Final Remedial Investigation Work Plan

Site Name	Block 37
Site Address	600 – 630 Westlake Avenue North Seattle, King County, Washington 98109
Alternate Location Info	King County Parcel Nos.: 408880-3236, 408880-3235, 408880-3240, 408880-3345, 408880-3355, and 198720-0015
Ecology Facility Site ID No.	46445373
Ecology Cleanup Site ID No.	6134
Ecology Agreed Order No.	DE 19430

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Date August 23, 2023

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Acronyms and Abbreviations

Atlas	Atlas Technical Consultants, LLC
AO	Agreed Order (No. DE 19430)
AS	air sparge
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and total xylenes
CAP	cleanup action plan
cDCE	cis-1,2-dichloroethene or cis-1,2-DCE
City	City of Seattle
City Investors	City Investors XI L.L.C.
cPAH	carcinogenic polycyclic aromatic hydrocarbon
COC	contaminant of concern
COPC	contaminant of potential concern
CSM	conceptual site model
CUL	cleanup level
CVOC	chlorinated volatile organic compound
DCE	dichloroethene
DOT	Department of Transportation
DPT	direct push techniques
DRO	diesel-range organics
Ecology	Washington State Department of Ecology
EDB	1,2-dibromoethane
EDC	1,2-dichloroethane
EDR	Environmental Database Report
EFR	enhanced fluid recovery
EIM	Environmental Information Management
FS	feasibility study
GAC	granular activated carbon
GPR	ground penetrating radar

GRO	gasoline-range organics
HASP	health and safety plan
HVOC	halogenated volatile organic compounds
IA	Interim Action
IDW	investigation-derived waste
LNAPL	light non-aqueous phase liquid
LUST	Leaking underground storage tank
MCP	Mercer Corridor Project
MOHAI	Museum of History and Industry
MTBE	methyl tert-butyl ether
MTCA	Model Toxics Control Act
mg/kg	milligrams per kilogram
MW	monitoring well
NAD83	North American Datum of 1983
NAVD88	North American Vertical Datum of 1988
ORO	oil range organics
P66	Phillips 66 Company
PAH	polycyclic aromatic hydrocarbon
PCBs	polychlorinated biphenyls
PCE	tetrachloroethylene
PQL	practical quantitation limit
PSCAA	Puget Sound Clean Air Agency
PVC	polyvinyl chloride
QAPP	quality assurance project plan
RCRA	Resource Conservation and Recovery Act
RI	remedial investigation
ROW	(City of Seattle) right-of-way
SAP	sampling and analysis plan
SDOT	City of Seattle Department of Transportation

SCB	soil cement/bentonite
SLs	Screening Levels
SPT	Standard Penetration Test
SVE	soil vapor extraction
TAP	Technical Assistance Program
TCE	trichloroethylene
tDCE	trans-1,2-dichloroethene or trans-1,2-DCE
TEE	Terrestrial Ecological Evaluation
TEH	Total Extractable Hydrocarbons
Tosco	Tosco Corporation
TPH	total petroleum hydrocarbon
TTEC	total toxicity equivalent concentration
UST	underground storage tank
VC	vinyl chloride
VCP	Voluntary Cleanup Program
VOC	volatile organic compound
WAC	Washington State Administrative Code

1. Introduction

Atlas Technical Consultants, LLC (formerly known as ATC) (Atlas) has prepared this Final Remedial Investigation (RI) Work Plan (Work Plan) on behalf of Phillips 66 Company (P66) and City Investors XI L.L.C. (City Investors) in accordance with Agreed Order No. DE 19430 (AO) effective May 4, 2021 and entered into by Washington State Department of Ecology (Ecology) with P66 and City Investors (Ecology, 2021a). This Work Plan describes remedial investigation activities necessary to identify and resolve investigative data gaps and perform additional site characterization tasks in accordance with Washington State's Model Toxics Control Act (MTCA) for the site generally located at 600-630 Westlake Avenue North in Seattle, King County, Washington (Block 37 Site) as more fully defined below (**Figure 1-1**).

The property located at 600-630 Westlake Avenue (Block 37 Property)[1] generally encompasses 1.59 acres and comprises six King County parcels (numbers 408880-3236, 408880-3235, 408880-3240, 408880-3345, 408880-3355, and 198720-0015) currently owned by City Investors (King County, 2021) (**Figure 1-2)**.The Block 37 Site, as defined in the AO, is where hazardous substances (other than consumer products in consumer use) were deposited, stored, disposed of, or placed, or have otherwise come to be located. The Block 37 Site includes portions of the Block 37 Property and the surrounding City of Seattle (City) rights-of-way (ROWs) where hazardous substances were released or have come to be located from historical operations. The affected City ROWs include Westlake Avenue North to the west of the Block 37 Property, Mercer Street to the south, Valley Street to the north, and Terry Avenue North to the east. The extent of the Block 37 Site will be defined as part of the RI.

1.1. Regulatory Framework

The Block 37 Site includes two previously listed contaminated Sites by Ecology: the TOSCO 25535330857 Site associated with a facility that operated on the southern portion of the Block 37 Property and realigned south-adjacent Mercer Street and Auto Service Company Site associated with a facility that operated on the northern portion of the Block 37 Property. The TOSCO 25535330857 Site was listed as Facility/Site ID 46445373 and designated Cleanup Site ID 6134. The Auto Service Company Site was listed as Facility/Site ID 24436664 and designated Cleanup Site ID 5749. Both of those Sites are identified in Ecology's database as Leaking Underground Storage Tank (LUST) Sites, with LUST IDs 1621 and 8134, respectively.

The TOSCO 25535330857 Site was enrolled in Ecology's Voluntary Cleanup Program (VCP) in 2006 and environmental work was performed independently under VCP Project NW1714. The Site was terminated from the VCP when the AO for the Block 37 Site became effective in May 2021. Upon negotiating the AO, Ecology combined both of the previously listed cleanup sites in its contaminated sites database as Block 37 and retained the Cleanup Site ID and Facility/Site ID previously associated with TOSCO 25535330857.

Completion of the RI, as well as interim actions, if any, and preparation of a draft Feasibility Study (FS) report, and draft cleanup action plan (dCAP) for the Block 37 Site are being implemented under the AO. The AO requires P66 and City Investors to complete and submit an RI report, FS, and a preliminary dCAP for the Block 37 Site in accordance with MTCA cleanup regulations (Washington State Administrative Code [WAC] 173-340) (WSL, 2021).

[1] This property has been referred to as Seattle City Block 77 in previous documents. The block numbers used in this document do not correspond to the block numbers designated by the City of Seattle.

1.2. Remedial Investigation Work Plan Purpose and Objectives

The purpose of this Work Plan is to identify the work elements necessary to adequately define the nature and extent of contamination at the Block 37 Site in order to support the preparation of the Remedial Investigation Report (RI Report) and to support the development and evaluation of cleanup action alternatives under the FS.

In accordance with the AO Exhibit B – Scope of Work, Task 1, the objectives of the Work Plan are to:

- Provide a summary of previous investigations conducted at the Block 37 Site.
- Describe the preliminary conceptual site model (CSM).
- Identify data gaps that require investigation to enable development and evaluation of cleanup action alternatives.
- Provide the rationale for the scope of work to be performed during the RI.
- Provide detailed methods for sampling and analysis, and a schedule for the RI.
- Provide a summary of the elements to be included in the RI report.

Remedial investigation activities planned for the Block 37 Site will meet the requirements of MTCA as defined in WAC 173-340-350(7).

1.3. Report Organization

This Work Plan is organized as follows:

- Section 1: Introduction – identifies the Work Plan purpose and objectives and describes the regulatory framework for performing the Work Plan and RI.
- Section 2: General Site Information – presents information on the Block 37 Site and relevant contact information.
- Section 3: Site Description – presents information on the Block 37 Site relevant to its historical and current land uses, a summary of surrounding land uses, and a description of the environmental setting.
- Section 4: Summary of Environmental Releases and Previous Actions – presents information on the history of releases and interim actions undertaken at the Block 37 Site and properties in the vicinity of the Block 37 Site.
- Section 5: Preliminary Conceptual Site Model – describes the sources of contaminants of potential concern (COPCs), transport pathways, and receptors, in addition to presenting the evaluation of screening levels applicable to the Block 37 Site.
- Section 6: Investigation Data Gaps – presents a summary of data gaps identified during the development of the Work Plan to be addressed during the RI activities at the Block 37 Site.
- Section 7: Remedial Investigation Elements – describes the objectives and scope of work for the proposed RI activities.
- Section 8: Reporting and Scheduling – presents the deliverables and schedule related to performance of the RI.
- Section 9: References – provides the references used to develop the Work Plan.

2. General Site Information

Site Name	Block 37
Site Address	600 — 630 Westlake Avenue North, Seattle, King County, Washington 98109
Site Parcel Numbers	408880-3236, 408880-3235, 408880-3240, 408880-3345, 408880-3355, and 198720-0015
Current Owner	City Investors XI, L.L.C.
Responsible Parties and Contact	Phillips 66 Company Eli Gurian – Program Manager Remediation Management 3900 Kilroy Airport Way, Suite 210 Long Beach, California 90806 Office: 562-290-1537 Cell: 562-506-4855 Email: Eli.A.Gurian@p66.com City Investors XI, LLC Corey Wilson 505 5th Ave S #900 Seattle, WA 98104 Email: coreyw@vulcan.com
Ecology Files	Facility Site ID: 46445373 Cleanup Site ID: 6134
Primary Consultant and Contact	Atlas Elisabeth Silver, LG 6347 Seaview Avenue NW Seattle, Washington 98107 Office: 206-781-449 Direct/Cell: 206-491-9754 Email: elisabeth.silver@oneatlas.com
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3. Site Description

This section provides a description of the Block 37 Site, historical land uses, surrounding land uses, and the environmental setting.

3.1. Site Description and Background

As presently understood, the Block 37 Site is situated within and surrounding the real property identified as the Block 37 Property located at 600-630 Westlake Avenue North in Seattle, King County, Washington (**Figure 1-2**). The Block 37 Site also encompasses portions of City ROWs including Valley Street to the north, Terry Avenue North to the east, Mercer Street to the south, and Westlake Avenue North to the west. The Block 37 Property consists of six King County parcels (numbers 408880-3236, 408880-3235, 408880-3240, 408880-3345, 408880-3355, and 198720-0015) totaling 1.59 acres in size all owned by City Investors (**Figure 3-1)**. Portions of the Block 37 Property have been owned by City Investors since 2000; individual parcels were acquired in 2000, 2002, and 2014 (King County, 2021). P66 previously owned and conducted operations on the southern portion of the Block 37 Property (parcels 1987200015 and 4088803355) from April 2012 to December 2014. Additional parcel detail information, such as ownership history, is provided in **Table 3-1**.

The northern half of the Block 37 Property is asphalt paved and the southern half is unpaved/gravel covered. The perimeter of the Block 37 Property is fenced, accessed from Terry Avenue North to the east and Westlake Avenue North to the west. No permanent structures presently exist; however, temporary trailers are situated in the southern portion of the Block 37 Property for use as construction-related offices. The north, west, and south sides of the Block 37 Property have minimal landscaping adjacent to the sidewalk/City ROW.

The Block 37 Property is situated within a mixed-use district of Seattle known as South Lake Union, which is developed with a variety of businesses (retail and commercial), open space (public park), public use (museum), and transportation corridors. Surrounding properties are zoned either “Seattle Mixed” (SM) or “Commercial 2” (C2) (King County, 2021). The City currently owns or holds easements for public ROWs on the streets and avenues surrounding the Block 37 Property. Sanitary and storm sewer lines run beneath Westlake Avenue North and Terry Avenue North; electrical utility lines run beneath Westlake Avenue North, Valley Street, and Mercer Street; and gas lines run beneath Valley Street and Mercer Street (**Figure 3-1**).

From 2006 through 2013, when the Valley Street wells were installed, the City made major modifications in the ROWs and adjacent property in the vicinity of the Block 37 Property in conjunction with implementation of the South Lake Union Street Car and the subsequent Mercer Corridor Project (MCP). One of these modifications was the City’s acquisition from P66, and incorporation into the Mercer Street ROW, of a portion of the Block 37 Property that historically extended approximately 70 feet to the south of the current southern boundary (**Figure 3-2**).

All historical operations described below in Section 3.1.1 have ceased and the structures related to operations on the Block 37 Property have been removed. Each of the parcels is currently vacant and zoned for commercial development (King County, 2021). Since City Investors’ acquisition of the Block 37 Property beginning in 2000 (and completed in 2014), the Block 37 Property has been used for parking and the temporary storage of construction materials and temporary trailers associated with City Investor affiliated construction projects and temporary dewatering/groundwater treatment systems that were installed for periods of time starting in 2013 during redevelopment of their Block 43 Property to the west of the Block 37 Property (Farallon, 2018a). Further details on historical land uses are provided in the following sections.

3.1.1. Historical Land Uses

The Block 37 Property has been developed for industrial, retail, and other commercial purposes since the late 1800's, with a lumber mill, two gasoline service stations, an automotive service/detailing station, a Denny's restaurant, a creamery, and a brewery (Ecology, 2021a). Prior to its original development, most of the Block 37 Property and surrounding ROWs were submerged and situated within Lake Union. The entire area was reclaimed using undocumented fill materials including dirt, concrete, bricks, wood, and sand (History Link, 2013; Dorpat et al, 2018). Further details on the historical land uses of the Block 37 Property and its vicinity are summarized in the following sections and historical site features are shown on **Figure 3-2**. Refer to **Table 3-1** for details of ownership history and uses by parcel.

3.1.1.1. Lumber Mill

The Brace Lumber Mill, which later became the Brace & Hergert Lumber Mill, occupied parts to all of the Block 37 Property from the late 1800's to late 1980's. In 1882, the Western Mill on Lake Union's southern shore began operations (MOHAI, 2021). In 1899, the mill operated under the name of Brace & Hergert Lumber Mill and continued operations until 1921. In 1909, a fire destroyed the mill but the mill was later rebuilt on newly filled land north of Valley Street (north of the present-day Block 37 Property). Another fire in 1935 damaged several on-Property and off-Property buildings (History Link, 2007).

Historical Sanborn Maps show the lumber mill included a sawmill, planing mill, a lumber shed, an electric powerhouse, and other associated structures including steam dry kilns, water tanks, and machine shop (Environmental Data Resources [EDR], 2018a). Retail lumber and building materials sales and custom cutting shop operated at the mill.

Between approximately 1950 and 1969, the Brace & Hergert lumber mill operational footprint was reduced to generally the northern portion of the Block 37 Property, approximately within the two current most northern parcels (408880-3240 and 408880-3235). By the end of this period, operations consisted of a planing mill, finished lumber shed, lumber yard, and office (EDR, 2018a). In 1971, the City purchased the northern parcels of the Block 37 Property but continued to lease the land to the lumber mill. The lumber mill ceased operations in 1988. The last remaining building associated with the lumber mill was removed from the northeast corner of the Block 37 Property in 2007 (History Link, 2007).

3.1.1.2. Gasoline Service Stations and Automobile Servicing

Westlake 76 Station

The Westlake 76 Station operated on the southwest corner of the Block 37 Property (Parcel No. 408880-3355) from 1965 to 2008. This facility is associated with the TOSCO 25535330857 Site and LUST ID 1621 noted in Section 1.1. The Westlake 76 Station was originally constructed by Union Oil Company of California in 1965. The first generation of Westlake 76 Station underground storage tanks (USTs), which included one 8,000-gallon gasoline UST, two 10,000-gallon gasoline USTs one 550-gallon heating oil UST, and one 550-gallon used oil UST, were removed or replaced in 1980. The second generation of USTs included three 10,000-gallon gasoline and one 10,000-gallon diesel UST, one 550-gallon waste oil UST, and two 550-gallon heating oil USTs. The station had two fuel dispenser islands and a service station building (with four service bays and four hydraulic hoists), which was later converted into a convenience store. The hydraulic hoists were removed in 2003. The fuel dispenser islands were situated adjacent to the west and south of the service station building (**Figure 3-2**) and the USTs were located adjacent to the east of the station building. The remaining Westlake 76 Station structures were demolished sometime between 2007 and early 2009 (EDR, 2018b).

Tosco Corporation (Tosco) acquired the Westlake 76 Station Property from Unocal in 1997. Tosco was acquired by Phillips Petroleum in 2001, which became ConocoPhillips Company in 2002. In 2012, ConocoPhillips conveyed retail and other assets, including the Westlake 76 Station Property, to the newly formed P66, which was spun off that year to become an independent entity. The parcel was acquired by City Investors from P66 in 2014 (**Table 3-1**).

Union 76 Service Station / Auto Service Company

A retail gasoline service station and automotive servicing facility operated on the northwest portion of the Block 37 Property (Parcel Nos. 408880-3235 and 408880-3240) from approximately 1930 to the mid-1960's, and possibly to 1972 (SCS, 1990; Ecology, 2021a). The gasoline service station operated as the Union 76 Service Station from approximately 1930 to at least 1964 and was developed with five motor oil and gasoline USTs ranging in capacity from 500 to 5,000 gallons, two pump islands, and a service station building (ATC, 2019b). The L-shaped service station building was identified as 'Auto Cleaning' in conjunction with the gasoline service station by at least 1969 (EDR, 2018a).

Auto service and detailing operations occurred intermittently from 1971 to 2002 by the Auto Service Company (Ecology, 2021a). This operation occurred at one building used as an office and at a second building used for auto servicing equipped with three service bays (Ecology, 2004). The service bay included an oil changing pit where oil from vehicles was drained and oil/oil filters were replaced. A wash rack was present adjacent to the east of the service bays. This facility is associated with the Auto Service Company Site and LUST ID 8134 noted in Section 1.1.

The USTs associated with the Union 76 Service Station were likely abandoned between 1959 and 1972 and removed in January 1990 (SCS, 1990). Reportedly, a 500-gallon waste oil UST was still in use from at least 1972 until January 1990 (SCS, 1990). Buildings and other aboveground structures associated with the former service station were demolished in June 2005 and the area was paved with asphalt. City Investors acquired Parcel Nos. 408880-3235 and 408880-3240 from the City in 2002 (**Table 3-1**).

3.1.1.3. Other Uses

Restaurant

A Denny's restaurant operated on the southeast corner of the Block 37 Property (Parcel No. 198720-0015) at 601 Terry Avenue North. The former restaurant was present from between 1950 and 1969 through at least 2005 when the building was demolished (EDR, 2018b; Google Earth, 2020). Asphalt parking surrounded the former building. It is not known how the building was heated.

Brewery

A brewery operating as Sick's Century Brewery (formerly known as Horluck's Brewing Co.) occupied the southeast corner of the Block 37 Property (Parcel No. 198720-0015) (EDR, 2018a; Vulcan, 2014). The brewery included a bottling plant, a warehouse, and a brew house. The brewery was in operation from at least 1944 to sometime prior to 1969 (EDR, 2018a; Vulcan, 2014).

Creamery

A creamery operating as Horluck's Creameries, Inc.) occupied the southwest corner of the Block 37 Property (Parcel No. 408880-3355) from at least 1950 to approximately 1968 (EDR, 2018a). The creamery included an office, storage area, a keg washing area, and a packing department.

Railroad Spur

A rail siding was located in the northeastern corner of the Block 37 Property (Parcel No. 408880-3236) that serviced the lumber mill operations from approximately 1917 to 1969 (GeoEngineers, 1995a). The parcel was sold to City Investors in 2000 by BNSF Railway Company.

3.1.2. Surrounding Land Uses

Potentially relevant historical land uses on surrounding properties are summarized below (refer to **Figure 1-2**):

- **North** — Valley Street followed by South Lake Union Park (a park) and Museum of History and Industry (MOHAI) and Lake Union. The property was historically used as a lumber yard and sawmill from the late 1880's to at least 1950. The Federal government acquired the property by 1942 and built the Naval Reserve Readiness Center building (Building 10; currently MOHAI). The property was redeveloped into its current use in the early 2000's (EDR, 2018a, 2018b; Google Earth, 2018). The properties to the north of Block 37 are discussed further in Section 4.4.1).
- **East** — Terry Avenue North followed by the Block 31 Property, located at 625 Boren Avenue North, is currently occupied by mixed use residential/commercial/office buildings. Block 31 was historically used as a lumber yard and sawmill in the late 1880's through the early 1900's, followed by a variety of manufacturing facilities in the 1890's through at least the 1950's, and a gasoline station by at least the late 1960's through at least the early 2000's, and redeveloped into its current use beginning in 2017 (EDR, 2018a, 2018b). Block 31 is discussed further in Section 4.4.2.
- **Southeast** — Terry Avenue North and Mercer Street intersection followed by the Block 32 Property, currently occupied by mixed use residential/commercial buildings. The Block 32 Property was historically used as a lumber yard in the late 1880's through the early 1900's, residential dwellings through at least the 1950's, and commercial development thereafter and developed into its current use beginning in 2009 (EDR, 2018a, 2018b; Google Earth, 2018). The Block 32 Property currently is occupied by office buildings on the northern and southwestern portions and mixed-use commercial and residential buildings on the southeastern portion. Block 32 is discussed further in Section 4.4.3.
- **South** — Mercer Street, followed by Block 38 (which is comprised of the Block 38 East Property and Block 38 West Property that are divided by an alley). The Block 38 East property is currently occupied by mixed use commercial/residential buildings. Block 38 was historically a marsh prior to the late 1880's. The Block 38 West Property was used as a lumber storage yard from the 1890's until approximately 1920, followed by small commercial operations (e.g., blacksmith shop, wagon shop, horse stable, auto repair, veterinary hospital), retail operations (e.g., auto parts, appliances, school supplies) and warehouse storage. Structures used as retail, temporary office space, storage, and parking remained unchanged from 1969 through August 2019, when redevelopment of the Block 38 West Property commenced. The Block 38 East Property has primarily been used for commercial and light industrial purposes since the late 1800's. Historical operations on the northern portion of the property (535 Terry Avenue North) included a lumber mill and yard, gasoline service station, and fuel yard associated with coal storage through the 1950's. By the late 1960's, the northern portion of the property was a parking lot until it was redeveloped in 2009 with a five-story commercial office building known as the Interurban Exchange 2 Building. Historical operations on the southern portion of the Block 38 East Property (960 Republican Street) included lumber storage until the late 1920's when a three-story commercial office building was built. The building, known as the Rosen Building, was used as a warehouse for electrical appliances and general storage through the 1960's and currently is a medical and dental office (Farallon, 2020b). Block 38 is discussed further in Section 4.4.4.
- **Southwest** — Westlake Avenue North and Mercer Street intersection followed by the Block 44 Property, which is currently occupied by mixed use commercial/residential buildings. This property was historically used as a steam cleaning laundry facility and residential dwellings from at least the 1890's to the early 1900's, used auto sales from at least 1950 to at least the early 2000's, and redeveloped with its current mixed-use buildings commencing in 2013 (EDR, 2018a, 2018b; Google Earth, 2018). The period of steam cleaning laundry facility use (the

1890's to the early 1900's) would be well before the use of CVOCs for dry cleaning, and would have used warm/hot water and conventional soaps.

- **West** — Westlake Avenue North, followed by the Block 43 Property located at 601 Westlake Avenue North. The Block 43 Property was originally developed as a lumber storage yard and subsequent operations included a carpet factory, steam laundry facility, foundry/blacksmith shop, machine shop, auto service/repair and sales facility and a gasoline station (EDR, 2018a). There is no historical information regarding CVOC use on the Block 43 Property in connection with the steam laundry facility. The former auto dealership and service shop occupied the property from the late 1970's through 2000 and the property was redeveloped between 2013 and 2015 with a six-story commercial office building with four levels of below-grade parking currently occupied by the Allen Institute for Brain Science Building (EDR, 2018a, 2018b; Google Earth, 2018). The Block 43 Property is discussed further in Section 4.4.5. Approximately 750 feet to the west/northwest is the Former American Linen Supply Co-Dexter Avenue North Site (the American Linen Site) generally located at 700 Dexter Avenue North (700 Dexter Property), which historically operated as a commercial laundry and dry-cleaning facility from 1925 to 1995 and a gasoline station from 1930 to 1966 (Ecology, 2017). The use of CVOCs in connection with commercial laundry and dry-cleaning operations at the 700 Dexter Property has been confirmed. The 700 Dexter Property is discussed further in Section 4.4.6
- **Northwest** — Valley Street, Broad Street, and Westlake Avenue North intersection, followed by commercial properties and Lake Union beyond. The property to the northwest of the intersection (also known as Block 77) was historically used as steam laundry and printing facilities from at least 1917 to 1950, automobile sheet metal shops and painting from at least 1950 to 1969, auto service by at least 1969, and other commercial uses thereafter (EDR, 2018a, 2018b).

3.2. Environmental Setting

3.2.1. Topography

The Block 37 Property is relatively flat, with a slight slope to the north, and elevations ranging from approximately 29.5 feet North American Vertical Datum of 1988 (NAVD88) to 27 feet NAVD88. The southern portion of the Block 37 Property is covered by gravel and the northern half consists of asphalt paved parking lot. The nearest surface waterbody is Lake Union, which is approximately 200 feet north of the Block 37 Property (**Figure 1-2**). With the exception of the Lake Union Park to the north, surrounding properties are either paved or covered by buildings.

3.2.2. Local Land Use and Zoning

The Block 37 Property is located in a mixed-use area of South Lake Union in Seattle, Washington that includes various businesses (both retail and commercial land uses), open space (Public Park), public use (museum), and transportation corridors. Most surrounding properties are zoned either "Seattle Mixed" (SM) or "Commercial 2" (C2) (King County, 2021).

3.2.3. Geology and Hydrogeology

3.2.3.1. Regional Geology and Hydrogeology

The Puget Sound region is underlain by Quaternary glacial sediments deposited during glacial advances and retreats, creating the existing subsurface conditions. Naturally occurring sediments in the South Lake Union area consist primarily of interbedded alluvial clays, silts, and sands that are typically situated over deposits of glacial till consisting of silty sand to sandy silt with gravel (Farallon, 2016). Outwash sediments consisting of sands, silts, clays, and gravels were deposited by rivers, streams, and glacial lakes during glacial advances and recessions. Advance outwash sediments have

been largely over-consolidated by the overriding ice sheets. The South Lake Union area is underlain by three general stratigraphic units (Farallon, 2016), which include the following (described from shallow to deep):

- **Fill material with recent lacustrine deposits**. Historical topographic maps show the original shoreline of Lake Union extending as far south as the current location of Mercer Street. In the late 1800's through early 1900's, the southern end of Lake Union was filled with sawdust, wood waste from lumber mill operations and other materials such as cobbles, boulders, slag material, construction debris, and other wastes. The lumber mills were typically constructed over the water on pilings and the sawdust and wood waste were discarded into Lake Union resulting in the accumulation of thick layers of wood debris. As the wood debris accumulated, the southern shoreline of the lake gradually filled in and the mills shifted their locations northward to remain over the water. Wood waste layers up to 12 feet thick were noted on the adjacent Block 31 Property (Farallon, 2016). The lacustrine deposits are comprised of silty sand, sandy silt, and sand with variable gravel content (20 to 30 feet below ground surface [bgs]). Peat and organic silt are also present in some areas of South Lake Union.
- **Native glacially consolidated soils**. This unit consists of dense silt, silty sand, and sandy silt with variable gravel content to depths of approximately 50 to 60 feet bgs. This intermediate unit is absent in some parts of the South Lake Union area. Alluvial material deposited during periods of glacial retreat can overlie this intermediate unit in certain areas (e.g., Block 25).
- **Glacial outwash deposits.** These deposits consist of sand with minor amounts of silt that occur at depths of approximately 130 feet bgs. In areas where the glacially consolidated unit is absent, outwash sand has been encountered at shallower depths. The glacial outwash has been noted to be underlain by very dense fine-grained soil during drilling west and northwest of Block 43.

The groundwater gradient in these units is variable. Local groundwater gradient anomalies may be present in areas of fill material, subsurface building foundations (e.g., subgrade parking levels) or other man-made structures, construction dewatering systems, groundwater remediation systems, or other localized conditions. Groundwater flow is locally affected by Lake Union, recharge to shallow groundwater flowing from Queen Anne and Capitol Hill, the Republican Street Drain, and heterogeneity and anisotropy of water-bearing units.

3.2.3.2. Site Geology and Hydrogeology

The Block 37 Property is underlain by mixed fill materials that include silt, silty sand, sand, gravel, and organic debris in the form of wood debris and peat. The wood debris is associated with activities from the former lumber mill that occupied the entire Block 37 Property at one time, and this layer ranged in thickness from less than 1 foot to 10 feet. The wood debris was encountered at depths ranging from approximately 9 feet to 20 feet bgs. More recently, a large area of the Block 37 Property was excavated during an interim cleanup action and backfilled with fill material from 15 to 25 feet bgs (approximately 20 to 10 feet NAVD88) (ATC, 2018). The fill is underlain by native sands, silty sands, silts, and clay to the maximum total depth explored of 80 feet bgs (approximately -50 feet NAVD88). Geologic cross-sections depicting the subsurface conditions beneath the Block 37 Property are shown on **Figures 3-3 through 3-6**.

Three general water-bearing zones underlie the Block 37 Property and South Lake Union area. The shallow water-bearing zone has been encountered at depths ranging from approximately 5 to 13.5 feet bgs (24 feet to 15.5 feet NAVD88). The groundwater gradient was historically relatively flat but recently, during nearby construction and dewatering operations, has ranged up to approximately 0.04 ft./ft. Groundwater flow has been generally northerly towards Lake Union, but has also ranged in direction from easterly to southerly. Groundwater flow maps during static conditions have been generated for four quarterly groundwater monitoring events conducted in 2022 (**Figures 3-7** through **3-10**).. Given

that the groundwater flow direction is not uniform and varies across the Block 37 Site, a Rose diagram could not be generated.

An intermediate water-bearing zone occurs in the glacially-consolidated soil at approximately 20 to 60 feet bgs (10 to -30 feet NAVD88). The intermediate water-bearing zone is continuous beneath the Block 37 Property and Block 38 located across Mercer Street to the south (**Figures 3-4** through **3-6**). The shallow and intermediate water-bearing zones beneath the Block 37 Property and Block 38 appear to be in direct communication, as no aquitard separating these groundwater-bearing zones has been identified. A deep outwash aquifer underlies the South Lake Union area (Farallon, 2020a). This unit is present at depths of greater than 60 feet bgs (-30 feet NAVD88). The lateral groundwater flow within the deep outwash aquifer is inferred to be easterly under static non-pumping conditions (Farallon, 2016).

Shoring elements installed as part of the interim remedial actions implemented at the Block 37 Site in 2005 through 2008 (known as the Phase 1 and Phase 2 Excavations, further discussed in Section 4) included a soil/cement/bentonite slurry wall (aka gravity wall) around the north, east and southern perimeter of the Block 37 Property and a sheet pile wall installed along the western perimeter of the Block 37 Property and west-adjacent Westlake Avenue North. The sheet pile and slurry gravity walls were installed to depths of approximately 25 feet bgs (Stantec, 2011). These shoring elements remain in place present-day and continue to act as a hydraulic hindrance affecting the local groundwater flow conditions in the shallow water-bearing zone.

3.2.3.3. Climate

Weather in the Seattle, Washington area is characterized by short, warm, and dry summers, while winters tend to be relatively cold, wet, and mostly cloudy. Over the course of the year, the temperature typically varies from 37°F to 79°F and is rarely below 28°F or above 88°F.

3.2.4. Water Supply Wells

No domestic wells or community drinking water source areas are located within a 1-mile radius of the Block 37 Property (Ecology, 2021b; DOH, 2021).

3.2.5. Surface Water

No surface water features are located within the Block 37 Property boundary. The nearest surface water body is Lake Union, which is approximately 200 feet to the north (**Figure 3-1**).

4. Summary of Environmental Releases and Previous Actions

This section provides a summary of historical releases, prior environmental investigations, and cleanup actions/remedial activities at the Block 37 Site. Selected figures depicting properties in the Block 37 Site vicinity with known contamination and that have potentially impacted the Block 37 Site are provided in **Appendix A**.

4.1. History of Releases

Petroleum releases associated with former gasoline station and automotive servicing operations have been identified at the Block 37 Property. Releases of petroleum products and other hazardous materials from former lumber mill, creamery, and brewery operations at the Block 37 Property have not been identified or confirmed given the lack of records available for those time periods (late 1880's to 1960's; **Table 3-1**). The historical features associated with the Block 37 Property automotive and lumber mill operations are depicted on **Figure 3-2.** Petroleum releases associated with the former gasoline and automotive service stations on the Block 37 Property are summarized below.

Westlake 76 Station

Documented petroleum releases that occurred in the southwest corner of the Block 37 Property are as follows:

- In May 1980, approximately 80,000 gallons of supreme leaded-gasoline were released over an approximate four-month period from a leaking product line south of the western pump island at the Westlake 76 Station (Ecology, 2021a).
- In May 2001, a contractor broke a gasoline product line during removal of used oil and heating oil USTs at the Westlake 76 Station and an estimated 600 gallons of unleaded gasoline was released (Ecology, 2021a).
- In 2003, during the removal of hydraulic hoists from the former Westlake 76 Station, oil-impacted soil was encountered in the vicinity of the hoists and subsequently removed (Ecology, 2021a).

Union 76 Service Station / Auto Service Company

Documented petroleum releases that occurred in the northwest corner of the Block 37 Property are as follows:

- During removal of five USTs in 1990, petroleum contaminated soil was detected, with total petroleum hydrocarbons (TPH) concentrations up to 13,000 milligrams per kilogram (mg/kg) and benzene concentrations up to 47 mg/kg.
- The Union 76 Service Station and the Auto Service Company reportedly had poor oil storage housekeeping practices and improperly handled auto servicing-related wastes that resulted in releases of used oil and oily wash water to the surface and subsurface (Ecology, 2004).
    1. The oil changing pit inside the service bay had documented leakage of used oil beneath the building.
    2. Outside of the service bays, greywater from steam cleaning operations was not contained and flowed to unpaved gravel-covered areas including to an oil/water separator and stormwater catch basins.
    3. Although not documented, hydraulic oil releases associated with the in-ground and aboveground lifts/hoists may also have occurred.

4.2. Previous Environmental Sampling

Multiple soil and groundwater investigations have been conducted at and in the immediate vicinity of the Block 37 Property since 1980 to assess impacts to the environment caused by releases from former gasoline station and automotive repair features and operations (**Figure 4-1**). The majority of these investigations have been associated with releases at the former Westlake 76 Service Station in the southwestern portion of the Block 37 Property. Additional information regarding the nature and extent of impacts is provided in **Section 5.8.**

An inventory of existing groundwater monitoring wells installed at and in the immediate vicinity of the Block 37 Property and associated construction details is provided in **Table 4-1a**. A summary of all wells installed at and in the vicinity of the Block 37 Property, including existing and historical wells for monitoring and remediation, is included in **Table 4-1b**. The locations of existing along with previous wells that have been decommissioned/abandoned are shown on **Figure 4-1**. The locations of the existing well network are shown on **Figure 4-2**. Historical groundwater sampling data are summarized in **Tables 4-2a** through **4-2d** and a subset of groundwater samples collected to the north of the Block 37 Property are presented in **Table 4-3a** through **4-3d**. Historical soil sampling data from reports have been compiled and are summarized in Tables 4-4a through 4-4d A summary of previous environmental investigation analytical results by media is provided below.

4.2.1. Previous Soil Sampling Results

Soil characterization has been conducted at the Block 37 Site since the initial release of petroleum was discovered in 1980 and environmental investigations have focused primarily on gasoline-related impacts. Select investigations have also been conducted associated with the former Union 76 gas station and automotive servicing operations on the northern parcels of the Block 37 Property, and the former Brace Lumber Mill, in addition to potential off-property impacts (i.e., outside the Block 37 Property boundary) from surrounding sites. A summary of historical soil characterizations is provided below. Soil analytical results for total petroleum hydrocarbons (TPH) as gasoline range organics (GRO), diesel range organics (DRO) and oil range organics (ORO), benzene, naphthalene, carcinogenic polycyclic aromatic hydrocarbons (cPAHs), and metals for various sample collection depth ranges are shown on **Figures 4-3** through **4-9 (a, b, and c)**. Generalized geologic cross sections with soil analytical results for GRO and benzene are shown on Figures **4-10 (a, b and c).** A summary of historical soil characterizations is provided below.

4.2.1.1. Pre-2006 Soil Characterization Activities

In 1980, following release discovery, 32 wells for monitoring and fuel recovery were installed by Roger Low Associates. No soil sampling was associated with the well installation (RLA, 1980).

In February 1990, SCS excavated and removed five USTs from the 630 Westlake property. Three of the USTs were full of water and their physical condition, although subjected to rust accumulation, had no indication of leakage. Two monitoring wells (SMW-1S and SMW-2S) were installed at this time. Analytical results for soil samples collected at the bottom of the excavation [T-1(bottom) and T-4(bottom)] indicated TPH concentrations of 3,800 and 2,100 mg/kg, respectively. Sample T-4(bottom) was analyzed for ethylbenzene, with a resulting concentration of 20 mg/kg.

Approximately 800 cubic yards of contaminated soil was removed from the 630 Westlake property to be treated; an unknown volume of contaminated soil remained in-situ on the property. It was suggested that this soil contamination was a result of previous on-Site fuel systems and upgradient activities (SCS, 1990). More subsurface investigative work was performed by SCS in January 1991, to assess the extent of contamination. This included the construction of five monitoring wells (MW-1/SMW-1 through MW-5/SMW-5) and one borehole (BH-1). Soil samples BH-1-5', and BH-1-8', from borehole BH-1, indicated TPH and total extractable hydrocarbons (TEH) concentrations of 500 and 29 mg/kg, respectively. Benzene, toluene, ethylbenzene, and total xylenes (BTEX) results for soil samples BH-1-5' and BH-1-8' indicated values below the practical quantitation limit (PQL).

Most of the contamination was present within the top 5 to 10 feet of the surface (SCS, 1991). Soil samples collected from monitoring well borings MW-1/SMW-1-5', MW-1/SMW-1-10', MW-2/SMW-2-5',

MW-2/SMW-2-8', MW-3/SMW-3-5', MW-3/SMW-3-10', MW-4/SMW-4-10', MW-4/SMW-4-15', MW-5/SMW-5-5', MW-5/SMW-5-10' were tested for TPH, resulting in the detected TPH concentrations of 38, 8.6, 750, 73, 290, 33, 450, 77, 390, and 17 mg/kg, respectively. Soil samples collected from monitoring well borings MW-1/SMW-1-5', MW-1/SMW-1-10', MW-2/SMW-2-5', MW-2/SMW-2-8', MW-3/SMW-3-5', MW-3/SMW-3-10', MW-4/SMW-4-5', MW-4/SMW-4-10', MW-4/SMW-4-15', MW-5/SMW-5-5', MW-5/SMW-5-10', and MW-5/SMW-5-15', were also tested for BTEX compounds, with the results for samples MW-1/SMW-1-5', MW-1/SMW-1-10', MW-2/SMW-2-5', MW-2/SMW-2-8', MW-3/SMW-3-5', MW-3/SMW-3-10' all below the PQL. Analytical data showed benzene levels in soil samples MW-4/SMW-4-5', MW-4/SMW-4-10', MW-5/SMW-5-5', MW- 5/SMW-5-10', MW-5/SMW-5-15' as 0.17, 4.3, 0.56, 11, and 0.78 mg/kg, respectively, and MW-4/SMW-4-15', was below the PQL. Toluene levels for MW-4/SMW-4-10', MW-4/SMW-4-15', W-5/SMW-5-5', MW-5/SMW-5-10', MW-5/SMW-5-15' were 4, 0.0024, 0.59. 57, and 0.78 mg/kg, respectively with MW-4/SMW-4-5' below the PQL. Ethylbenzene levels for MW-4/SMW-4-5', MW-4/SMW-4-10', MW-4/SMW-4-15', MW-5/SMW-5-5', 5/SMW-5-10', MW-5/SMW-5-15' were 0.6, 7.8, 0.0026, 0.084, 17, 0.43 mg/kg, respectively. Analytical data for total xylenes for MW-4/SMW-4-5', MW-4/SMW-4-10', MW-4/SMW-4-15', MW-5/SMW-5-5', 5/SMW-5-10', MW-5/SMW-5-15' were 0.038, 16.1, 0.0104, 0.51, 87, 2.24 mg/kg, respectively.

In 1991 and 1992, GeoEngineers installed eighteen monitoring wells (MW-32A - MW-49) to delineate soil and groundwater impacts at the former Westlake 76 Service Station (GeoEngineers, 1992). Soil analytical results indicated that soil impacted with GRO, DRO, and BTEX was present in multiple well borings,[2] primarily in the southwestern portion of the Block 37 Property (in the area of the former Westlake 76 Station) but also at other areas of the Block 37 Property.

In 1994, following removal of a 550-gallon heating oil UST from the Westlake 76 Station, soil samples were collected from the excavation base and sidewalls (HO-1-7, HO-2-5, and HO-3). The results indicated the presence of diesel- and oil-related impacts in soil surrounding the former tank. The excavated area was backfilled with temporarily stockpiled soil removed from the excavation along with imported backfill (GeoEngineers, 1995b).

During a Phase I Environmental Site Assessment (ESA) of the northern parcels of the Block 37 Property (identified in the report as Block 77 Lots 1, 2, and 3), conducted by Garry Struthers Associates (GSA) in April 1999, dark staining and petroleum odors were observed throughout the building at the subject property. Stained soil was also apparent near an above ground storage tank that was adjacent to the engine cleaning area (GSA, 1999). During subsequent Phase II ESA activities in September 1999, GSA advanced borings GSB4 through GSB7, GSB12, and GSB13 and installed well GSW7 (aka MW-806 in later reports) on the property and collected soil and groundwater samples for laboratory analysis. Elevated concentrations of GRO, DRO, ORO, BTEX compounds, and cPAHs were reportedly detected in soil samples from GSB5 and GSB6 at depths between 6 and 12 feet bgs. Elevated concentrations of DRO and/or ORO were also reportedly detected in soil samples from GSB4, GSB7, and GSB13 at depths between 2 and 9 feet bgs. CVOCs were included in the soil analyses but were not detected.[3] Following GSA's assessment, Hart Crowser also advanced and sampled test pits TP-7 through TP-12 on the property. Records indicate that soil from test pits TP-7, TP-8, TP-9, TP-11, and TP-12 contained elevated concentrations of GRO and BTEX compounds. CVOCs were also included in the soil analyses for two of the test pit samples (from TP-7 and TP-9) but were not detected above the laboratory's reporting limits.[4]

[2] MW-32A, MW-33, MW-34, MW-35, MW-37, MW-42, MW-45, MW-48, and MW-49.

[3] The Phase II ESA report was not available for review. Information from this assessment was found on a site map prepared by GSA in May 2000 and copies of accompanying data tables containing analytical results from September 1999 for soil samples collected from borings GSB4 through GSB7 and GSW7.

[4] A full report was not available for review. Records containing the information for this assessment include a "Site and Exploration Plan" figure prepared by Hart Crowser in October 2000 and copies of accompanying data tables containing analytical results for soil samples from test pits TP-7 through TP-12 as well as test pits advance on adjacent properties.

In August 2000, nine soil borings (B1 and B3 through B10) were advanced and soil sampled by Hart Crowser in the southeast corner of the Block 37 Property proximate to the Denny's restaurant (Hart Crowser, 2000). Soil samples were collected from various depths in each boring to the maximum depth explored ranging from 12 to 20 feet bgs. Analytical data for soil samplesB1-S1-3', B1-S2-7', B3-S1-3', B3-S2-7', B4-S2-6', B4-S3-10', B5-S2-6', B5-S3-10', B6-S1-2', B6-S2-6', B7-S1-3', B7-S3-7', B7-S4-15', B8-S1-3', B8-S3-11', B9-S2-7, B9-S3-11.6, B10-S2-6', B10-S3-10', B10-S4-14', B10-S5-18', all showed GRO, DRO, ORO, and kerosene concentrations below the PQL. Analytical data for soil samples B1-S3-11', B3-S3-11', B6-S3-10', and B7-S3-11' indicated GRO levels of 3,700, 3,400, 6,200, 1,500 mg/km, respectively, and DRO, ORO, and Kerosene levels below the PQL. Analytical data for soil sampleB5-S1-2' indicated an ORO concentration of 280 mg/kg, with GRO, DRO, and kerosene below the PQL. Soil samples B1-S3, B3-S3, B4-S2, B5-S2, B6-S3, B7-S3, and B8-S3 were analyzed for BTEX. Analytical data indicated benzene levels of 2,700, 2,300, and 220 in B3-S3, B6-S3, and B7-S3, respectively, with the additional soil samples reporting benzene levels below the PQL. Toluene identified in B1-S3, B3-S3, B4-S2, B6-S3, and B7-S3, was reported as 1,000, 20,000, 250, 6,900, and 260 mg/kg, respectively, with B5-S2 and B8-S3 toluene levels below the PQL. Ethylbenzene was reported at 17,000, 59,000, 210, 21,000, and 790 mg/kg, respectively in B1-S3, B3-S3, B4-S2, B6-S3, and B7-S3, with ethylbenzene levels below the PQL in B5-S2, B6-S1, and B8-S3. Total xylenes were reported as 99,000, 340,000, 1,100, 400,000, and 74,000 mg/kg, in B1-S3, B3-S3, B4-S2, B6-S3, and B7-S3, respectively, with total xylene levels below the PQL in B5-S2, B6-S1, and B8-S3. Samples B1-S2, B1-S3, B3-S1, B3-S3, B4-S2, B5-S2, B6-S2, B7-S3, B8-S3, B9-S2, B10-S3, and B10-S5 were tested for selected PAHs including acenaphthene, acenaphthylene, anthracene, benzo(g,h,i)perylene, fluoranthene, fluorene, phenanthrene, and pyrene. Analytical data indicated all samples, with the exception of B3-S1, were below the PQL. Analytical data for B3-S1 indicated fluoranthene, phenanthrene, and pyrene at 0.98, 1.5, and 1.2 mg/kg, respectively, with the remaining PAH parameters all indicated levels below the PQL. Reconnaissance groundwater samples were collected at borings B1, B3, B5, B7, and B10, which are further discussed in Section 4.2.2.

During assessment work in May 2001, Environmental Resolutions, Inc (ERI) conducted waste oil and heating oil UST removal, and collection of soil samples EX1-2.5, EX2-7, EX3-7, and EX4-3.5 at the limits of the excavation. Analyses included GRO, DRO, ORO, BTEX, and total lead. VOCs (including CVOCs) and PAHs were also analyzed for the bottom sample from the waste oil tank excavation. GRO, BTEX, select PAHs, and lead were detected in one or more of the samples. CVOCs were not detected (ERI, 2001).

Analytical results indicated a GRO concentrations in soil sample EX1-2.5 of 7,010 mg/kg, GRO concentrations were below the PQL in soil samples EX2-7 EX3-7, and EX4-3.5. A benzene concentration at EX3-7 was detected at 0.095 mg/kg, while samples EX1-2.5, EX2-7, and EX4-3.5 were below the PQL. Toluene concentrations for soil samples EX1-2.5, EX3-7, and EX4-3.5 were 173, 0.0907, and 0.0563 mg/kg, respectively, while EX2-7 was below the PQL. An ethylbenzene concentration of 123 mg/kg was detected in soil samples EX1-2.5, EX2-7 EX3-7, and was below the PQL in sample EX4-3.5. Total xylenes concentrations in soil samples EX1-2.5 and EX4-3.5 were detected at 708 and 0.115 mg/kg, respectively. Total xylenes concentrations in soil samples EX2-7 and EX3-7 were below the PQL.

EX2-7 was tested for the following PAHs and cPAHs: acenaphthene, acenaphthylene, anthracene, benzo(g,h,i)perylene, fluoranthene, fluorine, phenanthrene, pyrene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, and Indeno(1,2,3-cd)pyrene; and total toxicity equivalent concentration (TTEC) was calculated. Analytical results indicated values of 0.0458, 0.0215, 0.195, 0.239, 0.762, 0.0687, 0.74, 0.835, 0.47, 0.035, 0.334, 0.105, 0.305, 0.082, 0.245, and 0.43 mg/kg, respectively. EX2-7 was also tested for the following CVOCs: Tetrachloroethylene (PCE), Trichloroethylene (TCE), dichloroethene (DCE) isomers cis-1,2-DCE and trans-1,2-DCE, and vinyl chloride (VC). Analytical results for CVOCs all indicated values below the PQL.

EX1-2.5 and EX2-7 were analyzed for dissolved lead and indicated levels of 2.68 and 23.3 mg/kg, respectively.

Supplemental Site characterization was conducted by GeoEngineers in July 2001. This included installation of monitoring wells MW-50, MW-51, and MW-52, and advancement of soil boring SB-1. Soil samples were collected from all of the borings. Soil samples were analyzed for GRO, DRO, ORO, and BTEX. Concentrations of GRO, DRO, and ORO were detected in the borings at concentrations ranging from below the PQL to 354, 539, and 780 mg/kg, respectively, and BTEX concentrations ranged from below the PQLs to 0.696. 1.34, 3.53, and 14 mg/kg, respectively (GeoEngineers, 2001).

In January 2003, GeoEngineers conducted a hoist excavation at the former Westlake 76 Station, which included removal of four hoists from the "Lube Room" (GeoEngineers, 2003). Four soil samples were collected and analyzed: H-1-5.5, H-2-5, H-3-6.5, and H-4-5. The soil samples were tested or GRO, DRO, ORO, TEH, and BTEX compounds. H-1-5.5, H-2-5, H-3-6.5, and H-4-5 indicated values below the PQL for GRO and all BTEX compounds. H-3-6.5 indicated values below the PQL for DRO, while H-1-5.5, H-2-5, and H-4-5 indicated values of 103, 107, and 1,130 mg/kg, respectively. H-3-6.5 indicated values below the PQL for ORO, while H-1-5.5, H-2-5, and H-4-5 indicated values of 159, 234, and 3,130 mg/kg, respectively. TEH values of 262, 341, 22.5, and 4,260 mg/kg were reported for H-1-5.5, H-2-5, H-3-6.5, and H-4-5, respectively.

Site assessment activities were conducted for the 630 Westlake property between October 2004 and January 2005 by Urban Redevelopment. This included advancement and sampling of borings B-1 through B-25, B-101, and installation of monitoring wells MW-8[5], MW-101, MW-102, MW-103, and MW-105. GRO was detected in soil samples from 15 of the borings at concentrations ranging from 2 mg/kg to 4,000 mg/kg. One or more BTEX compounds were detected in soil samples from 16 of the borings at concentrations up to 10, 200, 120, and 720 mg/kg, respectively. Naphthalene was detected in soil samples from borings B-6 and B-8 at 6.0 mg/kg. Lead was detected in soil sample B-101 (dup) at 9.0 and 7.0 mg/kg.

In March 2005, Delta Environmental Consultants (Delta) installed well MW-3A to replace MW-3 which had been destroyed or paved over during installation of a new dumpster enclosure. Soil samples were collected from the well boring for laboratory analysis. The results indicated that GRO, DRO, ORO, and BTEX compounds were not detected above laboratory reporting limits, with the exception of a few detections slightly above the reporting limits (Delta, 2005a).

Delta conducted an environmental assessment on the southern portion of the Block 37 Property in June and July 2005, which included advancement of borings SB-1 through SB-22, and installation of wells MW-54 through MW-60 (Delta 2005b). The complete analytical data are provided in Tables **4-4a** and **4-4d**. Concentrations of petroleum hydrocarbons and related compounds were detected at most of the monitoring well and boring locations. Ranges of concentrations are summarized below:

- GRO ranged from a maximum of 14,000 mg/kg in SB-3A-10’ to below the PQL.
- DRO ranged from a maximum of 3,400 mg/kg in SB-8-18’ to below the PQL.
- ORO ranged from a maximum of 1,540 mg/kg in MW-57-20’ to below the PQL.
- TEH ranged from a maximum of 4,620 mg/kg in SB-8-18’ to below the PQL.
- Benzene ranged from a maximum of 270 mg/kg in SB-4-10’ to below the PQL.
- Toluene ranged from a maximum of 380 mg/kg in MW-60--14’ to below the PQL.
- Ethylbenzene ranged from a maximum of 1,600 mg/kg in SB-12-12.5’ to below the PQL.
- Total xylenes ranged from a maximum of 18,000 mg/kg in SB-12-12.5’ to below the PQL.
- Naphthalene ranged from a maximum of 1,400 mg/kg in SB-12-12.5’ to below the PQL.

Delta conducted an environmental assessment on the northern portion of the Block 37 Property and within the surrounding ROWs during October and November 2005 in order to complete horizontal and

[5] This well is shown in the Westlake Avenue N right-of-way on Figure 4-1.

vertical delineation of petroleum hydrocarbon impacts to soil and groundwater . The October 2005 work included advancement of borings SB-23 through SB-42, and installation of wells MW-61 through MW-99 and MW-200 through MW-208 (Delta, 2005c).

The complete analytical data for borings SB-23 through SB-42, and wells MW-61 through MW-99, and MW-200 through MW-208 is provided in soil tables 4-4A and 4-4D. Concentrations of petroleum hydrocarbons and related compounds and additives were detected at most of the monitoring well and boring locations. Maximum range of concentrations are summarized below:

- GRO ranged from a maximum of 16,000 mg/kg in MW-98-13.5 to below the PQL.
- DRO ranged from a maximum of 4,640 mg/kg in MW-90-10 to below the PQL.
- ORO ranged from a maximum of 12,500 mg/kg in MW-93-7 to below the PQL.
- TEH ranged from a maximum of 16,070 mg/kg in MW-93-7 to below the PQL.
- Benzene ranged from a maximum of 174 mg/kg in MW-92-12 to below the PQL.
- Toluene ranged from a maximum of 377 mg/kg in SB-27-5 to below the PQL.
- Ethyl benzene ranged from a maximum of 441 mg/kg in MW-92-12 to below the PQL.
- Total xylenes ranged from a maximum of 917 mg/kg in MW-82-5 to below the PQL.
- Naphthalene ranged from a maximum of 125 mg/kg in MW-92-12 to below the PQL.
- Lead ranged from a maximum of 11,700 mg/kg in MW-203-10 to a minimum value of 1.21 mg/km in SB-34-20.

MTBE was also analyzed but was less than the reporting limit in all of the samples.

4.2.1.2. Soil Characterization 2006-2013

Between 2006 and 2013, characterization activities were conducted at the Block 37 Property, in conjunction with remediation activities, to delineate environmental impacts post-remediation, as described further below.

In November and December 2006 and January 2007, URS conducted soil excavation to the west of the Block 37 Property, shown as Phase 1 Excavation[6] on Figure 4-1 (URS, 2007). A portion of Westlake Avenue North was excavated using grids and the grids were comprised of 58 cells. The excavation was sampled at 10 feet and 15 feet bgs, which corresponds to elevations of approximately 19 and 14 feet NAVD88. Several samples from the 15-foot interval (14 feet NAVD88) contained residual impacts.

The complete analytical data for Phase 1 Excavation performed under the supervision of URS in November and December 2006 and January 2007 is provided in soil tables 4-4A and 4-4D. (URS, 2007). Elevated concentrations of petroleum hydrocarbons and related compounds and additives were detected in a significant number of samples. The maximum range of detections is described below:

- GRO ranged from a maximum of 16,000 mg/kg in A-A2-10 to below the PQL.
- DRO ranged from a maximum of 908 mg/kg in A-A3-10 to below the PQL.
- ORO ranged from a maximum of 346 mg/kg in C-B1-3 to below the PQL.
- TEH ranged from a maximum of 923 mg/kg in A-A3-10 to a minimum of 18.9 mg/kg in grid sample F-C1-15.
- Benzene ranged from a maximum of 63.2 mg/kg in A-A2-10 to below the PQL.
- Toluene ranged from a maximum of 532 mg/kg in A-A2-10 to below the PQL.

[6] This was the first phase of the Westlake/Mercer Cleanup Project; see Section 4.3.2 for further discussion.

- Ethyl benzene ranged from a maximum of 301 mg/kg in A-A2-10 to below the PQL.
- Total xylenes ranged from a maximum of 1,100 mg/kg in A-A2-10 to below the PQL.
- MTBE ranged from a maximum of 8.0 mg/kg in H-C3-10 to below the PQL. Analytical data indicated that only 5 samples, H-C3-10, C-C1-10, B-C2-10, F-C3-10, and C-B2-10, had MTBE present within soil above PQL.
- Naphthalene ranged from a maximum of 56.8 mg/kg in A-A3-15.5 to below the PQL.
- Lead ranged from a maximum of 97 mg/kg in B-C2-1 to a minimum value of 1.86 mg/kg in F-B3-10.

Enhanced fluid recovery (EFR) wells (EFR1, EFR2, and EFR3) and soil vapor extraction wells (SVE) (TSVE1 through TSVE9) were also installed east of the Block 37 Property in December 2006 and soil sampling was performed at the well borings (Delta, 2007b). Soil analytical results indicated concentrations of GRO concentrations ranging from non-detect to 146 mg/kg, concentrations of BTEX ranging from non-detect to 0.0791, 0.0102, 0.172, and 0.196 mg/kg, respectively, and naphthalene concentrations ranging from non-detect to 0.59 mg/kg. Samples were also analyzed for lead, with concentrations ranging from 1.58 to 216 mg/kg. In September 2008, Stantec provided oversight for removal of the UST system at the Westlake 76 Service Station and performed the UST site assessment (Stantec, 2008). A total of eight soil samples, ESW-10, NET-11, NSW-6, NWT-11, SET-11, SSW-8, SWT-11, and WSW-11 were collected from the UST excavations and beneath the former dispensers and fuel piping. Soil analytical results indicated concentrations of GRO concentrations ranging from non-detect to 10,600 mg/kg, concentrations of BTEX ranging from non-detect to 4.4, 9, 190, and 990 mg/kg, respectively, and naphthalene concentrations ranging from non-detect to 9.38 mg/kg. Samples were also analyzed for lead and PAHs, with lead concentrations ranging from 5.3 to 91.6 mg/kg. PAHs and CPAHs were detected in all of the samples, with TTEC values ranging from 0.02 to 1.96 mg/kg.

In October 2008, Stantec installed three groundwater monitoring wells north of the Block 37 Property and Valley Street (MW-209, MW-210, and MW-211) (Stantec, 2009b). Soil samples were collected from the well borings as MW-209-7, MW-210-15, and MW-211-7, and analyzed for GRO, DRO, ORO, TEH, kerosene, BTEX, MTBE, and naphthalene. None of these constituents were detected in soil above the PQL in samples collected from MW-209-7 and MW-211-7. In the sample collected at MW-210-15, GRO, kerosene, benzene, toluene, ethyl benzene, MTBE, and naphthalene were not detected above the PQL. Analytical results indicated MW-210-15 contained a total xylenes level of 0.0112 mg/kg, and DRO and ORO levels of 19.8 and 73.4 mg/kg, respectively.

Between December 2008 and August 2009, URS conducted Phase 2 Excavation[7] activities that included soil excavations and the collection of approximately 430 soil samples (Figure 4-1) (URS, 2009a). Samples were collected using a 15 feet x 15 feet grid system designated from north to south as A through K and from west to east as 1 through 15 in the northern portion of the Block 37 Property (Phase 2 Excavation-Area 1), and a15 feet x 15 feet grid system designated from north to south as A through K and from west to east as 1 through 11 in the southern portion of the Block 37 Property and what is now a portion of the Mercer Street ROW (Phase 2 Excavation-Area 2). Grid cells in the southeast portion of the Phase 2, Area 2 excavation were backfilled prior to receiving post-excavation results,. The remainder of the grid cells were over-excavated to attempt removal of soil with elevated concentrations. Soil analytical results for the final excavation extents indicated that GRO, BTEX compounds, and/or naphthalene remained at elevated concentrations in Phase 2, Area 1 at grid cells C8, D5, and H2 and in Phase 2, Area 2 at grid cells C8, E10, G3, G5 through G10, H5 through H9, I7, I9, I10, J5, J7, K5, and K9.

In October and November 2010, Stantec installed replacement wells (MWR-1 through MWR-6) to evaluate groundwater conditions following the remedial excavation activities (Stantec, 2011). Four shallow SVE wells (SVER-1 through SVER-4) were also installed during this event for anticipated use

[7] This was the second phase of the Westlake/Mercer Cleanup Project (see Section 4.3.2 for further discussion).

in an expanded AS/SVE system. Soil samples were collected from all of the well borings for laboratory analysis. Elevated concentrations of GRO, BTEX, and naphthalene were detected in MWR-5@10' at concentrations of 255, 0.134, 3.86, 7.67, 31.6, and 0.97 mg/kg, respectively.

4.2.1.3. Soil Characterization 2014 to 2022

In 2014, Cardno ATC installed delineation wells MW-212 to MW-219 off the Block 37 Property in the ROWs to the north, south, and east (Cardno, 2015). Soil samples B-213-10, B-215-10, B-216-10, B-217-15, and B-218-10, -15, and -20 contained concentrations of GRO and benzene up to 635 and 0.274 mg/kg, respectively.

In 2014, GeoEngineers advanced two borings B-37-1 (GEI-1) and B-37-2 (GEI-2) to 80 feet bgs on the Block 37 Property and completed them as monitoring wells screened from 26.8 to 36.8 feet bgs and from 50.5 to 60.5 feet bgs, respectively (GeoEngineers, 2014). Monitoring well B-37-1 (GEI-1) was completed in the shallow water-bearing zone and monitoring well B-37-2 (GEI-2) was completed in the intermediate water-bearing zone. Borings B-37-1 (GEI-1) and B-37-2 (GEI-2) and wells installed within these borings were constructed for geotechnical purposes (GeoEngineers, 2014). No soil samples were collected for environmental analysis.

On August 25, 2016, a test boring for monitoring well FMW-131 was advanced at the southeastern portion of the Block 37 Property to a depth of approximately 102.5 feet bgs (approximately -73 feet NAVD88) (Farallon, 2016). One soil sample was collected from an elevation of approximately 51.5 feet bgs (-22 feet NAVD88) near the top of the Deep Outwash Aquifer. CVOCs were not detected at the laboratory PQL in this soil sample. Monitoring well FMW-131 was installed on August 30, 2016 with a screen interval between depths of approximately 63 and 73 feet bgs (-34 to -44 feet NAVD88) in the Deep Outwash Aquifer.

In April 2019, Farallon advanced borings FB-1 and FB-2 and installed monitoring well FMW-139 in the southeastern portion of the Block 37 Property to address Ecology's concerns regarding a detection of PCE in one reconnaissance groundwater sample collected by Hart Crowser in 2000 (see further summary of these investigation activities in Section 4.2.2.3 below). Soil samples were collected from FB-1, FB-2, and FB-139 at depths ranging from 5 to 7 feet bgs (24 to 22 feet NAVD88) and analyzed for CVOCs. Atlas (formerly ATC) observed the work and collected additional soil samples from the borings at depths ranging from 5 to 19.5 feet bgs (24 to 9.5 feet NAVD88) to be analyzed for petroleum hydrocarbons. CVOCs were not detected at the laboratory PQL in any of the soil samples collected from these borings for CVOC analysis. GRO was detected in soil samples collected between 5.5 and 10 feet bgs (23.5 to 19 feet NAVD88) in boring FB-2 at concentrations ranging from 40 to 101 mg/kg. Benzene was detected at a concentration of 0.067 mg/kg in a soil sample collected from 11 feet bgs (18 feet NAVD88) in boring FB-1. The remaining soil samples did not exhibit elevated concentrations of petroleum hydrocarbons.

In March and May 2021, GeoEngineers advanced borings B-37-3 through B-37-9 at the Block 37 Property (**Figure 4-1**) in order to gather geotechnical data in support of future construction activities and to support soil and groundwater characterizations. Borings were completed as monitoring wells with B-37-3 through B-37-7 completed in the shallow water-bearing zone and monitoring wells B-37-8 and B-37-9 completed in the intermediate water-bearing zone. Farallon collected soil samples for laboratory analysis during the advancement of borings B-37-3 through B-37-9. Soil results indicated that all of the samples contained non-detectable to low concentrations of petroleum-related compounds, cPAHs, and metals. Concentrations of benzene and toluene ranged from non-detect to 0.028 mg/kg and 0.087 mg/kg, respectively, and naphthalene concentrations ranged from non-detect to 0.16 mg/kg. Chromium and lead concentrations were detected up to 42 mg/kg and 74 mg/kg, respectively. The cPAH benzo(b)fluoranthene was detected in the sample from B-37-8-18.0 at 0.0110 mg/kg. All other analyzed compounds were not detected.

On January 26 and 27, 2022, Farallon performed limited soil sampling and installation of monitoring wells in conjunction with a structural shoring investigation. The drilling and soil sampling locations were identified as PH-1, PH-2/AMW-1, PH-3, and PH-4. The soil samples from 15, 20, 25, 30, and 35 feet bgs (approximately +15 feet, +10 feet, +5 feet, 0 feet, and -5 feet NAVD88)(approximately +5 feet, 0

feet, and -5 feet NAVD88) in PH-4, were submitted for laboratory analysis for GRO, DRO, ORO, BTEX, cPAHs, naphthalene, polychlorinated biphenyls (PCBs), and for the metals arsenic, barium, chromium, and lead. Soil analytical results indicated a concentration benzene of 0.001 in PH-4-30.0, as well as concentrations of arsenic, barium, chromium, and lead up to 4.3 mg/kg, 70 mg/kg, 31 mg/kg and 8.4 mg/kg, respectively. Concentrations of cPAHs were detected in soil samples from AMW-1, PH-1, PH-3 with TTECs up to 0.003 mg/kg. All other analyzed compounds were not detected.

4.2.2. Previous Groundwater Sampling Results

Numerous monitoring wells have been installed at and in the immediate vicinity of the Block 37 Property since the 1980's (**Figure 4-1**). A total of 129 monitoring wells have been decommissioned or abandoned and the status of 9 monitoring wells is unknown at this time. An inventory of all wells installed at and in the immediate vicinity of the Block 37 Property (and construction details) is provided in **Table 4-1b,** and an inventory of wells still present at the Block 37 Site is provided in **Table 4-1a**. The majority of the installed wells were screened in the shallow water-bearing zone but select wells are also installed in the intermediate- and deep water-bearing zones. Interim action wells IA-1 through IA-4 were designed as extraction wells to capture the American Linen CVOC Plume during temporary construction dewatering at Blocks 25 and 31 to the east of Block 37. These wells are 12 inches in diameter and have long screen intervals ranging from approximately 32 to 92 feet bgs (0 to -60 feet NAVD88). Interim action wells IA-1 through IA-4 are not included as part of the monitoring well network as only reconnaissance groundwater samples were collected and analyzed from these wells using sampling methodologies inconsistent with typical groundwater monitoring practices.

The existing groundwater monitoring well network at the Block 37 Property is included on **Table 4-1a** and **Figure 4-2**. All other wells previously installed at the Block 37 Property, and not within the existing network, have either been destroyed or decommissioned due to soil remediation activities and/or construction.

Groundwater sampling has occurred over the past 40 years associated with numerous investigations and interim actions that were performed at the Block 37 Site (**Tables 4-2a** through **4-2d**). Except as noted below, wells were screened in the shallow water-bearing zone. The majority of sampling events performed at the Block 37 Site included analysis for GRO, DRO, ORO, kerosene, BTEX, lead, and often for naphthalene and MTBE. Recent sampling events have included additional analysis including Resource Conservation and Recovery Act (RCRA) 8 metals, VOCs[8], PAHs[9], and PCBs.

The following factors were considered when evaluating historical groundwater monitoring and sampling events at the Block 37 Site.

- The stage of Lake Union is controlled by the Hiram M. Chittenden Locks with levels highest in the late spring and early summer and lowest during the winter and early spring (Goetz, 2001. The lake stage typically fluctuates 2 feet over the course of a year.
- The groundwater flow in the South Lake Union area is unusually dynamic due to large-scale construction dewatering events conducted west, southwest, south, southeast, and east of the Block 37 Property. Additionally, an interim action which included the installation and operation of four interceptor wells (IA-1 through IA-4; screened from 32 to 92 feet bgs) was performed at the Block 37 Property in 2017 (Farallon, 2018a). It is estimated that a total of 70,000,000 gallons of groundwater was extracted. The interim action and construction dewatering temporarily modified groundwater levels, sometimes to the extent of causing monitoring wells at the Block 37 Site to be dry and temporarily modifying the groundwater flow direction and gradient. Groundwater monitoring events were removed from consideration if it was known or suspected that construction dewatering may be influencing groundwater levels, flow direction, or gradient at the Block 37 Property.

[8] Results for detected VOCs are provided in the data tables.

[9] Results for detected PAHs are provided in the data tables.

- Contaminant mass has been substantially reduced as a result of the UST, piping, and hoist removal, large-scale excavations, light non-aqueous phase liquid (LNAPL) recovery, and in-situ treatment using air sparge (AS)/SVE. Several of these interim actions occurred in the 2007 to 2018 period. Since 2013, interim actions related to releases at the Block 37 Property consisted of the operation of an AS/SVE system for remediation wells in surrounding ROWs (the Westlake Avenue North, Valley Street, Terry Avenue North and Mercer Street).
- The network of monitoring wells has changed substantially over time. Large-scale excavations on the Block 37 Property and in the adjacent Westlake Avenue North and Mercer Street ROWs resulted in the decommissioning of many monitoring wells and installation of new monitoring wells at various locations. The monitoring wells that are utilized as part of the existing network were installed as recently as 2022 while some have been in place and monitored for more than 25 years (e.g., SMW-3) (**Table 4-1**). Several of the monitoring wells on the Block 37 Property were installed after the Phase 2 Excavation was completed in June 2009.

More than 29 groundwater monitoring events have been performed at the Block 37 Property after completion and restoration of the Phase 2 Excavation in June 2009. Several of those monitoring events were completed during periods when construction dewatering was not occurring at surrounding properties. In order to obtain a comprehensive data set of current groundwater conditions, groundwater sampling was conducted in 2022 on a quarterly basis. Analytical results for groundwater petroleum hydrocarbon constituents during 2022 quarterly groundwater sampling events are shown on **Figures 4-2a** through **4-2g**.

4.2.2.1. Groundwater Characterizations Pre-2006

Following the initial release of petroleum discovered at the Block 37 Property in 1980 (refer to Section 4.1), numerous monitoring and fuel recovery wells (MW-1 through MW-32) were installed at the Block 37 Property by Union Oil and others. Initial groundwater and LNAPL monitoring was performed regularly between 1980 and 1982 concurrent with LNAPL recovery operations. These activities primarily included measuring groundwater elevation and LNAPL thickness in the wells. Some of these wells were later utilized as vapor recovery wells beginning in 1988 (GeoEngineers, 1991). Historical records indicate that MW/RW-26 was converted to VE-1, MW/RW-7 was converted to VE-2, MW/RW-5A (next to MW-5) was converted to VE-3, MW/RW-4A (next to MW-4) was converted to VE-4, and MW/RW-28 was converted to VE-5. (GeoEngineers, 1988).

In 1990 and 1991, the City of Seattle conducted investigations at the Block 37 Property, in the vicinity of the Union 76 Service Station / Auto Service Company and installed several wells. These included two wells installed in 1990 concurrent with UST removal activities (SMW-1S[10] and SMW-2S) (SCS, 1990) and five additional wells installed in 1991 (SMW-1 through SMW-5, also identified as MW-1 through MW-5) (SCS, 1991). Analysis of groundwater samples from all of these wells indicated the presence of elevated levels of TPH and other petroleum related compounds.

In 1991 and 1992, additional investigations at the Block 37 Property by Unocal included the installation of multiple wells (MW-32A, and MW-33 through MW-49) to characterize conditions following the petroleum release from the Westlake 76 Station (GeoEngineers, 1992). A groundwater monitoring program utilizing these wells was established following their installation. Monitoring activities included measuring groundwater elevations and LNAPL thicknesses, and sampling groundwater for laboratory analysis. The samples were primarily analyzed for TPH and other petroleum related compounds. Hydrogeologic testing was also conducted at ten of these wells in 1993 to evaluate hydraulic conductivity at the Block 37 Site (GeoEngineers, 1993a). The results indicated hydraulic conductivity values ranging from 4.1×10^{-4} feet/minute to 6.5×10^{-2} feet/minute, which is consistent with values for silty sand and sandy silt.

In August 2000, Hart Crowser advanced ten borings in the southeastern portion of the Block 37 Property (Hart Crowser 2000) and collected reconnaissance groundwater samples at borings B1, B3, B5, B7,

[10] This well has also been identified as MW-X in later reports.

and B10. Analysis of groundwater samples from all locations indicated the presence of elevated levels of GRO, BTEX, and metals, as well as concentrations of naphthalene and PCE in the reconnaissance shallow groundwater sample collected from boring B1. To evaluate and confirm the validity of the PCE detection in the reconnaissance groundwater sample from B1, Farallon conducted additional investigation work and analysis in April 2019 that invalidated Hart Crowser's findings regarding the PCE detection, as further described below in Section 4.2.2.3.

In 1999 and 2000, an environmental investigation was conducted on multiple South Lake Union properties owned by the City. This work was performed by GSA and Hart Crowser and included installation of one well (GSW7, also identified as MW-806 in later reports) at the north end of the Block 37 Property in 1999 and collection of groundwater samples for laboratory analysis. Partial information regarding this investigation work was available for review but does not contain sufficient information to confirm sampling dates or all of the analytical data. However, the available information indicates that groundwater samples collected from monitoring wells SMW-4 and SMW-5 contained elevated concentrations of GRO and BTEX, and groundwater samples from GSW7 did not contain elevated concentrations. Elevated levels of arsenic and/or lead were also detected in groundwater from SMW-4, SMW-5, MW-48, MW-49, and GSW7.

Supplemental Site characterizations were performed by GeoEngineers in 2001 and 2002, which included installation of monitoring wells MW-50, MW-51, and MW-52 in July 2001 (GeoEngineers 2001) and MW-53 in August 2002 (GeoEngineers 2003). Groundwater monitoring began at MW-50, MW-51, MW-52 in October 2001 and at MW-53 in March 2003, the results of which indicated elevated concentrations of petroleum hydrocarbons and BTEX compounds in all of the wells.

In 2003, three wells were installed along the western edge of Westlake Avenue North as part of an investigation for the west-adjacent Block 43 Property (Kane, 2003). These wells were originally identified as K-MW-4, K-MW-5, and K-MW-6, and later identified as City Investor wells CI-1, CI-2, and CI-3, respectively. Kane's 2003 investigation included groundwater analysis at the three wells for GRO, DRO, ORO, BTEX, and MTBE; K-MW-5/CI-2 and K-MW-6/CI-3 for PAHs & cPAHs; and K-MW-6/CI-3 for lead. The results indicated that groundwater from K-MW-6/CI-3, located at the northeast corner of the Block 43 Property, contained elevated concentrations of GRO and BTEX compounds.

As noted in Section 4.2.1.1, site assessment activities were conducted from October through December 2004 by Urban Redevelopment. This included installation of monitoring wells MW-8 and MW-105 in the Westlake Avenue North ROW, MW-101 and MW-103 in the Terry Avenue North ROW, and MW-102 in the northeast portion of the Block 37 Property. Groundwater monitoring activities were performed at these wells during 2005 and 2006, with monitoring continuing through 2008 at MW-102 on the Property. Records indicate that MW-8, MW-101, MW-102, and MW-105 all contained elevated concentrations of GRO, DRO, BTEX compounds, and naphthalene.

In 2005, investigations conducted on behalf of ConocoPhillips included the installation of additional monitoring wells (MW-55 through MW-99 and MW-200 through MW-208). Analytical sampling results indicated petroleum impacts remained in groundwater in various areas of the Block 37 Property (Delta, 2005b and 2005c). In addition, MW-3 had been covered or destroyed during installation of a new dumpster enclosure on the Block 37 Property. Since it could not be found, replacement well MW-3A was installed near the location of MW-3 in March 2005 (Delta, 2005a).

Deep well DW-1 was installed in 2005. Data gathered during installation of deep well DW-1 included only geotechnical data. Specific gravity, flexible-wall hydraulic conductivity, and unconsolidated, undrained triaxial strength were analyzed in core samples. Results of specific gravity analyses indicated values ranging from 2.72 to 2.74 std units. Hydraulic conductivity values from samples collected at depths between 32.5 feet bgs and 36 feet bgs ranged from 9.84x10-7 centimeters per second (cm/s) to 2.06x10-3 cm/s. The average hydraulic conductivity in the analyzed samples was 5.16x10-4 cm/s (Delta, 2006b). This well was used for aquifer testing in 2006, as discussed in Section 4.2.2.2.

In addition to residual impacts from the 1980 petroleum release beneath the Westlake 76 Station, historical groundwater investigations conducted prior to 2006 indicated the presence of petroleum constituents that had been released from former operations that took place in the northwest corner of

at the Block 37 Property (refer to Section 3.1.1). The wells installed during these investigations were added to the groundwater monitoring program for the Block 37 Site.

4.2.2.2. Groundwater Characterizations 2006 to 2013

In early 2006, prior to commencing the Phase 1 Excavation activities, several of the wells installed between 2002 and 2005 were used for aquifer testing at the Block 37 Site. This included slug tests performed at monitoring wells MW-53, MW-59, and DW-1 and at three remediation wells also installed in 2005 (DAS-6, DAS-10, and DAS-12), and step-drawdown pump tests performed at DW-1 and MW-50 (Delta, 2006a). Hydraulic conductivity values determined from these tests reportedly ranged from 1.91×10^{-5} meters/second (3.8×10^{-3} feet/minute) to 1.22×10^{-4} meters/second (2.4×10^{-2} feet/minute).

Following completion of Phase 1 Excavation activities in 2007, monitoring wells (MW-209, MW-210, and MW-211) were installed in 2008 to delineate petroleum impacts to the north of the Block 37 Property (Stantec, 2009b). These wells were added to the groundwater monitoring program for the Block 37 Site.

In 2010, following completion of Phase 2 Excavation activities in 2009, replacement wells (MWR-1 through MWR-6) were installed on the Block 37 Property (Stantec, 2011) and added to the groundwater monitoring program for the Block 37 Site. Four of the wells were installed within the restored Phase 2 Excavation Area 2 and two were installed to the east of that area on the southeast portion of the Block 37 Property.

Groundwater monitoring was performed at more than 60 wells at the Block 37 Site on a quarterly to annual basis between 2006 and 2013 to evaluate groundwater quality following the Phase 1 and Phase 2 Excavations.

4.2.2.3. Groundwater Characterizations 2014 to 2022

In 2014, monitoring wells MW-212 through MW-219 were installed to the north, east and south of the Block 37 Property to provide groundwater monitoring locations where previous wells had been decommissioned during the MCP.

In 2017, four groundwater extraction wells (IA-1 through IA-4) were installed on the Block 37 Property as part of an interim action to intercept the chlorinated volatile organic compounds (CVOC) plume from the American Linen Site (the American Linen CVOC Plume) (refer to Section 4.4.6) from migrating easterly to the adjacent Block 31 Property where dewatering took place for the Block 31 foundation installation (Farallon, 2016, 2018). As part of pre-construction interim actions, wells B-37-1 (GEI-1) and B-37-2 (GEI-2) were also installed in 2014 in the shallow and intermediate water-bearing zones, respectively, and well FMW-131 was installed in 2016 in the deep water-bearing zone. Both B-37-1 and B-37-2 were equipped with dataloggers to provide long term groundwater level monitoring during the interim action work. Transducer data are available for the period the dewatering occurred. However, the relevance of these data for the RI Work Plan is not apparent and therefore the data is not included in this document. Borings B-37-1 (GEI-1) and B-37-2 (GEI-2) and wells installed within these borings were constructed for geotechnical purposes (GeoEngineers, 2014) but have also been included in environmental monitoring activities associated with the remedial investigation for the American Linen Site and more recently included in groundwater monitoring activities for Block 37.

Additional subsurface assessments were conducted in 2019 (Farallon, 2020a) to evaluate and confirm the validity of the August 2000 detection of PCE in a single reconnaissance shallow groundwater sample in the southeastern portion of the Block 37 Property (collected from boring B1 by Hart Crowser). To further evaluate Hart Crowser's reported PCE detection, Farallon advanced two borings proximate to historical boring B1 (identified as FB-1 and FB-2), installed one new shallow groundwater monitoring well at the location of boring B1 (identified as FMW-139), and sampled five existing shallow groundwater monitoring wells (MWR-5, MWR-6, MW-45, MW-50, and MW-54) and the new monitoring well FMW-139 multiple times over a period of five months (Farallon, 2020a). Concentrations of CVOCs, including PCE, were not detected in any of the soil and groundwater samples analyzed and Farallon concluded that the Hart Crowser analytical data should be considered both unreliable and likely a false positive associated with analytical method interference, and not representative of shallow groundwater conditions on the Block 37 Property.

In 2021, wells B-37-3 through B-37-7 were installed in the shallow water-bearing zone, and wells B-37-8 and B-37-9 were installed in the intermediate water-bearing zone concurrent with a geotechnical investigation of the Block 37 Property. Groundwater was sampled from these wells during April and May 2021 and analyzed for GRO, DRO, ORO, BTEX, MTBE, 1,2-dibromoethane (EDB), 1,-dichloroethane (EDC), naphthalene, cPAHs, and metals (arsenic, cadmium, chromium, lead, and mercury). The sample from well B-37-8 was also analyzed for PCBs. All compounds were not detected above the PQLs except for DRO, ORO, and arsenic. DRO and/or ORO were detected in six of the wells at concentrations up to 560 and 450 micrograms per liter (µg/L), respectively, and total arsenic was detected in three of the wells at concentrations up to 21 µg/L. The three samples containing detectable total arsenic were also analyzed for dissolved arsenic, the results of which indicated non-detectable concentrations (less than the PQL) in two of the samples (B-37-3 and B-37-5) and a concentration of 18 µg/L at B-37-9 where the highest total arsenic concentration was detected.

In January 2022, well PH-2/AMW-1 was installed in the shallow water-bearing zone, and wells PH-1 and PH-3 were installed in the intermediate zone concurrent with a structural shoring investigation along the western boundary of the Block 37 Property. These wells along with other existing and accessible monitoring wells were monitored on a quarterly basis during 2022 to obtain current data for the Site and refine the scope of work for completing the RI. Groundwater elevations were measured during the monitoring events (see Section 3.2.3.2 and Figures 3-7 through 3-10) and groundwater samples were analyzed for GRO, DRO, ORO, BTEX, naphthalene, cPAHs, and total and dissolved metals (arsenic, barium, chromium, and lead). Samples from a subset of the wells (MW-209 through MW-218) were also analyzed for MTBE (February and May events) and additional PAHs (February event), and one well (B-37-3) included analysis for PCB Aroclors (May 2022). The results indicated COPCs in groundwater including GRO, TEH, benzene, naphthalene, and total lead and arsenic were detected at concentrations up to 1,580, 1,627, 3.2, 45, 6.6, and 140 ug/L, respectively.

4.3. Interim Actions

Multiple interim actions have been conducted at the Block 37 Property and immediate surrounding areas between 1980 and 2021 (**Table 4-5**). Based on previous interim action activities, the majority of petroleum hydrocarbon-affected soils was remediated during the Phase 1 and Phase 2 Excavation activities, which included excavation of 16,172 tons of soil from Westlake Avenue and Terry Avenue (2006-2007), and excavation of 54,450 tons of soil from the Block 37 Property and south-adjacent Mercer Street to depths of up to 28.5 feet bgs (2008-2009) (CardnoATC, 2014b). In addition, approximately 7,301 pounds of hydrocarbons were recovered and treated by multiple AS/SVE systems that operated between 1988 and 2017.

Interim action excavation areas at the Block 37 Property conducted prior to the 2006 Phase 1 Excavation activities are shown on **Figure 4-11** and further described below. Remedial system locations at and around the Block 37 Property are shown on **Figure 4-12**. An overview of remedial activities conducted at the Block 37 Site, in response to historical releases, is provided below.

4.3.1. Interim Actions 1980 to 2002

In May 1980, in response to the release of 80,000 gallons of supreme leaded gasoline at the Westlake 76 Station (refer to Section 4.1), Unocal replaced the USTs and product lines, installed two recovery trenches and numerous recovery wells at the Block 37 Property, and removed a total of approximately 41,900 gallons of LNAPL between June 1980 and October 1982 (GeoEngineers, 1992).

In 1988, an initial SVE system was installed utilizing the existing recovery wells and trenches (GeoEngineers, 1992). In 1992, four wells located on the northern portion of the Block 37 Property (MW-32, MW-49, SMW-2S, and SMW-5) were connected to the system for additional vapor recovery and for reducing hydrocarbon concentrations beneath the City's property (GeoEngineers, 1993b). Approximately 4,732 gallons of gasoline was recovered by the SVE system between June 1988 and December 1995 (GeoEngineers, 1996). The system remained operational with negligible vapor recovery rates until it was shut down in July 1997 due to equipment failure (GeoEngineers, 1997).

In 1990, a total of five USTs were removed from the service station on the northwest portion of the Block 37 Property. One 500-gallon waste oil UST and four leaded gasoline USTs ranging in size from 2,000 gallons to 5,000 gallons (one 2,000-gallon, one 3,000-gallon, and two 5,000-gallon) were removed (SCS Engineers, 1990). Approximately 800 cubic yards of gasoline-impacted soil were also removed from the Block 37 Property.

In May 2001, following removal of a 500-gallon heating oil UST and a 500-gallon waste oil UST from the Westlake 76 Station, approximately 25 tons of petroleum-impacted materials (pea gravel) from the excavation were transported off-site for treatment and recycling. In addition, to address the release of an estimated 600 gallons of supreme unleaded gasoline that occurred when a product line was damaged during removal of the heating oil and waste oil tanks, approximately 500 gallons of product was immediately recovered from the excavation utilizing a vacuum truck (ERI, 2001). Throughout 2001, vacuum trucks and hand bailing were used for fluid recovery from adjacent monitoring wells and approximately four gallons of LNAPL was manually recovered and approximately 12,100 gallons of petroleum-impacted groundwater was removed by vacuum truck.

4.3.2. Interim Actions 2003 to 2019

In January 2003, approximately 15 cubic yards of petroleum-impacted soil was removed from the Block 37 Site for subsequent treatment and recycling or disposal during hydraulic hoist removal activities at the Westlake 76 Station (GeoEngineers, 2003).

In 2003, a new AS/SVE system was installed at the Westlake 76 Station that included a biosparge trench containing 15 shallow AS wells (SAS-1 through SAS-15 [also identified as AS-1 through AS-15]) and horizontal SVE piping, eight existing SVE wells (VE-1 through VE-5 on the station property and three wells[11] on the northern portion of the Block 37 Property), and several deep AS wells (DAS-2 through DAS-5). The expanded system became operational in August 2003. Approximately 1,410 tons of petroleum-impacted soil was removed during the installation of the remediation system trenches and wells (GeoEngineers, 2003b and 2004). The system operated in this configuration until August 2008, removing approximately 1,940 pounds of petroleum hydrocarbons from the Block 37 Property and surrounding ROWs.

During December 2005 and January 2006, a pilot study was performed to evaluate EFR at selected wells on the Block 37 Property. The activities were performed in a series of four events during which high vacuum was applied to the wells to recover water and free product, and vacuum influence was measured at surrounding wells. The wells included MW-53, MW-57, MW-58, MW-59, MW-60, and DW-1. Approximately 2,203 gallons of total fluids (water and free product) were extracted during the study (Delta, 2007a).

In June 2005, additional remediation wells were installed at the Block 37 Property for potential expansion of the existing AS/SVE system (Delta, 2005b). These included seven new AS wells (DAS-6 through DAS-12) and two new SVE wells (VE-6 and VE-7). Remedial pilot testing activities were conducted at the Block 37 Site between January and March 2006 (Delta, 2006a). The activities included air sparge testing at AS wells DAS-8 and DAS-12, SVE testing at monitoring well MW-98 within Westlake Avenue North, and biorespiration testing at monitoring wells MW-98 and MW-51. Records indicate that none of the new AS and SVE wells were connected to the remediation system.

Between July 2006 and April 2007, pursuant to the April 2007 Settlement Agreement between ConocoPhillips and the City, ConocoPhillips implemented the first phase of the Westlake/Mercer Cleanup Project (herein referred to as Phase 1 Excavation, previously described in Section 4.2.1.2) (URS, 2007). The Phase 1 Excavation was performed as an independent remedial action, designed, and completed to 15 feet bgs (13 to 14 feet NAVD88) on an expedited basis to meet the City's timeline for construction of the South Lake Union Streetcar line and to avoid disruption of the Streetcar line. The Phase 1 Excavation remedial activities included: 1) installation of sheet pile steel shoring surrounding the entire excavation footprint in Westlake Avenue North, excavation and disposal of petroleum-

[11] The well IDs for these wells were not specified in the system installation report nor in subsequent operation and maintenance reports but would have been three of the four that were added to the previous system in 1993.

impacted soil from the eastern lanes of Westlake Avenue North, and installation of AS/SVE wells and associated conveyance piping back to the Block 37 Property boundary and connection to the then existing above ground AS/SVE system; 2) installation of SVE and EFR wells in Terry Avenue North and installation of associated conveyance piping back to the Block 37 Property and connection to the then existing above ground AS/SVE system; 3) soil and groundwater sampling and analysis; and 4) backfilling and surface restoration. Approximately 16,172 tons of soil was excavated from the Westlake and Terry Avenue North ROWs. Confirmation sampling from the Phase 1 Excavation indicated that elevated concentrations of petroleum hydrocarbons remained in soil below the excavation. Influent vapor samples from the expanded AS/SVE system indicated that the petroleum hydrocarbon impacts were highest in those SVE wells completed in Terry Avenue North (URS, 2007).

Between November 2007 and August 2008, biweekly EFR was performed utilizing the recovery wells in Terry Avenue North (EFR-1, EFR-2, EFR-3, MW-48, MW-65, and MW-88) and 28,142 gallons of groundwater was removed from the wells during this time (Stantec, 2009a). Cumulative petroleum hydrocarbon removal through operation of AS/SVE systems and EFR from September 2003 through March 2008 totaled approximately 1,940 pounds. Total LNAPL recovered from June 1980 through the end of the third quarter 2008 was approximately 43,632 gallons.

In September 2008, the former Westlake 76 Station was demolished, all above-ground structures were removed, and all of the existing conveyance piping for the remediation wells were cut and capped in their respective ROWs to facilitate the second phase of the Westlake/Mercer Cleanup Project (herein referred to as Phase 2 Excavation) (CardnoATC, 2014b). Between November 2008 and June 2009, Phase 2 Excavation activities were implemented at the Block 37 Site (previously described in Section 4.2.1.2). With the exception of the southeast corner of the Block 37 Property, the excavation was completed to depths up to 28.5 feet bgs. A soil cement/bentonite (SCB) gravity wall was installed along the south, east, and north boundaries of the Block 37 Property. As previously cited, the south boundary of the Block 37 Property was approximately 70 feet farther south from its current location. The SCB gravity wall, in conjunction with the previously installed sheet pile wall along the west property boundary, provided shoring for Phase 2 Excavation activities and continues to serve as a hydraulic barrier. Backfill and surface restoration activities were completed in July 2009. A total of approximately 54,450 tons of soil was excavated from the Block 37 Property during the Phase 2 Excavation activities (URS, 2009b).

Confirmation soil sampling was conducted during the Phase 2 Excavation activities to document conditions at the base of the excavation and to assess whether additional excavation was required to achieve target concentrations or other project requirements (URS, 2009b). A total of 410 samples and 19 quality control duplicate samples were collected from 264 sampling grid cells within the Phase 2 Excavation. Except for the grid cells in the southeast corner of the Phase 2 Excavation, which extended to 15 feet bgs (14 feet NAVD88), the remaining excavation continued to depths as low as 1.5 feet NAVD88 until residual concentrations were at or below target levels with the exception of grid cells C8 and D5 on the northern parcel (Area 1) and E10 on the southern parcel (Area 2). Confirmation soil samples from a number of the grid cells in the southeast corner of the Phase 2 Excavation exceeded target levels, indicating that elevated petroleum hydrocarbon concentrations remained in soil below the excavation.

Soils encountered during the Phase 1 and Phase 2 Excavation activities generally consisted of sandy fill down to depths of at least 5 feet bgs. Fill between 5 feet to 25 feet bgs consisted of highly variable compositions of silty sand, sandy silt, sand, silt to silty clay, clayey silt, sand with clay, sandy gravel, and intermittent thin layers of peat/clay. The fill material also included variable proportions of wood or wood chips/wood debris, and sawdust ranging from 5 to 11 feet bgs in thickness.

Between 2011 and 2013, in conjunction with ROW improvements and modifications during the City's MCP activities, petroleum hydrocarbon-impacted soil was removed from the Mercer and Valley Streets and Westlake and Terry Avenues North ROWs. The soil removal actions were completed during installation and/or upgrades of various subsurface utilities. SVE and AS wells and associated conveyance piping were also installed in the Valley and Mercer Street ROWs north and south of the Block 37 Property (**Figure 4-12**). Between May 2011 and April 2012, 27 AS wells and 19 SVE wells were installed in the Mercer Street ROW, and in June 2013, 7 horizontal SVE wells and 14 AS wells

were installed in the Valley Street ROW. All of these wells were installed under the oversight of the City of Seattle Department of Transportation (SDOT) (CardnoATC, 2014b). Between August and November 2013, all of the remediation wells and conveyance piping located in the four ROWs were connected to a new aboveground AS/SVE treatment system previously located on the southeast portion of the Block 37 Property. The soil removal and system installation activities conducted during the MCP resulted in removal and off-site disposal of approximately 6,466 tons of soil, of which an unknown volume were impacted with petroleum hydrocarbons from the Block 37 Site.

In its final configuration, the new AS/SVE system consisted of two blowers capable of extracting soil vapors from a total of 35 vertical SVE wells (19 in Mercer Street and 16 in Terry Avenue North) and 16 horizontal wells (7 in Valley Street, 9 in Westlake Avenue North). This system began operating in 2013. The AS system was capable of supplying compressed air to 62 air sparge wells (27 in Mercer Street, 14 in Valley Street, 21 in Westlake Avenue North). The SVE blowers discharged vapors to an off-gas treatment system that used granular activated carbon (GAC) to reduce air emissions to permitted levels (under Puget Sound Clean Air Agency [PSSCA] permit Registration No. 29548). Recovered water from the SVE moisture separators was also treated with GAC before discharging to the underground sewer system (under Discharge Authorization No. 4262-01, expiration: 6/30/2018) (ATC, 2019a). The total TPH mass recovered by the system was 3,127 pounds. Due to diminishing returns, the AS/SVE system was decommissioned in April 2019; all above ground components were removed and the piping was capped at grade (ATC, 2019a).

4.4. Adjacent Property Releases and Cleanups

Commercial and industrial land uses have dominated the South Lake Union area since the late 1800's (EDR, 2018a, 2018b). Multiple properties surrounding the Block 37 Property are confirmed to be contaminated with multiple constituents in soil and groundwater and are or were managed under Ecology or the Pollution Liability Insurance Agency (PLIA) environmental programs or independent cleanup actions related to releases of hazardous constituents from USTs and other industrial/commercial sources (Farallon, 2016; Ecology, 2021d). Soil and groundwater contamination have been identified at properties surrounding the Block 37 Property to the north (South Lake Union Park and Former Naval Reserve Readiness Center), east (Block 31), southeast (Block 32), south (Block 38), west (Block 43); and to the northwest at the American Linen Site generally located at 700 Dexter Avenue (**Appendix A**). Based on the confirmed presence of contamination in the vicinity of the Block 37 Site, the potential for contamination from these properties to impact the Block 37 Site is evaluated below. Described below is the regulatory status for adjacent properties, the nature of contaminant releases, and completed cleanup actions.

4.4.1. South Lake Union Park (Ecology Cleanup Site ID 8641) and Former Naval Reserve Readiness Center (Ecology Cleanup Site ID 3494)

South Lake Union Park (Ecology Cleanup Site ID 8641) is located approximately 100 feet to the north of the Block 37 Property (Ecology, 2021e). South Lake Union Park is on a peninsula that was created in 1909 by filling a portion of Lake Union (Ecology, 2021f). The former Naval Reserve Readiness Center (Ecology Cleanup Site ID 3494) was used by the U.S. Navy in 1940 and is currently operated as the Museum of History and Industry, situated adjacent to the South Lake Union Park in the northeastern portion of the peninsula. The southeastern portion of the peninsula was occupied by the Belknap Glass Company from 1940 through the 1980's and the area is currently occupied by the Maritime Heritage Center.

Multiple USTs and petroleum-impacted soils were removed at both of these properties in 1993. Constituents detected in soil at elevated concentrations included benzene, GRO, DRO, ORO, naphthalene, and cPAHs. Non-halogenated solvents were also detected at low concentrations (Ecology, 2015, 2021e, 2021f). According to Ecology, residual contamination was left-in place and a No Further Action (NFA) determination was issued for the former Naval Reserve Readiness Center site in 1998 after recording an environmental covenant (Ecology, 2021e, 2021f). However, the NFA was rescinded in 2012 after Ecology conducted a periodic review in 2011 due to the lack of conditional points of compliance and residual contamination not being sufficiently protective of the environment. Select

information and figures pertaining to the South Lake Union Park and Former Naval Reserve Readiness Center are provided in **Appendix A**. Based on the inferred groundwater flow direction to the north toward Lake Union, releases from these properties are unlikely to have impacted the Block 37 Site.

4.4.2. Block 31 (Former Shell/Texaco Service Station - Ecology Cleanup Site ID 11355)

Block 31 is located approximately 70 feet to the east of the Block 37 Property. Block 31 was originally developed as a lumber mill in the late 1800s to early 1900's; and subsequent operations included: garage door manufacturing, a municipal junk warehouse, and a wagon painting/repairing facility in 1917; a furniture factory in 1930; a plumbing supply warehouse in 1935; a garage and truck repair shop, a steel products manufacturing business, and a cheese production and storage facility in 1940's to 1950's; a bakery from 1966 to 1980's; a boating supply store from 1992 to at least 2002; and warehousing and automotive repair and sales from 1969 to 2010 (EDR, 2018a). A Shell/Texaco service station was present on the southeast corner of the Block 31 Property (identified by Ecology as the Shell 23714 Site; Cleanup Site ID 11355) at 601 Boren Avenue North and extended into the present westbound lanes of Mercer Street from 1960 to 2008. The historical structures at Block 31 had been demolished and the property was used as a commercial parking lot before redevelopment during 2017 and 2018 with a multi-story commercial office building with two subgrade parking levels.

Multiple USTs (gasoline, waste oil, and heating oil) and the associated fuel dispenser islands and product piping were decommissioned at the former Shell/Texaco service station. Fill material underlain Block 31 similar to other properties in the area. Constituents in soil and/or groundwater included GRO, DRO, BTEX, PAHs, and lead.

The 2017-2018 development excavation extended to elevation ranging from -4 to 6 feet NAVD88 which removed the historical fill material and most to all of the recent deposits comprising the shallow water-bearing zone. All impacted soil within limits of the Block 31 Property were removed during redevelopment and disposed at an off-property, licensed facility.

Extensive dewatering was performed during the construction of the multi-story building. In addition, groundwater extraction wells on the Block 37 Property were installed to intercept the American Linen CVOC Plume and prevent it from migrating further east during the construction dewatering of the shallow, intermediate, and deep water-bearing zones for the new building at the Block 31 Property (**Figure 4-1**) (Farallon, 2018a). The dewatering activities on the Block 37 Property successfully mitigated further migration of the American Linen CVOC Plume to the east (Farallon, 2018a).

Residual impacted soil and/or groundwater may be present at the portion of the former Shell/Texaco service station that extended south into the present westbound lanes of Mercer Street. In 2018, Shell Oil Products US enrolled the Shell 23714 Site into the PLIA Technical Assistance Program (TAP Project No. PNW078) to seek regulatory closure. At the time of the production of this work plan, PLIA's website lists the cleanup status for this site as being "in progress". The groundwater flow direction reported by Emcon Northwest Inc. (EMCON, 1994) indicates the inferred groundwater flow direction to the northeast in the eastern portion and to the southwest in the western portion of the former Shell/Texaco service station parcel. Based on the groundwater flow direction and limited extent of contamination, it is unlikely that releases from the former Shell/Texaco service station at Block 31 and adjacent Mercer Street have impacted the Block 37 Site.

4.4.3. Block 32 (Block 32 North Building - City Place III LLC - Ecology Cleanup Site ID 1761 and Ivar's Commissary- Ecology Cleanup Site ID No. 6774)

Block 32 is located approximately 160 feet southeast of Block 37. Prior addresses at Block 32 include 1001 and 1021 Mercer Street in the northern portion of Block 32, 500 Terry Avenue North in the southwestern portion of Block 32 (Ivar's Commissary), and the parcel of land in the southeastern portion of Block 32 with the addresses of 511 and 525 Boren Avenue North and 1016 Republican Street. The southeastern parcel is separated from the remaining portion of Block 32 by an alley to the north and west. The northern portion of Block 32 had primarily been used for a mix of residential, commercial, and industrial purposes since the late 1880's. These uses included lumber staging and sawdust storage,

with lumber storage and lumber mill operations until the early 1900's. The surface grade was noted to be 10 to 12 feet below the Mercer Street grade during this period. By 1950, a roofing warehouse was on the northern portion of Block 32 and continued to be used for commercial and light industrial purposes until 2000, with evidence of disposal of "deteriorated cans and containers with residual automotive fluids, grease, paints, and thinners in a small area" at 1021 Mercer Street discovered during redevelopment (Hart Crowser 2012).

The Ivar's Commissary parcel in the southwestern portion of Block 32 had primarily been used for a mix of residential and commercial purposes since the late 1880's. A cold storage and distribution warehouse was present on the southern portion through the late 1960's (Ivar's Commissary Building).

The northern and southwestern portions of Block 32 were redeveloped in 2008 to 2009 with two five-story commercial office buildings with a shared underground parking garage. It appears that the Ivar's Commissary Site listed in Ecology's contaminated sites database as Facility Site ID No. 85883854 and Cleanup Site ID No. 6774 was incorporated into the Block 32 North Building – City Place III LLC Site being listed in Ecology's contaminated sites database as Facility Site ID No. 14637 and Cleanup Site ID No. 1761.

Petroleum-impacted soil associated with former USTs and the disposal of cans and containers were confirmed at 1001 and 1021 Mercer Street properties. Petroleum-impacted soil generally was limited to the upper 20 feet of soil and was removed during the remedial excavation conducted in conjunction with Block 32 Property redevelopment in 2008 and 2009 (Ecology, 2012). PCE and TCE-impacted soil was left in place beneath the building in the northeastern portion of Block 32.

At Ivar's Commissary elevated concentrations of GRO and DRO were present in soil near two USTs (1,000-gallon regular unleaded gasoline and 2,000-gallon heating oil UST) believed to have been installed in the late 1940's to early 1950's (Hart Crowser 1993). The USTs were removed in January 1993 along with approximately 90 tons of petroleum contaminated soil. Groundwater was found to be contaminated with GRO and DRO.

Creosote-treated pilings were identified on the southwest portion of the Ivar's Commissary property with elevated concentrations of PAHs in direct contact with the pilings.

Petroleum-, lead-, and CVOC-impacted soil was removed and treated or disposed of off-Site as part of the remedial action conducted during the redevelopment of the Block 32 North Building - City Place III Site (Hart Crowser 2010). The excavation for the underground parking garage for the Block 32 North Building - City Place III generally extended to elevations ranging from approximately 17 to 9 feet NAVD88, respectively. The over-excavation to remove PCE- and TCE-impacted soil in the northeastern portion of Block 32 advanced to the maximum depth ranging from approximately 11 to 6 feet NAVD88. According to Hart Crowser (2010), the analytical results for over 130 verification soil samples confirmed that the impacted soil was removed except for some CVOC-impacted soil remaining in a limited area at the base of excavation in the northeastern portion of Block 32.

Groundwater was sampled from a network of monitoring wells and only vinyl chloride (VC) was detected at elevated concentrations at four locations: in two monitoring wells near the approximate center of Block 32 in a monitoring well near the southwest corner of Block 32 in Terry Avenue North, and in a monitoring well along the northern boundary of Block 32. Concentrations of vinyl chloride along the northern boundary of Block 32 were detected twice in 2010 but were not detected at the laboratory reporting limit during three subsequent groundwater monitoring events conducted at the end of 2010 and first half of 2011. By letter date November 16, 2012, the Block 32 North Building – City Place III LLC Site received a Partial Sufficiency determination from Ecology for petroleum hydrocarbons in soil and groundwater and a Further Action Required determination from Ecology for PCE and VC in soil and groundwater.

According to groundwater elevations presented on a Hart Crowser figure provided in the Ecology Partial Sufficiency and Further Action letter (2012), the estimated groundwater flow direction near the center of the Block 32 Property was to the north and northeast. However, Farallon's review of Hart Crowser's groundwater elevation data measured during five groundwater monitoring events conducted during the

period from August 2010 to June 2011 indicate that the groundwater elevations were consistently higher in wells installed along the northern boundary of Block 32 compared to the elevations in the wells further south near the center of Block 32, indicating a southeasterly flow direction for the shallow water-bearing zone in the northern portion of Block 32. The groundwater flow direction estimated by Farallon using the Hart Crowser groundwater elevations in wells at and around the southern portion of Block 32 measured in 2010 and 2011 ranged from southeast to southwest during these five groundwater monitoring events. The August 2010 to June 2011 groundwater monitoring was conducted during natural static conditions when no known construction dewatering occurred in the area.

The southeasterly groundwater flow direction for the shallow water-bearing zone in the northern portion of Block 32 is consistent with the estimated flow direction for the southern portion of the Block 37 Property and beneath Mercer Street north of Block 32 seen during the recent groundwater monitoring events conducted in 2022 (**Figures 3-7 through 3-10**). There were no known dewatering activities in the vicinity of Block 37 or Block 32 during these recent groundwater monitoring events, therefore the inferred flow direction during these events are representative of groundwater flow during natural static conditions. The observed groundwater flow direction for the shallow water-bearing zone at the Block 38 West Property, which is half a block west of the Block 32 Property, was to the south in March 2019 (Farallon 2021). Based on the southerly to southeasterly groundwater flow direction for the shallow water-bearing zone at three different blocks in the same area, it is unlikely that groundwater to the extent it is impacted with vinyl chloride at Block 32 would migrate in the opposite direction (northwesterly) toward the Block 37 Property and cause impacts to the Block 37 Site.

4.4.4. Block 38 (Block 38 West Property - Ecology Cleanup Site IDs 15008 and Rosen Property Ecology Cleanup Site ID 5123)

Block 38 is located approximately 90 feet to the south of the Block 37 Property. Block 38 consists of two properties bisected by a north-south trending alley. The eastern portion of Block 38 is referred to as the Block 38 East Property and the western portion of Block 38 is referred to as the Block 38 West Property.

Historical operations on the northern portion of the Block 38 East Property at 535 Terry Avenue North included a lumber mill and yard, gasoline service station, and fuel yard associated with coal storage through the 1950's. By the late 1960's, the northern portion of the Block 38 East Property was a parking lot until redeveloped in 2009 with a five-story commercial office building known as the Interurban Exchange 2 Building.

Historical operations on the southern portion of the Block 38 East Property at 960 Republican Street included lumber storage until the late 1920's when a three-story commercial office building was built. The building, known as the Rosen Building, was used as a warehouse for electrical appliances and general storage through the 1960's and currently is a medical and dental office. The Rosen Building had a release from a heating oil UST. The heating oil UST and soil were excavated from that portion of the property in 1994.

The Block 38 East Property is currently associated with the Rosen Property Site, also known as the Interurban Exchange 2 Site, listed in Ecology's contaminated sites database as Facility Site ID No. 2500 and Cleanup Site ID 5123. The Rosen Property Site received a property-specific No Further Action determination from Ecology in 2009. Confirmed releases to soil and groundwater at the Rosen Property Site and residual soil contamination with detections of petroleum hydrocarbons, cPAHs, and metals exceeding regulatory screening levels remain at the western boundary of the Block 38 East Property (Farallon 2022a).

The western portion of Block 38 referred to as the Block 38 West Property at 500 to 536 Westlake Avenue North was historically undeveloped marshland that extended along the southern shore of Lake Union and onto the north-adjacent property in the late 1880's. Historical operations included a lumber storage yard across the majority of the Block 38 West Property from the 1890's until approximately 1920 when the first commercial and retail structures were built. Historical businesses at the Block 38 West Property included blacksmith shops, wagon shops, horse stables, warehouse storage, an auto repair facility, a veterinary hospital, a commercial printer, and various retail businesses from the early

1900's through 2019. The structures on the Block 38 West Property that were used as retail, temporary office space, storage, and parking remained unchanged from 1969 through August 2019. The structures were demolished in late 2019 and early 2020 as part of the redevelopment of the Block 38 West Property.

Historical operations and/or the following features resulted in the release of hazardous substances that caused contamination of soil and/or groundwater at the Block 38 West Property and east-adjacent alley (referred to as the Block 38 West Site, Facility Site ID No. 62773, Cleanup Site ID 15008): historical placement of impacted fill soil; impacted fill soil within wood debris associated with the former lumber mill operations on Block 38; former timber pilings associated with historical buildings; a coal fill layer across the central and northern portion of the Block 38 West Property; and localized impacts associated with former bunker fuel oil USTs encountered in the northwestern portion of the Block 38 West Property. Subsurface investigations have been conducted at the Block 38 West Site since 1994. Based on the results of these subsurface investigations, heavy range petroleum hydrocarbons and PAHs have been detected at elevated concentrations in soil and/or groundwater at the Block 38 West Site. (Farallon, 2020b). Remedial investigation and cleanup of the Block 38 West Site are ongoing through an Agreed Order entered into between Ecology and City Investors IX. L.L.C. on April 20, 2020 (Agreed Order No. DE 17963).

During redevelopment of the Block 38 East Property in 2008 and the Block 38 West Property from 2019 to 2021, contaminated soils were removed during construction of the new buildings. Additional shallow soil consisting of fill material within the alley bisecting the Block 38 East and Block 38 West Properties were removed in 2021 (Farallon, 2022a). Construction of the new building required mass excavation across the entire Block 38 West Property to approximate elevation -6.5 feet NAVD88 or approximately 30 to 35 feet below existing grade. Constituents encountered in soil included DRO, ORO, benzene, and PAHs. Residual contaminated soil and/or groundwater may be present at the unexcavated portions of Block 38. Based on the groundwater flow direction in the shallow water-bearing zone at the Block 38 West Site that has repeatedly been estimated to the south (Farallon 2022), releases to soil and/or groundwater from sites at Block 38 are not considered potential sources of contamination for the Block 37 Site. Selected figures pertaining to the Block 38 East and Block 38 West Properties are provided in **Appendix A**.

4.4.5. Block 43 (Ecology Cleanup Site ID 12637)

The Block 43 Property is located approximately 90 feet to the west of the Block 37 Property. Block 43 was originally developed as a lumber storage yard and subsequent operations included a carpet factory, steam laundry facility, foundry/blacksmith shop, machine shop, auto service/repair and sales facility, and a gasoline station (EDR, 2018a). The former auto dealership and service shop most recently occupied Block 43 from the late 1970's through 2000 and the property was redeveloped between 2013 and 2015 with a six-story commercial office building with up to four levels of below-grade parking currently occupied by the Allen Institute for Brain Science.

As previously summarized in Section 4.2.2.1, in 2003 three wells were installed proximate to the western edge of Westlake Avenue North as part of a larger investigation at the Block 43 Property (Kane, 2003). These wells were originally identified as K-MW-4, K-MW-5, and K-MW-6, and later identified as City Investor wells CI-1, CI-2, and CI-3, respectively. Analytical results indicated no analyte detections at the laboratory PQL in monitoring well K-MW-4 near the mid-point of the eastern Block 43 Property boundary and monitoring well K-MW-5 near the southeastern corner of the current Block 43 Property. GRO and benzene concentrations in a groundwater sample from monitoring well K-MW-6 near the northeast corner of the Block 43 Property were detected at 5,000 and 35 ug/l, respectively.

Contaminated soil encountered at Block 43 were attributed to historical UST releases, automotive repair operations, and historical placement of fill. Constituents in soil included GRO, DRO, ORO, BTEX, metals (lead, arsenic cadmium, and mercury) and cPAHs (Farallon, 2018b). Constituents in groundwater included GRO, DRO, benzene, ethylbenzene, xylenes, cis-1,2-DCE, VC, and metals (arsenic and lead). CVOCs encountered at the Block 43 Property were detected in shallow soil and Shallow Water-bearing Zone groundwater in limited areas presumed to be released from the former automotive repair operations that do not indicate the potential to impact the Intermediate Water-Bearing

Zone or the Deep Outwash Aquifer. CVOCs in groundwater samples collected from the Intermediate Water-Bearing Zone and Deep Outwash Aquifer were attributed to migration with groundwater from the American Linen Site.

Impacted soil was removed during property redevelopment from the excavation coinciding with the building footprint and the Block 43 Property to depths ranging from 12 feet NAVD88 in the western portion of the Block 43 Property to -12 feet NAVD88 in the eastern portion of the Block 43 Property (20 to 42 feet bgs), except for a limited wedge-shaped area up to 6 feet in width and 77 feet in length situated on the northeastern corner of the Block 43 Property but outside of the building envelope. This residual impacted soil is being addressed using SVE and AS remedial methods (Farallon, 2018b). Residual contamination remains in limited areas in the form of weathered gasoline in the Broad (Roy) Street ROW to the north of the Block 43 Property (Farallon 2018b) and heavy oil petroleum contamination in Mercer Street ROW to the south of the Block 43 Property. Both of these areas of residual contamination in soil and groundwater have been fully delineated by various subsurface investigations and are limited to areas proximate to the Block 43 Property; therefore, releases to soil and/or groundwater from the Block 43 Property are not considered potential sources of contamination for the Block 37 Site. The shallowest water-bearing stratum at the Block 43 Property – i.e., the shallow-water-bearing zone – was completely dewatered in the vicinity of the Block 43 Property during dewatering activities that began in November 2013. Excavation for the parking structure removed the shallow water-bearing zone and limited portions of the intermediate water-bearing zone. Selected figures pertaining to Block 43 investigations/cleanup action are presented in Appendix A.

4.4.6. 700 Dexter Avenue North Property (American Linen Site) (Ecology Cleanup Site ID 12004)

The former American Linen Supply Co. commercial laundry operation was historically located at 700 Dexter Avenue North (King County Parcel No. 224900-0285), approximately 800 feet to the northwest of the Block 37 Property (Ecology, 2017; King County, 2021). The American Linen operation included dry-cleaning utilizing chlorinated solvents from 1946 to approximately the mid-1990's. Additionally, a gasoline station and refueling facility was also in operation at the property. The property, owned by BMR-Dexter LLC is currently undergoing commercial redevelopment (King County, 2021).

The former commercial laundry and dry-cleaning operations resulted in releases that contaminated soil with CVOCs, including PCE; TCE; DCE isomers, primarily cis-1,2- DCE; and VC, at concentrations exceeding site-specific screening levels to depths greater than 100 feet bgs (PES, 2019). Groundwater contaminated with CVOCs has migrated down-gradient of the American Linen Site (referred to as the American Linen CVOC Plume). The American Linen Site (Ecology Facility Site ID 3573; Cleanup Site ID 12004) encompasses contaminated soil and groundwater on and off the 700 Dexter Avenue North property, including the American Linen CVOC Plume.

Under static conditions, contaminated groundwater[12] generally flows from the 700 Dexter Property to the northeast, east, and southeast with a downward vertical gradient over an approximate distance of 1,100 linear feet. The aerial extent of the American Linen CVOC Plume that exceeds site-specific screening levels encompasses the majority of the 700 Dexter Property and extends northeast past 8th Avenue North onto Blocks 79 and 77[13], south across Roy Street onto property located at 800 Mercer Street (aka Seattle DOT Mercer Parcels), and east across 9th Avenue North, Block 43, and Westlake Avenue North onto the western portion of the Block 37 Property. The portion of the American Linen CVOC plume within the lower intermediate water-bearing zone and deep outwash aquifer also extends southeast to the northwest corner of Block 38.

Vertical migration of the American Linen CVOC Plume, along the longitudinal axis of the plume, is generally downward from the shallow water-bearing zone into the intermediate water-bearing zone. The American Linen CVOC Plume continues from the intermediate water-bearing zone into the deep

[12] Includes the shallow and intermediate water-bearing zones. Contaminated groundwater flow in the deep outwash aquifer under static conditions is more complex and multi-directional, and is hydraulically influenced by Lake Union.

[13] Block 77 is located at 900 Roy Street to 731 Westlake Avenue North, and Block 79 is located at 800 Aloha Street, 802 Roy Street, and 701 through 753 9th Avenue North.

outwash aquifer. Analytical results for CVOCs in the shallow and intermediate water-bearing zone groundwater east of 9th Avenue North indicate that the American Linen CVOC Plume underlies shallow and intermediate water-bearing zones groundwater where CVOCs were either reported non-detect at the laboratory PQL or less than site-specific screening levels. The American Linen CVOC Plume in the intermediate water-bearing zone and deep outwash aquifer groundwater extend as far east as the western portion of Block 37 Property. Cis-1,2-DCE and/or VC associated with the American Linen CVOC Plume were detected at concentrations exceeding respective screening levels in deep outwash aquifer groundwater samples collected at the Block 37 Property from monitoring wells MW128, FMW-131, and B-37-2 (GEI-2) between 2014 and 2022 (Farallon, 2018a and PES, 2023).

5. Preliminary Conceptual Site Model

This section provides an in-depth description of the preliminary CSM prepared for the Block 37 Site, including a discussion on the nature and extent of contamination attributed to historical releases and an evaluation of potential exposure pathways and receptors.

The CSM for the Block 37 Site summarizes known and suspected activities potentially contributing to contamination on and off the Block 37 Property, with an evaluation of risks to human and ecological receptors (where applicable) from potential contaminants. A CSM identifies three components necessary for potentially complete exposure pathways related to a site: (1) release of hazardous substance from a source, (2) exposure point, and (3) exposure route. A complete pathway, indicating a potential risk to a receptor due to contaminants of concern, can only exist if all three elements are present. As such, if any of these elements are missing, the pathway is considered incomplete. The preliminary CSM prepared for the Block 37 Property in this RI Work Plan will be used to support the RI in determining potential risks of contaminant migration to receptors, consistent with Ecology guidance (Ecology, 2016a). The CSM will be refined throughout the duration of the RI as additional information is gathered and analyzed. The preliminary CSM is depicted on **Figure 5-1**.

5.1. Potential Source Areas and Releases

Known and suspected releases of hazardous substances from the former gasoline service stations and automotive servicing operations at the Block 37 Property (Figure 3-2) are considered primary sources of contaminants of potential concern (COPCs) identified for the Block 37 Site. The former lumber mill operations at the Block 37 Property may also have contributed to COPCs. Fill material used during the initial Block 37 Site development in the late 1800s through early 1900's (described in Section 3.2.3) may also be a source of select COPCs. Potential contaminants associated with these historical land uses and environmental releases include: petroleum products (gasoline, diesel, lubricating oil, hydraulic oil; petroleum related VOCs); degreasing solvents[14]; metals; PCBs; and PAHs. No indications were found that the historical lumber mill and yard operations on Block 37 manufactured, stored or employed creosote or any other wood preservatives at any time (Paul Michel, 2022). Therefore, chemicals associated with wood preservatives, such as pentachlorophenol, creosote, and dioxins, are not included as COPCs for the Block 37 Property. Individual compounds identified as COPCs remaining at the Block 37 Site are further discussed in Section 5.7.

CVOCs were not detected at concentrations exceeding screening levels in soil or the shallow water-bearing zone at the Block 37 Property, except for a single detection of PCE in a reconnaissance groundwater sample collected in the southeastern portion of Block 37 (Hart Crowser, 2000) that was invalidated by a subsequent investigation by Farallon (2020a). Farallon's investigation found that the PCE detection was both unreliable and likely a false positive associated with analytical method interference and not representative of shallow groundwater conditions on Block 37.

CVOCs were not detected in soil directly beneath the waste oil UST at the Westlake 76 Station (ERI, 2001) on the southern portion of the Block 37 Property. CVOCs were not tested in soil during the 1990 UST decommissioning activities at the Auto Service Company facility on the northern portion of the Block 37 Property (SCS 1990), but were later tested in soil and found to be non-detectable during Phase II ESA activities (refer to Section 4.2.1.1). Furthermore, CVOCs were not detected in groundwater samples collected from two monitoring wells installed to the north (down-gradient) and south (up-gradient) of the former waste oil UST at the Auto Service Company facility (SCS 1991). Environmental data collected to date demonstrate there are no confirmed CVOC sources in either soil or shallow groundwater at the Block 37 Site.

[14] Both chlorinated or petroleum-based solvents could have been used, but shallow soil and groundwater data collected for the Block 37 Property demonstrate that chlorinated solvents have not been released at the Block 37 Site.

CVOCs associated with the American Linen CVOC Plume originating from the American Linen Site generally located at 700 Dexter Avenue, approximately 800 feet to the northwest of the Block 37 Property (refer to Section 4.4.6 and **Appendix A**) are known to be present in the lower portion of the intermediate water-bearing zone to an unknown depth in the deep outwash aquifer. Evaluation and compilation of available soil, reconnaissance groundwater, and groundwater data for the Block 37 Property (**Tables 4-2C** and **4-4C**) confirmed that there is no evidence of either (i) a shallow release of CVOCs to the subsurface at concentrations that would constitute a source to shallow groundwater; or (ii) existing CVOC impacts in shallow groundwater that may act as a source of CVOCs to Intermediate Water-Bearing Zone or Deep Outwash Aquifer groundwater. Therefore, CVOCs are not considered COPCs for the Block 37 Site. As such, collection of CVOC analytical data associated with a separate unaffiliated source is beyond the scope of the Block 37 Site RI program. The distribution of CVOCs associated with the American Linen Site is being characterized by the current property owner, BMR-Dexter LLC under an Agreed Order (Ecology, 2017).

Other historical Block 37 Property uses included a Denny's restaurant, brewery, and creamery (refer to Section 3.1.1.3; **Figure 3-2**), which are not considered primary sources for the preliminary CSM given that these former operations are not common sources of environmental contaminants, including the COPCs identified for the Block 37 Site. Therefore, these other former operations are unlikely to be sources of contaminants.

As described in Section 4.3, cleanup actions, including soil excavations and operation of an AS/SVE system, have been implemented within the Block 37 Property and in the adjacent ROWs that generally comprise the Block 37 Site (**Figure 4-12**). Soils within the entire footprints of the former gasoline service stations, automotive repair operations, and lumber operations have been removed, along with most of the original fill (placed circa 1900). Approximately 0.28 acres of the area underlying Westlake Avenue North directly west of the Block 37 Property was excavated and the soil was removed during the Phase 1 Excavation from 2006 to 2007 (at an excavation depth of 15 feet bgs). Approximately 1.5 acres of the Block 37 Property was excavated to depths of 15 to 25 feet bgs as part of the Phase 2 Excavation from 2008 to 2009. Approximately 0.2 acres in the southeast Block 37 Property remains unexcavated. Remaining potential source areas, therefore, consist of residual impacted soils in the southeast portion of the Block 37 Property not previously excavated, deeper impacted soils within the former excavation areas that were not over excavated, shallow water-bearing zone impacts, and potential residual impacts in the capillary zone (smear zone) within the Block 37 Property.

5.2. Constituent Fate and Transport

Chemical constituents were released to shallow soil during the former operations of the gasoline service stations, automotive repair operations, and potentially at the lumber mill. Petroleum impacts in soil and groundwater were detected in all portions of the Block 37 Property. Chemical constituents migrated through the vadose zone into the shallow water-bearing zone by infiltration and percolation. Transportation of constituents via percolation is expected to be highly variable, both laterally and vertically, as subsurface fill and native soils range from sandy silt, organic silt to sand with gravel with various amounts of organic matter (e.g., wood and sawdust). Constituents that sorb tightly to organic carbon, such as PAHs and some metals, likely sorbed to silts, sawdust and wood waste in the original fill. In addition, utilities present in the surrounding ROWs may have provided preferential pathways enabling groundwater transport.

Constituents that migrated to the underlying shallow water-bearing zone would be transported via groundwater flow. Natural groundwater flow is radially outward with dominant flow patterns to the north-northwest in the north half of the Block 37 Property and southeast to southwest in the southern portion of the Block 37 Property (**Figures 3-7 through 3-10**). However, many anthropogenic factors may, in some cases temporarily, affect local groundwater flow, such as: construction dewatering performed at neighboring properties in South Lake Union, footing drains (to the extent they exist) in adjacent property buildings, and the slurry (gravity)/sheet pile walls present around the Block 37 Property and portions of the adjacent ROWs which act as a hydraulic hindrance that affects the natural direction of groundwater flow (**Figure 4-1**).

Most of the chemical constituents COPCs present in shallow soil were removed during Phase 1 and Phase 2 Excavations completed from 2006 through 2009. A total of approximately 41,900 gallons of free product associated with the 1980 gasoline leak was recovered between 1980 and 1982 using a free product recovery system, and from 1988 to 1995 approximately 4,732 gallons was removed via a VE system (GeoEngineers, 1996). Soils and groundwater impacted with GRO and petroleum-related VOCs outside of the Phase 1 and 2 Excavation areas were remediated during operation of the AS/SVE systems situated around the entire Block 37 Property (in operation until 2018). Attenuation of organic constituents in soil and groundwater also has occurred through biodegradation by native microbial populations and abiotic processes including volatilization. Steps for further assessment of the current nature and extent of constituents in soil and groundwater are provided in Section 7.

5.3. Terrestrial Ecological Evaluation and Potential Ecological Receptors

A completed terrestrial ecological evaluation (TEE) form is provided in **Appendix B**. The Block 37 Site qualifies for the barriers to exposure exclusion under WAC 173-340-7491(1)(b). All contaminated soil on the Block 37 Property will be removed to below the vertical point of compliance, and all contaminated soil in the surrounding ROWs will be covered by physical barriers (paved sidewalks and roads). The physical barriers will prevent exposure to plants and wildlife, and institutional controls will be used to manage remaining contamination in the ROWs.

5.4. Surface Water and Sediment Exposure Pathway Evaluation

Lake Union is located approximately 200 feet to the north of the Block 37 Property (**Figure 1-2**). Groundwater naturally flows northerly to northwesterly in the northern portion of the Block 37 Property and southeasterly to southwesterly in the southern portion of the Block 37 Property (**Figures 3-7 through 3-10**), but is affected locally by anthropogenic features, including the existing slurry gravity/sheet pile wall and local foundation drainage systems. These anthropogenic features are likely acting as a hydraulic hindrance and affecting local groundwater flow within and around the Block 37 Property. As such, constituents in groundwater have the potential to be transported northerly toward Lake Union and affect surface water and sediment (**Figure 5-1**). Impacts above preliminary screening levels for protection of surface water and sediment are present on the Block 37 Property for some COPCs; however, those compounds do not extend across the north adjacent ROW at levels above those screening levels[15] (see Tables 4-3a through 4-3d). Therefore, exposure pathways to surface water or sediment are incomplete and Lake Union is not considered a receptor and will not be the subject of investigation for the RI.

5.5. Current and Potential Future Human Receptors

The identified preliminary exposure pathways and potential human receptors for the Block 37 Site are shown on **Figure 5-1**. The Block 37 Property is currently used by construction workers for temporary construction parking and temporary office trailers, and equipment storage, and may also include earthwork associated with utility installation. Adjacent properties are primarily occupied by commercial workers. A remediation system compound associated with Block 43 is located in the northwest corner of the Block 37 Property.

[15] Groundwater sampled from monitoring well MW-209, located on the property north of Valley Street (Lake Union Park), contained PAH compounds fluoranthene and pyrene at concentrations exceeding the screening levels for protection of sediment and individual cPAHs at concentrations exceeding the screening levels protective of surface water and sediment. These exceedances in groundwater appear to be isolated and unrelated to Block 37; they are not collocated with other Block 37 Site COPCs in groundwater nor soil and appear to be disconnected from PAH and cPAH exceedances in groundwater on the Block 37 Property (more than 400 feet away). The PAH and cPAH exceedances in groundwater at MW-209 are believed to be from a separate, unknown source.

Future potential receptors include construction workers performing building construction operations. At the completion of the anticipated construction of a residential/commercial building at the Block 37 Property, future potential receptors include commercial workers and urban residential receptors.

5.6. Current and Potential Future Exposure Pathways

Potential current and future exposure pathways for human and ecological receptors at the Block 37 Site are described below by media.

Shallow Soil (less than 15 feet bgs)

- Current and future construction workers may be exposed to COPCs in shallow (<15 feet bgs) subsurface soil through direct contact (dermal absorption and incidental ingestion) or vapor inhalation.
- Current adjacent commercial workers may be exposed to COPCs in shallow soil through vapor inhalation (to the extent such commercial buildings do not already contain vapor mitigation systems).
- Future potential commercial workers or urban residents may be exposed to COPCs in shallow soil through vapor inhalation.
- The Block 37 Property and adjacent ROWs will be covered by a building or pavement and therefore, direct contact with shallow soils will be an incomplete pathway for future residents and commercial workers.

Deeper Soil (greater than 15 feet bgs)

- Current and future construction workers may be exposed to COPCs in deeper (>15 feet bgs) subsurface soil through direct contact (dermal absorption and incidental ingestion) or through vapor inhalation.
- Future potential commercial workers or urban residents are unlikely to be exposed directly to COPCs in deeper subsurface soil; therefore, these receptors will have no direct pathway of exposure to deeper soils.
- Future potential commercial workers and/or urban residents may be exposed to COPCs in deeper subsurface soil through vapor inhalation. Preliminary redevelopment plans of the Block 37 Property may include one to two levels of subgrade parking garage beneath a multi-story building (Vulcan, 2014). Therefore, vapor inhalation is a potentially complete exposure pathway for construction and commercial workers during the construction and use of the proposed subgrade parking. However, the vapor intrusion (VI) pathway is incomplete for urban residents using aboveground structures, as defined in Ecology's March 2022 *Guidance for Evaluating Vapor Intrusion in Washington State*, given the potential future construction of a two-level subgrade parking garage beneath the multi-story building (Ecology, 2022b).

Groundwater

- Ingestion of groundwater is unlikely but is retained as a potential exposure route for all human receptors because MTCA regulations require that drinking water be retained as a beneficial use for groundwater (WAC 173-340-720). No potable water supply wells are known to be present in the immediate vicinity of the Block 37 Site (Section 3.2.4). Potable water supply is currently provided to the Block 37 Property by the City of Seattle (King County, 2021). The City obtains potable water from two regional watersheds: the Cedar River located 35 miles southeast of Seattle and the Tolt River located in the Cascade foothills east of King County (SPU, 2021). In addition, because groundwater potentially discharges to Lake Union, which is considered a

domestic water supply, groundwater must meet drinking water standards (**Appendix C**, refer to Questions 3 and 4).
- Current and future construction workers may be exposed to COPCs in groundwater through incidental ingestion or vapor inhalation.
- Current commercial workers in buildings adjacent to the Block 37 Property may be exposed to COPCs in groundwater through vapor inhalation (to the extent such commercial buildings do not already contain vapor mitigation systems).
- Future potential commercial workers and/or urban residents may be exposed to COPCs in groundwater through vapor inhalation and ingestion.

Surface Water and Sediment

As described in Section 5.4, constituents that migrated to the underlying shallow water-bearing zone have been evaluated for potential transport to surface water and sediment via groundwater. Natural groundwater flow is generally toward Lake Union **(Figures 3-7** through **3-10**) in the northern portion of the Block 37 Property, but is affected locally by anthropogenic features, which may include the slurry (gravity) and sheet pile walls around the perimeter of the Block 37 Property and the adjacent western ROW (Westlake Avenue North). Exposure of recreational lake users and fish and benthic organisms to Block 37 COPCs in surface water or sediment is unlikely because no groundwater samples between the Block 37 Site and Lake Union exceed the preliminary screening levels for the surface water or sediment pathways. As previously footnoted, the isolated PAH and cPAH exceedances at MW-209 north of Valley Street are separate from, and appear to be unrelated to, the Block 37 Site.

5.7. Screening Levels

Screening levels were selected in the evaluation of Block 37 Site analytical data that are protective of human health and the environment in light of the exposure pathways identified in Section 5.6. These screening levels were developed in cooperation with Ecology and in accordance with MTCA (WAC 173-340-720 through 173-340-750). Comments and screening level tables provided by Ecology[16] are included in **Appendix C**. These screening levels identify a conservative basis for defining the COPCs and the extent of contamination for each COPC and media. The screening levels may be modified as the CSM is further developed during the RI.

5.7.1. Groundwater

Groundwater analytical data available for the Block 37 Site was evaluated by comparison to the following applicable screening levels, as provided by Ecology (**Appendix C**):

- GW-1 Protection of Drinking Water
- GW-4 Protection of Indoor Air
- GW-5 Natural Background

The selected screening level for arsenic was below the natural background concentration for the Puget Sound Basin (Ecology 2022a), so it was adjusted up to natural background.

Due to significant overlap between diesel- and kerosene- range hydrocarbons, when both kerosene and diesel values are present for a sample, the higher concentration and/or detection limit was used for the TEH calculation before comparing to the TEH screening level.

Analytical data collected from monitoring wells located north of the Block 37 Property (north of Valley Street) and screened within the shallow water-bearing zone were assessed using GW-2 and GW-3 values for protection of surface water and sediment. Data were evaluated from the closest existing wells

[16] The screening levels included in Appendix C are calculated using the following: Applicable or Relevant and Appropriate Requirements (ARARs); equations in MTCA, the Sediment Management Standards (SMS, WAC 173-204), and associated guidance; input parameters describing exposure or transport; and, for some chemicals, literature values for aquatic toxicity.

to the lake, including SMW-3, MW-209, MW-210, and MW-211 (**Tables 4-3a through 4-3d; Figure 4-1**), to determine whether the groundwater-to-surface-water and groundwater-to-sediment pathways are potentially complete.

- The screening levels were derived for protection of human health and aquatic (fresh water) receptors and were based on the potential for transport of contaminated groundwater to surface water and potential partitioning of groundwater contamination to sediment.
- The protective values for aquatic receptors in surface water for GRO, DRO, and BTEX were recently revised in Ecology's Implementation Memorandum No. 23 (Ecology, 2021c). The groundwater screening levels for protection of surface water take into account these updated values in accordance with this new guidance, along with values that are protective of human consumption of aquatic organisms and water.
- The selected screening level was adjusted to the laboratory PQL when the most conservative risk-based screening levels for protection of surface water and sediment were unattainable by current laboratory technology. The constituents affected by this adjustment included EDB, fluoranthene, pyrene, cPAHs, TCE, vinyl chloride, cadmium, selenium, silver, mercury, and PCBs.
- The selected screening level for arsenic for protection of surface water and sediment was below the natural background concentration, so it was adjusted up to natural background.
- A more thorough description of the surface water and sediment pathways evaluation between the Block 37 Property and the lake is provided in Section 5.9.1.

Relevant Method B screening levels for constituents analyzed in groundwater samples at the Block 37 Site are provided in **Tables 4.2a** through **4.2d and Table 5-1,** and samples taken between the Block 37 Property and the lake are provided in **Tables 4-3a** through **4-3d.**

5.7.2. Soil

Soil analytical data available for the Block 37 Site was evaluated by comparison to the following applicable screening levels[17], as provided by Ecology (**Appendix C**):

- SL-1 Direct Contact
- SL-2 Protection of Drinking Water - Vadose Zone (leaching)
- SL-5 Protection of Drinking Water - Saturated Zone (leaching)
- SL-10 Natural Background

These screening levels are modified by the following:

- The screening level applied to samples from 20 feet elevation and deeper (i.e., at and below the seasonal high water table) primarily included SL-5 (Protect Drinking Water Saturated Zone); and the next lowest screening level for the vadose zone, which was either SL-1 (Direct Contact) or SL-2 (Protect Drinking Water Vadose Zone), applied to samples from shallower elevations.
- The selected screening level for metals was applied as adjusted to the natural background values (SL-10) when the risk-based screening levels (SL-1, SL-2, and SL-5 listed above) are less than background concentrations in this region (Ecology, 1994). The constituents affected by this adjustment included arsenic and cadmium.
- The screening level was adjusted to the laboratory PQL when the risk-based values are unattainable by current laboratory technology. The constituents affected by this adjustment included benzene, EDB, EDC, MTBE, PCE, TCE, vinyl chloride, , 1-methylnaphthalene, PCBs, and selenium

Relevant Method B screening levels for constituents analyzed in soil samples at the Block 37 Site are provided in **Tables 4-4a through 4-4d, and in Table 5-2.**

[17] Soil screening levels derived for protection of the groundwater-to-surface-water and groundwater-to-sediment pathways were not used to evaluate soil data based on empirical demonstration that groundwater concentrations between the Block 37 Property and Lake Union are protective of those pathways (see Section 5.9.1).

5.7.3. Soil Gas

Soil gas samples have not been collected at the Block 37 Site since implementation of the various interim remedial actions (refer to Section 4.3). Collection of soil gas samples are anticipated during the RI and will be evaluated relative to MTCA Method B soil gas screening levels protective of VI (Ecology, 2022b).

5.8. Identification of Contaminants of Potential Concern

The identification of COPCs for the Block 37 Property involved comparing the concentrations of detected constituents in soil and groundwater to protective, risk-based screening levels, as previously described in Section 5.6. A screening summary of representative samples where constituent concentrations exceeded one or more of the selected Block 37 Site screening levels are provided in Table 5-1 (groundwater) and Table 5-2 (soil). Because of natural attenuation and previous remedial actions completed at the Block 37 Property, including operation of the AS/SVE system and the Phase 1 and Phase 2 Excavations (refer to Section 4.3), some older analytical data was considered to be no longer representative of current site conditions. The selection of representative samples included in the evaluation for the identification of COPCs is described below.

5.8.1. Selection of Representative Samples

In order to understand the current nature and extent of constituents impacting environmental media beneath the Block 37 Property, soil and groundwater analytical data that is no longer representative of current site conditions was removed from consideration prior to the evaluation of COPC identification for the Block 37 Site. The selection of representative samples, by media, is described below.

5.8.1.1. Representative Groundwater Samples

Concentrations of constituents in groundwater changed over time as a result of natural attenuation and by the removal of contaminant sources via excavation and operation of the AS/SVE system. Therefore, groundwater analytical data collected beginning in 2009 (subsequent to the Phase 1 and 2 Excavations) was considered representative of site conditions and was included in the COPC evaluation. As such, groundwater analytical data from samples collected prior to 2009 were not considered representative.

5.8.1.2. Representative Soil Samples

Soil excavations in the Phase 1 and 2 Excavation areas (**Figure 4-1**; **Tables 4-4a through 4-4d**) occurred as follows: the Phase 1 Excavation removed soil to 14-15 feet bgs (13 to 14 feet NAVD88); the Phase 2 Excavation removed soil to depths ranging from approximately 15 to 27 feet bgs, corresponding to a minimum elevation of 14 feet NAVD88 and a maximum elevation of 2 feet NAVD88. Furthermore, in the Phase 2 Excavation, the depth of the deepest confirmation sample is an indicator of the total excavation depth in that vicinity. Soil samples with specific analytes meeting one or more of the following criteria were identified as unrepresentative of current site conditions and excluded from the summary statistics:

- For confirmation samples collected from the floor of the Phase 1 or Phase 2 Excavation areas:
  - Samples collected at depths shallower than 14 feet NAVD88 were excavated; therefore, sample results are no longer representative.
  - When multiple confirmation samples were collected at a single location, it is assumed that the shallower sample was excavated; therefore, shallower samples are no longer representative.
- For borings advanced in the Phase 1 Excavation area:
  - Samples collected prior to the excavation and located shallower than the excavation depth of 13 to 14 feet NAVD88 were excavated; therefore, sample results are no longer representative.
- For borings advanced in the Phase 2 Excavation area:

- Samples collected prior to the excavation and located shallower than the excavation depth ranging from 14 to 2 feet NAVD88 were excavated; therefore, sample results are no longer representative. The excavation depth was assumed to be equivalent to the deepest confirmation sample at each location.

AS/SVE systems operated on the Block 37 Property prior to the Phase 2 Excavation in primarily the southern half of the Block 37 Property. More recent AS/SVE activities were utilized on the Block 37 Property and within the adjacent ROWs until 2018, when the AS/SVE system was shut down due to diminishing returns (Section 4.3). The AS/SVE system effectively removed GRO and petroleum related VOCs from soil, as evidenced by decreasing concentrations of VOCs within the extracted soil vapor gas over time. Therefore, GRO and VOC analytical data collected prior to 2018 in areas treated by the recent system are considered not representative of current site conditions and were thus excluded from the summary statistics in **Table 5-2**. Although AS/SVE activities also likely reduced concentrations of heavier organic compounds (e.g., DRO and naphthalene) to a lesser extent, these heavier organic compounds were retained as representative of current site conditions in areas treated by AS/SVE as a conservative estimate. Metals would not be affected by the operation of the AS/SVE system. All existing soil sampling data, other than that identified in this section as non-representative of current conditions, can be used to evaluate the current nature and extent of COPCs in soil at the Block 37 Site.

5.8.2. Contaminants of Potential Concern

Summary statistics describing the frequency of detection, minimum and maximum concentrations, and number of samples exceeding risk-based screening levels in groundwater and soil are provided in **Tables 5-1** and **5-2**, respectively. The selection of COPCs in groundwater and soil are described below by media.

5.8.2.1. COPCs in Groundwater

COPCs in groundwater include constituents detected in one or more groundwater samples from 2009 to present at concentrations exceeding the selected groundwater screening levels, as described in Section 5.7.1. Constituents that exceed the selected screening level (**Table 5-1**) include:

TPHs: GRO, DRO, ORO, and combined TEH (Total DRO/kerosene+ ORO)
VOCs: BTEX
SVOCs: naphthalene
Metals: arsenic and lead.

The selected screening levels and the basis for each COPC are identified below.

Summary of Groundwater COPCs and Selected Screening Levels

Compound	Screening Levels	Basis
DRO	500 ug/L	Protection of Drinking Water
ORO	500 ug/L	Protection of Drinking Water
Kerosene	500 ug/L	Protection of Drinking Water
TEH	500 ug/L	Protection of Drinking Water
GRO	800 ug/L	Protection of Drinking Water
Benzene	2.4 ug/L	Protection of Indoor Air
Toluene	640 ug/L	Protection of Drinking Water
Ethylbenzene	700 ug/L	Protection of Drinking Water
Total Xylenes	320 ug/L	Protection of Indoor Air
Naphthalene	8.9 ug/L	Protection of Indoor Air
Arsenic	8 ug/L	Protection of Surface Water and Drinking Water, adjusted to Natural Background
Lead	15 ug/L	Protection of Drinking Water

5.8.2.2. COPCs in Soil

COPCs in soil include constituents detected in one or more representative soil samples at concentrations exceeding the selected soil screening levels, as described in Section 5.7.2. Constituents that exceed the selected screening level (**Table 5-2**) include:

- **TPHs:** GRO, DRO, ORO, and combined TEH (Total DRO/kerosene +ORO).
- **VOCs:** BTEX
- **SVOCs:** Naphthalene
- **Metals:** Arsenic and lead

Note: PCBs, cPAHs TTEC, and chromium were not detected in any samples at concentrations exceeding the screening levels. As discussed in Section 5.9.2, cPAH TTEC will not be retained as a COPC for the Site as there are no exceedances of PAHs and CPAHs in soil samples collected from recent, post-excavation borings and no exceedances in groundwater samples collected from the monitoring well network. PCBs, cPAHs, and chromium are not retained as COPCs.

The selected screening levels and the basis for each COPC are identified below. As previously noted, soil screening levels derived for protection of surface water and sediment are not considered for this RI based on evaluation of groundwater data between the Block 37 Property and Lake Union.

Summary of Soil COPCs and Selected Screening Levels

Compound	Screening Levels	Basis
DRO	2,000 mg/kg	Protection of Drinking Water Vadose and Saturated Zone
ORO	2,000 mg/kg	Protection of Drinking Water Vadose and Saturated Zone
Kerosene	2,000 mg/kg	Protection of Drinking Water Vadose and Saturated Zone
TEH	2,000 mg/kg	Protection of Drinking Water Vadose and Saturated Zone
GRO	30 mg/kg	Protection of Drinking Water Vadose and Saturated Zone
Benzene	0.027 mg/kg 0.02 mg/kg	Protection of Drinking Water Vadose Zone Protection of Drinking Water Saturated Zone, adjusted to Laboratory PQL
Toluene	4.5 mg/kg 0.27 mg/kg	Protection of Drinking Water Vadose Zone Protection of Drinking Water Saturated Zone
Ethylbenzene	5.9 mg/kg 0.34 mg/kg	Protection of Drinking Water Vadose Zone Protection of Drinking Water Saturated Zone
Total Xylenes	14 mg/kg 0.83 mg/kg	Protection of Drinking Water Vadose Zone Protection of Drinking Water Saturated Zone
Naphthalene	4.5 mg/kg 0.24 mg/kg	Protection of Drinking Water Vadose Zone Protection of Drinking Water Saturated Zone
Arsenic	7.3 mg/kg	Protection of Drinking Water and Direct Contact, adjusted to Natural Background
Lead	250 mg/kg 150 mg/kg	Direct Contact (samples in vadose zone) Protection of Drinking Water Saturated Zone

5.8.2.3. COPCs in Soil Gas

COPCs in soil gas include volatile constituents present in shallow soil or shallow groundwater at concentrations exceeding the selected soil and groundwater screening levels listed in Sections 5.8.2.1 and 5.8.2.2 above. Those COPCs exceeding soil and groundwater screening levels present a potential risk for VI into future occupied buildings on the Block 37 Property. Constituents selected as COPCs in soil gas include:

- **TPHs:** GRO and DRO (including kerosene)
- **VOCs:** BTEX and naphthalene

The selected screening levels and the basis for each COPC are identified below. Note that there are no soil gas screening levels specific to GRO or DRO; only screening levels developed for TPH inclusive of carbon ranges C8 through C12.

Summary of Soil Gas COPCs and Selected VI Method B Sub-Slab Soil Gas Screening Levels

Compound	Screening Levels	Basis[18]
TPH-(C8-C12)	1,500 ug/m3 13,000 ug/m3	Residential Exposure Commercial Worker Exposure
Benzene	11 ug/m3 50 ug/m3	Residential Exposure Commercial Worker Exposure
Toluene	76,000 ug/m3 650,000 ug/m3	Residential Exposure Commercial Worker Exposure
Ethylbenzene	15,000 ug/m3 130,000 ug/m3	Residential Exposure Commercial Worker Exposure
Total Xylenes	1,500 ug/m3 13,000 ug/m3	Residential Exposure Commercial Worker Exposure
Naphthalene	2.5 ug/m3 11 ug/m3	Residential Exposure Commercial Worker Exposure

5.9. Nature and Extent of Contamination

This subsection summarizes the current understanding of the nature and extent of contamination at the Block 37 Site focused on concentrations of COPCs in representative samples that exceed one or more selected screening levels (refer to Sections 5.7 and 5.8). Locations of representative (unexcavated) confirmation samples collected during the Phase 1 and 2 Excavations are shown on **Figure 5-2**. Locations of all other representative soil samples where COPC concentrations exceed one or more of the selected screening levels are shown on **Figure 5-3**.

The majority of the Block 37 Property (with exception of the southeast portion) and a portion of the adjacent Mercer Street ROW was excavated during the Phase 2 Excavation to depths ranging from 15 to 28.5 feet bgs while the adjacent portion of the Westlake Avenue ROW was excavated to 15 feet bgs during the Phase 1 Excavation (Figure 4-1). Soil in these areas was replaced with clean fill after excavations were completed. COPCs may be present in unexcavated soil that remains in the southeastern portion of the Block 37 Property, in adjacent ROWs, and in soil present below the excavation depths. In addition, the AS/SVE remedial action further reduced concentrations of GRO and VOCs in the ROWs.

5.9.1. Groundwater

Groundwater at the Block 37 Site has been encountered between 5 to 13.5 feet bgs in the shallow water-bearing zone (refer to Section 3.2.3). Existing shallow water-bearing zone monitoring wells (**Table 4-1a**) within the excavated areas of the Block 37 Property are generally screened across recent fill (e.g., Phase 2 Excavation backfill) and some wells extend into the underlying historical fill material or native soils below the excavation limits, as shown on cross sections (**Figures 3-4, 3-5,** and **3-6**). Shallow groundwater at the Site appears to flow generally outward from the center of the property. Historically detected COPCs in shallow groundwater include: TPHs (GRO, DRO, ORO, kerosene and TEH), BTEX, SVOCs including cPAHs (TTEC) and naphthalene, and the metals arsenic and lead. Recent groundwater analytical data depicting the location of petroleum-related COPC impacts and metals are shown on **Figures 4-2a** through **4-2g**.

COPCs distribution in groundwater, which is based on the most recent data collected in 2022, is summarized below.:

- GRO in groundwater exceeded the screening levels in two shallow wells (MW-217 and MW-218) in the Mercer Street ROW. GRO was less than the screening levels in groundwater samples collected from wells on the Block 37 Property, the remaining wells in Mercer Street, and wells between the Block 37 Property and Lake Union (**Figure 4-2a**).

[18] The soil gas screening levels for residential and commercial worker exposures are based on values published in Ecology's Cleanup Levels and Risk Calculation database tables, updated January 2023.

- TEH (total DRO/kerosene + ORO) in groundwater was detected at one shallow monitoring well (B-37-1/GEI-1) at the northwest corner of the Block 37 Property within the Phase 2 Excavation and in two shallow wells (MW-45 and MW-50) within the unexcavated portion of the Block 37 Property (Denny's parcel) at concentrations exceeding the screening level. TEH also exceeded the screening level in one shallow well (MW-213) in Valley Street and two shallow wells (MW-217 and MW-218) in the Mercer Street ROW. TEH concentrations in groundwater did not exceed the screening level in any other wells on or off the Block 37 Property (**Figure 4-2b**).
- Benzene in groundwater was detected at two monitoring wells (shallow well PH-2/AMW-1 and intermediate zone well B-37-2/GEI-2) at the northwestern portion of the Block 37 Property within the Phase 2 Excavation and in one shallow well (MWR-5) within the unexcavated portion of the Block 37 Property (Denny's parcel) at concentrations exceeding the screening level. Benzene also exceeded the screening level in one shallow well (MW-213) in Valley Street. Concentrations of toluene, ethylbenzene, and/or total xylenes exceeding the screening levels have also been co-located with benzene exceedances at shallow well MWR-5. Benzene concentrations (and other BTEX compounds) in groundwater did not exceed the screening level in any other wells on or off the Block 37 Property (**Figure 4-2c**).
- Naphthalene in groundwater was detected at two shallow monitoring wells (MWR-5 and MW-50) within the unexcavated portion of the Block 37 Property (Denny's parcel) at concentrations exceeding the screening level. Naphthalene concentrations in groundwater did not exceed the screening level in any other wells on or off the Block 37 Property (**Figure 4-2d**).
- Fluoranthene and pyrene were detected in groundwater exceeding the screening levels protective of the groundwater-to-sediment pathway at one shallow well (MW-209) north of Valley Street; they do not exceed the screening levels protective of drinking water. These compounds, which were co-located with other detected PAHs and cPAHs at MW-209, were not detected in any other wells on or off the Block 37 Property, including wells directly upgradient of MW-209. As such, these isolated exceedances beyond the Block 37 Property boundary do not appear to be associated with releases from the Block 37 Site.
- cPAH TTEC concentrations in groundwater did not exceed the screening level in any wells on or off the Block 37 Property during quarterly groundwater monitoring events conducted in 2022 (**Figure 4-2e**). However, individual cPAH compounds (benzo[a]anthracene, chrysene, dibenz[a,h]anthracene, and indeno[1,2,3-cd]pyrene) were detected above their screening levels protective of the surface water and sediment pathways at MW-209 north of Valley Street. As noted above, these isolated cPAH exceedances were co-located with the fluoranthene and pyrene exceedances at this well and do not appear to be associated with releases from the Block 37 Site.
- Total lead had a single exceedance of the screening level in groundwater in an intermediate zone monitoring well (B-37-8) near the southern boundary of the Block 37 Property. Total or dissolved lead concentrations in groundwater did not exceed the screening level in any other wells on or off the Block 37 Property (**Figure 4-2f**).
- Total and dissolved arsenic in groundwater were detected at concentrations exceeding the selected screening level (natural background for Puget Sound Basin) in many monitoring wells on and off the Block 37 Property during 2022. This included groundwater at shallow monitoring wells B-37-3, B-37-5, MW-50, MW-213, MW-214, MW-216, MWR-3, MWR-5, and PH-2/AMW-1; intermediate zone wells B-37-8 and B-37-9; and deep well FMW-131. No sources of arsenic are identified in soil, and the arsenic widespread distribution in groundwater suggests that arsenic may be a regional issue and not related to historical releases from the Block 37 Site (**Figure 4-2g**). However, additional data will be collected during the RI to further evaluate the source of the arsenic exceedances at the Block 37 Site.
- Total and dissolved barium and chromium were not detected at concentrations exceeding the selected screening levels in any groundwater samples collected during quarterly groundwater monitoring events conducted in 2022 (**Figure 4-2g**).

5.9.2. Soil

Representative historical and more recent soil sample results were used to evaluate the current COPC distribution in soil at the Block 37 Site. Recent soil sampling conducted in 2022 across the Block 37 Property at monitoring well borings B-37-3 through B-37-9 and PH-1, PH-2/AMW-1, PH-3, and PH-4 from depths ranging from 5 to 35 feet bgs (25 to -5.6 feet NAVD88) did not reveal any detections of GRO, DRO, ORO, TEH, BTEX, MTBE, naphthalene, cPAHs, PCBs, or metals (including arsenic, barium, cadmium, chromium, lead, and mercury) at concentrations exceeding the selected screening levels for the vadose and saturated soil. However, until the COPC concentrations in soil are evaluated in proposed borings for the RI (further discussed in Section 7.1.1), historical results for soil samples collected outside the limits of the previous excavations (e.g. below the base of excavation and in unexcavated areas) are retained as representative soil samples. COPC distribution in soil is summarized below and illustrated on **Figures 4-3a** through **4-9c, 5-2,** and **5-3**:

- Concentrations of COPCs in soil samples collected to the north of the Block 37 Property, north of Valley Street and south of Lake Union, were less than their respective screening levels (**Tables 4-4a** and **4-4d**).
- Residual GRO and benzene concentrations exceeding their respective screening levels in soil were detected at various locations across the Site and are more widespread than the other COPCs. Residual GRO and benzene soil exceedances are primarily present in the southern portion of the Block 37 Property, including in the unexcavated area in the southeast portion of the Block 37 Property and beneath the southern portion of the Phase 2 Excavation Area 2 extending into the adjacent Mercer Street ROW. GRO and/or benzene exceedances were also present in soil in limited areas within Valley Street north-adjacent to the Block 37 Property, within Terry Avenue Northeast-adjacent to the Block 37 Property, within Mercer Street south of the Phase 2 Excavation Area 2, and within Westlake Avenue North beneath the Phase 1 Excavation area.
- Residual MTBE concentrations exceeding the screening levels for protection of groundwater as drinking water (via leaching pathway) were detected in soil at the base of the southern portion of the Phase 1 Excavation (Segments F and G, 15 feet bgs [14 feet NAVD88]) and in one location within the Mercer Street ROW to the south (MW-218/B-218-20 at 20 feet bgs [9 feet NAVD88]). However, MTBE concentrations in groundwater have not exceeded the screening level for protection of drinking water in the area of these soil samples nor at the Block 37 Site as a whole. Furthermore, none of the MTBE detections in soil exceed the screening level for direct contact. Therefore, MTBE will not be retained as a COPC for the Site.
- Residual TEH concentrations (**Table 4-4a**)exceeding the screening level were present in one representative soil sample in the southeast, unexcavated portion of the Block 37 Property (MW-45 at 7.5 feet bgs [21.5 feet NAVD88]), one soil sample in the Mercer Street ROW to the south (SB-8 at 18 feet bgs [11 feet NAVD88]), and in one sample in the southern portion of the Phase 1 Excavation area in west-adjacent Westlake Avenue North (B-25 at 15-16 feet bgs [13-12 feet NAVD88]). TEH did not exceed soil screening level in any samples collected from the limits of the Phase 1 and Phase 2 Excavation areas.
- Residual naphthalene concentrations exceeding the screening level are evident site-wide. These exceedances were present at depths between approximately 2 and 22.5 feet bgs, corresponding to elevations ranging between 27 and 5.5 feet NAVD88.
- With the exception of naphthalene, limited sampling for PAHs, including cPAHs, has been conducted. Data for representative samples indicate no residual cPAH TTEC concentrations exceeding the screening level in soil. PAHs above the soil screening levels include 1-methylnaphthalene in COP-T1-N, COP-T2-N, and COP-T2-S at up to 0.882 mg/kg, and 2-methylnaphthalene at COP-T2-S at 1.62 mg/kg. The locations of these soil samples, which were collected at the beginning of the Phase 2 Excavation activities, are not known but are assumed to have been removed during the subsequent Phase 2 excavation. As PAH and cPAH data are limited for this site, their distribution in soil is not well understood. However, given that there are no exceedances in soil samples collected from recent, post-excavation

borings and no exceedances in groundwater samples collected from the monitoring well network, cPAH TTEC will not be retained as a COPC for the Site.

- Lead concentrations exceeding the screening level were noted in several locations north or northeast of the Block 37 Property (in the Valley Street ROW and the Terry Avenue North ROW) but were also present in the unexcavated portion of the Block 37 Property, in one location within the Westlake Avenue North ROW (MW-63), and several locations in the southern portion of the Phase 2 Excavation Area 2 in Mercer Street. These exceedances were present at depths between approximately 2.5 and 20 feet bgs, corresponding to elevations ranging between 26.5 and 8 feet NAVD88.
- Except for a recent single detection of barium at a concentration exceeding the screening level in the northern portion of the Block 37 Property, the metals arsenic, barium, cadmium, chromium, selenium, silver, and mercury were not detected in soil samples at concentrations exceeding their respective screening levels. However, because barium concentrations in groundwater do not exceed the screening levels for the protection of surface water or drinking water in the area of this soil sample, nor at the Block 37 Site as a whole, barium will not be retained as a COPC for the Site.

5.9.3. Indoor Air

The Block 37 Property is currently used for temporary construction activities, including construction equipment parking; there are no permanent structures on the Block 37 Property. Additionally, no buildings are located immediately adjacent to the Block 37 Property: office/commercial buildings with underground parking garages are located across the ROWs at distances greater than 100 feet to the east, south, and west.

Given the current vacant use of the Block 37 Property and the proposed future development of a multi-story building with two levels of subgrade parking (Vulcan, 2014), indoor air will be retained as a media of potential concern until sufficient information has been collected during the RI to demonstrate whether or not the vapor intrusion pathway could be a future concern.

6. Investigation Data Gaps

This section provides a summary of the investigation data gaps identified for the Block 37 Site related to soil, and groundwater, and soil gas COPCs, including a discussion on data gaps related to potential impacts from neighboring properties.

Data gaps were identified during development of the preliminary CSM for the Block 37 Site. Additional information related to COPCs in soil and groundwater will be necessary to fully characterize the Block 37 Site and develop remedial alternatives during the FS. The investigation data gaps generally encompass soil, groundwater, and soil vapor, and are summarized in **Table 6-1**. Well locations where representative samples contain COPCs above their respective screening levels are shown on **Figures 4-2a** though **4-2g**. Soil sample locations where remaining concentrations of COPCs exceed their respective screening levels are shown on **Figures 4-3a** through **4-9c**. Investigation data gaps associated with the Block 37 Site by media are described further below. **Table 6-1** presents for each data gap a description of the data gap, its location, medium, constituents and rationale, and proposed action for the remedial investigation.

6.1. Groundwater Investigation Data Gaps

As noted previously in Section 5.9.1, historically detected COPCs in groundwater include TPHs (GRO, DRO, ORO, kerosene, and TEH), BTEX, SVOCs including cPAHs (TTEC) and naphthalene, and the metals arsenic and lead.

The shallow water-bearing zone beneath the Block 37 Property has been routinely monitored since the 1980's for petroleum-related constituents, including: GRO, DRO, ORO, BTEX, MTBE, naphthalene, and lead.

Select COPCs have been sampled less frequently but are not considered COPCs. The COPCs chromium and PCBs have never been detected in soil or groundwater at concentrations exceeding the selected screening levels and can therefore be eliminated from the COPC list. Soil with detections of barium above the screening level protective of groundwater has been removed, with the exception of one sample located in the Phase 2 Excavation Area 1 at cell D10, which exceeded the saturated soil screening level. However, barium was not detected at concentrations exceeding the screening level protective of drinking water in any groundwater samples (94 analyzed for total and 81 for dissolved barium). Therefore, the soil to groundwater to drinking water pathway is incomplete, and barium can be excluded from the COPC list based on this empirical demonstration.

Comprehensive groundwater monitoring has not consistently included the entire list of Block 37 Site COPCs. Additional sampling for arsenic is needed to assist in evaluating whether historical operations (**Figure 3-2**) may have affected the groundwater quality or if arsenic exceedances in groundwater are caused by other factors. The lack of comprehensive analysis for arsenic is considered a data gap.

An adequate number of monitoring wells within the shallow water-bearing zone are present on the Block 37 Property and to the north (**Figure 7-2**). An insufficient number of monitoring wells are present in the ROWs to the west, northwest, and south of the Block 37 Property to delineate the lateral extents of shallow groundwater impacts, so this is considered a data gap. To address this data gap, shallow water-bearing zone monitoring wells are proposed to be installed in the ROWs to the west, northwest, and south of the Block 37 Property.

Previous investigations have not fully characterized the intermediate or deep-water bearing zones for Block 37 COPCs. Impacts to the intermediate water-bearing zone require additional delineation in the southeast portion of the property, along the northern boundary of the property, and to the west and south of the Property. The intermediate water zone will be further characterized to determine if the deep-water bearing zone requires additional investigation.

6.2. Soil Investigation Data Gaps

Soil sample locations where remaining concentrations of COPCs exceed screening levels below the base of the Phase 1 and 2 Excavations are shown on **Figure 5-2**. Soil sample locations where remaining concentrations of COPCs exceed their respective screening levels in soil borings and monitoring wells are shown on **Figure 5-3.** Additional information regarding historical soil exceedances at depth is provided in **Tables 4-4a** through **4-4d** and summarized on **Figures 4-3a** through **4-9c**.

The Phase 1 and 2 excavation activities within and in the immediate vicinity of the Block 37 Property removed a significant quantity of petroleum-impacted soil; however, isolated locations within the remediated areas had exceedances of selected screening levels (**Figure 5-2**). Confirmation soil sampling has not been performed in areas located outside of the remedial excavations that were addressed by AS/SVE actions. In general, prior sampling conducted at the Block 37 Site did not consistently include the entire list of Block 37 Site COPCs. Therefore, the following data gaps were identified to further characterize the Block 37 Site:

- The vertical extent of contamination remaining beneath areas of the Phase 1 and Phase 2 Excavations is not clear and needs to be confirmed. In post-excavation grid samples and historical soil borings, concentrations of GRO, benzene, and naphthalene, and to a lesser extent, lead and TEH, are located across the Phase 1 and Phase 2 Excavation areas.
- Vertical delineation may also be needed both within and outside of the excavation areas where historical borings indicated that elevated COPCs may remain at depths deeper than what was investigated. This includes primarily GRO and benzene throughout the Block 37 Site, and to a lesser extent naphthalene throughout; lead to the north and northeast; and TEH at three locations to the southeast and southwest.
- The lateral extents of contamination remaining at the Block 37 Site, which includes areas within the surrounding ROWs, is not clear in some areas and needs to be confirmed. COPCs present at the lateral boundaries include GRO in the Phase I and 2 excavation areas, and to the west-southwest and southeast, with lesser extents of benzene and naphthalene in the Phase 1 excavation area, and benzene and lead in the southern portion of the Phase 2 area. In boring locations, lateral exceedances of GRO benzene, and naphthalene, extend to the south and east. However, these are laterally bounded by excavations on the adjacent Parcels. The only locations where concentrations are not laterally bounded are the ROW intersections to the southeast and southwest.
- Post-remediation (AS/SVE) soil conditions for volatile (and potentially other) contaminants in surrounding ROWs should be confirmed.
- The distribution of some COPCs, including arsenic, is not clear due to lack of previous analysis during historical investigations.

6.3. Soil Vapor Data Gaps

Vapor intrusion has not been evaluated for the Block 37 Site since the completion of the interim remedial actions (**Table 4-5**). Soil vapor analytical data collected during the RI, existing analytical data will be compared to vapor intrusion-related screening levels and soil gas sampling will be conducted in areas identified with residual GRO and VOC (BTEX and naphthalene) concentrations that could pose a future risk to indoor air quality through vapor intrusion.

7. Remedial Investigation Elements

This section provides a summary of the Block 37 Site RI elements.

The RI scope of work includes the collection of additional soil, groundwater, and soil gas samples to further characterize the nature and extent of Block 37 Site COPCs and an assessment of groundwater flow in the shallow and intermediate water-bearing zones. In addition, the preliminary CSM developed for this work plan will be updated in the RI to incorporate new data that fills the data gaps identified in this work plan (refer to Section 6). The existing data, together with the newly collected data, is expected to be sufficient to perform a FS and complete a Draft CAP. RI objectives and Specific sampling and investigation procedures are summarized below.

7.1. Remedial Investigation Objectives

7.1.1. Block 37 Site

The focus of previous investigations and cleanup actions performed at the Block 37 Site were generally related to releases of petroleum products associated with former gasoline stations and automotive repair operations (**Section 3.1.1**). Therefore, most of the previous soil and groundwater analytes were limited to GRO, DRO, ORO, BTEX, MTBE, naphthalene, and lead. A comprehensive assessment of other COPCs associated with historical Block 37 Property uses was not previously conducted. The primary objectives of the RI will be to evaluate if additional COPCs (e.g., arsenic), which were not previously analyzed, are present above selected screening levels in areas with known exceedances of current COPCs (**Figures 5-2** and **5-3**) and in other areas at the Block 37 Property identified with sources (e.g., historic mill operations, automotive servicing hoists and used oil USTs). The majority of the Block 37 Property, including the adjacent ROW to the west, was excavated during the Phase 1 and 2 Excavation activities. Exceedances of various COPCs were identified within the excavation areas and therefore, these areas will be re-assessed during the RI to confirm current conditions of COPCs.

The primary objectives of the additional groundwater investigation will be to: (1) further assess the shallow water-bearing zone across the entire Block 37 Site for the expanded list of COPCs; (2) expand the groundwater monitoring network to include assessment of the intermediate water-bearing zone; and (3) further evaluate the groundwater flow and the effects of the existing hydraulic hindrances (sheet pile/slurry (gravity) walls)) and adjacent building foundation drains, if any, on the lateral and vertical flow in the two water-bearing zones.

To assess the potential for future vapor intrusion risks at the Block 37 Site, an assessment of soil gas concentrations will be performed in select areas identified with elevated concentrations of GRO, DRO and VOCs in soils and/or groundwater that could represent a potential vapor intrusion risk to a future building's indoor air quality.

7.2. Sampling Scope

RI sampling proposed at the Block 37 Site is outlined in **Table 7-1** and described further below. Information regarding the sampling rationale, procedures, analytical methods, field screening procedures and quality control measures are presented in the sampling and analysis plan (SAP) and Quality Assurance Project Plan (QAPP) provided in **Appendix D**. The procedures outlined in these plans will govern all aspects of data collection activities conducted under the Ecology-approved SAP and work plan prepared for P66 and City Investors. The purpose of the QAPP and associated SAP is to ensure that the analytical data are representative of the conditions in the field and that analytical data are valid and accurately reported.

7.2.1. Utility Clearance

Atlas will retain a Washington State-licensed drilling contractor to provide drilling, well installation, and sampling services. Boring/monitoring well locations within ROWs will require preparing a Traffic Control Plan and applying for a City of Seattle Department of Transportation (SDOT) street use permit. Traffic

control measures will be implemented during the field activities in the ROWs. Nearby property owners will be notified of drilling activities prior to field mobilization. Atlas will review publicly available Seattle Public Utility maps and utility maps provided by City Investors and mark the proposed boring locations in the field. Atlas will notify the Washington Utility Notification Center for public utility locating at least 48 hours prior to commencing drilling activities. Additionally, Atlas will retain a private utility locating contractor to conduct a ground penetrating radar and conductive survey in the vicinity of the borings/monitoring wells/soil gas probes. If underground utilities are identified at the proposed drilling locations, alternative drilling locations will be selected. The utility locations will be noted on a field drawing and incorporated into the Site Plan (**Figure 3-1**). A minimum depth of 5 feet bgs will be cleared at each boring location using a hand auger and/or a vacuum/potholing truck. The subsurface drilling and sampling equipment will be decontaminated prior to initiating each boring location.

7.2.2. Soil Boring Advancement and Sampling

The additional soil characterization proposed at the Block 37 Site to address investigation data gaps (**Table 6-1**) is focused in areas identified with:

- Residual contamination that may remain in areas that were previously excavated/remediated as well as areas with historic land uses (i.e., sources) that were not fully assessed during previous investigations performed at the Block 37 Site (**Figure 4-12; Table 4-5**).
- COPCs exceeding screening levels either below the Phase 1 and 2 Excavation limits and/or outside of the Phase 1 and 2 Excavation limits (**Figures 5-2 and 5-3)**.
- Potential residual contamination and/or areas not previously characterized for the full list of COPCs.

The proposed soil boring locations are presented on **Figure 7-1**, and proposed depths and sampling intervals are provided in **Table 7-1**. The proposed soil sampling interval for the borings/monitoring wells within the Phase 1 and 2 Excavation areas will correspond to depths at and below the base of the previously remediated excavation limits. The proposed soil sampling interval outside of the previously excavated areas (e.g., southeastern portion of Block 37 Property/Denny's parcel) will be based on historical analytical data from various nearby borings/wells locations and field screening results. Borings within the former Phase 1 and 2 Excavation areas will be advanced using Geoprobe direct push techniques (DPT). The DPT borings will be continuously sampled using a 4-foot-long macro-core sampler/split barrel sampler to the total depth of the boring. Borings proposed outside of the excavation areas may be advanced using direct push drilling methods unless refusal conditions are encountered prior to the total depth of the boring. In those instances, the boring(s) will be advanced using hollow stem auger or sonic drilling methods. Soil samples collected from the borings will be submitted to the laboratory for the analyses indicated in **Table 7-1** using the methods listed in **Section 7.3**. Field screening procedures are presented in the SAP (**Appendix D**).

7.2.3. Monitoring Well Installation and Groundwater Monitoring

The additional groundwater characterization proposed at the Block 37 Site will focus on supplementing the existing information pertaining to the shallow water-bearing zone and a more comprehensive assessment of the intermediate water-bearing zone. Additional information on the groundwater flow characteristics and background groundwater quality will also be obtained to better understand the fate and transport of COPCs beneath and in the immediate vicinity of the Block 37 Site.

A total of seventeen new monitoring wells (7 intermediate and 10 shallow water-bearing zone) are proposed to be installed at the Block 37 Site, as listed in **Table 7-1** and shown on **Figure 7-2.** These new wells will be added to the existing monitoring well network and included in the subsequent groundwater monitoring and sampling program.

7.2.3.1. Monitoring Well Installation

The monitoring wells will be installed using hollow stem auger drilling methods and soil samples will be collected using a Standard Penetration Test (SPT) split spoon sampler on five-foot or less intervals to the total depth of the boring. Field screening procedures are presented in the SAP (**Appendix D**).

The monitoring wells screened across the top of the shallow water-bearing zone will be constructed with 15 feet of 0.020-inch slot well screen. The monitoring wells screened within the intermediate water-bearing zone will be constructed with 10 feet of 0.020-inch slot well screen. The monitoring wells will be constructed of 2-inch-diameter schedule 40 polyvinyl chloride (PVC) well casing with a 6-inch-long sump at the bottom of the well to accommodate any solids that may settle out of the groundwater. It is anticipated that the final depth of the shallow water bearing zone wells will be approximately 25 feet bgs within the fill and the intermediate water bearing zone wells will be up to a depth of 40 feet bgs within the recent deposits. The screened interval for each well will be approximately 8 to 23 feet bgs (22 to 7 feet NAVD88) for the shallow water bearing zone and varying in depth with the maximum estimated depth of 30 to 40 feet bgs (0 to -10 feet NAVD) for the intermediate water bearing zone. Proposed well AMW-17 will be screened from 5 to 18 feet bgs to be consistent with the other shallow wells in that area closest to the lake. Well construction details may vary based on conditions observed in the field. The monitoring wells will be installed in compliance with Ecology Resource Protection Well regulations (WAC 173-160) (WSL, 2021). Solid PVC riser casing will be placed from the top of the screened interval to the ground surface. A filter pack consisting of #2/12 sand will be installed in the well borings from the bottom of the screen and extended to approximately one foot above the screen. After the filter pack is placed, groundwater will be removed from the well using a bailer to help settle the filter pack and to aid in development of the well after completion. A two-foot-thick bentonite seal will be placed above the sand pack and allowed to hydrate for approximately 30 minutes prior to grouting. A Portland Type II grout or grout/bentonite slurry will be placed by tremie pipe from the top of the bentonite seal to approximately six inches below grade. The wells will be completed with a flush mounted traffic rated well box.

Each well will be developed using a combination of surging and bailing/pumping until the well produces clear, relatively sediment free water. Up to 10 well casing volumes of water will be purged from each well during development. During well development, groundwater physical parameters including temperature; pH; conductivity; dissolved oxygen; oxygen-reduction potential, and turbidity (goal of visibly clear/<50 NTU) will be monitored. Once the groundwater physical parameters have stabilized, or at least 10 well casing volumes of groundwater have been removed, the well development will be considered complete.

After completion of the monitoring well installation, the location of each well will be surveyed by a licensed surveyor with reference to latitude/longitude based on North American Datum of 1983 (NAD83) for horizontal control and NAVD88 for vertical control.

7.2.3.2. Groundwater Sampling and Monitoring

The new monitoring wells will be sampled at least 5 days after well development is completed. All existing/accessible Block 37 Site monitoring wells will be sampled at least once following installation of the new wells. Based on initial results, some wells may be eliminated from sampling program, as long as adequate Site coverage is maintained. The groundwater sampling methods and procedures are presented in the SAP (**Appendix D**). Synoptic groundwater level measurements will be performed prior to each groundwater sampling event. At least one year of quarterly monitoring will be proposed to assess the groundwater conditions at the Block 37 Site. Groundwater samples from the new and existing wells will be submitted to the laboratory for the analyses indicated in **Table 7-1** using the methods listed in **Section 7.3**.

7.2.4. Soil Gas Sampling

Subsurface soil gas data has not been collected or evaluated for the Block 37 Site following the various cleanup actions that have been implemented (**Table 4-5**). Soil gas sampling will be conducted as part of the RI in order to assess the potential for indoor air quality impacts as a result of vapor intrusion into

future constructed buildings/structures. Following evaluation of soil and groundwater analytical results, soil gas sampling will be conducted in areas identified with soil and/or groundwater containing GRO, DRO and VOC concentrations that could result in exceedances of soil gas screening levels.

Based on soil analytical results obtained from the soil borings and monitoring wells, soil gas sampling probes will be installed at select locations (e.g., detections of VOCs in soil or groundwater above MTCA Method B screening levels) and completed at a minimum depth of 5.0 feet bgs in accordance with Ecology's vapor intrusion guidance (Ecology, 2022b). Up to five vapor probes will be installed. The probes will be constructed within a hand-augered or air-knifed hole and a 6-inch-long air diffuser connected to ¼-inch-diameter Teflon™ tubing will be placed at the bottom of the hole. Probe construction will include the placement of 6 inches of sand around the air diffuser followed by a dry bentonite bridge consisting of 6 inches of granulated bentonite. Granulated bentonite will then be placed in the hole in 6-inch lifts and hydrated. This placement will be repeated until hydrated bentonite has been placed within one foot of the ground surface. The soil gas probes will be finished with a locking flush mount monument and a cement collar. The soil gas probes will be allowed to equilibrate for a minimum of 24 hours prior to sampling. Soil gas sampling will be performed in accordance with the methods and procedures presented in the SAP (**Appendix D**). The samples will be submitted to the laboratory for the analyses indicated in **Table 7-1** using the methods listed in **Section 7.3**.

7.2.5. Investigation-Derived Waste

Investigation-derived waste (IDW) encompasses soil cuttings and other solid waste generated during the drilling and well installation activities and will be collected and stored in Department of Transportation (DOT)-approved 55-gallon steel drums pending disposal profiling analysis. After each boring/monitoring well is completed, the drilling equipment will be decontaminated using a steam cleaner. The water generated by the drilling equipment decontamination, monitoring well development, and purging will be collected and stored in DOT-approved 55-gallon steel drums pending disposal profiling analysis. All drums will be appropriately labeled (e.g., date, contents, and source of waste) and stored on the Block 37 Property at a location approved by the property owner. The solid and liquid IDW will then be disposed of at a licensed disposal facility in accordance with specific client waste disposal requirements. If any of the drilling locations are advanced within the zone of chlorinated solvent contamination, waste from those areas will also be analyzed for CVOCs and disposed of appropriately. If any of the solid IDW contains CVOCs, coordination will be conducted with Ecology's Hazardous Waste and Toxics Reduction program for a contained-in determination, if applicable. Any IDW liquids containing CVOCs will be disposed of in accordance with applicable laws and regulations.

7.2.6. Health and Safety Plan

Atlas will develop a site-specific health and safety plan (HASP), which will include safety elements related to soil boring advancement, well installation, groundwater monitoring, and soil gas sampling. The driller will be responsible for developing and implementing their own site-specific HASP that meets the minimum requirements of Code of Federal Regulations 1910.120 and applicable Washington State Department of Labor and Industry requirements. At a minimum, all field work will be conducted using Level D personal protective equipment. The HASP prepared for the Block 37 Site RI is provided in **Appendix E**.

7.3. Laboratory Analyses

7.3.1. Soil and Groundwater

Soil and groundwater samples proposed for collection during the RI at the Block 37 Site will be analyzed for COPCs outlined in **Table 7-1** and listed below:

- TPHs
  - GRO using Northwest Method NWTPH-gasoline extended (Gx) and DRO and ORO using Northwest Method NWTPH-diesel extended (Dx). Kerosene standard to be included in NWTPH-Dx analysis

- BTEX and naphthalene by Method 8260D
- Metals
  - Arsenic and lead by EPA Method 6010D
- cPAHs by EPA Method 8270E modified by selected ion monitoring (SIM)

7.3.2. Soil Gas

Soil gas samples proposed for collection during the RI at the Block 37 Site will be analyzed for COPCs outlined in **Table 7-1** and listed below:

- TPHs by Massachusetts Department of Environmental Protection (MADEP) Air Phase Petroleum Hydrocarbons (APH) method
- BTEX and naphthalene by EPA Method TO-15

7.4. Permitting

Permits will be obtained prior to commencing RI field activities at the Block 37 Site. If required, Atlas will apply for a City Street Use Permit related to drilling of borings/wells in ROWs. Atlas or the selected driller will also apply for Ecology well installation permits.

7.5. Project Planning

Project management for implementation of this RI Work Plan, which includes planning, coordination, sampling, documentation, and reporting tasks, will be undertaken by Atlas. All project work will be supervised by a Washington-registered geologist employed at Atlas. Atlas will coordinate with subcontractors for various activities, including drilling, sampling, and laboratory services. The roles and responsibilities of key project personnel involved in the Block 37 Site RI are presented in **Table 7-2.**

8. Reporting and Schedule

The Block 37 Site RI will be performed in accordance with the AO issued by Ecology (Ecology, 2021a). Reports and data deliverables, in addition to the schedule of submittals to Ecology, are listed in **Table 8-1** and include the following:

- Monthly progress reports
- Report deliverables: RI Work Plan, RI Report, FS Report, Preliminary Draft CAP
- Existing data submittal to Ecology's Environmental Information Management (EIM) Database
- RI validated data

8.1. Project Deliverables

Monthly Progress Reports

The monthly progress reports will provide a summary of activities performed during the reporting period and include:

- Deviations from the scope of work;
- Changes in key personnel involved with the work;
- Changes to the schedule;
- Summary of prepared reports;
- Work and deliverables scheduled for the next reporting period; and
- Public or regulatory communications.

Data Submittals to EIM

Analytical data will be uploaded to Ecology's Environmental Information Management (EIM) database in accordance with WAC 173-340-840(5) (WSL, 2021). These submittals will be comprised of soil and groundwater analytical data not previously uploaded to EIM and soil and groundwater analytical data collected during the RI.

RI Work Plan

This Work Plan has been finalized and submitted to Ecology after receiving Ecology's comments to the Draft RI Work Plan. Implementation of the RI activities will commence upon Ecology's approval of the Final RI Work Plan.

RI Report

The RI Report will be prepared in accordance with WAC 173-340-350 (Remedial Investigation and Feasibility Study) (WSL, 2021), Ecology's Guidance for Remediation of Petroleum Contaminated Sites, (Ecology, 2016a) and Ecology's Remedial Investigation (RI) Checklist (Ecology, 2016c). The RI Report will summarize the existing soil and groundwater data for the Block 37 Site collected during previous investigations and the field work conducted during the current RI to fully characterize the Block 37 Site COPCs in determining the nature and extent.

The RI Report will include figures depicting the nature and extent of COPC contamination in addition to groundwater elevation contours and flow direction in the three water bearing zones (shallow, intermediate and deep). The intermediate water bearing zone will be further characterized to determine if the deep water bearing zone requires additional delineation. If so, then additional wells may be proposed in future assessment activities. The RI Report format will be consistent with the format specified in WAC 173-340-840 (General Submittal Requirements) (WSL, 2021).

8.2. Project Schedule

The project deliverables prepared as part of the Block 37 Site investigation will be submitted to Ecology in accordance with the AO (Ecology, 2021a), as outlined in **Table 8-1**.

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10. Limitations

This report has been prepared for Ecology on behalf of Phillips 66 Company and City Investors. Our professional services have been performed, our findings obtained, and our recommendations prepared in accordance with customary principles and practices in the fields of environmental science and engineering. This warranty is in lieu of all other warranties either expressed or implied. Atlas is not responsible for the independent conclusions, opinions, or recommendations made by others based on records review, site inspections, field exploration, and laboratory test data presented in this report.

FIGURES

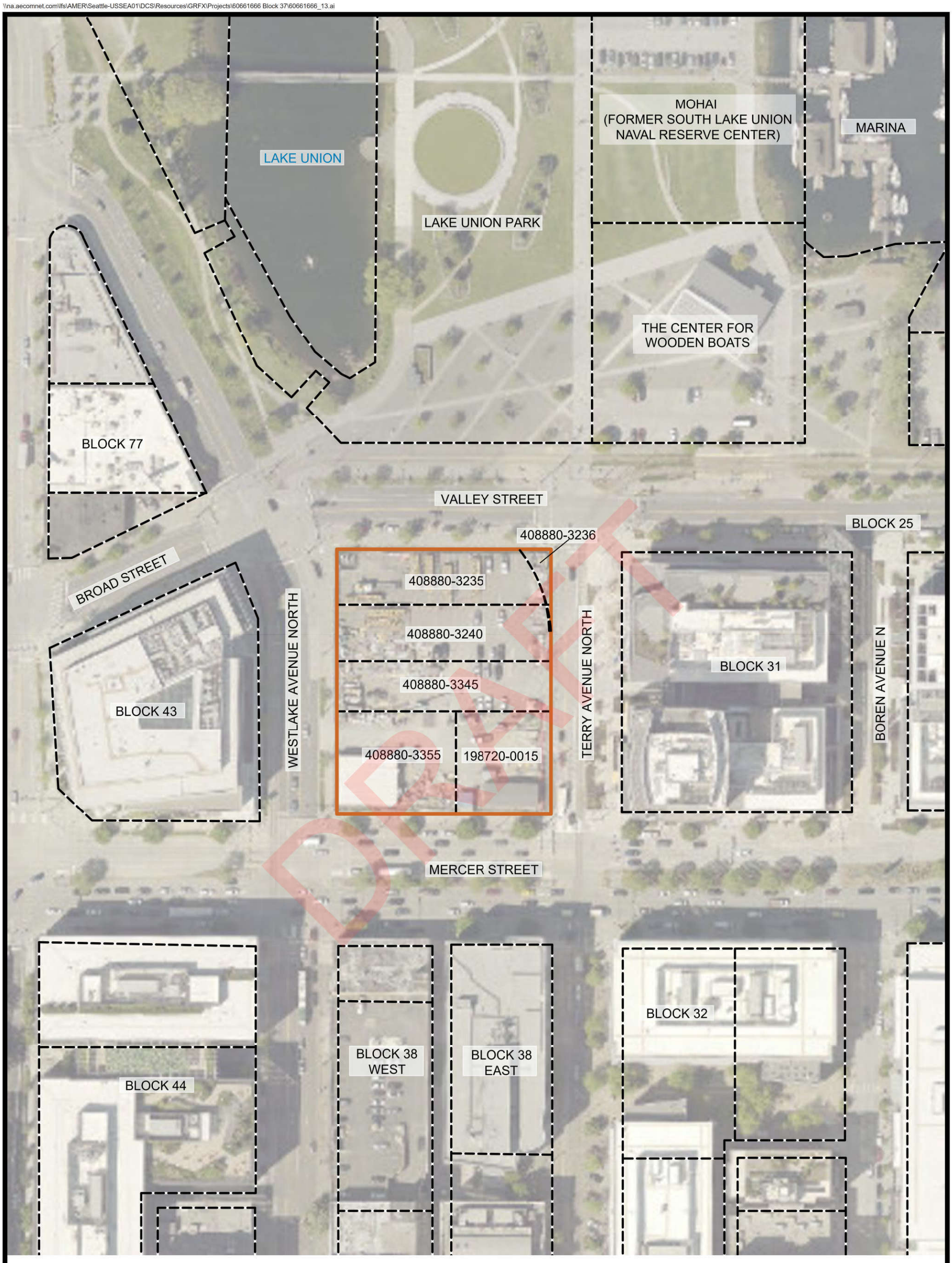
SITE LOCATION

BLOCK 37 SITE
600-630 WESTLAKE AVENUE NORTH
SEATTLE, WASHINGTON
REMEDIAL INVESTIGATION WORK PLAN

PROJECT NUMBER: Z076000073		DATE: 9/15/21	FIGURE 1-1
APPROVED BY: ES		DRAWN BY: MD	

ATLAS
6347 Seaview Avenue NW
Seattle, Washington 98107
Ph: (206) 781-1449 *** Fax: (206) 781-1543

\\na.aecomnet.com\lfs\AMER\Seattle-USSEA01\DCS\Resources\GRFX\Projects\60661666 Block 37\60661666_13.ai



LEGEND

Block 37 Property Boundary

Tax Lot Parcel

NOTES

MOHAI = Museum of History & Industry

N
W E
S

0 100 200

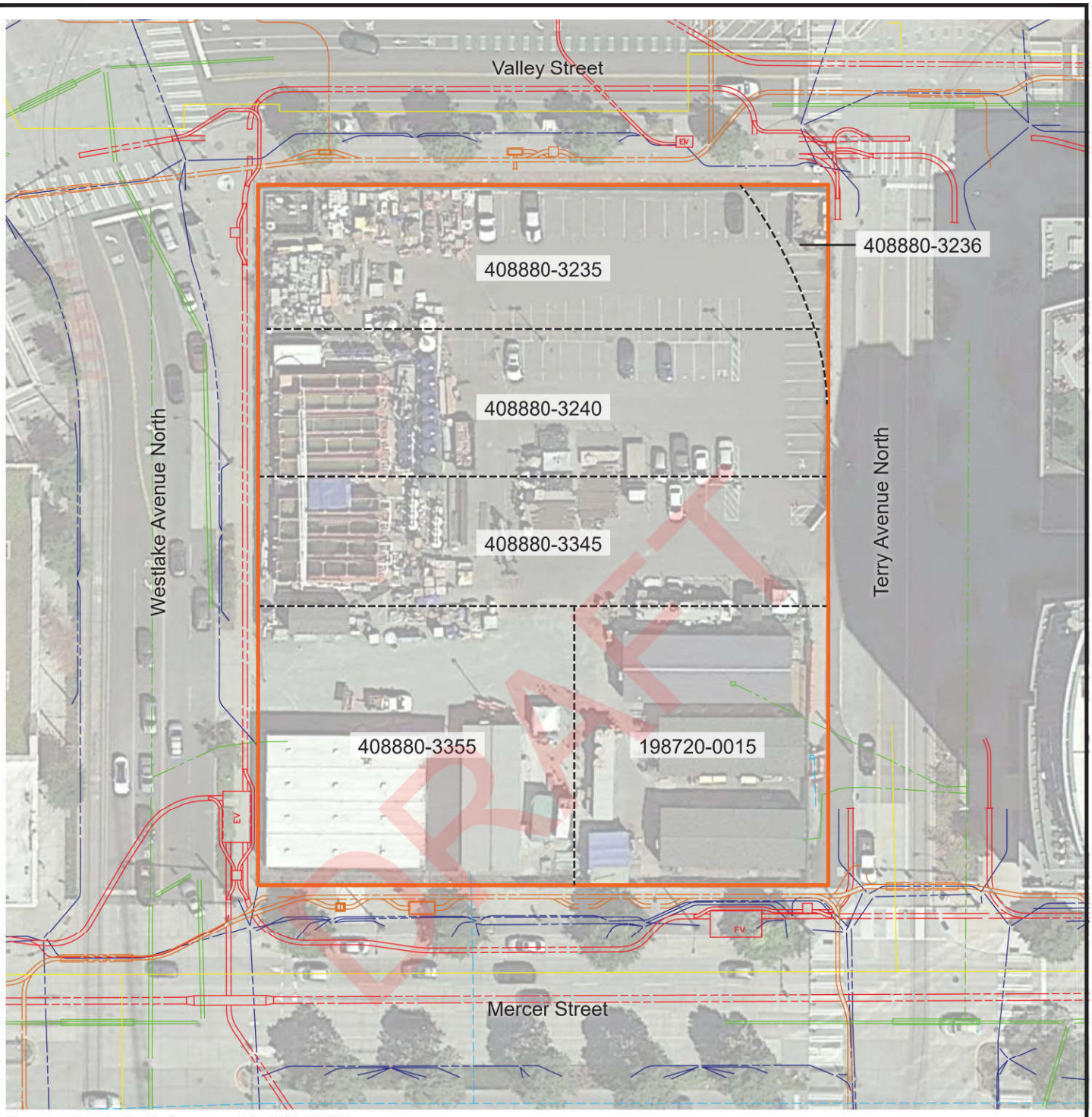
APPROXIMATE SCALE IN FEET

BLOCK 37 PROPERTY VICINITY

BLOCK 37 SITE
600-630 WESTLAKE AVENUE NORTH
SEATTLE, WASHINGTON
REMEDIAL INVESTIGATION WORK PLAN

PROJECT NUMBER: Z076000073		DATE: 10/01/21	FIGURE 1-2
APPROVED BY: ES		DRAWN BY: MD	

ATLAS
6347 Seaview Avenue NW
Seattle, Washington 98107
Ph: (206) 781-1449 *** Fax: (206) 781-1543



Source: Google Earth, imagery dated 8/14/2020

LEGEND

- Block 37 Property Boundary
- Tax lot parcel
- Water line
- Electrical Line for street lights
- Sanitary/Storm sewer
- Electrical Line (SCL)
- Communication Line
- Gas Line

N W E S

0 60 120

APPROXIMATE SCALE IN FEET

SITE PLAN

BLOCK 37 SITE
600-630 WESTLAKE AVENUE NORTH
SEATTLE, WASHINGTON
REMEDIAL INVESTIGATION WORK PLAN

PROJECT NUMBER: Z076000073		DATE: 9/15/21	FIGURE 3-1
APPROVED BY: ES		DRAWN BY: AC	

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Seattle, Washington 98107
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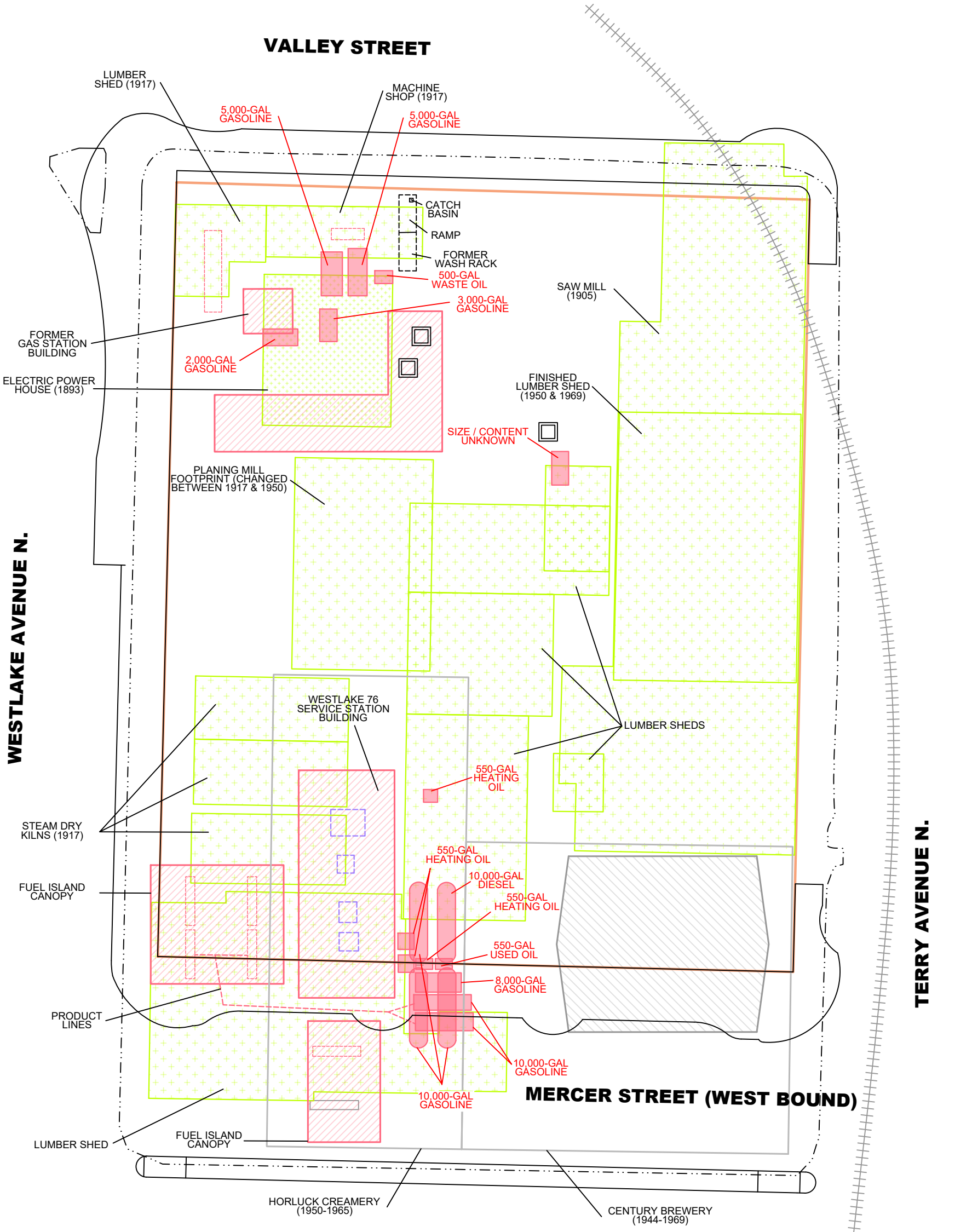

LEGEND

- Block 37 Property Boundary
- Former curb edge of sidewalk/right of way
- Former sump
- Former rail line
- Former service station structure
- Former fuel dispenser island
- Former UST
- Former hydraulic hoist
- Former lumber mill structure
- Former electric power structure
- Former Denny's restaurant structure
- Former brewery and creamery structures

NOTES:

GAL = gallon
UST = underground storage tank

1) All sample locations are approximate and no longer present.
2) Former structures based on maps prepared by Delta Environmental Consultants (2005) and GeoEngineers (1992) and Sanborn fire insurance maps (EDR 2018).

N W E S

0 40 80

APPROXIMATE SCALE IN FEET

HISTORICAL BLOCK 37 SITE FEATURES

BLOCK 37 SITE
600-630 WESTLAKE AVENUE NORTH
SEATTLE, WASHINGTON
REMEDIAL INVESTIGATION WORK PLAN

PROJECT NUMBER: Z076000082		DATE: 02/14/23	FIGURE 3-2
APPROVED BY: ES		DRAWN BY: ICD	

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Seattle, Washington 98107
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GEOLOGIC TRANSECT LOCATIONS

BLOCK 37 SITE
600-630 WESTLAKE AVENUE NORTH
SEATTLE, WASHINGTON
REMEDIAL INVESTIGATION WORK PLAN

PROJECT NUMBER: Z076000082		DATE: 02/14/23	FIGURE 3-3
APPROVED BY: ES		DRAWN BY: ICD	

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LEGEND

- Soil Boring
- Monitoring Well
- IA-1 Interim Action Well
- Grab Soil Sample
- SVER-1/TSVE-1 Soil Vapor Extraction Well
- EFR-1 Enhanced Fluid Recovery Well
- MW-87 SB-14 DAS-1 Abandoned Boring, Monitoring Well, or Air Sparge
- Phase 1 Excavation
- Phase 2 Excavation-Area 1
- Phase 2 Excavation-Area 2
- Block 37 Property Boundary
- Sheet Pile Wall
- SLU Street Car Line
- Slurry (Gravity) Wall

NOTES:

1) All sample locations are approximate.
2) Segment alphabet and number associated with grid sampling area. Refer to analytical data tables.
3) Locations of samples, excavation boundaries, and gravity walls based on maps obtained from Delta, Stantec, Farallon, GeoEngineers, and other consultants.

N W E S

0 60 120

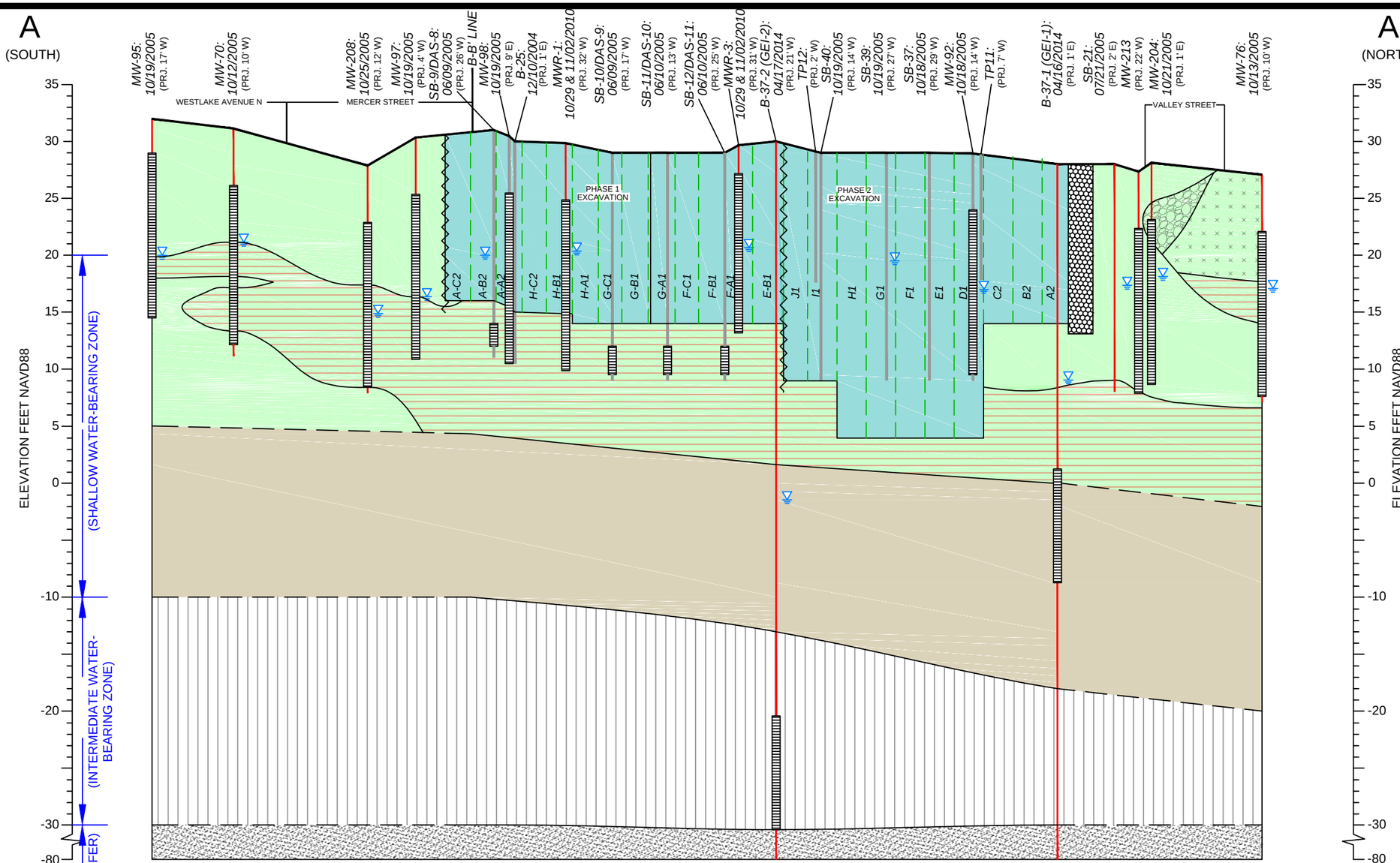
APPROXIMATE SCALE IN FEET

A

(SOUTH)

A'

(NORTH)



LEGEND

- Silty sand (recent fill)
- Fill: sandy silt to silty sand
- Sand to silty sand (recent deposits)
- Glacially consolidated soils: dense silt, sandy silt & silty sand with varying amounts of gravel
- Outwash sand: dense sand with minor silt
- Gravel
- Wood debris
- Brick fragments
- Slurry (gravity) wall
- Boring
- Well screen interval, over excavated well/boring.
- Boring
- Well screen interval
- Approximate first encountered water level during drilling
- Sheet pile wall
- PRJ — Projected offset distance to the transect
- Approximate contact boundary

NOTES:

1. The depth and thickness of the subsurface strata indicated on the sections were generalized from and interpolated between the soil borings. Information on actual subsurface conditions exists only at the location of the soil borings and it is possible that subsurface conditions between the soil borings may vary from those indicated.

2. The boring logs and related information depict subsurface conditions only at the specific locations and dates indicated. soil conditions and water levels at other locations may differ from conditions occuring at these boring locations. Also, the passage of time may result in a change in the conditions at these boring locations.

0 10 20

APPROX. VERTICAL SCALE, FT

0 60 120

APPROX. HORIZONTAL SCALE, FT

GENERALIZED SUBSURFACE CROSS SECTION A - A'

BLOCK 37 SITE
600-630 WESTLAKE AVENUE NORTH
SEATTLE, WASHINGTON
REMEDIAL INVESTIGATION WORK PLAN

PROJECT NUMBER: Z076000073	DATE: 01/04/23	FIGURE 3-4
APPROVED BY:	DRAWN BY: ICD	

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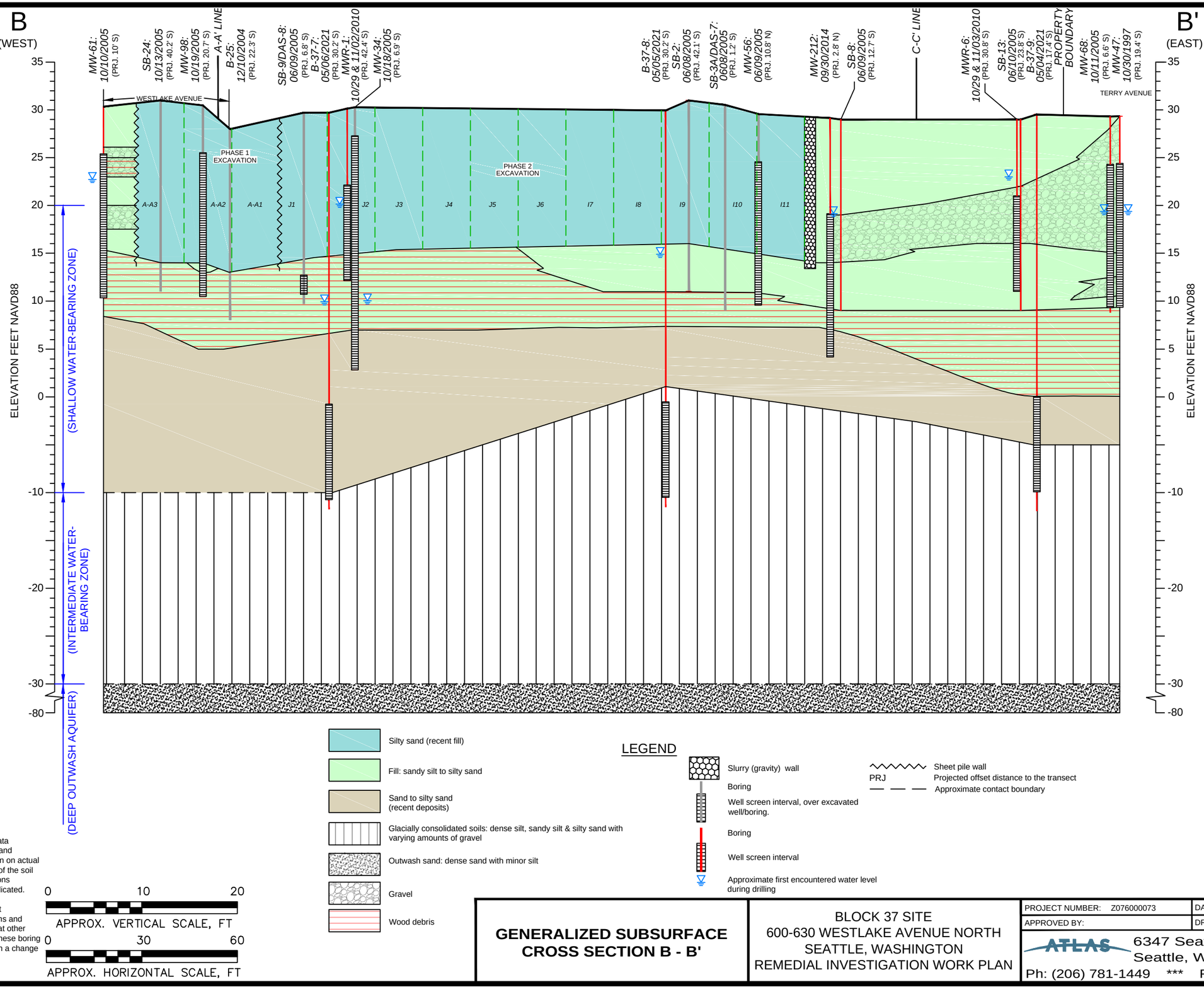
Seattle, Washington 98107
Ph: (206) 781-1449 *** Fax: (206) 781-1543



LEGEND

- Silty sand (recent fill)
- Fill: sandy silt to silty sand
- Sand to silty sand (recent deposits)
- Glacially consolidated soils: dense silt, sandy silt & silty sand with varying amounts of gravel
- Outwash sand: dense sand with minor silt
- Gravel
- Wood debris

- Slurry (gravity) wall
- Boring
- Well screen interval, over excavated well/boring.
- Boring
- Well screen interval
- Approximate first encountered water level during drilling
- Sheet pile wall
- PRJ — Projected offset distance to the transect
- Approximate contact boundary

NOTES:

1. The depth and thickness of the subsurface strata indicated on the sections were generalized from and interpolated between the soil borings. Information on actual subsurface conditions exists only at the location of the soil borings and it is possible that subsurface conditions between the soil borings may vary from those indicated.

2. The boring logs and related information depict subsurface conditions only at the specific locations and dates indicated. soil conditions and water levels at other locations may differ from conditions occuring at these boring locations. Also, the passage of time may result in a change in the conditions at these boring locations.

0 10 20
APPROX. VERTICAL SCALE, FT

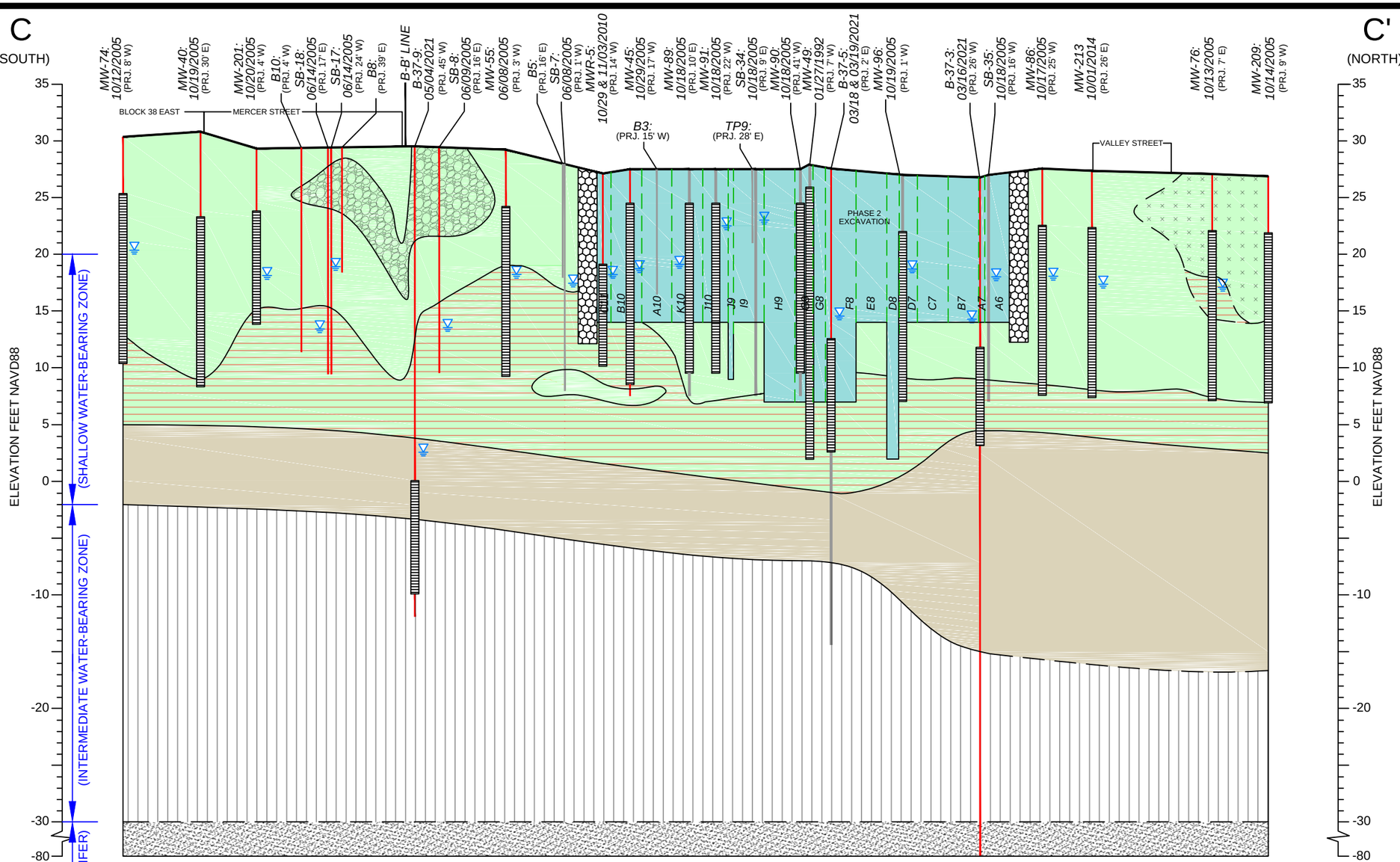
0 30 60
APPROX. HORIZONTAL SCALE, FT

GENERALIZED SUBSURFACE CROSS SECTION B - B'

BLOCK 37 SITE
600-630 WESTLAKE AVENUE NORTH
SEATTLE, WASHINGTON
REMEDIAL INVESTIGATION WORK PLAN

PROJECT NUMBER: Z076000073	DATE: 01/17/23	FIGURE
APPROVED BY:	DRAWN BY: ICD	3-5

ATLAS
6347 Seaview Avenue NW
Seattle, Washington 98107
Ph: (206) 781-1449 *** Fax: (206) 781-1543



LEGEND

- Silty sand (recent fill)
- Fill: sandy silt to silty sand
- Sand to silty sand (recent deposits)
- Glacially consolidated soils: dense silt, sandy silt & silty sand with varying amounts of gravel
- Outwash sand: dense sand with minor silt
- Gravel
- Wood debris
- Brick fragments
- Slurry (gravity) wall
- Boring
- Well screen interval, over excavated well/boring.
- Boring
- Well screen interval
- Approximate first encountered water level during drilling
- PRJ — Projected offset distance to the transect
- Approximate contact boundary

NOTES:

1. The depth and thickness of the subsurface strata indicated on the sections were generalized from and interpolated between the soil borings. Information on actual subsurface conditions exists only at the location of the soil borings and it is possible that subsurface conditions between the soil borings may vary from those indicated.

2. The boring logs and related information depict subsurface conditions only at the specific locations and dates indicated. soil conditions and water levels at other locations may differ from conditions occuring at these boring locations. Also, the passage of time may result in a change in the conditions at these boring locations.

0 10 20
APPROX. VERTICAL SCALE, FT

0 60 120
APPROX. HORIZONTAL SCALE, FT

GENERALIZED SUBSURFACE CROSS SECTION C - C'

BLOCK 37 SITE
600-630 WESTLAKE AVENUE NORTH
SEATTLE, WASHINGTON
REMEDIAL INVESTIGATION WORK PLAN

PROJECT NUMBER: Z076000073	DATE: 01/04/23	FIGURE 3-6
APPROVED BY:	DRAWN BY: ICD	

ATLAS
6347 Seaview Avenue NW
Seattle, Washington 98107
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LAKE UNION

VALLEY STREET

BROAD STREET

EXCAVATED:
-2' ELEVATION

EXCAVATED:
-12' ELEVATION

Block 43

EXCAVATED:
-4.5' ELEVATION

BLOCK 44 EXCAVATED:
UNKNOWN ELEVATION

Block 44

WESTLAKE AVENUE N.

MERCER STREET

Block 38 West

EXCAVATED:
-6.5' ELEVATION

Block 38 East

EXCAVATED:
15-16' ELEVATION

ALLEY - PARTIALLY
EXCAVATED

TERRY AVENUE N.

Block 31

EXCAVATED:
-4' ELEVATION

SMW-3
MW-209 17.26
MW-210 17.48
MW-211 17.56
MW-213 17.99
MW-214 17.73
MW-215 17.56
B-37-1(GEI-1) 17.80
B-37-3 17.99
B-37-4 18.50
PH-1 17.67
PH-2/AMW-1 18.37
B-37-5 18.53
B-37-6 18.46
PH-3 17.78
B-37-2(GEI-2)
MW-218 18.05*
MW-217 18.06*
MW-216 17.99*
MW-212 18.08
MW-45 17.95
MW-54 17.82
FMW-139 17.96
FMW-131
MW-50 19.09
B-37-8 18.46
MWR-1
MWR-2
MWR-3 18.83
MWR-4
MWR-5
MWR-6 18.11
B-37-7
B-37-9

17.50
18.00
18.50
19.00

Segment A
Segment B
Segment C
Segment D
Segment E
Segment F
Segment G
Segment H

LEGEND

- Monitoring Well
- Phase 1 Excavation
- Phase 2 Excavation-Area 1
- Phase 2 Excavation-Area 2
- Block 37 Property Boundary
- Sheet Pile Wall
- SLU Street Car Line
- Slurry (Gravity) Wall

NOTES:

1) All well locations are approximate.
2) Segment alphabet and number associated with grid sampling area. Refer to analytical data tables.
3) Locations of wells, excavation boundaries, and gravity wall based on maps obtained from Delta, Stantec, Farallon, GeoEngineers, and other consultants' reports.

Groundwater elevation measurements by Farallon Consulting, L.L.C.

17.99 Groundwater elevation (ft)

18.00 Groundwater elevation contour line (ft), dashed where inferred

* Groundwater elevation data collected by Atlas

Approximate groundwater flow direction

Contour Interval = 0.50 feet

N W E S

0 60 120

APPROXIMATE SCALE IN FEET

GROUNDWATER ELEVATION CONTOUR MAP FEBRUARY 16, 2022

BLOCK 37 SITE
600-630 WESTLAKE AVENUE NORTH
SEATTLE, WASHINGTON
REMEDIAL INVESTIGATION WORK PLAN

PROJECT NUMBER: Z076000082		DATE: 02/23/23	FIGURE 3-7
APPROVED BY: ES		DRAWN BY: ICD	

ATLAS
6347 Seaview Avenue NW
Seattle, Washington 98107
Ph: (206) 781-1449 Fax: (206) 781-1543

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LAKE UNION

SMW-3

MW-209
19.01

MW-210
19.20

MW-211
19.13

VALLEY STREET

MW-213
19.40

MW-214
19.38

MW-215

BROAD STREET

B-37-1 (GEI-1)
19.06

B-37-3
18.81*

B-37-4
19.25

PH-1
18.89

Segment B

Segment C

Segment D

Segment E

Segment F

Segment G

Segment H

Segment A

EXCAVATED:
-2' ELEVATION

EXCAVATED:
-12' ELEVATION

EXCAVATED:
-4.5' ELEVATION

Block 43

PH-2/MW-1
19.41

B-37-5
19.28

B-37-6
19.21

18.80
PH-3
B-37-2(GEI-2)

MWR-3
19.59

MWR-4

MW-45
19.27

19.20
MW-54

FMW-139
19.39

MWR-5

MWR-2
19.50

MWR-1

19.00

MW-50
18.78

MWR-6
18.61

B-37-7
18.19

B-37-8

B-37-9

18.50

MW-212
18.48

MW-218

MW-217

MW-216

Block 31

EXCAVATED:
-4' ELEVATION

TERRY AVENUE N.

WESTLAKE AVENUE N.

MERCER STREET

BLOCK 44 EXCAVATED:
UNKNOWN ELEVATION

Block 44

Block 38 West

EXCAVATED:
-6.5' ELEVATION

Block 38 East

EXCAVATED:
15-16' ELEVATION

ALLEY - PARTIALLY
EXCAVATED

LEGEND

- Monitoring Well
- Phase 1 Excavation
- Phase 2 Excavation-Area 1
- Phase 2 Excavation-Area 2
- Block 37 Property Boundary
- Sheet Pile Wall
- SLU Street Car Line
- Slurry (Gravity) Wall

17.40 Groundwater elevation (ft)

19.00 Groundwater elevation contour line (ft), dashed where inferred

* Groundwater elevation not used for contouring

Approximate groundwater flow direction

Contour Interval = 0.50 feet

NOTES:

1) All well locations are approximate.
2) Segment alphabet and number associated with grid sampling area. Refer to analytical data tables.
3) Locations of wells, excavation boundaries, and gravity wall based on maps obtained from Delta, Stantec, Farallon, GeoEngineers, and other consultants' reports.

Groundwater elevation measurements by Farallon Consulting, L.L.C.

N W E S

0 60 120

APPROXIMATE SCALE IN FEET

GROUNDWATER ELEVATION CONTOUR MAP MAY 17, 2022

BLOCK 37 SITE
600-630 WESTLAKE AVENUE NORTH
SEATTLE, WASHINGTON
REMEDIAL INVESTIGATION WORK PLAN

PROJECT NUMBER: Z076000082		DATE: 02/23/23	FIGURE 3-8
APPROVED BY: ES		DRAWN BY: ICD	

ATLAS
6347 Seaview Avenue NW
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Ph: (206) 781-1449 Fax: (206) 781-1543

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LAKE UNION

SMW-3

MW-209
17.84

MW-210
17.96

MW-211
17.96

18.00

VALLEY STREET

MW-213
18.21

MW-214
18.04

MW-215
18.05

18.50

BROAD STREET

B-37-1(GEI-1)
18.30

B-37-3
18.15

B-37-4
18.62

PH-1
18.11

Segment B

EXCAVATED:
-2' ELEVATION

PH-2/AMW-1
18.42

Segment C

B-37-5
18.60

B-37-6
18.56

Segment D

18.05
PH-3
B-37-2(GEI-2)

Segment E

EXCAVATED:
-12' ELEVATION

Block 43

MWR-3
18.60

MWR-4

18.45
MW-54

MW-45
17.99*

FMW-139
18.40

FMW-131

MWR-5

Segment F

MWR-2

Segment G

EXCAVATED:
-4.5' ELEVATION

MWR-1

MW-50
18.39

MWR-6
18.20

B-37-7
17.93

B-37-8

B-37-9

Segment H

Segment A

18.00

MW-212
18.13

MW-218

MW-217

MW-216

Block 31

EXCAVATED:
-4' ELEVATION

TERRY AVENUE N.

WESTLAKE AVENUE N.

MERCER STREET

BLOCK 44 EXCAVATED:
UNKNOWN ELEVATION

Block 44

Block 38 West

EXCAVATED:
-6.5' ELEVATION

Block 38 East

EXCAVATED:
15-16' ELEVATION

ALLEY - PARTIALLY
EXCAVATED

LEGEND

- Monitoring Well
- Phase 1 Excavation
- Phase 2 Excavation-Area 1
- Phase 2 Excavation-Area 2
- Block 37 Property Boundary
- Sheet Pile Wall
- SLU Street Car Line
- Slurry (Gravity) Wall

18.21 Groundwater elevation (ft)

18.00 Groundwater elevation contour line (ft), dashed where inferred

* Groundwater elevation not used for contouring

Approximate groundwater flow direction

Contour Interval = 0.50 feet

NOTES:

1) All well locations are approximate.
2) Segment alphabet and number associated with grid sampling area. Refer to analytical data tables.
3) Locations of wells, excavation boundaries, and gravity wall based on maps obtained from Delta, Stantec, Farallon, GeoEngineers, and other consultants' reports.

Groundwater elevation measurements by Farallon Consulting, L.L.C.

N W E S

0 60 120

APPROXIMATE SCALE IN FEET

GROUNDWATER ELEVATION CONTOUR MAP AUGUST 24-25, 2022

BLOCK 37 SITE
600-630 WESTLAKE AVENUE NORTH
SEATTLE, WASHINGTON
REMEDIAL INVESTIGATION WORK PLAN

PROJECT NUMBER: Z076000082		DATE: 02/23/23	FIGURE 3-9
APPROVED BY: ES		DRAWN BY: ICD	

ATLAS
6347 Seaview Avenue NW
Seattle, Washington 98107
Ph: (206) 781-1449 Fax: (206) 781-1543

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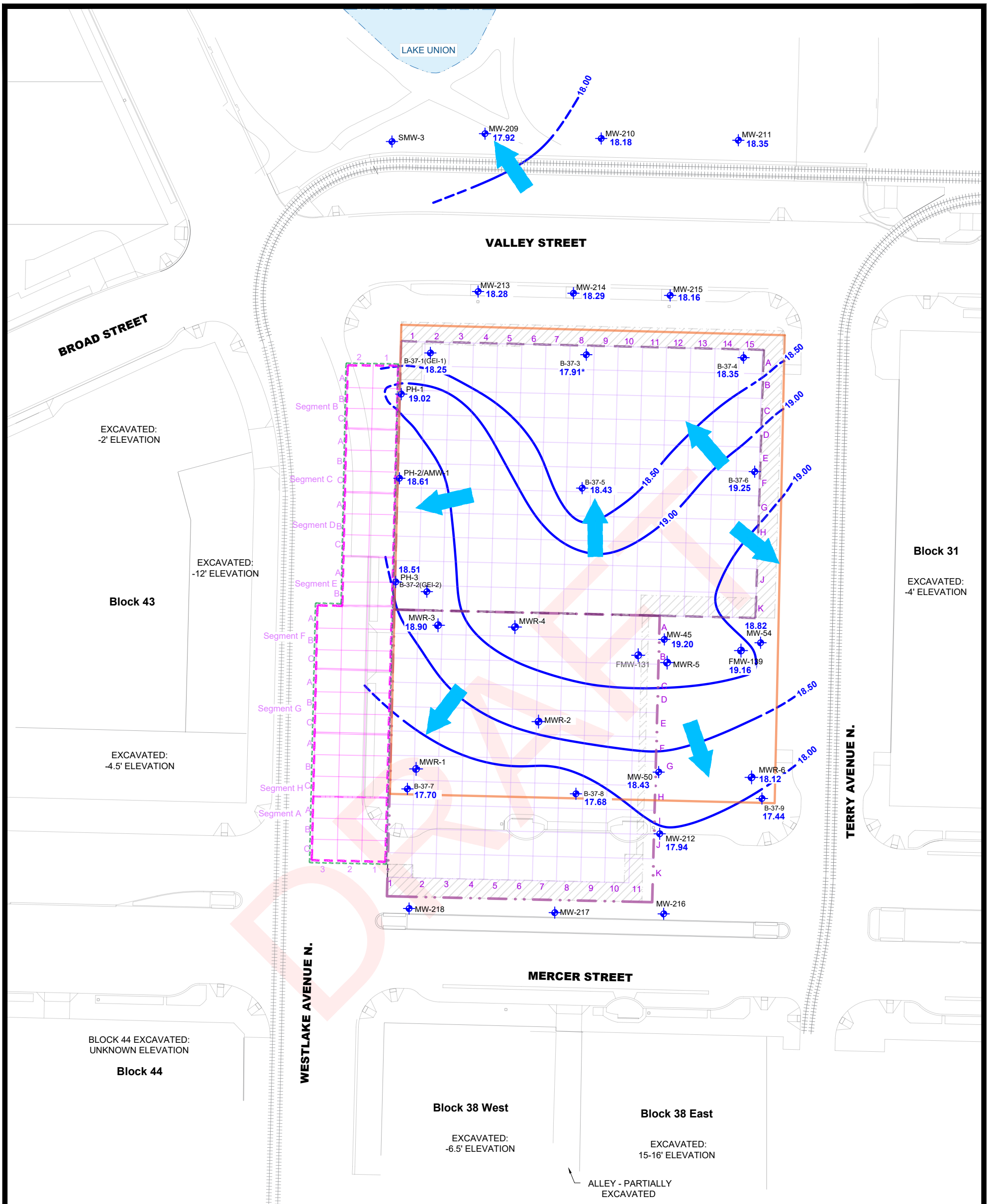

LEGEND

- Monitoring Well
- Phase 1 Excavation
- Phase 2 Excavation-Area 1
- Phase 2 Excavation-Area 2
- Block 37 Property Boundary
- Sheet Pile Wall
- SLU Street Car Line
- Slurry (Gravity) Wall

18.28 Groundwater elevation (ft)

18.00 Groundwater elevation contour line (ft), dashed where inferred

* Groundwater elevation not used for contouring

Approximate groundwater flow direction

Contour Interval = 0.50 feet

NOTES:

1) All well locations are approximate.
2) Segment alphabet and number associated with grid sampling area. Refer to analytical data tables.
3) Locations of wells, excavation boundaries, and gravity wall based on maps obtained from Delta, Stantec, Farallon, GeoEngineers, and other consultants' reports.

Groundwater elevation measurements by Farallon Consulting, L.L.C.

N W E S

0 60 120

APPROXIMATE SCALE IN FEET

GROUNDWATER ELEVATION CONTOUR MAP NOVEMBER 8-9, 2022

BLOCK 37 SITE
600-630 WESTLAKE AVENUE NORTH
SEATTLE, WASHINGTON
REMEDIAL INVESTIGATION WORK PLAN

PROJECT NUMBER: Z076000082		DATE: 02/23/23	FIGURE 3-10
APPROVED BY: ES		DRAWN BY: ICD	

ATLAS
6347 Seaview Avenue NW
Seattle, Washington 98107
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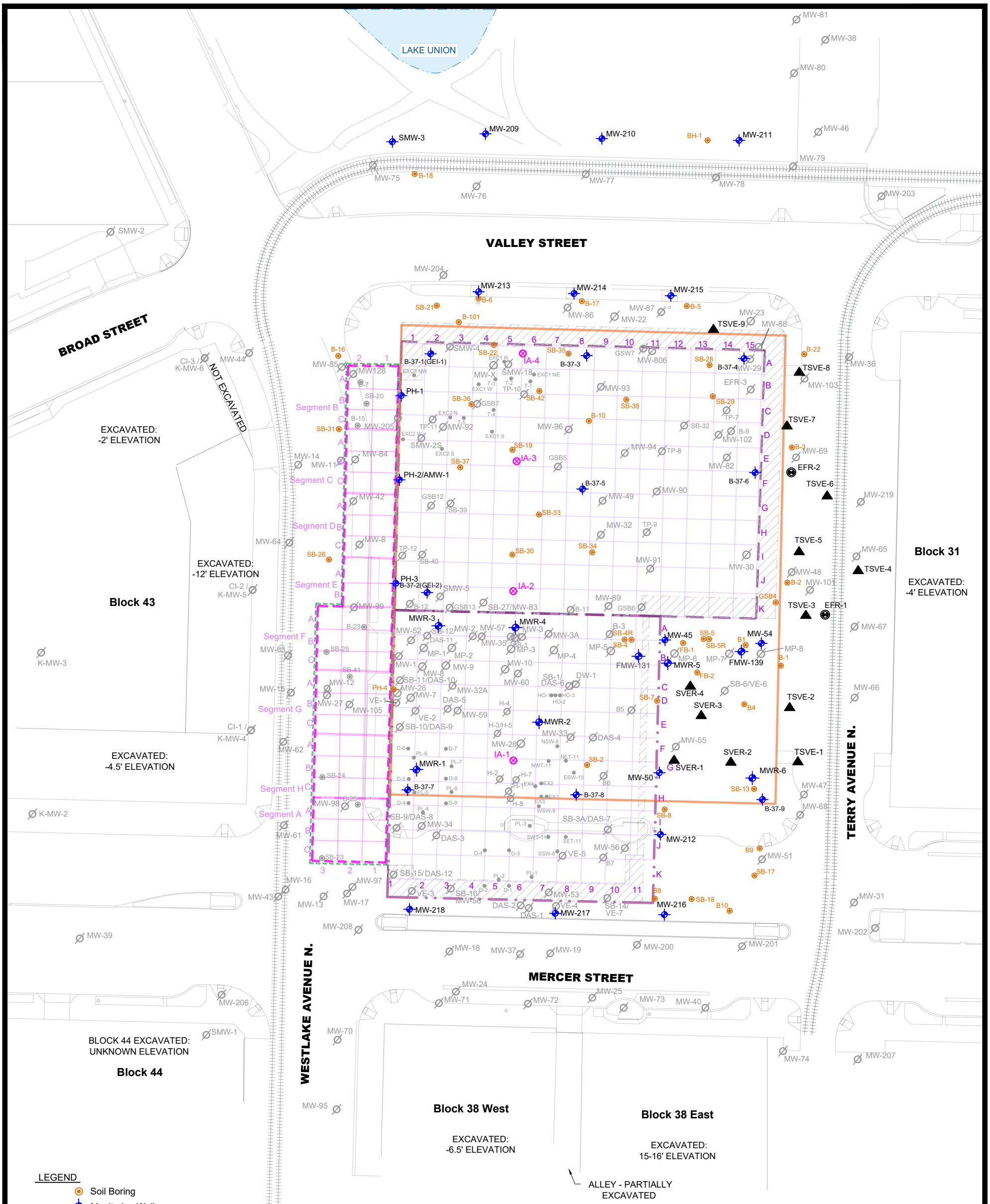

LEGEND

- Soil Boring
- Monitoring Well
- IA-1 Interim Action Well
- Grab Soil Sample
- SVER-1/TSVE-1 Soil Vapor Extraction Well
- EFR-1 Enhanced Fluid Recovery Well
- MW-87 SB-14 DAS-1 Abandoned Boring, Monitoring Well, or Air Sparge
- Phase 1 Excavation
- Phase 2 Excavation-Area 1
- Phase 2 Excavation-Area 2
- Block 37 Property Boundary
- Sheet Pile Wall
- SLU Street Car Line
- Slurry (Gravity) Wall

NOTES:

1) All sample locations are approximate.
2) Segment alphabet and number associated with grid sampling area. Refer to analytical data tables.
3) Locations of samples, excavation boundaries, and gravity walls based on maps obtained from Delta, Stantec, Farallon, GeoEngineers, and other consultants.

N W E S

0 60 120

APPROXIMATE SCALE IN FEET

HISTORICAL SAMPLING LOCATIONS

BLOCK 37 SITE
600-630 WESTLAKE AVENUE NORTH
SEATTLE, WASHINGTON
REMEDIAL INVESTIGATION WORK PLAN

PROJECT NUMBER: Z076000082		DATE: 08/02/23	FIGURE 4-1
APPROVED BY: ES		DRAWN BY: ICD	

ATLAS
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Seattle, Washington 98107
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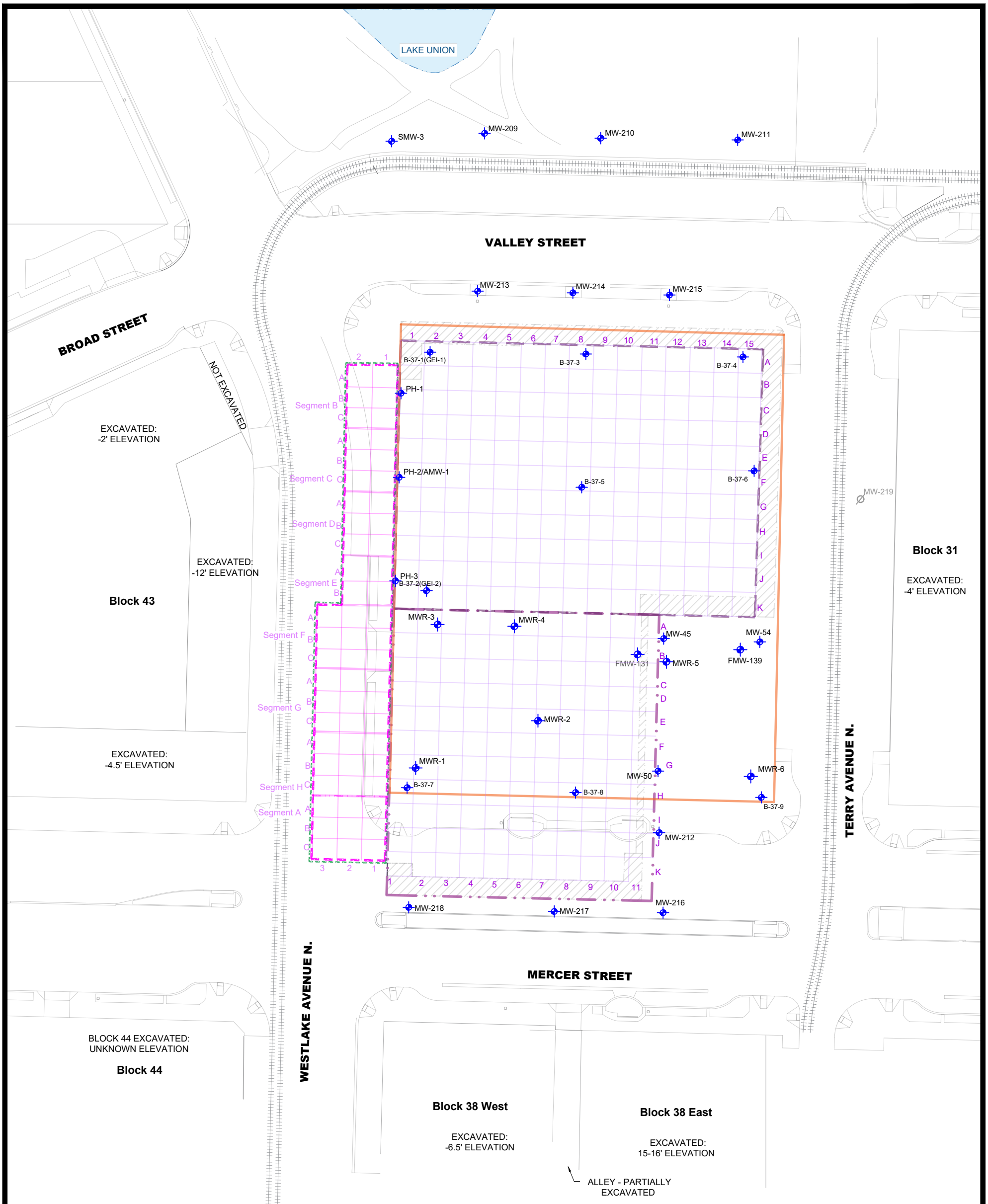

LEGEND

- Monitoring Well
- MW-219 Damaged/Missing Monitoring Well
- Phase 1 Excavation
- Phase 2 Excavation-Area 1
- Phase 2 Excavation-Area 2
- Block 37 Property Boundary
- Sheet Pile Wall
- SLU Street Car Line
- Slurry (Gravity) Wall

NOTES:

1) All well locations are approximate.
2) Segment alphabet and number associated with grid sampling area. Refer to analytical data tables.
3) Locations of wells, excavation boundaries, and gravity wall based on maps obtained from Delta, Stantec, Farallon, GeoEngineers, and other consultants' reports.

N
W E
S

0 60 120

APPROXIMATE SCALE IN FEET

EXISTING GROUNDWATER MONITORING NETWORK

BLOCK 37 SITE
600-630 WESTLAKE AVENUE NORTH
SEATTLE, WASHINGTON
REMEDIAL INVESTIGATION WORK PLAN

PROJECT NUMBER: Z076000082		DATE: 08/02/23	FIGURE 4-2
APPROVED BY: ES		DRAWN BY: ICD	

ATLAS
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Seattle, Washington 98107
Ph: (206) 781-1449 Fax: (206) 781-1543

Z076000073_23Q3.DWG

LAKE UNION

MW-209	02/17/22	08/17/22	11/30/22
GRO	<13.4	24.4 J	<22.6/<239

MW-210	02/17/22	08/17/22	11/30/22
GRO	<13.4	<22.6	<22.6/<235

MW-211	02/16/22	08/17/22	11/30/22
GRO	<13.4	23.5 J	<22.6/<241

SMW-3

MW-209

MW-210

MW-211

MW-213	02/17/22	08/17/22	12/01/22
GRO	168	46.9 J	<22.6/<233

MW-214	02/17/22	08/17/22	12/01/22
GRO	<13.4	<22.6	<22.6/<239

MW-215	02/17/22	08/17/22	12/01/22
GRO	<13.4	31.6 J	<22.6/<236

B-37-4	02/16/22	05/17/22	08/25/22	11/07/22
GRO	<100	<100	<100	<100

VALLEY STREET

MW-213

MW-214

MW-215

B-37-1	02/16/22	05/17/22	08/25/22	11/09/22
GRO	<100	<100	<100	<100

BROAD STREET

B-37-1(GEI-1)

B-37-3

B-37-4

B-37-3	02/16/22	05/17/22	08/25/22	11/07/22
GRO	<100	<100	<100	<100

PH-1	02/17/22	05/17/22	08/24/22	11/09/22
GRO	<100	<100	<100	<100

PH-1

Segment B

Segment C

Segment D

Segment E

Segment F

Segment G

Segment H

Segment A

EXCAVATED:
-2' ELEVATION

PH-2	02/17/22	05/17/22	08/24/22	11/09/22
GRO	120	<100	<100	<100

PH-2/AMW-1

B-37-5

B-37-6

B-37-6	02/16/22	05/18/22	08/25/22	11/07/22
GRO	<100	<122	<100	<100

B-37-5	02/17/22	05/18/22	08/25/22	11/07/22
GRO	<100	<100	<100	<100

PH-3	02/17/22	05/18/22	08/24/22	11/08/22
GRO	<100	<100	<100	<100

-12' ELEVATION

PH-3
B-37-2(GEI-2)

Block 43

B-37-2	02/18/22	05/18/22	08/24/22	11/09/22
GRO	<100	<100	<100	<100

FMW-131	05/18/22	08/24/22	11/08/22
GRO	<100	<100	<100

MWR-3

MWR-4

MWR-4	12/01/22
GRO	<22.6/<237

MW-54	02/16/22	05/18/22	08/24/22	11/08/22
GRO	<100	<100	<100	<100

Block 31

EXCAVATED:
-4' ELEVATION

MW-45

MW-54

FMW-131

MWR-5

FMW-139

FMW-139	02/16/22	05/18/22	08/24/22	11/08/22
GRO	<100	<100	<100	<100

MWR-5	12/01/22
GRO	1,580/<236

MW-45	02/16/22	05/17/22	08/24/22	11/08/22
GRO	410	160	<100	<100

MWR-3	02/17/22	05/18/22	08/24/22	11/08/22	12/01/22
GRO	<100	<100	<100	<100	<22.6/<239

MWR-2

MW-50	02/18/22	05/17/22	08/24/22	11/08/22
GRO	<100	<100	<100	<100

EXCAVATED:
-4.5' ELEVATION

MWR-1

MW-50

MWR-6

B-37-7

B-37-8

B-37-9

MWR-1	12/01/22
GRO	<22.6/<243

B-37-7	02/17/22	05/18/22	08/25/22	11/09/22
GRO	<100	<100	<100	<100

B-37-8	02/17/22	05/18/22	08/25/22	11/09/22
GRO	<100	<100	<100	<100

MWR-6	02/17/22	05/17/22	08/24/22	11/08/22
GRO	<100	<100	<100	<100

MW-212

B-37-9	02/17/22	05/17/22	08/24/22	11/08/22
GRO	<100	<100	<100	<100

MW-218

MW-217

MW-216

MW-218	02/16/22	08/16/22
GRO	126	91 J

MW-217	02/16/22	08/16/22
GRO	110	127

MW-216	02/16/22	08/16/22
GRO	<13.4	33.2 J

MW-212	02/17/22	08/17/22	11/30/22
GRO	<13.4	45.4 J	43.4 J/<239

WESTLAKE AVENUE N.

MERCER STREET

BLOCK 44 EXCAVATED:
UNKNOWN ELEVATION

Block 44

Block 38 West

EXCAVATED:
-6.5' ELEVATION

Block 38 East

EXCAVATED:
15-16' ELEVATION

ALLEY - PARTIALLY EXCAVATED

LEGEND

- Monitoring Well
- Phase 1 Excavation
- Phase 2 Excavation-Area 1
- Phase 2 Excavation-Area 2
- Block 37 Property Boundary
- Sheet Pile Wall
- SLU Street Car Line
- Slurry (Gravity) Wall

NOTES:

TPH-GRO = Total Petroleum Hydrocarbons-Gasoline Range Organics
1) All monitoring well locations are approximate and concentrations are expressed in micrograms per liter (µg/L)
2) Refer to Table 4-2a for details
3) TPH-GRO screening level is 800 µg/L
< = less than the reported method detection limit
Bold = The detection exceeds the screening level

Approximate extent of detected concentrations exceeding the screening level

N
W E
S

0 60 120

APPROXIMATE SCALE IN FEET

2022 GROUNDWATER TPH-GRO CONCENTRATIONS

BLOCK 37 SITE
600-630 WESTLAKE AVENUE NORTH
SEATTLE, WASHINGTON
REMEDIAL INVESTIGATION WORK PLAN

PROJECT NUMBER:	Z076000082	DATE:	08/02/23	FIGURE
APPROVED BY:	ES	DRAWN BY:	ICD	4-2a

ATLAS
6347 Seaview Avenue NW
Seattle, Washington 98107
Ph: (206) 781-1449 Fax: (206) 781-1543

Z076000073_23Q3.DWG

LAKE UNION

MW-209	02/17/22	08/17/22	11/30/22
TEH	215.5	209.1	<359

MW-210	02/17/22	08/17/22	11/30/22
TEH	332	236	<353

MW-211	02/16/22	08/17/22	11/30/22
TEH	228.5	<94.1	<362

SMW-3

MW-209

MW-210

MW-211

MW-213	02/17/22	08/17/22	12/01/22
TEH	531	220	<350

MW-214	02/17/22	08/17/22	12/01/22
TEH	116	<94.9	<358

MW-215	02/17/22	08/17/22	12/01/22
TEH	119	<94.3	<354

B-37-4	02/16/22	05/17/22	08/25/22	11/07/22
TEH	310	300	360	320

VALLEY STREET

B-37-1	02/16/22	05/17/22	08/25/22	11/09/22
TEH	700	<270	400	500

MW-213

MW-214

MW-215

BROAD STREET

PH-1	02/17/22	05/17/22	08/24/22	11/09/22
TEH	325	<260	<270	260

B-37-1(GEI-1)

B-37-3

B-37-4

B-37-3	02/16/22	05/17/22	08/25/22	11/07/22
TEH	200	<260	<260	<250

PH-1

Segment B

Segment C

Segment D

Segment E

Segment F

Segment G

Segment H

Segment A

EXCAVATED:
-2' ELEVATION

PH-2	02/17/22	05/17/22	08/24/22	11/09/22
TEH	165	<260	<260	340

PH-2/AMW-1

B-37-5

B-37-6

B-37-5	02/17/22	05/18/22	08/25/22	11/07/22
TEH	165	<270	<250	310

B-37-6	02/16/22	05/18/22	08/25/22	11/07/22
TEH	200	<260	330	260

Block 31

EXCAVATED:
-4' ELEVATION

PH-3	02/17/22	05/18/22	08/24/22	11/08/22
TEH	165	<260	<250	<250

-12' ELEVATION

PH-3
B-37-2(GEI-2)

Block 43

MW-54	02/16/22	05/18/22	08/24/22	11/08/22
TEH	380	<280	<250	<250

FMW-131	05/18/22	08/24/22	11/08/22
TEH	365	<260	<250

B-37-2	02/18/22	05/18/22	08/24/22	11/09/22
TEH	200	<270	<260	<250

MWR-3

MWR-4

MWR-4	12/01/22
TEH	<355

MW-45

MW-54

FMW-131

MWR-5

FMW-139

FMW-139	02/16/22	05/18/22	08/24/22	11/08/22
TEH	360	<270	<260	340

MWR-5	12/01/22
TEH	1,627

MW-45	02/16/22	05/17/22	08/24/22	11/08/22
TEH	700	390	320	300

MWR-3	02/17/22	05/18/22	08/24/22	11/08/22	12/01/22
TEH	<165	<280	<260	<250	<359

MWR-2

MW-50	02/18/22	05/17/22	08/24/22	11/08/22
TEH	1,030	340	560	650

EXCAVATED:
-4.5' ELEVATION

MWR-1

MWR-6

MW-50

MWR-1	12/01/22
TEH	<365

B-37-7

B-37-8

B-37-9

MWR-6	02/17/22	05/17/22	08/24/22	11/08/22
TEH	415	<270	270	350

B-37-7	02/17/22	05/18/22	08/25/22	11/09/22
TEH	165	<370	320	<250

B-37-8	02/17/22	05/18/22	08/25/22	11/09/22
TEH	165	<250	<250	<250

MW-212

B-37-9	02/17/22	05/17/22	08/24/22	11/08/22
TEH	285	<280	360	430

MW-218

MW-217

MW-216

MW-212	02/17/22	08/17/22	11/30/22
TEH	431.5	221	<359

MW-218	02/16/22	08/16/22
TEH	1,210	861.2

MW-217	02/16/22	08/16/22
TEH	1,458	1,108

MW-216	02/16/22	08/16/22
TEH	387.5	576.6

WESTLAKE AVENUE N.

MERCER STREET

BLOCK 44 EXCAVATED:
UNKNOWN ELEVATION

Block 44

Block 38 West

EXCAVATED:
-6.5' ELEVATION

Block 38 East

EXCAVATED:
15-16' ELEVATION

ALLEY - PARTIALLY EXCAVATED

LEGEND

- Monitoring Well
- Phase 1 Excavation
- Phase 2 Excavation-Area 1
- Phase 2 Excavation-Area 2
- Block 37 Property Boundary
- Sheet Pile Wall
- SLU Street Car Line
- Slurry (Gravity) Wall
- Approximate extent of detected concentrations exceeding the screening level

NOTES:

TEH = Total Extractable Hydrocarbons
1) All monitoring well locations are approximate and concentrations are expressed in micrograms per liter (µg/L)
2) Refer to Table 4-2a for details
3) TEH screening level is 500 µg/L
< = less than the reported method detection limit
Bold = The detection exceeds the screening level
-- = Not analyzed, sampled, or reported

N
W E
S

0 60 120

APPROXIMATE SCALE IN FEET

2022 GROUNDWATER TOTAL EXTRACTABLE HYDROCARBONS CONCENTRATIONS

BLOCK 37 SITE
600-630 WESTLAKE AVENUE NORTH
SEATTLE, WASHINGTON
REMEDIAL INVESTIGATION WORK PLAN

PROJECT NUMBER: Z076000082	DATE: 08/02/23	FIGURE
APPROVED BY: ES	DRAWN BY: ICD	4-2b

ATLAS
6347 Seaview Avenue NW
Seattle, Washington 98107
Ph: (206) 781-1449 Fax: (206) 781-1543

Z076000073_23Q1_2.DWG

LAKE UNION

MW-209	02/17/22	08/17/22	11/30/22
B	<0.1	<0.1	<0.1

MW-210	02/17/22	08/17/22	11/30/22
B	<0.1	<0.1	<0.1

MW-211	02/16/22	08/17/22	11/30/22
B	<0.1	<0.1	<0.1

SMW-3

MW-209

MW-210

MW-211

MW-213	02/17/22	08/17/22	12/01/22
B	1.6	<0.1	<0.1

MW-214	02/17/22	08/17/22	12/01/22
B	<0.1	<0.1	<0.1

MW-215	02/17/22	08/17/22	12/01/22
B	<0.1	<0.1	<0.1

B-37-4	02/16/22	05/17/22	08/25/22	11/07/22
B	<0.2	<0.2	<0.2	<0.2

VALLEY STREET

B-37-1	02/16/22	05/17/22	08/25/22	11/09/22
B	<0.2	<0.2	<0.2	<0.2

MW-213

MW-214

MW-215

BROAD STREET

PH-1	02/17/22	05/17/22	08/24/22	11/09/22
B	<0.2	<0.2	<0.2	<0.2

B-37-1(GEI-1)

B-37-3

B-37-4

PH-1

B-37-3	02/16/22	05/17/22	08/25/22	11/07/22
B	<0.2	<0.2	<0.2	<0.2

Segment B

B-37-6	02/16/22	05/18/22	08/25/22	11/07/22
B	<0.2	<0.2	<0.2	<0.2

EXCAVATED:
-2' ELEVATION

PH-2	02/17/22	05/17/22	08/24/22	11/09/22
B	2.4	1.3	0.54	0.43

PH-2/AMW-1

Segment C

B-37-5

B-37-6

B-37-5	02/17/22	05/18/22	08/25/22	11/07/22
B	<0.2	<0.2	<0.2	<0.2

Segment D

Block 31

EXCAVATED:
-4' ELEVATION

PH-3	02/17/22	05/18/22	08/24/22	11/08/22
B	<0.2	<0.2	<0.2	<0.2

-12' ELEVATION

PH-3
B-37-2(GEI-2)

Segment E

MW-54	02/16/22	05/18/22	08/24/22	11/08/22
B	<0.2	<0.2	<0.2	<0.2

Block 43

FMW-131	05/18/22	08/24/22	11/08/22
B	<0.2	<0.2	<0.2

MWR-3

MWR-4

B-37-2	02/18/22	05/18/22	08/24/22	11/09/22
B	<0.2	**2.8**	<0.2	2.0

Segment F

MWR-4	12/01/22
B	<0.1

MW-45

MW-54

FMW-131

MWR-5

FMW-139

FMW-139	02/16/22	05/18/22	08/24/22	11/08/22
B	<0.2	<0.2	<0.2	<0.2

MWR-5	12/01/22
B	**3.2**

MW-45	02/16/22	05/17/22	08/24/22	11/08/22
B	<0.2	<0.2	<0.2	<0.2

MWR-3	02/17/22	05/18/22	08/24/22	11/08/22	12/01/22
B	<0.2	<0.2	<0.2	<0.2	<0.1

Segment G

MWR-2

MW-50	02/18/22	05/17/22	08/24/22	11/08/22
B	<0.2	<0.2	<0.2	<0.2

EXCAVATED:
-4.5' ELEVATION

MWR-1

MW-50

MWR-6

MWR-1	12/01/22
B	0.2

B-37-7

B-37-8

B-37-9

Segment H

MWR-6	02/17/22	05/17/22	08/24/22	11/08/22
B	<0.2	<0.2	<0.2	<0.2

B-37-8	02/17/22	05/18/22	08/25/22	11/09/22
B	<0.2	<0.2	<0.2	<0.2

B-37-7	02/17/22	05/18/22	08/25/22	11/09/22
B	<0.2	<0.2	<0.2	<0.2

Segment A

MW-212

B-37-9	02/17/22	05/17/22	08/24/22	11/08/22
B	<0.2	<0.2	<0.2	<0.2

MW-218

MW-217

MW-216

MW-212	02/17/22	08/17/22	11/30/22
B	<0.1	<0.1	<0.1

MW-218	02/16/22	08/16/22
B	<0.1	<0.1

MW-217	02/16/22	08/16/22
B	<0.1	<0.1

MW-216	02/16/22	08/16/22
B	0.2 J	<0.1

WESTLAKE AVENUE N.

MERCER STREET

BLOCK 44 EXCAVATED:
UNKNOWN ELEVATION

Block 44

Block 38 West

EXCAVATED:
-6.5' ELEVATION

Block 38 East

EXCAVATED:
15-16' ELEVATION

ALLEY - PARTIALLY EXCAVATED

LEGEND

- Monitoring Well
- Phase 1 Excavation
- Phase 2 Excavation-Area 1
- Phase 2 Excavation-Area 2
- Block 37 Property Boundary
- Sheet Pile Wall
- SLU Street Car Line
- Slurry (Gravity) Wall
- Approximate extent of detected concentrations exceeding the screening level

NOTES:

1) All monitoring well locations are approximate and concentrations are expressed in micrograms per liter (µg/L)
2) Refer to Table 4-2a for details
3) Benzene screening level is 2.4 µg/L
< = less than the reported method detection limit
J = estimated concentration above the adjusted method detection limit and below the adjusted reporting limit
Bold = The detection exceeds the screening level

N
W E
S

0 60 120

APPROXIMATE SCALE IN FEET

2022 GROUNDWATER BENZENE CONCENTRATIONS

BLOCK 37 SITE
600-630 WESTLAKE AVENUE NORTH
SEATTLE, WASHINGTON
REMEDIAL INVESTIGATION WORK PLAN

PROJECT NUMBER: Z076000082	DATE: 06/27/23	FIGURE
APPROVED BY: ES	DRAWN BY: ICD	**4-2c**

ATLAS
6347 Seaview Avenue NW
Seattle, Washington 98107
Ph: (206) 781-1449 Fax: (206) 781-1543

Z076000073_23Q1_2.DWG

LAKE UNION

MW-209	02/17/22	08/17/22	11/30/22
N	--	<0.02	<0.18

MW-210	02/17/22	08/17/22	11/30/22
N	--	<0.02	<0.18

MW-211	02/16/22	08/17/22	11/30/22
N	--	<0.02	<0.18

SMW-3

MW-209

MW-210

MW-211

MW-213	02/17/22	08/17/22	12/01/22
N	--	0.35	<0.18

MW-214	02/17/22	08/17/22	12/01/22
N	--	<0.02	<0.18

MW-215	02/17/22	08/17/22	12/01/22
N	--	<0.02	0.24 J

B-37-4	02/16/22	05/17/22	08/25/22	11/07/22
N	<0.1	<0.1	<0.099	<0.097

VALLEY STREET

MW-213

MW-214

MW-215

B-37-1	02/16/22	05/17/22	08/25/22	11/09/22
N	0.037 J	0.12	<0.1	<0.096

BROAD STREET

PH-1	02/17/22	05/17/22	08/24/22	11/09/22
N	0.024 J	<0.1	<0.097	<0.095

B-37-1(GEI-1)

B-37-3

B-37-4

PH-1

B-37-3	02/16/22	05/17/22	08/25/22	11/07/22
N	0.016 J	<0.1	<0.097	<0.1

Segment B

B-37-6	02/16/22	05/18/22	08/25/22	11/07/22
N	0.024 J	<0.1	<0.1	<0.096

EXCAVATED:
-2' ELEVATION

PH-2	02/17/22	05/17/22	08/24/22	11/09/22
N	0.14	0.31	<0.099	<0.096

PH-2/AMW-1

Segment C

B-37-5

B-37-6

B-37-5	02/17/22	05/18/22	08/25/22	11/07/22
N	<0.1	<0.098	<0.096	<0.096

Segment D

Block 31

EXCAVATED:
-4' ELEVATION

MW-54	02/16/22	05/18/22	08/24/22	11/08/22
N	<0.1	<0.1	<0.1	<0.1

PH-3	02/17/22	05/18/22	08/24/22	11/08/22
N	<0.096	<0.1	<0.096	<0.095

-12' ELEVATION

PH-3
B-37-2(GEI-2)

Segment E

Block 43

FMW-131	05/18/22	08/24/22	11/08/22
N	<0.1	<0.097	<0.095

MWR-3

MWR-4

MW-45

MW-54

B-37-2	02/18/22	05/18/22	08/24/22	11/09/22
N	<0.096	<0.099	<0.097	<0.095

Segment F

MWR-4	12/01/22
N	<0.18

FMW-131

MWR-5

FMW-139

FMW-139	02/16/22	05/18/22	08/24/22	11/08/22
N	<0.11	<0.1	<0.096	<0.095

MWR-5	12/01/22
N	45

MW-45	02/16/22	05/17/22	08/24/22	11/08/22
N	2.2	0.24	<0.095	0.18

MWR-3	02/17/22	05/18/22	08/24/22	11/08/22	12/01/22
N	<0.098	<0.1	<0.096	<0.095	<0.096

Segment G

MWR-2

MW-50	02/18/22	05/17/22	08/24/22	11/08/22
N	30	2.7	4.0	12

EXCAVATED:
-4.5' ELEVATION

MWR-1

MW-50

MWR-6

MWR-1	12/01/22
N	<0.18

B-37-7

B-37-8

B-37-9

Segment H

MWR-6	02/17/22	05/17/22	08/24/22	11/08/22
N	<0.1	<0.11	<0.096	<0.096

B-37-7	02/17/22	05/18/22	08/25/22	11/09/22
N	<0.1	<0.11	<0.095	<0.095

Segment A

B-37-8	02/17/22	05/18/22	08/25/22	11/09/22
N	<0.099	<0.1	<0.096	<0.095

MW-212

B-37-9	02/17/22	05/17/22	08/24/22	11/08/22
N	0.034 J	0.016 J	<0.097	<0.095

MW-216

MW-218

MW-217

MW-212	02/17/22	08/17/22	11/30/22
N	--	<0.02	<0.18

MW-218	02/16/22	08/16/22
N	<0.02	<0.18

MW-217	02/16/22	08/16/22
N	0.24	<0.18

MW-216	02/16/22	08/16/22
N	<0.02	<0.18

WESTLAKE AVENUE N.

MERCER STREET

BLOCK 44 EXCAVATED:
UNKNOWN ELEVATION

Block 44

Block 38 West

EXCAVATED:
-6.5' ELEVATION

Block 38 East

EXCAVATED:
15-16' ELEVATION

ALLEY - PARTIALLY EXCAVATED

LEGEND

- Monitoring Well
- Phase 1 Excavation
- Phase 2 Excavation-Area 1
- Phase 2 Excavation-Area 2
- Block 37 Property Boundary
- Sheet Pile Wall
- SLU Street Car Line
- Slurry (Gravity) Wall
- Approximate extent of detected concentrations exceeding the screening level

NOTES:

1) All monitoring well locations are approximate and concentrations are expressed in micrograms per liter (µg/L)
2) Refer to Table 4-2a for details
3) Naphthalene screening level is 8.9 µg/L
< = less than the reported method detection limit
J = estimated concentration above the adjusted method detection limit and below the adjusted reporting limit
Bold = The detection exceeds the screening level

N
W E
S

0 60 120

APPROXIMATE SCALE IN FEET

2022 GROUNDWATER NAPHTHALENE CONCENTRATIONS

BLOCK 37 SITE
600-630 WESTLAKE AVENUE NORTH
SEATTLE, WASHINGTON
REMEDIAL INVESTIGATION WORK PLAN

PROJECT NUMBER: Z076000082	DATE: 02/14/23	FIGURE
APPROVED BY: ES	DRAWN BY: ICD	4-2d

ATLAS
6347 Seaview Avenue NW
Seattle, Washington 98107
Ph: (206) 781-1449 Fax: (206) 781-1543

Z076000073_23Q1_2.DWG

LAKE UNION

MW-209	02/17/22	08/17/22
cPAH	0.001	0.0145

MW-210	02/17/22	08/17/22
cPAH	<0.009	<0.01

MW-211	02/16/22	08/17/22
cPAH	<0.009	<0.01

SMW-3

MW-209

MW-210

MW-211

MW-213	02/17/22	08/17/22
cPAH	<0.009	<0.01

MW-214	02/17/22	08/17/22
cPAH	<0.009	<0.01

MW-215	02/17/22	08/17/22
cPAH	<0.009	<0.01

B-37-4	02/16/22	05/17/22	08/25/22	11/07/22
cPAH	<0.0076	<0.0076	<0.0075	<0.0073

VALLEY STREET

MW-213

MW-214

MW-215

B-37-1	02/16/22	05/17/22	08/25/22	11/09/22
cPAH	<0.0076	<0.0083	<0.0076	<0.0072

BROAD STREET

PH-1	02/17/22	05/17/22	08/25/22	11/09/22
cPAH	<0.0076	<0.0076	<0.0073	<0.0072

B-37-1(GEI-1)

B-37-3

B-37-4

PH-1

B-37-3	02/16/22	05/17/22	08/25/22	11/07/22
cPAH	<0.0076	0.0085	<0.0073	<0.0076

Segment B

EXCAVATED:
-2' ELEVATION

PH-2	02/17/22	05/17/22	08/25/22	11/09/22
cPAH	<0.0072	<0.0076	<0.0075	<0.0072

B-37-6	02/16/22	05/18/22	08/25/22	11/07/22
cPAH	<0.0076	<0.0076	<0.0076	<0.0072

PH-2/AMW-1

B-37-6

B-37-5

B-37-5	02/17/22	05/18/22	08/25/22	07/11/22
cPAH	<0.0076	<0.0074	<0.0072	<0.0072

Segment C

Segment D

Block 31

EXCAVATED:
-4' ELEVATION

PH-3	02/17/22	05/18/22	08/25/22	11/08/22
cPAH	<0.0072	<0.0076	<0.0072	<0.0072

-12' ELEVATION

PH-3

B-37-2(GEI-2)

MW-54	02/16/22	05/18/22	08/24/22	11/08/22
cPAH	<0.0076	<0.0083	<0.0072	<0.0072

Block 43

FMW-131	05/18/22	08/24/22	11/08/22
cPAH	<0.0076	<0.0073	<0.0072

Segment E

B-37-2	02/18/22	05/18/22	08/24/22	11/07/22
cPAH	<0.0072	<0.0075	–	–

MWR-3

MWR-4

MW-45

MW-54

FMW-131

FMW-139

MWR-5

FMW-139	02/16/22	05/18/22	08/24/22	11/08/22
cPAH	<0.0083	<0.0076	<0.0072	<0.0072

Segment F

MW-45	02/16/22	05/17/22	08/24/22	11/08/22
cPAH	<0.0075	<0.0083	<0.0072	<0.0072

MWR-3	02/17/22	05/18/22	08/24/22	11/08/22
cPAH	<0.0074	<0.0076	<0.0072	<0.0072

Segment G

MWR-2

MW-50	02/18/22	05/17/22	08/25/22	11/08/22
cPAH	0.03	0.017	0.011	0.0083

EXCAVATED:
-4.5' ELEVATION

MWR-1

MW-50

MWR-6

B-37-7

B-37-8

Segment H

B-37-7	02/17/22	05/18/22	08/25/22	11/09/22
cPAH	<0.0076	<0.0083	<0.0072	<0.0072

Segment A

B-37-8	02/17/22	05/18/22	08/25/22	11/09/22
cPAH	<0.0075	<0.0076	<0.0072	<0.0072

B-37-9

MWR-6	02/17/22	05/17/22	08/24/22	11/08/22
cPAH	<0.0076	<0.0083	<0.0072	<0.0072

MW-212

B-37-9	02/17/22	05/17/22	08/24/22	11/08/22
cPAH	<0.0076	<0.0091	<0.0073	<0.0072

MW-218

MW-217

MW-216

MW-218	02/16/22	08/16/22
cPAH	<0.009	<0.01

MW-217	02/16/22	08/16/22
cPAH	<0.0009	<0.01

MW-216	02/17/22	08/17/22
cPAH	<0.0009	<0.01

MW-212	02/17/22	08/17/22
cPAH	<0.01	<0.01

MERCER STREET

WESTLAKE AVENUE N.

BLOCK 44 EXCAVATED:
UNKNOWN ELEVATION

Block 44

Block 38 West

EXCAVATED:
-6.5' ELEVATION

Block 38 East

EXCAVATED:
15-16' ELEVATION

ALLEY - PARTIALLY EXCAVATED

LEGEND

- Monitoring Well
- Phase 1 Excavation
- Phase 2 Excavation-Area 1
- Phase 2 Excavation-Area 2
- Block 37 Property Boundary
- Sheet Pile Wall
- SLU Street Car Line
- Slurry (Gravity) Wall

NOTES:

cPAHs = Carcinogenic Polycyclic Aromatic Hydrocarbon: Value is calculated Total Toxicity Equivalence Concentration
1) All monitoring well locations are approximate and concentrations are expressed in micrograms per liter (µg/L)
2) Refer to Table 4-2b for details
3) cPAHs screening level is 0.0151 µg/L
< = less than the reported method detection limit
-- = Not analyzed, sampled, or reported

N
W E
S

0 60 120

APPROXIMATE SCALE IN FEET

2022 GROUNDWATER TOTAL cPAHs CONCENTRATIONS

BLOCK 37 SITE
600-630 WESTLAKE AVENUE NORTH
SEATTLE, WASHINGTON
REMEDIAL INVESTIGATION WORK PLAN

PROJECT NUMBER: Z076000082	DATE: 02/23/23	FIGURE
APPROVED BY: ES	DRAWN BY: ICD	4-2e

ATLAS
6347 Seaview Avenue NW
Seattle, Washington 98107
Ph: (206) 781-1449 Fax: (206) 781-1543

Z076000073_23Q1_2.DWG

LAKE UNION

MW-209	02/17/22	08/17/22	11/30/22
Pb T	0.042 J	<0.063 J	0.092 J
Pb D	0.15	<0.069 J	<0.056

MW-210	02/17/22	08/17/22	11/30/22
Pb T	<0.058 J	<0.056	<0.056
Pb D	<0.045 J	<0.056	<0.056

MW-211	02/16/22	08/17/22	11/30/22
Pb T	0.031 J	<0.056	<0.056
Pb D	<0.028	<0.056	<0.056

SMW-3

MW-209

MW-210

MW-211

MW-213	02/17/22	08/17/22	12/01/22
Pb T	1.0	0.39 J	0.72
Pb D	0.34	0.2 J	0.14 J

MW-214	02/17/22	08/17/22	12/01/22
Pb T	0.11	<0.056	0.079 J
Pb D	<0.03	<0.056	<0.056

MW-215	02/17/22	08/17/22	12/01/22
Pb T	0.41	1.3	0.49 J
Pb D	0.11	0.09 J	0.47 J

B-37-4	02/16/22	05/17/22	08/25/22	11/07/22
Pb T	<1.1	<1.1	<1.1	<1.1
Pb D	<1.0	<1.0	<1.0	<1.0

VALLEY STREET

MW-213

MW-214

MW-215

B-37-1	02/16/22	05/17/22	08/25/22	11/09/22
Pb T	<1.1	<1.1	<1.1	<1.1
Pb D	<1.0	<1.0	<1.0	<1.0

BROAD STREET

PH-1	02/17/22	05/17/22
Pb T	<1.1	<1.1
Pb D	--	<1.0

B-37-1(GEI-1)

B-37-3

B-37-4

PH-1

B-37-3	02/16/22	05/17/22	08/25/22	11/07/22
Pb T	<1.1	<1.1	<1.1	<1.1
Pb D	<1.0	<1.0	<1.0	<1.0

Segment B

EXCAVATED:
-2' ELEVATION

PH-2	02/17/22	05/17/22	08/25/22
Pb T	<1.1	<1.1	<1.1
Pb D	--	<1.0	<1.0

PH-2/AMW-1

Segment C

B-37-5

B-37-6

B-37-6	02/16/22	05/18/22	08/25/22	11/07/22
Pb T	<1.1	<1.1	<1.1	<1.1
Pb D	<1.0	<1.0	<1.0	<1.0

B-37-5	02/17/22	05/18/22	08/25/22	11/07/22
Pb T	<1.1	<1.1	<1.1	<1.1
Pb D	--	<1.0	<1.0	<1.0

Segment D

PH-3	02/17/22	05/18/22	08/25/22	11/08/22
Pb T	<1.1	<1.1	<1.1	<1.1
Pb D	--	<1.0	<1.0	<1.0

-12' ELEVATION

PH-3
B-37-2(GEI-2)

Segment E

MW-54	02/16/22	05/18/22	08/24/22	11/08/22
Pb T	<1.1	<1.1	<1.1	<1.1
Pb D	<1.0	<1.0	<1.0	<1.0

Block 31

EXCAVATED:
-4' ELEVATION

Block 43

B-37-2	02/18/22
Pb T	<1.1
Pb D	--

FMW-131	05/18/22	08/24/22	11/08/22
Pb T	<1.1	<1.1	1.2
Pb D	<1.0	<1.0	<1.0

MWR-3

MWR-4

Segment F

MWR-4	12/01/22
Pb T	<0.06
Pb D	<0.06

MW-45

MW-54

FMW-131

MWR-5

FMW-139

FMW-139	02/16/22	05/18/22	08/24/22	11/08/22
Pb T	<1.1	<1.1	<1.1	<1.1
Pb D	<1.0	<1.0	<1.0	<1.0

MWR-5	12/01/22
Pb T	1.1
Pb D	<0.2

MW-45	02/16/22	05/17/22	08/24/22	11/08/22
Pb T	<1.1	<1.1	<1.1	<1.1
Pb D	<1.0	<1.0	<1.0	<1.0

MWR-3	02/17/22	05/18/22	08/24/22	11/08/22	12/01/22
Pb T	<1.1	<1.1	<1.1	<1.1	0.1 J
Pb D	--	<1.0	<1.0	<1.0	<0.06

Segment G

MWR-2

MW-50	02/18/22	05/17/22	08/25/22	11/09/22
Pb T	<1.1	<1.1	<1.1	<1.1
Pb D	--	<1.0	<1.0	<1.0

EXCAVATED:
-4.5' ELEVATION

MWR-1

MW-50

MWR-6

Segment H

MWR-1	12/01/22
Pb T	<0.06
Pb D	<0.06

B-37-7

B-37-8

B-37-9

MWR-6	02/17/22	05/17/22	08/24/22	11/08/22
Pb T	<1.1	<1.1	<1.1	<1.1
Pb D	--	<1.0	<1.0	<1.0

B-37-7	02/17/22	05/18/22	08/25/22	11/09/22
Pb T	<1.1	<1.1	<1.1	<1.1
Pb D	--	<1.0	<1.0	<1.0

Segment A

B-37-8	02/17/22	05/18/22	08/25/22	11/09/22
Pb T	6.6	<1.1	<1.1	<1.1
Pb D	--	<1.0	<1.0	<1.0

MW-212

B-37-9	02/17/22	05/17/22	08/24/22	11/08/22
Pb T	<1.1	<1.1	<1.1	<1.1
Pb D	--	<1.0	<1.0	<1.0

MW-218

MW-217

MW-216

MW-212	02/17/22	08/17/22	11/30/22
Pb T	0.084 J	<0.056	<0.056
Pb D	0.11	<0.056	<0.056

MW-218	02/16/22	08/16/22
Pb T	0.2	0.14 J
Pb D	<0.028	<0.056

MW-217	02/16/22	08/16/22
Pb T	1.4	<0.056
Pb D	0.23	<0.056

MW-216	02/16/22	08/16/22
Pb T	0.29	0.28 J
Pb D	0.1	0.08 J

WESTLAKE AVENUE N.

MERCER STREET

BLOCK 44 EXCAVATED:
UNKNOWN ELEVATION

Block 44

Block 38 West

EXCAVATED:
-6.5' ELEVATION

Block 38 East

EXCAVATED:
15-16' ELEVATION

ALLEY - PARTIALLY EXCAVATED

LEGEND

- Monitoring Well
- Phase 1 Excavation
- Phase 2 Excavation-Area 1
- Phase 2 Excavation-Area 2
- Block 37 Property Boundary
- Sheet Pile Wall
- SLU Street Car Line
- Slurry (Gravity) Wall

NOTES:

1) All monitoring well locations are approximate and concentrations are expressed in micrograms per liter (µg/L)
2) Refer to Table 4-2d for details
3) Lead Total (Pb T) and Lead Dissolved (Pb D) screening level is 15 µg/L
< = less than the reported method detection limit
J = estimated concentration above the adjusted method detection limit and below the adjusted reporting limit
-- = Not analyzed, sampled, or reported

N
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0 60 120

APPROXIMATE SCALE IN FEET

2022 GROUNDWATER TOTAL AND DISSOLVED LEAD CONCENTRATIONS

BLOCK 37 SITE
600-630 WESTLAKE AVENUE NORTH
SEATTLE, WASHINGTON
REMEDIAL INVESTIGATION WORK PLAN

PROJECT NUMBER: Z076000082	DATE: 02/23/23	FIGURE 4-2f
APPROVED BY: ES	DRAWN BY: ICD	

ATLAS
6347 Seaview Avenue NW
Seattle, Washington 98107
Ph: (206) 781-1449 Fax: (206) 781-1543

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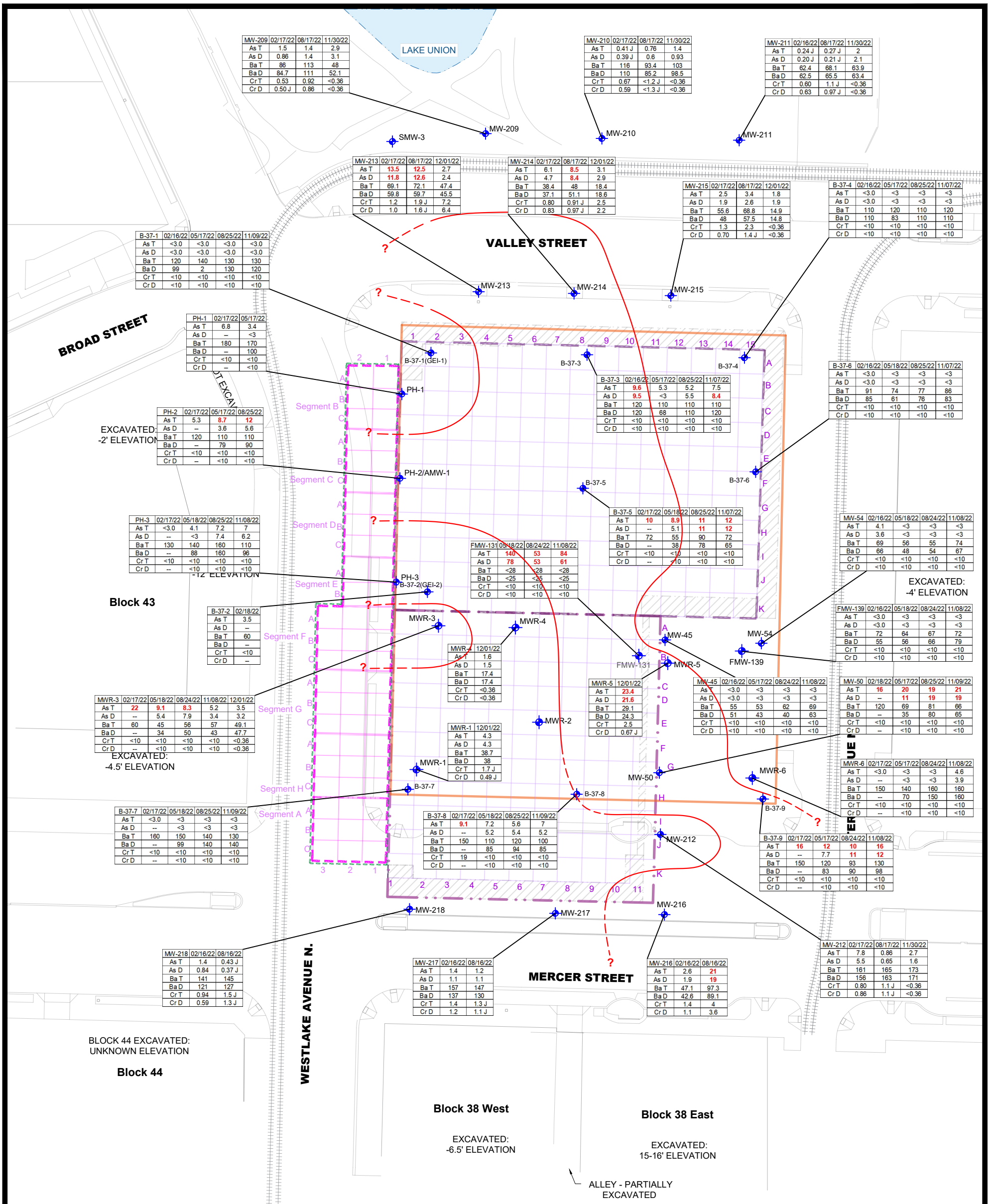

MW-209	02/17/22	08/17/22	11/30/22
As T	1.5	1.4	2.9
As D	0.86	1.4	3.1
Ba T	86	113	48
Ba D	84.7	111	52.1
Cr T	0.53	0.92	<0.36
Cr D	0.50 J	0.86	<0.36

MW-210	02/17/22	08/17/22	11/30/22
As T	0.41 J	0.76	1.4
As D	0.39 J	0.6	0.93
Ba T	116	93.4	103
Ba D	110	85.2	98.5
Cr T	0.67	<1.2 J	<0.36
Cr D	0.59	<1.3 J	<0.36

MW-211	02/16/22	08/17/22	11/30/22
As T	0.24 J	0.27 J	2
As D	0.20 J	0.21 J	2.1
Ba T	62.4	68.1	63.9
Ba D	62.5	65.5	63.4
Cr T	0.60	1.1 J	<0.36
Cr D	0.63	0.97 J	<0.36

MW-213	02/17/22	08/17/22	12/01/22
As T	**13.5**	**12.5**	2.7
As D	**11.8**	**12.6**	2.4
Ba T	69.1	72.1	47.4
Ba D	59.8	59.7	45.5
Cr T	1.2	1.9 J	7.2
Cr D	1.0	1.6 J	6.4

MW-214	02/17/22	08/17/22	12/01/22
As T	6.1	**8.5**	3.1
As D	4.7	**8.4**	2.9
Ba T	38.4	48	18.4
Ba D	37.1	51.1	18.6
Cr T	0.80	0.91 J	2.5
Cr D	0.83	0.97 J	2.2

MW-215	02/17/22	08/17/22	12/01/22
As T	2.5	3.4	1.8
As D	1.9	2.6	1.9
Ba T	55.6	68.8	14.9
Ba D	48	57.5	14.8
Cr T	1.3	2.3	<0.36
Cr D	0.70	1.4 J	<0.36

B-37-4	02/16/22	05/17/22	08/25/22	11/07/22
As T	<3.0	<3	<3	<3
As D	<3.0	<3	<3	<3
Ba T	110	120	110	120
Ba D	110	83	110	110
Cr T	<10	<10	<10	<10
Cr D	<10	<10	<10	<10

B-37-1	02/16/22	05/17/22	08/25/22	11/09/22
As T	<3.0	<3.0	<3.0	<3.0
As D	<3.0	<3.0	<3.0	<3.0
Ba T	120	140	130	130
Ba D	99	2	130	120
Cr T	<10	<10	<10	<10
Cr D	<10	<10	<10	<10

PH-1	02/17/22	05/17/22
As T	6.8	3.4
As D	–	<3
Ba T	180	170
Ba D	–	100
Cr T	<10	<10
Cr D	–	<10

B-37-3	02/16/22	05/17/22	08/25/22	11/07/22
As T	**9.6**	5.3	5.2	7.5
As D	**9.5**	<3	5.5	**8.4**
Ba T	120	110	110	110
Ba D	120	68	110	120
Cr T	<10	<10	<10	<10
Cr D	<10	<10	<10	<10

B-37-6	02/16/22	05/18/22	08/25/22	11/07/22
As T	<3.0	<3	<3	<3
As D	<3.0	<3	<3	<3
Ba T	91	74	77	86
Ba D	85	61	76	83
Cr T	<10	<10	<10	<10
Cr D	<10	<10	<10	<10

PH-2	02/17/22	05/17/22	08/25/22
As T	5.3	**8.7**	**12**
As D	–	3.6	5.6
Ba T	120	110	110
Ba D	–	79	90
Cr T	<10	<10	<10
Cr D	–	<10	<10

B-37-5	02/17/22	05/18/22	08/25/22	11/07/22
As T	**10**	**8.9**	**11**	**12**
As D	--	5.1	**11**	**12**
Ba T	72	55	90	72
Ba D	--	38	78	65
Cr T	<10	<10	<10	<10
Cr D	--	<10	<10	<10

PH-3	02/17/22	05/18/22	08/25/22	11/08/22
As T	<3.0	4.1	7.2	7
As D	--	<3	7.4	6.2
Ba T	130	140	160	110
Ba D	--	88	160	96
Cr T	<10	<10	<10	<10
Cr D	--	<10	<10	<10

FMW-131	05/18/22	08/24/22	11/08/22
As T	**140**	**53**	**84**
As D	**78**	**53**	**61**
Ba T	<28	<28	<28
Ba D	<25	<25	<25
Cr T	<10	<10	<10
Cr D	<10	<10	<10

MW-54	02/16/22	05/18/22	08/24/22	11/08/22
As T	4.1	<3	<3	<3
As D	3.6	<3	<3	<3
Ba T	69	56	55	74
Ba D	66	48	54	67
Cr T	<10	<10	<10	<10
Cr D	<10	<10	<10	<10

B-37-2	02/18/22
As T	3.5
As D	–
Ba T	60
Ba D	–
Cr T	<10
Cr D	–

MWR-4	12/01/22
As T	1.6
As D	1.5
Ba T	17.4
Ba D	17.4
Cr T	<0.36
Cr D	<0.36

FMW-139	02/16/22	05/18/22	08/24/22	11/08/22
As T	<3.0	<3	<3	<3
As D	<3.0	<3	<3	<3
Ba T	72	64	67	72
Ba D	55	56	66	79
Cr T	<10	<10	<10	<10
Cr D	<10	<10	<10	<10

MWR-3	02/17/22	05/18/22	08/24/22	11/08/22	12/01/22
As T	**22**	**9.1**	**8.3**	5.2	3.5
As D	--	5.4	7.9	3.4	3.2
Ba T	60	45	56	57	49.1
Ba D	--	34	50	43	47.7
Cr T	<10	<10	<10	<10	<0.36
Cr D	--	<10	<10	<10	<0.36

MWR-5	12/01/22
As T	**23.4**
As D	**21.6**
Ba T	29.1
Ba D	24.3
Cr T	2.5
Cr D	0.67 J

MW-45	02/16/22	05/17/22	08/24/22	11/08/22
As T	<3.0	<3	<3	<3
As D	<3.0	<3	<3	<3
Ba T	55	53	62	69
Ba D	51	43	40	63
Cr T	<10	<10	<10	<10
Cr D	<10	<10	<10	<10

MW-50	02/18/22	05/17/22	08/25/22	11/09/22
As T	**16**	**20**	**19**	**21**
As D	--	**11**	**19**	**19**
Ba T	120	69	81	66
Ba D	--	35	80	65
Cr T	<10	<10	<10	<10
Cr D	--	<10	<10	<10

MWR-1	12/01/22
As T	4.3
As D	4.3
Ba T	38.7
Ba D	38
Cr T	1.7 J
Cr D	0.49 J

MWR-6	02/17/22	05/17/22	08/24/22	11/08/22
As T	<3.0	<3	<3	4.6
As D	--	<3	<3	3.9
Ba T	150	140	160	160
Ba D	--	70	150	160
Cr T	<10	<10	<10	<10
Cr D	--	<10	<10	<10

B-37-7	02/17/22	05/18/22	08/25/22	11/09/22
As T	<3.0	<3	<3	<3
As D	--	<3	<3	<3
Ba T	160	150	140	130
Ba D	--	99	140	140
Cr T	<10	<10	<10	<10
Cr D	--	<10	<10	<10

B-37-8	02/17/22	05/18/22	08/25/22	11/09/22
As T	**9.1**	7.2	5.6	7
As D	--	5.2	5.4	5.2
Ba T	150	110	120	100
Ba D	--	85	94	85
Cr T	19	<10	<10	<10
Cr D	--	<10	<10	<10

B-37-9	02/17/22	05/17/22	08/24/22	11/08/22
As T	**16**	**12**	**10**	**16**
As D	--	7.7	**11**	**12**
Ba T	150	120	93	130
Ba D	--	83	90	98
Cr T	<10	<10	<10	<10
Cr D	--	<10	<10	<10

MW-218	02/16/22	08/16/22
As T	1.4	0.43 J
As D	0.84	0.37 J
Ba T	141	145
Ba D	121	127
Cr T	0.94	1.5 J
Cr D	0.59	1.3 J

MW-217	02/16/22	08/16/22
As T	1.4	1.2
As D	1.1	1.1
Ba T	157	147
Ba D	137	130
Cr T	1.4	1.3 J
Cr D	1.2	1.1 J

MW-216	02/16/22	08/16/22
As T	2.6	**21**
As D	1.9	**19**
Ba T	47.1	97.3
Ba D	42.6	89.1
Cr T	1.4	4
Cr D	1.1	3.6

MW-212	02/17/22	08/17/22	11/30/22
As T	7.8	0.86	2.7
As D	5.5	0.65	1.6
Ba T	161	165	173
Ba D	156	163	171
Cr T	0.80	1.1 J	<0.36
Cr D	0.86	1.1 J	<0.36

LEGEND

- Monitoring Well
- Phase 1 Excavation
- Phase 2 Excavation-Area 1
- Phase 2 Excavation-Area 2
- Block 37 Property Boundary
- Sheet Pile Wall
- SLU Street Car Line
- Slurry (Gravity) Wall

NOTES:

1) All monitoring well locations are approximate and concentrations are expressed in micrograms per liter (µg/L)
2) Refer to Table 4-2d for details
< = less than the reported method detection limit
J = estimated concentration above the adjusted method detection limit and below the adjusted reporting limit
Bold = The detection exceeds the screening level
-- = Not analyzed, sampled, or reported

Arsenic Total (As T)	8
Arsenic Dissolved (As D)	8
Barium Total (Ba T)	1,000
Barium Dissolved (Ba D)	1,000
Chromium III Total (Cr T)	74
Chromium III Dissolved (Cr D)	74

Screening Levels (µg/L)

Approximate extent of detected concentrations exceeding the screening level

N
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0 60 120

APPROXIMATE SCALE IN FEET

2022 GROUNDWATER TOTAL AND DISSOLVED METALS CONCENTRATIONS

BLOCK 37 SITE
600-630 WESTLAKE AVENUE NORTH
SEATTLE, WASHINGTON
REMEDIAL INVESTIGATION WORK PLAN

PROJECT NUMBER:	Z076000082	DATE:	02/14/23
APPROVED BY:	ES	DRAWN BY:	ICD

FIGURE **4-2g**

ATLAS
6347 Seaview Avenue NW
Seattle, Washington 98107
Ph: (206) 781-1449 Fax: (206) 781-1543

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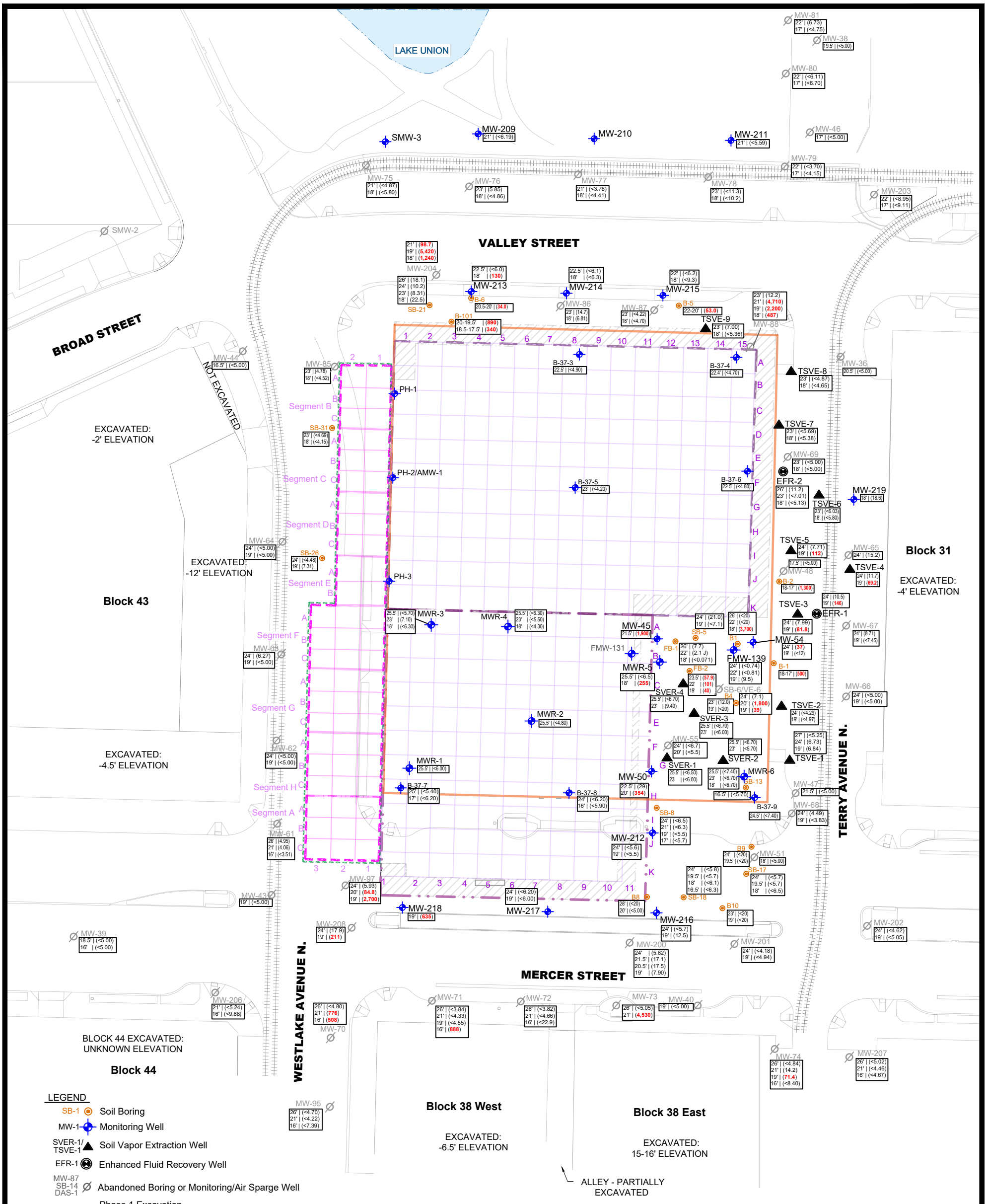

LEGEND

- SB-1 — Soil Boring
- MW-1 — Monitoring Well
- SVER-1/ TSVE-1 — Soil Vapor Extraction Well
- EFR-1 — Enhanced Fluid Recovery Well
- MW-87 SB-14 DAS-1 — Abandoned Boring or Monitoring/Air Sparge Well
- Phase 1 Excavation
- Phase 2 Excavation-Area 1
- Phase 2 Excavation-Area 2
- Block 37 Property Boundary
- Sheet Pile Wall
- SLU Street Car Line
- Slurry (Gravity) Wall

NOTES:

Elevation performance/confirmation soil samples shown as Elevation (ft NAVD88) | Concentration (mg/kg)

< = For soil borings: less than the laboratory method detection limit

J = estimated concentration below the practical quantitation limit.

Bold = The detection exceeds the screening level

TPH-GRO = Total Petroleum Hydrocarbons-Gasoline Range Organics

1) All soil sample locations are approximate and concentrations are expressed in milligrams per kilogram (mg/kg)
2) ft NAVD88 = feet expressed in elevation using North American Vertical Datum 1988.
3) TPH-GRO screening level is 30 mg/kg
4) Data in the interval 31-16 feet represents data from the surface to just above the Phase I and II excavation floor

N W E S

0 60 120

APPROXIMATE SCALE IN FEET

SOIL TPH-GRO CONCENTRATIONS (31-16 ft. NAVD88)

BLOCK 37 SITE
600-630 WESTLAKE AVENUE NORTH
SEATTLE, WASHINGTON
REMEDIAL INVESTIGATION WORK PLAN

PROJECT NUMBER:	Z076000082	DATE: 02/14/23	FIGURE 4-3a
APPROVED BY:	ES	DRAWN BY: ICD	

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6347 Seaview Avenue NW
Seattle, Washington 98107
Ph: (206) 781-1449 Fax: (206) 781-1543

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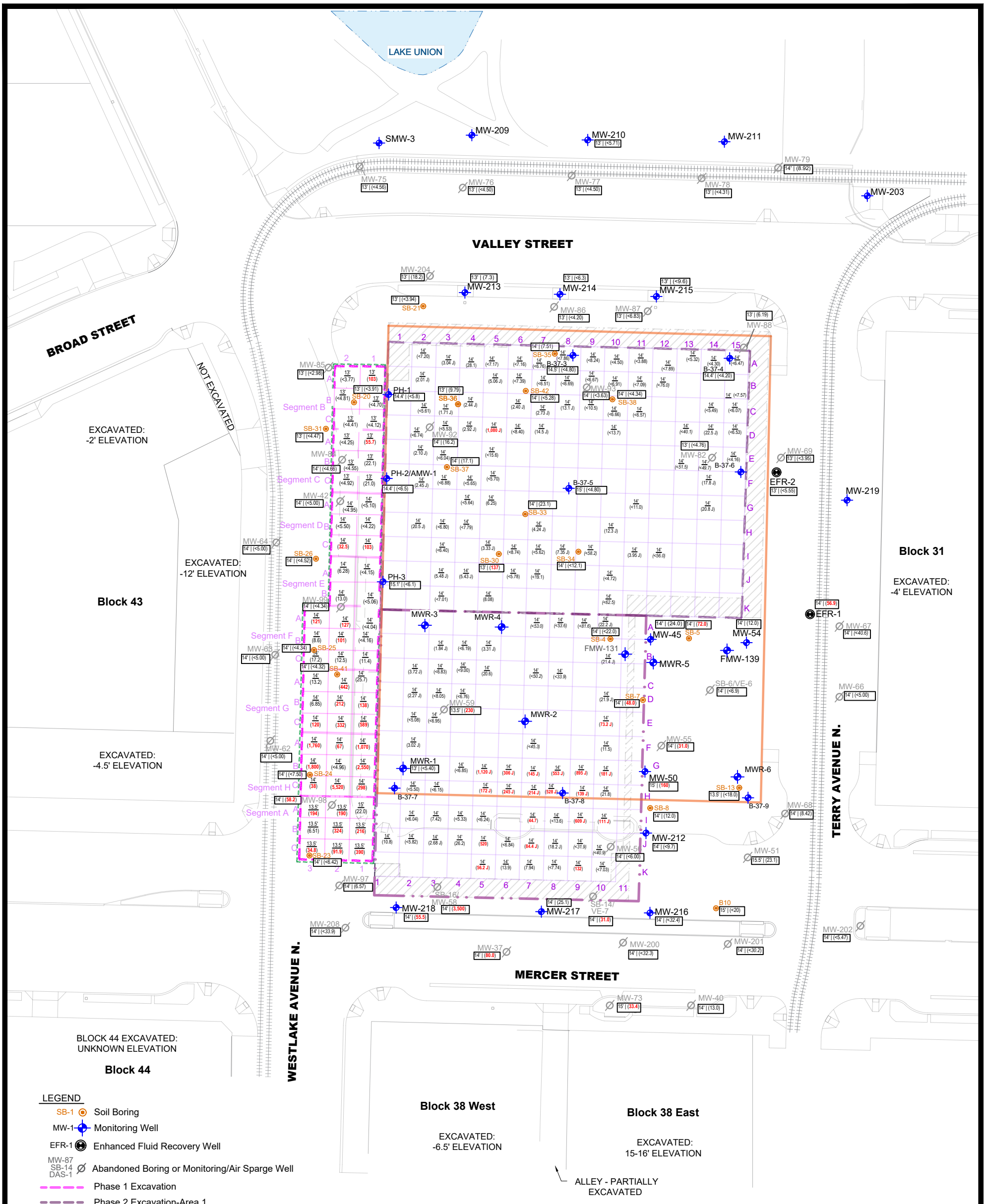

LEGEND

- SB-1 — Soil Boring
- MW-1 — Monitoring Well
- EFR-1 — Enhanced Fluid Recovery Well
- MW-87 / SB-14 / DAS-1 — Abandoned Boring or Monitoring/Air Sparge Well
- Phase 1 Excavation
- Phase 2 Excavation-Area 1
- Phase 2 Excavation-Area 2
- Block 37 Property Boundary
- Sheet Pile Wall
- SLU Street Car Line
- Slurry (Gravity) Wall

NOTES:

Elevation performance/confirmation soil samples shown as Elevation (ft NAVD88) | Concentration (mg/kg)

< = For soil borings: less than the laboratory method detection limit

J = estimated concentration below the practical quantitation limit.

Bold = The detection exceeds the screening level

Italics = The non-detect value exceeds the screening level

TPH-GRO = Total Petroleum Hydrocarbons-Gasoline Range Organics

1) All soil sample locations are approximate and concentrations are expressed in milligrams per kilogram (mg/kg)

2) ft NAVD88 = feet expressed in elevation using North American Vertical Datum 1988.

3) TPH-GRO screening level is 30 mg/kg

SOIL TPH-GRO CONCENTRATIONS (<16-13 ft. NAVD88)

BLOCK 37 SITE
600-630 WESTLAKE AVENUE NORTH
SEATTLE, WASHINGTON
REMEDIAL INVESTIGATION WORK PLAN

PROJECT NUMBER: Z076000082		DATE: 02/14/23	FIGURE 4-3b
APPROVED BY: ES		DRAWN BY: ICD	

ATLAS
6347 Seaview Avenue NW
Seattle, Washington 98107
Ph: (206) 781-1449 Fax: (206) 781-1543

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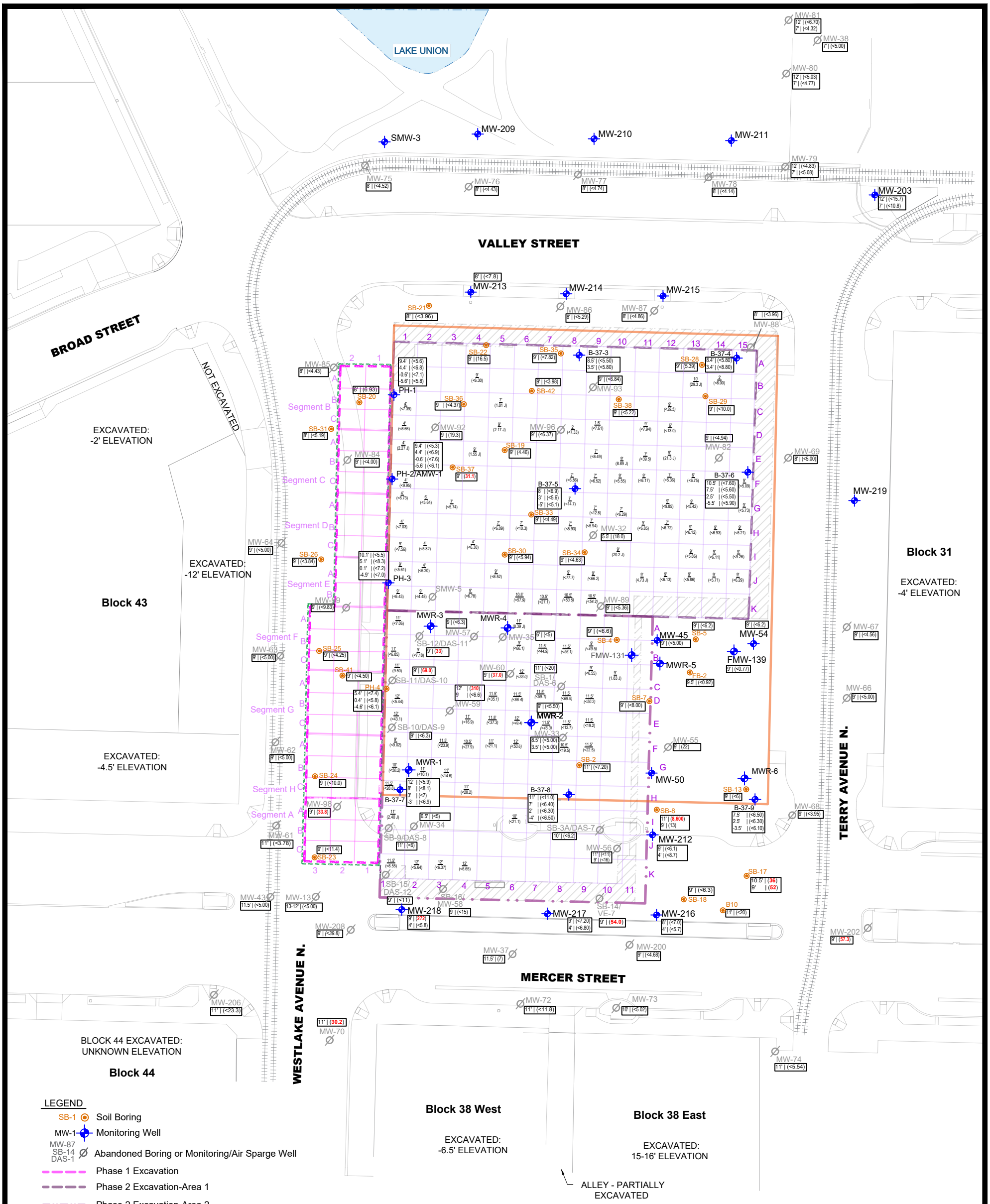

LEGEND

- SB-1 — Soil Boring
- MW-1 — Monitoring Well
- MW-87 / SB-14 / DAS-1 — Abandoned Boring or Monitoring/Air Sparge Well
- Phase 1 Excavation
- Phase 2 Excavation-Area 1
- Phase 2 Excavation-Area 2
- Block 37 Property Boundary
- Sheet Pile Wall
- SLU Street Car Line
- Slurry (Gravity) Wall

NOTES:

Elevation performance/confirmation soil samples shown as Elevation (ft NAVD88) | Concentration (mg/kg)

< = For soil borings: less than the laboratory method detection limit

J = estimated concentration below the practical quantitation limit.

Bold = The detection exceeds the screening level

Italics = The non-detect value exceeds the screening level

TPH-GRO = Total Petroleum Hydrocarbons-Gasoline Range Organics

1) All soil sample locations are approximate and concentrations are expressed in milligrams per kilogram (mg/kg)

2) ft NAVD88 = feet expressed in elevation using North American Vertical Datum 1988.

3) TPH-GRO screening level is 30 mg/kg

N W E S

0 60 120

APPROXIMATE SCALE IN FEET

SOIL TPH-GRO CONCENTRATIONS (<13 ft. NAVD88)

BLOCK 37 SITE
600-630 WESTLAKE AVENUE NORTH
SEATTLE, WASHINGTON
REMEDIAL INVESTIGATION WORK PLAN

PROJECT NUMBER: Z076000082		DATE: 02/14/23	FIGURE 4-3c
APPROVED BY: ES		DRAWN BY: ICD	

ATLAS
6347 Seaview Avenue NW
Seattle, Washington 98107
Ph: (206) 781-1449 Fax: (206) 781-1543

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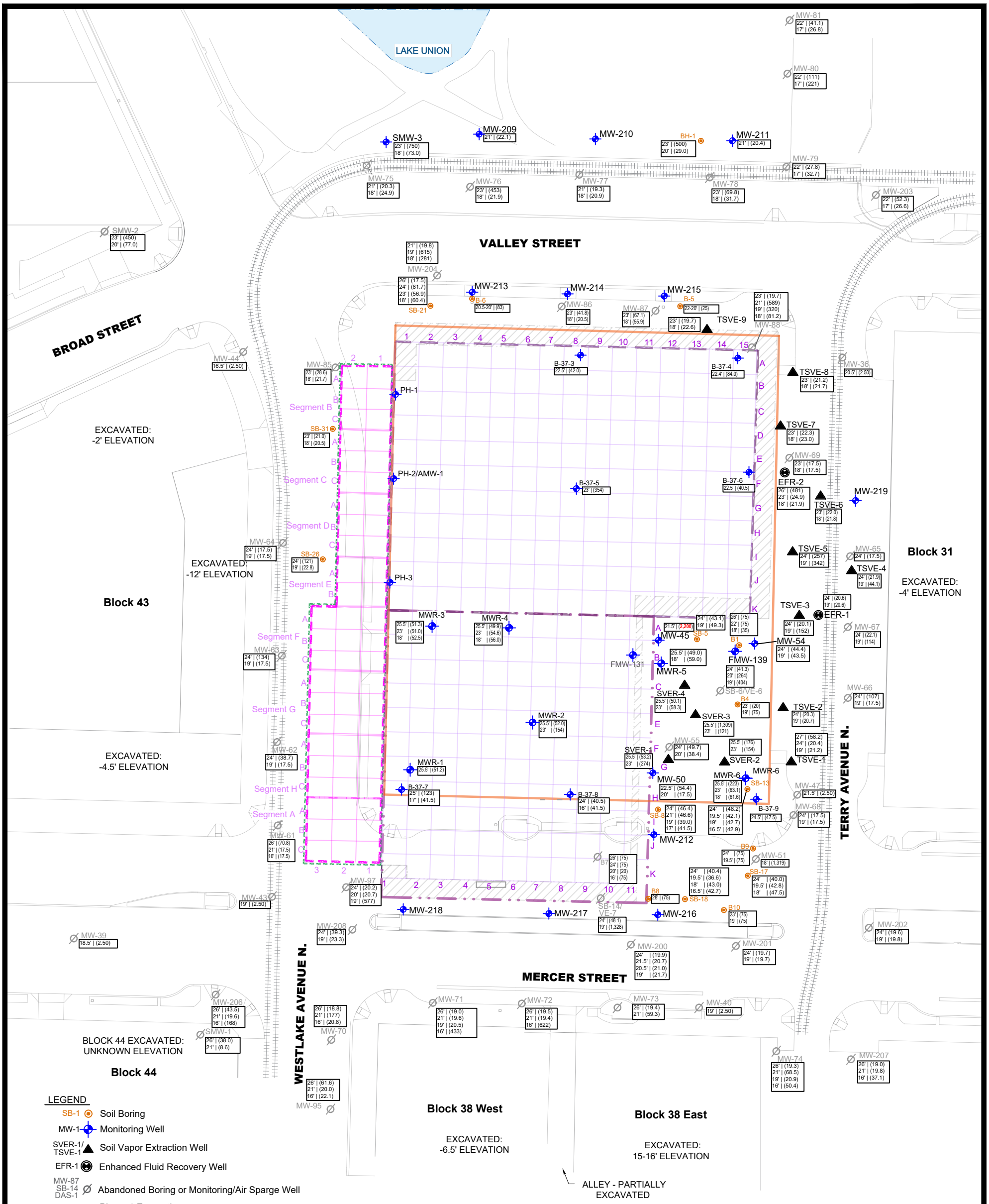

LEGEND

- SB-1 — Soil Boring
- MW-1 — Monitoring Well
- SVER-1/ TSVE-1 — Soil Vapor Extraction Well
- EFR-1 — Enhanced Fluid Recovery Well
- MW-87 SB-14 DAS-1 — Abandoned Boring or Monitoring/Air Sparge Well
- Phase 1 Excavation
- Phase 2 Excavation-Area 1
- Phase 2 Excavation-Area 2
- Block 37 Property Boundary
- Sheet Pile Wall
- SLU Street Car Line
- Slurry (Gravity) Wall

NOTES:

Elevation performance/confirmation soil samples shown as Elevation (ft NAVD88) | Concentration (mg/kg)

Bold = The detection exceeds the screening level

1) All soil sample locations are approximate and concentrations are expressed in milligrams per kilogram (mg/kg)
2) ft NAVD88 = feet expressed in elevation using North American Vertical Datum 1988.
3) Total Extractable Hydrocarbons screening level is 2,000 mg/kg
4)*SMW-# sample results reported as TPH concentrations, which are reported as a single total of all organic ranges.
5) The total extractable hydrocarbon value is a sum of diesel-range (or kerosene-range, whichever is higher) and oil-range concentrations. A value of half of the reporting limit was used for results reported as non-detect.

N W E S

0 60 120

APPROXIMATE SCALE IN FEET

SOIL TOTAL EXTRACTABLE HYDROCARBONS CONCENTRATIONS (31-16 ft. NAVD88)

BLOCK 37 SITE
600-630 WESTLAKE AVENUE NORTH
SEATTLE, WASHINGTON
REMEDIAL INVESTIGATION WORK PLAN

PROJECT NUMBER:	Z076000082	DATE: 02/23/23	FIGURE 4-4a
APPROVED BY:	ES	DRAWN BY: ICD	

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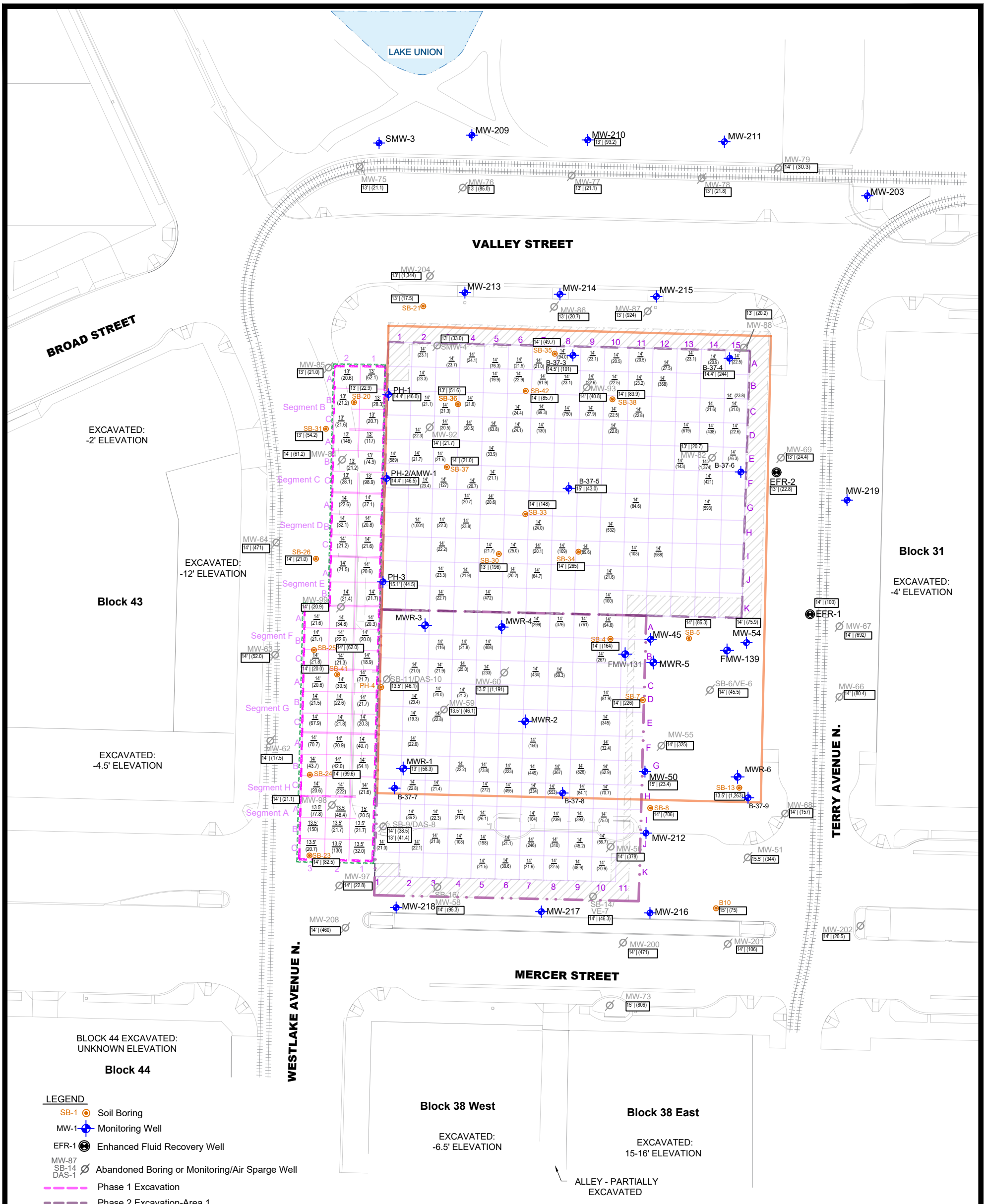

LEGEND

- SB-1 — Soil Boring
- MW-1 — Monitoring Well
- EFR-1 — Enhanced Fluid Recovery Well
- MW-87 / SB-14 / DAS-1 — Abandoned Boring or Monitoring/Air Sparge Well
- Phase 1 Excavation
- Phase 2 Excavation-Area 1
- Phase 2 Excavation-Area 2
- Block 37 Property Boundary
- Sheet Pile Wall
- SLU Street Car Line
- Slurry (Gravity) Wall

NOTES:
Elevation performance/confirmation soil samples shown as Elevation (ft NAVD88) | Concentration (mg/kg)

1) All soil sample locations are approximate and concentrations are expressed in milligrams per kilogram (mg/kg)
2) ft NAVD88 = feet expressed in elevation using North American Vertical Datum 1988.
3) Total Extractable Hydrocarbons screening level is 2,000 mg/kg.
4) The total extractable hydrocarbon value is a sum of diesel-range (or kerosene-range, whichever is higher) and oil-range concentrations. A value of half of the reporting limit was used for results reported as non-detect.

MW-41 13.5' | (2.50)

N W E S

0 60 120
APPROXIMATE SCALE IN FEET

SOIL TOTAL EXTRACTABLE HYDROCARBONS CONCENTRATIONS (<16-13 ft. NAVD88)

BLOCK 37 SITE
600-630 WESTLAKE AVENUE NORTH
SEATTLE, WASHINGTON
REMEDIAL INVESTIGATION WORK PLAN

PROJECT NUMBER: Z076000082		DATE: 02/14/23	FIGURE 4-4b
APPROVED BY: ES		DRAWN BY: ICD	

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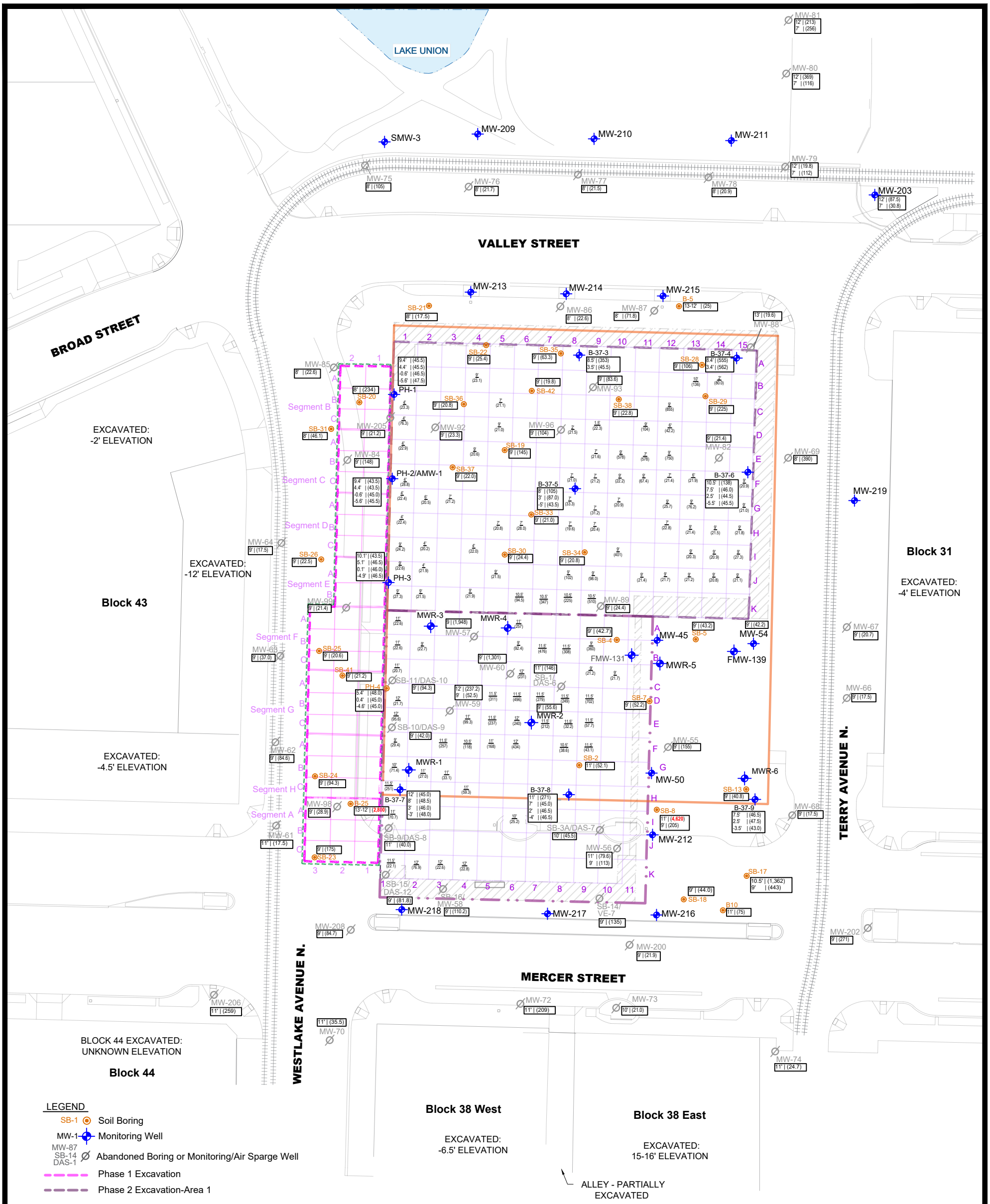

LEGEND

- SB-1 — Soil Boring
- MW-1 — Monitoring Well
- MW-87 / SB-14 / DAS-1 — Abandoned Boring or Monitoring/Air Sparge Well
- Phase 1 Excavation
- Phase 2 Excavation-Area 1
- Phase 2 Excavation-Area 2
- Block 37 Property Boundary
- Sheet Pile Wall
- SLU Street Car Line
- Slurry (Gravity) Wall

NOTES:

Elevation performance/confirmation soil samples shown as Elevation (ft NAVD88) | Concentration (mg/kg)

Bold = The detection exceeds the screening level

1) All soil sample locations are approximate and concentrations are expressed in milligrams per kilogram (mg/kg)
2) ft NAVD88 = feet expressed in elevation using North American Vertical Datum 1988.
3) Total Extractable Hydrocarbons screening level is 2,000 mg/kg.
4) The total extractable hydrocarbon value is a sum of diesel-range (or kerosene-range, whichever is higher) and oil-range concentrations. A value of half of the reporting limit was used for results reported as non-detect.

N W E S

0 60 120

APPROXIMATE SCALE IN FEET

SOIL TOTAL EXTRACTABLE HYDROCARBONS CONCENTRATIONS (<13 ft. NAVD88)

BLOCK 37 SITE
600-630 WESTLAKE AVENUE NORTH
SEATTLE, WASHINGTON
REMEDIAL INVESTIGATION WORK PLAN

PROJECT NUMBER: Z076000082		DATE: 02/23/23	FIGURE 4-4c
APPROVED BY: ES		DRAWN BY: ICD	

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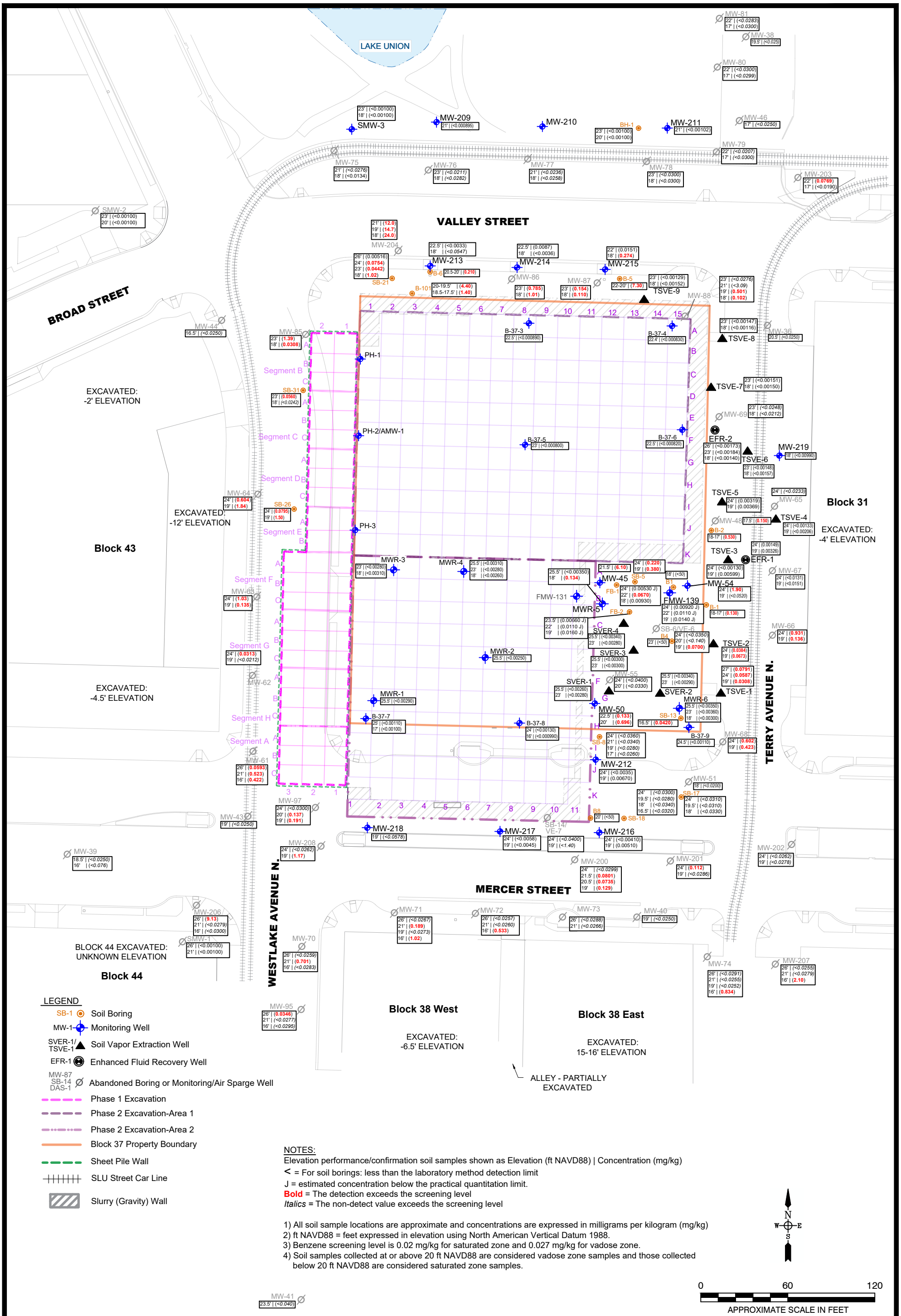

LEGEND

- SB-1 — Soil Boring
- MW-1 — Monitoring Well
- SVER-1/ TSVE-1 — Soil Vapor Extraction Well
- EFR-1 — Enhanced Fluid Recovery Well
- MW-87 SB-14 DAS-1 — Abandoned Boring or Monitoring/Air Sparge Well
- Phase 1 Excavation
- Phase 2 Excavation-Area 1
- Phase 2 Excavation-Area 2
- Block 37 Property Boundary
- Sheet Pile Wall
- SLU Street Car Line
- Slurry (Gravity) Wall

NOTES:

Elevation performance/confirmation soil samples shown as Elevation (ft NAVD88) | Concentration (mg/kg)

< = For soil borings: less than the laboratory method detection limit

J = estimated concentration below the practical quantitation limit.

Bold = The detection exceeds the screening level

Italics = The non-detect value exceeds the screening level

1) All soil sample locations are approximate and concentrations are expressed in milligrams per kilogram (mg/kg)
2) ft NAVD88 = feet expressed in elevation using North American Vertical Datum 1988.
3) Benzene screening level is 0.02 mg/kg for saturated zone and 0.027 mg/kg for vadose zone.
4) Soil samples collected at or above 20 ft NAVD88 are considered vadose zone samples and those collected below 20 ft NAVD88 are considered saturated zone samples.

N W E S

0 60 120

APPROXIMATE SCALE IN FEET

SOIL BENZENE CONCENTRATIONS (31-16 ft. NAVD88)

BLOCK 37 SITE
600-630 WESTLAKE AVENUE NORTH
SEATTLE, WASHINGTON
REMEDIAL INVESTIGATION WORK PLAN

PROJECT NUMBER:	Z076000082	DATE: 02/23/23	FIGURE 4-5a
APPROVED BY:	ES	DRAWN BY: ICD	

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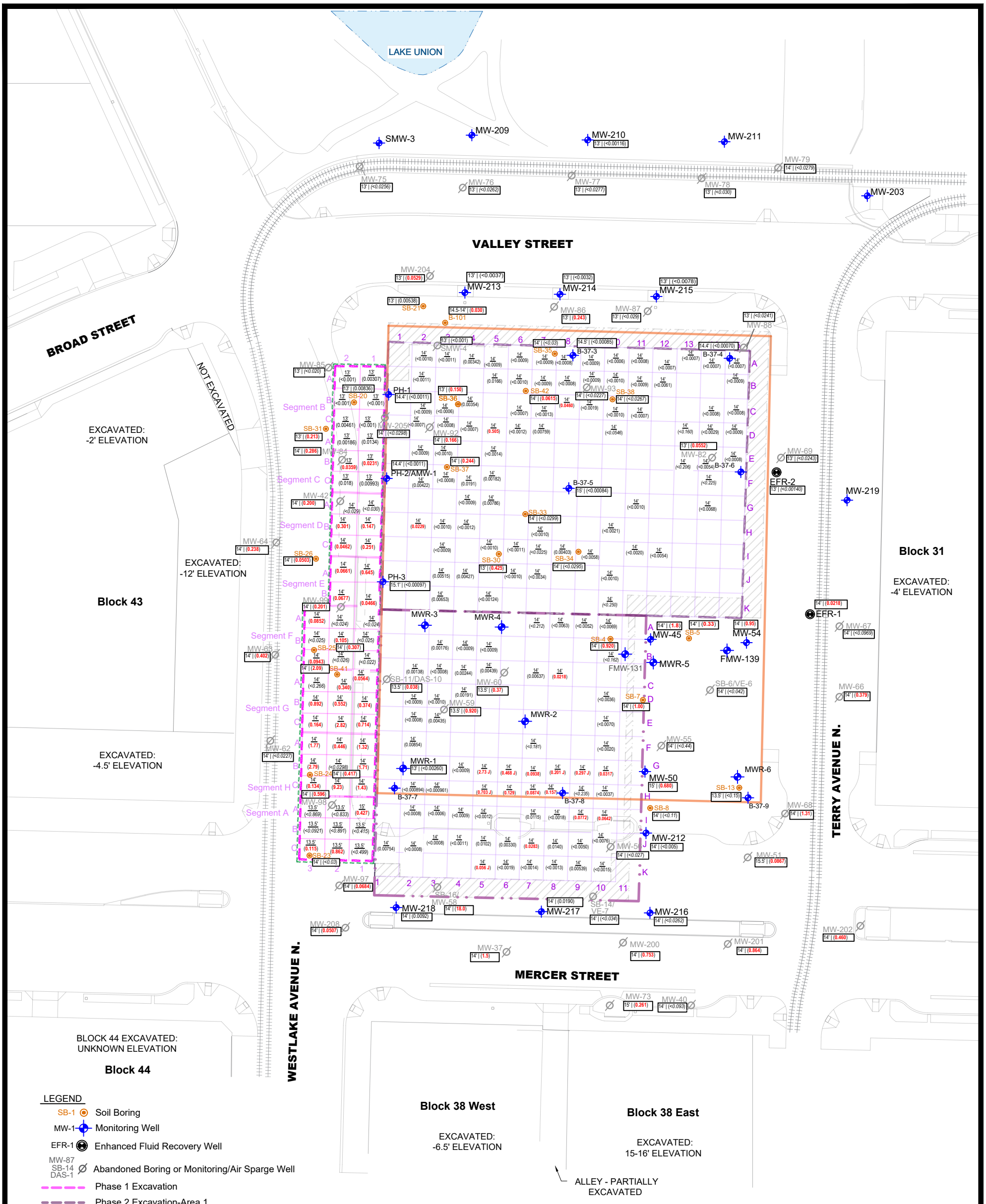

LEGEND

- SB-1 — Soil Boring
- MW-1 — Monitoring Well
- EFR-1 — Enhanced Fluid Recovery Well
- MW-87 / SB-14 / DAS-1 — Abandoned Boring or Monitoring/Air Sparge Well
- Phase 1 Excavation
- Phase 2 Excavation-Area 1
- Phase 2 Excavation-Area 2
- Block 37 Property Boundary
- Sheet Pile Wall
- SLU Street Car Line
- Slurry (Gravity) Wall

NOTES:

Elevation performance/confirmation soil samples shown as Elevation (ft NAVD88) | Concentration (mg/kg)

< = For soil borings: less than the laboratory method detection limit

J = estimated concentration below the practical quantitation limit.

Bold = The detection exceeds the screening level

Italics = The non-detect value exceeds the screening level

1) All soil sample locations are approximate and concentrations are expressed in milligrams per kilogram (mg/kg)
2) ft NAVD88 = feet expressed in elevation using North American Vertical Datum 1988.
3) Benzene screening level is 0.02 mg/kg for saturated zone. All soil samples depicted on this figure are assumed to be from the saturated zone.

N W E S

0 60 120

APPROXIMATE SCALE IN FEET

SOIL BENZENE CONCENTRATIONS (<16-13 ft. NAVD88)

BLOCK 37 SITE
600-630 WESTLAKE AVENUE NORTH
SEATTLE, WASHINGTON
REMEDIAL INVESTIGATION WORK PLAN

PROJECT NUMBER: Z076000082		DATE: 02/23/23	FIGURE 4-5b
APPROVED BY: ES		DRAWN BY: ICD	

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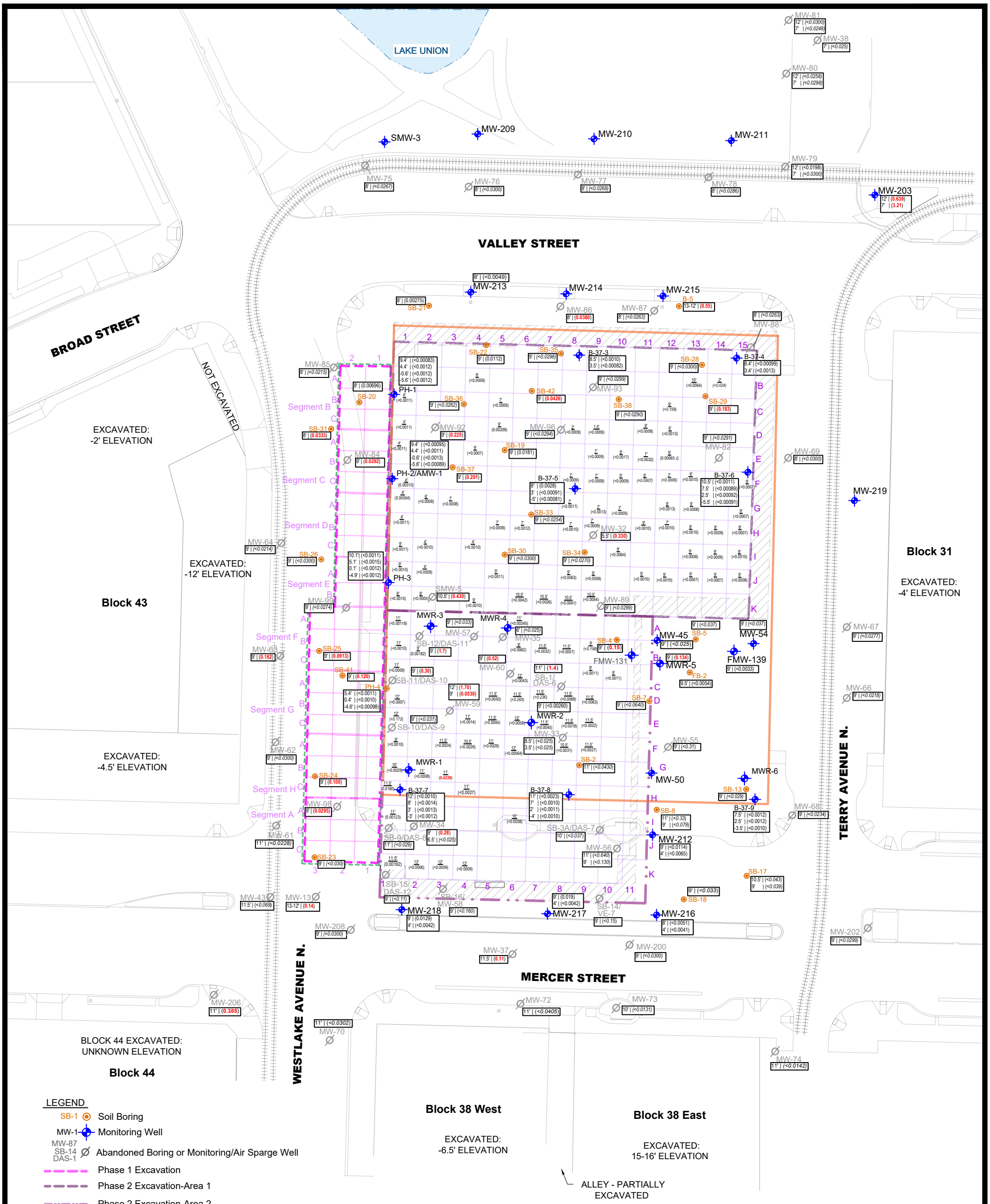

LEGEND

- SB-1 — Soil Boring
- MW-1 — Monitoring Well
- MW-87 / SB-14 / DAS-1 — Abandoned Boring or Monitoring/Air Sparge Well
- Phase 1 Excavation
- Phase 2 Excavation-Area 1
- Phase 2 Excavation-Area 2
- Block 37 Property Boundary
- Sheet Pile Wall
- SLU Street Car Line
- Slurry (Gravity) Wall

NOTES:

Elevation performance/confirmation soil samples shown as Elevation (ft NAVD88) | Concentration (mg/kg)

< = For soil borings: less than the laboratory method detection limit

J = estimated concentration below the practical quantitation limit.

Bold = The detection exceeds the screening level

Italics = The non-detect value exceeds the screening level

1) All soil sample locations are approximate and concentrations are expressed in milligrams per kilogram (mg/kg)
2) ft NAVD88 = feet expressed in elevation using North American Vertical Datum 1988.
3) Benzene screening level is 0.02 mg/kg for saturated soil. All soil samples depicted on this figure are assumed to be from the saturated zone.

N W E S

0 60 120

APPROXIMATE SCALE IN FEET

SOIL BENZENE CONCENTRATIONS (<13 ft. NAVD88)

BLOCK 37 SITE
600-630 WESTLAKE AVENUE NORTH
SEATTLE, WASHINGTON
REMEDIAL INVESTIGATION WORK PLAN

PROJECT NUMBER: Z076000082		DATE: 02/23/23	FIGURE 4-5c
APPROVED BY: ES		DRAWN BY: ICD	

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LAKE UNION

VALLEY STREET

BROAD STREET

NOT EXCAVATED

EXCAVATED:
-2' ELEVATION

EXCAVATED:
-12' ELEVATION

EXCAVATED:
-4.5' ELEVATION

Block 43

Block 31

EXCAVATED:
-4' ELEVATION

TERRY AVENUE N.

WESTLAKE AVENUE N.

MERCER STREET

BLOCK 44 EXCAVATED:
UNKNOWN ELEVATION

Block 44

Block 38 West

EXCAVATED:
-6.5' ELEVATION

Block 38 East

EXCAVATED:
15-16' ELEVATION

ALLEY - PARTIALLY
EXCAVATED

LEGEND

- SB-1 — Soil Boring
- MW-1 — Monitoring Well
- SVER-1/TSVE-1 — Soil Vapor Extraction Well
- EFR-1 — Enhanced Fluid Recovery Well
- MW-87 SB-14 DAS-1 — Abandoned Boring or Monitoring/Air Sparge Well
- Phase 1 Excavation
- Phase 2 Excavation-Area 1
- Phase 2 Excavation-Area 2
- Block 37 Property Boundary
- Sheet Pile Wall
- SLU Street Car Line
- Slurry (Gravity) Wall

NOTES:
Elevation performance/confirmation soil samples shown as Elevation (ft NAVD88) | Concentration (mg/kg)
< = For soil borings: less than the laboratory method detection limit
Bold = The detection exceeds the screening level
Italics = The non-detect value exceeds the screening level

1) All soil sample locations are approximate and concentrations are expressed in milligrams per kilogram (mg/kg)
2) ft NAVD88 = feet expressed in elevation using North American Vertical Datum 1988.
3) Naphthalene screening level is 0.24 mg/kg for saturated zone and 4.5 mg/kg for vadose zone.
4) Soil samples collected at or above 20 ft NAVD88 are considered vadose zone samples and those collected below 20 ft NAVD88 are considered saturated zone samples.

N W E S

0 60 120
APPROXIMATE SCALE IN FEET

SOIL NAPHTHALENE CONCENTRATIONS (31-16 ft. NAVD88)

BLOCK 37 SITE
600-630 WESTLAKE AVENUE NORTH
SEATTLE, WASHINGTON
REMEDIAL INVESTIGATION WORK PLAN

PROJECT NUMBER: Z076000082		DATE: 02/23/23	FIGURE 4-6a
APPROVED BY: ES		DRAWN BY: ICD	

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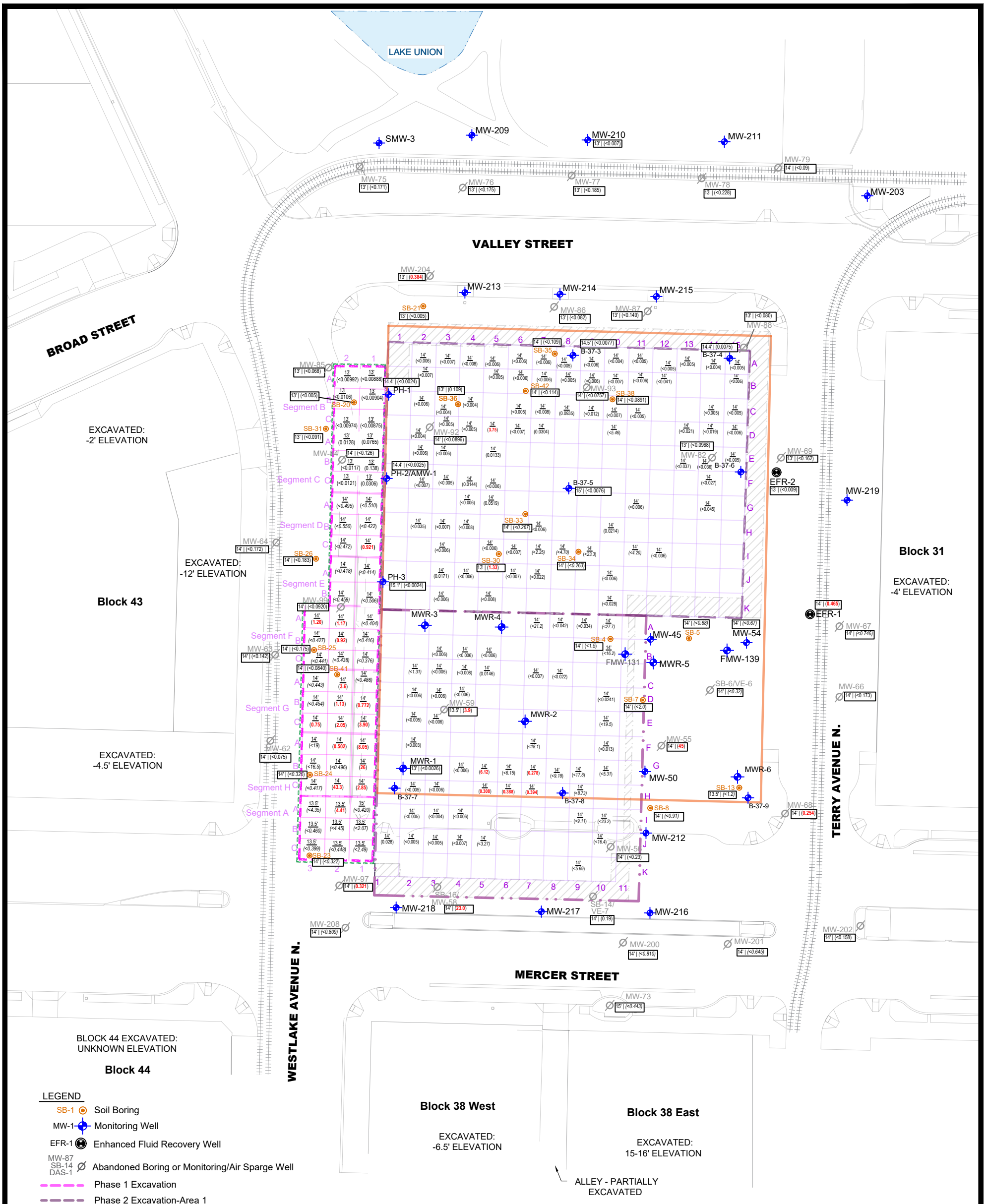

LEGEND

- SB-1 — Soil Boring
- MW-1 — Monitoring Well
- EFR-1 — Enhanced Fluid Recovery Well
- MW-87 / SB-14 / DAS-1 — Abandoned Boring or Monitoring/Air Sparge Well
- Phase 1 Excavation
- Phase 2 Excavation-Area 1
- Phase 2 Excavation-Area 2
- Block 37 Property Boundary
- Sheet Pile Wall
- SLU Street Car Line
- Slurry (Gravity) Wall

NOTES:

Elevation performance/confirmation soil samples shown as Elevation (ft NAVD88) | Concentration (mg/kg)

< = For soil borings: less than the laboratory method detection limit

Bold = The detection exceeds the screening level

Italics = The non-detect value exceeds the screening level

1) All soil sample locations are approximate and concentrations are expressed in milligrams per kilogram (mg/kg)
2) ft NAVD88 = feet expressed in elevation using North American Vertical Datum 1988.
3) Naphthalene screening level is 0.24 mg/kg for saturated zone. All soil samples depicted on this figure are assumed to be from the saturated zone.

N / W / E / S

0 60 120

APPROXIMATE SCALE IN FEET

SOIL NAPHTHALENE CONCENTRATIONS (<16-13 ft. NAVD88)

BLOCK 37 SITE
600-630 WESTLAKE AVENUE NORTH
SEATTLE, WASHINGTON
REMEDIAL INVESTIGATION WORK PLAN

PROJECT NUMBER: Z076000082	DATE: 02/23/23	FIGURE 4-6b
APPROVED BY: ES	DRAWN BY: ICD	

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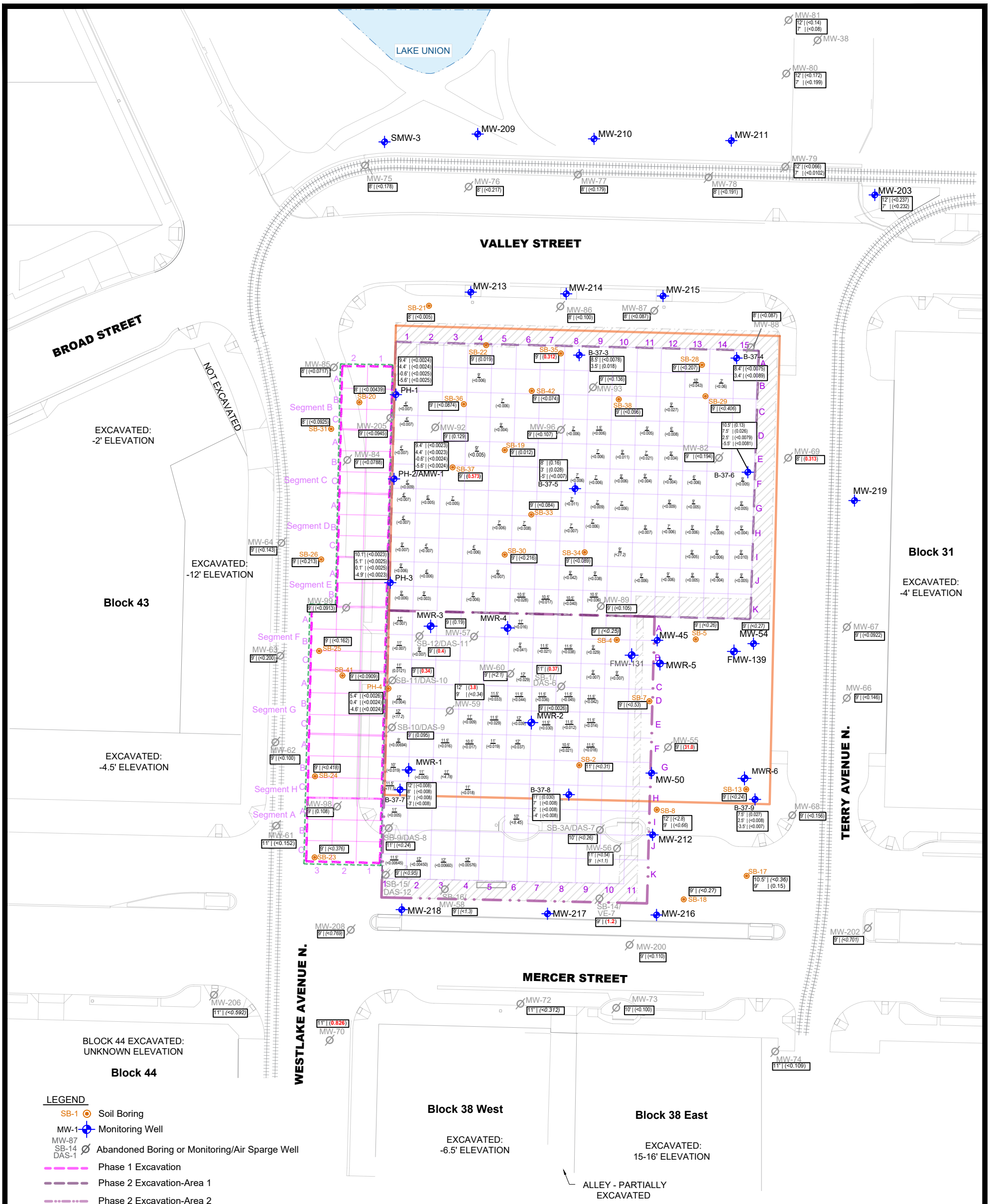

LEGEND

- SB-1 — Soil Boring
- MW-1 — Monitoring Well
- MW-87 / SB-14 / DAS-1 — Abandoned Boring or Monitoring/Air Sparge Well
- Phase 1 Excavation
- Phase 2 Excavation-Area 1
- Phase 2 Excavation-Area 2
- Block 37 Property Boundary
- Sheet Pile Wall
- SLU Street Car Line
- Slurry (Gravity) Wall

NOTES:

Elevation performance/confirmation soil samples shown as Elevation (ft NAVD88) | Concentration (mg/kg)

< = For soil borings: less than the laboratory method detection limit

Bold = The detection exceeds the screening level

Italics = The non-detect value exceeds the screening level

1) All soil sample locations are approximate and concentrations are expressed in milligrams per kilogram (mg/kg)
2) ft NAVD88 = feet expressed in elevation using North American Vertical Datum 1988.
3) Naphthalene screening level is 0.24 mg/kg
4) All soil samples depicted on this figure are assumed to be from the saturated zone.

N W E S

0 60 120

APPROXIMATE SCALE IN FEET

SOIL NAPHTHALENE CONCENTRATIONS (<13 ft. NAVD88)

BLOCK 37 SITE
600-630 WESTLAKE AVENUE NORTH
SEATTLE, WASHINGTON
REMEDIAL INVESTIGATION WORK PLAN

PROJECT NUMBER: Z076000082		DATE: 02/23/23	FIGURE 4-6c
APPROVED BY: ES		DRAWN BY: ICD	

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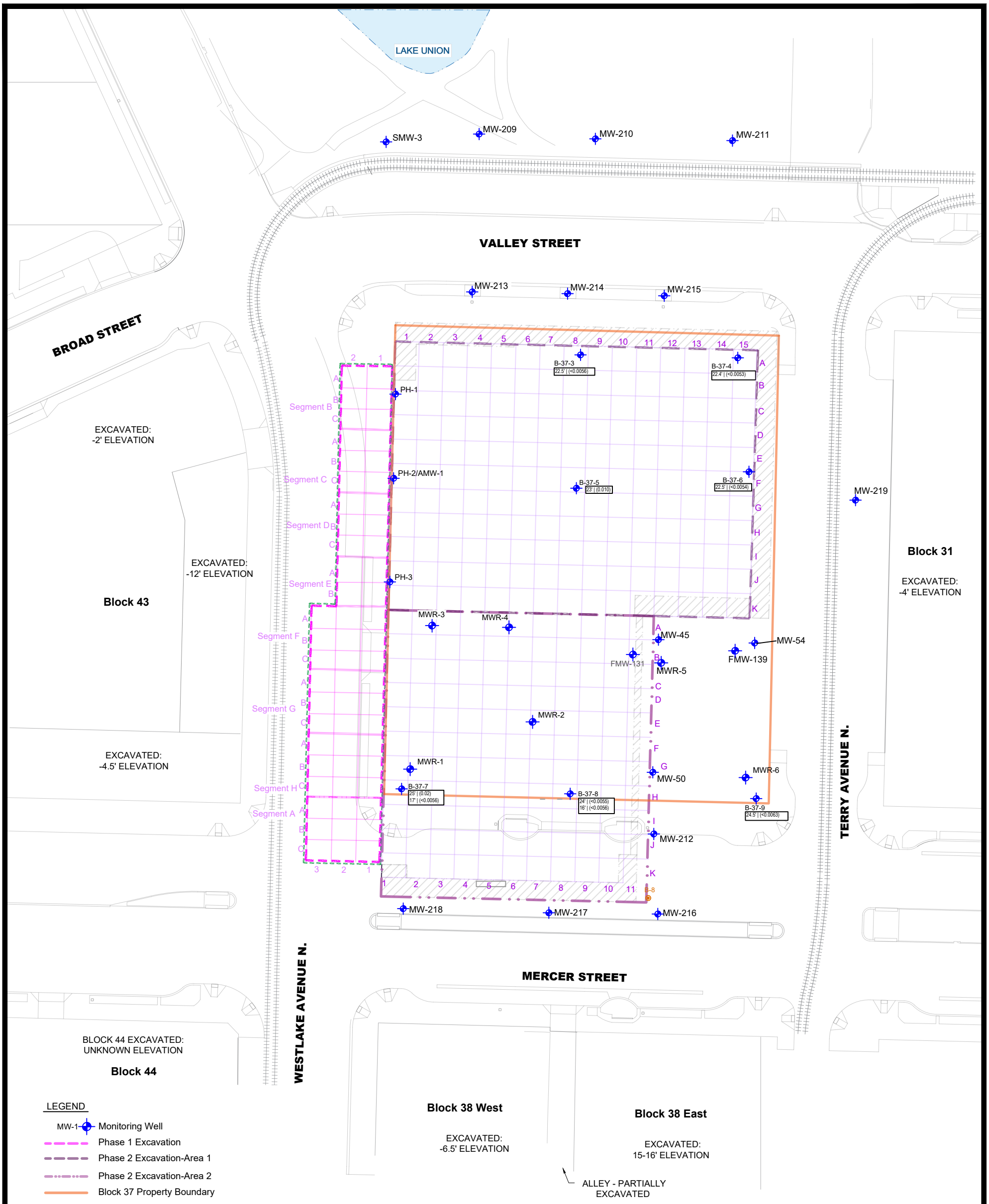

LEGEND

- MW-1 Monitoring Well
- Phase 1 Excavation
- Phase 2 Excavation-Area 1
- Phase 2 Excavation-Area 2
- Block 37 Property Boundary
- Sheet Pile Wall
- SLU Street Car Line
- Slurry (Gravity) Wall

NOTES:

Elevation performance/confirmation soil samples shown as Elevation (ft NAVD88) | Concentration (mg/kg)

< = For soil borings: less than the laboratory method detection limit

cPAHs = Carcinogenic Polycyclic Aromatic Hydrocarbon: Value is calculated Total Toxicity Equivalence Concentration

1) All soil sample locations are approximate and concentrations are expressed in milligrams per kilogram (mg/kg) as total cPAHs
2) ft NAVD88 = feet expressed in elevation using North American Vertical Datum 1988.
3) cPAHs screening level is 0.19 mg/kg for both saturated and vadose zones.
4) Soil samples collected at or above 20 ft NAVD88 are considered vadose zone samples and those collected below 20 ft NAVD88 are considered saturated zone samples.

N W E S

0 60 120

APPROXIMATE SCALE IN FEET

SOIL TOTAL cPAHs CONCENTRATIONS (31-16 ft. NAVD88)

BLOCK 37 SITE
600-630 WESTLAKE AVENUE NORTH
SEATTLE, WASHINGTON
REMEDIAL INVESTIGATION WORK PLAN

PROJECT NUMBER: Z076000082		DATE: 02/23/23	FIGURE 4-7a
APPROVED BY: ES		DRAWN BY: ICD	

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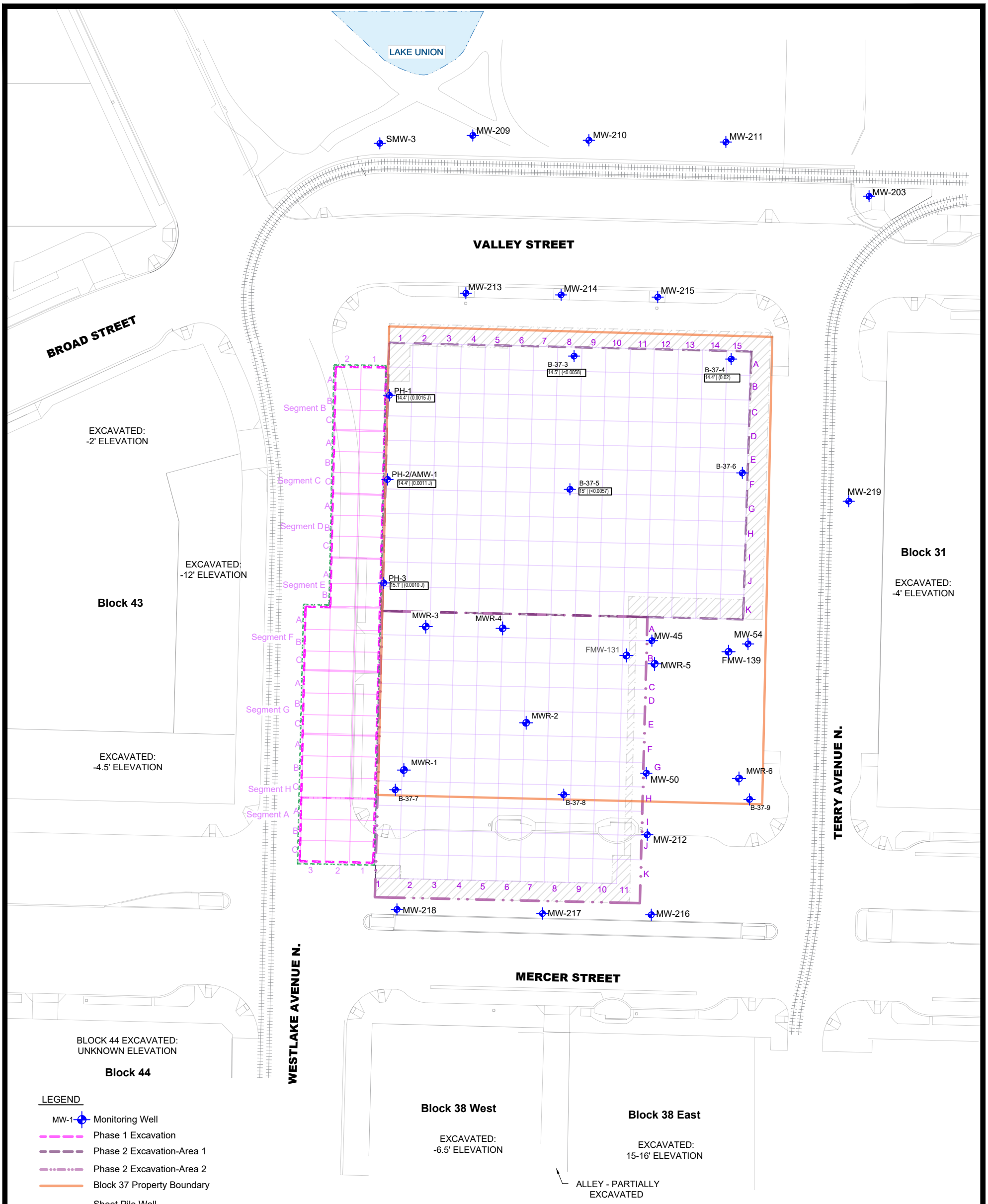

LEGEND

- MW-1 Monitoring Well
- Phase 1 Excavation
- Phase 2 Excavation-Area 1
- Phase 2 Excavation-Area 2
- Block 37 Property Boundary
- Sheet Pile Wall
- SLU Street Car Line
- Slurry (Gravity) Wall

NOTES:

Elevation performance/confirmation soil samples shown as Elevation (ft NAVD88) | Concentration (mg/kg)

< = For soil borings: less than the laboratory method detection limit

J = estimated concentration below the practical quantitation limit.

cPAHs = Carcinogenic Polycyclic Aromatic Hydrocarbon: Value is calculated Total Toxicity Equivalence Concentration

1) All soil sample locations are approximate and concentrations are expressed in milligrams per kilogram (mg/kg) as total cPAHs

2) ft NAVD88 = feet expressed in elevation using North American Vertical Datum 1988.

3) cPAHs screening level is 0.19 mg/kg for saturated and vadose zones.

N W E S

0 60 120

APPROXIMATE SCALE IN FEET

SOIL TOTAL cPAHs CONCENTRATIONS (<16-13 ft. NAVD88)

BLOCK 37 SITE
600-630 WESTLAKE AVENUE NORTH
SEATTLE, WASHINGTON
REMEDIAL INVESTIGATION WORK PLAN

PROJECT NUMBER: Z076000082		DATE: 02/23/23	FIGURE 4-7b
APPROVED BY: ES		DRAWN BY: ICD	

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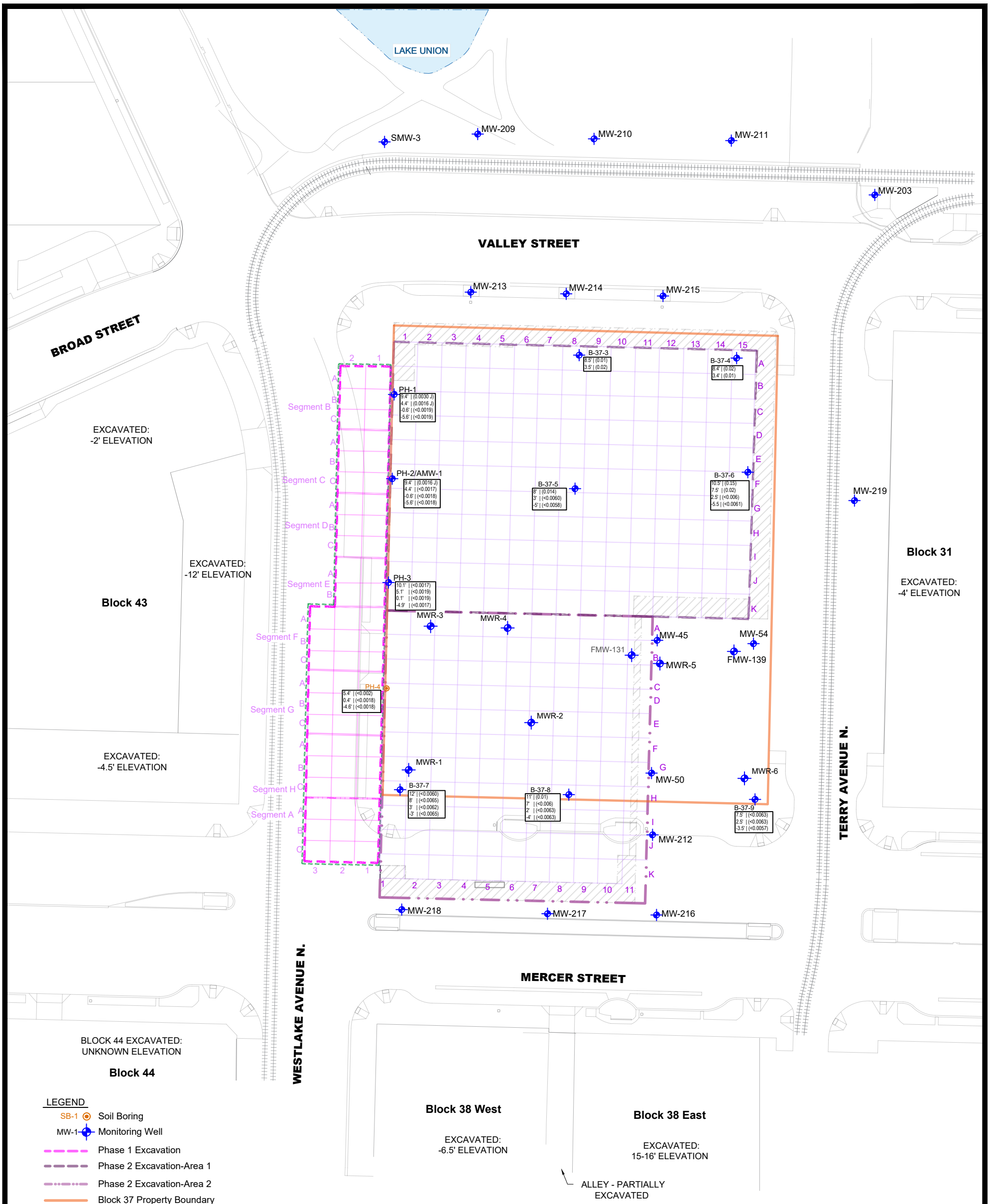

LEGEND

- SB-1 Soil Boring
- MW-1 Monitoring Well
- Phase 1 Excavation
- Phase 2 Excavation-Area 1
- Phase 2 Excavation-Area 2
- Block 37 Property Boundary
- Sheet Pile Wall
- SLU Street Car Line
- Slurry (Gravity) Wall

NOTES:

Elevation performance/confirmation soil samples shown as Elevation (ft NAVD88) | Concentration (mg/kg)

< = For soil borings: less than the laboratory method detection limit

J = estimated concentration below the practical quantitation limit.

cPAHs = Carcinogenic Polycyclic Aromatic Hydrocarbon: Value is calculated Total Toxicity Equivalence Concentration

1) All soil sample locations are approximate and concentrations are expressed in milligrams per kilogram (mg/kg) as total cPAHs

2) ft NAVD88 = feet expressed in elevation using North American Vertical Datum 1988.

3) cPAHs screening level is 0.19 mg/kg for both the saturated and vadose zones. All soil samples depicted on this figure are assumed to be from the saturated zone.

N W E S

0 60 120

APPROXIMATE SCALE IN FEET

SOIL TOTAL cPAHs CONCENTRATIONS (<13 ft. NAVD88)

BLOCK 37 SITE
600-630 WESTLAKE AVENUE NORTH
SEATTLE, WASHINGTON
REMEDIAL INVESTIGATION WORK PLAN

PROJECT NUMBER:	Z076000082	DATE: 02/23/23	FIGURE 4-7c
APPROVED BY:	ES	DRAWN BY: ICD	

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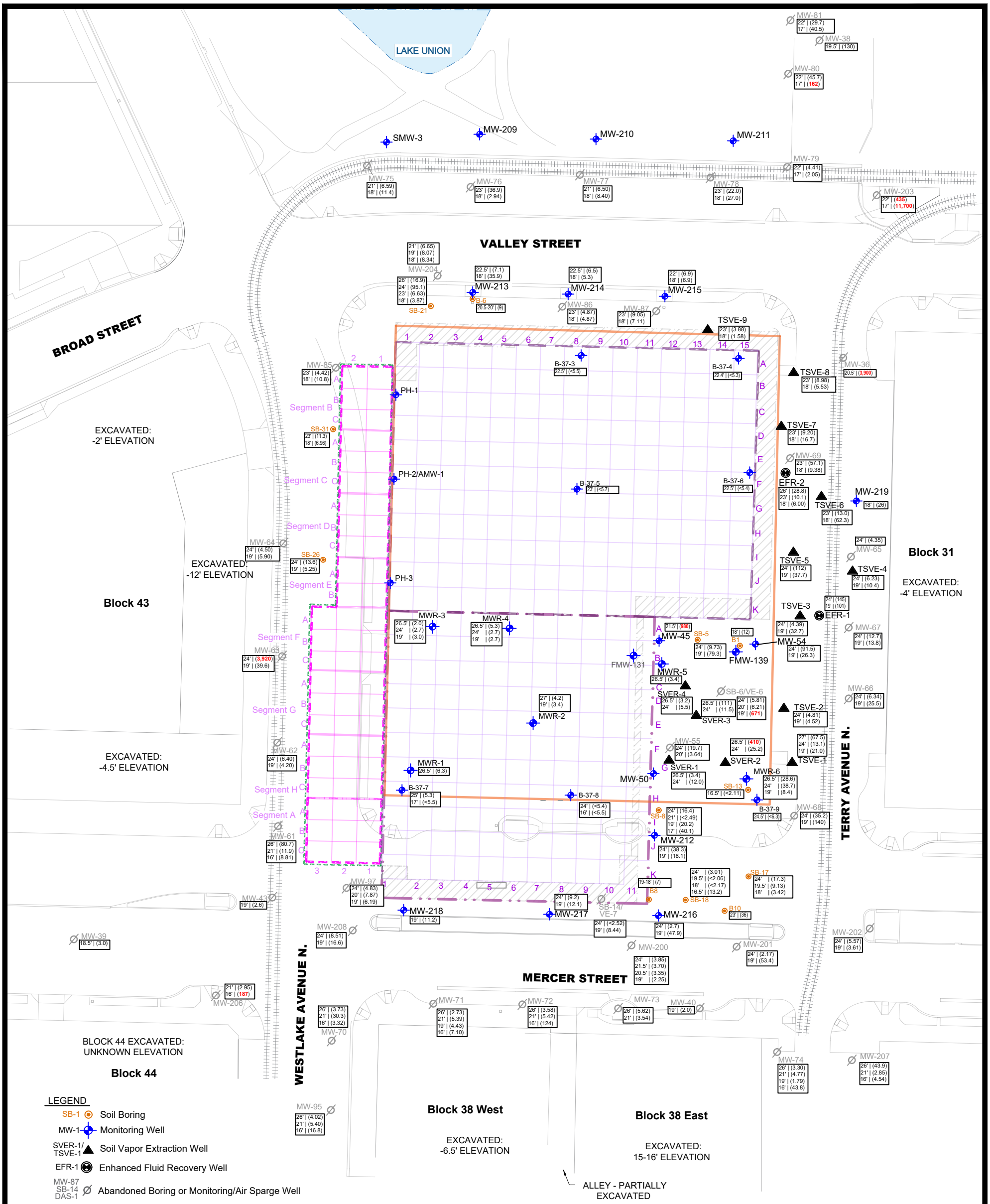

LEGEND

- SB-1 Soil Boring
- MW-1 Monitoring Well
- SVER-1/ TSVE-1 Soil Vapor Extraction Well
- EFR-1 Enhanced Fluid Recovery Well
- MW-87 SB-14 DAS-1 Abandoned Boring or Monitoring/Air Sparge Well
- Phase 1 Excavation
- Phase 2 Excavation-Area 1
- Phase 2 Excavation-Area 2
- Block 37 Property Boundary
- Sheet Pile Wall
- SLU Street Car Line
- Slurry (Gravity) Wall

NOTES:

Elevation performance/confirmation soil samples shown as Elevation (ft NAVD88) | Concentration (mg/kg)

< = For soil borings: less than the laboratory method detection limit

Bold = The detection exceeds the screening level

1) All soil sample locations are approximate and concentrations are expressed in milligrams per kilogram (mg/kg) as total lead
2) ft NAVD88 = feet expressed in elevation using North American Vertical Datum 1988.
3) Lead screening level is 150 mg/kg for saturated zone and 250 mg/kg for vadose zone.
4) Soil samples collected at or above 20 ft NAVD88 are considered vadose zone samples and those collected below 20 ft NAVD88 are considered saturated zone samples.

N W E S

0 60 120

APPROXIMATE SCALE IN FEET

SOIL TOTAL LEAD CONCENTRATIONS (31-16 ft. NAVD88)

BLOCK 37 SITE
600-630 WESTLAKE AVENUE NORTH
SEATTLE, WASHINGTON
REMEDIAL INVESTIGATION WORK PLAN

PROJECT NUMBER: Z076000082		DATE: 02/23/23	FIGURE 4-8a
APPROVED BY: ES		DRAWN BY: ICD	

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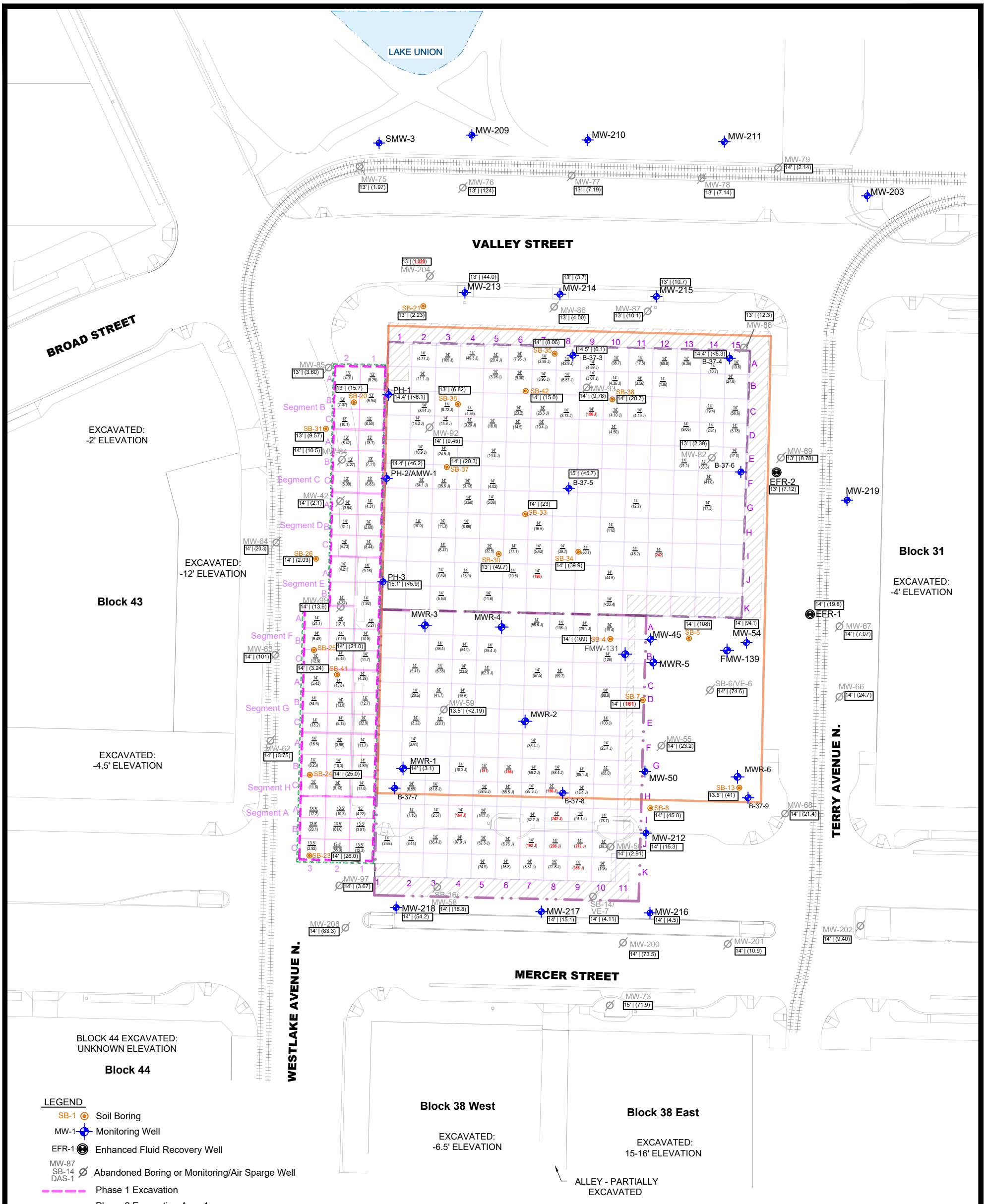

LEGEND

- SB-1 Soil Boring
- MW-1 Monitoring Well
- EFR-1 Enhanced Fluid Recovery Well
- MW-87 / SB-14 / DAS-1 Abandoned Boring or Monitoring/Air Sparge Well
- Phase 1 Excavation
- Phase 2 Excavation-Area 1
- Phase 2 Excavation-Area 2
- Block 37 Property Boundary
- Sheet Pile Wall
- SLU Street Car Line
- Slurry (Gravity) Wall

NOTES:

Elevation performance/confirmation soil samples shown as Elevation (ft NAVD88) | Concentration (mg/kg)

< = For soil borings: less than the laboratory method detection limit

J = estimated concentration below the practical quantitation limit.

Bold = The detection exceeds the screening level

Italics = The non-detect value exceeds the screening level

1) All soil sample locations are approximate and concentrations are expressed in milligrams per kilogram (mg/kg) as lead
2) ft NAVD88 = feet expressed in elevation using North American Vertical Datum 1988.
3) Lead screening level is 150 mg/kg for saturated zone. All soil samples depicted on this figure are assumed to be from the saturated zone.

N W E S

0 60 120

APPROXIMATE SCALE IN FEET

SOIL TOTAL LEAD CONCENTRATIONS (<16-13 ft. NAVD88)

BLOCK 37 SITE
600-630 WESTLAKE AVENUE NORTH
SEATTLE, WASHINGTON
REMEDIAL INVESTIGATION WORK PLAN

PROJECT NUMBER: Z076000082		DATE: 02/23/23	FIGURE 4-8b
APPROVED BY: ES		DRAWN BY: ICD	

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Seattle, Washington 98107
Ph: (206) 781-1449 Fax: (206) 781-1543

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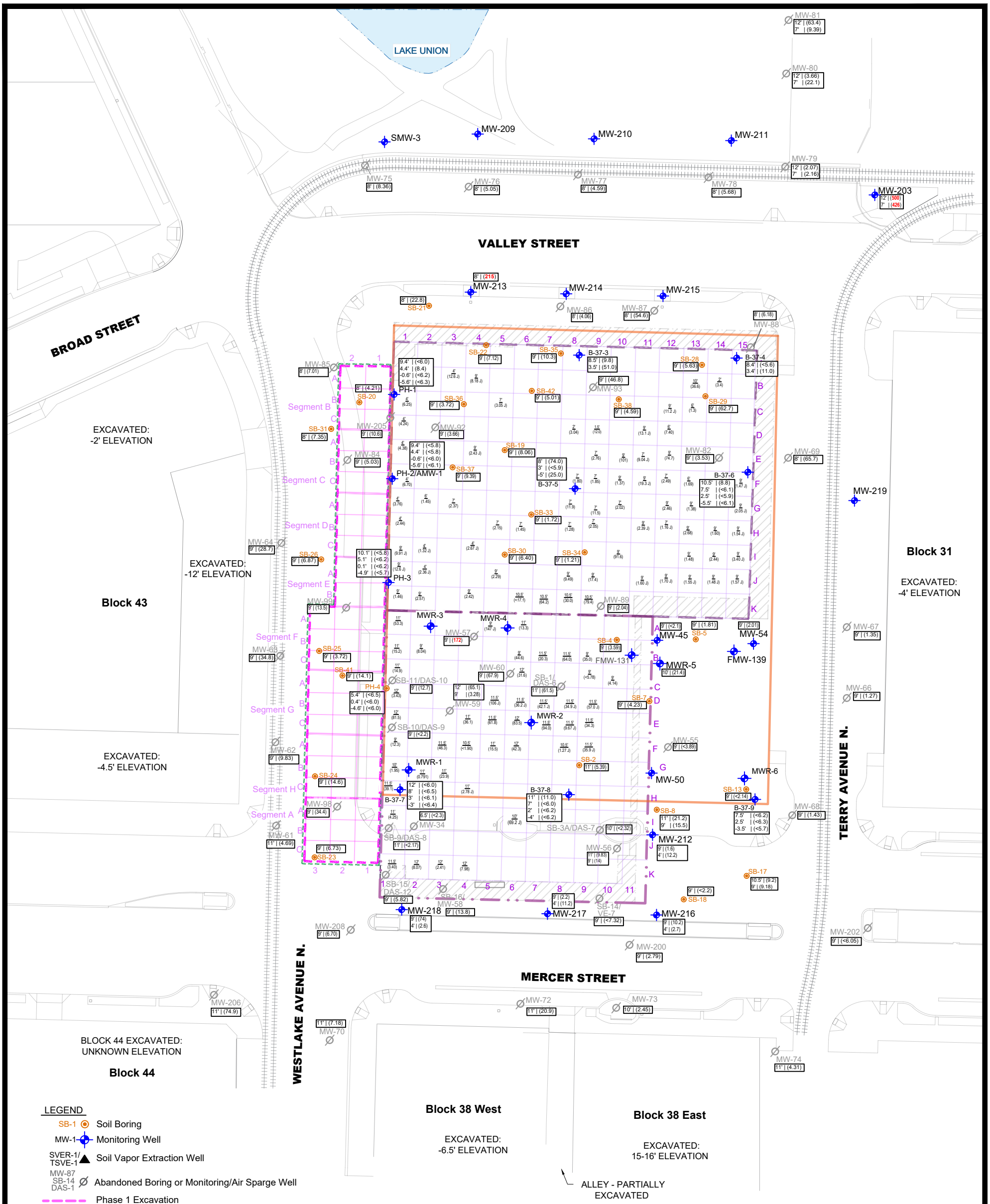

LEGEND

- SB-1 — Soil Boring
- MW-1 — Monitoring Well
- SVER-1/TSVE-1 — Soil Vapor Extraction Well
- MW-87 SB-14 DAS-1 — Abandoned Boring or Monitoring/Air Sparge Well
- Phase 1 Excavation
- Phase 2 Excavation-Area 1
- Phase 2 Excavation-Area 2
- Block 37 Property Boundary
- Sheet Pile Wall
- SLU Street Car Line
- Slurry (Gravity) Wall

NOTES:

Elevation performance/confirmation soil samples shown as Elevation (ft NAVD88) | Concentration (mg/kg)

< = For soil borings: less than the laboratory method detection limit

J = estimated concentration below the practical quantitation limit.

Bold = The detection exceeds the screening level

Italics = The non-detect value exceeds the screening level

1) All soil sample locations are approximate and concentrations are expressed in milligrams per kilogram (mg/kg) as lead
2) ft NAVD88 = feet expressed in elevation using North American Vertical Datum 1988.
3) Lead screening level is 150 mg/kg for saturated zone. All soil samples depicted on this figure are assumed to be from the saturated zone.

N W E S

0 60 120

APPROXIMATE SCALE IN FEET

SOIL TOTAL LEAD CONCENTRATIONS (<13 ft. NAVD88)

BLOCK 37 SITE
600-630 WESTLAKE AVENUE NORTH
SEATTLE, WASHINGTON
REMEDIAL INVESTIGATION WORK PLAN

PROJECT NUMBER: Z076000082		DATE: 02/23/23	FIGURE 4-8c
APPROVED BY: ES		DRAWN BY: ICD	

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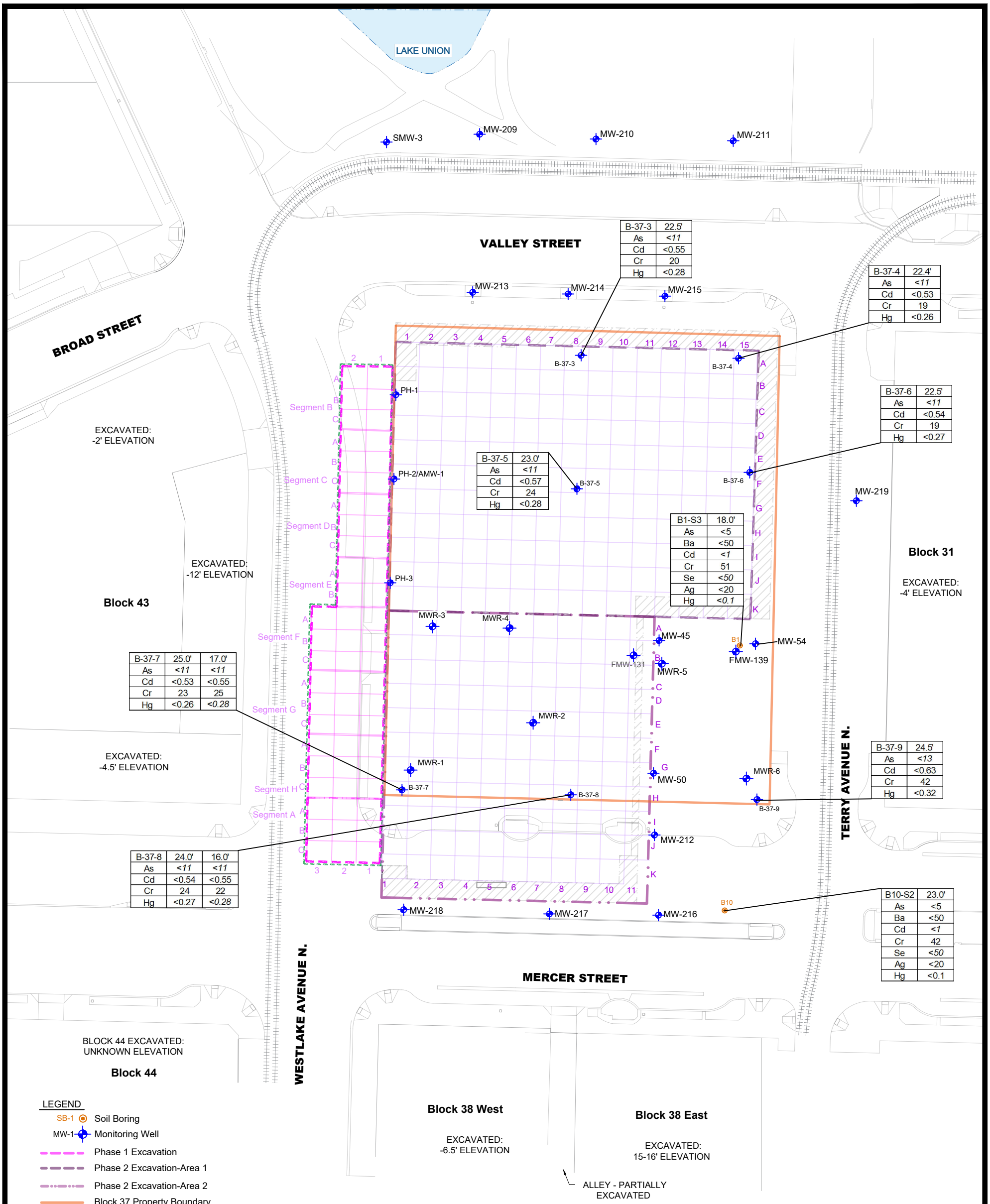

LEGEND

- SB-1 Soil Boring
- MW-1 Monitoring Well
- Phase 1 Excavation
- Phase 2 Excavation-Area 1
- Phase 2 Excavation-Area 2
- Block 37 Property Boundary
- Sheet Pile Wall
- SLU Street Car Line
- Slurry (Gravity) Wall

NOTES:

Elevation performance/confirmation soil samples shown as Elevation (ft NAVD88) | Concentration (mg/kg)

< = For soil borings: less than the laboratory method detection limit

Italics = The non-detect value exceeds the screening level

1) All soil sample locations are approximate and concentrations are expressed in milligrams per kilogram (mg/kg) as total metals
2) ft NAVD88 = feet expressed in elevation using North American Vertical Datum 1988.
3) Soil samples collected at or above 20 ft NAVD88 are considered vadose zone samples and those collected below 20 ft NAVD88 are considered saturated zone samples.

B-37-3 | 22.5' — Sample ID | Elevation ft NAVD88

		Vadose	Saturated
As	Arsenic	7.3	7.3
Ba	Barium	1,600	83
Cd	Cadmium	0.77	0.77
Cr	Chromium	120,000	24,000
Se	Selenium	5.2	1.0
Ag	Silver	14	0.69
Hg	Mercury	2.1	0.1

Screening Levels (mg/kg) Vadose and Saturated Zones

N W E S

0 60 120

APPROXIMATE SCALE IN FEET

SOIL METALS CONCENTRATIONS (31-16 ft. NAVD88)

BLOCK 37 SITE
600-630 WESTLAKE AVENUE NORTH
SEATTLE, WASHINGTON
REMEDIAL INVESTIGATION WORK PLAN

PROJECT NUMBER:	Z076000082	DATE:	02/23/23
APPROVED BY:	ES	DRAWN BY:	ICD

FIGURE 4-9a

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Z076000073_23Q1_2.DWG

LAKE UNION

D10	14'
As	3.34
Ba	**96.2**
Cd	<0.663
Cr	45.1
Se	*<1.33*
Ag	*<0.633*

B-37-3	14.5'
As	*<12*
Cd	<0.58
Cr	29
Hg	*<0.29*

E13	14'
As	<2.17
Ba	30.4
Cd	*<2.17*
Cr	<2.17
Se	*<4.34*
Ag	<2.17

D13	14'
As	<1.89
Ba	<18.9
Cd	*<1.89*
Cr	<1.89
Se	*<3.78*
Ag	*<1.89*

B-37-4	14.4'
As	*<11*
Cd	<0.53
Cr	15
Hg	*<0.27*

D14	14'
As	<1.57
Ba	<15.7
Cd	*<1.57*
Cr	<1.57
Se	*<3.14*
Ag	*<1.57*

E14	14'
As	<2.19
Ba	<21.9
Cd	*<2.19*
Cr	<2.19
Se	*<4.38*
Ag	*<2.19*

F14	14'
As	<1.39
Ba	30.8
Cd	*<1.39*
Cr	1.53
Se	*<2.77*
Ag	*<1.39*

G14	14'
As	<1.30
Ba	25.4
Cd	*<1.30*
Cr	1.78
Se	*<2.59*
Ag	*<1.30*

PH-1	14.4'
As	<3.1
Ba	35
Cr	21

AMW-1	14.4'
As	<3.1
Ba	36
Cr	20

B-37-5	15'
As	*<11*
Cd	<0.57
Cr	23
Hg	*<0.28*

G11	14'
As	2.02
Ba	49.1
Cd	*<0.329*
Cr	20.0
Se	<0.658
Ag	<0.329

PH-3	15.1'
As	<3
Ba	28
Cr	16

SMW-3
MW-209
MW-210
MW-211
MW-203
MW-213
MW-214
MW-215
MW-219
MW-212
MW-218
MW-217
MW-216
MW-45
MW-54
MW-5
FMW-131
FMW-139
MWR-1
MWR-2
MWR-3
MWR-4
MWR-5
MWR-6
MW-50
B-37-3
B-37-4
B-37-5
B-37-6
B-37-7
B-37-8
B-37-9
PH-1
PH-2/AMW-1
PH-3

VALLEY STREET
BROAD STREET
TERRY AVENUE N.
WESTLAKE AVENUE N.
MERCER STREET

Segment A
Segment B
Segment C
Segment D
Segment E
Segment F
Segment G
Segment H

EXCAVATED:
-2' ELEVATION

EXCAVATED:
-12' ELEVATION

EXCAVATED:
-4.5' ELEVATION

EXCAVATED:
-4' ELEVATION

EXCAVATED:
-6.5' ELEVATION

EXCAVATED:
15-16' ELEVATION

BLOCK 44 EXCAVATED:
UNKNOWN ELEVATION

Block 31
Block 43
Block 44
Block 38 West
Block 38 East

ALLEY - PARTIALLY EXCAVATED

LEGEND

- MW-1 Monitoring Well
- Phase 1 Excavation
- Phase 2 Excavation-Area 1
- Phase 2 Excavation-Area 2
- Block 37 Property Boundary
- Sheet Pile Wall
- SLU Street Car Line
- Slurry (Gravity) Wall

	B-37-3	14.5'	Sample ID | Elevation ft NAVD88
As	Arsenic	7.3	Screening Levels (mg/kg) Saturated Zone
Ba	Barium	83	
Cd	Cadmium	0.77	
Cr	Chromium	24,000	
Se	Selenium	1.0	
Ag	Silver	0.69	
Hg	Mercury	0.1	

NOTES:
Elevation performance/confirmation soil samples shown as Elevation (ft NAVD88) | Concentration (mg/kg)
< = For soil borings: less than the laboratory method detection limit
J = estimated concentration below the practical quantitation limit.
Bold = The detection exceeds the screening level
Italics = The non-detect value exceeds the screening level

1) All soil sample locations are approximate and concentrations are expressed in milligrams per kilogram (mg/kg) as total metals
2) ft NAVD88 = feet expressed in elevation using North American Vertical Datum 1988.
3) All soil samples depicted on this figure are assumed to be from the saturated zone.

N W E S

0 60 120
APPROXIMATE SCALE IN FEET

SOIL METALS CONCENTRATIONS (<16-13 ft. NAVD88)

BLOCK 37 SITE
600-630 WESTLAKE AVENUE NORTH
SEATTLE, WASHINGTON
REMEDIAL INVESTIGATION WORK PLAN

PROJECT NUMBER: Z076000082	DATE: 02/23/23	FIGURE 4-9b
APPROVED BY: ES	DRAWN BY: ICD	

ATLAS
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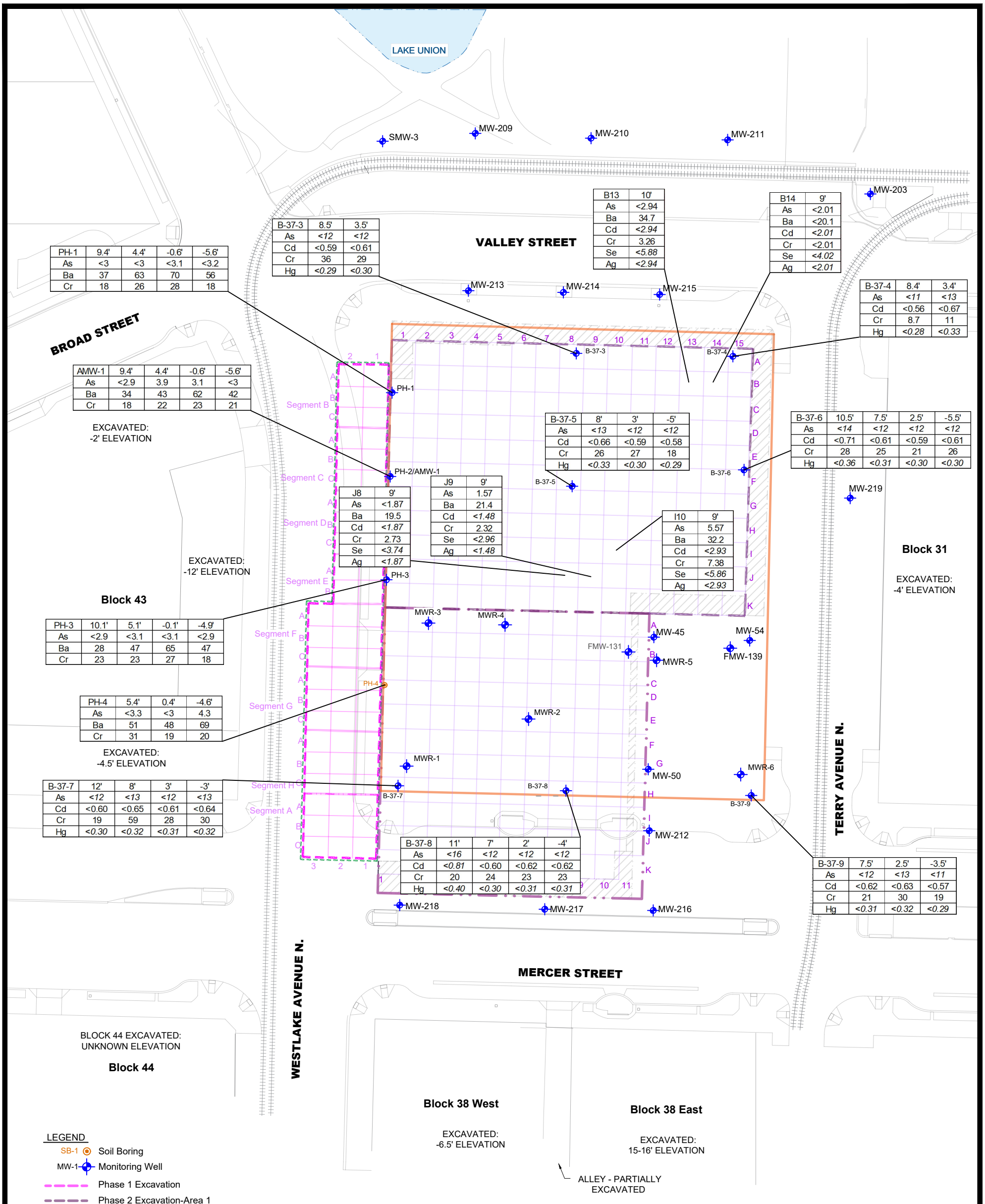

PH-1	9.4'	4.4'	-0.6'	-5.6'
As	<3	<3	<3.1	<3.2
Ba	37	63	70	56
Cr	18	26	28	18

B-37-3	8.5'	3.5'
As	*<12*	*<12*
Cd	<0.59	<0.61
Cr	36	29
Hg	*<0.29*	*<0.30*

B13	10'
As	<2.94
Ba	34.7
Cd	*<2.94*
Cr	3.26
Se	*<5.88*
Ag	*<2.94*

B14	9'
As	<2.01
Ba	<20.1
Cd	*<2.01*
Cr	<2.01
Se	*<4.02*
Ag	*<2.01*

B-37-4	8.4'	3.4'
As	*<11*	*<13*
Cd	<0.56	<0.67
Cr	8.7	11
Hg	*<0.28*	*<0.33*

AMW-1	9.4'	4.4'	-0.6'	-5.6'
As	<2.9	3.9	3.1	<3
Ba	34	43	62	42
Cr	18	22	23	21

EXCAVATED:
-2' ELEVATION

B-37-5	8'	3'	-5'
As	*<13*	*<12*	*<12*
Cd	<0.66	<0.59	<0.58
Cr	26	27	18
Hg	*<0.33*	*<0.30*	*<0.29*

B-37-6	10.5'	7.5'	2.5'	-5.5'
As	*<14*	*<12*	*<12*	*<12*
Cd	<0.71	<0.61	<0.59	<0.61
Cr	28	25	21	26
Hg	*<0.36*	*<0.31*	*<0.30*	*<0.30*

J8	9'
As	<1.87
Ba	19.5
Cd	*<1.87*
Cr	2.73
Se	*<3.74*
Ag	*<1.87*

J9	9'
As	1.57
Ba	21.4
Cd	*<1.48*
Cr	2.32
Se	*<2.96*
Ag	*<1.48*

I10	9'
As	5.57
Ba	32.2
Cd	*<2.93*
Cr	7.38
Se	*<5.86*
Ag	*<2.93*

PH-3	10.1'	5.1'	-0.1'	-4.9'
As	<2.9	<3.1	<3.1	<2.9
Ba	28	47	65	47
Cr	23	23	27	18

PH-4	5.4'	0.4'	-4.6'
As	<3.3	<3	4.3
Ba	51	48	69
Cr	31	19	20

B-37-7	12'	8'	3'	-3'
As	*<12*	*<13*	*<12*	*<13*
Cd	<0.60	<0.65	<0.61	<0.64
Cr	19	59	28	30
Hg	*<0.30*	*<0.32*	*<0.31*	*<0.32*

B-37-8	11'	7'	2'	-4'
As	*<16*	*<12*	*<12*	*<12*
Cd	*<0.81*	<0.60	<0.62	<0.62
Cr	20	24	23	23
Hg	*<0.40*	*<0.30*	*<0.31*	*<0.31*

B-37-9	7.5'	2.5'	-3.5'
As	*<12*	*<13*	*<11*
Cd	<0.62	<0.63	<0.57
Cr	21	30	19
Hg	*<0.31*	*<0.32*	*<0.29*

LEGEND

- SB-1 Soil Boring
- MW-1 Monitoring Well
- Phase 1 Excavation
- Phase 2 Excavation-Area 1
- Phase 2 Excavation-Area 2
- Block 37 Property Boundary
- Sheet Pile Wall
- SLU Street Car Line
- Slurry (Gravity) Wall

	B-37-3	8.5'	Sample ID | Elevation ft NAVD88
As	Arsenic	7.3	Screening Levels (mg/kg) Saturated Zone
Ba	Barium	83	
Cd	Cadmium	0.77	
Cr	Chromium	24,000	
Se	Selenium	1.0	
Ag	Silver	0.69	
Hg	Mercury	0.1	

NOTES:

Elevation performance/confirmation soil samples shown as Elevation (ft NAVD88) | Concentration (mg/kg)

< = For soil borings: less than the laboratory method detection limit

Italics = The non-detect value exceeds the screening level

1) All soil sample locations are approximate and concentrations are expressed in milligrams per kilogram (mg/kg) as total metals
2) ft NAVD88 = feet expressed in elevation using North American Vertical Datum 1988.
3) All soil samples depicted on this figure are assumed to be from the saturated zone.

N W E S

0 60 120

APPROXIMATE SCALE IN FEET

SOIL METALS CONCENTRATIONS (<13 ft. NAVD88)

BLOCK 37 SITE
600-630 WESTLAKE AVENUE NORTH
SEATTLE, WASHINGTON
REMEDIAL INVESTIGATION WORK PLAN

PROJECT NUMBER: Z076000082	DATE: 02/23/23	FIGURE 4-9c
APPROVED BY: ES	DRAWN BY: ICD	

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MW-95			
DEPTH	ELE	G	B
5	26	<4.70	0.0346
10	21	<4.22	<0.0277
15	16	<7.39	<0.0295

MW-70			
DEPTH	ELE	G	B
5	26	<4.80	<0.0259
10	21	776	0.701
15	16	508	<0.0283
20	11	30.2	<0.0302

MW-208			
DEPTH	ELE	G	B
5	24	17.9	<0.0262
10	19	211	1.17
15	14	<33.9	0.0507
20	9	<39.8	<0.0300

MW-97			
DEPTH	ELE	G	B
5	24	5.93	<0.0300
9	20	84.8	0.137
10	19	2,700	0.191
15	14	6.57	0.0684

SB-9/DAS-8			
DEPTH	ELE	G	B
5	26	<5.60	<0.0340
8	23	<6.00	<0.0300
9	22	<5.60	<0.0280
10	21	5.70	<0.0240
12	19	550	<0.140
14	17	8,200	38.0
15	16	83.0	0.250
17	14	12.0	0.0370
18	13	7.50	0.130
20	11	<6.00	<0.0290

MW-98			
DEPTH	ELE	G	B
5	24	4.42	0.619
7	22	13.9	0.270
10	19	3,390	10.0
12	17	5,650	35.6
13.5	15.5	16,000	50.2
15.0	14	58.2	0.596
20	9	33.8	0.0295

B-25			
DEPTH	ELE	G	B
11-12	17-16	2,000	6.00
15-16	13-12	4,000	10.0
17-18	11-10	2.00	0.100

MWR-1			
DEPTH	ELE	G	B
2.5	25.5	<6.00	<0.00290
15	13	<5.40	<0.00260

SB-10/DAS-9			
DEPTH	ELE	G	B
5	24	<5.00	<0.0310
10	19	4,600	0.170
12	17	40.0	1.70
15	14	<5.90	0.110
20	9	<6.30	<0.0310

SB-11/DAS-10			
DEPTH	ELE	G	B
5	24	<5.60	0.0960
9.5	19.5	<5.60	<0.0270
11	18	55.0	0.320
12.5	16.5	420	2.30
13	16	2,500	34.0
14	15	6.70	<0.0220
15.5	13.5	<6.10	0.0380
20	9	69.0	0.300

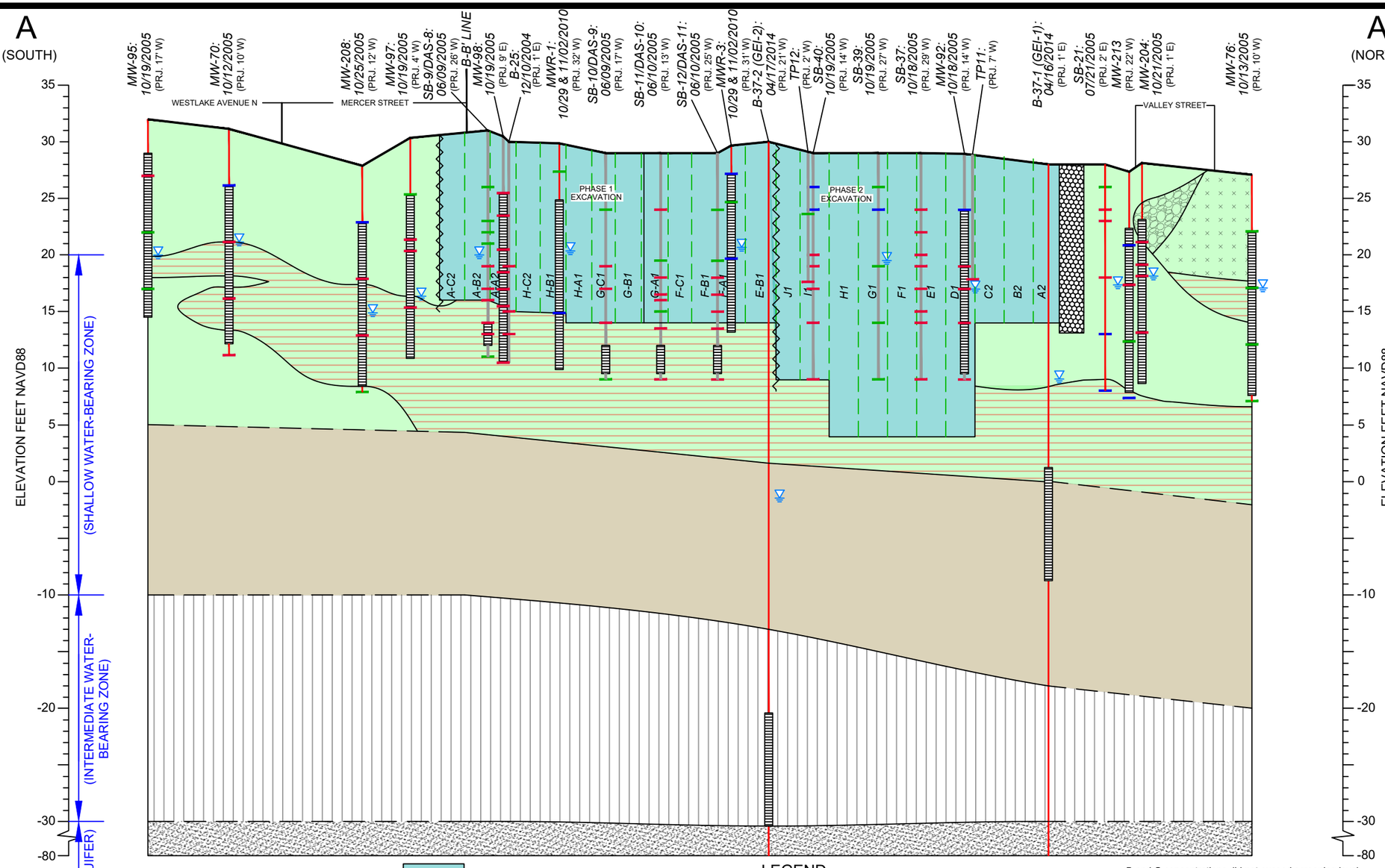
SB-12/DAS-11			
DEPTH	ELE	G	B
5	24	7.50	<0.0250
9.5	19.5	<6.00	<0.0260
11	18	1,500	<0.490
12.5	16.5	3,400	110
14	14	170	1.60
15.5	13.5	180	1.70
20	9	33.0	<0.0370

A

(SOUTH)

A'

(NORTH)



MW-76			
DEPTH	ELE	G	B
5	23	5.85	<0.0211
10	18	<4.86	<0.0282
15	13	<4.50	<0.0262
20	8	<4.43	<0.0300

MW-204			
DEPTH	ELE	G	B
7	21	98.7	12.0
9	19	5,420	14.7
10	18	1,240	24.0
15	13	18.2	0.0529

MW-213			
DEPTH	ELE	G	B
6.5	22.5	<6.00	<0.00330
10	18	130	<0.0547
15	13	7.30	<0.00370
20	8	<7.80	<0.00490

SB-21			
DEPTH	ELE	G	B
2	26	18.1	0.00516
4	24	10.2	0.0754
5	23	8.31	0.0442
10	18	22.5	1.02
15	13	<3.94	0.00538
20	8	<3.96	0.00275

TP11			
DEPTH	ELE	G	B
10.5-11	20.5-20	280	71

MW-92			
DEPTH	ELE	G	B
5	24	<4.34	<0.0259
10	19	7.31	0.0813
12	17	5,340	174
15	14	16.2	0.166
20	9	19.3	0.225

SB-37			
DEPTH	ELE	G	B
5	24	203	0.927
7	22	366	1.40
9	20	4,660	4.47
10	19	5,700	22.1
12	17	1,260	8.69
14	15	11.0	0.277
15	14	17.1	0.244
20	9	31.1	0.201

SB-39			
DEPTH	ELE	G	B
3	26	<6.45	<0.0300
5	24	<4.59	<0.0258
10	19	<3.88	<0.0249
15	14	<2.98	<0.0299
20	9	<3.80	<0.0215

SB-40			
DEPTH	ELE	G	B
3	26	<6.96	<0.0243
5	24	12.9	<0.0257
9	20	131	<0.0276
10	19	363	0.313
12	17	571	0.291
15	14	99.8	0.260
20	9	41.5	0.165

TP12			
DEPTH	ELE	G	B
5-5.5	26-25.5	21	<50
11-11.5	20-19.5	2,400	460

MWR-3			
DEPTH	ELE	G	B
2.5	25.5	<5.70	<0.00280
5	23	7.10	<0.00290
10	18	<6.30	<0.00310

LEGEND

- Silty sand (recent fill)
- Fill: sandy silt to silty sand
- Sand to silty sand (recent deposits)
- Glacially consolidated soils: dense silt, sandy silt & silty sand with varying amounts of gravel
- Outwash sand: dense sand with minor silt
- Gravel
- Wood debris
- Brick fragments

- Sheet pile wall
- Slurry (gravity) wall
- Boring
- Well screen interval, over excavated well/boring.
- Boring
- Well screen interval
- Approximate first encountered water level during drilling
- PRJ — Projected offset distance to the transect

- B and G concentrations did not exceed screening level
- B and G concentrations exceeded screening level
- Non-detect B and G concentrations did not exceed screening level
- ELE — Elevation in feet using North American Vertical Datum 1988
- G — Total Petroleum Hydrocarbon-Gasoline Range Organics
- B — Benzene
- < — Less than the laboratory method detection limit
- **Bold** — Bold values indicate the detection exceeds the screening level
- *Italic* — The non-detect value exceeds the screening level
- All soil sample locations are approximate and concentrations are expressed in milligrams per kilogram (mg/kg)
- TPH-GRO screening level is 30mg/kg
- Benzene screening level is 0.02 mg/kg (if sample elevation is <20') and 0.027 mg/kg (if sample elevation is 20' or >20')
- Sample location over excavated; boring/well location advanced prior to completion of Phase 1 and 2 Excavations.

NOTES:

1. The depth and thickness of the subsurface strata indicated on the sections were generalized from and interpolated between the soil borings. Information on actual subsurface conditions exists only at the location of the soil borings and it is possible that subsurface conditions between the soil borings may vary from those indicated.

2. The boring logs and related information depict subsurface conditions only at the specific locations and dates indicated. soil conditions and water levels at other locations may differ from conditions occuring at these boring locations. Also, the passage of time may result in a change in the conditions at these boring locations.

0 10 20

APPROX. VERTICAL SCALE, FT

0 60 120

APPROX. HORIZONTAL SCALE, FT

SUBSURFACE CROSS SECTION A - A' WITH SOIL BENZENE AND TPH-GRO CONCENTRATIONS

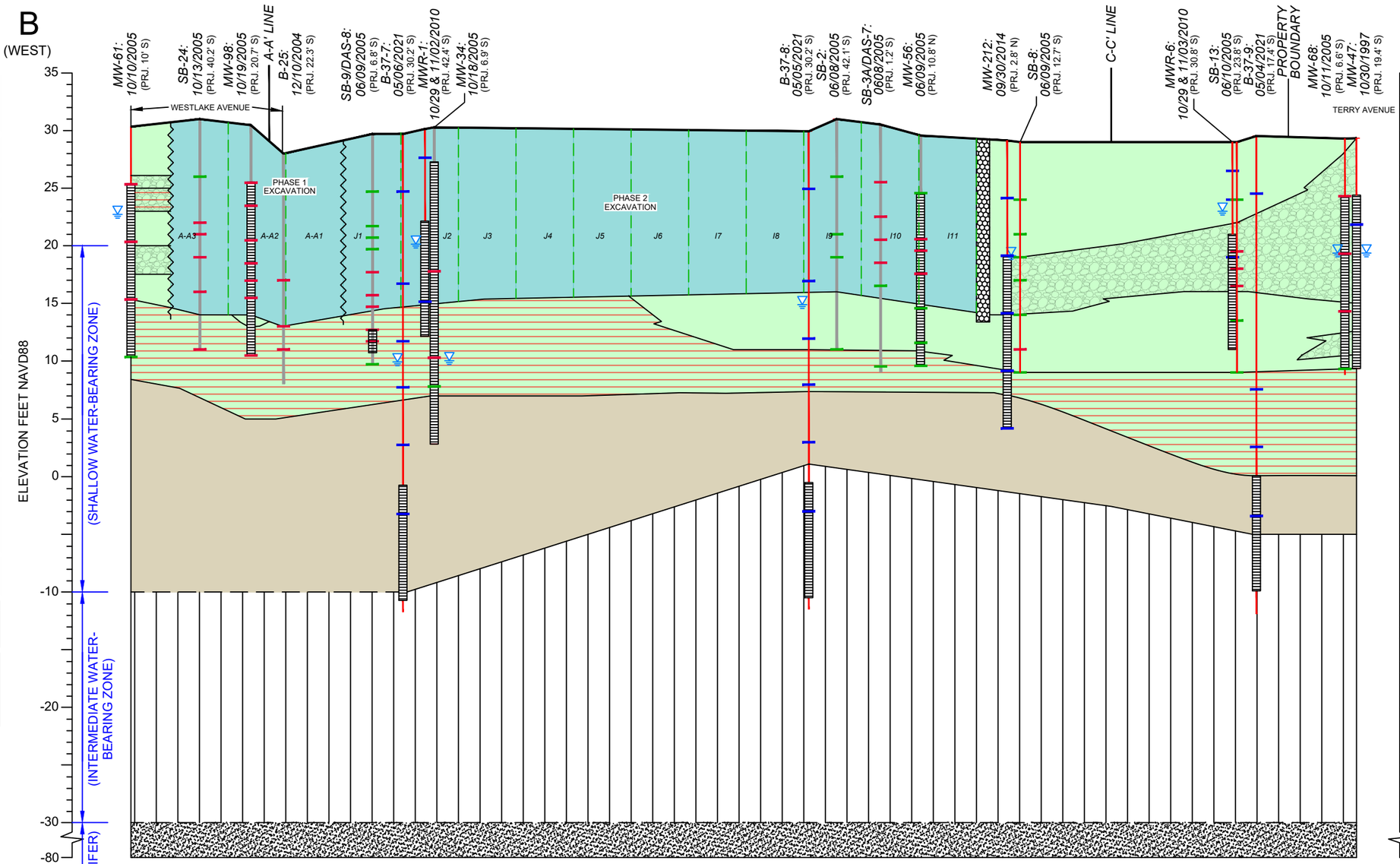
BLOCK 37 SITE
600-630 WESTLAKE AVENUE NORTH
SEATTLE, WASHINGTON
REMEDIAL INVESTIGATION WORK PLAN

PROJECT NUMBER: Z076000073	DATE: 02/14/23	FIGURE 4-10a
APPROVED BY:	DRAWN BY: ICD	

ATLAS
6347 Seaview Avenue NW
Seattle, Washington 98107
Ph: (206) 781-1449 *** Fax: (206) 781-1543

B (WEST)

B' (EAST)



MW-61			
DEPTH	ELE	G	B
5	26	4.95	0.0593
10	21	4.06	0.523
15	16	<3.51	0.422
20	11	<3.78	*<0.0228*

SB-24			
DEPTH	ELE	G	B
5	26	<4.27	*<0.0270*
9	21	5,080	9.00
10	19	66.4	12.0
12	17	34.9	1.11
15	14	<7.50	0.417
20	9	<10.0	0.100

MW-98			
DEPTH	ELE	G	B
5	24	4.42	0.619
7	22	13.9	0.270
10	19	3,390	10.0
12	17	5,650	35.6
13.5	15.5	16,000	50.2
15	14	58.2	0.596
20	9	33.8	0.0295

B-25			
DEPTH	ELE	G	B
11-12	17-16	2,000	6.00
15-16	13-12	4,000	10.0
17-18	11-10	2.00	0.100

SB-9/DAS-8			
DEPTH	ELE	G	B
5	26	<5.60	*<0.0340*
8	23	<6.00	*<0.0300*
9	22	<5.60	*<0.0280*
10	21	5.70	<0.0240
12	19	550	*<0.140*
14	17	8,200	38.0
15	16	83.0	0.250
17	14	12.0	0.0370
18	13	7.50	0.130
20	11	<6.00	*<0.0290*

B-37-7			
DEPTH	ELE	G	B
5	25	<5.40	<0.00110
13	17	<6.20	<0.00100
18	12	<5.90	<0.00100
22	8	<8.10	<0.00140
27	3	<7.00	<0.00130
33	-3	<6.90	<0.00120

MWR-1			
DEPTH	ELE	G	B
2.5	25.5	<6.00	<0.00290
15	13	<5.40	<0.00260

MW-34			
DEPTH	ELE	G	B
12.5	14	2,600 (340)	9.00
20	9	170	0.280
22.5	6.5	<5.00	*<0.0250*

B-37-8			
DEPTH	ELE	G	B
5	24	<6.20	<0.00130
13	16	<5.90	<0.000990
18	11	<11.0	<0.00230
22	7	<6.40	<0.00100
27	2	<6.30	<0.00110
33	-4	<6.50	<0.00100

MW-47			
DEPTH	ELE	G	B
7.5	21.5	<5.00	--

MW-68			
DEPTH	ELE	G	B
5	24	4.49	0.602
10	19	<3.83	0.423
15	14	8.42	1.31
20	9	<3.95	*<0.0234*

B-37-9			
DEPTH	ELE	G	B
5	24.5	<7.40	<0.00110
22	7.5	<6.50	<0.00120
27	2.5	<6.30	<0.00120
33	-3.5	<6.10	<0.00100

SB-13			
DEPTH	ELE	G	B
5	24	8.80	*<0.0440*
9.5	19.5	<5.90	0.120
11	19	<5.90	0.150
12.5	16.5	<5.70	0.0420
15.5	13.5	<18.0	*<0.150*
20	9	<6.00	*<0.0290*

MWR-6			
DEPTH	ELE	G	B
2.5	25.5	<7.40	<0.00350
5	23	<6.70	<0.00360
10	18	<6.70	<0.00300

SB-8			
DEPTH	ELE	G	B
5	24	<6.50	*<0.0360*
8	21	<6.30	*<0.0340*
10	19	<5.50	*<0.0280*
12	17	<5.70	*<0.0260*
15	14	12.0	*<0.110*
18	11	8,600	*<0.330*
20	9	13.0	*<0.0790*

MW-212			
DEPTH	ELE	G	B
5	24	<5.60	<0.00350
10	19	<5.50	0.0067
15	14	<9.70	<0.00510
20	9	<6.10	<0.0114
25	4	<8.70	<0.00650

MW-56			
DEPTH	ELE	G	B
5	24	<6.30	*<0.0320*
9	20	8.60	0.340
10	19	200	0.130
12	17	<5.70	0.130
15	14	<6.00	*<0.0270*
18	11	<11.0	*<0.0640*
20	9	<16.0	*<0.130*

SB-3A/DAS-7			
DEPTH	ELE	G	B
5	26	15.0	0.0480
8	23	19.0	0.0570
10	21	14,000	6.90
12	19	1,000	0.810
14	17	11.0	*<0.0360*
21	10	<6.20	*<0.0370*

SB-2			
DEPTH	ELE	G	B
5	26	<6.60	*<0.0400*
10	21	<5.70	*<0.0340*
12	19	<5.90	*<0.0350*
20	11	<7.20	*<0.0430*

LEGEND

- Silty sand (recent fill)
- Fill: sandy silt to silty sand
- Sand to silty sand (recent deposits)
- Glacially consolidated soils: dense silt, sandy silt & silty sand with varying amounts of gravel
- Outwash sand: dense sand with minor silt
- Gravel
- Wood debris

- Sheet pile wall
- Slurry (gravity) wall
- Boring
- Well screen interval, over excavated well/boring.
- Boring
- Well screen interval
- Approximate first encountered water level during drilling
- PRJ — Projected offset distance to the transect

- B and G concentrations did not exceed screening level
- B and G concentrations exceeded screening level
- Non-detect B and G concentrations did not exceed screening level
- ELE — Elevation in feet using North American Vertical Datum 1988
- G — Total Petroleum Hydrocarbon-Gasoline Range Organics
- B — Benzene
- NA — Not analyzed
- < — Less than the laboratory method detection limit
- **Bold** — Bold values indicate the detection exceeds the screening level
- *Italic* — The non-detect value exceeds the screening level

All soil sample locations are approximate and concentrations are expressed in milligrams per kilogram (mg/kg)

TPH-GRO screening level is 30mg/kg

Benzene screening level is 0.02mg/kg (if sample elevation is <20') and 0.027 mg/kg (if sample elevation is 20' or >20')

Sample location over excavated; boring/well location advanced prior to completion of Phase 1 and 2 Excavations.

NOTES:

1. The depth and thickness of the subsurface strata indicated on the sections were generalized from and interpolated between the soil borings. Information on actual subsurface conditions exists only at the location of the soil borings and it is possible that subsurface conditions between the soil borings may vary from those indicated.

2. The boring logs and related information depict subsurface conditions only at the specific locations and dates indicated. soil conditions and water levels at other locations may differ from conditions occuring at these boring locations. Also, the passage of time may result in a change in the conditions at these boring locations.

0 10 20
APPROX. VERTICAL SCALE, FT

0 30 60
APPROX. HORIZONTAL SCALE, FT

SUBSURFACE CROSS SECTION B-B' WITH SOIL BENZENE AND TPH-GRO CONCENTRATIONS

BLOCK 37 SITE
600-630 WESTLAKE AVENUE NORTH
SEATTLE, WASHINGTON
REMEDIAL INVESTIGATION WORK PLAN

PROJECT NUMBER: Z076000073 | DATE: 02/14/23 | FIGURE 4-10b
APPROVED BY: | DRAWN BY: ICD

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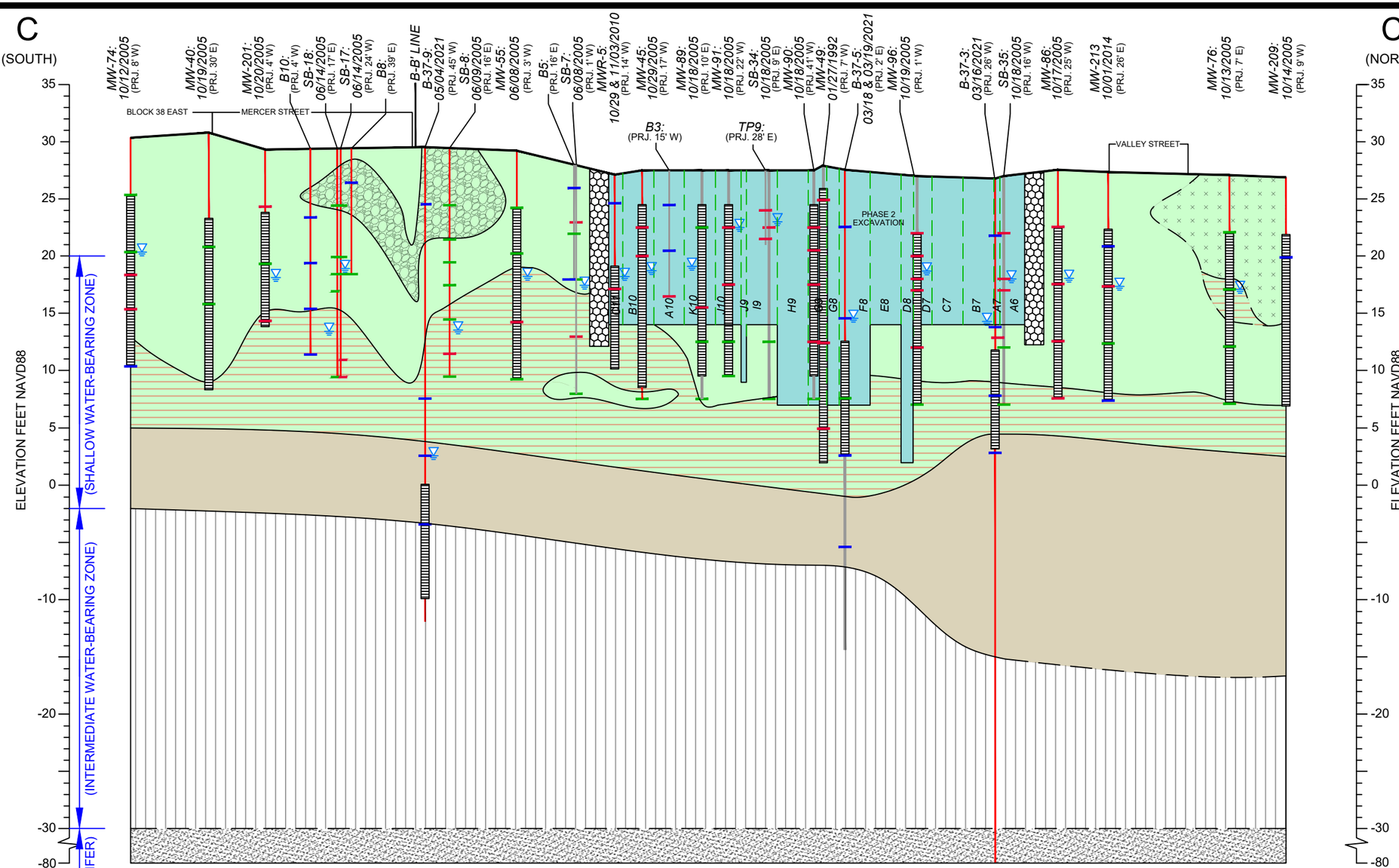

MW-74			
DEPTH	ELE	G	B
5	26	<4.84	<0.0291
10	21	14.2	<0.0255
12	19	71.4	<0.0252
15	16	<8.40	0.834
20	11	<5.54	<0.0142

MW-40			
DEPTH	ELE	G	B
10	19	<5.00	<0.0250
15	14	13.0	<0.0930

MW-201			
DEPTH	ELE	G	B
5	24	<4.18	0.112
10	19	<4.94	<0.0286
15	14	<30.2	0.864

B10			
DEPTH	ELE	G	B
6	23	<20	--
10	19	<20	--
14	15	<20	--
18	11	<20	--

SB-18			
DEPTH	ELE	G	B
5	24	<5.80	<0.0300
9.5	19.5	<5.70	<0.0280
11	18	<6.10	<0.0340
12.5	16.5	<6.30	<0.0320
20	9	<6.30	<0.0330

SB-17			
DEPTH	ELE	G	B
5	24	<5.70	<0.0310
9.5	19.5	<5.70	<0.0310
11	18	<6.50	<0.0330
18.5	10.5	36.0	<0.0430
20	9	52.0	<0.0390

B8			
DEPTH	ELE	G	B
3	28	<20	--
11	20	<5.00	<50

B-37-9			
DEPTH	ELE	G	B
5	24.5	<7.40	<0.00110
22	7.5	<6.50	<0.00120
27	2.5	<6.30	<0.00120
33	-3.5	<6.10	<0.00100

SB-8			
DEPTH	ELE	G	B
5	24	<6.50	<0.0360
8	21	<6.30	<0.0340
10	19	<5.50	<0.0280
12	17	<5.70	<0.0260
15	14	12.0	<0.110
18	11	8,600	<0.330
20	9	13.0	<0.0790

MW-55			
DEPTH	ELE	G	B
5	24	<6.70	<0.0400
9	20	<5.50	<0.0330
15	14	31.0	<0.440
20	9	22.0	<0.310

B5			
DEPTH	ELE	G	B
2	27	<20	--
6	23	<5.00	<50
10	19	<20	--

SB-7			
DEPTH	ELE	G	B
5	24	42.0	1.90
10	19	<6.50	<0.0390
15	14	48.0	1.00
20	9	<8.00	<0.0640

MWR-5			
DEPTH	ELE	G	B
2.5	25.5	<6.50	<0.00350
10	18	255	0.134

MW-45			
DEPTH	ELE	G	B
7.5	21.5	1,900	6.10
15	14	24.0	1.80
20	9	<5.00	<0.0250

B3			
DEPTH	ELE	G	B
3	26	<20	--
7	22	<20	--
11	18	3,400	2,700

MW-209			
DEPTH	ELE	G	B
7	21	<6.19	<0.000895

MW-76			
DEPTH	ELE	G	B
5	23	5.85	<0.0211
10	18	<4.86	<0.0282
15	13	<4.50	<0.0262
20	8	<4.43	<0.0300

MW-213			
DEPTH	ELE	G	B
6.5	22.5	<6.00	<0.00330
10	18	130	<0.0547
15	13	7.30	<0.00370
20	8	<7.80	<0.00490

MW-86			
DEPTH	ELE	G	B
5	23	14.7	0.785
10	18	6.81	1.01
15	13	<4.20	0.243
20	8	<5.29	0.0380

SB-35			
DEPTH	ELE	G	B
5	24	26.4	0.123
9	20	117	0.282
10	19	430	0.151
15	14	7.51	<0.0300
20	9	<7.82	<0.0298

B-37-3			
DEPTH	ELE	G	B
5.0	22.5	<4.90	<0.000890
13.0	14.5	<4.80	<0.000850
19.0	8.5	<5.50	<0.00100
24.0	3.5	<5.80	<0.000820

MW-96			
DEPTH	ELE	G	B
5	24	141	<0.0299
7	22	840	0.587
9	20	1,680	8.40
10	19	99.9	1.90
15	14	39.9	0.141
20	9	<6.37	<0.0294

B-37-5			
DEPTH	ELE	G	B
5	23	<4.20	<0.000800
13	15	<4.80	<0.000840
20	8	<6.90	0.0028
25	3	<5.60	<0.000910
33	-5	<5.10	<0.000810

MW-49			
DEPTH	ELE	G	B
3	26	180 (71)	0.140
15.5	12.5	190 (140)	1.20
23	5	120	1.80

MW-90			
DEPTH	ELE	G	B
5	24	410	1.95
7	22	476	2.08
10	19	64.6	0.142
15	14	10.4	0.986
20	9	<4.65	<0.0278

SB-34			
DEPTH	ELE	G	B
5	24	343	0.488
15	14	<12.1	<0.0295
20	9	<4.63	<0.0270

TP9			
DEPTH	ELE	G	B
3.5-4	28.5-28	1,300	140
6-6.5	25-24.5	2,600	7,200

MW-91			
DEPTH	ELE	G	B
5	24	99.6	0.344
10	19	<6.05	0.379
15	14	<4.42	<0.0283
18	11	<4.74	<0.0287

MW-89			
DEPTH	ELE	G	B
5	24	13.3	<0.0258
12	17	44.9	0.124
15	14	<6.05	<0.0299
20	9	<5.36	<0.0299

LEGEND

- Silty sand (recent fill)
- Fill: sandy silt to silty sand
- Sand to silty sand (recent deposits)
- Glacially consolidated soils: dense silt, sandy silt & silty sand with varying amounts of gravel
- Outwash sand: dense sand with minor silt
- Gravel
- Wood debris
- Brick fragments

- Slurry (gravity) wall
- Boring
- Well screen interval, over excavated well/boring.
- Boring
- Well screen interval
- Approximate first encountered water level during drilling
- PRJ — Projected offset distance to the transect

- B and G concentrations did not exceed screening level
- B and G concentrations exceeded screening level
- Non-detect B and G concentrations did not exceed screening level
- ELE — Elevation in feet Using North American Vertical Datum 1988
- G — Total Petroleum Hydrocarbon-Gasoline Range Organics
- B — Benzene
- NA — Not analyzed
- < — Less than the laboratory method detection limit
- **Bold** — Bold values indicate the detection exceeds the screening level
- *Italic* — The non-detect value exceeds the screening level

All soil sample locations are approximate and concentrations are expressed in milligrams per kilogram (mg/kg)

TPH-GRO screening level is 30mg/kg
Benzene screening level is 0.02mg/kg (if sample elevation is <20') and 0.027 mg/kg (if sample elevation is 20' or >20')

Sample location over excavated; boring/well location advanced prior to completion of Phase 1 and 2 Excavations.

NOTES:

1. The depth and thickness of the subsurface strata indicated on the sections were generalized from and interpolated between the soil borings. Information on actual subsurface conditions exists only at the location of the soil borings and it is possible that subsurface conditions between the soil borings may vary from those indicated.

2. The boring logs and related information depict subsurface conditions only at the specific locations and dates indicated. soil conditions and water levels at other locations may differ from conditions occuring at these boring locations. Also, the passage of time may result in a change in the conditions at these boring locations.

0 10 20
APPROX. VERTICAL SCALE, FT

0 60 120
APPROX. HORIZONTAL SCALE, FT

SUBSURFACE CROSS SECTION C - C' WITH SOIL BENZENE AND TPH-GRO CONCENTRATIONS

BLOCK 37 SITE
600-630 WESTLAKE AVENUE NORTH
SEATTLE, WASHINGTON
REMEDIAL INVESTIGATION WORK PLAN

PROJECT NUMBER: Z076000073	DATE: 02/14/23	FIGURE
APPROVED BY:	DRAWN BY: ICD	4-10c

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Seattle, Washington 98107
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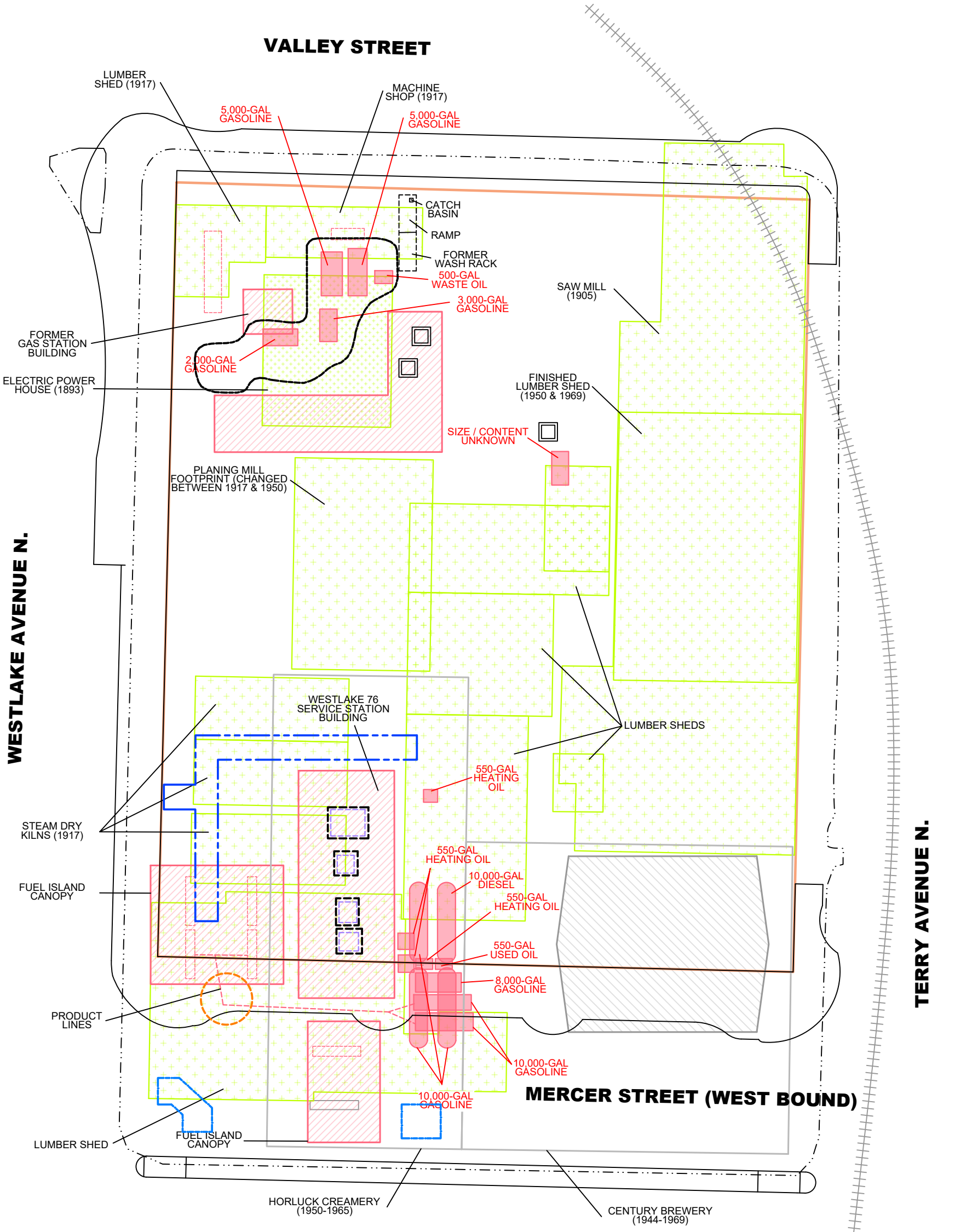

LEGEND

- Block 37 Property Boundary
- Former curb edge of sidewalk/right of way
- Former sump
- Former rail line
- UST/soils and hoist excavation
- Rock-filled product recovery trench
- Approximate location of 1980 gasoline release
- Recovery point excavation
- Former service station structure
- Former fuel dispenser island
- Former UST
- Former hydraulic hoist
- Former lumber mill structure
- Former electric power structure
- Former Denny's restaurant structure
- Former brewery and creamery structures

NOTES:

GAL = gallon
UST = underground storage tank

1) All sample locations are approximate and no longer present.
2) Former structures based on maps prepared by Delta Environmental Consultants (2005) and GeoEngineers (1992) and Sanborn fire insurance maps (EDR 2018).

N
W E
S

0 40 80

APPROXIMATE SCALE IN FEET

REMEDIAL EXCAVATION AREAS (PRIOR TO 2006)

BLOCK 37 SITE
600-630 WESTLAKE AVENUE NORTH
SEATTLE, WASHINGTON
REMEDIAL INVESTIGATION WORK PLAN

PROJECT NUMBER: Z076000082		DATE: 02/14/23	FIGURE 4-11
APPROVED BY: ES		DRAWN BY: ICD	

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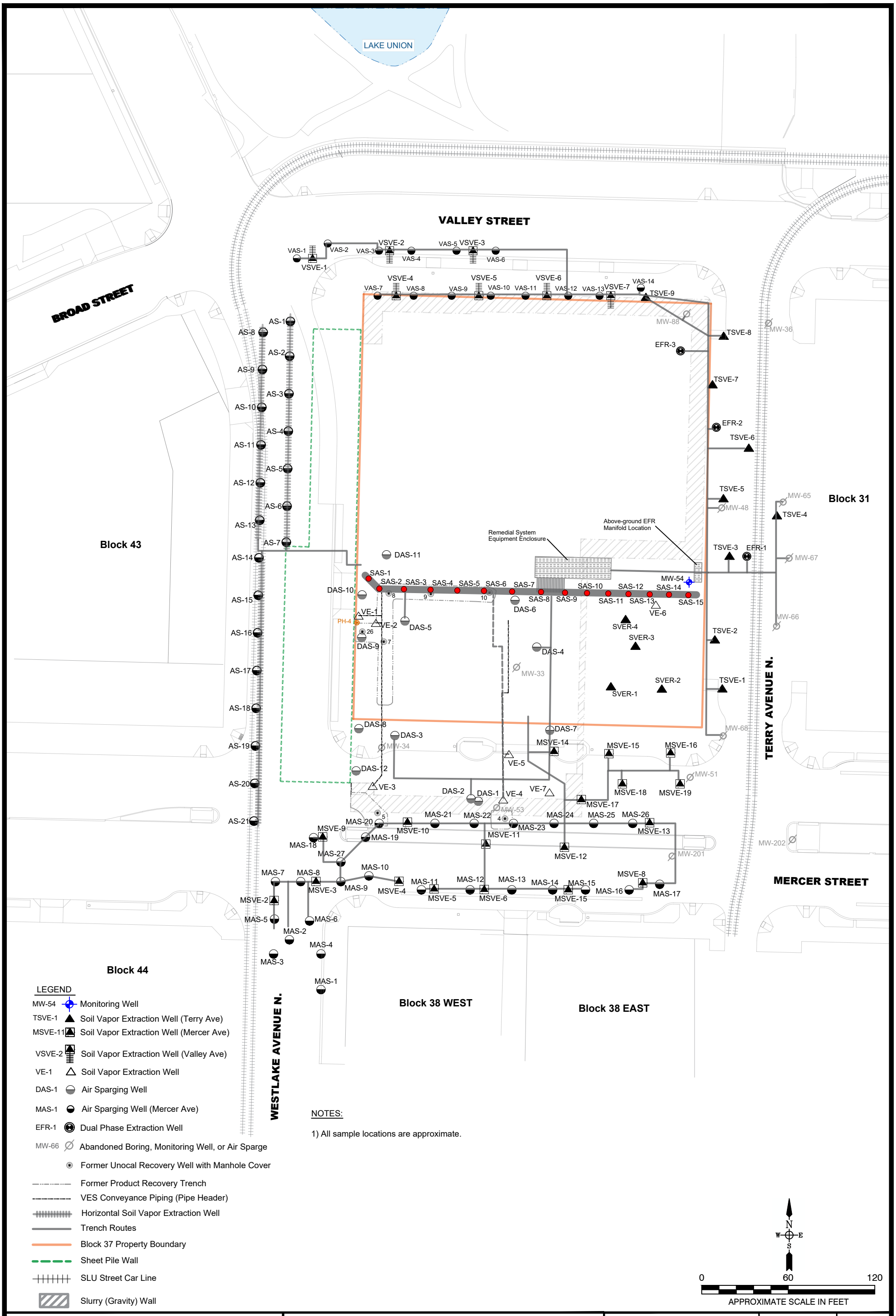

LEGEND

- MW-54 Monitoring Well
- TSVE-1 Soil Vapor Extraction Well (Terry Ave)
- MSVE-11 Soil Vapor Extraction Well (Mercer Ave)
- VSVE-2 Soil Vapor Extraction Well (Valley Ave)
- VE-1 Soil Vapor Extraction Well
- DAS-1 Air Sparging Well
- MAS-1 Air Sparging Well (Mercer Ave)
- EFR-1 Dual Phase Extraction Well
- MW-66 Abandoned Boring, Monitoring Well, or Air Sparge
- Former Unocal Recovery Well with Manhole Cover
- Former Product Recovery Trench
- VES Conveyance Piping (Pipe Header)
- Horizontal Soil Vapor Extraction Well
- Trench Routes
- Block 37 Property Boundary
- Sheet Pile Wall
- SLU Street Car Line
- Slurry (Gravity) Wall

NOTES:

1) All sample locations are approximate.

N W E S

0 60 120

APPROXIMATE SCALE IN FEET

REMEDIATION SYSTEM LOCATIONS

BLOCK 37 SITE
600-630 WESTLAKE AVENUE NORTH
SEATTLE, WASHINGTON
REMEDIAL INVESTIGATION WORK PLAN

PROJECT NUMBER: Z076000082		DATE: 07/31/23	FIGURE 4-12
APPROVED BY: ES		DRAWN BY: ICD	

ATLAS
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Seattle, Washington 98107
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POTENTIAL SOURCE/RELEASE

PRIMARY SOURCE(S)	RELEASE MECHANISM
Lumber Mill Activities (1882 to 1988) • Sawing/Milling • Fuel Storage • Lubricant Storage and Use	• Leaks and Spills From Saws/Mills • Overfills or Leaks from UST or AST Systems
Gasoline Service Stations (1930 to 2008) • Gasoline and Diesel USTs • Dispensers • Fuel Lines **Automobile Servicing (1971 to 2002)** • Automotive Repair • Hydraulic Lifts • Waste Oil UST(s) • Catch Basins and Sumps	• Leaks and Spills from Automotive Repairs • Overfills or Leaks from UST Systems • Oily Runoffs to Stormwater Catch Basins • Waste Disposal to Sumps
Filling of Lake Union (Late 1800's - Early 1900's)	• Placement of Contaminated Fill/Debris
Backfilling Interim Action Excavations (2009)	• Placement of Contaminated Fill

PATHWAY

EXPOSURE MEDIA	TRANSPORT MECHANISM(S)	EXPOSURE ROUTE
Surface/Shallow Soil (0 to 15 ft bgs)	Runoff	Dermal Absorption
	Infiltration/Percolation	Ingestion
	Leaching	Vapor Inhalation
	Volatilization	
Deeper Soil (>15 ft bgs)	Leaching	Dermal Absorption
	Volatilization	Ingestion
		Vapor Inhalation
Groundwater	Advection	Dermal Absorption
	Diffusion	Ingestion
	Volatilization	Vapor Inhalation
Surface Water (Incomplete)	Advection	Ingestion
	Volatilization	Dermal Absorption
		Fish/Shellfish Consumption
		Vapor Inhalation
Sediments		

POTENTIAL RECEPTOR

HUMAN				TERRESTRIAL			AQUATIC	
Residents	Commercial Workers	Construction Workers	Recreational Lake Users	Soil Biota	Plants	Animals	Fish	Benthic Organisms
		C, F		I	I	I		
		C, F		I	I	I		
F	C, F	C, F		I	I	I		
		C, F						
		C, F						
F	C, F	C, F						
F	F	C, F						
F	F	C, F						
F	C, F	C, F						
			I				I	I
			I				I	I
			I				I	I

LEGEND

- C — Complete pathway for current receptor
- F — Complete pathway for future receptor
- I — Incomplete pathway

NOTES:

AST = Above ground storage tank

UST = Underground storage tank

ft bgs = feet below ground surface

PRELIMINARY CONCEPTUAL SITE MODEL

BLOCK 37 SITE
600-630 WESTLAKE AVENUE NORTH
SEATTLE, WASHINGTON
REMEDIAL INVESTIGATION WORK PLAN

PROJECT NUMBER: Z076000073		DATE: 07/31/23	FIGURE 5-1
APPROVED BY: ES		DRAWN BY: ICD	

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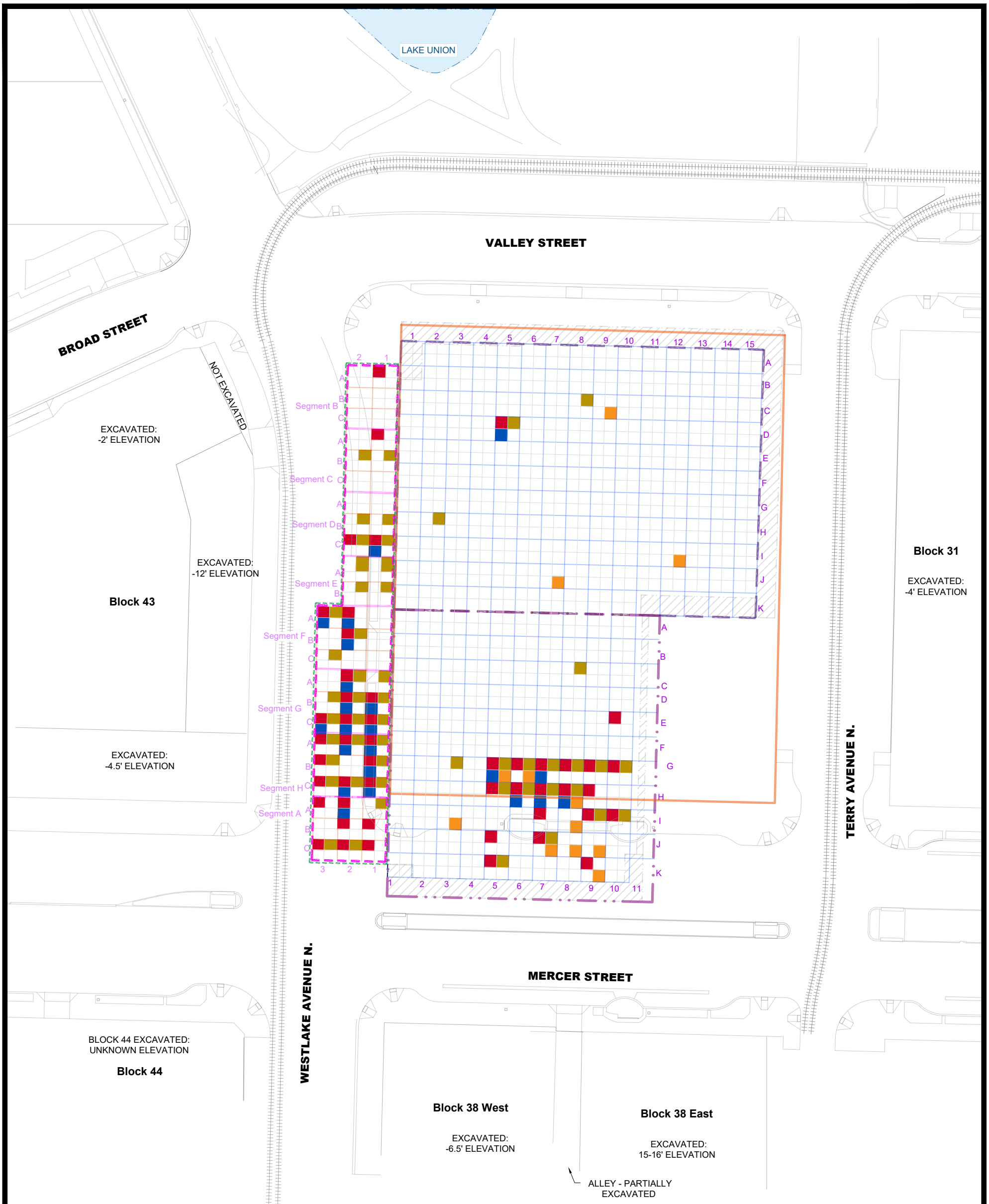

LEGEND

- Phase 1 Excavation
- Phase 2 Excavation-Area 1
- Phase 2 Excavation-Area 2
- Block 37 Property Boundary
- Sheet Pile Wall
- SLU Street Car Line
- Slurry (Gravity) Wall

- Does not exceed screening level
- Exceeds screening level

GRO	Benzene
Napthalene	Lead

GRO Total petroleum hydrocarbon gasoline-range organics
Lead Represented as total lead

NOTES:

1) All sample locations are approximate.
2) Segment alphabet and number associated with grid sampling area.
3) NAVD88 = feet expressed in elevation using North American Vertical Datum 1988.
4) Results shown are unexcavated floor confirmation samples from Phase 1 and Phase 2 excavations, as described in Section 5.
5) The total extractable hydrocarbon value is a sum of diesel-range (or kerosene-range, whichever is higher) and oil-range concentrations. A value of half of the reporting limit was used for results reported as non-detect.
6) Refer to Table 4-4 for additional information.

N
W E
S

0 60 120

APPROXIMATE SCALE IN FEET

SOIL CONCENTRATIONS EXCEEDING SCREENING LEVELS IN UNEXCAVATED CONFIRMATION SAMPLES

BLOCK 37 SITE
600-630 WESTLAKE AVENUE NORTH
SEATTLE, WASHINGTON
REMEDIAL INVESTIGATION WORK PLAN

PROJECT NUMBER: Z076000082		DATE: 02/14/23	FIGURE 5-2
APPROVED BY: ES		DRAWN BY: ICD	

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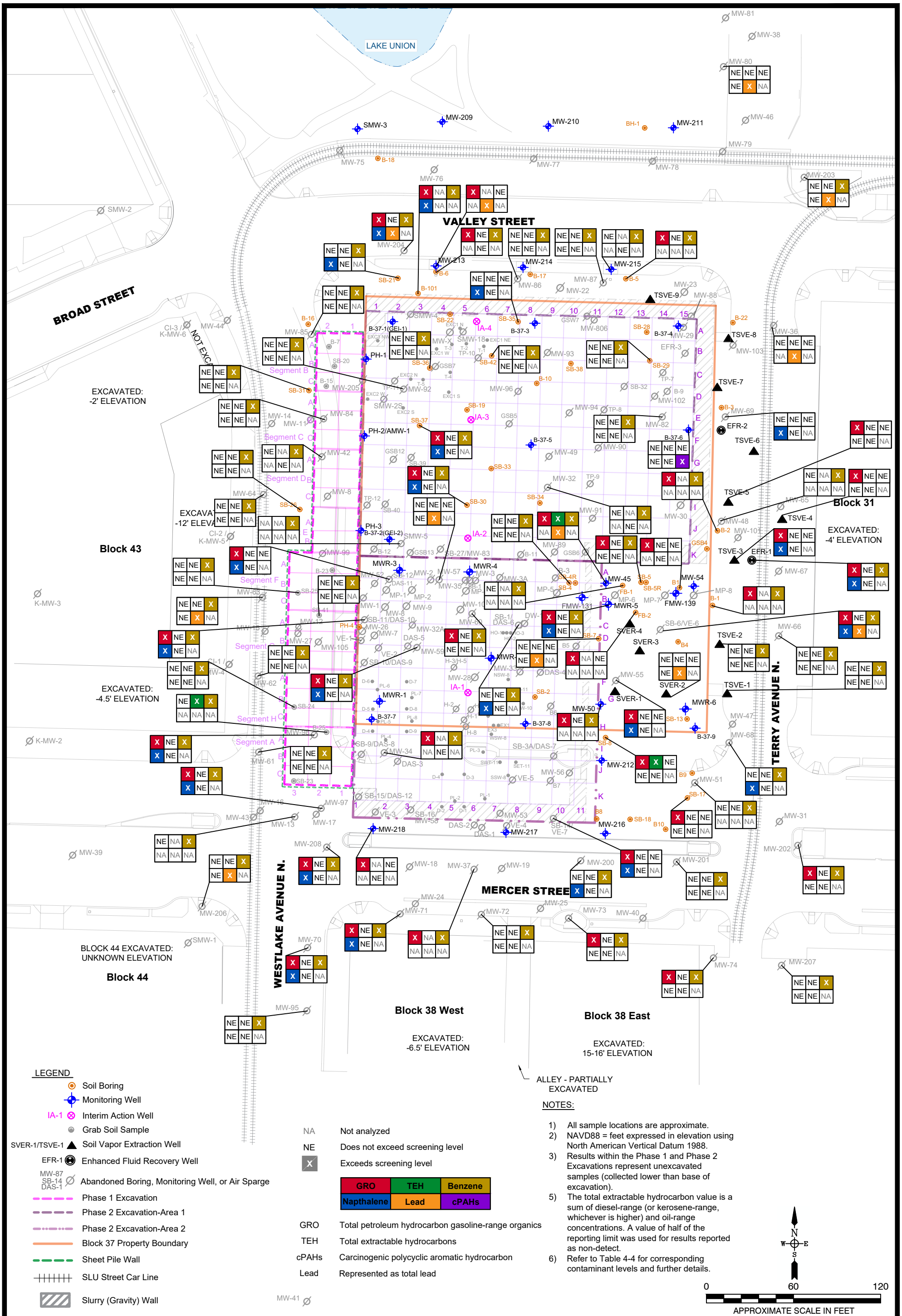


LEGEND

- Soil Boring
- Monitoring Well
- IA-1 Interim Action Well
- Grab Soil Sample
- SVER-1/TSVE-1 Soil Vapor Extraction Well
- EFR-1 Enhanced Fluid Recovery Well
- MW-87 / SB-14 / DAS-1 Abandoned Boring, Monitoring Well, or Air Sparge
- Phase 1 Excavation
- Phase 2 Excavation-Area 1
- Phase 2 Excavation-Area 2
- Block 37 Property Boundary
- Sheet Pile Wall
- SLU Street Car Line
- Slurry (Gravity) Wall

NA	Not analyzed
NE	Does not exceed screening level
X	Exceeds screening level

GRO	TEH	Benzene
Napthalene	Lead	cPAHs

GRO	Total petroleum hydrocarbon gasoline-range organics
TEH	Total extractable hydrocarbons
cPAHs	Carcinogenic polycyclic aromatic hydrocarbon
Lead	Represented as total lead

NOTES:

1) All sample locations are approximate.
2) NAVD88 = feet expressed in elevation using North American Vertical Datum 1988.
3) Results within the Phase 1 and Phase 2 Excavations represent unexcavated samples (collected lower than base of excavation).
5) The total extractable hydrocarbon value is a sum of diesel-range (or kerosene-range, whichever is higher) and oil-range concentrations. A value of half of the reporting limit was used for results reported as non-detect.
6) Refer to Table 4-4 for corresponding contaminant levels and further details.

N W E S

0 60 120

APPROXIMATE SCALE IN FEET

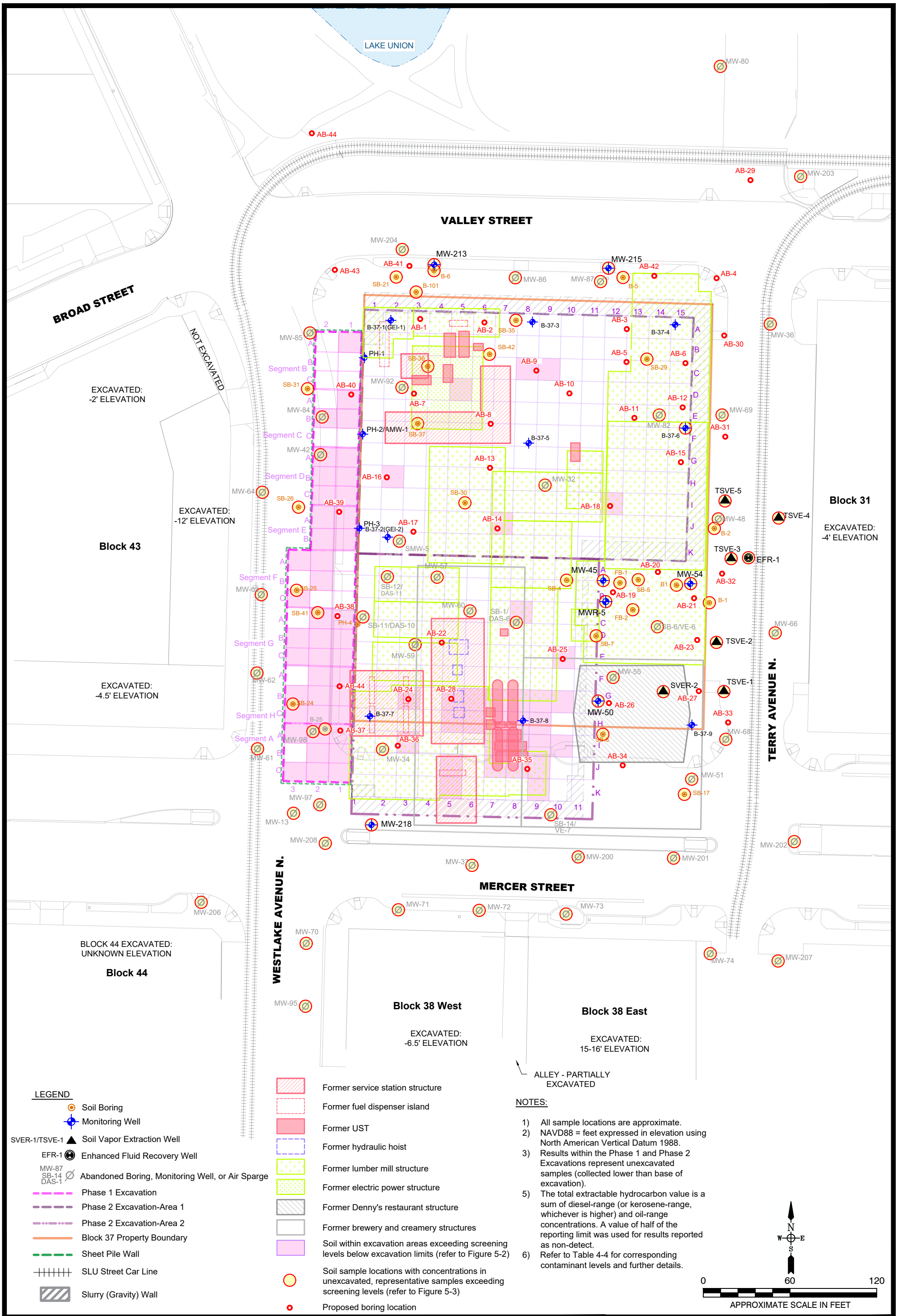
SOIL CONCENTRATIONS EXCEEDING SCREENING LEVELS IN REPRESENTATIVE SAMPLES

BLOCK 37 SITE
600-630 WESTLAKE AVENUE NORTH
SEATTLE, WASHINGTON
REMEDIAL INVESTIGATION WORK PLAN

PROJECT NUMBER: Z076000082		DATE: 03/07/23	FIGURE 5-3
APPROVED BY: ES		DRAWN BY: ICD	

ATLAS
6347 Seaview Avenue NW
Seattle, Washington 98107
Ph: (206) 781-1449 Fax: (206) 781-1543

Z076000073_23Q3.DWG



LEGEND

- Soil Boring
- Monitoring Well
- SVER-1/TSVE-1 Soil Vapor Extraction Well
- EFR-1 Enhanced Fluid Recovery Well
- MW-87 / SB-14 / DAS-1 Abandoned Boring, Monitoring Well, or Air Sparge
- Phase 1 Excavation
- Phase 2 Excavation-Area 1
- Phase 2 Excavation-Area 2
- Block 37 Property Boundary
- Sheet Pile Wall
- SLU Street Car Line
- Slurry (Gravity) Wall

- Former service station structure
- Former fuel dispenser island
- Former UST
- Former hydraulic hoist
- Former lumber mill structure
- Former electric power structure
- Former Denny's restaurant structure
- Former brewery and creamery structures
- Soil within excavation areas exceeding screening levels below excavation limits (refer to Figure 5-2)
- Soil sample locations with concentrations in unexcavated, representative samples exceeding screening levels (refer to Figure 5-3)
- Proposed boring location

NOTES:

1) All sample locations are approximate.
2) NAVD88 = feet expressed in elevation using North American Vertical Datum 1988.
3) Results within the Phase 1 and Phase 2 Excavations represent unexcavated samples (collected lower than base of excavation).
5) The total extractable hydrocarbon value is a sum of diesel-range (or kerosene-range, whichever is higher) and oil-range concentrations. A value of half of the reporting limit was used for results reported as non-detect.
6) Refer to Table 4-4 for corresponding contaminant levels and further details.

N
W E
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0 60 120

APPROXIMATE SCALE IN FEET

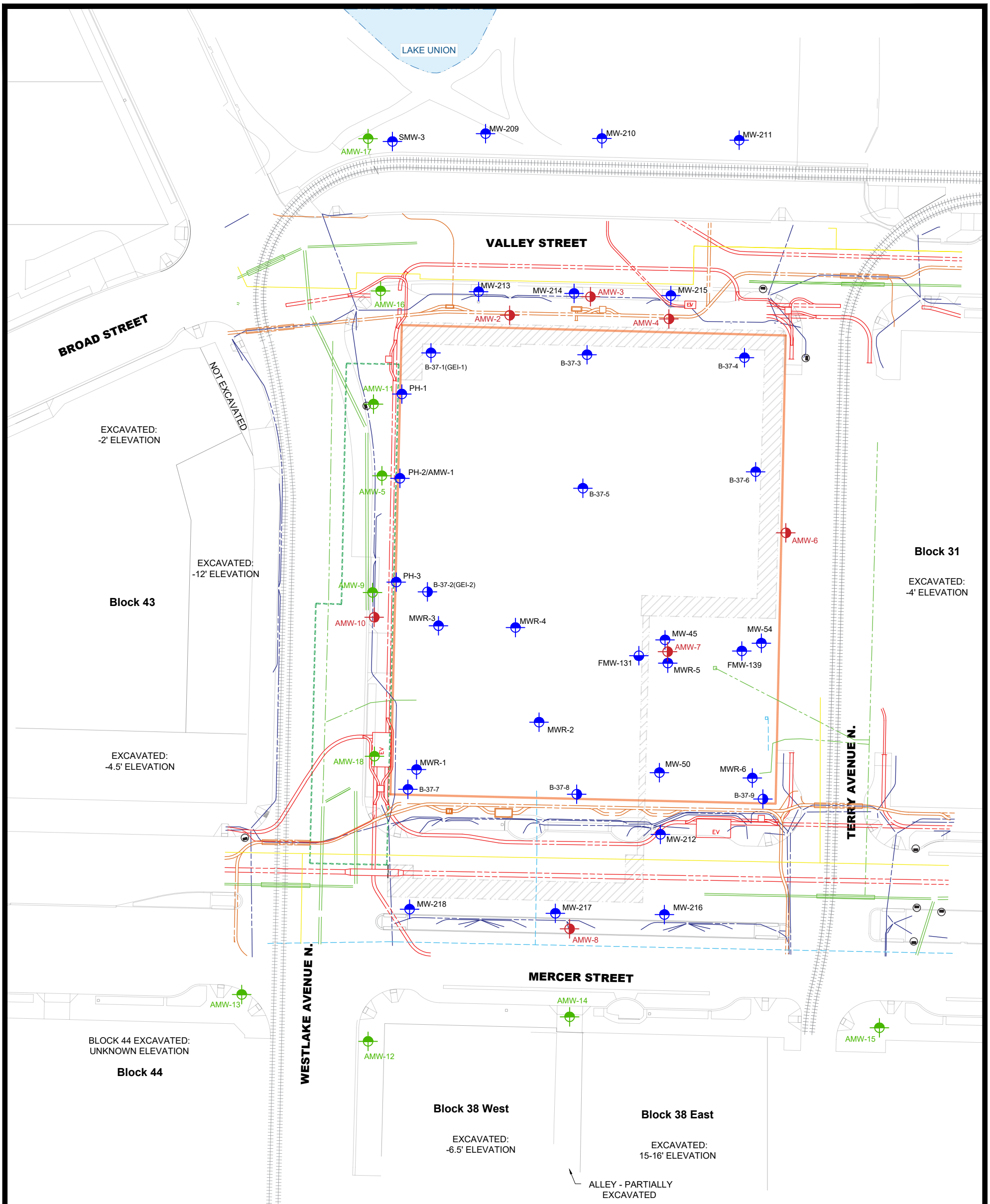
PROPOSED SOIL BORING LOCATIONS

BLOCK 37 SITE
600-630 WESTLAKE AVENUE NORTH
SEATTLE, WASHINGTON
REMEDIAL INVESTIGATION WORK PLAN

PROJECT NUMBER: Z076000082		DATE: 07/31/23	FIGURE 7-1
APPROVED BY: ES		DRAWN BY: ICD	

ATLAS
6347 Seaview Avenue NW
Seattle, Washington 98107
Ph: (206) 781-1449 Fax: (206) 781-1543

Z076000073_23Q3.DWG



LEGEND

- MWR-1 — Shallow Water-bearing Zone Monitoring Well
- B-37-8 — Intermediate Water-bearing Zone Monitoring Well
- FMW-131 — Deep Water-bearing Zone Monitoring Well
- AMW-12 — Proposed Shallow Water-bearing Zone Monitoring Well
- AMW-8 — Proposed Intermediate Water-bearing Zone Monitoring Well
- Block 37 Property Boundary
- Sheet Pile Wall
- SLU Street Car Line
- Slurry (Gravity) Wall
- Storm sewer manhole/catch basin
- Water line
- Electrical Line for street lights
- Sanitary/Storm sewer
- Electrical Line (SCL)
- Communication Line
- Gas Line

NOTES:

1) All well locations are approximate.
2) AMW = ATLAS Monitoring Well

N
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0 60 120

APPROXIMATE SCALE IN FEET

PROPOSED MONITORING WELL LOCATIONS

BLOCK 37 SITE
600-630 WESTLAKE AVENUE NORTH
SEATTLE, WASHINGTON
REMEDIAL INVESTIGATION WORK PLAN

PROJECT NUMBER: Z076000082		DATE: 07/08/23	FIGURE 7-2
APPROVED BY: ES		DRAWN BY: ICD	

ATLAS
6347 Seaview Avenue NW
Seattle, Washington 98107
Ph: (206) 781-1449 Fax: (206) 781-1543

TABLES

Table 3-1. Parcel Details
Remedial Investigation Work Plan
Block 37 Site
600 - 630 Westlake Avenue North | Seattle, Washington

Parcel Number[1]	Address[1]	Acres[1]	Current Owner[1]	Current Use[1]	Parcel Sale History[1]	Historical Operations[2]
408880-3236	615 Terry Ave N	0.02	City Investors XI LLC	Vacant commercial	9/28/2000 Seller: Burlington Northern & Santa Fe Railway Co Buyer: City Investors XI LLC	1882 to 1988 Brace / Brace & Hergert Lumber Mill
408880-3235	n/a	0.3	City Investors XI LLC	Vacant commercial	3/5/2002 Seller: City of Seattle Buyer: City Investors XI LLC	1882 to 1988 Brace / Brace & Hergert Lumber Mill 1930 to 1964 (approx.) Union 76 Service Station 1960s (approx.) to 2002 Auto Service Company
408880-3240	n/a	0.33	City Investors XI LLC	Vacant commercial	3/5/2002 Seller: City of Seattle Buyer: City Investors XI LLC	1882 to 1988 Brace / Brace & Hergert Lumber Mill 1930 to 1964 (approx.) Union 76 Service Station 1960s (approx.) to 2002 Auto Service Company
408880-3345	670 Terry Ave N	0.33	City Investors XI LLC	Vacant commercial	3/5/2002 Seller: City of Seattle Buyer: City Investors XI LLC	1882 to 1988 Brace / Brace & Hergert Lumber Mill
408880-3355	n/a	0.33	City Investors XI LLC	Vacant commercial	12/5/2014 Seller: Phillips 66 Co Buyer: City Investors XI LLC 4/27/2012 Seller: Conoco Phillips Co Buyer: Phillips 66 Co 5/13/1997 Seller: Union Oil of California Buyer: Tosco Corporation	1882 to 1988 Brace / Brace & Hergert Lumber Mill 1950 to 1965 (approx.) Horluck Creameries 1965 to 2008 Westlake 76 Station
198720-0015	n/a	0.28	City Investors XI LLC	Vacant commercial	12/5/2014 Seller: Phillips 66 Co Buyer: City Investors XI LLC 4/24/2012 Seller: Conoco Phillips Buyer: Phillips 66 Co 5/13/1997 Seller: Union Oil of California Buyer: Tosco Corporation	1882 to 1988 Brace / Brace & Hergert Lumber Mill 1944 to 1969 (approx.) Sick's Century Brewery (formerly Horluck's Brewing Co) Unknown dates Denny's Restaurant
	Total Acres:	**1.59**				

Notes

[1]King County Parcel Viewer, KCGIS Center. Available at https://gismaps.kingcounty.gov/parcelviewer2/.

[2]Environmental Database Resources (EDR). 2018. Sanborn Map Report, prepared for 600 Westlake Avenue N, Seattle WA 98109, dated January 17, 2018. Inquiry number 5159511.3.
Environmental Database Resources (EDR). 2018. Aerial Photos Decade Package prepared for 600 Westlake Avenue N, Seattle WA 98109, dated January 16, 2018. Inquiry number 5159511.9.
Refer to the Remedial Investigation Work Plan for additional details and references.

Approx. = approximate (estimated time period based on review of historical data sources). Refer to the RI Work Plan for additional details.

Table 4-1a. Inventory of Existing Wells Construction Details
Remedial Investigation Work Plan
Block 37 Site
600 - 630 Westlake Avenue North | Seattle, Washington

Well ID	Alternate ID	Installation Date	Abandoned / Decommissioned Date	Well Owner	Top of Casing Elevation (ft NAVD88)	Screen Interval (ft bgs)	Screen Interval (ft NAVD88)	Water-Bearing Zone	Available Reference
EXISTING WELLS[1,2]									
MW-45	--	10/29/1991	NA	P66	18.11	3 to 19	15.11 to -0.89	Shallow	GeoEngineers, 1992
MW-50	--	7/17/2001	NA	P66	29.32	5 to 17	24.3 to 11.8	Shallow	GeoEngineers, 2001
MW-54	--	6/7/2005	NA	P66	29.06	5 to 20	24.06 to 9.06	Shallow	Delta, 2005
MW128	--	1/9/2014	NA	BMR	28.59	60 to 70	-30.8 to -40.8	Deep	PES, 2020
MW-209	--	10/14/2008	NA	P66	26.88	5 to 20	21.88 to 6.88	Shallow	Stantec, 2009
MW-210	--	10/14/2008	NA	P66	26.56	5 to 20	21.56 to 6.56	Shallow	Stantec, 2009
MW-211	--	10/14/2008	NA	P66	26.55	5 to 20	21.55 to 6.55	Shallow	Stantec, 2009
MW-212	B-212	9/30/2014	NA	P66	29.09	10 to 25	19.09 to 4.09	Shallow	CardnoATC, 2015
MW-213	B-213	10/1/2014	NA	P66	27.35	5 to 20	22.35 to 7.35	Shallow	CardnoATC, 2015
MW-214	B-214	10/1/2014	NA	P66	27.33	7 to 17	20.33 to 10.33	Shallow	CardnoATC, 2015
MW-215	B-215	10/1/2014	NA	P66	27.21	7 to 17	20.21 to 10.21	Shallow	CardnoATC, 2015
MW-216	B-216	10/2/2014	NA	P66	29.68	10 to 25	19.68 to 4.68	Shallow	CardnoATC, 2015
MW-217	B-217	10/3/2014	NA	P66	30.08	10 to 25	20.08 to 5.08	Shallow	CardnoATC, 2015
MW-218	B-218	10/3/2014	NA	P66	29.64	10 to 25	19.64 to 4.64	Shallow	CardnoATC, 2015
MW-219 *	B-219	NA	NA	P66	27.41	5 to 20	22.41 to 7.41	Shallow	CardnoATC, 2015
MWR-1	--	11/2/2010	NA	P66	29.86	8 to 18	21.86 to 11.86	Shallow	Stantec, 2011
MWR-2	--	11/2/2010	NA	P66	28.16	8 to 17	20.16 to 11.16	Shallow	Stantec, 2011
MWR-3	--	11/2/2010	NA	P66	29.67	8 to 17	21.67 to 12.67	Shallow	Stantec, 2011
MWR-4	--	11/2/2010	NA	P66	28.8	8 to 17	20.8 to 11.8	Shallow	Stantec, 2011
MWR-5	--	11/3/2010	NA	P66	27.12	8 to 17	19.12 to 10.12	Shallow	Stantec, 2011
MWR-6	--	11/3/2010	NA	P66	29.12	8 to 18	21.12 to 11.12	Shallow	Stantec, 2011
SMW-3	MW-3	1/29/1991	NA	City of Seattle	27.40	6.5 to 16.5	11.4 to 10.9	Shallow	SCS Engineers, 1991
FMW-131	--	8/30/2016	NA	City Investors	27.85	63 to 73	-34.65 to -44.65	Deep	Farallon, 2016
FMW-139	--	4/4/2019	NA	City Investors	27.81	7 to 17	20.81 to 10.81	Shallow	Farallon 2019
B-37-1	GEI-1	4/16/2014	NA	City Investors	27.95	26.75 to 36.75	1.2 to -8.8	Shallow	GeoEngineers, 2014
B-37-2	GEI-2	4/16-4/17/2014	NA	City Investors	29.38	50.5 to 60.5	-21.1 to -31.1	Intermediate[3]	GeoEngineers, 2014
B-37-3	--	3/16/2021	NA	City Investors	26.78	15 to 23.7	11.78 to 3.08	Shallow	Farallon 2021
B-37-4	--	3/17/2021	NA	City Investors	27.20	15 to 25	12.2 to 2.2	Shallow	Farallon 2021
B-37-5	--	3/18-3/19/2021	NA	City Investors	27.55	15 to 25	12.55 to 2.55	Shallow	Farallon 2021
B-37-6	--	3/18/2021	NA	City Investors	27.54	15 to 25	12.54 to 2.54	Shallow	Farallon 2021
B-37-7	--	5/6/2021	NA	City Investors	29.71	30.5 to 40.5	-0.79 to -10.79	Shallow[4]	Farallon 2021
B-37-8	--	5/5/2021	NA	City Investors	29.94	30.5 to 40.5	-0.56 to -10.56	Intermediate	Farallon 2021
B-37-9	--	5/4/2021	NA	City Investors	29.53	29.5 to 39.5	0.03 to -9.97	Intermediate	Farallon 2021
PH-1	--	1/26-27/2022	NA	City Investors	29.12	24.0 to 34.0	6.0 to -4.0	Shallow[4]	
PH-2	AMW-1	1/26-27/2022	NA	City Investors	29.21	8.0 to 23.0	22.0 to 7.0	Shallow	
PH-3	--	1/26-27/2022	NA	City Investors	29.60	24.0 to 34.0	6.0 to -4.0	Shallow[4]	

Notes

[1]Refer to Figure 4-1 of the Remedial Investigation Work Plan for locations of historical sampling locations.

[2]Refer to Figure 4-2 of the Remedial Investigation Work Plan for locations of wells.

[3]Well screened across base of intermediate water-bearing zone and sandpack extends into deep water-bearing zone.

[4]Well screened across base of shallow water-bearing zone, but slightly penetrating into intermediate water-bearing zone.

* May be damaged

B = boring

ft bgs = feet below ground surface

ft NAVD88 = feet in elevation North American Vertical Datum 1988

MW = monitoring well

MWR = monitoring well replacement

NA = not applicable

P66 = Phillips 66

SMW = Seattle monitoring well

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Table 4-1b. Complete Inventory of Well Construction Details
Remedial Investigation Work Plan
Block 37 Site
600 - 630 Westlake Avenue North | Seattle, Washington

Well ID	Alternate ID	Installation Date	Abandoned / Decommissioned Date	Well Owner	Top of Casing Elevation (ft NAVD88)	Screen Interval (ft bgs)	Screen Interval (ft NAVD88)	Water-Bearing Zone	Available Reference
EXISTING WELLS[1,2]									
MW-45	--	10/29/1991	NA	P66	18.11	3 to 19	15.11 to -0.89	Shallow	GeoEngineers, 1992
MW-50	--	7/17/2001	NA	P66	29.32	5 to 17	24.3 to 11.8	Shallow	GeoEngineers, 2001
MW-54	--	6/7/2005	NA	P66	29.06	5 to 20	24.06 to 9.06	Shallow	Delta, 2005
MW-128	--	1/9/2014	NA	BMR	28.59	60 to 70	-30.8 to -40.8	Deep	PES 2020
MW-209	--	10/14/2008	NA	P66	26.88	5 to 20	21.88 to 6.88	Shallow	Stantec, 2009
MW-210	--	10/14/2008	NA	P66	26.56	5 to 20	21.56 to 6.56	Shallow	Stantec, 2009
MW-211	--	10/14/2008	NA	P66	26.55	5 to 20	21.55 to 6.55	Shallow	Stantec, 2009
MW-212	B-212	9/30/2014	NA	P66	29.09	10 to 25	19.09 to 4.09	Shallow	CardnoATC, 2015
MW-213	B-213	10/1/2014	NA	P66	27.35	5 to 20	22.35 to 7.35	Shallow	CardnoATC, 2015
MW-214	B-214	10/1/2014	NA	P66	27.33	7 to 17	20.33 to 10.33	Shallow	CardnoATC, 2015
MW-215	B-215	10/1/2014	NA	P66	27.21	7 to 17	20.21 to 10.21	Shallow	CardnoATC, 2015
MW-216	B-216	10/2/2014	NA	P66	29.68	10 to 25	19.68 to 4.68	Shallow	CardnoATC, 2015
MW-217	B-217	10/3/2014	NA	P66	30.08	10 to 25	20.08 to 5.08	Shallow	CardnoATC, 2015
MW-218	B-218	10/3/2014	NA	P66	29.64	10 to 25	19.64 to 4.64	Shallow	CardnoATC, 2015
MW-219 *	B-219	NA	NA	P66	27.41	5 to 20	22.41 to 7.41	Shallow	CardnoATC, 2015
MWR-1	--	11/2/2010	NA	P66	29.86	8 to 18	21.86 to 11.86	Shallow	Stantec, 2011
MWR-2	--	11/2/2010	NA	P66	28.16	8 to 17	20.16 to 11.16	Shallow	Stantec, 2011
MWR-3	--	11/2/2010	NA	P66	29.67	8 to 17	21.67 to 12.67	Shallow	Stantec, 2011
MWR-4	--	11/2/2010	NA	P66	28.8	8 to 17	20.8 to 11.8	Shallow	Stantec, 2011
MWR-5	--	11/3/2010	NA	P66	27.12	8 to 17	19.12 to 10.12	Shallow	Stantec, 2011
MWR-6	--	11/3/2010	NA	P66	29.12	8 to 18	21.12 to 11.12	Shallow	Stantec, 2011
SMW-3	MW-3	1/29/1991	NA	City of Seattle	27.40	6.5 to 16.5	11.4 to 10.9	Shallow	SCS Engineers 1991
FMW-131	--	8/30/2016	NA	City Investors	27.85	63 to 73	-34.65 to -44.65	Deep	Farallon 2016
FMW-139	--	4/4/2019	NA	City Investors	27.81	7 to 17	20.81 to 10.81	Shallow	Farallon 2019
B-37-1	GEI-1	4/16/2014	NA	City Investors	27.95	26.75 to 36.75	1.2 to -8.8	Shallow	GeoEngineers, 2014
B-37-2	GEI-2	4/16-4/17/2014	NA	City Investors	29.38	50.5 to 60.5	-21.1 to -31.1	Intermediate[4]	GeoEngineers, 2014
B-37-3	--	3/16/2021	NA	City Investors	26.78	15 to 23.7	11.78 to 3.08	Shallow	Farallon 2021
B-37-4	--	3/17/2021	NA	City Investors	27.20	15 to 25	12.2 to 2.2	Shallow	Farallon 2021
B-37-5	--	3/18-3/19/2021	NA	City Investors	27.55	15 to 25	12.55 to 2.55	Shallow	Farallon 2021
B-37-6	--	3/18/2021	NA	City Investors	27.54	15 to 25	12.54 to 2.54	Shallow	Farallon 2021
B-37-7	--	5/6/2021	NA	City Investors	29.71	30.5 to 40.5	-0.79 to -10.79	Shallow[5]	Farallon 2021
B-37-8	--	5/5/2021	NA	City Investors	29.94	30.5 to 40.5	-0.56 to -10.56	Intermediate	Farallon 2021
B-37-9	--	5/4/2021	NA	City Investors	29.53	29.5 to 39.5	0.03 to -9.97	Intermediate	Farallon 2021
PH-1	--	1/26-27/2022	NA	City Investors	29.12	24.0 to 34.0	6.0 to -4.0	Shallow[5]	
PH-2	AMW-1	1/26-27/2022	NA	City Investors	29.21	8.0 to 23.0	22.0 to 7.0	Shallow	
PH-3	--	1/26-27/2022	NA	City Investors	29.60	24.0 to 34.0	6.0 to -4.0	Shallow[5]	
ABANDONED / DECOMMISSIONED WELLS[1]									
MW-1	1, U-1	~ June 1980	NA	P66	29.31	10 to 19	19.31 to 0.31	Shallow	RLA 1980
MW-1S	1S, SMW-1S, MW-X	Feb 1990	11/18-19/2008	City of Seattle	28.37				SCS Engineers, 1990
MW-2	2, U-2	~ June 1980	12/14/2004	P66	25.75	4 to 14	21.75 to 11.75	Shallow	RLA 1980
MW-2S	S2,MW-2S	Feb 1990	11/18-19/2008	City of Seattle	28.1				SCS Engineers, 1990
MW-3A	--	3/15/2005	11/18-19/2008	P66	29.09	5 to 20	24.09 to 9.09	Shallow	Delta 1Q05 GWMR
SMW-4	MW-4	1/29/1991	11/18-19/2008	City of Seattle	28.33	5 to 15	23.33 to 13.33	Shallow	SCS Engineers, 1991
SMW-5	MW-5	1/31/1991	11/18-19/2008	City of Seattle	27.32	7 to 17	20.32 to 10.32	Shallow	SCS Engineers, 1991
MW-6	6	~ June 1980	NA	P66	29.3	7 to 17	20.32 to 10.32	Shallow	RLA 1980
MW-7	7, RW -7,VE-2	~ June 1980	NA	P66	20.66				GeoEngineers, 1992
MW-8[6]	--	10/17/2005	Dec 2010 - Jan 2011 ?	P66	28.82	6 to 16	22.82 to 12.82	Shallow	RLA 1980
MW-9	9, RW-9	~ June 1980	NA	P66	20.61				GeoEngineers, 1992
MW-10	10, RW-10	~ June 1980	NA	P66	20.59				GeoEngineers, 1992
MW-12	--	NA	NA		29.6				
MW-13	13, U-13	~ June 1980	9/25/2006, per Delta Q3-2006 GWMR	P66	30.88				
MW-14	14, U-14	~ June 1980	6/12-13/2006	P66	19.28				
MW-15	15, U-15	~ June 1980	6/12-13/2006	P66	20.48				
MW-16	16, U-16	~ June 1980	6/12-13/2006	P66	30.26				
MW-17	17	~ June 1980	6/12-13/2006	P66	21.28				Delta 2007
MW-18	18	~ June 1980	Dec 2010 - Jan 2011 ?	P66	30.08				
MW-19	19, U-19	~ June 1980	Dec 2010 - Jan 2011 ?	P66	29.93				
MW-26	26, RW-26, VE-1	~ June 1980	NA	P66	20.72				GeoEngineers, 1992
MW-27	27, U-27	~ June 1980	6/12-13/2006	P66	20.71				Delta 2007
MW-28	28, RW-28,VE-5	~ June 1980	NA	P66	21.17				GeoEngineers, 1992
MW-29	29, U-29, MW- (NO I.D.)	Nov 1980	NA	P66	18.63				GeoEngineers, 1992
MW-30	30	Nov 1980	NA	P66	29				GeoEngineers, 1992
MW-32	32, U-32, RW-32	Nov 1980	NA	P66	19.3				
MW-32A	--	10/21/1991	11/18-19/2008	P66	20.7	8.5 to 25	12.2 to -4.3	Shallow	
MW-33	--	10/21/1991	NA	P66	30.16	5 to 25	25.16 to 5.16	Shallow	
MW-34	--	10/22/1991	11/18-19/2008	P66	30.28	3 to 27.5	27.28 to 2.78	Shallow	
MW-35	--	10/22/1991	11/18-19/2008	P66	28.9	5 to 27.5	23.9 to 1.4	Shallow	
MW-36	--	10/23/1991	6/12-13/2006	P66	27.21	4 to 20	23.21 to 7.21	Shallow	Delta 2007
MW-37	--	10/24/1991	Dec 2010 - Jan 2011 ?	P66	30.09	5 to 25	25.09 to 5.09	Shallow	
MW-38	--	10/24/1991	NA	P66	26.01	5 to 20	21.01 to 6.01	Shallow	
MW-40	--	10/25/1991	Dec 2010 - Jan 2011 ?	P66	30.08	7.5 to 22.5	22.58 to 7.58	Shallow	
MW-41	--	10/28/1991	1/24-28/2011	P66	36.25	5 to 20	31.25 to 16.25	Shallow	
MW-42	--	10/28/1991	6/12-13/2006	P66	28.66	5 to 27	23.66 to 1.66	Shallow	
MW-43	--	10/29/1991	Jan 2007, per Delta Q4-2006 GWM rpt	P66	30.21	7 to 22	23.21 to 8.21	Shallow	
MW-44	--	10/29/1991	Jan 2007, per Delta Q4-2006 GWM rpt	P66	36.09	5 to 20	31.09 to 16.09	Shallow	
MW-46	--	10/30/1991	NA	P66	16.91	5 to 22.5	11.91 to -5.59	Shallow	Delta 2007
MW-47	--	10/30/1991	6/12-13/2006	P66	29.34	5 to 20	24.34 to 9.34	Shallow	
MW-48	--	1/27/1992	Noted as 3/6/07 in Delta's Q1-2007 tables	P66	27.98	5 to 21.5	22.98 to 6.48	Shallow	Delta 2007
MW-49	--	1/27/1992	11/18-19/2008	P66	27.91	2 to 26	25.91 to 1.91	Shallow	
MW-51	--	7/17/2001	NA	P66	29.75				
MW-52	--	7/17/2001	11/18-19/2008	P66	29.06				
MW-53	--	8/15/2002	11/18-19/2008	P66	29.00				
MW-55	--	6/8/2005	NA	P66	29.22	5 to 20	24.22 to 9.22	Shallow	Delta, 2005
MW-56	--	6/9/2005	11/18-19/2008	P66	29.7	5 to 20	24.7 to 9.7	Shallow	Delta, 2005
MW-57	--	6/10/2005	11/18-19/2008	P66	29.31	5 to 20	24.31 to 9.31	Shallow	Delta, 2005
MW-58	(soil boring SB-16)	6/13/2005	11/18-19/2008	P66	30.69	5 to 20	25.69 to 10.69	Shallow	Delta, 2005
MW-59	--	6/14/2005	11/18-19/2008	P66	30.73	5 to 20	25.73 to 10.73	Shallow	Delta, 2005
MW-60	--	6/14/2005	11/18-19/2008	P66	30.31	5 to 20	25.31 to 10.31	Shallow	Delta, 2005
MW-61	--	10/10/2005	Jan 2007, per Delta Q4-2006 GWM rpt	P66	30.24	5 to 20	25.24 to 10.24	Shallow	Delta, 2005
MW-62	--	10/10/2005	Jan 2007, per Delta Q4-2006 GWM rpt	P66	29.74	5 to 20	24.74 to 9.74	Shallow	Delta, 2005
MW-63	--	10/11/2005	Jan 2007, per Delta Q4-2006 GWM rpt	P66	29.43	5 to 20	24.43 to 9.43	Shallow	Delta, 2005
MW-64	--	10/11/2005	Jan 2007, per Delta Q4-2006 GWM rpt	P66	28.73	5 to 20	23.73 to 8.73	Shallow	Delta, 2005
MW-65	--	10/11/2005	Noted as 3/6/07 in Delta's Q1-2007 tables	P66	27.67	5 to 20	23.67 to 8.67	Shallow	Delta 2007
MW-66	--	10/11/2005	Noted as 3/6/07 in Delta's Q1-2007 tables	P66	28.65	7 to 22	21.65 to 6.65	Shallow	Delta 2007

Table 4-1b. Complete Inventory of Well Construction Details
Remedial Investigation Work Plan
Block 37 Site
600 - 630 Westlake Avenue North | Seattle, Washington

Well ID	Alternate ID	Installation Date	Abandoned / Decommissioned Date	Well Owner	Top of Casing Elevation (ft NAVD88)	Screen Interval (ft bgs)	Screen Interval (ft NAVD88)	Water-Bearing Zone	Available Reference
ABANDONED / DECOMMISSIONED WELLS[1] Cont'd									
MW-67	--	10/12/2005	Noted as 3/6/07 in Delta's Q1-2007 tables	P66	27.64	5 to 20	23.73 to 8.73	Shallow	Delta 2007
MW-68	--	10/11/2005	Noted as 3/6/07 in Delta's Q1-2007 tables	P66	29.33	5.5 to 20.5	23.83 to 8.83	Shallow	Delta 2007
MW-69	--	10/11/2005	Noted as 3/6/07 in Delta's Q1-2007 tables	P66	27.67	5 to 20	22.67 to 7.67	Shallow	
MW-70	--	10/11/2005	6/12-13/2006	P66	31.14	5 to 20	26.14 to 11.14	Shallow	
MW-71	--	10/12/2005	Dec 2010 - Jan 2011 ?	P66	30.42	5 to 20	25.42 to 10.42	Shallow	
MW-72	--	10/12/2005	Dec 2010 - Jan 2011 ?	P66	30.32	5 to 20	25.32 to 10.32	Shallow	
MW-73	--	10/12/2005	Dec 2010 - Jan 2011 ?	P66	30.11	5 to 20	25.11 to 10.11	Shallow	
MW-74	--	10/12/2005	2007 (assumed)	P66	30.35	5 to 20	25.35 to 10.35	Shallow	
MW-75	--	10/13/2005	6/12-13/2006	P66	28.11	5 to 20	23.11 to 8.11	Shallow	
MW-76	--	10/13/2005	Oct 2008?	P66	27.08	5 to 20	22.08 to 7.08	Shallow	
MW-77	--	10/13/2005	6/12-13/2007	P66	26.53	5 to 20	21.53 to 6.53	Shallow	
MW-78	--	10/13/2005	6/12-13/2007	P66	26.45	5 to 20	21.45 to 6.45	Shallow	
MW-79	--	10/14/2005	6/12-13/2007	P66	26.8	5 to 20	21.8 to 6.8	Shallow	
MW-80	--	10/14/2005	Nov 2009 - Feb 2010 ?	P66	26.34	5 to 20	21.34 to 6.34	Shallow	
MW-81	--	10/14/2005	Feb - May 2010 ?	P66	26.21	5 to 20	21.21 to 6.21	Shallow	
MW-82	--	10/14/2005	11/18-19/2008	P66	23.7	3 to 18	20.7 to 5.7	Shallow	
MW-83	SB-27	10/14/2005	2008 ?	P66	23.63	3 to 18	20.63 to 5.63	Shallow	
MW-84	--	10/17/2005	6/12-13/2007	P66	28.51	5 to 20	23.51 to 8.51	Shallow	
MW-85	--	10/17/2005	9/20/2006, per Delta Q3-2006 GWMR	P66	28.29	5 to 20	23.29 to 8.29	Shallow	
MW-86	--	10/17/2005	Dec 2010 - Jan 2011 ?	P66	27.55	5 to 20	22.55 to 7.55	Shallow	
MW-87	--	10/17/2005	Dec 2010 - Jan 2011 ?	P66	26.74	5 to 20	21.74 to 6.74	Shallow	
MW-88	--	10/172005	Noted as 3/6/07 in Delta's Q1-2007 tables	P66	27.28	5 to 20	22.28 to 7.28	Shallow	Delta 2007
MW-89	--	10/18/2005	11/18-19/2008	P66	23.02	3 to 18	20.02 to 5.02	Shallow	
MW-90	--	10/18/2005	11/18-19/2008	P66	22.9	3 to 18	19.9 to 4.9	Shallow	
MW-91	--	10/18/2005	11/18-19/2008	P66	23.13	3 to 18	20.13 to 5.13	Shallow	
MW-92	--	10/18/2005	11/18-19/2008	P66	28.98	5 to 20	23.98 to 8.98	Shallow	
MW-93	--	10/18/2005	11/18-19/2008	P66	25.74	3 to 18	22.74 to 7.74	Shallow	
MW-94	--	10/18/2005	11/18-19/2008	P66	21.9	3 to 18	18.9 to 3.9	Shallow	
MW-95	--	10/19/2005	Dec 2010 - Jan 2011 ?	P66	31.99	3 to 18	28.99 to 13.99	Shallow	
MW-96	--	10/19/2005	11/18/08 ?	P66	24.98	5 to 20	19.98 to 4.98	Shallow	
MW-97	--	10/19/2005	9/25/2006, per Delta Q3-2006 GWMR	P66	30.35	5 to 20	25.35 to 10.35	Shallow	
MW-98	--	10/19/2005	6/12-13/2008	P66	30.47	5 to 20	25.47 to 10.47	Shallow	
MW-99	--	10/20/2005	6/12-13/2009	P66	29.34	5 to 20	24.34 to 9.34	Shallow	
MW-101	--	10/14/2004	6/12-13/2006	City of Seattle	28.1	8 to 13	20.1 to 15.1	Shallow	
MW-102	--	10/14/2004?	11/18-19/2008	City of Seattle	23.86				
MW-103	--	10/14/2004?	Noted as 3/6/07 in Delta's Q1-2007 tables	City of Seattle	27.22				
MW-105	--	10/15/2004	6/12-13/2006	City of Seattle	29.61				
MW-8[7]	--	10/14/2004	6/12-13/2006	City of Seattle		9 to 14		Shallow	
MW-200	--	10/20/2005	Dec 2010 - Jan 2011 ?	P66	29.69	5 to 20	24.69 to 9.69	Shallow	
MW-201	--	10/20/2005	Dec 2010 - Jan 2011 ?	P66	29.32	5.5 to 15.5	23.82 to 13.82	Shallow	
MW-202	--	10/20/2005	Dec 2010 - Jan 2011 ?	P66	30.55	5 to 20	25.55 to 10.55	Shallow	
MW-203	--	10/21/2005	1/24-28/12	P66	25.94	5 to 20	20.94 to 5.94	Shallow	
MW-204	--	10/21/2005	6/12-13/2006	P66	28.13	5 to 20	23.13 to 8.13	Shallow	
MW-205	--	10/24/2005	6/12-13/2006	P66	28.08	5 to 20	23.08 to 8.08	Shallow	
MW-206	--	10/24/2005	Dec 2010 - Jan 2011 ?	P66	31.54	5 to 20	26.54 to 11.54	Shallow	
MW-208	--	10/25/2005	Dec 2010 - Jan 2011 ?	P66	27.88	5 to 20	22.88 to 7.88	Shallow	
MW-806	GSW7	Sept 1999	11/18-19/2008	Unknown	26.28				Garry Struthers Associates (Hart Crowser maps and tables 10/30/2000)
MP-1	--	3/11-12/2003	11/18-19/2008	Unknown	29.1				GeoEngineers, 2003
MP-2	--	3/11-12/2003	11/18-19/2008	Unknown	29.1				GeoEngineers, 2003
MP-3	--	3/11-12/2003	11/18-19/2008	Unknown	29.1				GeoEngineers, 2003
MP-4	--	3/11-12/2003	11/18-19/2008	Unknown	29.3				GeoEngineers, 2003
MP-5	--	3/11-12/2003	11/18-19/2008	Unknown	27.9				GeoEngineers, 2003
MP-6	--	3/11-12/2003	11/18-19/2008	Unknown	28.1				GeoEngineers, 2003
MP-7	--	3/11-12/2003	11/18-19/2008	Unknown	28.2				GeoEngineers, 2003
MP-8	--	3/11-12/2003	11/18-19/2008	Unknown	29.1				GeoEngineers, 2003
DAS-1	AS-1	August 2002	11/18-19/2008	P66	30.1				GeoEngineers, 2003
DAS-2	AS-2	August 2002	11/18-19/2008	P66	30.1				GeoEngineers, 2003
DAS-3	AS-3	3/4/2003	11/18-19/2008	P66	30.2				GeoEngineers, 2003
DAS-4	AS-4	3/5/2003	11/18-19/2008	P66	30.1				GeoEngineers, 2003
DAS-5	AS-5	3/4/2003	11/18-19/2008	P66	30.75				GeoEngineers, 2003
DAS-6	(soil boring SB-1)	6/7/2005	11/18-19/2008	P66	29.5	18 to 20	11.5 to 9.5	Shallow	GeoEngineers, 2003
DAS-7	(soil boring SB-3A)	6/8/2005	11/18-19/2008	P66	39.6	18 to 20		Shallow	Delta, 2005
DAS-8	(soil boring SB-9)	6/9/2005	11/18-19/2008	P66	29.3	18 to 20	11.3 to 9.3	Shallow	Delta, 2005
DAS-9	(soil boring SB-10)	6/9/2005	11/18-19/2008	P66	32.1	18 to 20	4.1 to 2.1	Shallow	Delta, 2005
DAS-10	(soil boring SB-11)	6/10/2005	11/18-19/2008	P66	29.5	18 to 20	11.5 to 9.5	Shallow	Delta, 2005
DAS-11	(soil boring SB-12)	6/10/2005	11/18-19/2008	P66	29.67				Delta, 2005
DAS-12	(soil boring SB-15)	6/13/2005	11/18-19/2008	P66	29.2	18 to 20	11.2 to 9.2	Shallow	Delta, 2005
DW-1	--	12/21/2005	11/18-19/2008	P66	28.9				
SMW-2	--	1/30/1991	NA	City of Seattle	26.48	4 to 14	22.48 to 12.48	Shallow	
CI-1	K-MW-4, MW-4	3/31/2003	2/27/2011	City Investors	29.97	10 to 30	19.97 to -0,03	Shallow	Kane 2003
CI-2	K-MW-5, MW-5	3/31/2003	2/27/2011	City Investors	28.98	10 to 30	19.98 to -0.02	Shallow	Kane 2003
CI-3	K-MW-6	4/1/2003	2/27/2011	City Investors	29.04	5 to 20	24.04 to 9.04	Shallow	Kane 2003
UNKNOWN WELL STATUS[1]									
MW-11	11	~ June 1980	NA	P66	19.82			Shallow	GeoEngineers, 2001
MW-22	22	~ June 1980	NA	P66	26.7				
MW-23	23	~ June 1980	NA	P66	27.2				
MW-25	25	~ June 1980	NA	P66	21.61				GeoEngineers, 2001
MW-31	31	Nov 1980	NA	P66	29.1				
MW-39	--	10/25/1991	NA	P66	29	7 to 24	22 to 5	Shallow	
MW-207	--	10/24/2005	NA	P66	29.1	5 to 20	24.1 to 9.1	Shallow	
SAS-1[8]	--	3/11-12/2003		P66		16 to 18		Shallow	GeoEngineers 2003
SAS-2[8]	--	3/11-12/2003		P66		15 to 18		Shallow	GeoEngineers 2003
SAS-3[8]	--	3/11-12/2003		P66		15 to 18		Shallow	GeoEngineers 2003
SAS-4[8]	--	3/11-12/2003		P66		15 to 18		Shallow	GeoEngineers 2003
SAS-5[8]	--	3/11-12/2003		P66		15 to 18		Shallow	GeoEngineers 2003
SAS-6[8]	--	3/11-12/2003		P66		15 to 18		Shallow	GeoEngineers 2003
SAS-7[8]	--	3/11-12/2003		P66		15 to 18		Shallow	GeoEngineers 2003
SAS-8[8]	--	3/11-12/2003		P66		15 to 18		Shallow	GeoEngineers 2003
SAS-9[8]	--	3/11-12/2003		P66		15 to 18		Shallow	GeoEngineers 2003
SAS-10[8]	--	3/11-12/2003		P66		15 to 18		Shallow	GeoEngineers 2003
SAS-11[8]	--	3/11-12/2003		P66		15 to 18		Shallow	GeoEngineers 2003
SAS-12[8]	--	3/11-12/2003		P66		15 to 18		Shallow	GeoEngineers 2003
SAS-13[8]	--	3/11-12/2003		P66		15 to 18		Shallow	GeoEngineers 2003
SAS-14[8]	--	3/11-12/2003		P66		15 to 18		Shallow	GeoEngineers 2003
SAS-15[8]	--	3/11-12/2003		P66		15 to 17		Shallow	GeoEngineers 2003
SMW-1	--	1/28/1991	NA	City of Seattle	29.1	10 to 20		Shallow	SCS Engineers, 1991

Table 4-1b. Complete Inventory of Well Construction Details
Remedial Investigation Work Plan
Block 37 Site
600 - 630 Westlake Avenue North | Seattle, Washington

Well ID	Alternate ID	Installation Date	Abandoned / Decommissioned Date	Well Owner	Top of Casing Elevation (ft NAVD88)	Screen Interval (ft bgs)	Screen Interval (ft NAVD88)	Water-Bearing Zone	Available Reference
ABANDONED REMEDIATION SYSTEM WELLS[1,3]									
AS-1	--	7/19/2006	April 2019	P66		21 to 24		Shallow	Delta, 2007
AS-2	--	7/19/2006	April 2019	P66		20 to 23		Shallow	Delta, 2007
AS-3	--	7/18/2006	April 2019	P66		21 to 24		Shallow	Delta, 2007
AS-4	--	7/18/2006	April 2019	P66		20 to 23		Shallow	Delta, 2007
AS-5	--	7/19/2006	April 2019	P66		20 to 23		Shallow	Delta, 2007
AS-6	--	7/18/2006	April 2019	P66		20 to 23		Shallow	Delta, 2007
AS-7	--	7/20/2006	April 2019	P66		20 to 23		Shallow	Delta, 2007
AS-8	--	7/17/2006	April 2019	P66		20 to 23		Shallow	Delta, 2007
AS-9	--	7/17/2006	April 2019	P66		20 to 23		Shallow	Delta, 2007
AS-10	--	7/13/2006	April 2019	P66		20 to 23		Shallow	Delta, 2007
AS-11	--	7/14/2006	April 2019	P66		20 to 23		Shallow	Delta, 2007
AS-12	--	7/16/2006	April 2019	P66		20 to 23		Shallow	Delta, 2007
AS-13	--	7/17/2006	April 2019	P66		20 to 23		Shallow	Delta, 2007
AS-14	--	7/12/2006	April 2019	P66		16.5 to 19.5		Shallow	Delta, 2007
AS-15	--	7/13/2006	April 2019	P66		20 to 23		Shallow	Delta, 2007
AS-16	--	7/12/2006	April 2019	P66		20 to 23		Shallow	Delta, 2007
AS-17	--	7/11/2006	April 2019	P66		20 to 23		Shallow	Delta, 2007
AS-18	--	7/11/2006	April 2019	P66		20 to 23		Shallow	Delta, 2007
AS-19	--	7/10/2006	April 2019	P66		20 to 23		Shallow	Delta, 2007
AS-20	--	7/9/2006	April 2019	P66		20 to 23		Shallow	Delta, 2007
AS-21	--	7/9/2006	April 2019	P66		16 to 19		Shallow	Delta, 2007
EFR-1	--	12/5/2006	NA	P66	29.1	13 to 15	16.1 to 14.1	Shallow	Delta 2007
EFR-2	--	12/5/2006	NA	P66	27.6	13 to 15	14.6 to 12.6	Shallow	Delta 2007
EFR-3	--	12/5/2006	NA	P66	27.2	13 to 15	14.2 to 12.2	Shallow	Delta 2007
SVER-1	--	11/4/2010	NA	P66	29.3	3 to 7	26.3 to 22.3	Shallow	
SVER-2		11/4/2010	NA	P66	29.1	3 to 7	26.1 to 22.1	Shallow	
SVER-3	--	11/4/2010	NA	P66	29.1	3 to 7	26.1 to 22.1	Shallow	
SVER-4	--	11/4/2010	NA	P66	29.1	3 to 7	26.1 to 22.1	Shallow	
TSVE-1	--	12/5/2006	April 2019	P66	28.9	5 to 10	23.9 to 18.9	Shallow	Delta 2007
TSVE-2	--	12/5/2006	April 2019	P66	29.2	5 to 10	24.2 to 19.2	Shallow	Delta 2007
TSVE-3	--	12/5/2006	April 2019	P66	29.1	5 to 10	24.1 to 19.1	Shallow	Delta 2007
TSVE-4	--	12/6/2006	April 2019	P66	27.6	5 to 10	22.6 to 17.6	Shallow	Delta 2007
TSVE-5	--	12/5/2006	April 2019	P66	27.9	5 to 10	22.9 to 17.9	Shallow	Delta 2007
TSVE-6	--	12/5/2006	April 2019	P66	27.6	5 to 10	22.6 to 17.6	Shallow	Delta 2007
TSVE-7	--	12/5/2006	April 2019	P66	27.6	5 to 10	22.6 to 17.6	Shallow	Delta 2007
TSVE-8	--	12/6/2006	April 2019	P66	27.2	5 to 10	22.2 to 17.2	Shallow	Delta 2007
TSVE-9	--	12/6/2006	April 2019	P66	27.3	5 to 10	22.3 to 17.3	Shallow	Delta 2007
VE-1	--	1980	NA	P66	29.1				
VE-2	--	1980	NA	P66	32.1				
VE-3	--	1980	NA	P66	29.6				
VE-4	--	1980	NA	P66	29				
VE-5	--	1980	NA	P66	29.6				
VE-6	(soil boring SB-6)	6/8/2005	11/18-19/2008	P66	29.1	8 to 13	21.1 to 16.1	Shallow	Delta, 2005
VE-7	(soil boring SB-14)	6/13/2005	11/18-19/2008	P66	28.6	5 to 15	23.6 to 13.6	Shallow	Delta, 2005
MAS-1	--	Mar/Apr 2012	April 2019	P66		19 to 20		Shallow	CardnoATC, 2014
MAS-2	--	Mar/Apr 2012	April 2019	P66		19 to 20		Shallow	CardnoATC, 2014
MAS-3	--	Mar/Apr 2012	April 2019	P66		19 to 20		Shallow	CardnoATC, 2014
MAS-4	--	Mar/Apr 2012	April 2019	P66		19 to 20		Shallow	CardnoATC, 2014
MAS-5	--	Mar/Apr 2012	April 2019	P66		19 to 20		Shallow	CardnoATC, 2014
MAS-6	--	Mar/Apr 2012	April 2019	P66		19 to 20		Shallow	CardnoATC, 2014
MAS-7	--	Mar/Apr 2012	April 2019	P66		19 to 20		Shallow	CardnoATC, 2014
MAS-8	--	Mar/Apr 2012	April 2019	P66		19 to 20		Shallow	CardnoATC, 2014
MAS-9	--	Mar/Apr 2012	April 2019	P66		19 to 20		Shallow	CardnoATC, 2014
MAS-10	--	Mar/Apr 2012	April 2019	P66		19 to 20		Shallow	CardnoATC, 2014
MAS-11	--	Mar/Apr 2012	April 2019	P66		19 to 20		Shallow	CardnoATC, 2014
MAS-12	--	Mar/Apr 2012	April 2019	P66		19 to 20		Shallow	CardnoATC, 2014
MAS-13	--	Mar/Apr 2012	April 2019	P66		19 to 20		Shallow	CardnoATC, 2014
MAS-14	--	Mar/Apr 2012	April 2019	P66		19 to 20		Shallow	CardnoATC, 2014
MAS-15	--	Mar/Apr 2012	April 2019	P66		19 to 20		Shallow	CardnoATC, 2014
MAS-16	--	Mar/Apr 2012	April 2019	P66		19 to 20		Shallow	CardnoATC, 2014
MAS-17	--	Mar/Apr 2012	April 2019	P66		19 to 20		Shallow	CardnoATC, 2014
MAS-18	--	Mar/Apr 2012	April 2019	P66		19 to 20		Shallow	CardnoATC, 2014
MAS-19	--	Mar/Apr 2012	April 2019	P66		19 to 20		Shallow	CardnoATC, 2014
MAS-20	--	6/1/2011	April 2019	P66		19.5 to 20.5		Shallow	CardnoATC, 2014
MAS-21	--	6/1/2011	April 2019	P66		19.5 to 20.5		Shallow	CardnoATC, 2014
MAS-22	--	6/1/2011	April 2019	P66		19.3 to 20.3		Shallow	CardnoATC, 2014
MAS-23	--	6/1/2011	April 2019	P66		19 to 20		Shallow	CardnoATC, 2014
MAS-24	--	6/1/2011	April 2019	P66		19.3 to 20.3		Shallow	CardnoATC, 2014
MAS-25	--	6/1/2011	April 2019	P66		19.5 to 20.5		Shallow	CardnoATC, 2014
MAS-26	--	6/1/2011	April 2019	P66		19.8 to 20.8		Shallow	CardnoATC, 2014
MAS-25	--	6/1/2011	April 2019	P66		19.5 to 20.5		Shallow	CardnoATC, 2014
MAS-26	--	6/1/2011	April 2019	P66		19.8 to 20.8		Shallow	CardnoATC, 2014
MAS-27	--	6/1/2011?	April 2019	P66		19.8 to 20.8		Shallow	CardnoATC, 2014
MSVE-1	--	Mar/Apr 2012	April 2019	P66		4 to 7		Shallow	CardnoATC, 2014
MSVE-2	--	Mar/Apr 2012	April 2019	P66		4 to 7		Shallow	CardnoATC, 2014
MSVE-3	--	Mar/Apr 2012	April 2019	P66		4 to 7		Shallow	CardnoATC, 2014
MSVE-4	--	Mar/Apr 2012	April 2019	P66		4 to 7		Shallow	CardnoATC, 2014
MSVE-5	--	Mar/Apr 2012	April 2019	P66		4 to 7		Shallow	CardnoATC, 2014
MSVE-6	--	Mar/Apr 2012	April 2019	P66		4 to 7		Shallow	CardnoATC, 2014
MSVE-7	--	Mar/Apr 2012	April 2019	P66		4 to 7		Shallow	CardnoATC, 2014
MSVE-8	--	Mar/Apr 2012	April 2019	P66		4 to 7		Shallow	CardnoATC, 2014
MSVE-9	--	Mar/Apr 2012	April 2019	P66		4 to 7		Shallow	CardnoATC, 2014
MSVE-10	--	5/31/2011	April 2019	P66		4.8-7.8		Shallow	CardnoATC, 2014
MSVE-11	--	Mar/Apr 2012	April 2019	P66		4 to 7		Shallow	CardnoATC, 2014
MSVE-12	--	Mar/Apr 2012	April 2019	P66		4 to 7		Shallow	CardnoATC, 2014
MSVE-13	--	6/1/2011	April 2019	P66		4.8 to 7.8		Shallow	CardnoATC, 2014
MSVE-14	--	6/2/2011	April 2019	P66		3.5 to 6.5		Shallow	CardnoATC, 2014
MSVE-15	--	5/31/2011	April 2019	P66		4.8 to 7.8		Shallow	CardnoATC, 2014
MSVE-16	--	5/31/2011	April 2019	P66		4.3 to 7.3		Shallow	CardnoATC, 2014
MSVE-17	--	6/2/2011	April 2019	P66		5 to 8		Shallow	CardnoATC, 2014
MSVE-18	--	5/31/2011	April 2019	P66		4.8 to 7.8		Shallow	CardnoATC, 2014
MSVE-19	--	5/31/2011	April 2019	P66		5.5 to 8.5		Shallow	CardnoATC, 2014
VAS-1	--	6/26/2013	April 2019	P66		16.5 to 17.5		Shallow	CardnoATC, 2014
VAS-2	--	6/26/2013	April 2019	P66		16.5 to 17.5		Shallow	CardnoATC, 2014
VAS-3	--	6/24/2013	April 2019	P66		16.5 to 17.5		Shallow	CardnoATC, 2014
VAS-4	--	6/24/2013	April 2019	P66		16.5 to 17.5		Shallow	CardnoATC, 2014
VAS-5	--	6/24/2013	April 2019	P66		16.5 to 17.5		Shallow	CardnoATC, 2014
VAS-6	--	6/24/2013	April 2019	P66		16.5 to 17.5		Shallow	CardnoATC, 2014
VAS-7	--	6/25/2013	April 2019	P66		16.5 to 17.5		Shallow	CardnoATC, 2014
VAS-8	--	6/24/2013	April 2019	P66		16.5 to 17.5		Shallow	CardnoATC, 2014
VAS-9	--	6/25/2013	April 2019	P66		16.5 to 17.5		Shallow	CardnoATC, 2014
VAS-10	--	6/25/2013	April 2019	P66		16.5 to 17.5		Shallow	CardnoATC, 2014
VAS-11	--	6/25/2013	April 2019	P66		16.5 to 17.5		Shallow	CardnoATC, 2014
VAS-12	--	6/25/2013	April 2019	P66		16.5 to 17.5		Shallow	CardnoATC, 2014
VAS-13	--	6/25/2013	April 2019	P66		16.5 to 17.5		Shallow	CardnoATC, 2014

Table 4-1b. Complete Inventory of Well Construction Details
Remedial Investigation Work Plan
Block 37 Site
600 - 630 Westlake Avenue North | Seattle, Washington

Well ID	Alternate ID	Installation Date	Abandoned / Decommissioned Date	Well Owner	Top of Casing Elevation (ft NAVD88)	Screen Interval (ft bgs)	Screen Interval (ft NAVD88)	Water-Bearing Zone	Available Reference
ABANDONED REMEDIATION SYSTEM WELLS[1,3] Cont'd									
VAS-14	--	6/26/2013	April 2019	P66		16.5 to 17.5		Shallow	CardnoATC, 2014
VSVE-1 (horizontal)	--	June 2013	April 2019	P66		NA			CardnoATC, 2014
VSVE-2 (horizontal)	--	June 2013	April 2019	P66		NA			CardnoATC, 2014
VSVE-3 (horizontal)	--	June 2013	April 2019	P66		NA			CardnoATC, 2014
VSVE-4 (horizontal)	--	June 2013	April 2019	P66		NA			CardnoATC, 2014
VSVE-5 (horizontal)	--	June 2013	April 2019	P66		NA			CardnoATC, 2014
VSVE-6 (horizontal)	--	June 2013	April 2019	P66		NA			CardnoATC, 2014
VSVE-7 (horizontal)	--	June 2013	April 2019	P66		NA			CardnoATC, 2014
INTERIM ACTION WELLS[1]									
IA-1	--	2/2-2/7/2017	NA	City Investors	32.59	32 to 92	0.59 to -59.4	Intermediate/Deep	Farallon 2018
IA-2	--	2/2-2/7/2017	NA	City Investors	31.72	32 to 92	-0.28 to -60.28	Intermediate/Deep	Farallon 2018
IA-3	--	2/3-2/7/2017	NA	City Investors	31.25	32 to 92	-0.75 to -60.75	Intermediate/Deep	Farallon 2018
IA-4	--	2/7/2017	NA	City Investors	31.16	32 to 92	-0.84 to -60.84	Intermediate/Deep	Farallon 2018

Notes

[1]Refer to Figure 4-1 of the Remedial Investigation Work Plan for locations of historical sampling locations.

[2]Refer to Figure 4-2 of the Remedial Investigation Work Plan for locations of wells.

[3]Refer to Figure 4-12 of the Remedial Investigation Work Plan for locations of wells.

[4]Well screened across base of intermediate water-bearing zone and sandpack extends into deep water-bearing zone.

[5]Well screened across base of shallow water-bearing zone, but slightly penetrating into intermediate water-bearing zone.

[6]Well located within the southern half of the Block 37 Property.

[7]Well located within the Westlake Ave N ROW.

[8]SAS Wells are not shown on figures but were located within a biosparge trench running west to east on the southern portion of the Block 37 Property and in allignment with wells MP-1 through MP-8.

* May be damaged
AS = air sparge
B = boring
CI = City Investors
DAS = air sparge (Delta Consultants)
DW = dewatering
EFR = Enhanced fluid recovery
ft bgs = feet below ground surface
ft NAVD88 = feet in elevation North American Vertical Datum 1988
GWMR = ground water monitoring report
IA = interim action
in = inches
MW = monitoring well
MWR = monitoring well replacement
NA = not applicable
P66 = Phillips 66
RW = Recovery well
SB = soil boring
SMW = Seattle monitoring well
SVER = soil vapor extraction
TSVE = soil vapor extraction (Terry Avenue N)
VE = vapor extraction

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Table 4-2a. Groundwater Analytical Results - TPH, VOCs, Naphthalene, and PCBs
Remedial Investigation Work Plan
Block 37 Site
600 - 630 Westlake Avenue North | Seattle, Washington

Monitoring Well ID	Sample Date	TPH (µg/L)					VOCs[4] (µg/L)								PCBs - Total as Aroclors (µg/L)
		GRO[1]	DRO[2]	ORO[2]	TEH (DRO+ORO)[3]	Kerosene	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	EDB	EDC	Naphthalene	
Screening Levels[5]															
GW-1 Protect Drinking Water GW-Detail-PW		**800**	**500**	**500**	**500**	**500**	**5**	**640**	**700**	**1,600**	**24**	**0.05**	**4.8**	**160**	**0.22**
GW-4 Screening Level Protect Indoor Air GW-Detail-PW		**NE**	**NE**	**NE**	**NE**	**NE**	**2.4**	**15,000**	**2,800**	**320**	**800**	**0.3**	**3.5**	**8.9**	**NE**
Laboratory PQL		**100**	**200**	**200**	**400**	**100**	**0.2**	**1.0**	**0.2**	**0.6**	**1.0**	**1.0**	**1.0**	**0.10**	**0.175**
Existing Monitoring Wells															
B-37-1 (GEI-1)	02/16/22	< 100	210	390	**700**	--	< 0.2	< 1.0	< 0.2	< 0.6	--	--	--	0.037 J	--
	05/17/22	< 100	< 150	< 210	< 270	--	< 0.2	< 1.0	< 0.2	< 0.6	--	--	--	0.12	< 0.074
	08/25/22	< 100	270	420	400	--	< 0.2	< 1.0	< 0.2	< 0.6	--	--	--	< 0.1	< 0.086
	11/09/22	< 100	290	390	**500**	--	< 0.2	< 1.0	< 0.2	< 0.6	--	--	--	< 0.096	< 0.086
B-37-2 (GEI-2)	02/18/22	< 100	< 200	< 200	200	--	< 0.2	< 1.0	< 0.2	< 0.6	--	--	--	< 0.096	--
	05/18/22	< 100	< 160	< 220	< 270	--	**2.8**	< 1.0	< 0.2	< 0.6	--	--	--	< 0.099	--
	08/24/22	< 100	< 130	250	< 260	--	< 0.2	< 1.0	< 0.2	< 0.6	--	--	--	< 0.097	--
	11/09/22	< 100	140	230	< 250	--	< 2.0	< 1.0	< 0.2	< 0.6	--	--	--	< 0.095	--
B-37-3	04/01/21	< 100	330	380	**710**	--	< 0.2	< 1.0	< 0.2	< 0.6	< 0.2	< 0.0097	< 0.2	< 1.0	--
	02/16/22	< 100	< 200	< 200	200	--	< 0.2	< 1.0	< 0.2	< 0.6	--	--	--	0.016 J	--
	05/17/22	< 100	< 150	< 210	< 260	--	< 0.2	< 1.0	< 0.2	< 0.6	--	--	--	< 0.1	< 0.074
	08/25/22	< 100	240	280	< 260	--	< 0.2	< 1.0	< 0.2	< 0.6	--	--	--	< 0.097	< 0.086
	11/07/22	< 100	210	< 200	< 250	--	< 0.2	< 1.0	< 0.2	< 0.6	--	--	--	< 0.1	< 0.086
B-37-4	04/01/21	< 100	**560**	400	**960**	--	0.21	< 1.0	< 0.2	< 0.6	< 0.2	< 0.0095	< 0.2	< 1.0	--
	02/16/22	< 100	< 200	210	310	--	< 0.2	< 1.0	< 0.2	< 0.6	--	--	--	< 0.1	--
	05/17/22	< 100	< 150	340	300	--	< 0.2	< 1.0	< 0.2	< 0.6	--	--	--	< 0.1	--
	08/25/22	< 100	240	400	360	--	< 0.2	< 1.0	< 0.2	< 0.6	--	--	--	< 0.099	--
	11/07/22	< 100	210	280	320	--	< 0.2	< 1.0	< 0.2	< 0.6	--	--	--	< 0.097	--
B-37-5	04/01/21	< 100	< 210	270	375	--	< 0.2	< 1.0	< 0.2	< 0.6	< 0.2	< 0.0096	< 0.2	< 1.0	--
	02/17/22	< 100	< 130	< 200	165	--	< 0.2	< 1.0	< 0.2	< 0.6	--	--	--	< 0.1	--
	05/18/22	< 100	< 160	260	< 270	--	< 0.2	< 1.0	< 0.2	< 0.6	--	--	--	< 0.098	--
	08/25/22	< 100	< 130	280	< 250	--	< 0.2	< 1.0	< 0.2	< 0.6	--	--	--	< 0.096	--
	11/07/22	< 100	160	330	310	--	< 0.2	< 1.0	< 0.2	< 0.6	--	--	--	< 0.096	--
B-37-6	04/01/21	< 100	260	450	**710**	--	< 0.2	< 1.0	< 0.2	< 0.6	< 0.2	< 0.0097	< 0.2	< 1.0	--
	02/16/22	< 100	< 200	< 200	200	--	< 0.2	< 1.0	< 0.2	< 0.6	--	--	--	0.024 J	--
	05/18/22	< 120	< 150	330	< 260	--	< 0.2	< 1.0	< 0.2	< 0.6	--	--	--	< 0.1	--
	08/25/22	< 100	160	340	330	--	< 0.2	< 1.0	< 0.2	< 0.6	--	--	--	< 0.1	--
	11/07/22	< 100	150	260	260	--	< 0.2	< 1.0	< 0.2	< 0.6	--	--	--	< 0.096	--
B-37-7	05/10/21	< 100	400	250	**650**	--	< 0.2	< 1.0	< 0.2	< 0.6	< 0.2	--	< 0.2	< 0.1	--
	02/17/22	< 100	< 130	< 200	165	--	< 0.2	< 1.0	< 0.2	< 0.6	--	--	--	< 0.1	--
	05/18/22	< 100	< 180	280	< 300	--	< 0.2	< 1.0	< 0.2	< 0.6	--	--	--	< 0.11	--
	08/25/22	< 100	270	< 200	320	--	< 0.2	< 1.0	< 0.2	< 0.6	--	--	--	< 0.095	--
	11/09/22	< 100	142	< 200	< 250	--	< 0.2	< 1.0	< 0.2	< 0.6	--	--	--	< 0.095	--
B-37-8	05/10/21	< 100	< 210	< 210	210	--	< 0.2	< 1.0	< 0.2	< 0.6	< 0.2	< 0.0097	< 0.2	< 0.1	< **0.35**
	02/17/22	< 100	< 130	< 200	165	--	< 0.2	< 1.0	< 0.2	< 0.6	--	--	--	< 0.099	--
	05/18/22	< 100	< 150	230	< 250	--	< 0.2	< 1.0	< 0.2	< 0.6	--	--	--	< 0.1	--
	08/25/22	< 100	< 130	270	< 250	--	< 0.2	< 1.0	< 0.2	< 0.6	--	--	--	< 0.096	--
	11/09/22	< 100	140	< 200	< 250	--	< 0.2	< 1.0	< 0.2	< 0.6	--	--	--	< 0.095	--
B-37-9	05/10/21	< 100	240	< 210	345	--	< 0.2	< 1.0	< 0.2	< 0.6	< 0.2	--	< 0.2	0.15	--
	02/17/22	< 100	< 130	220	285	--	< 0.2	< 1.0	< 0.2	< 0.6	--	--	--	0.034 J	--
	05/17/22	< 100	< 160	< 220	< 280	--	< 0.2	< 1.0	< 0.2	< 0.6	--	--	--	0.016 J	--
	08/24/22	< 100	230	290	360	--	< 0.2	< 1.0	< 0.2	< 0.6	--	--	--	< 0.097	--
	11/08/22	< 100	270	300	430	--	< 0.2	< 1.0	< 0.2	< 0.6	< 0.02	--	< 0.02	< 0.095	--
FMW-131	05/18/22	< 100	< 170	280	365	--	< 0.2	< 1.0	< 0.2	< 0.6	--	--	--	< 0.1	--
	08/24/22	< 100	< 130	< 210	< 260	--	< 0.2	< 1.0	< 0.2	< 0.6	--	--	--	< 0.097	--
	11/08/22	< 100	< 130	< 200	< 250	--	< 0.2	< 1.0	< 0.2	< 0.6	--	--	--	< 0.095	--
FMW-139	02/16/22	< 100	< 200	260	360	--	< 0.2	< 1.0	< 0.2	< 0.6	--	--	--	< 0.11	--
	05/18/22	< 100	< 160	< 210	< 270	--	< 0.2	< 1.0	< 0.2	< 0.6	--	--	--	< 0.1	--
	08/24/22	< 100	< 130	< 210	< 260	--	< 0.2	< 1.0	< 0.2	< 0.6	--	--	--	< 0.096	--
	11/08/22	< 100	130	360	340	--	< 0.2	< 1.0	< 0.2	< 0.6	--	--	--	< 0.095	--
MW-45	11/04/91	**17,000**	**2,000**	--	**2,000**	--	**500**	**1,000**	370	**2,300**	--	--	--	--	--
	12/29/93	**11,000**	**1,100**	**860**	**1,960**	--	**2,900**	**760**	680	**3,000**	--	--	--	--	--
	04/07/94	**16,000**	**830**	< **750**	**1,205**	--	**2,500**	620	580	**2,500**	--	--	--	--	--
	07/14/94	**25,000**	**850**	**1,100**	**1,950**	--	**4,000**	**750**	**870**	**3,600**	--	--	--	--	--
	10/25/94	**19,000**	**1,000**	< **750**	**1,375**	--	**2,600**	230	**920**	**3,000**	--	--	--	--	--
	09/07/01[6]	< 50.0	375	< **606**	**678**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	12/28/01	**17,300**	**2,210**	**597**	**2,807**	--	**2,130**	73.4	**1,330**	**2,970**	--	--	--	--	--
	03/08/02	**15,500**	**2,380**	**686**	**3,066**	--	**2,090**	38.4	**1,190**	**1,650**	--	--	--	--	--
	06/24/02	**5,100**	**1,920**	**761**	**2,681**	--	**1,330**	6.39	451	235	--	--	--	--	--
	09/26/02	**2,420**	**1,190** b	**547** b	**1,737**	--	**394**	3.41	204	106	--	--	--	--	--
	03/13/03	**3,590**	**2,050**	< **500**	**2,300**	--	**219**	133	99.4	**368**	--	--	--	--	--
	06/12/03	**10,700**	**1,470**	< **575**	**1,758**	--	**1,350**	10.8	**954**	**631**	--	--	--	--	--
	09/19/03	583	< 298	< **595**	446.5	--	1.93	2.25	5.65	38.6	--	--	--	--	--
	01/14/04	360	< 118	< 236	177	--	**4.97**	< 0.5	2.48	1.01	--	--	--	--	--
	03/30/04	303	234	< 240	354	--	< 1.0	< 1.0	< 1.0	< 2.0	--	--	--	--	--
	06/22/04	151	365	358	**723**	--	< 1.0	< 1.0	< 1.0	< 2.0	--	--	--	--	--
	09/29/04	270	< 251	< **503**	377	--	< 0.5	1.5	0.62	7.3	--	--	--	--	--
	12/29/04	207	< 249	< 498	373.5	--	**2.9**	< 1.0	< 1.0	9.04	--	--	--	--	--
	03/17/05	235	< 239	< 477	358	--	**5.61**	1.08	2.49	19.1	--	--	--	--	--
	06/01/05	793	283 c, d	< 491 c	**528.5**	--	**17.1**	37.9	13.9	83.8	--	--	--	< 1.0	--
	07/25/05	564	< 250	< **500**	375	--	**19.6**	14.6	16.7	113.2	--	--	--	< 1.0	--
	11/01/05	100	< 240	< 481	360.5	--	< 0.2	< 0.5	< 0.5	< 1.0	--	--	--	< 2.0	--
	02/21/06	484	< 275	< **549**	412	--	**5.13**	< 0.5	7.65	36.5	--	--	--	< 1.0	--
	05/08/06	198	**540**	< **500**	**790**	--	1.06	< 0.5	0.98	2.7	--	--	--	< 1.0	--
	08/30/06	104	< 248	< 495	371.5	--	< 0.5	< 0.5	< 0.5	< 3.0	--	--	--	< 1.0	--
	12/12/06	**25,900**	**662**	< 485	**904.5**	--	**64.1**	23.8	330	**5,020**	--	--	--	< 5.0	--
	03/06/07	**1,680**	< 260	< **521**	390.5	--	< 0.5	< 0.5	22	139	--	--	--	< 1.0	--
	06/15/07	**12,500**	439	< 481	**679.5**	--	**16.8**	2.77	178	**1,590**	--	--	--	< 1.0	--
	09/13/07	**23,400**	328	< 481	**568.5**	--	**65.3**	16.9	303	**3,740**	--	--	--	< 1.0	--
	03/18/08	< 50.0	< 236	< 472	354	< 236	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	06/05/08	64.4	< 236	< 472	354	< 236	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	02/22/09	53.2	< 236	< 472	354	< 236	< 0.5	< 0.5	< 0.5	< 3.0	--	--	--	**15**	--
	05/17/09	176	428	< 476	**669**	431	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	**97.9**	--
	08/16/09	250	**570**	< 480	**1,440**	**1,200**	< 0.5	< 0.5	< 0.5	< 2.0	< 1.0	--	--	**100**	--
	11/15/09	**1,000**	**2,200**	< 480	**2,440**	**2,100**	**3.9**	2.2	11	28	< 1.0	--	--	**14**	--
	02/21/10	745	**1,160**	**832**	**1,992**	**566**	**3.9**	< 1.0	34	23.2	--	--	--	**14.5**	--
	05/23/10	398	**692**	449	**1,141**	**665**	1.3	< 1.0	14.5	4.0	--	--	--	7.9	--
	08/16/10	319	< 77.7	< 388	371	177	< 1.0	< 1.0	5.8	< 3.0	--	--	--	7.5	--
	11/16/10	**1,880**	106	< 388	**741**	**547**	**5.8**	1.3	43.1	212	--	--	--	**28.4**	--
	02/28/11	**10,500**	347	< 388	**2,944**	**2,750**	**17.6**	3.3	172	**479**	--	--	--	**150**	--
	06/14/11	**3,230**	137	< 396	335	--	1.7	< 1.0	46.8	33.6	--	--	--	--	--
	08/29/11	**1,790**	119	< 421	**699.5**	489	< 1.0	< 1.0	5.1	< 3.0	--	--	--	**36.5**	--
	12/05/11	**19,900**	298	< 426	**7,173**	**6,960**	**20.5**	5.7	327	**2,240**	--	--	--	**213**	--
	02/15/12	**14,000**	219	< 404	**2,572**	**2,470**	**11.6**	2.7	203	**631**	--	--	--	**206**	--
	05/15/12	**3,920**	211	< 421	**1,540.5**	**1,330**	< **5.0**	< 5.0	77	122	--	--	--	**75.4**	--
	08/14/12	**1,600**	206	< 430	**891**	**676**	< 1.0	< 1.0	7.3	< 3.0	--	--	--	**33.7**	--
	11/06/13	281	< 400	< 400	400	< 400	< 1.0	1.3	< 1.0	< 3.0	< 1.0	--	--	--	--
	12/08/14	323	--	--	--	--	**6.2**	< 1.0	1.6	< 3.0	< 1.0	< 0.0098	< 1.0	--	--
	03/23/15	**917**	--	--	--	--	2.0	< 1.0	20.4	53.8	--	--	--	--	--
	06/22/15	474	--	--	--	--	**5.1**	< 1.0	18.3	< 3.0	--	--	--	--	--
	09/10/15	150	--	--	--	--	--	--	--	--	--	--	--	--	--
	12/07/15	748	--	--	--	--	2.1	< 1.0	20.3	3.4	--	--	--	--	--
	12/13/17	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	01/03/19	**1,230**	--	--	--	--	1.4	0.51 J	34.1	5.6	--	--	--	--	--
	02/16/22	410	480	220	**700**	--	< 0.2	< 1.0	3.9	< 0.6	--	--	--	2.2	--
	05/17/22	160	240	320	390	--	< 0.2	< 1.0	< 0.2	< 0.6	--	--	--	0.24	--
	08/24/22	< 100	220	< 200	320	--	< 0.2	< 1.0	< 0.2	< 0.6	--	--	--	< 0.095	--
	11/08/22	< 100	220	210	300	--	< 0.2	< 1.0	< 0.2	< 0.6	--	--	--	0.18	--

Table 4-2a. Groundwater Analytical Results - TPH, VOCs, Naphthalene, and PCBs
Remedial Investigation Work Plan
Block 37 Site
600 - 630 Westlake Avenue North | Seattle, Washington

Monitoring Well ID	Sample Date	TPH (µg/L)					VOCs[4] (µg/L)								PCBs - Total as Aroclors (µg/L)
		GRO[1]	DRO[2]	ORO[2]	TEH (DRO+ORO)[3]	Kerosene	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	EDB	EDC	Naphthalene	
Screening Levels[5]															
GW-1 Protect Drinking Water GW-Detail-PW		**800**	**500**	**500**	**500**	**500**	**5**	**640**	**700**	**1,600**	**24**	**0.05**	**4.8**	**160**	**0.22**
GW-4 Screening Level Protect Indoor Air GW-Detail-PW		**NE**	**NE**	**NE**	**NE**	**NE**	**2.4**	**15,000**	**2,800**	**320**	**800**	**0.3**	**3.5**	**8.9**	**NE**
Laboratory PQL		**100**	**200**	**200**	**400**	**100**	**0.2**	**1.0**	**0.2**	**0.6**	**1.0**	**1.0**	**1.0**	**0.10**	**0.175**
MW-50	10/10/01	**8,970**	**2,200**	< **606**	**2,603**	--	**674**	221	382	**779**	--	--	--	--	--
	12/28/01	**23,200**	**3,460**	< **500**	**3,719**	--	**1,630**	**3,690**	**991**	**4,480**	--	--	--	--	--
	06/24/02	**8,290**	**1,970**	**556**	**2,526**	--	**414**	22.9	314	**2,010**	--	--	--	--	--
	03/13/03	**12,200**	**1,810**	< **588**	**2,104**	--	**733**	127	523	**1,100**	--	--	--	--	--
	06/12/03	**6,450**	**1,740**	< **500**	**1,990**	--	**448**	13.7	299	286	--	--	--	--	--
	09/19/03	**4,440**	< 250	< **500**	375	--	**51.7**	315	26.1	**462**	--	--	--	--	--
	01/14/04	**29,700**	**1,970**	< 258	**2,099**	--	**308**	502	312	**6,180**	--	--	--	--	--
	03/30/04	**3,330**	**867**	< 241	**987.5**	--	**21.8**	< 5.0	21.9	226.4	--	--	--	--	--
	06/22/04	**2,130**	**874**	< 237	**992.5**	--	**14.2**	2.4	27.9	85.11	--	--	--	--	--
	09/29/04	**3,600**	**1,330**	< **502**	**1,581**	--	**92**	62.0	100	**520**	--	--	--	--	--
	12/29/04	**1,570**	**745**	< **611**	**1,050.5**	--	**9.69**	3.88	9.98	27.62	--	--	--	--	--
	03/17/05	**1,420**	**1,060**	**506**	**1,566**	--	**5.82**	2.41	10.6	30.59	--	--	--	--	--
	06/01/05	**1,710**	**528**	< **503**	**779.5**	--	**20.3**	10.7	42.3	84.7	--	--	--	8.01	--
	07/25/05	**1,500**	< 250	< **500**	375	--	**16.8**	3.23	36.9	50.11	--	--	--	4.29	--
	11/01/05	634	380	< 472	**616**	--	**15.9**	2.49	0.52	2.19	--	--	--	5.62	--
	02/21/06	**1,430**	< 272	< **543**	407.5	--	**139**	15.4	16.7	28.2	--	--	--	< 5.0	--
	05/08/06	**1,650** J	**1,670**	< 485	**2,112.5**	--	**28.4**	2.13	24.7	35.06	--	--	--	3.88	--
	08/29/06	264	< 248	< 495	371.5	--	**8.55**	0.78	6.87	7.26	--	--	--	4.23	--
	12/12/06	**1,650**	< 243	< 485	364	--	**80.9**	2.75	18.9	41.9	--	--	--	3.93	--
	03/08/07	**1,650**	< 240	< 481	360.5	--	**51.3**	1.06	14.1	33.6	--	--	--	2.92	--
	06/15/07	**1,390** J	333	< 495	**580.5**	--	**28**	1.0	6.46	5.2	--	--	--	1.85	--
	09/13/07	439	< 240	< 481	360.5	--	**4.36**	< 0.5	0.65	< 3.0	--	--	--	1.89	--
	12/18/07	**886**	< 236	< 472	354	--	1.1	< 1.0	4.0	< 3.0	--	--	--	< 1.0	--
	03/18/08	77.6	< 236	< 472	354	< 236	1.02	0.58	1.85	< 3.0	< 1.0	--	--	< 5.0	--
	08/05/08	**1,260**	< 236	< 472	**730**	494	**3.94**	0.5	8.42	9.76	2.06	--	--	< 5.0	--
	11/03/08	**1,250**	< 236	< 472	**714**	478	< 0.5	< 0.5	3.69	4.84	< 1.0	--	--	< 5.0	--
	11/15/09	630	**2,900**	< 490	**3,245**	**3,000**	2.3	0.74	0.65	< 2.0	< 1.0	--	--	**660** k	--
	02/21/10	< 50.0	**1,280**	457	**1,737**	392	< 1.0	< 1.0	< 1.0	4.9	--	--	--	**62.8**	--
	05/23/10	57.4	**1,320**	433	**1,753**	**1,080**	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	**60.4**	--
	08/16/10	< 50.0	156	< 392	377	181	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	**33.4**	--
	11/16/10	< 50.0	102	< 388	296	102	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	**35.6**	--
	02/28/11	74.8	102	< 388	308	114	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	**19.2**	--
	06/14/11	< 50.0	< 82.5	< 412	247.25	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	08/29/11	65.1	< 86	< 430	303.2	88.2	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	**15**	--
	12/05/11	71.6	< 86	< 430	258	< 86	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	**10.2**	--
	02/15/12	85.0	110	< 426	367	154	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	**20.5**	--
	05/15/12	97.9	< 80	< 400	287.3	87.3	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	**16.1**	--
	08/14/12	138	117	< 430	358	143	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	**11.4**	--
	11/06/13	185	**540**	< 400	**740**	**530**	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	--	--	--	--
	06/04/19	< 38.3	--	--	--	--	< 0.1	< 0.083	< 0.14	< 0.31	< 0.16	< 0.24	< 0.22	1.1 J	--
	02/18/22	< 100	**720**	310	**1,030**	--	< 0.2	< 1.0	< 0.2	< 0.6	--	--	--	**30**	--
	05/17/22	< 100	< 170	< 230	< 340	--	< 0.2	< 1.0	< 0.2	< 0.6	--	--	--	2.7	--
	08/24/22	< 100	390	400	**560**	--	< 0.2	< 1.0	< 0.2	< 0.6	--	--	--	4.0	--
	11/08/22	< 100	440	400	**650**	--	< 0.2	< 1.0	< 0.2	< 0.6	--	--	--	**12**	--
MW-54	06/16/05	206	130	410	**540**	--	**4.82**	< 1.0	2.09	10.27	< 1.0	--	--	--	--
	07/25/05	177	< 250	< **500**	375	--	**5.26**	0.28	0.68	3.11	< 1.0	--	--	0.99	--
	11/18/05	75.8	< 243	< 485	364	--	0.56	0.53	4.19	10.8	< 1.0	--	--	--	--
	02/23/06	< 50.0	**695**	< 472	**931**	--	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	--	--	< 1.0	--
	05/08/06	< 50.0	328	< **500**	**578**	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 1.0	--
	08/29/06	< 80.0	< 236	< 472	354	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	12/12/06	< 50.0	< 248	< 495	371.5	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	03/06/07	< 50.0	< 263	< **526**	394.5	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	06/15/07	< 50.0	< 243	< 485	364	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	09/13/07	< 50.0	< 245	< 490	367.5	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	12/18/07	< 50.0	< 236	< 472	354	--	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	--	--	< 1.0	--
	03/18/08	< 50.0	< 236	< 472	354	< 236	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	08/05/08	< 50.0	< 236	< 472	354	< 236	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	11/03/08	< 50.0	< 236	< 472	354	< 236	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	08/16/09	280	< 240	< 480	**550**	310	< 0.5	< 0.5	1.4	2.5	< 1.0	--	--	< 5.0	--
	11/15/09	< 50.0	< 240	< 470	355	< 240	< 0.5	< 0.5	< 0.5	< 2.0	< 1.0	--	--	< 5.0	--
	02/21/10	< 50.0	178	434	**612**	< 75.8	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	05/23/10	< 50.0	144	384	**528**	92.8	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	08/16/10	< 50.0	< 77.7	< 388	232.85	< 77.7	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	11/17/10	< 50.0	< 77.7	< 388	232.85	< 77.7	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	02/28/11	< 50.0	< 77.7	< 388	232.85	< 77.7	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	06/14/11	< 50.0	< 84.2	< 421	252.6	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	08/29/11	< 50.0	< 84.2	< 421	252.6	< 84.2	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	12/05/11	< 50.0	< 84.2	< 421	252.6	< 84.2	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	**< 10**	--
	02/16/12	< 50.0	< 75.8	< 379	227.4	< 75.8	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	2.4	--
	05/15/12	< 50.0	< 75.5	< 377	226.25	< 75.5	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	4.0	--
	08/14/12	< 50.0	< 87.9	< 440	263.95	< 87.9	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	11/06/13	281	< 400	< 400	400	< 400	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	--	--	--	--
	02/16/22	< 100	< 200	280	380	--	< 0.2	< 1.0	< 0.2	< 0.6	--	--	--	< 0.1	--
	05/18/22	< 100	< 170	< 220	< 280	--	< 0.2	< 1.0	< 0.2	< 0.6	--	--	--	< 0.11	--
	08/24/22	< 100	< 130	< 200	< 250	--	< 0.2	< 1.0	< 0.2	< 0.6	--	--	--	< 0.095	--
	11/08/22	< 100	< 130	210	< 250	--	< 0.2	< 1.0	< 0.2	< 0.6	--	--	--	< 0.095	--
MW-209	11/05/08	< 50.0	< 238	< 476	357	< 238	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	02/22/10	< 50.0	251	< 388	445	< 77.7	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	05/24/10	< 50.0	192	< 396	390	137	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	08/18/10	< 50.0	86.7	< 388	280.7	< 77.7	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	11/16/10	< 50.0	85.1	< 388	279.1	< 77.7	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	03/01/11	< 50.0	< 77.7	< 388	232.85	< 77.7	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	06/15/11	< 50.0	< 82.5	< 412	247.25	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	08/30/11	< 50.0	< 80	< 400	240	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	12/06/11	< 50.0	< 82.5	< 412	247.25	< 82.5	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	**< 10**	--
	02/15/12	< 50.0	103	< 412	309	< 82.5	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	2.1	--
	05/16/12	< 50.0	< 79.2	< 396	237.6	< 79.2	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	08/15/12	< 50.0	117	< 426	330	85.6	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	11/21/12	< 100	< 100	< 100	100	< 100	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 4.0	--
	11/06/13	< 400	< 400	< 400	400	< 400	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	--	--	--	--
	07/29/14	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	< 0.0098	< 1.0	--	--
	12/09/14	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	< 0.0098	< 1.0	--	--
	03/23/15	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	06/23/15	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	09/11/15	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	12/07/15	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	12/15/16	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	06/04/19	< 38.3	--	--	--	--	< 0.1	< 0.083	< 0.14	< 0.31	< 0.16	< 0.24	< 0.22	< 0.48	--
	12/19/19	< 38.3	--	--	--	--	< 0.1	< 0.083	< 0.14	< 0.31	< 0.16	< 0.24	< 0.22	--	--
	02/17/22	< 13.4	156	< 119	215.5	< 119	< 0.1	< 0.1	< 0.11	< 0.2	< 0.13	--	--	--	--
	08/17/22	24.4 J	162 / <140	< 94.2 / <218	209.1	--	< 0.1	< 0.1	< 0.11	< 0.2	< 0.13	--	--	< 0.02	--
	11/30/22	< 22.6 / <239	< 239	< 478	< 359	< 239	< 0.1	< 0.1	< 0.11	< 0.2	--	--	--	< 0.18	--
MW-210	11/05/08	< 50.0	< 243	< 485	364	< 243	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	02/25/09	< 50.0	< 240	< 481	360.5	< 240	< 0.5	< 0.5	< 0.5	< 3.0	--	--	--	< 5.0	--
	05/17/09	< 50.0	< 245	< 490	367.5	< 245	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	08/17/09	< 50.0	< 240	< 280	260	< 240	< 0.5	< 0.5	< 0.5	< 2.0	< 1.0	--	--	< 5.0	--
	11/17/09	< 50.0	< 240	< 490	365	< 240	< 0.5	< 0.5	< 0.5 k	< 2.0	< 1.0	--	--	< 5.0	--
	02/22/10	< 50.0	154	< 381	344.5	< 76.2	< 1.0	< 1.0	< 1.0	5.5	--	--	--	< 1.0	--
	05/24/10	< 50.0	190	< 385	382.5	150	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	08/18/10	< 50.0	< 78.4	< 392	235.2	< 78.4	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	11/16/10	< 50.0	85.1	< 388	279.1	< 77.7	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	03/01/11	< 50.0	< 77.7	< 388	232.85	< 77.7	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	06/15/11	< 50.0	< 86	< 430	258	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	08/30/11	< 50.0	< 87	< 435	261	< 87	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	12/06/11	< 50.0	< 86.2	< 412	249.1	< 82.5	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	02/15/12	< 50.0	< 82.5	< 412	247.25	< 82.5	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	2.1	--

Table 4-2a. Groundwater Analytical Results - TPH, VOCs, Naphthalene, and PCBs
Remedial Investigation Work Plan
Block 37 Site
600 - 630 Westlake Avenue North | Seattle, Washington

Monitoring Well ID	Sample Date	TPH (µg/L)					VOCs[4] (µg/L)								PCBs - Total as Aroclors (µg/L)
		GRO[1]	DRO[2]	ORO[2]	TEH (DRO+ORO)[3]	Kerosene	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	EDB	EDC	Naphthalene	
Screening Levels[5]															
GW-1 Protect Drinking Water GW-Detail-PW		**800**	**500**	**500**	**500**	**500**	**5**	**640**	**700**	**1,600**	**24**	**0.05**	**4.8**	**160**	**0.22**
GW-4 Screening Level Protect Indoor Air GW-Detail-PW		**NE**	**NE**	**NE**	**NE**	**NE**	**2.4**	**15,000**	**2,800**	**320**	**800**	**0.3**	**3.5**	**8.9**	**NE**
	Laboratory PQL	**100**	**200**	**200**	**400**	**100**	**0.2**	**1.0**	**0.2**	**0.6**	**1.0**	**1.0**	**1.0**	**0.10**	**0.175**
MW-210 Cont'd	05/16/12	< 50.0	< 83.3	< 417	250.15	< 83.3	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	08/15/12	< 50.0	< 85.1	< 426	255.55	< 85.1	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	11/21/12	< 100	< 100	< 100	100	< 100	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 4.0	--
	11/06/13	< 400	< 400	< 400	400	< 400	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	--	--	--	--
	07/29/14	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	< 0.01	< 1.0	--	--
	12/09/14	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	< 0.0099	< 1.0	--	--
	03/23/15	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	06/23/15	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	09/11/15	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	12/07/15	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	12/15/16	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	06/04/19	< 38.3	--	--	--	--	< 0.1	< 0.083	< 0.14	< 0.31	< 0.16	< 0.24	< 0.22	< 0.48	--
	02/17/22	< 13.4	273	< 118	332	< 118	< 0.1	< 0.1	< 0.11	< 0.2	< 0.13	--	--	--	--
	08/17/22	< 22.6	189 / <134	< 93.9 / <208	236	--	< 0.1	< 0.1	< 0.11	< 0.2	< 0.13	--	--	< 0.02	--
	11/30/22	< 22.6 / <235	< 235	< 470	< 353	< 235	< 0.1	< 0.1	< 0.11	< 0.2	--	--	--	< 0.18	--
MW-211	11/05/08	< 50.0	< 240	< 481	360.5	< 240	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	02/25/09	< 50.0	< 240	< 481	360.5	< 240	< 0.5	< 0.5	< 0.5	< 3.0	--	--	--	< 5.0	--
	05/17/09	< 50.0	236	< 472	354	< 236	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	08/17/09	< 50.0	< 240	< 490	365	< 240	< 0.5	< 0.5	< 0.5	< 2.0	< 1.0	--	--	< 5.0	--
	11/17/09	< 50.0	< 240	< 480	360	< 240	< 0.5	< 0.5	< 0.5	< 2.0	< 1.0	--	--	< 5.0	--
	02/22/10	< 50.0	146	< 385	338.5	< 76.9	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	05/24/10	< 50.0	115	< 388	309	85.1	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	08/18/10	< 50.0	< 77.7	< 388	232.85	< 77.7	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	11/15/10	< 50.0	< 77.7	< 388	232.85	< 77.7	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	03/01/11	< 50.0	< 77.7	< 388	232.85	< 77.7	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	06/15/11	< 50.0	< 84.2	< 421	252.6	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	08/30/11	< 50.0	< 84.2	< 421	252.6	< 84.2	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	12/06/11	< 50.0	< 83.3	< 417	250.15	< 83.3	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	**< 10**	--
	02/15/12	< 50.0	< 75.5	< 377	226.25	< 75.5	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	2.1	--
	05/16/12	< 50.0	< 83.3	< 417	250.15	< 83.3	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	4.0	--
	08/15/12	< 50.0	< 88.9	< 444	266.45	< 88.9	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	11/06/13	< 400	< 400	< 400	400	< 400	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	--	--	--	--
	12/13/17	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	01/04/19	< 19.6	--	--	--	--	< 0.1	< 0.083	< 0.14	< 0.31	--	--	--	--	--
	12/19/19	< 38.3	--	--	--	--	< 0.1	< 0.083	< 0.14	< 0.31	< 0.16	< 0.24	< 0.22	--	--
	02/16/22	< 13.4	169	< 119	228.5	< 119	< 0.1	< 0.1	< 0.11	< 0.2	< 0.13	--	--	--	--
	08/17/22	23.5 J	< 94.1 / <148	< 94.1 / <229	< 94.1	--	< 0.1	< 0.1	< 0.11	< 0.2	< 0.13	--	--	< 0.02	--
	11/30/22	< 22.6 / <241	< 241	< 482	< 362	< 241	< 0.1	< 0.1	< 0.11	< 0.2	--	--	--	< 0.18	--
MW-212	09/30/14	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	< 0.021	< 1.0	--	--
	12/09/14	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	< 0.0097	< 1.0	--	--
	03/23/15	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	06/22/15	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	09/11/15	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	12/13/16	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	02/17/22	< 13.4	372	< 119	431.5	< 119	< 0.1	< 0.1	< 0.11	< 0.2	0.3 J	--	--	--	--
	08/17/22	45.4 J	174 / <148	< 94 / <229	221	--	< 0.1	< 0.1	< 0.11	< 0.2	0.25 J	--	--	< 0.02	--
	11/30/22	43.4 J / <239	< 239	< 479	< 359	< 239	< 0.1	< 0.1	< 0.11	< 0.2	--	--	--	< 0.18	--
MW-213	10/06/14	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	< 0.02	< 1.0	--	--
	12/08/14	< 100	--	--	--	--	**4.9**	< 1.0	< 1.0	< 3.0	< 1.0	< 0.0098	< 1.0	--	--
	03/23/15	364	--	--	--	--	**70.6**	< 1.0	18.7	18.5	--	--	--	--	--
	6/23/2015[FD]	453	--	--	--	--	**43.1**	1.3	16.8	27.8	--	--	--	--	--
	6/23/2015[FB]	150	--	--	--	--	**9.4**	< 1.0	6.1	3.1	--	--	--	--	--
	9/11/2015[FD]	638	--	--	--	--	2.2	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	9/11/2015[FB]	< 100	--	--	--	--	**3.4**	< 1.0	1.4	< 3.0	--	--	--	--	--
	12/07/15	< 100	--	--	--	--	1.2	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	06/28/16	< 250	--	--	--	--	2.3	< 0.5	5.5	3.2	--	--	--	--	--
	12/15/16	408	--	--	--	--	**41.8**	< 1.0	8.7	3.2	--	--	--	--	--
	06/29/17	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	12/13/17	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	06/13/18	152	--	--	--	--	1.4	0.13 J	2.5	< 0.13	--	--	--	--	--
	01/04/19	< 19.6	--	--	--	--	< 0.1	< 0.083	< 0.14	< 0.13	--	--	--	--	--
	06/04/19	< 38.3	--	--	--	--	< 0.1	< 0.083	< 0.14	< 0.31	< 0.16	< 0.24	< 0.22	< 0.48	--
	12/18/19	< 38.3	--	--	--	--	< 0.1	< 0.083	< 0.14	< 0.31	< 0.16	< 0.24	< 0.22	--	--
	02/17/22	168	< 116	< 116	**531**	473	1.6	0.15 J	0.23 J	< 0.2	< 0.13	--	--	--	--
	08/17/22	46.9 J	173 / <140	< 94 / <218	220	--	< 0.1	< 0.1	< 0.11	< 0.2	0.13	--	--	0.35	--
	12/01/22	< 22.6 / <233	< 233	< 467	< 350	< 233	< 0.1	< 0.1	< 0.11	< 0.2	--	--	--	< 0.18	--
MW-214	10/06/14	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	< 0.021	< 1.0	--	--
	12/08/14	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	< 0.01	< 1.0	--	--
	03/23/15	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	06/23/15	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	09/11/15	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	12/07/15	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	12/15/16	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	06/04/19	< 38.3	--	--	--	--	< 0.1	< 0.083	< 0.14	< 0.31	< 0.16	< 0.24	< 0.22	< 0.48	--
	02/17/22	< 13.4	< 116	< 116	116	< 116	< 0.1	< 0.1	< 0.11	< 0.2	< 0.13	--	--	--	--
	08/17/22	< 22.6	< 94.9 / <128	< 94.9 / <199	< 94.9	--	< 0.1	< 0.1	< 0.11	< 0.2	0.13	--	--	< 0.02	--
	12/01/22	< 22.6 / <239	< 239	< 477	< 358	< 239	< 0.1	< 0.1	< 0.11	< 0.2	--	--	--	< 0.18	--
MW-215	10/06/14	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	< 0.02	< 1.0	--	--
	12/08/14	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	< 0.0099	< 1.0	--	--
	03/23/15	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	06/23/15	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	09/11/15	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	12/07/15	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	12/15/16	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	12/13/17	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	01/04/19	< 19.6	--	--	--	--	< 0.1	< 0.083	< 0.14	< 0.31	--	--	--	--	--
	12/18/19	< 38.3	--	--	--	--	< 0.1	< 0.083	< 0.14	< 0.31	< 0.16	< 0.24	< 0.22	--	--
	02/17/22	< 13.4	< 119	< 119	119	< 119	< 0.1	< 0.1	< 0.11	< 0.2	< 0.13	--	--	--	--
	08/17/22	31.6 J	< 94.3 / <134	< 94.3 / <208	< 94.3	--	< 0.1	< 0.1	< 0.11	< 0.2	< 0.13	--	--	< 0.02	--
	12/01/22	< 22.6 / <236	< 236	< 472	< 354	< 236	< 0.1	< 0.1	< 0.11	< 0.2	--	--	--	0.24 J	--
MW-216	10/03/14	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	< 0.02	< 1.0	--	--
	12/09/14	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	< 0.0096	< 1.0	--	--
	03/23/15	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	06/22/15	< 100	--	--	--	--	2.3	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	09/12/15	< 100	--	--	--	--	1.4	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	12/07/15	< 100	--	--	--	--	**10.3**	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	06/28/16	< 250	--	--	--	--	< 0.5	< 0.5	< 0.5	< 1.5	--	--	--	--	--
	12/13/16	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	12/12/17	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	01/03/19	< 19.6	--	--	--	--	< 0.1	0.2 J	< 0.14	< 0.31	--	--	--	--	--
	12/18/19	93.8 J	238 J	101 J	339 J	--	< 0.1	< 0.083	< 0.14	< 0.31	< 0.16	< 0.24	< 0.22	< 1.6	--
	02/16/22	< 13.4	329	< 117	387.5	< 117	0.22 J	< 0.1	< 0.11	< 0.2	< 0.13	--	--	< 0.02	--
	08/16/22	33.2 J	**529 / <148**	< 95.2 / <229	**576.6**	--	< 0.1	< 0.1	< 0.11	< 0.2	< 0.13	--	--	< 0.18	--
MW-217	10/03/14	< 100	--	--	--	--	< 1.0	9.1	1.0	5.3	< 1.0	< 0.02	< 1.0	--	--
	12/09/14	< 100	--	--	--	--	**6.1**	< 1.0	< 1.0	< 3.0	< 1.0	< 0.0096	< 1.0	--	--
	03/23/15	< 100	--	--	--	--	**4.5**	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	06/22/15	105	--	--	--	--	**4.8**	< 1.0	1.1	< 3.0	--	--	--	--	--
	9/12/2015[FD]	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	9/12/2015[FB]	197	--	--	--	--	**4.4**	< 1.0	2.3	< 3.0	--	--	--	--	--
	12/07/15	182	--	--	--	--	1.6	< 1.0	3.0	< 3.0	--	--	--	--	--
	06/28/16	< 250	--	--	--	--	< 0.5	< 0.5	< 0.5	< 1.5	--	--	--	--	--
	12/13/16	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	12/12/17	226	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	01/03/19	229	--	--	--	--	0.2 J	19.3	1.1	3.1	--	--	--	--	--

Table 4-2a. Groundwater Analytical Results - TPH, VOCs, Naphthalene, and PCBs
Remedial Investigation Work Plan
Block 37 Site
600 - 630 Westlake Avenue North | Seattle, Washington

Monitoring Well ID	Sample Date	TPH (µg/L)					VOCs[4] (µg/L)								PCBs - Total as Aroclors (µg/L)
		GRO[1]	DRO[2]	ORO[2]	TEH (DRO+ORO)[3]	Kerosene	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	EDB	EDC	Naphthalene	
Screening Levels[5]															
GW-1 Protect Drinking Water GW-Detail-PW		**800**	**500**	**500**	**500**	**500**	**5**	**640**	**700**	**1,600**	**24**	**0.05**	**4.8**	**160**	**0.22**
GW-4 Screening Level Protect Indoor Air GW-Detail-PW		**NE**	**NE**	**NE**	**NE**	**NE**	**2.4**	**15,000**	**2,800**	**320**	**800**	**0.3**	**3.5**	**8.9**	**NE**
Laboratory PQL		**100**	**200**	**200**	**400**	**100**	**0.2**	**1.0**	**0.2**	**0.6**	**1.0**	**1.0**	**1.0**	**0.10**	**0.175**
MW-217 Cont'd	12/18/19	322	**803**	232 J	**1,332**	**1,100**	< 0.1	0.63 J	0.27 J	5.3	< 0.16	< 0.24	< 0.22	1.6 J	--
	02/16/22	110	< 116	< 116	**1,408**	**1,400**	< 0.1	< 0.1	< 0.11	< 0.2	< 0.13	--	--	0.24	--
	08/16/22	127	475	< 96.7 / <208	**1,108**	**1,060**	< 0.1	0.28 J	< 0.11	< 0.2	< 0.13	--	--	< 0.18	--
MW-218	10/03/14	492	--	--	--	--	< 1.0	3.0	< 1.0	8.4	< 1.0	< 0.021	< 1.0	--	--
	12/09/14	616	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	< 0.01	< 1.0	--	--
	03/23/15	353	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	06/22/15	560	--	--	--	--	< 1.0	< 1.0	< 1.0	5.6	--	--	--	--	--
	9/12/2015[DP]	614	--	--	--	--	< 1.0	< 1.0	1.1	11.2	--	--	--	--	--
	9/13/2015[DP]	258	--	--	--	--	< 1.0	< 1.0	1.2	11.4	--	--	--	--	--
	12/07/15	180	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	12/13/16	515	--	--	--	--	< 1.0	< 1.0	< 1.0	5.5	--	--	--	--	--
	12/12/17	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	01/03/19	104	--	--	--	--	< 0.1	0.78 J	< 0.14	< 0.31	--	--	--	--	--
	12/18/19	229	**1,020**	243 J	**1,263**	**1,500**	< 0.1	0.13 J	< 0.14	< 0.31	< 0.16	< 0.24	< 0.22	< 1.6	--
	02/16/22	126	< 119	< 119	**1,210**	**1,150**	< 0.1	< 0.1	< 0.11	< 0.2	< 0.13	--	--	< 0.02	--
	08/16/22	91 J	**326 J**	< 96.3 / <183	**861.2**	**813**	< 0.1	0.11 J	< 0.11	< 0.2	< 0.13	--	--	< 0.18	--
MW-219	10/06/14	147	--	--	--	--	< 1.0	1.2	2.0	4.4	< 1.0	< 0.02	< 1.0	--	--
	12/09/14	197	--	--	--	--	1.0	< 1.0	2.4	5.8	< 1.0	< 0.0098	< 1.0	--	--
	03/23/15	< 100	--	--	--	--	1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	06/22/15	< 100	--	--	--	--	1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	09/10/15	< 100	--	--	--	--	< 1.0	< 1.0	1.1	< 3.0	--	--	--	--	--
	12/07/15	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	12/13/16	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	12/13/17	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	Well Destroyed														
MWR-1	11/17/10	< 50.0	< 77.7	< 388	233	< 77.7	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	03/03/11	< 50.0	< 77.7	< 388	233	< 77.7	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	06/15/11	< 50.0	< 83.3	< 417	250	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	08/30/11	< 50.0	< 86	< 430	258	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	12/06/11	< 50.0	< 83.3	< 417	250	< 83.3	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	**< 10**	--
	02/16/12	< 50.0	< 81.6	< 408	245	< 81.6	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	05/15/12	< 50.0	< 81.6	< 408	245	< 81.6	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	3.8	--
	08/15/12	< 50.0	< 85.1	< 426	255.55	< 85.1	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	11/20/12	< 100	< 100	< 100	100	< 100	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 4.0	--
	11/06/13	< 400	< 400	< 400	400	< 400	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	--	--	--	--
	12/08/14	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	< 0.0099	< 1.0	--	--
	03/23/15	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	06/22/15	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	09/11/15	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	12/07/15	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	12/14/16	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	12/01/22	< 22.6/<243	< 243	< 243	< 365	< 243	0.21	< 1.0	< 0.11	< 0.2	--	--	--	< 0.18	--
MWR-2	11/17/10	< 50.0	< 77.7	< 388	232.85	< 77.7	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	03/01/11	< 50.0	< 77.7	< 388	232.85	< 77.7	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	06/14/11	< 50.0	< 83.3	< 417	250.15	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	08/29/11	< 50.0	< 83.3	< 417	252	< 87	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	12/06/11	< 50.0	< 86	< 430	258	< 86	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	**< 10**	--
	02/16/12	< 50.0	< 81.6	< 408	244.8	< 81.6	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	2.0	--
	05/15/12	< 50.0	< 75.8	< 379	227.4	< 75.8	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	3.8	--
	08/15/12	< 50.0	< 84.2	< 421	252.6	< 84.2	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	11/20/12	< 100	< 100	< 100	100	< 100	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 4.0	--
	11/06/13	< 400	< 400	< 400	400	< 400	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	--	--	--	--
	12/08/14	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	< 0.0099	< 1.0	--	--
	03/23/15	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	06/22/15	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	09/11/15	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	12/07/15	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	12/14/16	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	12/01/22	< 22.6/<237	< 237	< 473	< 355	< 237	< 0.1	< 0.1	< 0.11	< 0.2	--	--	--	< 0.18	--
MWR-3	11/17/10	< 50.0	83.6	< 385	**1,332.5**	**1,140**	< 1.0	1.4	< 1.0	< 3.0	--	--	--	< 1.0	--
	03/01/11	< 50.0	< 77.7	< 388	232.85	< 77.7	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	06/15/11	< 50.0	< 82.5	< 412	247.25	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	08/30/11	< 50.0	< 88.9	< 444	266.45	< 88.9	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	12/06/11	< 50.0	< 86	< 430	258	< 86	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	**< 10**	--
	02/16/12	< 50.0	< 81.6	< 408	244.8	< 81.6	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	2.0	--
	05/15/12	< 50.0	< 81.6	< 408	244.8	< 81.6	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	08/15/12	< 50.0	< 87	< 435	261	< 87	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	11/20/12	< 100	< 100	< 100	100	< 100	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 4.0	--
	11/06/13	< 400	< 400	< 400	400	< 400	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	--	--	--	--
	12/08/14	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	< 0.0098	< 1.0	--	--
	03/23/15	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	06/22/15	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	09/11/15	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	12/07/15	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	12/14/16	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	02/17/22	< 100	< 130	< 200	< 165	--	< 0.2	< 1.0	< 0.2	< 0.6	--	--	--	< 0.098	--
	05/18/22	< 100	< 170	< 220	< 280	--	< 0.2	< 1.0	< 0.2	< 0.6	--	--	--	< 0.1	**< 0.186**
	08/24/22	< 100	< 130	< 210	< 260	--	< 0.2	< 1.0	< 0.2	< 0.6	--	--	--	< 0.096	< 0.090
	11/08/22	< 100	< 130	220	< 250	--	< 0.2	< 1.0	< 0.2	< 0.6	--	--	--	< 0.095	< 0.086
	12/01/22	< 22.6/<239	< 239	< 479	< 359	< 239	< 0.1	< 0.1	< 0.11	< 0.2	--	--	--	< 0.096	--
MWR-4	11/17/10	141	< 76.9	< 385	332.5	140	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	03/01/11	< 50.0	< 77.7	< 388	326	132	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	06/14/11	< 50.0	< 85.1	< 426	255.55	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	08/29/11	< 50.0	< 82.5	< 412	247.25	< 82.5	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	12/06/11	< 50.0	< 83.3	< 417	250.15	< 83.3	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	**< 10**	--
	02/16/12	< 50.0	< 82.5	< 412	247.25	< 82.5	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	2.0	--
	05/15/12	< 50.0	< 81.6	< 408	244.8	< 81.6	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	3.8	--
	08/15/12	< 50.0	< 82.5	< 412	247.25	< 82.5	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	11/20/12	< 100	< 100	< 100	100	< 100	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 4.0	--
	11/06/13	< 400	< 400	< 400	400	< 400	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	--	--	--	--
	12/08/14	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	< 0.0098	< 1.0	--	--
	03/23/15	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	06/22/15	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	09/11/15	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	12/07/15	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	12/14/16	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	12/01/22	< 22.6/<237	< 237	< 473	< 355	< 237	< 0.1	< 0.1	< 0.11	< 0.2	--	--	--	< 0.18	--
MWR-5	11/17/10	**15,900**	423	< 388	**5,274**	**5,080**	**199**	371	592	**3,710**	--	--	--	**157**	--
	02/28/11	**21,800**	368	< 388	**4,844**	**4,650**	**195**	444	642	**3,430**	--	--	--	**143**	--
	06/14/11	**22,700**	323	< 400	**523**	--	**192**	383	**719**	**4,340**	--	--	--	--	--
	08/29/11	**35,400**	478	< 408	**7,264**	**7,060**	**244**	271	**861**	**4,500**	--	--	--	**338**	--
	12/05/11	**30,800**	235	< 412	**9,786**	**9,500**	**211**	450	**1,140**	**5,960**	--	--	--	**193**	--
	02/16/12	**9,490**	160	< 396	**2,528**	**2,330**	**68.7**	9.1	218	**1,090**	--	--	--	**88.2**	--
	05/15/12	**27,900**	298	< 404	**4,852**	**4,650**	**181**	160	**813**	**4,830**	--	--	--	**226**	--
	08/14/12	**7,720**	329	< 440	**2,780**	**2,560**	**60.5**	3.8	244	**1,280**	--	--	--	**81.3**	--
	11/20/12	**35,500**	**15,500**	< 100	**20,550**	**20,500**	**306**	471	**1,520**	**10,700**	--	--	--	**342**	--
	11/06/13	**3,820**	< 400	< 400	**1,300**	**1,100**	**23**	< 1.0	150	286	< 1.0	--	--	--	--
	12/08/14	**20,400**	--	--	--	--	< 1.0	2.1	430	**1,400**	< 1.0	< 0.01	< 1.0	--	--
	03/23/15	**11,900**	--	--	--	--	**31**	1.4	459	**1,030**	< 1.0	< 0.01	< 1.0	--	--
	06/22/15	**14,700**	--	--	--	--	**22.9**	< 10.0	455	**843**	--	--	--	--	--
	09/10/15	**10,700**	--	--	--	--	**35**	1.1	223	**644**	--	--	--	--	--
	06/28/16	**10,800**	--	--	--	--	**14.9**	< 1.2	232	**519**	--	--	--	--	--
	12/14/16	**51,900**	--	--	--	--	**45.6**	7.4	**1,920**	**6,350**	--	--	--	--	--
	12/13/17	713	--	--	--	--	< 1.0	< 1.0	2.4	20.3	--	--	--	--	--
	06/13/18	**11,000**	--	--	--	--	**5.9**	1.4	72.8	**511**	--	--	--	--	--
	01/03/19	**43,000**	--	--	--	--	**20.9**	7.9	**1,180**	**4,282**	--	--	--	--	--
	12/01/22	**1,580**/<236	< 94.3	< 94.3	**1,627**	**1,580**	**3.2**	0.51 J	55	6.9	--	--	--	**45**	--

Table 4-2a. Groundwater Analytical Results - TPH, VOCs, Naphthalene, and PCBs
Remedial Investigation Work Plan
Block 37 Site
600 - 630 Westlake Avenue North | Seattle, Washington

Monitoring Well ID	Sample Date	TPH (µg/L)					VOCs[4] (µg/L)								PCBs - Total as Aroclors (µg/L)
		GRO[1]	DRO[2]	ORO[2]	TEH (DRO+ORO)[3]	Kerosene	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	EDB	EDC	Naphthalene	
Screening Levels[5]															
GW-1 Protect Drinking Water GW-Detail-PW		**800**	**500**	**500**	**500**	**500**	**5**	**640**	**700**	**1,600**	**24**	**0.05**	**4.8**	**160**	**0.22**
GW-4 Screening Level Protect Indoor Air GW-Detail-PW		**NE**	**NE**	**NE**	**NE**	**NE**	**2.4**	**15,000**	**2,800**	**320**	**800**	**0.3**	**3.5**	**8.9**	**NE**
	Laboratory PQL	**100**	**200**	**200**	**400**	**100**	**0.2**	**1.0**	**0.2**	**0.6**	**1.0**	**1.0**	**1.0**	**0.10**	**0.175**
MWR-6	11/16/10	< 50.0	< 77.7	< 388	232.85	< 77.7	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	02/28/11	< 50.0	< 77.7	< 388	232.85	< 77.7	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	06/14/11	< 50.0	< 80.8	< 404	242.4	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	08/29/11	< 50.0	< 87	< 435	261	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	12/05/11	< 50.0	< 82.5	< 412	247.25	< 82.5	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	**< 10**	--
	02/16/12	< 50.0	< 75.5	< 377	226.25	< 75.5	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	2.8	--
	05/15/12	< 50.0	< 81.6	< 408	244.8	< 81.6	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	3.8	--
	08/14/12	< 50.0	< 85.1	< 426	255.55	< 85.1	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	11/20/12	< 100	< 100	< 100	100	< 100	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 4.0	--
	11/06/13	< 400	< 400	< 400	400	< 400	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	--	--	--	--
	12/08/14	< 100	--	--	--	--	**5.1**	< 1.0	< 1.0	< 3.0	< 1.0	< 0.0098	< 1.0	--	--
	03/23/15	< 100	--	--	--	--	1.7	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	06/22/15	< 100	--	--	--	--	1.6	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	09/11/15	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	12/07/15	< 100	--	--	--	--	1.9	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	06/28/16	< 250	--	--	--	--	< 0.5	< 0.5	< 0.5	< 1.5	--	--	--	--	--
	12/14/16	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	12/19/19	< 38.3	205 J	156 J	366	210 J	< 0.1	< 0.083	< 0.14	< 0.31	< 0.16	< 0.24	< 0.22	< 1.6	--
	02/17/22	< 100	< 130	350	415	--	< 0.2	< 1.0	< 0.2	< 0.6	--	--	--	< 0.1	--
	05/17/22	< 100	< 160	< 220	< 270	--	< 0.2	< 1.0	< 0.2	< 0.6	--	--	--	< 0.11	--
	08/24/22	< 100	150	270	270	--	< 0.2	< 1.0	< 0.2	< 0.6	--	--	--	< 0.096	--
	11/08/22	< 100	190	350	350	--	< 0.2	< 1.0	< 0.2	< 0.6	--	--	--	< 0.096	--
PH-1	02/17/22	< 100	< 130	260	325	--	< 0.2	< 1.0	< 0.2	< 0.6	--	--	--	0.024 J	--
	05/17/22	< 100	< 150	300	< 280	--	< 0.2	< 1.0	< 0.2	< 0.6	--	--	--	< 0.1	< 0.070
	08/24/22	< 100	< 130	< 210	< 270	--	< 0.2	< 1.0	< 0.2	< 0.6	--	--	--	< 0.097	< 0.086
	11/09/22	< 100	140	220	260	--	< 0.2	< 1.0	< 0.2	< 0.6	--	--	--	< 0.095	< 0.086
PH-2 /MW-1	02/17/22	120	< 130	< 200	< 165	--	**2.4**	< 4.0	< 0.8	< 2.4	--	--	--	0.14	--
	05/17/22	< 100	< 150	< 210	< 250	--	1.3	< 1.0	0.6	< 0.6	--	--	--	0.31	< 0.070
	08/24/22	< 100	< 130	< 200	< 260	--	0.54	< 1.0	< 0.2	< 0.6	--	--	--	< 0.099	< 0.090
	11/09/22	< 100	180	< 200	340	--	0.43	< 1.0	< 0.2	< 0.6	--	--	--	< 0.096	< 0.086
PH-3	02/17/22	< 100	< 130	< 200	< 165	--	< 0.2	< 1.0	< 0.2	< 0.6	--	--	--	< 0.096	--
	05/18/22	< 100	< 160	270	< 250	--	< 0.2	< 1.0	< 0.2	< 0.6	--	--	--	< 0.1	**< 0.182**
	08/24/22	< 100	< 130	< 200	< 250	--	< 0.2	< 1.0	< 0.2	< 0.6	--	--	--	< 0.096	< 0.086
	11/08/22	< 100	< 130	< 200	< 250	--	< 0.2	< 1.0	< 0.2	< 0.6	--	--	--	< 0.095	< 0.086
Monitoring Wells - Abandoned / Unknown Status															
MW-3	10/10/01	**14,100**	**4,060**	**1,990**	**6,050**	--	**1,070**	< 25.0	**1,040**	292	--	--	--	--	--
	12/28/01	**3,340**	**1,810**	**< 500**	**2,060**	--	**92.6**	4.62	146	51.2	--	--	--	--	--
	09/26/02	**10,500**	**1,820** b	**< 500**	**2,070**	--	**326**	14.0	685	**447**	--	--	--	--	--
	03/13/03	**17,200**	**1,440**	**< 595**	**1,737.5**	--	**86.6**	38.1	434	**798**	--	--	--	--	--
	03/30/04	**3,040**	**1,950**	< 285	**2,092.5**	--	**57.1**	< 5.0	24.3	23.57	--	--	--	--	--
MW-3A	03/17/05	**1,610**	< 251	**< 502**	376.5	--	**2.54**	1.23	30.9	156.8	--	--	--	--	--
	06/01/05	***1,030*** c	< 241 c	< 483	362	--	**5.21**	< 1.0	27.8	66	< 1.0	--	--	--	--
	07/25/05	702	< 250	**< 500**	375	--	**4.6**	0.86	23	47.1	1.06	--	--	2.16	--
	11/07/05	647	< 243	< 485	364	--	**4.77**	0.89	35.2	33.8	< 1.0	--	--	--	--
	02/23/06	759	1.12	< 0.5	1.37	--	**4.14**	0.74	51.3	38.9	< 1.0	--	--	5.83	--
	05/10/06	654	< 260	**< 521**	390.5	--	**3.6**	1.35	51.2	57.5	< 1.0	--	--	**13.3**	--
	08/30/06	160	< 236	< 472	354	--	0.55	0.58	3.45	< 1.0	< 1.0	--	--	7.03	--
	12/12/06	610	< 243	< 485	364	--	0.93	0.7	13.3	14.3	< 1.0	--	--	**12.3**	--
	03/06/07	< 50.0	< 236	< 472	354	--	< 0.5	< 5.0	< 5.0	< 3.0	< 1.0	--	--	< 5.0	--
	06/15/07	< 50.0	< 250	**< 500**	375	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	09/14/07	79.4	< 250	**< 500**	375	--	< 0.5	< 0.5	2.56	4.82	< 1.0	--	--	< 5.0	--
	12/19/07	< 50.0	< 236	< 472	354	--	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	--	--	< 1.0	--
MW-8	07/26/05	**81,600**	**641**	**< 500**	**891**	--	**4,700**	**5,280**	**4,270**	**15,450**	< 1.0	--	--	**1,010**	--
	11/02/05	**41,000**	**506**	< 485	**748.5**	--	**4,540**	**955**	**3,240**	**12,000**	< 1.0	--	--	--	--
	02/22/06	**72,800**	**623**	< 490	**868**	--	**2,760**	**6,240**	**3,020**	**13,400**	**< 1,000** I	--	--	**1,040**	--
	05/09/06	**87,600**	**1,140**	< 485	**1,382.5**	--	**2,940**	**6,510**	**3,470**	**13,870**	**< 200**	--	--	**834**	--
MW-13	06/16/05	**1,820**	**880**	**1,100** d	**1,980**	--	**2.91**	< 1.0	< 1.0	< 2.0	< 1.0	--	--	--	--
	11/01/05	125	< 238	< 476	357	--	1.19	< 0.5	< 0.5	< 1.0	< 2.0	--	--	--	--
	02/22/06	227	< 272	**< 543**	407.5	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 1.0	--
	05/08/06	236	< 243	< 485	364	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 1.0	--
	08/31/06	< 100	< 243	< 485	364	--	1.24	< 0.5	7.64	6.68	< 1.0	--	--	6.0	--
MW-16	06/16/05	< 500	**4,000**	**16,000** g	**20,000**	--	**135**	< 5.0	< 5.0	< 10	< 5.0	--	--	--	--
	07/26/05	358	**8,320**	**20,700**	**29,020**	--	**42.6**	0.34	< 0.2	1.25	< 1.0	--	--	--	--
	11/01/05	< 50.0	< 236	< 472	354	--	**8.0**	< 0.5	0.6	< 1.0	< 2.0	--	--	--	--
	02/21/06	137	< 278	**1,080**	**1,219**	--	**4.09**	< 0.5	< 0.5	< 3.0	< 1.0	--	--	--	--
	05/09/06	98.4	< 238	< 476	357	--	**2.43**	< 0.5	< 0.5	< 3.0	< 1.0	--	--	--	--
MW-18	06/02/05	**6,600**	**18,000**	**25,800** g	**46,800**	--	**403**	434	91.9	**779**	< 1.0	--	--	--	--
	07/26/05	**1,400**	**6,930**	**13,200**	**20,130**	--	**35.2**	3.98	6.23	33.4	< 1.0	--	--	**30.9**	--
	11/07/05	**2,660**	271	**< 505**	**523.5**	--	**84.4**	28.2	28.7	314	< 4.0	--	--	--	--
	02/22/06	**10,500**	**2,090**	**< 505**	**2,342.5**	--	**345**	217	56.4	**697**	< 20 I	--	--	**80.2**	--
	05/10/06	**1,450**	269	< 481	**509.5**	--	**102**	5.32	19	57.4	< 4.0	--	--	**122**	--
	08/29/06	**1,250**	377	**1,030**	**1,407**	--	**298**	7.42	13.5	72.2	< 1.0	--	--	**107**	--
	12/12/06	**4,360**	**856**	**1,800**	**2,656**	--	**301**	28.7	44.9	281	< 1.0	--	--	**69.2**	--
	03/06/07	**856**	< 266	**< 532**	399	--	**140**	5.0	7.2	67.1	< 1.0	--	--	**< 50**	--
	06/14/07	330	< 236	< 472	354	--	**8.67**	0.72	2.02	4.84	< 1.0	--	--	**44.9**	--
	09/14/07	458	< 243	< 485	364	--	**15.6**	16.3	3.23	6.46	< 1.0	--	--	**16.4**	--
	05/17/09	**3,370**	**1,220**	**4,320**	**5,540**	**695**	**281**	3.95	29.4	258	< 1.0	--	--	**62.6**	--
	08/16/09	690	**910**	**2,200**	**3,110**	**800**	**120**	0.77	3.1	28	< 1.0	--	--	**42**	--
	11/15/09	**2,300**	**760**	**1,200**	**2,000**	**800**	**470** k	1.3	40	180	< 1.0	--	--	**61**	--
	02/21/10	**18,400**	**3,440**	**2,900**	**9,110**	**6,210**	**768**	289	274	**3,280**	--	--	--	**123**	--
	05/23/10	**9,700**	**2,870**	**2,330**	**6,260**	**3,930**	**819**	109	174	**2,840**	--	--	--	**128**	--
	08/15/10	**9,200**	481	**891**	**2,371**	**1,480**	**789**	129	115	**2,240**	--	--	--	**104**	--
	11/14/10	**16,600**	**598**	**936**	**4,836**	**3,900**	**1,180**	158	343	**4,390**	--	--	--	**146**	--
MW-19	06/16/05	**117,000**	**31,000**	**< 12,000** g	**37,000**	--	**391**	380	121	**21,960**	**< 50**	--	--	--	--
	07/26/05	**96,400**	**4,050**	**2,340**	**6,390**	--	**201**	229	< 20	**16,590**	< 1.0	--	--	**805**	--
	11/07/05	**72,000**	**4,070**	**< 990**	**4,565**	--	**436**	520	504	**13,700**	**< 40**	--	--	--	--
	02/22/06	**18,900**	**13,900**	**< 5,210**	**16,505**	--	**288**	33.8	146	**1,760**	< 20 I	--	--	**491**	--
	05/10/06	**45,900**	**5,520**	**< 1,000**	**6,020**	--	**373**	171	164	**8,760**	**< 100**	--	--	**1,700**	--
	08/29/06	**3,530**	**1,220**	< 495	**1,467.5**	--	**156**	72.4	66.1	**1,920**	< 10	--	--	**251**	--
	12/12/06	**68,400**	**2,720**	< 481	**2,960.5**	--	**688**	731	286	**10,700**	< 1.0	--	--	**452**	--
	03/06/07	**47,800**	**2,330**	< 495	**2,577.5**	--	**560**	192	480	**12,000**	10	--	--	**873**	--
	06/14/07	**28,100**	**8,140**	< 481	**8,380.5**	--	**279**	130	96.9	**4,860**	< 1.0	--	--	**308**	--
	09/14/07	**22,300**	**1,530**	**1,050**	**2,580**	--	**98.4**	27.8	128	**2,710**	< 1.0	--	--	**511**	--
	03/18/08	**32,400**	--	--	--	--	**218**	89.1	127	**4,650**	< 1.0	--	--	**304**	--
	06/01/08	**22,400**	**822**	**< 758**	**5,389**	**5,010**	**202**	18.6	140	**3,280**	< 1.0	--	--	**337**	--
	08/10/08	**26,800**	--	--	--	--	**180**	34.8	140	**2,390**	< 20	--	--	**215**	--
	11/02/08	**19,700**	< 245	< 490	**794**	**549**	**78.6**	14.5	90.4	**2,610**	< 1.0	--	--	**< 200**	--
	02/22/09	**50,700**	**4,440**	< 481	**19,740.5**	**19,500**	**470**	33.7	280	**7,900**	--	--	--	**83.5**	--
	05/17/09	**61,200**	**2,140**	< 485	**21,142.5**	**20,900**	**202**	37.6	343	**12,300**	< 1.0	--	--	**63.7**	--
	11/15/09	**53,000**	**12,000**	< 490	**21,245**	**21,000**	**530** k	10.0	490 k	**8,500** k	< 1.0	--	--	**950** k	--
	02/21/10	**46,400**	**7,090**	**1,660**	**22,960**	**21,300**	**319**	7.7	688	**7,820**	--	--	--	**517**	--
	05/23/10	**44,400**	**7,100**	**2,010**	**23,410**	**21,400**	**312**	5.8	687	**6,990**	--	--	--	**543**	--
	08/15/10	**33,500**	**2,470**	**954**	**13,154**	**12,200**	**293**	4.9	354	**4,950**	--	--	--	**67.7**	--
	11/14/10	**29,500**	**1,640**	< 388	**12,194**	**12,000**	**436**	9.5	496	**4,190**	--	--	--	**432**	--
MW-32A	11/04/91	**52,000**	**< 1,000**	--	**500**	--	**10,000**	**10,000**	**2,000**	**10,000**	--	--	--	--	--
	12/29/93	**19,000**	**2,900**	**1,300**	**4,200**	--	**6,300**	**990**	**940**	**1,700**	--	--	--	--	--
	04/07/94	**11,000**	**2,100**	**1,300**	**3,400**	--	**3,900**	150	490	**590**	--	--	--	--	--
	07/14/94	**9,900**	**1,700**	**1,500**	**3,200**	--	**5,600**	54.0	530	**500**	--	--	--	--	--
	10/25/94	**19,000**	**1,100**	**1,000**	**2,100**	--	**4,600**	**2,300**	560	**2,300**	--	--	--	--	--
	03/08/95	**21,000**	**2,300**	**2,300**	**4,600**	--	**5,800**	**1,700**	**990**	**2,900**	--	--	--	--	--
	9/7/1995	**20,000**	**2,500**	**1,600**	**4,100**	--	**4,200**	470	**720**	**2,000**	--	--	--	--	--
	12/8/1995	**11,000**	**1,200**	**< 750**	**1,575**	--	**1,600**	86.0	420	**910**	--	--	--	--	--
	4/1/1996	**7,900**	**1,400**	**1,000**	**2,400**	--	**2,200**	58.0	300	**490**	--	--	--	--	--
	6/25/1996	**7,500**	**1,250**	**< 750**	**1,625**	--	**1,200**	60.4	217	**435**	--	--	--	--	--

Table 4-2a. Groundwater Analytical Results - TPH, VOCs, Naphthalene, and PCBs
Remedial Investigation Work Plan
Block 37 Site
600 - 630 Westlake Avenue North | Seattle, Washington

Monitoring Well ID	Sample Date	TPH (µg/L)					VOCs[4] (µg/L)								PCBs - Total as Aroclors (µg/L)
		GRO[1]	DRO[2]	ORO[3]	TEH (DRO+ORO)[3]	Kerosene	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	EDB	EDC	Naphthalene	
Screening Levels[5]															
GW-1 Protect Drinking Water GW-Detail-PW		800	500	500	500	500	5	640	700	1,600	24	0.05	4.8	160	0.22
GW-4 Screening Level Protect Indoor Air GW-Detail-PW		NE	NE	NE	NE	NE	2.4	15,000	2,800	320	800	0.3	3.5	8.9	NE
Laboratory PQL		100	200	200	400	100	0.2	1.0	0.2	0.6	1.0	1.0	1.0	0.10	0.175
MW-32A Cont'd	9/27/1996	7,050	1,040	< 750	1,415	--	1,570	37.4	264	416	--	--	--	--	--
	12/19/00[6]	7,010	1,740	< 750	2,115	--	4,430	136	438	182	--	--	--	--	--
	06/15/01[6]	13,700	2,810	< 846	3,233	--	2,370	11.2	272	31.1	--	--	--	--	--
	06/26/01[6]	15,500	1,620	< 750	1,995	--	8,780	1,110	1,230	1,020	--	--	--	--	--
	09/07/01[6]	17,100	4,220	822	5,042	--	5,870	19.9	684	110	--	--	--	--	--
	12/28/01	12,200	4,260	711	4,971	--	3,570	180	537	393	--	--	--	--	--
	03/08/02	16,400	4,140	769	4,909	--	4,900	142	619	247	--	--	--	--	--
	06/24/02	6,850	2,040	577	2,617	--	2,820	7.43	221	59.1	--	--	--	--	--
	09/26/02	6,580	3,740 b	670 b	4,410	--	1,930	31.4	204	89.7	--	--	--	--	--
	12/12/02	6,750	3,530	528	4,058	--	1,450	55.6	229	283	--	--	--	--	--
	03/13/03	13,000	2,550	< 581	2,840.5	--	1,990	222	419	806	--	--	--	--	--
	06/12/03	17,400	2,730	< 500	2,980	--	4,830	200	745	262	--	--	--	--	--
	09/19/03	1,420	< 294	< 588	441	--	64.2	42.7	7.49	135	--	--	--	--	--
	01/14/04	1,580	316	< 253	442.5	--	28.9	4.13	13.1	32.5	--	--	--	--	--
	03/30/04	7,310	838	< 276	976	--	18.3	< 10.0	209	122	--	--	--	--	--
	06/22/04	3,330	1,470	381	1,851	--	149	< 10.0	72.5	43.8	--	--	--	--	--
	09/29/04	330	< 242	< 484	363	--	13	1.6	3.7	39	--	--	--	--	--
	12/29/04	1,500	592	< 478	831	--	71	< 5.0	30.9	31.2	--	--	--	--	--
	03/17/05	< 100	< 239	< 478	358.5	--	< 1.0	< 1.0	< 1.0	< 2.0	--	--	--	--	--
	06/01/05	205	< 237	< 473	355	--	13.2	< 1.0	5.55	6.16	< 1.0	--	--	--	--
	07/25/05	277	< 250	< 500	375	--	11.2	0.27	7.04	2.83	< 1.0	--	--	2.28	--
	11/08/05	217	< 250	< 500	375	--	6.84	0.81	0.66	< 3.0	< 1.0	--	--	--	--
	02/23/06	< 50.0	400	< 505	652.5	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 1.0	--
	05/08/06	2,740	1,030	< 500	1,280	--	157	1.65	179	85.5	< 1.0	--	--	47.4	--
	08/30/06	197	< 243	< 485	364	--	13.8	< 0.5	12.3	< 3.0	< 1.0	--	--	10.9	--
	12/13/06	1,770	< 250	< 500	375	--	128	7.05	129	51.2	< 5.0	--	--	< 25	--
	03/08/07	596	< 248	< 495	371.5	--	38.5	< 0.05	31.3	5.3	< 1.0	--	--	18.5	--
	06/15/07	296	< 250	< 500	375	--	14.2	< 0.5	3.26	< 3.0	< 1.0	--	--	12.1	--
	09/14/07	358	< 245	< 490	367.5	--	25.5	< 0.5	9.29	< 3.0	< 1.0	--	--	6.85	--
	12/18/07	64.8	< 236	< 472	354	--	3.3	< 1.0	< 1.0	< 3.0	< 1.0	--	--	< 5.0	--
	03/17/08	290	< 236	< 472	354	< 236	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 1.0	--
	06/02/08	215	284	< 472	520	265	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	08/04/08	--	< 236	< 472	354	< 236	--	--	--	--	--	--	--	--	--
	11/05/08	528	< 238	< 476	519	281	< 0.5	< 0.5	0.65	< 3.0	< 1.0	--	--	< 5.0	--
MW-33	11/04/91	11,000	< 1,000	--	500	--	550	490	240	1,300	--	--	--	--	--
	12/29/93	7,200	1,100	< 750	1,475	--	560	100	250	1,100	--	--	--	--	--
	04/07/94	3,500	1,000	1,100	2,100	--	220	1.5	80	190	--	--	--	--	--
	3/8/1995	4,900	1,400	2,000	3,400	--	650	< 25.0	320	420	--	--	--	--	--
	9/7/1995	9,700	1,400	820	2,220	--	550	140	230	620	--	--	--	--	--
	12/8/1995	13,000	1,900	1,800	3,700	--	800	240	280	760	--	--	--	--	--
	4/1/1996	5,200	960	< 750	1,335	--	630	33.0	130	270	--	--	--	--	--
	6/25/1996	2,700	1,030	< 750	1,405	--	230	24.6	46.5	61.1	--	--	--	--	--
	9/27/1996	5,150	1,190	< 750	1,565	--	1,190	237	86.3	272	--	--	--	--	--
	12/28/01	141,000	25,200	2,680	27,880	--	5,360	32,500	3,410	22,700	--	--	--	--	--
	03/08/02	126,000	31,400	3,420	34,820	--	2,660	21,600	3,420	24,800	--	--	--	--	--
	06/24/02	205,000	51,700	14,000	65,700	--	1,510	14,200	3,770	28,900	--	--	--	--	--
	06/12/03	30,900	4,170	< 562	4,451	--	396	526	474	3,890	--	--	--	--	--
	09/19/03	125	< 291	< 581	436	--	0.704	< 0.5	< 0.5	4.3	--	--	--	--	--
	01/14/04	524	< 135	< 271	203	--	17	3.7	7.65	31	--	--	--	--	--
	03/30/04	2,690	725	< 256	853	--	218	14.7	53.2	150.4	--	--	--	--	--
	06/22/04	3,500	1,330	443	1,773	--	197	12.1	99.2	217.3	--	--	--	--	--
	09/29/04	290	290	< 511	545.5	--	12	1.9	5.6	22	--	--	--	--	--
	12/29/04	2,860	795	< 491	1,040.5	--	90.9	30.9	49.4	169.3	--	--	--	--	--
	03/17/05	106	< 239	< 478	358.5	--	8.23	1.23	4.6	9.55	--	--	--	--	--
	06/01/05	< 100	< 262	< 524	393	--	2.03	< 1.0	< 1.0	< 2.0	< 1.0	--	--	--	--
	07/25/05	79.3	< 250	< 500	375	--	3.27	0.23	1.95	1.78	< 1.0	--	--	1.27	--
	11/01/05	< 50.0	< 236	< 472	354	--	0.8	< 0.5	< 0.5	< 1.0	< 2.0	--	--	--	--
	02/23/06	582	< 255	< 510	382.5	--	145	4.75	5.5	< 15	< 5.0	--	--	< 5.0	--
	05/08/06	242	< 240	< 481	360.5	--	4.29	< 0.5	0.7	1.78	< 1.0	--	--	2.13	--
	08/30/06	874	< 250	< 500	375	--	200	10.0	26.2	56	6.79	--	--	17.1	--
	12/12/06	11,200	< 243	< 485	364	--	163	41.2	45.2	175	< 5.0	--	--	< 25	--
	03/07/07	867	< 260	< 521	390.5	--	65.3	2.48	54.8	84.6	< 1.0	--	--	23.8	--
	06/15/07	535	< 245	< 490	367.5	--	32.5	< 0.5	0.55	17.5	1.38	--	--	21.8	--
	09/14/07	235	< 250	< 500	375	--	29.4	1.45	< 0.5	19.8	1.23	--	--	6.62	--
	12/19/07	176	< 236	< 472	354	--	40	< 1.0	< 1.0	4.3	< 1.0	--	--	1.3	--
	03/18/08	82.9	< 236	< 472	354	< 236	1.17	0.68	2.08	< 3.0	< 1.0	--	--	< 5.0	--
	06/03/08	< 50.0	< 236	< 472	354	< 236	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	09/04/08	55.3	< 236	< 472	354	< 236	1.16	< 0.5	0.91	< 3.0	< 1.0	--	--	< 5.0	--
MW-34	11/04/91	40,000	< 1,000	--	500	--	23,000	18,000	2,600	14,000	--	--	--	--	--
	10/07/93	4,200	1,600	970	2,570	--	1,400	480	120	440	--	--	--	--	--
	12/29/93	52,000	2,200	< 750	2,575	--	15,000	11,000	1,500	7,000	--	--	--	--	--
	04/07/94	9,800	1,400	< 750	1,775	--	4,500	930	260	840	--	--	--	--	--
	07/14/94	5,700	1,200	< 750	1,575	--	980	420	210	820	--	--	--	--	--
	10/25/94	13,000	4,100	1,900	6,000	--	6,500	170	680	1,000	--	--	--	--	--
	3/8/1995	8,200	1,100	480	1,580	--	2,400	1,500	250	1,300	--	--	--	--	--
	6/6/1995	9,100	2,300	< 750	2,675	--	4,200	1,000	330	1,200	--	--	--	--	--
	9/7/1995	18,000	1,800	930	2,730	--	4,800	2,300	560	2,000	--	--	--	--	--
	12/8/1995	68,000	2,900	1,600	4,500	--	12,000	9,200	1,200	5,500	--	--	--	--	--
	4/1/1996	10,000	1,900	< 750	2,275	--	5,500	580	520	1,200	--	--	--	--	--
	6/25/1996	13,700	1,160	< 750	1,535	--	4,190	1,110	393	1,740	--	--	--	--	--
	9/27/1996	16,300	1,030	< 750	1,405	--	5,010	2,520	541	1,310	--	--	--	--	--
	06/30/97[6]	2,970	311	< 750	686	--	1,930	15.7	271	531	--	--	--	--	--
	09/08/97[6]	8,390	455	< 750	830	--	3,920	645	567	1,270	--	--	--	--	--
	06/26/98[6]	76,900	3,090	< 750	3,465	--	13,400	11,100	2,310	9,080	--	--	--	--	--
	09/23/98[6]	9,040	3,000	799	3,799	--	3,540	243	636	1,650	--	--	--	--	--
	12/17/98[6]	80,900	5,470	1,380	6,850	--	14,200	10,800	3,110	11,800	--	--	--	--	--
	03/31/99[6]	33,400	1,910	< 750	2,285	--	5,970	1,740	1,400	3,820	--	--	--	--	--
	06/30/99[6]	28,500	4,840	984	5,824	--	4,340	1,320	1,490	3,610	--	--	--	--	--
	12/08/99[6]	62,400	2,500	< 1,360	3,180	--	12,900	7,440	3,240	9,210	--	--	--	--	--
	06/20/00[6]	25,000	< 250	< 750	500	--	6,360	480	2,190	3,930	--	--	--	--	--
	06/15/01[6]	25,800	4,780	< 883	5,221.5	--	5,300	90.0	1,930	2,190	--	--	--	--	--
	09/07/01[6]	17,800	4,510	722	5,232	--	3,540	44.9	1,510	2,180	--	--	--	--	--
	12/28/01	19,000	8,400	752	9,152	--	5,320	1,200	406	1,010	--	--	--	--	--
	03/08/02	59,200	8,550	661	9,211	--	7,200	8,610	2,190	8,200	--	--	--	--	--
	06/24/02	12,500	4,200	614	4,814	--	2,140	651	659	1,160	--	--	--	--	--
	09/26/02	13,500	6,270 b	< 1,160	6,850	--	5,840	21.8	280	87	--	--	--	--	--
	12/12/02	14,500	11,000	681	11,681	--	5,130	44.7	333	224	--	--	--	--	--
	03/13/03	25,600	6,480	< 500	6,730	--	6,030	668	775	1,130	--	--	--	--	--
	06/12/03	13,000	2,880	< 500	3,130	--	1,590	735	450	1,360	--	--	--	--	--
	09/19/03	351	< 301	< 602	451.5	--	9.91	11.7	6.48	34.6	--	--	--	--	--
	01/14/04	160	< 122	< 245	183.5	--	23.7	< 0.5	2.11	< 1.0	--	--	--	--	--
	03/30/04	15,100	1,120	< 300	1,270	--	3,060	238	564	846.6	--	--	--	--	--
	06/22/04	6,760	1,900	< 238	2,019	--	2,320	14.3	395	279.8	--	--	--	--	--
	09/29/04	310	306	< 505	598.5	--	10	< 0.5	3.5	8.2	--	--	--	--	--
	12/29/04	2,590	481	< 504	733	--	320	< 10.0	83.8	101.4	--	--	--	--	--
	03/17/05	< 100	< 239	< 478	358.5	--	< 1.0	< 1.0	< 1.0	< 2.0	--	--	--	--	--
	06/01/05	143	< 237	< 474	355.5	--	< 1.0	< 1.0	5.34	4.87	< 1.0	--	--	--	--
	07/25/05	< 50.0	< 250	< 500	375	--	0.21	< 0.2	1.85	1.31	< 1.0	--	--	< 0.5	--
	11/07/05	219	< 245	< 490	367.5	--	8.46	< 0.5	0.58	4.86	< 1.0	--	--	--	--
	02/22/06	95.9	< 255	< 510	382.5	--	6.27	9.27	2.1	10.2	< 1.0 I	--	--	< 1.0	--
	05/08/06	489	< 250	< 500	375	--	14.7	< 0.5	9.15	2.36	< 1.0	--	--	8.04	--
	08/30/06	254	< 245	< 490	367.5	--	32.8	0.88	4.82	5.45	< 1.0	--	--	12.1	--
	12/13/06	2,240	< 250	< 500	375	--	211	< 2.5	25	< 15	< 5.0	--	--	< 25	--
	03/07/07	1,010	< 240	< 481	360.5	--	81.7	< 5.0	7.5	181	< 10	--	--	< 50	--
	06/15/07	806	< 250	< 500	375	--	141	1.01	4.02	< 3.0	< 1.0	--	--	6.79	--

Table 4-2a. Groundwater Analytical Results - TPH, VOCs, Naphthalene, and PCBs
Remedial Investigation Work Plan
Block 37 Site
600 - 630 Westlake Avenue North | Seattle, Washington

Monitoring Well ID	Sample Date	TPH (µg/L)					VOCs[4] (µg/L)								PCBs - Total as Aroclors (µg/L)
		GRO[1]	DRO[2]	ORO[2]	TEH (DRO+ORO)[3]	Kerosene	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	EDB	EDC	Naphthalene	
Screening Levels[5]															
GW-1 Protect Drinking Water GW-Detail-PW		**800**	**500**	**500**	**500**	**500**	**5**	**640**	**700**	**1,600**	**24**	**0.05**	**4.8**	**160**	**0.22**
GW-4 Screening Level Protect Indoor Air GW-Detail-PW		**NE**	**NE**	**NE**	**NE**	**NE**	**2.4**	**15,000**	**2,800**	**320**	**800**	**0.3**	**3.5**	**8.9**	**NE**
	Laboratory PQL	**100**	**200**	**200**	**400**	**100**	**0.2**	**1.0**	**0.2**	**0.6**	**1.0**	**1.0**	**1.0**	**0.10**	**0.175**
MW-34 Cont'd	09/13/07	727	< 238	< 476	357	--	**59.2**	0.68	27.1	< 3.0	< 1.0	--	--	**14.6**	--
	12/19/07	514	236	< 472	354	--	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	--	--	< 1.0	--
	03/17/08	**2,040**	< 236	< 472	354	--	**235**	**1,480**	10.5	< 3.0	< 1.0	--	--	< 5.0	--
	06/02/08	**1,280**	< 240	< 481	**596.5**	356	**55.1**	1.26	5.07	< 3.0	< 1.0	--	--	< 5.0	--
	11/05/08	**1,890**	< 238	< 476	**1,298**	**1,060**	**23.2**	1.2	10.4	< 3.0	< 1.0	--	--	8.55	--
MW-35	11/04/91	**24,000**	< **1,000**	--	**500**	--	**440**	**2,600**	610	**4,300**	--	--	--	--	--
	12/29/93	**4,200**	**1,000**	< **750**	**1,375**	--	**580**	40.0	200	**720**	--	--	--	--	--
	04/07/94	**5,300**	**870**	< **750**	**1,245**	--	**480**	51.0	140	**550**	--	--	--	--	--
	07/14/94	**8,100**	**890**	< **750**	**1,265**	--	**980**	79.0	150	**600**	--	--	--	--	--
	10/25/94	**2,800**	**1,300**	**1,200**	**2,500**	--	**360**	3.6	100	82	--	--	--	--	--
	03/08/95	**2,600**	**1,200**	**1,300**	**2,500**	--	**400**	< 25.0	120	83	--	--	--	--	--
	6/6/1995	**810**	**1,000**	**930**	**1,930**	--	**62**	1.4	27	36	--	--	--	--	--
	6/25/1996	**1,620**	**850**	< **750**	**1,225**	--	**68.2**	1.11	26.7	17.6	--	--	--	--	--
	9/27/1996	**959**	**524**	< **750**	**899**	--	**38.8**	0.99	10.4	6.18	--	--	--	--	--
	03/28/97[a]	**1,370**	333	< **750**	**708**	--	**161**	2.36	31.9	10.7	--	--	--	--	--
	3/28/1997	**1,800**	< 250	< **750**	**500**	--	**250**	2.62	49.1	8.04	--	--	--	--	--
	06/30/97[a]	**1,900**	< 250	< **750**	**500**	--	**348**	< 2.5	85	7.31	--	--	--	--	--
	09/08/97[a]	**4,200**	< 250	< **750**	**500**	--	**1,460**	16.2	231	68.2	--	--	--	--	--
	03/16/98[a]	**905**	361	< **750**	**736**	--	**410**	4.24	< 2.5	< 5.0	--	--	--	--	--
	06/26/98[a]	**1,300**	**682**	< **750**	**1,057**	--	**600**	< 10.0	45.1	< 20	--	--	--	--	--
	09/23/98[a]	665	**659**	< **750**	**1,034**	--	**243**	< 2.5	< 2.5	< 5.0	--	--	--	--	--
	12/17/98[a]	699	**572**	< **750**	**947**	--	**402**	< 2.5	10.8	9.99	--	--	--	--	--
	06/26/01[a]	504	464	< **750**	**839**	--	**11.3**	27.5	5.52	28.4	--	--	--	--	--
	09/04/01[a]	263	**903**	< **564**	**1,185**	--	2.36	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	12/28/01	691	**1,160**	< **500**	**1,410**	--	**28.7**	0.898	14.1	13.2	--	--	--	--	--
	03/08/02	638	**1,100**	< **500**	**1,350**	--	**16.2**	0.939	7.05	6.91	--	--	--	--	--
	09/26/02[a]	555	**1,420**	< **500**	**1,670**	--	**9.49**	< 2.0	1.78	< 1.5	--	--	--	--	--
	03/13/03	**13,500**	**1,430**	< **500**	**1,680**	--	**749**	153	**791**	**2,160**	--	--	--	--	--
	06/12/03	**3,930**	**973**	< **562**	**1,254**	--	**338**	21.2	49.9	222	--	--	--	--	--
	09/19/03	517	< 373	< **746**	**559.5**	--	**7.29**	4.32	1.86	14.6	--	--	--	--	--
	01/14/04	614	142	< 256	270	--	1.45	< 0.5	0.657	0.568	--	--	--	--	--
	03/30/04	541	196	< 257	324.5	--	< 1.0	< 1.0	< 1.0	< 2.0	--	--	--	--	--
	06/22/04	526	210	< 238	329	--	1.27	< 1.0	< 1.0	< 2.0	--	--	--	--	--
	09/29/04	250	248	< 487	491.5	--	0.5	< 0.5	1.1	2.1	--	--	--	--	--
	12/29/04	280	< 255	< **510**	382.5	--	< 1.0	< 1.0	< 1.0	< 2.0	--	--	--	--	--
	03/17/05	168	< 239	< 478	358.5	--	< 1.0	< 1.0	< 1.0	< 2.0	--	--	--	--	--
	06/01/05	334	< 238	< 475 c	356.5	--	**7.06**	< 1.0	2.11	< 2.0	1.21	--	--	--	--
	07/25/05	296	< 250	< **500**	375	--	2.09	0.28	0.98	1.15	1.14	--	--	0.97	--
	11/07/05	243	< 245	< 490	367.5	--	1.22	0.87	1.17	3.89	< 1.0	--	--	--	--
	02/23/06	< 50.0	315	< 485	**507.5**	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 1.0	--
	05/08/06	< 50.0	< 236	< 472	354	--	**2.53**	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 1.0	--
	08/30/06	120	< 245	< 490	367.5	--	1.3	1.25	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	12/13/06	181	< 248	< 495	371.5	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	03/08/07	89.1	< 253	< **505**	379	--	**13**	0.72	0.89	< 3.0	< 1.0	--	--	< 5.0	--
	06/15/07	< 50.0	< 245	< 490	367.5	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	6.34	--
	09/14/07	< 50.0	< 255	< **510**	382.5	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	12/18/07	72.6	< 236	< 472	354	--	2.31	< 1.0	< 1.0	2.4	< 1.0	--	--	< 1.0	--
	03/18/08	59.6	< 236	< 472	354	< 236	< 0.05	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	06/03/08	75.8	479	**940**	**1,419**	< 236	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	08/04/08	70.1	< 236	< 472	354	< 236	< 0.5	0.7	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	11/05/08	94.8	< 238	< 476	357	< 238	< 0.5	1.35	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
MW-36	11/05/91	**1,000**	< **1,000**	--	**500**	--	**24**	0.9	< 0.5	1.0	--	--	--	--	--
	12/30/93	< 100	370	**940**	**1,310**	--	0.7	< 0.5	< 0.5	< 0.5	--	--	--	--	--
	07/15/94	< 100	410	**960**	**1,370**	--	0.7	< 0.5	< 0.5	< 0.5	--	--	--	--	--
	10/25/94	< 50.0	**670**	**1,300**	**1,970**	--	1.2	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	03/08/95	< 50.0	**560**	**1,200**	**1,760**	--	**2.6**	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	6/6/1995	< 50.0	< 250	< **750**	**500**	--	1.0	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	9/7/1995	< 50.0	< 250	< **750**	**500**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	12/8/1995	< 50.0	**510**	**1,200**	**1,710**	--	1.1	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	4/1/1996	< 50.0	< 250	< **750**	**500**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	6/25/1996	< 50.0	< 250	< **750**	**500**	--	0.58	0.5	< 0.5	< 1.0	--	--	--	--	--
	9/27/1996	< 50.0	< 250	< **750**	**500**	--	1.18	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	3/28/1997	< 50.0	< 250	< **750**	**500**	--	0.81	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	06/30/97[a]	< 50.0	< 250	< **750**	**500**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	09/08/97[a]	< 50.0	< 250	< **750**	**500**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	12/19/97[a]	< 50.0	< 250	< **750**	**500**	--	0.606	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	03/16/98[a]	56.6	287	< **750**	**662**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	06/26/98[a]	< 50.0	< 250	< **750**	**500**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	09/23/98[a]	< 50.0	< 250	< **750**	**500**	--	0.737	< 0.5	< 0.5	1.13	--	--	--	--	--
	12/17/98[a]	< 50.0	288	< **750**	**663**	--	0.533	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	03/31/99[a]	< 50.0	321	< **750**	**696**	--	0.759	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	06/30/99[a]	< 50.0	< 250	< **750**	**500**	--	1.29	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	12/08/99[a]	< 50.0	< 250	< **750**	**500**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	06/20/00[a]	172	< 250	< **750**	**500**	--	< 0.5	0.583	1.78	11.1	--	--	--	--	--
	12/19/00[a]	106	< 250	< **750**	**500**	--	0.529	1.51	1.08	7.14	--	--	--	--	--
	06/15/01[a]	< 50.0	298	< **750**	**673**	--	0.691	0.648	0.53	1.53	--	--	--	--	--
	09/07/01[a]	< 50.0	< 250	< **500**	375	--	0.897	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	12/28/01	< 50.0	387	< **500**	**637**	--	0.773	0.748	< 0.5	1.78	--	--	--	--	--
	09/26/02	< 100	< 250	< **500**	375	--	0.735	< 2.0	< 1.0	< 1.5	--	--	--	--	--
	03/13/03	< 50.0	< 250	< **500**	375	--	0.83	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	09/19/03	< 50.0	< 287	< **579**	431	--	1.44	0.561	< 0.5	< 1.0	--	--	--	--	--
	03/30/04	< 100	< 133	< 267	200	--	< 1.0	< 1.0	< 1.0	< 2.0	--	--	--	--	--
	09/29/04	< 50.0	< 250	< **500**	375	--	0.9	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	03/17/05	< 100	< 246	< 492	369	--	< 1.0	< 1.0	< 1.0	< 2.0	--	--	--	--	--
	06/02/05	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	--	--	--	--
	06/16/05	--	82 d	< 250	207	--	--	--	--	--	--	--	--	--	--
	07/25/05	< 50.0	< 250	< **500**	375	--	0.55	< 0.2	< 0.2	< 0.5	< 1.0	--	--	< 0.5	--
	11/08/05	< 50.0	< 243	< 485	364	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	--	--
	02/24/06	< 50.0	< 255	< **510**	382.5	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 1.0	--
	05/09/06	< 50.0	243	< 485	364	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 1.0	--
MW-37	11/05/91	**21,000**	< **1,000**	--	**500**	--	**810**	**2,400**	470	**3,300**	--	--	--	--	--
	04/07/94	**92,000**	**18,000**	< **750**	**18,375**	--	**660**	**3,600**	**1,500**	**9,500**	--	--	--	--	--
	07/15/94	**330,000**	**1,700,000**	**260,000**	**1,960,000**	--	**18,000**	**44,000**	**7,700**	**44,000**	--	--	--	--	--
	10/26/94	**170,000**	**35,000**	**7,500**	**42,500**	--	**14,000**	**30,000**	**4,400**	**26,000**	--	--	--	--	--
	03/08/95	**34,000**	**3,200**	**1,400**	**4,600**	--	**3,100**	**2,400**	**1,200**	**6,700**	--	--	--	--	--
	6/6/1995	**45,000**	**4,600**	**2,500**	**7,100**	--	**3,700**	**2,400**	**1,300**	**7,900**	--	--	--	--	--
	6/6/1995	**90,000**	--	--	--	--	**5,100**	**6,000**	**2,400**	**14,000**	--	--	--	--	--
	03/28/97[a]	**60,100**	**7,570**	**789**	**8,359**	--	**1,530**	**2,180**	**1,650**	**7,440**	--	--	--	--	--
	3/28/1997	**297,000**	**45,100**	< **8,250**	**49,225**	--	**6,570**	**13,200**	**4,930**	**22,900**	--	--	--	--	--
	09/07/01[a]	**159,000**	**22,100**	**14,600**	**36,700**	--	**3,420**	**12,600**	**4,440**	**27,000**	--	--	--	--	--
	06/12/03	**1,450**	474	< **568**	**758**	--	**22.9**	43.2	15.8	85.5	--	--	--	--	--
	09/19/03	141	< 298	< **595**	446.5	--	< 0.5	< 0.5	< 0.5	1.01	--	--	--	--	--
	01/14/04	471	< 127	< 255	191	--	**4.56**	< 0.5	9.01	27.75	--	--	--	--	--
	03/30/04	572	180	< 281	320.5	--	**5.77**	< 1.0	1.53	7.1	--	--	--	--	--
	06/22/04	737	487	294	**781**	--	**3.26**	3.66	1.46	14.25	--	--	--	--	--
	09/29/04	190	419	< 496	**667**	--	< 0.5	< 0.5	0.67	1.3	--	--	--	--	--
	12/29/04	430	< 262	< **524**	393	--	**18.2**	2.27	1.08	11.22	--	--	--	--	--
	03/17/05	250	259	< 476	497	--	< 1.0	1.27	< 1.0	4.22	--	--	--	--	--
	06/02/05	137	< 238	**604**	**723**	--	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	--	--	--	--
	07/26/05	59.4	< 250	< **500**	375	--	< 0.2	< 0.2	< 0.2	< 0.5	< 1.0	--	--	0.52	--
	11/07/05	< 50.0	< 243	< 485	364	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	--	--
	02/22/06	**1,830**	< 248	< 495	371.5	--	**32.4**	63.8	19.6	284	< 5.0 i	--	--	**15**	--
	05/10/06	< 50.0	< 243	< 485	364	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 1.0	--
	08/29/06	91.2	< 258	< **515**	386.5	--	**2.59**	1.61	1.19	12.4	< 1.0	--	--	< 5.0	--

Table 4-2a. Groundwater Analytical Results - TPH, VOCs, Naphthalene, and PCBs
Remedial Investigation Work Plan
Block 37 Site
600 - 630 Westlake Avenue North | Seattle, Washington

Monitoring Well ID	Sample Date	TPH (µg/L)					VOCs[4] (µg/L)								PCBs - Total as Aroclors (µg/L)
		GRO[1]	DRO[2]	ORO[3]	TEH (DRO+ORO)[3]	Kerosene	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	EDB	EDC	Naphthalene	
Screening Levels[5]															
GW-1 Protect Drinking Water GW-Detail-PW		**800**	**500**	**500**	**500**	**500**	**5**	**640**	**700**	**1,600**	**24**	**0.05**	**4.8**	**160**	**0.22**
GW-4 Screening Level Protect Indoor Air GW-Detail-PW		**NE**	**NE**	**NE**	**NE**	**NE**	**2.4**	**15,000**	**2,800**	**320**	**800**	**0.3**	**3.5**	**8.9**	**NE**
Laboratory PQL		**100**	**200**	**200**	**400**	**100**	**0.2**	**1.0**	**0.2**	**0.6**	**1.0**	**1.0**	**1.0**	**0.10**	**0.175**
MW-37 Cont'd	12/12/06	686	< 238	< 476	357	--	**5.46**	11.2	5.87	60.4	< 1.0	--	--	< 5.0	--
	03/06/07	64.6	< 266	**< 532**	399	--	< 0.5	1.14	1.02	5.76	< 1.0	--	--	< 5.0	--
	06/14/07	121	< 236	< 472	354	--	1.56	< 0.5	0.5	< 3.0	< 1.0	--	--	< 5.0	--
	09/14/07	< 50.0	< 245	< 490	367.5	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	12/17/07	**3,130**	< 240	< 481	360.5	--	**54**	72.0	27	**600**	< 1.0	--	--	--	--
	03/18/08	750	< 236	< 472	485	249	2.16	1.16	3.32	51.4	< 1.0	--	--	< 5.0	--
	06/01/08	**1,370**	< 238	< 476	**581**	343	**4.87**	2.52	5.77	158	< 1.0	--	--	7.31	--
	08/10/08	**1,450**	< 240	< 481	**694.5**	444	**51.3**	1.7	13.4	115	< 1.0	--	--	**18.1**	--
	11/02/08	685	< 245	< 490	367.5	< 245	**3.63**	0.54	4.58	38	< 1.0	--	--	**10.3**	--
	02/22/09	**2,330**	< 238	< 476	**930**	**692**	**35.2**	49.0	52.4	**391**	--	--	--	**21**	--
	05/17/09	**1,840**	< 236	< 472	**695**	459	**12.5**	2.37	35.5	199	< 1.0	--	--	**16.3**	--
	08/16/09	**1,100**	**840**	< 480	**1,080**	**650**	**4.7**	0.53	3.7	47	< 1.0	--	--	5.9	--
	11/15/09	**1,300**	440	< 480	**770**	**530**	**12**	2.9	19	88	< 1.0	--	--	**20**	--
	02/21/10	**4,120**	**958**	**649**	**1,679**	**1,030**	**161**	66.6	184	**1,530**	--	--	--	**15.7**	--
	05/23/10	**2,260**	**810**	**522**	**1,662**	**1,140**	**80.6**	13.6	106	**706**	--	--	--	**13.3**	--
	08/15/10	**2,350**	< 79.2	< 396	**796**	**598**	**51**	2.6	47	**415**	--	--	--	**16.7**	--
	11/14/10	**5,550**	111	< 388	**1,106**	**912**	**94.3**	10.3	151	**1,270**	--	--	--	**22.5**	--
MW-38	11/05/91	**< 1,000**	**< 1,000**	--	**500**	--	< 0.5	0.6	< 0.5	0.5	--	--	--	--	--
	3/28/1997	< 50.0	< 250	**< 750**	**500**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	12/28/01	< 50.0	403	**< 500**	**653**	--	0.636	1.33	0.554	2.59	--	--	--	--	--
	09/26/02	< 100	282 b	**< 500**	**532**	--	0.743	< 2.0	< 1.0	< 1.5	--	--	--	--	--
	03/13/03	< 50.0	< 250	**< 500**	375	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	09/19/03	< 50.0	< 250	**< 500**	375	--	0.704	1.42	0.722	3.72	--	--	--	--	--
	03/30/04	< 100	< 133	< 266	199.5	--	< 1.0	< 1.0	< 1.0	< 2.0	--	--	--	--	--
	03/17/05	< 100	< 250	< 499	374.5	--	< 1.0	< 1.0	< 1.0	< 2.0	--	--	--	--	--
	07/26/05	< 50.0	< 250	**< 500**	375	--	< 0.2	< 0.2	< 0.2	< 0.5	< 1.0	--	--	< 0.5	--
	11/07/05	< 50.0	< 253	**< 505**	379	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	--	--
	05/09/06	< 50.0	< 250	**< 500**	375	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 1.0	--
	08/30/06	< 80.0	< 245	< 490	367.5	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	12/13/06	< 50.0	< 250	**< 500**	375	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	03/07/07	< 50.0	< 250	**< 500**	375	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	06/14/07	< 50.0	< 240	< 481	360.5	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	09/12/07	< 50.0	< 240	< 481	360.5	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	06/02/08	< 50.0	< 236	< 472	354	< 236	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	11/04/08	< 50.0	< 245	< 472	358.5	< 236	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	02/24/09	< 50.0	< 240	< 481	360.5	< 240	< 0.5	< 0.5	< 0.5	< 3.0	--	--	--	< 5.0	--
	05/17/09	< 50.0	< 238	< 476	357	< 238	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	08/17/09	< 50.0	< 240	< 470	355	< 240	< 0.5	< 0.5	< 0.5	< 2.0	< 1.0	--	--	< 5.0	--
	11/16/09	< 50.0	< 240	< 480	360	< 240	< 0.5	< 0.5	< 0.5	< 2.0	< 1.0	--	--	< 5.0	--
	02/22/10	< 50.0	149	423	**672**	< 75.5	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
MW-39	11/05/91	**< 1,000**	**< 1,000**	--	**500**	--	0.8	0.9	< 0.5	< 0.5	--	--	--	--	--
MW-40	11/05/91	**< 1,000**	**< 1,000**	--	**500**	--	**5.8**	0.7	0.5	0.8	--	--	--	--	--
	10/07/93	**930**	**1,800**	**1,900**	**3,700**	--	**36**	1.8	2.1	5.3	--	--	--	--	--
	12/30/93	**1,500**	**5,400**	**4,200**	**9,600**	--	**34**	1.1	11	7.4	--	--	--	--	--
	04/07/94	**1,200**	**2,200**	**2,000**	**4,200**	--	**29**	1.1	6.9	2.6	--	--	--	--	--
	07/15/94	**1,000**	**2,100**	**2,500**	**4,600**	--	**27**	0.8	1.2	1.7	--	--	--	--	--
	10/26/94	**1,200**	**2,900**	**2,600**	**5,500**	--	**20**	0.53	0.77	2.0	--	--	--	--	--
	03/08/95	**960**	**2,600**	**2,600**	**5,200**	--	**11**	< 0.5	11	< 1.0	--	--	--	--	--
	6/6/1995	**1,500**	**2,300**	**1,600**	**3,900**	--	**6.8**	4.3	4.1	21	--	--	--	--	--
	9/7/1995	650	**13,000**	**66,000**	**79,000**	--	**11**	0.91	0.57	< 1.0	--	--	--	--	--
	12/8/1995	500	**1,400**	**4,800**	**6,200**	--	**2.70**	3.0	< 0.5	< 1.0	--	--	--	--	--
	4/1/1996	520	**3,200**	**13,000**	**16,200**	--	1.2	< 0.5	0.55	< 1.0	--	--	--	--	--
	6/25/1996	500	**2,700**	**8,460**	**11,160**	--	< 0.5	9.82	< 0.5	< 1.0	--	--	--	--	--
	9/27/1996	602	**3,550**	**9,860**	**13,410**	--	0.604	41.1	0.525	< 1.0	--	--	--	--	--
	12/19/97[6]	325	**3,260**	**12,600**	**15,860**	--	< 0.5	0.504	0.663	2.44	--	--	--	--	--
	12/17/98[6]	384	**2,840**	**9,620**	**12,460**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	12/28/01	449	**4,000**	**5,090**	**9,090**	--	2.12	2.19	1.38	3.88	--	--	--	--	--
	09/26/02	331	**2,810**	**3,470**	**6,280**	--	1.92	< 2.0	< 1.0	< 1.5	--	--	--	--	--
	03/13/03	509	**2,010**	**2,010**	**4,020**	--	< 0.5	< 0.5	0.63	1.77	--	--	--	--	--
	09/19/03	259	393	**1,120**	**1,513**	--	**2.64**	3.01	1.39	6.77	--	--	--	--	--
	03/30/04	627	**863**	**3,360**	**4,223**	--	**3.69**	< 1.0	< 1.0	< 2.0	--	--	--	--	--
	09/29/04	390	**32,800**	**219,000**	**251,800**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	03/17/05	402	**758**	**4,130**	**4,888**	--	< 1.0	< 1.0	< 1.0	< 2.0	--	--	--	--	--
	06/02/05	433	**692**	**3,760**	**4,452**	--	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	--	--	--	--
	07/26/05	216	**596**	**1,600**	**2,196**	--	< 0.2	< 0.2	< 0.2	< 0.5	< 1.0	--	--	< 0.5	--
	11/07/05	269	< 243	< 485	364	--	< 0.5	< 0.5	< 0.5	3.58	< 1.0	--	--	--	--
	02/23/06	397	< 248	**546**	**670**	--	< 0.5	< 0.5	3.0	< 1.0	< 1.0	--	--	< 1.0	--
	05/10/06	207	< 238	< 476	357	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 1.0	--
	08/29/06	81.5	< 236	< 472	354	--	0.94	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	12/12/06	540	< 243	< 485	364	--	**2.51**	0.6	0.52	< 3.0	< 1.0	--	--	< 5.0	--
	03/07/07	216	< 250	**< 500**	375	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	06/14/07	179	< 240	< 481	360.5	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	09/14/07	65.8	< 250	**< 500**	375	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	12/17/07	203	< 236	< 472	354	--	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	--	--	--	--
	03/17/08	411	< 236	< 472	354	< 236	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	06/02/08	272	< 240	< 481	360.5	< 240	< 0.5	0.68	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	08/04/08	149	< 236	< 472	354	< 236	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	11/03/08	350	< 240	< 481	360.5	< 240	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 0.5	--
	02/23/09	330	< 240	< 481	360.5	< 240	< 0.5	< 0.5	< 0.5	< 3.0	--	--	--	< 5.0	--
	05/17/09	281	< 238	< 476	357	< 238	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	02/21/10	609	**1,070**	< 771	**1,841**	**711**	1.9	< 1.0	< 1.0	6.1	--	--	--	2.1	--
	05/23/10	480	**861**	**909**	**1,770**	**810**	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	11/14/10	500	109	< 388	429	235	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
MW-41	11/05/91	**< 1,000**	**< 1,000**	--	**500**	--	**67**	< 0.5	< 0.5	< 0.5	--	--	--	--	--
	12/29/93	< 100	< 250	**< 750**	**500**	--	**4.6**	< 0.5	< 0.5	< 0.5	--	--	--	--	--
	07/14/94	< 100	< 250	**< 750**	**500**	--	**10**	< 0.5	< 0.5	< 0.5	--	--	--	--	--
	10/25/94	< 50.0	**500**	**< 750**	**875**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	03/08/95	< 50.0	< 250	**< 750**	**500**	--	1.6	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	6/6/1995	< 50.0	< 250	**< 750**	**500**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	9/7/1995	< 50.0	< 250	**< 750**	**500**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	12/8/1995	< 50.0	< 250	**< 750**	**500**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	4/1/1996	< 50.0	< 250	**< 750**	**500**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	6/25/1996	< 50.0	< 250	**< 750**	**500**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	9/27/1996	< 50.0	< 250	**< 750**	**500**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	06/02/05	< 100	< 237	< 474	355.5	--	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	--	--	--	--
	07/26/05	< 50.0	258 c	**977**	**1,235**	--	< 0.2	< 0.2	< 0.2	< 0.5	< 1.0	--	--	< 0.5	--
	11/02/05	< 50.0	< 238	< 476	357	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	--	--
	02/23/06	< 50.0	< 250	**< 500**	375	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 1.0	--
	05/09/06	< 50.0	< 253	**< 505**	379	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 1.0	--
	08/30/06	< 80.0	< 240	< 481	360.5	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	12/12/06	< 50.0	< 243	< 485	364	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	03/07/07	< 50.0	< 263	**< 526**	394.5	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	06/14/07	79.2	< 236	< 472	354	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	09/13/07	< 50.0	< 236	< 472	354	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	12/18/07	< 50.0	< 236	< 472	354	--	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	--	--	< 1.0	--
	03/17/08	< 50.0	< 236	< 472	354	< 236	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	06/03/08	< 50.0	< 236	< 472	354	< 236	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	08/04/08	< 50.0	< 236	< 472	354	< 236	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	11/04/08	< 50.0	< 245	< 490	367.5	< 245	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	02/24/09	< 50.0	< 240	< 481	360.5	< 240	< 0.5	< 0.5	< 0.5	< 3.0	--	--	--	< 5.0	--
	05/17/09	< 50.0	< 250	**< 500**	375	< 250	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	08/16/09	< 50.0	470	< 480	**710**	< 240	< 0.5	< 0.5	< 0.5	< 2.0	< 1.0	--	--	< 5.0	--
	11/15/09	< 50.0	< 280	**< 560**	420	< 280	< 0.5	< 0.5	< 0.5	< 2.0	< 1.0	--	--	< 5.0	--
	02/21/10	< 50.0	98.4	< 379	287.9	< 75.8	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--

Table 4-2a. Groundwater Analytical Results - TPH, VOCs, Naphthalene, and PCBs
Remedial Investigation Work Plan
Block 37 Site
600 - 630 Westlake Avenue North | Seattle, Washington

Monitoring Well ID	Sample Date	TPH (µg/L)					VOCs[4] (µg/L)								PCBs - Total as Aroclors (µg/L)
		GRO[1]	DRO[2]	ORO[2]	TEH (DRO+ORO)[3]	Kerosene	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	EDB	EDC	Naphthalene	
Screening Levels[5]															
GW-1 Protect Drinking Water GW-Detail-PW		**800**	**500**	**500**	**500**	**500**	**5**	**640**	**700**	**1,600**	**24**	**0.05**	**4.8**	**160**	**0.22**
GW-4 Screening Level Protect Indoor Air GW-Detail-PW		**NE**	**NE**	**NE**	**NE**	**NE**	**2.4**	**15,000**	**2,800**	**320**	**800**	**0.3**	**3.5**	**8.9**	**NE**
Laboratory PQL		**100**	**200**	**200**	**400**	**100**	**0.2**	**1.0**	**0.2**	**0.6**	**1.0**	**1.0**	**1.0**	**0.10**	**0.175**
MW-41 Cont'd	05/23/10	< 50.0	< 76.9	< 385	230.95	< 76.9	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	11/15/10	< 50.0	< 77.7	< 388	232.85	< 77.7	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	02/28/11	< 50.0	< 77.7	< 388	232.85	< 77.7	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	06/14/11	< 50.0	< 82.5	< 412	247.25	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	08/29/11	< 50.0	< 84.2	< 421	252.6	< 84.2	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	12/05/11	< 50.0	< 85.1	< 426	255.55	< 85.1	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 10	--
	02/15/12	< 50.0	< 76.2	< 381	228.6	< 76.2	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	2.0	--
	05/16/12	< 50.0	< 81.6	< 408	244.8	< 81.6	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	08/14/12	< 50.0	< 88.9	< 444	266.45	< 88.9	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	11/07/13	< 100	< 400	< 400	400	--	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	--	--	--	--
MW-42	11/05/91	**< 1,000**	**< 1,000**	--	**500**	--	**180**	2.9	0.8	4.7	--	--	--	--	--
	12/30/93	< 100	**1,300**	**2,400**	**3,700**	--	**570**	0.5	< 0.5	0.7	--	--	--	--	--
	04/07/94	< 200	**840**	**1,100**	**1,940**	--	**620**	< 1.0	< 1.0	< 1.0	--	--	--	--	--
	07/15/94	< 100	**540**	**850**	**1,390**	--	**490**	0.6	< 0.5	0.5	--	--	--	--	--
	10/26/94	92.0	**1,300**	**2,500**	**3,800**	--	**530**	0.55	< 0.5	< 1.0	--	--	--	--	--
	03/08/95	130	**670**	**1,200**	**1,870**	--	**790**	< 25.0	< 25	< 50	--	--	--	--	--
	6/6/1995	120	**920**	**1,500**	**2,420**	--	**500**	< 0.56	< 0.5	< 1.0	--	--	--	--	--
	9/7/1995	**3,000**	**780**	**1,200**	**1,980**	--	**210**	4.1	42	230	--	--	--	--	--
	12/8/1995	200	**1,300**	**1,900**	**3,200**	--	**380**	< 2.0	< 2.0	< 4.0	--	--	--	--	--
	4/1/1996	180	**650**	**< 750**	**1,025**	--	**280**	0.52	< 0.5	< 1.0	--	--	--	--	--
	6/25/1996	150	**720**	**< 750**	**1,095**	--	**160**	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	9/27/1996	< 250	**534**	**< 750**	**909**	--	**228**	< 2.5	< 2.5	< 5.0	--	--	--	--	--
	06/02/05	198	--	--	--	--	**4.67**	< 1.0	< 1.0	< 2.0	< 1.0	--	--	--	--
	06/16/05	--	97	< 250	222	--	--	--	--	--	--	--	--	--	--
	07/26/05	117	< 250	**< 500**	375	--	**2.95**	0.34	< 0.2	0.9	< 1.0	--	--	< 0.5	--
	11/02/05	179	< 236	< 472	354	--	**8.22**	< 0.5	< 0.5	< 3.0	< 1.0	--	--	--	--
	02/22/06	193	< 248	< 495	371.5	--	2.23	< 0.5	< 0.5	< 3.0	< 1.0 I	--	--	< 1.0	--
	05/09/06	185	< 250	**< 500**	375	--	**3.62**	1.37	0.58	< 3.0	< 1.0	--	--	< 1.0	--
MW-43	11/05/91	**< 1,000**	**< 1,000**	--	**500**	--	**86**	3.4	0.6	2.7	--	--	--	--	--
	12/30/93	340	320	**< 750**	**695**	--	**82**	0.5	11	100	--	--	--	--	--
	07/14/94	360	< 250	**< 750**	**500**	--	**31**	< 0.5	4.6	74	--	--	--	--	--
	10/26/94	160	**580**	**< 750**	**955**	--	**9.1**	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	03/08/95	< 50.0	**650**	**2,400**	**3,050**	--	**25**	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	6/6/1995	< 50.0	**690**	**1,500**	**2,190**	--	**8.2**	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	9/7/1995	< 50.0	< 250	**850**	**975**	--	**10**	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	12/8/1995	< 50.0	**960**	**3,100**	**4,060**	--	**37**	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	4/1/1996	< 50.0	300	**< 750**	**675**	--	**4.5**	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	6/25/1996	< 50.0	370	**< 750**	**745**	--	**2.57**	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	9/27/1996	< 50.0	339	**< 750**	**714**	--	**4.4**	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	3/28/1997	< 50.0	< 250	**< 750**	**500**	--	**5.89**	0.884	< 0.5	2.47	--	--	--	--	--
	06/30/97[a]	< 50.0	< 250	**< 750**	**500**	--	**59.2**	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	09/08/97[a]	83.0	< 250	**< 750**	**500**	--	**35.5**	< 0.5	2.1	3.08	--	--	--	--	--
	03/16/98[a]	76.3	408	**< 750**	**783**	--	**26.5**	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	06/26/98[a]	< 50.0	346	**< 750**	**721**	--	**69.6**	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	09/23/98[a]	< 50.0	267	**< 750**	**642**	--	**9.05**	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	12/17/98[a]	< 50.0	< 250	**< 750**	**500**	--	**33**	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	03/31/99[a]	< 50.0	267	**< 750**	**642**	--	**9.04**	< 0.5	0.782	2.47	--	--	--	--	--
	06/30/99[a]	146	253	**< 750**	**628**	--	**28.2**	7.47	2.95	17.5	--	--	--	--	--
	12/08/99[a]	< 50.0	< 250	**< 750**	**500**	--	**20.5**	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	06/20/00[a]	< 50.0	< 250	**< 750**	**500**	--	**3.79**	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	12/19/00[a]	55.9	253	**< 749**	**627.5**	--	**2.97**	0.948	0.73	4.78	--	--	--	--	--
	06/15/01[a]	< 50.0	405	**< 750**	**730**	--	0.67	< 0.5	< 0.5	1.22	--	--	--	--	--
	09/07/01[a]	< 50.0	< 293	**< 587**	440	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	12/28/01	52.0	487	**< 500**	**737**	--	**5.61**	1.18	0.558	3.34	--	--	--	--	--
	09/26/02	< 100	303 b	**< 500**	**553**	--	0.669	< 2.0	< 1.0	< 1.5	--	--	--	--	--
	03/13/03	< 50.0	< 321	**< 641**	481	--	0.883	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	09/19/03	< 50.0	< 291	**< 581**	436	--	1.76	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	03/30/04	< 100	< 129	< 258	193.5	--	< 1.0	< 1.0	< 1.0	< 2.0	--	--	--	--	--
	09/29/04	180	< 249	< 499	374	--	**3.6**	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	03/17/05	< 100	< 250	**< 501**	375.5	--	2.23	< 1.0	< 1.0	< 2.0	--	--	--	--	--
	06/02/05	< 100	--	--	--	--	**15**	< 1.0	< 1.0	< 2.0	< 1.0	--	--	--	--
	06/16/05	--	< 50	< 250	150	--	--	--	--	--	--	--	--	--	--
	07/26/05	< 50.0	< 250	**< 500**	375	--	**4.24**	< 0.2	< 0.2	< 0.5	< 1.0	--	--	< 0.5	--
	11/01/05	< 50.0	< 236	< 472	354	--	< 0.2	< 0.5	< 0.5	< 1.0	< 2.0	--	--	--	--
	02/21/06	< 50.0	< 281	**< 562**	421.5	--	1.16	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 1.0	--
	05/09/06	< 50.0	< 236	< 472	354	--	1.13	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 1.0	--
	08/31/06	< 100	< 236	< 472	354	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	12/13/06	< 50.0	< 240	< 481	360.5	--	**10.3**	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
MW-44	11/05/91	**< 1,000**	**< 1,000**	--	**500**	--	< 0.5	< 0.5	< 0.5	< 0.5	--	--	--	--	--
	07/15/94	< 100	< 250	**< 750**	**500**	--	< 0.5	< 0.5	< 0.5	< 0.5	--	--	--	--	--
	10/26/94	< 50.0	280	**< 750**	**655**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	03/08/95	< 50.0	290	**940**	**1,230**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	6/6/1995	< 50.0	< 250	**820**	**945**	--	< 0.5	< 0.5	< 0.5	1.6	--	--	--	--	--
	9/7/1995	< 50.0	< 250	**< 750**	**500**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	12/8/1995	< 50.0	**520**	**2,500**	**3,020**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	4/1/1996	< 50.0	< 250	**< 750**	**500**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	6/25/1996	< 50.0	< 250	**< 750**	**500**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	9/27/1996	< 50.0	< 250	**< 750**	**500**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	3/28/1997	< 50.0	< 250	**< 750**	**500**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	06/30/97[a]	< 50.0	< 250	**< 750**	**500**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	09/08/97[a]	< 50.0	< 250	**< 750**	**500**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	12/19/97[a]	< 50.0	< 250	**< 750**	**500**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	03/16/98[a]	60.0	310	**< 750**	**685**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	06/26/98[a]	< 50.0	< 250	**< 750**	**500**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	09/23/98[a]	< 50.0	343	**< 750**	**718**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	12/17/98[a]	< 50.0	271	**< 750**	**646**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	03/31/99[a]	< 50.0	< 250	**< 750**	**500**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	06/30/99[a]	< 50.0	393	**< 750**	**768**	--	< 0.5	0.619	< 0.5	1.21	--	--	--	--	--
	12/08/99[a]	< 50.0	281	**< 750**	**656**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	06/20/00[a]	< 50.0	< 250	**< 750**	**500**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	12/19/00[a]	301	330	**< 750**	**705**	--	< 0.5	1.64	2.76	22.1	--	--	--	--	--
	06/15/01[a]	< 50.0	468	**< 841**	**888.5**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	09/07/01[a]	**10,300**	**4,250**	**849**	**5,099**	--	**1,050**	6.97	**945**	51	--	--	--	--	--
	12/28/01	90.6	**823**	**< 500**	**1,073**	--	**10.9**	1.4	0.644	4.04	--	--	--	--	--
	09/26/02	< 100	**1,600** b	**569** b	**2,169**	--	**14.2**	< 2.0	< 1.0	< 1.5	--	--	--	--	--
	03/13/03	196	347	**< 575**	**634.5**	--	**26.8**	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	09/19/03	196	301	**< 602**	451.5	--	**20.2**	< 0.5	0.997	2.61	--	--	--	--	--
	03/30/04	< 100	< 134	< 268	201	--	< 1.0	< 1.0	< 1.0	< 2.0	--	--	--	--	--
	12/29/04	< 100	< 260	**< 520**	390	--	< 1.0	< 1.0	< 1.0	< 2.0	--	--	--	--	--
	03/17/05	< 100	< 240	< 480	360	--	< 1.0	< 1.0	< 1.0	< 2.0	--	--	--	--	--
	06/02/05	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	--	--	--	--
	06/16/05	--	< 50	< 250	150	--	--	--	--	--	--	--	--	--	--
	07/26/05	< 50.0	< 250	**< 500**	375	--	< 0.2	< 0.2	< 0.2	< 0.5	< 1.0	--	--	< 0.5	--
	11/01/05	< 50.0	< 236	< 472	354	--	< 0.2	< 0.5	< 0.5	< 1.0	< 2.0	--	--	--	--
	02/21/06	< 50.0	< 263	**< 526**	394.5	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 1.0	--
	05/09/06	< 50.0	< 272	**< 543**	407.5	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	7.98	--
	08/29/06	< 80.0	< 240	< 481	360.5	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	11/04/08	< 50.0	< 248	< 495	371.5	< 248	< 0.5	< 0.5	< 0.5	< 3.0	--	--	--	< 5.0	--
	02/24/09	< 50.0	< 240	< 481	360.5	< 240	< 0.5	< 0.5	< 0.5	< 3.0	--	--	--	< 5.0	--
	05/17/09	< 50.0	< 238	< 476	357	< 238	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	08/17/09	< 50.0	< 240	< 480	**500**	260	< 0.5	< 0.5	< 0.5	< 2.0	< 1.0	--	--	< 5.0	--
	11/16/09	< 50.0	< 240	< 490	365	< 240	< 0.5	< 0.5	< 0.5	< 2.0	< 1.0	--	--	< 5.0	--
	02/22/10	< 50.0	166	< 381	356.5	< 76.2	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	05/24/10	< 50.0	121	< 385	313.5	< 76.9	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--

Table 4-2a. Groundwater Analytical Results - TPH, VOCs, Naphthalene, and PCBs
Remedial Investigation Work Plan
Block 37 Site
600 - 630 Westlake Avenue North | Seattle, Washington

Monitoring Well ID	Sample Date	TPH (µg/L)					VOCs[4] (µg/L)								PCBs - Total as Aroclors (µg/L)
		GRO[1]	DRO[2]	ORO[2]	TEH (DRO+ORO)[3]	Kerosene	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	EDB	EDC	Naphthalene	
Screening Levels[5]															
GW-1 Protect Drinking Water GW-Detail-PW		**800**	**500**	**500**	**500**	**500**	**5**	**640**	**700**	**1,600**	**24**	**0.05**	**4.8**	**160**	**0.22**
GW-4 Screening Level Protect Indoor Air GW-Detail-PW		**NE**	**NE**	**NE**	**NE**	**NE**	**2.4**	**15,000**	**2,800**	**320**	**800**	**0.3**	**3.5**	**8.9**	**NE**
Laboratory PQL		**100**	**200**	**200**	**400**	**100**	**0.2**	**1.0**	**0.2**	**0.6**	**1.0**	**1.0**	**1.0**	**0.10**	**0.175**
MW-44 Cont'd	08/17/10	< 50.0	< 78.4	< 392	235.2	< 78.4	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	11/15/10	< 50.0	< 77.7	< 388	232.85	< 77.7	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	11/20/12	< 50.0	< 100	< 100	100	< 100	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 4.0	--
	11/07/13	< 100	< 400	< 400	400	--	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	--	--	--	--
	07/29/14	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	< 0.01	< 1.0	--	--
	12/09/14	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	< 0.0099	< 1.0	--	--
	03/23/15	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	06/22/15	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	09/10/15	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	12/07/15	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	12/13/16	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
MW-46	11/05/91	**< 1,000**	**< 1,000**	--	**500**	--	< 0.5	0.6	< 0.5	1.2	--	--	--	--	--
	07/15/94	< 100	270	**1,200**	**1,470**	--	< 0.5	< 0.5	< 0.5	< 0.5	--	--	--	--	--
	10/25/94	< 50.0	**1,500**	**7,300**	**8,800**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	03/08/95	< 50.0	**720**	**3,600**	**4,320**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	6/6/1995	< 50.0	< 250	**1,400**	**1,525**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	9/7/1995	< 50.0	**710**	**5,600**	**6,310**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	12/8/1995	< 50.0	**1,400**	**14,000**	**15,400**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	4/1/1996	< 50.0	< 400	**2,800**	**3,000**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	6/25/1996	< 50.0	440	**2,090**	**2,530**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	9/27/1996	< 50.0	267	**< 750**	**642**	--	0.518	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	3/28/1997	< 50.0	< 250	**< 750**	**500**	--	< 0.5	1.25	< 0.5	2.06	--	--	--	--	--
	12/19/97[a]	< 50.0	< 250	**< 750**	**500**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	12/17/98[a]	< 50.0	354	**< 750**	**729**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	12/19/00	226	277	**< 750**	**652**	--	0.5	2.18	2.53	18	--	--	--	--	--
	06/15/01[a]	< 50.0	295	**< 750**	**670**	--	< 0.5	< 0.5	< 0.5	1.39	--	--	--	--	--
MW-47	11/05/91	**< 1,000**	**< 1,000**	--	**500**	--	**5.2**	0.5	< 0.5	< 0.5	--	--	--	--	--
	12/30/93	< 100	310	**< 750**	**685**	--	2.0	< 0.5	< 0.5	1.0	--	--	--	--	--
	04/07/94	< 100	300	**< 750**	**675**	--	**2.5**	< 0.5	< 0.5	< 0.5	--	--	--	--	--
	07/14/94	< 100	290	**< 750**	**665**	--	1.6	< 0.5	< 0.5	< 0.5	--	--	--	--	--
	10/25/94	51.0	270	**< 750**	**645**	--	1.8	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	03/08/95	< 50.0	330	**1,000**	**1,930**	--	**5.3**	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	6/6/1995	70.0	380	**780**	**1,160**	--	**15**	0.59	< 0.5	2.3	--	--	--	--	--
	9/7/1995	< 50.0	260	**< 750**	**635**	--	1.7	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	12/8/1995	740	**580**	**2,000**	**2,580**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	4/1/1996	< 50.0	< 250	**< 750**	**500**	--	**4.4**	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	6/25/1996	110	400	**< 750**	**775**	--	**14.4**	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	9/27/1996	< 50.0	< 250	**< 750**	**500**	--	**4.34**	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	03/28/97[a]	64.5	< 250	**< 750**	**500**	--	**7.61**	< 0.5	< 0.5	1.57	--	--	--	--	--
	3/28/1997	177	< 250	**< 750**	**500**	--	**52.6**	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	06/26/98[a]	< 50.0	356	**< 750**	**731**	--	**27.3**	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	12/17/98[a]	< 50.0	< 250	**< 750**	**500**	--	**3.34**	< 0.5	< 0.5	1.12	--	--	--	--	--
	06/20/00[a]	< 50.0	< 250	**< 750**	**500**	--	< 1.3	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	12/19/00[a]	**1,310**	357	**< 750**	**732**	--	< 0.5	6.1	10.6	77.3	--	--	--	--	--
	06/15/01	< 50.0	**591**	**< 952**	**1,067**	--	0.709	0.504	< 0.5	1.18	--	--	--	--	--
	09/07/01[a]	< 50.0	356	**< 500**	**606**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	12/28/01	181	**542**	**< 500**	**792**	--	**7.64**	1.49	4.79	37.8	--	--	--	--	--
	09/26/02	106	**747** b	**< 500**	**997**	--	2.36	< 2.0	< 1.0	< 1.5	--	--	--	--	--
	03/13/03	75.5	< 284	**< 568**	426	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	09/19/03	76.8	< 294	**< 588**	441	--	**3.41**	< 0.5	< 0.5	1.14	--	--	--	--	--
	03/30/04	272	262	**980**	**1,242**	--	< 1.0	< 1.0	< 1.0	< 2.0	--	--	--	--	--
	09/29/04	200	329	**735**	**1,064**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	03/17/05	166	< 248	< 495	371.5	--	< 1.0	< 1.0	< 1.0	< 2.0	--	--	--	--	--
	06/01/05	217	< 252	**616** d	**742**	--	< 1.0	< 1.0	< 1.0	< 2.0	1.3	--	--	--	--
	07/25/05	162	< 250	**< 500**	375	--	< 0.2	< 0.2	< 0.2	< 0.5	1.18	--	--	< 0.5	--
	11/04/05	99.2	< 236	< 472	354	--	< 0.5	< 0.5	< 0.5	< 1.0	< 1.0	--	--	--	--
	02/22/06	73.5	< 238	< 476	357	--	< 0.5	< 0.5	< 0.5	< 3.0	1.06	--	--	< 1.0	--
	05/09/06	97.8	< 236	< 472	354	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 1.0	--
MW-48	01/29/92	**4,000**	**2,000**	--	**2,000**	--	**430**	330	180	**600**	--	--	--	--	--
	06/01/05	357	294 f	< 494	**541**	--	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	--	--	--	--
	07/25/05	334	< 250	**< 500**	375	--	< 0.2	< 0.2	< 0.2	< 0.5	< 1.0	--	--	< 0.5	--
	11/04/05	278	< 236	< 472	354	--	< 0.5	< 0.5	< 0.5	< 1.0	< 1.0	--	--	--	--
	02/22/06	**6,460**	< 258	**< 515**	386.5	--	**139**	26.8	219	**1,140**	< 20 I	--	--	**41**	--
	05/09/06	325	< 236	< 472	354	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 1.0	--
	08/30/06	176	< 236	< 472	354	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	12/13/06	275	< 240	< 481	360.5	--	< 0.5	< 0.5	0.87	4.44	< 1.0	--	--	< 5.0	--
MW-49	01/29/92	**22,000**	**3,000**	--	**3,000**	--	**550**	54.0	**720**	**3,200**	--	--	--	--	--
	07/25/05	313	**2,060**	**6,590**	**8,650**	--	< 0.2	< 0.2	< 0.2	0.3	< 1.0	--	--	0.55	--
	11/02/05	< 50.0	< 236	< 472	354	--	0.2	< 0.5	0.66	1.06	< 2.0	--	--	--	--
	02/24/06	380	457	**< 556**	**735**	--	< 0.5	< 0.5	3.45	9.35	< 1.0	--	--	1.52	--
	05/11/06	201	**2,550**	**625** i	**3,175**	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 1.0	--
	08/31/06	< 100	< 236	< 472	354	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	12/13/06	197	< 240	**679**	**799**	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	03/07/07	232	< 236	< 472	354	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	06/13/07	178	< 238	< 476	357	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 1.0	--
	09/12/07	68.7	< 240	< 481	360.5	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	12/19/07	308	< 236	< 472	354	--	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	--	--	< 1.0	--
	03/18/08	< 50.0	< 236	< 472	354	< 236	< 0.05	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	06/03/08	51.8	< 236	< 472	354	< 236	1.38	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	08/06/08	< 50.0	< 236	< 472	354	< 236	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	11/20/12	**4,130**	**1,900**	< 100	**2,500**	**2,500**	**6.0**	2.8	105	**612**	--	--	--	**99.3**	--
	11/06/13	281	< 400	< 400	400	< 400	< 1.0	1.3	< 1.0	< 3.0	< 1.0	--	--	--	--
	12/08/14	323	--	--	--	--	**6.2**	< 1.0	1.6	< 3.0	< 1.0	< 0.0098	< 1.0	--	--
	03/23/15	**917**	--	--	--	--	2.0	< 1.0	20.4	53.8	--	--	--	--	--
	06/22/15	474	--	--	--	--	**5.1**	< 1.0	18.3	< 3.0	--	--	--	--	--
	09/10/15	150	--	--	--	--	--	--	--	--	--	--	--	--	--
	12/07/15	748	--	--	--	--	2.1	< 1.0	20.3	3.4	--	--	--	--	--
MW-51	10/10/01	671	**11,700**	**2,150**	**13,850**	--	**10.1**	10.4	7.75	16.6	--	--	--	--	--
	12/28/01	631	**2,170**	**3,100**	**5,270**	--	**37**	75.6	30.4	81.2	--	--	--	--	--
	03/08/02	102	**2,350**	**1,610**	**3,960**	--	**6.22**	5.89	3.84	10.4	--	--	--	--	--
	06/24/02	57.7	**2,650**	**1,730**	**4,380**	--	1.28	1.42	0.699	2.51	--	--	--	--	--
	09/26/02	< 100	**1,660** b	**875** b	**2,535**	--	0.848	< 2.0	< 1.0	< 1.5	--	--	--	--	--
	12/12/02	< 50.0	**2,050**	**781**	**2,831**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	03/13/03	< 50.0	**693**	**< 625**	**1,005.5**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	09/19/03	52.4	< 250	**< 500**	375	--	1.47	1.81	0.544	3.59	--	--	--	--	--
	01/14/04	73.5	< 139	< 278	208.5	--	< 0.25	0.804	< 0.5	< 1.0	--	--	--	--	--
	03/30/04	< 100	404	401	**805**	--	< 1.0	< 1.0	< 1.0	< 2.0	--	--	--	--	--
	06/22/04	104	129	< 237	247.5	--	< 1.0	< 1.0	< 1.0	< 2.0	--	--	--	--	--
	09/29/04	150	< 242	< 484	363	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	12/29/04	< 100	< 257	**< 514**	385.5	--	< 1.0	< 1.0	< 1.0	< 2.0	--	--	--	--	--
	03/17/05	< 100	< 240	< 481	360.5	--	< 1.0	< 1.0	< 1.0	< 2.0	--	--	--	--	--
	06/01/05	< 100	408	**< 520**	**668**	--	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	--	--	--	--
	07/25/05	< 50.0	**697**	**826**	**1,523**	--	< 0.2	< 0.2	< 0.2	< 0.5	< 1.0	--	--	< 0.5	--
	11/04/05	< 50.0	238	< 476	357	--	< 0.5	< 0.5	< 0.5	< 1.0	< 1.0	--	--	--	--
	11/04/05	--	**1,290**	**536** d,h	**1,826**	--	--	--	--	--	--	--	--	--	--
	02/22/06	< 50.0	< 248	< 495	371.5	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 1.0	--
	05/08/06	< 50.0	< 245	< 490	367.5	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 1.0	--
	08/30/06	< 80.0	< 245	< 490	367.5	--	< 0.5	< 0.5	< 0.5	< 3.0	1.2	--	--	< 5.0	--
	12/12/06	< 50.0	< 243	< 485	364	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	03/07/07	< 50.0	< 258	**< 515**	386.5	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	06/15/07	< 50.0	< 245	< 490	367.5	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	09/13/07	< 50.0	< 240	< 481	360.5	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	12/19/07	< 50.0	< 236	< 472	354	--	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	--	--	< 1.0	--
	03/18/08	< 50.0	< 236	< 472	354	< 236	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--

Table 4-2a. Groundwater Analytical Results - TPH, VOCs, Naphthalene, and PCBs
Remedial Investigation Work Plan
Block 37 Site
600 - 630 Westlake Avenue North | Seattle, Washington

Monitoring Well ID	Sample Date	TPH (µg/L)					VOCs[4] (µg/L)								PCBs - Total as Aroclors (µg/L)
		GRO[1]	DRO[2]	ORO[2]	TEH (DRO+ORO)[3]	Kerosene	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	EDB	EDC	Naphthalene	
Screening Levels[5]															
GW-1 Protect Drinking Water GW-Detail-PW		**800**	**500**	**500**	**500**	**500**	**5**	**640**	**700**	**1,600**	**24**	**0.05**	**4.8**	**160**	**0.22**
GW-4 Screening Level Protect Indoor Air GW-Detail-PW		**NE**	**NE**	**NE**	**NE**	**NE**	**2.4**	**15,000**	**2,800**	**320**	**800**	**0.3**	**3.5**	**8.9**	**NE**
Laboratory PQL		**100**	**200**	**200**	**400**	**100**	**0.2**	**1.0**	**0.2**	**0.6**	**1.0**	**1.0**	**1.0**	**0.10**	**0.175**
MW-51 Cont'd	08/05/08	< 50.0	< 236	< 472	354	< 236	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	11/04/08	< 50.0	< 236	< 472	354	< 236	< 0.5	< 0.5	< 0.5	< 3.0	--	--	--	< 5.0	--
	02/22/09	< 50.0	< 236	< 472	354	< 236	< 0.5	< 0.5	< 0.5	< 3.0	--	--	--	< 5.0	--
	05/17/09	< 50.0	< 240	< 481	360.5	< 240	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	11/15/09	< 50.0	< 240	< 490	365	< 240	< 0.5	< 0.5	< 0.5	< 2.0	< 1.0	--	--	< 5.0 k	--
	02/21/10	< 50.0	**1,040**	**1,550**	**2,590**	< 76.9	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	2.4	--
	05/23/10	< 50.0	**1,270**	**1,610**	**2,880**	346	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	08/17/10	< 50.0	< 78.4	< 392	**542**	346	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	11/16/10	< 50.0	< 76.9	< 385	230.95	< 76.9	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
MW-52	10/10/01	**13,400**	**1,460**	< **582**	**1,751**	--	**1,150**	< 10.0	**827**	**793**	--	--	--	--	--
	12/28/01	**7,900**	**1,690**	**595**	**2,285**	--	**634**	5.87	509	**479**	--	--	--	--	--
	03/08/02	**10,100**	**2,790**	< **602**	**3,091**	--	**814**	6.3	602	**387**	--	--	--	--	--
	06/24/02	**9,820**	**2,810**	**640**	**3,450**	--	**1,250**	< 25.0	**757**	**448**	--	--	--	--	--
	09/26/02	**6,600**	**3,530** b	< **500**	**3,780**	--	**943**	21.7	600	284	--	--	--	--	--
	12/12/02	**1,170**	**7,350**	**638**	**7,988**	--	**120**	0.822	73.9	7.3	--	--	--	--	--
	03/13/03	**4,540**	**1,530**	< **568**	**1,814**	--	**272**	52.7	236	210	--	--	--	--	--
	01/14/04	**905**	< 126	< 252	189	--	**15.6**	0.532	39.6	2.447	--	--	--	--	--
	03/30/04	738	462	< 253	**588.5**	--	**16.8**	< 1.0	18.4	24.66	--	--	--	--	--
	06/22/04	**1,600**	**593**	< 248	**717**	--	**161**	< 10.0	70.1	< 20	--	--	--	--	--
	09/29/04	290	< 253	< **507**	380	--	**4.9**	< 0.5	4.8	2.3	--	--	--	--	--
	12/29/04	**844**	272	< **507**	**525.5**	--	**28.7**	< 1.0	17	9.22	--	--	--	--	--
	03/17/05	752	< 238	< 477	357.5	--	**18.9**	< 1.0	17.6	3.75	--	--	--	--	--
	06/01/05	503	< 249 J	< 498	373.5	--	**28.3**	< 1.0	19	7.06	< 1.0	--	--	--	--
	07/25/05	401	368	< **500**	**618**	--	**14.5**	< 0.2	8.24	3.12	< 1.0	--	--	2.37	--
	11/08/05	243	< 243	< 485	364	--	**6.47**	0.86	9.39	4.69	< 1.0	--	--	--	--
	02/23/06	91.8	**587**	< 495	**834.5**	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 1.0	--
	05/08/06	< 250	290	< 490	**535**	--	< 0.5	< 0.5	0.56	< 3.0	< 1.0	--	--	< 1.0	--
	08/30/06	178	< 236	< 472	354	--	**10.3**	1.14	8.04	11	< 1.0	--	--	< 5.0	--
	12/13/06	215	< 245	< 490	367.5	--	**5.82**	< 0.5	4.2	< 3.0	< 1.0	--	--	< 5.0	--
	06/15/07	146	< 250	< **500**	375	--	0.62	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	09/13/07	57.7	< 250	< **500**	375	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	03/17/08	< 50.0	< 238	< 476	357	< 238	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	06/02/08	52.7	< 236	< 472	354	< 236	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	08/04/08	< 50.0	< 236	< 472	354	< 236	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	11/05/08	< 50.0	< 236	< 472	354	< 236	< 0.5	< 0.5	< 0.5	< 3.0	--	--	--	< 5.0	--
MW-53	03/13/03	**14,000**	**1,030**	< **625**	**1,342.5**	--	**398**	143	501	**1,170**	--	--	--	--	--
	06/12/03	**9,700**	**1,370**	< **500**	**1,620**	--	**553**	197	431	**1,270**	--	--	--	--	--
	09/19/03	**1,470**	< 250	< **500**	375	--	**29.3**	6.61	28.5	111	--	--	--	--	--
	01/14/04	**2,770**	181	< 264	313	--	**173**	3.79	91.7	127.1	--	--	--	--	--
	03/30/04	**3,580**	**686**	< 237	**804.5**	--	**257**	49.7	125	204.8	--	--	--	--	--
	06/22/04	**4,820**	**750**	< 240	**870**	--	**363**	85.2	188	**425**	--	--	--	--	--
	09/29/04	240	311	< **509**	**565.5**	--	1.9	< 0.5	1.4	6.7	--	--	--	--	--
	12/29/04	**2,650**	**655**	< 491	**900.5**	--	**225**	11.9	92.8	123.4	--	--	--	--	--
	03/17/05	**1,560**	293	< **515**	**550.5**	--	**106**	3.25	40.9	61.3	--	--	--	--	--
	06/01/05	**3,120**	381	493 d	**874**	--	**205**	5.98	120	236.9	1.88	--	--	--	--
	07/25/05	450	310	< **500**	**560**	--	**20.4**	0.61	8.96	13.14	< 1.0	--	--	**9.15**	--
	11/04/05	**1,910**	< 236	< 472	354	--	**164**	< 2.5	59.4	28.2	< 5.0	--	--	--	--
	02/22/06	**2,770**	< 248	< 495	371.5	--	**183**	5.65	77.2	173	< 5.0 l	--	--	**30**	--
	05/08/06	559	< 245	< 490	367.5	--	**66.6**	< 1.0	21.2	9.06	< 2.0	--	--	8.24	--
	08/30/06	**1,980**	< 236	< 472	354	--	**188**	4.5	61.2	112	< 1.0	--	--	**38.7**	--
	12/12/06	177	< 245	< 490	367.5	--	**33.8**	< 0.5	2.2	4.38	< 1.0	--	--	< 5.0	--
	03/07/07	< 50.0	< 236	< 472	354	--	**2.86**	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	06/15/07	71.4	< 238	< 476	357	--	1.11	< 0.5	0.59	< 3.0	< 1.0	--	--	< 5.0	--
	09/13/07	< 50.0	< 238	< 476	357	--	0.97	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	03/17/08	121	< 236	< 472	354	< 236	**8.96**	< 0.5	3.69	3.58	< 1.0	--	--	< 5.0	--
	06/02/08	176	< 236	< 472	354	< 236	**17.4**	< 0.5	6.51	< 3.0	< 1.0	--	--	< 5.0	--
	08/04/08	382	< 236	< 472	354	< 236	**63.2**	2.34	18.5	17.7	< 1.0	--	--	5.36	--
	11/04/08	117	< 236	< 472	354	< 236	**6.65**	< 0.5	2.92	< 3.0	< 1.0	--	--	< 5.0	--
	11/20/12	183	180	< 100	300	250	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	6.5	--
	11/06/13	185	**540**	< 400	**740**	**530**	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	--	--	--	--
	12/08/14	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	< 0.0098	< 1.0	--	--
	03/27/15	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	06/22/15	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	09/10/15	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	12/07/15	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	12/14/16	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
MW-55	06/16/05	**2,240**	**3,100**	< **2,500** g	**4,350**	--	< 2.0	< 2.0	< 2.0	< 4.0	< 2.0	--	--	--	--
	07/25/05	**1,850**	**1,390**	< **500**	**1,640**	--	0.48	1.69	2.57	1.99	< 1.0	--	--	**908**	--
	11/01/05	**814**	**699**	< **526**	**962**	--	0.36	2.12	< 0.5	< 1.0	< 2.0	--	--	--	--
	02/21/06	278	353	< **562**	**634**	--	< 0.5	1.35	< 0.5	< 3.0	< 1.0	--	--	**117**	--
	05/08/06	190	358	< **500**	**608**	--	< 0.5	0.55	< 0.5	< 3.0	< 1.0	--	--	**64.9**	--
	08/29/06	< 80.0	268	< 495	**515.5**	--	1.42	< 0.5	0.72	6.95	< 1.0	--	--	**104**	--
	12/12/06	60.1	< 243	< 485	364	--	< 0.5	< 0.5	< 0.5	< 3.0	1.06	--	--	**39.1**	--
	03/06/07	< 50.0	< 243	< 485	364	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	06/15/07	< 50.0	< 245	< 490	367.5	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	7.19	--
	09/13/07	< 50.0	< 243	< 485	364	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	12/18/07	< 50.0	< 236	< 472	354	--	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	--	--	3.8	--
	03/18/08	< 50.0	< 238	< 476	357	< 238	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	06/03/08	< 50.0	< 236	< 472	354	< 236	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	6.88	--
	11/02/08	51.8	< 245	< 490	367.5	< 245	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	**10.1**	--
MW-56	06/16/05	135	210	380 d	**590**	--	< 1.0	< 1.0	< 1.0	< 2.0	1.29	--	--	--	--
	07/25/05	220	< 250	< **500**	375	--	**3.81**	< 0.2	3.96	< 0.5	< 1.0	--	--	< 0.5	--
	11/03/05	130	< 236	< 472	354	--	**7.28**	< 0.5	1.7	2.33	< 2.0	--	--	--	--
	02/22/06	285	< 248	< 495	371.5	--	**3.69**	0.69	0.87	< 3.0	2.79	--	--	< 1.0	--
	05/08/06	120	< 248	< 495	371.5	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 1.0	--
	08/30/06	449	< 243	< 485	364	--	**36.7**	< 0.5	4.02	< 3.0	1.67	--	--	< 5.0	--
	12/12/06	609	< 245	< 490	367.5	--	**2.72**	0.57	5.12	< 3.0	3.56	--	--	< 5.0	--
	03/06/07	279	< 250	< **500**	375	--	< 0.5	< 0.5	< 0.5	< 3.0	2.2	--	--	< 5.0	--
	06/15/07	106	< 245	< 490	367.5	--	1.94	< 0.5	0.65	< 3.0	1.53	--	--	**10.1**	--
	09/13/07	< 50.0	< 250	< **500**	375	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	12/18/07	51.3	< 236	< 472	354	--	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	--	--	< 1.0	--
	03/18/08	92.9	< 236	< 472	354	< 236	1.01	0.62	1.83	< 3.0	< 1.0	--	--	< 5.0	--
	06/03/08	73.8	< 236	< 472	354	< 236	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	06/05/08	98.4	< 236	< 472	354	< 236	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	11/03/08	312	< 236	< 472	354	< 236	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
MW-57	06/16/05	**16,900**	**1,800**	< **1,200**	**2,400**	--	**525**	**2,310**	327	**2,188**	< 20	--	--	--	--
	07/25/05	**11,400**	418	**571**	**989**	--	**614**	**2,680**	436	**2,647**	< 1.0	--	--	**98**	--
	11/08/05	**3,980**	< 245	< 490	367.5	--	**328**	497	100	**525**	< 10	--	--	--	--
	02/23/06	**10,000**	**877**	< 495	**1,124.5**	--	**909**	**1,570**	381	**2,230**	< 20	--	--	**92**	--
	05/08/06	**12,200**	426	< 485	**668.5**	--	**538**	**960**	281	**1,671**	< 1.0	--	--	**94**	--
	08/30/06	**2,620**	< 248	< 495	371.5	--	**249**	37.9	77.4	**350**	< 1.0	--	--	**28.9**	--
	12/13/06	**39,400**	422	< 495	**689.5**	--	**1,200**	**5,020**	**1,150**	**6,090**	< 5.0	--	--	**266**	--
	03/08/07	**21,600**	267	< 472	**503**	--	**1,130**	**2,330**	**876**	**4,610**	< **40**	--	--	**291**	--
	06/15/07	**19,800**	< 245	< 490	367.5	--	**699**	**1,010**	660	**3,350**	< 20	--	--	**256**	--
	09/14/07	**34,900**	349	< 495	**596.5**	--	**1,470**	**2,400**	**1,270**	**6,520**	< 1.0	--	--	< **500**	--
	12/18/07	221	< 236	< 472	354	--	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	--	--	1.6	--
	03/18/08	**23,100**	340	< 476	**4,898**	**4,660**	**942**	**1,610**	**878**	**4,190**	< 1.0	--	--	< **200**	--
	06/03/08	173	< 236	< 472	354	< 236	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	06/04/08	**7,580**	< 236	< 472	**1,746**	**1,910**	**433**	154	399	**1,860**	< 1.0	--	--	**87.2**	--
	11/05/08	76.2	< 238	< 476	**605**	367	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--

Table 4-2a. Groundwater Analytical Results - TPH, VOCs, Naphthalene, and PCBs
Remedial Investigation Work Plan
Block 37 Site
600 - 630 Westlake Avenue North | Seattle, Washington

Monitoring Well ID	Sample Date	TPH (µg/L)					VOCs[4] (µg/L)								PCBs - Total as Aroclors (µg/L)
		GRO[1]	DRO[2]	ORO[2]	TEH (DRO+ORO)[3]	Kerosene	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	EDB	EDC	Naphthalene	
Screening Levels[5]															
GW-1 Protect Drinking Water GW-Detail-PW		**800**	**500**	**500**	**500**	**500**	**5**	**640**	**700**	**1,600**	**24**	**0.05**	**4.8**	**160**	**0.22**
GW-4 Screening Level Protect Indoor Air GW-Detail-PW		**NE**	**NE**	**NE**	**NE**	**NE**	**2.4**	**15,000**	**2,800**	**320**	**800**	**0.3**	**3.5**	**8.9**	**NE**
Laboratory PQL		**100**	**200**	**200**	**400**	**100**	**0.2**	**1.0**	**0.2**	**0.6**	**1.0**	**1.0**	**1.0**	**0.10**	**0.175**
MW-58	06/16/05	**3,970**	420	< 250	**545**	--	**628**	499	143	**541**	< 5.0	--	--	--	--
	07/25/05	**7,750**	**673**	< **500**	**923**	--	**1,420**	**1,610**	379	**1,887**	< 1.0	--	--	**57**	--
	11/07/05	**1,350**	< 248	< 495	371.5	--	**147**	123	37.2	177	< 4.0	--	--	--	--
	02/22/06	**28,700**	< 258	< **515**	386.5	--	**2,570**	**3,980**	**906**	**4,200**	< **50** I	--	--	**166**	--
	05/08/06	**11,700**	< 238	< 476	357	--	**959**	**1,150**	314	**1,644**	< 1.0	--	--	**107**	--
	08/30/06	**9,010**	< 245	< 490	367.5	--	**2,070**	347	**736**	**2,950**	< 1.0	--	--	< **250**	--
	12/13/06	**17,000**	268	< 485	**510.5**	--	**1,720**	241	**767**	**2,920**	< 5.0	--	--	**178**	--
	03/08/07	**3,790**	< 245	< 490	367.5	--	**423**	367	100	**548**	< 20	--	--	< **100**	--
	06/15/07	**2,220**	< 243	< 485	364	--	**328**	175	54	**333**	< 1.0	--	--	**12.3**	--
	09/13/07	260	< 238	< 476	357	--	**20.8**	5.73	5.5	10	< 1.0	--	--	< 5.0	--
	12/19/07	111	< 236	< 472	354	--	**7.9**	< 1.0	1.6	7.0	< 1.0	--	--	1.2	--
	03/17/08	486	< 236	< 472	354	< 236	**116**	< 0.5	22.3	8.68	< 1.0	--	--	< 5.0	--
	06/02/08	**2,350**	< 236	< 472	**708**	472	**328** J	2.45	167 c	215	< 1.0	--	--	**10.6**	--
	08/04/08	**2,680**	< 236	< 472	**775**	**539**	**533**	1.94	154	231	< 1.0	--	--	**19.2**	--
	11/04/08	**1,310**	< 236	< 472	**591**	355	**130**	1.46	80.9	99.7	< 1.0	--	--	8.62	--
MW-59	06/16/05	**10,100**	**1,700**	< **1,200**	**2,300**	--	**519**	< 10.0	176	**725.2**	< 10	--	--	--	--
	07/25/05	**4,660**	253	< **500**	**503**	--	**307**	1.24	181	201	< 4.0	--	--	**64.3**	--
	11/08/05	**919**	< 250	< **500**	375	--	**10.3**	< 0.5	28.8	41	< 1.0	--	--	--	--
	02/22/06	**1,630**	< 248	< 495	371.5	--	**89.8**	< 2.5	105	< 15	< 5.0 I	--	--	**9.8**	--
	05/08/06	**968**	322	< **500**	**572**	--	**27.9**	0.51	53.2	89.44	< 1.0	--	--	6.27	--
	08/30/06	**830**	< 236	< 472	354	--	**27.1**	< 0.5	61.7	82.8	< 1.0	--	--	< 5.0	--
	12/13/06	**1,280**	< 243	< 485	364	--	**76.3**	1.35	50.7	24.8	< 1.0	--	--	**13.5**	--
	03/06/07	129	< 245	< 490	367.5	--	2.22	< 0.5	1.12	< 3.0	< 1.0	--	--	< 5.0	--
	06/15/07	87.8	< 245	< 490	367.5	--	**8.24**	< 0.5	0.74	< 3.0	< 1.0	--	--	< 5.0	--
	09/13/07	< 50.0	< 238	< 476	357	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	12/18/07	80.2	< 236	< 472	354	--	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	--	--	< 1.0	--
	03/17/08	126	< 236	< 472	354	< 236	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	06/02/08	184	< 240	< 481	360.5	< 240	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	08/04/08	213	< 236	< 472	**506**	270	**5.64**	< 0.5	0.51	< 3.0	< 1.0	--	--	< 5.0	--
	11/05/08	280	< 238	< 476	357	< 238	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
MW-60	06/16/05	**64,300**	**4,300**	< **5,000** g	**6,800**	--	**4,100**	**6,820**	**2,260**	**10,610**	< **40**	--	--	--	--
	07/25/05	**48,800**	**2,220**	**791**	**3,611**	--	**3,670**	**4,730**	**1,570**	**7,720**	< 1.0	--	--	**299**	--
	11/07/05	**78,100**	311	< 472	**547**	--	**5,260**	**6,550**	**2,950**	**16,200**	< **200**	--	--	--	--
	11/07/05	--	490	< **962** h	**971**	--	--	--	--	--	--	--	--	--	--
	02/24/06	**56,900**	**973**	< **510**	**1,228**	--	**5,020**	89.6	**2,750**	**14,600**	< **40**	--	--	**721**	--
	05/08/06	**48,800**	**1,150**	< 476	**1,388**	--	**3,660**	179	**1,780**	**8,500**	< 1.0	--	--	**473**	--
	08/30/06	**40,700**	406	< **521**	**666.5**	--	**5,350**	434	**2,610**	**10,300**	< 1.0	--	--	**472**	--
	12/12/06	**56,400**	417	< **505**	**609.5**	--	**4,630**	58.6	**2,840**	**11,200**	< 5.0	--	--	< **500**	--
	03/07/07	**27,700**	< 245	< 490	367.5	--	**1,780**	84.8	652	**4,870**	< **40**	--	--	**350**	--
	06/15/07	**41,200**	**567**	< 476	**1,195**	--	**2,870**	119	**1,200**	**6,970**	< **40**	--	--	**880**	--
	09/14/07	**52,200**	346	< **500**	**596**	--	**3,260**	42.2	**1,680**	**10,100**	< 1.0	--	--	**632**	--
	12/18/07	**29,300**	361	< 476	**599**	--	**2,000**	14.0	**1,300**	**3,660**	< 1.0	--	--	**320**	--
	03/18/08	**24,700**	464	< 472	**5,716**	**5,480**	**2,490**	30.9	**1,460**	**3,710**	< 1.0	--	--	**210**	--
	06/03/08	**24,900**	432	< 472	**8,066**	**7,830**	**2,890**	13.8	**1,400**	**2,510**	< 1.0	--	--	< **200**	--
	08/04/08	**29,400**	**680**	< 472	**5,266**	**5,030**	**3,330**	59.2	**2,180**	**3,830**	< **40**	--	--	**377**	--
	11/05/08	**23,300**	**740**	< 476	**978**	< 476	**2,220**	24.6	**1,760**	**2,440**	< 1.0	--	--	**267**	--
MW-61	11/01/05	< 50.0	< 236	< 472	354	--	**10**	< 0.5	< 0.5	< 1.0	< 2.0	--	--	--	--
	02/21/06	< 50.0	< 250	< **500**	375	--	**2.8**	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 1.0	--
	05/09/06	< 50.0	< 240	< 481	360.5	--	**3.39**	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 1.0	--
	08/31/06	< 100	< 250	< **500**	375	--	0.6	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	12/13/06	< 50.0	< 238	< 476	357	--	1.31	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
MW-62	11/01/05	< 50.0	< 243	< 485	364	--	0.47	< 0.5	< 0.5	< 1.0	< 2.0	--	--	--	--
	02/21/06	< 50.0	< 275	< **549**	412	--	< **2.5**	< 2.5	< 2.5	< 15	< 5.0	--	--	< 5.0	--
	05/09/06	< 50.0	< 240	< 481	360.5	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 1.0	--
	08/31/06	< 100	< 248	< 495	371.5	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	12/13/06	< 50.0	< 243	< 485	364	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
MW-63	11/01/05	< 50.0	< 250	< **500**	375	--	1.0	< 0.5	< 0.5	< 1.0	< 2.0	--	--	--	--
	02/21/06	< 50.0	< 278	< **556**	417	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 1.0	--
	05/09/06	< 50.0	< 245	< 490	367.5	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 1.0	--
	08/31/06	< 100	< 248	< 495	371.5	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	12/13/06	< 50.0	< 243	< 485	364	--	0.59	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
MW-64	11/01/05	< 50.0	< 250	< **500**	375	--	**41.9**	< 0.5	< 0.5	< 1.0	< 2.0	--	--	--	--
	02/21/06	84.9	< 272	< **543**	407.5	--	**32.4**	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 1.0	--
	05/09/06	133	< 248	< 495	371.5	--	**55.8**	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 1.0	--
	08/31/06	< 100	< 243	< 485	364	--	**6.0**	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	12/13/06	< 50.0	< 240	< 481	360.5	--	**14.7**	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
MW-65	11/04/05	**557**	< 236	< 472	354	--	0.74	12.9	7.8		< 1.0	--	--	--	--
	02/23/06	**1,000**	**638**	< 495	**886**	--	< 0.5	1.83	15.3	8.34	< 1.0	--	--	4.32	--
	05/09/06	**1,220** J	< 236	< 472	354	--	< 0.5	0.68	7.72	3.04	< 1.0	--	--	2.52	--
	08/30/06	261	< 248	< 495	371.5	--	< 0.5	< 0.5	11.2	3.42	< 1.0	--	--	< 5.0	--
MW-66	11/07/05	< 50.0	< 243	< 485	364	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	--	--
	02/24/06	< 50.0	< 253	< **505**	379	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 1.0	--
	05/09/06	< 50.0	< 272	< **543**	407.5	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	1.85	--
	08/30/06	< 80.0	< 248	< 495	371.5	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
MW-67	11/04/05	78.1	< 238	< 476	357	--	< 0.5	< 0.5	0.77	1.44	< 1.0	--	--	--	--
	02/23/06	< 50.0	< 255	< **510**	382.5	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 1.0	--
	05/09/06	< 50.0	< 236	< 472	354	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 1.0	--
	08/30/06	< 80.0	< 275	< **549**	412	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
MW-68	11/04/05	437	< 236	< 472	354	--	**8.11**	0.79	< 0.5	< 3.0	1.21	--	--	--	--
	02/22/06	248	< 255	< **510**	382.5	--	**19**	1.7	< 0.5	5.08	< 1.0	--	--	< 1.0	--
	05/09/06	184	< 238	< 476	357	--	**2.46**	0.57	< 0.5	< 3.0	< 1.0	--	--	< 1.0	--
	08/30/06	168	< 258	< **515**	386.5	--	1.29	2.08	< 0.5	< 3.0	1.02	--	--	< 5.0	--
	12/13/06	401	< 245	< 490	367.5	--	**115**	< 1.0	< 1.0	< 6.0	< 2.0	--	--	< **10**	--
MW-69	11/07/05	< 50.0	< 238	< 476	357	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	--	--
	02/23/06	< 50.0	< 236	< 472	354	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 1.0	--
	05/09/06	< 50.0	< 236	< 472	354	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 1.0	--
	08/30/06	< 80.0	< 255	< **510**	382.5	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
MW-70	11/02/05	**24,800**	< 236	< 472	354	--	**29.8**	3.6	697	**1,540**	< 1.0	--	--	--	--
	02/23/06	**8,290**	< 287	< **575**	431	--	**33.3**	2.0	428	537	< 4.0	--	--	**91.5**	--
	05/09/06	**15,500**	< 266	< **532**	399	--	**108**	< 10.0	**905**	**1,316**	< 20	--	--	**233**	--
MW-71	11/03/05	**18,100**	**5,880**	< 472	**6,116**	--	**240**	59.3	**925**	**1,750**	< 20	--	--	--	--
	02/23/06	**21,800**	**1,770**	< 485	**2,012.5**	--	**190**	28.0	**848**	**1,710**	< 20	--	--	**341**	--
	05/10/06	**25,100**	**733**	< 495	**980.5**	--	**195**	< 20.0	**803**	**1,338**	< **40**	--	--	**410**	--
	08/29/06	**15,400**	**664**	< 476	**902**	--	**207**	4.61	698	**834**	< 1.0	--	--	**364**	--
	12/12/06	**11,300**	**609**	< 476	**847**	--	**127**	68.2	237	**512**	< 1.0	--	--	**151**	--
	03/07/07	**22,100**	**567**	< 490	**812**	--	**211**	< 20.0	**836**	**1,220**	< **40**	--	--	**691**	--
	06/14/07	**19,200**	**851**	< 490	**1,096**	--	**186**	2.67	647	**667**	< 1.0	--	--	**328**	--
	09/14/07	**7,230**	**901**	< 485	**1,143.5**	--	**128**	2.0	329	122	< 1.0	--	--	**200**	--
	12/17/07	**16,500**	**823**	< 472	**1,059**	--	**200**	17.0	600	**694**	< 1.0	--	--	--	--
	03/17/08	**15,900**	**1,070**	< 472	**5,946**	**5,710**	**124**	2.7	454	250.6	< 1.0	--	--	**190**	--
	06/02/08	**9,480**	**566**	< 472	**4,516**	**4,280**	**94**	24.5	291	**328**	< 1.0	--	--	**156**	--
	08/04/08	**4,140**	**550**	< 472	**2,096**	**1,860**	**31.7**	1.06	103	62.3	< 1.0	--	--	**89.4**	--
	11/03/08	**5,820**	**524**	< 485	**2,692.5**	**2,450**	**49.2**	1.03	69	10.4	< 1.0	--	--	**68.7**	--
	02/23/09	**11,600**	**828**	< 481	**4,580.5**	**4,340**	**136**	2.3	358	213	--	--	--	**193**	--
	05/17/09	**13,400**	**1,380**	< 481	**6,060.5**	**5,820**	**104**	2.38	260	201	< 1.0	--	--	**151**	--
	08/16/09	**2,300**	**660**	< 480	**1,940**	**1,700**	**37**	< 0.5	56	14	< 1.0	--	--	**11**	--
	11/15/09	**2,500**	**940**	< 470	**1,335**	**1,100**	**6.2**	0.6	25	6.5	< 1.0	--	--	6.2	--
	02/21/10	**6,390**	**3,990**	**4,500**	**9,480**	**9,980**	**97.1**	1.9	403	101	--	--	--	**126**	--
	05/23/10	**2,550**	**3,860**	**4,440**	**8,850**	**4,410**	**39.7**	3.8	84	12.7	--	--	--	**56.4**	--
	08/15/10	**5,130**	**912**	**729**	**3,435**	**2,710**	**99.1**	< 1.0	148	12.1	--	--	--	**128**	--
	11/14/10	244	**541**	**2,600**	**3,141**	267	< 1.0	1.8	< 1.0	< 3.0	--	--	--	3.3	--

Table 4-2a. Groundwater Analytical Results - TPH, VOCs, Naphthalene, and PCBs
Remedial Investigation Work Plan
Block 37 Site
600 - 630 Westlake Avenue North | Seattle, Washington

Monitoring Well ID	Sample Date	TPH (µg/L)					VOCs[4] (µg/L)								PCBs - Total as Aroclors (µg/L)
		GRO[1]	DRO[2]	ORO[2]	TEH (DRO+ORO)[3]	Kerosene	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	EDB	EDC	Naphthalene	
Screening Levels[5]															
GW-1 Protect Drinking Water GW-Detail-PW		**800**	**500**	**500**	**500**	**500**	**5**	**640**	**700**	**1,600**	**24**	**0.05**	**4.8**	**160**	**0.22**
GW-4 Screening Level Protect Indoor Air GW-Detail-PW		**NE**	**NE**	**NE**	**NE**	**NE**	**2.4**	**15,000**	**2,800**	**320**	**800**	**0.3**	**3.5**	**8.9**	**NE**
Laboratory PQL		**100**	**200**	**200**	**400**	**100**	**0.2**	**1.0**	**0.2**	**0.6**	**1.0**	**1.0**	**1.0**	**0.10**	**0.175**
MW-72	11/03/05	71.3	< 236	< 472	354	--	0.98	< 0.5	< 0.5	2.32	< 2.0	--	--	--	--
	02/23/06	**1,900**	408	**< 500**	**658**	--	**11**	1.22	98.2	25.3	< 2.0	--	--	**37.3**	--
	05/10/06	**1,540** J	< 250	**< 500**	375	--	**8.2**	1.12	70.4	< 6.0	< 2.0	--	--	**48.9**	--
	08/29/06	**810**	< 253	**< 505**	379	--	**6.28**	< 0.5	10.2	< 3.0	< 1.0	--	--	**48.4**	--
	12/12/06	**970**	< 250	**< 500**	375	--	**3.29**	< 0.5	1.95	< 3.0	< 1.0	--	--	**12.5**	--
	03/07/07	560	< 260	**< 521**	390.5	--	**5.45**	0.59	38.5	< 3.0	< 1.0	--	--	6.68	--
	06/14/07	**1,140**	< 255	**< 510**	382.5	--	**5.29**	< 0.5	2.72	< 3.0	< 1.0	--	--	**10**	--
	09/14/07	239	< 250	**< 500**	375	--	1.76	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	12/17/07	489	< 238	< 476	357	--	1.8	< 1.0	< 1.0	< 2.0	< 1.0	--	--	--	--
	03/17/08	**983**	< 236	< 472	**643**	407	**3.3**	< 0.5	4.34	< 3.0	< 1.0	--	--	< 5.0	--
	06/02/08	**1,160**	< 238	< 476	**712**	474	**2.89**	< 0.5	4.77	< 3.0	< 1.0	--	--	< 5.0	--
	08/04/08	330	< 236	< 472	483	247	0.81	< 0.5	< 0.5	< 3.0	< 1.0	--	--	6.4	--
	11/03/08	577	< 243	< 485	**520.5**	278	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	02/23/09	780	< 243	< 485	**3,372.5**	**3,130**	< 0.5	< 0.5	< 0.5	< 3.0	--	--	--	< 5.0	--
	05/17/09	786	**634**	< 476	**1,200**	**962**	**3.55**	< 0.5	24.1	< 3.0	< 1.0	--	--	**8.92**	--
	08/16/09	170	< 240	< 490	365	< 240	< 0.5	< 0.5	0.82	< 2.0	< 1.0	--	--	< 5.0	--
	11/15/09	110	430	**2,900**	**2,930**	< 240	0.5	0.77	< 0.5	< 2.0	< 1.0	--	--	< 5.0	--
	02/21/10	258	**1,810**	**1,720**	**3,530**	**803**	< 1.0	1.7	< 1.0	< 3.0	--	--	--	2.3	--
	05/23/10	329	**6,100**	**2,250**	**8,350**	**5,630**	2.3	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	08/15/10	330	**641**	**3,460**	**4,101**	236	1.4	< 1.0	3.1	< 3.0	--	--	--	< 1.0	--
	11/14/10	261	159	**749**	**908**	147	< 1.0	< 1.0	1.6	< 3.0	--	--	--	< 1.0	--
MW-73	11/03/05	**1,070**	249	< 472	485	--	**23.1**	1.74	3.58	4.74	< 2.0	--	--	--	--
	02/23/06	**2,420**	**731**	**< 500**	**981**	--	**13.2**	2.13	4.52	< 3.0	< 1.0	--	--	< 1.0	--
	04/10/06	**2,460**	< 236	< 472	354	--	**9.56**	2.19	4.51	2.44	< 1.0	--	--	1.06	--
	08/29/06	**1,130**	< 236	< 472	354	--	**12.6**	2.4	1.89	< 3.0	< 1.0	--	--	< 5.0	--
	12/12/06	**2,360**	< 243	< 485	364	--	**14.5**	2.01	4.32	< 3.0	< 1.0	--	--	< 5.0	--
	03/07/07	**2,260**	< 236	< 472	354	--	**17.5**	1.47	2.72	3.11	< 1.0	--	--	< 5.0	--
	06/14/07	**2,450**	< 260	**< 521**	390.5	--	**11.6**	1.56	2.63	< 3.0	< 1.0	--	--	< 5.0	--
	09/14/07	**1,380**	< 236	< 472	354	--	**12.1**	1.88	0.65	< 3.0	< 1.0	--	--	< 5.0	--
	12/17/07	**2,390**	< 236	< 472	354	--	**18**	1.4	3.3	1.4	< 1.0	--	--	--	--
	03/17/08	**2,670**	< 238	< 476	**945**	**707**	**10.1**	1.35	2.16	< 3.0	< 1.0	--	--	< 5.0	--
	06/02/08	**2,260**	< 236	< 472	**1,003**	**767**	**15.8**	0.76	1.14	< 3.0	< 1.0	--	--	< 5.0	--
	08/04/08	**1,250**	< 236	< 472	**701**	465	**10.3**	1.15	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	11/03/08	**1,790**	< 243	< 485	**708.5**	466	**21.3**	1.38	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	02/23/09	**2,800**	< 240	< 481	**7,750.5**	**7,510**	**25.6**	2.05	1.59	< 3.0	--	--	--	< 5.0	--
	05/17/09	**1,510**	< 243	< 485	**672.5**	430	**9.97**	1.0	0.73	< 3.0	< 1.0	--	--	< 5.0	--
	08/16/09	**1,200**	430	< 480	**1,340**	**1,100**	**5.0**	< 0.5	< 0.5	< 2.0	< 1.0	--	--	< 5.0	--
	11/15/09	**2,700**	**1,100**	< 480	**1,740**	**1,900**	**26**	2.0	3.8	< 2.0	< 1.0	--	--	< 5.0	--
	02/21/10	**2,190**	**946**	**624**	**1,734**	**1,110**	**39**	2.4	3.3	6.9	--	--	--	2.4	--
	05/23/10	**2,260**	**1,030**	**659**	**2,329**	**1,670**	**31.2**	2.2	2.1	< 3.0	--	--	--	< 1.0	--
	08/15/10	**1,960**	173	< 392	**867**	**671**	**37.3**	1.8	1.7	< 3.0	--	--	--	3.3	--
	11/14/10	**1,410**	407	**1,670**	**2,403**	**733**	**26**	3.4	< 1.0	< 3.0	--	--	--	< 1.0	--
MW-74	11/04/05	**2,160** c	< 245	< 490	367.5	--	**14.2**	1.53	13	3.35	< 1.0	--	--	--	--
	02/23/06	**3,320**	< 245	< 490	367.5	--	**11**	1.37	17.3	3.5	< 1.0	--	--	**27.9**	--
	05/10/06	**3,320** c	< 240	< 481	360.5	--	**13.8**	2.29	17.3	4.04	< 1.0	--	--	**27.8**	--
	08/29/06	618 c	< 253	**< 505**	379	--	**33.9**	4.55	8.18	< 3.0	< 1.0	--	--	**21.6**	--
MW-75	11/08/05	< 50.0	< 238	< 476	357	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	--	--
	02/24/06	< 50.0	< 253	**< 505**	379	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 1.0	--
	05/11/06	< 50.0	< 240	< 481	360.5	--	1.52	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 1.0	--
MW-76	11/08/05	84.6	< 245	< 490	367.5	--	0.7	< 0.5	< 0.5	< 3.0	< 1.0	--	--	--	--
	02/24/06	< 50.0	394	**752**	**1,146**	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 1.0	--
	05/11/06	< 50.0	< 245	< 490	367.5	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 1.0	--
	08/30/06	< 80.0	< 236	< 472	354	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	03/18/08	< 50.0	< 236	< 472	354	< 236	< 0.5	0.55	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	06/02/08	< 50.0	< 236	< 472	354	< 236	< 0.5	0.52	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	08/05/08	< 50.0	< 240	< 481	360.5	< 240	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
MW-77	11/04/05	< 50.0	< 236	< 472	354	--	< 0.5	< 0.5	0.54	< 3.0	< 1.0	--	--	--	--
	02/23/06	< 50.0	< 238	< 476	357	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 1.0	--
	05/11/06	< 50.0	< 238	< 476	357	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	1.08	--
MW-78	11/04/05	< 50.0	< 236	< 472	354	--	0.59	0.76	0.73	< 3.0	< 1.0	--	--	--	--
	02/23/06	< 50.0	**1,800**	< 490	**2,045**	--	< 0.5	0.66	< 0.5	< 3.0	< 1.0	--	--	< 1.0	--
	05/11/06	< 50.0	< 243	< 485	364	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 1.0	--
MW-79	11/04/05	< 50.0	< 236	< 472	354	--	0.62	< 0.5	0.67	1.41	< 1.0	--	--	--	--
	02/23/06	< 50.0	< 245	< 490	367.5	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 1.0	--
	05/11/06	< 50.0	< 248	< 495	371.5	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 1.0	--
MW-80	11/03/05	69.4	< 243	< 485	364	--	**3.96**	< 0.5	10	7.88	< 2.0	--	--	--	--
	02/23/06	< 50.0	< 245	< 490	367.5	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 1.0	--
	05/09/06	< 50.0	< 236	< 472	354	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 1.0	--
	08/30/06	< 80.0	< 258	**< 515**	386.5	--	--	--	--	--	--	--	--	--	--
	12/13/06	< 50.0	< 243	< 485	364	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	03/07/07	< 50.0	< 243	< 485	364	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	06/14/07	< 50.0	< 236	< 472	354	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	09/12/07	< 50.0	< 240	< 481	360.5	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	12/18/07	< 50.0	< 236	< 472	354	--	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	--	--	< 1.0	--
	03/18/08	< 50.0	< 236	< 472	354	< 236	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	06/02/08	< 50.0	< 236	< 472	354	< 236	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	08/05/08	< 50.0	< 236	< 472	354	< 236	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	11/04/08	< 50.0	< 236	< 472	354	< 236	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	02/23/09	< 50.0	< 236	< 472	354	< 236	< 0.5	< 0.5	< 0.5	< 3.0	--	--	--	< 5.0	--
	05/17/09	< 50.0	< 240	< 481	360.5	< 240	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	08/17/09	< 50.0	< 240	< 490	365	< 240	< 0.5	< 0.5	< 0.5	< 2.0	< 1.0	--	--	< 5.0	--
	11/16/09	< 50.0	< 240	< 480	360	< 240	< 0.5	< 0.5	< 0.5	< 2.0	< 1.0	--	--	< 5.0	--
MW-81	11/03/05	< 50.0	< 236	< 472	354	--	< 0.2	< 0.5	0.84	2.05	< 2.0	--	--	--	--
	02/23/06	< 50.0	< 248	< 495	371.5	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 1.0	--
	05/09/06	< 50.0	< 248	< 495	371.5	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 1.0	--
	08/30/06	< 80.0	< 248	< 496	371.5	--	--	--	--	--	--	--	--	--	--
	12/13/06	< 50.0	< 258	**< 515**	386.5	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	03/07/07	< 50.0	< 258	**< 515**	386.5	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	06/14/07	< 50.0	< 240	< 481	360.5	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	09/12/07	< 50.0	< 240	< 481	360.5	--	1.08	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	12/18/07	< 50.0	< 236	< 472	354	--	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	--	--	< 5.0	--
	03/18/08	< 50.0	< 236	< 472	354	< 236	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	06/02/08	< 50.0	< 238	< 476	357	< 238	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	06/05/08	< 50.0	< 238	< 476	357	< 238	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	11/04/08	< 50.0	< 236	< 472	354	< 236	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	02/23/09	< 50.0	< 240	< 481	360.5	< 240	< 0.5	< 0.5	< 0.5	< 3.0	--	--	--	< 5.0	--
	05/17/09	< 50.0	< 240	< 481	360.5	< 240	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	08/17/09	< 50.0	< 240	< 470	355	< 240	< 0.5	< 0.5	< 0.5	2.0	< 1.0	--	--	< 5.0	--
	11/16/09	< 50.0	< 240	< 470	355	< 240	< 0.5	< 0.5	< 0.5	< 2.0	< 1.0	--	--	< 5.0	--
	02/21/10	< 50.0	126	< 383	317.5	< 76.6	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
MW-82	11/03/05	**16,300**	**1,850**	< 472	**2,086**	--	**308**	427	696	**3,370**	**< 40**	--	--	--	--
	02/21/06	**15,400**	< 258	**< 515**	386.5	--	**483**	256	477	**2,110**	< 1.0	--	--	**78.7**	--
	05/11/06	**6,890**	**554**	< 476	**792**	--	**221**	120	177	**1,043**	< 10	--	--	**31**	--
	12/11/06	**5,590**	< 240	< 481	360.5	--	**244**	50.7	184	**815**	< 1.0	--	--	**27.4**	--
	03/08/07	**8,910**	< 250	**< 500**	375	--	**425**	193	328	**1,450**	< 20	--	--	**< 100**	--
	06/13/07	**12,100**	< 243	< 485	364	--	**630**	179	375	**1,800**	< 1.0	--	--	**154**	--
	09/12/07	**10,200**	< 240	< 481	360.5	--	**627**	30.8	354	**1,610**	< 1.0	--	--	**29**	--
	12/19/07	**6,030**	< 236	< 472	354	--	**360**	51.0	230	**840**	< 1.0	--	--	**42**	--
	03/18/08	**8,870**	< 236	< 472	**2,176**	**1,940**	**407**	22.5	250	**791**	< 1.0	--	--	**27.9**	--
	06/03/08	**7,640**	< 236	< 472	**2,186**	**1,950**	**570**	8.71	316	**1,190**	< 1.0	--	--	**36**	--
	08/06/08	**12,000**	< 236	< 472	**1,104**	**868**	**326**	18.0	254	**1,890**	< 1.0	--	--	**79.8**	--
	11/04/08	**20,900**	< 238	< 476	**3,608**	**3,370**	**1,050**	177	549	**3,760**	< 1.0	--	--	**75.2**	--

Table 4-2a. Groundwater Analytical Results - TPH, VOCs, Naphthalene, and PCBs
Remedial Investigation Work Plan
Block 37 Site
600 - 630 Westlake Avenue North | Seattle, Washington

Monitoring Well ID	Sample Date	TPH (µg/L)					VOCs[4] (µg/L)								PCBs - Total as Aroclors (µg/L)
		GRO[1]	DRO[2]	ORO[2]	TEH (DRO+ORO)[3]	Kerosene	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	EDB	EDC	Naphthalene	
Screening Levels[5]															
GW-1 Protect Drinking Water GW-Detail-PW		800	500	500	500	500	5	640	700	1,600	24	0.05	4.8	160	0.22
GW-4 Screening Level Protect Indoor Air GW-Detail-PW		NE	NE	NE	NE	NE	2.4	15,000	2,800	320	800	0.3	3.5	8.9	NE
Laboratory PQL		100	200	200	400	100	0.2	1.0	0.2	0.6	1.0	1.0	1.0	0.10	0.175
MW-83	11/03/05	2,270	< 236	< 472 J	354	--	67.9	202	50.6	230	< 4.0	--	--	--	--
	02/24/06	4,370	< 250	< 500	375	--	198	367	93.9	393	< 4.0	--	--	23.8	--
	05/11/06	2,820	550	< 500	800	--	163	172	66.6	259.9	< 4.0	--	--	14.3	--
	08/31/06	386	< 236	< 472	354	--	8.9	4.97	6.3	24.7	< 1.0	--	--	< 5.0	--
	12/19/07	1,030	358	593	951	--	< 1.0	< 1.0	1.6	1.2	< 1.0	--	--	< 1.0	--
MW-84	11/02/05	95.5	< 236	< 472	354	--	10.2	< 0.5	< 0.5	< 3.0	< 1.0	--	--	--	--
	02/22/06	189	< 266	< 532	399	--	53.4	0.55	< 0.5	< 3.0	< 1.0	--	--	< 1.0	--
	05/09/06	143	< 250	< 500	375	--	29.7	0.81	< 0.5	< 3.0	< 1.0	--	--	< 1.0	--
MW-85	11/02/05	108	< 236	< 472	354	--	3.25	0.74	2.19	5.68	< 1.0	--	--	--	--
	02/22/06	69.8	< 248	< 495	371.5	--	5.47	0.77	0.85	< 3.0	< 1.0	--	--	< 1.0	--
	05/09/06	69.5	< 245	< 490	367.5	--	4.56	0.72	0.8	< 3.0	< 1.0	--	--	< 1.0	--
	08/29/06	< 80.0	< 248	< 495	371.5	--	--	--	--	--	--	--	--	--	--
MW-86	11/02/05	3,010	< 248	< 495	371.5	--	508	5.09	5.26	31.5	< 1.0	--	--	--	--
	02/21/06	7,880	< 269	< 538	403.5	--	2,640	5.65	10.2	31.9	< 5.0	--	--	< 5.0	--
	05/09/06	7,980	< 240	< 481	360.5	--	2,740	< 25.0	64	104	< 50	--	--	287	--
	08/29/06	2,690 J	< 253	< 505	379	--	1,640	6.58	9.78	29.2	2.62	--	--	< 5.0	--
	12/11/06	4,700	< 250	< 500	375	--	1,410	5.79	7.66	28.2	3.21	--	--	< 5.0	--
	03/07/07	7,370	< 243	< 485	364	--	2,530	< 10.0	10.8	< 60	< 20	--	--	< 100	--
	06/13/07	7,300	< 243	< 485	364	--	2,430	7.4	11.9	26.9	< 5.0	--	--	< 25	--
	09/12/07	5,410	< 240	< 481	360.5	--	1,860	5.55	8.31	25	1.56	--	--	< 5.0	--
	12/18/07	4,540	< 238	< 476	357	--	1,400	5.6	9.9	29.7	< 1.0	--	--	1.4	--
	03/18/08	6,290	< 236	< 472	693	457	1,950	7.1	9.36	27.9	< 1.0	--	--	< 5.0	--
	06/03/08	5,340	< 236	< 472	769	533	1,380	7.19	12.6	28.4	< 1.0	--	--	< 5.0	--
	08/05/08	4,090	< 236	< 472	592	356	612	7.18	7.23	30.7	< 1.0	--	--	< 5.0	--
	11/04/08	2,430	245	< 490	790	545	232	< 5.0	4.9	25.6	< 1.0	--	--	< 5.0	--
	02/24/09	4,750	< 240	< 481	5,000.5	4,760	1,300	6.48	7.67	29.7	--	--	--	< 5.0	--
	05/17/09	10,300	< 243	< 485	1,009.5	767	3,380	22.4	87.7	95	< 1.0	--	--	< 5.0	--
	08/17/09	1,800	440	< 480	2,340	2,100	1,500	23.0	45	71	< 1.0	--	--	< 5.0	--
	11/16/09	2,700	1,000	< 480	1,840	1,600	2,100 k	42.0	76	200	< 1.0	--	--	< 5.0	--
	02/22/10	1,550	1,940	1,640	3,580	1,190	906	10.5	41.2	90.5	--	--	--	4.0	--
	05/24/10	1,440	1,970	1,710	3,680	1,960	719	7.4	23.3	66.1	--	--	--	1.8	--
	08/16/10	1,270	87.6	< 388	727	533	331	6.0	10.6	48.6	--	--	--	1.9	--
	11/15/10	1,460	< 77.7	< 388	734	540	283	6.8	6.7	46.3	--	--	--	2.2	--
MW-87	11/02/05	< 50.0	< 245	< 490	367.5	--	2.35	1.28	1.33	6.61	< 1.0	--	--	--	--
	02/21/06	< 50.0	< 263	< 526	394.5	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 1.0	--
	05/09/06	< 50.0	< 245	< 490	367.5	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 1.0	--
	08/29/06	< 80.0	< 248	< 495	371.5	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	12/11/06	< 50.0	< 245	< 490	367.5	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	03/07/07	< 50.0	< 236	< 472	354	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	06/13/07	162	< 243	< 485	364	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	09/12/07	< 50.0	< 240	< 481	360.5	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	12/18/07	< 50.0	< 240	< 481	360.5	--	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	--	--	< 1.0	--
	03/18/08	< 50.0	< 236	< 472	354	< 236	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	06/03/08	< 50.0	< 236	< 472	354	< 236	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	08/05/08	< 50.0	< 236	< 472	354	< 236	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	11/04/08	< 50.0	< 243	< 485	364	< 243	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	02/24/09	< 50.0	< 236	< 472	354	< 236	< 0.5	< 0.5	< 0.5	< 3.0	--	--	--	< 5.0	--
	05/17/09	< 50.0	< 240	< 481	360.5	< 240	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	08/17/09	< 50.0	< 240	< 480	360	< 240	< 0.5	< 0.5	< 0.5	< 2.0	< 1.0	--	--	< 5.0	--
	11/16/09	< 50.0	< 240	< 490	365	< 240	< 0.5	< 0.5	< 0.5	< 2.0	< 1.0	--	--	< 5.0	--
	02/22/10	< 50.0	643	860	1,503	< 76.6	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	05/24/10	< 50.0	543	675	1,218	263	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	08/16/10	< 50.0	< 78.4	< 392	235.2	< 78.4	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	11/15/10	< 50.0	< 77.7	< 388	232.85	< 77.7	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
MW-88	11/07/05	14,700	< 240	< 481	360.5	--	546	< 50.0	2,230	1,400	< 100	--	--	--	--
	05/10/06	20,500	418	< 476	656	--	768	< 50.0	2,590	1,121	< 100	--	--	734	--
	12/13/06	16,600	316	< 485	558.5	--	208	< 10.0	1,170	1,620	< 20	--	--	255	--
MW-89	11/03/05	1,110	< 236	< 472	354	--	10.3	8.2	82.5	170	< 2.0	--	--	--	--
	02/24/06	49,900	1,180	< 515	1,437.5	--	188	916	2,200	7,930	< 20	--	--	860	--
	05/11/06	24,300	3,040	< 495	3,287.5	--	96	352	1,200	3,452	< 40	--	--	365	--
	08/31/06	463	< 245	< 490	367.5	--	6.85	15.4	40.9	82.2	< 1.0	--	--	59.8	--
	12/11/06	1,100	< 248	< 495	371.5	--	3.21	14.6	38.1	87.9	< 1.0	--	--	50.8	--
	03/08/07	2,640	< 250	< 500	375	--	13.4	14.8	206	396	< 10	--	--	122	--
	06/13/07	2,450	< 236	< 472	354	--	21.6	72.2	148	816	< 1.0	--	--	596	--
	09/13/07	102	< 238	< 476	357	--	< 0.5	7.65	5.87	< 3.0	< 1.0	--	--	63.2	--
	12/19/07	210	< 236	< 472	354	--	1.4	< 1.0	< 1.0	3.3	< 1.0	--	--	4.7	--
	03/18/08	522	< 236	< 472	496	260	0.89	1.66	13.9	9.92	< 1.0	--	--	57	--
	06/03/08	818	< 236	< 472	593	357	4.84	0.64	16.5	23.5	< 1.0	--	--	97.8	--
	08/06/08	601	< 236	< 472	512	276	1.79	1.22	15.7	24.5	< 1.0	--	--	70.4	--
	11/04/08	4,590	< 236	< 472	1,846	1,610	2.27	1.55	150	214	< 1.0	--	--	61.2	--
MW-90	11/02/05	3,840	444	< 490	689	--	70.8	2.94	244	792	< 4.0	--	--	--	--
	02/21/06	19,600	504	< 538	773	--	218	10.0	805	2,400	< 20	--	--	187	--
	05/11/06	10,200	1,179	< 495	1,417.5	--	125	8.9	348	1,222	< 10	--	--	91.3	--
	08/13/07	9,180	< 248	< 495	371.5	--	118	1.9	194	1,290	< 1.0	--	--	166	--
	09/12/07	3,870	< 240	< 481	360.5	--	46.3	1.15	64	645	< 1.0	--	--	58	--
	03/18/08	1,060	< 236	< 472	603	367	11.4	< 0.5	3.11	16.5	< 1.0	--	--	14.3	--
	06/03/08	536	< 236	< 472	354	< 236	8.06	< 0.5	1.41	8.92	< 1.0	--	--	5.27	--
	08/06/08	422	< 236	< 472	354	< 236	7.2	< 0.5	0.91	5.63	< 1.0	--	--	15.1	--
	11/03/08	1,460	< 391	< 781	586	< 391	9.49	< 0.5	6.75	8.45	< 1.0	--	--	15.9	--
MW-91	11/03/05	9,390	2,230	< 472	2,466	--	56.2	6.45	319	414	< 10	--	--	--	--
	02/24/06	6,080	487	< 515	744.5	--	21	2.67	177	430	< 1.0	--	--	188	--
	05/11/06	5,900	931	< 485	1,173.5	--	14.9	14.5	106	162.7	< 4.0	--	--	171	--
	06/13/07	1,180	< 236	< 472	354	--	< 0.5	0.77	0.58	< 3.0	< 1.0	--	--	91.6	--
	09/12/07	160	< 240	< 481	360.5	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	13.2	--
	12/19/07	316	< 236	< 472	354	--	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	--	--	4.2	--
	03/18/08	646	< 236	< 472	489	253	0.98	< 0.5	5.16	< 3.0	< 1.0	--	--	12	--
	06/03/08	359	< 236	< 472	354	< 236	2.42	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	08/06/08	163	< 236	< 472	354	< 236	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	21.9	--
	11/03/08	252	< 236	< 472	354	< 236	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
MW-92	11/02/05	12,300	338	< 472	574	--	925	83.4	756	940	< 20	--	--	--	--
	02/22/06	4,360	< 248	< 495	371.5	--	261	8.6	111	127	< 5.0	--	--	36	--
	05/10/06	5,580	< 240	< 481	360.5	--	458	11.2	122	97.6	< 20	--	--	38.4	--
	08/31/06	3,770	< 243	< 485	364	--	770	25.0	197	103	< 1.0	--	--	55.1	--
	12/13/06	1,190	< 238	< 476	357	--	23.2	0.73	23.6	14.7	< 1.0	--	--	5.05	--
	03/08/07	525	< 250	< 500	375	--	7.68	< 0.5	8.9	4.7	< 1.0	--	--	< 5.0	--
	06/13/07	662	< 238	< 476	357	--	30.2	< 0.5	8.98	< 3.0	< 1.0	--	--	< 5.0	--
	09/13/07	1,150	< 238	< 476	357	--	39.9	1.19	35.1	< 3.0	< 1.0	--	--	5.18	--
	12/18/07	1,410	< 238	< 476	357	--	79	1.2	14	3.1	< 1.0	--	--	4.3	--
	03/17/08	1,490	< 236	< 472	591	355	51.6	1.14	22.6	5.67	< 1.0	--	--	< 5.0	--
	06/03/08	682	< 236	< 472	480	244	4.71	< 0.5	5.6	< 3.0	< 1.0	--	--	< 5.0	--
	08/05/08	546	< 238	< 476	357	< 238	5.77	0.54	2.48	< 3.0	< 1.0	--	--	< 5.0	--
	11/03/08	1,030	< 238	< 476	613	375	56.5	4.87	6.4	6.06	< 1.0	--	--	6.84	--
MW-93	11/02/05	79.3	< 248	< 495	371.5	--	0.37	0.57	0.72	2.35	< 2.0	--	--	--	--
	02/21/06	1,200	3,580	< 526	3,843	--	2.38	0.78	3.25	3.18	< 1.0	--	--	1.71	--
	05/10/06	1,200 J	1,540	< 472	1,776	--	< 0.5	0.79	2.04	1.7	< 1.0	--	--	2.04	--
	08/31/06	204	< 243	< 485	364	--	< 0.5	0.61	1.55	< 3.0	< 1.0	--	--	< 5.0	--
	12/13/06	1,120	< 253	< 505	379	--	< 0.5	0.67	2.54	3.18	< 1.0	--	--	< 5.0	--
	03/07/07	1,010	3,490	< 500	3,740	--	11.6	0.76	2.91	3.59	< 1.0	--	--	< 5.0	--
	06/13/07	1,330	822	1,250	2,072	--	< 0.5	0.68	1.77	3.01	< 1.0	--	--	5.4	--
	09/13/07	303	267	616	883	--	< 0.5	< 0.5	1.37	< 3.0	< 1.0	--	--	5.43	--
	03/17/08	1,200	541	1,660	2,201	< 1.0	464	< 0.5	< 0.5	0.96	< 1.0	--	--	< 1.0	--
	06/03/08	1,320	429	< 472	849	613	6.56	< 0.5	3.62	1.44	< 1.0	--	--	< 5.0	--
	08/06/08	847	1,140	1,270	2,410	946	< 0.5	0.51	1.44	< 3.0	< 1.0	--	--	< 5.0	--
	11/03/08	1,110	564	842	1,406	535	< 0.5	< 0.5	1.43	< 3.0	< 1.0	--	--	< 5.0	--

Table 4-2a. Groundwater Analytical Results - TPH, VOCs, Naphthalene, and PCBs
Remedial Investigation Work Plan
Block 37 Site
600 - 630 Westlake Avenue North | Seattle, Washington

Monitoring Well ID	Sample Date	TPH (µg/L)					VOCs[4] (µg/L)								PCBs - Total as Aroclors (µg/L)
		GRO[1]	DRO[2]	ORO[2]	TEH (DRO+ORO)[3]	Kerosene	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	EDB	EDC	Naphthalene	
Screening Levels[5]															
GW-1 Protect Drinking Water GW-Detail-PW		800	500	500	500	500	5	640	700	1,600	24	0.05	4.8	160	0.22
GW-4 Screening Level Protect Indoor Air GW-Detail-PW		NE	NE	NE	NE	NE	2.4	15,000	2,800	320	800	0.3	3.5	8.9	NE
Laboratory PQL		100	200	200	400	100	0.2	1.0	0.2	0.6	1.0	1.0	1.0	0.10	0.175
MW-94	11/02/05	393	277	< 472	513	--	1.74	0.75	30.2	4.62	< 2.0	--	--	--	--
	02/24/06	172	< 248	< 495	371.5	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 1.0	--
	05/11/06	236	360	< 500	610	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	1.6	--
	08/31/06	< 100	< 250	< 500	375	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	12/13/06	159	< 243	< 485	364	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	03/07/07	1,720	< 248	< 495	371.5	--	1.88	< 0.5	33.6	< 3.0	< 1.0	--	--	93.8	--
	06/13/07	2,340	< 250	< 500	375	--	< 0.5	< 0.5	0.71	< 3.0	< 1.0	--	--	96.7	--
	09/12/07	521	< 240	< 481	360.5	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	12/19/07	285	< 236	< 472	354	--	1,010	< 1.0	< 1.0	< 1.0	< 3.0	--	--	< 1.0	--
	03/17/08	2,490	255	< 472	1,246	1,010	1.33	< 0.5	31.5	< 3.0	< 1.0	--	--	< 5.0	--
	08/06/08	637	< 236	< 472	530	294	0.58	< 0.5	0.8	< 3.0	< 1.0	--	--	< 5.0	--
MW-95	11/02/05	545	< 236	< 472	354	--	1.06	0.91	1.18	9.87	< 1.0	--	--	--	--
	02/23/06	278	240	< 481	480.5	--	9.67	5.57	7.88	19.2	< 1.0	--	--	3.31	--
	05/09/06	326	< 255	< 510	382.5	--	2.91	0.73	1.4	15.78	< 1.0	--	--	5.56	--
	08/30/06	94.3	< 248	< 495	371.5	--	--	--	--	--	--	--	--	--	--
	12/12/06	1,330	< 243	< 485	364	--	52.9	14.5	32.9	119	< 1.0	--	--	10.6	--
	03/07/07	60.2	< 250	< 500	375	--	3.87	< 0.5	1.31	10.5	< 1.0	--	--	< 5.0	--
	06/14/07	215	< 236	< 472	354	--	4.12	< 0.5	1.6	41.7	< 1.0	--	--	< 5.0	--
	09/13/07	< 50.0	< 238	< 476	357	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	12/18/07	< 50.0	< 238	< 476	357	--	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	--	--	< 1.0	--
	03/17/08	< 50.0	< 236	< 472	354	< 236	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 1.0	--
	06/03/08	< 50.0	< 236	< 472	354	< 236	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	08/04/08	< 50.0	< 236	< 472	354	< 236	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	11/04/08	< 50.0	< 248	< 495	371.5	< 248	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	02/24/09	< 50.0	< 240	< 481	360.5	< 240	< 0.5	< 0.5	< 0.5	< 3.0	--	--	--	< 5.0	--
	05/17/09	< 50.0	< 240	< 481	360.5	< 240	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	08/16/09	< 50.0	< 240	< 480	360	< 240	< 0.5	< 0.5	< 0.5	< 2.0	< 1.0	--	--	< 5.0	--
	11/15/09	110	< 240	< 480	360	< 240	< 0.5	< 0.5	< 0.5	< 2.0	< 1.0	--	--	< 5.0	--
	02/21/10	< 50.0	202	< 388	396	< 77.7	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	05/23/10	< 50.0	80	< 392	279.2	83.2	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	08/16/10	56.5	< 78.4	< 392	235.2	< 78.4	< 1.0	< 1.0	< 1.0	4.5	--	--	--	< 1.0	--
	11/15/10	85.7	< 77.7	< 388	291	97	< 1.0	< 1.0	< 1.0	23.7	--	--	--	< 1.0	--
MW-96	11/02/05	3,230	501	< 472	737	--	172	75.1	65	714	< 4.0	--	--	--	--
	05/11/06	6,190	5,570	< 971	6,055.5	--	392	136	152	1,057	< 10	--	--	90.8	--
MW-97	11/02/05	17,600	441	< 490	686	--	121	38.2	1,010	1,860	< 1.0	--	--	--	--
	02/22/06	39,900	811	< 500	1,061	--	350	32.8	1,840	3,730	< 40	--	--	735	--
	05/09/06	30,300 J	686	< 498	935	--	264	65.5	1,740	2,660	< 50	--	--	768	--
	08/30/06	6,580	456	< 485	696.5	--	82.4	6.4	749	401	< 1.0	--	--	516	--
MW-98	11/02/05	25,600	< 250	< 500	375	--	1,880	4,080	680	3,760	< 1.0	--	--	--	--
	02/22/06	173,000	360	< 556	638	--	14,000	30,500	4,090	22,200	< 400	--	--	888	--
	05/09/06	186,000	651	< 472	887	--	12,700	29,000	4,800	22,560	< 1,000	--	--	11,800	--
MW-99	11/02/05	910	< 243	< 485	364	--	1.84	0.85	11.1	73.8	< 1.0	--	--	--	--
	02/22/06	4,910	< 240	< 481	360.5	--	28.4	< 2.5	203	811	< 5.0	--	--	80.8	--
	05/09/06	3,370	< 248	< 495	371.5	--	14	< 5.0	82.5	521.3	< 10	--	--	59.7	--
MW-101	07/25/05	6,960	432	< 500	682	--	39.1	61.4	88	429	< 5.0	--	--	19.7	--
	11/04/05	2,960	< 236	< 472	354	--	53.8	44.8	72.1	464	< 5.0	--	--	--	--
	02/23/06	4,890	< 250	< 500	375	--	99.4	16.9	150	768	< 4.0	--	--	27.5	--
	05/09/06	1,120	< 238	< 476	357	--	14.2	1.62	27.1	136.7	< 2.0	--	--	6.06	--
MW-102	11/03/05	10,200	1,730	< 472	1,966	--	471	12.0	492	1,490	< 20	--	--	--	--
	02/24/06	11,400	294	< 532	560	--	471	3.96	473	1,160	< 4.0	--	--	90.4	--
	05/11/06	2,810 J	370	< 490	615	--	97.6	< 2.0	35.8	177.6	< 4.0	--	--	22.9	--
	08/31/06	2,430 J	< 236	< 472	354	--	212	< 2.5	101	208	< 5.0	--	--	29.5	--
	12/11/06	13,600	243	< 485	485.5	--	608	30.6	609	1,190	< 1.0	--	--	118	--
	03/08/07	10,000	257	< 500	507	--	366	25.8	448	1,240	< 20	--	--	183	--
	06/13/07	8,080	275	< 476	513	--	320	2.26	182	894	< 1.0	--	--	139	--
	09/12/07	8,800	246	< 481	486.5	--	428	2.38	426	792	< 1.0	--	--	90.2	--
	12/19/07	13,500	289	< 472	525	--	400	160	570	1,320	< 1.0	--	--	140	--
	03/18/08	9,840	347	< 472	3,006	2,770	291	1.5	371	747.1	< 1.0	--	--	99.4	--
	06/03/08	660	359	< 472	2,406	2,170	208	< 0.5	78.5	239	< 1.0	--	--	85.9	--
	08/06/08	3,310	276	< 472	1,476	1,240	138	0.79	43.2	69	< 1.0	--	--	54.2	--
	11/04/08	8,720	497	< 472	3,156	2,920	232	1.23	366	248	< 1.0	--	--	108	--
MW-103	07/26/05	< 50.0	< 250	< 500	375	--	< 0.2	< 0.2	< 0.2	< 0.5	< 1.0	--	--	< 0.5	--
	11/07/05	< 50.0	< 243	< 485	364	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	--	--
	02/24/06	< 50.0	< 250	< 500	375	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 1.0	--
	05/09/06	< 50.0	< 248	< 495	371.5	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 1.0	--
	08/30/06	< 80.0	< 248	< 495	371.5	--	--	--	--	--	--	--	--	--	--
	12/13/06	< 50.0	< 243	< 485	364	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
MW-105	07/26/05	62,000	821	< 500	1,071	--	1,970	7,460	2,640	12,750	< 1.0	--	--	723	--
	11/02/05	66,100	495	< 538	764	--	1,370	6,430	2,360	12,300	< 1.0	--	--	--	--
	02/22/06	50,000	332	< 495	579.5	--	1,200	2,810	1,990	8,540	< 50 I	--	--	498	--
	05/09/06	62,300	867	< 472	1,103	--	1,200	5,070	2,210	10,550	< 100	--	--	440	--
MW-200	11/07/05	533	< 250	< 500	375	--	4.39	1.21	8.65	22.1	5.03	--	--	--	--
	02/22/06	2,560	270	< 490	515	--	38.4	2.38	57.3	70.9	1.84	--	--	60.7	--
	05/10/06	1,440 J	< 245	< 490	367.5	--	25.1	0.62	35.5	12.82	1.57	--	--	45.2	--
	08/29/06	471 J	< 236	< 472	354	--	7.1	2.0	31.3	28.2	1.11	--	--	53	--
	12/12/06	1,630	< 245	< 490	367.5	--	7.12	1.3	20	27.9	1.9	--	--	25	--
	03/06/07	< 50.0	< 260	< 521	390.5	--	< 5.0	< 5.0	< 5.0	< 3.0	1.12	--	--	< 5.0	--
	06/14/07	262	< 243	< 485	364	--	3.63	< 0.5	1.61	< 3.0	< 1.0	--	--	< 5.0	--
	09/14/07	< 50.0	< 245	< 490	367.5	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	12/17/07	327	< 240	< 481	360.5	--	1.5	< 1.0	18	10	< 1.0	--	--	--	--
	06/01/08	2,390	270	< 481	1,460.5	1,220	27.5	1.07	55.2	16.6	< 1.0	--	--	92.8	--
	08/10/08	1,140	< 238	< 476	854	616	10.4	0.85	21.2	6.7	< 1.0	--	--	45.3	--
	02/22/09	4,570	5,550	< 481	5,790.5	1,820	17.1	2.12	58	45.4	--	--	--	134	--
	05/17/09	7,160	396	< 476	2,058	1,820	71.4	3.72	224	363	< 1.0	--	--	273	--
	08/16/09	1,800	330	< 480	1,050	810	< 0.5	< 0.5	12	11	< 1.0	--	--	22	--
	11/15/09	2,300	890	< 490	1,245	1,000	8.3	< 0.5	30	17	< 1.0	--	--	59	--
	02/21/10	8,170	3,160	1,300	6,300	5,000	116	2.0	445	151	--	--	--	510	--
	08/15/10	4,290	608	< 388	2,014	1,820	89.7	1.0	191	1.0	--	--	--	388	--
MW-201	11/07/05	56.8	974	4,180	5,154	--	< 0.5	< 0.5	0.99	9.49	< 1.0	--	--	--	--
	02/22/06	199	464	1,460	1,924	--	27.6	14.2	< 0.5	< 3.0	< 1.0	--	--	< 1.0	--
	05/10/06	221	< 250	< 500	375	--	27.1	14.6	< 0.5	< 3.0	< 1.0	--	--	< 1.0	--
	08/29/06	114	< 248	< 495	371.5	--	19.1	10.6	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	12/12/06	223	< 245	< 490	367.5	--	16.3	1.79	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	03/06/07	174	< 260	< 521	390.5	--	25.6	1.46	< 5.0	< 3.0	< 1.0	--	--	< 5.0	--
	06/14/07	206	< 245	< 490	367.5	--	20.4	0.87	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	09/14/07	125	< 245	< 490	367.5	--	21.4	0.75	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	03/18/08	281	< 236	< 472	354	< 236	11	58.0	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	06/01/08	196	< 238	< 476	357	< 238	18.3	7.4	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	08/10/08	125	< 243	< 485	364	< 243	17.7	1.14	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	02/22/09	157	< 238	6,530	6,649	< 238	11.5	< 0.5	< 0.5	< 3.0	--	--	--	< 5.0	--
	05/17/09	173	< 248	< 495	371.5	< 248	12.4	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	08/16/09	230	570	3,300	3,870	< 240	2.70	< 0.5	< 0.5	< 2.0	< 1.0	--	--	< 5.0	--
	11/15/09	73.0	< 240	< 480	360	< 240	12 k	< 0.5 k	< 0.5 k	< 2.0 k	< 1.0 k	--	--	< 5.0 k	--
	02/21/10	< 50.0	655	1,970	2,625	< 79.2	3.8	< 1.0	< 1.0	5.3	--	--	--	< 1.0	--
	05/23/10	56.8	639	1,870	2,309	353	9.7	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	08/15/10	< 50.0	113	451	564	< 79.2	8.7	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
MW-202	11/04/05	247	< 240	< 481	360.5	--	0.63	0.88	< 0.5	1.8	< 1.0	--	--	--	--
	02/22/06	< 50.0	< 253	< 505	379	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0 I	--	--	< 1.0	--
	05/10/06	< 50.0	< 250	< 500	375	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 1.0	--
	08/29/06	< 80.0	< 253	< 505	379	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	12/12/06	< 50.0	< 243	< 485	364	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	03/08/07	< 50.0	< 253	< 505	379	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	06/14/07	< 50.0	< 238	< 476	357	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	09/14/07	< 50.0	< 250	< 500	375	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--

Table 4-2a. Groundwater Analytical Results - TPH, VOCs, Naphthalene, and PCBs
Remedial Investigation Work Plan
Block 37 Site
600 - 630 Westlake Avenue North | Seattle, Washington

Monitoring Well ID	Sample Date	TPH (µg/L)					VOCs[4] (µg/L)								PCBs - Total as Aroclors (µg/L)
		GRO[1]	DRO[2]	ORO[2]	TEH (DRO+ORO)[3]	Kerosene	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	EDB	EDC	Naphthalene	
Screening Levels[5]															
GW-1 Protect Drinking Water GW-Detail-PW		**800**	**500**	**500**	**500**	**500**	**5**	**640**	**700**	**1,600**	**24**	**0.05**	**4.8**	**160**	**0.22**
GW-4 Screening Level Protect Indoor Air GW-Detail-PW		**NE**	**NE**	**NE**	**NE**	**NE**	**2.4**	**15,000**	**2,800**	**320**	**800**	**0.3**	**3.5**	**8.9**	**NE**
Laboratory PQL		**100**	**200**	**200**	**400**	**100**	**0.2**	**1.0**	**0.2**	**0.6**	**1.0**	**1.0**	**1.0**	**0.10**	**0.175**
MW-202 Cont'd	12/19/07	< 50.0	< 240	< 481	360.5	--	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	--	--	< 1.0	--
	03/18/08	< 50.0	< 236	< 472	354	< 236	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	06/02/08	< 50.0	< 240	< 481	360.5	< 240	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	08/05/08	< 50.0	< 248	< 495	371.5	< 248	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	11/05/08	< 50.0	< 243	< 485	364	< 243	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	02/25/09	< 50.0	< 243	< 485	364	< 243	< 0.5	< 0.5	< 0.5	< 3.0	--	--	--	< 5.0	--
	05/17/09	< 50.0	< 236	< 472	354	< 236	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	08/16/09	< 50.0	< 240	< 470	355	< 240	< 0.5	< 0.5	< 0.5	< 2.0	< 1.0	--	--	< 5.0	--
	11/15/09	< 50.0	< 240	< 470	355	< 240	< 0.5	< 0.5	< 0.5	< 2.0	< 1.0	--	--	< 5.0	--
	02/21/10	< 50.0	82.8	< 381	273.3	< 76.2	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	05/23/10	< 50.0	< 78.4	< 392	235.2	< 78.4	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	08/18/10	< 50.0	< 78.4	< 392	235.2	< 78.4	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	11/16/10	< 50.0	< 77.7	< 388	232.85	< 77.7	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
MW-203	11/08/05	< 50.0	< 238	< 476	357	--	1.14	< 0.5	0.78	< 3.0	< 1.0	--	--	--	--
	02/24/06	< 50.0	< 260	**< 521**	390.5	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 1.0	--
	05/09/06	< 50.0	< 248	< 495	371.5	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 1.0	--
	08/30/06	< 80.0	< 236	< 472	354	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	12/13/06	< 50.0	258	**< 515**	386.5	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	03/07/07	< 50.0	< 245	< 490	367.5	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	12/19/07	< 50.0	< 236	< 472	354	--	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	--	--	< 1.0	--
	03/18/08	< 50.0	< 236	< 472	354	< 236	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	06/02/08	< 50.0	< 236	< 472	354	< 236	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	08/05/08	< 50.0	< 236	< 472	354	< 236	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	11/04/08	< 50.0	< 236	< 472	354	< 236	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	02/25/09	< 50.0	< 240	< 481	360.5	< 240	< 0.5	< 0.5	< 0.5	< 3.0	--	--	--	< 5.0	--
	05/17/09	< 50.0	< 236	< 472	354	< 236	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	08/17/09	< 50.0	< 240	< 490	365	< 240	< 0.5	< 0.5	< 0.5	< 2.0	< 1.0	--	--	< 5.0	--
	11/16/09	< 50.0	< 240	< 480	360	< 240	< 0.5	< 0.5	< 0.5	< 2.0	< 1.0	--	--	< 5.0	--
	02/22/10	< 50.0	< 77.7	< 388	232.85	< 77.7	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	05/24/10	< 50.0	< 76.9	< 385	230.95	< 76.9	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	08/18/10	< 50.0	< 78.4	< 392	235.2	< 78.4	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	11/15/10	< 50.0	< 77.7	< 388	232.85	< 77.7	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
MW-204	11/03/05	725	< 236	< 472	354	--	**34.5**	0.55	23.3	13.6	< 2.0	--	--	--	--
	02/21/06	**3,120**	< 287	**< 575**	431	--	**388**	< 2.5	221	87	< 5.0	--	--	**42.2**	--
	05/09/06	**2,990** J	< 236	< 472	354	--	**343**	9.05	144	84.7	< 5.0	--	--	**50.6**	--
MW-205	11/02/05	735	< 236	< 472	354	--	0.75	< 0.5	23.2	20.6	< 1.0	--	--	--	--
	02/22/06	**3,950**	< 245	< 490	367.5	--	**7.6**	< 2.5	307	116	< 5.0 I	--	--	**82**	--
	05/10/06	**1,530**	< 236	< 472	354	--	**2.68**	< 1.0	86.8	30.04	< 2.0	--	--	**38.5**	--
MW-206	11/03/05	93.4	< 236	< 472	354	--	2.23	< 0.5	2.86	2.84	< 2.0	--	--	--	--
	02/23/06	< 50.0	279	< 490	**524**	--	**7.57**	0.56	< 0.5	< 3.0	< 1.0	--	--	< 1.0	--
	05/10/06	< 50.0	< 263	**< 526**	394.5	--	**8.54**	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 1.0	--
	08/29/06	< 80.0	< 266	**< 532**	399	--	1.63	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	12/17/07	< 50.0	293	**1,020**	**1,313**	--	< 1.0	< 1.0	< 1.0	< 1.0	< 2.0	--	--	--	--
	03/17/08	< 50.0	331	**1,080**	**1,411**	< 236	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	11/03/08	< 50.0	< 243	**564**	**685.5**	< 243	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	11/15/09	< 50.0	**1,400**	**10,000**	**11,400**	330	< 0.5	< 0.5	< 0.5	< 2.0	< 1.0	--	--	< 5.0	--
	02/21/10	< 50.0	--	--	--	--	< 1.0	< 1.0	< 1.0	< 1.0	--	--	--	< 1.0	--
	05/23/10	< 50.0	--	--	--	--	< 1.0	< 1.0	< 1.0	< 1.0	--	--	--	< 1.0	--
	11/14/10	< 50.0	**5,990**	**49,100**	**55,090**	**546**	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	1.0	--
MW-207	11/04/05	< 50.0	< 281	**< 562**	421.5	--	**2.82**	< 0.5	< 0.5	< 3.0	< 1.0	--	--	--	--
	02/23/06	< 50.0	< 248	< 495	371.5	--	**3.52**	2.05	< 0.5	< 3.0	< 1.0	--	--	< 1.0	--
	05/10/06	< 50.0	< 250	**< 500**	375	--	1.85	1.86	< 0.5	< 3.0	< 1.0	--	--	< 1.0	--
	08/29/06	< 80.0	< 253	**< 505**	379	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	12/12/06	< 50.0	< 248	< 495	371.5	--	1.21	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	03/07/07	< 50.0	< 263	**< 526**	394.5	--	0.96	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	06/15/07	< 50.0	< 238	< 476	357	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	09/14/07	< 50.0	< 245	< 490	367.5	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	12/19/07	< 50.0	< 236	< 472	354	--	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	--	--	< 1.0	--
	03/18/08	< 50.0	< 236	< 472	354	< 236	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	06/02/08	< 50.0	< 238	< 476	357	< 238	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	08/05/08	< 50.0	< 238	< 476	357	< 238	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	11/05/08	< 50.0	< 240	< 481	360.5	< 240	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	02/21/10	< 50.0	**681**	**536**	**1,217**	< 92	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
MW-208	11/07/05	**1,980**	< 250	**< 500**	375	--	**20.2**	4.4	35.2	143	< 1.0	--	--	--	--
	02/22/06	**11,900**	< 243	< 485	364	--	**131**	35.4	450	**1,610**	< 20	--	--	**96.8**	--
	05/10/06	**13,400**	< 236	< 472	354	--	**185**	29.2	**785**	**2,358**	< 20	--	--	**184**	--
	08/30/06	**21,800**	276	< 495	**523.5**	--	**213**	93.9	**1,590**	**5,960**	< 1.0	--	--	**521**	--
	12/12/06	**21,800**	**542**	< 490	**787**	--	**78.6**	18.2	**949**	**3,780**	< 20	--	--	**315**	--
	03/08/07	**34,000**	454	**< 500**	**704**	--	**212**	25.2	**1,660**	**5,360**	**40**	--	--	**838**	--
	06/14/07	**57,400**	**591**	< 472	**827**	--	**241**	52.6	**3,520**	**12,900**	< 20	--	--	**2,110**	--
	09/14/07	**63,000**	**1,120**	< 490	**1,365**	--	**93.7**	44.2	**2,360**	**8,480**	< 1.0	--	--	**1,080**	--
	12/17/07	**8,770**	< 238	< 476	357	--	**30**	1.4	470	**1,310**	< 1.0	--	--	--	--
	03/18/08	**23,200**	**512**	< 472	**6,416**	**6,180**	**35.2**	5.58	**756**	**2,280**	< 1.0	--	--	**210**	--
	06/01/08	**17,200**	310	< 472	**7,696**	**7,460**	**29.2**	10.3	**856** J	**2,200** J	< 1.0	--	--	**256** J	--
	08/10/08	**40,600**	115	< 485	**12,842.5**	**12,600**	**52.1**	31.0	**1,490**	**4,920**	< 10	--	--	**414**	--
	11/02/08	**32,700**	**988**	< 490	**12,745**	**12,500**	**10.9**	23.5	**947**	**3,150**	< 1.0	--	--	**21.4**	--
	05/17/09	**18,000**	**652**	< 476	**7,568**	**7,330**	**4.72**	6.26	**700**	**2,100**	< 1.0	--	--	**274**	--
	08/16/09	**22,000**	< 240	< 480	**11,240**	**11,000**	--	--	--	--	--	--	--	--	--
	11/15/09	**28,000**	**5,600**	< 470	**10,235**	**10,000**	**8.9**	5.6	630 k	**2,400** k	< 1.0	--	--	**280** k	--
	02/21/10	**23,700**	**1,250**	472	**9,342**	**8,870**	**6.4**	< 5.0	679	**1,980**	--	--	--	**222**	--
	05/23/10	**18,900**	**1,200**	< 385	**6,742.5**	**6,500**	**7.0**	2.1	341	**1,730**	--	--	--	**173**	--
	08/15/10	**14,800**	**699**	< 392	**5,956**	**5,760**	**3.4**	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	11/14/10	**7,440**	**515**	< 388	**4,064**	**3,870**	**2.4**	< 1.0	122	32.1	--	--	--	**53.6**	--
	11/20/12	< 100	< 100	< 100	100	< 100	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 4.0	--
	11/06/13	281	< 400	< 400	400	< 400	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	--	--	--	--
	07/29/14	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	< 0.0098	< 1.0	--	--
	12/08/14	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	< 0.0098	< 1.0	--	--
	03/23/15	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	06/22/15	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	09/10/15	< 100	--	--	--	--	2.1	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	12/07/15	< 100	--	--	--	--	**2.9**	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	12/15/16	< 100	--	--	--	--	1.9	< 1.0	< 1.0	< 3.0	--	--	--	--	--
MW-806	11/02/05	61.8	< 245	< 490	367.5	--	1.57	< 0.5	2.94	10.3	< 2.0	--	--	--	--
	02/24/06	117	< 238	< 476	357	--	< 0.5	0.91	1.49	4.24	< 1.0	--	--	< 1.0	--
MW-X	11/02/05	760	252	< 472	488	--	**114**	0.73	14	7.16	< 1.0	--	--	--	--
SMW-2	11/21/12	< 100	< 100	< 100	100	< 100	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 4.0	--
	11/06/13	< 400	< 400	< 400	400	< 400	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	--	--	--	--
	07/29/14	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	< 0.0097	< 1.0	--	--
	12/09/14	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	< 0.0098	< 1.0	--	--
	03/23/15	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	06/22/15	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	09/11/15	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	12/15/16	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
SMW-3	3/8/1995	< 50.0	400	**2,000**	**2,900**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	6/6/1995	< 50.0	< 250	**< 750**	**500**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	9/7/1995	< 50.0	300	**< 750**	**675**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	12/8/1995	< 50.0	300	**< 750**	**675**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	4/1/1996	< 50.0	< 250	**< 750**	**500**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	6/25/1996	< 50.0	320	**< 750**	**695**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	9/27/1996	< 50.0	< 250	**< 750**	**500**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	3/28/1997	< 50.0	< 250	**< 750**	**500**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	06/30/97*	< 50.0	< 250	**< 750**	**500**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	09/08/97*	< 50.0	< 250	**< 750**	**500**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	12/19/97*	< 50.0	**521**	**< 750**	**896**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--	--

Table 4-2a. Groundwater Analytical Results - TPH, VOCs, Naphthalene, and PCBs
Remedial Investigation Work Plan
Block 37 Site
600 - 630 Westlake Avenue North | Seattle, Washington

Monitoring Well ID	Sample Date	TPH (µg/L)					VOCs[4] (µg/L)								PCBs - Total as Aroclors (µg/L)
		GRO[1]	DRO[2]	ORO[2]	TEH (DRO+ORO)[3]	Kerosene	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	EDB	EDC	Naphthalene	
Screening Levels[5]															
GW-1 Protect Drinking Water GW-Detail-PW		**800**	**500**	**500**	**500**	**500**	**5**	**640**	**700**	**1,600**	**24**	**0.05**	**4.8**	**160**	**0.22**
GW-4 Screening Level Protect Indoor Air GW-Detail-PW		**NE**	**NE**	**NE**	**NE**	**NE**	**2.4**	**15,000**	**2,800**	**320**	**800**	**0.3**	**3.5**	**8.9**	**NE**
Laboratory PQL		**100**	**200**	**200**	**400**	**100**	**0.2**	**1.0**	**0.2**	**0.6**	**1.0**	**1.0**	**1.0**	**0.10**	**0.175**
SMW-3 Cont'd	03/16/98[6]	50.1	< 250	**< 750**	**500**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	06/26/98[6]	< 50.0	**500**	**< 750**	**875**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	09/23/98[6]	< 50.0	< 250	**< 750**	**500**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	12/17/98[6]	< 50.0	293	**< 750**	**668**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	03/31/99[6]	< 50.0	360	**< 750**	**735**	--	< 0.5	< 0.5	0.526	4.97	--	--	--	--	--
	06/30/99[6]	< 50.0	**639**	**< 750**	**1,014**	--	< 0.5	0.609	< 0.5	1.32	--	--	--	--	--
	12/08/99[6]	< 50.0	< 484	**< 1,450**	**967**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	06/20/00[6]	< 50.0	< 250	**< 750**	**500**	--	< 0.5	0.585	< 0.5	1.86	--	--	--	--	--
	06/15/01[6]	< 50.0	368	**< 866**	**801**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	09/07/01[6]	< 50.0	385	**< 571**	**670.5**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	12/28/2001	< 50.0	**1,160**	**< 500**	**1,410**	--	< 0.5	0.902	< 0.5	2.78	--	--	--	--	--
	06/26/02	< 100	< 250	**< 500**	375	--	1.83	< 2.0	< 1.0	< 1.5	--	--	--	--	--
	03/13/03	< 50.0	< 250	**< 500**	375	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	09/19/03	< 50.0	< 287	**< 575**	431	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	03/30/04	< 100	< 119	< 238	178.5	--	< 1.0	< 1.0	< 1.0	< 2.0	--	--	--	--	--
	09/29/04	56.0	< 242	< 483	362.5	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--	--
	03/17/05	< 100	< 248	< 495	371.5	--	< 1.0	< 1.0	< 1.0	< 2.0	--	--	--	--	--
	09/01/05	< 100	< 249	< 498	373.5	--	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	--	--	--	--
	07/25/05	< 50.0	< 250	**< 500**	375	--	< 0.2	< 0.2	< 0.2	< 0.5	< 1.0	--	--	< 0.5	--
	11/08/05	< 50.0	< 236	< 472	354	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	--	--
	02/24/06	< 50.0	< 278	**< 556**	417	--	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	--	--	< 1.0	--
	08/30/06	< 80.0	< 243	< 485	364	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	10/11/06	< 50.0	< 243	< 485	364	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 1.0	--
	12/13/06	< 50.0	< 236	< 472	354	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	03/08/07	< 50.0	< 250	**< 500**	375	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	06/02/08	< 50.0	< 236	< 472	354	< 236	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	08/05/08	< 50.0	< 236	< 472	354	< 236	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0	--
	11/04/08	< 50.0	< 238	< 476	357	< 238	< 0.5	< 0.5	< 0.5	< 3.0	--	--	--	< 5.0	--
	02/25/09	< 50.0	< 240	< 481	360.5	< 240	< 0.5	< 0.5	< 0.5	< 3.0	--	--	--	< 5.0	--
	08/17/09	< 50.0	< 250	< 490	370	< 250	< 0.5	< 0.5	< 0.5	< 2.0	< 1.0	--	--	< 5.0	--
	11/17/09	< 50.0	< 240	< 490	365	< 240	< 0.5	< 0.5	< 0.5	< 2.0	< 1.0	--	--	< 5.0	--
	02/22/10	< 50.0	107	**605**	**712**	< 76.2	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	05/24/10	< 50.0	255	**510**	**765**	100	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	08/18/10	< 50.0	< 77.7	< 388	232.85	< 77.7	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	11/16/10	< 50.0	< 77.7	< 388	232.85	< 77.7	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	03/01/11	< 50.0	< 77.7	< 388	232.85	< 77.7	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	06/15/11	< 50.0	< 83.3	< 417	250.15	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	08/30/11	< 50.0	< 86	< 430	258	< 86	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	12/06/11	< 50.0	< 82.5	< 412	247.25	< 82.5	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 10	--
	02/15/12	< 50.0	< 82.5	< 412	247.25	< 82.5	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	2.1	--
	05/16/12	< 50.0	< 83.3	< 417	250.15	< 83.3	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	2.9	--
	08/15/12	< 50.0	< 85.1	< 426	255.55	< 85.1	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0	--
	11/06/13	< 400	< 400	< 400	400	< 400	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	--	--	--	--
	12/13/17	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
SMW-4	03/08/95	**39,000**	**4,100**	**5,100**	**9,200**	--	**13,000**	< 250	**2,400**	**8,200**	--	--	--	--	--
	6/6/1995	**41,000**	**5,500**	**< 750**	**5,875**	--	**9,400**	44.0	**2,700**	**4,900**	--	--	--	--	--
	12/8/1995	**40,000**	**1,500**	**920**	**2,420**	--	**8,100**	57.0	**2,600**	**3,600**	--	--	--	--	--
	4/1/1996	**34,000**	**4,000**	**2,300**	**6,300**	--	**6,400**	42.0	**2,100**	**3,000**	--	--	--	--	--
	6/25/1996	**28,100**	**2,680**	**630**	**3,310**	--	**3,900**	81.4	**1,710**	**1,710**	--	--	--	--	--
	9/27/1996	**28,600**	**2,460**	**< 750**	**2,835**	--	**6,090**	< 0.5	**2,060**	**1,730**	--	--	--	--	--
	07/25/05	**14,500**	**6,490**	**1,110**	**7,600**	--	**2,120**	< 20.0	**908**	< 50	< 1.0	--	--	**312**	--
	11/02/05	**17,200**	**3,210**	< 472	**3,446**	--	**2,440**	< 50.0	**1,390**	**< 300**	**< 100**	--	--	--	--
	02/24/06	**17,800**	**3,160**	< 472	**3,396**	--	**2,730**	13.4	**1,330**	**< 60**	< 20	--	--	**442**	--
	05/11/06	**18,700**	**1,520**	< 490	**1,765**	--	**2,130**	< 25.0	**1,120**	**< 150**	**< 50**	--	--	**531**	--
	08/31/06	**8,190**	**651**	< 495	**898.5**	--	**1,800**	11.9	**1,000**	**1,350**	< 10	--	--	**366**	--
	12/13/06	**16,800**	**682**	< 472	**918**	--	**1,880**	< 20.0	**1,240**	**1,550**	**< 40**	--	--	**465**	--
	03/08/07	**16,500**	**1,010**	< 490	**1,255**	--	**2,000**	< 20.0	**1,480**	**1,820**	**40**	--	--	**991**	--
	06/13/07	**13,000**	**963**	< 495	**1,210.5**	--	**2,070**	14.4 J	**1,720**	42.6 J	< 1.0	--	--	**1,160**	--
	09/13/07	**15,000**	**834**	< 476	**1,072**	--	**2,170**	16.3	**1,800**	**2,410**	< 1.0	--	--	**598**	--
	12/18/07	**12,400**	**904**	< 472	**1,140**	--	**1,400**	4.8	640	13.7	< 1.0	--	--	**319**	--
	03/17/08	**1,630**	< 236	< 472	**776**	**540**	**78.1**	1.23	1.34	8.17	< 1.0	--	--	5.71	--
	06/03/08	**14,600**	**753**	< 472	**4,076**	**3,840**	**1,330**	6.02	**866**	15.4	< 1.0	--	--	**292**	--
	08/06/08	**10,300**	**959**	< 472	**3,516**	**3,280**	**1,210**	5.29	**782**	< 3.0	< 1.0	--	--	**454**	--
	11/03/08	**15,800**	**1,400**	< 472	**5,686**	**5,450**	**1,290**	6.95	**1,620**	24.4	< 1.0	--	--	**< 500**	--
SMW-5	07/25/05	**3,110**	**835**	**< 500**	**1,085**	--	**40.2**	0.79	41.8	21.48	< 1.0	--	--	**24.6**	--
	11/02/05	**1,950**	**1,930**	< 490	**2,175**	--	**52.9**	3.43	58	64.8	< 2.0	--	--	--	--
	02/22/06	**3,530**	< 248	< 495	371.5	--	**176**	< 2.5	31.8	18.5	< 5.0	--	--	**50**	--
	05/11/06	**3,140**	**1,110**	**< 500**	**1,360**	--	**140**	2.95	53.6	31.1	< 5.0	--	--	**49.2**	--
	08/31/06	**942**	248	< 472	484	--	**51.8**	1.73	9.01	11.3	< 1.0	--	--	**30.3**	--
	12/13/06	**3,780**	318	< 472	**554**	--	**177**	6.62	93.9	53.4	< 2.0	--	--	**60.8**	--
	03/08/07	**2,560**	< 236	< 472	354	--	**80.4**	0.84	8.81	6.35	< 1.0	--	--	**51.3**	--
	06/13/07	**2,850** c	301	< 485	**543.5**	--	**61.2**	0.88	8.21	5.43	< 1.0	--	--	**17.2**	--
	09/13/07	**1,350**	258	< 476	496	--	**35**	1.43	19.5	< 3.0	< 1.0	--	--	**15.2**	--
	12/18/07	**3,610**	264	< 472	**500**	--	**150**	8.1	140	41.2	< 1.0	--	--	**66**	--
	03/17/08	**3,450**	288	< 472	**1,346**	**1,110**	**93.9**	1.03	20.4	4.28	< 1.0	--	--	**15.7**	--
	06/03/08	**1,580**	< 236	< 472	**918**	**682**	**24.4**	0.89	12.9	5.15	< 1.0	--	--	**9.06**	--
	08/05/08	**2,050**	259	< 472	**1,177**	**941**	**18.2**	1.28	17.1	4.78	< 1.0	--	--	6.2	--
	11/03/08	**2,890**	280	< 476	**1,428**	**1,190**	**6.0**	1.03	21.5	5.59	< 1.0	--	--	8.59	--
	11/21/12	< 100	< 100	< 100	100	< 100	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 4.0	--
	11/06/13	< 400	< 400	< 400	400	< 400	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	--	--	--	--
	07/29/14	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	< 0.0099	< 1.0	--	--
	12/09/14	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	< 0.0098	< 1.0	--	--
	03/23/15	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	06/23/15	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	09/11/15	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	12/07/15	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
	12/15/16	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--	--
Reconnaissance Wells															
B1	08/29/00	80.0	< 0.2	< 0.5	--	< 0.2	**290**	**2,400**	**1,700**	**13,000**	--	--	--	**490,000**	--
B3	08/29/00	1.3	< 0.2	< 0.5	--	< 0.2	**47**	45.0	37	170	--	--	--	**< 2,000**	--
B5	08/29/00	1.1	< 0.2	< 0.5	--	< 0.2	**11**	< 1.0	6.8	10	--	--	--	--	--
B7	08/29/00	21.0	< 0.2	< 0.5	--	< 0.2	**1,000**	520	630	**2,400**	--	--	--	**< 2,000**	--
B10	08/29/00	0.92	< 0.2	< 0.5	--	< 0.2	< 1.0	< 1.0	< 1.0	2.8	--	--	--	**< 2,000**	--

Notes:
1. TPH as gasoline-range organics (GRO) analyzed by Ecology Method NWTPH-Gx.
2. TPH as diesel-range organics (DRO) and motor oil-range organics (ORO) analyzed by Ecology Method NWTPH-Dx.
3. Results are DRO+ORO calculations. A value of half the detection limit was used for non-detect values. Due to significant overlap between the two hydrocarbons, when both kerosene and diesel values are present for a sample the higher concentration and/or detection limit was used for the total extractable hydrocarbon calculation. Beginning in May 2022, results were quantified by the laboratory as hydrocarbon range of C10 to C36 (diesel and oil ranges).
4. Volatile organic Carbons (VOC) analysis by EPA Method 8020A, 8021B or 8260B/C/D.
5. The lowest relevant screening level for each constituent is highlighted in the corresponding color. Screening level selection process is summarized in Section 5.7.
Bold font indicates the reported value exceeds the corresponding (shaded) screening level (i.e., most stringent).
Shaded cell indicates the detected value exceeds the corresponding screening level (i.e., most stringent).
"<" = denotes analyte not detected at of exceeding the reporting limit listed
"--" = not analyzed, sampled, or reported
[b] TPH-Diesel and TPH-Oil did not resemble chromatogram used for quantitation.
[c] Surrogate recovery outside advisory QC limits due to matrix interference.
[d] Contaminant does not appear to be "typical" product.
[e] Surrogate recovery was not calculated because the extract was diluted beyond the ability to quantitate a recovery.
[f] Samples analyzed using Northwest Method NWTPH-Dx without acid/silica gel cleanup.
[i] The sample chromatographic pattern does not resemble the fuel standard used for quantitation.
[j] The benzene and ethylbenzene concentrations were outside the calibration range of the instrument. A new concentration was measured during a second run, but this run was outside of the holding time for the sample. The laboratory still considers this value to be more accurate than the original estimated value listed in the lab report.'
[k] Analysis was performed outside of the method specified holding time
Ecology = Washington State Department of Ecology
EDB = 1,2-dibromoethane
EDC = 1,2-dichloroethane
EPA = United States Environmental Protection Agency
MTBE = methyl tert-butyl ether
NE = not established
PCB = polychlorinated biphenyl
PQL = practical quantitation limit
TEH = total extractable hydrocarbons
TPH = total petroleum hydrocarbons
µg/L = microgram per liter

Table 4-2b. Groundwater Analytical Results - PAHs and cPAHs
Remedial Investigation Work Plan
Block 37 Site
600 - 630 Westlake Avenue North | Seattle, Washington

Monitoring Well ID	Sample Date	PAHs (µg/L)[1]									cPAHs (µg/L)							
		1-Methyl-naphthalene	Acenaphthene	Anthracene	Dibenzofuran	Fluoranthene	Fluorene	Naphthalene	Phenanthrene	Pyrene	Benzo(a) pyrene	Benzo(a) anthracene	Benzo(b) fluoranthene	Benzo(j,k) fluoranthene	Chrysene	Dibenz(a,h) anthracene	Indeno(1,2,3-cd)pyrene	TTEC[1]
Screening Levels																		
GW-1 Protect Drinking Water GW-Detail-PW		**1.5**	**480**	**2,400**	**8.0**	**640**	**320**	**160**	**NE**	**240**	**0.2**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**0.2**
GW-4 Screening Level Protect Indoor Air GW-Detail-PW		**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**8.9**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**
Laboratory PQL		**0.04**	**0.04**	**0.04**	**0.04**	**0.04**	**0.04**	**0.10**	**0.04**	**0.04**	**0.01**	**0.01**	**0.01**	**(Total Benzofluoranthenes)**	**0.01**	**0.01**	**0.01**	**0.0151**
Existing Monitoring Wells																		
B-37-1 (GEI-1)	2/16/2022	--	--	--	--	--	--	0.037 J	--	--	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	< 0.0076
	5/17/2022	--	--	--	--	--	--	0.12	--	--	**< 0.011**	**< 0.011**	**< 0.011**	**< 0.011**	**< 0.011**	**< 0.011**	**< 0.011**	< 0.0083
	8/25/2022	--	--	--	--	--	--	< 0.10	--	--	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	< 0.0076
	11/9/2022	--	--	--	--	--	--	< 0.096	--	--	< 0.0096	< 0.0096	**< 0.0096**	**< 0.0096**	< 0.0096	< 0.0096	< 0.0096	< 0.0072
B-37-2 (GEI-2)	2/18/2022	--	--	--	--	--	--	< 0.096	--	--	< 0.0096	< 0.0096	**< 0.0096**	**< 0.0096**	< 0.0096	< 0.0096	< 0.0096	< 0.0072
	5/18/2022	--	--	--	--	--	--	< 0.099	--	--	< 0.0099	< 0.0099	**< 0.0099**	**< 0.0099**	< 0.0099	< 0.0099	< 0.0099	< 0.0075
	8/24/2022	--	--	--	--	--	--	< 0.097	--	--	--	--	--	--	--	--	--	--
	11/7/2022	--	--	--	--	--	--	< 0.095	--	--	--	--	--	--	--	--	--	--
B-37-3	4/1/2021	--	--	--	--	--	--	< 1.0	--	--	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	< 0.0076
	2/16/2022	--	--	--	--	--	--	0.016 J	--	--	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	< 0.0076
	5/17/2022	--	--	--	--	--	--	< 0.10	--	--	**< 0.01**	**< 0.01**	**< 0.01**	**0.014**	**< 0.01**	**< 0.01**	**< 0.01**	0.0085
	8/25/2022	--	--	--	--	--	--	< 0.097	--	--	< 0.0097	< 0.0097	**< 0.0097**	**< 0.0097**	< 0.0097	< 0.0097	< 0.0097	< 0.0073
	11/7/2022							< 0.10	--	--	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	< 0.0076
B-37-4	4/1/2021	--	--	--	--	--	--	< 1.0	--	--	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	< 0.0076
	2/16/2022	--	--	--	--	--	--	< 0.10	--	--	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	< 0.0076
	5/17/2022	--	--	--	--	--	--	< 0.10	--	--	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	< 0.0076
	8/25/2022	--	--	--	--	--	--	< 0.099	--	--	< 0.0099	< 0.0099	**< 0.0099**	**< 0.0099**	< 0.0099	< 0.0099	< 0.0099	< 0.0075
	11/7/2022	--	--	--	--	--	--	< 0.097	--	--	< 0.0097	< 0.0097	**< 0.0097**	**< 0.0097**	< 0.0097	< 0.0097	< 0.0097	< 0.0073
B-37-5	4/1/2021	--	--	--	--	--	--	< 1.0	--	--	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	< 0.0076
	2/17/2022	--	--	--	--	--	--	< 0.10	--	--	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.0076
	5/18/2022	--	--	--	--	--	--	< 0.098	--	--	**< 0.098**	**< 0.098**	**< 0.098**	**< 0.098**	**< 0.098**	**< 0.098**	**< 0.098**	< 0.0074
	8/25/2022	--	--	--	--	--	--	< 0.096	--	--	< 0.0096	< 0.0096	**< 0.0096**	**< 0.0096**	< 0.0096	< 0.0096	< 0.0096	< 0.0072
	11/7/122							< 0.096	--	--	< 0.0096	< 0.0096	**< 0.0096**	**< 0.0096**	< 0.0096	< 0.0096	< 0.0096	< 0.0072
B-37-6	4/1/2021	--	--	--	--	--	--	< 1.0	--	--	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	< 0.0076
	2/16/2022	--	--	--	--	--	--	0.024 J	--	--	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	< 0.0076
	5/18/2022	--	--	--	--	--	--	< 0.10	--	--	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	< 0.0076
	8/25/2022	--	--	--	--	--	--	< 0.10	--	--	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	< 0.0076
	11/7/2022	--	--	--	--	--	--	< 0.096	--	--	< 0.0096	< 0.0096	**< 0.0096**	**< 0.0096**	< 0.0096	< 0.0096	< 0.0096	< 0.0072
B-37-7	5/10/2021	--	--	--	--	--	--	< 0.10	--	--	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	< 0.0076
	2/17/2022	--	--	--	--	--	--	< 0.10	--	--	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	< 0.0076
	5/18/2022	--	--	--	--	--	--	< 0.11	--	--	**< 0.011**	**< 0.011**	**< 0.011**	**< 0.011**	**< 0.011**	**< 0.011**	**< 0.011**	< 0.0083
	8/25/2022	--	--	--	--	--	--	< 0.095	--	--	< 0.0095	< 0.0095	**< 0.0095**	**< 0.0095**	< 0.0095	< 0.0095	< 0.0095	< 0.0072
	11/9/2022	--	--	--	--	--	--	< 0.095	--	--	< 0.0095	< 0.0095	**< 0.0095**	**< 0.0095**	< 0.0095	< 0.0095	< 0.0095	< 0.0072
B-37-8	5/10/2021	--	--	--	--	--	--	< 0.10	--	--	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	< 0.0076
	2/17/2022	--	--	--	--	--	--	< 0.099	--	--	< 0.0099	< 0.0099	**< 0.0099**	**< 0.0099**	< 0.0099	< 0.0099	< 0.0099	< 0.0075
	5/18/2022	--	--	--	--	--	--	< 0.10	--	--	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	< 0.0076
	8/25/2022	--	--	--	--	--	--	< 0.096	--	--	< 0.0096	< 0.0096	**< 0.0096**	**< 0.0096**	< 0.0096	< 0.0096	< 0.0096	< 0.0072
	11/9/2022	--	--	--	--	--	--	< 0.095	--	--	< 0.0095	< 0.0095	**< 0.0095**	**< 0.0095**	< 0.0095	< 0.0095	< 0.0095	< 0.0072
B-37-9	5/10/2021	--	--	--	--	--	--	0.15	--	--	< 0.0099	< 0.0099	**< 0.0099**	**< 0.0099**	< 0.0099	< 0.0099	< 0.0099	< 0.0075
	2/17/2022	--	--	--	--	--	--	0.034 J	--	--	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	< 0.0076
	5/17/2022	--	--	--	--	--	--	0.016 J	--	--	**< 0.012**	**< 0.012**	**< 0.012**	**< 0.012**	**< 0.012**	**< 0.012**	**< 0.012**	< 0.0091
	8/24/2022	--	--	--	--	--	--	< 0.097	--	--	< 0.0097	< 0.0097	**< 0.0097**	**< 0.0097**	< 0.0097	< 0.0097	< 0.0097	< 0.0073
	11/8/2022	--	--	--	--	--	--	< 0.095	--	--	< 0.0095	< 0.0095	**< 0.0095**	**< 0.0095**	< 0.0095	< 0.0095	< 0.0095	< 0.0072
FMW-131	5/18/2022	--	--	--	--	--	--	< 0.10	--	--	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	< 0.0076
	8/24/2022	--	--	--	--	--	--	< 0.097	--	--	< 0.0097	< 0.0097	**< 0.0097**	**< 0.0097**	< 0.0097	< 0.0097	< 0.0097	< 0.0073
	11/8/2022	--	--	--	--	--	--	< 0.095	--	--	< 0.0095	< 0.0095	**< 0.0095**	**< 0.0095**	< 0.0095	< 0.0095	< 0.0095	< 0.0072
FMW-139	2/16/2022	--	--	--	--	--	--	< 0.11	--	--	**< 0.011**	**< 0.011**	**< 0.011**	**< 0.011**	**< 0.011**	**< 0.011**	**< 0.011**	< 0.0083
	5/18/2022	--	--	--	--	--	--	< 0.10	--	--	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	< 0.0076
	8/24/2022	--	--	--	--	--	--	< 0.096	--	--	< 0.0096	< 0.0096	**< 0.0096**	**< 0.0096**	< 0.0096	< 0.0096	< 0.0096	< 0.0072
	11/8/2022	--	--	--	--	--	--	< 0.095	--	--	< 0.0095	< 0.0095	**< 0.0095**	**< 0.0095**	< 0.0095	< 0.0095	< 0.0095	< 0.0072
MW-45	2/16/2022	--	--	--	--	--	--	2.2	--	--	< 0.0099	< 0.0099	**< 0.0099**	**< 0.0099**	< 0.0099	< 0.0099	< 0.0099	< 0.0075
	5/17/2022	--	--	--	--	--	--	0.24	--	--	**< 0.011**	**< 0.011**	**< 0.011**	**< 0.011**	**< 0.011**	**< 0.011**	**< 0.011**	< 0.0083
	8/24/2022	--	--	--	--	--	--	< 0.095	--	--	< 0.0095	< 0.0095	**< 0.0095**	**< 0.0095**	< 0.0095	< 0.0095	< 0.0095	< 0.0072
	11/8/2022	--	--	--	--	--	--	0.18	--	--	< 0.0095	< 0.0095	**< 0.0095**	**< 0.0095**	< 0.0095	< 0.0095	< 0.0095	< 0.0072
MW-50	2/18/2022	--	--	--	--	--	--	**30**	--	--	**0.017**	**0.064**	**0.039**	**0.011**	**0.048**	**< 0.01**	**< 0.01**	0.03
	5/17/2022	--	--	--	--	--	--	2.7	--	--	0.0092 J	**0.02**	**0.017**	**0.023**	**0.012**	**< 0.012**	**< 0.012**	**0.017**
	8/25/2022	--	--	--	--	--	--	4.0	--	--	< 0.0096	**0.22**	**0.019**	**< 0.0096**	**0.017**	< 0.0096	< 0.0096	0.011
	11/8/2022	--	--	--	--	--	--	**12**	--	--	< 0.0096	**0.014**	**< 0.0096**	**< 0.0096**	**0.016**	< 0.0096	< 0.0096	0.0083
MW-54	2/16/2022	--	--	--	--	--	--	< 0.10	--	--	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	< 0.0076
	5/18/2022	--	--	--	--	--	--	< 0.11	--	--	**< 0.011**	**< 0.011**	**< 0.011**	**< 0.011**	**< 0.011**	**< 0.011**	**< 0.011**	< 0.0083
	8/24/2022	--	--	--	--	--	--	< 0.095	--	--	< 0.0095	< 0.0095	**< 0.0095**	**< 0.0095**	< 0.0095	< 0.0095	< 0.0095	< 0.0072
	11/8/2022	--	--	--	--	--	--	< 0.095	--	--	< 0.0095	< 0.0095	**< 0.0095**	**< 0.0095**	< 0.0095	< 0.0095	< 0.0095	< 0.0072
MW-209	2/17/2022	0.25	2.6	0.23	0.13	**0.36**	1.0	< 0.015	0.42	**0.4**	**< 0.011**	**0.018 J**	**< 0.024**		**< 0.014**	**< 0.015**	**< 0.015**	0.001
	8/17/2022	--	--	--	--	--	--	< 0.18	--	--	**< 0.011**	**0.037**	**< 0.034**		**0.042**	**0.016**	**0.016**	0.0145
MW-210	2/17/2022	< 0.0084	0.014 J	< 0.0078	< 0.018	< 0.018	< 0.01	< 0.016	< 0.016	< 0.014	**< 0.012**	**< 0.016**	**< 0.026**		**< 0.015**	**< 0.016**	**< 0.016**	< 0.009
	8/17/2022	--	--	--	--	--	--	< 0.18	--	--	**< 0.01**	< 0.008	**< 0.035**		< 0.0083	**< 0.016**	**< 0.016**	< 0.01
MW-211	2/16/2022	< 0.0086	< 0.011	< 0.008	< 0.018	< 0.018	< 0.01	< 0.017	< 0.016	< 0.014	**< 0.012**	**< 0.017**	**< 0.027**		**< 0.015**	**< 0.017**	**< 0.017**	< 0.009
	8/17/2022	--	--	--	--	--	--	< 0.18	--	--	**< 0.011**	< 0.0079	**< 0.034**		< 0.0082	**< 0.016**	**< 0.016**	< 0.01

Table 4-2b. Groundwater Analytical Results - PAHs and cPAHs
Remedial Investigation Work Plan
Block 37 Site
600 - 630 Westlake Avenue North | Seattle, Washington

Monitoring Well ID	Sample Date	PAHs (µg/L)[1]									cPAHs (µg/L)							
		1-Methyl-naphthalene	Acenaphthene	Anthracene	Dibenzofuran	Fluoranthene	Fluorene	Naphthalene	Phenanthrene	Pyrene	Benzo(a) pyrene	Benzo(a) anthracene	Benzo(b) fluoranthene	Benzo(j,k) fluoranthene	Chrysene	Dibenz(a,h) anthracene	Indeno(1,2,3-cd)pyrene	TTEC[1]
Screening Levels																		
GW-1 Protect Drinking Water GW-Detail-PW		**1.5**	**480**	**2,400**	**8.0**	**640**	**320**	**160**	**NE**	**240**	**0.2**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**0.2**
GW-4 Screening Level Protect Indoor Air GW-Detail-PW		**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**8.9**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**
Laboratory PQL		**0.04**	**0.04**	**0.04**	**0.04**	**0.04**	**0.04**	**0.10**	**0.04**	**0.04**	**0.01**	**0.01**	**0.01**	**(Total Benzofluoranthenes)**	**0.01**	**0.01**	**0.01**	**0.0151**
MW-212	2/17/2022	0.012 J	0.057	< 0.0078	< 0.018	< 0.018	0.015 J	< 0.016	< 0.016	< 0.014	**< 0.012**	**< 0.016**	**< 0.026**		**< 0.015**	**< 0.016**	**< 0.016**	< 0.01
	8/17/2022	--	--	--	--	--	--	< 0.18	--	--	**< 0.01**	< 0.0079	**< 0.034**		< 0.0082	**< 0.016**	**< 0.016**	< 0.01
MW-213	2/17/2022	1.1	0.028 J	< 0.0074	< 0.017	< 0.017	< 0.0095	0.35	< 0.015	< 0.013	**< 0.011**	**< 0.016**	**< 0.025**		**< 0.014**	**< 0.016**	**< 0.016**	< 0.009
	8/17/2022	--	--	--	--	--	--	< 0.18	--	--	**< 0.011**	< 0.0079	**< 0.034**		< 0.0082	**< 0.016**	**< 0.016**	< 0.01
MW-214	2/17/2022	< 0.0084	< 0.011	< 0.0078	< 0.018	< 0.018	< 0.01	< 0.016	< 0.016	< 0.014	**< 0.012**	**< 0.016**	**< 0.026**		**< 0.015**	**< 0.016**	**< 0.016**	< 0.009
	8/17/2022	--	--	--	--	--	--	< 0.18	--	--	**< 0.011**	< 0.0078	**< 0.034**		< 0.008	**< 0.016**	**< 0.016**	< 0.009
MW-215	2/17/2022	< 0.0079	< 0.010	< 0.0073	< 0.016	< 0.016	< 0.0093	< 0.015	< 0.015	< 0.013	**< 0.011**	**< 0.015**	**< 0.024**		**< 0.014**	**< 0.015**	**< 0.015**	< 0.009
	8/17/2022	--	--	--	--	--	--	--	--	--	**< 0.011**	< 0.0081	**< 0.035**		< 0.0084	**< 0.016**	**< 0.017**	< 0.01
MW-216	2/16/2022	< 0.0088	< 0.012	< 0.0081	< 0.018	< 0.018	< 0.01	< 0.017	< 0.016	< 0.014	**< 0.013**	**< 0.017**	**< 0.027**		**< 0.016**	**< 0.017**	**< 0.017**	< 0.009
	8/16/2022	--	--	--	--	--	--	< 0.18	--	--	**< 0.011**	< 0.0079	**< 0.034**		< 0.0081	**< 0.016**	**< 0.016**	< 0.01
MW-217	2/16/2022	0.017 J	0.2	< 0.0081	< 0.018	< 0.018	0.047	0.24	< 0.016	< 0.014	**< 0.012**	**< 0.017**	**< 0.027**		**< 0.015**	**< 0.017**	**< 0.017**	< 0.009
	8/16/2022	--	--	--	--	--	--	< 0.18	--	--	**< 0.011**	< 0.0083	**< 0.036**		< 0.0085	**< 0.017**	**< 0.017**	< 0.01
MW-218	2/16/2022	0.016 J	0.014 J	< 0.0076	< 0.017	< 0.017	< 0.0097	< 0.016	< 0.015	< 0.013	**< 0.012**	**< 0.016**	**< 0.025**		**< 0.015**	**< 0.016**	**< 0.016**	< 0.009
	8/16/2022	--	--	--	--	--	--	< 0.18	--	--	**< 0.012**	< 0.0086	**< 0.037**		< 0.0088	**< 0.017**	**< 0.017**	< 0.01
MWR-3	2/17/2022	--	--	--	--	--	--	< 0.098	--	--	< 0.0098	< 0.0098	**< 0.0098**	**< 0.0098**	< 0.0098	< 0.0098	< 0.0098	< 0.0074
	5/18/2022	--	--	--	--	--	--	< 0.10	--	--	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	< 0.0076
	8/24/2022	--	--	--	--	--	--	< 0.096	--	--	< 0.0096	< 0.0096	**< 0.0096**	**< 0.0096**	< 0.0096	< 0.0096	< 0.0096	< 0.0072
	11/8/2022	--	--	--	--	--	--	< 0.096	--	--	< 0.0095	< 0.0095	**< 0.0095**	**< 0.0095**	< 0.0095	< 0.0095	< 0.0095	< 0.0072
MWR-6	2/17/2022	--	--	--	--	--	--	< 0.10	--	--	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	< 0.0076
	5/17/2022	--	--	--	--	--	--	< 0.11	--	--	**< 0.011**	**< 0.011**	**< 0.011**	**< 0.011**	**< 0.011**	**< 0.011**	**< 0.011**	< 0.0083
	8/24/2022	--	--	--	--	--	--	< 0.096	--	--	< 0.0096	< 0.0096	**< 0.0096**	**< 0.0096**	< 0.0096	< 0.0096	< 0.0096	< 0.0072
	11/8/2022	--	--	--	--	--	--	< 0.096	--	--	< 0.0096	< 0.0096	**< 0.0096**	**< 0.0096**	< 0.0096	< 0.0096	< 0.0096	< 0.0072
PH-1	2/17/2022	--	--	--	--	--	--	0.024 J	--	--	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	< 0.0076
	5/17/2022	--	--	--	--	--	--	< 0.10	--	--	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	< 0.0076
	8/25/2022	--	--	--	--	--	--	< 0.097	--	--	< 0.0097	< 0.0097	**< 0.0097**	**< 0.0097**	< 0.0097	< 0.0097	< 0.0097	< 0.0073
	11/9/2022	--	--	--	--	--	--	< 0.095	--	--	< 0.0095	< 0.0095	**< 0.0095**	**< 0.0095**	< 0.0095	< 0.0095	< 0.0095	< 0.0072
PH-2 /AMW-1	2/17/2022	--	--	--	--	--	--	0.14	--	--	< 0.0096	< 0.0096	**< 0.0096**	**< 0.0096**	< 0.0096	< 0.0096	< 0.0096	< 0.0072
	5/17/2022	--	--	--	--	--	--	0.31	--	--	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	< 0.0076
	8/25/2022	--	--	--	--	--	--	< 0.099	--	--	< 0.0099	< 0.0099	**< 0.0099**	**< 0.0099**	< 0.0099	< 0.0099	< 0.0099	< 0.0075
	11/9/2022	--	--	--	--	--	--	< 0.096	--	--	< 0.0096	< 0.0096	**< 0.0096**	**< 0.0096**	< 0.0096	< 0.0096	< 0.0096	< 0.0072
PH-3	2/17/2022	--	--	--	--	--	--	< 0.096	--	--	< 0.0096	< 0.0096	**< 0.0096**	**< 0.0096**	< 0.0096	< 0.0096	< 0.0096	< 0.0072
	5/18/2022	--	--	--	--	--	--	< 0.10	--	--	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	**< 0.01**	< 0.0076
	8/25/2022	--	--	--	--	--	--	< 0.096	--	--	< 0.0096	< 0.0096	**< 0.0096**	**< 0.0096**	< 0.0096	< 0.0096	< 0.0096	< 0.0072
	11/8/2022	--	--	--	--	--	--	< 0.095	--	--	< 0.0095	< 0.0095	**< 0.0095**	**< 0.0095**	< 0.0095	< 0.0095	< 0.0095	< 0.0072
Reconnaissance Wells																		
B1	8/29/2000	--	--	--	--	--	--	**490**	--	--	--	--	--	--	--	--	--	--
B3	8/29/2000	--	--	--	--	--	--	< 2.0	--	--	--	--	--	--	--	--	--	--
B7	8/29/2000	--	--	--	--	--	--	< 2.0	--	--	--	--	--	--	--	--	--	--
B10	8/29/2000	--	--	--	--	--	--	< 2.0	--	--	--	--	--	--	--	--	--	--

Notes:
1. cPAHs are subject to WAC-173-340 Toxicity Equivalent Concentration calculations. The MTCA Method A cleanup level for TTEC is based on benzo(a)pyrene.
2. The lowest relevant screening level for each constituent is highlighted in the corresponding color. Screening level selection process is summarized in Section 5.7.
Naphthalene results are also included in Table 4-2a
Bold font indicates the reported value exceeds the corresponding (shaded) screening level (i.e., most stringent).
Shaded cell indicates the detected value exceeds the corresponding screening level (i.e., most stringent).
"<" = denotes analyte not detected at of exceeding the reporting limit listed
"--" = not analyzed, sampled, or reported
cPAH = carcinogenic polycyclic aromatic hydrocarbon
Ecology = Washington State Department of Ecology
EPA = United States Environmental Protection Agency
J = Result is an estimate.
NE = not established
PQL = practical quantitation limit
TTEC = total toxicity equivalent concentration
WAC = Washington Administrative Code
µg/L = micrograms per liter

Table 4-2c. Groundwater Analytical Results - CVOCs
Remedial Investigation Work Plan
Block 37 Site
600 - 630 Westlake Avenue North | Seattle, Washington

Monitoring Well ID	Sample Date	cVOCs (µg/L) PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride
Screening Levels [1]						
GW-1 Protect Drinking Water GW-Detail-PW		**5.0**	**4.0**	**16**	**100**	**0.29**
GW-4 Screening Level Protect Indoor Air GW-Detail PW		**25**	**1.4**	**180**	**77**	**0.33**
Laboratory PQL		**1.0**	**1.0**	**1.0**	**1.0**	**0.2**
Existing Monitoring Wells						
B-37-2	03/24/17	< 0.199	< 0.153	2.25	< 0.152	**6.94**
	06/23/17	< 0.199	< 0.153	**16.3**	< 0.152	**127**
	12/29/18	< 0.4	< 0.4	6.7	< 0.4	**60**
	04/22/19	< 0.199	< 0.153	11.5	< 0.152	**57.7** J
	07/16/19	< 0.199	< 0.153	1.37	< 0.152	**46.4**
	10/12/19	< 0.199	< 0.153	**20.1**	< 0.152	**88.2**
	11/11/19	< 1.0	**< 1.0**	**18**	< 1.0	**92**
	01/14/20	< 0.2	< 0.2	2.0	< 0.2	**36**
	01/22/20	< 0.199	0.192 J	0.31 J	< 0.152	< 0.118
	02/17/20	< 0.2	< 0.2	5.6	< 0.2	**34**
	03/25/20	< 0.4	< 0.4	4.3	< 0.4	**52**
	04/27/20	< 0.4	< 0.4	3.2	< 0.4	**50**
	05/19/20	< 0.4	< 0.4	2.7	< 0.4	**55**
	06/29/20	< 0.2	< 0.2	1.6	< 0.2	**33**
	07/29/20	< 0.2	< 0.2	1.3	< 0.2	**46**
	08/26/20	< 0.2	< 0.2	< 0.2	< 0.2	**< 0.2**
	09/17/20	< 0.4	< 0.4	1.0	< 0.4	**48**
	12/04/20	< 0.2	< 0.2	0.52	< 0.2	**21**
FMW-131	09/02/16	< 0.2	< 0.2	**41**	< 0.2	**1.7**
	03/24/17	< 0.199	< 0.153	**45.6**	< 0.152	**0.249** J
	06/23/17	< 0.199	< 0.153	3.61	< 0.152	**0.264** J
	12/18/17	< 0.2	< 0.2	0.61	< 0.2	**< 0.2**
	04/22/19	< 0.199	< 0.153	10.8	< 0.152	0.195 J
	10/21/19	< 0.199	< 0.153	10.5	< 0.152	0.14 J
	01/22/19	< 0.199	< 0.153	15.1	< 0.152	0.162 J
	08/26/19	< 0.2	< 0.2	6.5	< 0.2	**< 0.2**
	12/04/20	< 0.2	< 0.2	3.5	< 0.2	**< 0.2**
FMW-139	04/19/19	< 0.2	< 0.2	< 0.2	< 0.2	**< 0.2**
	05/06/19	< 0.2	< 0.2	< 0.2	< 0.2	**< 0.2**
	07/09/19	< 0.2	< 0.2	< 0.2	< 0.2	**< 0.2**
	09/20/19	< 0.2	< 0.2	< 0.2	< 0.2	**< 0.2**
MW-45	03/26/19	< 0.2	< 0.2	< 0.2	< 0.2	**< 0.2**
	07/08/19	< 0.2	< 0.2	< 0.2	< 0.2	**< 0.2**
	09/20/19	< 0.2	< 0.2	< 0.2	< 0.2	**< 0.2**
MW-50	03/26/19	< 0.2	< 0.2	< 0.2	< 0.2	**< 0.2**
	05/06/19	< 0.2	< 0.2	< 0.2	< 0.2	**< 0.2**
	07/08/19	< 0.2	< 0.2	< 0.2	< 0.2	**< 0.2**
	09/20/19	< 0.2	< 0.2	< 0.2	< 0.2	**< 0.2**
MW-54	03/28/19	< 0.2	< 0.2	< 0.2	< 0.2	**< 0.2**
	05/06/19	< 0.2	< 0.2	< 0.2	< 0.2	**< 0.2**
	07/09/19	< 0.2	< 0.2	< 0.2	< 0.2	**< 0.2**
	09/20/19	< 0.2	< 0.2	< 0.2	< 0.2	**< 0.2**
MW-209	06/04/19	< 0.17	< 0.15	< 0.15	< 0.24	< 0.092
MW-210	06/04/19	< 0.17	< 0.15	< 0.15	< 0.24	< 0.092
MW-213	06/04/19	< 0.17	< 0.15	< 0.15	< 0.24	< 0.092
MW-214	06/04/19	< 0.17	< 0.15	< 0.15	< 0.24	< 0.092
MWR-5	03/26/19	< 2.0	**< 2.0**	< 2.0	< 2.0	**< 2.0**
	05/06/19	< 4.0	**< 4.0**	< 4.0	< 4.0	**< 4.0**
	07/09/19	< 2.0	**< 2.0**	< 2.0	< 2.0	**< 2.0**
	09/20/19	< 1.0	**< 1.0**	< 1.0	< 1.0	**< 1.0**
MWR-6	03/26/19	< 0.2	< 0.2	< 0.2	< 0.2	**< 0.2**
	05/06/19	< 0.2	< 0.2	< 0.2	< 0.2	**< 0.2**
	07/08/19	< 0.2	< 0.2	< 0.2	< 0.2	**< 0.2**
	09/20/19	< 0.2	< 0.2	< 0.2	< 0.2	**< 0.2**
Reconnaissance Wells						
B1	08/29/00	**210**	**< 1.0**	< 5.0	< 5.0	**< 5.0**
B3	08/29/00	< 1.0	**< 1.0**	< 5.0	< 5.0	**< 5.0**
B5	08/29/00	< 1.0	**< 1.0**	< 5.0	< 5.0	**< 5.0**
B7	08/29/00	< 1.0	**< 1.0**	< 5.0	< 5.0	**< 5.0**
B10	08/29/00	< 1.0	**< 1.0**	< 5.0	< 5.0	**< 5.0**

Notes:
1. The lowest relevant screening level is highlighted in the corresponding color. Screening level selection process is summarized in Section 5.7.
Bold font indicates the reported value exceeds the corresponding (shaded) screening level (i.e., most stringent).
Shaded cell indicates the detected value exceeds the corresponding screening level (i.e., most stringent).
"<" = denotes analyte not detected at or exceeding the reporting limit listed
"--" = not analyzed, sampled, or reported
cVOC = Chlorinated Volatile Organic Compounds
DCE = Dichloroethylene
PCE = Tetrachloroethylene
TCE = Trichloroethylene
µg/L = microgram per liter

Table 4-2d. Groundwater Analytical Results - Metals
Remedial Investigation Work Plan
Block 37 Site
600 - 630 Westlake Avenue North | Seattle, Washington

Monitoring Well ID	Sample Date	Metals (µg/L)											
		Arsenic (Total)	Arsenic (Dissolved)	Barium (Total)	Barium (Dissolved)	Cadmium	Chromium III (Total)[3]	Chromium III (Dissolved)[3]	Lead (Total)[1]	Lead (Dissolved)[1]	Selenium	Silver	Mercury
Screening Levels[2]													
GW-1 Protect Drinking Water GW-Detail-PW		**0.58**	**0.58**	**2,000**	**2,000**	**5**	**100**	**100**	**15**	**15**	**50**	**80**	**2**
GW-4 Screening Level Protect Indoor Air GW-Detail-PW		**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**1.1**
GW-5 Natural Background		**8**	**8**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**
Laboratory PQL		**3.3**	**3.3**	**28**	**28**	**4.4**	**11**	**11**	**0.5**	**0.5**	**20**	**10**	**0.5**
Existing Monitoring Wells													
B-37-1 (GEI-1)	02/16/22	< 3.0	< 3.0	120	99	--	< 10	< 10	< 1.1	< 1.0	--	--	--
	05/17/22	< 3.0	< 3.0	140	2	--	< 10	< 10	< 1.1	< 1.0	--	--	--
	08/25/22	< 3.0	< 3.0	130	130	--	< 10	< 10	< 1.1	< 1.0	--	--	--
	11/09/22	< 3.0	< 3.0	130	120	--	< 10	< 10	< 1.1	< 1.0	--	--	--
B-37-2 (GEI-2)	02/18/22	3.5	--	60	--	--	< 10	--	< 1.1	--	--	--	--
B-37-3	04/01/21	**9.6**	< 3.0	--	--	**< 4.4**	< 11	--	1.5	--	--	--	**< 0.5**
	02/16/22	**9.6**	**9.5**	120	120	--	< 10	< 10	< 1.1	< 1.0	--	--	--
	05/17/22	5.3	< 3.0	110	68	--	< 10	< 10	< 1.1	< 1.0	--	--	--
	08/25/22	5.2	5.5	110	110	--	< 10	< 10	< 1.1	< 1.0	--	--	--
	11/07/22	7.5	**8.4**	110	120	--	< 10	< 10	< 1.1	< 1.0	--	--	--
B-37-4	04/01/21	< 3.3	--	--	--	**< 4.4**	< 11	--	1.8	--	--	--	**< 0.5**
	02/16/22	< 3.0	< 3.0	110	110	--	< 10	< 10	< 1.1	< 1.0	--	--	--
	05/17/22	< 3.0	< 3.0	120	83	--	< 10	< 10	< 1.1	< 1.0	--	--	--
	08/25/22	< 3.0	< 3.0	110	110	--	< 10	< 10	< 1.1	< 1.0	--	--	--
	11/07/22	< 3.0	< 3.0	120	110	--	< 10	< 10	< 1.1	< 1.0	--	--	--
B-37-5	04/01/21	6.0	< 3.0	--	--	**< 4.4**	< 11	--	1.2	--	--	--	**< 0.5**
	02/17/22	**10**	--	72	--	--	< 10	--	< 1.1	--	--	--	--
	05/18/22	**8.9**	5.1	55	38	--	< 10	< 10	< 1.1	< 1.0	--	--	--
	08/25/22	**11**	**11**	90	78	--	< 10	< 10	< 1.1	< 1.0			
	11/07/22	**12**	**12**	72	65	--	< 10	< 10	< 1.1	< 1.0			
B-37-6	04/01/21	< 3.3	--	--	--	**< 4.4**	< 11	--	< 1.1	--	--	--	**< 0.5**
	02/16/22	< 3.0	< 3.0	91	85	--	< 10	< 10	< 1.1	< 1.0	--	--	--
	05/18/22	< 3.0	< 3.0	74	61	--	< 10	< 10	< 1.1	< 1.0	--	--	--
	08/25/22	< 3.0	< 3.0	77	76	--	< 10	< 10	< 1.1	< 1.0	--	--	--
	11/07/22	< 3.0	< 3.0	86	83	--	< 10	< 10	< 1.1	< 1.0	--	--	--
B-37-7	05/10/21	< 3.3	--	--	--	**< 4.4**	< 11	--	< 1.1	--	--	--	**< 0.5**
	02/17/22	< 3.0	--	160	--	--	< 10	--	< 1.1	--	--	--	--
	05/18/22	< 3.0	< 3.0	150	99	--	< 10	< 10	< 1.1	< 1.0	--	--	--
	08/25/22	< 3.0	< 3.0	140	140	--	< 10	< 10	< 1.1	< 1.0	--	--	--
	11/09/22	< 3.0	< 3.0	130	140	--	< 10	< 10	< 1.1	< 1.0	--	--	--
B-37-8	05/10/21	< 3.3	--	--	--	**< 4.4**	< 11	--	< 1.1	--	--	--	**< 0.5**
	02/17/22	**9.1**	--	150	--	--	19	--	6.6	--	--	--	--
	05/18/22	7.2	5.2	110	85	--	< 10	< 10	< 1.1	< 1.0	--	--	--
	08/25/22	5.6	5.4	120	94	--	< 10	< 10	< 1.1	< 1.0	--	--	--
	11/09/22	7.0	5.2	100	85	--	< 10	< 10	< 1.1	< 1.0	--	--	--
B-37-9	05/10/21	**21**	**18**	--	--	**< 4.4**	< 11	--	< 1.1	--	--	--	**< 0.5**
	02/17/22	**16**	--	150	--	--	< 10	--	< 1.1	--	--	--	--
	05/17/22	**12**	7.7	120	83	--	< 10	< 10	< 1.1	< 1.0	--	--	--
	08/24/22	**10**	**11.0**	93	90	--	< 10	< 10	< 1.1	< 1.0	--	--	--
	11/08/22	**16**	**12**	130	98	--	< 10	< 10	< 1.1	< 1.0	--	--	--
FMW-131	05/18/22	**140**	**78**	< 28	< 25	--	< 10	< 10	< 1.1	< 1.0	--	--	--
	08/24/22	**53**	**53**	< 28	< 25	--	< 10	< 10	< 1.1	< 1.0	--	--	--
	11/08/22	**84**	**61**	< 28	< 25	--	< 10	< 10	1.2	< 1.0	--	--	--
FMW-139	02/16/22	< 3.0	< 3.0	72	55	--	< 10	< 10	< 1.1	< 1.0	--	--	--
	05/18/22	< 3.0	< 3.0	64	56	--	< 10	< 10	< 1.1	< 1.0	--	--	--
	08/24/22	< 3.0	< 3.0	67	66	--	< 10	< 10	< 1.1	< 1.0	--	--	--
	11/08/22	< 3.0	< 3.0	72	79	--	< 10	< 10	< 1.1	< 1.0	--	--	--
MW-45	11/04/91	--	--	--	--	--	--	--	--	0.005	--	--	--
	07/25/05	--	--	--	--	--	--	--	7.5	--	--	--	--
	02/21/06	--	--	--	--	--	--	--	3.8	1.3	--	--	--
	05/08/06	--	--	--	--	--	--	--	1.7	< 1.0	--	--	--
	08/30/06	--	--	--	--	--	--	--	< 5.0	< 1.0	--	--	--
	12/12/06	--	--	--	--	--	--	--	**278**	10.8	--	--	--
	03/06/07	--	--	--	--	--	--	--	**53.6**	< 1.0	--	--	--
	06/15/07	--	--	--	--	--	--	--	**330**	1.8	--	--	--
	09/13/07	--	--	--	--	--	--	--	**246**	6.9	--	--	--
	03/18/08	--	--	--	--	--	--	--	< 1.0	< 1.0	--	--	--
	08/05/08	--	--	--	--	--	--	--	1.4	< 1.0	--	--	--
	02/22/09	--	--	--	--	--	--	--	< 1.0	< 1.0	--	--	--
	05/17/09	--	--	--	--	--	--	--	< 1.0	< 1.0	--	--	--
	08/16/09	--	--	--	--	--	--	--	< 5.0	< 5.0	--	--	--
	11/15/09	--	--	--	--	--	--	--	9.2	< 1.0	--	--	--
	02/21/10	--	--	--	--	--	--	--	4.7	< 0.1	--	--	--
	05/23/10	--	--	--	--	--	--	--	3.1	< 0.1	--	--	--
	08/16/10	--	--	--	--	--	--	--	7.2	0.4	--	--	--
	11/16/10	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	02/28/11	--	--	--	--	--	--	--	< 10	--	--	--	--
	06/14/11	--	--	--	--	--	--	--	1.8	< 0.1	--	--	--
	08/29/11	--	--	--	--	--	--	--	0.4	< 0.1	--	--	--
	12/05/11	--	--	--	--	--	--	--	2.1	0.3	--	--	--
	02/15/12	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	05/15/12	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	08/14/12	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	11/06/13	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	12/08/14	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	12/13/17	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	01/03/19	--	--	--	--	--	--	--	< 2.0	2.1 J	--	--	--
	02/16/22	< 3.0	< 3.0	55	51	--	< 10	< 10	< 1.1	< 1.0	--	--	--
	05/17/22	< 3.0	< 3.0	53	43	--	< 10	< 10	< 1.1	< 1.0	--	--	--
	08/24/22	< 3.0	< 3.0	62	40	--	< 10	< 10	< 1.1	< 1.0	--	--	--
	11/08/22	< 3.0	< 3.0	69	63	--	< 10	< 10	< 1.1	< 1.0	--	--	--
MW-50	07/25/05	--	--	--	--	--	--	--	7.04	--	--	--	--
	02/21/06	--	--	--	--	--	--	--	7.05	1.33	--	--	--
	05/08/06	--	--	--	--	--	--	--	9.48	< 1.0	--	--	--
	08/29/06	--	--	--	--	--	--	--	< 5.0	< 1.0	--	--	--
	12/12/06	--	--	--	--	--	--	--	**17.4**	1.62	--	--	--
	03/08/07	--	--	--	--	--	--	--	**35.9**	< 1.0	--	--	--
	06/15/07	--	--	--	--	--	--	--	**40.5**	< 1.0	--	--	--
	09/13/07	--	--	--	--	--	--	--	10.3	< 1.0	--	--	--
	12/18/07	--	--	--	--	--	--	--	6.9	2.94	--	--	--
	03/18/08	--	--	--	--	--	--	--	< 1.0	< 1.0	--	--	--
	08/05/08	--	--	--	--	--	--	--	4.0	< 1.0	--	--	--
	11/03/08	--	--	--	--	--	--	--	< 1.0	< 1.0	--	--	--
	11/15/09	--	--	--	--	--	--	--	1.1	< 1.0	--	--	--
	02/21/10	--	--	--	--	--	--	--	0.61	< 0.1	--	--	--
	05/23/10	--	--	--	--	--	--	--	0.92	< 0.1	--	--	--
	08/16/10	--	--	--	--	--	--	--	0.63	0.18	--	--	--
	11/16/10	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	02/28/11	--	--	--	--	--	--	--	< 10	--	--	--	--
	06/14/11	--	--	--	--	--	--	--	0.52	< 0.10	--	--	--
	08/29/11	--	--	--	--	--	--	--	0.19	0.12	--	--	--
	12/05/11	--	--	--	--	--	--	--	0.53	< 0.10	--	--	--
	02/15/12	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	05/15/12	--	--	--	--	--	--	--	< 10	< 10	--	--	--

Table 4-2d. Groundwater Analytical Results - Metals
Remedial Investigation Work Plan
Block 37 Site
600 - 630 Westlake Avenue North | Seattle, Washington

Monitoring Well ID	Sample Date	Metals (µg/L)											
		Arsenic (Total)	Arsenic (Dissolved)	Barium (Total)	Barium (Dissolved)	Cadmium	Chromium III (Total)[3]	Chromium III (Dissolved)[3]	Lead (Total)[1]	Lead (Dissolved)[1]	Selenium	Silver	Mercury
Screening Levels[2]													
GW-1 Protect Drinking Water GW-Detail-PW		**0.58**	**0.58**	**2,000**	**2,000**	**5**	**100**	**100**	**15**	**15**	**50**	**80**	**2**
GW-4 Screening Level Protect Indoor Air GW-Detail-PW		**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**1.1**
GW-5 Natural Background		**8**	**8**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**
Laboratory PQL		**3.3**	**3.3**	**28**	**28**	**4.4**	**11**	**11**	**0.5**	**0.5**	**20**	**10**	**0.5**
MW-50 Cont'd	08/14/12	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	11/06/13	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	06/04/19	--	--	--	--	--	--	--	< 2.0	< 2.0	--	--	--
	02/18/22	**16**	--	120	--	--	< 10	--	< 1.1	--	--	--	--
	05/17/22	**20**	**11**	69	35	--	< 10	< 10	< 1.1	< 1.0	--	--	--
	08/25/22	**19**	**19**	81	80	--	< 10	< 10	< 1.1	< 1.0	--	--	--
	11/09/22	**21**	**19**	66	65	--	< 10	< 10	< 1.1	< 1.0	--	--	--
MW-54	02/23/06	--	--	--	--	--	--	--	1.04	--	--	--	--
	05/08/06	--	--	--	--	--	--	--	1.41	--	--	--	--
	08/29/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	12/12/06	--	--	--	--	--	--	--	2.69	--	--	--	--
	03/06/07	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	06/15/07	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	09/13/07	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	12/18/07	--	--	--	--	--	--	--	1.13	--	--	--	--
	03/18/08	--	--	--	--	--	--	--	< 5.0	< 1.0	--	--	--
	08/05/08	--	--	--	--	--	--	--	2.37	< 1.0	--	--	--
	11/03/08	--	--	--	--	--	--	--	8.64	< 1.0	--	--	--
	08/16/09	--	--	--	--	--	--	--	< 5.0	< 5.0	--	--	--
	11/15/09	--	--	--	--	--	--	--	1.8	< 1.0	--	--	--
	02/21/10	--	--	--	--	--	--	--	1.1	0.24	--	--	--
	05/23/10	--	--	--	--	--	--	--	4.4	0.12	--	--	--
	08/16/10	--	--	--	--	--	--	--	5.7	0.21	--	--	--
	11/17/10	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	02/28/11	--	--	--	--	--	--	--	< 10	--	--	--	--
	06/14/11	--	--	--	--	--	--	--	1.2	< 0.1	--	--	--
	08/29/11	--	--	--	--	--	--	--	0.58	< 0.1	--	--	--
	12/05/11	--	--	--	--	--	--	--	0.7	0.18	--	--	--
	02/16/12	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	05/15/12	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	08/14/12	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	11/06/13	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	02/16/22	4.1	3.6	69	66	--	< 10	< 10	< 1.1	< 1.0	--	--	--
	05/18/22	< 3.0	< 3.0	56	48	--	< 10	< 10	< 1.1	< 1.0	--	--	--
	08/24/22	< 3.0	< 3.0	55	54	--	< 10	< 10	< 1.1	< 1.0	--	--	--
	11/08/22	< 3.0	< 3.0	74	67	--	< 10	< 10	< 1.1	< 1.0	--	--	--
MW-209	11/05/08	--	--	--	--	--	--	--	< 1.0	< 1.0	--	--	--
	02/22/10	--	--	--	--	--	--	--	1.3	< 0.1	--	--	--
	05/24/10	--	--	--	--	--	--	--	1.1	< 0.1	--	--	--
	08/18/10	--	--	--	--	--	--	--	1.3	< 0.1	--	--	--
	11/16/10	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	03/01/11	--	--	--	--	--	--	--	< 10	--	--	--	--
	06/15/11	--	--	--	--	--	--	--	0.19	< 0.10	--	--	--
	08/30/11	--	--	--	--	--	--	--	0.35	0.17	--	--	--
	12/06/11	--	--	--	--	--	--	--	0.12	0.18	--	--	--
	02/15/12	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	05/16/12	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	08/15/12	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	11/21/12	--	--	--	--	--	--	--	< 3.0	< 3.0	--	--	--
	11/06/13	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	07/29/14	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	12/09/14	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	06/04/19	--	--	--	--	--	--	--	2.4 J	< 2.0	--	--	--
	12/19/19	--	--	--	--	--	--	--	< 2.0	< 2.0	--	--	--
	02/17/22	1.5	0.9	86	84.7	--	0.53	0.5 J	0.042 J	0.15	--	--	--
	08/17/22	1.4	1.4	113	111	--	0.92	0.86	< 0.063 J	< 0.069 J	--	--	--
	11/30/22	2.9	3.1	48	52.1	--	< 0.36	< 0.36	0.092 J	< 0.056	--	--	--
MW-210	11/05/08	--	--	--	--	--	--	--	< 1.0	< 1.0	--	--	--
	02/25/09	--	--	--	--	--	--	--	< 1.0	< 1.0	--	--	--
	05/17/09	--	--	--	--	--	--	--	< 1.0	< 1.0	--	--	--
	08/17/09	--	--	--	--	--	--	--	< 5.0	< 5.0	--	--	--
	11/17/09	--	--	--	--	--	--	--	1.3	< 1.0	--	--	--
	02/22/10	--	--	--	--	--	--	--	0.31	0.21	--	--	--
	05/24/10	--	--	--	--	--	--	--	0.45	< 0.1	--	--	--
	08/18/10	--	--	--	--	--	--	--	0.36	< 0.1	--	--	--
	11/16/10	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	03/01/11	--	--	--	--	--	--	--	< 10	--	--	--	--
	06/15/11	--	--	--	--	--	--	--	0.27	< 0.1	--	--	--
	08/30/11	--	--	--	--	--	--	--	< 0.1	< 0.1	--	--	--
	12/06/11	--	--	--	--	--	--	--	< 0.1	0.22	--	--	--
	02/15/12	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	05/16/12	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	08/15/12	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	11/21/12	--	--	--	--	--	--	--	< 3.0	< 3.0	--	--	--
	11/06/13	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	07/29/14	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	12/09/14	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	06/04/19	--	--	--	--	--	--	--	< 2.0	< 2.0	--	--	--
	02/17/22	0.41 J	0.39 J	116	110	--	< 0.67	< 0.59	< 0.058 J	< 0.045 J	--	--	--
	08/17/22	0.76	1	93.4	85.2	--	< 1.2 J	< 1.3 J	< 0.056	< 0.056	--	--	--
	11/30/22	1.4	0.93	103	98.5	--	< 0.36	< 0.36	< 0.056	< 0.056	--	--	--
MW-211	11/05/08	--	--	--	--	--	--	--	< 1.0	< 1.0	--	--	--
	02/25/09	--	--	--	--	--	--	--	< 1.0	< 1.0	--	--	--
	05/17/09	--	--	--	--	--	--	--	4.72	< 1.0	--	--	--
	08/17/09	--	--	--	--	--	--	--	< 5.0	< 5.0	--	--	--
	11/17/09	--	--	--	--	--	--	--	< 1.0	< 1.0	--	--	--
	02/22/10	--	--	--	--	--	--	--	0.42	< 0.1	--	--	--
	05/24/10	--	--	--	--	--	--	--	0.46	0.29	--	--	--
	08/18/10	--	--	--	--	--	--	--	0.34	0.13	--	--	--
	11/15/10	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	03/01/11	--	--	--	--	--	--	--	< 10	--	--	--	--
	06/15/11	--	--	--	--	--	--	--	0.12	< 0.1	--	--	--
	08/30/11	--	--	--	--	--	--	--	< 0.1	< 0.1	--	--	--
	12/06/11	--	--	--	--	--	--	--	< 0.1	0.15	--	--	--
	02/15/12	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	05/16/12	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	08/15/12	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	11/06/13	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	12/13/17	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	01/04/19	--	--	--	--	--	--	--	< 2.0	< 2.0	--	--	--
	12/19/19	--	--	--	--	--	--	--	< 2.0	2.0 J	--	--	--
	02/16/22	0.24 J	0.2 J	62	62.5	--	0.6	0.63	0.031 J	< 0.028	--	--	--
	08/17/22	0.27 J	0.21 J	68	65.5	--	1.10 J	0.97 J	< 0.056	< 0.056	--	--	--
	11/30/22	2.0	2.1	63.9	63.4	--	< 0.36	< 0.36	< 0.056	< 0.056	--	--	--
MW-212	09/30/14	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	12/09/14	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	02/17/22	7.8	5.5	161	156	--	1	0.86	0.084 J	0.11	--	--	--
	08/17/22	0.86	0.7	165	163	--	1 J	1 J	< 0.056	< 0.056	--	--	--
	11/30/22	2.7	1.6	173	171	--	< 0.36	< 0.36	< 0.056	< 0.056	--	--	--

Table 4-2d. Groundwater Analytical Results - Metals
Remedial Investigation Work Plan
Block 37 Site
600 - 630 Westlake Avenue North | Seattle, Washington

Monitoring Well ID	Sample Date	Metals (µg/L)											
		Arsenic (Total)	Arsenic (Dissolved)	Barium (Total)	Barium (Dissolved)	Cadmium	Chromium III (Total)[3]	Chromium III (Dissolved)[3]	Lead (Total)[1]	Lead (Dissolved)[1]	Selenium	Silver	Mercury
Screening Levels[2]													
GW-1 Protect Drinking Water GW-Detail-PW		**0.58**	**0.58**	**2,000**	**2,000**	**5**	**100**	**100**	**15**	**15**	**50**	**80**	**2**
GW-4 Screening Level Protect Indoor Air GW-Detail-PW		**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**1.1**
GW-5 Natural Background		**8**	**8**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**
Laboratory PQL		**3.3**	**3.3**	**28**	**28**	**4.4**	**11**	**11**	**0.5**	**0.5**	**20**	**10**	**0.5**
MW-213	10/06/14	--	--	--	--	--	--	--	11	< 10	--	--	--
	12/08/14	--	--	--	--	--	--	--	12.8	< 10	--	--	--
	12/13/17	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	06/13/18	--	--	--	--	--	--	--	2.8 J	2.6 J	--	--	--
	01/04/19	--	--	--	--	--	--	--	< 2.0	< 2.0	--	--	--
	06/04/19	--	--	--	--	--	--	--	2.8 J	< 2.0	--	--	--
	12/18/19	--	--	--	--	--	--	--	3.8 J	2.5 J	--	--	--
	02/17/22	**13.5**	**11.8**	69.1	59.8	--	1.2	1.0	1.0	0.34	--	--	--
	08/17/22	**12.5**	**12.6**	72.1	59.7	--	1.9 J	1.6 J	0.39 J	0.2 J	--	--	--
	12/01/22	2.7	2.4	47.4	45.5	--	7.2	6.4	0.72	0.14 J	--	--	--
MW-214	10/06/14	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	12/08/14	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	06/04/19	--	--	--	--	--	--	--	2.3 J	2.3 J	--	--	--
	02/17/22	6.1	4.7	38	37	--	0.8	0.83	0.11	< 0.03	--	--	--
	08/17/22	**8.5**	**8.4**	48	51	--	0.91 J	0.97 J	< 0.056	< 0.056	--	--	--
	12/01/22	3.1	2.9	18	19	--	2.5	2.2	0.079 J	< 0.056	--	--	--
MW-215	10/06/14	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	12/08/14	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	12/13/17	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	01/04/19	--	--	--	--	--	--	--	< 2.0	< 2.0	--	--	--
	12/18/19	--	--	--	--	--	--	--	< 2.0	< 2.0	--	--	--
	02/17/22	2.5	1.9	55.6	48	--	1.3	0.7	0.41	0.11	--	--	--
	08/17/22	3.4	2.6	68.8	57.5	--	2.3	1.4 J	1.3	0.09 J	--	--	--
	12/01/22	1.8	1.9	14.9	14.8	--	< 0.36	< 0.36	0.49 J	0.47 J	--	--	--
MW-216	10/03/14	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	12/09/14	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	12/12/17	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	01/03/19	--	--	--	--	--	--	--	< 2.0	< 2.0	--	--	--
	12/18/19	--	--	--	--	--	--	--	< 2.0	< 2.0	--	--	--
	02/16/22	2.6	1.9	47.1	42.6	--	1.4	1.1	0.29	0.1	--	--	--
	08/16/22	**21**	**19**	97.3	89.1	--	4.0	3.6	0.28 J	0.08 J	--	--	--
MW-217	10/03/14	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	12/09/14	--	--	--	--	--	--	--	14.7	< 10	--	--	--
	12/12/17	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	01/03/19	--	--	--	--	--	--	--	< 2.0	< 2.0	--	--	--
	12/18/19	--	--	--	--	--	--	--	< 2.0	< 2.0	--	--	--
	02/16/22	1.4	1.1	157	137	--	1.4	1.2	1.4	0.23	--	--	--
	08/16/22	1.2	1.1	147	130	--	1.3 J	1.1 J	< 0.056	< 0.056	--	--	--
MW-218	10/03/14	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	12/09/14	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	12/12/17	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	01/03/19	--	--	--	--	--	--	--	< 2.0	< 2.0	--	--	--
	12/18/19	--	--	--	--	--	--	--	2.0 J	< 2.0	--	--	--
	02/16/22	1.4	0.84	141	121	--	0.94	0.59	0.2	< 0.028	--	--	--
	08/16/22	0.43 J	0.37 J	145	127	--	1.5 J	1.3 J	0.14 J	< 0.056	--	--	--
MW-219	10/06/14	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	12/09/14	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	12/13/17	--	--	--	--	--	--	--	< 10	< 10	--	--	--
MWR-1	11/17/10	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	03/03/11	--	--	--	--	--	--	--	< 10	--	--	--	--
	06/15/11	--	--	--	--	--	--	--	1.5	< 0.1	--	--	--
	08/30/11	--	--	--	--	--	--	--	0.51	< 0.1	--	--	--
	12/06/11	--	--	--	--	--	--	--	0.68	0.62	--	--	--
	02/16/12	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	05/15/12	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	08/15/12	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	11/20/12	--	--	--	--	--	--	--	< 3.0	< 3.0	--	--	--
	11/06/13	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	12/08/14	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	12/01/22	4.3	4.3	38.7	38.00	--	1.7 J	0.49 J	< 0.06	< 0.06	--	--	--
MWR-2	11/17/10	--	--	--	--	--	--	--	11.7	< 10	--	--	--
	03/01/11	--	--	--	--	--	--	--	**16**	--	--	--	--
	06/14/11	--	--	--	--	--	--	--	3.1	< 0.1	--	--	--
	08/29/11	--	--	--	--	--	--	--	0.35	0.1	--	--	--
	12/06/11	--	--	--	--	--	--	--	1.3	< 0.1	--	--	--
	02/16/12	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	05/15/12	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	08/15/12	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	11/20/12	--	--	--	--	--	--	--	< 3.0	< 3.0	--	--	--
	11/06/13	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	12/08/14	--	--	--	--	--	--	--	< 10	< 10	--	--	--
MWR-3	11/17/10	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	03/01/11	--	--	--	--	--	--	--	< 10	--	--	--	--
	06/15/11	--	--	--	--	--	--	--	0.74	< 0.1	--	--	--
	08/30/11	--	--	--	--	--	--	--	0.38	< 0.1	--	--	--
	12/06/11	--	--	--	--	--	--	--	< 0.1	< 0.1	--	--	--
	02/16/12	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	05/15/12	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	08/15/12	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	11/20/12	--	--	--	--	--	--	--	< 3.0	< 3.0	--	--	--
	11/06/13	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	12/08/14	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	02/17/22	**22**	--	60	--	--	< 10	--	< 1.1	--	--	--	--
	05/18/22	**9.1**	5.4	45	34	--	< 10	< 10	< 1.1	< 1.0	--	--	--
	08/24/22	**8.3**	7.9	56	50	--	< 10	< 10	< 1.1	< 1.0	--	--	--
	11/08/22	5.2	3.4	57	43	--	< 10	< 10	< 1.1	< 1.0	--	--	--
	12/01/22	3.5	3.2	49.1	47.7	--	< 0.36	< 0.36	0.1 J	< 0.06	--	--	--
MWR-4	11/17/10	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	03/01/11	--	--	--	--	--	--	--	< 10	--	--	--	--
	06/14/11	--	--	--	--	--	--	--	0.63	< 0.1	--	--	--
	08/29/11	--	--	--	--	--	--	--	0.18	0.14	--	--	--
	12/06/11	--	--	--	--	--	--	--	< 0.1	0.29	--	--	--
	02/16/12	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	05/15/12	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	08/15/12	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	11/20/12	--	--	--	--	--	--	--	< 3.0	< 3.0	--	--	--
	11/06/13	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	12/08/14	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	12/01/22	1.6	1.5	17.4	17.4	--	< 0.36	< 0.36	< 0.06	< 0.06	--	--	--
MWR-5	11/17/10	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	02/28/11	--	--	--	--	--	--	--	< 10	--	--	--	--
	06/14/11	--	--	--	--	--	--	--	4.1	0.36	--	--	--
	08/29/11	--	--	--	--	--	--	--	0.95	0.62	--	--	--
	12/05/11	--	--	--	--	--	--	--	1.3	0.52	--	--	--
	02/16/12	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	05/15/12	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	08/14/12	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	11/20/12	--	--	--	--	--	--	--	5.8	< 3.0	--	--	--
	11/06/13	--	--	--	--	--	--	--	< 10	< 10	--	--	--

Table 4-2d. Groundwater Analytical Results - Metals
Remedial Investigation Work Plan
Block 37 Site
600 - 630 Westlake Avenue North | Seattle, Washington

Monitoring Well ID	Sample Date	Metals (µg/L)											
		Arsenic (Total)	Arsenic (Dissolved)	Barium (Total)	Barium (Dissolved)	Cadmium	Chromium III (Total)[3]	Chromium III (Dissolved)[3]	Lead (Total)[1]	Lead (Dissolved)[1]	Selenium	Silver	Mercury
Screening Levels[2]													
GW-1 Protect Drinking Water GW-Detail-PW		**0.58**	**0.58**	**2,000**	**2,000**	**5**	**100**	**100**	**15**	**15**	**50**	**80**	**2**
GW-4 Screening Level Protect Indoor Air GW-Detail-PW		**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**1.1**
GW-5 Natural Background		**8**	**8**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**
Laboratory PQL		**3.3**	**3.3**	**28**	**28**	**4.4**	**11**	**11**	**0.5**	**0.5**	**20**	**10**	**0.5**
MWR-5 Cont'd	12/08/14	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	03/23/15	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	12/13/17	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	06/13/18	--	--	--	--	--	--	--	2.4 J	< 2.0	--	--	--
	01/03/19	--	--	--	--	--	--	--	< 2.0	< 2.0	--	--	--
	12/01/22	**23.4**	**21.6**	29.1	24.3	--	2.5	0.67 J	1.1	< 0.2	--	--	--
MWR-6	11/16/10	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	02/28/11	--	--	--	--	--	--	--	< 10	--	--	--	--
	06/14/11	--	--	--	--	--	--	--	1.3	< 0.1	--	--	--
	08/29/11	--	--	--	--	--	--	--	0.3	< 0.1	--	--	--
	12/05/11	--	--	--	--	--	--	--	0.54	0.11	--	--	--
	02/16/12	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	05/15/12	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	08/14/12	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	11/20/12	--	--	--	--	--	--	--	< 3.0	< 3.0	--	--	--
	11/06/13	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	12/08/14	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	12/19/19	--	--	--	--	--	--	--	2.9 J	< 2.0	--	--	--
	02/17/22	< 3.0	--	150	--	--	< 10	--	< 1.1	--	--	--	--
	05/17/22	< 3.0	< 3.0	140	70	--	< 10	< 10	< 1.1	< 1.0	--	--	--
	08/24/22	< 3.0	< 3.0	160	150	--	< 10	< 10	< 1.1	< 1.0	--	--	--
	11/08/22	4.6	3.9	160	160	--	< 10	< 10	< 1.1	< 1.0	--	--	--
PH-1	02/17/22	6.8	--	180	--	--	< 10	--	< 1.1	--	--	--	--
	05/17/22	3.4	< 3.0	170	100	--	< 10	< 10	< 1.1	< 1.0	--	--	--
PH-2 /AMW-1	02/17/22	5.3	--	120	--	--	< 10	--	< 1.1	--	--	--	--
	05/17/22	**8.7**	3.6	110	79	--	< 10	< 10	< 1.1	< 1.0	--	--	--
	08/25/22	**12.0**	5.6	110	90	--	< 10	< 10	< 1.1	< 1.0	--	--	--
PH-3	02/17/22	< 3.0	--	130	--	--	< 10	--	< 1.1	--	--	--	--
	05/18/22	4.1	< 3.0	140	88	--	< 10	< 10	< 1.1	< 1.0	--	--	--
	08/25/22	7.2	7.4	160	160	--	< 10	< 10	< 1.1	< 1.0	--	--	--
	11/08/22	7.0	6.2	110	96	--	< 10	< 10	< 1.1	< 1.0	--	--	--
SMW-3	02/24/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	08/30/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	10/11/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	12/13/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	03/08/07	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	06/02/08	--	--	--	--	--	--	--	< 1.0	< 1.0	--	--	--
	08/05/08	--	--	--	--	--	--	--	4.5	< 1.0	--	--	--
	11/04/08	--	--	--	--	--	--	--	5.9	< 1.0	--	--	--
	02/25/09	--	--	--	--	--	--	--	< 1.0	< 1.0	--	--	--
	08/17/09	--	--	--	--	--	--	--	< 5.0	< 5.0	--	--	--
	11/17/09	--	--	--	--	--	--	--	1.2	< 1.0	--	--	--
	02/22/10	--	--	--	--	--	--	--	0.26	< 0.1	--	--	--
	05/24/10	--	--	--	--	--	--	--	0.42	< 0.1	--	--	--
	08/18/10	--	--	--	--	--	--	--	0.39	< 0.1	--	--	--
	11/16/10	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	03/01/11	--	--	--	--	--	--	--	< 10	--	--	--	--
	06/15/11	--	--	--	--	--	--	--	0.2	< 0.1	--	--	--
	08/30/11	--	--	--	--	--	--	--	0.1	0.1	--	--	--
	12/06/11	--	--	--	--	--	--	--	0.1	0.4	--	--	--
	02/15/12	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	05/16/12	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	08/15/12	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	11/06/13	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	12/13/17	--	--	--	--	--	--	--	< 10	< 10	--	--	--
Monitoring Wells - Abandoned / Unknown Status													
CI-1	03/08/07	--	--	--	--	--	--	--	< 1.00	--	--	--	--
	06/13/07	--	--	--	--	--	--	--	< 1.00	--	--	--	--
	09/12/07	--	--	--	--	--	--	--	< 1.00	--	--	--	--
	12/19/07	--	--	--	--	--	--	--	< 1.000	--	--	--	--
	03/18/08	--	--	--	--	--	--	--	< 1	< 1.000	--	--	--
	05/09/08	--	--	--	--	--	--	--	< 5	1.26	--	--	--
	06/03/08	--	--	--	--	--	--	--	< 1.00	< 1.00	--	--	--
	08/05/08	--	--	--	--	--	--	--	< 1.00	< 1.00	--	--	--
	11/05/08	--	--	--	--	--	--	--	< 1.00	< 1.00	--	--	--
	02/25/09	--	--	--	--	--	--	--	< 1.00	< 1.00	--	--	--
	05/17/09	--	--	--	--	--	--	--	< 1.00	< 1.00	--	--	--
	11/17/09	--	--	--	--	--	--	--	< 1.00	< 1.00	--	--	--
	02/22/10	--	--	--	--	--	--	--	1.2	< 0.1	--	--	--
	05/24/10	--	--	--	--	--	--	--	0.19	< 0.1	--	--	--
	08/17/10	--	--	--	--	--	--	--	2.0	< 0.1	--	--	--
	11/15/10	--	--	--	--	--	--	--	< 10.0	< 10	--	--	--
CI-2	03/08/07	--	--	--	--	--	--	--	< 1.00	--	--	--	--
	06/13/07	--	--	--	--	--	--	--	< 1.00	--	--	--	--
	09/12/07	--	--	--	--	--	--	--	< 1.00	--	--	--	--
	12/19/07	--	--	--	--	--	--	--	< 1	--	--	--	--
	03/18/08	--	--	--	--	--	--	--	< 1	< 1	--	--	--
	05/09/08	--	--	--	--	--	--	--	< 5	1.26	--	--	--
	06/03/08	--	--	--	--	--	--	--	9.22	< 1.00	--	--	--
	08/05/08	--	--	--	--	--	--	--	< 1	< 1.00	--	--	--
	11/05/08	--	--	--	--	--	--	--	< 1	< 1.00	--	--	--
	02/25/09	--	--	--	--	--	--	--	< 1	< 1.00	--	--	--
	05/17/09	--	--	--	--	--	--	--	1.72	< 1.00	--	--	--
	11/17/09	--	--	--	--	--	--	--	1.4	< 1	--	--	--
	02/22/10	--	--	--	--	--	--	--	0.72	< 0.1	--	--	--
	05/24/10	--	--	--	--	--	--	--	2.2	< 0.1	--	--	--
	08/17/10	--	--	--	--	--	--	--	1.7	< 0.1	--	--	--
	11/15/10	--	--	--	--	--	--	--	< 10	< 10	--	--	--
CI-3	03/08/07	--	--	--	--	--	--	--	< 1.00	--	--	--	--
	06/13/07	--	--	--	--	--	--	--	< 1.00	--	--	--	--
	09/12/07	--	--	--	--	--	--	--	< 1.00	--	--	--	--
	12/19/07	--	--	--	--	--	--	--	< 1	--	--	--	--
	03/18/08	--	--	--	--	--	--	--	< 1	< 1	--	--	--
	05/09/08	--	--	--	--	--	--	--	< 5	1.26	--	--	--
MW-3A	02/23/06	--	--	--	--	--	--	--	4.1	--	--	--	--
	05/10/06	--	--	--	--	--	--	--	9.14	--	--	--	--
	08/30/06	--	--	--	--	--	--	--	11.6	--	--	--	--
	12/12/06	--	--	--	--	--	--	--	9.05	--	--	--	--
	03/06/07	--	--	--	--	--	--	--	2.36	--	--	--	--
	06/15/07	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	09/14/07	--	--	--	--	--	--	--	2.86	--	--	--	--
	12/19/07	--	--	--	--	--	--	--	3.43	--	--	--	--
MW-8	02/22/06	--	--	--	--	--	--	--	**21.8**	--	--	--	--
	05/09/06	--	--	--	--	--	--	--	**22.5**	--	--	--	--
MW-13	02/22/06	--	--	--	--	--	--	--	11.9	--	--	--	--
	05/08/06	--	--	--	--	--	--	--	**38.2**	--	--	--	--
	08/31/06	--	--	--	--	--	--	--	**48.9**	--	--	--	--

Table 4-2d. Groundwater Analytical Results - Metals
Remedial Investigation Work Plan
Block 37 Site
600 - 630 Westlake Avenue North | Seattle, Washington

Monitoring Well ID	Sample Date	Metals (µg/L)											
		Arsenic (Total)	Arsenic (Dissolved)	Barium (Total)	Barium (Dissolved)	Cadmium	Chromium III (Total)[3]	Chromium III (Dissolved)[3]	Lead (Total)[1]	Lead (Dissolved)[1]	Selenium	Silver	Mercury
Screening Levels[2]													
GW-1 Protect Drinking Water GW-Detail-PW		**0.58**	**0.58**	**2,000**	**2,000**	**5**	**100**	**100**	**15**	**15**	**50**	**80**	**2**
GW-4 Screening Level Protect Indoor Air GW-Detail-PW		**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**1.1**
GW-5 Natural Background		**8**	**8**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**
Laboratory PQL		**3.3**	**3.3**	**28**	**28**	**4.4**	**11**	**11**	**0.5**	**0.5**	**20**	**10**	**0.5**
MW-16	07/26/05	--	--	--	--	--	--	--	< 0.5	--	--	--	--
	02/21/06	--	--	--	--	--	--	--	< 1.0	**157**	--	--	--
	05/09/06	--	--	--	--	--	--	--	< 1.0	4.33	--	--	--
MW-18	02/22/06	--	--	--	--	--	--	--	**386**	--	--	--	--
	05/10/06	--	--	--	--	--	--	--	**64.8**	--	--	--	--
	08/29/06	--	--	--	--	--	--	--	**1,360**	--	--	--	--
	12/12/06	--	--	--	--	--	--	--	**70.2**	--	--	--	--
	03/06/07	--	--	--	--	--	--	--	**15.3**	--	--	--	--
	06/14/07	--	--	--	--	--	--	--	**73.4**	--	--	--	--
	09/14/07	--	--	--	--	--	--	--	**226**	--	--	--	--
	05/17/09	--	--	--	--	--	--	--	**93.1**	4.77	--	--	--
	08/16/09	--	--	--	--	--	--	--	**1,100**	< 5.0	--	--	--
	11/15/09	--	--	--	--	--	--	--	**57**	< 1.0	--	--	--
	02/21/10	--	--	--	--	--	--	--	**33.8**	0.38	--	--	--
	05/23/10	--	--	--	--	--	--	--	**39.2**	0.26	--	--	--
	08/15/10	--	--	--	--	--	--	--	**40.4**	3.30	--	--	--
	11/14/10	--	--	--	--	--	--	--	**23.7**	< 10	--	--	--
MW-19	02/22/06	--	--	--	--	--	--	--	**81**	--	--	--	--
	05/10/06	--	--	--	--	--	--	--	**64.8**	--	--	--	--
	08/29/06	--	--	--	--	--	--	--	**20.9**	--	--	--	--
	12/12/06	--	--	--	--	--	--	--	**78.6**	--	--	--	--
	03/06/07	--	--	--	--	--	--	--	**40.4**	--	--	--	--
	06/14/07	--	--	--	--	--	--	--	**53.4**	--	--	--	--
	09/14/07	--	--	--	--	--	--	--	**34**	--	--	--	--
	03/18/08	--	--	--	--	--	--	--	**72.7**	**25**	--	--	--
	06/01/08	--	--	--	--	--	--	--	--	**19.4**	--	--	--
	08/10/08	--	--	--	--	--	--	--	**30.2**	**25.5**	--	--	--
	11/02/08	--	--	--	--	--	--	--	**25.8**	8.22	--	--	--
	02/22/09	--	--	--	--	--	--	--	**24.8**	5.45	--	--	--
	05/17/09	--	--	--	--	--	--	--	**28.3**	1.41	--	--	--
	11/15/09	--	--	--	--	--	--	--	**41**	1.4	--	--	--
	02/21/10	--	--	--	--	--	--	--	9.5	0.33	--	--	--
	05/23/10	--	--	--	--	--	--	--	8.7	0.31	--	--	--
	08/15/10	--	--	--	--	--	--	--	**20.9**	1.8	--	--	--
	11/14/10	--	--	--	--	--	--	--	< 10	< 10	--	--	--
MW-32A	11/04/91	--	--	--	--	--	--	--	--	0.009	--	--	--
	02/23/06	--	--	--	--	--	--	--	1.12	--	--	--	--
	05/08/06	--	--	--	--	--	--	--	1.43	--	--	--	--
	08/30/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	12/13/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	03/08/07	--	--	--	--	--	--	--	1.26	--	--	--	--
	06/15/07	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	09/14/07	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	12/18/07	--	--	--	--	--	--	--	3.55	--	--	--	--
	03/17/08	--	--	--	--	--	--	--	4.4	< 1.0	--	--	--
	06/02/08	--	--	--	--	--	--	--	**415**	< 1.0	--	--	--
	08/04/08	--	--	--	--	--	--	--	**334**	< 1.0	--	--	--
	11/05/08	--	--	--	--	--	--	--	2.32	< 1.0	--	--	--
MW-33	11/04/91	--	--	--	--	--	--	--	--	0.0045	--	--	--
	02/23/06	--	--	--	--	--	--	--	1.0	--	--	--	--
	05/08/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	08/30/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	12/12/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	03/07/07	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	06/15/07	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	09/14/07	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	12/19/07	--	--	--	--	--	--	--	8.85	--	--	--	--
	03/18/08	--	--	--	--	--	--	--	7.38	< 1.0	--	--	--
	06/03/08	--	--	--	--	--	--	--	5.41	< 1.0	--	--	--
	08/04/08	--	--	--	--	--	--	--	3.84	< 1.0	--	--	--
MW-34	11/04/91	--	--	--	--	--	--	--	--	0.010	--	--	--
	02/22/06	--	--	--	--	--	--	--	1.32	--	--	--	--
	05/08/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	08/30/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	12/13/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	03/07/07	--	--	--	--	--	--	--	1.98	--	--	--	--
	06/15/07	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	09/13/07	--	--	--	--	--	--	--	4.25	--	--	--	--
	12/19/07	--	--	--	--	--	--	--	1.69	--	--	--	--
	03/17/08	--	--	--	--	--	--	--	**18.6**	< 1.0	--	--	--
	06/02/08	--	--	--	--	--	--	--	**37.2**	< 1.0	--	--	--
	11/05/08	--	--	--	--	--	--	--	1.41	< 1.0	--	--	--
MW-35	11/04/91	--	--	--	--	--	--	--	--	< 0.003	--	--	--
	02/23/06	--	--	--	--	--	--	--	1.95	--	--	--	--
	05/08/06	--	--	--	--	--	--	--	2.01	--	--	--	--
	08/30/06	--	--	--	--	--	--	--	1.35	--	--	--	--
	12/13/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	03/08/07	--	--	--	--	--	--	--	2.55	--	--	--	--
	06/15/07	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	09/14/07	--	--	--	--	--	--	--	4.62	--	--	--	--
	12/18/07	--	--	--	--	--	--	--	2.26	--	--	--	--
	03/18/08	--	--	--	--	--	--	--	11.2	< 1.0	--	--	--
	06/03/08	--	--	--	--	--	--	--	**191**	< 1.0	--	--	--
	08/04/08	--	--	--	--	--	--	--	4.64	< 1.0	--	--	--
	11/05/08	--	--	--	--	--	--	--	**229**	< 1.0	--	--	--
MW-36	11/05/91	--	--	--	--	--	--	--	--	< 0.003	--	--	--
	02/24/06	--	--	--	--	--	--	--	3.37	--	--	--	--
	05/09/06	--	--	--	--	--	--	--	10.7	--	--	--	--
MW-37	11/05/91	--	--	--	--	--	--	--	--	< 0.003	--	--	--
	02/22/06	--	--	--	--	--	--	--	1.66	--	--	--	--
	05/10/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	08/29/06	--	--	--	--	--	--	--	1.3	--	--	--	--
	12/12/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	03/06/07	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	06/14/07	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	09/14/07	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	12/17/07	--	--	--	--	--	--	--	**18.8**	--	--	--	--
	03/18/08	--	--	--	--	--	--	--	**92.1**	< 1.0	--	--	--
	06/01/08	--	--	--	--	--	--	--	--	< 1.0	--	--	--
	08/10/08	--	--	--	--	--	--	--	3.31	< 1.0	--	--	--
	11/02/08	--	--	--	--	--	--	--	1.77	< 1.0	--	--	--
	02/22/09	--	--	--	--	--	--	--	5.44	< 1.0	--	--	--
	05/17/09	--	--	--	--	--	--	--	1.37	< 1.0	--	--	--
	08/16/09	--	--	--	--	--	--	--	< 5.0	< 5.0	--	--	--
	11/15/09	--	--	--	--	--	--	--	1.5	< 1.0	--	--	--
	02/21/10	--	--	--	--	--	--	--	0.85	< 0.1	--	--	--
	05/23/10	--	--	--	--	--	--	--	2.2	< 0.1	--	--	--
	08/15/10	--	--	--	--	--	--	--	4.3	0.64	--	--	--
	11/14/10	--	--	--	--	--	--	--	< 10	< 10	--	--	--

Table 4-2d. Groundwater Analytical Results - Metals
Remedial Investigation Work Plan
Block 37 Site
600 - 630 Westlake Avenue North | Seattle, Washington

Monitoring Well ID	Sample Date	Metals (µg/L)											
		Arsenic (Total)	Arsenic (Dissolved)	Barium (Total)	Barium (Dissolved)	Cadmium	Chromium III (Total)[3]	Chromium III (Dissolved)[3]	Lead (Total)[1]	Lead (Dissolved)[1]	Selenium	Silver	Mercury
Screening Levels[2]													
GW-1 Protect Drinking Water GW-Detail-PW		**0.58**	**0.58**	**2,000**	**2,000**	**5**	**100**	**100**	**15**	**15**	**50**	**80**	**2**
GW-4 Screening Level Protect Indoor Air GW-Detail-PW		**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**1.1**
GW-5 Natural Background		**8**	**8**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**
Laboratory PQL		**3.3**	**3.3**	**28**	**28**	**4.4**	**11**	**11**	**0.5**	**0.5**	**20**	**10**	**0.5**
MW-38	11/05/91	--	--	--	--	--	--	--	--	< 0.003	--	--	--
	05/09/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	08/30/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	12/13/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	03/07/07	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	06/14/07	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	09/12/07	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	06/02/08	--	--	--	--	--	--	--	3.77	< 1.0	--	--	--
	11/04/08	--	--	--	--	--	--	--	5.99	< 1.0	--	--	--
	02/24/09	--	--	--	--	--	--	--	1.78	< 1.0	--	--	--
	05/17/09	--	--	--	--	--	--	--	1.71	< 1.0	--	--	--
	08/17/09	--	--	--	--	--	--	--	5.9	< 5.0	--	--	--
	11/16/09	--	--	--	--	--	--	--	4.9	< 1.0	--	--	--
	02/22/10	--	--	--	--	--	--	--	5.9	< 0.1	--	--	--
MW-39	11/05/91	--	--	--	--	--	--	--	--	< 0.003	--	--	--
MW-40	11/05/91	--	--	--	--	--	--	--	--	< 0.003	--	--	--
	02/23/06	--	--	--	--	--	--	--	7.35	--	--	--	--
	05/10/06	--	--	--	--	--	--	--	1.84	--	--	--	--
	08/29/06	--	--	--	--	--	--	--	2.01	--	--	--	--
	12/12/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	03/07/07	--	--	--	--	--	--	--	1.08	--	--	--	--
	06/14/07	--	--	--	--	--	--	--	1.05	--	--	--	--
	09/14/07	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	12/17/07	--	--	--	--	--	--	--	7.37	--	--	--	--
	03/17/08	--	--	--	--	--	--	--	4.1	< 1.0	--	--	--
	06/02/08	--	--	--	--	--	--	--	6.39	< 1.0	--	--	--
	08/04/08	--	--	--	--	--	--	--	12.5	< 1.0	--	--	--
	11/03/08	--	--	--	--	--	--	--	4.97	< 1.0	--	--	--
	02/23/09	--	--	--	--	--	--	--	7.09	< 1.0	--	--	--
	05/17/09	--	--	--	--	--	--	--	4.64	< 1.0	--	--	--
	02/21/10	--	--	--	--	--	--	--	3.9	0.39	--	--	--
	05/23/10	--	--	--	--	--	--	--	7.7	0.25	--	--	--
	11/14/10	--	--	--	--	--	--	--	< 10	< 10	--	--	--
MW-41	11/05/91	--	--	--	--	--	--	--	--	< 0.003	--	--	--
	02/23/06	--	--	--	--	--	--	--	1.32	--	--	--	--
	05/09/06	--	--	--	--	--	--	--	1.56	--	--	--	--
	08/30/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	12/12/06	--	--	--	--	--	--	--	8.79	--	--	--	--
	03/07/07	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	06/14/07	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	09/13/07	--	--	--	--	--	--	--	2.56	--	--	--	--
	12/18/07	--	--	--	--	--	--	--	2.73	--	--	--	--
	03/17/08	--	--	--	--	--	--	--	< 1.0	< 1.0	--	--	--
	06/03/08	--	--	--	--	--	--	--	< 1.0	< 1.0	--	--	--
	08/04/08	--	--	--	--	--	--	--	< 1.0	< 1.0	--	--	--
	11/04/08	--	--	--	--	--	--	--	< 1.0	< 1.0	--	--	--
	02/24/09	--	--	--	--	--	--	--	< 1.0	< 1.0	--	--	--
	05/17/09	--	--	--	--	--	--	--	2.05	< 1.0	--	--	--
	08/16/09	--	--	--	--	--	--	--	< 5.0	< 5.0	--	--	--
	02/21/10	--	--	--	--	--	--	--	1.8	< 0.1	--	--	--
	05/23/10	--	--	--	--	--	--	--	0.35	< 0.1	--	--	--
	11/15/10	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	02/28/11	--	--	--	--	--	--	--	< 10	--	--	--	--
	06/14/11	--	--	--	--	--	--	--	0.51	< 0.1	--	--	--
	08/29/11	--	--	--	--	--	--	--	< 0.1	< 0.1	--	--	--
	12/05/11	--	--	--	--	--	--	--	0.16	0.11	--	--	--
	02/15/12	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	05/16/12	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	08/14/12	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	11/07/13	--	--	--	--	--	--	--	< 10	< 10	--	--	--
MW-42	11/05/91	--	--	--	--	--	--	--	--	< 0.003	--	--	--
	02/22/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	05/09/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
MW-43	11/05/91	--	--	--	--	--	--	--	--	< 0.003	--	--	--
	02/21/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	05/09/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	08/31/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	12/13/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
MW-44	11/05/91	--	--	--	--	--	--	--	--	< 0.003	--	--	--
	02/21/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	05/09/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	08/29/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	11/04/08	--	--	--	--	--	--	--	< 1.0	< 1.0	--	--	--
	02/24/09	--	--	--	--	--	--	--	< 1.0	< 1.0	--	--	--
	05/17/09	--	--	--	--	--	--	--	1.01	< 1.0	--	--	--
	08/17/09	--	--	--	--	--	--	--	< 5.0	< 5.0	--	--	--
	11/16/09	--	--	--	--	--	--	--	3.2	< 1.0	--	--	--
	02/22/10	--	--	--	--	--	--	--	0.52	< 0.1	--	--	--
	05/24/10	--	--	--	--	--	--	--	0.54	< 0.1	--	--	--
	08/17/10	--	--	--	--	--	--	--	0.49	0.16	--	--	--
	11/15/10	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	11/20/12	--	--	--	--	--	--	--	14.8	7.1	--	--	--
	11/07/13	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	07/29/14	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	12/09/14	--	--	--	--	--	--	--	< 10	< 10	--	--	--
MW-46	11/05/91	--	--	--	--	--	--	--	--	0.006	--	--	--
MW-47	11/05/91	--	--	--	--	--	--	--	--	< 0.003	--	--	--
	02/22/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	05/09/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
MW-48	01/29/92	--	--	--	--	--	--	--	--	< 0.003	--	--	--
	02/22/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	05/09/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	08/30/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	12/13/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
MW-49	01/29/92	--	--	--	--	--	--	--	--	< 0.003	--	--	--
	02/24/06	--	--	--	--	--	--	--	1.69	--	--	--	--
	05/11/06	--	--	--	--	--	--	--	2.21	--	--	--	--
	08/31/06	--	--	--	--	--	--	--	5.73	--	--	--	--
	12/13/06	--	--	--	--	--	--	--	3.33	--	--	--	--
	03/07/07	--	--	--	--	--	--	--	< 1.85	--	--	--	--
	06/13/07	--	--	--	--	--	--	--	2.42	--	--	--	--
	09/12/07	--	--	--	--	--	--	--	2.47	--	--	--	--
	12/19/07	--	--	--	--	--	--	--	13	--	--	--	--
	03/18/08	--	--	--	--	--	--	--	12.9	< 1.0	--	--	--
	06/03/08	--	--	--	--	--	--	--	6.12	< 1.0	--	--	--
	08/06/08	--	--	--	--	--	--	--	**28.1**	< 1.0	--	--	--
	11/20/12	--	--	--	--	--	--	--	3.7	< 3.0	--	--	--
	11/06/13	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	12/08/14	--	--	--	--	--	--	--	< 10	< 10	--	--	--

Table 4-2d. Groundwater Analytical Results - Metals
Remedial Investigation Work Plan
Block 37 Site
600 - 630 Westlake Avenue North | Seattle, Washington

Monitoring Well ID	Sample Date	Metals (µg/L)											
		Arsenic (Total)	Arsenic (Dissolved)	Barium (Total)	Barium (Dissolved)	Cadmium	Chromium III (Total)[3]	Chromium III (Dissolved)[3]	Lead (Total)[1]	Lead (Dissolved)[1]	Selenium	Silver	Mercury
Screening Levels[2]													
GW-1 Protect Drinking Water GW-Detail-PW		**0.58**	**0.58**	**2,000**	**2,000**	**5**	**100**	**100**	**15**	**15**	**50**	**80**	**2**
GW-4 Screening Level Protect Indoor Air GW-Detail-PW		**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**1.1**
GW-5 Natural Background		**8**	**8**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**
Laboratory PQL		**3.3**	**3.3**	**28**	**28**	**4.4**	**11**	**11**	**0.5**	**0.5**	**20**	**10**	**0.5**
MW-51	02/22/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	05/08/06	--	--	--	--	--	--	--	3.71	--	--	--	--
	08/30/06	--	--	--	--	--	--	--	2.81	--	--	--	--
	12/12/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	03/07/07	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	06/15/07	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	09/13/07	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	12/19/07	--	--	--	--	--	--	--	**20.6**	--	--	--	--
	03/18/08	--	--	--	--	--	--	--	< 1.0	< 1.0	--	--	--
	08/05/08	--	--	--	--	--	--	--	< 1.0	1.4	--	--	--
	11/04/08	--	--	--	--	--	--	--	< 1.0	< 1.0	--	--	--
	02/22/09	--	--	--	--	--	--	--	< 1.0	< 1.0	--	--	--
	05/17/09	--	--	--	--	--	--	--	2.36	< 1.0	--	--	--
	11/15/09	--	--	--	--	--	--	--	< 1.0	< 1.0	--	--	--
	02/21/10	--	--	--	--	--	--	--	6.1	< 0.1	--	--	--
	05/23/10	--	--	--	--	--	--	--	0.47	< 0.1	--	--	--
	08/17/10	--	--	--	--	--	--	--	1.4	0.1	--	--	--
	11/16/10	--	--	--	--	--	--	--	< 10	< 10	--	--	--
MW-52	02/23/06	--	--	--	--	--	--	--	< 1.0	< 1.0	--	--	--
	05/08/06	--	--	--	--	--	--	--	< 1.0	< 1.0	--	--	--
	08/30/06	--	--	--	--	--	--	--	< 1.0	< 1.0	--	--	--
	12/13/06	--	--	--	--	--	--	--	1.02	1.02	--	--	--
	06/15/07	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	09/13/07	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	03/17/08	--	--	--	--	--	--	--	**97.6**	< 1.0	--	--	--
	06/02/08	--	--	--	--	--	--	--	6.14	< 1.0	--	--	--
	08/04/08	--	--	--	--	--	--	--	8.43	< 1.0	--	--	--
	11/05/08	--	--	--	--	--	--	--	**17.8**	< 1.0	--	--	--
MW-53	02/22/06	--	--	--	--	--	--	--	1.16	--	--	--	--
	05/08/06	--	--	--	--	--	--	--	1.32	--	--	--	--
	08/30/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	12/12/06	--	--	--	--	--	--	--	3.34	--	--	--	--
	03/07/07	--	--	--	--	--	--	--	1.44	--	--	--	--
	06/15/07	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	09/13/07	--	--	--	--	--	--	--	2.62	--	--	--	--
	03/17/08	--	--	--	--	--	--	--	**81.9**	< 1.0	--	--	--
	06/02/08	--	--	--	--	--	--	--	**35.6**	< 1.0	--	--	--
	08/04/08	--	--	--	--	--	--	--	**21.9**	< 1.0	--	--	--
	11/04/08	--	--	--	--	--	--	--	< 1.0	< 1.0	--	--	--
	11/20/12	--	--	--	--	--	--	--	6.4	< 3.0	--	--	--
	11/06/13	--	--	--	--	--	--	--	< 10	< 10	--	--	--
	12/08/14	--	--	--	--	--	--	--	14	< 10	--	--	--
MW-55	02/21/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	05/08/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	08/29/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	12/12/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	03/06/07	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	06/15/07	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	09/13/07	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	12/18/07	--	--	--	--	--	--	--	2.31	2.31	--	--	--
	03/18/08	--	--	--	--	--	--	--	1.0	< 1.0	--	--	--
	06/03/08	--	--	--	--	--	--	--	1.3	< 1.0	--	--	--
	11/02/08	--	--	--	--	--	--	--	1.16	< 1.0	--	--	--
MW-56	02/22/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	05/08/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	08/30/06	--	--	--	--	--	--	--	1.85	--	--	--	--
	12/12/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	03/06/07	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	06/15/07	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	09/13/07	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	12/18/07	--	--	--	--	--	--	--	2.99	--	--	--	--
	03/18/08	--	--	--	--	--	--	--	5.97	< 1.0	--	--	--
	06/03/08	--	--	--	--	--	--	--	< 1.0	< 1.0	--	--	--
	08/05/08	--	--	--	--	--	--	--	1.46	< 1.0	--	--	--
	11/03/08	--	--	--	--	--	--	--	< 1.0	< 1.0	--	--	--
MW-57	02/23/06	--	--	--	--	--	--	--	4.38	--	--	--	--
	05/08/06	--	--	--	--	--	--	--	2.09	--	--	--	--
	08/30/06	--	--	--	--	--	--	--	1.24	--	--	--	--
	12/13/06	--	--	--	--	--	--	--	5.18	--	--	--	--
	03/08/07	--	--	--	--	--	--	--	9.81	--	--	--	--
	06/15/07	--	--	--	--	--	--	--	1.77	--	--	--	--
	09/14/07	--	--	--	--	--	--	--	**27.6**	--	--	--	--
	12/18/07	--	--	--	--	--	--	--	**200**	--	--	--	--
	03/18/08	--	--	--	--	--	--	--	**199**	1.92	--	--	--
	06/03/08	--	--	--	--	--	--	--	**49.8**	< 1.0	--	--	--
	08/04/08	--	--	--	--	--	--	--	**322**	< 1.0	--	--	--
	11/05/08	--	--	--	--	--	--	--	12.8	< 1.0	--	--	--
MW-58	02/22/06	--	--	--	--	--	--	--	1.21	--	--	--	--
	05/08/06	--	--	--	--	--	--	--	1.04	--	--	--	--
	08/30/06	--	--	--	--	--	--	--	2.09	--	--	--	--
	12/13/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	03/08/07	--	--	--	--	--	--	--	13.0	--	--	--	--
	06/15/07	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	09/13/07	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	12/19/07	--	--	--	--	--	--	--	**71.5**	--	--	--	--
	03/17/08	--	--	--	--	--	--	--	3.29	< 1.0	--	--	--
	06/02/08	--	--	--	--	--	--	--	**19.3**	< 1.0	--	--	--
	08/04/08	--	--	--	--	--	--	--	6.82	< 1.0	--	--	--
	11/04/08	--	--	--	--	--	--	--	3.47	< 1.0	--	--	--
MW-59	02/22/06	--	--	--	--	--	--	--	1.83	--	--	--	--
	05/08/06	--	--	--	--	--	--	--	1.04	--	--	--	--
	08/30/06	--	--	--	--	--	--	--	1.82	--	--	--	--
	12/13/06	--	--	--	--	--	--	--	2.18	--	--	--	--
	03/06/07	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	06/15/07	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	09/13/07	--	--	--	--	--	--	--	1.13	--	--	--	--
	12/18/07	--	--	--	--	--	--	--	**16.6**	--	--	--	--
	03/17/08	--	--	--	--	--	--	--	**142**	< 1.0	--	--	--
	06/02/08	--	--	--	--	--	--	--	**32.1**	< 1.0	--	--	--
	08/04/08	--	--	--	--	--	--	--	**132**	< 1.0	--	--	--
	11/05/08	--	--	--	--	--	--	--	2.29	< 1.0	--	--	--
MW-60	02/24/06	--	--	--	--	--	--	--	5.09	--	--	--	--
	05/08/06	--	--	--	--	--	--	--	3.21	--	--	--	--
	08/30/06	--	--	--	--	--	--	--	2.56	--	--	--	--
	12/12/06	--	--	--	--	--	--	--	2.14	--	--	--	--
	03/07/07	--	--	--	--	--	--	--	1.09	--	--	--	--
	06/15/07	--	--	--	--	--	--	--	1.11	--	--	--	--
	09/14/07	--	--	--	--	--	--	--	1.41	--	--	--	--
	12/18/07	--	--	--	--	--	--	--	**20.3**	--	--	--	--
	03/18/08	--	--	--	--	--	--	--	1.67	< 1.0	--	--	--
	06/03/08	--	--	--	--	--	--	--	**19.3**	< 1.0	--	--	--

Table 4-2d. Groundwater Analytical Results - Metals
Remedial Investigation Work Plan
Block 37 Site
600 - 630 Westlake Avenue North | Seattle, Washington

Monitoring Well ID	Sample Date	Metals (µg/L)											
		Arsenic (Total)	Arsenic (Dissolved)	Barium (Total)	Barium (Dissolved)	Cadmium	Chromium III (Total)[3]	Chromium III (Dissolved)[3]	Lead (Total)[1]	Lead (Dissolved)[1]	Selenium	Silver	Mercury
Screening Levels[2]													
GW-1 Protect Drinking Water GW-Detail-PW		**0.58**	**0.58**	**2,000**	**2,000**	**5**	**100**	**100**	**15**	**15**	**50**	**80**	**2**
GW-4 Screening Level Protect Indoor Air GW-Detail-PW		**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**1.1**
GW-5 Natural Background		**8**	**8**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**
Laboratory PQL		**3.3**	**3.3**	**28**	**28**	**4.4**	**11**	**11**	**0.5**	**0.5**	**20**	**10**	**0.5**
MW-60	08/04/08	--	--	--	--	--	--	--	1.65	< 1.0	--	--	--
Cont'd	11/05/08	--	--	--	--	--	--	--	2.14	< 1.0	--	--	--
MW-61	02/21/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	05/09/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	08/31/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	12/13/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
MW-62	02/21/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	05/09/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	08/31/06	--	--	--	--	--	--	--	1.1	--	--	--	--
	12/13/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
MW-63	02/21/06	--	--	--	--	--	--	--	6.0	--	--	--	--
	05/09/06	--	--	--	--	--	--	--	1.4	--	--	--	--
	08/31/06	--	--	--	--	--	--	--	2.5	--	--	--	--
	12/13/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
MW-64	02/21/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	05/09/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	08/31/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	12/13/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
MW-65	02/23/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	05/09/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	08/30/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
MW-66	02/24/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	05/09/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	08/30/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
MW-67	02/23/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	05/09/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	08/30/06	--	--	--	--	--	--	--	1.75	--	--	--	--
MW-68	02/22/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	05/09/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	08/30/06	--	--	--	--	--	--	--	8.45	--	--	--	--
	12/13/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
MW-69	02/23/06	--	--	--	--	--	--	--	3.54	--	--	--	--
	05/09/06	--	--	--	--	--	--	--	1.01	--	--	--	--
	08/30/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
MW-70	02/23/06	--	--	--	--	--	--	--	3.47	--	--	--	--
	05/09/06	--	--	--	--	--	--	--	2.18	--	--	--	--
MW-71	02/23/06	--	--	--	--	--	--	--	3.25	--	--	--	--
	05/10/06	--	--	--	--	--	--	--	2.54	--	--	--	--
	08/29/06	--	--	--	--	--	--	--	8.19	--	--	--	--
	12/12/06	--	--	--	--	--	--	--	1.55	--	--	--	--
	03/07/07	--	--	--	--	--	--	--	2.33	--	--	--	--
	06/14/07	--	--	--	--	--	--	--	2.89	--	--	--	--
	09/14/07	--	--	--	--	--	--	--	1.49	--	--	--	--
	12/17/07	--	--	--	--	--	--	--	4.76	--	--	--	--
	03/17/08	--	--	--	--	--	--	--	**190**	2.47	--	--	--
	06/02/08	--	--	--	--	--	--	--	2.03	< 1.0	--	--	--
	08/04/08	--	--	--	--	--	--	--	2.97	< 1.0	--	--	--
	11/03/08	--	--	--	--	--	--	--	1.56	< 1.0	--	--	--
	02/23/09	--	--	--	--	--	--	--	2.25	< 1.0	--	--	--
	05/17/09	--	--	--	--	--	--	--	2.21	< 1.0	--	--	--
	08/16/09	--	--	--	--	--	--	--	< 5.0	**< 5.0**	--	--	--
	11/15/09	--	--	--	--	--	--	--	1.3	< 1.0	--	--	--
	02/21/10	--	--	--	--	--	--	--	9.0	0.8	--	--	--
	05/23/10	--	--	--	--	--	--	--	**134**	0.45	--	--	--
	08/15/10	--	--	--	--	--	--	--	14.8	0.87	--	--	--
	11/14/10	--	--	--	--	--	--	--	14.5	< 10	--	--	--
MW-72	02/23/06	--	--	--	--	--	--	--	1.61	--	--	--	--
	05/10/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	08/29/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	12/12/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	03/07/07	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	06/14/07	--	--	--	--	--	--	--	1.97	--	--	--	--
	09/14/07	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	12/17/07	--	--	--	--	--	--	--	1.13	--	--	--	--
	03/17/08	--	--	--	--	--	--	--	< 1.0	< 1.0	--	--	--
	06/02/08	--	--	--	--	--	--	--	< 1.0	< 1.0	--	--	--
	08/04/08	--	--	--	--	--	--	--	< 1.0	< 1.0	--	--	--
	11/03/08	--	--	--	--	--	--	--	< 1.0	< 1.0	--	--	--
	02/23/09	--	--	--	--	--	--	--	< 1.0	< 1.0	--	--	--
	05/17/09	--	--	--	--	--	--	--	2.14	< 1.0	--	--	--
	08/16/09	--	--	--	--	--	--	--	< 5.0	< 5.0	--	--	--
	11/15/09	--	--	--	--	--	--	--	33	< 1.0	--	--	--
	02/21/10	--	--	--	--	--	--	--	5.1	< 0.1	--	--	--
	05/23/10	--	--	--	--	--	--	--	10.6	< 0.1	--	--	--
	08/15/10	--	--	--	--	--	--	--	14.7	0.12	--	--	--
	11/14/10	--	--	--	--	--	--	--	< 10	< 10	--	--	--
MW-73	02/23/06	--	--	--	--	--	--	--	2.27	--	--	--	--
	04/10/06	--	--	--	--	--	--	--	1.97	--	--	--	--
	08/29/06	--	--	--	--	--	--	--	1.76	--	--	--	--
	12/12/06	--	--	--	--	--	--	--	3.01	--	--	--	--
	03/07/07	--	--	--	--	--	--	--	1.16	--	--	--	--
	06/14/07	--	--	--	--	--	--	--	2.16	--	--	--	--
	09/14/07	--	--	--	--	--	--	--	1.6	--	--	--	--
	12/17/07	--	--	--	--	--	--	--	4.95	--	--	--	--
	03/17/08	--	--	--	--	--	--	--	2.15	1.17	--	--	--
	06/02/08	--	--	--	--	--	--	--	3.81	1.0	--	--	--
	08/04/08	--	--	--	--	--	--	--	11.5	< 1.0	--	--	--
	11/03/08	--	--	--	--	--	--	--	6.74	< 1.0	--	--	--
	02/23/09	--	--	--	--	--	--	--	4.82	2.0	--	--	--
	05/17/09	--	--	--	--	--	--	--	5.34	< 1.0	--	--	--
	08/16/09	--	--	--	--	--	--	--	< 5.0	< 5.0	--	--	--
	11/15/09	--	--	--	--	--	--	--	6.4	3.9	--	--	--
	02/21/10	--	--	--	--	--	--	--	7.8	--	--	--	--
	05/23/10	--	--	--	--	--	--	--	5.7	3.5	--	--	--
	08/15/10	--	--	--	--	--	--	--	6.9	2.0	--	--	--
	11/14/10	--	--	--	--	--	--	--	**22.1**	< 10	--	--	--
MW-74	02/23/06	--	--	--	--	--	--	--	5.42	--	--	--	--
	05/10/06	--	--	--	--	--	--	--	1.94	--	--	--	--
	08/29/06	--	--	--	--	--	--	--	2.71	--	--	--	--
MW-75	02/24/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	05/11/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
MW-76	02/24/06	--	--	--	--	--	--	--	4.3	--	--	--	--
	05/11/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	08/30/06	--	--	--	--	--	--	--	1.78	--	--	--	--
	03/18/08	--	--	--	--	--	--	--	**20.8**	< 1.0	--	--	--
	06/02/08	--	--	--	--	--	--	--	1.31	< 1.0	--	--	--
	08/05/08	--	--	--	--	--	--	--	4.82	< 1.0	--	--	--

Table 4-2d. Groundwater Analytical Results - Metals
Remedial Investigation Work Plan
Block 37 Site
600 - 630 Westlake Avenue North | Seattle, Washington

Monitoring Well ID	Sample Date	Metals (µg/L)											
		Arsenic (Total)	Arsenic (Dissolved)	Barium (Total)	Barium (Dissolved)	Cadmium	Chromium III (Total)[3]	Chromium III (Dissolved)[3]	Lead (Total)[1]	Lead (Dissolved)[1]	Selenium	Silver	Mercury
Screening Levels[2]													
GW-1 Protect Drinking Water GW-Detail-PW		**0.58**	**0.58**	**2,000**	**2,000**	**5**	**100**	**100**	**15**	**15**	**50**	**80**	**2**
GW-4 Screening Level Protect Indoor Air GW-Detail-PW		**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**1.1**
GW-5 Natural Background		**8**	**8**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**
Laboratory PQL		**3.3**	**3.3**	**28**	**28**	**4.4**	**11**	**11**	**0.5**	**0.5**	**20**	**10**	**0.5**
MW-77	02/23/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	05/11/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
MW-78	02/23/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	05/11/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
MW-79	02/23/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	05/11/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
MW-80	02/23/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	05/09/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	08/30/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	12/13/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	03/07/07	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	06/14/07	--	--	--	--	--	--	--	6.15	--	--	--	--
	09/12/07	--	--	--	--	--	--	--	1.6	--	--	--	--
	12/18/07	--	--	--	--	--	--	--	2.7	--	--	--	--
	03/18/08	--	--	--	--	--	--	--	1.15	< 1.0	--	--	--
	06/02/08	--	--	--	--	--	--	--	1.64	< 1.0	--	--	--
	08/05/08	--	--	--	--	--	--	--	1.81	< 1.0	--	--	--
	11/04/08	--	--	--	--	--	--	--	3.66	< 1.0	--	--	--
	02/23/09	--	--	--	--	--	--	--	2.52	< 1.0	--	--	--
	05/17/09	--	--	--	--	--	--	--	2.83	< 1.0	--	--	--
	08/17/09	--	--	--	--	--	--	--	< 5.0	< 5.0	--	--	--
	11/16/09	--	--	--	--	--	--	--	2.4	< 1.0	--	--	--
MW-81	02/23/06	--	--	--	--	--	--	--	1.3	--	--	--	--
	05/09/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	08/30/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	12/13/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	03/07/07	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	06/14/07	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	09/12/07	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	12/18/07	--	--	--	--	--	--	--	1.82	--	--	--	--
	03/18/08	--	--	--	--	--	--	--	1.82	< 1.0	--	--	--
	06/02/08	--	--	--	--	--	--	--	< 1.0	< 1.0	--	--	--
	08/05/08	--	--	--	--	--	--	--	8.83	< 1.0	--	--	--
	11/04/08	--	--	--	--	--	--	--	7.90	< 1.0	--	--	--
	02/23/09	--	--	--	--	--	--	--	2.32	< 1.0	--	--	--
	05/17/09	--	--	--	--	--	--	--	3.27	< 1.0	--	--	--
	08/17/09	--	--	--	--	--	--	--	7.90	< 5.0	--	--	--
	11/16/09	--	--	--	--	--	--	--	5.3	< 1.0	--	--	--
	02/21/10	--	--	--	--	--	--	--	4.0	< 0.1	--	--	--
MW-82	02/21/06	--	--	--	--	--	--	--	3.9	--	--	--	--
	05/11/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	12/11/06	--	--	--	--	--	--	--	1.28	--	--	--	--
	03/08/07	--	--	--	--	--	--	--	1.39	--	--	--	--
	06/13/07	--	--	--	--	--	--	--	1.27	--	--	--	--
	09/12/07	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	12/19/07	--	--	--	--	--	--	--	2.65	--	--	--	--
	03/18/08	--	--	--	--	--	--	--	< 1.0	< 1.0	--	--	--
	06/03/08	--	--	--	--	--	--	--	1.69	< 1.0	--	--	--
	08/06/08	--	--	--	--	--	--	--	1.28	< 1.0	--	--	--
	11/04/08	--	--	--	--	--	--	--	< 1.0	< 1.0	--	--	--
MW-83	02/24/06	--	--	--	--	--	--	--	3.59	--	--	--	--
	05/11/06	--	--	--	--	--	--	--	4.96	--	--	--	--
	08/31/06	--	--	--	--	--	--	--	1.11	--	--	--	--
	12/19/07	--	--	--	--	--	--	--	1.73	--	--	--	--
MW-84	02/22/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	05/09/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
MW-85	02/22/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	05/09/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	08/29/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
MW-86	02/21/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	05/09/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	08/29/06	--	--	--	--	--	--	--	1.32	--	--	--	--
	12/11/06	--	--	--	--	--	--	--	1.43	--	--	--	--
	03/07/07	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	06/13/07	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	09/12/07	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	12/18/07	--	--	--	--	--	--	--	1.32	--	--	--	--
	03/18/08	--	--	--	--	--	--	--	< 1.0	< 1.0	--	--	--
	06/03/08	--	--	--	--	--	--	--	< 1.0	< 1.0	--	--	--
	08/05/08	--	--	--	--	--	--	--	< 1.0	< 1.0	--	--	--
	11/04/08	--	--	--	--	--	--	--	< 1.0	< 1.0	--	--	--
	02/24/09	--	--	--	--	--	--	--	< 1.0	< 1.0	--	--	--
	05/17/09	--	--	--	--	--	--	--	< 1.0	< 1.0	--	--	--
	08/17/09	--	--	--	--	--	--	--	< 5.0	< 5.0	--	--	--
	11/16/09	--	--	--	--	--	--	--	< 1.0	< 1.0	--	--	--
	02/22/10	--	--	--	--	--	--	--	0.48	< 0.1	--	--	--
	05/24/10	--	--	--	--	--	--	--	0.51	< 0.1	--	--	--
	08/16/10	--	--	--	--	--	--	--	0.63	0.25	--	--	--
	11/15/10	--	--	--	--	--	--	--	< 10	< 10	--	--	--
MW-87	02/21/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	05/09/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	08/29/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	12/11/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	03/07/07	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	06/13/07	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	09/12/07	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	12/18/07	--	--	--	--	--	--	--	2.95	--	--	--	--
	03/18/08	--	--	--	--	--	--	--	< 1.0	< 1.0	--	--	--
	06/03/08	--	--	--	--	--	--	--	< 1.0	< 1.0	--	--	--
	08/05/08	--	--	--	--	--	--	--	< 1.0	< 1.0	--	--	--
	11/04/08	--	--	--	--	--	--	--	1.46	< 1.0	--	--	--
	02/24/09	--	--	--	--	--	--	--	1.27	< 1.0	--	--	--
	05/17/09	--	--	--	--	--	--	--	< 1.0	< 1.0	--	--	--
	08/17/09	--	--	--	--	--	--	--	< 5.0	< 5.0	--	--	--
	11/16/09	--	--	--	--	--	--	--	1.3	< 1.0	--	--	--
	02/22/10	--	--	--	--	--	--	--	3.3	< 0.1	--	--	--
	05/24/10	--	--	--	--	--	--	--	0.86	< 0.1	--	--	--
	08/16/10	--	--	--	--	--	--	--	1.4	< 0.1	--	--	--
	11/15/10	--	--	--	--	--	--	--	< 10	< 10	--	--	--
MW-88	05/10/06	--	--	--	--	--	--	--	1.97	--	--	--	--
	12/13/06	--	--	--	--	--	--	--	2.2	--	--	--	--
MW-89	02/24/06	--	--	--	--	--	--	--	**23.4**	--	--	--	--
	05/11/06	--	--	--	--	--	--	--	**37.4**	--	--	--	--
	08/31/06	--	--	--	--	--	--	--	12.2	--	--	--	--
	12/11/06	--	--	--	--	--	--	--	6.6	--	--	--	--
	03/08/07	--	--	--	--	--	--	--	**290**	--	--	--	--
	06/13/07	--	--	--	--	--	--	--	12.5	--	--	--	--
	09/13/07	--	--	--	--	--	--	--	**35.5**	--	--	--	--
	12/19/07	--	--	--	--	--	--	--	**145**	--	--	--	--

Table 4-2d. Groundwater Analytical Results - Metals
Remedial Investigation Work Plan
Block 37 Site
600 - 630 Westlake Avenue North | Seattle, Washington

Monitoring Well ID	Sample Date	Metals (µg/L)											
		Arsenic (Total)	Arsenic (Dissolved)	Barium (Total)	Barium (Dissolved)	Cadmium	Chromium III (Total)[3]	Chromium III (Dissolved)[3]	Lead (Total)[1]	Lead (Dissolved)[1]	Selenium	Silver	Mercury
Screening Levels[2]													
GW-1 Protect Drinking Water GW-Detail-PW		**0.58**	**0.58**	**2,000**	**2,000**	**5**	**100**	**100**	**15**	**15**	**50**	**80**	**2**
GW-4 Screening Level Protect Indoor Air GW-Detail-PW		**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**1.1**
GW-5 Natural Background		**8**	**8**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**
Laboratory PQL		**3.3**	**3.3**	**28**	**28**	**4.4**	**11**	**11**	**0.5**	**0.5**	**20**	**10**	**0.5**
MW-89 Cont'd	03/18/08	--	--	--	--	--	--	--	**875**	< 1.0	--	--	--
	06/03/08	--	--	--	--	--	--	--	**38.5**	< 1.0	--	--	--
	08/06/08	--	--	--	--	--	--	--	10.9	< 1.0	--	--	--
	11/04/08	--	--	--	--	--	--	--	16.4	< 1.0	--	--	--
MW-90	02/21/06	--	--	--	--	--	--	--	5.59	--	--	--	--
	05/11/06	--	--	--	--	--	--	--	2.87	--	--	--	--
	06/13/07	--	--	--	--	--	--	--	2.14	--	--	--	--
	09/12/07	--	--	--	--	--	--	--	4.64	--	--	--	--
	03/18/08	--	--	--	--	--	--	--	8.29	< 1.0	--	--	--
	06/03/08	--	--	--	--	--	--	--	3.23	< 1.0	--	--	--
	08/06/08	--	--	--	--	--	--	--	**17.6**	< 1.0	--	--	--
	11/03/08	--	--	--	--	--	--	--	2.86	< 1.0	--	--	--
MW-91	02/24/06	--	--	--	--	--	--	--	2.39	--	--	--	--
	05/11/06	--	--	--	--	--	--	--	1.49	--	--	--	--
	06/13/07	--	--	--	--	--	--	--	1.8	--	--	--	--
	09/12/07	--	--	--	--	--	--	--	1.05	--	--	--	--
	12/19/07	--	--	--	--	--	--	--	4.13	--	--	--	--
	03/18/08	--	--	--	--	--	--	--	3.32	< 1.0	--	--	--
	06/03/08	--	--	--	--	--	--	--	3.0	< 1.0	--	--	--
	08/06/08	--	--	--	--	--	--	--	3.04	< 1.0	--	--	--
	11/03/08	--	--	--	--	--	--	--	**101**	< 1.0	--	--	--
MW-92	02/22/06	--	--	--	--	--	--	--	3.58	--	--	--	--
	05/10/06	--	--	--	--	--	--	--	2.69	--	--	--	--
	08/31/06	--	--	--	--	--	--	--	3.36	--	--	--	--
	12/13/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	03/08/07	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	06/13/07	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	09/13/07	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	12/18/07	--	--	--	--	--	--	--	3.64	--	--	--	--
	03/17/08	--	--	--	--	--	--	--	2.41	< 1.0	--	--	--
	06/03/08	--	--	--	--	--	--	--	1.48	< 1.0	--	--	--
	08/05/08	--	--	--	--	--	--	--	7.64	< 1.0	--	--	--
	11/03/08	--	--	--	--	--	--	--	2.59	< 1.0	--	--	--
MW-93	02/21/06	--	--	--	--	--	--	--	1.16	--	--	--	--
	05/10/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	08/31/06	--	--	--	--	--	--	--	2.98	--	--	--	--
	12/13/06	--	--	--	--	--	--	--	1.25	--	--	--	--
	03/07/07	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	06/13/07	--	--	--	--	--	--	--	1.66	--	--	--	--
	09/13/07	--	--	--	--	--	--	--	1.05	--	--	--	--
	03/17/08	--	--	--	--	--	--	--	< 5.0	< 1.0	--	--	--
	06/03/08	--	--	--	--	--	--	--	< 1.0	< 1.0	--	--	--
	08/06/08	--	--	--	--	--	--	--	2.69	< 1.0	--	--	--
	11/03/08	--	--	--	--	--	--	--	2.95	< 1.0	--	--	--
MW-94	02/24/06	--	--	--	--	--	--	--	4.81	--	--	--	--
	05/11/06	--	--	--	--	--	--	--	10.4	--	--	--	--
	08/31/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	12/13/06	--	--	--	--	--	--	--	4.24	--	--	--	--
	03/07/07	--	--	--	--	--	--	--	< 1.00	--	--	--	--
	06/13/07	--	--	--	--	--	--	--	2.13	--	--	--	--
	09/12/07	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	12/19/07	--	--	--	--	--	--	--	< 1.0	12.9	--	--	--
	03/17/08	--	--	--	--	--	--	--	2.65	< 1.0	--	--	--
	08/06/08	--	--	--	--	--	--	--	3.8	< 1.0	--	--	--
MW-95	02/23/06	--	--	--	--	--	--	--	< 1.0	< 1.0	--	--	--
	05/09/06	--	--	--	--	--	--	--	< 1.0	< 1.0	--	--	--
	08/30/06	--	--	--	--	--	--	--	< 1.0	< 1.0	--	--	--
	12/12/06	--	--	--	--	--	--	--	< 1.0	< 1.0	--	--	--
	03/07/07	--	--	--	--	--	--	--	< 1.0	< 1.0	--	--	--
	06/14/07	--	--	--	--	--	--	--	< 1.0	< 1.0	--	--	--
	09/13/07	--	--	--	--	--	--	--	< 1.0	< 1.0	--	--	--
	12/18/07	--	--	--	--	--	--	--	< 1.0	< 1.0	--	--	--
	03/17/08	--	--	--	--	--	--	--	< 1.0	< 1.0	--	--	--
	06/03/08	--	--	--	--	--	--	--	< 1.0	< 1.0	--	--	--
	08/04/08	--	--	--	--	--	--	--	< 1.0	< 1.0	--	--	--
	11/04/08	--	--	--	--	--	--	--	< 1.0	< 1.0	--	--	--
	02/24/09	--	--	--	--	--	--	--	< 1.0	< 1.0	--	--	--
	05/17/09	--	--	--	--	--	--	--	< 1.0	< 1.0	--	--	--
	08/16/09	--	--	--	--	--	--	--	< 5.0	< 5.0	--	--	--
	11/15/09	--	--	--	--	--	--	--	< 1.0	< 1.0	--	--	--
	02/21/10	--	--	--	--	--	--	--	0.58	< 0.1	--	--	--
	05/23/10	--	--	--	--	--	--	--	0.47	< 0.1	--	--	--
	08/16/10	--	--	--	--	--	--	--	0.28	< 0.1	--	--	--
	11/15/10	--	--	--	--	--	--	--	< 10	< 10	--	--	--
MW-96	05/11/06	--	--	--	--	--	--	--	1.2	1.2	--	--	--
MW-97	02/22/06	--	--	--	--	--	--	--	**21.6**	--	--	--	--
	05/09/06	--	--	--	--	--	--	--	12	--	--	--	--
	08/30/06	--	--	--	--	--	--	--	7.48	--	--	--	--
MW-98	02/22/06	--	--	--	--	--	--	--	**49.9**	--	--	--	--
	05/09/06	--	--	--	--	--	--	--	**50**	--	--	--	--
MW-99	02/22/06	--	--	--	--	--	--	--	14	--	--	--	--
	05/09/06	--	--	--	--	--	--	--	6.57	--	--	--	--
MW-101	02/23/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	05/09/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
MW-102	02/24/06	--	--	--	--	--	--	--	4.54	--	--	--	--
	05/11/06	--	--	--	--	--	--	--	1.71	--	--	--	--
	08/31/06	--	--	--	--	--	--	--	2.71	--	--	--	--
	12/11/06	--	--	--	--	--	--	--	6.08	--	--	--	--
	03/08/07	--	--	--	--	--	--	--	3.58	--	--	--	--
	06/13/07	--	--	--	--	--	--	--	4.54	--	--	--	--
	09/12/07	--	--	--	--	--	--	--	**30.8**	--	--	--	--
	12/19/07	--	--	--	--	--	--	--	14.9	--	--	--	--
	03/18/08	--	--	--	--	--	--	--	**24.2**	1.75	--	--	--
	06/03/08	--	--	--	--	--	--	--	**29**	< 1.0	--	--	--
	08/06/08	--	--	--	--	--	--	--	**54.1**	1.14	--	--	--
	11/04/08	--	--	--	--	--	--	--	**19.2**	1.36	--	--	--
MW-103	02/24/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	05/09/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	08/30/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	12/13/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
MW-105	02/22/06	--	--	--	--	--	--	--	5.13	--	--	--	--
	05/09/06	--	--	--	--	--	--	--	9.54	--	--	--	--
MW-200	02/22/06	--	--	--	--	--	--	--	1.6	--	--	--	--
	05/10/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	08/29/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	12/12/06	--	--	--	--	--	--	--	1.05	--	--	--	--
	03/06/07	--	--	--	--	--	--	--	1.73	--	--	--	--
	06/14/07	--	--	--	--	--	--	--	1.87	--	--	--	--
	09/14/07	--	--	--	--	--	--	--	< 1.0	--	--	--	--

Table 4-2d. Groundwater Analytical Results - Metals
Remedial Investigation Work Plan
Block 37 Site
600 - 630 Westlake Avenue North | Seattle, Washington

Monitoring Well ID	Sample Date	Metals (µg/L)											
		Arsenic (Total)	Arsenic (Dissolved)	Barium (Total)	Barium (Dissolved)	Cadmium	Chromium III (Total)[3]	Chromium III (Dissolved)[3]	Lead (Total)[1]	Lead (Dissolved)[1]	Selenium	Silver	Mercury
Screening Levels[2]													
GW-1 Protect Drinking Water GW-Detail-PW		**0.58**	**0.58**	**2,000**	**2,000**	**5**	**100**	**100**	**15**	**15**	**50**	**80**	**2**
GW-4 Screening Level Protect Indoor Air GW-Detail-PW		**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**1.1**
GW-5 Natural Background		**8**	**8**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**
Laboratory PQL		**3.3**	**3.3**	**28**	**28**	**4.4**	**11**	**11**	**0.5**	**0.5**	**20**	**10**	**0.5**
MW-200 Cont'd	12/17/07	--	--	--	--	--	--	--	9.24	--	--	--	--
	06/01/08	--	--	--	--	--	--	--	2.46	< 1.0	--	--	--
	08/10/08	--	--	--	--	--	--	--	7.41	< 1.0	--	--	--
	02/22/09	--	--	--	--	--	--	--	1.82	< 1.0	--	--	--
	05/17/09	--	--	--	--	--	--	--	10.4	< 1.0	--	--	--
	08/16/09	--	--	--	--	--	--	--	5.8	< 5.0	--	--	--
	11/15/09	--	--	--	--	--	--	--	8.0	< 1.0	--	--	--
	02/21/10	--	--	--	--	--	--	--	4.2	0.59	--	--	--
	08/15/10	--	--	--	--	--	--	--	6.2	0.7	--	--	--
MW-201	02/22/06	--	--	--	--	--	--	--	9.78	--	--	--	--
	05/10/06	--	--	--	--	--	--	--	3.01	--	--	--	--
	08/29/06	--	--	--	--	--	--	--	2.16	--	--	--	--
	12/12/06	--	--	--	--	--	--	--	3.88	--	--	--	--
	03/06/07	--	--	--	--	--	--	--	2.54	--	--	--	--
	06/14/07	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	09/14/07	--	--	--	--	--	--	--	1.87	--	--	--	--
	03/18/08	--	--	--	--	--	--	--	6.72	1.28	--	--	--
	06/01/08	--	--	--	--	--	--	--	19.8	2.29	--	--	--
	08/10/08	--	--	--	--	--	--	--	13.3	3.73	--	--	--
	02/22/09	--	--	--	--	--	--	--	8.43	< 1.0	--	--	--
	05/17/09	--	--	--	--	--	--	--	11.8	1.28	--	--	--
	08/16/09	--	--	--	--	--	--	--	95	< 5.0	--	--	--
	11/15/09	--	--	--	--	--	--	--	14	2.30	--	--	--
	02/21/10	--	--	--	--	--	--	--	9.1	< 0.1	--	--	--
	05/23/10	--	--	--	--	--	--	--	5.9	< 0.1	--	--	--
	08/15/10	--	--	--	--	--	--	--	4.4	< 0.1	--	--	--
MW-202	02/22/06	--	--	--	--	--	--	--	1.71	--	--	--	--
	05/10/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	08/29/06	--	--	--	--	--	--	--	9.54	--	--	--	--
	12/12/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	03/08/07	--	--	--	--	--	--	--	1.04	--	--	--	--
	06/14/07	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	09/14/07	--	--	--	--	--	--	--	1.43	--	--	--	--
	12/19/07	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	03/18/08	--	--	--	--	--	--	--	< 1.0	< 1.0	--	--	--
	06/02/08	--	--	--	--	--	--	--	< 1.0	< 1.0	--	--	--
	08/05/08	--	--	--	--	--	--	--	< 1.0	< 1.0	--	--	--
	11/05/08	--	--	--	--	--	--	--	< 1.0	< 1.0	--	--	--
	02/25/09	--	--	--	--	--	--	--	< 1.0	< 1.0	--	--	--
	05/17/09	--	--	--	--	--	--	--	12.9	< 1.0	--	--	--
	08/16/09	--	--	--	--	--	--	--	7.5	< 5.0	--	--	--
	11/15/09	--	--	--	--	--	--	--	2.3	< 1.0	--	--	--
	02/21/10	--	--	--	--	--	--	--	1.1	< 0.1	--	--	--
	05/23/10	--	--	--	--	--	--	--	0.91	< 0.1	--	--	--
	08/18/10	--	--	--	--	--	--	--	1.8	< 0.1	--	--	--
	11/16/10	--	--	--	--	--	--	--	< 10	< 10	--	--	--
MW-203	02/24/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	05/09/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	08/30/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	12/13/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	03/07/07	--	--	--	--	--	--	--	< 1.0	--	--	--	--
	12/19/07	--	--	--	--	--	--	--	1.69	--	--	--	--
	03/18/08	--	--	--	--	--	--	--	< 1.0	< 1.0	--	--	--
	06/02/08	--	--	--	--	--	--	--	< 1.0	< 1.0	--	--	--
	08/05/08	--	--	--	--	--	--	--	1.66	< 1.0	--	--	--
	11/04/08	--	--	--	--	--	--	--	**272**	< 1.0	--	--	--
	02/25/09	--	--	--	--	--	--	--	3.21	< 1.0	--	--	--
	05/17/09	--	--	--	--	--	--	--	4.03	< 1.0	--	--	--
	08/17/09	--	--	--	--	--	--	--	< 5.0	< 5.0	--	--	--
	11/16/09	--	--	--	--	--	--	--	4.3	< 1.0	--	--	--
	02/22/10	--	--	--	--	--	--	--	0.16	< 0.1	--	--	--
	05/24/10	--	--	--	--	--	--	--	1.9	< 0.1	--	--	--
	08/18/10	--	--	--	--	--	--	--	0.84	< 0.1	--	--	--
	11/15/10	--	--	--	--	--	--	--	< 10	< 10	--	--	--
MW-204	02/21/06	--	--	--	--	--	--	--	1.63	--	--	--	--
	05/09/06	--	--	--	--	--	--	--	< 1.0	--	--	--	--
MW-205	02/22/06	--	--	--	--	--	--	--	3.64	--	--	--	--
	05/10/06	--	--	--	--	--	--	--	1.31	--	--	--	--
MW-206	02/23/06	--	--	--	--	--	--	--	1.24	--	--	--	--
	05/10/06	--	--	--	--	--	--	--	1.04	--	--	--	--
	08/29/06	--	--	--	--	--	--	--	1.84	--	--	--	--
	12/17/07	--	--	--	--	--	--	--	--	6.16	--	--	--
	03/17/08	--	--	--	--	--	--	--	**852**	1.0	--	--	--
	11/03/08	--	--	--	--	--	--	--	14.8	1.65	--	--	--
	11/15/09	--	--	--	--	--	--	--	**330**	1.0	--	--	--
	02/21/10	--	--	--	--	--	--	--	--	0.1	--	--	--
	05/23/10	--	--	--	--	--	--	--	**7,810**	0.1	--	--	--
	11/14/10	--	--	--	--	--	--	--	**58.1**	10	--	--	--
MW-207	02/23/06	--	--	--	--	--	--	--	1.0	--	--	--	--
	05/10/06	--	--	--	--	--	--	--	1.0	--	--	--	--
	08/29/06	--	--	--	--	--	--	--	1.22	--	--	--	--
	12/12/06	--	--	--	--	--	--	--	1.0	--	--	--	--
	03/07/07	--	--	--	--	--	--	--	1.0	--	--	--	--
	06/15/07	--	--	--	--	--	--	--	1.0	--	--	--	--
	09/14/07	--	--	--	--	--	--	--	1.0	--	--	--	--
	12/19/07	--	--	--	--	--	--	--	1.0	--	--	--	--
	03/18/08	--	--	--	--	--	--	--	1.0	1.0	--	--	--
	06/02/08	--	--	--	--	--	--	--	1.0	1.0	--	--	--
	08/05/08	--	--	--	--	--	--	--	1.58	1.0	--	--	--
	11/05/08	--	--	--	--	--	--	--	1.02	1.0	--	--	--
	02/21/10	--	--	--	--	--	--	--	0.2	0.1	--	--	--
MW-208	02/22/06	--	--	--	--	--	--	--	2.17	--	--	--	--
	05/10/06	--	--	--	--	--	--	--	1.8	--	--	--	--
	08/30/06	--	--	--	--	--	--	--	2.88	--	--	--	--
	12/12/06	--	--	--	--	--	--	--	1.28	--	--	--	--
	03/08/07	--	--	--	--	--	--	--	1.0	--	--	--	--
	06/14/07	--	--	--	--	--	--	--	1.74	--	--	--	--
	09/14/07	--	--	--	--	--	--	--	1.0	--	--	--	--
	12/17/07	--	--	--	--	--	--	--	2.97	--	--	--	--
	03/18/08	--	--	--	--	--	--	--	**217**	1.0	--	--	--
	06/01/08	--	--	--	--	--	--	--	7.91	1.0	--	--	--
	08/10/08	--	--	--	--	--	--	--	6.23	1.56	--	--	--
	11/02/08	--	--	--	--	--	--	--	1.8	1.41	--	--	--
	05/17/09	--	--	--	--	--	--	--	3.84	1.0	--	--	--
	08/16/09	--	--	--	--	--	--	--	5.0	5.0	--	--	--
	11/15/09	--	--	--	--	--	--	--	4.0	1.0	--	--	--
	02/21/10	--	--	--	--	--	--	--	6.1	0.16	--	--	--
	05/23/10	--	--	--	--	--	--	--	**42.7**	0.29	--	--	--
	08/15/10	--	--	--	--	--	--	--	3.9	0.5	--	--	--

Table 4-2d. Groundwater Analytical Results - Metals
Remedial Investigation Work Plan
Block 37 Site
600 - 630 Westlake Avenue North | Seattle, Washington

Monitoring Well ID	Sample Date	Metals (µg/L)											
		Arsenic (Total)	Arsenic (Dissolved)	Barium (Total)	Barium (Dissolved)	Cadmium	Chromium III (Total)[3]	Chromium III (Dissolved)[3]	Lead (Total)[1]	Lead (Dissolved)[1]	Selenium	Silver	Mercury
Screening Levels[2]													
GW-1 Protect Drinking Water GW-Detail-PW		**0.58**	**0.58**	**2,000**	**2,000**	**5**	**100**	**100**	**15**	**15**	**50**	**80**	**2**
GW-4 Screening Level Protect Indoor Air GW-Detail-PW		**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**1.1**
GW-5 Natural Background		**8**	**8**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**
Laboratory PQL		**3.3**	**3.3**	**28**	**28**	**4.4**	**11**	**11**	**0.5**	**0.5**	**20**	**10**	**0.5**
MW-208 Cont'd	11/14/10	--	--	--	--	--	--	--	10	10	--	--	--
	11/20/12	--	--	--	--	--	--	--	3.0	3.0	--	--	--
	11/06/13	--	--	--	--	--	--	--	10	10	--	--	--
	07/29/14	--	--	--	--	--	--	--	10	10	--	--	--
	12/08/14	--	--	--	--	--	--	--	10	10	--	--	--
MW-806	02/24/06	--	--	--	--	--	--	--	2.16	--	--	--	--
SMW-2	11/21/12	--	--	--	--	--	--	--	3.0	3.0	--	--	--
	11/06/13	--	--	--	--	--	--	--	10	10	--	--	--
	07/29/14	--	--	--	--	--	--	--	10	10	--	--	--
	12/09/14	--	--	--	--	--	--	--	**28.9**	10	--	--	--
SMW-4	02/24/06	--	--	--	--	--	--	--	**15.8**	--	--	--	--
	05/11/06	--	--	--	--	--	--	--	**29.4**	--	--	--	--
	08/31/06	--	--	--	--	--	--	--	**20.0**	--	--	--	--
	12/13/06	--	--	--	--	--	--	--	9.5	--	--	--	--
	03/08/07	--	--	--	--	--	--	--	7.42	--	--	--	--
	06/13/07	--	--	--	--	--	--	--	7.74	--	--	--	--
	09/13/07	--	--	--	--	--	--	--	7.57	--	--	--	--
	12/19/07	--	--	--	--	--	--	--	8.66	--	--	--	--
	03/17/08	--	--	--	--	--	--	--	3.82	1.0	--	--	--
	06/03/08	--	--	--	--	--	--	--	10.4	1.0	--	--	--
	08/06/08	--	--	--	--	--	--	--	9.96	7.91	--	--	--
	11/03/08	--	--	--	--	--	--	--	12.3	8.88	--	--	--
SMW-5	02/22/06	--	--	--	--	--	--	--	4.21	--	--	--	--
	05/11/06	--	--	--	--	--	--	--	1.0	--	--	--	--
	08/31/06	--	--	--	--	--	--	--	2.12	--	--	--	--
	12/13/06	--	--	--	--	--	--	--	1.0	--	--	--	--
	03/08/07	--	--	--	--	--	--	--	2.12	--	--	--	--
	06/13/07	--	--	--	--	--	--	--	1.0	--	--	--	--
	09/13/07	--	--	--	--	--	--	--	1.0	--	--	--	--
	12/18/07	--	--	--	--	--	--	--	1.83	--	--	--	--
	03/17/08	--	--	--	--	--	--	--	1.0	1.0	--	--	--
	06/03/08	--	--	--	--	--	--	--	2.72	1.0	--	--	--
	08/05/08	--	--	--	--	--	--	--	1.54	1.0	--	--	--
	11/03/08	--	--	--	--	--	--	--	1.14	1.0	--	--	--
	11/21/12	--	--	--	--	--	--	--	3.0	3.0	--	--	--
	11/06/13	--	--	--	--	--	--	--	10	10	--	--	--
	07/29/14	--	--	--	--	--	--	--	10	10	--	--	--
	12/09/14	--	--	--	--	--	--	--	**119**	10	--	--	--
Reconnaissance Wells													
B1	08/29/00	0.21	--	6.4	--	0.028	1.3	--	3.8	--	< 0.05	0.011	0.0021 J
B3	08/29/00	0.087	--	1.2	--	0.0082	0.062	--	2.7	--	< 0.05	0.001	0.00065 J
B7	08/29/00	0.17	--	6.1	--	0.024	2.0	--	1.7	--	0.05	0.01	0.0046 J
B10	08/29/00	0.033	--	0.46	--	< 0.003	0.091	--	0.13	--	< 0.05	0.001	0.0003 J

Notes:

1. Total lead analysis by EPA Method 6020.
2. The lowest relevant screening level for each constituent is highlighted in the corresponding color. Screening level selection process is summarized in Section 5.7.
3. The screening level shown for protection of drinking water is based on the value for total chromium, and the screening levels shown for protection of surface water and sediment are based on those for trivalent chromium.

Bold font indicates the reported value exceeds the corresponding (shaded) screening level (i.e., most stringent).

Shaded cell indicates the detected value exceeds the corresponding screening level (i.e., most stringent).

"<" = denotes analyte not detected at or exceeding the reporting limit listed

"--" = not analyzed, sampled, or reported

[a] Well was not purged prior to sample collection.

[J] Result is an estimate

MW = monitoring well

MWR = monitoring well replacement

NE = not established

PQL = practical quantitation limit

µg/L = microgram per liter

Table 4-3a. Groundwater Analytical Results: Samples Between South Lake Union and Block 37 Site - TPH, VOCs, Naphthalene, and PCBs
Remedial Investigation Work Plan
Block 37 Site
600 - 630 Westlake Avenue North | Seattle, Washington

Monitoring Well ID	Sample Date	TPH (µg/L)					VOCs[4] (µg/L)							
		GRO[1]	DRO[2]	ORO[2]	TEH (DRO+ORO)[3]	Kerosene	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	EDB	EDC	Naphthalene
Screening Levels[5]														
GW-1 Protect Drinking Water GW-Detail-PW		**800**	**500**	**500**	**500**	**500**	**5**	**640**	**700**	**1,600**	**24**	**0.05**	**4.8**	**160**
GW-2 Protect Surface Water GW-Detail-SW-FW		**800**	**500**	**500**	**500**	**500**	**0.44**	**53**	**12**	**57**	**NE**	**NE**	**8.9**	**1,400**
GW-3 Protect Sediment Mod.747-1FW		**NE**	**NE**	**NE**	**NE**	**NE**	**69,000**	**22,000,000**	**19,000,000**	**35,000,000**	**3,700,000**	**900**	**25,000**	**260,000**
GW-4 Screening Level Protect Indoor Air GW-Detail-PW		**NE**	**NE**	**NE**	**NE**	**NE**	**2.4**	**15,000**	**2,800**	**320**	**800**	**0.3**	**3.5**	**8.9**
Laboratory PQL		**100**	**200**	**200**	**400**	**100**	**0.2**	**1.0**	**0.2**	**0.6**	**1.0**	**1.0**	**1.0**	**0.10**
Monitoring Wells - South of Valley Street														
MW-86	11/02/05	**3,010**	< 248	< 495	371.5	--	**508**	5.09	5.26	31.5	< 1.0	--	--	--
	02/21/06	**7,880**	< 269	**< 538**	403.5	--	**2,640**	5.65	10.2	31.9	< 5.0	--	--	< 5.0
	05/09/06	**7,980**	< 240	< 481	360.5	--	**2,740**	< 25.0	64	104	**< 50**	--	--	**287**
	08/29/06	**2,690** J	< 253	**< 505**	379	--	**1,640**	6.58	9.78	29.2	2.62	--	--	< 5.0
	12/11/06	**4,700**	< 250	**< 500**	375	--	**1,410**	5.79	7.66	28.2	3.21	--	--	< 5.0
	03/07/07	**7,370**	< 243	< 485	364	--	**2,530**	< 10.0	10.8	< 60	< 20	--	--	**< 100**
	06/13/07	**7,300**	< 243	< 485	364	--	**2,430**	7.4	11.9	26.9	< 5.0	--	--	**< 25**
	09/12/07	**5,410**	< 240	< 481	360.5	--	**1,860**	5.55	8.31	25	1.56	--	--	< 5.0
	12/18/07	**4,540**	< 238	< 476	357	--	**1,400**	5.6	9.9	29.7	< 1.0	--	--	1.4
	03/18/08	**6,290**	< 236	< 472	**693**	457	**1,950**	7.1	9.36	27.9	< 1.0	--	--	< 5.0
	06/03/08	**5,340**	< 236	< 472	**769**	**533**	**1,380**	7.19	12.6	28.4	< 1.0	--	--	< 5.0
	08/05/08	**4,090**	< 236	< 472	**592**	356	**612**	7.18	7.23	30.7	< 1.0	--	--	< 5.0
	11/04/08	**2,430**	< 245	< 490	**790**	**545**	**232**	< 5.0	4.9	25.6	< 1.0	--	--	< 5.0
	02/24/09	**4,750**	< 240	< 481	**5,000.5**	**4,760**	**1,300**	6.48	7.67	29.7	--	--	--	< 5.0
	05/17/09	**10,300**	< 243	< 485	**1,009.5**	**767**	**3,380**	22.4	87.7	95	< 1.0	--	--	< 5.0
	08/17/09	**1,800**	440	< 480	**2,340**	**2,100**	**1,500**	23.0	45	71	< 1.0	--	--	< 5.0
	11/16/09	**2,700**	**1,000**	< 480	**1,840**	**1,600**	**2,100** k	42.0	76	200	< 1.0	--	--	< 5.0
	02/22/10	**1,550**	**1,940**	**1,640**	**3,580**	**1,190**	**906**	10.5	41.2	90.5	--	--	--	4.0
	05/24/10	**1,440**	**1,970**	**1,710**	**3,680**	**1,960**	**719**	7.4	23.3	66.1	--	--	--	1.8
	08/16/10	**1,270**	87.6	< 388	**727**	**533**	**331**	6.0	10.6	48.6	--	--	--	1.9
	11/15/10	**1,460**	< 77.7	< 388	**734**	**540**	**263**	6.8	6.7	46.3	--	--	--	2.2
MW-87	11/02/05	< 50.0	< 245	< 490	367.5	--	2.35	1.28	1.33	6.61	< 1.0	--	--	--
	02/21/06	< 50.0	< 263	**< 526**	394.5	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 1.0
	05/09/06	< 50.0	< 245	< 490	367.5	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 1.0
	08/29/06	< 80.0	< 248	< 495	371.5	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0
	12/11/06	< 50.0	< 245	< 490	367.5	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0
	03/07/07	< 50.0	< 236	< 472	354	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0
	06/13/07	162	< 243	< 485	364	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0
	09/12/07	< 50.0	< 240	< 481	360.5	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0
	12/18/07	< 50.0	< 240	< 481	360.5	--	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	--	--	< 1.0
	03/18/08	< 50.0	< 236	< 472	354	< 236	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0
	06/03/08	< 50.0	< 236	< 472	354	< 236	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0
	08/05/08	< 50.0	< 236	< 472	354	< 236	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0
	11/04/08	< 50.0	< 243	< 485	364	< 243	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0
	02/24/09	< 50.0	< 236	< 472	354	< 236	< 0.5	< 0.5	< 0.5	< 3.0	--	--	--	< 5.0
	05/17/09	< 50.0	< 240	< 481	360.5	< 240	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0
	08/17/09	< 50.0	< 240	< 480	360	< 240	< 0.5	< 0.5	< 0.5	< 2.0	< 1.0	--	--	< 5.0
	11/16/09	< 50.0	< 240	< 490	365	< 240	< 0.5	< 0.5	< 0.5	< 2.0	< 1.0	--	--	< 5.0
	02/22/10	< 50.0	**643**	**860**	**1,503**	< 76.6	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0
	05/24/10	< 50.0	**543**	**675**	**1,218**	263	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0
	08/16/10	< 50.0	< 78.4	< 392	235.2	< 78.4	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0
	11/15/10	< 50.0	< 77.7	< 388	232.85	< 77.7	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0
MW-88	11/07/05	**14,700**	< 240	< 481	360.5	--	**546**	< 50.0	**2,230**	**1,400**	**< 100**	--	--	--
	05/10/06	**20,500**	418	< 476	**656**	--	**768**	< 50.0	**2,590**	**1,121**	**< 100**	--	--	**734**
	12/13/06	**16,600**	316	< 485	**558.5**	--	**208**	< 10.0	**1,170**	**1,620**	< 20	--	--	**255**
MW-213	10/06/14	105	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	< 0.02	< 1.0	--
	12/08/14	< 100	--	--	--	--	**4.9**	< 1.0	< 1.0	< 3.0	< 1.0	< 0.0098	< 1.0	--
	03/23/15	364	--	--	--	--	**70.6**	< 1.0	18.7	18.5	--	--	--	--
	6/23/2015[MS]	453	--	--	--	--	**43.1**	1.3	16.8	27.8	--	--	--	--
	6/23/2015[SD]	150	--	--	--	--	**9.4**	< 1.0	6.1	3.1	--	--	--	--
	9/11/2015[FD]	638	--	--	--	--	2.2	< 1.0	< 1.0	< 3.0	--	--	--	--
	9/11/2015[EB]	< 100	--	--	--	--	**3.4**	< 1.0	1.4	< 3.0	--	--	--	--
	12/07/15	< 100	--	--	--	--	1.2	< 1.0	< 1.0	< 3.0	--	--	--	--
	06/28/16	< 250	--	--	--	--	2.3	< 0.5	5.5	3.2	--	--	--	--
	12/15/16	408	--	--	--	--	**41.8**	< 1.0	8.7	3.2	--	--	--	--
	06/29/17	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--
	12/13/17	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--
	06/13/18	152	--	--	--	--	1.4	0.13 J	2.5	< 0.13	--	--	--	--
	01/04/19	< 19.6	--	--	--	--	< 0.1	< 0.083	< 0.14	< 0.13	--	--	--	--
	06/04/19	< 38.3	--	--	--	--	< 0.1	< 0.083	< 0.14	< 0.31	< 0.16	< 0.24	< 0.22	< 0.48
	12/18/19	< 38.3	--	--	--	--	< 0.1	< 0.083	< 0.14	< 0.31	< 0.16	< 0.24	< 0.22	--
	02/17/22	168	< 116	< 116	**531**	473	1.6	0.15 J	0.23 J	< 0.2	< 0.13	--	--	--
	08/17/22	46.9 J	173 / <140	< 94 / <218	220	--	< 0.1	< 0.1	< 0.11	< 0.2	0.13	--	--	0.35
	12/01/22	< 22.6 / <233	< 233	< 467	< 350	< 233	< 0.1	< 0.1	< 0.11	< 0.2	--	--	--	< 0.18
MW-214	10/06/14	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	< 0.021	< 1.0	--
	12/08/14	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	< 0.01	< 1.0	--
	03/23/15	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--
	06/23/15	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--
	09/11/15	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--
	12/07/15	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--
	12/15/16	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--
	06/04/19	< 38.3	--	--	--	--	< 0.1	< 0.083	< 0.14	< 0.31	< 0.16	< 0.24	< 0.22	< 0.48
	02/17/22	< 13.4	< 116	< 116	116	< 116	< 0.1	< 0.1	< 0.11	< 0.2	< 0.13	--	--	--
	08/17/22	< 22.6	< 94.9 / <128	< 94.9 / <199	< 94.9	--	< 0.1	< 0.1	< 0.11	< 0.2	0.13	--	--	< 0.02
	12/01/22	< 22.6 / <239	< 239	< 477	< 358	< 239	< 0.1	< 0.1	< 0.11	< 0.2	--	--	--	< 0.18
MW-215	10/06/14	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	< 0.02	< 1.0	--
	12/08/14	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	< 0.0099	< 1.0	--
	03/23/15	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--
	06/23/15	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--
	09/11/15	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--
	12/07/15	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--
	12/15/16	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--
	12/13/17	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--
	01/04/19	< 19.6	--	--	--	--	< 0.1	< 0.083	< 0.14	< 0.31	--	--	--	--
	12/18/19	< 38.3	--	--	--	--	< 0.1	< 0.083	< 0.14	< 0.31	< 0.16	< 0.24	< 0.22	--
	02/17/22	< 13.4	< 119	< 119	119	< 119	< 0.1	< 0.1	< 0.11	< 0.2	< 0.13	--	--	--
	08/17/22	31.6 J	< 94.3 / <134	< 94.3 / <208	< 94.3	--	< 0.1	< 0.1	< 0.11	< 0.2	< 0.13	--	--	< 0.02
	12/01/22	< 22.6 / <236	< 236	< 472	< 354	< 236	< 0.1	< 0.1	< 0.11	< 0.2	--	--	--	0.24 J
Monitoring Wells - North of Valley Street														
MW-209	11/05/08	< 50.0	< 238	< 476	357	< 238	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0
	02/22/10	< 50.0	251	< 388	445	< 77.7	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0
	05/24/10	< 50.0	192	< 396	390	137	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0
	08/18/10	< 50.0	86.7	< 388	280.7	< 77.7	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0
	11/16/10	< 50.0	85.1	< 388	279.1	< 77.7	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0
	03/01/11	< 50.0	< 77.7	< 388	232.85	< 77.7	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0
	06/15/11	< 50.0	< 82.5	< 412	247.25	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--
	08/30/11	< 50.0	< 80	< 400	240	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0
	12/06/11	< 50.0	< 82.5	< 412	247.25	< 82.5	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	**< 10**
	02/15/12	< 50.0	103	< 412	309	< 82.5	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	2.1
	05/16/12	< 50.0	< 79.2	< 396	237.6	< 79.2	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0
	08/15/12	< 50.0	117	< 426	330	85.6	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0
	11/21/12	< 100	< 100	< 100	100	< 100	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 4.0
	11/06/13	< 400	< 400	< 400	400	< 400	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	--	--	--
	07/29/14	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	< 0.0098	< 1.0	--
	12/09/14	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	< 0.0098	< 1.0	--
	03/23/15	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--
	06/23/15	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--
	09/11/15	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--
	12/07/15	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--
	12/15/16	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--
	06/04/19	< 38.3	--	--	--	--	< 0.1	< 0.083	< 0.14	< 0.31	< 0.16	< 0.24	< 0.22	< 0.48
	12/19/19	< 38.3	--	--	--	--	< 0.1	< 0.083	< 0.14	< 0.31	< 0.16	< 0.24	< 0.22	--
	02/17/22	< 13.4	156	< 119	215.5	< 119	< 0.1	< 0.1	< 0.11	< 0.2	< 0.13	--	--	--
	08/17/22	24.4 J	162 / <140	< 94.2 / <218	209.1	--	< 0.1	< 0.1	< 0.11	< 0.2	< 0.13	--	--	< 0.02
	11/30/22	< 22.6 / <239	< 239	< 478	< 359	< 239	< 0.1	< 0.1	< 0.11	< 0.2	--	--	--	< 0.18
MW-210	11/05/08	< 50.0	< 243	< 485	364	< 243	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0
	02/25/09	< 50.0	< 240	< 481	360.5	< 240	< 0.5	< 0.5	< 0.5	< 3.0	--	--	--	< 5.0
	05/17/09	< 50.0	< 245	< 490	367.5	< 245	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0
	08/17/09	< 50.0	< 240	< 280	260	< 240	< 0.5	< 0.5	< 0.5	< 2.0	< 1.0	--	--	< 5.0
	11/17/09	< 50.0	< 240	< 490	365	< 240	< 0.5	< 0.5	< 0.5 k	< 2.0	< 1.0	--	--	< 5.0
	02/22/10	< 50.0	154	< 381	344.5	< 76.2	< 1.0	< 1.0	< 1.0	5.5	--	--	--	< 1.0
	05/24/10	< 50.0	190	< 385	382.5	150	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0
	08/18/10	< 50.0	< 78.4	< 392	235.2	< 78.4	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0
	11/16/10	< 50.0	85.1	< 388	279.1	< 77.7	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0
	03/01/11	< 50.0	< 77.7	< 388	232.85	< 77.7	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0
	06/15/11	< 50.0	< 86	< 430	258	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--
	08/30/11	< 50.0	< 87	< 435	261	< 87	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0
	12/06/11	< 50.0	< 86.2	< 412	249.1	< 82.5	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0
	02/15/12	< 50.0	< 82.5	< 412	247.25	< 82.5	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	2.1
	05/16/12	< 50.0	< 83.3	< 417	250.15	< 83.3	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0
	08/15/12	< 50.0	< 85.1	< 426	255.55	< 85.1	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0
	11/21/12	< 100	< 100	< 100	100	< 100	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 4.0
	11/06/13	< 400	< 400	< 400	400	< 400	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	--	--	--
	07/29/14	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	< 0.01	< 1.0	--
	12/09/14	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	< 0.0099	< 1.0	--
	03/23/15	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--
	06/23/15	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--
	09/11/15	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--
	12/07/15	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--
	12/15/16	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--
	06/04/19	< 38.3	--	--	--	--	< 0.1	< 0.083	< 0.14	< 0.31	< 0.16	< 0.24	< 0.22	< 0.48
	02/17/22	< 13.4	273	< 118	332	< 118	< 0.1	< 0.1	< 0.11	< 0.2	< 0.13	--	--	--
	08/17/22	< 22.6	189 / <134	< 93.9 / <208	236	--	< 0.1	< 0.1	< 0.11	< 0.2	< 0.13	--	--	< 0.02
	11/30/22	< 22.6 / <235	< 235	< 470	< 353	< 235	< 0.1	< 0.1	< 0.11	< 0.2	--	--	--	< 0.18
MW-211	11/05/08	< 50.0	< 240	< 481	360.5	< 240	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0
	02/25/09	< 50.0	< 240	< 481	360.5	< 240	< 0.5	< 0.5	< 0.5	< 3.0	--	--	--	< 5.0
	05/17/09	< 50.0	< 236	< 472	354	< 236	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0
	08/17/09	< 50.0	< 240	< 490	365	< 240	< 0.5	< 0.5	< 0.5	< 2.0	< 1.0	--	--	< 5.0
	11/17/09	< 50.0	< 240	< 480	360	< 240	< 0.5	< 0.5	< 0.5	< 2.0	< 1.0	--	--	< 5.0
	02/22/10	< 50.0	146	< 385	338.5	< 76.9	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0
	05/24/10	< 50.0	115	< 388	309	85.1	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0
	08/18/10	< 50.0	< 77.7	< 388	232.85	< 77.7	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0
	11/15/10	< 50.0	< 77.7	< 388	232.85	< 77.7	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0
	03/01/11	< 50.0	< 77.7	< 388	232.85	< 77.7	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0
	06/15/11	< 50.0	< 84.2	< 421	252.6	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--
	08/30/11	< 50.0	< 84.2	< 421	252.6	< 84.2	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0
	12/08/11	< 50.0	< 83.3	< 417	250.15	< 83.3	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	**< 10**
	02/15/12	< 50.0	< 75.5	< 377	226.25	< 75.5	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	2.1
	05/16/12	< 50.0	< 83.3	< 417	250.15	< 83.3	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	4.0
	08/15/12	< 50.0	< 88.9	< 444	266.45	< 88.9	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0
	11/06/13	< 400	< 400	< 400	400	< 400	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	--	--	--
	12/13/17	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--
	01/04/19	< 19.6	--	--	--	--	< 0.1	< 0.083	< 0.14	< 0.31	--	--	--	--
	12/19/19	< 38.3	--	--	--	--	< 0.1	< 0.083	< 0.14	< 0.31	< 0.16	< 0.24	< 0.22	--
	02/16/22	< 13.4	169	< 119	228.5	< 119	< 0.1	< 0.1	< 0.11	< 0.2	< 0.13	--	--	--
	08/17/22	23.5 J	< 94.1 / <148	< 94.1 / <229	< 94.1	--	< 0.1	< 0.1	< 0.11	< 0.2	< 0.13	--	--	< 0.02
	11/30/22	< 22.6 / <241	< 241	< 482	< 362	< 241	< 0.1	< 0.1	< 0.11	< 0.2	--	--	--	< 0.18
SMW-3	3/8/1995	< 50.0	400	**2,500**	**2,900**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--
	6/6/1995	< 50.0	< 250	**< 750**	**500**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--
	9/7/1995	< 50.0	300	**< 750**	**675**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--
	12/8/1995	< 50.0	300	**< 750**	**675**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--
	4/1/1996	< 50.0	< 250	**< 750**	**500**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--
	6/25/1996	< 50.0	320	**< 750**	**695**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--
	9/27/1996	< 50.0	< 250	**< 750**	**500**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--
	3/28/1997	< 50.0	< 250	**< 750**	**500**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--
	06/30/97[a]	< 50.0	< 250	**< 750**	**500**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--
	09/08/97[a]	< 50.0	< 250	**< 750**	**500**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--
	12/19/97[a]	< 50.0	**521**	**< 750**	**896**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--
	03/16/98[a]	50.1	< 250	**< 750**	**500**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--
	06/26/98[a]	< 50.0	**500**	**< 750**	**875**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--
	09/23/98[a]	< 50.0	< 250	**< 750**	**500**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--
	12/17/98[a]	< 50.0	293	**< 750**	**668**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--
	03/31/99[a]	< 50.0	360	**< 750**	**735**	--	< 0.5	< 0.5	0.526	4.97	--	--	--	--
	06/30/99[a]	< 50.0	**639**	**< 750**	**1,014**	--	< 0.5	0.609	< 0.5	1.32	--	--	--	--
	12/08/99[a]	< 50.0	< 484	**< 1,450**	**967**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--
	06/20/00[a]	< 50.0	< 250	**< 750**	**500**	--	< 0.5	0.585	< 0.5	1.86	--	--	--	--
	06/15/01[a]	< 50.0	368	**< 866**	**801**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--

Table 4-3a. Groundwater Analytical Results: Samples Between South Lake Union and Block 37 Site - TPH, VOCs, Naphthalene, and PCBs
Remedial Investigation Work Plan
Block 37 Site
600 - 630 Westlake Avenue North | Seattle, Washington

Monitoring Well ID	Sample Date	TPH (µg/L)					VOCs[4] (µg/L)							
		GRO[1]	DRO[2]	ORO[2]	TEH (DRO+ORO)[3]	Kerosene	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	EDB	EDC	Naphthalene
Screening Levels[5]														
GW-1 Protect Drinking Water GW-Detail-PW		**800**	**500**	**500**	**500**	**500**	**5**	**640**	**700**	**1,600**	**24**	**0.05**	**4.8**	**160**
GW-2 Protect Surface Water GW-Detail-SW-FW		**800**	**500**	**500**	**500**	**500**	**0.44**	**53**	**12**	**57**	**NE**	**NE**	**8.9**	**1,400**
GW-3 Protect Sediment Mod.747-1FW		**NE**	**NE**	**NE**	**NE**	**NE**	**69,000**	**22,000,000**	**19,000,000**	**35,000,000**	**3,700,000**	**900**	**25,000**	**260,000**
GW-4 Screening Level Protect Indoor Air GW-Detail-PW		**NE**	**NE**	**NE**	**NE**	**NE**	**2.4**	**15,000**	**2,800**	**320**	**800**	**0.3**	**3.5**	**8.9**
Laboratory PQL		**100**	**200**	**200**	**400**	**100**	**0.2**	**1.0**	**0.2**	**0.6**	**1.0**	**1.0**	**1.0**	**0.10**
SMW-3 Cont'd	09/07/01[a]	< 50.0	385	**< 571**	**670.5**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--
	12/28/2001	< 50.0	**1,160**	**< 500**	**1,410**	--	< 0.5	0.902	< 0.5	2.78	--	--	--	--
	09/26/02	< 100	< 250	**< 500**	375	--	1.83	< 2.0	< 1.0	< 1.5	--	--	--	--
	03/13/03	< 50.0	< 250	**< 500**	375	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--
	09/19/03	< 50.0	< 287	**< 575**	431	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--
	03/30/04	< 100	< 119	< 238	178.5	--	< 1.0	< 1.0	< 1.0	< 2.0	--	--	--	--
	09/29/04	56.0	< 242	< 483	362.5	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--
	03/17/05	< 100	< 248	< 495	371.5	--	< 1.0	< 1.0	< 1.0	< 2.0	--	--	--	--
	06/01/05	< 100	< 249	< 498	373.5	--	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	--	--	--
	07/25/05	< 50.0	< 250	**< 500**	375	--	< 0.2	< 0.2	< 0.2	< 0.5	< 1.0	--	--	< 0.5
	11/08/05	< 50.0	< 236	< 472	354	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	--
	02/24/06	< 50.0	< 278	**< 556**	417	--	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	--	--	< 1.0
	08/30/06	< 80.0	< 243	< 485	364	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0
	10/11/06	< 50.0	< 243	< 485	364	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 1.0
	12/13/06	< 50.0	< 236	< 472	354	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0
	03/08/07	< 50.0	< 250	**< 500**	375	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0
	06/02/08	< 50.0	< 236	< 472	354	< 236	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0
	08/05/08	< 50.0	< 236	< 472	354	< 236	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0
	11/04/08	< 50.0	< 238	< 476	357	< 238	< 0.5	< 0.5	< 0.5	< 3.0	--	--	--	< 5.0
	02/25/09	< 50.0	< 240	< 481	360.5	< 240	< 0.5	< 0.5	< 0.5	< 3.0	--	--	--	< 5.0
	08/17/09	< 50.0	< 250	< 490	370	< 250	< 0.5	< 0.5	< 0.5	< 2.0	< 1.0	--	--	< 5.0
	11/17/09	< 50.0	< 240	< 490	365	< 240	< 0.5	< 0.5	< 0.5	< 2.0	< 1.0	--	--	< 5.0
	02/22/10	< 50.0	107	**605**	**712**	< 76.2	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0
	05/24/10	< 50.0	255	**510**	**765**	100	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0
	08/18/10	< 50.0	< 77.7	< 388	232.85	< 77.7	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0
	11/16/10	< 50.0	< 77.7	< 388	232.85	< 77.7	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0
	03/01/11	< 50.0	< 77.7	< 388	232.85	< 77.7	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0
	06/15/11	< 50.0	< 83.3	< 417	250.15	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--
	08/30/11	< 50.0	< 86	< 430	258	< 86	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0
	12/06/11	< 50.0	< 82.5	< 412	247.25	< 82.5	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	**< 10**
	02/15/12	< 50.0	< 82.5	< 412	247.25	< 82.5	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	2.1
	05/16/12	< 50.0	< 83.3	< 417	250.15	< 83.3	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	2.9
	08/15/12	< 50.0	< 85.1	< 426	255.55	< 85.1	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0
	11/06/13	< 400	< 400	< 400	400	< 400	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	--	--	--
	12/13/17	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--
MW-38	11/05/91	**< 1,000**	**< 1,000**	--	**500**	--	< 0.5	0.6	< 0.5	0.5	--	--	--	--
	3/28/1997	< 50.0	< 250	**< 750**	**500**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--
	12/28/01	< 50.0	403	**< 500**	**653**	--	0.636	1.33	0.554	2.59	--	--	--	--
	09/26/02	< 100	282 b	**< 500**	**532**	--	0.743	< 2.0	< 1.0	< 1.5	--	--	--	--
	03/13/03	< 50.0	< 250	**< 500**	375	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--
	09/19/03	< 50.0	< 250	**< 500**	375	--	0.704	1.42	0.722	3.72	--	--	--	--
	03/30/04	< 100	< 133	< 266	199.5	--	< 1.0	< 1.0	< 1.0	< 2.0	--	--	--	--
	03/17/05	< 100	< 250	< 499	374.5	--	< 1.0	< 1.0	< 1.0	< 2.0	--	--	--	--
	07/26/05	< 50.0	< 250	**< 500**	375	--	< 0.2	< 0.2	< 0.2	< 0.5	< 1.0	--	--	< 0.5
	11/07/05	< 50.0	< 253	**< 505**	379	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	--
	05/09/06	< 50.0	< 250	**< 500**	375	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 1.0
	08/30/06	< 80.0	< 245	< 490	367.5	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0
	12/13/06	< 50.0	< 250	**< 500**	375	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0
	03/07/07	< 50.0	< 250	**< 500**	375	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0
	06/14/07	< 50.0	< 240	< 481	360.5	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0
	09/12/07	< 50.0	< 240	< 481	360.5	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0
	06/02/08	< 50.0	< 236	< 472	354	< 236	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0
	11/04/08	< 50.0	< 245	< 472	358.5	< 236	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0
	02/24/09	< 50.0	< 240	< 481	360.5	< 240	< 0.5	< 0.5	< 0.5	< 3.0	--	--	--	< 5.0
	05/17/09	< 50.0	< 238	< 476	357	< 238	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0
	08/17/09	< 50.0	< 240	< 470	355	< 240	< 0.5	< 0.5	< 0.5	< 2.0	< 1.0	--	--	< 5.0
	11/16/09	< 50.0	< 240	< 480	360	< 240	< 0.5	< 0.5	< 0.5	< 2.0	< 1.0	--	--	< 5.0
	02/22/10	< 50.0	149	423	**572**	< 75.5	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0
MW-46	11/05/91	**< 1,000**	**< 1,000**	--	**500**	--	< 0.5	0.6	< 0.5	1.2	--	--	--	--
	07/15/94	< 100	270	**1,200**	**1,470**	--	< 0.5	< 0.5	< 0.5	< 0.5	--	--	--	--
	10/25/94	< 50.0	**1,500**	**7,300**	**8,800**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--
	03/08/95	< 50.0	**720**	**3,600**	**4,320**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--
	6/6/1995	< 50.0	< 250	**1,400**	**1,525**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--
	9/7/1995	< 50.0	**710**	**5,600**	**6,310**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--
	12/8/1995	< 50.0	**1,400**	**14,000**	**15,400**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--
	4/1/1996	< 50.0	< 400	**2,800**	**3,000**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--
	6/25/1996	< 50.0	440	**2,090**	**2,530**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--
	9/27/1996	< 50.0	267	**< 750**	**642**	--	0.518	< 0.5	< 0.5	< 1.0	--	--	--	--
	3/28/1997	< 50.0	< 250	**< 750**	**500**	--	< 0.5	1.25	< 0.5	2.06	--	--	--	--
	12/19/97[a]	< 50.0	< 250	**< 750**	**500**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--
	12/17/98[a]	< 50.0	354	**< 750**	**729**	--	< 0.5	< 0.5	< 0.5	< 1.0	--	--	--	--
	12/19/00	226	277	**< 750**	**652**	--	< 0.5	2.18	2.53	18	--	--	--	--
	06/15/01[a]	< 50.0	295	**< 750**	**670**	--	< 0.5	< 0.5	< 0.5	1.39	--	--	--	--
MW-75	11/08/05	< 50.0	< 238	< 476	357	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	--
	02/24/06	< 50.0	< 253	**< 505**	379	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 1.0
	05/11/06	< 50.0	< 240	< 481	360.5	--	1.52	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 1.0
MW-76	11/08/05	84.6	< 245	< 490	367.5	--	0.7	< 0.5	< 0.5	< 3.0	< 1.0	--	--	--
	02/24/06	< 50.0	394	**752**	**1,146**	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 1.0
	05/11/06	< 50.0	< 245	< 490	367.5	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 1.0
	08/30/06	< 80.0	< 236	< 472	354	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0
	03/18/08	< 50.0	< 236	< 472	354	< 236	< 0.5	0.55	< 0.5	< 3.0	< 1.0	--	--	< 5.0
	06/02/08	< 50.0	< 236	< 472	354	< 236	< 0.5	0.52	< 0.5	< 3.0	< 1.0	--	--	< 5.0
	08/05/08	< 50.0	< 240	< 481	360.5	< 240	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0
MW-77	11/04/05	< 50.0	< 236	< 472	354	--	< 0.5	< 0.5	0.54	< 3.0	< 1.0	--	--	--
	02/23/06	< 50.0	< 238	< 476	357	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 1.0
	05/11/06	< 50.0	< 238	< 476	357	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	1.08
MW-78	11/04/05	< 50.0	< 236	< 472	354	--	0.59	0.76	0.73	< 3.0	< 1.0	--	--	--
	02/23/06	< 50.0	**1,800**	< 490	**2,045**	--	< 0.5	0.66	< 0.5	< 3.0	< 1.0	--	--	< 1.0
	05/11/06	< 50.0	< 243	< 485	364	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 1.0
MW-79	11/04/05	< 50.0	< 236	< 472	354	--	0.62	< 0.5	0.67	1.41	< 1.0	--	--	--
	02/23/06	< 50.0	< 245	< 490	367.5	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 1.0
	05/11/06	< 50.0	< 248	< 495	371.5	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 1.0
MW-80	11/03/05	69.4	< 243	< 485	364	--	**3.96**	< 0.5	10	7.88	< 2.0	--	--	--
	02/23/06	< 50.0	< 245	< 490	367.5	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 1.0
	05/09/06	< 50.0	< 236	< 472	354	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 1.0
	08/30/06	< 80.0	< 258	**< 515**	386.5	--	--	--	--	--	--	--	--	--
	12/13/06	< 50.0	< 243	< 485	364	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0
	03/07/07	< 50.0	< 243	< 485	364	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0
	06/14/07	< 50.0	< 236	< 472	354	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0
	09/12/07	< 50.0	< 240	< 481	360.5	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0
	12/18/07	< 50.0	< 236	< 472	354	--	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	--	--	< 1.0
	03/18/08	< 50.0	< 236	< 472	354	< 236	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0
	06/02/08	< 50.0	< 236	< 472	354	< 236	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0
	08/05/08	< 50.0	< 236	< 472	354	< 236	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0
	11/04/08	< 50.0	< 236	< 472	354	< 236	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0
	02/23/09	< 50.0	< 236	< 472	354	< 236	< 0.5	< 0.5	< 0.5	< 3.0	--	--	--	< 5.0
	05/17/09	< 50.0	< 240	< 481	360.5	< 240	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0
	08/17/09	< 50.0	< 240	< 490	365	< 240	< 0.5	< 0.5	< 0.5	< 2.0	< 1.0	--	--	< 5.0
	11/16/09	< 50.0	< 240	< 480	360	< 240	< 0.5	< 0.5	< 0.5	< 2.0	< 1.0	--	--	< 5.0
MW-81	11/03/05	< 50.0	< 236	< 472	354	--	< 0.2	< 0.5	0.84	2.05	< 2.0	--	--	--
	02/23/06	< 50.0	< 248	< 495	371.5	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 1.0
	05/09/06	< 50.0	< 248	< 495	371.5	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 1.0
	08/30/06	< 80.0	< 248	< 495	371.5	--	--	--	--	--	--	--	--	--
	12/13/06	< 50.0	< 258	**< 515**	386.5	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0
	03/07/07	< 50.0	< 258	**< 515**	386.5	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0
	06/14/07	< 50.0	< 240	< 481	360.5	--	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0
	09/12/07	< 50.0	< 240	< 481	360.5	--	1.08	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0
	12/18/07	< 50.0	< 236	< 472	354	--	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	--	--	< 5.0
	03/18/08	< 50.0	< 236	< 472	354	< 236	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0
	06/02/08	< 50.0	< 238	< 476	357	< 238	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0
	08/05/08	< 50.0	< 238	< 476	357	< 238	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0
	11/04/08	< 50.0	< 236	< 472	354	< 236	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0
	02/23/09	< 50.0	< 240	< 481	360.5	< 240	< 0.5	< 0.5	< 0.5	< 3.0	--	--	--	< 5.0
	05/17/09	< 50.0	< 240	< 481	360.5	< 240	< 0.5	< 0.5	< 0.5	< 3.0	< 1.0	--	--	< 5.0
	08/17/09	< 50.0	< 240	< 470	355	< 240	< 0.5	< 0.5	< 0.5	2.0	< 1.0	--	--	< 5.0
	11/16/09	< 50.0	< 240	< 470	355	< 240	< 0.5	< 0.5	< 0.5	< 2.0	< 1.0	--	--	< 5.0
	02/21/10	< 50.0	126	< 383	317.5	< 76.6	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 1.0
Monitoring Wells - Northwest of Valley Street														
SMW-2	11/21/12	< 100	< 100	< 100	100	< 100	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	< 4.0
	11/06/13	< 400	< 400	< 400	400	< 400	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	--	--	--
	07/29/14	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	< 0.0097	< 1.0	--
	12/09/14	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	< 0.0098	< 1.0	--
	03/23/15	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--
	06/22/15	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--
	09/11/15	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--
	12/15/16	< 100	--	--	--	--	< 1.0	< 1.0	< 1.0	< 3.0	--	--	--	--

Notes:

1. TPH as gasoline-range organics (GRO) analyzed by Ecology Method NWTPH-Gx.
2. TPH as diesel-range organics (DRO) and motor oil-range organics (ORO) analyzed by Ecology Method NWTPH-Dx.
3. Results are DRO+ORO calculations. A value of half the detection limit was used for non-detect values. Due to significant overlap between the two hydrocarbons, when both kerosene and diesel values are present for a sample the higher concentration and/or detection limit was used for the total extractable hydrocarbon calculation. Beginning in May 2022, results were quantified by the laboratory as hydrocarbon range of C10 to C36 (diese
4. Volatile organic Carbons (VOC) analysis by EPA Method 8020A, 8021B or 8260B/C/D.
5. The lowest relevant screening level for each constituent is highlighted in the corresponding color. Screening level selection process is summarized in Section 5.7.

Bold font indicates the reported value exceeds the corresponding (shaded) screening level (i.e., most stringent).
Shaded cell indicates the detected value exceeds the corresponding screening level (i.e., most stringent).
"<" = denotes analyte not detected at of exceeding the reporting limit listed
"--" = not analyzed, sampled, or reported

[b] TPH-Diesel and TPH-Oil did not resemble chromatogram used for quantitation.

[k] Analysis was performed outside of the method specified holding time
EDB = 1,2-dibromoethane
EDC = 1,2-dichloroethane
EPA = United States Environmental Protection Agency
MTBE = methyl tert-butyl ether
NE = not established
PQL = practical quantitation limit
TEH = total extractable hydrocarbons
TPH - total petroleum hydrocarbons
µg/L = microgram per liter

Table 4-3b. Groundwater Analytical Results: Samples Between South Lake Union and Block 37 Site - PAHs and cPAHs
Remedial Investigation Work Plan
Block 37 Site
600 - 630 Westlake Avenue North | Seattle, Washington

Monitoring Well ID	Sample Date	PAHs (µg/L)[1]									cPAHs (µg/L)							
		1-Methyl-naphthalene	Acenaphthene	Anthracene	Dibenzofuran	Fluoranthene	Fluorene	Naphthalene	Phenanthrene	Pyrene	Benzo(a) pyrene	Benzo(a) anthracene	Benzo(b) fluoranthene	Benzo(j,k) fluoranthene	Chrysene	Dibenz(a,h) anthracene	Indeno(1,2,3-cd)pyrene	TTEC[1]
Screening Levels																		
GW-1 Protect Drinking Water GW-Detail-PW		**1.5**	**480**	**2,400**	**8.0**	**640**	**320**	**160**	**NE**	**240**	**0.2**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**0.2**
GW-2 Protect Surface Water GW-Detail-SW-FW		**NE**	**30**	**100**	**NE**	**6.0**	**10**	**1,400**	**NE**	**8.0**	**0.000016**	**0.00016**	**0.00016**	**0.0016**	**0.016**	**0.000016**	**0.00016**	**0.0097**
GW-3 Protect Sediment Mod.747-1FW		**1,200**	**200,000**	**210,000**	**4.3**	**0.02**	**83,000**	**260,000**	**NE**	**0.015**	**0.0019**	**0.005**	**0.003**	**0.0031**	**0.0098**	**0.001**	**0.00092**	**0.0043**
GW-4 Screening Level Protect Indoor Air GW-Detail-PW		**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**8.9**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**
Laboratory PQL		**0.04**	**0.04**	**0.04**	**0.04**	**0.04**	**0.04**	**0.10**	**0.04**	**0.04**	**0.01**	**0.01**	**0.01**	**(Total Benzofluoranthenes)**	**0.01**	**0.01**	**0.01**	**0.0151**
Monitoring Wells - South of Valley Street																		
MW-213	2/17/2022	1.1	0.028 J	< 0.0074	< 0.017	< 0.017	< 0.0095	0.35	< 0.015	< 0.013	**< 0.011**	**< 0.016**	**< 0.025**		**< 0.014**	**< 0.016**	**< 0.016**	< 0.009
	8/17/2022	--	--	--	--	--	--	< 0.18	--	--	**< 0.011**	< 0.0079	**< 0.034**		< 0.0082	**< 0.016**	**< 0.016**	< 0.01
MW-214	2/17/2022	< 0.0084	< 0.011	< 0.0078	< 0.018	< 0.018	< 0.01	< 0.016	< 0.016	< 0.014	**< 0.012**	**< 0.016**	**< 0.026**		**< 0.015**	**< 0.016**	**< 0.016**	< 0.009
	8/17/2022	--	--	--	--	--	--	< 0.18	--	--	**< 0.011**	< 0.0078	**< 0.034**		< 0.008	**< 0.016**	**< 0.016**	< 0.009
MW-215	2/17/2022	< 0.0079	< 0.010	< 0.0073	< 0.016	< 0.016	< 0.0093	< 0.015	< 0.015	< 0.013	**< 0.011**	**< 0.015**	**< 0.024**		**< 0.014**	**< 0.015**	**< 0.015**	< 0.009
	8/17/2022	--	--	--	--	--	--	--	--	--	**< 0.011**	< 0.0081	**< 0.035**		< 0.0084	**< 0.016**	**< 0.017**	< 0.01
Monitoring Wells - North of Valley Street																		
MW-209	2/17/2022	0.25	2.6	0.23	0.13	**0.36**	1.0	< 0.015	0.42	**0.4**	**< 0.011**	**0.018 J**	**< 0.024**		**< 0.014**	**< 0.015**	**< 0.015**	0.001
	8/17/2022	--	--	--	--	--	--	< 0.18	--	--	**< 0.011**	**0.037**	**< 0.034**		**0.042**	**0.016**	**0.016**	0.0145
MW-210	2/17/2022	< 0.0084	0.014 J	< 0.0078	< 0.018	< 0.018	< 0.01	< 0.016	< 0.016	< 0.014	**< 0.012**	**< 0.016**	**< 0.026**		**< 0.015**	**< 0.016**	**< 0.016**	< 0.009
	8/17/2022	--	--	--	--	--	--	< 0.18	--	--	**< 0.01**	< 0.008	**< 0.035**		< 0.0083	**< 0.016**	**< 0.016**	< 0.01
MW-211	2/16/2022	< 0.0086	< 0.011	< 0.008	< 0.018	< 0.018	< 0.01	< 0.017	< 0.016	< 0.014	**< 0.012**	**< 0.017**	**< 0.027**		**< 0.015**	**< 0.017**	**< 0.017**	< 0.009
	8/17/2022	--	--	--	--	--	--	< 0.18	--	--	**< 0.011**	< 0.0079	**< 0.034**		< 0.0082	**< 0.016**	**< 0.016**	< 0.01

Notes:
1. cPAHs are subject to WAC-173-340 Toxicity Equivalent Concentration calculations. The MTCA Method A cleanup level for TTEC is based on benzo(a)pyrene.
2. The lowest relevant screening level for each constituent is highlighted in the corresponding color. Screening level selection process is summarized in Section 5.7.
Naphthalene results are also included in Table 4-2a
Bold font indicates the reported value exceeds the corresponding (shaded) screening level (i.e., most stringent).
Shaded cell indicates the detected value exceeds the corresponding screening level (i.e., most stringent).
"<" = denotes analyte not detected at of exceeding the reporting limit listed
"--" = not analyzed, sampled, or reported
cPAH = carcinogenic polycyclic aromatic hydrocarbon
Ecology = Washington State Department of Ecology
EPA = United States Environmental Protection Agency
J = Result is an estimate.
NE = not established
PQL = practical quantitation limit
TTEC = total toxicity equivalent concentration
WAC = Washington Administrative Code
µg/L = micrograms per liter

Table 4-3c. Groundwater Analytical Results: Samples Between South Lake Union and Block 37 Site - CVOCs
Remedial Investigation Work Plan
Block 37 Site
600 - 630 Westlake Avenue North | Seattle, Washington

Monitoring Well ID	Sample Date	cVOCs (µg/L)				
		PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride
Screening Levels [1]						
GW-1 Protect Drinking Water GW-Detail-PW		**5.0**	**4.0**	**16**	**100**	**0.29**
GW-2 Protect Surface Water GW-Detail-SW-FW		**2.40**	**0.3**	**NE**	**100**	**0.02**
GW-3 Protect Sediment Mod.747-1FW		**330,000**	**8,200**	**2,700,000**	**27,000,000**	**3,800**
GW-4 Screening Level Protect Indoor Air GW-Detail-PW		**25**	**1.4**	**180**	**77**	**0.33**
Laboratory PQL		**1.0**	**1.0**	**1.0**	**1.0**	**0.2**
Monitoring Wells - South of Valley Street						
MW-213	06/04/19	< 0.17	< 0.15	< 0.15	< 0.24	< 0.092
MW-214	06/04/19	< 0.17	< 0.15	< 0.15	< 0.24	< 0.092
Monitoring Wells - North of Valley Street						
MW-209	06/04/19	< 0.17	< 0.15	< 0.15	< 0.24	< 0.092
MW-210	06/04/19	< 0.17	< 0.15	< 0.15	< 0.24	< 0.092

Notes:
1. The lowest relevant screening level is highlighted in the corresponding color. Screening level selection process is summarized in Section 5.7.
Bold font indicates the reported value exceeds the corresponding (shaded) screening level (i.e., most stringent).
Shaded cell indicates the detected value exceeds the corresponding screening level (i.e., most stringent).
cVOC = Chlorinated Volatile Organic Compounds
DCE = Dichloroethylene
PCE = Tetrachloroethylene
TCE = Trichloroethylene
µg/L = microgram per liter

Table 4-3d. Groundwater Analytical Results: Samples Between South Lake Union and Block 37 Site - Metals
Remedial Investigation Work Plan
Block 37 Site
600 - 630 Westlake Avenue North | Seattle, Washington

Monitoring Well ID	Sample Date	Metals (µg/L)							
		Arsenic (Total)	Arsenic (Dissolved)	Barium (Total)	Barium (Dissolved)	Chromium III (Total)[3]	Chromium III (Dissolved)[3]	Lead (Total)[1]	Lead (Dissolved)[1]
Screening Levels[2]									
GW-1 Protect Drinking Water GW-Detail-PW		**0.58**	**0.58**	**2,000**	**2,000**	**100**	**100**	**15**	**15**
GW-2 Protect Surface Water GW-Detail-SW-FW		**0.018**	**0.018**	**1,000**	**1,000**	**74**	**74**	**2.5**	**2.5**
GW-3 Protect Sediment Mod.747-1FW		**380**	**380**	**400,000**	**400,000**	**25,000**	**25,000**	**2.1**	**2.1**
GW-4 Screening Level Protect Indoor Air GW-Detail-PW		**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**
GW-5 Natural Background		**8**	**8**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**
Laboratory PQL		**3.3**	**3.3**	**28**	**28**	**11**	**11**	**0.5**	**0.5**
Monitoring Wells - South of Valley Street									
MW-86	02/21/06	--	--	--	--	--	--	< 1.0	--
	05/09/06	--	--	--	--	--	--	< 1.0	--
	08/29/06	--	--	--	--	--	--	1.32	--
	12/11/06	--	--	--	--	--	--	1.43	--
	03/07/07	--	--	--	--	--	--	< 1.0	--
	06/13/07	--	--	--	--	--	--	< 1.0	--
	09/12/07	--	--	--	--	--	--	< 1.0	--
	12/18/07	--	--	--	--	--	--	1.32	--
	03/18/08	--	--	--	--	--	--	< 1.0	< 1.0
	06/03/08	--	--	--	--	--	--	< 1.0	< 1.0
	08/05/08	--	--	--	--	--	--	< 1.0	< 1.0
	11/04/08	--	--	--	--	--	--	< 1.0	< 1.0
	02/24/09	--	--	--	--	--	--	< 1.0	< 1.0
	05/17/09	--	--	--	--	--	--	< 1.0	< 1.0
	08/17/09	--	--	--	--	--	--	**< 5.0**	**< 5.0**
	11/16/09	--	--	--	--	--	--	< 1.0	< 1.0
	02/22/10	--	--	--	--	--	--	0.48	< 0.1
	05/24/10	--	--	--	--	--	--	0.51	< 0.1
	08/16/10	--	--	--	--	--	--	0.63	0.25
	11/15/10	--	--	--	--	--	--	**< 10**	**< 10**
MW-87	02/21/06	--	--	--	--	--	--	< 1.0	--
	05/09/06	--	--	--	--	--	--	< 1.0	--
	08/29/06	--	--	--	--	--	--	< 1.0	--
	12/11/06	--	--	--	--	--	--	< 1.0	--
	03/07/07	--	--	--	--	--	--	< 1.0	--
	06/13/07	--	--	--	--	--	--	< 1.0	--
	09/12/07	--	--	--	--	--	--	< 1.0	--
	12/18/07	--	--	--	--	--	--	**2.95**	--
	03/18/08	--	--	--	--	--	--	< 1.0	< 1.0
	06/03/08	--	--	--	--	--	--	< 1.0	< 1.0
	08/05/08	--	--	--	--	--	--	< 1.0	< 1.0
	11/04/08	--	--	--	--	--	--	1.46	< 1.0
	02/24/09	--	--	--	--	--	--	1.27	< 1.0
	05/17/09	--	--	--	--	--	--	< 1.0	< 1.0
	08/17/09	--	--	--	--	--	--	**< 5.0**	**< 5.0**
	11/16/09	--	--	--	--	--	--	1.3	< 1.0
	02/22/10	--	--	--	--	--	--	**3.3**	< 0.1
	05/24/10	--	--	--	--	--	--	0.86	< 0.1
	08/16/10	--	--	--	--	--	--	1.4	< 0.1
	11/15/10	--	--	--	--	--	--	**< 10**	**< 10**
MW-88	05/10/06	--	--	--	--	--	--	1.97	--
	12/13/06	--	--	--	--	--	--	**2.2**	--
MW-213	10/06/14	--	--	--	--	--	--	**11**	**< 10**
	12/08/14	--	--	--	--	--	--	**12.8**	**< 10**
	12/13/17	--	--	--	--	--	--	**< 10**	**< 10**
	06/13/18	--	--	--	--	--	--	**2.8 J**	**2.6 J**
	01/04/19	--	--	--	--	--	--	< 2.0	< 2.0
	06/04/19	--	--	--	--	--	--	**2.8 J**	< 2.0
	12/18/19	--	--	--	--	--	--	**3.8 J**	**2.5 J**
	02/17/22	**13.5**	**11.8**	69.1	59.8	1.2	1.0	1.0	0.34
	08/17/22	**12.5**	**12.6**	72.1	59.7	1.9 J	1.6 J	0.39 J	0.2 J
	12/01/22	2.7	2.4	47.4	45.5	7.2	6.4	0.72	0.14 J
MW-214	10/06/14	--	--	--	--	--	--	**< 10**	**< 10**
	12/08/14	--	--	--	--	--	--	**< 10**	**< 10**
	06/04/19	--	--	--	--	--	--	**2.3 J**	**2.3 J**
	02/17/22	6.1	4.7	38	37	0.8	0.83	0.11	< 0.03
	08/17/22	**8.5**	**8.4**	48	51	0.91 J	0.97 J	< 0.056	< 0.056
	12/01/22	3.1	2.9	18	19	2.5	2.2	0.079 J	< 0.056
MW-215	10/06/14	--	--	--	--	--	--	**< 10**	**< 10**
	12/08/14	--	--	--	--	--	--	**< 10**	**< 10**
	12/13/17	--	--	--	--	--	--	**< 10**	**< 10**
	01/04/19	--	--	--	--	--	--	< 2.0	< 2.0
	12/18/19	--	--	--	--	--	--	< 2.0	< 2.0
	02/17/22	2.5	1.9	55.6	48	1.3	0.7	0.41	0.11
	08/17/22	3.4	2.6	68.8	57.5	2.3	1.4 J	1.3	0.09 J
	12/01/22	1.8	1.9	14.9	14.8	< 0.36	< 0.36	0.49 J	0.47 J
Monitoring Wells - North of Valley Street									
MW-209	11/05/08	--	--	--	--	--	--	< 1.0	< 1.0
	02/22/10	--	--	--	--	--	--	1.3	< 0.1
	05/24/10	--	--	--	--	--	--	1.1	< 0.1
	08/18/10	--	--	--	--	--	--	1.3	< 0.1
	11/16/10	--	--	--	--	--	--	**< 10**	**< 10**
	03/01/11	--	--	--	--	--	--	**< 10**	--
	06/15/11	--	--	--	--	--	--	0.19	< 0.10
	08/30/11	--	--	--	--	--	--	0.35	0.17
	12/06/11	--	--	--	--	--	--	0.12	0.18
	02/15/12	--	--	--	--	--	--	**< 10**	**< 10**
	05/16/12	--	--	--	--	--	--	**< 10**	**< 10**
	08/15/12	--	--	--	--	--	--	**< 10**	**< 10**
	11/21/12	--	--	--	--	--	--	**< 3.0**	**< 3.0**
	11/06/13	--	--	--	--	--	--	**< 10**	**< 10**

Table 4-3d. Groundwater Analytical Results: Samples Between South Lake Union and Block 37 Site - Metals
Remedial Investigation Work Plan
Block 37 Site
600 - 630 Westlake Avenue North | Seattle, Washington

Monitoring Well ID	Sample Date	Metals (µg/L)							
		Arsenic (Total)	Arsenic (Dissolved)	Barium (Total)	Barium (Dissolved)	Chromium III (Total)[3]	Chromium III (Dissolved)[3]	Lead (Total)[1]	Lead (Dissolved)[1]
Screening Levels[2]									
GW-1 Protect Drinking Water GW-Detail-PW		**0.58**	**0.58**	**2,000**	**2,000**	**100**	**100**	**15**	**15**
GW-2 Protect Surface Water GW-Detail-SW-FW		**0.018**	**0.018**	**1,000**	**1,000**	**74**	**74**	**2.5**	**2.5**
GW-3 Protect Sediment Mod.747-1FW		**380**	**380**	**400,000**	**400,000**	**25,000**	**25,000**	**2.1**	**2.1**
GW-4 Screening Level Protect Indoor Air GW-Detail-PW		**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**
GW-5 Natural Background		**8**	**8**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**
Laboratory PQL		**3.3**	**3.3**	**28**	**28**	**11**	**11**	**0.5**	**0.5**
MW-209 Cont'd	07/29/14	--	--	--	--	--	--	**< 10**	**< 10**
	12/09/14	--	--	--	--	--	--	**< 10**	**< 10**
	06/04/19	--	--	--	--	--	--	**2.4 J**	< 2.0
	12/19/19	--	--	--	--	--	--	< 2.0	< 2.0
	02/17/22	1.5	0.9	86	84.7	0.53	0.5 J	0.042 J	0.15
	08/17/22	1.4	1.4	113	111	0.92	0.86	< 0.063 J	< 0.069 J
	11/30/22	2.9	3.1	48	52.1	< 0.36	< 0.36	0.092 J	< 0.056
MW-210	11/05/08	--	--	--	--	--	--	< 1.0	< 1.0
	02/25/09	--	--	--	--	--	--	< 1.0	< 1.0
	05/17/09	--	--	--	--	--	--	< 1.0	< 1.0
	08/17/09	--	--	--	--	--	--	**< 5.0**	**< 5.0**
	11/17/09	--	--	--	--	--	--	1.3	< 1.0
	02/22/10	--	--	--	--	--	--	0.31	0.21
	05/24/10	--	--	--	--	--	--	0.45	< 0.1
	08/18/10	--	--	--	--	--	--	0.36	< 0.1
	11/16/10	--	--	--	--	--	--	**< 10**	**< 10**
	03/01/11	--	--	--	--	--	--	**< 10**	--
	06/15/11	--	--	--	--	--	--	0.27	< 0.1
	08/30/11	--	--	--	--	--	--	< 0.1	< 0.1
	12/06/11	--	--	--	--	--	--	< 0.1	0.22
	02/15/12	--	--	--	--	--	--	**< 10**	**< 10**
	05/16/12	--	--	--	--	--	--	**< 10**	**< 10**
	08/15/12	--	--	--	--	--	--	**< 10**	**< 10**
	11/21/12	--	--	--	--	--	--	**< 3.0**	**< 3.0**
	11/06/13	--	--	--	--	--	--	**< 10**	**< 10**
	07/29/14	--	--	--	--	--	--	**< 10**	**< 10**
	12/09/14	--	--	--	--	--	--	**< 10**	**< 10**
	06/04/19	--	--	--	--	--	--	< 2.0	< 2.0
	02/17/22	0.41 J	0.39 J	116	110	< 0.67	< 0.59	< 0.058 J	< 0.045 J
	08/17/22	0.76	1	93.4	85.2	< 1.2 J	< 1.3 J	< 0.056	< 0.056
	11/30/22	1.4	0.93	103	98.5	< 0.36	< 0.36	< 0.056	< 0.056
MW-211	11/05/08	--	--	--	--	--	--	< 1.0	< 1.0
	02/25/09	--	--	--	--	--	--	< 1.0	< 1.0
	05/17/09	--	--	--	--	--	--	**4.72**	< 1.0
	08/17/09	--	--	--	--	--	--	**< 5.0**	**< 5.0**
	11/17/09	--	--	--	--	--	--	< 1.0	< 1.0
	02/22/10	--	--	--	--	--	--	0.42	< 0.1
	05/24/10	--	--	--	--	--	--	0.46	0.29
	08/18/10	--	--	--	--	--	--	0.34	0.13
	11/15/10	--	--	--	--	--	--	**< 10**	**< 10**
	03/01/11	--	--	--	--	--	--	**< 10**	--
	06/15/11	--	--	--	--	--	--	0.12	< 0.1
	08/30/11	--	--	--	--	--	--	< 0.1	< 0.1
	12/06/11	--	--	--	--	--	--	< 0.1	0.15
	02/15/12	--	--	--	--	--	--	**< 10**	**< 10**
	05/16/12	--	--	--	--	--	--	**< 10**	**< 10**
	08/15/12	--	--	--	--	--	--	**< 10**	**< 10**
	11/06/13	--	--	--	--	--	--	**< 10**	**< 10**
	12/13/17	--	--	--	--	--	--	**< 10**	**< 10**
	01/04/19	--	--	--	--	--	--	< 2.0	< 2.0
	12/19/19	--	--	--	--	--	--	< 2.0	2.0 J
	02/16/22	0.24 J	0.2 J	62	62.5	0.6	0.63	0.031 J	< 0.028
	08/17/22	0.27 J	0.21 J	68	65.5	1.10 J	0.97 J	< 0.056	< 0.056
	11/30/22	2.0	2.1	63.9	63.4	< 0.36	< 0.36	< 0.056	< 0.056
SMW-3	02/24/06	--	--	--	--	--	--	< 1.0	--
	08/30/06	--	--	--	--	--	--	< 1.0	--
	10/11/06	--	--	--	--	--	--	< 1.0	--
	12/13/06	--	--	--	--	--	--	< 1.0	--
	03/08/07	--	--	--	--	--	--	< 1.0	--
	06/02/08	--	--	--	--	--	--	< 1.0	< 1.0
	08/05/08	--	--	--	--	--	--	**4.5**	< 1.0
	11/04/08	--	--	--	--	--	--	**5.9**	< 1.0
	02/25/09	--	--	--	--	--	--	< 1.0	< 1.0
	08/17/09	--	--	--	--	--	--	**< 5.0**	**< 5.0**
	11/17/09	--	--	--	--	--	--	1.2	< 1.0
	02/22/10	--	--	--	--	--	--	0.26	< 0.1
	05/24/10	--	--	--	--	--	--	0.42	< 0.1
	08/18/10	--	--	--	--	--	--	0.39	< 0.1
	11/16/10	--	--	--	--	--	--	**< 10**	**< 10**
	03/01/11	--	--	--	--	--	--	**< 10**	--
	06/15/11	--	--	--	--	--	--	0.2	< 0.1
	08/30/11	--	--	--	--	--	--	0.1	0.1
	12/06/11	--	--	--	--	--	--	0.1	0.4
	02/15/12	--	--	--	--	--	--	**< 10**	**< 10**
	05/16/12	--	--	--	--	--	--	**< 10**	**< 10**
	08/15/12	--	--	--	--	--	--	**< 10**	**< 10**
	11/06/13	--	--	--	--	--	--	**< 10**	**< 10**
	12/13/17	--	--	--	--	--	--	**< 10**	**< 10**
MW-38	11/05/91	--	--	--	--	--	--	--	< 0.003
	05/09/06	--	--	--	--	--	--	< 1.0	--
	08/30/06	--	--	--	--	--	--	< 1.0	--
	12/13/06	--	--	--	--	--	--	< 1.0	--
	03/07/07	--	--	--	--	--	--	< 1.0	--
	06/14/07	--	--	--	--	--	--	< 1.0	--
	09/12/07	--	--	--	--	--	--	< 1.0	--
`	06/02/08	--	--	--	--	--	--	**3.77**	< 1.0
	11/04/08	--	--	--	--	--	--	**5.99**	< 1.0
	02/24/09	--	--	--	--	--	--	1.78	< 1.0
	05/17/09	--	--	--	--	--	--	1.71	< 1.0
	08/17/09	--	--	--	--	--	--	**5.9**	**< 5.0**
	11/16/09	--	--	--	--	--	--	**4.9**	< 1.0
	02/22/10	--	--	--	--	--	--	**5.9**	< 0.1

Table 4-3d. Groundwater Analytical Results: Samples Between South Lake Union and Block 37 Site - Metals
Remedial Investigation Work Plan
Block 37 Site
600 - 630 Westlake Avenue North | Seattle, Washington

Monitoring Well ID	Sample Date	Metals (µg/L)							
		Arsenic (Total)	Arsenic (Dissolved)	Barium (Total)	Barium (Dissolved)	Chromium III (Total)[3]	Chromium III (Dissolved)[3]	Lead (Total)[1]	Lead (Dissolved)[1]
Screening Levels[2]									
GW-1 Protect Drinking Water GW-Detail-PW		**0.58**	**0.58**	**2,000**	**2,000**	**100**	**100**	**15**	**15**
GW-2 Protect Surface Water GW-Detail-SW-FW		**0.018**	**0.018**	**1,000**	**1,000**	**74**	**74**	**2.5**	**2.5**
GW-3 Protect Sediment Mod.747-1FW		**380**	**380**	**400,000**	**400,000**	**25,000**	**25,000**	**2.1**	**2.1**
GW-4 Screening Level Protect Indoor Air GW-Detail-PW		**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**
GW-5 Natural Background		**8**	**8**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**
Laboratory PQL		**3.3**	**3.3**	**28**	**28**	**11**	**11**	**0.5**	**0.5**
MW-46	11/05/91	--	--	--	--	--	--	--	0.006
MW-75	02/24/06	--	--	--	--	--	--	< 1.0	--
	05/11/06	--	--	--	--	--	--	< 1.0	--
MW-76	02/24/06	--	--	--	--	--	--	**4.3**	--
	05/11/06	--	--	--	--	--	--	< 1.0	--
	08/30/06	--	--	--	--	--	--	1.78	--
	03/18/08	--	--	--	--	--	--	**20.8**	< 1.0
	06/02/08	--	--	--	--	--	--	1.31	< 1.0
	08/05/08	--	--	--	--	--	--	**4.82**	< 1.0
MW-77	02/23/06	--	--	--	--	--	--	< 1.0	--
	05/11/06	--	--	--	--	--	--	< 1.0	--
MW-78	02/23/06	--	--	--	--	--	--	< 1.0	--
	05/11/06	--	--	--	--	--	--	< 1.0	--
MW-79	02/23/06	--	--	--	--	--	--	< 1.0	--
	05/11/06	--	--	--	--	--	--	< 1.0	--
MW-80	02/23/06	--	--	--	--	--	--	< 1.0	--
	05/09/06	--	--	--	--	--	--	< 1.0	--
	08/30/06	--	--	--	--	--	--	< 1.0	--
	12/13/06	--	--	--	--	--	--	< 1.0	--
	03/07/07	--	--	--	--	--	--	< 1.0	--
	06/14/07	--	--	--	--	--	--	**6.15**	--
	09/12/07	--	--	--	--	--	--	1.6	--
	12/18/07	--	--	--	--	--	--	**2.7**	--
	03/18/08	--	--	--	--	--	--	1.15	< 1.0
	06/02/08	--	--	--	--	--	--	1.64	< 1.0
	08/05/08	--	--	--	--	--	--	1.81	< 1.0
	11/04/08	--	--	--	--	--	--	**3.66**	< 1.0
	02/23/09	--	--	--	--	--	--	**2.52**	< 1.0
	05/17/09	--	--	--	--	--	--	**2.83**	< 1.0
	08/17/09	--	--	--	--	--	--	**< 5.0**	**< 5.0**
	11/16/09	--	--	--	--	--	--	**2.4**	< 1.0
MW-81	02/23/06	--	--	--	--	--	--	1.3	--
	05/09/06	--	--	--	--	--	--	< 1.0	--
	08/30/06	--	--	--	--	--	--	< 1.0	--
	12/13/06	--	--	--	--	--	--	< 1.0	--
	03/07/07	--	--	--	--	--	--	< 1.0	--
	06/14/07	--	--	--	--	--	--	< 1.0	--
	09/12/07	--	--	--	--	--	--	< 1.0	--
	12/18/07	--	--	--	--	--	--	1.82	--
	03/18/08	--	--	--	--	--	--	1.82	< 1.0
	06/02/08	--	--	--	--	--	--	< 1.0	< 1.0
	08/05/08	--	--	--	--	--	--	**8.83**	< 1.0
	11/04/08	--	--	--	--	--	--	**7.90**	< 1.0
	02/23/09	--	--	--	--	--	--	**2.32**	< 1.0
	05/17/09	--	--	--	--	--	--	**3.27**	< 1.0
	08/17/09	--	--	--	--	--	--	**7.90**	**< 5.0**
	11/16/09	--	--	--	--	--	--	**5.3**	< 1.0
	02/21/10	--	--	--	--	--	--	**4.0**	< 0.1
Monitoring Wells - Northwest of Valley Street									
SMW-2	11/21/12	--	--	--	--	--	--	**3.0**	**3.0**
	11/06/13	--	--	--	--	--	--	**10**	**10**
	07/29/14	--	--	--	--	--	--	**10**	**10**
	12/09/14	--	--	--	--	--	--	**28.9**	**10**
Monitoring Wells - Within Valley Street									
MW-204	02/21/06	--	--	--	--	--	--	1.63	--
	05/09/06	--	--	--	--	--	--	< 1.0	--

Notes:

1. Total lead analysis by EPA Method 6020.
2. The lowest relevant screening level for each constituent is highlighted in the corresponding color. Screening level selection process is summarized in Section 5.7.
3. The screening level shown for protection of drinking water is based on the value for total chromium, and the screening levels shown for protection of surface water and sediment are based on those for trivalent chromium.

Bold font indicates the reported value exceeds the corresponding (shaded) screening level (i.e., most stringent).

Shaded cell indicates the detected value exceeds the corresponding screening level (i.e., most stringent).

"<" = denotes analyte not detected at or exceeding the reporting limit listed

"--" = not analyzed, sampled, or reported

[J] Result is an estimate

MW = monitoring well

MWR = monitoring well replacement

NE = not established

PQL = practical quantitation limit

µg/L = microgram per liter

Table 4-4a. Soil Analytical Results - TPH, VOCs, Naphthalene, and PCBs
Block 37 Site | Work Plan
Remedial Investigation Work Plan
600-630 Westlake Avenue North | Seattle, Washington

Sample ID	Sample Excavated (Yes=sample removed; No=sample present)	Sample Depth (feet bgs)	Elevation (feet NAVD88)	Sample Date	Consultant	TPH (mg/kg)						VOCs[5] (mg/kg)							PAHs (mg/kg)	PCB (Aroclors) (mg/kg)
						TPH[1]	GRO[2]	DRO[3]	ORO[3]	Total Extractable Hydrocarbons[4]	Kerosene	Benzene	Toluene	Ethyl benzene	Total Xylenes	EDB	EDC	MTBE	Naphthalene	
Screening Levels [6]																				
SL-1 Direct Contact						NE	1,500	NE	NE	NE	NE	18	6,400	8,000	16,000	0.50	11	560	1,600	1.0
SL-2 Protect Drinking Water Vadose Zone						NE	30	2,000	2,000	2,000	2,000	0.027	4.5	5.9	14	0.00027	0.023	0.1	4.5	0.34
SL-5 Protect Drinking Water Saturated Zone						2,000	30	2,000	2,000	2,000	2,000	0.0017	0.27	0.34	0.83	0.000018	0.0016	0.0072	0.24	0.017
SL-10 Natural Background						NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Laboratory PQL						NE	5	15	10	3.44	NA	0.02	0.05	0.05	0.15	0.05	0.05	0.05	0.2	0.0330
Exc. 1- N wall	Yes	14	17	2/28/1990	SCS Engineers	1,400	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Exc. 1- NE wall	Yes	14	17	2/28/1990	SCS Engineers	220	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Exc. 1- S wall	Yes	14	17	2/28/1990	SCS Engineers	1,100	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Exc. 1- W wall	Yes	14	17	2/28/1990	SCS Engineers	340	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Exc. 2- S wall	Yes	14	17	2/28/1990	SCS Engineers	580	--	--	--	--	--	47	160	93	--	--	--	--	--	--
T-1 (bottom)	Yes	14	17	2/28/1990	SCS Engineers	3,800	--	--	--	--	--	--	--	--	--	--	--	--	--	--
T-2 (bottom)	Yes	14	17	2/28/1990	SCS Engineers	870	--	--	--	--	--	3.1	--	55	--	--	--	--	--	--
T-3 (bottom)	Yes	14	17	2/28/1990	SCS Engineers	820	--	--	--	--	--	2.9	--	35	--	--	--	--	--	--
T-4 (bottom)	Yes	14	17	2/28/1990	SCS Engineers	2,100	--	--	--	--	--	--	--	20	--	--	--	--	--	--
T-5 (bottom)	Yes	14	17	2/28/1990	SCS Engineers	1,700	--	--	--	--	--	0.97	--	--	--	--	--	--	--	--
Exc. 2- N wall	Yes	14	17	3/2/1990	SCS Engineers	660	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Exc. 2- S wall	Yes	14	17	3/2/1990	SCS Engineers	13,000	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Exc. 2- W wall	Yes	14	17	3/2/1990	SCS Engineers	220	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Exc. 3- NW wall	Yes	14	17	3/2/1990	SCS Engineers	970	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SMW-1-5'	No	5	26	1/28/1991	SCS Engineers	38	--	--	--	38	--	< 0.001	< 0.001	< 0.001	< 0.001	--	--	--	--	--
SMW-1-10'	No	10	21	1/28/1991	SCS Engineers	8.6	--	--	--	8.6	--	< 0.001	< 0.001	< 0.001	< 0.001	--	--	--	--	--
SMW-3-5'	No	5	23	1/28/1991	SCS Engineers	750	--	--	--	750	--	< 0.001	< 0.001	0.0015	0.0145	--	--	--	--	--
SMW-3-10'	No	10	18	1/28/1991	SCS Engineers	73	--	--	--	73	--	< 0.001	< 0.001	< 0.001	< 0.001	--	--	--	--	--
SMW-4-5'	Yes	5	23	1/28/1991	SCS Engineers	--	--	--	--	--	--	0.17	< 0.005	0.6	0.038	--	--	--	--	--
SMW-4-10'	Yes	10	18	1/28/1991	SCS Engineers	290	--	--	--	290	--	4.3	4	7.8	16.1	--	--	--	--	--
SMW-4-15'	No	15	13	1/28/1991	SCS Engineers	33	--	--	--	33	--	< 0.001	0.0024	0.0026	0.0104	--	--	--	--	--
BH-1-5'	No	5	23	1/30/1991	SCS Engineers	500	--	--	--	500	--	< 0.001	< 0.001	< 0.001	< 0.001	--	--	--	--	--
BH-1-8'	No	8	20	1/30/1991	SCS Engineers	29	--	--	--	29	--	< 0.001	< 0.001	< 0.001	< 0.001	--	--	--	--	--
SMW-2-5'	No	5	23	1/30/1991	SCS Engineers	450	--	--	--	450	--	< 0.001	< 0.001	< 0.001	< 0.001	--	--	--	--	--
SMW-2-8'	No	8	20	1/30/1991	SCS Engineers	77	--	--	--	77	--	< 0.001	< 0.001	< 0.001	< 0.001	--	--	--	--	--
SMW-5-5'	Yes	5	23	1/30/1991	SCS Engineers	390	--	--	--	390	--	0.56	0.59	0.084	0.51	--	--	--	--	--
SMW-5-10'	Yes	10	18	1/30/1991	SCS Engineers	17	--	--	--	17	--	11	57	17	87	--	--	--	--	--
SMW-5-17.5'	No	17.5	10.5	1/30/1991	SCS Engineers	--	--	--	--	--	--	0.43	0.78	0.43	2.24	--	--	--	--	--
MW-32-5	Yes	12.5	15.5	10/21/1991	Geo Engineers	--	4,500	--	--	--	--	41	300	110	600	--	--	--	--	--
MW-32-7	No	22.5	5.5	10/21/1991	Geo Engineers	--	18	--	--	--	--	0.33	1.1	0.4	2.3	--	--	--	--	--
MW-33-3	Yes	12.5	14	10/21/1991	Geo Engineers	--	60.0 (5)	< 5	--	2.5	--	< 0.025	0.098	0.27	1.3	--	--	--	--	--
MW-33-5	No	17.5	8.5	10/21/1991	Geo Engineers	--	< 5	--	--	--	--	< 0.025	< 0.025	< 0.025	0.1	--	--	--	--	--
MW-33-7	No	22.5	3.5	10/21/1991	Geo Engineers	--	< 5	--	--	--	--	< 0.025	< 0.025	< 0.025	< 0.025	--	--	--	--	--
MW-34-5	Yes	12.5	14	10/22/1991	Geo Engineers	--	2,600 (340	100	--	100	--	9	4.4	51	290	--	--	--	--	--
MW-34-6	No	20	9	10/22/1991	Geo Engineers	--	170	--	--	--	--	0.28	2.3	1.2	7.5	--	--	--	--	--
MW-34-7	No	22.5	6.5	10/22/1991	Geo Engineers	--	< 5	--	--	--	--	< 0.025	< 0.025	< 0.025	< 0.025	--	--	--	--	--
MW-35-5	Yes	12.5	18.5	10/22/1991	Geo Engineers	--	< 5	--	--	--	--	0.045	0.032	< 0.025	0.065	--	--	--	--	--
MW-35-10	No	25	6	10/22/1991	Geo Engineers	--	< 5	--	--	--	--	< 0.025	0.055	< 0.025	0.11	--	--	--	--	--
MW-36-3	No	7.5	20.5	10/23/1991	Geo Engineers	--	< 5	< 5	--	2.5	--	< 0.025	< 0.025	< 0.025	0.025	--	--	--	--	--
MW-37-5	No	15	14	10/24/1991	Geo Engineers	--	80	--	--	--	--	1.5	16	8.9	42	--	--	--	--	--
MW-37-6	No	17.5	11.5	10/24/1991	Geo Engineers	--	7	--	--	--	--	0.11	1.3	0.42	2.8	--	--	--	--	--
MW-38-3	No	7.5	19.5	10/24/1991	Geo Engineers	--	< 5	--	--	--	--	< 0.025	< 0.025	< 0.025	< 0.025	--	--	--	--	--
MW-38-8	No	20	7	10/24/1991	Geo Engineers	--	< 5	--	--	--	--	< 0.025	< 0.025	< 0.025	< 0.025	--	--	--	--	--
MW-39-5	No	12.5	18.5	10/25/1991	Geo Engineers	--	< 5	< 5	--	2.5	--	< 0.025	< 0.025	< 0.025	< 0.025	--	--	--	--	--
MW-39-6	No	15	16	10/25/1991	Geo Engineers	--	< 5	--	--	--	--	< 0.076	< 0.076	< 0.076	< 0.076	--	--	--	--	--
MW-40-4	No	10	19	10/25/1991	Geo Engineers	--	< 5	< 5	--	2.5	--	< 0.025	< 0.025	< 0.025	< 0.025	--	--	--	--	--
MW-40-5	No	15	14	10/25/1991	Geo Engineers	--	13	--	--	--	--	< 0.093	< 0.093	< 0.093	< 0.093	--	--	--	--	--
MW-41-3	No	7.5	23.5	10/28/1991	Geo Engineers	--	< 5	--	--	--	--	< 0.04	< 0.04	< 0.04	< 0.04	--	--	--	--	--
MW-41-7	No	17.5	13.5	10/28/1991	Geo Engineers	--	< 5	< 5	--	2.5	--	--	--	--	--	--	--	--	--	--
MW-42-5	No	15	14	10/28/1991	Geo Engineers	--	< 5	--	--	--	--	0.2	< 0.025	< 0.025	< 0.025	--	--	--	--	--
MW-43-4	No	10	19	10/29/1991	Geo Engineers	--	< 5	< 5	--	2.5	--	< 0.025	< 0.025	< 0.025	< 0.025	--	--	--	--	--
MW-43-7	No	17.5	11.5	10/29/1991	Geo Engineers	--	< 5	--	--	--	--	< 0.069	< 0.069	< 0.069	< 0.069	--	--	--	--	--
MW-44-5	No	12.5	16.5	10/29/1991	Geo Engineers	--	< 5	< 5	--	2.5	--	< 0.025	< 0.025	< 0.025	< 0.025	--	--	--	--	--
MW-45-3	No	7.5	21.5	10/29/1991	Geo Engineers	--	1,900	2,200	--	2,200	--	6.1	56	63.0	370	--	--	--	--	--
MW-45-5	No	15	14	10/29/1991	Geo Engineers	--	24	--	--	--	--	1.8	3.5	2.6	15	--	--	--	--	--
MW-45-6	No	20	9	10/29/1991	Geo Engineers	--	< 5	--	--	--	--	< 0.025	< 0.025	< 0.025	< 0.025	--	--	--	--	--
MW-46-3	No	10	17	10/30/1991	Geo Engineers	--	< 5	--	--	--	--	< 0.025	< 0.025	< 0.025	< 0.025	--	--	--	--	--
MW-47-3	No	7.5	21.5	10/30/1991	Geo Engineers	--	< 5	< 5	--	2.5	--	--	--	--	--	--	--	--	--	--
MW-48-4	No	10.5	17.5	1/27/1992	Geo Engineers	--	< 5	--	--	--	--	0.15	< 0.025	< 0.025	0.053	--	--	--	--	--
MW-49-1	Yes	3	26	1/27/1992	Geo Engineers	--	180 (71)	130	--	130	--	0.14	< 0.025	< 0.025	0.049	--	--	--	--	--
MW-49-3	Yes	15.5	12.5	1/27/1992	Geo Engineers	--	190 (140)	340	--	340	--	1.2	0.39	3.3	15	--	--	--	--	--
MW-49-6	Yes	23	12	1/27/1992	Geo Engineers	--	120	--	--	--	--	1.8	0.44	4.5	19	--	--	--	--	--
HO-1-7	Yes	7	22	4/6/1994	Geo Engineers	--	--	< 11	< 46	28.5	--	--	--	--	--	--	--	--	--	--
HO-2-5	Yes	5	24	4/6/1994	Geo Engineers	--	--	420	87	507	--	--	--	--	--	--	--	--	--	--
HO-3	Yes	--	--	4/6/1994	Geo Engineers	--	--	29	< 45	51.5	--	--	--	--	--	--	--	--	--	--
B1-S1-3'	No	3	26	8/29/2000	Hart Crowser	--	< 20	< 50	< 100	75	< 20	--	--	--	--	--	--	--	--	--
B1-S2-7'	No	7	22	8/29/2000	Hart Crowser	--	< 20	< 50	< 100	75	< 20	--	--	--	--	--	--	--	--	--
B1-S3-9'	No	11	18	8/29/2000	Hart Crowser	--	3,700	< 50	< 20	35	< 20	< 50	1,000	17,000	99,000	--	--	--	--	--
B3-S1-3'	Yes	3	26	8/29/2000	Hart Crowser	--	< 20	< 50	< 100	75	< 20	--	--	--	--	--	--	--	--	--
B3-S2-7'	Yes	7	22	8/29/2000	Hart Crowser	--	< 20	< 50	< 100	75	< 20	--	--	--	--	--	--	--	--	--
B3-S3-9'	Yes	11	18	8/29/2000	Hart Crowser	--	3,400	< 20	< 20	20	< 20	2,700	20,000	59,000	240,000	--	--	--	--	--
B4-S2-6'	No	6	23	8/29/2000	Hart Crowser	--	12	< 20	< 20	20	< 20	< 50	250	210	1,100	--	--	--	--	--
B4-S3-10'	No	10	19	8/29/2000	Hart Crowser	--	< 20	< 50	< 100	75	< 20	--	--	--	--	--	--	--	--	--
B5-S1-2'	Yes	2	27	8/29/2000	Hart Crowser	--	< 20	< 50	280	305	< 20	--	--	--	--	--	--	--	--	--
B5-S2-6'	Yes	6	23	8/29/2000	Hart Crowser	--	< 5	< 20	< 50	35	< 20	< 50	< 50	< 50	< 50	--	--	--	--	--
B5-S3-10'	Yes	10	19	8/29/2000	Hart Crowser	--	< 20	< 50	< 100	75	< 20	--	--	--	--	--	--	--	--	--
B6-S1-2'	Yes	2	27	8/29/2000	Hart Crowser	--	< 20	< 50	< 100	75	< 20	--	--	< 50	< 50	--	--	--	--	--
B6-S2-6'	Yes	6	23	8/29/2000	Hart Crowser	--	< 20	< 50	< 100	75	< 20	--	--	--	--	--	--	--	--	--
B6-S3-10'	Yes	10	19	8/29/2000	Hart Crowser	--	6,200	< 50	< 100	75	< 20	2,300	6,900	21,000	400,000	--	--	--	--	--
B7-S1-3'	Yes	3	26	8/29/2000	Hart Crowser	--	< 20	< 50	< 100	75	< 20	--	--	--	--	--	--	--	--	--
B7-S2-7'	Yes	7	24	8/29/2000	Hart Crowser	--	< 20	< 50	< 100	75	< 20	--	--	--	--	--	--	--	--	--
B7-S3-7'	Yes	11	20	8/29/2000	Hart Crowser	--	1,500	< 20	< 20	20	< 20	220	260	790	74,000	--	--	--	--	--
B7-S4-15'	No	15	16	8/29/2000	Hart Crowser	--	< 20	< 50	< 100	75	< 20	--	--	--	--	--	--	--	--	--
B8-S1-3'	No	3	28	8/29/2000	Hart Crowser	--	< 20	< 50	< 100	75	< 20	--	--	--	--	--	--	--	--	--
B8-S3-11'	No	11	20	8/29/2000	Hart Crowser	--	< 5	--	--	--	--	< 50	< 50	< 50	< 50	--	--	--	--	--
B9-S2-7'	No	7	24	8/29/2000	Hart Crowser	--	< 20	< 50	< 100	75	< 20	--	--	--	--	--	--	--	--	--
B9-S3-11.6	No	11.5	19.5	8/29/2000	Hart Crowser	--	< 20	< 50	< 100	75	< 20	--	--	--	--	--	--	--	--	--
B10-S2-6'	No	6	23	8/29/2000	Hart Crowser	--	< 20	< 50	< 100	75	< 20	--	--	--	--	--	--	--	--	--
B10-S3-10'	No	10	19	8/29/2000	Hart Crowser	--	< 20	< 50	< 100	75	< 20	--	--	--	--	--	--	--	--	--
B10-S4-14'	No	14	15	8/29/2000	Hart Crowser	--	< 20	< 50	< 100	75	< 20	--	--	--	--	--	--	--	--	--
B10-S5-18'	No	18	11	8/29/2000	Hart Crowser	--	< 20	< 50	< 100	75	< 20	--	--	--	--	--	--	--	--	--
TP7-S2	Yes	2.5 to 3	28 to 28.5	Prior to 2001	Hart Crowser	--	69	< 20	< 50	35	< 20	< 0.05	0.58	0.69	1.80	--	--	--	2.4	--
TP7-S5	Yes	8 to 8.5	20 to 19.5	Prior to 2001	Hart Crowser	--	1,000	< 20	< 50	35	< 20	0.51	1.80	15	73	--	--	--	0.28	--
TP8-S2	Yes	2.5 to 3	28 to 28.5	Prior to 2001	Hart Crowser	--	< 100	< 50	< 100	75	< 20	--	--	--	--	--	--	--	< 1	--

Table 4-4a. Soil Analytical Results - TPH, VOCs, Naphthalene, and PCBs
Block 37 Site | Work Plan
Remedial Investigation Work Plan
600-630 Westlake Avenue North | Seattle, Washington

Sample ID	Sample Excavated (Yes=sample removed; No=sample present)	Sample Depth (feet bgs)	Elevation (feet NAVD88)	Sample Date	Consultant	TPH (mg/kg)						VOCs[5] (mg/kg)							PAHs (mg/kg)	PCB (Aroclors) (mg/kg)
						TPH[1]	GRO[2]	DRO[3]	ORO[3]	Total Extractable Hydrocarbons[4]	Kerosene	Benzene	Toluene	Ethyl benzene	Total Xylenes	EDB	EDC	MTBE	Naphthalene	
Screening Levels [6]																				
SL-1 Direct Contact						NE	1,500	NE	NE	NE	NE	18	6,400	8,000	16,000	0.50	11	560	1,600	1.0
SL-2 Protect Drinking Water Vadose Zone						NE	30	2,000	2,000	2,000	2,000	0.027	4.5	5.9	14	0.00027	0.023	0.1	4.5	0.34
SL-5 Protect Drinking Water Saturated Zone						2,000	30	2,000	2,000	2,000	2,000	0.0017	0.27	0.34	0.83	0.000018	0.0016	0.0072	0.24	0.017
SL-10 Natural Background						NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Laboratory PQL						NE	5	15	10	3.44	NA	0.02	0.05	0.05	0.15	0.05	0.05	0.05	0.2	0.0330
TP8-S4	Yes	6 to 6.5	24.5 to 25	Prior to 2001	Hart Crowser	--	460	< 20	11,000	11,010	< 20	1.50	26	13	75	--	--	--	9.9	--
TP9-S2	Yes	3.5 to 4	28 to 28.5	Prior to 2001	Hart Crowser	--	1,300	< 20	< 50	35	< 20	0.140	14	19	80	--	--	--	130	--
TP9-S4	Yes	6 to 6.5	24.5 to 25	Prior to 2001	Hart Crowser	--	2,600	< 20	< 50	35	< 20	7.20	68	32	230	--	--	--	220	--
TP11-S6	Yes	10.5 to 11	20 to 20.5	Prior to 2001	Hart Crowser	--	280	< 50	< 100	75	< 20	0.071	1.0	1.80	4.70	--	--	--	--	--
TP12-S3	Yes	5 to 5.5	25.5 to 26	Prior to 2001	Hart Crowser	--	21	< 50	< 100	75	< 20	< 0.05	0.430	0.076	1.60	--	--	--	< 1	--
TP12-S7	Yes	11 to 11.5	19.5 to 20	Prior to 2001	Hart Crowser	--	2,400	< 20	< 50	35	< 20	0.46	20	17	120	--	--	--	--	--
EX1-2.5	Yes	2.5	26.5	5/22/2001	ERI	--	7,010	279	< 125	341.5	--	< 5	173	123	708	--	--	--	--	--
EX1-2.5	Yes	2.5	28.5	5/23/2001	ERI	--	7,010	279	< 125	342	--	< 5	173	123	708	--	--	--	--	--
EX2-7	Yes	7	22	5/23/2001	ERI	--	< 5	32.6	77.3	109.9	--	< 0.05	< 0.05	< 0.05	< 0.1	--	--	--	--	--
EX3-7	Yes	7	22	5/23/2001	ERI	--	< 5	320	410	730	--	0.095	0.0907	< 0.05	< 0.1	--	--	--	--	--
EX4-3.5	Yes	3.5	25.5	5/23/2001	ERI	--	< 5	79.2	161	240.2	--	< 0.05	0.0563	< 0.05	0.115	--	--	--	--	--
MW-50-8.5	No	8.5	22.5	7/17/2001	Geo Engineers	--	29	18.5	35.9	54.4	--	0.133	< 0.05	0.585	0.151	--	--	--	--	--
MW-50-11	No	11	20	7/17/2001	Geo Engineers	--	354	< 10	< 25	17.5	--	0.696	0.891	4.98	8.41	--	--	--	--	--
MW-50-16	No	16	15	7/17/2001	Geo Engineers	--	160	10.9	< 25	23.4	--	0.68	1.34	3.53	14	--	--	--	--	--
MW-51-11	No	11	18	7/17/2001	Geo Engineers	--	< 5	539	780	1,319	--	< 0.02	< 0.05	< 0.05	< 0.1	--	--	--	--	--
MW-51-13.5	No	13.5	15.5	7/17/2001	Geo Engineers	--	23.1	140	204	344	--	0.0867	< 0.156	< 0.156	< 0.312	--	--	--	--	--
MW-52-11	Yes	11	20	7/17/2001	Geo Engineers	--	157	< 10	< 25	17.5	--	0.207	0.433	0.973	2.55	--	--	--	--	--
MW-52-13.5	Yes	13.5	15.5	7/17/2001	Geo Engineers	--	< 5	13.7	< 25	26.2	--	0.045	< 0.05	< 0.05	0.276	--	--	--	--	--
SB-1-8.5	Yes	8.5	22.5	7/17/2001	GeoEngineers	--	< 5	< 10	< 25	17.5	--	< 0.02	< 0.05	< 0.05	< 0.1	--	--	--	--	--
H-1-5.5	Yes	5.5	23.5	1/3/2003	GeoEngineers	--	< 5	103	159	262	--	< 0.03	< 0.05	< 0.05	< 0.1	--	--	--	--	--
H-2-5	Yes	5	24	1/3/2003	Geo Engineers	--	< 5	107	234	341	--	< 0.03	< 0.05	< 0.05	< 0.1	--	--	--	--	--
H-3-6.5	Yes	6.5	22.5	1/3/2003	Geo Engineers	--	< 5	< 10	< 25	22.5	--	< 0.03	< 0.05	< 0.05	< 0.1	--	--	--	--	--
H-4-5	Yes	5	24	1/3/2003	GeoEngineers	--	< 5	1,130	3,130	4,260	--	< 0.03	< 0.05	< 0.05	< 0.1	--	--	--	--	--
K-MW-4-15.5	No	15.5	12.5	3/31/2003	Kane	--	--	--	--	--	--	< 0.0012	< 0.0012	< 0.0012	< 0.0036	--	--	--	< 0.01	--
K-MW-5-16.0	No	16	12	3/31/2003	Kane	--	< 6.4	--	--	--	--	< 0.0013	< 0.0013	< 0.0013	< 0.0036	--	--	< 0.0013	--	--
K-MW-6-6.0	No	6	22	4/1/2003	Kane	--	< 11	--	--	--	--	0.0012	0.002	0.0046	< 0.0033	--	--	< 0.0011	0.01	--
B-1	No	11-12	18-17	10/15/2004	Urban Redevelopment	--	500	--	--	--	--	0.13	0.97	9.6	3.9	--	--	--	--	--
B-2	No	11-12	18-17	10/15/2004	Urban Redevelopment	--	1,300	--	--	--	--	0.53	8.3	23	120	--	--	--	--	--
B-5	No	15-16	13-12	10/15/2004	Urban Redevelopment	--	8	< 50	--	25	--	0.55	0.03	0.08	0.22	--	--	--	--	--
B-5	No	6-8	22-20	10/15/2004	Urban Redevelopment	--	53	< 50	--	25	--	7.3	0.4	1.1	2.2	--	--	--	--	--
B-6	No	7.5-8	20.5-20	10/15/2004	Urban Redevelopment	--	34	83	--	83	--	0.21	0.17	0.16	0.35	--	--	--	--	--
B-8	Yes	12.5-13	16.5-16	10/15/2004	Urban Redevelopment	--	80	--	--	--	--	3.3	0.19	2.7	1.3	--	--	--	--	--
B-8	Yes	10-11	19-18	10/15/2004	Urban Redevelopment	--	2,600	--	--	--	--	0.82	19	40	190	--	--	--	--	--
B-9	Yes	7-8	22-21	10/15/2004	Urban Redevelopment	--	2,800	--	--	--	--	3.8	8.1	47	170	--	--	--	--	--
B-10	Yes	7-8	22-21	10/15/2004	Urban Redevelopment	--	300	--	--	--	--	0.64	0.68	5.1	32	--	--	--	--	--
B-11	Yes	7.5-8.5	20.5-19.5	10/15/2004	Urban Redevelopment	--	510	--	--	--	--	0.5	3.9	8.2	37	--	--	--	--	--
B-12	Yes	14-15	12 to 13	10/15/2004	Urban Redevelopment	--	30	--	--	--	--	0.05	0.09	0.09	0.1	--	--	--	--	--
B-12	Yes	11.5-12	17.5 to 17	10/15/2004	Urban Redevelopment	--	83	--	--	--	--	0.05	0.13	0.33	2.3	--	--	--	--	--
B-13	No	14-15	12 to 13	10/15/2004	Urban Redevelopment	--	< 5	--	--	--	--	0.14	< 0.1	< 0.1	< 0.3	--	--	--	--	--
B-14	Yes	10-11.5	19 to 17.5	10/15/2004	Urban Redevelopment	--	1,300	--	--	--	--	3.2	2.8	33	52	--	--	--	--	--
B-15	Yes	11-12	17 to 18	12/10/2004	Urban Redevelopment	--	11	81	540	621	--	0.06	--	--	--	--	--	--	--	--
B-23	Yes	12-13.5	17 to 15.5	12/10/2004	Urban Redevelopment	--	270	--	--	--	--	2.4	1.6	11	3.8	--	--	--	--	--
B-24	Yes	11-11.5	18 to 17.5	12/10/2004	Urban Redevelopment	--	60	290	290	580	--	0.3	0.98	0.39	1.3	--	--	--	--	--
B-25	No	17-18	11-10	12/10/2004	Urban Redevelopment	--	2	--	--	--	--	0.1	0.17	< 0.02	0.08	--	--	--	--	--
B-25	No	15-16	13-12	12/10/2004	Urban Redevelopment	--	4,000	1,400	1,400	2,800	--	10	200	120	720	--	--	--	--	--
B-25	Yes	11-12	17-16	12/10/2004	Urban Redevelopment	--	2,000	360	360	720	--	6	79	44	240	--	--	--	--	--
B-101	No	13.5-14	14.5-14	1/21/2005	Urban Redevelopment	--	--	--	--	--	--	0.03	< 0.02	< 0.02	< 0.06	--	--	--	--	--
B-101	No	9.5-10.5	18.5-17.5	1/21/2005	Urban Redevelopment	--	340	--	--	--	--	1.4	1.8	6.2	22	--	--	--	--	--
B-101	No	8-9.5	20-19.5	1/21/2005	Urban Redevelopment	--	890	--	--	--	--	4.4	4.8	24	95	--	--	--	--	--
B-101 (Dup)	No	8-9.5	20-19.5	1/21/2005	Urban Redevelopment	--	--	--	--	--	--	< 2	2	17	72	--	--	--	6.0	--
MW-3A-3.0	Yes	3	26	3/15/2005	Delta	--	< 0.102	< 28.4	< 56.8	42.6	--	< 0.001	< 0.00102	< 0.00102	< 0.00205	--	--	--	--	--
MW-3A-6.0	Yes	6	23	3/15/2005	Delta	--	< 0.104	< 25.6	< 51.1	38.4	--	< 0.00104	< 0.00104	< 0.00104	< 0.00208	--	--	--	--	--
MW-3A-7.5	Yes	7.5	21.5	3/15/2005	Delta	--	< 0.126	< 32.1	< 64.3	48.2	--	< 0.00126	< 0.00126	< 0.00126	< 0.00251	--	--	--	--	--
MW-3A-9.0	Yes	9	20	3/15/2005	Delta	--	0.345	< 29.3	< 58.5	43.9	--	< 0.00107	< 0.00107	0.00303	0.00372	--	--	--	--	--
MW-3A-10.5	Yes	10.5	18.5	3/15/2005	Delta	--	2.18	< 31.2	< 62.4	47.3	--	< 0.0012	< 0.0012	0.0259	0.1359	--	--	--	--	--
MW-54-5[a]	No	5	24	6/7/2005	Geo Engineers	--	37	< 29.6	< 59.1	44.4	--	1.9	3.8	1.2	4.2	--	--	< 0.6	0.14	--
MW-54-10[a]	No	10	19	6/7/2005	Geo Engineers	--	< 12	< 29	< 58	43.5	--	< 0.052	< 0.44	< 0.44	< 0.44	--	--	< 0.87	< 0.44	--
MW-54-15[a]	No	15	14	6/7/2005	Geo Engineers	--	12	< 50.7	< 101	75.9	--	0.95	0.21	0.19	0.76	--	--	< 1.3	< 0.67	--
MW-54-20[a]	No	20	9	6/7/2005	Geo Engineers	--	< 6.2	< 28.1	< 56.2	42.2	--	< 0.037	< 0.27	< 0.27	< 0.27	--	--	< 0.54	< 0.27	--
SB-1-5	Yes	5	26	6/7/2005	Delta	--	7.6	< 26.1	< 52.1	39.1	--	0.064	< 0.24	0.095	0.57	--	--	< 0.48	< 0.24	--
SB-1-10	Yes	10	21	6/7/2005	Delta	--	3,600	113	< 57.8	142	--	3.8	28	48	280	--	--	< 28	34	--
SB-1-15	Yes	15	16	6/7/2005	Delta	--	< 30	< 26.6	< 53.2	39.9	--	0.17	< 1.2	< 1.2	< 1.2	--	--	< 2.3	< 1.2	--
SB-1-20	No	20	11	6/7/2005	Delta	--	< 20	< 97.2	< 194	146	--	1.4	0.63	0.35	1.7	--	--	< 2.4	0.37	--
SB-4-5	Yes	5	24	6/7/2005	Delta	--	9.7	< 29.3	< 58.6	44	--	0.041	< 0.31	0.16	0.26	--	--	< 0.62	< 0.31	--
SB-4-10	Yes	10	19	6/7/2005	Delta	--	1,200	193	< 215	301	--	270	62	34	170	--	--	< 36	5.5	--
SB-4-15	Yes	15	14	6/7/2005	Delta	--	< 22	< 109	< 219	164	--	0.92	< 1.5	< 1.5	0.48	--	--	< 3.1	< 1.5	--
SB-4-20	No	20	9	6/7/2005	Delta	--	< 6.6	< 28.4	< 56.9	42.7	--	0.15	< 0.25	< 0.25	< 0.25	--	--	< 0.49	< 0.25	--
SB-5-5	No	5	24	6/7/2005	Delta	--	21	< 28.7	< 57.5	43.1	--	0.22	0.25	0.39	2.1	--	--	< 0.55	0.11	--
SB-5-10	No	10	19	6/7/2005	Delta	--	< 7.1	< 32.8	< 65.7	49.3	--	0.38	< 0.31	< 0.31	< 0.25	--	--	< 0.63	< 0.31	--
SB-5-15	No	15	14	6/7/2005	Delta	--	72	< 57.6	< 115	86.3	--	0.33	< 0.68	0.25	1.3	--	--	< 1.4	< 0.68	--
SB-5-20	No	20	9	6/7/2005	Delta	--	< 6.2	< 28.8	< 57.5	43.2	--	< 0.037	< 0.26	< 0.26	< 0.26	--	--	< 0.52	< 0.26	--
MW-55-5	No	5	24	6/8/2005	Geo Engineers	--	< 6.7	< 33.1	< 66.2	49.7	--	< 0.04	< 0.3	< 0.3	< 0.3	--	--	< 0.6	0.72	--

Table 4-4a. Soil Analytical Results - TPH, VOCs, Naphthalene, and PCBs
Block 37 Site | Work Plan
Remedial Investigation Work Plan
600-630 Westlake Avenue North | Seattle, Washington

Sample ID	Sample Excavated (Yes=sample removed; No=sample present)	Sample Depth (feet bgs)	Elevation (feet NAVD88)	Sample Date	Consultant	TPH (mg/kg)						VOCs[5] (mg/kg)							PAHs (mg/kg)	PCB (Aroclors) (mg/kg)
						TPH[1]	GRO[2]	DRO[3]	ORO[3]	Total Extractable Hydrocarbons[4]	Kerosene	Benzene	Toluene	Ethyl benzene	Total Xylenes	EDB	EDC	MTBE	Naphthalene	
Screening Levels [6]																				
SL-1 Direct Contact						NE	1,500	NE	NE	NE	NE	18	6,400	8,000	16,000	0.50	11	560	1,600	1.0
SL-2 Protect Drinking Water Vadose Zone						NE	30	2,000	2,000	2,000	2,000	0.027	4.5	5.9	14	0.00027	0.023	0.1	4.5	0.34
SL-5 Protect Drinking Water Saturated Zone						2,000	30	2,000	2,000	2,000	2,000	0.0017	0.27	0.34	0.83	0.000018	0.0016	0.0072	0.24	0.017
SL-10 Natural Background						NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Laboratory PQL						NE	5	15	10	3.44	NA	0.02	0.05	0.05	0.15	0.05	0.05	0.05	0.2	0.0330
MW-55-9	No	9	20	6/8/2005	Geo Engineers	--	< 5.5	< 25.6	< 51.2	38.4	--	< 0.033	< 0.2	< 0.2	< 0.2	--	--	< 0.41	< 0.2	--
MW-55-15	No	15	14	6/8/2005	Geo Engineers	--	31	233	< 184	325	--	< 0.44	< 3.7	< 3.7	< 3.7	--	--	< 7.3	45	--
MW-55-20	No	20	9	6/8/2005	Geo Engineers	--	22	104	< 102	155	--	< 0.31	< 2.6	< 2.6	< 2.6	--	--	< 5.2	31	--
SB-2-5	Yes	5	26	6/8/2005	Delta	--	< 6.6	< 32.3	< 64.6	48.5	--	< 0.04	< 0.3	< 0.3	< 0.3	--	--	< 0.59	< 0.3	--
SB-2-10	Yes	10	21	6/8/2005	Delta	--	< 5.7	< 27.5	74.4	88.2	--	< 0.034	< 0.22	< 0.22	< 0.22	--	--	< 0.44	< 0.22	--
SB-2-12	Yes	12	19	6/8/2005	Delta	--	< 5.9	< 29.2	< 58.4	43.8	--	< 0.035	< 0.25	< 0.25	< 0.25	--	--	< 0.49	< 0.25	--
SB-2-20	No	20	11	6/8/2005	Delta	--	< 7.2	< 34.7	< 69.5	52.1	--	< 0.043	< 0.31	< 0.31	< 0.31	--	--	< 0.62	< 0.31	--
SB-6-5	No	5	24	6/8/2005	Delta	--	7.1	< 27.5	< 55	41.3	--	< 0.035	< 0.26	< 0.26	0.078	--	--	< 0.51	< 0.26	--
SB-6-9	No	9	20	6/8/2005	Delta	--	1,800	235	< 57.7	264	--	< 0.14	< 1.2	5.6	20	--	--	< 2.4	16	--
SB-6-10	No	10	19	6/8/2005	Delta	--	39	214	190	404	--	0.07	< 0.31	1.2	0.46	--	--	< 0.62	0.51	--
SB-6-15	No	15	14	6/8/2005	Delta	--	< 6.9	< 30.3	< 60.6	45.5	--	< 0.042	0.19	< 0.32	< 0.32	--	--	< 0.64	< 0.32	--
SB-7-5	Yes	5	24	6/8/2005	Delta	--	42	< 29	< 57.9	43.5	--	1.9	0.25	1.5	4.6	--	--	< 0.54	< 0.27	--
SB-7-10	Yes	10	19	6/8/2005	Delta	--	< 6.5	< 31.6	< 63.2	47.4	--	< 0.039	< 0.32	< 0.32	< 0.32	--	--	< 0.65	< 0.32	--
SB-7-15	No	15	14	6/8/2005	Delta	--	48	< 151	< 301	226	--	1.0	< 2	< 2	0.85 [a]	--	--	< 4.1	< 2.0	--
SB-7-20	No	20	9	6/8/2005	Delta	--	< 8	< 34.8	< 69.6	52.2	--	< 0.064	< 0.53	< 0.53	< 0.53	--	--	< 1.1	< 0.53	--
SB-3A-5	Yes	5	26	6/8/2005	Delta	--	15	< 29.9	< 59.7	44.8	--	0.048	< 0.27	< 0.27	0.34	--	--	< 0.55	< 0.27	--
SB-3A-8	Yes	8	23	6/8/2005	Delta	--	19	< 31	< 62	46.5	--	0.057	< 0.34	< 0.34	0.21	--	--	< 0.67	0.1	--
SB-3A-10	Yes	10	21	6/8/2005	Delta	--	14,000	486	< 51.8	512	--	6.9	240	140	790	--	--	< 46	59	--
SB-3A-12	Yes	12	19	6/8/2005	Delta	--	1,000	28.1	< 52.2	54.2	--	0.61	6.4	8.4	59	--	--	< 4.8	9.8	--
SB-3A-14	Yes	14	17	6/8/2005	Delta	--	11	< 28.1	< 56.2	42.2	--	< 0.036	0.17	0.14	0.97	--	--	< 0.46	0.13	--
SB-3A-21	No	21	10	6/8/2005	Delta	--	< 6.2	< 30.3	< 60.7	45.5	--	< 0.037	< 0.26	< 0.26	< 0.26	--	--	< 0.51	< 0.26	--
MW-56-5	Yes	5	24	6/9/2005	Geo Engineers	--	< 6.3	< 30.3	< 60.6	45.5	--	< 0.032	< 0.27	< 0.27	0.21 [a]	--	--	< 0.54	< 0.27	--
MW-56-9	Yes	9	20	6/9/2005	Geo Engineers	--	8.6	< 30.6	< 61.2	45.9	--	0.34	< 0.28	0.17	0.24 [a]	--	--	< 0.56	< 0.28	--
MW-56-10	Yes	10	19	6/9/2005	Geo Engineers	--	200	< 27.6	< 55.3	41.5	--	0.13	< 0.25	2.8	< 0.25	--	--	< 0.49	0.92	--
MW-56-12	Yes	12	17	6/9/2005	Geo Engineers	--	< 5.7	< 27.4	< 54.7	41.1	--	0.13	< 0.21	< 0.21	< 0.21	--	--	< 0.42	< 0.21	--
MW-56-15	Yes	15	14	6/9/2005	Geo Engineers	--	< 6	100	278	378	--	< 0.027	< 0.23	< 0.23	< 0.23	--	--	< 0.46	< 0.23	--
MW-56-18	No	18	11	6/9/2005	Geo Engineers	--	< 11	< 53.1	< 106	79.6	--	< 0.064	< 0.54	< 0.54	< 0.54	--	--	< 1.1	< 0.54	--
MW-56-20	No	20	9	6/9/2005	Geo Engineers	--	< 16	< 75.3	< 151	113	--	< 0.13	< 1.1	< 1.1	< 1.1	--	--	< 2.2	< 1.1	--
SB-8-5	No	5	24	6/9/2005	Delta	--	< 6.5	< 30.9	< 61.9	46.4	--	< 0.036	< 0.3	< 0.3	< 0.3	--	--	< 0.59	< 0.3	--
SB-8-8	No	8	21	6/9/2005	Delta	--	< 6.3	< 31.1	< 62.1	46.6	--	< 0.034	< 0.28	< 0.28	< 0.28	--	--	< 0.57	< 0.28	--
SB-8-10	No	10	19	6/9/2005	Delta	--	< 5.5	< 26	< 51.9	39	--	< 0.028	< 0.24	< 0.24	< 0.24	--	--	< 0.47	< 0.24	--
SB-8-12	No	12	17	6/9/2005	Delta	--	< 5.7	< 27.6	< 55.3	41.5	--	< 0.026	< 0.21	< 0.21	< 0.21	--	--	< 0.43	< 0.21	--
SB-8-15	No	15	14	6/9/2005	Delta	--	12	373	333	706	--	< 0.11	< 0.91	< 0.91	< 0.91	--	--	< 1.8	< 0.91	--
SB-8-18	No	18	11	6/9/2005	Delta	--	8,600	3,400	1,220	4,620	--	< 0.33	3.1	< 2.8	< 2.8	--	--	< 5.5	< 2.8	--
SB-8-20	No	20	9	6/9/2005	Delta	--	13	155	< 100	205	--	< 0.079	< 0.66	< 0.66	< 0.66	--	--	< 1.3	< 0.66	--
SB-9-5	Yes	5	26	6/9/2005	Delta	--	< 5.6	< 26.4	< 52.9	39.7	--	< 0.034	< 0.28	< 0.28	< 0.28	--	--	< 0.56	< 0.28	--
SB-9-8	Yes	8	23	6/9/2005	Delta	--	< 6	< 29.8	< 59.6	44.7	--	< 0.03	< 0.25	< 0.25	0.092	--	--	< 0.51	< 0.25	--
SB-9-9	Yes	9	22	6/9/2005	Delta	--	< 5.6	< 27.6	< 55.3	41.5	--	< 0.028	< 0.24	< 0.24	< 0.24	--	--	< 0.47	< 0.24	--
SB-9-10	Yes	10	21	6/9/2005	Delta	--	5.7	< 26.9	< 53.7	40.3	--	< 0.024	< 0.2	< 0.2	0.4	--	--	< 0.4	0.09	--
SB-9-12	Yes	12	19	6/9/2005	Delta	--	550	96.8	< 55.3	124	--	< 0.14	< 1.2	< 1.2	11	--	--	< 2.3	5.3	--
SB-9-14	Yes	14	17	6/9/2005	Delta	--	8,200	1,240	< 50.2	1,265	--	38	270	110	610	--	--	< 86	37	--
SB-9-15	Yes	15	16	6/9/2005	Delta	--	83	< 29.2	< 58.4	43.8	--	0.25	< 0.23	0.44	0.29	--	--	< 0.45	0.17	--
SB-9-17	Yes	17	14	6/9/2005	Delta	--	12	< 25.7	< 51.3	38.5	--	0.037	0.086	< 0.29	0.35	--	--	< 0.57	< 0.29	--
SB-9-18	Yes	18	13	6/9/2005	Delta	--	7.5	< 27.6	< 55.2	41.4	--	0.13	< 0.23	< 0.23	0.2	--	--	< 0.46	< 0.23	--
SB-9-20	No	20	11	6/9/2005	Delta	--	< 6	< 26.7	< 53.3	40	--	< 0.029	< 0.24	< 0.24	< 0.24	--	--	< 0.48	< 0.24	--
SB-10-5	Yes	5	24	6/9/2005	Delta	--	< 6	< 27.9	< 55.9	41.9	--	< 0.031	< 0.26	< 0.26	< 0.26	--	--	< 0.52	< 0.26	--
SB-10-10	Yes	10	19	6/9/2005	Delta	--	4,600	1,910	< 52.1	1,936	--	0.17	< 0.29	1.6	7.8	--	--	< 0.59	4.4	--
SB-10-12	Yes	12	17	6/9/2005	Delta	--	40	< 31.1	< 62.3	46.7	--	1.7	< 0.51	3.8	0.39	--	--	< 1	4	--
SB-10-15	Yes	15	14	6/9/2005	Delta	--	< 5.9	< 27.8	< 55.7	41.8	--	0.11	< 0.27	< 0.27	< 0.27	--	--	< 0.54	0.32	--
SB-10-20	No	20	9	6/9/2005	Delta	--	< 6.3	< 28	< 55.9	42	--	< 0.031	< 0.26	< 0.26	< 0.26	--	--	< 0.52	0.095	--
MW-57-5	Yes	5	24	6/10/2005	Geo Engineers	--	9.60	< 27.1	< 54.2	40.7	--	< 0.029	< 0.24	< 0.24	< 0.24	--	--	< 0.49	< 0.24	--
MW-57-11	Yes	11	18	6/10/2005	Geo Engineers	--	45	202	720	922	--	1.9	< 0.44	2.2	7.1	--	--	< 0.89	0.16	--
MW-57-12.5	Yes	12.5	16.5	6/10/2005	Geo Engineers	--	410	54.5	< 57.9	83.5	--	23	250	95	540	--	--	< 5	53	--
MW-57-20	No	20	9	6/10/2005	Geo Engineers	--	< 6.3	408	1,540	1,948	--	< 0.033	0.11	< 0.27	< 0.27	--	--	< 0.54	0.19	--
SB-11-5	Yes	5	24	6/10/2005	Delta	--	< 5.6	< 27.1	64.1	77.7	--	0.096	< 0.27	< 0.27	< 0.27	--	--	< 0.54	< 0.27	--
SB-11-9.5	Yes	9.5	19.5	6/10/2005	Delta	--	< 5.6	< 26.9	< 53.7	40.3	--	< 0.027	< 0.22	< 0.22	< 0.22	--	--	< 0.45	< 0.22	--
SB-11-11	Yes	11	18	6/10/2005	Delta	--	55	90.9	172	263	--	0.32	1.3	0.52	4.4	--	--	< 0.58	0.66	--
SB-11-12.5	Yes	12.5	16.5	6/10/2005	Delta	--	420	45.3	< 55	72.8	--	2.3	< 1.1	22	18	--	--	< 2.2	41	--
SB-11-13	Yes	13	16	6/10/2005	Delta	--	2,500	245	< 56.6	273	--	34	< 5.6	730	390	--	--	< 11	380	--
SB-11-14	Yes	14	15	6/10/2005	Delta	--	6.7	< 27.3	< 54.6	41	--	< 0.022	< 0.18	< 0.18	< 0.18	--	--	< 0.36	< 0.18	--
SB-11-15.5	No	15.5	13.5	6/10/2005	Delta	--	< 6.1	< 29.7	< 59.4	44.6	--	0.038	< 0.26	< 0.26	< 0.26	--	--	< 0.53	< 0.26	--
SB-11-20	No	20	9	6/10/2005	Delta	--	69	54.1	< 80.3	94.3	--	0.3	< 0.54	0.47	0.56	--	--	< 1.1	0.34	--
SB-12-5	Yes	5	24	6/10/2005	Delta	--	7.5	< 26.8	< 53.7	40.3	--	< 0.025	< 0.21	< 0.21	< 0.21	--	--	< 0.42	< 0.21	--
SB-12-9.5	Yes	9.5	19.5	6/10/2005	Delta	--	< 6	< 28.5	< 57.1	42.8	--	< 0.026	< 0.22	< 0.22	0.088	--	--	< 0.44	< 0.22	--
SB-12-11	Yes	11	18	6/10/2005	Delta	--	1,500	98.2	< 58.8	127.6	--	< 0.49	100	100	2,200	--	--	< 8.1	230	--
SB-12-12.5	Yes	12.5	16.5	6/10/2005	Delta	--	3,400	579	< 58.5	608	--	110	240	1,600	18,000	--	--	< 24	1,400	--
SB-12-14[f]	Yes	14	14	6/10/2005	Delta	--	170	--	--	--	--	1.6	1.4	19	56	--	--	< 1.8	10	--
SB-12-15.5	Yes	15.5	13.5	6/10/2005	Delta	--	180	38.9	< 61.1	69.5	--	1.7	< 1.1	22	51	--	--	< 2.2	11	--
SB-12-20	No	20	9	6/10/2005	Delta	--	33	39.3	113	152	--	< 0.037	0.19	0.47	1.7	--	--	< 0.61	0.4	--
SB-13-5	Yes	5	24	6/10/2005	Delta	--	8.8	< 32.1	< 64.3	48.2	--	< 0.044	< 0.36	< 0.36	< 0.36	--	--	< 0.73	< 0.36	--
SB-13-9.5	Yes	9.5	19.5	6/10/2005	Delta	--	< 5.9	< 28.1	< 56.1	42.1	--	0.12	< 0.25	< 0.25	< 0.25	--	--	< 0.49	< 0.25	--
SB-13-11	Yes	11	19	6/10/2005	Delta	--	< 5.9	< 28.5	< 56.9	42.7	--	0.15	< 0.23	< 0.23	< 0.23	--	--	< 0.46	< 0.23	--
SB-13-12.5	Yes	12.5	16.5	6/10/2005	Delta	--	< 5.7	< 28.6	< 57.1	42.9	--	0.042	< 0.21	< 0.21	0.12	--	--	< 0.42	< 0.21	--
SB-13-15.5	No	15.5	13.5	6/10/2005	Delta	--	< 18	263	1,000	1,263	--	< 0.15	< 1.2	< 1.2	< 1.2	--	--	< 2.5	< 1.2	--
SB-13-20	No	20	9	6/10/2005	Delta	--	< 6	< 27.2	< 54.4	40.8	--	< 0.029	< 0.24	< 0.24	< 0.24	--	--	< 0.49	< 0.24	--
SB-14-5	Yes	5	24	6/13/2005	Delta	--	< 6.8	< 32	< 64.1	48.1	--	< 0.04	< 0.34	< 0.34	0.098	--	--	< 0.67	< 0.34	--
SB-14-10	Yes	10	19	6/13/2005	Delta	--	7,900	1,270	58.1	1,328	--	< 1.4	< 12	110	330	--	--	< 23	52	--
SB-14-15	Yes	15	14	6/13/2005	Delta	--	31	< 30.9	< 61.7	46.3	--	< 0.034	< 0.29	0.37	1.1	--	--	< 0.57	0.19 [a]	--
SB-14-20	No	20	9	6/13/2005	Delta	--	54	< 89.9	< 180	135	--	< 0.15	< 1.3	0.45	1.5	--	--	< 2.5	1.0	--
SB-15-9	Yes	9	20	6/13/2005	Delta	--	< 5.5	< 26.1	< 52.3	39.2	--	< 0.031	< 0.26	< 0.26	0.082	--	--	< 0.52	0.07	--
SB-15-10	Yes	10	19	6/13/2005	Delta	--	< 6.5	< 31	< 61.9	46.5	--	< 0.037	< 0.31	< 0.31	< 0.31	--	--	< 0.62	< 0.31	--
SB-15-12	Yes	12	17	6/13/2005	Delta	--	680	< 28.6	< 57.2	42.9	--	0.5	0.4	4.4	3.7	--	--	< 2.4	18	--
SB-15-15	Yes	15	14	6/13/2005	Delta	--	< 6.1	< 28.2	< 56.3	42.3	--	0.2	< 0.23	< 0.23	< 0.23	--	--	< 0.45	0.56	--
SB-15-20	No	20	9	6/13/2005	Delta	--	< 11	< 54.6	< 109	81.8	--	< 0.11	< 0.95	< 0.95	< 0.95	--	--	< 1.9	< 0.95	--
SB-16-5	Yes	5	24	6/13/2005	Delta	--	7.6	< 28.8	< 57.6	43.2	--	< 0.046	< 0.38	< 0.38	< 0.38	--	--	< 0.76	< 0.38	--
SB-16-10	Yes	10	19	6/13/2005	Delta	--	< 5.6	< 27.7	< 55.5	41.6	--	< 0.032	< 0.27	< 0.27	< 0.27	--	--	< 0.54	< 0.27	--
SB-16-12	Yes	12	17	6/13/2005	Delta	--	8,700	82.4	< 59.4	112	--	< 6.3	110	87	500	--	--	< 100	54	--
SB-16-15	Yes	15	14	6/13/2005	Delta	--	3,500	64.9	< 60.7	95.3	--	18	100	61	300	--	--	< 29	23	--
SB-16-20	No	20	9	6/13/2005	Delta	--	< 15	< 73.4	< 147	110	--	< 0.16	< 1.3	< 1.3	< 1.3	--	--	< 2.7	< 1.3	--
MW-59-5	Yes	5	24	6/14/2005	Geo Engineers	--	< 6	< 29	< 58	43.5	--	< 0.034	< 0.29	< 0.29	< 0.29	--	--	< 0.57	< 0.29	--
MW-59-9.5	Yes	9.5	19.5	6/14/2005	Geo Engineers	--	< 9.5	< 44.2	< 88.4	66.3	--	0.055	< 0.39	< 0.39	< 0.39	--	--	< 0.78	< 0.39	--
MW-59-11	Yes	11	18	6/14/2005	Geo Engineers	--	7.6	< 27.8	< 55.7	41.8	--	0.057	0.22	0.093	0.54	--	--	< 0.56	0.22	--
MW-59-12.5	Yes	12.5	16.5	6/14/2005	Geo Engineers	--	10	53.6	129	182.6	--	< 0.03	< 0.25	< 0.25	0.13 [a]	--	--	< 0.51	< 0.25	--

Table 4-4a. Soil Analytical Results - TPH, VOCs, Naphthalene, and PCBs
Block 37 Site | Work Plan
Remedial Investigation Work Plan
600-630 Westlake Avenue North | Seattle, Washington

Sample ID	Sample Excavated (Yes=sample removed; No=sample present)	Sample Depth (feet bgs)	Elevation (feet NAVD88)	Sample Date	Consultant	TPH (mg/kg)						VOCs[5] (mg/kg)							PAHs (mg/kg)	PCB (Aroclors) (mg/kg)
						TPH[1]	GRO[2]	DRO[3]	ORO[3]	Total Extractable Hydrocarbons[4]	Kerosene	Benzene	Toluene	Ethyl benzene	Total Xylenes	EDB	EDC	MTBE	Naphthalene	
Screening Levels [6]																				
SL-1 Direct Contact						NE	1,500	NE	NE	NE	NE	18	6,400	8,000	16,000	0.50	11	560	1,600	1.0
SL-2 Protect Drinking Water Vadose Zone						NE	30	2,000	2,000	2,000	2,000	0.027	4.5	5.9	14	0.00027	0.023	0.1	4.5	0.34
SL-5 Protect Drinking Water Saturated Zone						2,000	30	2,000	2,000	2,000	2,000	0.0017	0.27	0.34	0.83	0.000018	0.0016	0.0072	0.24	0.017
SL-10 Natural Background						NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Laboratory PQL						NE	5	15	10	3.44	NA	0.02	0.05	0.05	0.15	0.05	0.05	0.05	0.2	0.0330
MW-59-14	Yes	14	15	6/14/2005	Geo Engineers	--	**34**	55.6	< 59.7	85.5	--	**1.2**	< **0.28**	**2.9**	0.56	--	--	< **0.56**	**1.1**	--
MW-59-15.5	No	15.5	13.5	6/14/2005	Geo Engineers	--	**230**	< 30.7	< 61.4	46.1	--	**0.92**	< **0.28**	**3.6**	0.13 [a]	--	--	< **0.57**	**3.9**	--
MW-59-17	No	17	12	6/14/2005	Geo Engineers	--	**310**	208	< 58.4	237	--	**1.7**	< **1.3**	**7**	**16**	--	--	< **2.6**	**3.8**	--
MW-59-20	No	20	9	6/14/2005	Geo Engineers	--	< 6.6	< 35	< 70	52.5	--	**0.053**	< **0.34**	< **0.34**	< 0.34	--	--	< **0.67**	< **0.34**	--
MW-60-5	Yes	5	24	6/14/2005	Geo Engineers	--	< 5.8	< 26.2	< 52.4	39.3	--	< **0.033**	< 0.27	< 0.27	< 0.27	--	--	< **0.54**	< 0.27	--
MW-60-9.5	Yes	9.5	19.5	6/14/2005	Geo Engineers	--	13	< 28.5	< 57	42.8	--	**0.17**	< 0.26	0.26	0.66	--	--	< **0.52**	< **0.26**	--
MW-60-11	Yes	11	18	6/14/2005	Geo Engineers	--	**140**	< 27.3	< 54.6	41	--	**1**	0.11	**2.8**	**2.10**	--	--	< **0.71**	0.13	--
MW-60-12.5	Yes	12.5	16.5	6/14/2005	Geo Engineers	--	**7,100**	570	85.5	656	--	**5.6**	**77**	**63**	**370**	--	--	< **24**	**29**	--
MW-60-14	Yes	14	15	6/14/2005	Geo Engineers	--	**10,000**	**2,080**	362	**2,442**	--	**65**	**380**	**190**	**980**	--	--	< **210**	**67**	--
MW-60-15.5	No	15.5	13.5	6/14/2005	Geo Engineers	--	14	192	999	1,191	--	**0.37**	**0.3**	0.3	**1.2**	--	--	< **0.48**	0.11	--
MW-60-20	No	20	9	6/14/2005	Geo Engineers	--	**37**	439	862	1,301	--	**0.520**	**2.2**	**0.56**	**2.4**	--	--	< **4.2**	< **2.1**	--
SB-17-5	No	5	24	6/14/2005	Delta	--	< 5.7	< 26.7	< 53.3	40	--	< **0.031**	< 0.25	< 0.25	< 0.25	--	--	< **0.51**	< 0.25	--
SB-17-9.5	No	9.5	19.5	6/14/2005	Delta	--	< 5.7	< 28.5	< 57	42.8	--	< **0.031**	< 0.26	< 0.26	< 0.26	--	--	< **0.52**	< **0.26**	--
SB-17-11	No	11	18	6/14/2005	Delta	--	< 6.5	< 31.6	< 63.3	47.5	--	< **0.033**	< **0.27**	< 0.27	< 0.27	--	--	< **0.55**	< **0.27**	--
SB-17-18.5	No	18.5	10.5	6/14/2005	Delta	--	**36**	437	925	1,362	--	< **0.043**	< **0.36**	< **0.36**	< 0.36	--	--	< **0.72**	< **0.36**	--
SB-17-20	No	20	9	6/14/2005	Delta	--	**52**	156	287	443	--	< **0.039**	< **0.32**	< 0.32	< 0.32	--	--	< **0.65**	0.15	--
SB-18-5	No	5	24	6/14/2005	Delta	--	< 5.8	< 26.9	< 53.8	40.4	--	< **0.03**	< 0.25	< 0.25	< 0.25	--	--	< **0.5**	< 0.25	--
SB-18-9.5	No	9.5	19.5	6/14/2005	Delta	--	< 5.7	< 24.4	< 48.8	36.6	--	< **0.028**	< 0.23	< 0.23	< 0.23	--	--	< **0.46**	< 0.23	--
SB-18-11	No	11	18	6/14/2005	Delta	--	< 6.1	< 28.7	< 57.3	43	--	< **0.034**	< **0.28**	< 0.28	< 0.28	--	--	< **0.56**	< **0.28**	--
SB-18-12.5	No	12.5	16.5	6/14/2005	Delta	--	< 6.3	< 28.4	< 56.9	42.7	--	< **0.032**	< **0.27**	< 0.27	< 0.27	--	--	< **0.54**	< **0.27**	--
SB-18-20	No	20	9	6/14/2005	Delta	--	< 6.3	< 29.3	< 58.6	44	--	< **0.033**	< **0.27**	< 0.27	< 0.27	--	--	< **0.55**	< **0.27**	--
SB-19-2	Yes	2	27	7/21/2005	Delta	--	< 7.76	20.3	70	90.3	--	< 0.00119	< 0.00119	< 0.00317	< 0.00792	--	--	< 0.000792	< 0.004	--
SB-19-4	Yes	4	25	7/21/2005	Delta	--	< 7.91	< 10	< 25	17.5	--	< 0.00125	< 0.00125	< 0.00334	< 0.00835	--	--	< 0.000835	< 0.004	--
SB-19-5	Yes	5	24	7/21/2005	Delta	--	< 3.91	11.9	50.9	62.8	--	< 0.0015	< 0.00218	< 0.004	< 0.01	--	--	< 0.001	< 0.01	--
SB-19-10	Yes	10	19	7/21/2005	Delta	--	**3,420**	112	277	389	--	**16.2**	< **1.55**	**76.8**	**123**	--	--	< **7.74**	**23.6**	--
SB-19-15	Yes	15	14	7/21/2005	Delta	--	< 3.35	33.2	163	196	--	0.011	0.00254	0.0878	0.151	--	--	< 0.00126	0.1	--
SB-19-20	No	20	9	7/21/2005	Delta	--	4.46	35.5	109	145	--	0.0181	0.0014	0.0383	0.0595	--	--	< 0.000862	0.01	--
SB-20-2	Yes	2	26	7/21/2005	Delta	--	15.3	< 10	< 25	17.5	--	0.00442	< 0.0015	< 0.004	< 0.01	--	--	< 0.001	< 0.005	--
SB-20-4	Yes	4	24	7/21/2005	Delta	--	8.74	29.2	56.9	86.1	--	0.0116	0.00189	< 0.00339	< 0.00847	--	--	< 0.000847	< 0.004	--
SB-20-5	Yes	5	23	7/21/2005	Delta	--	< 7.65	< 10	< 25	17.5	--	< 0.00625	< 0.00625	< 0.0167	< 0.0417	--	--	< 0.00417	< 0.02	--
SB-20-10	Yes	10	18	7/21/2005	Delta	--	< 10.5	12.8	< 25	25.3	--	0.00232	< 0.0015	< 0.004	< 0.01	--	--	< 0.001	< 0.01	--
SB-20-15	Yes	15	13	7/21/2005	Delta	--	< 3.91	10.4	< 25	22.9	--	0.00836	< 0.0015	< 0.004	< 0.01	--	--	< 0.001	< 0.01	--
SB-20-20	No	20	8	7/21/2005	Delta	--	6.93	33.8	200	234	--	0.00696	< 0.00132	< 0.00351	< 0.00877	--	--	< 0.000877	< 0.004	--
SB-21-2	No	2	26	7/21/2005	Delta	--	18.1	< 10	< 25	17.5	--	0.00516	< 0.0015	< 0.004	0.011	--	--	< 0.001	< 0.01	--
SB-21-4	No	4	24	7/21/2005	Delta	--	10.2	21.6	60.1	81.7	--	**0.0754**	0.00542	0.00896	0.0255	--	--	< 0.000766	< 0.004	--
SB-21-5	No	5	23	7/21/2005	Delta	--	8.31	12	44.9	56.9	--	**0.0442**	0.00506	0.0165	0.0454	--	--	< 0.00172	< 0.01	--
SB-21-10	No	10	18	7/21/2005	Delta	--	22.5	22.4	38	60.4	--	**1.02**	< 0.221	**2.61**	**1.53**	--	--	< **1.11**	**0.95**	--
SB-21-15	No	15	13	7/21/2005	Delta	--	< 3.94	< 10	< 25	17.5	--	0.00538	0.00296	< 0.004	< 0.01	--	--	< 0.001	< 0.01	--
SB-21-20	No	20	8	7/21/2005	Delta	--	< 3.96	< 10	< 25	17.5	--	0.00275	0.00601	0.00546	0.0237	--	--	< 0.001	< 0.01	--
SB-22-2	Yes	2	27	7/21/2005	Delta	--	17.9	< 10	< 25	17.5	--	**0.0666**	< 0.0283	< 0.0283	< 0.0849	--	--	< **0.141**	0.07	--
SB-22-4	Yes	4	25	7/21/2005	Delta	--	**1,090**	587	1,490	**2,077**	--	< **0.658**	< 0.658	0.78	< 1.97	--	--	< **3.29**	**7.99**	--
SB-22-5	Yes	5	24	7/21/2005	Delta	--	**758**	169	467	636	--	**3.44**	< 0.356	3.59	1.14	--	--	< **1.78**	**9.98**	--
SB-22-10	Yes	10	19	7/21/2005	Delta	--	**1,380**	382	995	1,377	--	**1.76**	< **0.36**	**5.78**	**2.69**	--	--	< **1.8**	**5.96**	--
SB-22-15	Yes	15	14	7/21/2005	Delta	--	**99**	12.4	29.7	42.1	--	**0.241**	< 0.0745	**0.35**	0.672	--	--	< **0.372**	**0.34**	--
SB-22-20	No	20	9	7/21/2005	Delta	--	16.5	12.9	< 25	25.4	--	0.0112	0.00282	0.0167	0.0224	--	--	< 0.000859	0.02	--
MW-61-5	No	5	26	10/10/2005	Delta	--	4.95	19.9	50.9	70.8	--	**0.0593**	< 0.035	0.0427	0.165	--	--	< 0.07	< 0.07	--
MW-61-10	No	10	21	10/10/2005	Delta	--	4.06	< 10	< 25	17.5	--	**0.523**	< 0.0354	0.0676	0.201	--	--	< 0.0708	< 0.14	--
MW-61-15	No	15	16	10/10/2005	Delta	--	< 3.51	< 10	< 25	17.5	--	**0.422**	< 0.0391	< 0.0391	< 0.0782	--	--	< **0.0782**	< 0.08	--
MW-61-20	No	20	11	10/10/2005	Delta	--	< 3.78	< 10	< 25	17.5	--	< **0.0228**	< 0.0379	< 0.0379	< 0.0759	--	--	< **0.0759**	< 0.15	--
MW-62-5	No	5	24	10/10/2005	Delta	--	< 5	< 10	33.7	38.7	--	**0.0313**	< 0.0363	0.0429	< 0.0725	--	--	< 0.0725	< 0.07	--
MW-62-10	No	10	19	10/10/2005	Delta	--	< 5	< 10	< 25	17.5	--	< **0.0212**	< 0.0354	< 0.0354	< 0.0708	--	--	< **0.0708**	0.08	--
MW-62-15	No	15	14	10/10/2005	Delta	--	< 5	< 10	< 25	17.5	--	< **0.0227**	< 0.0379	< 0.0379	< 0.0758	--	--	< **0.0758**	< 0.08	--
MW-62-20	No	20	9	10/10/2005	Delta	--	< 5	10.9	73.7	84.6	--	< **0.03**	< 0.05	< 0.05	< 0.1	--	--	< **0.1**	< 0.1	--
MW-63-5	No	5	24	10/11/2005	Delta	--	6.27	33	101	134	--	**1.03**	0.427	0.768	1.98	--	--	< **0.1**	< 0.2	--
MW-63-10	No	10	19	10/11/2005	Delta	--	< 5	< 10	< 25	17.5	--	**0.135**	< 0.0337	< 0.0337	< 0.0673	--	--	< **0.0673**	< 0.14	--
MW-63-15	No	15	14	10/11/2005	Delta	--	< 5	15.6	36.4	52	--	**0.402**	< 0.0354	< 0.0354	< 0.0708	--	--	< **0.0708**	< 0.14	--
MW-63-20	No	20	9	10/11/2005	Delta	--	< 5	< 10	< 32	37	--	**0.162**	< 0.05	< 0.05	< 0.1	--	--	< **0.1**	< 0.2	--
MW-64-5	No	5	24	10/11/2005	Delta	--	< 5	< 10	< 25	17.5	--	**0.604**	< 0.0438	0.0804	0.427	--	--	< 0.0876	1.79	--
MW-64-10	No	10	19	10/11/2005	Delta	--	< 5	< 10	< 25	17.5	--	**1.84**	< 0.0424	< 0.0424	< 0.0847	--	--	< **0.0847**	< 0.17	--
MW-64-15	No	15	14	10/11/2005	Delta	--	< 5	29.3	70.5	99.8	--	**0.238**	< 0.0429	0.0439	0.0967	--	--	< **0.0858**	< 0.17	--
MW-64 (DUP)	No	15	14	10/11/2005	Delta	--	< 5	255	216	471	--	**0.0615**	< 0.0403	< 0.0403	0.116	--	--	< **0.0805**	< 0.16	--
MW-64-20	No	20	9	10/11/2005	Delta	--	< 5	< 10	< 25	17.5	--	< **0.0214**	< 0.0357	< 0.0357	< 0.0715	--	--	< **0.0715**	< 0.14	--
MW-65-5	No	5	24	10/11/2005	Delta	--	15.2	< 10	< 25	17.5	--	< 0.0223	< 0.0371	0.054	0.255	--	--	< 0.0742	< 0.15	--
MW-66-5	No	5	24	10/11/2005	Delta	--	< 5	15.3	91.3	107	--	**0.931**	0.128	< 0.0389	0.0873	--	--	< 0.0777	< 0.16	--
MW-66-10	No	10	19	10/11/2005	Delta	--	< 5	< 10	< 25	17.5	--	**0.136**	< 0.0393	< 0.0393	< 0.0787	--	--	< **0.0787**	< 0.16	--
MW-66-15	No	15	14	10/11/2005	Delta	--	< 5	26.5	53.9	80.4	--	**0.379**	0.0796	< 0.0433	< 0.0866	--	--	< **0.0866**	< 0.17	--
MW-66-20	No	20	9	10/11/2005	Delta	--	< 5	< 10	< 25	17.5	--	< **0.0218**	< 0.0364	< 0.0364	< 0.0728	--	--	< **0.0728**	< 0.15	--
MW-68-5	No	5	24	10/11/2005	Delta	--	4.49	< 10	< 25	17.5	--	**0.602**	0.0556	0.333	0.393	--	--	< 0.0747	< 0.15	--
MW-68-10	No	10	19	10/11/2005	Delta	--	< 3.83	< 10	< 25	17.5	--	**0.423**	< 0.0389	0.0398	0.174	--	--	< **0.0779**	< 0.16	--
MW-68-15	No	15	14	10/11/2005	Delta	--	8.42	120	37	157	--	**1.31**	0.225	**0.536**	0.697	--	--	< **0.0725**	**0.25**	--
MW-68-20	No	20	9	10/11/2005	Delta	--	< 3.95	< 10	< 25	17.5	--	< **0.0234**	< 0.0391	< 0.0391	< 0.0781	--	--	< **0.0781**	< 0.16	--
MW-69-5	No	5	23	10/11/2005	Delta	--	< 5	< 10	< 25	17.5	--	< 0.0248	< 0.0414	< 0.0414	< 0.0828	--	--	< 0.0828	1.2	--
MW-69-10	No	10	18	10/11/2005	Delta	--	< 5	< 10	< 25	17.5	--	< **0.0212**	< 0.0354	< 0.0354	< 0.0707	--	--	< **0.0707**	< 0.14	--
MW-69-15	No	15	13	10/11/2005	Delta	--	< 3.95	11.9	< 25	24.4	--	< **0.0243**	< 0.0405	< 0.0405	< 0.0809	--	--	< **0.0809**	< 0.16	--
MW-69-20	No	20	8	10/11/2005	Delta	--	< 5	96.2	294	390	--	< **0.03**	0.185	< 0.05	< 0.1	--	--	< **0.1**	**0.31**	--
MW-67-5	No	5	24	10/12/2005	Delta	--	8.71	< 12.6	< 31.5	22.1	--	< 0.0131	< 0.101	< 0.101	< 0.303	--	--	< 0.0131	< 0.1	--
MW-67-10	No	10	19	10/12/2005	Delta	--	< 7.45	27.8	85.8	114	--	< 0.0151	< 0.116	< 0.116	< 0.348	--	--	< 0.0151	< 0.12	--
MW-67-15	No	15	14	10/12/2005	Delta	--	< **40.6**	471	221	692	--	< **0.0969**	< **0.746**	< **0.746**	< **2.24**	--	--	< **0.0969**	< **0.75**	--
MW-67-20	No	20	9	10/12/2005	Delta	--	< 4.56	< 11.8	< 29.6	20.7	--	< **0.0277**	< 0.0922	< 0.0922	< 0.277	--	--	< **0.0922**	< 0.09	--
MW-70-5	No	5	26	10/12/2005	Delta	--	< 4.8	< 10.7	< 26.8	18.8	--	< 0.0259	< 0.0431	< 0.0431	< 0.0863	--	--	< 0.0863	< 0.17	--
MW-70-10	No	10	21	10/12/2005	Delta	--	**776**	97.3	80.1	177	--	**0.701**	< 0.331	**23.9**	1.52	--	--	< **0.661**	**19.1**	--
MW-70-15	No	15	16	10/12/2005	Delta	--	**508**	< 11.9	< 29.7	20.8	--	< **0.0283**	< 0.0472	< 0.0472	< 0.0945	--	--	< **0.0945**	< 0.19	--
MW-70-20	No	20	11	10/12/2005	Delta	--	**30.2**	< 20.3	< 50.7	35.5	--	< **0.0302**	< 0.116	**0.623**	**1.41**	--	--	< 0.0302	**0.83**	--
MW-71-5	No	5	26	10/12/2005	Delta	--	< 3.84	< 10.8	< 27.1	19	--	< 0.0267	< 0.0891	< 0.0891	< 0.267	--	--	< 0.0891	< 0.09	--
MW-71-10	No	10	21	10/12/2005	Delta	--	< 4.33	< 11.2	< 28	19.6	--	**0.189**	< 0.0861	0.314	0.262	--	--	< 0.0861	< 0.09	--
MW-71-12	No	12	19	10/12/2005	Delta	--	< 4.55	< 11.7	< 29.3	20.5	--	< **0.0273**	< 0.091	< 0.091	< 0.273	--	--	< **0.091**	< 0.09	--
MW-71-15	No	15	16	10/12/2005	Delta	--	**888**	135	298	433	--	**1.02**	**0.724**	**9.97**	**29.1**	--	--	< **0.0623**	**6.49**	--
MW-72-5	No	5	26	10/12/2005	Delta	--	< 3.82	< 11.1	< 27.9	19.5	--	< 0.0257	< 0.0857	< 0.0857	< 0.257	--	--	< 0.0857	< 0.09	--
MW-72-10	No	10	21	10/12/2005	Delta	--	< 4.66	< 11.1	< 27.7	19.4	--	< 0.026	< 0.0868	< 0.0868	< 0.26	--	--	< 0.0868	< 0.09	--
MW-72-15	No	15	16	10/12/2005	Delta	--	< 22.9	219	403	622	--	**0.533**	< **0.702**	< **0.702**	< **2.1**	--	--	< **0.0912**	< **0.7**	--
MW-72-20	No	20	11	10/12/2005	Delta	--	< 11.8	109	99.6	209	--	< **0.0405**	< **0.312**	< 0.312	< **0.936**	--	--	< 0.0405	< **0.31**	--
MW-73-5	No	5	26	10/12/2005	Delta	--	< 5.05	< 11.1	< 27.7	19.4	--	< **0.0288**	< 0.096	< 0.096	< 0.288	--	--	< 0.096	< 0.096	--
MW-73-10	No	10	21	10/12/2005	Delta	--	**4,530**	45	< 28.5	59.3	--	< 0.0266	< 0.0888	< 0.0888	< 0.266	--	--	< 0.0888	< 0.09	--

Table 4-4a. Soil Analytical Results - TPH, VOCs, Naphthalene, and PCBs
Block 37 Site | Work Plan
Remedial Investigation Work Plan
600-630 Westlake Avenue North | Seattle, Washington

Sample ID	Sample Excavated (Yes=sample removed; No=sample present)	Sample Depth (feet bgs)	Elevation (feet NAVD88)	Sample Date	Consultant	TPH (mg/kg)						VOCs[5] (mg/kg)							PAHs (mg/kg)	PCB (Aroclors) (mg/kg)
						TPH[1]	GRO[2]	DRO[3]	ORO[3]	Total Extractable Hydrocarbons[4]	Kerosene	Benzene	Toluene	Ethyl benzene	Total Xylenes	EDB	EDC	MTBE	Naphthalene	
Screening Levels [6]																				
SL-1 Direct Contact						NE	1,500	NE	NE	NE	NE	18	6,400	8,000	16,000	0.50	11	560	1,600	1.0
SL-2 Protect Drinking Water Vadose Zone						NE	30	2,000	2,000	2,000	2,000	0.027	4.5	5.9	14	0.00027	0.023	0.1	4.5	0.34
SL-5 Protect Drinking Water Saturated Zone						2,000	30	2,000	2,000	2,000	2,000	0.0017	0.27	0.34	0.83	0.000018	0.0016	0.0072	0.24	0.017
SL-10 Natural Background						NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Laboratory PQL						NE	5	15	10	3.44	NA	0.02	0.05	0.05	0.15	0.05	0.05	0.05	0.2	0.0330
MW-73-16	No	16	15	10/12/2005	Delta	--	**33.4**	129	677	806	--	**0.261**	**< 0.443**	**< 0.443**	**< 1.33**	--	--	**< 0.0576**	**< 0.44**	--
MW-73-20	No	20	10	10/12/2005	Delta	--	< 5.02	< 12	< 29.9	21	--	< 0.0131	< 0.1	< 0.1	< 0.301	--	--	**< 0.1**	< 0.1	--
MW-74-5	No	5	26	10/12/2005	Delta	--	< 4.84	< 11	< 27.6	19.3	--	**< 0.0291**	< 0.0969	< 0.0969	< 0.291	--	--	< 0.0969	< 0.097	--
MW-74-10	No	10	21	10/12/2005	Delta	--	14.2	54.8	< 27.4	68.5	--	< 0.0255	< 0.085	< 0.085	< 0.255	--	--	< 0.085	< 0.09	--
MW-74-12	No	12	19	10/12/2005	Delta	--	**71.4**	< 11.9	< 29.8	20.9	--	**< 0.0252**	< 0.0842	< 0.0842	< 0.252	--	--	**< 0.0842**	< 0.08	--
MW-74-15	No	15	16	10/12/2005	Delta	--	< 8.4	< 16.6	42.1	50.4	--	**0.834**	< 0.139	< 0.139	< 0.418	--	--	< 0.0181	< 0.14	--
MW-74-20	No	20	11	10/12/2005	Delta	--	< 5.54	< 14.1	< 35.3	24.7	--	< 0.0142	< 0.109	< 0.109	< 0.327	--	--	< 0.0142	< 0.11	--
MW-75-7	No	7	21	10/13/2005	Delta	--	< 4.87	< 11.6	< 29	20.3	--	**< 0.0276**	< 0.0459	< 0.0459	< 0.0919	--	--	< 0.0919	< 0.18	--
MW-75-10	No	10	18	10/13/2005	Delta	--	< 5.8	< 14.2	< 35.6	24.9	--	< 0.0134	< 0.0516	< 0.0516	< 0.103	--	--	< 0.0134	< 0.21	--
MW-75-15	No	15	13	10/13/2005	Delta	--	< 4.56	< 12	< 30.1	21.1	--	**< 0.0256**	< 0.0426	< 0.0426	< 0.0853	--	--	**< 0.0853**	< 0.17	--
MW-75-20	No	20	8	10/13/2005	Delta	--	< 4.52	32.4	72.6	105	--	**< 0.0267**	< 0.0444	< 0.0444	< 0.0889	--	--	**< 0.0889**	< 0.18	--
MW-76-5	No	5	23	10/13/2005	Delta	--	5.85	94.8	358	453	--	< 0.0211	< 0.0369	< 0.0369	< 0.0738	--	--	< 0.0738	< 0.15	--
MW-76-10	No	10	18	10/13/2005	Delta	--	< 4.86	< 12.5	< 31.2	21.9	--	**< 0.0282**	< 0.0469	< 0.0469	< 0.0938	--	--	**< 0.0938**	< 0.19	--
MW-76-15	No	15	13	10/13/2005	Delta	--	< 4.5	25.9	59.1	85	--	**< 0.0262**	< 0.0437	< 0.0437	< 0.0873	--	--	**< 0.0873**	< 0.18	--
MW-76-20	No	20	8	10/13/2005	Delta	--	< 4.43	< 12.4	< 31	21.7	--	**< 0.03**	< 0.0542	< 0.0542	< 0.108	--	--	**< 0.1**	< 0.22	--
MW-77-7	No	7	21	10/13/2005	Delta	--	< 3.78	< 11	< 27.6	19.3	--	< 0.0236	< 0.0393	< 0.0393	< 0.0786	--	--	< 0.0786	< 0.16	--
MW-77-10	No	10	18	10/13/2005	Delta	--	< 4.41	< 11.9	< 29.8	20.9	--	**< 0.0258**	< 0.043	< 0.043	< 0.0861	--	--	**< 0.0861**	< 0.17	--
MW-77-15	No	15	13	10/13/2005	Delta	--	< 4.5	< 12	< 30.1	21.1	--	**< 0.0277**	< 0.0462	< 0.0462	< 0.0925	--	--	**< 0.0925**	< 0.19	--
MW-77-20	No	20	8	10/13/2005	Delta	--	< 4.74	< 12.3	< 30.7	21.5	--	**< 0.0268**	< 0.0447	< 0.0447	< 0.0894	--	--	**< 0.0894**	< 0.18	--
MW-78-5	No	5	23	10/13/2005	Delta	--	< 11.3	< 20.6	59.5	69.8	--	**< 0.03**	< 0.108	< 0.108	< 0.217	--	--	**< 0.1**	< 0.43	--
MW-78-10	No	10	18	10/13/2005	Delta	--	< 10.2	< 18.1	< 45.2	31.7	--	**< 0.03**	< 0.0663	< 0.0663	< 0.133	--	--	**< 0.1**	**< 0.27**	--
MW-78-15	No	15	13	10/13/2005	Delta	--	< 4.31	< 12.4	< 31.1	21.8	--	**< 0.03**	< 0.057	< 0.057	< 0.114	--	--	**< 0.1**	< 0.23	--
MW-78-20	No	20	8	10/13/2005	Delta	--	< 4.14	< 11.9	< 29.8	20.9	--	**< 0.0286**	< 0.0477	< 0.0477	< 0.0953	--	--	**< 0.0953**	< 0.19	--
SB-23-5	Yes	5	24	10/13/2005	Delta	--	< 5.04	< 10.4	< 26.1	18.3	--	**< 0.03**	< 0.0524	< 0.0524	< 0.105	--	--	**< 0.1**	< 0.21	--
SB-23-10	Yes	10	19	10/13/2005	Delta	--	**6,360**	29.8	< 26.6	43.1	--	**4.07**	**24.6**	**77.8**	**377**	--	--	**< 0.0901**	**86**	--
SB-23-15	Yes	15	14	10/13/2005	Delta	--	< 6.42	30.9	51.6	82.5	--	**< 0.03**	< 0.0887	< 0.0806	< 0.161	--	--	**< 0.1**	**< 0.32**	--
SB-23-20	No	20	9	10/13/2005	Delta	--	< 11.4	81.5	93.9	175	--	**< 0.03**	0.13	0.113	0.529	--	--	**< 0.1**	**< 0.38**	--
SB-24-5	Yes	5	26	10/13/2005	Delta	--	< 4.27	< 11.5	< 28.8	20.2	--	**< 0.027**	< 0.0451	< 0.0451	< 0.0901	--	--	< 0.0901	< 0.18	--
SB-24-9	Yes	9	21	10/13/2005	Delta	--	**5,080**	432	< 56.5	460	--	**9**	**39.7**	**108**	**529**	--	--	< 0.0906	**102**	--
SB-24-10	Yes	10	19	10/13/2005	Delta	--	**66.4**	146	< 29.2	161	--	**12**	**176**	**146**	**809**	--	--	**< 0.0964**	**46.7**	--
SB-24-12	Yes	12	17	10/13/2005	Delta	--	**34.9**	< 12.7	< 31.8	22.3	--	**1.11**	**0.481**	**0.605**	**3.18**	--	--	**< 0.102**	**0.27**	--
SB-24-15	Yes	15	14	10/13/2005	Delta	--	< 7.5	39.5	60.1	99.6	--	**0.417**	0.16	0.173	0.718	--	--	**< 0.163**	**< 0.33**	--
SB-24-20	No	20	9	10/13/2005	Delta	--	< 10	32	62.3	94.3	--	**0.1**	< 0.105	< 0.105	< 0.209	--	--	**< 0.1**	**< 0.42**	--
SB-25-5	Yes	5	24	10/13/2005	Delta	--	< 5	< 10.6	< 26.4	18.5	--	**< 0.03**	< 0.069	< 0.069	< 0.138	--	--	**< 0.1**	< 0.28	--
SB-25-10	Yes	10	19	10/13/2005	Delta	--	< 3.87	< 11.5	< 28.8	20.2	--	**0.0268**	0.0868	0.0641	0.306	--	--	**< 0.0812**	< 0.16	--
SB-25-15	Yes	15	14	10/13/2005	Delta	--	< 4.34	< 12.1	55.9	62	--	**0.307**	< 0.0438	0.148	0.244	--	--	**< 0.0875**	< 0.18	--
SB-25-20	No	20	9	10/13/2005	Delta	--	< 4.25	< 11.8	< 29.4	20.6	--	**0.0913**	< 0.0404	< 0.0404	< 0.0808	--	--	**< 0.0808**	< 0.16	--
SB-26-5	No	5	24	10/13/2005	Delta	--	< 4.48	27	93.9	121	--	**0.0795**	0.047	0.0759	0.223	--	--	< 0.0903	< 0.18	--
SB-26-10	No	10	19	10/13/2005	Delta	--	7.31	< 13	< 32.5	22.8	--	**1.5**	< 0.0499	< 0.0499	0.117	--	--	**< 0.0999**	< 0.2	--
SB-26-15	No	15	14	10/13/2005	Delta	--	< 4.52	< 12	< 30	21	--	**0.0503**	< 0.0457	< 0.0457	< 0.0914	--	--	**< 0.0914**	< 0.18	--
SB-26-20	No	20	9	10/13/2005	Delta	--	< 3.84	< 12.8	< 32.1	22.5	--	**< 0.03**	< 0.0531	< 0.0531	< 0.106	--	--	**< 0.1**	< 0.21	--
MW-79-5	No	5	22	10/14/2005	Delta	--	< 3.7	14.9	< 25.8	27.8	--	< 0.0207	< 0.0346	< 0.0346	< 0.0691	--	--	< 0.0691	< 0.07	--
MW-79-10	No	10	17	10/14/2005	Delta	--	< 4.15	19.6	< 26.1	32.7	--	**< 0.03**	< 0.0591	< 0.0591	< 0.118	--	--	**< 0.1**	< 0.12	--
MW-79-13	No	13	14	10/14/2005	Delta	--	8.92	16.3	< 28	30.3	--	**< 0.0279**	0.0652	0.0931	0.573	--	--	**< 0.0931**	< 0.09	--
MW-79-15	No	15	12	10/14/2005	Delta	--	< 4.83	< 11.3	< 28.3	19.8	--	< 0.0198	< 0.033	< 0.033	< 0.066	--	--	**< 0.066**	< 0.07	--
MW-79-20	No	20	7	10/14/2005	Delta	--	< 5.08	72.1	39.9	112	--	**< 0.03**	< 0.0508	< 0.0508	< 0.102	--	--	**< 0.1**	< 0.1	--
MW-80-5	No	5	22	10/14/2005	Delta	--	< 6.11	32.9	78.1	111	--	**< 0.03**	< 0.0572	< 0.0572	< 0.114	--	--	**< 0.1**	< 0.23	--
MW-80-10	No	10	17	10/14/2005	Delta	--	< 6.7	80.3	141	221	--	**< 0.0299**	< 0.0745	< 0.0745	< 0.149	--	--	**< 0.1**	**< 0.3**	--
MW-80-15	No	15	12	10/14/2005	Delta	--	< 5.03	46.6	322	369	--	**< 0.0258**	< 0.0431	< 0.0431	< 0.0861	--	--	**< 0.0861**	< 0.17	--
MW-80-20	No	20	7	10/14/2005	Delta	--	< 4.77	32.7	83	116	--	**< 0.0298**	< 0.0497	< 0.0497	< 0.0994	--	--	**< 0.0994**	< 0.2	--
MW-81-5	No	5	22	10/14/2005	Delta	--	6.73	11.9	29.2	41.1	--	**< 0.0283**	< 0.0472	< 0.0472	< 0.0944	--	--	< 0.0944	< 0.09	--
MW-81-10	No	10	17	10/14/2005	Delta	--	< 4.75	11.9	< 29.8	26.8	--	**< 0.03**	< 0.051	< 0.051	< 0.102	--	--	**< 0.1**	< 0.1	--
MW-81-15	No	15	12	10/14/2005	Delta	--	< 6.7	86.2	127	213	--	**< 0.03**	< 0.0711	< 0.0711	< 0.142	--	--	**< 0.1**	< 0.14	--
MW-81-20	No	20	7	10/14/2005	Delta	--	< 4.32	68.3	188	256	--	**< 0.0248**	< 0.0413	< 0.0413	< 0.0827	--	--	**< 0.0827**	< 0.08	--
MW-82-3	Yes	3	26	10/14/2005	Delta	--	28.2	26.6	30.9	57.5	--	**1.1**	0.0662	1.11	1.17	--	--	< 0.0827	0.71	--
MW-82-5	Yes	5	24	10/14/2005	Delta	--	**3,920**	344	194	538	--	**17.5**	**88.2**	**196**	**917**	--	--	**< 0.914**	**50.5**	--
MW-82-8	Yes	8	21	10/14/2005	Delta	--	**4,720**	268	186	454	--	**17.9**	**120**	**188**	**899**	--	--	**< 4.9**	**66.3**	--
MW-82-9	Yes	9	20	10/14/2005	Delta	--	**1,020**	362	747	1,109	--	**9.93**	**7.43**	**16.7**	**72.3**	--	--	**< 0.314**	**4.62**	--
MW-82-10	Yes	10	19	10/14/2005	Delta	--	**588**	175	343	518	--	**4.2**	**7.37**	**11.3**	**44.7**	--	--	**< 0.257**	**3.38**	--
MW-82-15	Yes	15	14	10/14/2005	Delta	--	**844**	910	122	1,032	--	**0.734**	**2.44**	**6.03**	**30.7**	--	--	**< 0.369**	**1.89**	--
MW-82-16	No	16	13	10/14/2005	Delta	--	< 4.76	< 11.8	< 29.5	20.7	--	**0.0552**	< 0.0484	< 0.0484	0.106	--	--	**< 0.0968**	< 0.097	--
MW-82-20	No	20	9	10/14/2005	Delta	--	< 4.94	< 12.2	< 30.5	21.4	--	**< 0.0291**	< 0.0484	< 0.0484	< 0.0969	--	--	**< 0.0969**	< 0.19	--
SB-27-5	Yes	5	24	10/14/2005	Delta	--	**9,930**	187	116	303	--	**42.5**	**377**	**135**	**745**	--	--	< 0.0754	**108**	--
SB-27-7	Yes	7	22	10/14/2005	Delta	--	**175**	45.6	< 28.9	60.1	--	**31.5**	**276**	**118**	**625**	--	--	< 0.081	**36.5**	--
SB-27-9	Yes	9	20	10/14/2005	Delta	--	**35.5**	417	829	1,246	--	**4.23**	1.28	0.781	3.34	--	--	**< 0.114**	0.57	--
SB-27-10	Yes	10	19	10/14/2005	Delta	--	**167**	1,100	**3,670**	**4,770**	--	**1.52**	**9.26**	**4.67**	**24.5**	--	--	**< 0.125**	**2.16**	--
SB-27-15	Yes	15	14	10/14/2005	Delta	--	**44.8**	130	231	361	--	**0.211**	**1.76**	**0.858**	**4.53**	--	--	**< 0.128**	**0.53**	--
SB-27-20	No	20	9	10/14/2005	Delta	--	< 5.39	< 13.1	< 32.7	22.9	--	**< 0.03**	< 0.055	< 0.055	0.119	--	--	**< 0.1**	< 0.22	--
SB-28-5	Yes	5	24	10/14/2005	Delta	--	**903**	1,790	**4,120**	**5,910**	--	**0.0648**	0.117	1.5	0.438	--	--	**< 0.106**	**11.6**	--
SB-28-9	Yes	9	20	10/14/2005	Delta	--	**44.3**	24	68.7	92.7	--	**0.0739**	< 0.056	0.084	0.139	--	--	**< 0.112**	0.24	--
SB-28-10	Yes	10	19	10/14/2005	Delta	--	**30.1**	46.8	129	176	--	**0.0747**	< 0.0429	**0.58**	0.113	--	--	**< 0.0858**	**2.97**	--
SB-28-15	Yes	15	14	10/14/2005	Delta	--	29.7	41.9	191	233	--	**< 0.0262**	< 0.0437	0.0507	< 0.0874	--	--	**< 0.0874**	**0.43**	--
SB-28-20	No	20	9	10/14/2005	Delta	--	5.39	20.5	85.4	106	--	**< 0.03**	< 0.0518	< 0.0518	< 0.104	--	--	**< 0.1**	< 0.21	--
SB-29-5	Yes	5	24	10/14/2005	Delta	--	**3,320**	173	175	348	--	**3.3**	0.492	**61.9**	**238**	--	--	**< 0.103**	**30.9**	--
SB-29-7	Yes	7	22	10/14/2005	Delta	--	**386**	209	114	323	--	**1.72**	< 0.0393	**90.2**	**115**	--	--	< 0.0787	**49**	--
SB-29-10	Yes	10	19	10/14/2005	Delta	--	26.8	39.9	77.6	118	--	**0.572**	0.0657	**0.459**	**1.78**	--	--	**< 0.101**	< 0.2	--
SB-29-15	Yes	15	14	10/14/2005	Delta	--	**101**	1,150	169	1,319	--	**0.678**	0.209	**1.74**	**6.19**	--	--	**< 0.394**	**< 0.79**	--
SB-29-20	No	20	9	10/14/2005	Delta	--	< 10	142	82.6	225	--	**0.183**	0.124	< 0.101	< 0.203	--	--	**< 0.203**	**< 0.41**	--
SB-30-5	Yes	5	24	10/14/2005	Delta	--	**368**	101	46.2	147	--	**3.81**	0.328	**8.82**	**26**	--	--	**< 0.111**	4.08	--
SB-30-7	Yes	7	22	10/14/2005	Delta	--	< 6.68	31.7	35.6	67.3	--	**< 0.03**	0.116	< 0.0677	< 0.135	--	--	**< 0.1**	0.27	--
SB-30-10	Yes	10	19	10/14/2005	Delta	--	8.68	< 15.6	< 39.1	27.4	--	**0.0556**	0.151	0.191	0.78	--	--	**< 0.1**	**< 0.31**	--
SB-30-16	No	16	13	10/14/2005	Delta	--	**137**	57.7	138	196	--	**0.425**	**1.14**	**4.88**	**23.1**	--	--	**< 0.201**	**1.33**	--
SB-30-20	No	20	9	10/14/2005	Delta	--	< 5.94	< 13.9	< 34.8	24.4	--	**< 0.03**	< 0.0539	< 0.0539	< 0.108	--	--	**< 0.1**	< 0.22	--
MW-84-5	Yes	5	24	10/17/2005	Delta	--	< 4.55	< 12.1	< 30.3	21.2	--	**0.0618**	< 0.0483	< 0.0483	< 0.0966	--	--	< 0.0966	< 0.097	--
MW-84-10	Yes	10	19	10/17/2005	Delta	--	< 3.79	< 11	< 27.4	19.2	--	**0.245**	< 0.0427	< 0.0427	< 0.0855	--	--	**< 0.0855**	< 0.09	--
MW-84-15	Yes	15	14	10/17/2005	Delta	--	< 4.66	27.8	33.4	61.2	--	**0.286**	< 0.0631	< 0.0631	< 0.126	--	--	**< 0.1**	< 0.13	--
MW-84-20	No	20	9	10/17/2005	Delta	--	< 4	20.3	128	148.3	--	**0.0292**	< 0.0394	< 0.0394	< 0.0788	--	--	**< 0.0788**	< 0.08	--
MW-85-5	No	5	23	10/17/2005	Delta	--	4.78	14	< 29.1	28.6	--	**1.39**	0.861	0.281	0.416	--	--	< 0.0977	< 0.098	--
MW-85-10	No	10	18	10/17/2005	Delta	--	< 4.52	< 12.4	< 30.9	21.7	--	**0.0308**	< 0.0466	< 0.0466	< 0.0932	--	--	**< 0.0932**	< 0.09	--
MW-85-15	No	15	13	10/17/2005	Delta	--	< 2.98	< 12	< 30	21	--	**< 0.0206**	< 0.0343	< 0.0343	< 0.0686	--	--	**< 0.0686**	< 0.07	--
MW-85-20	No	20	8	10/17/2005	Delta	--	< 4.43	< 12.9	< 32.2	22.6	--	**< 0.0215**	< 0.0359	< 0.0359	< 0.0717	--	--	**< 0.0717**	< 0.07	--
MW-86-5	No	5	23	10/17/2005	Delta	--	14.7	< 11.3	36.1	41.8	--	**0.785**	< 0.0413	0.16	0.584	--	--	< 0.0827	< 0.08	--
MW-86-10	No	10	18	10/17/2005	Delta	--	6.81	< 11.7	< 29.3	20.5	--	**1.01**	< 0.0406	< 0.0406	< 0.0813	--	--	**< 0.0813**	< 0.08	--

Table 4-4a. Soil Analytical Results - TPH, VOCs, Naphthalene, and PCBs
Block 37 Site | Work Plan
Remedial Investigation Work Plan
600-630 Westlake Avenue North | Seattle, Washington

Sample ID	Sample Excavated (Yes=sample removed; No=sample present)	Sample Depth (feet bgs)	Elevation (feet NAVD88)	Sample Date	Consultant	TPH (mg/kg)						VOCs[5] (mg/kg)							PAHs (mg/kg)	PCB (Aroclors) (mg/kg)
						TPH[1]	GRO[2]	DRO[3]	ORO[3]	Total Extractable Hydrocarbons[4]	Kerosene	Benzene	Toluene	Ethyl benzene	Total Xylenes	EDB	EDC	MTBE	Naphthalene	
Screening Levels [6]																				
SL-1 Direct Contact						NE	1,500	NE	NE	NE	NE	18	6,400	8,000	16,000	0.50	11	560	1,600	1.0
SL-2 Protect Drinking Water Vadose Zone						NE	30	2,000	2,000	2,000	2,000	0.027	4.5	5.9	14	0.00027	0.023	0.1	4.5	0.34
SL-5 Protect Drinking Water Saturated Zone						2,000	30	2,000	2,000	2,000	2,000	0.0017	0.27	0.34	0.83	0.000018	0.0016	0.0072	0.24	0.017
SL-10 Natural Background						NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Laboratory PQL						NE	5	15	10	3.44	NA	0.02	0.05	0.05	0.15	0.05	0.05	0.05	0.2	0.0330
MW-86-15	No	15	13	10/17/2005	Delta	--	< 4.2	< 11.8	< 29.5	20.7	--	**0.243**	< 0.0414	< 0.0414	< 0.0828	--	--	**< 0.0828**	< 0.08	--
MW-86-20	No	20	8	10/17/2005	Delta	--	< 5.29	< 12.9	< 32.3	22.6	--	**0.038**	< 0.05	< 0.05	< 0.1	--	--	**< 0.1**	< 0.1	--
MW-87-5	No	5	23	10/17/2005	Delta	--	< 4.22	< 11.3	61.4	67.1	--	**0.154**	< 0.041	< 0.041	< 0.0821	--	--	< 0.0821	< 0.08	--
MW-87-10	No	10	18	10/17/2005	Delta	--	< 4.7	14.9	41	55.9	--	**0.11**	< 0.0281	< 0.0281	< 0.0561	--	--	**< 0.0561**	< 0.06	--
MW-87-15	No	15	13	10/17/2005	Delta	--	< 6.83	541	383	924	--	**< 0.0299**	< 0.0743	< 0.0743	< 0.149	--	--	**< 0.1**	< 0.15	--
MW-87-20	No	20	8	10/17/2005	Delta	--	< 4.86	28	43.8	71.8	--	**< 0.0263**	< 0.0438	< 0.0438	< 0.263	--	--	**< 0.0876**	< 0.09	--
MW-88-5	Yes	5	23	10/17/2005	Delta	--	12.2	< 11.2	< 28.1	19.7	--	**< 0.0276**	< 0.046	< 0.046	< 0.092	--	--	< 0.092	< 0.09	--
MW-88-7	Yes	7	21	10/17/2005	Delta	--	**4,710**	347	242	589	--	**< 3.09**	**< 5.15**	**198**	**813**	--	--	**< 10.3**	**57.4**	--
MW-88-9	Yes	9	19	10/17/2005	Delta	--	**2,200**	164	156	320	--	**0.501**	**0.632**	**31.6**	**131**	--	--	**< 0.0962**	**10.7**	--
MW-88-10	Yes	10	18	10/17/2005	Delta	--	**487**	31.8	49.4	81.2	--	**0.102**	< 0.0454	**0.753**	0.406	--	--	**< 0.0908**	**0.27**	--
MW-88-15	Yes	15	13	10/17/2005	Delta	--	6.19	< 11.5	< 28.9	20.2	--	**< 0.0241**	< 0.0402	0.0458	< 0.0803	--	--	**< 0.0803**	< 0.08	--
MW-88-20	No	20	8	10/17/2005	Delta	--	< 3.96	< 11.2	< 28	19.6	--	**< 0.0263**	< 0.0438	0.049	0.117	--	--	**< 0.0875**	< 0.09	--
SB-31-5	No	5	23	10/17/2005	Delta	--	< 4.69	< 12	< 30	21	--	**0.056**	< 0.0431	< 0.0431	< 0.0862	--	--	< 0.0862	< 0.09	--
SB-31-10	No	10	18	10/17/2005	Delta	--	< 4.15	< 11.7	< 29.2	20.5	--	**< 0.0242**	< 0.0403	< 0.0403	< 0.0806	--	--	**< 0.0806**	< 0.08	--
SB-31-15	No	15	13	10/17/2005	Delta	--	< 4.47	16.8	37.4	54.2	--	**0.213**	< 0.0458	< 0.0458	< 0.0915	--	--	**< 0.0915**	< 0.09	--
SB-31-20	No	20	8	10/17/2005	Delta	--	< 5.19	< 11.5	40.3	46.1	--	**0.0333**	< 0.0463	< 0.0463	< 0.0925	--	--	**< 0.0925**	< 0.09	--
SB-32-5	Yes	5	24	10/17/2005	Delta	--	**1,880**	297	236	533	--	**1.17**	1.27	**77.9**	**212**	--	--	**< 0.897**	**19.6**	--
SB-32-7	Yes	7	22	10/17/2005	Delta	--	**2,640**	335	273	608	--	**1.81**	< 0.492	**56.3**	**145**	--	--	**< 0.985**	**21.2**	--
SB-32-9	Yes	9	20	10/17/2005	Delta	--	**455**	123	250	373	--	**0.222**	< 0.309	**5.99**	**20.8**	--	--	**< 0.618**	2.12	--
SB-32-12	Yes	12	17	10/17/2005	Delta	--	**120**	920	1,560	**2,480**	--	**< 0.03**	< 0.128	**0.744**	**2.78**	--	--	**< 0.1**	**< 0.26**	--
SB-32-16	Yes	16	13	10/17/2005	Delta	--	< 27.4	595	839	1,434	--	**< 0.03**	< 0.245	**0.387**	**1.33**	--	--	**< 0.1**	**< 0.49**	--
SB-32-20	Yes	20	9	10/17/2005	Delta	--	< 4.36	< 12.1	< 30.3	21.2	--	**< 0.0271**	< 0.0451	< 0.0451	< 0.0903	--	--	**< 0.0903**	< 0.09	--
MW-89-5	Yes	5	24	10/18/2005	Delta	--	13.3	< 12.1	< 30.2	21.2	--	< 0.0258	< 0.0431	0.099	0.208	--	--	< 0.0861	< 0.17	--
MW-89-12	Yes	12	17	10/18/2005	Delta	--	**44.9**	41.5	72.3	114	--	**0.124**	0.144	0.185	0.376	--	--	**< 0.18**	**2.17**	--
MW-89-15	Yes	15	14	10/18/2005	Delta	--	< 6.05	< 11.4	< 28.5	20	--	**< 0.0299**	< 0.0543	< 0.0543	< 0.109	--	--	**< 0.1**	< 0.22	--
MW-89-20	No	20	9	10/18/2005	Delta	--	< 5.36	< 13.9	< 34.8	24.4	--	**< 0.0299**	< 0.0525	< 0.0525	< 0.105	--	--	**< 0.1**	< 0.11	--
MW-90-5	Yes	5	24	10/18/2005	Delta	--	**410**	554	680	1,234	--	**1.95**	0.105	**46.3**	**79.7**	--	--	**< 0.14**	**16.8**	--
MW-90-7	Yes	7	22	10/18/2005	Delta	--	**476**	**2,180**	**3,450**	**5,630**	--	**2.08**	< 0.0833	**8.99**	**22.7**	--	--	**< 0.167**	3.24	--
MW-90-10	Yes	10	19	10/18/2005	Delta	--	**64.6**	**4,640**	**9,130**	**13,770**	--	**0.142**	< 0.0749	**1.9**	**5.85**	--	--	**< 0.15**	**1.33**	--
MW-90-15	Yes	15	14	10/18/2005	Delta	--	10.4	116	227	343	--	**0.986**	**0.395**	**0.86**	**2.34**	--	--	**< 0.134**	**0.54**	--
MW-90-20	No	20	9	10/18/2005	Delta	--	< 4.65	65	128	193	--	**< 0.0278**	< 0.0464	< 0.0464	< 0.0928	--	--	**< 0.0928**	< 0.09	--
MW-91-5	Yes	5	24	10/18/2005	Delta	--	**99.6**	43.3	51.9	95.2	--	**0.344**	0.087	0.0891	0.361	--	--	**< 0.1**	< 0.102	--
MW-91-10	Yes	10	19	10/18/2005	Delta	--	< 6.05	62.8	135	198	--	**0.379**	0.176	0.125	0.297	--	--	**< 0.1**	0.14	--
MW-91-15	Yes	15	14	10/18/2005	Delta	--	< 4.42	< 11.6	< 29	20.3	--	**< 0.0283**	< 0.0472	< 0.0472	< 0.0944	--	--	**< 0.0944**	< 0.09	--
MW-91-18	No	18	11	10/18/2005	Delta	--	< 4.74	< 12.1	< 30.3	21.2	--	**< 0.0287**	< 0.0478	< 0.0478	< 0.0956	--	--	**< 0.0956**	< 0.096	--
MW-92-5	Yes	5	24	10/18/2005	Delta	--	< 4.34	< 10.5	< 26.3	18.4	--	< 0.0259	< 0.0431	< 0.0431	< 0.0863	--	--	< 0.0863	< 0.09	--
MW-92-10	Yes	10	19	10/18/2005	Delta	--	7.31	47.9	< 26.8	61.3	--	**0.0813**	< 0.0423	0.156	0.202	--	--	**< 0.0847**	< 0.08	--
MW-92-12	Yes	12	17	10/18/2005	Delta	--	**5,340**	332	88.4	420	--	**174**	**32.7**	**441**	**245**	--	--	**< 0.165**	**125**	--
MW-92-15	Yes	15	14	10/18/2005	Delta	--	16.2	< 12.4	< 30.9	21.7	--	**0.166**	0.0582	0.163	0.247	--	--	**< 0.0896**	< 0.09	--
MW-92-20	No	20	9	10/18/2005	Delta	--	19.3	< 13.3	< 33.3	23.3	--	**0.225**	0.0743	0.265	0.317	--	--	**< 0.099**	0.13	--
MW-93-5	Yes	5	24	10/18/2005	Delta	--	**241**	813	**2,970**	**3,783**	--	**0.0579**	0.0998	0.168	0.235	--	--	< 0.0891	1.0	--
MW-93-7	Yes	7	22	10/18/2005	Delta	--	**312**	**3,570**	**12,500**	**16,070**	--	**0.0365**	0.0823	0.87	0.263	--	--	< 0.0848	< 0.08	--
MW-93-9	Yes	9	20	10/18/2005	Delta	--	**470**	**2,050**	**4,540**	**6,590**	--	**< 0.0296**	0.123	0.455	0.287	--	--	**< 0.1**	0.46	--
MW-93-10	Yes	10	19	10/18/2005	Delta	--	< 4.39	155	480	635	--	**< 0.0298**	< 0.0505	< 0.0505	< 0.101	--	--	**< 0.1**	< 0.101	--
MW-93-15	Yes	15	14	10/18/2005	Delta	--	< 3.63	11.1	29.7	40.8	--	**< 0.0227**	< 0.0378	< 0.0378	< 0.0757	--	--	**< 0.0757**	< 0.08	--
MW-93-20	No	20	9	10/18/2005	Delta	--	< 6.84	31.9	51.7	83.6	--	**< 0.0299**	< 0.0679	< 0.0679	< 0.136	--	--	**< 0.0998**	< 0.14	--
MW-94-5	Yes	5	24	10/18/2005	Delta	--	**1,000**	233	530	763	--	**< 0.196**	< 0.327	**11.4**	3.16	--	--	**< 0.654**	**9.99**	--
MW-94-7	Yes	7	22	10/18/2005	Delta	--	**418**	528	1,680	**2,208**	--	**< 0.228**	< 0.38	4.16	< 0.76	--	--	**< 0.76**	**4.89**	--
MW-94-10	Yes	10	19	10/18/2005	Delta	--	**249**	414	1,110	1,524	--	**< 0.247**	**< 0.412**	**1.08**	< 0.823	--	--	**< 0.823**	**1.84**	--
MW-94-15	Yes	15	14	10/18/2005	Delta	--	< 8.52	249	547	796	--	**< 0.0298**	< 0.0993	< 0.0993	< 0.199	--	--	**< 0.1**	< 0.199	--
MW-94-20	No	20	9	10/18/2005	Delta	--	< 5.06	< 14.7	< 36.8	25.8	--	**< 0.0299**	< 0.0543	< 0.0543	< 0.109	--	--	**< 0.1**	< 0.11	--
SB-33-5	Yes	5	24	10/18/2005	Delta	--	**31**	< 11.7	< 29.2	20.5	--	**0.109**	< 0.0486	1.87	2.59	--	--	< 0.0972	0.48	--
SB-33-15	Yes	15	14	10/18/2005	Delta	--	23.1	50.6	97.3	148	--	**< 0.0299**	**0.749**	< 0.133	< 0.267	--	--	**< 0.1**	**< 0.27**	--
SB-33-20	No	20	9	10/18/2005	Delta	--	< 4.49	< 12	< 29.9	21	--	**< 0.0254**	< 0.0423	< 0.0423	< 0.0845	--	--	**< 0.0845**	< 0.08	--
SB-34-5	Yes	5	24	10/18/2005	Delta	--	**343**	30.3	< 30.4	45.5	--	**0.488**	0.0795	3.45	6.3	--	--	< 0.0883	**21**	--
SB-34-15	Yes	15	14	10/18/2005	Delta	--	< 12.1	81.4	184	265	--	**< 0.0295**	< 0.132	< 0.132	< 0.263	--	--	**< 0.0993**	**< 0.26**	--
SB-34-20	No	20	9	10/18/2005	Delta	--	< 4.63	< 11.9	< 29.7	20.8	--	**< 0.027**	< 0.0449	< 0.0449	< 0.0898	--	--	**< 0.0898**	< 0.09	--
SB-35-5	Yes	5	24	10/18/2005	Delta	--	26.4	< 11.8	< 29.4	20.6	--	**0.123**	< 0.047	0.103	0.174	--	--	< 0.0939	< 0.09	--
SB-35-9	Yes	9	20	10/18/2005	Delta	--	**117**	41.3	39.1	80.4	--	**0.282**	< 0.047	2.34	0.106	--	--	< 0.0939	**5.16**	--
SB-35-10	Yes	10	19	10/18/2005	Delta	--	**430**	50.8	52.3	103	--	**0.151**	< 0.051	**0.758**	0.148	--	--	**< 0.102**	**1.06**	--
SB-35-15	Yes	15	14	10/18/2005	Delta	--	7.51	< 13.9	42.7	49.7	--	**< 0.03**	< 0.0545	< 0.0545	< 0.109	--	--	**< 0.1**	< 0.11	--
SB-35-20	No	20	9	10/18/2005	Delta	--	< 7.82	40.2	< 46.1	63.3	--	**< 0.0298**	0.0909	< 0.0758	< 0.152	--	--	**< 0.0995**	**0.31**	--
SB-36-5	Yes	5	24	10/18/2005	Delta	--	9.73	< 11.5	< 28.7	20.1	--	< 0.0246	< 0.041	< 0.041	< 0.0819	--	--	< 0.0819	< 0.08	--
SB-36-9	Yes	9	20	10/18/2005	Delta	--	**630**	203	331	534	--	**3.77**	< 0.983	**23.7**	< 1.97	--	--	**< 1.97**	< 1.97	--
SB-36-12	Yes	12	17	10/18/2005	Delta	--	**2,750**	132	72.7	205	--	**5.7**	**< 1.82**	**140**	**29.4**	--	--	**< 3.63**	**47.4**	--
SB-36-16	No	16	13	10/18/2005	Delta	--	9.79	17.3	34.3	51.6	--	**0.15**	< 0.0437	0.0516	< 0.0874	--	--	**< 0.0874**	0.11	--
SB-36-20	No	20	9	10/18/2005	Delta	--	< 4.37	< 11.9	< 29.7	20.8	--	**< 0.0262**	< 0.0437	< 0.0437	< 0.0874	--	--	**< 0.0874**	< 0.09	--
SB-37-5	Yes	5	24	10/18/2005	Delta	--	**203**	< 11.5	< 28.8	20.2	--	**0.927**	0.0572	4.33	9.63	--	--	< 0.0893	0.94	--
SB-37-7	Yes	7	22	10/18/2005	Delta	--	**366**	12.6	< 30.7	28	--	**1.4**	0.527	3.1	**15.4**	--	--	< 0.091	3.75	--
SB-37-9	Yes	9	20	10/18/2005	Delta	--	**4,660**	350	89.6	440	--	**4.47**	**19.5**	**59.1**	**295**	--	--	**< 0.354**	**20.9**	--
SB-37-10	Yes	10	19	10/18/2005	Delta	--	**5,700**	200	60	260	--	**22.1**	**1.5**	**266**	**593**	--	--	**< 0.384**	**94.5**	--
SB-37-12	Yes	12	17	10/18/2005	Delta	--	**1,260**	96.1	38.9	135	--	**8.69**	**0.485**	**34.9**	**45**	--	--	**< 0.33**	**11.5**	--
SB-37-14	Yes	14	15	10/18/2005	Delta	--	11	< 11.9	< 29.8	20.9	--	**0.277**	0.107	**1.05**	**3.95**	--	--	**< 0.0862**	**0.7**	--
SB-37-15	Yes	15	14	10/18/2005	Delta	--	17.1	< 12	< 30	21	--	**0.244**	< 0.0431	**0.522**	**1.12**	--	--	**< 0.0862**	0.14	--
SB-37-20	No	20	9	10/18/2005	Delta	--	**31.1**	< 12.6	< 31.4	22	--	**0.201**	0.176	**1.18**	**4.04**	--	--	**< 0.1**	**0.57**	--
SB-38-5	Yes	5	24	10/18/2005	Delta	--	< 4.31	< 12.2	< 30.5	21.4	--	< 0.0236	< 0.0394	< 0.0394	< 0.0788	--	--	< 0.0788	< 0.08	--
SB-38-10	Yes	10	19	10/18/2005	Delta	--	12.4	27.1	82.4	110	--	**< 0.0299**	< 0.0521	< 0.0521	< 0.104	--	--	**< 0.1**	< 0.1	--
SB-38-15	Yes	15	14	10/18/2005	Delta	--	< 4.34	23.9	60	83.9	--	**< 0.0267**	< 0.0446	< 0.0446	< 0.0891	--	--	**< 0.0891**	< 0.09	--
SB-38-20	No	20	9	10/18/2005	Delta	--	< 5.22	< 13	< 32.5	22.8	--	**< 0.029**	< 0.0484	< 0.0484	< 0.0968	--	--	**< 0.0968**	< 0.097	--
MW-95-5	No	5	26	10/19/2005	Delta	--	< 4.7	48.4	< 26.4	61.6	--	**0.0346**	< 0.0508	< 0.0508	< 0.102	--	--	**< 0.1**	< 0.1	--
MW-95-10	No	10	21	10/19/2005	Delta	--	< 4.22	< 11.4	< 28.6	20	--	**< 0.0277**	< 0.0462	< 0.0462	< 0.0923	--	--	< 0.0923	< 0.09	--
MW-95-15	No	15	16	10/19/2005	Delta	--	< 7.39	< 12.6	< 31.5	22.1	--	**< 0.0295**	< 0.0492	< 0.0492	< 0.0985	--	--	**< 0.0985**	< 0.099	--
MW-96-5	Yes	5	24	10/19/2005	Delta	--	**141**	524	**2,220**	**2,744**	--	**< 0.0299**	< 0.0518	< 0.0518	< 0.104	--	--	**< 0.1**	< 0.104	--
MW-96-7	Yes	7	22	10/19/2005	Delta	--	**840**	1,190	**3,710**	**4,900**	--	**0.587**	0.25	**8.39**	**52.7**	--	--	< 0.0896	4.09	--
MW-96-9	Yes	9	20	10/19/2005	Delta	--	**1,680**	413	1,260	1,673	--	**8.4**	**101**	**33**	**194**	--	--	< 0.0832	**15.2**	--
MW-96-10	Yes	10	19	10/19/2005	Delta	--	**99.9**	344	1,040	1,384	--	**1.9**	**7.34**	**2.51**	**16**	--	--	**< 0.0743**	**1.31**	--
MW-96-15	Yes	15	14	10/19/2005	Delta	--	**39.9**	246	771	1,017	--	**0.141**	**0.775**	**0.37**	**2.89**	--	--	**< 0.107**	**0.65**	--
MW-96-20	No	20	9	10/19/2005	Delta	--	< 6.37	31.4	72.7	104	--	**< 0.0294**	< 0.0533	< 0.0533	< 0.107	--	--	**< 0.1**	< 0.11	--
MW-97-5	No	5	24	10/19/2005	Delta	--	5.93	< 11.5	< 28.8	20.2	--	**< 0.03**	< 0.0525	0.0651	0.196	--	--	**< 0.1**	< 0.11	--
MW-97-9	No	9	20	10/19/2005	Delta	--	**84.8**	< 11.8	< 29.5	20.7	--	**0.137**	< 0.0466	0.436	< 0.0931	--	--	< 0.0931	0.48	--
MW-97-10	No	10	19	10/19/2005	Delta	--	**2,700**	548	< 57.6	577	--	**0.191**	< 0.0443	**8.32**	**3.21**	--	--	**< 0.0886**	**5.05**	--
MW-97-15	No	15	14	10/19/2005	Delta	--	6.57	< 13	< 32.6	22.8	--	**0.0684**	< 0.061	< 0.061	< 0.122	--	--	**< 0.1**	**0.32**	--
MW-98-5	Yes	5	24	10/19/2005	Delta	--	4.42	< 11.4	< 28.4	19.9	--	**0.619**	< 0.0494	0.768	2.25	--	--	< 0.0987	< 0.099	--

Table 4-4a. Soil Analytical Results - TPH, VOCs, Naphthalene, and PCBs
Block 37 Site | Work Plan
Remedial Investigation Work Plan
600-630 Westlake Avenue North | Seattle, Washington

Sample ID	Sample Excavated (Yes=sample removed; No=sample present)	Sample Depth (feet bgs)	Elevation (feet NAVD88)	Sample Date	Consultant	TPH (mg/kg)						VOCs[5] (mg/kg)							PAHs (mg/kg)	PCB (Aroclors) (mg/kg)
						TPH[1]	GRO[2]	DRO[3]	ORO[3]	Total Extractable Hydrocarbons[4]	Kerosene	Benzene	Toluene	Ethyl benzene	Total Xylenes	EDB	EDC	MTBE	Naphthalene	
Screening Levels [6]																				
SL-1 Direct Contact						NE	1,500	NE	NE	NE	NE	18	6,400	8,000	16,000	0.50	11	560	1,600	1.0
SL-2 Protect Drinking Water Vadose Zone						NE	30	2,000	2,000	2,000	2,000	0.027	4.5	5.9	14	0.00027	0.023	0.1	4.5	0.34
SL-5 Protect Drinking Water Saturated Zone						2,000	30	2,000	2,000	2,000	2,000	0.0017	0.27	0.34	0.83	0.000018	0.0016	0.0072	0.24	0.017
SL-10 Natural Background						NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Laboratory PQL						NE	5	15	10	3.44	NA	0.02	0.05	0.05	0.15	0.05	0.05	0.05	0.2	0.0330
MW-98-7	Yes	7	22	10/19/2005	Delta	--	13.9	< 11.7	< 29.2	20.5	--	0.270	< 0.0453	0.263	1.11	--	--	< 0.0907	< 0.09	--
MW-98-10	Yes	10	19	10/19/2005	Delta	--	3,390	186	< 27.9	200	--	10	105	69.6	394	--	--	< 10.7	30	--
MW-98-12	Yes	12	17	10/19/2005	Delta	--	5,650	529	< 59.7	559	--	35.6	356	154	848	--	--	< 8.95	47.3	--
MW-98-13.5	Yes	13.5	15.5	10/19/2005	Delta	--	16,000	876	< 302	1,027	--	50.2	270	117	579	--	--	< 9.71	34.7	--
MW-98-15	Yes	15	14	10/19/2005	Delta	--	58.2	< 12	< 30.1	21.1	--	0.596	1.78	1.27	5.69	--	--	< 0.185	2.22	--
MW-98-20	No	20	9	10/19/2005	Delta	--	33.8	14.1	< 29.5	28.9	--	0.0295	0.168	0.0884	0.473	--	--	< 0.0842	0.11	--
SB-39-3	Yes	3	26	10/19/2005	Delta	--	< 6.45	< 108	473	527	--	< 0.03	< 0.0519	< 0.0519	< 0.104	--	--	< 0.0999	< 0.1	--
SB-39-5	Yes	5	24	10/19/2005	Delta	--	< 4.59	< 105	500	553	--	< 0.0258	< 0.043	< 0.043	< 0.086	--	--	< 0.086	0.27	--
SB-39-10	Yes	10	19	10/19/2005	Delta	--	< 3.88	< 12.5	< 31.1	21.8	--	< 0.0249	< 0.0416	< 0.0416	< 0.0831	--	--	< 0.0831	< 0.08	--
SB-39-15	Yes	15	14	10/19/2005	Delta	--	< 2.98	230	251	481	--	< 0.0299	< 0.0498	< 0.0498	< 0.0996	--	--	< 0.0996	< 0.1	--
SB-39-20	No	20	9	10/19/2005	Delta	--	< 3.8	< 11.7	< 29.3	20.5	--	< 0.0215	< 0.0359	< 0.0359	< 0.0717	--	--	< 0.0717	< 0.07	--
SB-40-3	Yes	3	26	10/19/2005	Delta	--	< 6.96	27.9	83.7	112	--	< 0.0243	< 0.0406	< 0.0406	< 0.0811	--	--	< 0.0811	< 0.08	--
SB-40-5	Yes	5	24	10/19/2005	Delta	--	12.9	< 11.3	< 28.3	19.8	--	< 0.0257	< 0.0428	< 0.0428	< 0.0856	--	--	< 0.0856	< 0.09	--
SB-40-9	Yes	9	20	10/19/2005	Delta	--	131	44.2	< 29.3	58.9	--	< 0.0276	< 0.046	3.7	0.369	--	--	< 0.0921	3.83	--
SB-40-10	Yes	10	19	10/19/2005	Delta	--	363	< 13.2	< 33.1	23.2	--	0.313	< 0.0457	7.26	8.15	--	--	< 0.0914	2.74	--
SB-40-12	Yes	12	17	10/19/2005	Delta	--	571	< 13.8	< 34.4	24.1	--	0.291	0.051	14.6	42	--	--	< 0.102	3.51	--
SB-40-15	Yes	15	14	10/19/2005	Delta	--	99.8	62.9	74.9	138	--	0.26	0.073	1.7	6.48	--	--	< 0.114	0.78	--
SB-40-20	Yes	20	9	10/19/2005	Delta	--	41.5	277	326	603	--	0.165	< 0.137	0.181	0.723	--	--	< 0.1	< 0.28	--
MW-99-5	Yes	5	24	10/20/2005	Delta	--	14.5	< 11.7	< 29.2	20.5	--	0.0758	< 0.0486	0.143	0.917	--	--	< 0.0972	< 0.097	--
MW-99-9	Yes	9	20	10/20/2005	Delta	--	56.2	30.4	< 32	46.4	--	< 0.0297	< 0.0494	0.859	3.86	--	--	< 0.0988	0.44	--
MW-99-10	Yes	10	19	10/20/2005	Delta	--	249	< 12.3	< 30.7	21.5	--	0.147	0.0571	3.88	22.6	--	--	< 0.102	2.32	--
MW-99-15	Yes	15	14	10/20/2005	Delta	--	< 4.34	< 11.9	< 29.8	20.9	--	0.201	< 0.046	0.0736	0.0984	--	--	< 0.092	< 0.09	--
MW-99-20	No	20	9	10/20/2005	Delta	--	< 9.83	< 12.2	< 30.5	21.4	--	< 0.0274	< 0.0457	< 0.0457	< 0.0913	--	--	< 0.0913	< 0.09	--
MW-200-5	No	5	24	10/20/2005	Delta	--	5.82	< 11.4	< 28.4	19.9	--	< 0.0299	< 0.0508	0.131	0.193	--	--	< 0.1	< 0.1	--
MW-200-7.5	No	7.5	21.5	10/20/2005	Delta	--	17.1	< 11.8	< 29.6	20.7	--	0.0801	< 0.05	0.45	0.991	--	--	< 0.1	0.18	--
MW-200-8.5	No	8.5	20.5	10/20/2005	Delta	--	17.5	< 12	< 29.9	21	--	0.0735	< 0.0471	0.498	1.38	--	--	< 0.0943	0.52	--
MW-200-10	No	10	19	10/20/2005	Delta	--	7.9	< 12.4	< 31	21.7	--	0.129	< 0.0488	0.461	0.377	--	--	< 0.0976	0.59	--
MW-200-15	No	15	14	10/20/2005	Delta	--	< 32.3	114	357	471	--	0.753	0.996	< 0.405	< 0.81	--	--	< 0.1	< 0.81	--
MW-200-20	No	20	9	10/20/2005	Delta	--	< 4.68	< 12.5	< 31.2	21.9	--	< 0.03	< 0.0552	< 0.0552	< 0.11	--	--	< 0.1	< 0.11	--
MW-201-5	No	5	24	10/20/2005	Delta	--	< 4.18	< 11.2	< 28.1	19.7	--	0.112	< 0.0465	< 0.0465	< 0.0929	--	--	< 0.0929	< 0.09	--
MW-201-10	No	10	19	10/20/2005	Delta	--	< 4.94	< 11.3	< 28.1	19.7	--	< 0.0286	< 0.0476	< 0.0476	< 0.0953	--	--	< 0.0953	< 0.095	--
MW-201-15	No	15	14	10/20/2005	Delta	--	< 30.2	60.4	< 91.9	106	--	0.864	< 0.323	< 0.323	< 0.645	--	--	< 0.0992	< 0.65	--
MW-202-5	No	5	24	10/20/2005	Delta	--	< 4.62	< 11.2	< 28	19.6	--	< 0.0262	< 0.0437	< 0.0437	< 0.0874	--	--	< 0.0874	< 0.09	--
MW-202-10	No	10	19	10/20/2005	Delta	--	< 5.05	< 11.3	< 28.3	19.8	--	< 0.0278	< 0.0463	< 0.0463	< 0.0927	--	--	< 0.0927	< 0.09	--
MW-202-15	No	15	14	10/20/2005	Delta	--	< 5.47	< 11.7	< 29.3	20.5	--	0.46	< 0.0791	0.134	< 0.158	--	--	< 0.0997	< 0.16	--
MW-202-20	No	20	9	10/20/2005	Delta	--	57.3	209	< 124	271	--	< 0.0299	< 0.351	< 0.351	< 0.701	--	--	< 0.1	< 0.7	--
SB-41-5	Yes	5	24	10/20/2005	Delta	--	< 4.31	< 11.6	< 29	20.3	--	< 0.0252	< 0.042	< 0.042	0.139	--	--	< 0.0841	< 0.08	--
SB-41-10	Yes	10	19	10/20/2005	Delta	--	< 4.87	40.4	33	73.4	--	< 0.03	< 0.05	< 0.05	< 0.1	--	--	< 0.1	< 0.1	--
SB-41-12	Yes	12	17	10/20/2005	Delta	--	44.2	< 11.9	< 29.9	20.9	--	0.0485	0.0732	0.133	2.96	--	--	< 0.095	1.76	--
SB-41-15	Yes	15	14	10/20/2005	Delta	--	< 4.32	< 11.4	< 28.5	20	--	2.09	< 0.042	< 0.042	< 0.084	--	--	< 0.084	< 0.08	--
SB-41-20	No	20	9	10/20/2005	Delta	--	< 4.5	< 12.1	< 30.3	21.2	--	0.12	< 0.0455	< 0.0455	< 0.0909	--	--	< 0.0909	< 0.09	--
MW-203-5	No	5	22	10/21/2005	Delta	--	< 8.95	14.4	37.9	52.3	--	0.0769	< 0.0818	< 0.0818	< 0.164	--	--	< 0.1	< 0.16	--
MW-203-10	No	10	17	10/21/2005	Delta	--	< 9.11	< 15.2	< 37.9	26.6	--	< 0.019	< 0.073	< 0.073	< 0.146	--	--	< 0.019	< 0.15	--
MW-203-15	No	15	12	10/21/2005	Delta	--	< 15.7	35.3	52.2	87.5	--	0.639	< 0.118	< 0.118	< 0.237	--	--	< 0.0308	< 0.24	--
MW-203-20	No	20	7	10/21/2005	Delta	--	< 10.8	< 17.6	< 44	30.8	--	3.21	< 0.116	< 0.116	< 0.232	--	--	< 0.232	< 0.23	--
MW-204-7	No	7	21	10/21/2005	Delta	--	98.7	< 11.3	< 28.2	19.8	--	12	0.95	24.7	45.8	--	--	< 0.896	6.58	--
MW-204-9	No	9	19	10/21/2005	Delta	--	5,420	278	337	615	--	14.7	< 0.48	162	< 0.96	--	--	< 0.96	63.4	--
MW-204-10	No	10	18	10/21/2005	Delta	--	1,240	114	167	281	--	24	< 0.457	17.2	75	--	--	< 0.913	6.61	--
MW-204-15	No	15	13	10/21/2005	Delta	--	18.2	641	703	1,344	--	0.0529	< 0.0601	0.0733	< 0.12	--	--	< 0.1	0.38	--
SB-42-5	Yes	5	24	10/21/2005	Delta	--	< 4.49	< 11.5	36.5	42.3	--	< 0.0298	< 0.0496	< 0.0496	< 0.0992	--	--	< 0.0992	< 0.099	--
SB-42-7.5	Yes	7.5	21.5	10/21/2005	Delta	--	< 4.99	< 12.3	< 30.7	21.5	--	< 0.03	< 0.0568	< 0.0568	< 0.114	--	--	< 0.1	< 0.11	--
SB-42-9	Yes	9	20	10/21/2005	Delta	--	6.74	< 12.2	< 30.5	21.4	--	0.142	< 0.0496	< 0.0496	< 0.0991	--	--	< 0.0991	< 0.099	--
SB-42-10	Yes	10	19	10/21/2005	Delta	--	101	302	1,300	1,602	--	0.149	< 0.0424	< 0.0424	0.127	--	--	< 0.0849	0.12	--
SB-42-12	Yes	12	17	10/21/2005	Delta	--	< 4.68	66.4	254	320	--	< 0.0273	< 0.0456	< 0.0456	< 0.0911	--	--	< 0.0911	< 0.09	--
SB-42-15	Yes	15	14	10/21/2005	Delta	--	< 5.28	< 12.9	79.2	85.7	--	0.0615	< 0.0569	< 0.0569	< 0.114	--	--	< 0.0409	< 0.11	--
SB-42-20	No	20	9	10/21/2005	Delta	--	< 3.98	< 11.3	< 28.2	19.8	--	0.0426	< 0.0374	< 0.0374	< 0.0748	--	--	< 0.0748	< 0.07	--
MW-205-5	Yes	5	24	10/24/2005	Delta	--	< 5.98	22	89	111	--	< 0.0292	< 0.0487	< 0.0487	< 0.0974	--	--	< 0.0974	< 0.097	--
MW-205-9	Yes	9	20	10/24/2005	Delta	--	432	67.3	< 28.1	81.4	--	< 0.114	< 0.437	4.43	2.51	--	--	< 0.114	2.08	--
MW-205-10	Yes	10	19	10/24/2005	Delta	--	2,540	83.1	< 28.4	97.3	--	< 0.48	0.8	56.8	149	--	--	1.6	46.4	--
MW-205-15	Yes	15	14	10/24/2005	Delta	--	17.1	< 13.1	< 32.7	22.9	--	< 0.0298	< 0.0534	< 0.0534	< 0.107	--	--	< 0.1	0.21	--
MW-205-20	No	20	9	10/24/2005	Delta	--	< 4.61	< 12.1	< 30.2	21.2	--	< 0.0283	< 0.0472	< 0.0472	< 0.0945	--	--	< 0.0945	< 0.09	--
MW-206-5	No	5	26	10/24/2005	Delta	--	14.9	14.1	29.4	43.5	--	9.13	< 0.049	< 0.049	< 0.098	--	--	< 0.098	< 0.098	--
MW-206-10	No	10	21	10/24/2005	Delta	--	< 5.24	< 11.2	< 28	19.6	--	< 0.0279	< 0.0931	< 0.0465	< 0.0931	--	--	< 0.0931	< 0.09	--
MW-206-15	No	15	16	10/24/2005	Delta	--	< 9.88	48.9	119	168	--	< 0.03	< 0.209	< 0.105	< 0.209	--	--	< 0.0996	< 0.21	--
MW-206-20	No	20	11	10/24/2005	Delta	--	< 23.3	89.7	169	259	--	0.385	< 0.296	< 0.296	< 0.592	--	--	< 0.0999	< 0.59	--
MW-207-5	No	5	26	10/24/2005	Delta	--	< 5.02	< 10.8	< 27.1	19	--	< 0.0255	< 0.0425	< 0.0425	< 0.0849	--	--	< 0.0849	< 0.08	--
MW-207-10	No	10	21	10/24/2005	Delta	--	< 4.46	< 11.3	< 28.2	19.8	--	< 0.0279	< 0.0464	< 0.0464	< 0.0928	--	--	< 0.0928	< 0.09	--
MW-207-15	No	15	16	10/24/2005	Delta	--	< 4.67	21.9	< 30.4	37.1	--	2.1	< 0.108	< 0.108	< 0.215	--	--	< 0.028	< 0.22	--
MW-208-5	No	5	24	10/25/2005	Delta	--	17.9	24.7	< 29.1	39.3	--	< 0.0262	< 0.0437	< 0.0437	< 0.0873	--	--	< 0.0873	< 0.09	--
MW-208-10	No	10	19	10/25/2005	Delta	--	211	< 13.3	< 33.3	23.3	--	1.17	< 0.0764	2.16	19.2	--	--	< 0.153	0.66	--
MW-208-15	No	15	14	10/25/2005	Delta	--	< 33.9	115	345	460	--	0.0507	< 0.809	< 0.404	< 0.809	--	--	< 0.1	< 0.81	--
MW-208-20	No	20	9	10/25/2005	Delta	--	< 39.8	< 48.3	< 121	84.7	--	< 0.03	< 0.769	< 0.385	< 0.769	--	--	< 0.1	< 0.77	--
EFR-1-5.0	No	5	24	12/5/2006	Delta	--	10.5	< 11.8	< 29.4	20.6	--	0.00149	< 0.00137	< 0.00364	0.0221	--	--	< 0.000911	< 0.00911	--
EFR-1-10.0	No	10	19	12/5/2006	Delta	--	146	< 11.8	< 29.4	20.6	--	0.00326	< 0.00147	0.172	0.0173	--	--	< 0.000978	0.0019	--
EFR-1-15.0	No	15	14	12/5/2006	Delta	--	56.9	25.9	74.5	100	--	0.0218	0.0102	0.000864	--	--	--	< 0.00219	0.47	--
EFR-2-5.0	No	5	23	12/5/2006	Delta	--	< 7.01	< 14.2	< 35.6	24.9	--	< 0.00184	< 0.00184	< 0.00491	< 0.0123	--	--	< 0.00123	< 0.0123	--
EFR-2-10.0	No	10	18	12/5/2006	Delta	--	< 5.13	< 12.5	< 31.2	21.9	--	< 0.0014	< 0.0014	< 0.00372	< 0.00931	--	--	< 0.00931	< 0.00931	--
EFR-2-15.0	No	15	13	12/5/2006	Delta	--	< 5.55	< 13	< 32.5	22.8	--	< 0.0014	< 0.0014	0.00374	< 0.00936	--	--	< 0.000936	< 0.00936	--
EFR-3-5.0	Yes	5	23	12/5/2006	Delta	--	17.1	346	1,650	1,996	--	0.00226	< 0.00136	< 0.00363	< 0.00908	--	--	< 0.000908	< 0.00908	--
EFR-3-10.0	Yes	10	18	12/5/2006	Delta	--	< 5.44	< 12.5	< 31.3	21.9	--	0.00239	< 0.00145	< 0.00387	< 0.00968	--	--	< 0.000968	< 0.00968	--
EFR-3-15.0	No	15	13	12/5/2006	Delta	--	< 34.2	414	816	1,230	--	< 0.00976	< 0.00976	< 0.026	< 0.0651	--	--	< 0.00651	< 0.0651	--
TSVE-5-5.0	No	5	24	12/5/2006	Delta	--	7.71	27.5	229	257	--	0.00319	0.00296	0.0146	0.0815	--	--	< 0.000816	0.05	--
TSVE-5-10.0	No	10	19	12/5/2006	Delta	--	112	59.1	283	342	--	0.00369	0.00526	0.0433	0.196	--	--	< 0.000878	0.01	--
TSVE-6-5.0	No	5	23	12/5/2006	Delta	--	< 6.03	< 12.5	< 31.4	22	--	< 0.00148	< 0.00148	< 0.00395	< 0.00987	--	--	< 0.000987	< 0.00987	--
TSVE-6-10.0	No	10	18	12/5/2006	Delta	--	< 5.8	< 12.4	< 31.1	21.8	--	< 0.00157	< 0.00157	< 0.00419	< 0.0105	--	--	< 0.00105	< 0.0105	--
TSVE-7-5.0	No	5	23	12/5/2006	Delta	--	< 5.69	< 12.7	< 31.9	22.3	--	< 0.00151	< 0.00151	< 0.004003	< 0.0101	--	--	< 0.00101	< 0.0101	--
TSVE-7-10.0	No	10	18	12/5/2006	Delta	--	< 5.38	< 13.1	< 32.8	23	--	< 0.0015	< 0.0015	< 0.00399	< 0.00997	--	--	< 0.000997	< 0.00997	--
EFR-2-2.0	No	2	26	12/4/2006	Delta	--	11.2	56.2	425	481	--	< 0.00173	0.00198	< 0.00461	< 0.0115	--	--	< 0.00115	< 0.0115	--
TSVE-1-2.0	No	2	27	12/5/2006	Delta	--	< 5.25	21	37.2	58.2	--	0.0791	< 0.00151	< 0.00403	< 0.0101	--	--	< 0.00101	< 0.0101	--
TSVE-1-5.0	No	5	24	12/5/2006	Delta	--	6.73	< 11.7	< 29.1	20.4	--	0.0587	0.00471	0.0237	0.0239	--	--	< 0.000763	< 0.00763	--
TSVE-1-10.0	No	10	19	12/5/2006	Delta	--	6.84	< 12.1	< 30.3	21.2	--	0.0308	< 0.00123	< 0.00328	< 0.00821	--	--	< 0.000821	< 0.00821	--
TSVE-2-5.0	No	5	24	12/5/2006	Delta	--	< 4.29	< 11.6	< 28.9	20.3	--	0.0384	< 0.00121	< 0.00322	< 0.00805	--	--	< 0.000805	< 0.00805	--
TSVE-2-10.0	No	10	19	12/5/2006	Delta	--	< 4.97	< 11.8	< 29.5	20.7	--	0.0673	< 0.00121	< 0.00323	< 0.00807	--	--	< 0.000807	< 0.00807	--

Table 4-4a. Soil Analytical Results - TPH, VOCs, Naphthalene, and PCBs
Block 37 Site | Work Plan
Remedial Investigation Work Plan
600-630 Westlake Avenue North | Seattle, Washington

Sample ID	Sample Excavated (Yes=sample removed; No=sample present)	Sample Depth (feet bgs)	Elevation (feet NAVD88)	Sample Date	Consultant	TPH (mg/kg)						VOCs[5] (mg/kg)							PAHs (mg/kg)	PCB (Aroclors) (mg/kg)
						TPH[1]	GRO[2]	DRO[3]	ORO[3]	Total Extractable Hydrocarbons[4]	Kerosene	Benzene	Toluene	Ethyl benzene	Total Xylenes	EDB	EDC	MTBE	Naphthalene	
Screening Levels [6]																				
SL-1 Direct Contact						NE	1,500	NE	NE	NE	NE	18	6,400	8,000	16,000	0.50	11	560	1,600	1.0
SL-2 Protect Drinking Water Vadose Zone						NE	30	2,000	2,000	2,000	2,000	0.027	4.5	5.9	14	0.00027	0.023	0.1	4.5	0.34
SL-5 Protect Drinking Water Saturated Zone						2,000	30	2,000	2,000	2,000	2,000	0.0017	0.27	0.34	0.83	0.000018	0.0016	0.0072	0.24	0.017
SL-10 Natural Background						NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Laboratory PQL						NE	5	15	10	3.44	NA	0.02	0.05	0.05	0.15	0.05	0.05	0.05	0.2	0.0330
TSVE-3-5.0	No	5	24	12/5/2006	Delta	--	7.99	< 11.5	< 28.6	20.1	--	< 0.0013	< 0.0013	< 0.00346	< 0.00864	--	--	< 0.000864	< 0.00864	--
TSVE-3-10.0	No	10	19	12/5/2006	Delta	--	**81.8**	114	37.5	152	--	0.00599	< 0.00139	0.000813	< 0.000314	--	--	< 0.000929	**0.59**	--
TSVE-4-5.0	No	5	24	12/6/2006	Delta	--	11.7	< 12.5	< 31.3	21.9	--	< 0.00133	< 0.00133	0.00355	< 0.00887	--	--	< 0.000887	< 0.00887	--
TSVE-4-10.0	No	10	19	12/6/2006	Delta	--	**69.2**	26.1	< 36	44.1	--	< 0.00206	< 0.00206	0.0133	< 0.0137	--	--	< 0.00137	0.04	--
TSVE-8-5.0	No	5	23	12/6/2006	Delta	--	< 4.87	< 12.1	< 30.3	21.2	--	< 0.00147	< 0.00147	< 0.00392	< 0.00979	--	--	< 0.000979	< 0.00979	--
TSVE-8-10.0	No	10	18	12/6/2006	Delta	--	< 4.65	< 12.4	< 30.9	21.7	--	< 0.00116	< 0.00116	< 0.00309	< 0.00773	--	--	< 0.000773	< 0.00773	--
TSVE-9-5.0	No	5	23	12/6/2006	Delta	--	7	< 11.2	< 28.1	19.7	--	< 0.00129	< 0.00129	< 0.00345	< 0.00863	--	--	< 0.000863	< 0.00863	--
TSVE-9-10.0	No	10	18	12/6/2006	Delta	--	< 5.36	< 12.9	< 32.2	22.6	--	< 0.00152	< 0.00152	< 0.00406	< 0.0101	--	--	< 0.00101	< 0.0101	--
ESW-10	Yes	10	16.5	9/16/2008	Stantec	--	< 9.12	< 12.5	< 31.3	21.9	< 12.5	0.000863	0.000596	0.000381	0.00234	< 0.0036	< 0.0009	< 0.000718	< 0.0125	--
NET-11	Yes	11	15.5	9/16/2008	Stantec	--	**1,640**	119	140	259	209	**0.4**	**5**	**16**	**95**	**< 0.05**	**< 0.05**	**< 0.52**	**2.24**	--
NSW-6	Yes	6	20.5	9/16/2008	Stantec	--	< 8.87	< 11.6	72.1	77.9	< 11.6	0.000289	0.000311	< 0.00222	0.00152	< 0.0028	< 0.007	< 0.000556	< 0.0116	--
NWT-11	Yes	11	15.5	9/16/2008	Stantec	--	18.9	13	155	168	< 10.7	**< 0.0236**	0.02	< 0.118	< 0.355	**< 0.118**	**< 0.118**	**< 0.591**	< 0.106	--
SET-11	Yes	11	15.5	9/16/2008	Stantec	--	**10,600**	187	82	269	466	**4.4**	**9**	**190**	**990**	**< 0.06**	**< 0.06**	**< 0.58**	**7.21**	--
SSW-8	Yes	8	18.5	9/16/2008	Stantec	--	< 6.71	< 11.1	130	136	< 11.1	< 0.00092	< 0.00092	< 0.00245	0.00159	< 0.0031	< 0.0008	< 0.000613	< 0.0548	--
SWT-11	Yes	11	15.5	9/16/2008	Stantec	--	**2,850**	109	131	240	293	**0.89**	**1.8**	**25**	**160**	**< 0.06**	**< 0.06**	**< 0.6**	**9.35**	--
WSW-8	Yes	8	18.5	9/16/2008	Stantec	--	< 7.17	< 10.4	< 26.1	18.4	< 10.4	< 0.00104	< 0.00104	< 0.00278	0.00075	< 0.0035	< 0.0009	< 0.000695	< 0.0103	--
D-1	Yes	2	24.5	9/18/2008	Stantec	--	< 6.01	878	72.1	950	622	< 0.024	0.0276	< 0.36	< 0.36	**< 0.12**	**< 0.12**	**< 0.601**	0.04	--
D-2	Yes	2	24.5	9/18/2008	Stantec	--	< 5.18	--	--	--	--	< 0.00111	< 0.00111	0.00106	0.00106	< 0.0037	< 0.0009	< 0.000739	--	--
D-3	Yes	2	24.5	9/18/2008	Stantec	--	< 4.66	--	--	--	--	< 0.0193	< 0.00965	< 0.299	< 0.0299	**< 0.0965**	**< 0.0965**	< 0.00965	--	--
D-4	Yes	2	24.5	9/18/2008	Stantec	--	< 5.78	--	--	--	--	0.00105	0.00399	0.00923	0.00923	< 0.0036	< 0.0009	< 0.000716	--	--
D-5	Yes	2	24.5	9/18/2008	Stantec	--	< 5.79	--	--	--	--	< 0.00154	< 0.00154	0.00105	0.00105	< 0.0051	< 0.00128	< 0.000103	--	--
D-6	Yes	2	24.5	9/18/2008	Stantec	--	**108**	**4,300**	139	**4,439**	**3,330**	< 0.00103	< 0.00103	0.00158	0.00158	< 0.0034	< 0.0009	< 0.000688	< 0.0513	--
D-7	Yes	2	24.5	9/18/2008	Stantec	--	< 4.72	--	--	--	--	< 0.00106	< 0.00106	< 0.00284	0.000972	< 0.0036	< 0.0009	< 0.00709	--	--
D-8	Yes	2	24.5	9/18/2008	Stantec	--	< 5.9	--	--	--	--	< 0.00122	< 0.00122	< 0.00326	0.00179	< 0.0041	< 0.00102	< 0.000815	--	--
D-9	Yes	2	24.5	9/18/2008	Stantec	--	< 5.51	--	--	--	--	< 0.00144	< 0.00144	< 0.00384	0.00109	< 0.0044	< 0.0011	< 0.000881	--	--
D-10	Yes	2	24.5	9/18/2008	Stantec	--	< 4.57	35.5	42.9	78.4	21.4	< 0.00102	0.000645	0.000353	0.005	< 0.0034	< 0.0008	< 0.000679	< 0.0104	--
PL-1	Yes	2	24.5	9/18/2008	Stantec	--	< 4.95	< 10.6	27.9	33.2	< 10.6	< 0.00115	< 0.00115	< 0.00307	0.00203	< 0.0038	< 0.001	< 0.000766	< 0.0106	--
PL-2	Yes	2	24.5	9/18/2008	Stantec	--	< 5.05	--	--	--	--	< 0.00114	< 0.00114	< 0.00304	< 0.00101	< 0.0038	< 0.001	< 0.00076	--	--
PL-4	Yes	2	24.5	9/18/2008	Stantec	--	< 6.2	15	33.3	48.3	< 10.4	0.000492	0.00329	0.00125	0.013	< 0.0041	< 0.00102	< 0.000819	< 0.519	--
PL-5	Yes	2	24.5	9/18/2008	Stantec	--	< 5.54	29.9	< 26	42.9	22.1	< 0.00155	0.000825	< 0.00412	0.0024	< 0.0052	< 0.00129	< 0.00103	< 0.0103	--
PL-6	Yes	2	24.5	9/18/2008	Stantec	--	11.3	609	34.3	643	438	< 0.0208	< 0.104	< 0.104	< 0.312	**< 0.104**	**< 0.104**	**< 0.52**	< 0.0102	--
PL-7	Yes	2	24.5	9/18/2008	Stantec	--	< 4.97	--	--	--	--	< 0.000828	0.000392	0.000353	0.00653	< 0.0028	< 0.0007	< 0.000552	--	--
PL-8	Yes	2	24.5	9/18/2008	Stantec	--	< 4.38	--	--	--	--	< 0.00125	< 0.00125	< 0.0033	0.0026	< 0.0042	< 0.00104	< 0.000833	--	--
PL-9	Yes	2	24.5	9/18/2008	Stantec	--	< 5.31	< 10.5	< 26.3	18.4	< 10.5	< 0.00125	< 0.00125	< 0.00333	0.0026	< 0.0042	< 0.00104	< 0.000833	< 0.0106	--
MW-209-7	No	7	21	10/14/2008	Stantec	--	< 6.19	< 12.6	< 31.5	22.1	< 12.6	< 0.000895	< 0.000895	< 0.00239	< 0.00597	--	--	< 0.000597	< 0.01	--
MW-210-15	No	15	13	10/14/2008	Stantec	--	< 5.71	19.8	73.4	93.2	< 12.3	< 0.00116	< 0.00116	< 0.0031	0.0112	--	--	< 0.000776	< 0.01	--
MW-211-7	No	7	21	10/14/2008	Stantec	--	< 5.59	< 11.6	< 29.1	20.4	< 11.6	< 0.00102	< 0.00102	< 0.00272	< 0.00681	--	--	< 0.000681	< 0.01	--
SCB-4	No	26.5*	2.5	3/3/2009	[illegible]	--	< 13.6	< 13.7	< 34.3	24	--	0.0054	< 0.00155	0.0403	0.0473	--	--	--	--	--
MWR-1@2.5'	No	2.5	25.5	10/29/2010	Stantec	--	< 6	< 20.5	< 81.8	51.2	< 20.5	< 0.0029	< 0.0029	< 0.0029	< 0.0088	--	--	--	< 0.0029	--
MWR-2@2.5'	No	2.5	25.5	10/29/2010	Stantec	--	< 4.8	< 20.8	< 83.1	52	< 20.8	< 0.0025	< 0.0025	< 0.0025	< 0.0076	--	--	--	< 0.0025	--
MWR-3@2.5'	No	2.5	25.5	10/29/2010	Stantec	--	< 5.7	< 20.5	< 82.1	51.3	< 20.5	< 0.0028	< 0.0028	< 0.0028	< 0.0083	--	--	--	< 0.0028	--
MWR-4@2.5'	No	2.5	25.5	10/29/2010	Stantec	--	< 6.3	< 20	< 79.8	49.9	< 20	< 0.0031	< 0.0031	< 0.0031	< 0.0093	--	--	--	< 0.0031	--
MWR-5@2.5'	No	2.5	25.5	10/29/2010	Stantec	--	< 6.5	< 19.6	< 78.3	49	--	< 0.0035	< 0.0035	0.0052	0.0108	--	--	--	0.01	--
MWR-6@2.5'	No	2.5	25.5	10/29/2010	Stantec	--	< 7.4	40.1	183	223	< 23.2	< 0.0035	< 0.0035	< 0.0035	< 0.0105	--	--	--	< 0.0035	--
SVER-1@2.5'	No	2.5	25.5	10/29/2010	Stantec	--	< 6.5	< 21.3	< 85.1	53.2	< 21.3	< 0.0026	< 0.0026	< 0.0026	< 0.0078	--	--	--	< 0.0026	--
SVER-2@2.5'	No	2.5	25.5	10/29/2010	Stantec	--	< 6.7	25.2	151	176	< 22.3	< 0.0034	< 0.0034	< 0.0034	< 0.0103	--	--	--	< 0.0034	--
SVER-3@2.5'	No	2.5	25.5	10/29/2010	Stantec	--	< 6.7	159	1,150	1,309	< 23.6	< 0.003	< 0.003	< 0.003	< 0.0091	--	--	--	< 0.003	--
SVER-4@2.5'	No	2.5	25.5	10/29/2010	Stantec	--	< 6.7	< 20	< 80.2	50.1	< 20	< 0.0034	< 0.0034	< 0.0034	< 0.0103	--	--	--	< 0.0034	--
MWR-1@15'	No	15	13	11/2/2010	Stantec	--	< 5.4	< 23.3	< 93.2	58.3	< 23.3	< 0.0026	< 0.0026	< 0.0026	< 0.0077	--	--	--	< 0.0026	--
MWR-2@10'	No	10	9	11/2/2010	Stantec	--	< 5.5	< 22.2	< 89	55.6	< 22.2	< 0.0026	< 0.0026	< 0.0026	< 0.0078	--	--	--	< 0.0026	--
MWR-3@5'	No	5	23	11/2/2010	Stantec	--	7.1	< 20.4	< 81.6	51	< 20.4	< 0.0029	< 0.0029	< 0.0029	< 0.0086	--	--	--	< 0.0029	--
MWR-3@10'	No	10	18	11/2/2010	Stantec	--	< 6.3	< 21	< 84	52.5	< 21	< 0.0031	< 0.0031	< 0.0031	< 0.0092	--	--	--	< 0.0031	--
MWR-4@5'	No	5	23	11/2/2010	Stantec	--	< 5.5	< 21.8	< 87.3	54.6	< 21.8	< 0.0028	< 0.0028	< 0.0028	< 0.0084	--	--	--	< 0.0028	--
MWR-4@10'	No	10	18	11/2/2010	Stantec	--	< 4.3	< 22.4	< 89.6	56	< 22.4	< 0.0026	< 0.0026	< 0.0026	< 0.0078	--	--	--	< 0.0026	--
MWR-5@10'	No	10	18	11/3/2010	Stantec	--	**255**	< 23.6	< 94.4	59	< 23.6	**0.134**	**3.86**	**7.67**	**31.6**	--	--	--	**0.97**	--
MWR-6@5'	No	5	23	11/3/2010	Stantec	--	< 6.7	< 25.2	< 101	63.1	< 25.2	< 0.0036	< 0.0036	< 0.0036	< 0.0108	--	--	--	< 0.0036	--
MWR-6@10'	No	10	18	11/3/2010	Stantec	--	< 6.7	< 24.6	< 98.6	61.6	< 24.6	< 0.003	< 0.003	< 0.003	< 0.009	--	--	--	< 0.003	--
SVER-1@5'	No	5	23	11/4/2010	Stantec	--	< 6	< 24.1	262	274	< 24.1	< 0.0028	< 0.0028	< 0.0028	< 0.0083	--	--	--	< 0.0028	--
SVER-2@5'	No	5	23	11/4/2010	Stantec	--	< 5.7	< 22.7	143	154	< 22.7	< 0.0029	< 0.0029	< 0.0029	< 0.0086	--	--	--	< 0.0029	--
SVER-3@5'	No	5	23	11/4/2010	Stantec	--	< 6	< 23.3	109	121	< 23.3	< 0.003	< 0.003	0.003	< 0.0089	--	--	--	< 0.003	--
SVER-4@5'	No	5	23	11/4/2010	Stantec	--	9.4	< 23.3	< 93.2	58.3	< 23.3	< 0.0028	< 0.0028	0.0028	0.013	--	--	--	0.0037	--
B-212-5'	No	5	24	9/30/2014	CardnoATC	--	< 5.6	--	--	--	--	< 0.0035	< 0.0035	< 0.0035	< 0.0106	< 0.004	< 0.004	< 0.0035	--	--
B-212-10'	No	10	19	9/30/2014	CardnoATC	--	< 5.5	--	--	--	--	0.0067	0.0073	0.0056	0.0191	< 0.005 0.001	< 0.01	< 0.0051	--	--
B-212-15'	No	15	14	9/30/2014	CardnoATC	--	< 9.7	--	--	--	--	< 0.0051	< 0.0051	< 0.0051	< 0.0153	< 0.005 0.001	< 0.01	< 0.0051	--	--
B-212-20'	No	20	9	9/30/2014	CardnoATC	--	< 6.1	--	--	--	--	< 0.0114	< 0.0114	< 0.0114	< 0.0341	< 0.011 0.002	< 0.01	< 0.0114	--	--
B-212-25'	No	25	4	9/30/2014	CardnoATC	--	< 8.7	--	--	--	--	< 0.0065	< 0.0065	< 0.0065	< 0.0196	< 0.007 0.001	< 0.01	< 0.0065	--	--
B-213-6.5'	No	6.5	22.5	10/1/2014	CardnoATC	--	< 6	--	--	--	--	< 0.0033	< 0.0033	< 0.0033	< 0.0033	< 0.003	< 0.003	< 0.01	--	--
B-213-10'	No	10	18	10/1/2014	CardnoATC	--	**130**	--	--	--	--	**< 0.0547**	< 0.0547	< 0.0547	< 0.164	**< 0.055** 0.007	**< 0.05**	**< 0.0547**	--	--
B-213-15'	No	15	13	10/1/2014	CardnoATC	--	7.3	--	--	--	--	< 0.0037	< 0.0037	< 0.0037	< 0.0111	< 0.004	< 0.004	< 0.0037	--	--
B-213-20'	No	20	8	10/1/2014	CardnoATC	--	< 7.8	--	--	--	--	< 0.0049	< 0.0049	< 0.0049	< 0.0147	< 0.005	< 0.005	< 0.0049	--	--
B-214-6.5'	No	6.5	22.5	10/1/2014	CardnoATC	--	< 6.1	--	--	--	--	0.0087	< 0.0037	< 0.0037	< 0.0111	< 0.004	< 0.004	< 0.0037	--	--
B-214-10'	No	10	18	10/1/2014	CardnoATC	--	< 6.3	--	--	--	--	< 0.0036	< 0.0036	< 0.0036	< 0.0107	< 0.004	< 0.004	< 0.0036	--	--
B-214-15'	No	15	13	10/1/2014	CardnoATC	--	< 6.3	--	--	--	--	< 0.0032	< 0.0032	< 0.0032	< 0.0095	< 0.003	< 0.003	< 0.0032	--	--
B-215-6'	No	6	22	10/1/2014	CardnoATC	--	< 6.2	--	--	--	--	0.0151	< 0.0033	< 0.0033	< 0.01	< 0.003	< 0.003	< 0.0033	--	--
B-215-10'	No	10	18	10/1/2014	CardnoATC	--	< 9.3	--	--	--	--	**0.274**	< 0.0963	< 0.0963	< 0.289	**< 0.096** < 0.01	**< 0.096**	< 0.01	--	--
B-215-15'	No	15	13	10/1/2014	CardnoATC	--	< 9.6	--	--	--	--	< 0.0078	< 0.0078	< 0.0078	< 0.0234	< 0.001 < 0.01	< 0.01	< 0.0078	--	--
B-216-6'	No	6	24	10/2/2014	CardnoATC	--	< 5.7	--	--	--	--	< 0.0041	< 0.0041	< 0.0041	< 0.0122	< 0.004	< 0.004	< 0.0041	--	--
B-216-10	No	10	19	10/2/2014	CardnoATC	--	12.5	--	--	--	--	0.0051	< 0.0036	< 0.0036	< 0.0796	< 0.004	< 0.004	< 0.0036	--	--
B-216-15	No	15	14	10/2/2014	CardnoATC	--	**< 32.4**	--	--	--	--	**< 0.0265**	< 0.0265	< 0.0265	< 0.0796	< 0.027 < 0.005	< 0.0265	< 0.0265	--	--
B-216-20	No	20	8	10/2/2014	CardnoATC	--	< 7	--	--	--	--	< 0.0051	< 0.0051	< 0.0051	< 0.0153	< 0.005 < 0.001	< 0.0051	< 0.0051	--	--
B-216-25	No	25	4	10/2/2014	CardnoATC	--	< 5.7	--	--	--	--	< 0.0041	< 0.0041	< 0.0041	< 0.0122	< 0.004	< 0.0041	< 0.0041	--	--

Table 4-4a. Soil Analytical Results - TPH, VOCs, Naphthalene, and PCBs
Block 37 Site | Work Plan
Remedial Investigation Work Plan
600-630 Westlake Avenue North | Seattle, Washington

Sample ID	Sample Excavated (Yes=sample removed; No=sample present)	Sample Depth (feet bgs)	Elevation (feet NAVD88)	Sample Date	Consultant	TPH (mg/kg)						VOCs[5] (mg/kg)							PAHs (mg/kg)	PCB (Aroclors) (mg/kg)
						TPH[1]	GRO[2]	DRO[3]	ORO[3]	Total Extractable Hydrocarbons[4]	Kerosene	Benzene	Toluene	Ethyl benzene	Total Xylenes	EDB	EDC	MTBE	Naphthalene	
Screening Levels [6]																				
SL-1 Direct Contact						NE	1,500	NE	NE	NE	NE	18	6,400	8,000	16,000	0.50	11	560	1,600	1.0
SL-2 Protect Drinking Water Vadose Zone						NE	30	2,000	2,000	2,000	2,000	0.027	4.5	5.9	14	0.00027	0.023	0.1	4.5	0.34
SL-5 Protect Drinking Water Saturated Zone						2,000	30	2,000	2,000	2,000	2,000	0.0017	0.27	0.34	0.83	0.000018	0.0016	0.0072	0.24	0.017
SL-10 Natural Background						NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Laboratory PQL						NE	5	15	10	3.44	NA	0.02	0.05	0.05	0.15	0.05	0.05	0.05	0.2	0.0330
B-217-5	No	5	24	10/3/2014	CardnoATC	--	< 6.2	--	--	--	--	< 0.0058	< 0.0058	< 0.0058	< 0.0175	< 0.006 < 0.001	< 0.0058	< 0.0058	--	--
B-217-10	No	10	19	10/3/2014	CardnoATC	--	< 6	--	--	--	--	< 0.0045	< 0.0045	< 0.0045	< 0.0134	< 0.005	< 0.0045	< 0.0045	--	--
B-217-15	No	15	14	10/3/2014	CardnoATC	--	25.1	--	--	--	--	0.019	< 0.0077	< 0.0077	0.0292	< 0.008 < 0.001	< 0.0077	< 0.0077	--	--
B-217-20	No	20	9	10/3/2014	CardnoATC	--	< 7.2	--	--	--	--	0.019	< 0.0055	< 0.0055	< 0.0164	< 0.006 < 0.001	< 0.0055	< 0.0055	--	--
B-217-25	No	25	4	10/3/2014	CardnoATC	--	< 6.8	--	--	--	--	< 0.0043	< 0.0043	< 0.0043	< 0.0129	< 0.004	< 0.0043	< 0.0043	--	--
B-218-10'	No	10	19	10/3/2014	CardnoATC	--	**635**	--	--	--	--	**< 0.0578**	< 0.0578	< 0.0578	< 0.173	**< 0.058** < 0.012	**< 0.0578** < 0.0071	**< 0.0578**	--	--
B-218-15'	No	15	14	10/3/2014	CardnoATC	--	**55.5**	--	--	--	--	0.0092	0.009	< 0.0048	< 0.0145	0.009	< 0.0048	< 0.0048	--	--
B-218-20'	No	20	9	10/3/2014	CardnoATC	--	**272**	--	--	--	--	0.0129	0.0418	< 0.0064	**0.973**	0.013	< 0.0064 < 0.0011	**0.067**	--	--
B-218-25'	No	25	4	10/3/2014	CardnoATC	--	< 5.8	--	--	--	--	< 0.0042	< 0.0042	< 0.0042	< 0.0125	< 0.004	< 0.0042	< 0.0042	--	--
B-219-10'	No	10	18	10/3/2014	CardnoATC	--	18.6	--	--	--	--	< 0.01	< 0.0099	< 0.0099	0.048	< 0.0099 < 0.002	< 0.0099	< 0.0099	--	--
FB-1-5	No	5	24	4/4/2019	ATC	--	< 0.8	--	--	--	--	< 0.0033	< 0.014	0.0082 J	< 0.013	--	--	--	--	--
FB-1-7	No	7	22	4/4/2019	ATC	--	7.7	--	--	--	--	0.0053 J	0.023 J	0.016 J	< 0.015	--	--	--	--	--
FB-1-11	No	11	18	4/4/2019	ATC	--	2.1 J	--	--	--	--	**0.067**	< 0.015	0.017 J	< 0.014	--	--	--	--	--
FB-1-17.5	No	17.5	11.5	4/4/2019	ATC	--	< 0.071	--	--	--	--	0.0093 J	< 0.014	< 0.0032	< 0.014	--	--	--	--	--
FB-2-5.5	No	5.5	23.5	4/4/2019	ATC	--	**57.9**	--	--	--	--	0.0066 J	< 0.015	0.013 J	< 0.015	--	--	--	--	--
FB-2-7	No	7	22	4/4/2019	ATC	--	**101**	--	--	--	--	0.011 J	0.02 J	0.087	0.14 J	--	--	--	--	--
FB-2-10	No	10	19	4/4/2019	ATC	--	**40**	--	--	--	--	0.016 J	< 0.016	0.026 J	< 0.015	--	--	--	--	--
FB-2-19.5	No	19.5	9.5	4/4/2019	ATC	--	< 0.92	--	--	--	--	< 0.0054	< 0.023	< 0.0052	< 0.022	--	--	--	--	--
FMW-139-5	No	5	24	4/4/2019	ATC	--	< 0.74	--	--	--	--	0.0092 J	0.02 J	0.018 J	< 0.014	--	--	--	--	--
FMW-139-7	No	7	22	4/4/2019	ATC	--	< 0.81	--	--	--	--	0.011 J	0.041 J	0.047 J	0.13 J	--	--	--	--	--
FMW-139-10	No	10	19	4/4/2019	ATC	--	9.5	--	--	--	--	0.014 J	0.041 J	0.037 J	< 0.014	--	--	--	--	--
FMW-139-19	No	19	10	4/4/2019	ATC	--	< 0.77	--	--	--	--	< 0.0033	< 0.014	< 0.0032	< 0.014	--	--	--	--	--
B-37-3-5.0	No	5	22.5	3/16/2021	Farallon	--	< 4.9	< 28	< 56	42	--	< 0.00089	< 0.0044	< 0.00089	< 0.0027	--	--	< 0.00089	< 0.0074	--
B-37-3-13.0	No	13	14.5	3/16/2021	Farallon	--	< 4.8	< 29	86	101	--	< 0.00085	< 0.0043	< 0.00085	< 0.0026	--	--	< 0.00085	< 0.0077	--
B-37-3-19.0	No	19	8.5	3/16/2021	Farallon	--	< 5.5	53 N	300	353	--	< 0.001	< 0.005	< 0.001	< 0.003	--	--	< 0.001	< 0.0078	--
B-37-3-24.0	No	24	3.5	3/16/2021	Farallon	--	< 5.8	< 30	< 61	45.5	--	< 0.00082	< 0.0041	< 0.00082	< 0.0024	--	--	< 0.00082	0.018	--
B-37-4-5.0	No	5	22.4	3/17/2021	Farallon	--	< 4.7	< 26	71	84	--	< 0.00083	< 0.0042	< 0.00083	< 0.0025	--	--	< 0.00083	< 0.007	--
B-37-4-13.0	No	13	14.4	3/17/2021	Farallon	--	< 4.2	< 27	230	244	--	< 0.0007	< 0.0035	< 0.0007	< 0.0021	--	--	< 0.0007	0.0075	--
B-37-4-19.0	No	19	8.4	3/17/2021	Farallon	--	< 5.8	< 29	540	555	--	< 0.00099	< 0.0049	< 0.00099	< 0.003	--	--	< 0.00099	< 0.0075	--
B-37-4-24.0	No	24	3.4	3/17/2021	Farallon	--	< 8.8	72 N	490	562	--	< 0.0013	0.0087	< 0.0013	< 0.0038	--	--	< 0.0013	< 0.0089	--
B-37-5-5.0	No	5	23	3/18/2021	Farallon	--	< 4.2	< 28	340	354	--	< 0.0008	< 0.004	< 0.0008	< 0.0024	--	--	< 0.0008	< 0.0075	--
B-37-5-13.0	No	13	15	3/18/2021	Farallon	--	< 4.8	< 29	< 57	43	--	< 0.00084	< 0.0042	< 0.00084	< 0.0025	--	--	< 0.00084	< 0.0076	--
B-37-6-5.0	No	5	22.5	3/18/2021	Farallon	--	< 4.8	< 27	< 54	40.5	--	< 0.00082	< 0.0041	< 0.00082	< 0.0024	--	--	< 0.00082	< 0.0072	--
B-37-6-17.0	No	17	10.5	3/18/2021	Farallon	--	< 7.6	< 36	120	138	--	< 0.0011	< 0.0054	< 0.0011	< 0.0032	--	--	< 0.0011	0.13	--
B-37-6-20.0	No	20	7.5	3/18/2021	Farallon	--	< 5.6	< 31	< 61	46	--	< 0.00089	< 0.0045	< 0.00089	< 0.0027	--	--	< 0.00089	0.026	--
B-37-6-25.0	No	25	2.5	3/18/2021	Farallon	--	< 5.5	< 30	< 59	44.5	--	< 0.00092	< 0.0046	< 0.00092	< 0.0027	--	--	< 0.00092	< 0.0079	--
B-37-6-33.0	No	33	-5.5	3/18/2021	Farallon	--	< 5.9	< 30	< 61	45.5	--	< 0.00091	< 0.0045	< 0.00091	< 0.0027	--	--	< 0.00091	< 0.0081	--
B-37-5-20.0	No	20	8	3/19/2021	Farallon	--	< 6.9	< 33	88	105	--	0.0028	< 0.0053	< 0.0011	< 0.0032	--	--	< 0.0011	0.16	--
B-37-5-25.0	No	25	3	3/19/2021	Farallon	--	< 5.6	< 30	72	87	--	< 0.00091	< 0.0046	< 0.00091	< 0.0027	--	--	< 0.00091	0.028	--
B-37-5-33.0	No	33	-5	3/19/2021	Farallon	--	< 5.1	< 29	< 58	43.5	--	< 0.00081	< 0.004	< 0.00081	< 0.0024	--	--	< 0.00081	< 0.0077	--
B-37-9-5.0	No	5	24.5	5/4/2021	Farallon	--	< 7.4	< 32	< 63	47.5	--	< 0.0011	< 0.0054	< 0.0011	< 0.0033	--	--	--	< 0.0084	--
B-37-9-22.0	No	22	7.5	5/4/2021	Farallon	--	< 6.5	< 31	< 62	46.5	--	< 0.0012	< 0.0061	< 0.0012	< 0.0036	--	--	--	0.027	--
B-37-9-27.0	No	27	2.5	5/4/2021	Farallon	--	< 6.3	< 32	< 63	47.5	--	< 0.0012	< 0.0059	< 0.0012	< 0.0035	--	--	--	< 0.0084	--
B-37-9-33.0	No	33	-3.5	5/4/2021	Farallon	--	< 6.1	< 29	< 57	43	--	< 0.001	< 0.0051	< 0.001	< 0.003	--	--	--	< 0.0076	--
B-37-8-5.0	No	5	24	5/5/2021	Farallon	--	< 6.2	< 27	< 54	40.5	--	< 0.0013	< 0.0063	< 0.0013	< 0.0038	--	--	--	< 0.073	--
B-37-8-13.0	No	13	16	5/5/2021	Farallon	--	< 5.9	< 28	< 55	41.5	--	< 0.00099	< 0.005	< 0.00099	< 0.00299	--	--	--	< 0.0074	--
B-37-8-18.0	No	18	11	5/5/2021	Farallon	--	< 11	< 41	250	271	--	< 0.0023	< 0.011	< 0.0023	< 0.0068	< 0.0023	< 0.0023	< 0.0023	0.03	--
B-37-8-22.0	No	22	7	5/5/2021	Farallon	--	< 6.4	< 30	< 60	45	--	< 0.001	< 0.0052	< 0.001	< 0.0031	< 0.001	< 0.001	< 0.001	< 0.008	--
B-37-8-27.0	No	27	2	5/5/2021	Farallon	--	< 6.3	< 31	< 62	46.5	--	< 0.0011	< 0.0053	< 0.0011	< 0.0032	--	--	--	< 0.0083	--
B-37-8-33.0	No	33	-4	5/5/2021	Farallon	--	< 6.5	< 31	< 62	46.5	--	< 0.001	< 0.0051	< 0.001	< 0.003	--	--	--	< 0.0083	--
B-37-7-5.0	No	5	25	5/6/2021	Farallon	--	< 5.4	< 26	110	123	--	< 0.0011	< 0.0057	< 0.0011	< 0.0034	--	--	--	< 0.007	--
B-37-7-13.0	No	13	17	5/6/2021	Farallon	--	< 6.2	< 28	< 55	41.5	--	< 0.001	< 0.0051	< 0.001	< 0.0031	--	--	--	< 0.0074	--
B-37-7-18.0	No	18	12	5/6/2021	Farallon	--	< 5.9	< 30	< 60	45	--	< 0.001	< 0.0051	< 0.001	< 0.003	--	--	--	< 0.008	--
B-37-7-22.0	No	22	8	5/6/2021	Farallon	--	< 8.1	< 32	< 65	48.5	--	< 0.0014	< 0.0069	< 0.0014	< 0.0042	--	--	--	< 0.0086	--
B-37-7-27.0	No	27	3	5/6/2021	Farallon	--	< 7	< 31	< 61	46	--	< 0.0013	< 0.0063	< 0.0013	< 0.0038	--	--	--	< 0.0082	--
B-37-7-33.0	No	33	-3	5/6/2021	Farallon	--	< 6.9	< 32	< 64	48	--	< 0.0012	< 0.0058	< 0.0012	< 0.0035	--	--	--	< 0.0086	--
PH-1-15.0	No	15	14.4	1/26/2022	Farallon	--	< 5.8	< 31	< 61	46	--	< 0.0011	< 0.0057	< 0.0011	< 0.0034	--	--	--	< 0.0024	< 0.0217
PH-1-20.0	No	20	9.4	1/26/2022	Farallon	--	< 5.6	< 30	< 60	45.5	--	< 0.00083	< 0.0042	< 0.00083	< 0.00253	--	--	--	< 0.0024	< 0.021
PH-1-25.0	No	25	4.4	1/26/2022	Farallon	--	< 6.8	< 30	< 61	45.5	--	< 0.0012	< 0.0058	< 0.0012	< 0.0035	--	--	--	< 0.0024	< 0.021
PH-1-30.0	No	30	-0.6	1/26/2022	Farallon	--	< 7.1	< 31	< 62	46.5	--	< 0.0012	< 0.0059	< 0.0012	< 0.0036	--	--	--	< 0.0025	< 0.0217
PH-1-35.0	No	35	-5.6	1/26/2022	Farallon	--	< 5.8	< 32	< 63	47.5	--	< 0.0012	< 0.0059	< 0.0012	< 0.0036	--	--	--	< 0.0025	< 0.0224
PH-3-15.0	No	15	15.1	1/26/2022	Farallon	--	< 6.1	< 30	< 59	44.5	--	< 0.00097	< 0.0049	< 0.00097	< 0.00287	--	--	--	< 0.0024	< 0.021
PH-2/AMW-1-15.0	No	15	14.4	1/26/2022	Farallon	--	< 6.5	< 31	< 62	46.5	--	< 0.0011	< 0.0057	< 0.0011	< 0.0034	--	--	--	< 0.0025	< 0.0217
PH-2/AMW-1-20.0	No	20	9.4	1/26/2022	Farallon	--	< 5.3	< 29	< 58	43.5	--	< 0.00095	< 0.0047	< 0.00095	< 0.00285	--	--	--	< 0.0023	< 0.0203
PH-2/AMW-1-25.0	No	25	4.4	1/26/2022	Farallon	--	< 6.9	< 29	< 58	43.5	--	< 0.0011	< 0.0057	< 0.0011	< 0.0034	--	--	--	< 0.0023	< 0.0203
PH-2/AMW-1-30.0	No	30	-0.6	1/26/2022	Farallon	--	< 7.6	< 30	< 60	45	--	< 0.0013	< 0.0064	< 0.0013	< 0.0039	--	--	--	< 0.0024	< 0.021
PH-2/AMW-1-35.0	No	35	-5.6	1/26/2022	Farallon	--	< 6.1	< 30	< 61	45.5	--	< 0.00089	< 0.0045	< 0.00089	< 0.00269	--	--	--	< 0.0024	< 0.021
PH-3-20.0	No	20	10.1	1/27/2022	Farallon	--	< 5.5	< 29	< 58	43.5	--	< 0.0011	< 0.0055	< 0.0011	< 0.0033	--	--	--	< 0.0023	< 0.0203
PH-3-25.0	No	25	5.1	1/27/2022	Farallon	--	< 8.3	< 31	< 62	46.5	--	< 0.0015	< 0.0075	< 0.0015	< 0.0045	--	--	--	< 0.0025	< 0.0217
PH-3-30.0	No	30	0.1	1/27/2022	Farallon	--	< 7.2	< 31	< 62	46	--	< 0.0012	< 0.0058	< 0.0012	< 0.0035	--	--	--	< 0.0025	< 0.0217
PH-3-35.0	No	35	-4.9	1/27/2022	Farallon	--	< 7	< 29	< 57	46.5	--	< 0.0012	< 0.0062	< 0.0012	< 0.0037	--	--	--	< 0.0023	< 0.0203
PH-4-25.0	No	25	5.4	1/27/2022	Farallon	--	< 7.4	< 33	< 65	48	--	< 0.0011	< 0.0057	< 0.0011	< 0.0034	--	--	--	< 0.0026	< 0.0231
PH-4-30.0	No	30	0.4	1/27/2022	Farallon	--	< 5.8	< 30	< 60	45	--	0.001	< 0.005	< 0.00099	< 0.00299	--	--	--	< 0.0024	< 0.021
PH-4-35.0	No	35	-4.6	1/27/2022	Farallon	--	< 6.1	< 30	< 60	45	--	< 0.00098	< 0.0049	< 0.00098	< 0.00298	--	--	--	< 0.0024	< 0.021
Confirmation Sampling - Phase 1 Excavation[7]																				
B-A1-3	Yes	3	25	11/2/2006	ORS Corporation	--	< 5.69	< 11.5	< 28.7	20.1	--	< 0.00136	< 0.00136	< 0.00362	< 0.00904	--	--	< 0.000904	< 0.01	--
B-C2-1	Yes	1	27	11/2/2006	ORS Corporation	--	**40.7**	13.4	61.3	74.7	--	< 0.00136	< 0.00136	< 0.00364	< 0.00909	--	--	< 0.000909	< 0.01	--
C-A1-3	Yes	3	25	11/6/2006	ORS Corporation	--	6.41	< 12.5	< 31.2	21.9	--	< 0.00147	< 0.00147	0.00633	0.0303	--	--	< 0.000983	< 0.01	--
C-B1-3	Yes	3	25	11/6/2006	ORS Corporation	--	**49**	108	346	454	--	**0.0302**	0.00263	0.00762	0.0173	--	--	< 0.00121	0.17	--
C-C1-3	Yes	3	25	11/6/2006	ORS Corporation	--	4.43	< 11.5	38.2	44	--	< 0.00139	< 0.00139	< 0.00371	< 0.00928	--	--	< 0.000928	< 0.01	--
D-A1-5	Yes	5	24	11/7/2006	ORS Corporation	--	11.5	< 11.3	< 28.4	19.9	--	< 0.00147	--	0.068	0.283	--	--	< 0.000977	0.02	--

Table 4-4a. Soil Analytical Results - TPH, VOCs, Naphthalene, and PCBs
Block 37 Site | Work Plan
Remedial Investigation Work Plan
600-630 Westlake Avenue North | Seattle, Washington

Sample ID	Sample Excavated (Yes=sample removed; No=sample present)	Sample Depth (feet bgs)	Elevation (feet NAVD88)	Sample Date	Consultant	TPH (mg/kg)						VOCs[5] (mg/kg)							PAHs (mg/kg)	PCB (Aroclors) (mg/kg)
						TPH[1]	GRO[2]	DRO[3]	ORO[3]	Total Extractable Hydrocarbons[4]	Kerosene	Benzene	Toluene	Ethyl benzene	Total Xylenes	EDB	EDC	MTBE	Naphthalene	
Screening Levels [6]																				
SL-1 Direct Contact						NE	1,500	NE	NE	NE	NE	18	6,400	8,000	16,000	0.50	11	560	1,600	1.0
SL-2 Protect Drinking Water Vadose Zone						NE	30	2,000	2,000	2,000	2,000	0.027	4.5	5.9	14	0.00027	0.023	0.1	4.5	0.34
SL-5 Protect Drinking Water Saturated Zone						2,000	30	2,000	2,000	2,000	2,000	0.0017	0.27	0.34	0.83	0.000018	0.0016	0.0072	0.24	0.017
SL-10 Natural Background						NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Laboratory PQL						NE	5	15	10	3.44	NA	0.02	0.05	0.05	0.15	0.05	0.05	0.05	0.2	0.0330
B-A1-10	Yes	10	18	11/14/2006	URS Corporation	--	< 5.37	< 13.2	< 32.9	23.1	--	< 0.00202	< 0.00202	< 0.00538	< 0.0135	--	--	< 0.00135	< 0.01	--
B-A1-15	No	15	13	11/14/2006	URS Corporation	--	**103**	18.4	43.7	62.1	--	0.00307	< 0.00133	0.0116	< 0.00888	--	--	< 0.000888	< 0.01	--
B-A2-10	Yes	10	18	11/14/2006	URS Corporation	--	< 4.52	< 11.5	< 28.8	20.2	--	< 0.00138	< 0.00138	< 0.00369	< 0.00922	--	--	< 0.000922	< 0.01	--
B-A2-15	No	15	13	11/14/2006	URS Corporation	--	< 3.77	< 11.8	< 29.4	20.6	--	< 0.00149	< 0.00149	< 0.00397	< 0.00992	--	--	< 0.000992	< 0.01	--
B-B1-10	Yes	10	18	11/14/2006	URS Corporation	--	< 4.6	< 12.2	< 30.6	21.4	--	< 0.00175	< 0.00175	< 0.00467	< 0.0117	--	--	< 0.00117	< 0.01	--
B-B1-15	No	15	13	11/14/2006	URS Corporation	--	< 4.7	12.8	< 30.9	28.3	--	< 0.00136	< 0.00136	< 0.00362	< 0.00904	--	--	< 0.000904	< 0.01	--
B-B2-10	Yes	10	18	11/14/2006	URS Corporation	--	< 4.38	< 12.5	< 31.1	21.8	--	< 0.00162	< 0.00162	< 0.00433	< 0.0108	--	--	< 0.00108	< 0.01	--
B-B2-15	No	15	13	11/14/2006	URS Corporation	--	< 4.81	< 12.1	< 30.2	21.2	--	< 0.0016	< 0.0016	< 0.00425	< 0.0106	--	--	< 0.00106	< 0.01	--
B-C1-10	Yes	10	18	11/14/2006	URS Corporation	--	19	< 12.4	< 31.1	21.8	--	< 0.00181	< 0.00181	0.0219	< 0.0121	--	--	< 0.00121	< 0.01	--
B-C1-15	No	15	13	11/14/2006	URS Corporation	--	< 4.12	< 11.8	< 29.5	20.7	--	< 0.00131	< 0.00131	< 0.0035	< 0.00875	--	--	< 0.000875	< 0.01	--
B-C2-10	Yes	10	18	11/14/2006	URS Corporation	--	< 4.46	< 11.9	52.9	58.9	--	< 0.00165	< 0.00165	< 0.00441	< 0.011	--	--	< 0.0011	< 0.01	--
B-C2-15	No	15	13	11/14/2006	URS Corporation	--	< 4.41	< 12.3	< 30.8	21.6	--	0.00461	< 0.00146	< 0.0039	< 0.00974	--	--	< 0.000974	< 0.01	--
C-A1-10	Yes	10	18	11/27/2006	URS Corporation	--	< 4.14	< 12.1	< 30.2	21.2	--	< 0.00171	< 0.00171	0.0142	0.0455	--	--	< 0.00114	< 0.01	--
C-A1-15	No	15	13	11/27/2006	URS Corporation	--	**55.7**	55.4	61.2	117	--	0.0134	0.0618	0.191	**1.88**	--	--	< 0.00101	0.08	--
C-A2-10	Yes	10	18	11/27/2006	URS Corporation	--	10.8	< 12.7	32.6	39	--	**0.0633**	0.00348	0.0356	0.0826	--	--	< 0.00112	0.03	--
C-A2-15	No	15	13	11/27/2006	URS Corporation	--	< 4.25	22.9	123	146	--	0.00186	0.00211	0.0112	0.0505	--	--	< 0.00113	0.01	--
C-B1-10	Yes	10	18	11/27/2006	URS Corporation	--	17.6	45.5	67.2	113	--	**0.0798**	**0.349**	**0.745**	**3.05**	--	--	< 0.00104	**0.39**	--
C-B1-15	No	15	13	11/27/2006	URS Corporation	--	22.1	33	41.9	74.9	--	**0.0231**	0.0469	**0.477**	**1.86**	--	--	< 0.00117	0.14	--
C-B2-10	Yes	10	18	11/27/2006	URS Corporation	--	< 4.65	< 12.2	< 30.4	21.3	--	0.00411	< 0.00163	< 0.00434	< 0.0109	--	--	< 0.00109	< 0.01	--
C-B2-15	No	15	13	11/27/2006	URS Corporation	--	< 4.55	< 12.1	< 30.3	21.2	--	**0.0359**	< 0.00176	< 0.00468	< 0.0117	--	--	< 0.00117	< 0.01	--
C-C1-10	Yes	10	18	11/27/2006	URS Corporation	--	< 4.8	< 11.9	< 29.8	20.9	--	0.0156	< 0.00209	< 0.00558	< 0.0139	--	--	< 0.00139	< 0.01	--
C-C1-15	No	15	13	11/27/2006	URS Corporation	--	21	48.5	50.4	98.9	--	0.00993	0.0259	0.0611	0.27	--	--	< 0.00122	0.03	--
C-C2-10	Yes	10	18	11/27/2006	URS Corporation	--	< 4.41	< 12	< 30.1	21.1	--	**0.108**	< 0.0021	< 0.0056	< 0.014	--	--	< 0.0014	< 0.01	--
C-C2-15	No	15	13	11/27/2006	URS Corporation	--	< 4.92	13.1	< 30	28.1	--	0.018	< 0.00181	< 0.00482	0.017	--	--	< 0.00121	< 0.01	--
A-A1-10	Yes	10	19	12/13/2006	URS Corporation	--	**1,770**	559	< 29.8	574	--	**0.204**	0.25	**18.7**	**44**	--	--	< **0.44**	**18.4**	--
A-A2-10	Yes	10	19	12/13/2006	URS Corporation	--	**16,000**	508	< 30.2	523	--	**63.2**	**532**	**301**	**1,100**	--	--	< **45.4**	**56.8**	--
A-A3-10	Yes	10	19	12/13/2006	URS Corporation	--	**6,500**	908	< 30.3	923	--	**8.94**	**103**	**106**	**399**	--	--	< **16.7**	**31.2**	--
A-B1-10	Yes	10	19	12/13/2006	URS Corporation	--	**223**	86.2	< 28.5	100	--	< **0.0841**	**0.336**	**1.96**	**8.81**	--	--	< **0.421**	**2.05**	--
A-B2-10	Yes	10	19	12/13/2006	URS Corporation	--	**3,050**	194	< 30.7	209	--	**2.15**	**66.7**	**53.7**	**224**	--	--	< **10.3**	**12.9**	--
A-B3-10	Yes	10	19	12/13/2006	URS Corporation	--	**117**	< 15.4	< 30.9	23.2	--	**2.39**	**9.37**	**2.4**	**9.79**	--	--	< **0.519**	**1.11**	--
A-C1-10	Yes	10	19	12/13/2006	URS Corporation	--	**88.6**	17.6	102	120	--	**0.208**	**0.572**	0.292	**1.02**	--	--	< **0.475**	< **0.48**	--
A-C2-10	Yes	10	19	12/13/2006	URS Corporation	--	**283**	< 14.6	51.9	59.2	--	**0.85**	**2.07**	**15.4**	**59.2**	--	--	< **0.428**	**4.83**	--
A-C3-10	Yes	10	19	12/13/2006	URS Corporation	--	**324**	22.1	< 29.9	37.1	--	**0.198**	0.194	**3.5**	**6.35**	--	--	< **0.471**	**2.62**	--
A-A1-14	No	14	15	12/14/2006	URS Corporation	--	22	< 11.7	< 29.3	20.5	--	**0.427**	**0.347**	**0.548**	**1.87**	--	--	< **0.42**	< **0.42**	--
A-A2-15.5	No	15.5	13.5	12/14/2006	URS Corporation	--	**190**	33.6	< 29.5	48.4	--	< **0.833**	**3.64**	**10.8**	**43.1**	--	--	< **4.16**	**4.41**	--
A-A3-15.5	No	15.5	13.5	12/14/2006	URS Corporation	--	**194**	41.4	36.4	77.8	--	< **0.869**	**4.42**	**10.4**	**41.7**	--	--	< **4.35**	< **4.35**	--
A-B1-15.5	No	15.5	13.5	12/14/2006	URS Corporation	--	**216**	< 12.4	< 31	21.7	--	< **0.415**	**0.837**	**3.9**	**12.7**	--	--	< **2.07**	< **2.07**	--
A-B2-15.5	No	15.5	13.5	12/14/2006	URS Corporation	--	**324**	< 12.4	< 31	21.7	--	< **0.891**	**12.5**	**10.6**	**49.5**	--	--	< **4.45**	< **4.45**	--
A-B3-15.5	No	15.5	13.5	12/14/2006	URS Corporation	--	6.51	95.5	54.5	150	--	< **0.0921**	**0.318**	0.18	0.481	--	--	< **0.46**	< **0.46**	--
A-C1-15.5	No	15.5	13.5	12/14/2006	URS Corporation	--	**390**	16.4	< 31.1	32	--	< **0.499**	< **0.499**	**8.37**	**14.1**	--	--	< **2.49**	< **2.49**	--
A-C2-15.5	No	15.5	13.5	12/14/2006	URS Corporation	--	**91.9**	22.7	107	130	--	**0.862**	**1.28**	**1.58**	**6.75**	--	--	< **0.448**	< **0.45**	--
A-C3-15.5	No	15.5	13.5	12/14/2006	URS Corporation	--	**34.8**	< 11.8	< 29.6	20.7	--	**0.115**	**0.369**	**0.395**	**1.2**	--	--	< **0.399**	< **0.4**	--
D-A1-10	Yes	10	19	12/21/2006	URS Corporation	--	**56.9**	16.1	< 29.8	31	--	**0.206**	< 0.0911	**2.79**	**3.04**	--	--	< **0.0911**	**0.58**	--
D-A2-10	Yes	10	19	12/21/2006	URS Corporation	--	**71.8**	< 13	35.4	41.9	--	**0.0763**	**0.701**	**1.08**	**4.57**	--	--	< **0.106**	< **0.53**	--
D-B1-10	Yes	10	19	12/21/2006	URS Corporation	--	**1,920**	39.7	< 29.2	54.3	--	**1.44**	**31**	**43.3**	**202**	--	--	< **4.13**	< **20.6**	--
D-B2-10	Yes	10	19	12/21/2006	URS Corporation	--	**134**	< 12.1	< 30.2	21.2	--	**0.864**	**2.8**	**3.97**	**13.2**	--	--	< **0.0802**	**1.61**	--
D-C1-10	Yes	10	19	12/21/2006	URS Corporation	--	27	< 11.8	< 29.5	20.7	--	**0.411**	< 0.0976	**2.33**	0.397	--	--	< **0.0976**	**0.65**	--
D-C2-10	Yes	10	19	12/21/2006	URS Corporation	--	**49**	< 11.9	< 29.8	20.9	--	**1.24**	0.19	**1.91**	**1.76**	--	--	< **0.0941**	**3.16**	--
E-A1-10	Yes	10	19	12/21/2006	URS Corporation	--	**2,510**	43.2	< 30.3	58.4	--	**3.32**	< **4.49**	**48.5**	**238**	--	--	< **4.49**	< **22.5**	--
E-A2-10	Yes	10	19	12/21/2006	URS Corporation	--	**448**	51.9	< 31.2	67.5	--	**0.149**	< 0.0927	0.293	**7.11**	--	--	< **0.0927**	**2.22**	--
E-B1-10	Yes	10	19	12/21/2006	URS Corporation	--	< 4.35	< 12	< 29.9	21	--	< 0.00139	< 0.00139	< 0.0037	< 0.00926	--	--	< 0.000926	< 0.01	--
E-B2-10	Yes	10	19	12/21/2006	URS Corporation	--	9.14	< 12.3	< 30.7	21.5	--	**0.0727**	0.0851	0.232	0.727	--	--	< **0.0827**	< **0.41**	--
F-A1-10	Yes	10	19	12/27/2006	URS Corporation	--	< 5.11	< 12.7	< 31.8	22.3	--	< 0.00167	< 0.00167	< 0.00446	< 0.0111	--	--	< 0.00111	< 0.01	--
F-A2-10	Yes	10	19	12/27/2006	URS Corporation	--	5.51	< 11.5	< 28.9	20.2	--	< 0.00141	< 0.00141	< 0.00376	< 0.00939	--	--	< 0.000939	< 0.01	--
F-A3-10	Yes	10	19	12/27/2006	URS Corporation	--	21.1	< 11.9	33.8	39.8	--	0.00372	0.0169	0.0712	0.249	--	--	< 0.000986	0.05	--
F-B1-10	Yes	10	19	12/27/2006	URS Corporation	--	23.9	< 12.1	< 30.3	21.2	--	0.0195	0.0862	0.0381	0.202	--	--	< 0.00101	0.02	--
F-B2-10	Yes	10	19	12/27/2006	URS Corporation	--	10	< 12	< 29.9	21	--	< 0.00147	< 0.00147	< 0.00393	< 0.000983	--	--	< 0.000983	0.02	--
F-B3-10	Yes	10	19	12/27/2006	URS Corporation	--	< 5.23	< 12.8	< 32	22.4	--	< 0.00193	< 0.00193	< 0.00514	< 0.0129	--	--	< 0.00129	< 0.01	--
F-C1-10	Yes	10	19	12/27/2006	URS Corporation	--	11.5	< 12.3	< 30.7	21.5	--	< 0.00148	< 0.00148	**0.459**	0.207	--	--	< 0.000988	0.24	--
F-C2-10	Yes	10	19	12/27/2006	URS Corporation	--	**1,570**	59.5	< 29.2	74.1	--	**0.328**	< 0.0834	**8.07**	**23.9**	--	--	< **0.0834**	**21.2**	--
F-C3-10	Yes	10	19	12/27/2006	URS Corporation	--	< 4.72	36.2	42.1	78.3	--	< 0.0017	< 0.0017	< 0.00454	< 0.0113	--	--	< 0.00113	< 0.01	--
G-A1-10	Yes	10	19	12/28/2006	URS Corporation	--	**45.6**	< 12.1	< 30.3	21.2	--	**0.0337**	0.00302	0.12	0.265	--	--	< 0.00124	0.05	--
G-A2-10	Yes	10	19	12/28/2006	URS Corporation	--	**81.8**	< 12.1	< 30.3	21.2	--	**0.0402**	0.135	**0.999**	**4.54**	--	--	< 0.00109	**0.61**	--
G-A3-10	Yes	10	19	12/28/2006	URS Corporation	--	< 4.68	< 11.6	< 28.9	20.3	--	< 0.00175	< 0.00175	< 0.00465	< 0.0116	--	--	< 0.00116	< 0.01	--
G-B1-10	Yes	10	19	12/28/2006	URS Corporation	--	**48.5**	< 12.7	< 31.7	22.2	--	**0.0734**	**0.322**	**0.635**	**3.02**	--	--	< 0.00109	< **0.51**	--
G-B2-10	Yes	10	19	12/28/2006	URS Corporation	--	< 4.31	< 11.9	< 29.8	20.9	--	0.0174	< 0.00151	0.00808	0.0318	--	--	< 0.00101	< 0.01	--
G-B3-10	Yes	10	19	12/28/2006	URS Corporation	--	< 3.94	< 11.2	< 28	19.6	--	< 0.00154	< 0.00154	< 0.00409	< 0.0102	--	--	< 0.00102	< 0.01	--
G-C1-10	Yes	10	19	12/28/2006	URS Corporation	--	**236**	16.4	36.6	53	--	**0.408**	**4.09**	**3.87**	**22.5**	--	--	< 0.0013	**1.29**	--
G-C2-10	Yes	10	19	12/28/2006	URS Corporation	--	**136**	< 12.2	< 30.5	21.4	--	**0.298**	**2.3**	**2.14**	**12.4**	--	--	< **0.465**	< **2.33**	--
G-C3-10	Yes	10	19	12/28/2006	URS Corporation	--	**133**	< 11.8	< 29.5	20.7	--	**0.3**	**1.41**	**1.85**	**9.18**	--	--	< **0.0858**	**0.97**	--
H-A1-10	Yes	10	19	12/29/2006	URS Corporation	--	**310**	13	< 29.8	27.9	--	**0.915**	**7.2**	**5.39**	**30.1**	--	--	< 0.00101	**0.86**	--
H-A2-10	Yes	10	19	12/29/2006	URS Corporation	--	**432**	13.8	35	48.8	--	**1.65**	**13.1**	**9.63**	**54.9**	--	--	< **0.846**	< **4.23**	--
H-A3-10	Yes	10	19	12/29/2006	URS Corporation	--	< 4.77	< 11.6	< 29.1	20.4	--	< 0.00171	< 0.00171	< 0.00456	< 0.0114	--	--	< 0.00114	< 0.01	--
H-B1-10	Yes	10	19	12/29/2006	URS Corporation	--	**371**	< 11.9	< 29.7	20.8	--	**0.491**	**6.56**	**7.26**	**39.1**	--	--	< **0.846**	< **4.23**	--
H-B2-10	Yes	10	19	12/29/2006	URS Corporation	--	**459**	17.6	65.4	83	--	**0.681**	**5.28**	**5.28**	**30.5**	--	--	< **0.851**	< **4.25**	--
H-B3-10	Yes	10	19	12/29/2006	URS Corporation	--	< 5.23	< 10.7	39.2	44.6	--	< 0.00184	< 0.00184	< 0.0049	< 0.0123	--	--	< 0.00123	< 0.01	--
H-C1-10	Yes	10	19	12/29/2006	URS Corporation	--	**266**	44.5	< 31.8	60.4	--	**0.318**	**2.67**	< **3.71**	**19.3**	--	--	< 0.00103	**0.59**	--
H-C2-10	Yes	10	19	12/29/2006	URS Corporation	--	**3,120**	136	< 29.2	151	--	**63.7**	**7.1**	**54.4**	**266**	--	--	< **0.934**	**25.6**	--
H-C3-10	Yes	10	19	12/29/2006	URS Corporation	--	< 4.69	< 11.2	< 27.9	19.6	--	0.00643	< 0.00151	0.0114	0.0439	--	--	< 0.00101	< 0.01	--
D-A1-15	No	15	14	1/10/2007	URS Corporation	--	< 5.1	20.8	< 32.5	37.1	--	< **0.0306**	< 0.102	< 0.102	< 0.306	--	--	< **0.102**	< **0.51**	--
D-A2-15	No	15	14	1/10/2007	URS Corporation	--	< 4.95	< 12.9	< 32.3	22.6	--	< **0.0297**	< 0.0989	< 0.0989	< 0.297	--	--	< **0.0989**	< **0.5**	--
D-B1-15	No	15	14	1/10/2007	URS Corporation	--	< 4.22	< 11.9	< 29.7	20.8	--	**0.147**	< 0.0844	< 0.0844	< 0.253	--	--	< **0.0844**	< **0.42**	--
D-B2-15	No	15	14	1/10/2007	URS Corporation	--	< 5.5	14.4	< 35.4	32.1	--	**0.301**	< 0.11	< 0.11	< 0.33	--	--	< **0.11**	< **0.55**	--
D-C1-15	No	15	14	1/10/2007	URS Corporation	--	**103**	< 12.3	< 30.8	21.6	--	**0.251**	**1.2**	**2.11**	**8.87**	--	--	< **0.0901**	**0.92**	--
D-C2-15	No	15	14	1/10/2007	URS Corporation	--	**32.5**	< 12.1	< 30.2	21.2	--	**0.0462**	0.146	**0.623**	**2.99**	--	--	< **0.0943**	< **0.47**	--
E-A1-15	No	15	14	1/10/2007	URS Corporation	--	< 4.15	< 11.8	< 29.4	20.6	--	**0.645**	< 0.0829	< 0.0829	< 0.249	--	--	< **0.0829**	< **0.41**	--
E-A2-15	No	15	14	1/10/2007	URS Corporation	--	6.28	< 12.3	< 30.7	21.5	--	**0.0661**	< 0.0836	0.115	0.266	--	--	< **0.0836**	< **0.42**	--
E-B1-15	No	15	14	1/10/2007	URS Corporation	--	< 5.06	< 12.4	< 30.9	21.7	--	**0.0466**	< 0.101	< 0.101	< 0.304	--	--	< **0.101**	< **0.51**	--
E-B2-15	No	15	14	1/10/2007	URS Corporation	--	13	< 12.2	< 30.5	21.4	--	**0.0677**	0.169	0.216	**1.01**	--	--	< **0.0915**	< **0.46**	--
F-A1-15	No	15	14	1/10/2007	URS Corporation	--	< 4.04	< 11.6	< 29	20.3	--	< **0.0242**	< 0.081	< 0.0807	< 0.08	--	--	< **0.08**	< **0.4**	--
F-A2-15	No	15	14	1/15/2007	URS Corporation	--	**127**	19.7	< 30.2	34.8	--	< **0.0248**	< 0.083	0.325	**4.53**	--	--	**7.0**	**1.17**	--
F-A3-15	No	15	14	1/15/2007	URS Corporation	--	**121**	< 12.3	< 30.8	21.6	--	**0.0852**	< 0.0878	**0.747**	**6**	--	--	< **0.082**	**1.2**	--
F-B1-15	No	15	14	1/15/2007	URS Corporation	--	< 4.16	< 11.4	< 28.6	20	--	< **0.025**	< 0.0832	< 0.0832	< 0.25	--	--	**6.0**	< **0.42**	--

Table 4-4a. Soil Analytical Results - TPH, VOCs, Naphthalene, and PCBs
Block 37 Site | Work Plan
Remedial Investigation Work Plan
600-630 Westlake Avenue North | Seattle, Washington

Sample ID	Sample Excavated (Yes=sample removed; No=sample present)	Sample Depth (feet bgs)	Elevation (feet NAVD88)	Sample Date	Consultant	TPH (mg/kg)						VOCs[5] (mg/kg)							PAHs (mg/kg)	PCB (Aroclors) (mg/kg)
						TPH[1]	GRO[2]	DRO[3]	ORO[3]	Total Extractable Hydrocarbons[4]	Kerosene	Benzene	Toluene	Ethyl benzene	Total Xylenes	EDB	EDC	MTBE	Naphthalene	
Screening Levels [6]																				
SL-1 Direct Contact						NE	1,500	NE	NE	NE	NE	18	6,400	8,000	16,000	0.50	11	560	1,600	1.0
SL-2 Protect Drinking Water Vadose Zone						NE	30	2,000	2,000	2,000	2,000	0.027	4.5	5.9	14	0.00027	0.023	0.1	4.5	0.34
SL-5 Protect Drinking Water Saturated Zone						2,000	30	2,000	2,000	2,000	2,000	0.0017	0.27	0.34	0.83	0.000018	0.0016	0.0072	0.24	0.017
SL-10 Natural Background						NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Laboratory PQL						NE	5	15	10	3.44	NA	0.02	0.05	0.05	0.15	0.05	0.05	0.05	0.2	0.0330
F-B2-15	No	15	14	1/15/2007	URS Corporation	--	**101**	< 12.9	< 32.3	22.6	--	**0.105**	< 0.0937	< 0.0937	**2.21**	--	--	< **0.087**	**0.92**	--
F-B3-15	No	15	14	1/15/2007	URS Corporation	--	8.6	< 12.4	< 31	21.7	--	< **0.0256**	< 0.0855	< 0.0855	< 0.256	--	--	**8.0**	< **0.43**	--
F-C1-15	No	15	14	1/15/2007	URS Corporation	--	11.4	< 10.8	< 27	18.9	--	< **0.0226**	< 0.07533	< 0.07533	< 0.226	--	--	< **0.083**	< **0.38**	--
F-C2-15	No	15	14	1/15/2007	URS Corporation	--	12.5	< 12.2	< 30.4	21.3	--	< **0.0263**	< 0.0877	< 0.0877	0.357	--	--	**2.0**	< **0.44**	--
F-C3-15	No	15	14	1/15/2007	URS Corporation	--	17.2	< 12.4	< 31.1	21.8	--	**0.0943**	< 0.0881	0.121	0.663	--	--	< **0.0937**	< **0.44**	--
G-B3-15	No	15	14	1/16/2007	URS Corporation	--	6.85	< 12.3	< 30.7	21.5	--	**0.892**	< 0.0908	< 0.0908	< 0.272	--	--	< **0.0908**	< **0.45**	--
G-C3-15	No	15	14	1/16/2007	URS Corporation	--	**120**	52	< 31.8	67.9	--	**0.164**	**1.05**	**1.51**	**9.15**	--	--	< **0.0927**	**0.75**	--
G-A1-15	No	15	14	1/17/2007	URS Corporation	--	25.7	< 12.4	< 31	21.7	--	**0.0564**	< 0.0972	0.194	0.463	--	--	**7.0**	< **0.49**	--
G-A2-15	No	15	14	1/17/2007	URS Corporation	--	**442**	15.1	< 30.7	30.5	--	**0.34**	**0.991**	**6.72**	**19.8**	--	--	< **0.0855**	**3.6**	--
G-A3-15	No	15	14	1/17/2007	URS Corporation	--	13.2	< 11.7	< 29.4	20.6	--	< **0.266**	< 0.0885	< 0.0885	< 0.266	--	--	< **0.0885**	< **0.44**	--
G-B1-15	No	15	14	1/17/2007	URS Corporation	--	**138**	< 12.4	< 31	21.7	--	**0.374**	**0.424**	**1.12**	**4.05**	--	--	< **0.091**	**0.77**	--
G-B2-15	No	15	14	1/17/2007	URS Corporation	--	**212**	< 12.9	< 32.2	22.6	--	**0.552**	**2.86**	**2.65**	**13.4**	--	--	< **0.094**	**1.13**	--
G-C1-15	No	15	14	1/17/2007	URS Corporation	--	**589**	< 11.6	< 28.90	20.3	--	**0.714**	**8.04**	**6.95**	**23.4**	--	--	< **0.0814**	**3.9**	--
G-C2-15	No	15	14	1/17/2007	URS Corporation	--	**332**	< 12.4	< 31.1	21.8	--	**2.82**	**7.85**	**4.63**	**18.9**	--	--	< **0.0927**	**2.05**	--
H-A1-15	No	15	14	1/18/2007	URS Corporation	--	**1,070**	26.1	< 29.2	40.7	--	**1.32**	**15**	**14.5**	**79**	--	--	< **0.0896**	**8.05**	--
H-A2-15	No	15	14	1/18/2007	URS Corporation	--	**67**	< 11.9	< 29.8	20.9	--	**0.446**	**1.26**	**0.995**	**5.63**	--	--	< **0.0942**	**0.5**	--
H-A3-15	No	15	14	1/18/2007	URS Corporation	--	**1,760**	34.7	36	70.7	--	**1.77**	**25.6**	**26.9**	**145**	--	--	< **0.0948**	< **19**	--
H-B1-15	No	15	14	1/18/2007	URS Corporation	--	**2,550**	14.4	39.7	54.1	--	**1.71**	**32.5**	**34.6**	**211**	--	--	< **0.0895**	**26**	--
H-B2-15	No	15	14	1/18/2007	URS Corporation	--	< 4.96	< 12	36	42	--	< **0.0298**	< 0.0992	< 0.0992	< 0.298	--	--	< **0.0992**	< **0.5**	--
H-B3-15	No	15	14	1/18/2007	URS Corporation	--	**1,800**	29.2	< 28.9	43.7	--	**2.79**	**45.2**	**35.2**	**198**	--	--	< **0.0827**	< **16.5**	--
H-C1-15	No	15	14	1/18/2007	URS Corporation	--	**298**	< 12.3	< 30.9	21.6	--	**1.43**	**1.19**	**5.85**	**15.3**	--	--	< **0.085**	**2.85**	--
H-C2-15	No	15	14	1/18/2007	URS Corporation	--	**5,520**	207	< 30.1	222	--	**9.23**	< 0.095	**119**	**592**	--	--	< **0.0951**	**43.3**	--
H-C3-15	No	15	14	1/18/2007	URS Corporation	--	**38**	< 11.8	< 29.4	20.6	--	**0.134**	**0.756**	**0.568**	**3.09**	--	--	< **0.08**	< **0.42**	--
Confirmation Sampling - Phase 2 Excavation-Area 1[7]																				
A2	No	15	14	4/28/2009	URS Corporation	--	< 7.2	< 13.2	< 33	23.1	< 13.2	< 0.00103	< 0.00103	< 0.00275	< 0.00687	--	--	< 0.000687	< 0.01	--
A3	No	15	14	4/28/2009	URS Corporation	--	3.04 J	< 13.5	< 33.9	23.7	< 13.5	< 0.00115	< 0.00115	< 0.00306	< 0.00766	--	--	< 0.000766	< 0.01	--
A4	No	15	14	4/22/2009	URS Corporation	--	26.9	< 13.8	< 34.4	24.1	< 13.8	0.00342	0.00253	< 0.00338	0.0159	--	--	< 0.000844	< 0.01	--
A4	No	15	14	4/22/2009	URS Corporation	--	28.1	< 12.7	< 31.7	22.2	< 12.7	0.00325	0.00167	< 0.00282	0.00967	--	--	< 0.000705	< 0.01	--
A5	No	15	14	4/22/2009	URS Corporation	--	< 7.17	< 122	< 30.5	76.3	< 12.2	< 0.000901	< 0.000901	< 0.0024	< 0.00601	--	--	< 0.000601	< 0.01	--
A6	No	15	14	4/22/2009	URS Corporation	--	< 7.16	< 12.3	< 30.7	21.5	< 12.3	< 0.000915	< 0.000915	< 0.00244	< 0.0061	--	--	< 0.00061	< 0.01	--
A7	No	15	14	4/22/2009	URS Corporation	--	< 6.76	< 12	< 29.9	21	< 12	< 0.000928	< 0.000928	< 0.00247	< 0.00619	--	--	< 0.000619	< 0.01	--
A8	No	15	14	4/22/2009	URS Corporation	--	< 7.86	24.8	69.2	94	< 12.4	< 0.000846	< 0.000846	< 0.00226	< 0.00564	--	--	< 0.000564	< 0.01	--
A9	No	15	14	4/22/2009	URS Corporation	--	< 8.24	< 13.2	< 32.9	23.1	< 13.2	< 0.000982	< 0.000982	< 0.00262	< 0.00655	--	--	< 0.000655	< 0.01	--
A10	No	15	14	4/6/2009	URS Corporation	--	< 4.5	< 11.7	< 29.3	20.5	< 11.7	< 0.000691	< 0.000691	< 0.00184	< 0.00461	--	--	< 0.000461	< 0.005	--
A11	No	15	14	4/6/2009	URS Corporation	--	< 3.88	< 11.7	< 29.2	20.5	< 11.7	< 0.000839	< 0.000839	0.00272	0.00662	--	--	< 0.000559	< 0.01	--
A12	No	15	14	4/6/2009	URS Corporation	--	< 7.89	< 15.7	< 39.3	27.5	< 15.7	< 0.000752	< 0.000752	< 0.00201	< 0.00501	--	--	< 0.000501	< 0.01	--
A13	No	15	14	4/6/2009	URS Corporation	--	< 5.32	< 13.2	< 33	23.1	< 13.2	< 0.000795	< 0.000795	< 0.00212	< 0.0053	--	--	< 0.00053	< 0.01	--
A14	No	15	14	4/6/2009	URS Corporation	--	< 4.3	< 11.9	< 29.8	20.9	< 11.9	< 0.000715	< 0.000715	< 0.00191	< 0.00477	--	--	< 0.000477	< 0.00	--
A15	No	15	14	4/6/2009	URS Corporation	--	< 6.47	< 12.8	< 32.1	22.5	< 12.8	< 0.000754	< 0.000754	< 0.00201	< 0.00503	--	--	< 0.000503	< 0.01	--
B2	No	15	14	4/28/2009	URS Corporation	--	2.01 J	< 13.2	< 33.1	23.3	< 13.2	< 0.0011	< 0.0011	< 0.00293	< 0.00732	--	--	< 0.000732	< 0.01	--
B3	Yes	22	7	5/4/2009	URS Corporation	--	5.41 J	< 15.5	< 38.9	27.2	< 15.5	0.00233	< 0.00129	< 0.00345	< 0.00862	--	--	< 0.000862	< 0.01	--
B3	Yes	20	9	4/30/2009	URS Corporation	--	11.1	< 13.4	< 33.5	23.5	< 13.4	**0.0342**	0.0015	0.00354	0.0136	--	--	< 0.000723	< 0.01	--
B3	Yes	15	14	4/25/2009	URS Corporation	--	**70.2 J**	75.9	158	233.9	30	0.0186	0.000704	0.0122	0.00476	--	--	< 0.000343	< 0.003	--
B4	No	20	9	4/29/2009	URS Corporation	--	< 6.3	< 13.2	< 33	23.1	< 13.2	< 0.000988	< 0.000988	< 0.00264	< 0.00659	--	--	< 0.000659	< 0.01	--
B4	Yes	15	14	4/24/2009	URS Corporation	--	2.42 J	76.3	46.2	123	32.5	**0.0307**	< 0.000903	< 0.00241	< 0.00602	--	--	< 0.000602	< 0.01	--
B5	No	15	14	4/24/2009	URS Corporation	--	5.06 J	< 11.4	< 28.4	19.9	< 11.4	0.0166	< 0.000879	< 0.00234	< 0.00586	--	--	< 0.000586	< 0.01	--
B6	No	15	14	4/23/2009	URS Corporation	--	< 7.39	< 13.1	< 32.7	22.9	< 13.1	< 0.001	< 0.001	< 0.00268	< 0.0067	--	--	< 0.00067	< 0.01	--
B6	No	15	14	4/23/2009	URS Corporation	--	< 6.92	< 12.7	< 31.8	22.3	< 12.7	< 0.00051	< 0.00051	< 0.00136	< 0.0034	--	--	< 0.00034	< 0.003	--
B7	Yes	15	14	4/16/2009	URS Corporation	--	< 6.51	< 12.8	85.5	91.9	< 12.8	< 0.000907	< 0.000907	< 0.00242	< 0.00605	--	--	< 0.000835	< 0.01	--
B8	No	15	14	4/16/2009	URS Corporation	--	< 6.69	< 13.2	< 33	23.1	< 13.2	< 0.000885	< 0.000885	< 0.00236	< 0.0059	--	--	< 0.00059	< 0.01	--
B9	Yes	15	14	4/16/2009	URS Corporation	--	< 6.67	< 12.9	< 32.3	22.6	< 12.9	< 0.000979	< 0.000979	< 0.00261	< 0.00652	--	--	< 0.000652	< 0.01	--
B10	No	15	14	4/15/2009	URS Corporation	--	< 6.91	< 12.8	< 32.1	22.5	< 12.8	< 0.00106	< 0.00106	< 0.00282	< 0.00706	--	--	< 0.000706	< 0.01	--
B11	No	15	14	4/1/2009	URS Corporation	--	< 7.09	< 13.2	< 33.1	23.2	< 13.2	< 0.000919	< 0.000919	< 0.00245	< 0.00613	--	--	< 0.000613	< 0.01	--
B12	No	15	14	4/1/2009	URS Corporation	--	< 6.61	126	242	368	< 65.2	< 0.00619	< 0.00619	< 0.00412	< 0.0165	--	--	< 0.00412	< 0.04	--
B13	No	19	10	4/13/2009	URS Corporation	--	29.3 J	< 60.4	< 151	136	< 60.4	< 0.00647	0.00849 J	< 0.0172	< 0.0431	--	--	< 0.00431	< 0.04	--
B13	Yes	15	14	4/1/2009	URS Corporation	--	**79.3 J**	241	< 121	302	174	< 0.0061	< **1.08**	< 0.0163	< 0.0407	--	--	< 0.00407	< **21.6**	--
B14	Yes	22	7	4/16/2009	URS Corporation	--	**59.6 J**	1,530	291	1,821	738	**0.592 J**	< **0.688**	< **0.688**	< **2.06**	--	--	< 0.00247	< **13.8**	--
B14	Yes	20	9	4/13/2009	URS Corporation	--	**192 J**	809	433	1,242	87.7	< 0.00443	< **0.883**	< **0.883**	< **2.65**	--	--	< 0.00295	< **17.7**	--
B14	Yes	15	14	4/1/2009	URS Corporation	--	**175 J**	755	252	1,007	396	< 0.00521	< **0.992**	< 0.0139	< **2.97**	--	--	< 0.00347	< **19.8**	--
B14	No	27	2	6/19/2009	URS Corporation	--	< 6	49	< 62	80	< 12.5	< **0.024**	< 0.06	< 0.06	< 0.06	--	--	< **0.06**	< 0.06	--
B15	Yes	15	14	4/6/2009	URS Corporation	--	< 7.57	< 13.6	< 34	23.8	< 13.6	< 0.000918	< 0.000918	< 0.00245	< 0.00612	--	--	< 0.000612	< 0.01	--
C1	No	25	4	5/12/2009	URS Corporation	--	< 7.39	< 13.3	< 33.2	23.3	< 13.3	< 0.00119	< 0.00119	< 0.00318	< 0.00795	--	--	< 0.000795	< 0.01	--
C1	Yes	20	9	5/4/2009	URS Corporation	--	**219 J**	< 11.7	< 29.2	20.5	< 11.7	< 0.000963	< 0.000963	< 0.00257	< 0.00642	--	--	< 0.000642	< 0.01	--
C1	Yes	15	14	5/4/2009	URS Corporation	--	< 6.14	< 10.8	< 27	18.9	< 10.8	0.0103 J	< 0.000856	0.0186 J	< 0.00571	--	--	< 0.000571	< 0.01	--
C2	No	15	14	4/28/2009	URS Corporation	--	< 5.61	< 12.1	< 30.1	21.1	< 12.1	< 0.000994	< 0.000994	< 0.00265	< 0.00663	--	--	< 0.000663	< 0.01	--
C3	No	15	14	4/28/2009	URS Corporation	--	1.71 J	< 12.2	< 30.4	21.3	< 12.2	< 0.000695	< 0.000695	< 0.00185	< 0.00463	--	--	< 0.000463	< 0.005	--
C4	No	15	14	4/24/2009	URS Corporation	--	2.44 J	< 12.3	< 30.8	21.6	< 12.3	0.00354	< 0.000618	< 0.00165	< 0.00412	--	--	< 0.000412	< 0.004	--
C5	No	22	7	4/29/2009	URS Corporation	--	1.81 J	< 12	< 30.1	21.1	< 12	< 0.000951	< 0.000951	< 0.00254	< 0.00634	--	--	< 0.000634	< 0.01	--
C5	Yes	15	14	4/24/2009	URS Corporation	--	**351 J**	< 17.3	48.1	56.8	< 17.3	**0.0225**	0.00115	**3.1**	< 0.00649	--	--	< 0.000649	0.06	--
C6	No	15	14	4/23/2009	URS Corporation	--	2.4 J	< 13.9	< 34.8	24.4	< 13.9	< 0.000799	< 0.000799	< 0.00213	< 0.00532	--	--	< 0.000532	< 0.01	--
C7	No	15	14	4/16/2009	URS Corporation	--	2.73 J	18.2	51.1	69.3	< 14.4	< 0.00134	< 0.00134	< 0.00357	< 0.00893	--	--	0.00155	< 0.01	--
C8	No	15	14	4/16/2009	URS Corporation	--	7.07 J 13.10 J	208	542	750	33	**0.046** **0.0214**	0.008 0.002	0.0954 J 0.0317	0.458 0.554	--	--	< 0.000541	< **1.77**	--
C9	No	15	14	4/16/2009	URS Corporation	--	< 10.5	< 15.9	< 39.8	27.9	< 15.9	< 0.00193	< 0.00193	< 0.00515	< 0.0129	--	--	< 0.00129	< 0.01	--
C10	No	15	14	4/15/2009	URS Corporation	--	< 6.66	< 12.8	< 32.1	22.5	< 12.8	< 0.00105	< 0.00105	< 0.00281	< 0.00703	--	--	< 0.000703	< 0.01	--
C11	No	15	14	4/15/2009	URS Corporation	--	< 6.57	< 13	< 32.5	22.8	< 13	< 0.000775	< 0.000775	< 0.00207	< 0.00517	--	--	< 0.000517	< 0.01	--
C12	No	20	9	4/16/2009	URS Corporation	--	< **39.5**	818	202	855	653	< **0.158**	< **0.79**	< 0.0108	< 0.027	--	--	< 0.0027	< 0.03	--
C12	Yes	15	14	4/1/2009	URS Corporation	--	< **68.6**	**4,870**	**11,300**	**16,170**	692	< 0.0071	< **1.35**	< 0.0189	< **4.05**	--	--	< 0.00473	< 0.05	--
C13	Yes	23	6	4/21/2009	URS Corporation	--	< 5.37	< 12.3	< 30.7	21.5	< 12.3	< 0.000917	< 0.000917	< 0.00244	< 0.00611	--	--	< 0.000611	< 0.01	--
C13	Yes	20	9	4/16/2009	URS Corporation	--	< **33.4**	415	< 87.3	458.7	299	**0.0847**	< 0.0026	< 0.00693	< 0.0173	--	--	< 0.00173	< 0.02	--
C13	Yes	15	14	4/1/2009	URS Corporation	--	**186 J**	353	423	776	161	< **0.156**	**0.78**	**2**	**8.83**	--	--	< 0.0024	< **15.6**	--
C14	No	15	14	4/6/2009	URS Corporation	--	< 5.49	< 12.3	< 30.8	21.6	< 12.3	< 0.000834	< 0.000834	< 0.00222	0.00682	--	--	< 0.000556	< 0.01	--
C15	No	15	14	4/6/2009	URS Corporation	--	< 6.07	15	< 32	31	< 12.8	< 0.00087	< 0.00087	< 0.00232	< 0.0058	--	--	< 0.00058	< 0.01	--
D1	No	25	4	5/12/2009	URS Corporation	--	< 6.66	< 12.2	< 30.5	76.3	< 12.2	< 0.00112	< 0.00112	< 0.00299	< 0.00747	--	--	< 0.000747	< 0.01	--
D1	Yes	22	7	5/12/2009	URS Corporation	--	< 7.02	< 12.8	< 32	22.4	< 12.8	< 0.00105	< 0.00105	< 0.00279	< 0.000981	--	--	< 0.000698	< 0.01	--
D1	Yes	20	9	5/4/2009	URS Corporation	--	10.8	< 12.8	< 32	22.4	< 12.8	**0.0342**	0.0595 J	0.11811 J	**1.62**	--	--	< 0.000814	0.09	--
D1	Yes	15	14	5/4/2009	URS Corporation	--	**218 J**	132	199	331	38.4	**0.108**	0.139	**0.855**	**1.62**	--	--	< 0.000651	< **2.17**	--
D1 (DUP)	Yes	15	14	5/4/2009	URS Corporation	--	**89.9 J**	117	173	290	28.8	**0.0802**	0.131	**0.674**	**2.1**	--	--	< 0.000578	< **1.94**	--
D2	No	15	14	4/28/2009	URS Corporation	--	< 6.74	< 12.7	< 31.8	22.3	< 12.7	< 0.000715	< 0.000715	< 0.00191	< 0.00477	--	--	< 0.000477	< 0.005	--
D3	No	15	14	4/28/2009	URS Corporation	--	< 5.53	< 11.7	< 29.3	20.5	< 11.7	< 0.000895	< 0.000895	< 0.00239	< 0.00597	--	--	< 0.000597	< 0.01	--
D4	No	15	14	4/24/2009	URS Corporation	--	2.92 J	< 11.7	< 29.2	20.5	< 11.7	< 0.00077	< 0.00077	< 0.00205	< 0.00513	--	--	< 0.000513	< 0.01	--
D5	No	20	9	4/29/2009	URS Corporation	--	2.17 J	< 12	< 30	21	< 12	< 0.00209	< 0.00064	0.00384	< 0.00427	--	--	< 0.000427	< 0.004	--
D5	No	15	14	4/24/2009	URS Corporation	--	**1,080 J**	23.1	38.1	63.8	25.7	**0.419 J**	< 0.04091	**4.93 J**	**5.31 J**	--	--	< 0.000572	**3.75**	--

Table 4-4a. Soil Analytical Results - TPH, VOCs, Naphthalene, and PCBs
Block 37 Site | Work Plan
Remedial Investigation Work Plan
600-630 Westlake Avenue North | Seattle, Washington

Sample ID	Sample Excavated (Yes=sample removed; No=sample present)	Sample Depth (feet bgs)	Elevation (feet NAVD88)	Sample Date	Consultant	TPH (mg/kg)						VOCs[5] (mg/kg)							PAHs (mg/kg)	PCB (Aroclors) (mg/kg)
						TPH[1]	GRO[2]	DRO[3]	ORO[3]	Total Extractable Hydrocarbons[4]	Kerosene	Benzene	Toluene	Ethyl benzene	Total Xylenes	EDB	EDC	MTBE	Naphthalene	
Screening Levels [6]																				
SL-1 Direct Contact						NE	1,500	NE	NE	NE	NE	18	6,400	8,000	16,000	0.50	11	560	1,600	1.0
SL-2 Protect Drinking Water Vadose Zone						NE	30	2,000	2,000	2,000	2,000	0.027	4.5	5.9	14	0.00027	0.023	0.1	4.5	0.34
SL-5 Protect Drinking Water Saturated Zone						2,000	30	2,000	2,000	2,000	2,000	0.0017	0.27	0.34	0.83	0.000018	0.0016	0.0072	0.24	0.017
SL-10 Natural Background						NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Laboratory PQL						NE	5	15	10	3.44	NA	0.02	0.05	0.05	0.15	0.05	0.05	0.05	0.2	0.0330
D5 (DUP)	No	15	14	4/24/2009	Cornerstone	--	**838 J**	20.3	34.4	60.8	26.4	**0.505**	0.0241 J	**4.99**	**5.11**	--	--	< 0.000649	**3.27**	--
D6	No	15	14	4/23/2009	Cornerstone	--	< 8.4	< 13.7	< 34.4	24.1	< 13.7	< 0.0012	< 0.0012	< 0.00319	< 0.00797	--	--	< 0.000797	< 0.01	--
D7	No	15	14	4/16/2009	Cornerstone	--	14.5 J	36.9	92.7	130	15.8	0.00759	0.00507	0.0342	0.165	--	--	< 0.000915	0.03	--
D8	No	27	2	5/4/2009	Cornerstone	--	< 7.33	< 12.3	< 30.7	21.5	< 12.3	< 0.000927	< 0.000927	< 0.00247	< 0.00618	--	--	< 0.000618	< 0.01	--
D8	Yes	15	14	4/16/2009	Cornerstone	--	**121 J**	**6,870**	**19,900**	**26,770**	1,030	**0.0984**	0.0745 J	0.11 J	0.62 J	--	--	< 0.00168	**< 5.96**	--
D9	No	27.5	1.5	5/4/2009	Cornerstone	--	< 7.61	< 12.7	< 31.8	22.3	< 12.7	< 0.000924	< 0.000924	< 0.00246	< 0.00616	--	--	< 0.000616	< 0.01	--
D9	Yes	22	7	4/30/2009	Cornerstone	--	< 19.1	< 15.2	< 38.1	26.7	< 15.2	< 0.00116	0.00116	< 0.00311	< 0.00777	--	--	< 0.000777	< 0.01	--
D9	Yes	15	14	4/16/2009	Cornerstone	--	7.51 J	212	537	749	33.1	**< 0.0368**	0.00122	< 0.00325	< 0.00812	--	--	< 0.000812	< 0.01	--
D10	No	15	14	4/13/2009	Cornerstone	--	< 13.7	< 13	< 32.6	22.8	< 13	**< 0.0546**	**< 0.273**	< 0.273	< 0.819	--	--	**< 0.137**	**< 5.46**	--
D11	No	20	9	4/15/2009	Cornerstone	--	< 7.94	46.8	57.9	104.7	14.3	< 0.000787	< 0.000787	< 0.0021	< 0.00525	--	--	< 0.000525	< 0.01	--
D11 (DUP)	No	20	9	4/15/2009	Cornerstone	--	< 6.27	22.4	< 32.6	38.7	< 13	< 0.000837	< 0.000837	< 0.00223	< 0.00558	--	--	< 0.000558	< 0.01	--
D11	Yes	17	12	4/28/2009	Cornerstone	--	**203**	**44,200**	**59,100**	**103,300**	**8,490**	**0.155**	0.132 J	< 0.0108	**< 2.33**	--	--	< 0.0027	**< 15.5**	--
D11	Yes	15	14	4/13/2009	Cornerstone	--	**204 J**	**12,700 J**	**14,200 J**	**26,900**	**2,070**	**0.0705 J**	**0.28 J**	< 0.216	**0.974 J**	--	--	< 0.0031	**< 18**	--
D11 (DUP)	Yes	15	14	4/13/2009	Cornerstone	--	**180 J**	**4,970 J**	**6,540 J**	**11,510**	790	**0.0967 J**	**0.328 J**	< 0.239	**1.41 J**	--	--	< 0.00325	< 0.03	--
D12	No	23	6	4/23/2009	Cornerstone	--	< 13	19.9	< 44.6	42.2	< 17.8	< 0.00133	< 0.00133	< 0.00355	< 0.00888	--	--	< 0.000888	< 0.01	--
D12	Yes	20	9	4/21/2009	Cornerstone	--	**31.5 J**	583	412	995	336	**< 0.207**	**< 1.03**	**< 1.03**	**< 3.1**	--	--	< 0.00324	< 0.03	--
D12	Yes	15	14	4/13/2009	Cornerstone	--	**183 J**	**2,010**	**3,010**	**5,020**	334	**0.0275 J**	**< 1.34**	0.215 J	**0.899 J**	--	--	< 0.00253	< 0.03	--
D13	No	15	14	4/13/2009	Cornerstone	--	**< 40.1**	523	96.4	619.4	< 37	**< 0.16**	**< 0.801**	< 0.00874	**< 2.4**	--	--	< 0.00219	< 0.02	--
D14	No	15	14	4/13/2009	Cornerstone	--	22.5 J	398	< 80.3	438.2	< 32.1	< 0.00292	< 0.00292	< 0.00778	**< 2.15**	--	--	< 0.00194	< 0.02	--
D15	No	15	14	4/6/2009	Cornerstone	--	< 6.53	< 12.9	< 32.3	22.6	< 12.9	< 0.000965	< 0.000965	< 0.00257	< 0.00643	--	--	< 0.000643	< 0.01	--
E1	No	25	4	5/15/2009	Cornerstone	--	2.27 J	< 13.1	< 32.7	22.9	< 13.1	< 0.00114	< 0.00114	< 0.00304	< 0.0076	--	--	< 0.00076	< 0.01	--
E1	Yes	22	7	5/15/2009	Cornerstone	--	10.2	< 13.6	< 34	23.8	< 13.6	0.00178	< 0.00142	< 0.00378	< 0.00946	--	--	< 0.000946	< 0.01	--
E1	Yes	20	9	5/4/2009	Cornerstone	--	17.4 J	438	135	573	< 37.2	**3.48**	**< 0.777**	**< 0.777**	**< 2.33**	--	--	< 0.00218	**< 15.5**	--
E1	Yes	15	14	5/4/2009	Cornerstone	--	14.8 J	216	373	589	35.3	0.0139	**< 0.583**	0.185	**< 1.75**	--	--	< 0.00141	**< 11.7**	--
E2	No	15	14	4/29/2009	Cornerstone	--	2.1 J	< 12.4	< 31	21.7	< 12.4	< 0.00097	< 0.00097	< 0.00259	< 0.00647	--	--	< 0.00647	< 0.01	--
E3	No	15	14	4/29/2009	Cornerstone	--	< 6.04	< 12.3	< 30.8	21.6	< 12.3	< 0.00101	< 0.00101	< 0.00269	< 0.00673	--	--	< 0.000673	< 0.01	--
E4	No	20	9	4/29/2009	Cornerstone	--	1.55 J	< 11.8	< 29.4	20.6	< 11.8	< 0.000785	< 0.000785	< 0.00209	< 0.00524	--	--	< 0.000524	< 0.01	--
E4	Yes	15	14	4/24/2009	Cornerstone	--	1.92 J	< 12	< 30	21	< 12	**0.0381**	< 0.000626	0.0319 J	< 0.319	--	--	< 0.000418	**< 2.13**	--
E5	No	15	14	4/24/2009	Cornerstone	--	< 15.6	< 19.4	< 48.4	33.9	< 19.4	< 0.00144	< 0.00144	< 0.00383	< 0.00958	--	--	< 0.000958	0.01	--
E9	No	22	7	5/12/2009	Cornerstone	--	< 6.49	< 12.3	< 30.8	21.6	< 12.3	< 0.000951	< 0.000951	< 0.00254	< 0.00634	--	--	< 0.000634	< 0.01	--
E10	No	20	9	5/11/2009	Cornerstone	--	8.89 J	210	368	578	36.3	< 0.00176	< 0.00176	< 0.00469	< 0.0117	--	--	< 0.00117	< 0.01	--
E10	Yes	15	14	4/13/2009	Cornerstone	--	**41.8 J**	272	570	842	47.7	< 0.00443	0.115 J	< 0.0118	< 0.0295	--	--	< 0.00295	**< 19.2**	--
E11	No	22	7	4/22/2009	Cornerstone	--	**< 39.5**	542	< 72.6	578.3	311	< 0.00325	< 0.00325	< 0.00866	< 0.0217	--	--	< 0.00217	< 0.02	--
E11	Yes	20	9	4/15/2009	Cornerstone	--	9.63 J	1,260	1,780	**3,040**	420	**0.131 J**	0.0422 J	0.0563 J	0.179 J	--	--	< 0.000849	**< 4.02**	--
E11	Yes	15	14	4/13/2009	Cornerstone	--	**104 J**	**30,800**	**39,600**	**70,400**	**5,200**	< 0.00358	0.0514 J	0.262 J	0.432 J	--	--	< 0.00239	**< 10.3**	--
E12	No	20	9	4/21/2009	Cornerstone	--	21.3 J	479	271	750	285	0.00565 J	< 0.00516	< 0.0138	**< 3.2**	--	--	< 0.00344	< 0.03	--
E12	Yes	15	14	4/13/2009	Cornerstone	--	**110 J**	835	914	1,749	99.5	**0.0291 J**	0.0609 J	0.112 J	0.399 J	--	--	< 0.0031	**< 19.2**	--
E13	No	15	14	4/13/2009	Cornerstone	--	**< 51.5**	87.7	< 110	143	< 44	**< 0.206**	< 0.00566	< 0.0151	< 0.0378	--	--	< 0.00378	< 0.04	--
E14	No	15	14	4/13/2009	Cornerstone	--	**< 49.7**	634	740	1,374	73.1	< 0.00543	< 0.00543	< 0.0145	< 0.0362	--	--	< 0.00362	< 0.04	--
E15	No	15	14	4/6/2009	Cornerstone	--	< 4.16	< 12.2	< 30.5	76.3	< 12.2	< 0.000859	< 0.000859	< 0.00229	< 0.00573	--	--	< 0.000573	< 0.01	--
F1	No	25	4	5/22/2009	Cornerstone	--	< 9.95	< 16.4	< 41.1	28.8	< 16.4	0.0031	< 0.00144	< 0.00385	< 0.00963	--	--	< 0.000963	< 0.01	--
F1	Yes	22	7	5/15/2009	Cornerstone	--	25.4 J	308	158	466	140	**5.99**	**< 0.989**	**< 0.989**	**< 2.97**	--	--	< 0.00321	< 0.03	--
F1	Yes	20	9	5/4/2009	Cornerstone	--	25.5 J	630	143	773	49.6	**6.27**	**< 0.7**	**< 0.7**	**< 2.1**	--	--	< 0.00281	**< 14**	--
F1	Yes	15	14	5/4/2009	Cornerstone	--	2.84 J	25.1	45	70.1	< 12.6	< 0.00102	< 0.00102	0.0166	0.00779	--	--	< 0.000682	< 0.01	--
F2	No	15	14	4/29/2009	Cornerstone	--	2.45 J	< 13.4	< 33.4	23.4	< 13.4	0.00422	< 0.00111	0.00574	0.00927	--	--	< 0.00074	< 0.01	--
F3	No	15	14	4/29/2009	Cornerstone	--	< 6.88	127 J	181 J	127	31.2	< 0.000855	< 0.000855	< 0.00228	< 0.0057	--	--	< 0.00057	< 0.01	--
F4	No	15	14	4/27/2009	Cornerstone	--	< 5.65	< 11.8	< 29.6	20.7	< 11.8	0.0191	< 0.000926	0.00927	< 0.00617	--	--	< 0.000617	0.01	--
F5	No	15	14	4/27/2009	Cornerstone	--	< 5.7	< 12.1	< 30.1	21.1	< 12.1	0.00182	< 0.00104	< 0.00276	< 0.0069	--	--	< 0.00069	< 0.01	--
F8	No	22	7	5/12/2009	Cornerstone	--	< 6.86	< 12	< 30	21	< 12	< 0.000906	< 0.000906	< 0.00242	< 0.00604	--	--	< 0.000604	< 0.01	--
F9	No	22	7	5/12/2009	Cornerstone	--	< 6.52	< 12.1	< 30.3	21.2	< 12.1	< 0.000999	< 0.000999	< 0.00266	< 0.00666	--	--	< 0.000666	< 0.01	--
F10	No	20	9	5/12/2009	Cornerstone	--	< 5.55	< 12.7	< 31.7	22.2	< 12.7	< 0.000928	< 0.000928	< 0.00248	< 0.00619	--	--	< 0.000619	< 0.01	--
F10	Yes	15	14	4/2/2009	Cornerstone	--	23.6 J	**2,120 J**	**2,830 J**	**4,950**	674	< 0.00941	< 0.00941	< 0.0251	< 0.0628	--	--	< 0.00628	< 0.06	--
F11	No	20	9	4/22/2009	Cornerstone	--	< 6.17	27.9	39.5	67.4	< 11.4	< 0.000737	< 0.000737	< 0.00196	< 0.00491	--	--	< 0.000491	< 0.005	--
F11	Yes	15	14	4/10/2009	Cornerstone	--	2.5 J	535	746	1,281	96.5	**0.0791**	0.033 J	0.0364	0.118 J	--	--	< 0.00867	0.01	--
F12	No	22	7	4/21/2009	Cornerstone	--	< 5.36	< 12.2	< 30.6	21.4	< 12.2	< 0.00062	< 0.00062	< 0.00165	< 0.00414	--	--	< 0.000414	< 0.004	--
F12	Yes	20	9	4/15/2009	Cornerstone	--	**44.6 J**	747	436	1,183	369	**< 0.203**	**< 1.01**	< 0.0108	**< 3.04**	--	--	< 0.0027	**< 20.3**	--
F12	Yes	15	14	4/10/2009	Cornerstone	--	**43.8 J**	**13,000 J**	**23,300 J**	**36,300**	995	0.0121	**< 1.26**	0.201 J	**< 3.77**	--	--	< 0.00367	< 0.04	--
F13	No	23	6	4/23/2009	Cornerstone	--	< 6.75	< 12.5	< 31.3	21.9	< 12.5	< 0.00105	< 0.00105	< 0.00279	< 0.00697	--	--	< 0.000697	< 0.01	--
F13	Yes	20	9	4/21/2009	Cornerstone	--	**< 48.5**	350	305	655	202	**0.233**	**< 0.97**	< 0.0129	< 0.0322	--	--	< 0.00322	< 0.03	--
F13	Yes	15	14	4/10/2009	Cornerstone	--	23 J	538	471	1,009	< 43.3	**0.0844**	**< 0.987**	**< 0.987**	0.474 J	--	--	< 0.00283	**< 19.7**	--
F14	No	15	14	4/10/2009	Cornerstone	--	17.8 J	150	271	421	< 49.9	**< 0.225**	**< 1.12**	**< 1.12**	0.371 J	--	--	< 0.0027	< 0.03	--
F15	No	20	9	4/15/2009	Cornerstone	--	< 5.09	< 11.9	< 29.8	20.9	< 11.9	< 0.000777	< 0.000777	< 0.00207	< 0.00518	--	--	< 0.000518	< 0.01	--
F15	Yes	15	14	4/6/2009	Cornerstone	--	**1,290**	15.1	< 31	53.2	37.7	**1.23**	**0.617**	**32.2**	**110**	--	--	**< 0.0553**	**9.06**	--
G1	No	25	4	5/20/2009	Cornerstone	--	< 6.73	< 12.8	< 31.9	22.4	< 12.8	0.00554	< 0.00105	< 0.00281	< 0.00703	--	--	< 0.000703	< 0.01	--
G1	Yes	20	9	5/4/2009	Cornerstone	--	15.6 J	565	195	760	39	**3.02**	**< 0.706**	**< 0.706**	**< 2.12**	--	--	< 0.00232	**< 14.1**	--
G1	Yes	15	14	5/4/2009	Cornerstone	--	**< 46.1**	534	599	1,133	115	**0.0925 J**	**< 0.712**	**< 0.712**	**< 2.13**	--	--	< 0.00349	< 0.03	--
G2	No	23	6	5/21/2009	Cornerstone	--	< 5.64	< 11.7	< 29.3	20.5	< 11.7	< 0.000886	< 0.000886	< 0.00236	< 0.00591	--	--	< 0.000591	< 0.01	--
G2	Yes	15	14	4/29/2009	Cornerstone	--	**40.4 J**	80.6	98	179	< 38.6	< 0.00418	**< 0.797**	0.175 J	**< 2.39**	--	--	< 0.00279	**< 15.9**	--
G3	No	22	7	5/21/2009	Cornerstone	--	< 5.74	< 12.1	< 30.2	21.2	< 12.1	< 0.000832	< 0.000832	< 0.00222	< 0.00555	--	--	< 0.000555	< 0.01	--
G3	Yes	15	14	4/29/2009	Cornerstone	--	**32.5 J**	**2,560**	**5,060**	**7,620**	409	0.0132	0.0867 J	0.26 J	0.451 J	--	--	< 0.00192	< 0.02	--
G3 (DUP)	Yes	15	14	4/29/2009	Cornerstone	--	**31.8 J**	1,840	**3,220**	**5,060**	291	0.0142 J	0.0681 J	0.136 J	0.215 J	--	--	< 0.00143	< 0.02	--
G4	No	15	14	4/27/2009	Cornerstone	--	< 5.64	< 11.8	< 29.5	20.7	< 11.8	< 0.000935	< 0.000935	< 0.00249	< 0.00624	--	--	< 0.000624	< 0.01	--
G5	No	15	14	4/27/2009	Cornerstone	--	6.25	< 11.8	< 29.4	20.6	< 11.8	0.00786	< 0.00105	0.119	0.0829	--	--	< 0.000698	0.05	--
G8	No	22	7	5/12/2009	Cornerstone	--	< 14.7	< 19	< 47.6	33.3	< 19	< 0.00173	< 0.00173	< 0.00461	< 0.0115	--	--	< 0.00115	< 0.01	--
G8	Yes	15	14	4/20/2009	Cornerstone	--	**184 J**	165	205	370	55.9	**0.436**	0.166 J	0.176 J	0.705 J	--	--	< 0.00216	**< 20.7**	--
G9	No	22	7	5/12/2009	Cornerstone	--	< 12.8	< 17.8	< 44.5	31.2	< 17.8	< 0.00136	< 0.00136	< 0.00364	< 0.00909	--	--	< 0.000909	< 0.01	--
G9	Yes	15	14	4/20/2009	Cornerstone	--	**63.9 J**	**8,440**	**7,520**	**15,960**	**3,520**	**0.208 J**	0.169 J	**< 1.3**	**< 3.9**	--	--	< 0.0025	**< 26**	--
G10	No	22	7	5/13/2009	Cornerstone	--	< 6.29	< 11.9	< 29.8	20.9	< 11.9	< 0.000964	< 0.000964	< 0.00257	< 0.00643	--	--	< 0.000643	< 0.01	--
G10	Yes	15	14	4/2/2009	Cornerstone	--	**< 48.5**	59.2	< 124	121	< 49.5	< 0.00578	< 0.00578	< 0.0154	< 0.0386	--	--	< 0.00386	< 0.04	--
G11	No	15	14	4/10/2009	Cornerstone	--	< 11	32	52.6	84.6	< 15.5	< 0.00101	< 0.00101	< 0.221	< 0.662	--	--	< 0.000674	< 0.01	--
G12	No	20	9	4/21/2009	Cornerstone	--	< 9.85	< 14.7	< 36.7	25.7	< 14.7	< 0.00135	< 0.00135	< 0.00361	< 0.00903	--	--	< 0.000903	< 0.01	--
G12	Yes	15	14	4/10/2009	Cornerstone	--	**306 J**	**5,610**	**9,450**	**15,060**	802	**< 0.312**	**< 1.56**	**< 1.56**	**< 4.67**	--	--	< 0.00413	**< 31.2**	--
G13	No	20	9	4/21/2009	Cornerstone	--	< 5.42	< 12.2	< 30.4	76.2	< 12.2	< 0.000849	< 0.000849	< 0.00226	< 0.00566	--	--	< 0.000566	< 0.01	--
G13	Yes	15	14	4/10/2009	Cornerstone	--	**155 J**	1,130	1,640	**2,770**	161	**0.144**	--	**0.565**	**3.67 J**	--	--	< 0.00424	**< 29.1**	--
G14	No	15	14	4/10/2009	Cornerstone	--	20.8 J	385	208	593	< 53.4	< 0.00686	< 0.00686	< 0.0183	**< 3.79**	--	--	< 0.00457	< 0.05	--
G15	No	20	9	4/15/2009	Cornerstone	--	< 5.73	< 12	< 29.9	21	< 12	< 0.000791	< 0.000791	< 0.00211	0.0139	--	--	< 0.000527	< 0.01	--
G15	Yes	15	14	4/6/2009	Cornerstone	--	17.2	< 11.8	< 29.5	20.7	< 11.8	**0.0682**	0.0382	**0.508**	0.644	--	--	< 0.00041	0.04	--
H1	No	25	4	5/19/2009	Cornerstone	--	< 7.03	< 12.8	< 32	22.4	< 12.8	< 0.00114	< 0.00114	< 0.00304	< 0.0076	--	--	< 0.00076	< 0.01	--
H1	Yes	20	9	5/4/2009	Cornerstone	--	28.1 J	317	104	421	< 40.5	**4.74**	**< 0.82**	**< 0.82**	< 0.032	--	--	< 0.0032	< 0.03	--
H1	Yes	15	14	5/4/2009	Cornerstone	--	< 6.92	< 11.3	< 28.2	19.8	< 11.3	< 0.000938	< 0.000938	< 0.0025	< 0.00625	--	--	< 0.000625	< 0.01	--
H2	No	15	14	4/3/2009	Cornerstone	--	20.5 J	263	738	1,001	< 50	**0.0229**	0.107 J	< 0.0143	**< 3.21**	--	--	< 0.00358	< 0.04	--
H3	No	15	14	4/30/2009	Cornerstone	--	< 6.8	< 12.7	< 31.8	22.3	< 12.7	< 0.00108	< 0.00108	< 0.00289	< 0.00721	--	--	< 0.000721	< 0.01	--
H4	No	15	14	4/27/2009	Cornerstone	--	< 7.79	< 13.6	< 34	23.8	< 13.6	< 0.00129	< 0.00129	< 0.00345	< 0.00862	--	--	< 0.000862	< 0.01	--

Table 4-4a. Soil Analytical Results - TPH, VOCs, Naphthalene, and PCBs
Block 37 Site | Work Plan
Remedial Investigation Work Plan
600-630 Westlake Avenue North | Seattle, Washington

Sample ID	Sample Excavated (Yes=sample removed; No=sample present)	Sample Depth (feet bgs)	Elevation (feet NAVD88)	Sample Date	Consultant	TPH (mg/kg)						VOCs[5] (mg/kg)							PAHs (mg/kg)	PCB (Aroclors) (mg/kg)
						TPH[1]	GRO[2]	DRO[3]	ORO[3]	Total Extractable Hydrocarbons[4]	Kerosene	Benzene	Toluene	Ethyl benzene	Total Xylenes	EDB	EDC	MTBE	Naphthalene	
Screening Levels [6]																				
SL-1 Direct Contact						NE	1,500	NE	NE	NE	NE	18	6,400	8,000	16,000	0.50	11	560	1,600	1.0
SL-2 Protect Drinking Water Vadose Zone						NE	30	2,000	2,000	2,000	2,000	0.027	4.5	5.9	14	0.00027	0.023	0.1	4.5	0.34
SL-5 Protect Drinking Water Saturated Zone						2,000	30	2,000	2,000	2,000	2,000	0.0017	0.27	0.34	0.83	0.000018	0.0016	0.0072	0.24	0.017
SL-10 Natural Background						NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Laboratory PQL						NE	5	15	10	3.44	NA	0.02	0.05	0.05	0.15	0.05	0.05	0.05	0.2	0.0330
H5	No	22	7	5/1/2009	ORS Corporation	--	< 6.09	< 11.9	< 29.7	20.8	< 11.9	< 0.000979	< 0.000979	< 0.00261	< 0.00653	--	--	< 0.000653	< 0.01	--
H5	Yes	15	14	4/27/2009	ORS Corporation	--	**78.47 J**	64.1	99.6	164	23.7	**0.0493**	0.0083 J	**0.472**	0.263	--	--	< 0.000887	0.11	--
H5 (DUP)	Yes	15	14	4/27/2009	ORS Corporation	--	**81.8 J**	101	117	218	37.8	**0.05**	0.0204 J	**0.369**	0.177	--	--	< 0.000917	0.0833	--
H6	No	22	7	5/1/2009	ORS Corporation	--	< 10.3	< 16	< 40	28	< 16	< 0.00128	< 0.00128	< 0.00343	< 0.00856	--	--	< 0.000856	< 0.01	--
H7	No	15	14	4/9/2009	ORS Corporation	--	4.24 J	< 13.7	< 34.3	24	< 13.7	< 0.00102	< 0.00102	< 0.00273	< 0.00682	--	--	< 0.000682	< 0.01	--
H8	No	22	7	5/1/2009	ORS Corporation	--	< 5.93	< 11.2	< 28	19.6	< 11.2	< 0.00107	< 0.00107	< 0.00284	< 0.00711	--	--	< 0.000711	< 0.01	--
H8	Yes	15	14	4/8/2009	ORS Corporation	--	**204 J**	**3,410**	**3,360**	**6,770**	1,340	**0.677**	0.121 J	0.147 J	0.449 J	--	--	< 0.0023	**< 13.4**	--
H9	No	22	7	5/1/2009	ORS Corporation	--	< 5.94	< 11.7	< 29.1	20.4	< 11.7	< 0.000999	< 0.000999	< 0.00266	< 0.00666	--	--	< 0.000666	< 0.01	--
H9	Yes	15	14	4/8/2009	ORS Corporation	--	8.7	113	125	238	43.8	**0.149**	0.103 J	0.0366 J	0.176 J	--	--	< 0.000596	**< 2.44**	--
H10	No	15	14	4/2/2009	ORS Corporation	--	12.3 J	226	306	532	81.5	< 0.00218	< 0.00218	< 0.00582	< 0.0146	--	--	< 0.00146	0.02	--
H11	No	20	9	4/28/2009	ORS Corporation	--	< 6.85	--	--	--	--	< 0.00105	< 0.00105	< 0.00281	< 0.00703	--	--	< 0.000703	< 0.01	--
H11	Yes	17	12	4/28/2009	ORS Corporation	--	6.56 J	--	--	--	--	< 0.0026	< 0.0026	< 0.00694	< 0.0173	--	--	< 0.00173	< 0.02	--
H11	Yes	15	14	4/8/2009	ORS Corporation	--	**214 J**	864	1,240	**2,104**	279	**0.771**	**< 0.709**	**2.41**	**9.27**	--	--	< 0.00243	**< 15.6**	--
H12	No	22	7	4/30/2009	ORS Corporation	--	< 6.72	< 13	< 32.6	22.8	< 13	< 0.00101	< 0.00101	< 0.00268	< 0.0067	--	--	< 0.00067	< 0.01	--
H12	Yes	20	9	4/15/2009	ORS Corporation	--	**< 42.2**	**4,680**	**11,300**	**15,980**	1,040	< 0.00537	< 0.00537	< 0.0143	< 0.0358	--	--	< 0.00358	< 0.04	--
H12	Yes	17	12	4/28/2009	ORS Corporation	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
H12	Yes	15	14	4/10/2009	ORS Corporation	--	16.5 J	**6,290**	**11,200**	**17,490**	1,010	0.00795	**< 1.03**	< 0.0112	**< 3.08**	--	--	< 0.00281	< 0.03	--
H13	No	20	9	4/20/2009	ORS Corporation	--	< 6.12	< 12.2	< 30.5	21.4	< 12.2	< 0.001	< 0.001	< 0.00267	< 0.00668	--	--	< 0.000668	< 0.01	--
H13	Yes	15	14	4/10/2009	ORS Corporation	--	**133 J**	135	182	317	43.8	**0.0628**	0.177	**1.96**	**9.64**	--	--	< 0.000998	**< 3.29**	--
H14	No	20	9	4/20/2009	ORS Corporation	--	< 6.93	< 12.3	< 30.7	21.5	< 12.3	< 0.000932	< 0.000932	< 0.00248	< 0.00621	--	--	< 0.000621	< 0.01	--
H14	Yes	15	14	4/10/2009	ORS Corporation	--	**49.5 J**	**3,300**	**3,780**	**7,080**	512	**< 0.251**	**< 1.26**	**< 1.26**	**< 3.77**	--	--	< 0.00368	< 0.04	--
H15	No	20	9	4/15/2009	ORS Corporation	--	< 5.21	< 12.4	< 31.1	21.8	< 12.4	< 0.00074	< 0.00074	< 0.00197	< 0.00493	--	--	< 0.000493	< 0.005	--
H15	Yes	15	14	4/10/2009	ORS Corporation	--	**48.6 J**	191	438	629	< 54.3	**0.114**	**< 1.2**	0.168 J	**0.996 J**	--	--	< 0.0037	< 0.04	--
I1	No	20	9	5/28/2009	ORS Corporation	--	< 7.56	< 13.8	< 34.5	24.2	< 13.8	< 0.00112	< 0.00112	< 0.00298	< 0.00745	--	--	< 0.000745	< 0.01	--
I1	Yes	15	14	5/28/2009	ORS Corporation	--	2.2 J	< 12.7	< 31.6	22.2	< 12.7	**0.0508**	0.0143	0.0379 J	0.145 J	--	--	< 0.000675	0.04	--
I2	No	25	4	5/28/2009	ORS Corporation	--	< 5.82	< 11.5	< 28.8	20.2	< 11.5	< 0.00106	< 0.00106	< 0.00282	< 0.00704	--	--	< 0.000704	< 0.01	--
I2	Yes	15	14	4/30/2009	ORS Corporation	--	15 J	364	649 J	1,013	68.3	< 0.0039	< 0.0039	< 0.0104	< 0.026	--	--	< 0.0026	< 0.03	--
I3	No	15	14	4/30/2009	ORS Corporation	--	< 6.4	< 12.7	< 31.7	22.2	< 12.7	< 0.000943	< 0.000943	< 0.00252	< 0.00629	--	--	< 0.000629	< 0.01	--
I4	No	25	4	5/28/2009	ORS Corporation	--	< 6.3	< 12.5	< 31.4	22	< 12.5	< 0.00101	< 0.00101	< 0.0027	< 0.00676	--	--	< 0.000676	< 0.01	--
I4	Yes	22	7	5/28/2009	ORS Corporation	--	< 14.8	46.6	124	58.6	< 21	< 0.00224	< 0.00224	0.00712	0.0176	--	--	0.00199	< 0.01	--
I4	Yes	20	9	5/28/2009	ORS Corporation	--	**49.9 J**	106	128	234	48.7	**0.0259**	0.0552	**0.777**	**1.94**	--	--	**< 0.23**	**< 9.19**	--
I4	Yes	15	14	5/1/2009	ORS Corporation	--	**305**	< 12.4	< 31	21.7	< 12.4	0.00864	0.00208	0.128	0.155	--	--	< 0.00068	0.03	--
I5	No	15	14	5/1/2009	ORS Corporation	--	3.33 J	< 12.4	< 30.9	21.7	< 12.4	< 0.00104	< 0.00104	< 0.00278	< 0.00695	--	--	< 0.000695	< 0.01	--
I6	No	15	14	4/8/2009	ORS Corporation	--	< 8.74	< 14.3	< 35.6	25	< 14.3	< 0.00112	< 0.00112	< 0.00299	< 0.00748	--	--	< 0.000748	< 0.01	--
I7	No	15	14	4/8/2009	ORS Corporation	--	< 5.62	< 11.5	< 28.7	20.1	< 11.5	**< 0.0225**	< 0.112	< 0.112	< 0.337	--	--	**< 0.0562**	**< 2.25**	--
I8	No	15	14	4/8/2009	ORS Corporation	--	7.35 J	44.3	64.6	109	< 17.4	0.00403	0.00648	0.0342	0.106	--	--	< 0.000954	**< 4.7**	--
I9	No	15	14	4/8/2009	ORS Corporation	--	**< 58.2**	< 51.1	< 128	89.6	< 51.1	< 0.00582	**< 1.16**	**< 1.16**	**< 3.49**	--	--	< 0.00388	**< 23.3**	--
I10	No	20	9	4/13/2009	ORS Corporation	--	20.2 J	129	272	401	< 55.7	< 0.0064	< 0.0064	**< 1.36**	**< 4.09**	--	--	**< 0.681**	**< 27.2**	--
I10	Yes	15	14	4/8/2009	ORS Corporation	--	**740 J**	697	1,110	1,807	264	**4.16 J**	**0.722**	**11.7 J**	**9.79 J**	--	--	< 0.0029	**381**	--
I10 (DUP)	Yes	15	14	4/8/2009	ORS Corporation	--	**279 J**	571	857	1,428	224	**0.157 J**	**0.743 J**	**4.55 J**	**4.16 J**	--	--	< 0.00191	**163**	--
I11	No	15	14	4/9/2009	ORS Corporation	--	3.95 J	33.5	69.1	103	< 18.3	< 0.00204	< 0.00204	< 0.00544	< 0.0136	--	--	< 0.00136	**< 4.2**	--
I12	No	15	14	4/9/2009	ORS Corporation	--	**< 56**	322	666 J	988	< 46.3	< 0.00543	< 0.00543	< 0.0145	< 0.0362	--	--	< 0.00362	< 0.04	--
I13	No	20	9	4/20/2009	ORS Corporation	--	< 5.86	< 11.6	< 29	20.3	< 11.6	< 0.000858	< 0.000858	< 0.00229	< 0.00572	--	--	< 0.000572	< 0.01	--
I13	Yes	15	14	4/10/2009	ORS Corporation	--	**96.2 J**	315	503	818	< 60.8	**0.056 J**	**< 1.59**	**0.859 J**	**3.17 J**	--	--	< 0.00476	**< 31.8**	--
I14	No	20	9	4/20/2009	ORS Corporation	--	< 6.11	< 11.9	< 29.8	20.9	< 11.9	< 0.000998	< 0.000998	< 0.00266	< 0.00665	--	--	< 0.000665	< 0.01	--
I14	Yes	15	14	4/10/2009	ORS Corporation	--	**92.8 J**	**3,840**	**6,050**	**9,890**	614	0.0128	**< 1.36**	**< 1.36**	**< 4.08**	--	--	< 0.00382	< 0.04	--
I15	No	20	9	4/15/2009	ORS Corporation	--	< 9.26	< 15.6	< 39	27.3	< 15.6	< 0.0015	< 0.0015	< 0.004	< 0.01	--	--	< 0.001	< 0.01	--
I15	Yes	15	14	4/10/2009	ORS Corporation	--	**104 J**	**2,490**	**4,250**	**6,740**	333	< 0.00852	**< 1.83**	**< 1.83**	**< 5.48**	--	--	< 0.00568	< 0.06	--
J1	No	20	9	5/28/2009	ORS Corporation	--	< 5.61	< 12.9	< 32.3	22.6	< 12.9	< 0.00101	0.0025	0.00326	0.00644	--	--	< 0.000674	< 0.01	--
J1	Yes	15	14	5/28/2009	ORS Corporation	--	**270 J**	< 13.1	< 32.7	22.9	< 13.1	0.00637	**0.921**	**2.66**	**19.6**	--	--	**< 0.0544**	**1.5**	--
J2	No	25	4	5/28/2009	ORS Corporation	--	< 6.2	< 12.5	< 31.3	21.9	< 12.5	< 0.000912	< 0.000912	< 0.00243	< 0.00608	--	--	< 0.000608	< 0.01	--
J2	Yes	22	7	5/28/2009	ORS Corporation	--	11.4 J	157	301	458	< 36.9	0.0093	0.0124	0.0396	0.201	--	--	< 0.00313	< 0.03	--
J2	Yes	20	9	5/28/2009	ORS Corporation	--	18.3 J	233	321	554	49.6	**0.03**	0.187 J	0.187 J	0.708 J	--	--	< 0.00387	**< 19.7**	--
J2	Yes	15	14	5/1/2009	ORS Corporation	--	**83.3 J**	1,030	**2,570 J**	**3,600**	213	0.0147	0.264 J	0.132 J	0.314 J	--	--	< 0.00206	**< 12.6**	--
J2 (DUP)	Yes	15	14	5/1/2009	ORS Corporation	--	**69.8 J**	654	930 J	1,584	165	0.0125	0.0565 J	0.0108 J	0.0255 J	--	--	< 0.00236	< 0.02	--
J3	No	15	14	5/1/2009	ORS Corporation	--	5.48 J	< 13.3	< 33.2	23.3	< 13.3	0.00515	< 0.00114	0.0538	0.0819	--	--	< 0.00076	0.02	--
J4	No	15	14	5/1/2009	ORS Corporation	--	5.43 J	< 12.5	< 31.3	21.9	< 12.5	0.00427	0.00236	0.00533	0.0147	--	--	< 0.000644	< 0.01	--
J5	No	20	9	6/3/2009	ORS Corporation	--	< 6.52	< 12.3	< 30.7	21.5	< 12.3	< 0.00111	< 0.00111	< 0.00296	< 0.0074	--	--	< 0.00074	< 0.01	--
J5	Yes	15	14	5/1/2009	ORS Corporation	--	16.4	143	35.4	178	18.7	**0.0616**	0.0215	0.0961 J	0.361	--	--	< 0.000806	0.15	--
J6	No	15	14	4/8/2009	ORS Corporation	--	< 5.78	< 11.5	< 28.9	20.2	< 11.5	< 0.00105	< 0.00105	< 0.00281	< 0.00703	--	--	< 0.000703	< 0.01	--
J7	No	15	14	4/8/2009	ORS Corporation	--	< 19.1	30.4	< 68.5	64.7	< 27.4	< 0.00344	< 0.00344	< 0.00918	< 0.0229	--	--	0.00356	< 0.02	--
J8	No	20	9	4/10/2009	ORS Corporation	--	**< 77.7**	< 58.6	< 146	102	< 58.6	< 0.00636	< 0.00636	< 0.017	< 0.0424	--	--	0.00729	< 0.04	--
J8	Yes	15	14	4/8/2009	ORS Corporation	--	**< 56.4**	79.3	150	229	< 54.6	< 0.00465	**< 1.13**	< 0.0124	**< 3.4**	--	--	0.00945	< 0.03	--
J9	No	20	9	4/10/2009	ORS Corporation	--	**< 66.2**	< 56	< 140	98	< 56	< 0.00583	< 0.00583	0.0315	< 0.0389	--	--	0.004	< 0.04	--
J9	Yes	15	14	4/8/2009	ORS Corporation	--	**184 J**	46.4	87.8	134	< 29.6	0.00309	0.00485	0.0153	0.0364	--	--	< 0.0018	**< 11.8**	--
J10	No	15	14	4/7/2009	ORS Corporation	--	< 4.72	< 12.3	< 30.9	21.6	< 12.3	< 0.00104	< 0.00104	< 0.0944	< 0.283	--	--	< 0.000696	< 0.01	--
J11	No	20	9	4/14/2009	ORS Corporation	--	4.73 J	< 12.2	< 30.5	21.4	< 12.2	< 0.00095	< 0.000956	< 0.00255	< 0.00638	--	--	< 0.000638	< 0.01	--
J11	Yes	15	14	4/7/2009	ORS Corporation	--	**< 59.4**	< 54.1	< 135	94.6	< 54.1	< 0.00444	**< 1.19**	**< 1.19**	**< 3.57**	--	--	< 0.00296	**< 23.8**	--
J12	No	20	9	4/14/2009	ORS Corporation	--	< 6.13	< 12.4	< 30.9	21.7	< 12.4	< 0.00102	< 0.00102	< 0.00272	< 0.0068	--	--	< 0.00068	< 0.01	--
J12	Yes	15	14	4/7/2009	ORS Corporation	--	**266 J**	112	247	359	< 59.8	**< 0.33**	**< 1.65**	**< 1.65**	**< 4.95**	--	--	< 0.00259	**< 33**	--
J13	No	20	9	4/14/2009	ORS Corporation	--	< 5.86	< 12.1	< 30.2	21.2	< 12.1	< 0.000793	< 0.000793	< 0.00212	< 0.00529	--	--	< 0.000529	< 0.01	--
J13	Yes	15	14	4/7/2009	ORS Corporation	--	**< 50.7**	370	673	1,043	118	**< 0.203**	**< 1.01**	**< 1.01**	**3.1**	--	--	< 0.00302	**< 20.3**	--
J14	No	20	9	4/14/2009	ORS Corporation	--	< 5.71	< 11.9	< 29.7	20.8	< 11.9	< 0.000719	< 0.000719	< 0.00192	< 0.00479	--	--	< 0.000479	< 0.005	--
J14	Yes	15	14	4/7/2009	ORS Corporation	--	**113 J**	137	220	357	65.9	0.0169	**< 0.292**	**0.977**	**4.25**	--	--	< 0.00124	**< 5.83**	--
J15	No	20	9	4/14/2009	ORS Corporation	--	< 6.29	< 12	< 30.1	21.1	< 12	< 0.000877	< 0.000877	< 0.00234	< 0.00585	--	--	< 0.000585	< 0.01	--
J15	Yes	15	14	4/7/2009	ORS Corporation	--	**57.1 J**	686	392	1,078	413	**< 0.133**	**< 0.666**	**< 0.666**	**< 2**	--	--	< 0.00257	**< 13.3**	--
K1	No	20	9	6/1/2009	ORS Corporation	--	< 6.43	< 12.1	< 30.3	27.3	< 12.1	< 0.00104	< 0.00104	< 0.00277	< 0.00692	--	--	< 0.000692	< 0.01	--
K1	Yes	15	14	6/1/2009	ORS Corporation	--	**36.9**	< 12.2	< 30.5	21.4	< 12.2	< 0.000977	< 0.000977	0.0188	0.0258	--	--	< 0.000651	0.03	--
K1 (DUP)	Yes	15	14	6/1/2009	ORS Corporation	--	**36.8**	< 12.4	< 31	21.7	< 12.4	< 0.000967	< 0.000967	0.0216	0.0394	--	--	< 0.000645	0.04	--
K2	No	20	9	6/1/2009	ORS Corporation	--	< 4.48	< 12.3	< 30.6	21.5	< 12.3	< 0.000551	< 0.000551	< 0.00147	< 0.00367	--	--	< 0.000367	< 0.004	--
K2	Yes	15	14	5/1/2009	ORS Corporation	--	**36 J**	1,080	744	1,824	97.4	**0.825**	**0.855 J**	< 0.0138	< 0.0344	--	--	< 0.00344	< 0.03	--
K3	No	15	14	5/1/2009	ORS Corporation	--	< 7.01	< 13	< 32.4	22.7	< 13	0.00653	< 0.001	0.00608	0.0264	--	--	< 0.00067	< 0.01	--
K4	No	20	9	6/1/2009	ORS Corporation	--	< 6.78	< 12.5	< 31.2	21.9	< 12.5	< 0.00104	< 0.00104	< 0.00278	< 0.00695	--	--	< 0.000695	< 0.01	--
K4	Yes	15	14	5/5/2009	ORS Corporation	--	11.1	< 11.9	< 29.8	20.9	< 11.9	**0.0941**	0.109	0.0774	0.0841	--	--	< 0.000581	< 0.01	--
K5	No	15	14	5/5/2009	ORS Corporation	--	8.08	155	317	472	29.5	< 0.00124	0.00131	< 0.0033	< 0.00825	--	--	< 0.000825	< 0.01	--
K6	No	18.5	10.5	4/8/2009	ORS Corporation	--	**< 57.9**	< 54	< 135	94.5	< 54	< 0.00422	**< 1.16**	**< 1.16**	**< 3.48**	--	--	**< 0.579**	< 0.03	--
K7	No	18.5	10.5	4/8/2009	ORS Corporation	--	< 27.1	105	242	347	27.6	< 0.00261	< 0.00261	< 0.00697	< 0.0174	--	--	< 0.00174	< 0.02	--
K7	Yes	15	14	4/3/2009	ORS Corporation	--	< 10.9	< 17.5	< 43.7	30.6	< 17.5	< 0.00163	< 0.00163	< 0.00434	< 0.0109	--	--	< 0.00109	< 0.01	--
K8	No	18.5	10.5	4/8/2009	ORS Corporation	--	**< 53.5**	102	123	225	< 46.2	< 0.0061	< 0.0061	< 0.0163	< 0.0407	--	--	0.00488	< 0.04	--
K8	Yes	15	14	4/3/2009	ORS Corporation	--	**< 94.8**	< 59.7	< 149	104	< 59.7	**< 0.379**	**< 1.9**	**< 1.9**	**< 5.69**	--	--	< 0.00654	< 0.07	--
K9	No	18.5	10.5	4/8/2009	ORS Corporation	--	**< 54.2**	147	363	510	< 48.6	< 0.00542	< 0.00542	< 0.0145	< 0.0361	--	--	< 0.00361	< 0.04	--
K9	Yes	15	14	4/3/2009	ORS Corporation	--	14.1 J	87.3	245	332	< 34.5	0.00529	**< 0.631**	< 0.0117	**< 1.89**	--	--	< 0.00292	< 0.03	--
K10	No	15	14	4/8/2009	ORS Corporation	--	**< 62.5**	< 57.4	< 143	100	< 57.4	**< 0.25**	**< 1.25**	**< 1.25**	**< 3.75**	--	--	< 0.00288	< 0.03	--

Table 4-4a. Soil Analytical Results - TPH, VOCs, Naphthalene, and PCBs
Block 37 Site | Work Plan
Remedial Investigation Work Plan
600-630 Westlake Avenue North | Seattle, Washington

Sample ID	Sample Excavated (Yes=sample removed; No=sample present)	Sample Depth (feet bgs)	Elevation (feet NAVD88)	Sample Date	Consultant	TPH (mg/kg)						VOCs[5] (mg/kg)							PAHs (mg/kg)	PCB (Aroclors) (mg/kg)
						TPH[1]	GRO[2]	DRO[3]	ORO[3]	Total Extractable Hydrocarbons[4]	Kerosene	Benzene	Toluene	Ethyl benzene	Total Xylenes	EDB	EDC	MTBE	Naphthalene	
Screening Levels [6]																				
SL-1 Direct Contact						NE	1,500	NE	NE	NE	NE	18	6,400	8,000	16,000	0.50	11	560	1,600	1.0
SL-2 Protect Drinking Water Vadose Zone						NE	30	2,000	2,000	2,000	2,000	0.027	4.5	5.9	14	0.00027	0.023	0.1	4.5	0.34
SL-5 Protect Drinking Water Saturated Zone						2,000	30	2,000	2,000	2,000	2,000	0.0017	0.27	0.34	0.83	0.000018	0.0016	0.0072	0.24	0.017
SL-10 Natural Background						NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Laboratory PQL						NE	5	15	10	3.44	NA	0.02	0.05	0.05	0.15	0.05	0.05	0.05	0.2	0.0330
Confirmation Sampling - Phase 2 Excavation-Area 2[7]																				
COP-T1-N	Likely Removed	Unknown	--	1/29/2009	URS Corporation	--	12.7	16.8	90.1	107	--	**< 0.0243**	< 0.122	< 0.122	< 0.365	--	--	--	0.02	--
COPT1-S	Likely Removed	Unknown	--	1/29/2009	URS Corporation	--	< 5.28	< 11.5	38.4	44.2	--	**< 0.0211**	< 0.106	< 0.106	< 0.317	--	--	--	< 0.01	--
COP-T2-N	Likely Removed	Unknown	--	1/30/2009	URS Corporation	--	**73.9**	172 J	371 J	543	--	**0.364**	0.194	**0.996**	**4.07**	--	--	--	0.02	--
COPT2-S	Likely Removed	Unknown	--	1/30/2009	URS Corporation	--	**949**	74.8	37.3	112	--	**2.19**	< 0.109	**14.4**	**38.1**	--	--	--	**1.14**	--
A1	No	18	11	6/5/2009	URS Corporation	--	< 7.06	< 12.9	< 32.2	22.6	< 12.9	< 0.00118	< 0.00118	< 0.00315	< 0.00789	--	--	< 0.000789	< 0.01	--
A1	Yes	15	14	6/5/2009	URS Corporation	--	< 5.81	< 11.9	< 29.9	20.9	< 11.9	< 0.000966	< 0.000966	< 0.00258	< 0.00644	--	--	< 0.000644	< 0.01	--
A2	Yes	15	14	6/8/2009	URS Corporation	--	6.87 J	< 12.7	< 31.8	22.3	< 12.7	0.015	0.0268	0.0728	0.157	--	--	< 0.000553	0.01	--
A3	Yes	15	14	6/8/2009	URS Corporation	--	17.4	< 12.3	< 30.7	21.5	< 12.3	**0.0298**	0.0361	0.0885	0.41	--	--	< 0.0005	**< 1.36**	--
A4	Yes	15	14	6/10/2009	URS Corporation	--	< 7.62	< 13.5	< 33.8	23.7	< 13.5	< 0.000978	< 0.000978	< 0.00261	< 0.00652	--	--	< 0.000652	< 0.01	--
A5	Yes	15	14	6/12/2009	URS Corporation	--	3.25 J	26	48.5	74.5	< 15	0.000835	0.00131	0.0118	0.0532	--	--	< 0.000553	< 0.01	--
A6	No	18	11	4/8/2009	URS Corporation	--	8.39 J	92.2	165	257	37	< 0.00245	< 0.00245	< 0.00653	< 0.0163	--	--	**< 0.264**	< 0.02	--
A6	Yes	15	14	4/8/2009	URS Corporation	--	< 25.7	338	556	894	56.5	< 0.00318	0.00468	0.0085	0.0331	--	--	< 0.00212	< 0.02	--
A7	No	15	14	4/3/2009	URS Corporation	--	**< 53**	97	202	299	< 48.1	**< 0.212**	**< 1.06**	**< 1.06**	**< 3.18**	--	--	< 0.00399	**< 21.2**	--
A8	No	15	14	4/3/2009	URS Corporation	--	**< 53.6**	170	206	376	< 49.9	< 0.00636	< 0.00636	< 0.017	< 0.0424	--	--	0.00526	< 0.04	--
A9	No	15	14	4/3/2009	URS Corporation	--	**< 81.6**	270	491	761	< 53.2	< 0.00522	< 0.00522	**< 1.63**	**< 4.89**	--	--	**< 0.816**	< 0.03	--
A10	No	15	14	4/9/2009	URS Corporation	--	22.2 J	< 54.1	< 135	94.6	< 54.1	< 0.00699	< 0.00699	0.208 J	0.665 J	--	--	< 0.00466	**< 27.7**	--
B1	No	18	11	6/5/2009	URS Corporation	--	< 6.85	< 12.9	< 32.2	22.6	< 12.9	< 0.00105	0.00105	< 0.00281	< 0.00703	--	--	< 0.000703	< 0.01	--
B1	Yes	15	14	6/5/2009	URS Corporation	--	< 6.43	< 12.7	< 31.7	22.2	< 12.7	< 0.00119	< 0.00119	< 0.00316	< 0.00791	--	--	< 0.000791	< 0.01	--
B2	No	20	9	6/10/2009	URS Corporation	--	< 7.18	< 12.9	< 32.4	22.7	< 12.9	0.00182	< 0.00113	< 0.00301	< 0.00753	--	--	< 0.000753	< 0.01	--
B2	Yes	15	14	6/8/2009	URS Corporation	--	**1,090**	< 12.6	< 31.5	53.3	37.5	**12.1**	**36.8**	**17.5**	**88.6**	--	--	< 0.000679	**5.94**	--
B2 (DUP)	Yes	15	14	6/8/2009	URS Corporation	--	**1,040**	13.7	< 31.8	81.3	65.4	**11.2**	**33**	**16.2**	**84.2**	--	--	< 0.000581	**6.3**	--
B3	No	15	14	6/10/2009	URS Corporation	--	1.84 J	< 11.4	110	116	< 11.4	0.00176	0.00233	0.00427	0.0294	--	--	< 0.000627	< 0.01	--
B4	No	15	14	6/10/2009	URS Corporation	--	< 6.19	< 12.4	< 31.1	21.8	< 12.4	< 0.000997	< 0.000997	< 0.00266	< 0.00665	--	--	< 0.000665	< 0.01	--
B5	No	15	14	4/3/2009	URS Corporation	--	3.31 J	70.2 J	338 J	408	< 11.9	< 0.000925	< 0.000925	< 0.00247	< 0.00773	--	--	< 0.000617	< 0.01	--
B6	No	20	9	4/9/2009	URS Corporation	--	**< 66.1**	< 52.8	< 132	92.4	< 52.8	< 0.00622	< 0.00622	< 0.0166	< 0.0415	--	--	**< 0.661**	< 0.04	--
B6	Yes	16.5	12.5	4/7/2009	URS Corporation	--	**69 J**	82	249	331	< 52.7	< 0.00655	< 0.00655	< 0.0175	**< 3.66**	--	--	< 0.00437	< 0.04	--
B6	Yes	15	14	4/3/2009	URS Corporation	--	**37.8 J**	188	419	607	< 50.7	**0.181**	**< 1.18**	**< 1.18**	**< 3.53**	--	--	< 0.00512	< 0.05	--
B7	Yes	17.5	11.5	4/7/2009	URS Corporation	--	**< 44.9**	139	337	476	43.3	< 0.00322	**< 0.898**	< 0.00858	< 0.0215	--	--	**< 0.449**	< 0.02	--
B7	Yes	15	14	4/3/2009	URS Corporation	--	**41.4 J**	62.8	< 103	114	< 41.2	**< 0.35**	**< 1.75**	**< 1.75**	**< 5.25**	--	--	< 0.00395	< 0.04	--
B8	No	17.5	11.5	4/7/2009	URS Corporation	--	**< 56.1**	92.1	216	308	< 47.9	< 0.00573	< 0.00573	< 0.0153	< 0.0382	--	--	**< 0.55**	< 0.04	--
B8	Yes	15	14	4/3/2009	URS Corporation	--	**61.5 J**	< 40.6	< 101	70.8	< 40.6	**< 0.175**	**< 0.877**	**< 0.877**	**< 2.63**	--	--	< 0.00418	**< 17.5**	--
B9	Yes	20	9	4/9/2009	URS Corporation	--	**< 49.5**	108	252	360	< 46.4	**< 0.198**	**< 0.99**	**< 0.99**	**< 2.97**	--	--	**< 0.495**	< 0.03	--
B9	Yes	17	12	4/7/2009	URS Corporation	--	**< 52.1**	75.7	163	239	< 47.3	**< 0.208**	**< 1.04**	**< 1.04**	**< 3.12**	--	--	**< 0.521**	**< 20.8**	--
B9	Yes	15	14	4/3/2009	URS Corporation	--	**95.6 J**	54	< 119	114	< 47.7	**0.269 J**	**< 0.898**	**< 0.898**	**< 2.69**	--	--	< 0.00502	**< 18**	--
B10	No	15	14	4/9/2009	URS Corporation	--	21.4 J	65.9	201	267	< 35.4	**< 0.162**	**< 0.808**	0.137 J	0.355 J	--	--	< 0.00233	**< 16.2**	--
C1	No	18	11	6/5/2009	URS Corporation	--	9.5	< 11.8	< 29.5	20.7	< 11.8	< 0.000955	0.00138	0.0168	0.0593	--	--	< 0.000637	0.01	--
C1	Yes	15	14	6/5/2009	URS Corporation	--	**32.9**	< 12.5	< 31.3	21.9	< 12.5	< 0.00106	0.00119	0.0327	0.0733	--	--	< 0.000707	0.06	--
C2	No	15	14	6/8/2009	URS Corporation	--	3.72 J	< 12	< 29.9	21	< 12	0.00138	0.00767	0.0964	0.0348 J	--	--	< 0.000559	**< 1.31**	--
C3	No	15	14	6/10/2009	URS Corporation	--	< 6.83	< 12.5	< 31.2	21.9	< 12.5	< 0.000849	< 0.000849	< 0.00226	< 0.00566	--	--	< 0.000566	< 0.01	--
C4	No	15	14	6/10/2009	URS Corporation	--	< 7.56	< 14.3	< 35.7	25	< 14.3	< 0.00114	< 0.00114	< 0.00303	< 0.00757	--	--	< 0.000757	< 0.01	--
C4 (DUP)	No	15	14	6/10/2009	URS Corporation	--	< 9	< 14	< 35	24.5	< 14	0.00244	< 0.00121	< 0.00323	0.0172	--	--	< 0.000808	< 0.01	--
C5	No	15	14	4/3/2009	URS Corporation	--	20.6	87.1	146	233	< 15.9	0.00439	0.00801	0.0369	0.171	--	--	< 0.000822	0.01	--
C6	No	17	12	4/7/2009	URS Corporation	--	**< 33**	56.4	175	231	< 35.1	< 0.00437	< 0.00437	< 0.0117	**< 1.98**	--	--	0.00854	< 0.03	--
C6	Yes	15	14	4/2/2009	URS Corporation	--	**53.2 J**	175	225	400	88.9	**0.0255**	0.204 J	**0.827 J**	**3.33**	--	--	0.00375	< 0.03	--
C7	No	15	14	4/2/2009	URS Corporation	--	**< 50.2**	141	293	434	< 45.8	0.00637	**< 1**	< 0.0151	**< 3.01**	--	--	0.00616	< 0.04	--
C8	No	15	14	4/2/2009	URS Corporation	--	**< 33.9**	< 39.6	< 98.9	69.3	< 39.6	**0.0218**	0.088 J	0.0948 J	0.406 J	--	--	0.00492	< 0.02	--
C9	No	20	9	4/9/2009	URS Corporation	--	< 6.55	< 12.1	< 30.3	21.2	< 12.1	< 0.00117	< 0.00117	< 0.00312	< 0.0078	--	--	< 0.00078	< 0.01	--
C9	Yes	17	12	4/7/2009	URS Corporation	--	**< 51.7**	297	513	810	86.9	**< 0.207**	**< 1.03**	**< 1.03**	**< 3.1**	--	--	**< 0.517**	< 0.03	--
C9	Yes	15	14	4/2/2009	URS Corporation	--	**32.8 J**	< 34.3	< 85.7	60	< 34.3	**0.0398**	0.157 J	**0.365 J**	**1.43 J**	--	--	**< 0.254**	**< 10.1**	--
C10	No	20	9	4/20/2009	URS Corporation	--	1.83 J	< 12.4	< 31	21.7	< 12.4	< 0.00112	< 0.00112	< 0.00297	< 0.00744	--	--	< 0.000744	< 0.01	--
C10	Yes	15	14	4/8/2009	URS Corporation	--	**< 49.7**	83	168	251	< 46.3	< 0.00474	< 0.00474	< 0.0126	< 0.0316	--	--	0.00607	< 0.03	--
D1	No	17	12	6/4/2009	URS Corporation	--	< 5.44	< 12.4	< 31	21.7	< 12.4	< 0.000709	< 0.000709	< 0.00189	< 0.00473	--	--	< 0.000473	< 0.005	--
D1	Yes	15	14	6/4/2009	URS Corporation	--	< 6.14	< 12.3	< 30.7	21.5	< 12.3	< 0.00074	< 0.00074	< 0.00197	< 0.00494	--	--	< 0.000494	< 0.01	--
D2	No	15	14	6/4/2009	URS Corporation	--	2.27 J	< 13.4	< 33.4	23.4	< 13.4	< 0.000931	< 0.00164	< 0.00248	< 0.00621	--	--	< 0.000621	< 0.01	--
D3	No	15	14	6/10/2009	URS Corporation	--	< 8.05	< 13.7	< 34.2	24	< 13.7	< 0.00102	< 0.00102	< 0.00273	< 0.00682	--	--	< 0.000682	< 0.01	--
D4	No	15	14	6/10/2009	URS Corporation	--	< 6.76	< 12.2	< 30.4	21.3	< 12.2	0.00191	< 0.000948	< 0.00253	< 0.00632	--	--	< 0.000632	< 0.01	--
D5	No	17.5	11.5	4/3/2009	URS Corporation	--	**< 35.1**	102	209	311	< 34.7	< 0.00507	< 0.00507	< 0.0135	< 0.0338	--	--	< 0.00338	< 0.03	--
D5	Yes	15	14	3/27/2009	URS Corporation	--	**335**	33.1	57.9	91	31.8	0.00815	0.0309	**1.96**	**5.14**	--	--	< 0.000686	0.14	--
D6	No	17.5	11.5	4/3/2009	URS Corporation	--	**< 66.4**	159	337	496	< 42.6	**< 0.265**	**< 1.33**	**< 1.33**	**< 3.98**	--	--	**< 0.664**	< 0.04	--
D6	Yes	15	14	3/30/2009	URS Corporation	--	**76.9 J**	< 22.7	< 56.8	39.8	< 22.7	**0.0657**	0.183	0.312	**2.82**	--	--	< 0.00187	0.17	--
D7	No	17.5	11.5	4/3/2009	URS Corporation	--	**< 59.1**	85.4	194	279	< 39.4	**< 0.236**	**< 1.18**	**< 1.18**	**< 3.54**	--	--	**< 0.591**	< 0.04	--
D7	Yes	15	14	3/30/2009	URS Corporation	--	**117 J**	29.1	< 58.4	58.3	< 23.3	**0.0619**	0.204	**0.972**	**4.05**	--	--	< 0.00207	**< 8.23**	--
D8	No	17.5	11.5	4/3/2009	URS Corporation	--	**< 69.9**	76.2	173	249	< 45.3	< 0.00689	< 0.00689	**< 1.4**	**< 4.19**	--	--	**< 0.699**	< 0.05	--
D8	Yes	15	14	3/30/2009	URS Corporation	--	**< 45.8**	< 43	< 107	75	< 43	**0.073**	0.162	0.272	**< 2.75**	--	--	< 0.00382	**< 18.3**	--
D9	No	17.5	11.5	4/3/2009	URS Corporation	--	**< 50.2**	195	507	702	< 42.1	< 0.00637	< 0.00637	**< 1**	**< 3.01**	--	--	0.0254	< 0.04	--
D9	Yes	15	14	3/30/2009	URS Corporation	--	**< 39.2**	< 35.8	< 89.6	62.7	< 35.8	**0.0205**	0.0563	0.144	**< 2.35**	--	--	< 0.00343	**< 15.7**	--
D10	No	15	14	4/9/2009	URS Corporation	--	21.9 J	< 46.8	< 117	81.9	< 46.8	< 0.00361	< 0.00361	**< 1.02**	**< 3.05**	--	--	**< 0.508**	< 0.02	--
E1	No	17	12	6/4/2009	URS Corporation	--	**< 43.1**	44.6	< 102	95.6	< 40.8	**< 0.172**	0.129 J	0.146 J	0.327 J	--	--	< 0.00239	**< 17.2**	--
E1	Yes	15	14	6/4/2009	URS Corporation	--	**76.6**	< 12.4	< 30.9	21.7	< 12.4	**0.0307 J**	0.00466 J	**0.901 J**	**2.11 J**	--	--	< 0.000612	0.12	--
E2	No	15	14	6/4/2009	URS Corporation	--	< 5.08	< 11	< 27.5	19.3	< 11	< 0.000863	< 0.000863	< 0.0023	< 0.00575	--	--	< 0.000575	< 0.01	--
E3	No	15	14	6/4/2009	URS Corporation	--	< 6.95	< 13	< 32.5	22.8	< 13	0.00435	< 0.00105	0.00477	0.00795	--	--	< 0.000698	< 0.01	--
E4	No	18	11	6/9/2009	URS Corporation	--	< 16.9	26	73.3	99.3	< 23	< 0.00146	< 0.00146	< 0.00388	< 0.00971	--	--	< 0.000971	< 0.01	--
E4	Yes	15	14	6/4/2009	URS Corporation	--	**2,960**	20.3	< 30	73.3	58.3	**6.84 J**	**67.2 J**	**50.5 J**	**281 J**	--	--	< 0.000605	**10.8**	--
E5	No	17.5	11.5	4/1/2009	URS Corporation	--	**< 37.3**	73.8	163	237	< 35.3	< 0.00445	< 0.00445	< 0.0119	< 0.0297	--	--	< 0.00297	< 0.03	--
E5	Yes	15	14	3/27/2009	URS Corporation	--	**90.5 J**	56.6 J	85	142	29.8	0.0174 J	0.0292 J	0.122 J	**3.11 J**	--	--	< 0.00102	0.09	--
E5 (DUP)	Yes	15	14	3/27/2009	URS Corporation	--	**53 J**	16.2 J	< 33.2	32.8	< 13.3	0.00514 J	0.00842 J	0.0454 J	0.379 J	--	--	< 0.000883	0.05	--
E6	No	17	12	4/1/2009	URS Corporation	--	**< 49.4**	90.8	149	240	< 45.3	< 0.00587	< 0.00587	< 0.0157	< 0.0392	--	--	**< 0.493**	< 0.04	--
E6	Yes	15	14	3/27/2009	URS Corporation	--	**< 41.5**	154	309	463	< 38.1	**0.648 J**	**< 0.831**	**< 0.831**	**< 2.49**	--	--	< 0.00449	< 0.04	--
E7	No	17.5	11.5	4/1/2009	URS Corporation	--	**< 45.3**	67.4	145	212	< 42.2	< 0.00456	< 0.00456	< 0.0122	< 0.0304	--	--	**< 0.458**	< 0.03	--
E7	Yes	15	14	3/27/2009	URS Corporation	--	**67.8 J**	< 38.2	< 95.4	66.8	< 38.2	**0.237**	**< 0.816**	**< 0.816**	**3.43**	--	--	< 0.00414	**< 16.3**	--
E8	No	17.5	11.5	3/31/2009	URS Corporation	--	< 12.7	< 18.4	< 46	32.2	< 18.4	< 0.00188	< 0.00188	< 0.00501	< 0.767	--	--	0.00456	< 0.01	--
E8	Yes	15	14	3/27/2009	URS Corporation	--	**134 J**	24.1	43.9	68	< 17.4	**0.0847**	**0.32**	**1.14**	**5.14**	--	--	< 0.00108	**< 4.63**	--
E9	No	17.5	11.5	3/31/2009	URS Corporation	--	< 19.2	30.8	< 53.7	57.7	< 21.5	< 0.00224	**< 0.384**	< 0.00598	**< 1.15**	--	--	0.00408	< 0.01	--
E9	Yes	15	14	3/27/2009	URS Corporation	--	**82.4 J**	< 31.1	< 77.8	54.5	< 31.1	**0.161**	**< 0.621**	**1.15**	**4.31**	--	--	< 0.00301	**< 12.4**	--
E10	No	15	14	3/27/2009	URS Corporation	--	**73.2 J**	101	244	345	< 45.6	< 0.00708	**< 0.977**	**< 0.977**	**< 2.93**	--	--	**< 0.489**	**< 19.5**	--
F1	No	20	9	6/9/2009	URS Corporation	--	< 9.02	< 16.8	< 41.9	29.4	< 16.8	< 0.00104	< 0.00104	< 0.00278	< 0.00694	--	--	< 0.000694	< 0.01	--
F1	Yes	17	12	6/4/2009	URS Corporation	--	13.7 J	< 44.3	119	141	< 44.3	**0.126 J**	**< 0.842**	0.168 J	0.548 J	--	--	< 0.00259	**< 16.8**	--
F1	Yes	15	14	6/4/2009	URS Corporation	--	10.1	< 12.9	< 32.3	168	< 12.9	0.0191	0.0198	0.107	0.322	--	--	< 0.000669	0.06	--
F2	No	15	14	6/2/2009	URS Corporation	--	3.02 J	< 12.9	< 32.3	22.6	< 12.9	0.00854	0.00544	0.0101	0.0283	--	--	< 0.000342	< 0.003	--
F3	No	17.5	11.5	6/9/2009	URS Corporation	--	< 23.9	73.4	184	257	< 32.2	< 0.00249	**< 0.567**	< 0.00664	< 0.0166	--	--	< 0.00166	< 0.02	--
F3	Yes	15	14	3/29/2009	URS Corporation	--	**449**	< 12.5	< 31.2	32.4	< 33.5	**0.0826 J**	**2.13**	**5.78**	**31.1**	--	--	< 0.000612	**2.66**	--
F3 (DUP)	Yes	15	14	3/29/2009	URS Corporation	--	**613**	21.7	< 31.4	68.6	< 74.3	**0.0431 J**	**1.74**	**7.47**	**34.6**	--	--	< 0.000614	**4.37**	--

Table 4-4a. Soil Analytical Results - TPH, VOCs, Naphthalene, and PCBs
Block 37 Site | Work Plan
Remedial Investigation Work Plan
600-630 Westlake Avenue North | Seattle, Washington

Sample ID	Sample Excavated (Yes=sample removed; No=sample present)	Sample Depth (feet bgs)	Elevation (feet NAVD88)	Sample Date	Consultant	TPH (mg/kg)						VOCs[5] (mg/kg)							PAHs (mg/kg)	PCB (Aroclors) (mg/kg)
						TPH[1]	GRO[2]	DRO[3]	ORO[3]	Total Extractable Hydrocarbons[4]	Kerosene	Benzene	Toluene	Ethyl benzene	Total Xylenes	EDB	EDC	MTBE	Naphthalene	
Screening Levels [6]																				
SL-1 Direct Contact						NE	1,500	NE	NE	NE	NE	18	6,400	8,000	16,000	0.50	11	560	1,600	1.0
SL-2 Protect Drinking Water Vadose Zone						NE	30	2,000	2,000	2,000	2,000	0.027	4.5	5.9	14	0.00027	0.023	0.1	4.5	0.34
SL-5 Protect Drinking Water Saturated Zone						2,000	30	2,000	2,000	2,000	2,000	0.0017	0.27	0.34	0.83	0.000018	0.0016	0.0072	0.24	0.017
SL-10 Natural Background						NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Laboratory PQL						NE	5	15	10	3.44	NA	0.02	0.05	0.05	0.15	0.05	0.05	0.05	0.2	0.0330
F4	No	18.5	10.5	6/9/2009	URS Corporation	--	< 27.9	< 39.5	< 98.7	118	< 39.5	< 0.00268	**< 0.672**	< 0.00716	< 0.0179	--	--	< 0.00179	< 0.02	--
F4	Yes	15	14	4/21/2009	URS Corporation	--	< 10.8	30.8	52.9	83.7	< 16	**0.0905**	0.0409 J	< 0.215	< 0.646	--	--	**< 0.108**	< 0.01	--
F5	No	18	11	4/1/2009	URS Corporation	--	< 21.1	< 22.5	< 56.1	168	< 22.5	< 0.00293	< 0.00293	< 0.00782	< 0.0195	--	--	< 0.00195	< 0.02	--
F5	Yes	15	14	3/27/2009	URS Corporation	--	**267 J**	304	219	523	43	**0.171 J**	**0.906 J**	**1.95 J**	**7.58 J**	--	--	< 0.00192	**< 7.13**	--
F6	No	17	12	4/1/2009	URS Corporation	--	**< 50.6**	105	329	434	< 44.9	< 0.00564	< 0.00564	< 0.015	< 0.0376	--	--	**< 0.531**	< 0.04	--
F6	Yes	15	14	3/27/2009	URS Corporation	--	**290 J**	177	266	443	83.5	**0.0847**	**1.64**	**3.2**	**13.7**	--	--	< 0.000772	0.13	--
F7	No	15	14	3/27/2009	URS Corporation	--	**< 45.3**	98.4	< 103	150	< 41.3	**< 0.181**	**< 0.906**	**< 0.906**	**< 2.72**	--	--	**< 0.453**	**< 18.1**	--
F8	No	18.5	10.5	3/31/2009	URS Corporation	--	< 19.5	< 22.1	< 55.1	38.6	< 22.1	< 0.00316	< 0.00316	< 0.00842	**< 1.17**	--	--	**< 0.195**	< 0.02	--
F8	Yes	15	14	3/25/2009	URS Corporation	--	**183 J**	30.8	< 59.7	60.7	< 23.9	**0.0375**	**0.956**	**1.8**	**7.39**	--	--	< 0.000913	0.17	--
F9	No	17.5	11.5	3/31/2009	URS Corporation	--	< 22.5	< 24.6	< 61.5	43.1	< 24.6	< 0.00277	< 0.00277	< 0.00738	**< 1.35**	--	--	**< 0.225**	< 0.02	--
F9	Yes	15	14	3/25/2009	URS Corporation	--	**144**	< 13	< 32.6	22.8	< 13	**0.0236**	**0.345**	**0.675**	**3.6**	--	--	< 0.000683	0.12	--
F10	No	15	14	3/27/2009	URS Corporation	--	11.5	14.8	< 35.1	32.4	< 14	< 0.00207	< 0.00207	< 0.00553	< 0.0138	--	--	< 0.00138	< 0.01	--
G1	No	19	10	6/4/2009	URS Corporation	--	**< 50.2**	< 40.8	< 102	71.4	< 40.8	< 0.00292	**< 0.77**	**< 0.77**	**< 2.31**	--	--	< 0.00195	< 0.02	--
G1	Yes	15	14	6/4/2009	URS Corporation	--	< 5.06	< 12.1	< 30.3	21.2	< 12.1	< 0.000875	0.00272	< 0.00233	0.00916	--	--	< 0.000583	< 0.01	--
G2	No	18	11	6/9/2009	URS Corporation	--	< 10.1	< 15.4	< 38.5	27	< 15.4	< 0.000802	< 0.158	< 0.158	< 0.474	--	--	< 0.000535	< 0.01	--
G2	Yes	15	14	6/2/2009	URS Corporation	--	2.32 J	< 13.9	41.1	48.1	< 13.9	**0.0876**	< 0.000916	0.00387	< 0.0061	--	--	< 0.00061	< 0.01	--
G3	No	18	11	6/9/2009	URS Corporation	--	< 14.6	< 18.9	< 47.2	33.1	< 18.9	**0.0239**	0.0191	0.0318	0.292	--	--	< 0.000737	**< 4.78**	--
G3	Yes	15	14	5/29/2009	URS Corporation	--	2.67 J	< 12.1	< 30.2	21.2	< 12.1	**0.0368**	< 0.00077	0.00259	< 0.00513	--	--	< 0.000513	< 0.01	--
G4	No	15	14	5/29/2009	URS Corporation	--	< 6.85	< 12.7	< 31.6	22.2	< 12.7	< 0.0009	< 0.0009	< 0.0024	< 0.006	--	--	< 0.0006	< 0.01	--
G5	No	15	14	3/25/2009	URS Corporation	--	**1,120 J**	20.6	40.2	73.8	33.6	**2.73 J**	**14.9 J**	**11.7 J**	**49 J**	--	--	< 0.000837	**6.12**	--
G6	No	15	14	3/25/2009	URS Corporation	--	**306 J**	80.8	142	223	37.1	**0.468 J**	**1.79 J**	**3.4 J**	**13.5 J**	--	--	< 0.00145	**< 6.15**	--
G7	No	15	14	3/24/2009	URS Corporation	--	**145 J**	184	265	449	95.9	**0.0938**	**0.669**	**1.18**	**4.64**	--	--	< 0.00182	**0.28**	--
G8	No	15	14	3/24/2009	URS Corporation	--	**553 J**	132	235	367	85.8	**0.201 J**	**2.02**	**3.8**	**16.5 J**	--	--	< 0.0023	**< 9.18**	--
G9	No	15	14	3/24/2009	URS Corporation	--	**895 J**	289 J	537 J	826	170	**0.297 J**	**4.24 J**	**5.08 J**	**27.1 J**	--	--	< 0.00381	**< 17.8**	--
G10	No	15	14	3/23/2009	URS Corporation	--	**181 J**	22.1	40.8	62.9	< 15.4	**0.0317**	**0.669**	**2.7**	**4.93**	--	--	< 0.0021	**< 5.31**	--
H1	No	17.5	11.5	6/4/2009	URS Corporation	--	< 28.8	66.3	185	251	< 30	**< 0.575**	< 0.018	0.0805 J	**< 1.73**	--	--	< 0.00176	**< 11.5**	--
H1	Yes	15	14	6/4/2009	URS Corporation	--	14.7	< 11.9	< 29.8	20.9	< 11.9	**0.0571**	0.00321	0.0409	0.158	--	--	< 0.000414	0.06	--
H1 (DUP)	Yes	15	14	6/4/2009	URS Corporation	--	9.21	< 11.6	< 29	20.3	< 11.6	**0.0811**	0.00346	0.042	0.148	--	--	< 0.000513	0.04	--
H2	No	15	14	6/2/2009	URS Corporation	--	< 5.5	< 13	< 32.6	22.8	< 13	< 0.000894	< 0.000894	< 0.00238	< 0.00596	--	--	< 0.000596	< 0.01	--
H3	No	15	14	3/29/2009	URS Corporation	--	< 6.15	< 12.2	< 30.6	21.4	< 12.2	< 0.000961	< 0.000961	< 0.00256	< 0.0064	--	--	< 0.00064	< 0.01	--
H4	No	18	11	6/9/2009	URS Corporation	--	< 28.2	< 33.9	< 84.7	59.3	< 33.9	< 0.00272	**< 0.535**	< 0.00726	**< 1.6**	--	--	< 0.00181	< 0.02	--
H4	Yes	15	14	5/29/2009	URS Corporation	--	**239 J**	< 12	< 30.1	21.1	< 12	0.0174	**1.63**	**3.89**	**8.85**	--	--	< 0.000654	0.04	--
H5	No	15	14	3/19/2009	URS Corporation	--	**51 J** **172 J**	110	162	272	71.2	**0.298 J** **0.703 J**	**0.453 J** **2.08 J**	**0.784 J** **2.98 J**	**2.8 J** **10.9 J**	--	--	--	--	--
H6	No	15	14	3/24/2009	URS Corporation	--	**245 J**	183	312	495	96.6	**0.129**	**1.15**	**2.1**	**8.11**	--	--	< 0.0017	**0.31**	--
H7	No	15	14	3/24/2009	URS Corporation	--	**214 J**	123	211	334	60.9	**0.0874**	**0.768**	**1.58**	**5.89**	--	--	< 0.00213	**0.39**	--
H8	No	15	14	3/24/2009	URS Corporation	--	**528 J**	185	368	553	101	**0.157**	**2.17**	**3.91**	**17.3**	--	--	< 0.00414	**0.39**	--
H9	No	15	14	3/19/2009	URS Corporation	--	**139 J**	< 48.2	< 120	84.1	< 48.2	**< 0.235**	**< 1.17**	**< 1.17**	**4.56**	--	--	--	--	--
H10	No	15	14*	3/23/2009	URS Corporation	--	< 21.8	< 19.3	61	70.7	< 19.3	< 0.0037	**< 0.437**	**< 0.437**	**< 1.31**	--	--	0.0123	**< 8.73**	--
I1	No	18	11	6/3/2009	URS Corporation	--	2.4 J	< 12.6	< 31.6	70.7	< 12.6	0.00123	0.00259	0.00273	0.0138	--	--	< 0.000568	< 0.01	--
I1	Yes	15	14	6/3/2009	URS Corporation	--	**184**	23.9	32.4	49	33.2	**0.194**	0.0552 J	**2.41**	**12.8**	--	--	< 0.000638	**1.78**	--
I1 (DUP)	Yes	15	14	6/3/2009	URS Corporation	--	**148**	21.1	< 30.2	57.6	25.2	**0.247**	0.131 J	**2.22**	**10.4**	--	--	< 0.000539	**< 2.73**	--
I2	No	15	14	6/2/2009	URS Corporation	--	< 6.04	< 12.7	< 31.9	36.2	< 12.7	< 0.00085	< 0.00085	< 0.00227	< 0.00567	--	--	< 0.000567	< 0.01	--
I3	No	15	14	5/29/2009	URS Corporation	--	7.42	< 12.3	< 30.8	22.3	< 12.3	< 0.000643	< 0.000643	< 0.00172	< 0.00429	--	--	< 0.000429	< 0.004	--
I4	No	15	14	5/29/2009	URS Corporation	--	< 5.33	< 11.6	< 28.9	21.6	< 11.6	< 0.000953	< 0.000953	< 0.00254	< 0.00636	--	--	< 0.000636	< 0.01	--
I5	No	15	14	3/19/2009	URS Corporation	--	< 6.24	< 11.9	< 29.8	26.1	< 11.9	< 0.00125	< 0.00125	< 0.00334	< 0.00836	--	--	--	--	--
I6	Yes	15	14	3/19/2009	URS Corporation	--	**1,520**	40.8	63.3	220	89	**3.25**	**8.57**	**14.6**	**78.3**	--	--	--	--	--
I6	No	19	10	3/23/2009	URS Corporation	--	< 21.1	< 20.5	131	25.2	< 20.5	< 0.00386	**< 0.423**	**< 0.423**	**< 1.27**	--	--	< 0.00257	**< 8.45**	--
I7	No	15	14	3/19/2009	URS Corporation	--	**44.7**	< 12.2	< 30.4	104	< 12.2	0.0115	0.107	0.115	**2.93**	--	--	--	--	--
I8	No	15	14	3/19/2009	URS Corporation	--	< 13.6	66.9	172	239	23.4	< 0.00188	< 0.00188	< 0.00503	< 0.0126	--	--	--	--	--
I9	No	15	14	3/24/2009	URS Corporation	--	**609 J**	161	232	393	92.2	**0.0772**	**3.03**	**4.66**	**23.6**	--	--	< 0.00259	**< 9.11**	--
I10	No	15	14	3/23/2009	URS Corporation	--	**111 J**	< 42.9	< 107	75	< 42.9	**0.0642**	**< 1.16**	**< 1.16**	**< 3.48**	--	--	< 0.00529	**< 23.2**	--
J1	No	15	14	3/23/2009	URS Corporation	--	10.8	< 12	< 30	21	< 12	0.00754	0.0885	0.0797	0.703	--	--	< 0.000562	0.03	--
J2	No	15	14	6/1/2009	URS Corporation	--	< 5.82	< 12.6	< 31.5	22.1	< 12.6	< 0.00088	< 0.00088	< 0.00235	< 0.00587	--	--	< 0.000587	< 0.01	--
J3	No	15	14	5/29/2009	URS Corporation	--	2.68 J	< 12.4	< 31.1	21.8	< 12.4	< 0.000893	< 0.000893	< 0.00238	< 0.00596	--	--	< 0.000596	< 0.01	--
J4	No	15	14	5/29/2009	URS Corporation	--	26.2	23.3	84.6	108	< 15.6	< 0.00117	0.00139	< 0.00313	< 0.00783	--	--	< 0.000783	< 0.01	--
J5	No	15	14	3/24/2009	URS Corporation	--	**520**	70.7	110	198	87.6	0.0102	0.0303	**1.36**	**11.5**	--	--	< 0.00129	**< 3.27**	--
J6	No	15	14	3/19/2009	URS Corporation	--	< 6.84	< 12	< 30.1	21.1	< 12	0.0033	0.00893	0.00733	0.0299			--	--	--
J7	No	15	14	3/19/2009	URS Corporation	--	**84.4 J**	84.8	161	246	54.7	**0.0283**	0.177	0.192	0.739	--	--	--	--	--
J8	No	15	14	3/19/2009	URS Corporation	--	18.2 J	47.7	262	310	< 19.7	0.014	0.0104	0.0122	0.102	--	--	--	--	--
J9	No	15	14	3/19/2009	URS Corporation	--	**< 31.9**	< 25.8	< 64.6	45.2	< 25.8	< 0.00502	0.00645	< 0.0134	0.0385	--	--	--	--	--
J10	No	15	14	3/23/2009	URS Corporation	--	**< 40.9**	< 32.4	< 81	56.7	< 32.4	< 0.00767	**< 0.818**	**< 0.818**	**< 2.46**	--	--	0.0132	**< 16.4**	--
K1	No	17.5	11.5	6/3/2009	URS Corporation	--	< 6.55	< 12.6	< 31.5	22.1	< 12.6	0.00192	< 0.000967	< 0.00258	< 0.00645	--	--	< 0.000645	< 0.01	--
K1	Yes	15	14	6/3/2009	URS Corporation	--	26.4	< 12.8	< 31.9	22.4	< 12.8	**0.0471**	0.00107	0.238	0.0635	--	--	< 0.000683	0.11	--
K2	No	17	12	6/3/2009	URS Corporation	--	< 5.64	< 123	< 30.8	76.9	< 12.3	< 0.000674	< 0.000674	< 0.0018	< 0.0045	--	--	< 0.00045	< 0.00	--
K2	Yes	15	14	6/3/2009	URS Corporation	--	9.63	< 12.6	< 31.4	22	< 12.6	< 0.000757	< 0.000757	< 0.00202	< 0.00505	--	--	< 0.000505	< 0.01	--
K3	No	17	12	6/3/2009	URS Corporation	--	< 6.37	< 12.9	< 32.2	22.6	< 12.9	< 0.00099	< 0.00099	< 0.00264	< 0.0066	--	--	< 0.00066	< 0.01	--
K3	Yes	15	14	6/3/2009	URS Corporation	--	< 7.68	< 14	< 35	24.5	< 14	< 0.000934	< 0.000934	< 0.00249	< 0.00623	--	--	< 0.000623	< 0.01	--
K4	No	17	12	6/3/2009	URS Corporation	--	< 6.65	< 13	< 32.5	22.8	< 13	< 0.000865	< 0.000865	< 0.00231	< 0.00576	--	--	< 0.000576	< 0.01	--
K4	Yes	15	14	6/3/2009	URS Corporation	--	< 5.35	< 12.3	< 30.7	21.5	< 12.3	< 0.000873	< 0.000873	< 0.00233	< 0.00582	--	--	< 0.000582	< 0.01	--
K5	No	15	14	3/20/2009	URS Corporation	--	**56.2 J**	< 12.3	< 30.7	21.5	< 12.3	**0.056 J**	0.186	**0.632 J**	**1.58 J**	--	--	--	--	--
K6	No	15	14	3/20/2009	URS Corporation	--	13.9	< 12.5	< 33.3	39.6	< 12.5	< 0.00194	< 0.00194	< 0.00517	< 0.0129	--	--	--	--	--
K7	No	15	14	3/20/2009	URS Corporation	--	7.94	< 12.3	< 30.8	21.6	< 12.3	< 0.00147	< 0.00147	< 0.00393	< 0.00983	--	--	--	--	--
K8	No	15	14	3/20/2009	URS Corporation	--	< 7.74	< 12.9	< 32.1	22.5	< 12.9	< 0.00133	< 0.00133	< 0.00354	< 0.00886	--	--	--	--	--
K9	No	15	14	3/23/2009	URS Corporation	--	**132**	30.1	< 37.6	48.9	< 15.1	0.00539	**< 0.285**	**0.919**	**2.72**	--	--	< 0.00133	**< 5.69**	--
K10	No	15	14	3/20/2009	URS Corporation	--	< 7.03	< 11.9	< 29.8	20.9	< 11.9	< 0.0015	< 0.0015	< 0.00401	< 0.01	--	--	--	--	--

Notes:
1. TPH analysis by Method 418.1 (pertaining to the SMW# sample IDs).
2. TPH as gasoline range hydrocarbons (TPH-GRO) analysis by Ecology Method NWTPH-Gx/8021. The GRO data associated with the "Geoengineers 1992-Supplemental Subsurface Study" data was also analyzed by EPA Method 8015-modified, and therefore has two values expressed as "WTPH-G (GRO 8015)".
3. TPH as diesel-range (DRO) and motor oil-range (ORO) analysis by Ecology Method NWTPH-Dx without acid/silica gel cleanup.
4. Due to significant overlap between the two hydrocarbons, when both kerosene and diesel values are present for a sample the higher concentration and/or detection limit was used for the total extractable hydrocarbon calculation.
A value of 1/2 the detection limit was used for results reported as not detected.
5. VOCs analysis by EPA Method 8260, prepared by EPA Method 5035/5030B. Benzene, toluene, ethylbenzene, and xylenes (BTEX) analysis by EPA Method 8020A, 8021B, or 8260B/C/D.
The VOC data associated with the "Geoengineers 1992-Supplemental Subsurface Study" data was analyzed by EPA Method 8020.
6. The lowest relevant screening level for each constituent is highlighted in the corresponding color. Screening level selection process is summarized in Section 5.7.
7. Sample IDs with letters (e.g., A-#-#) refer to the excavation area segments (e.g., Segment A, B, etc.). Refer to the soil concentration figures.
a Due to laboratory error, samples collected on June 7, 2005 were transferred from STL Seattle to STL Sacramento without ice or other cooling media and were received at STL Sacramento at 22°C. The TPH-G, BTEX, MTBE, and Naphthalene results for these samples may be biased low due to the higher temperature.
Bold font indicates the reported value exceeds the corresponding (shaded) screening level (i.e., most stringent).
Shaded cell indicates the reported value exceeds the corresponding screening level (i.e., most stringent).
Font color indicates the samples at elevation 20 or shallower that were compared to SL-2 Protect Drinking Water Vadose Zone screening levels, as applicable.
"<" = less than the laboratory method detection limit
"--" = not analyzed, sampled, or reported
Two sample results provided by lab indicated as xx (<yy)

Table 4-4a. Soil Analytical Results - TPH, VOCs, Naphthalene, and PCBs
Block 37 Site | Work Plan
Remedial Investigation Work Plan
600-630 Westlake Avenue North | Seattle, Washington

Sample ID	Sample Excavated (Yes=sample removed; No=sample present)	Sample Depth (feet bgs)	Elevation (feet NAVD88)	Sample Date	Consultant	TPH (mg/kg)						VOCs[5] (mg/kg)							PAHs (mg/kg)	PCB (Aroclors) (mg/kg)
						TPH[1]	GRO[2]	DRO[3]	ORO[3]	Total Extractable Hydrocarbons[4]	Kerosene	Benzene	Toluene	Ethyl benzene	Total Xylenes	EDB	EDC	MTBE	Naphthalene	
Screening Levels [6]																				
SL-1 Direct Contact						NE	1,500	NE	NE	NE	NE	18	6,400	8,000	16,000	0.50	11	560	1,600	1.0
SL-2 Protect Drinking Water Vadose Zone						NE	30	2,000	2,000	2,000	2,000	0.027	4.5	5.9	14	0.00027	0.023	0.1	4.5	0.34
SL-5 Protect Drinking Water Saturated Zone						2,000	30	2,000	2,000	2,000	2,000	0.0017	0.27	0.34	0.83	0.000018	0.0016	0.0072	0.24	0.017
SL-10 Natural Background						NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Laboratory PQL						NE	5	15	10	3.44	NA	0.02	0.05	0.05	0.15	0.05	0.05	0.05	0.2	0.0330

bgs = below ground surface
BTEX = benzene, toluene, ethylbenzene, and total xylenes
DRO = diesel-range organics
Ecology = Washington State Department of Ecology
EDB = 1,2-dibromoethane
EDC = 1,2-dichloroethane
EPA = United States Environmental Protection Agency
GRO = gasoline-range organics
ID = identification
J = estimated concentration
mg/kg = milligram per kilogram
MTBE = methyl tert-butyl ether
MTCA = Model Toxics Control Act
NA = not applicable
NAVD88 = North American Vertical Datum 1988
NE = not established
ORO = oil-range organics
PCB = polychlorinated biphenyl
PQL = practical quantitation limit
SL = screening level
TPH = total petroleum hydrocarbon
VOC = volatile organic compound
WAC = Washington Administrative Code

Table 4-4b. Soil Analytical Results - PAHs and cPAHs
Remedial Investigation Work Plan
Block 37 Site
600-630 Westlake Avenue North | Seattle, Washington

Sample ID	Sample Excavated (Yes=sample removed; No=sample present)	Sample Depth (feet bgs)	Elevation (feet NAVD88)	Sample Date	Consultant	PAHs (mg/kg)										cPAHs (mg/kg) [1]							
						Acenaph thene	Acenaph thylene	Anthracene	Benzo(ghi) perylene	Fluoran thene	Fluorene	1-Methyl naphthalene	2-Methyl naphthalene	Phenan threne	Pyrene	Benzo(a) anthracene	Benzo(a) pyrene	Benzo(b) fluoranthene	Benzo(k) fluoranthene	Chrysene	Dibenz(a,h) anthracene	Indeno (1,2,3-cd) pyrene	TTEC[1]
Screening Levels[2]																							
					SL-1 Direct Contact	**4,800**	**NE**	**24,000**	**NE**	**3,200**	**3,200**	**34**	**320**	**NE**	**2,400**	**NE**	**0.19**	**NE**	**NE**	**NE**	**NE**	**NE**	**0.19**
					SL-2 Protect Drinking Water Vadose Zone	**49**	**NE**	**1,100**	**NE**	**630**	**51**	**0.082**	**1.7**	**NE**	**330**	**NE**	**3.9**	**NE**	**NE**	**NE**	**NE**	**NE**	**3.90**
					SL-5 Protect Drinking Water Saturated Zone	**2.5**	**NE**	**57**	**NE**	**32**	**2.6**	**0.0042**	**0.089**	**NE**	**16**	**NE**	**0.19**	**NE**	**NE**	**NE**	**NE**	**NE**	**0.19**
					SL-10 Natural Background	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**
					Laboratory PQL	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**(total benzo-fluoranthenes)**		**0.01**	**0.01**	**0.0151**
B1-S2	No	7	22	8/29/2000	Hart Crowser	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	--	--	< 0.1	< 0.1	--	--	--	--	--	--	--	--
B1-S3	No	11	18	8/29/2000	Hart Crowser	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	--	--	< 0.1	< 0.1	--	--	--	--	--	--	--	--
B3-S1	Yes	3.0	26.0	8/29/2000	Hart Crowser	0.1	0.1	0.1	0.1	0.98	0.1	--	--	1.5	1.2	--	--	--	--	--	--	--	--
B3-S3	Yes	11.0	18.0	8/29/2000	Hart Crowser	0.1	0.1	0.1	0.1	0.1	0.1	--	--	0.1	0.1	--	--	--	--	--	--	--	--
B4-S2	No	6	23	8/29/2000	Hart Crowser	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	--	--	< 0.1	< 0.1	--	--	--	--	--	--	--	--
B5-S2	Yes	6.0	23.0	8/29/2000	Hart Crowser	0.1	0.1	0.1	0.1	0.1	0.1	--	--	0.1	0.1	--	--	--	--	--	--	--	--
B6-S2	Yes	6.0	23.0	8/29/2000	Hart Crowser	0.1	0.1	0.1	0.1	0.1	0.1	--	--	0.1	0.1	--	--	--	--	--	--	--	--
B7-S3	Yes	11.0	20.0	8/29/2000	Hart Crowser	0.1	0.1	0.1	0.1	0.1	0.1	--	--	0.1	0.1	--	--	--	--	--	--	--	--
B8-S3	No	11	20	8/29/2000	Hart Crowser	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	--	--	< 0.1	< 0.1	--	--	--	--	--	--	--	--
B9-S2	No	7	24	8/29/2000	Hart Crowser	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	--	--	< 0.1	< 0.1	--	--	--	--	--	--	--	--
B10-S3	No	10	19	8/29/2000	Hart Crowser	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	--	--	< 0.1	< 0.1	--	--	--	--	--	--	--	--
B10-S5	No	18	11	8/29/2000	Hart Crowser	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	--	--	< 0.1	< 0.1	--	--	--	--	--	--	--	--
TP7-S2	Yes	2.5 to 3	28 to 28.5	Prior to 2001	Hart Crowser	1.0	1.0	1.0	1.0	1.0	1.0	--	--	1.0	1.0	1.0	**1.0**	1.0	1.0	1.0	1.0	1.0	**1.51**
TP8-S2	Yes	2.5 to 3	28 to 28.5	Prior to 2001	Hart Crowser	1.0	1.0	1.0	1.0	1.0	1.0	--	--	1.0	1.0	1.0	**1.0**	1.0	1.0	1.0	1.0	1.0	**1.51**
TP8-S4	Yes	6 to 6.5	24.5 to 25	Prior to 2001	Hart Crowser	1.0	1.0	1.0	1.0	7.4	1.0	--	--	1.0	4.4	30	**1.0**	1.0	1.0	1.0	1.0	1.0	**4.41**
TP9-S2	Yes	3.5 to 4	27.5 to 28	Prior to 2001	Hart Crowser	2.2	1.0	1.0	1.0	3.5	6.9	--	--	1.0	3.1	26	**1.0**	1.0	26	1.0	1.0	1.0	**4.01**
TP12-S3	Yes	5 to 5.5	21.5 to 22	Prior to 2001	Hart Crowser	1.0	1.0	1.0	1.0	1.0	1.0	--	--	1.0	1.0	1.0	**1.0**	1.0	1.0	1.0	1.0	1.0	**1.51**
EX2-7	Yes	7.0	21.0	5/23/2001	ERI	0.0458	0.0215	0.195	0.239	0.762	0.0687	--	--	0.74	0.835	0.47	**0.305**	0.334	0.105	0.305	0.082	0.245	**0.43**
K-MW-4-15.5	No	15.5	12.5	3/31/2003	Kane	0.01	0.01	0.01	0.01	0.01	0.01	**0.01**	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02
K-MW-6-6.0	No	6	22.0	4/1/2003	Kane	0.0094	0.0094	0.0094	0.0094	0.0094	0.0094	0.026	0.039	0.0094	0.0094	0.0094	0.022	0.0094	0.0094	0.0094	0.0094	0.0094	0.03
ESW-10	Yes	10	16.5	9/16/2008	Stantec	0.0125	0.0125	0.0125	0.0125	0.0133	0.0125	**0.0125**	0.0125	0.0125	0.0165	0.0125	0.0125	0.0125	0.0125	0.0135	0.0125	0.0125	0.02
NET-11	Yes	11	15.5	9/16/2008	Stantec	0.314	0.141	1.54	0.691	3.84	0.409	**2.3**	**3.85**	4.39	4.29	1.42	**1.53**	0.877	0.967	1.580	0.253	0.6	1.96
NSW-6	Yes	6	20.5	9/16/2008	Stantec	0.0116	0.0116	0.0116	0.0116	0.0116	0.0116	0.0116	0.0116	0.0116	0.0116	0.0116	0.0116	0.0116	0.0116	0.0116	0.0116	0.0116	0.02
NWT-11	Yes	11	15.5	9/16/2008	Stantec	0.106	0.106	0.106	0.106	0.106	0.106	**0.106**	0.0106	0.106	0.106	0.1060	0.106	0.106	0.106	0.1060	0.1060	0.1060	0.16
SET-11	Yes	11	15.5	9/16/2008	Stantec	0.131	0.0111	0.12	0.0329	0.235	0.126	**4.36**	**7.21**	0.426	0.273	0.0795	0.0742	0.044	0.054	0.0953	0.0111	0.0263	0.10
SSW-8	Yes	8	18.5	9/16/2008	Stantec	0.0548	0.115	0.0548	0.227	0.113	0.0548	**0.0548**	0.0548	0.095	0.161	0.0643	0.171	0.0983	0.0793	0.107	0.0548	0.165	0.22
SWT-11	Yes	11	15.5	9/16/2008	Stantec	0.705	0.16	0.777	0.242	1.78	0.525	**6.03**	**9.35**	2.65	2.08	0.5760	**0.62**	0.432	0.4100	0.681	0.0678	0.217	0.80
WSW-8	Yes	8	18.5	9/16/2008	Stantec	0.0103	0.0103	0.0103	0.0103	0.0103	0.0103	**0.0103**	0.0103	0.0103	0.0123	0.0103	0.0103	0.0103	0.0103	0.0103	0.0103	0.0103	0.02
D-1	Yes	2	24.5	9/18/2008	Stantec	0.0221	0.0221	0.0221	0.025	0.0735	0.0221	0.0221	0.0221	0.04	0.0805	0.0221	0.0275	0.0221	0.0221	0.0342	0.0221	0.0221	0.04
D-6	Yes	2	24.5	9/18/2008	Stantec	0.121	0.121	0.078	0.0513	0.0513	0.197	**0.183**	0.0698	0.1	0.258	0.0513	0.0513	0.0513	0.0513	0.5130	0.0513	0.0513	0.078
D-10	Yes	2	24.5	9/18/2008	Stantec	0.0104	0.0104	0.0104	0.0108	0.0141	0.0104	0.0104	0.0153	0.0104	0.018	0.0104	0.0104	0.0104	0.0104	0.0104	0.0104	0.0104	0.016
PL-1	Yes	2	24.5	9/18/2008	Stantec	0.0106	0.0106	0.0106	0.0106	0.0168	0.0106	0.0106	0.0106	0.0137	0.0196	0.0106	0.0106	0.0106	0.0106	0.0124	0.0106	0.0106	0.016
PL-4	Yes	2	24.5	9/18/2008	Stantec	0.0519	0.0519	0.0519	0.0519	0.0519	0.0519	0.0519	0.0733	0.0519	0.0519	0.0519	0.0519	0.0519	0.0519	0.0519	0.0519	0.0519	0.078
PL-5	Yes	2	24.5	9/18/2008	Stantec	0.0103	0.0103	0.0103	0.0103	0.0103	0.0103	0.0103	0.0135	0.0103	0.0123	0.0103	0.0103	0.0103	0.0103	0.0103	0.0103	0.0103	0.016
PL-6	Yes	2	24.5	9/18/2008	Stantec	0.0102	0.0102	0.0102	0.0102	0.0102	0.0102	0.0102	0.0102	0.0227	0.044	0.0102	0.0102	0.0102	0.0102	0.0102	0.0102	0.0102	0.015
PL-9	Yes	2	24.5	9/18/2008	Stantec	0.0106	0.0106	0.0106	0.0106	0.0106	0.0106	0.0106	0.0106	0.0106	0.0106	0.0106	0.0106	0.0106	0.0106	0.0106	0.0106	0.0106	0.016
B-37-3-5.0	No	5	22.5	3/16/2021	Farallon	--	--	--	--	--	--	--	--	--	--	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0056
B-37-3-13.0	No	13	14.5	3/16/2021	Farallon	--	--	--	--	--	--	--	--	--	--	< 0.0077	< 0.0077	< 0.0077	< 0.0077	< 0.0077	< 0.0077	< 0.0077	< 0.0058
B-37-3-19.0	No	19	8.5	3/16/2021	Farallon	--	--	--	--	--	--	--	--	--	--	0.01	0.01	0.01	< 0.0078	0.02	< 0.0078	< 0.0078	0.01
B-37-3-24.0	No	24	3.5	3/16/2021	Farallon	--	--	--	--	--	--	--	--	--	--	0.02	0.02	0.02	< 0.0081	0.02	< 0.0081	0.01	0.02
B-37-4-5.0	No	5	22.4	3/17/2021	Farallon	--	--	--	--	--	--	--	--	--	--	< 0.007	< 0.007	< 0.007	< 0.007	< 0.007	< 0.007	< 0.007	< 0.0053
B-37-4-13.0	No	13	14.4	3/17/2021	Farallon	--	--	--	--	--	--	--	--	--	--	0.01	0.014	0.01	< 0.0071	0.02	< 0.0071	< 0.0071	0.02
B-37-4-19.0	No	19	8.4	3/17/2021	Farallon	--	--	--	--	--	--	--	--	--	--	0.01	0.012	0.01	< 0.0075	0.03	< 0.0075	< 0.0075	0.02
B-37-4-24.0	No	24	3.4	3/17/2021	Farallon	--	--	--	--	--	--	--	--	--	--	< 0.0089	< 0.0089	< 0.0089	< 0.0089	0.01	< 0.0089	< 0.0089	0.01
B-37-5-5.0	No	5	23	3/18/2021	Farallon	--	--	--	--	--	--	--	--	--	--	< 0.0075	0.01	< 0.0075	< 0.0075	0.02	< 0.0075	< 0.0075	0.01
B-37-5-13.0	No	13	15	3/18/2021	Farallon	--	--	--	--	--	--	--	--	--	--	< 0.0076	< 0.0076	< 0.0076	< 0.0076	< 0.0076	< 0.0076	< 0.0076	< 0.0057
B-37-5-20.0	No	20	8	3/19/2021	Farallon	--	--	--	--	--	--	--	--	--	--	< 0.0088	0.01	0.02	< 0.0088	0.02	< 0.0088	0.01	0.01
B-37-5-25.0	No	25	3	3/19/2021	Farallon	--	--	--	--	--	--	--	--	--	--	< 0.0079	< 0.0079	< 0.0079	< 0.0079	< 0.0079	< 0.0079	< 0.0079	< 0.006
B-37-5-33.0	No	33	-5	3/19/2021	Farallon	--	--	--	--	--	--	--	--	--	--	< 0.0077	< 0.0077	< 0.0077	< 0.0077	< 0.0077	< 0.0077	< 0.0077	< 0.0058
B-37-6-5.0	No	5	22.5	3/18/2021	Farallon	--	--	--	--	--	--	--	--	--	--	< 0.0072	< 0.0072	< 0.0072	< 0.0072	< 0.0072	< 0.0072	< 0.0072	< 0.0054
B-37-6-17.0	No	17	10.5	3/18/2021	Farallon	--	--	--	--	--	--	--	--	--	--	0.11	0.11	0.13	0.04	0.1	0.01	0.08	0.15
B-37-6-20.0	No	20	7.5	3/18/2021	Farallon	--	--	--	--	--	--	--	--	--	--	0.01	0.01	0.01	< 0.0081	0.01	< 0.0081	< 0.0081	0.02
B-37-6-25.0	No	25	2.5	3/18/2021	Farallon	--	--	--	--	--	--	--	--	--	--	< 0.0079	< 0.0079	< 0.0079	< 0.0079	< 0.0079	< 0.0079	< 0.0079	< 0.006
B-37-6-33.0	No	33	-5.5	3/18/2021	Farallon	--	--	--	--	--	--	--	--	--	--	< 0.0081	< 0.0081	< 0.0081	< 0.0081	< 0.0081	< 0.0081	< 0.0081	< 0.0061
B-37-7-5.0	No	5	25	5/6/2021	Farallon	--	--	--	--	--	--	--	--	--	--	0.01	0.01	0.02	< 0.007	0.01	< 0.007	0.01	0.02
B-37-7-13.0	No	13	17	5/6/2021	Farallon	--	--	--	--	--	--	--	--	--	--	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0056
B-37-7-18.0	No	18	12	5/6/2021	Farallon	--	--	--	--	--	--	--	--	--	--	< 0.008	< 0.008	< 0.0080	< 0.0080	< 0.0080	< 0.008	< 0.008	< 0.006
B-37-7-22.0	No	22	8	5/6/2021	Farallon	--	--	--	--	--	--	--	--	--	--	< 0.0086	< 0.0086	< 0.0086	< 0.0086	< 0.0086	< 0.0086	< 0.0086	< 0.0065
B-37-7-27.0	No	27	3	5/6/2021	Farallon	--	--	--	--	--	--	--	--	--	--	< 0.0082	< 0.0082	< 0.0082	< 0.0082	< 0.0082	< 0.0082	< 0.0082	< 0.0062
B-37-7-33.0	No	33	-3	5/6/2021	Farallon	--	--	--	--	--	--	--	--	--	--	< 0.0086	< 0.0086	< 0.0086	< 0.0086	< 0.0086	< 0.0086	< 0.0086	< 0.0065
B-37-8-5.0	No	5	24	5/5/2021	Farallon	--	--	--	--	--	--	--	--	--	--	< 0.0073	< 0.0073	< 0.0073	< 0.0073	< 0.0073	< 0.0073	< 0.0073	< 0.0055

Table 4-4b. Soil Analytical Results - PAHs and cPAHs
Remedial Investigation Work Plan
Block 37 Site
600-630 Westlake Avenue North | Seattle, Washington

Sample ID	Sample Excavated (Yes=sample removed; No=sample present)	Sample Depth (feet bgs)	Elevation (feet NAVD88)	Sample Date	Consultant	PAHs (mg/kg)										cPAHs (mg/kg) [1]							
						Acenaph thene	Acenaph thylene	Anthracene	Benzo(ghi) perylene	Fluoran thene	Fluorene	1-Methyl naphthalene	2-Methyl naphthalene	Phenan threne	Pyrene	Benzo(a) anthracene	Benzo(a) pyrene	Benzo(b) fluoranthene	Benzo(k) fluoranthene	Chrysene	Dibenz(a,h) anthracene	Indeno (1,2,3-cd) pyrene	TTEC[1]
Screening Levels[2]																							
SL-1 Direct Contact						4,800	NE	24,000	NE	3,200	3,200	34	320	NE	2,400	NE	0.19	NE	NE	NE	NE	NE	0.19
SL-2 Protect Drinking Water Vadose Zone						49	NE	1,100	NE	630	51	0.082	1.7	NE	330	NE	3.9	NE	NE	NE	NE	NE	3.90
SL-5 Protect Drinking Water Saturated Zone						2.5	NE	57	NE	32	2.6	0.0042	0.089	NE	16	NE	0.19	NE	NE	NE	NE	NE	0.19
SL-10 Natural Background						NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Laboratory PQL						0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01 (total benzo-fluoranthenes)		0.01	0.01	0.01	0.0151
B-37-8-13.0	No	13	16	5/5/2021	Farallon	--	--	--	--	--	--	--	--	--	--	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0074	< 0.0056
B-37-8-18.0	No	18	11	5/5/2021	Farallon	--	--	--	--	--	--	--	--	--	--	< 0.011	< 0.011	0.0110	< 0.0110	< 0.0110	< 0.0110	< 0.011	0.01
B-37-8-22.0	No	22	7	5/5/2021	Farallon	--	--	--	--	--	--	--	--	--	--	< 0.0080	< 0.008	< 0.0080	< 0.0080	< 0.0080	< 0.0080	< 0.008	< 0.006
B-37-8-27.0	No	27	2	5/5/2021	Farallon	--	--	--	--	--	--	--	--	--	--	< 0.0083	< 0.0083	< 0.0083	< 0.0083	< 0.0083	< 0.0083	< 0.0083	< 0.0063
B-37-8-33.0	No	33	-4	5/5/2021	Farallon	--	--	--	--	--	--	--	--	--	--	< 0.0083	< 0.0083	< 0.0083	< 0.0083	< 0.0083	< 0.0083	< 0.0083	< 0.0063
B-37-9-5.0	No	5	24.5	5/4/2021	Farallon	--	--	--	--	--	--	--	--	--	--	< 0.0084	< 0.0084	< 0.0084	< 0.0084	< 0.0084	< 0.0084	< 0.0084	< 0.0063
B-37-9-22.0	No	22	7.5	5/4/2021	Farallon	--	--	--	--	--	--	--	--	--	--	< 0.0083	< 0.0083	< 0.0083	< 0.0083	< 0.0083	< 0.0083	< 0.0083	< 0.0063
B-37-9-27.0	No	27	2.5	5/4/2021	Farallon	--	--	--	--	--	--	--	--	--	--	< 0.0084	< 0.0084	< 0.0084	< 0.0084	< 0.0084	< 0.0084	< 0.0084	< 0.0063
B-37-9-33.0	No	33	-3.5	5/4/2021	Farallon	--	--	--	--	--	--	--	--	--	--	< 0.0076	< 0.0076	< 0.0076	< 0.0076	< 0.0076	< 0.0076	< 0.0076	< 0.0057
PH-2/AMW-1-15.0	No	15	14.4	1/26/2022	Farallon	--	--	--	--	--	--	< 0.0025	< 0.0025	--	--	0.0006 J	0.00061 J	0.0009 J	< 0.0025	0.0007 J	< 0.0025	0.0004 J	0.0011 J
PH-2/AMW-1-20.0	No	20	9.4	1/26/2022	Farallon	--	--	--	--	--	--	< 0.0023	< 0.0023	--	--	0.00096 J	0.0012	0.0012 J	0.0004 J	0.0009 J	< 0.0023	0.0007 J	0.0016 J
PH-2/AMW-1-25.0	No	25	4.4	1/26/2022	Farallon	--	--	--	--	--	--	< 0.0023	< 0.0023	--	--	< 0.0023	< 0.0023	< 0.0023	< 0.0023	< 0.0023	< 0.0023	< 0.0023	< 0.0017
PH-2/AMW-1-30.0	No	30	-0.6	1/26/2022	Farallon	--	--	--	--	--	--	< 0.0024	< 0.0024	--	--	< 0.0024	< 0.0024	< 0.0024	< 0.0024	< 0.0024	< 0.0024	< 0.0024	< 0.0018
PH-2/AMW-1-35.0	No	35	-5.6	1/26/2022	Farallon	--	--	--	--	--	--	< 0.0024	< 0.0024	--	--	< 0.0024	< 0.0024	< 0.0024	< 0.0024	< 0.0024	< 0.0024	< 0.0024	< 0.0018
PH-1-15.0	No	15	14.4	1/26/2022	Farallon	--	--	--	--	--	--	< 0.0024	< 0.0024	--	--	0.00073 J	0.0011 J	0.0011 J	0.0005 J	0.0009 J	< 0.0024	0.0007 J	0.0015 J
PH-1-20.0	No	20	9.4	1/26/2022	Farallon	--	--	--	--	--	--	< 0.0024	< 0.0024	--	--	0.0015 J	0.0023 J	0.0023 J	0.0007 J	0.0021 J	0.0004 J	0.0016 J	0.003 J
PH-1-25.0	No	25	4.4	1/26/2022	Farallon	--	--	--	--	--	--	< 0.0024	< 0.0024	--	--	0.0009 J	0.0012 J	0.0012 J	0.0004 J	0.0009 J	< 0.0024	0.0008 J	0.0016 J
PH-1-30.0	No	30	-0.6	1/26/2022	Farallon	--	--	--	--	--	--	< 0.0025	< 0.0025	--	--	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0019
PH-1-35.0	No	35	-5.6	1/26/2022	Farallon	--	--	--	--	--	--	< 0.0025	< 0.0025	--	--	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0019
PH-3-15.0	No	15	15.1	1/27/2022	Farallon	--	--	--	--	--	--	< 0.0024	< 0.0024	--	--	< 0.0024	0.00054 J	0.0006 J	< 0.0024	0.0004 J	< 0.0024	0.0004 J	0.001 J
PH-3-20.0	No	20	10.1	1/27/2022	Farallon	--	--	--	--	--	--	< 0.0023	< 0.0023	--	--	< 0.0023	< 0.0023	< 0.0023	< 0.0023	< 0.0023	< 0.0023	< 0.0023	< 0.0017
PH-3-25.0	No	25	5.1	1/27/2022	Farallon	--	--	--	--	--	--	< 0.0025	< 0.0025	--	--	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0019
PH-3-30.0	No	30	0.1	1/27/2022	Farallon	--	--	--	--	--	--	< 0.0025	< 0.0025	--	--	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0019
PH-3-35.0	No	35	-4.9	1/27/2022	Farallon	--	--	--	--	--	--	< 0.0023	< 0.0023	--	--	< 0.0023	< 0.0023	< 0.0023	< 0.0023	< 0.0023	< 0.0023	< 0.0023	< 0.0017
PH-4-25.0	No	25	5.4	1/27/2022	Farallon	--	--	--	--	--	--	< 0.0026	< 0.0026	--	--	< 0.0026	< 0.0026	< 0.0026	< 0.0026	< 0.0026	< 0.0026	< 0.0026	< 0.002
PH-4-30.0	No	30	0.4	1/27/2022	Farallon	--	--	--	--	--	--	< 0.0024	< 0.0024	--	--	< 0.0024	< 0.0024	< 0.0024	< 0.0024	< 0.0024	< 0.0024	< 0.0024	< 0.0018
PH-4-35.0	No	35	-4.6	1/27/2022	Farallon	--	--	--	--	--	--	< 0.0024	< 0.0024	--	--	< 0.0024	< 0.0024	< 0.0024	< 0.0024	< 0.0024	< 0.0024	< 0.0024	< 0.0018
Confirmation Sampling - Phase 2 Excavation-Area 2[4]																--	--	--	--	--	--	--	--
COP-T1-N	Unknown	Likely Removed	--	1/29/2009	URS Corporation	< 0.0115	< 0.0115	< 0.0115	0.0502	0.0151	< 0.0115	**0.0245**	0.0296	0.0119	0.0266	< 0.0115	0.051	0.0325	0.0255	0.0307	< 0.0115	0.0372	0.0608
COPT1-S	Unknown	Likely Removed	--	1/29/2009	URS Corporation	< 0.0116	< 0.0116	< 0.0116	0.0205	< 0.0116	< 0.0116	**< 0.0116**	< 0.0116	< 0.0116	< 0.0116	< 0.0116	< 0.0116	< 0.0116	< 0.0116	< 0.0116	< 0.0116	0.0131	0.0013
COP-T2-N	Unknown	Likely Removed	--	1/30/2009	URS Corporation	< 0.0121	< 0.0121	< 0.0121	0.0698	< 0.0121	< 0.0121	**0.0425**	0.064	0.0268	0.0456	< 0.0121	0.141	0.0411	0.0128	0.0779	0.0209	0.0328	0.1525
COPT2-S	Unknown	Likely Removed	--	1/30/2009	URS Corporation	0.0197	< 0.012	0.019	< 0.012	0.0213	0.0329	**0.882**	**1.62**	0.104	0.0246	< 0.012	< 0.012	< 0.012	< 0.012	0.0191	< 0.012	< 0.012	0.0002

Notes:

1. cPAHs are subject to WAC-173-340 Toxicity Equivalent Concentration calculations. Individual screening levels do not apply to individual cPAHs.
2. The lowest relevant screening level for each constituent is highlighted in the corresponding color.

[a] Chromatogram suggests that this may be overlap from the gasoline range.
Bold font indicates the reported value exceeds the corresponding (shaded) screening level (i.e., most stringent).
Shaded cell indicates the detected value exceeds the corresponding screening level (i.e., most stringent).
Font color indicates the samples at elevation 20 or shallower that were compared to SL-2 Protect Drinking Water Vadose Zone screening levels, as applicable.
"<" = less than the laboratory method detection limit
"--" = not analyzed, sampled, or reported
bgs = below ground surface
cPAH = carcinogenic polycyclic aromatic hydrocarbon
Naphthalene results for soil are provided in Table 4-4a
EPA = United States Environmental Protection Agency
mg/kg = milligram per kilogram
MTCA = Model Toxics Control Act
NAVD88 = North American Vertical Datum 1988
NE = not established
PAH = polycyclic aromatic hydrocarbon
PQL = practical quantitation limit
SL = screening level
TTEC = total toxicity equivalent concentration
WAC = Washington Administrative Code

Table 4-4c.
Soil Analytical Results - CVOCs
Remedial Investigation Work Plan
Block 37 Site
600-630 Westlake Avenue North | Seattle, Washington

Sample ID	Sample Excavated (Yes=sample removed; No=sample present)	Sample Depth (feet bgs)	Elevation (feet NAVD88)	Sample Date	Consultant	cVOCs (mg/kg)[1] PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride
Screening Levels[2]										
SL-1 Direct Contact						480	12	160	1600	0.67
SL-2 Protect Drinking Water Vadose Zone						0.05	0.025	0.079	0.52	0.0017
SL-5 Protect Drinking Water Saturated Zone						0.0028	0.0015	0.0052	0.032	0.00009
Laboratory PQL						0.05	0.05	0.05	0.05	0.02
TP-7-S5	Yes	8 to 8.5	20 to 19.5	Prior to 2001	Hart Crowser	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
TP-9-S4	Yes	6 to 6.5	24.5 to 25	Prior to 2001	Hart Crowser	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
FMW-131-51.5	No	51.5	-22	8/25/2016	Farallon	< 0.0012	< 0.0012	< 0.0012	< 0.0012	< 0.0012
FMW-139-5	No	5	24	4/4/2019	Farallon	< 0.00076	< 0.0076	< 0.00076	< 0.00076	< 0.00076
FMW-139-7	No	7	22	4/4/2019	Farallon	< 0.00074	< 0.0074	< 0.00074	< 0.00074	< 0.00074
FB-1-5	No	5	24	4/4/2019	Farallon	< 0.00069	< 0.0069	< 0.00069	< 0.00069	< 0.00069
FB-2-5.5	No	5.5	23.5	4/4/2019	Farallon	< 0.00092	< 0.0092	< 0.00092	< 0.00092	< 0.00092
FB-2-7	No	7	22	4/4/2019	Farallon	--	< 0.0099	--	--	--
EX2-7	Yes	7	22	5/23/2001	ERI	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1

Notes:
1. VOCs analysis by EPA Method 8260, prepared by EPA Method 5035/5030B.
2. The lowest relevant screening level for each constituent is highlighted in the corresponding color. Screening level selection process is summarized in Section 5.7.
Bold font indicates the reported value exceeds the corresponding (shaded) screening level (i.e., most stringent).
Shaded cell indicates the detected value exceeds the corresponding screening level (i.e., most stringent).
Font color indicates the samples at elevation 20 or shallower that were compared to SL-2 Protect Drinking Water Vadose Zone screening levels, as applicable.
"<" = less than the laboratory method detection limit
"--" = not analyzed, sampled, or reported
bgs = below ground surface
cVOC = chlorinated volatile organic compound
DCE = Dichloroethene
ID = identification
mg/kg = milligram per kilogram
NAVD88 = North American Vertical Datum 1988
PCE = Tetrachloroethene
PQL = practical quantitation limit
SL = screening level
TCE = trichloroethene
VOC = volatile organic compound

Table 4-4d. Soil Analytical Results - Metals
Remedial Investigation Work Plan
Block 37 Site
600-630 Westlake Avenue North | Seattle, Washington

Sample ID	Sample Excavated (Yes = sample removed; No = sample present)	Sample Depth (feet bgs)	Elevation (feet NAVD88)	Sample Date	Consultant	Metals (mg/kg)							
						Arsenic	Barium	Cadmium	Chromium[1]	Lead[2]	Selenium	Silver	Mercury
Screening Levels[2]													
					SL-1 Direct Contact	**0.67**	**16,000**	**80**	**120,000**	**250**	**400**	**400**	**NE**
					SL-2 Protect Drinking Water Vadose Zone	**4.67**	**1,600**	**0.69**	**480,000**	**3,000**	**5.2**	**14**	**2.1**
					SL-5 Protect Drinking Water Saturated Zone	**0.234**	**83**	**0.035**	**24,000**	**150**	**0.26**	**0.69**	**0.10**
					SL-10 Natural Background	**7.3**	**NE**	**0.77**	**48**	**17**	**NE**	**NE**	**0.07**
					Laboratory PQL	**1.0**	**0.5**	**0.15**	**0.5**	**0.5**	**1**	**0.5**	**0.02**
MW-32-5	Yes	12.5	--	10/21/1991	Geo Engineers	--	--	--	--	26	--	--	--
MW-32-7	No	22.5	--	10/21/1991	Geo Engineers	--	--	--	--	29	--	--	--
MW-33-3	Yes	12.5	14	10/21/1991	Geo Engineers	--	--	--	--	2.0	--	--	--
MW-33-7	Yes	12.5	--	10/22/1991	Geo Engineers	--	--	--	--	8.2	--	--	--
MW-34-6	No	20	9	10/22/1991	Geo Engineers	--	--	--	--	--	--	--	--
MW-34-7	No	22.5	6.5	10/22/1991	Geo Engineers	--	--	--	--	< 2.3	--	--	--
MW-35-5	Yes	12.5	18.5	10/22/1991	Geo Engineers	--	--	--	--	3.4	--	--	--
MW-36-3	No	7.5	20.5	10/23/1991	Geo Engineers	--	--	--	--	**3,900**	--	--	--
MW-38-3	No	7.5	19.5	10/24/1991	Geo Engineers	--	--	--	--	130	--	--	--
MW-39-5	No	12.5	18.5	10/25/1991	Geo Engineers	--	--	--	--	3.0	--	--	--
MW-40-4	No	10	19	10/25/1991	Geo Engineers	--	--	--	--	2.0	--	--	--
MW-42-5	No	15	14	10/28/1991	Geo Engineers	--	--	--	--	2.1	--	--	--
MW-43-4	No	10	19	10/29/1991	Geo Engineers	--	--	--	--	2.6	--	--	--
MW-45-3	No	7.5	21.5	10/29/1991	Geo Engineers	--	--	--	--	**980**	--	--	--
MW-45-6	No	20	9	10/29/1991	Geo Engineers	--	--	--	--	< 2.1	--	--	--
B1-S3	No	11	18	8/29/2000	Hart Crowser	< 5	< 50	**< 1.0**	51	12	**< 50**	**< 20**	**< 0.1**
B3-S3	Yes	11	18	8/29/2000	Hart Crowser	< 5	< 50	**< 1.0**	29	25	**< 50**	**< 20**	**< 0.1**
B6-S3	Yes	10	19	8/29/2000	Hart Crowser	< 5	< 50	**< 1.0**	33	14	**< 50**	**< 20**	**< 0.1**
B7-S3	Yes	11	18	8/29/2000	Hart Crowser	< 5	< 50	**< 1.0**	42	< 5.0	**< 50**	**< 20**	**< 0.1**
B10-S2	No	6	23	8/29/2000	Hart Crowser	< 5	< 50	**< 1.0**	42	36	**< 50**	**< 20**	< 0.1
TP9-S2	Yes	3.5 to 4	28 to 28.5	Prior to 2001	Hart Crowser	< 5	< 50	**< 1.0**	26	8.0	**< 50**	**< 20**	< 0.5
EX1-2.5	Yes	2.5	26.5	5/22/2001	ERI	--	--	--	--	2.68	--	--	--
EX2-7	Yes	7	22	5/23/2001	ERI	--	--	--	--	23.3	--	--	--
K-MW-4-15.5	Yes	15.5	12.5	3/31/2003	Kane	--	--	--	--	--	--	--	--
K-MW-5-16.0	Yes	16	12	3/31/2003	Kane	--	--	--	--	--	--	--	--
K-MW-6-6.0	Yes	6	22	4/1/2003	Kane	--	--	--	--	--	--	--	--
B-6	No	7.5-8	20.5-20	10/15/2004	Urban Redevelopment	--	--	--	--	9.0	--	--	--
B-8	Yes	10-11	19-18	10/15/2004	Urban Redevelopment	--	--	--	--	7.0	--	--	--
MW-3A-3.0	Yes	3	26	3/15/2005	Delta	--	--	--	--	< 62	--	--	--
MW-3A-6.0	Yes	6	23	3/15/2005	Delta	--	--	--	--	< 61	--	--	--
MW-3A-7.5	Yes	7.5	21.5	3/15/2005	Delta	--	--	--	--	< 61	--	--	--
MW-3A-9.0	Yes	9	20	3/15/2005	Delta	--	--	--	--	< 69	--	--	--
MW-3A-10.5	Yes	10.5	18.5	3/15/2005	Delta	--	--	--	--	< 60	--	--	--
MW-54-5	No	5	24	6/7/2005	Geo Engineers	--	--	--	--	91.5	--	--	--
MW-54-10	No	10	19	6/7/2005	Geo Engineers	--	--	--	--	26.3	--	--	--
MW-54-15	No	15	14	6/7/2005	Geo Engineers	--	--	--	--	94.1	--	--	--
MW-54-20	No	20	9	6/7/2005	Geo Engineers	--	--	--	--	2.01	--	--	--
SB-1-5	Yes	5	26	6/7/2005	Delta	--	--	--	--	13.9	--	--	--
SB-1-10	Yes	10	21	6/7/2005	Delta	--	--	--	--	16.6	--	--	--
SB-1-15	Yes	15	16	6/7/2005	Delta	--	--	--	--	10.8	--	--	--
SB-1-20	No	20	11	6/7/2005	Delta	--	--	--	--	61.5	--	--	--
SB-4-5	Yes	5	24	6/7/2005	Delta	--	--	--	--	9.5	--	--	--
SB-4-10	Yes	10	19	6/7/2005	Delta	--	--	--	--	107	--	--	--
SB-4-15	Yes	15	14	6/7/2005	Delta	--	--	--	--	109	--	--	--
SB-4-20	No	20	9	6/7/2005	Delta	--	--	--	--	3.59	--	--	--
SB-5-5	No	5	24	6/7/2005	Delta	--	--	--	--	9.73	--	--	--
SB-5-10	No	10	19	6/7/2005	Delta	--	--	--	--	79.3	--	--	--
SB-5-15	No	15	14	6/7/2005	Delta	--	--	--	--	108	--	--	--
SB-5-20	No	20	9	6/7/2005	Delta	--	--	--	--	1.81	--	--	--
MW-55-5	No	5	24	6/8/2005	Geo Engineers	--	--	--	--	19.7	--	--	--
MW-55-9	No	9	20	6/8/2005	Geo Engineers	--	--	--	--	3.64	--	--	--
MW-55-15	No	15	14	6/8/2005	Geo Engineers	--	--	--	--	23.2	--	--	--
MW-55-20	No	20	9	6/8/2005	Geo Engineers	--	--	--	--	< 3.89	--	--	--
SB-2-5	Yes	5	26	6/8/2005	Delta	--	--	--	--	14.6	--	--	--
SB-2-10	Yes	10	21	6/8/2005	Delta	--	--	--	--	5.15	--	--	--
SB-2-12	Yes	12	19	6/8/2005	Delta	--	--	--	--	4.23	--	--	--
SB-2-20	No	20	11	6/8/2005	Delta	--	--	--	--	5.39	--	--	--
SB-3A-5	Yes	5	26	6/8/2005	Delta	--	--	--	--	5.71	--	--	--
SB-3A-8	Yes	8	23	6/8/2005	Delta	--	--	--	--	4.04	--	--	--
SB-3A-10	Yes	10	21	6/8/2005	Delta	--	--	--	--	4.75	--	--	--
SB-3A-12	Yes	12	19	6/8/2005	Delta	--	--	--	--	3.7	--	--	--
SB-3A-14	Yes	14	17	6/8/2005	Delta	--	--	--	--	21.5	--	--	--
SB-3A-21	No	21	10	6/8/2005	Delta	--	--	--	--	< 2.32	--	--	--
SB-6-5	No	5	24	6/8/2005	Delta	--	--	--	--	5.81	--	--	--
SB-6-9	No	9	20	6/8/2005	Delta	--	--	--	--	6.21	--	--	--
SB-6-10	No	10	19	6/8/2005	Delta	--	--	--	--	**671**	--	--	--
SB-6-15	No	15	14	6/8/2005	Delta	--	--	--	--	74.6	--	--	--
SB-7-5	Yes	5	24	6/8/2005	Delta	--	--	--	--	11.2	--	--	--
SB-7-10	Yes	10	19	6/8/2005	Delta	--	--	--	--	89.2	--	--	--
SB-7-15	No	15	14	6/8/2005	Delta	--	--	--	--	**161**	--	--	--
SB-7-20	No	20	9	6/8/2005	Delta	--	--	--	--	4.23	--	--	--
MW-56-5	Yes	5	24	6/9/2005	Geo Engineers	--	--	--	--	5.23	--	--	--
MW-56-9	Yes	9	20	6/9/2005	Geo Engineers	--	--	--	--	4.41	--	--	--
MW-56-10	Yes	10	19	6/9/2005	Geo Engineers	--	--	--	--	4.5	--	--	--
MW-56-12	Yes	12	17	6/9/2005	Geo Engineers	--	--	--	--	2.25	--	--	--
MW-56-15	Yes	15	14	6/9/2005	Geo Engineers	--	--	--	--	2.91	--	--	--
MW-56-18	No	18	11	6/9/2005	Geo Engineers	--	--	--	--	9.83	--	--	--
MW-56-20	No	20	9	6/9/2005	Geo Engineers	--	--	--	--	14	--	--	--
SB-8-5	No	5	24	6/9/2005	Delta	--	--	--	--	16.4	--	--	--
SB-8-8	No	8	21	6/9/2005	Delta	--	--	--	--	< 2.49	--	--	--
SB-8-10	No	10	19	6/9/2005	Delta	--	--	--	--	20.2	--	--	--
SB-8-12	No	12	17	6/9/2005	Delta	--	--	--	--	40.1	--	--	--
SB-8-15	No	15	14	6/9/2005	Delta	--	--	--	--	45.8	--	--	--
SB-8-18	No	18	11	6/9/2005	Delta	--	--	--	--	21.2	--	--	--
SB-8-20	No	20	9	6/9/2005	Delta	--	--	--	--	15.5	--	--	--
SB-9-5	Yes	5	26	6/9/2005	Delta	--	--	--	--	3.82	--	--	--
SB-9-8	Yes	8	23	6/9/2005	Delta	--	--	--	--	4.84	--	--	--
SB-9-9	Yes	9	22	6/9/2005	Delta	--	--	--	--	< 1.77	--	--	--
SB-9-10	Yes	10	21	6/9/2005	Delta	--	--	--	--	19.5	--	--	--
SB-9-12	Yes	12	19	6/9/2005	Delta	--	--	--	--	5.15	--	--	--
SB-9-14	Yes	14	17	6/9/2005	Delta	--	--	--	--	12.6	--	--	--
SB-9-15	Yes	15	16	6/9/2005	Delta	--	--	--	--	< 2.29	--	--	--
SB-9-17	Yes	17	14	6/9/2005	Delta	--	--	--	--	< 1.92	--	--	--
SB-9-18	Yes	18	13	6/9/2005	Delta	--	--	--	--	< 1.94	--	--	--
SB-9-20	No	20	11	6/9/2005	Delta	--	--	--	--	< 2.17	--	--	--
SB-10-5	Yes	5	24	6/9/2005	Delta	--	--	--	--	2.18	--	--	--
SB-10-10	Yes	10	19	6/9/2005	Delta	--	--	--	--	117	--	--	--
SB-10-12	Yes	12	17	6/9/2005	Delta	--	--	--	--	< 2.28	--	--	--
SB-10-15	Yes	15	14	6/9/2005	Delta	--	--	--	--	< 2.29	--	--	--
SB-10-20	No	20	9	6/9/2005	Delta	--	--	--	--	< 2.2	--	--	--
MW-57-5	Yes	5	24	6/10/2005	Geo Engineers	--	--	--	--	< 1.89	--	--	--
MW-57-11	Yes	11	18	6/10/2005	Geo Engineers	--	--	--	--	7.38	--	--	--
MW-57-12.5	Yes	12.5	16.5	6/10/2005	Geo Engineers	--	--	--	--	13.6	--	--	--
MW-57-20	No	20	9	6/10/2005	Geo Engineers	--	--	--	--	**172**	--	--	--
SB-11-5	Yes	5	24	6/10/2005	Delta	--	--	--	--	23.7	--	--	--
SB-11-9.5	Yes	9.5	19.5	6/10/2005	Delta	--	--	--	--	< 2.21	--	--	--
SB-11-11	Yes	11	18	6/10/2005	Delta	--	--	--	--	77.1	--	--	--
SB-11-12.5	Yes	12.5	16.5	6/10/2005	Delta	--	--	--	--	31.6	--	--	--
SB-11-13	Yes	13	16	6/10/2005	Delta	--	--	--	--	2.33	--	--	--
SB-11-14	Yes	14	15	6/10/2005	Delta	--	--	--	--	< 2.21	--	--	--
SB-11-15.5	No	15.5	13.5	6/10/2005	Delta	--	--	--	--	< 2.18	--	--	--
SB-11-20	No	20	9	6/10/2005	Delta	--	--	--	--	12.7	--	--	--
SB-12-5	Yes	5	24	6/10/2005	Delta	--	--	--	--	< 2.14	--	--	--
SB-12-9.5	Yes	9.5	19.5	6/10/2005	Delta	--	--	--	--	70.1	--	--	--
SB-12-11	Yes	11	18	6/10/2005	Delta	--	--	--	--	8.68	--	--	--
SB-12-12.5	Yes	12.5	16.5	6/10/2005	Delta	--	--	--	--	9.02	--	--	--
SB-12-15.5	Yes	15.5	13.5	6/10/2005	Delta	--	--	--	--	10.8	--	--	--
SB-12-20	No	20	9	6/10/2005	Delta	--	--	--	--	10.7	--	--	--

Table 4-4d. Soil Analytical Results - Metals
Remedial Investigation Work Plan
Block 37 Site
600-630 Westlake Avenue North | Seattle, Washington

Sample ID	Sample Excavated (Yes = sample removed; No = sample present)	Sample Depth (feet bgs)	Elevation (feet NAVD88)	Sample Date	Consultant	Metals (mg/kg)							
						Arsenic	Barium	Cadmium	Chromium[1]	Lead[2]	Selenium	Silver	Mercury
Screening Levels[2]													
					SL-1 Direct Contact	**0.67**	**16,000**	**80**	**120,000**	**250**	**400**	**400**	**NE**
					SL-2 Protect Drinking Water Vadose Zone	**4.67**	**1,600**	**0.69**	**480,000**	**3,000**	**5.2**	**14**	**2.1**
					SL-5 Protect Drinking Water Saturated Zone	**0.234**	**83**	**0.035**	**24,000**	**150**	**0.26**	**0.69**	**0.10**
					SL-10 Natural Background	**7.3**	**NE**	**0.77**	**48**	**17**	**NE**	**NE**	**0.07**
					Laboratory PQL	**1.0**	**0.5**	**0.15**	**0.5**	**0.5**	**1**	**0.5**	**0.02**
SB-13-5	Yes	5	24	6/10/2005	Delta	--	--	--	--	3,700	--	--	--
SB-13-9.5	Yes	9.5	19.5	6/10/2005	Delta	--	--	--	--	6.75	--	--	--
SB-13-11	Yes	11	19	6/10/2005	Delta	--	--	--	--	< 2.05	--	--	--
SB-13-12.5	Yes	12.5	16.5	6/10/2005	Delta	--	--	--	--	< 2.11	--	--	--
SB-13-15.5	No	15.5	13.5	6/10/2005	Delta	--	--	--	--	41	--	--	--
SB-13-20	No	20	9	6/10/2005	Delta	--	--	--	--	< 2.14	--	--	--
SB-14-5	Yes	5	24	6/13/2005	Delta	--	--	--	--	< 2.52	--	--	--
SB-14-10	Yes	10	19	6/13/2005	Delta	--	--	--	--	8.44	--	--	--
SB-14-15	Yes	15	14	6/13/2005	Delta	--	--	--	--	4.11	--	--	--
SB-14-20	No	20	9	6/13/2005	Delta	--	--	--	--	< 7.32	--	--	--
SB-15-9	Yes	9	20	6/13/2005	Delta	--	--	--	--	4.7	--	--	--
SB-15-10	Yes	10	19	6/13/2005	Delta	--	--	--	--	9.68	--	--	--
SB-15-12	Yes	12	17	6/13/2005	Delta	--	--	--	--	< 1.99	--	--	--
SB-15-15	Yes	15	14	6/13/2005	Delta	--	--	--	--	< 2.38	--	--	--
SB-15-20	No	20	9	6/13/2005	Delta	--	--	--	--	5.82	--	--	--
SB-16-5	Yes	5	24	6/13/2005	Delta	--	--	--	--	3.63	--	--	--
SB-16-10	Yes	10	19	6/13/2005	Delta	--	--	--	--	< 2.12	--	--	--
SB-16-12	Yes	12	17	6/13/2005	Delta	--	--	--	--	23.7	--	--	--
SB-16-15	Yes	15	14	6/13/2005	Delta	--	--	--	--	18.8	--	--	--
SB-16-20	No	20	9	6/13/2005	Delta	--	--	--	--	13.8	--	--	--
MW-59-5	Yes	5	24	6/14/2005	Geo Engineers	--	--	--	--	5.1	--	--	--
MW-59-9.5	Yes	9.5	19.5	6/14/2005	Geo Engineers	--	--	--	--	43.1	--	--	--
MW-59-11	Yes	11	18	6/14/2005	Geo Engineers	--	--	--	--	4.73	--	--	--
MW-59-12.5	Yes	12.5	16.5	6/14/2005	Geo Engineers	--	--	--	--	5.65	--	--	--
MW-59-14	Yes	14	15	6/14/2005	Geo Engineers	--	--	--	--	26.1	--	--	--
MW-59-15.5	No	15.5	13.5	6/14/2005	Geo Engineers	--	--	--	--	< 2.19	--	--	--
MW-59-17	No	17	12	6/14/2005	Geo Engineers	--	--	--	--	65.1	--	--	--
MW-59-20	No	20	9	6/14/2005	Geo Engineers	--	--	--	--	3.28	--	--	--
MW-60-5	Yes	5	24	6/14/2005	Geo Engineers	--	--	--	--	< 1.96	--	--	--
MW-60-9.5	Yes	9.5	19.5	6/14/2005	Geo Engineers	--	--	--	--	< 2.22	--	--	--
MW-60-11	Yes	11	18	6/14/2005	Geo Engineers	--	--	--	--	< 1.99	--	--	--
MW-60-12.5	Yes	12.5	16.5	6/14/2005	Geo Engineers	--	--	--	--	20.2	--	--	--
MW-60-14	Yes	14	15	6/14/2005	Geo Engineers	--	--	--	--	6.73	--	--	--
MW-60-15.5	No	15.5	13.5	6/14/2005	Geo Engineers	--	--	--	--	3.1	--	--	--
MW-60-20	No	20	9	6/14/2005	Geo Engineers	--	--	--	--	67.9	--	--	--
SB-17-5	No	5	24	6/14/2005	Delta	--	--	--	--	17.3	--	--	--
SB-17-9.5	No	9.5	19.5	6/14/2005	Delta	--	--	--	--	9.13	--	--	--
SB-17-11	No	11	18	6/14/2005	Delta	--	--	--	--	3.42	--	--	--
SB-17-18.5	No	18.5	10.5	6/14/2005	Delta	--	--	--	--	9.2	--	--	--
SB-17-20	No	20	9	6/14/2005	Delta	--	--	--	--	9.18	--	--	--
SB-18-5	No	5	24	6/14/2005	Delta	--	--	--	--	3.01	--	--	--
SB-18-9.5	No	9.5	19.5	6/14/2005	Delta	--	--	--	--	< 2.06	--	--	--
SB-18-11	No	11	18	6/14/2005	Delta	--	--	--	--	< 2.17	--	--	--
SB-18-12.5	No	12.5	16.5	6/14/2005	Delta	--	--	--	--	13.2	--	--	--
SB-18-20	No	20	9	6/14/2005	Delta	--	--	--	--	< 2.2	--	--	--
SB-19-2	Yes	2	27	7/21/2005	Delta	--	--	--	--	28.4	--	--	--
SB-19-4	Yes	4	25	7/21/2005	Delta	--	--	--	--	64.4	--	--	--
SB-19-5	Yes	5	24	7/21/2005	Delta	--	--	--	--	95.1	--	--	--
SB-19-10	Yes	10	19	7/21/2005	Delta	--	--	--	--	7.66	--	--	--
SB-19-15	Yes	15	14	7/21/2005	Delta	--	--	--	--	14.9	--	--	--
SB-19-20	No	20	9	7/21/2005	Delta	--	--	--	--	8.06	--	--	--
SB-20-2	Yes	2	26	7/21/2005	Delta	--	--	--	--	4.75	--	--	--
SB-20-4	Yes	4	24	7/21/2005	Delta	--	--	--	--	7.21	--	--	--
SB-20-5	Yes	5	23	7/21/2005	Delta	--	--	--	--	5.68	--	--	--
SB-20-10	Yes	10	18	7/21/2005	Delta	--	--	--	--	7.23	--	--	--
SB-20-15	Yes	15	13	7/21/2005	Delta	--	--	--	--	15.7	--	--	--
SB-20-20	No	20	8	7/21/2005	Delta	--	--	--	--	4.21	--	--	--
SB-21-2	No	2	26	7/21/2005	Delta	--	--	--	--	16.9	--	--	--
SB-21-4	No	4	24	7/21/2005	Delta	--	--	--	--	95.1	--	--	--
SB-21-5	No	5	23	7/21/2005	Delta	--	--	--	--	6.63	--	--	--
SB-21-10	No	10	18	7/21/2005	Delta	--	--	--	--	3.87	--	--	--
SB-21-15	No	15	13	7/21/2005	Delta	--	--	--	--	2.23	--	--	--
SB-21-20	No	20	8	7/21/2005	Delta	--	--	--	--	22.8	--	--	--
SB-22-2	Yes	2	27	7/21/2005	Delta	--	--	--	--	190	--	--	--
SB-22-4	Yes	4	25	7/21/2005	Delta	--	--	--	--	53.3	--	--	--
SB-22-5	Yes	5	24	7/21/2005	Delta	--	--	--	--	50.9	--	--	--
SB-22-10	Yes	10	19	7/21/2005	Delta	--	--	--	--	50.3	--	--	--
SB-22-15	Yes	15	14	7/21/2005	Delta	--	--	--	--	6.37	--	--	--
SB-22-20	No	20	9	7/21/2005	Delta	--	--	--	--	7.12	--	--	--
MW-61-5	No	5	26	10/10/2005	Delta	--	--	--	--	80.7	--	--	--
MW-61-10	No	10	21	10/10/2005	Delta	--	--	--	--	11.9	--	--	--
MW-61-15	No	15	16	10/10/2005	Delta	--	--	--	--	8.81	--	--	--
MW-61-20	No	20	11	10/10/2005	Delta	--	--	--	--	4.69	--	--	--
MW-62-5	No	5	24	10/10/2005	Delta	--	--	--	--	6.4	--	--	--
MW-62-10	No	10	19	10/10/2005	Delta	--	--	--	--	4.2	--	--	--
MW-62-15	No	15	14	10/10/2005	Delta	--	--	--	--	3.75	--	--	--
MW-62-20	No	20	9	10/10/2005	Delta	--	--	--	--	9.83	--	--	--
MW-63-5	No	5	24	10/11/2005	Delta	--	--	--	--	3,920	--	--	--
MW-63-10	No	10	19	10/11/2005	Delta	--	--	--	--	39.6	--	--	--
MW-63-15	No	15	14	10/11/2005	Delta	--	--	--	--	101	--	--	--
MW-63-20	No	20	9	10/11/2005	Delta	--	--	--	--	34.8	--	--	--
MW-64-5	No	5	24	10/11/2005	Delta	--	--	--	--	4.5	--	--	--
MW-64-10	No	10	19	10/11/2005	Delta	--	--	--	--	5.9	--	--	--
MW-64-15	No	15	14	10/11/2005	Delta	--	--	--	--	20.3	--	--	--
MW-64 (DUP)	No	15	14	10/11/2005	Delta	--	--	--	--	10.9	--	--	--
MW-64-20	No	20	9	10/11/2005	Delta	--	--	--	--	28.7	--	--	--
MW-65-5	No	5	24	10/11/2005	Delta	--	--	--	--	4.35	--	--	--
MW-66-5	No	5	24	10/11/2005	Delta	--	--	--	--	6.34	--	--	--
MW-66-10	No	10	19	10/11/2005	Delta	--	--	--	--	25.5	--	--	--
MW-66-15	No	15	14	10/11/2005	Delta	--	--	--	--	24.7	--	--	--
MW-66-20	No	20	9	10/11/2005	Delta	--	--	--	--	1.27	--	--	--
MW-68-5	No	5	24	10/11/2005	Delta	--	--	--	--	35.2	--	--	--
MW-68-10	No	10	19	10/11/2005	Delta	--	--	--	--	140	--	--	--
MW-68-15	No	15	14	10/11/2005	Delta	--	--	--	--	21.4	--	--	--
MW-68-20	No	20	9	10/11/2005	Delta	--	--	--	--	1.43	--	--	--
MW-69-5	No	5	23	10/11/2005	Delta	--	--	--	--	57.1	--	--	--
MW-69-10	No	10	18	10/11/2005	Delta	--	--	--	--	9.38	--	--	--
MW-69-15	No	15	13	10/11/2005	Delta	--	--	--	--	8.78	--	--	--
MW-69-20	No	20	8	10/11/2005	Delta	--	--	--	--	65.7	--	--	--
MW-67-5	No	5	24	10/12/2005	Delta	--	--	--	--	12.7	--	--	--
MW-67-10	No	10	19	10/12/2005	Delta	--	--	--	--	13.8	--	--	--
MW-67-15	No	15	14	10/12/2005	Delta	--	--	--	--	7.07	--	--	--
MW-67-20	No	20	9	10/12/2005	Delta	--	--	--	--	1.35	--	--	--
MW-70-5	No	5	26	10/12/2005	Delta	--	--	--	--	3.73	--	--	--
MW-70-10	No	10	21	10/12/2005	Delta	--	--	--	--	30.3	--	--	--
MW-70-15	No	15	16	10/12/2005	Delta	--	--	--	--	3.32	--	--	--
MW-70-20	No	20	11	10/12/2005	Delta	--	--	--	--	7.18	--	--	--
MW-71-5	No	5	26	10/12/2005	Delta	--	--	--	--	2.73	--	--	--
MW-71-10	No	10	21	10/12/2005	Delta	--	--	--	--	5.39	--	--	--
MW-71-12	No	12	19	10/12/2005	Delta	--	--	--	--	4.43	--	--	--
MW-71-15	No	15	16	10/12/2005	Delta	--	--	--	--	7.1	--	--	--
MW-72-5	No	5	26	10/12/2005	Delta	--	--	--	--	3.58	--	--	--
MW-72-10	No	10	21	10/12/2005	Delta	--	--	--	--	5.42	--	--	--
MW-72-15	No	15	16	10/12/2005	Delta	--	--	--	--	124	--	--	--
MW-72-20	No	20	11	10/12/2005	Delta	--	--	--	--	20.9	--	--	--
MW-73-5	No	5	26	10/12/2005	Delta	--	--	--	--	5.62	--	--	--
MW-73-10	No	10	21	10/12/2005	Delta	--	--	--	--	3.54	--	--	--
MW-73-16	No	16	15	10/12/2005	Delta	--	--	--	--	71.9	--	--	--

Table 4-4d. Soil Analytical Results - Metals
Remedial Investigation Work Plan
Block 37 Site
600-630 Westlake Avenue North | Seattle, Washington

Sample ID	Sample Excavated (Yes = sample removed; No = sample present)	Sample Depth (feet bgs)	Elevation (feet NAVD88)	Sample Date	Consultant	Metals (mg/kg)							
						Arsenic	Barium	Cadmium	Chromium[1]	Lead[2]	Selenium	Silver	Mercury
Screening Levels[3]													
					SL-1 Direct Contact	**0.67**	**16,000**	**80**	**120,000**	**250**	**400**	**400**	**NE**
					SL-2 Protect Drinking Water Vadose Zone	**4.67**	**1,600**	**0.69**	**480,000**	**3,000**	**5.2**	**14**	**2.1**
					SL-5 Protect Drinking Water Saturated Zone	**0.234**	**83**	**0.035**	**24,000**	**150**	**0.26**	**0.69**	**0.10**
					SL-10 Natural Background	**7.3**	**NE**	**0.77**	**48**	**17**	**NE**	**NE**	**0.07**
					Laboratory PQL	**1.0**	**0.5**	**0.15**	**0.5**	**0.5**	**1**	**0.5**	**0.02**
MW-73-20	No	20	10	10/12/2005	Delta	--	--	--	--	2.45	--	--	--
MW-74-5	No	5	26	10/12/2005	Delta	--	--	--	--	3.3	--	--	--
MW-74-10	No	10	21	10/12/2005	Delta	--	--	--	--	4.77	--	--	--
MW-74-12	No	12	19	10/12/2005	Delta	--	--	--	--	1.79	--	--	--
MW-74-15	No	15	16	10/12/2005	Delta	--	--	--	--	43.8	--	--	--
MW-74-20	No	20	11	10/12/2005	Delta	--	--	--	--	4.31	--	--	--
MW-75-7	No	7	21	10/13/2005	Delta	--	--	--	--	6.59	--	--	--
MW-75-10	No	10	18	10/13/2005	Delta	--	--	--	--	11.4	--	--	--
MW-75-15	No	15	13	10/13/2005	Delta	--	--	--	--	1.97	--	--	--
MW-75-20	No	20	8	10/13/2005	Delta	--	--	--	--	8.36	--	--	--
MW-76-5	No	5	23	10/13/2005	Delta	--	--	--	--	36.9	--	--	--
MW-76-10	No	10	18	10/13/2005	Delta	--	--	--	--	2.94	--	--	--
MW-76-15	No	15	13	10/13/2005	Delta	--	--	--	--	124	--	--	--
MW-76-20	No	20	8	10/13/2005	Delta	--	--	--	--	5.05	--	--	--
MW-77-7	No	7	21	10/13/2005	Delta	--	--	--	--	6.5	--	--	--
MW-77-10	No	10	18	10/13/2005	Delta	--	--	--	--	8.4	--	--	--
MW-77-15	No	15	13	10/13/2005	Delta	--	--	--	--	7.19	--	--	--
MW-77-20	No	20	8	10/13/2005	Delta	--	--	--	--	4.59	--	--	--
MW-78-5	No	5	23	10/13/2005	Delta	--	--	--	--	22	--	--	--
MW-78-10	No	10	18	10/13/2005	Delta	--	--	--	--	27	--	--	--
MW-78-15	No	15	13	10/13/2005	Delta	--	--	--	--	7.14	--	--	--
MW-78-20	No	20	8	10/13/2005	Delta	--	--	--	--	5.68	--	--	--
SB-23-5	Yes	5	24	10/13/2005	Delta	--	--	--	--	3.31	--	--	--
SB-23-10	Yes	10	19	10/13/2005	Delta	--	--	--	--	6.59	--	--	--
SB-23-15	Yes	15	14	10/13/2005	Delta	--	--	--	--	26	--	--	--
SB-23-20	No	20	9	10/13/2005	Delta	--	--	--	--	6.73	--	--	--
SB-24-5	Yes	5	26	10/13/2005	Delta	--	--	--	--	2.61	--	--	--
SB-24-9	Yes	9	21	10/13/2005	Delta	--	--	--	--	8.82	--	--	--
SB-24-10	Yes	10	19	10/13/2005	Delta	--	--	--	--	8.26	--	--	--
SB-24-12	Yes	12	17	10/13/2005	Delta	--	--	--	--	5.64	--	--	--
SB-24-15	Yes	15	14	10/13/2005	Delta	--	--	--	--	25	--	--	--
SB-24-20	No	20	9	10/13/2005	Delta	--	--	--	--	14.6	--	--	--
SB-25-5	Yes	5	24	10/13/2005	Delta	--	--	--	--	2.67	--	--	--
SB-25-10	Yes	10	19	10/13/2005	Delta	--	--	--	--	11.1	--	--	--
SB-25-15	Yes	15	14	10/13/2005	Delta	--	--	--	--	21	--	--	--
SB-25-20	No	20	9	10/13/2005	Delta	--	--	--	--	3.72	--	--	--
SB-26-5	No	5	24	10/13/2005	Delta	--	--	--	--	13.6	--	--	--
SB-26-10	No	10	19	10/13/2005	Delta	--	--	--	--	5.25	--	--	--
SB-26-15	No	15	14	10/13/2005	Delta	--	--	--	--	2.03	--	--	--
SB-26-20	No	20	9	10/13/2005	Delta	--	--	--	--	6.87	--	--	--
MW-79-5	No	5	22	10/14/2005	Delta	--	--	--	--	4.41	--	--	--
MW-79-10	No	10	17	10/14/2005	Delta	--	--	--	--	2.05	--	--	--
MW-79-13	No	13	14	10/14/2005	Delta	--	--	--	--	2.14	--	--	--
MW-79-15	No	15	12	10/14/2005	Delta	--	--	--	--	2.07	--	--	--
MW-79-20	No	20	7	10/14/2005	Delta	--	--	--	--	2.16	--	--	--
MW-80-5	No	5	22	10/14/2005	Delta	--	--	--	--	45.7	--	--	--
MW-80-10	No	10	17	10/14/2005	Delta	--	--	--	--	**162**	--	--	--
MW-80-15	No	15	12	10/14/2005	Delta	--	--	--	--	3.66	--	--	--
MW-80-20	No	20	7	10/14/2005	Delta	--	--	--	--	22.1	--	--	--
MW-81-5	No	5	22	10/14/2005	Delta	--	--	--	--	29.7	--	--	--
MW-81-10	No	10	17	10/14/2005	Delta	--	--	--	--	40.5	--	--	--
MW-81-15	No	15	12	10/14/2005	Delta	--	--	--	--	63.4	--	--	--
MW-81-20	No	20	7	10/14/2005	Delta	--	--	--	--	9.39	--	--	--
MW-82-3	Yes	3	26	10/14/2005	Delta	--	--	--	--	5.5	--	--	--
MW-82-5	Yes	5	24	10/14/2005	Delta	--	--	--	--	15.4	--	--	--
MW-82-8	Yes	8	21	10/14/2005	Delta	--	--	--	--	9.93	--	--	--
MW-82-9	Yes	9	20	10/14/2005	Delta	--	--	--	--	29	--	--	--
MW-82-10	Yes	10	19	10/14/2005	Delta	--	--	--	--	31	--	--	--
MW-82-15	Yes	15	14	10/14/2005	Delta	--	--	--	--	8.26	--	--	--
MW-82-16	No	16	13	10/14/2005	Delta	--	--	--	--	2.39	--	--	--
MW-82-20	No	20	9	10/14/2005	Delta	--	--	--	--	3.53	--	--	--
SB-27-5	Yes	5	24	10/14/2005	Delta	--	--	--	--	20.1	--	--	--
SB-27-7	Yes	7	22	10/14/2005	Delta	--	--	--	--	28.3	--	--	--
SB-27-9	Yes	9	20	10/14/2005	Delta	--	--	--	--	20.8	--	--	--
SB-27-10	Yes	10	19	10/14/2005	Delta	--	--	--	--	46.9	--	--	--
SB-27-15	Yes	15	14	10/14/2005	Delta	--	--	--	--	24	--	--	--
SB-27-20	No	20	9	10/14/2005	Delta	--	--	--	--	4.93	--	--	--
SB-28-5	Yes	5	24	10/14/2005	Delta	--	--	--	--	49.4	--	--	--
SB-28-9	Yes	9	20	10/14/2005	Delta	--	--	--	--	6.88	--	--	--
SB-28-10	Yes	10	19	10/14/2005	Delta	--	--	--	--	31.9	--	--	--
SB-28-15	Yes	15	14	10/14/2005	Delta	--	--	--	--	10.2	--	--	--
SB-28-20	No	20	9	10/14/2005	Delta	--	--	--	--	5.63	--	--	--
SB-29-5	Yes	5	24	10/14/2005	Delta	--	--	--	--	19	--	--	--
SB-29-7	Yes	7	22	10/14/2005	Delta	--	--	--	--	5.26	--	--	--
SB-29-10	Yes	10	19	10/14/2005	Delta	--	--	--	--	54.5	--	--	--
SB-29-15	Yes	15	14	10/14/2005	Delta	--	--	--	--	127	--	--	--
SB-29-20	No	20	9	10/14/2005	Delta	--	--	--	--	62.7	--	--	--
SB-30-5	Yes	5	24	10/14/2005	Delta	--	--	--	--	13	--	--	--
SB-30-7	Yes	7	22	10/14/2005	Delta	--	--	--	--	68.1	--	--	--
SB-30-10	Yes	10	19	10/14/2005	Delta	--	--	--	--	**177**	--	--	--
SB-30-16	No	16	13	10/14/2005	Delta	--	--	--	--	49.7	--	--	--
SB-30-20	No	20	9	10/14/2005	Delta	--	--	--	--	6.4	--	--	--
MW-84-5	Yes	5	24	10/17/2005	Delta	--	--	--	--	5.97	--	--	--
MW-84-10	Yes	10	19	10/17/2005	Delta	--	--	--	--	2.82	--	--	--
MW-84-15	Yes	15	14	10/17/2005	Delta	--	--	--	--	10.5	--	--	--
MW-84-20	No	20	9	10/17/2005	Delta	--	--	--	--	5.03	--	--	--
MW-85-5	No	5	23	10/17/2005	Delta	--	--	--	--	4.42	--	--	--
MW-85-10	No	10	18	10/17/2005	Delta	--	--	--	--	10.8	--	--	--
MW-85-15	No	15	13	10/17/2005	Delta	--	--	--	--	3.6	--	--	--
MW-85-20	No	20	8	10/17/2005	Delta	--	--	--	--	7.01	--	--	--
MW-86-5	No	5	23	10/17/2005	Delta	--	--	--	--	4.87	--	--	--
MW-86-10	No	10	18	10/17/2005	Delta	--	--	--	--	4.87	--	--	--
MW-86-15	No	15	13	10/17/2005	Delta	--	--	--	--	4.0	--	--	--
MW-86-20	No	20	8	10/17/2005	Delta	--	--	--	--	4.06	--	--	--
MW-87-5	No	5	23	10/17/2005	Delta	--	--	--	--	9.05	--	--	--
MW-87-10	No	10	18	10/17/2005	Delta	--	--	--	--	7.11	--	--	--
MW-87-15	No	15	13	10/17/2005	Delta	--	--	--	--	10.1	--	--	--
MW-87-20	No	20	8	10/17/2005	Delta	--	--	--	--	54.6	--	--	--
MW-88-5	Yes	5	23	10/17/2005	Delta	--	--	--	--	2.84	--	--	--
MW-88-7	Yes	7	21	10/17/2005	Delta	--	--	--	--	115	--	--	--
MW-88-9	Yes	9	19	10/17/2005	Delta	--	--	--	--	15.8	--	--	--
MW-88-10	Yes	10	18	10/17/2005	Delta	--	--	--	--	3.93	--	--	--
MW-88-15	Yes	15	13	10/17/2005	Delta	--	--	--	--	12.3	--	--	--
MW-88-20	No	20	8	10/17/2005	Delta	--	--	--	--	6.18	--	--	--
SB-31-5	No	5	23	10/17/2005	Delta	--	--	--	--	11.3	--	--	--
SB-31-10	No	10	18	10/17/2005	Delta	--	--	--	--	6.96	--	--	--
SB-31-15	No	15	13	10/17/2005	Delta	--	--	--	--	9.57	--	--	--
SB-31-20	No	20	8	10/17/2005	Delta	--	--	--	--	7.35	--	--	--
SB-32-5	Yes	5	24	10/17/2005	Delta	--	--	--	--	26	--	--	--
SB-32-7	Yes	7	22	10/17/2005	Delta	--	--	--	--	17.3	--	--	--
SB-32-9	Yes	9	20	10/17/2005	Delta	--	--	--	--	24.7	--	--	--
SB-32-12	Yes	12	17	10/17/2005	Delta	--	--	--	--	**1,450**	--	--	--
SB-32-16	Yes	16	13	10/17/2005	Delta	--	--	--	--	**170**	--	--	--
SB-32-20	Yes	20	9	10/17/2005	Delta	--	--	--	--	2.35	--	--	--
MW-89-5	Yes	5	24	10/18/2005	Delta	--	--	--	--	2.85	--	--	--
MW-89-12	Yes	12	17	10/18/2005	Delta	--	--	--	--	11.3	--	--	--
MW-89-15	Yes	15	14	10/18/2005	Delta	--	--	--	--	6.37	--	--	--
MW-89-20	No	20	9	10/18/2005	Delta	--	--	--	--	2.04	--	--	--

Table 4-4d. Soil Analytical Results - Metals
Remedial Investigation Work Plan
Block 37 Site
600-630 Westlake Avenue North | Seattle, Washington

Sample ID	Sample Excavated (Yes = sample removed; No = sample present)	Sample Depth (feet bgs)	Elevation (feet NAVD88)	Sample Date	Consultant	Metals (mg/kg)							
						Arsenic	Barium	Cadmium	Chromium[1]	Lead[2]	Selenium	Silver	Mercury
Screening Levels[3]													
					SL-1 Direct Contact	**0.67**	**16,000**	**80**	**120,000**	**250**	**400**	**400**	**NE**
					SL-2 Protect Drinking Water Vadose Zone	**4.67**	**1,600**	**0.69**	**480,000**	**3,000**	**5.2**	**14**	**2.1**
					SL-5 Protect Drinking Water Saturated Zone	**0.234**	**83**	**0.035**	**24,000**	**150**	**0.26**	**0.69**	**0.10**
					SL-10 Natural Background	**7.3**	**NE**	**0.77**	**48**	**17**	**NE**	**NE**	**0.07**
					Laboratory PQL	**1.0**	**0.5**	**0.15**	**0.5**	**0.5**	**1**	**0.5**	**0.02**
MW-90-5	Yes	5	23	10/18/2005	Delta	--	--	--	--	65.9	--	--	--
MW-90-7	Yes	7	21	10/18/2005	Delta	--	--	--	--	**784**	--	--	--
MW-90-10	Yes	10	18	10/18/2005	Delta	--	--	--	--	**280**	--	--	--
MW-90-15	Yes	15	13	10/18/2005	Delta	--	--	--	--	106	--	--	--
MW-90-20	No	20	8	10/18/2005	Delta	--	--	--	--	16.4	--	--	--
MW-91-5	Yes	5	23	10/18/2005	Delta	--	--	--	--	81.4	--	--	--
MW-91-10	Yes	10	18	10/18/2005	Delta	--	--	--	--	35.9	--	--	--
MW-91-15	Yes	15	13	10/18/2005	Delta	--	--	--	--	1.67	--	--	--
MW-91-18	No	18	10	10/18/2005	Delta	--	--	--	--	1.3	--	--	--
MW-92-5	Yes	5	24	10/18/2005	Delta	--	--	--	--	1.84	--	--	--
MW-92-10	Yes	10	19	10/18/2005	Delta	--	--	--	--	42.7	--	--	--
MW-92-12	Yes	12	17	10/18/2005	Delta	--	--	--	--	44.9	--	--	--
MW-92-15	Yes	15	14	10/18/2005	Delta	--	--	--	--	9.45	--	--	--
MW-92-20	No	20	9	10/18/2005	Delta	--	--	--	--	3.66	--	--	--
MW-93-5	Yes	5	24	10/18/2005	Delta	--	--	--	--	6.87	--	--	--
MW-93-7	Yes	7	22	10/18/2005	Delta	--	--	--	--	17.4	--	--	--
MW-93-9	Yes	9	20	10/18/2005	Delta	--	--	--	--	79.4	--	--	--
MW-93-10	Yes	10	19	10/18/2005	Delta	--	--	--	--	8.28	--	--	--
MW-93-15	Yes	15	14	10/18/2005	Delta	--	--	--	--	9.78	--	--	--
MW-93-20	No	20	9	10/18/2005	Delta	--	--	--	--	46.8	--	--	--
MW-94-5	Yes	5	24	10/18/2005	Delta	--	--	--	--	39.2	--	--	--
MW-94-7	Yes	7	22	10/18/2005	Delta	--	--	--	--	34.6	--	--	--
MW-94-10	Yes	10	19	10/18/2005	Delta	--	--	--	--	29.2	--	--	--
MW-94-15	Yes	15	14	10/18/2005	Delta	--	--	--	--	**152**	--	--	--
MW-94-20	No	20	9	10/18/2005	Delta	--	--	--	--	6.79	--	--	--
SB-33-5	Yes	5	24	10/18/2005	Delta	--	--	--	--	4.61	--	--	--
SB-33-15	Yes	15	14	10/18/2005	Delta	--	--	--	--	23	--	--	--
SB-33-20	No	20	9	10/18/2005	Delta	--	--	--	--	1.72	--	--	--
SB-34-5	Yes	5	24	10/18/2005	Delta	--	--	--	--	9.42	--	--	--
SB-34-15	Yes	15	14	10/18/2005	Delta	--	--	--	--	39.9	--	--	--
SB-34-20	No	20	9	10/18/2005	Delta	--	--	--	--	1.21	--	--	--
SB-35-5	Yes	5	24	10/18/2005	Delta	--	--	--	--	6.29	--	--	--
SB-35-9	Yes	9	20	10/18/2005	Delta	--	--	--	--	10.7	--	--	--
SB-35-10	Yes	10	19	10/18/2005	Delta	--	--	--	--	9.21	--	--	--
SB-35-15	Yes	15	14	10/18/2005	Delta	--	--	--	--	8.06	--	--	--
SB-35-20	No	20	9	10/18/2005	Delta	--	--	--	--	10.3	--	--	--
SB-36-5	Yes	5	24	10/18/2005	Delta	--	--	--	--	10.3	--	--	--
SB-36-9	Yes	9	20	10/18/2005	Delta	--	--	--	--	27.9	--	--	--
SB-36-12	Yes	12	17	10/18/2005	Delta	--	--	--	--	22.1	--	--	--
SB-36-16	No	16	13	10/18/2005	Delta	--	--	--	--	6.82	--	--	--
SB-36-20	No	20	9	10/18/2005	Delta	--	--	--	--	3.72	--	--	--
SB-37-5	Yes	5	24	10/18/2005	Delta	--	--	--	--	118	--	--	--
SB-37-7	Yes	7	22	10/18/2005	Delta	--	--	--	--	27.7	--	--	--
SB-37-9	Yes	9	20	10/18/2005	Delta	--	--	--	--	27.7	--	--	--
SB-37-10	Yes	10	19	10/18/2005	Delta	--	--	--	--	26.8	--	--	--
SB-37-12	Yes	12	17	10/18/2005	Delta	--	--	--	--	12	--	--	--
SB-37-14	Yes	14	15	10/18/2005	Delta	--	--	--	--	41.6	--	--	--
SB-37-15	Yes	15	14	10/18/2005	Delta	--	--	--	--	20.3	--	--	--
SB-37-20	No	20	9	10/18/2005	Delta	--	--	--	--	9.39	--	--	--
SB-38-5	Yes	5	24	10/18/2005	Delta	--	--	--	--	34.1	--	--	--
SB-38-10	Yes	10	19	10/18/2005	Delta	--	--	--	--	10.6	--	--	--
SB-38-15	Yes	15	14	10/18/2005	Delta	--	--	--	--	20.7	--	--	--
SB-38-20	No	20	9	10/18/2005	Delta	--	--	--	--	4.59	--	--	--
MW-95-5	No	5	26	10/19/2005	Delta	--	--	--	--	4.02	--	--	--
MW-95-10	No	10	21	10/19/2005	Delta	--	--	--	--	5.4	--	--	--
MW-95-15	No	15	16	10/19/2005	Delta	--	--	--	--	16.8	--	--	--
MW-96-5	Yes	5	24	10/19/2005	Delta	--	--	--	--	51.1	--	--	--
MW-96-7	Yes	7	22	10/19/2005	Delta	--	--	--	--	19.5	--	--	--
MW-96-9	Yes	9	20	10/19/2005	Delta	--	--	--	--	2.5	--	--	--
MW-96-10	Yes	10	19	10/19/2005	Delta	--	--	--	--	5.32	--	--	--
MW-96-15	Yes	15	14	10/19/2005	Delta	--	--	--	--	9.16	--	--	--
MW-96-20	No	20	19	10/19/2005	Delta	--	--	--	--	29.4	--	--	--
MW-97-5	No	5	24	10/19/2005	Delta	--	--	--	--	4.83	--	--	--
MW-97-9	No	9	20	10/19/2005	Delta	--	--	--	--	7.87	--	--	--
MW-97-10	No	10	19	10/19/2005	Delta	--	--	--	--	6.19	--	--	--
MW-97-15	No	15	14	10/19/2005	Delta	--	--	--	--	3.67	--	--	--
MW-98-5	Yes	5	24	10/19/2005	Delta	--	--	--	--	3.07	--	--	--
MW-98-7	Yes	7	22	10/19/2005	Delta	--	--	--	--	8.57	--	--	--
MW-98-10	Yes	10	19	10/19/2005	Delta	--	--	--	--	8.58	--	--	--
MW-98-12	Yes	12	17	10/19/2005	Delta	--	--	--	--	16.9	--	--	--
MW-98-13.5	Yes	13.5	15.5	10/19/2005	Delta	--	--	--	--	14.1	--	--	--
MW-98-15	Yes	15	14	10/19/2005	Delta	--	--	--	--	2.82	--	--	--
MW-98-20	No	20	9	10/19/2005	Delta	--	--	--	--	34.4	--	--	--
SB-39-3	Yes	3	26	10/19/2005	Delta	--	--	--	--	178	--	--	--
SB-39-5	Yes	5	24	10/19/2005	Delta	--	--	--	--	102	--	--	--
SB-39-10	Yes	10	19	10/19/2005	Delta	--	--	--	--	9.43	--	--	--
SB-39-15	Yes	15	14	10/19/2005	Delta	--	--	--	--	14.6	--	--	--
SB-39-20	No	20	9	10/19/2005	Delta	--	--	--	--	2.08	--	--	--
SB-40-3	Yes	3	26	10/19/2005	Delta	--	--	--	--	56	--	--	--
SB-40-5	Yes	5	24	10/19/2005	Delta	--	--	--	--	61.4	--	--	--
SB-40-9	Yes	9	20	10/19/2005	Delta	--	--	--	--	11.1	--	--	--
SB-40-10	Yes	10	19	10/19/2005	Delta	--	--	--	--	8.86	--	--	--
SB-40-12	Yes	12	17	10/19/2005	Delta	--	--	--	--	12.1	--	--	--
SB-40-15	Yes	15	14	10/19/2005	Delta	--	--	--	--	4.64	--	--	--
SB-40-20	Yes	20	9	10/19/2005	Delta	--	--	--	--	42.9	--	--	--
MW-99-5	Yes	5	24	10/20/2005	Delta	--	--	--	--	5.71	--	--	--
MW-99-9	Yes	9	20	10/20/2005	Delta	--	--	--	--	8.34	--	--	--
MW-99-10	Yes	10	19	10/20/2005	Delta	--	--	--	--	9.23	--	--	--
MW-99-15	Yes	15	14	10/20/2005	Delta	--	--	--	--	13.6	--	--	--
MW-99-20	No	20	9	10/20/2005	Delta	--	--	--	--	13.5	--	--	--
MW-200-5	No	5	24	10/20/2005	Delta	--	--	--	--	3.85	--	--	--
MW-200-7.5	No	7.5	21.5	10/20/2005	Delta	--	--	--	--	3.7	--	--	--
MW-200-8.5	No	8.5	20.5	10/20/2005	Delta	--	--	--	--	3.35	--	--	--
MW-200-10	No	10	19	10/20/2005	Delta	--	--	--	--	2.25	--	--	--
MW-200-15	No	15	14	10/20/2005	Delta	--	--	--	--	73.5	--	--	--
MW-200-20	No	20	9	10/20/2005	Delta	--	--	--	--	2.79	--	--	--
MW-201-5	No	5	24	10/20/2005	Delta	--	--	--	--	2.17	--	--	--
MW-201-10	No	10	19	10/20/2005	Delta	--	--	--	--	53.4	--	--	--
MW-201-15	No	15	14	10/20/2005	Delta	--	--	--	--	10.9	--	--	--
MW-202-5	No	5	24	10/20/2005	Delta	--	--	--	--	5.57	--	--	--
MW-202-10	No	10	19	10/20/2005	Delta	--	--	--	--	3.61	--	--	--
MW-202-15	No	15	14	10/20/2005	Delta	--	--	--	--	9.4	--	--	--
MW-202-20	No	20	9	10/20/2005	Delta	--	--	--	--	< 6.05	--	--	--
SB-41-5	Yes	5	24	10/20/2005	Delta	--	--	--	--	3.45	--	--	--
SB-41-10	Yes	10	19	10/20/2005	Delta	--	--	--	--	14.2	--	--	--
SB-41-12	Yes	12	17	10/20/2005	Delta	--	--	--	--	8.61	--	--	--
SB-41-15	Yes	15	14	10/20/2005	Delta	--	--	--	--	3.24	--	--	--
SB-41-20	No	20	9	10/20/2005	Delta	--	--	--	--	14.1	--	--	--
MW-203-5	No	5	22	10/21/2005	Delta	--	--	--	--	**435**	--	--	--
MW-203-10	No	10	17	10/21/2005	Delta	--	--	--	--	**11,700**	--	--	--
MW-203-15	No	15	12	10/21/2005	Delta	--	--	--	--	**500**	--	--	--
MW-203-20	No	20	7	10/21/2005	Delta	--	--	--	--	**426**	--	--	--
MW-204-7	No	7	21	10/21/2005	Delta	--	--	--	--	6.65	--	--	--
MW-204-9	No	9	19	10/21/2005	Delta	--	--	--	--	8.07	--	--	--
MW-204-10	No	10	18	10/21/2005	Delta	--	--	--	--	8.34	--	--	--
MW-204-15	No	15	13	10/21/2005	Delta	--	--	--	--	**1,020**	--	--	--
SB-42-5	Yes	5	24	10/21/2005	Delta	--	--	--	--	6.8	--	--	--
SB-42-7.5	Yes	7.5	21.5	10/21/2005	Delta	--	--	--	--	4.67	--	--	--

Table 4-4d. Soil Analytical Results - Metals
Remedial Investigation Work Plan
Block 37 Site
600-630 Westlake Avenue North | Seattle, Washington

Sample ID	Sample Excavated (Yes = sample removed; No = sample present)	Sample Depth (feet bgs)	Elevation (feet NAVD88)	Sample Date	Consultant	Metals (mg/kg)							
						Arsenic	Barium	Cadmium	Chromium[1]	Lead[2]	Selenium	Silver	Mercury
Screening Levels[3]													
					SL-1 Direct Contact	**0.67**	**16,000**	**80**	**120,000**	**250**	**400**	**400**	**NE**
					SL-2 Protect Drinking Water Vadose Zone	**4.67**	**1,600**	**0.69**	**480,000**	**3,000**	**5.2**	**14**	**2.1**
					SL-5 Protect Drinking Water Saturated Zone	**0.234**	**83**	**0.035**	**24,000**	**150**	**0.26**	**0.69**	**0.10**
					SL-10 Natural Background	**7.3**	**NE**	**0.77**	**48**	**17**	**NE**	**NE**	**0.07**
					Laboratory PQL	**1.0**	**0.5**	**0.15**	**0.5**	**0.5**	**1**	**0.5**	**0.02**
SB-42-9	Yes	9	20	10/21/2005	Delta	--	--	--	--	3.52	--	--	--
SB-42-10	Yes	10	19	10/21/2005	Delta	--	--	--	--	34.2	--	--	--
SB-42-12	Yes	12	17	10/21/2005	Delta	--	--	--	--	11.4	--	--	--
SB-42-15	Yes	15	14	10/21/2005	Delta	--	--	--	--	15	--	--	--
SB-42-20	No	20	9	10/21/2005	Delta	--	--	--	--	5.01	--	--	--
MW-205-5	Yes	5	24	10/24/2005	Delta	--	--	--	--	39.7	--	--	--
MW-205-9	Yes	9	20	10/24/2005	Delta	--	--	--	--	7.6	--	--	--
MW-205-10	Yes	10	19	10/24/2005	Delta	--	--	--	--	6.43	--	--	--
MW-205-15	Yes	15	14	10/24/2005	Delta	--	--	--	--	4.97	--	--	--
MW-205-20	No	20	9	10/24/2005	Delta	--	--	--	--	10.6	--	--	--
MW-206-5	No	5	26	10/24/2005	Delta	--	--	--	--	16.2	--	--	--
MW-206-10	No	10	21	10/24/2005	Delta	--	--	--	--	2.95	--	--	--
MW-206-15	No	15	16	10/24/2005	Delta	--	--	--	--	**187**	--	--	--
MW-206-20	No	20	11	10/24/2005	Delta	--	--	--	--	74.9	--	--	--
MW-207-5	No	5	26	10/24/2005	Delta	--	--	--	--	43.9	--	--	--
MW-207-10	No	10	21	10/24/2005	Delta	--	--	--	--	2.85	--	--	--
MW-207-15	No	15	16	10/24/2005	Delta	--	--	--	--	4.54	--	--	--
MW-208-5	No	5	24	10/25/2005	Delta	--	--	--	--	8.51	--	--	--
MW-208-10	No	10	19	10/25/2005	Delta	--	--	--	--	16.6	--	--	--
MW-208-15	No	15	14	10/25/2005	Delta	--	--	--	--	83.3	--	--	--
MW-208-20	No	20	9	10/25/2005	Delta	--	--	--	--	6.7	--	--	--
EFR-1-5.0	No	5	24	12/5/2006	Delta	--	--	--	--	145	--	--	--
EFR-1-10.0	No	10	19	12/5/2006	Delta	--	--	--	--	101	--	--	--
EFR-1-15.0	No	15	14	12/5/2006	Delta	--	--	--	--	19.8	--	--	--
EFR-2-5.0	No	5	23	12/5/2006	Delta	--	--	--	--	10.1	--	--	--
EFR-2-10.0	No	10	18	12/5/2006	Delta	--	--	--	--	6.0	--	--	--
EFR-2-15.0	No	15	13	12/5/2006	Delta	--	--	--	--	7.12	--	--	--
EFR-3-5.0	Yes	5	23	12/5/2006	Delta	--	--	--	--	72	--	--	--
EFR-3-10.0	Yes	10	18	12/5/2006	Delta	--	--	--	--	**163**	--	--	--
EFR-3-15.0	No	15	13	12/5/2006	Delta	--	--	--	--	**216**	--	--	--
TSVE-5-5.0	No	5	24	12/5/2006	Delta	--	--	--	--	112	--	--	--
TSVE-5-10.0	No	10	19	12/5/2006	Delta	--	--	--	--	37.7	--	--	--
TSVE-6-5.0	No	5	23	12/5/2006	Delta	--	--	--	--	13	--	--	--
TSVE-6-10.0	No	10	18	12/5/2006	Delta	--	--	--	--	62.3	--	--	--
TSVE-7-5.0	No	5	23	12/5/2006	Delta	--	--	--	--	9.2	--	--	--
TSVE-7-10.0	No	10	18	12/5/2006	Delta	--	--	--	--	16.7	--	--	--
EFR-2-2.0	No	2	26	12/4/2007	Delta	--	--	--	--	28.8	--	--	--
TSVE-1-2.0	No	2	27	12/5/2007	Delta	--	--	--	--	67.5	--	--	--
TSVE-1-5.0	No	5	24	12/5/2007	Delta	--	--	--	--	13.1	--	--	--
TSVE-1-10.0	No	10	19	12/5/2007	Delta	--	--	--	--	21	--	--	--
TSVE-2-5.0	No	5	24	12/5/2007	Delta	--	--	--	--	4.81	--	--	--
TSVE-2-10.0	No	10	19	12/5/2007	Delta	--	--	--	--	4.52	--	--	--
TSVE-3-5.0	No	5	24	12/5/2007	Delta	--	--	--	--	4.39	--	--	--
TSVE-3-10.0	No	10	19	12/5/2007	Delta	--	--	--	--	32.7	--	--	--
TSVE-4-5.0	No	5	24	12/6/2007	Delta	--	--	--	--	6.23	--	--	--
TSVE-4-10.0	No	10	19	12/6/2007	Delta	--	--	--	--	10.4	--	--	--
TSVE-8-5.0	No	5	23	12/6/2007	Delta	--	--	--	--	8.98	--	--	--
TSVE-8-10.0	No	10	18	12/6/2007	Delta	--	--	--	--	5.53	--	--	--
TSVE-9-5.0	No	5	23	12/6/2007	Delta	--	--	--	--	3.88	--	--	--
TSVE-9-10.0	No	10	18	12/6/2007	Delta	--	--	--	--	1.58	--	--	--
ESW-10	Yes	10	16.5	9/16/2008	Stantec	--	--	--	--	9.0	--	--	--
NET-11	Yes	11	15.5	9/16/2008	Stantec	--	--	--	--	10.4	--	--	--
NSW-6	Yes	6	20.5	9/16/2008	Stantec	--	--	--	--	6.75	--	--	--
NWT-11	Yes	11	15.5	9/16/2008	Stantec	--	--	--	--	15	--	--	--
SET-11	Yes	11	15.5	9/16/2008	Stantec	--	--	--	--	5.3	--	--	--
SSW-8	Yes	8	18.5	9/16/2008	Stantec	--	--	--	--	91.6	--	--	--
SWT-11	Yes	11	15.5	9/16/2008	Stantec	--	--	--	--	26.4	--	--	--
WSW-8	Yes	8	18.5	9/16/2008	Stantec	--	--	--	--	7.57	--	--	--
D-1	Yes	2	24.5	9/18/2008	Stantec	--	--	--	--	14.9	--	--	--
D-2	Yes	2	24.5	9/18/2008	Stantec	--	--	--	--	3.75	--	--	--
D-3	Yes	2	24.5	9/18/2008	Stantec	--	--	--	--	13.8	--	--	--
D-4	Yes	2	24.5	9/18/2008	Stantec	--	--	--	--	17	--	--	--
D-5	Yes	2	24.5	9/18/2008	Stantec	--	--	--	--	8.61	--	--	--
D-6	Yes	2	24.5	9/18/2008	Stantec	--	--	--	--	4.68	--	--	--
D-7	Yes	2	24.5	9/18/2008	Stantec	--	--	--	--	6.44	--	--	--
D-8	Yes	2	24.5	9/18/2008	Stantec	--	--	--	--	11	--	--	--
D-9	Yes	2	24.5	9/18/2008	Stantec	--	--	--	--	7.86	--	--	--
D-10	Yes	2	24.5	9/18/2008	Stantec	--	--	--	--	7.8	--	--	--
PL-1	Yes	2	24.5	9/18/2008	Stantec	--	--	--	--	15.5	--	--	--
PL-2	Yes	2	24.5	9/18/2008	Stantec	--	--	--	--	14.1	--	--	--
PL-4	Yes	2	24.5	9/18/2008	Stantec	--	--	--	--	15.7	--	--	--
PL-5	Yes	2	24.5	9/18/2008	Stantec	--	--	--	--	11.3	--	--	--
PL-6	Yes	2	24.5	9/18/2008	Stantec	--	--	--	--	2.04	--	--	--
PL-7	Yes	2	24.5	9/18/2008	Stantec	--	--	--	--	10.7	--	--	--
PL-8	Yes	2	24.5	9/18/2008	Stantec	--	--	--	--	14.1	--	--	--
PL-9	Yes	2	24.5	9/18/2008	Stantec	--	--	--	--	5.43	--	--	--
MWR-1@2.5'	No	2.5	26.5	10/29/2010	Stantec	--	--	--	--	6.3	--	--	--
MWR-2@2.5'	No	2.5	27	10/29/2010	Stantec	--	--	--	--	4.2	--	--	--
MWR-3@2.5'	No	2.5	26.5	10/29/2010	Stantec	--	--	--	--	2.0	--	--	--
MWR-4@2.5'	No	2.5	26.5	10/29/2010	Stantec	--	--	--	--	5.3	--	--	--
MWR-5@2.5'	No	2.5	26.5	10/29/2010	Stantec	--	--	--	--	3.4	--	--	--
MWR-6@2.5'	No	2.5	26.5	10/29/2010	Stantec	--	--	--	--	28.6	--	--	--
SVER-1@2.5'	No	2.5	26.5	10/29/2010	Stantec	--	--	--	--	3.4	--	--	--
SVER-2@2.5'	No	2.5	26.5	10/29/2010	Stantec	--	--	--	--	**410**	--	--	--
SVER-3@2.5'	No	2.5	26.5	10/29/2010	Stantec	--	--	--	--	111	--	--	--
SVER-4@2.5'	No	2.5	26.5	10/29/2010	Stantec	--	--	--	--	3.2	--	--	--
MWR-1@15'	No	15	14	11/2/2010	Stantec	--	--	--	--	3.1	--	--	--
MWR-2@10'	No	10	19	11/2/2010	Stantec	--	--	--	--	3.4	--	--	--
MWR-3@5'	No	5	24	11/2/2010	Stantec	--	--	--	--	2.7	--	--	--
MWR-3@10'	No	10	19	11/2/2010	Stantec	--	--	--	--	3.0	--	--	--
MWR-4@5'	No	5	24	11/2/2010	Stantec	--	--	--	--	2.7	--	--	--
MWR-4@10'	No	10	19	11/2/2010	Stantec	--	--	--	--	2.7	--	--	--
MWR-5@10'	No	10	9	11/3/2010	Stantec	--	--	--	--	21.4	--	--	--
MWR-6@5'	No	5	24	11/3/2010	Stantec	--	--	--	--	38.7	--	--	--
MWR-6@10'	No	10	19	11/3/2010	Stantec	--	--	--	--	8.4	--	--	--
SVER-1@5'	No	5	24	11/4/2010	Stantec	--	--	--	--	12	--	--	--
SVER-2@5'	No	5	24	11/4/2010	Stantec	--	--	--	--	25.2	--	--	--
SVER-3@5'	No	5	24	11/4/2010	Stantec	--	--	--	--	11.5	--	--	--
SVER-4@5'	No	5	24	11/4/2010	Stantec	--	--	--	--	5.5	--	--	--
B-212-5'	No	5	24	9/30/2014	CardnoATC	--	--	--	--	38.3	--	--	--
B-212-10'	No	10	19	9/30/2014	CardnoATC	--	--	--	--	18.1	--	--	--
B-212-15'	No	15	14	9/30/2014	CardnoATC	--	--	--	--	15.3	--	--	--
B-212-20'	No	20	9	9/30/2014	CardnoATC	--	--	--	--	1.6	--	--	--
B-212-25'	No	25	4	9/30/2014	CardnoATC	--	--	--	--	12.2	--	--	--
B-213-6.5'	No	6.5	22.5	10/1/2014	CardnoATC	--	--	--	--	7.1	--	--	--
B-213-10'	No	10	18	10/1/2014	CardnoATC	--	--	--	--	35.9	--	--	--
B-213-15'	No	15	13	10/1/2014	CardnoATC	--	--	--	--	44	--	--	--
B-213-20'	No	20	8	10/1/2014	CardnoATC	--	--	--	--	**215**	--	--	--
B-214-6.5'	No	6.5	22.5	10/1/2014	CardnoATC	--	--	--	--	6.5	--	--	--
B-214-10'	No	10	18	10/1/2014	CardnoATC	--	--	--	--	5.3	--	--	--
B-214-15'	No	15	13	10/1/2014	CardnoATC	--	--	--	--	3.7	--	--	--
B-215-6'	No	6	22	10/1/2014	CardnoATC	--	--	--	--	6.9	--	--	--
B-215-10'	No	10	18	10/1/2014	CardnoATC	--	--	--	--	6.9	--	--	--
B-215-15'	No	15	13	10/1/2014	CardnoATC	--	--	--	--	10.7	--	--	--
B-216-6'	No	6	24	10/2/2014	CardnoATC	--	--	--	--	2.7	--	--	--
B-216-10	No	10	19	10/2/2014	CardnoATC	--	--	--	--	47.9	--	--	--
B-216-15	No	15	14	10/2/2014	CardnoATC	--	--	--	--	4.5	--	--	--
B-216-20	No	20	9	10/2/2014	CardnoATC	--	--	--	--	10.2	--	--	--

Table 4-4d. Soil Analytical Results - Metals
Remedial Investigation Work Plan
Block 37 Site
600-630 Westlake Avenue North | Seattle, Washington

Sample ID	Sample Excavated (Yes = sample removed; No = sample present)	Sample Depth (feet bgs)	Elevation (feet NAVD88)	Sample Date	Consultant	Metals (mg/kg)							
						Arsenic	Barium	Cadmium	Chromium[1]	Lead[2]	Selenium	Silver	Mercury
Screening Levels[3]													
					SL-1 Direct Contact	**0.67**	**16,000**	**80**	**120,000**	**250**	**400**	**400**	**NE**
					SL-2 Protect Drinking Water Vadose Zone	**4.67**	**1,600**	**0.69**	**480,000**	**3,000**	**5.2**	**14**	**2.1**
					SL-5 Protect Drinking Water Saturated Zone	**0.234**	**83**	**0.035**	**24,000**	**150**	**0.26**	**0.69**	**0.10**
					SL-10 Natural Background	**7.3**	**NE**	**0.77**	**48**	**17**	**NE**	**NE**	**0.07**
					Laboratory PQL	**1.0**	**0.5**	**0.15**	**0.5**	**0.5**	**1**	**0.5**	**0.02**
B-216-25	No	25	4	10/2/2014	CardnoATC	--	--	--	--	2.7	--	--	--
B-217-5	No	5	24	10/3/2014	CardnoATC	--	--	--	--	9.2	--	--	--
B-217-10	No	10	19	10/3/2014	CardnoATC	--	--	--	--	12.1	--	--	--
B-217-15	No	15	14	10/3/2014	CardnoATC	--	--	--	--	15.1	--	--	--
B-217-20	No	20	9	10/3/2014	CardnoATC	--	--	--	--	2.2	--	--	--
B-217-25	No	25	4	10/3/2014	CardnoATC	--	--	--	--	11.2	--	--	--
B-218-10'	No	10	19	10/3/2014	CardnoATC	--	--	--	--	11.2	--	--	--
B-218-15'	No	15	14	10/3/2014	CardnoATC	--	--	--	--	54.2	--	--	--
B-218-20'	No	20	9	10/3/2014	CardnoATC	--	--	--	--	74	--	--	--
B-218-25'	No	25	4	10/3/2014	CardnoATC	--	--	--	--	2.6	--	--	--
B-219-10'	No	10	18	10/3/2014	CardnoATC	--	--	--	--	26	--	--	--
B-37-3-5.0	No	5	22.5	3/16/2021	Farallon	**< 11**	--	< 0.55	20	< 5.5	--	--	< 0.28
B-37-3-13.0	No	13	14.5	3/16/2021	Farallon	**< 12**	--	< 0.58	29	6.1	--	--	**< 0.29**
B-37-3-19.0	No	19	8.5	3/16/2021	Farallon	**< 12**	--	< 0.59	36	9.8	--	--	**< 0.29**
B-37-3-24.0	No	24	3.5	3/16/2021	Farallon	**< 12**	--	< 0.61	29	51	--	--	**< 0.3**
B-37-4-5.0	No	5	22.4	3/17/2021	Farallon	**< 11**	--	< 0.53	19	< 5.3	--	--	< 0.26
B-37-4-13.0	No	13	14.4	3/17/2021	Farallon	**< 11**	--	< 0.53	15	< 5.3	--	--	**< 0.27**
B-37-4-19.0	No	19	8.4	3/17/2021	Farallon	**< 11**	--	< 0.56	8.7	< 5.6	--	--	**< 0.28**
B-37-4-24.0	No	24	3.4	3/17/2021	Farallon	**< 13**	--	< 0.67	11	11	--	--	**< 0.33**
B-37-5-5.0	No	5	23	3/18/2021	Farallon	**< 11**	--	< 0.57	24	< 5.7	--	--	< 0.28
B-37-5-13.0	No	13	15	3/18/2021	Farallon	**< 11**	--	< 0.57	23	< 5.7	--	--	**< 0.28**
B-37-6-5.0	No	5	22.5	3/18/2021	Farallon	**< 11**	--	< 0.54	19	< 5.4	--	--	< 0.27
B-37-6-17.0	No	17	10.5	3/18/2021	Farallon	**< 14**	--	< 0.71	28	8.8	--	--	**< 0.36**
B-37-6-20.0	No	20	7.5	3/18/2021	Farallon	**< 12**	--	< 0.61	25	< 6.1	--	--	**< 0.31**
B-37-6-25.0	No	25	2.5	3/18/2021	Farallon	**< 12**	--	< 0.59	21	< 5.9	--	--	**< 0.3**
B-37-6-33.0	No	33	-5.5	3/18/2021	Farallon	**< 12**	--	< 0.61	26	< 6.1	--	--	**< 0.3**
B-37-5-20.0	No	20	8	3/19/2021	Farallon	**< 13**	--	< 0.66	26	74	--	--	**< 0.33**
B-37-5-25.0	No	25	3	3/19/2021	Farallon	**< 12**	--	< 0.59	27	< 5.9	--	--	**< 0.3**
B-37-5-33.0	No	33	-5	3/19/2021	Farallon	**< 12**	--	< 0.58	18	25	--	--	**< 0.29**
B-37-9-5.0	No	5	24.5	5/4/2021	Farallon	**< 13**	--	< 0.63	42	< 6.3	--	--	< 0.32
B-37-9-22.0	No	22	7.5	5/4/2021	Farallon	**< 12**	--	< 0.62	21	< 6.2	--	--	**< 0.31**
B-37-9-27.0	No	27	2.5	5/4/2021	Farallon	**< 13**	--	< 0.63	30	< 6.3	--	--	**< 0.32**
B-37-9-33.0	No	33	-3.5	5/4/2021	Farallon	**< 11**	--	< 0.57	19	< 5.7	--	--	**< 0.29**
B-37-8-5.0	No	5	24	5/5/2021	Farallon	**< 11**	--	< 0.54	24	< 5.4	--	--	< 0.27
B-37-8-13.0	No	13	16	5/5/2021	Farallon	**< 11**	--	< 0.55	22	< 5.5	--	--	**< 0.28**
B-37-8-18.0	No	18	11	5/5/2021	Farallon	**< 16**	--	**< 0.81**	20	11	--	--	**< 0.4**
B-37-8-22.0	No	22	7	5/5/2021	Farallon	**< 12**	--	< 0.6	24	< 6.0	--	--	**< 0.3**
B-37-8-27.0	No	27	2	5/5/2021	Farallon	**< 12**	--	< 0.62	23	< 6.2	--	--	**< 0.31**
B-37-8-33.0	No	33	-4	5/5/2021	Farallon	**< 12**	--	< 0.62	23	< 6.2	--	--	**< 0.31**
B-37-7-5.0	No	5	25	5/6/2021	Farallon	**< 11**	--	< 0.53	23	5.3	--	--	< 0.26
B-37-7-13.0	No	13	17	5/6/2021	Farallon	**< 11**	--	< 0.55	25	< 5.5	--	--	**< 0.28**
B-37-7-18.0	No	18	12	5/6/2021	Farallon	**< 12**	--	< 0.6	19	< 6.0	--	--	**< 0.3**
B-37-7-22.0	No	22	8	5/6/2021	Farallon	**< 13**	--	< 0.65	59	< 6.5	--	--	**< 0.32**
B-37-7-27.0	No	27	3	5/6/2021	Farallon	**< 12**	--	< 0.61	28	< 6.1	--	--	**< 0.31**
B-37-7-33.0	No	33	-3	5/6/2021	Farallon	**< 13**	--	< 0.64	30	< 6.4	--	--	**< 0.32**
PH-2/AMW-1-15.0	No	15	14.4	1/26/2022	Farallon	< 3.1	36	--	20	< 6.2	--	--	--
PH-2/AMW-1-20.0	No	20	9.4	1/26/2022	Farallon	< 2.9	34	--	18	< 5.8	--	--	--
PH-2/AMW-1-25.0	No	25	4.4	1/26/2022	Farallon	3.9	43	--	22	< 5.8	--	--	--
PH-2/AMW-1-30.0	No	30	-0.6	1/26/2022	Farallon	3.1	62	--	23	< 6.0	--	--	--
PH-2/AMW-1-35.0	No	35	-5.6	1/26/2022	Farallon	< 3	42	--	21	< 6.1	--	--	--
PH-1-15.0	No	15	14.4	1/26/2022	Farallon	< 3.1	35	--	21	< 6.1	--	--	--
PH-1-20.0	No	20	9.4	1/26/2022	Farallon	< 3	37	--	18	< 6.0	--	--	--
PH-1-25.0	No	25	4.4	1/26/2022	Farallon	< 3	63	--	26	8.4	--	--	--
PH-1-30.0	No	30	-0.6	1/26/2022	Farallon	< 3.1	70	--	28	< 6.2	--	--	--
PH-1-35.0	No	35	-5.6	1/26/2022	Farallon	< 3.2	56	--	18	< 6.3	--	--	--
PH-3-15.0	No	15	15.1	1/27/2022	Farallon	< 3	28	--	16	< 5.9	--	--	--
PH-3-20.0	No	20	10.1	1/27/2022	Farallon	< 2.9	28	--	23	< 5.8	--	--	--
PH-3-25.0	No	25	5.1	1/27/2022	Farallon	< 3.1	47	--	23	< 6.2	--	--	--
PH-3-30.0	No	30	0.1	1/27/2022	Farallon	< 3.1	65	--	27	< 6.2	--	--	--
PH-3-35.0	No	35	-4.9	1/27/2022	Farallon	< 2.9	47	--	18	< 5.7	--	--	--
PH-4-25.0	No	25	5.4	1/27/2022	Farallon	< 3.3	51	--	31	< 6.5	--	--	--
PH-4-30.0	No	30	0.4	1/27/2022	Farallon	< 3	48	--	19	< 6.0	--	--	--
PH-4-35.0	No	35	-4.6	1/27/2022	Farallon	4.3	69	--	20	< 6.0	--	--	--
Confirmation Sampling - Phase 1 Excavation[5]													
B-A1-3	Yes	3	25	11/2/2006	URS Corporation	--	--	--	--	9.02	--	--	--
B-C2-1	Yes	1	27	11/2/2006	URS Corporation	--	--	--	--	97	--	--	--
C-A1-3	Yes	3	25	11/6/2006	URS Corporation	--	--	--	--	2.7	--	--	--
C-B1-3	Yes	3	25	11/6/2006	URS Corporation	--	--	--	--	17.6	--	--	--
C-C1-3	Yes	3	25	11/6/2006	URS Corporation	--	--	--	--	5.34	--	--	--
D-A1-5	Yes	5	24	11/7/2006	URS Corporation	--	--	--	--	3.08	--	--	--
B-A1-10	Yes	10	18	11/14/2006	URS Corporation	--	--	--	--	7.48	--	--	--
B-A1-15	No	15	13	11/14/2006	URS Corporation	--	--	--	--	8.25	--	--	--
B-A2-10	Yes	10	18	11/14/2006	URS Corporation	--	--	--	--	4.22	--	--	--
B-A2-15	No	15	13	11/14/2006	URS Corporation	--	--	--	--	4.01	--	--	--
B-B1-10	Yes	10	18	11/14/2006	URS Corporation	--	--	--	--	7.37	--	--	--
B-B1-15	No	15	13	11/14/2006	URS Corporation	--	--	--	--	5.94	--	--	--
B-B2-10	Yes	10	18	11/14/2006	URS Corporation	--	--	--	--	6.78	--	--	--
B-B2-15	No	15	13	11/14/2006	URS Corporation	--	--	--	--	7.37	--	--	--
B-C1-10	Yes	10	18	11/14/2006	URS Corporation	--	--	--	--	5.05	--	--	--
B-C1-15	No	15	13	11/14/2006	URS Corporation	--	--	--	--	8.5	--	--	--
B-C2-10	Yes	10	18	11/14/2006	URS Corporation	--	--	--	--	5.58	--	--	--
B-C2-15	No	15	13	11/14/2006	URS Corporation	--	--	--	--	10.1	--	--	--
C-A1-10	Yes	10	18	11/27/2006	URS Corporation	--	--	--	--	3.79	--	--	--
C-A1-15	No	15	13	11/27/2006	URS Corporation	--	--	--	--	18.7	--	--	--
C-A2-10	Yes	10	18	11/27/2006	URS Corporation	--	--	--	--	7.05	--	--	--
C-A2-15	No	15	13	11/27/2006	URS Corporation	--	--	--	--	8.42	--	--	--
C-B1-10	Yes	10	18	11/27/2006	URS Corporation	--	--	--	--	6.33	--	--	--
C-B1-15	No	15	13	11/27/2006	URS Corporation	--	--	--	--	7.11	--	--	--
C-B2-10	Yes	10	18	11/27/2006	URS Corporation	--	--	--	--	3.13	--	--	--
C-B2-15	No	15	13	11/27/2006	URS Corporation	--	--	--	--	4.27	--	--	--
C-C1-10	Yes	10	18	11/27/2006	URS Corporation	--	--	--	--	6.03	--	--	--
C-C1-15	No	15	13	11/27/2006	URS Corporation	--	--	--	--	6.83	--	--	--
C-C2-10	Yes	10	18	11/27/2006	URS Corporation	--	--	--	--	3.97	--	--	--
C-C2-15	No	15	13	11/27/2006	URS Corporation	--	--	--	--	5.09	--	--	--
A-A1-10	Yes	10	19	12/13/2006	URS Corporation	--	--	--	--	15.3	--	--	--
A-A2-10	Yes	10	19	12/13/2006	URS Corporation	--	--	--	--	4.26	--	--	--
A-A3-10	Yes	10	19	12/13/2006	URS Corporation	--	--	--	--	10.9	--	--	--
A-B1-10	Yes	10	19	12/13/2006	URS Corporation	--	--	--	--	4.33	--	--	--
A-B2-10	Yes	10	19	12/13/2006	URS Corporation	--	--	--	--	4.66	--	--	--
A-B3-10	Yes	10	19	12/13/2006	URS Corporation	--	--	--	--	24.8	--	--	--
A-C1-10	Yes	10	19	12/13/2006	URS Corporation	--	--	--	--	13.1	--	--	--
A-C2-10	Yes	10	19	12/13/2006	URS Corporation	--	--	--	--	7.5	--	--	--
A-C3-10	Yes	10	19	12/13/2006	URS Corporation	--	--	--	--	15.8	--	--	--
A-A1-14	No	14	15	12/14/2006	URS Corporation	--	--	--	--	4.22	--	--	--
A-A2-15.5	No	15.5	13.5	12/14/2006	URS Corporation	--	--	--	--	10.2	--	--	--
A-A3-15.5	No	15.5	13.5	12/14/2006	URS Corporation	--	--	--	--	17.2	--	--	--
A-B1-15.5	No	15.5	13.5	12/14/2006	URS Corporation	--	--	--	--	3.81	--	--	--
A-B2-15.5	No	15.5	13.5	12/14/2006	URS Corporation	--	--	--	--	81	--	--	--
A-B3-15.5	No	15.5	13.5	12/14/2006	URS Corporation	--	--	--	--	20.1	--	--	--
A-C1-15.5	No	15.5	13.5	12/14/2006	URS Corporation	--	--	--	--	12.3	--	--	--
A-C2-15.5	No	15.5	13.5	12/14/2006	URS Corporation	--	--	--	--	55.3	--	--	--
A-C3-15.5	No	15.5	13.5	12/14/2006	URS Corporation	--	--	--	--	2.92	--	--	--
D-A1-10	Yes	10	19	12/21/2006	URS Corporation	--	--	--	--	9.13	--	--	--
D-A2-10	Yes	10	19	12/21/2006	URS Corporation	--	--	--	--	11	--	--	--
D-B1-10	Yes	10	19	12/21/2006	URS Corporation	--	--	--	--	6.04	--	--	--
D-B2-10	Yes	10	19	12/21/2006	URS Corporation	--	--	--	--	3.59	--	--	--
D-C1-10	Yes	10	19	12/21/2006	URS Corporation	--	--	--	--	2.76	--	--	--
D-C2-10	Yes	10	19	12/21/2006	URS Corporation	--	--	--	--	3.84	--	--	--

Table 4-4d. Soil Analytical Results - Metals
Remedial Investigation Work Plan
Block 37 Site
600-630 Westlake Avenue North | Seattle, Washington

Sample ID	Sample Excavated (Yes = sample removed; No = sample present)	Sample Depth (feet bgs)	Elevation (feet NAVD88)	Sample Date	Consultant	Metals (mg/kg)							
						Arsenic	Barium	Cadmium	Chromium[1]	Lead[2]	Selenium	Silver	Mercury
Screening Levels[3]													
					SL-1 Direct Contact	**0.67**	**16,000**	**80**	**120,000**	**250**	**400**	**400**	**NE**
					SL-2 Protect Drinking Water Vadose Zone	**4.67**	**1,600**	**0.69**	**480,000**	**3,000**	**5.2**	**14**	**2.1**
					SL-5 Protect Drinking Water Saturated Zone	**0.234**	**83**	**0.035**	**24,000**	**150**	**0.26**	**0.69**	**0.10**
					SL-10 Natural Background	**7.3**	**NE**	**0.77**	**48**	**17**	**NE**	**NE**	**0.07**
					Laboratory PQL	**1.0**	**0.5**	**0.15**	**0.5**	**0.5**	**1**	**0.5**	**0.02**
E-A1-10	Yes	10	19	12/21/2006	URS Corporation	--	--	--	--	8.04	--	--	--
E-A2-10	Yes	10	19	12/21/2006	URS Corporation	--	--	--	--	5.35	--	--	--
E-B1-10	Yes	10	19	12/21/2006	URS Corporation	--	--	--	--	9.55	--	--	--
E-B2-10	Yes	10	19	12/21/2006	URS Corporation	--	--	--	--	14.8	--	--	--
F-A1-10	Yes	10	19	12/27/2006	URS Corporation	--	--	--	--	38.2	--	--	--
F-A2-10	Yes	10	19	12/27/2006	URS Corporation	--	--	--	--	10	--	--	--
F-A3-10	Yes	10	19	12/27/2006	URS Corporation	--	--	--	--	10.9	--	--	--
F-B1-10	Yes	10	19	12/27/2006	URS Corporation	--	--	--	--	11.8	--	--	--
F-B2-10	Yes	10	19	12/27/2006	URS Corporation	--	--	--	--	6.44	--	--	--
F-B3-10	Yes	10	19	12/27/2006	URS Corporation	--	--	--	--	1.86	--	--	--
F-C1-10	Yes	10	19	12/27/2006	URS Corporation	--	--	--	--	6.52	--	--	--
F-C2-10	Yes	10	19	12/27/2006	URS Corporation	--	--	--	--	10.9	--	--	--
F-C3-10	Yes	10	19	12/27/2006	URS Corporation	--	--	--	--	6.18	--	--	--
G-A1-10	Yes	10	19	12/28/2006	URS Corporation	--	--	--	--	4.21	--	--	--
G-A2-10	Yes	10	19	12/28/2006	URS Corporation	--	--	--	--	8.47	--	--	--
G-A3-10	Yes	10	19	12/28/2006	URS Corporation	--	--	--	--	3.69	--	--	--
G-B1-10	Yes	10	19	12/28/2006	URS Corporation	--	--	--	--	7.78	--	--	--
G-B2-10	Yes	10	19	12/28/2006	URS Corporation	--	--	--	--	6.96	--	--	--
G-B3-10	Yes	10	19	12/28/2006	URS Corporation	--	--	--	--	16.6	--	--	--
G-C1-10	Yes	10	19	12/28/2006	URS Corporation	--	--	--	--	21.6	--	--	--
G-C2-10	Yes	10	19	12/28/2006	URS Corporation	--	--	--	--	15.4	--	--	--
G-C3-10	Yes	10	19	12/28/2006	URS Corporation	--	--	--	--	22.4	--	--	--
H-A1-10	Yes	10	19	12/29/2006	URS Corporation	--	--	--	--	12	--	--	--
H-A2-10	Yes	10	19	12/29/2006	URS Corporation	--	--	--	--	17.3	--	--	--
H-A3-10	Yes	10	19	12/29/2006	URS Corporation	--	--	--	--	5.57	--	--	--
H-B1-10	Yes	10	19	12/29/2006	URS Corporation	--	--	--	--	9.93	--	--	--
H-B2-10	Yes	10	19	12/29/2006	URS Corporation	--	--	--	--	26.7	--	--	--
H-B3-10	Yes	10	19	12/29/2006	URS Corporation	--	--	--	--	2.42	--	--	--
H-C1-10	Yes	10	19	12/29/2006	URS Corporation	--	--	--	--	13.1	--	--	--
H-C2-10	Yes	10	19	12/29/2006	URS Corporation	--	--	--	--	6.03	--	--	--
H-C3-10	Yes	10	19	12/29/2006	URS Corporation	--	--	--	--	10	--	--	--
D-A1-15	No	15	14	1/10/2007	URS Corporation	--	--	--	--	4.31	--	--	--
D-A2-15	No	15	14	1/10/2007	URS Corporation	--	--	--	--	3.94	--	--	--
D-B1-15	No	15	14	1/10/2007	URS Corporation	--	--	--	--	2.68	--	--	--
D-B2-15	No	15	14	1/10/2007	URS Corporation	--	--	--	--	31.1	--	--	--
D-C1-15	No	15	14	1/10/2007	URS Corporation	--	--	--	--	8.44	--	--	--
D-C2-15	No	15	14	1/10/2007	URS Corporation	--	--	--	--	4.73	--	--	--
E-A1-15	No	15	14	1/10/2007	URS Corporation	--	--	--	--	9.16	--	--	--
E-A2-15	No	15	14	1/10/2007	URS Corporation	--	--	--	--	4.21	--	--	--
E-B1-15	No	15	14	1/10/2007	URS Corporation	--	--	--	--	7.92	--	--	--
E-B2-15	No	15	14	1/10/2007	URS Corporation	--	--	--	--	8.37	--	--	--
F-A1-15	No	15	14	1/10/2007	URS Corporation	--	--	--	--	6.27	--	--	--
F-A2-15	No	15	14	1/15/2007	URS Corporation	--	--	--	--	12.1	--	--	--
F-A3-15	No	15	14	1/15/2007	URS Corporation	--	--	--	--	21.1	--	--	--
F-B1-15	No	15	14	1/15/2007	URS Corporation	--	--	--	--	10.8	--	--	--
F-B2-15	No	15	14	1/15/2007	URS Corporation	--	--	--	--	7.16	--	--	--
F-B3-15	No	15	14	1/15/2007	URS Corporation	--	--	--	--	6.48	--	--	--
F-C1-15	No	15	14	1/15/2007	URS Corporation	--	--	--	--	11.7	--	--	--
F-C2-15	No	15	14	1/15/2007	URS Corporation	--	--	--	--	6.45	--	--	--
F-C3-15	No	15	14	1/15/2007	URS Corporation	--	--	--	--	12.9	--	--	--
G-B3-15	No	15	14	1/16/2007	URS Corporation	--	--	--	--	34.9	--	--	--
G-C3-15	No	15	14	1/16/2007	URS Corporation	--	--	--	--	13.2	--	--	--
G-A1-15	No	15	14	1/17/2007	URS Corporation	--	--	--	--	4.39	--	--	--
G-A2-15	No	15	14	1/17/2007	URS Corporation	--	--	--	--	13.8	--	--	--
G-A3-15	No	15	14	1/17/2007	URS Corporation	--	--	--	--	5.43	--	--	--
G-B1-15	No	15	14	1/17/2007	URS Corporation	--	--	--	--	12.7	--	--	--
G-B2-15	No	15	14	1/17/2007	URS Corporation	--	--	--	--	13	--	--	--
G-C1-15	No	15	14	1/17/2007	URS Corporation	--	--	--	--	32.9	--	--	--
G-C2-15	No	15	14	1/17/2007	URS Corporation	--	--	--	--	5.15	--	--	--
H-A1-15	No	15	14	1/18/2007	URS Corporation	--	--	--	--	11.7	--	--	--
H-A2-15	No	15	14	1/18/2007	URS Corporation	--	--	--	--	3.96	--	--	--
H-A3-15	No	15	14	1/18/2007	URS Corporation	--	--	--	--	16.6	--	--	--
H-B1-15	No	15	14	1/18/2007	URS Corporation	--	--	--	--	4.89	--	--	--
H-B2-15	No	15	14	1/18/2007	URS Corporation	--	--	--	--	10.3	--	--	--
H-B3-15	No	15	14	1/18/2007	URS Corporation	--	--	--	--	8.23	--	--	--
H-C1-15	No	15	14	1/18/2007	URS Corporation	--	--	--	--	17	--	--	--
H-C2-15	No	15	14	1/18/2007	URS Corporation	--	--	--	--	8.13	--	--	--
H-C3-15	No	15	14	1/18/2007	URS Corporation	--	--	--	--	11.6	--	--	--
Confirmation Sampling - Phase 2 Excavation-Area 1[6]													
A2	No	15	14	4/28/2009	URS Corporation	--	--	--	--	4.77 J	--	--	--
A3	No	15	14	4/28/2009	URS Corporation	--	--	--	--	105 J	--	--	--
A4	No	15	14	4/22/09	URS Corporation	--	--	--	--	49.3 J	--	--	--
A4 (Dup)	No	15	14	4/22/09	URS Corporation	--	--	--	--	44.2	--	--	--
A5	No	15	14	4/22/09	URS Corporation	--	--	--	--	20.4 J	--	--	--
A6	No	15	14	4/22/09	URS Corporation	--	--	--	--	7.95 J	--	--	--
A7	No	15	14	4/22/09	URS Corporation	--	--	--	--	2.58 J	--	--	--
A8	No	15	14	4/22/09	URS Corporation	--	--	--	--	42.9 J	--	--	--
A9	No	15	14	4/22/09	URS Corporation	--	--	--	--	4.69 J	--	--	--
A10	No	15	14	4/6/2009	URS Corporation	--	--	--	--	38.7	--	--	--
A11	No	15	14	4/6/2009	URS Corporation	--	--	--	--	17.5	--	--	--
A12	No	15	14	4/6/2009	URS Corporation	--	--	--	--	69.8	--	--	--
A13	No	15	14	4/6/2009	URS Corporation	--	--	--	--	6.36	--	--	--
A14	No	15	14	4/6/2009	URS Corporation	--	--	--	--	10.7	--	--	--
A15	No	15	14	4/6/2009	URS Corporation	--	--	--	--	13.6	--	--	--
B2	No	15	14	4/28/2009	URS Corporation	--	--	--	--	11.1 J	--	--	--
B3	No	25	4	6/11/2009	URS Corporation	--	--	--	--	12.6 J	--	--	--
B3	Yes	22	7	5/4/09	URS Corporation	--	--	--	--	**274**	--	--	--
B3	Yes	20	9	4/30/2009	URS Corporation	--	--	--	--	7.2	--	--	--
B3	Yes	15	14	4/25/2009	URS Corporation	--	--	--	--	23.8 J	--	--	--
B4	No	20	9	4/29/2009	URS Corporation	--	--	--	--	8.18 J	--	--	--
B4	Yes	15	14	4/24/2009	URS Corporation	--	--	--	--	5.72 J	--	--	--
B5	No	15	14	4/24/2009	URS Corporation	--	--	--	--	3.26 J	--	--	--
B6	No	15	14	4/23/2009	URS Corporation	--	--	--	--	9.3	--	--	--
B6 (Dup)	No	15	14	4/23/2009	URS Corporation	--	--	--	--	6.52	--	--	--
B7	Yes	15	14	4/16/09	URS Corporation	--	--	--	--	8.96 J	--	--	--
B8	No	15	14	4/16/09	URS Corporation	--	--	--	--	6.57 J	--	--	--
B9	Yes	15	14	4/16/09	URS Corporation	--	--	--	--	3.07 J	--	--	--
B10	No	15	14	4/15/2009	URS Corporation	--	--	--	--	4.36 J	--	--	--
B11	No	15	14	4/1/2009	URS Corporation	--	--	--	--	3.56	--	--	--
B12	No	15	14	4/1/2009	URS Corporation	--	--	--	--	136	--	--	--
B13	No	19	10	4/13/2009	URS Corporation	< 2.94	34.7	**< 2.94**	3.26	36.6	**< 5.88**	< 2.94	--
B13	Yes	15	14	4/1/2009	URS Corporation	--	--	--	--	11.6	--	--	--
B14	No	27	2	6/19/2009	URS Corporation	--	--	--	--	3.4	--	--	--
B14	Yes	22	7	4/16/09	URS Corporation	--	--	--	--	19.8 J	--	--	--
B14	Yes	20	9	4/13/2009	URS Corporation	< 2.01	< 20.1	**< 2.01**	< 2.01	12.5	**< 4.02**	< 2.01	--
B14	Yes	15	14	4/1/2009	URS Corporation	--	--	--	--	13.1	--	--	--
B15	Yes	15	14	4/6/2009	URS Corporation	--	--	--	--	27.8	--	--	--
C1	No	25	4	5/12/09	URS Corporation	--	--	--	--	6.25	--	--	--
C1	Yes	20	9	5/4/09	URS Corporation	--	--	--	--	6.46	--	--	--
C1	Yes	15	14	5/4/09	URS Corporation	--	--	--	--	1.81	--	--	--
C2	No	15	14	4/28/2009	URS Corporation	--	--	--	--	8.91 J	--	--	--
C3	No	15	14	4/28/2009	URS Corporation	--	--	--	--	8.72 J	--	--	--
C4	No	15	14	4/24/2009	URS Corporation	--	--	--	--	4.36	--	--	--
C5	No	22	7	4/29/2009	URS Corporation	--	--	--	--	3.05 J	--	--	--
C5	Yes	15	14	4/24/2009	URS Corporation	--	--	--	--	39.5 J	--	--	--
C6	No	15	14	4/23/2009	URS Corporation	--	--	--	--	23.2	--	--	--
C7	No	15	14	4/16/09	URS Corporation	--	--	--	--	23.3 J	--	--	--
C8	No	15	14	4/16/09	URS Corporation	--	--	--	--	3.23/3.73 J	--	--	--

Table 4-4d. Soil Analytical Results - Metals
Remedial Investigation Work Plan
Block 37 Site
600-630 Westlake Avenue North | Seattle, Washington

Sample ID	Sample Excavated (Yes = sample removed; No = sample present)	Sample Depth (feet bgs)	Elevation (feet NAVD88)	Sample Date	Consultant	Metals (mg/kg)							
						Arsenic	Barium	Cadmium	Chromium[1]	Lead[2]	Selenium	Silver	Mercury
Screening Levels[3]													
					SL-1 Direct Contact	**0.67**	**16,000**	**80**	**120,000**	**250**	**400**	**400**	**NE**
					SL-2 Protect Drinking Water Vadose Zone	**4.67**	**1,600**	**0.69**	**480,000**	**3,000**	**5.2**	**14**	**2.1**
					SL-5 Protect Drinking Water Saturated Zone	**0.234**	**83**	**0.035**	**24,000**	**150**	**0.26**	**0.69**	**0.10**
					SL-10 Natural Background	**7.3**	**NE**	**0.77**	**48**	**17**	**NE**	**NE**	**0.07**
					Laboratory PQL	**1.0**	**0.5**	**0.15**	**0.5**	**0.5**	**1**	**0.5**	**0.02**
C8 (DUP)	No	15	14	4/16/09	URS Corporation	--	--	--	--	3.73 J	--	--	--
C9	No	15	14	4/16/09	URS Corporation	--	--	--	--	**156 J**	--	--	--
C10	No	15	14	4/15/2009	URS Corporation	--	--	--	--	4.1 J	--	--	--
C11	No	15	14	4/15/2009	URS Corporation	--	--	--	--	4.19 J	--	--	--
C12	No	20	9	4/16/09	URS Corporation	--	--	--	--	11.2 J	--	--	--
C12	Yes	15	14	4/1/2009	URS Corporation	--	--	--	--	**2,330**	--	--	--
C13	Yes	23	6	4/21/2009	URS Corporation	--	--	--	--	1.3	--	--	--
C13	Yes	20	9	4/16/09	URS Corporation	--	--	--	--	3.58 J	--	--	--
C13	Yes	15	14	4/1/2009	URS Corporation	--	--	--	--	40.1	--	--	--
C14	No	15	14	4/6/2009	URS Corporation	--	--	--	--	19.4	--	--	--
C15	No	15	14	4/6/2009	URS Corporation	--	--	--	--	56.6	--	--	--
D1	No	25	4	5/12/09	URS Corporation	--	--	--	--	4.24	--	--	--
D1	Yes	22	7	5/12/09	URS Corporation	--	--	--	--	**159**	--	--	--
D1	Yes	20	9	5/4/09	URS Corporation	--	--	--	--	4.61	--	--	--
D1	Yes	15	14	5/4/09	URS Corporation	--	--	--	--	3.46	--	--	--
D1 (DUP)	Yes	15	14	5/4/09	URS Corporation	--	--	--	--	3.15	--	--	--
D2	No	15	14	4/28/2009	URS Corporation	--	--	--	--	14.3 J	--	--	--
D3	No	15	14	4/28/2009	URS Corporation	--	--	--	--	14.8 J	--	--	--
D4	No	15	14	4/24/2009	URS Corporation	--	--	--	--	3.2 J	--	--	--
D5	Yes	20	9	4/29/2009	URS Corporation	--	--	--	--	2.74 J	--	--	--
D5	No	15	14	4/24/2009	URS Corporation	--	--	--	--	17.9 J	--	--	--
D5 (DUP)	No	15	14	4/24/2009	URS Corporation	--	--	--	--	18.6	--	--	--
D6	No	15	14	4/23/2009	URS Corporation	--	--	--	--	14.5	--	--	--
D7	No	15	14	4/16/09	URS Corporation	--	--	--	--	19.4 J	--	--	--
D8	No	27	2	5/4/09	URS Corporation	--	--	--	--	3.04	--	--	--
D8	Yes	15	14	4/16/09	URS Corporation	--	--	--	--	**250 J**	--	--	--
D9	No	27.5	1.5	5/4/09	URS Corporation	--	--	--	--	12	--	--	--
D9	Yes	22	7	4/30/2009	URS Corporation	--	--	--	--	**1,130**	--	--	--
D9	Yes	20	9	4/28/2009	URS Corporation	--	--	--	--	**485 J**	--	--	--
D9	Yes	17	12	4/28/2009	URS Corporation	--	--	--	--	**186 J**	--	--	--
D9	Yes	15	14	4/16/09	URS Corporation	--	--	--	--	**837 J**	--	--	--
D10	No	15	14	4/13/2009	URS Corporation	3.34	**96.2**	< 0.663	45.1	4.5	**< 1.33**	< 0.633	--
D11	No	20	9	4/15/2009	URS Corporation	--	--	--	--	10.5 J	--	--	--
D11 (DUP)	No	20	9	4/15/2009	URS Corporation	--	--	--	--	13.1 J	--	--	--
D11	Yes	17	12	4/28/2009	URS Corporation	--	--	--	--	**4,660 J**	--	--	--
D11	Yes	15	14	4/13/2009	URS Corporation	**21.4**	**516 J**	**< 2.29**	9.16	**6,410 J**	**< 4.58**	< 2.29	--
D11 (DUP)	Yes	15	14	4/13/2009	URS Corporation	**18**	**237 J**	**< 2.3**	7.13	**3,440 J**	**< 4.6**	< 2.3	--
D12	No	23	6	4/23/2009	URS Corporation	--	--	--	--	7.4	--	--	--
D12	Yes	20	9	4/21/2009	URS Corporation	--	--	--	--	34.5	--	--	--
D12	Yes	15	14	4/13/2009	URS Corporation	5.85	**106**	**< 2.14**	5.81	**560**	**< 4.27**	< 2.14	--
D13	No	15	14	4/13/2009	URS Corporation	< 1.89	< 18.9	**< 1.89**	< 1.89	9.06	**< 3.78**	< 1.89	--
D14	No	15	14	4/13/2009	URS Corporation	< 1.57	< 15.7	**< 1.57**	< 1.57	2.61	**< 3.14**	< 1.57	--
D15	No	15	14	4/6/2009	URS Corporation	--	--	--	--	5.78	--	--	--
E1	No	25	4	5/15/2009	URS Corporation	--	--	--	--	4.38	--	--	--
E1	Yes	22	7	5/15/2009	URS Corporation	--	--	--	--	3.86	--	--	--
E1	Yes	20	9	5/4/09	URS Corporation	--	--	--	--	2.7	--	--	--
E1	Yes	15	14	5/4/09	URS Corporation	--	--	--	--	39	--	--	--
E2	No	15	14	4/29/2009	URS Corporation	--	--	--	--	10.9 J	--	--	--
E3	No	15	14	4/29/2009	URS Corporation	--	--	--	--	24.5 J	--	--	--
E4	No	20	9	4/29/2009	URS Corporation	--	--	--	--	2.43 J	--	--	--
E4	Yes	15	14	4/24/2009	URS Corporation	--	--	--	--	2.3 J	--	--	--
E5	No	15	14	4/24/2009	URS Corporation	--	--	--	--	19.4 J	--	--	--
E9	No	22	7	5/12/09	URS Corporation	--	--	--	--	2.76	--	--	--
E10	No	20	9	5/11/2009	URS Corporation	--	--	--	--	101	--	--	--
E10	Yes	15	14	4/13/2009	URS Corporation	4.14	**106**	**2.23**	18.3	**518**	**< 4.45**	< 2.23	--
E11	No	22	7	4/22/09	URS Corporation	--	--	--	--	9.04 J	--	--	--
E11	Yes	20	9	4/15/2009	URS Corporation	--	--	--	--	80.2 J	--	--	--
E11	Yes	15	14	4/13/2009	URS Corporation	**28.3**	**465**	**< 1.4**	30.4	**6,500**	**< 2.8**	< 1.4	--
E12	No	20	9	4/21/2009	URS Corporation	--	--	--	--	74.7	--	--	--
E12	Yes	15	14	4/13/2009	URS Corporation	5.49	**84.1**	**< 2.32**	13.7	**227**	**< 4.64**	< 2.32	--
E13	No	15	14	4/13/2009	URS Corporation	< 2.17	30.4	**< 2.17**	< 2.17	21.1	**< 4.34**	< 2.17	--
E14	No	15	14	4/13/2009	URS Corporation	< 2.19	< 21.9	**< 2.19**	< 2.19	33.6	**< 4.38**	< 2.19	--
E15	No	15	14	4/6/2009	URS Corporation	--	--	--	--	17	--	--	--
F1	No	25	4	5/22/2009	URS Corporation	--	--	--	--	6.7	--	--	--
F1	Yes	22	7	5/15/2009	URS Corporation	--	--	--	--	15	--	--	--
F1	Yes	20	9	5/4/09	URS Corporation	--	--	--	--	2.54	--	--	--
F1	Yes	15	14	5/4/09	URS Corporation	--	--	--	--	11.5	--	--	--
F2	No	15	14	4/29/2009	URS Corporation	--	--	--	--	64.1 J	--	--	--
F3	No	15	14	4/29/2009	URS Corporation	--	--	--	--	35.6 J	--	--	--
F4	No	15	14	4/27/2009	URS Corporation	--	--	--	--	3.13	--	--	--
F5	No	15	14	4/27/2009	URS Corporation	--	--	--	--	4.02	--	--	--
F8	No	22	7	5/12/09	URS Corporation	--	--	--	--	1.8	--	--	--
F9	No	22	7	5/12/09	URS Corporation	--	--	--	--	1.85	--	--	--
F10	No	20	9	5/12/09	URS Corporation	--	--	--	--	1.37	--	--	--
F10	Yes	15	14	4/2/2009	URS Corporation	--	--	--	--	**205**	--	--	--
F11	No	20	9	4/22/09	URS Corporation	--	--	--	--	19.3 J	--	--	--
F11	Yes	15	14	4/10/2009	URS Corporation	5.79	**114**	0.531	34.2	**357**	< 0.857	< 0.429	--
F12	No	22	7	4/21/2009	URS Corporation	--	--	--	--	2.49	--	--	--
F12	Yes	20	9	4/15/2009	URS Corporation	--	--	--	--	**164 J**	--	--	--
F12	Yes	15	14	4/10/2009	URS Corporation	2.29	29.3	**< 1.46**	2.61	**1,590**	**< 2.92**	< 1.46	--
F13	No	23	6	4/23/2009	URS Corporation	--	--	--	--	1.69	--	--	--
F13	Yes	20	9	4/21/2009	URS Corporation	--	--	--	--	24.7	--	--	--
F13	Yes	15	14	4/10/2009	URS Corporation	< 1.24	13.6	**< 1.24**	1.53	54	**< 2.49**	< 1.24	--
F14	No	15	14	4/10/2009	URS Corporation	< 1.39	30.8	**< 1.39**	1.53	41	**< 2.77**	< 1.39	--
F15	No	20	9	4/15/2009	URS Corporation	--	--	--	--	1.47 J	--	--	--
F15	Yes	15	14	4/6/2009	URS Corporation	--	--	--	--	16.8	--	--	--
G1	No	25	4	5/20/2009	URS Corporation	--	--	--	--	3.76	--	--	--
G1	Yes	20	9	5/4/09	URS Corporation	--	--	--	--	5.71	--	--	--
G1	Yes	15	14	5/4/09	URS Corporation	--	--	--	--	24.3	--	--	--
G2	No	23	6	5/21/2009	URS Corporation	--	--	--	--	1.45	--	--	--
G2	Yes	15	14	4/29/2009	URS Corporation	--	--	--	--	7.65 J	--	--	--
G3	No	22	7	5/21/2009	URS Corporation	--	--	--	--	2.37	--	--	--
G3	Yes	15	14	4/29/2009	URS Corporation	--	--	--	--	**2,050 J**	--	--	--
G3 (DUP)	Yes	15	14	4/29/2009	URS Corporation	--	--	--	--	**881 J**	--	--	--
G4	No	15	14	4/27/2009	URS Corporation	--	--	--	--	3.6	--	--	--
G5	No	15	14	4/27/2009	URS Corporation	--	--	--	--	5.08	--	--	--
G8	No	22	7	5/12/09	URS Corporation	--	--	--	--	11.9	--	--	--
G8	Yes	15	14	4/20/2009	URS Corporation	--	--	--	--	**392**	--	--	--
G9	No	22	7	5/12/09	URS Corporation	--	--	--	--	11.5	--	--	--
G9	Yes	15	14	4/20/2009	URS Corporation	--	--	--	--	**360**	--	--	--
G10	No	22	7	5/13/2009	URS Corporation	--	--	--	--	2.02	--	--	--
G10	Yes	15	14	4/2/2009	URS Corporation	--	--	--	--	**532**	--	--	--
G11	No	15	14	4/10/2009	URS Corporation	2.02	49.1	< 0.329	20	12.7	< 0.658	< 0.329	--
G12	No	20	9	4/21/2009	URS Corporation	--	--	--	--	2.46	--	--	--
G12	Yes	15	14	4/10/2009	URS Corporation	3.72	26.3	**< 1.83**	2.61	**709**	**< 3.65**	< 1.83	--
G13	No	20	9	4/21/2009	URS Corporation	--	--	--	--	1.38	--	--	--
G13	Yes	15	14	4/10/2009	URS Corporation	4.29	42.6	**< 1.35**	6.37	**251**	**< 2.71**	< 1.35	--
G14	No	15	14	4/10/2009	URS Corporation	< 1.3	25.4	**< 1.3**	1.78	17.3	**< 2.59**	< 1.3	--
G15	No	20	9	4/15/2009	URS Corporation	--	--	--	--	2.05 J	--	--	--
G15	Yes	15	14	4/6/2009	URS Corporation	--	--	--	--	8.32	--	--	--
H1	No	25	4	5/19/2009	URS Corporation	--	--	--	--	2.44	--	--	--
H1	Yes	20	9	5/4/09	URS Corporation	--	--	--	--	11.7	--	--	--
H1	Yes	15	14	5/4/09	URS Corporation	--	--	--	--	1.54	--	--	--
H2	No	15	14	4/3/2009	URS Corporation	--	--	--	--	97	--	--	--
H3	No	15	14	4/30/2009	URS Corporation	--	--	--	--	11.3	--	--	--
H4	No	15	14	4/27/2009	URS Corporation	--	--	--	--	6.86	--	--	--
H5	No	22	7	5/1/2009	URS Corporation	--	--	--	--	2.15	--	--	--
H5	Yes	15	14	4/27/2009	URS Corporation	--	--	--	--	33.1	--	--	--

Table 4-4d. Soil Analytical Results - Metals
Remedial Investigation Work Plan
Block 37 Site
600-630 Westlake Avenue North | Seattle, Washington

Sample ID	Sample Excavated (Yes = sample removed; No = sample present)	Sample Depth (feet bgs)	Elevation (feet NAVD88)	Sample Date	Consultant	Metals (mg/kg)							
						Arsenic	Barium	Cadmium	Chromium[1]	Lead[2]	Selenium	Silver	Mercury
Screening Levels[3]													
					SL-1 Direct Contact	**0.67**	**16,000**	**80**	**120,000**	**250**	**400**	**400**	**NE**
					SL-2 Protect Drinking Water Vadose Zone	**4.67**	**1,600**	**0.69**	**480,000**	**3,000**	**5.2**	**14**	**2.1**
					SL-5 Protect Drinking Water Saturated Zone	**0.234**	**83**	**0.035**	**24,000**	**150**	**0.26**	**0.69**	**0.10**
					SL-10 Natural Background	**7.3**	**NE**	**0.77**	**48**	**17**	**NE**	**NE**	**0.07**
					Laboratory PQL	**1.0**	**0.5**	**0.15**	**0.5**	**0.5**	**1**	**0.5**	**0.02**
H5 (DUP)	Yes	15	14	4/27/2009	URS Corporation	--	--	--	--	34.9	--	--	--
H6	No	22	7	5/1/2009	URS Corporation	--	--	--	--	1.45	--	--	--
H7	No	15	14	4/9/2009	URS Corporation	--	--	--	--	16.6	--	--	--
H8	No	22	7	5/1/2009	URS Corporation	--	--	--	--	1.28	--	--	--
H8	Yes	15	14	4/8/2009	URS Corporation	--	--	--	--	**332**	--	--	--
H9	No	22	7	5/1/2009	URS Corporation	--	--	--	--	2.05	--	--	--
H9	Yes	15	14	4/8/2009	URS Corporation	--	--	--	--	**377**	--	--	--
H10	No	15	14	4/2/2009	URS Corporation	--	--	--	--	112	--	--	--
H11	No	20	9	4/28/2009	URS Corporation	--	--	--	--	2.39 J	--	--	--
H11	Yes	17	12	4/28/2009	URS Corporation	--	--	--	--	**18,900 J**	--	--	--
H11	Yes	15	14	4/8/2009	URS Corporation	--	--	--	--	**1,450**	--	--	--
H12	No	22	7	4/30/2009	URS Corporation	--	--	--	--	1.61 J	--	--	--
H12	Yes	20	9	4/15/2009	URS Corporation	--	--	--	--	**1,010 J**	--	--	--
H12	Yes	17	12	4/28/2009	URS Corporation	--	--	--	--	120 J	--	--	--
H12	Yes	15	14	4/10/2009	URS Corporation	**17.6**	78.2	**< 1.61**	16.1	**1,740**	**< 3.22**	< 1.61	--
H13	No	20	9	4/20/2009	URS Corporation	--	--	--	--	2.68	--	--	--
H13	Yes	15	14	4/10/2009	URS Corporation	6.63	**121**	< 0.653	34.9	87.5	**< 1.31**	< 0.653	--
H14	No	20	9	4/20/2009	URS Corporation	--	--	--	--	1.6	--	--	--
H14	Yes	15	14	4/10/2009	URS Corporation	3.32	22	**< 1.61**	4.16	**745**	**< 3.21**	< 1.61	--
H15	No	20	9	4/15/2009	URS Corporation	--	--	--	--	1.54 J	--	--	--
H15	Yes	15	14	4/10/2009	URS Corporation	4.47	48.8	**< 1.31**	11.3	**196**	**< 2.63**	< 1.31	--
I1	No	20	9	5/28/2009	URS Corporation	--	--	--	--	9.91 J	--	--	--
I1	Yes	15	14	5/28/2009	URS Corporation	--	--	--	--	5.71 J	--	--	--
I2	No	25	4	5/28/2009	URS Corporation	--	--	--	--	1.32 J	--	--	--
I2	Yes	15	14	4/30/2009	URS Corporation	--	--	--	--	**307**	--	--	--
I3	No	15	14	4/30/2009	URS Corporation	--	--	--	--	6.47	--	--	--
I4	No	25	4	5/28/2009	URS Corporation	--	--	--	--	2.67 J	--	--	--
I4	Yes	22	7	5/28/2009	URS Corporation	--	--	--	--	65.9 J	--	--	--
I4	Yes	20	9	5/28/2009	URS Corporation	--	--	--	--	45.7	--	--	--
I4	Yes	15	14	5/1/2009	URS Corporation	--	--	--	--	38.9	--	--	--
I5	No	15	14	5/1/2009	URS Corporation	--	--	--	--	32.5	--	--	--
I6	No	15	14	4/8/2009	URS Corporation	--	--	--	--	77.1	--	--	--
I7	No	15	14	4/8/2009	URS Corporation	--	--	--	--	5.43	--	--	--
I8	No	15	14	4/8/2009	URS Corporation	--	--	--	--	39.7	--	--	--
I9	No	15	14	4/8/2009	URS Corporation	--	--	--	--	60.7	--	--	--
I10	No	20	9	4/13/2009	URS Corporation	5.57	32.2	**< 2.93**	7.38	91.6	**< 5.86**	< 2.93	--
I10	Yes	15	14	4/8/2009	URS Corporation	--	--	--	--	**323**	--	--	--
I10 (DUP)	Yes	15	14	4/8/2009	URS Corporation	--	--	--	--	**243**	--	--	--
I11	No	15	14	4/9/2009	URS Corporation	--	--	--	--	48.2	--	--	--
I12	No	15	14	4/9/2009	URS Corporation	--	--	--	--	**242**	--	--	--
I13	No	20	9	4/20/2009	URS Corporation	--	--	--	--	1.48	--	--	--
I13	Yes	15	14	4/10/2009	URS Corporation	2.72	39	**< 2.19**	5.35	76.3	**< 4.38**	< 2.19	--
I14	No	20	9	4/20/2009	URS Corporation	--	--	--	--	2.44	--	--	--
I14	Yes	15	14	4/10/2009	URS Corporation	< 2.14	< 21.4	**< 2.14**	< 2.14	**566**	**< 4.27**	< 2.14	--
I15	No	20	9	4/15/2009	URS Corporation	--	--	--	--	3.4 J	--	--	--
I15	Yes	15	14	4/10/2009	URS Corporation	7.02	46.5	**< 1.85**	8.69	**1,800**	**< 3.7**	< 1.85	--
J1	No	20	9	5/28/2009	URS Corporation	--	--	--	--	12.6 J	--	--	--
J1	Yes	15	14	5/28/2009	URS Corporation	--	--	--	--	4.63 J	--	--	--
J2	No	25	4	5/28/2009	URS Corporation	--	--	--	--	2.36 J	--	--	--
J2	Yes	22	7	5/28/2009	URS Corporation	--	--	--	--	**156 J**	--	--	--
J2	Yes	20	9	5/28/2009	URS Corporation	--	--	--	--	136 J	--	--	--
J2	Yes	15	14	5/1/2009	URS Corporation	--	--	--	--	122	--	--	--
J2 (DUP)	Yes	15	14	5/1/2009	URS Corporation	--	--	--	--	124	--	--	--
J3	No	15	14	5/1/2009	URS Corporation	--	--	--	--	7.48	--	--	--
J4	No	15	14	5/1/2009	URS Corporation	--	--	--	--	13.9	--	--	--
J5	No	20	9	6/3/2009	URS Corporation	--	--	--	--	2.29	--	--	--
J5	Yes	15	14	5/1/2009	URS Corporation	--	--	--	--	65.1	--	--	--
J6	No	15	14	4/8/2009	URS Corporation	--	--	--	--	10.5	--	--	--
J7	No	15	14	4/8/2009	URS Corporation	--	--	--	--	**196**	--	--	--
J8	No	20	9	4/10/2009	URS Corporation	< 1.87	19.5	**< 1.87**	2.73	9.49	**< 3.74**	< 1.87	--
J8	Yes	15	14	4/8/2009	URS Corporation	--	--	--	--	**268**	--	--	--
J9	No	20	9	4/10/2009	URS Corporation	1.57	21.4	**< 1.48**	2.32	17.4	**< 2.96**	< 1.48	--
J9	Yes	15	14	4/8/2009	URS Corporation	--	--	--	--	**389**	--	--	--
J10	No	15	14	4/7/2009	URS Corporation	--	--	--	--	44.5	--	--	--
J11	No	20	9	4/14/2009	URS Corporation	--	--	--	--	1.6 J	--	--	--
J11	Yes	15	14	4/7/2009	URS Corporation	--	--	--	--	**390**	--	--	--
J12	No	20	9	4/14/2009	URS Corporation	--	--	--	--	1.7 J	--	--	--
J12	Yes	15	14	4/7/2009	URS Corporation	--	--	--	--	82.8	--	--	--
J13	No	20	9	4/14/2009	URS Corporation	--	--	--	--	1.55 J	--	--	--
J13	Yes	15	14	4/7/2009	URS Corporation	--	--	--	--	149	--	--	--
J14	No	20	9	4/14/2009	URS Corporation	--	--	--	--	1.48 J	--	--	--
J14	Yes	15	14	4/7/2009	URS Corporation	--	--	--	--	**218**	--	--	--
J15	No	20	9	4/14/2009	URS Corporation	--	--	--	--	1.57 J	--	--	--
J15	Yes	15	14	4/7/2009	URS Corporation	--	--	--	--	66	--	--	--
K1	No	20	9	6/1/2009	URS Corporation	--	--	--	--	1.46	--	--	--
K1	Yes	15	14	6/1/2009	URS Corporation	--	--	--	--	4.5	--	--	--
K1 (DUP)	Yes	15	14	6/1/2009	URS Corporation	--	--	--	--	5.49	--	--	--
K2	No	20	9	6/1/2009	URS Corporation	--	--	--	--	2.57	--	--	--
K2	Yes	15	14	5/1/2009	URS Corporation	--	--	--	--	**153**	--	--	--
K3	No	15	14	5/1/2009	URS Corporation	--	--	--	--	5.53	--	--	--
K4	No	20	9	6/1/2009	URS Corporation	--	--	--	--	2.42	--	--	--
K4	Yes	15	14	5/5/2009	URS Corporation	--	--	--	--	7.12	--	--	--
K5	No	15	14	5/5/2009	URS Corporation	--	--	--	--	11.6	--	--	--
K6	No	18.5	10.5	4/8/2009	URS Corporation	--	--	--	--	< 17.1	--	--	--
K7	No	18.5	10.5	4/8/2009	URS Corporation	--	--	--	--	64.2	--	--	--
K7	Yes	15	14	4/3/2009	URS Corporation	--	--	--	--	**316 J**	--	--	--
K8	No	17.5	11.5	4/8/2009	URS Corporation	--	--	--	--	30	--	--	--
K8	Yes	15	14	4/3/2009	URS Corporation	--	--	--	--	23.2 J	--	--	--
K9	No	17.5	11.5	4/8/2009	URS Corporation	--	--	--	--	79.4	--	--	--
K9	Yes	15	14	4/3/2009	URS Corporation	--	--	--	--	125 J	--	--	--
K10	No	15	14	4/8/2009	URS Corporation	--	--	--	--	< 22.4	--	--	--
Confirmation Sampling - Phase 2 Excavation-Area 2[6]													
COP-T1-N	Likely Removed	Unknown	--	1/29/2009	URS Corporation	2.63	**89.9**	< 0.569	32.1	41.1	**< 1.14**	< 0.569	**< 0.112**
COPT1-S	Likely Removed	Unknown	--	1/29/2009	URS Corporation	1.64	81.6	< 0.509	45.3	4.97	**< 1.02**	< 0.509	**< 0.106**
COP-T2-N	Likely Removed	Unknown	--	1/30/2009	URS Corporation	--	--	--	--	--	--	--	--
COPT2-S	Likely Removed	Unknown	--	1/30/2009	URS Corporation	--	--	--	--	--	--	--	--
A1	No	18	11	6/5/2009	URS Corporation	--	--	--	--	53.3	--	--	--
A1	Yes	15	14	6/5/2009	URS Corporation	--	--	--	--	12.8	--	--	--
A2	Yes	15	14	6/8/2009	URS Corporation	--	--	--	--	15.6	--	--	--
A3	Yes	15	14	6/8/2009	URS Corporation	--	--	--	--	12.6	--	--	--
A4	Yes	15	14	6/10/2009	URS Corporation	--	--	--	--	123	--	--	--
A5	No	20	9	6/12/2009	URS Corporation	--	--	--	--	147 J	--	--	--
A5	Yes	18	11	6/12/2009	URS Corporation	--	--	--	--	38.8 J	--	--	--
A5	Yes	15	14	6/12/2009	URS Corporation	--	--	--	--	**412**	--	--	--
A6	No	18	11	4/8/2009	URS Corporation	--	--	--	--	13.3	--	--	--
A6	Yes	15	14	4/8/2009	URS Corporation	--	--	--	--	**289 J**	--	--	--
A7	No	15	14	4/3/2009	URS Corporation	--	--	--	--	56.5 J	--	--	--
A8	No	15	14	4/3/2009	URS Corporation	--	--	--	--	136 J	--	--	--
A9	No	15	14	4/3/2009	URS Corporation	--	--	--	--	79.1 J	--	--	--
A10	No	15	14	4/9/2009	URS Corporation	--	--	--	--	19.4	--	--	--
B1	No	18	11	6/5/2009	URS Corporation	--	--	--	--	15.2	--	--	--
B1	Yes	15	14	6/5/2009	URS Corporation	--	--	--	--	5.0	--	--	--
B2	No	20	9	6/10/2009	URS Corporation	--	--	--	--	8.04	--	--	--
B2	Yes	15	14	6/8/2009	URS Corporation	--	--	--	--	16.5	--	--	--
B2 (DUP)	Yes	15	14	6/8/2009	URS Corporation	--	--	--	--	22.7	--	--	--
B3	No	15	14	6/10/2009	URS Corporation	--	--	--	--	36.4	--	--	--
B4	No	15	14	6/10/2009	URS Corporation	--	--	--	--	54	--	--	--
B5	No	15	14	4/3/2009	URS Corporation	--	--	--	--	25.4 J	--	--	--

Table 4-4d. Soil Analytical Results - Metals
Remedial Investigation Work Plan
Block 37 Site
600-630 Westlake Avenue North | Seattle, Washington

Sample ID	Sample Excavated (Yes = sample removed; No = sample present)	Sample Depth (feet bgs)	Elevation (feet NAVD88)	Sample Date	Consultant	Metals (mg/kg)							
						Arsenic	Barium	Cadmium	Chromium[1]	Lead[2]	Selenium	Silver	Mercury
Screening Levels[3]													
					SL-1 Direct Contact	**0.67**	**16,000**	**80**	**120,000**	**250**	**400**	**400**	**NE**
					SL-2 Protect Drinking Water Vadose Zone	**4.67**	**1,600**	**0.69**	**480,000**	**3,000**	**5.2**	**14**	**2.1**
					SL-5 Protect Drinking Water Saturated Zone	**0.234**	**83**	**0.035**	**24,000**	**150**	**0.26**	**0.69**	**0.10**
					SL-10 Natural Background	**7.3**	**NE**	**0.77**	**48**	**17**	**NE**	**NE**	**0.07**
					Laboratory PQL	**1.0**	**0.5**	**0.15**	**0.5**	**0.5**	**1**	**0.5**	**0.02**
B6	No	20	9	4/9/2009	URS Corporation	--	--	--	--	44.6	--	--	--
B6	Yes	16.5	12.5	4/7/2009	URS Corporation	--	--	--	--	< 24.4	--	--	--
B6	Yes	15	14	4/3/2009	URS Corporation	--	--	--	--	**217 J**	--	--	--
B7	Yes	17.5	11.5	4/7/2009	URS Corporation	--	--	--	--	20.3	--	--	--
B7	Yes	15	14	4/3/2009	URS Corporation	--	--	--	--	79.5 J	--	--	--
B8	No	17.5	11.5	4/7/2009	URS Corporation	--	--	--	--	64	--	--	--
B8	Yes	15	14	4/3/2009	URS Corporation	--	--	--	--	51.2 J	--	--	--
B9	Yes	20	9	4/9/2009	URS Corporation	--	--	--	--	35	--	--	--
B9	Yes	17	12	4/7/2009	URS Corporation	--	--	--	--	39.4	--	--	--
B9	Yes	15	14	4/3/2009	URS Corporation	--	--	--	--	118 J	--	--	--
B10	No	15	14	4/9/2009	URS Corporation	--	--	--	--	126	--	--	--
C1	No	18	11	6/5/2009	URS Corporation	--	--	--	--	14.9	--	--	--
C1	Yes	15	14	6/5/2009	URS Corporation	--	--	--	--	7.77	--	--	--
C2	No	15	14	6/8/2009	URS Corporation	--	--	--	--	5.41	--	--	--
C3	No	15	14	6/10/2009	URS Corporation	--	--	--	--	6.36	--	--	--
C4	No	15	14	6/10/2009	URS Corporation	--	--	--	--	17.3	--	--	--
C4 (DUP)	No	15	14	6/10/2009	URS Corporation	--	--	--	--	23.5	--	--	--
C5	No	15	14	4/3/2009	URS Corporation	--	--	--	--	62.3 J	--	--	--
C6	No	17	12	4/7/2009	URS Corporation	--	--	--	--	31.6	--	--	--
C6	Yes	15	14	4/2/2009	URS Corporation	--	--	--	--	45.8	--	--	--
C7	No	15	14	4/2/2009	URS Corporation	--	--	--	--	67.5	--	--	--
C8	No	15	14	4/2/2009	URS Corporation	--	--	--	--	59.7	--	--	--
C9	No	20	9	4/9/2009	URS Corporation	--	--	--	--	< 5.78	--	--	--
C9	Yes	17	12	4/7/2009	URS Corporation	--	--	--	--	96.7	--	--	--
C9	Yes	15	14	4/2/2009	URS Corporation	--	--	--	--	144	--	--	--
C10	No	20	9	4/20/2009	URS Corporation	--	--	--	--	4.14	--	--	--
C10	Yes	15	14	4/9/2009	URS Corporation	--	--	--	--	**483**	--	--	--
D1	No	17	12	6/4/2009	URS Corporation	--	--	--	--	3.43	--	--	--
D1	Yes	15	14	6/4/2009	URS Corporation	--	--	--	--	3.8	--	--	--
D2	No	15	14	6/4/2009	URS Corporation	--	--	--	--	20.6	--	--	--
D3	No	15	14	6/10/2009	URS Corporation	--	--	--	--	41.7	--	--	--
D4	No	15	14	6/10/2009	URS Corporation	--	--	--	--	15.6	--	--	--
D5	No	17.5	11.5	4/3/2009	URS Corporation	--	--	--	--	106 J	--	--	--
D5	Yes	15	14	3/27/2009	URS Corporation	--	--	--	--	44.3 J	--	--	--
D6	No	17.5	11.5	4/3/2009	URS Corporation	--	--	--	--	36.2 J	--	--	--
D6	Yes	15	14	3/30/2009	URS Corporation	--	--	--	--	18	--	--	--
D7	No	17.5	11.5	4/3/2009	URS Corporation	--	--	--	--	42.1 J	--	--	--
D7	Yes	15	14	3/30/2009	URS Corporation	--	--	--	--	41.7	--	--	--
D8	No	17.5	11.5	4/3/2009	URS Corporation	--	--	--	--	34.9 J	--	--	--
D8	Yes	15	14	3/30/2009	URS Corporation	--	--	--	--	98.2	--	--	--
D9	No	17.5	11.5	4/3/2009	URS Corporation	--	--	--	--	57 J	--	--	--
D9	Yes	15	14	3/30/2009	URS Corporation	--	--	--	--	87.4	--	--	--
D10	No	15	14	4/9/2009	URS Corporation	--	--	--	--	89	--	--	--
E1	No	17	12	6/4/2009	URS Corporation	--	--	--	--	81.5	--	--	--
E1	Yes	15	14	6/4/2009	URS Corporation	--	--	--	--	7.2	--	--	--
E2	No	15	14	6/4/2009	URS Corporation	--	--	--	--	3.22	--	--	--
E3	No	15	14	6/4/2009	URS Corporation	--	--	--	--	23.7	--	--	--
E4	No	18	11	6/9/2009	URS Corporation	--	--	--	--	36.1	--	--	--
E4	Yes	15	14	6/4/2009	URS Corporation	--	--	--	--	43.4	--	--	--
E5	No	17.5	11.5	4/1/2009	URS Corporation	--	--	--	--	61.8	--	--	--
E5	Yes	15	14	3/27/2009	URS Corporation	--	--	--	--	21.1 J	--	--	--
E5 (DUP)	Yes	15	14	3/27/2009	URS Corporation	--	--	--	--	30.7 J	--	--	--
E6	No	17	12	4/1/2009	URS Corporation	--	--	--	--	83.5	--	--	--
E6	Yes	15	14	3/27/2009	URS Corporation	--	--	--	--	86.4 J	--	--	--
E7	No	17.5	11.5	4/1/2009	URS Corporation	--	--	--	--	94	--	--	--
E7	Yes	15	14	3/27/2009	URS Corporation	--	--	--	--	92.2 J	--	--	--
E8	No	17.5	11.5	3/31/2009	URS Corporation	--	--	--	--	9.67 J	--	--	--
E8	Yes	15	14	3/27/2009	URS Corporation	--	--	--	--	48.5 J	--	--	--
E9	No	17.5	11.5	3/31/2009	URS Corporation	--	--	--	--	34.3 J	--	--	--
E9	Yes	15	14	3/27/2009	URS Corporation	--	--	--	--	63.5 J	--	--	--
E10	No	15	14	3/27/2009	URS Corporation	--	--	--	--	100 J	--	--	--
F1	No	20	9	6/9/2009	URS Corporation	--	--	--	--	12.3	--	--	--
F1*	Yes	17	12	6/4/2009	URS Corporation	--	--	--	--	101	--	--	--
F1*	Yes	15	14	6/4/2009	URS Corporation	--	--	--	--	3.96	--	--	--
F2	No	15	14	6/2/2009	URS Corporation	--	--	--	--	3.41	--	--	--
F3	No	17.5	11.5	6/9/2009	URS Corporation	--	--	--	--	46.3	--	--	--
F3	Yes	15	14	3/29/2009	URS Corporation	--	--	--	--	20.8 J	--	--	--
F3 (DUP)	Yes	15	14	3/29/2009	URS Corporation	--	--	--	--	19.6 J	--	--	--
F4	No	18.5	10.5	6/9/2009	URS Corporation	--	--	--	--	< 1.9	--	--	--
F4	Yes	15	14	4/21/2009	URS Corporation	--	--	--	--	28.8	--	--	--
F5	No	18	11	4/1/2009	URS Corporation	--	--	--	--	15.5	--	--	--
F5	Yes	15	14	3/27/2009	URS Corporation	--	--	--	--	84.8 J	--	--	--
F6	No	17	12	4/1/2009	URS Corporation	--	--	--	--	42.3	--	--	--
F6	Yes	15	14	3/27/2009	URS Corporation	--	--	--	--	88.2 J	--	--	--
F7	No	15	14	3/27/2009	URS Corporation	--	--	--	--	36.4 J	--	--	--
F8	No	18.5	10.5	3/31/2009	URS Corporation	--	--	--	--	1.27 J	--	--	--
F8	Yes	15	14	3/25/2009	URS Corporation	--	--	--	--	61.6	--	--	--
F9	No	17.5	11.5	3/31/2009	URS Corporation	--	--	--	--	35.9 J	--	--	--
F9	Yes	15	14	3/25/2009	URS Corporation	--	--	--	--	23.1	--	--	--
F10	No	15	14	3/27/2009	URS Corporation	--	--	--	--	25.7 J	--	--	--
G1	No	19	10	6/4/2009	URS Corporation	--	--	--	--	1.95	--	--	--
G1	Yes	15	14	6/4/2009	URS Corporation	--	--	--	--	1.78	--	--	--
G2	No	18	11	6/9/2009	URS Corporation	--	--	--	--	0.791	--	--	--
G2	Yes	15	14	6/2/2009	URS Corporation	--	--	--	--	**163**	--	--	--
G3	No	18	11	6/9/2009	URS Corporation	--	--	--	--	23.9	--	--	--
G3	Yes	15	14	5/29/2009	URS Corporation	--	--	--	--	29.8 J	--	--	--
G4	No	15	14	5/29/2009	URS Corporation	--	--	--	--	10.2 J	--	--	--
G5	No	15	14	3/25/2009	URS Corporation	--	--	--	--	**161**	--	--	--
G6	No	15	14	3/25/2009	URS Corporation	--	--	--	--	**188**	--	--	--
G7	No	15	14	3/24/2009	URS Corporation	--	--	--	--	55.2 J	--	--	--
G8	No	15	14	3/24/2009	URS Corporation	--	--	--	--	58.4 J	--	--	--
G9	No	15	14	3/24/2009	URS Corporation	--	--	--	--	85.1 J	--	--	--
G10	No	15	14	3/23/2009	URS Corporation	--	--	--	--	88	--	--	--
H1	No	17.5	11.5	6/4/2009	URS Corporation	--	--	--	--	39.1	--	--	--
H1	Yes	15	14	6/4/2009	URS Corporation	--	--	--	--	2.37	--	--	--
H1 (DUP)	Yes	15	14	6/4/2009	URS Corporation	--	--	--	--	2.6	--	--	--
H2	No	15	14	6/2/2009	URS Corporation	--	--	--	--	6.59	--	--	--
H3	No	15	14	3/29/2009	URS Corporation	--	--	--	--	81.8 J	--	--	--
H4	No	18	11	6/9/2009	URS Corporation	--	--	--	--	2.78 J	--	--	--
H4	Yes	15	14	5/29/2009	URS Corporation	--	--	--	--	46.7	--	--	--
H5	No	15	14	3/19/2009	URS Corporation	--	--	--	--	59.6 J	--	--	--
H5 (DUP)	No	15	14	3/19/2009	URS Corporation	--	--	--	--	30 J	--	--	--
H6	No	15	14	3/24/2009	URS Corporation	--	--	--	--	55.5 J	--	--	--
H7	No	15	14	3/24/2009	URS Corporation	--	--	--	--	96.3 J	--	--	--
H8	No	15	14	3/24/2009	URS Corporation	--	--	--	--	**156 J**	--	--	--
H9	No	15	14	3/19/2009	URS Corporation	--	--	--	--	15.4 J	--	--	--
H10	No	15	14	3/23/2009	URS Corporation	--	--	--	--	4.25	--	--	--
I1	No	18	11	6/3/2009	URS Corporation	--	--	--	--	11	--	--	--
I1	Yes	15	14	6/3/2009	URS Corporation	--	--	--	--	6.72	--	--	--
I1 (DUP)	Yes	15	14	6/3/2009	URS Corporation	--	--	--	--	7.1	--	--	--
I2	No	15	14	6/2/2009	URS Corporation	--	--	--	--	2.57	--	--	--
I3	No	15	14	5/29/2009	URS Corporation	--	--	--	--	**164 J**	--	--	--
I4	No	15	14	5/29/2009	URS Corporation	--	--	--	--	19.2 J	--	--	--
I5	No	15	14	3/19/2009	URS Corporation	--	--	--	--	69.2 J	--	--	--
I6	No	19	10	3/23/2009	URS Corporation	--	--	--	--	2.03	--	--	--
I6	Yes	15	14	3/19/2009	URS Corporation	--	--	--	--	32.7 J	--	--	--
I7	No	15	14	3/19/2009	URS Corporation	--	--	--	--	11.6 J	--	--	--
I8	No	15	14	3/19/2009	URS Corporation	--	--	--	--	**242 J**	--	--	--

Table 4-4d. Soil Analytical Results - Metals
Remedial Investigation Work Plan
Block 37 Site
600-630 Westlake Avenue North | Seattle, Washington

Sample ID	Sample Excavated (Yes = sample removed; No = sample present)	Sample Depth (feet bgs)	Elevation (feet NAVD88)	Sample Date	Consultant	Metals (mg/kg)							
						Arsenic	Barium	Cadmium	Chromium[1]	Lead[2]	Selenium	Silver	Mercury
Screening Levels[3]													
SL-1 Direct Contact						**0.67**	**16,000**	**80**	**120,000**	**250**	**400**	**400**	**NE**
SL-2 Protect Drinking Water Vadose Zone						**4.67**	**1,600**	**0.69**	**480,000**	**3,000**	**5.2**	**14**	**2.1**
SL-5 Protect Drinking Water Saturated Zone						**0.234**	**83**	**0.035**	**24,000**	**150**	**0.26**	**0.69**	**0.10**
SL-10 Natural Background						**7.3**	**NE**	**0.77**	**48**	**17**	**NE**	**NE**	**0.07**
Laboratory PQL						**1.0**	**0.5**	**0.15**	**0.5**	**0.5**	**1**	**0.5**	**0.02**
I9	No	15	14	3/24/2009	URS Corporation	--	--	--	--	91.1 J	--	--	--
I10	No	15	14	3/23/2009	URS Corporation	--	--	--	--	76.7	--	--	--
J1	No	15	14	3/23/2009	URS Corporation	--	--	--	--	2.68	--	--	--
J2	No	15	14	6/1/2009	URS Corporation	--	--	--	--	8.44	--	--	--
J3	No	15	14	5/29/2009	URS Corporation	--	--	--	--	36.4 J	--	--	--
J4	No	15	14	5/29/2009	URS Corporation	--	--	--	--	97.9 J	--	--	--
J5	No	15	14	3/24/2009	URS Corporation	--	--	--	--	52.3 J	--	--	--
J6	No	15	14	3/19/2009	URS Corporation	--	--	--	--	6.76 J	--	--	--
J7	No	15	14	3/19/2009	URS Corporation	--	--	--	--	**192 J**	--	--	--
J8	No	15	14	3/19/2009	URS Corporation	--	--	--	--	**298 J**	--	--	--
J9	No	15	14	3/19/2009	URS Corporation	--	--	--	--	**212 J**	--	--	--
J10	No	15	14	3/23/2009	URS Corporation	--	--	--	--	38.3	--	--	--
K1	No	17.5	11.5	6/3/2009	URS Corporation	--	--	--	--	3.4	--	--	--
K1	Yes	15	14	6/3/2009	URS Corporation	--	--	--	--	5.91	--	--	--
K2	No	17	12	6/3/2009	URS Corporation	--	--	--	--	8.07	--	--	--
K2	Yes	15	14	6/3/2009	URS Corporation	--	--	--	--	4.0	--	--	--
K3	No	17	12	6/3/2009	URS Corporation	--	--	--	--	2.41	--	--	--
K3	Yes	15	14	6/3/2009	URS Corporation	--	--	--	--	4.53	--	--	--
K4	No	17	12	6/3/2009	URS Corporation	--	--	--	--	7.98	--	--	--
K4	Yes	15	14	6/3/2009	URS Corporation	--	--	--	--	3.09	--	--	--
K5	No	15	14	3/20/2009	URS Corporation	--	--	--	--	74.9	--	--	--
K6	No	15	14	3/20/2009	URS Corporation	--	--	--	--	15.8	--	--	--
K7	No	15	14	3/20/2009	URS Corporation	--	--	--	--	8.81 J	--	--	--
K8	No	15	14	3/20/2009	URS Corporation	--	--	--	--	22.6 J	--	--	--
K9	No	15	14	3/23/2009	URS Corporation	--	--	--	--	**386 J**	--	--	--
K10	No	15	14	3/20/2009	URS Corporation	--	--	--	--	103	--	--	--

Notes:
1. Chromium cleanup levels for Soil are based on trivalent chromium, except for natural background.
2. Total lead analysis by EPA Method 6010; prepared by EPA Method 3050.
3. The lowest relevant screening level for each constituent is highlighted in the corresponding color. Screening level selection process is summarized in Section 5.6.
4. Values in parentheses in the Screening Level block represent the previous screening level, where available.
5. Values with an asterisk (*) in the Screening Level Block represent the previous screening level that was applicable to quantifying exceedances.
4. Ecology's MTCA Method A Cleanup Levels for Soil (WAC 173-340-900 Table 740-1)
a Due to laboratory error, samples collected on June 7, 2005 were transferred from STL Seattle to STL Sacramento without ice or other cooling media and were received at STL Sacramento at 22°C.
The TPH-G, BTEX, MTBE, and Naphthalene results for these samples may be biased low due to the higher temperature.
4. Arsenic III Soil Concentration.
5. Arsenic V Soil Concentration.
6. Sample IDs with letters (e.g., A-#-#) refer to the excavation area segments (e.g., Segment A, B, etc.). Refer to the soil concentration figures.
Bold font indicates the reported value exceeds the corresponding (shaded) screening level (i.e., most stringent).
Shaded cell indicates the reported value exceeds the corresponding screening level (i.e., most stringent).
Font color indicates the samples at elevation 20 or shallower that were compared to SL-2 Protect Drinking Water Vadose Zone screening levels, as applicable.
"<" = less than the laboratory method detection limit
"--" = not analyzed, sampled, or reported
bgs = below ground surface
Ecology = Washington State Department of Ecology
EPA = United States Environmental Protection Agency
ID = identification
J = estimated concentration
MDL = method detection limit
mg/kg = milligram per kilogram
MTCA = Model Toxics Control Act
NAVD88 = North American Vertical Datum 1988
ND = not detected
NE = not established
PQL = practical quantitation limit
RCRA = Resource Conservation and Recovery Act

Table 4-5. Remedial Actions Summary
Remedial Investigation Work Plan
Block 37 Site
600 - 630 Westlake Avenue North | Seattle, Washington

Date(s)	Remedial Action	Comments	Location[1]	Party Performing Action	Reference
1980 to 1992	Removal of USTs and replacement of product lines. Installation/operation of recovery trenches and wells	Removal of 41,900 gallons of LPH	SW corner of Block 37 Site	Union Oil Company of California (UNOCAL)	ATC, 2019
1988	Installation of SVE system (utilizing existing recovery trenches and wells)			UNOCAL	ATC, 2019
1990	Removal of 5 motor oil and gasoline USTs	Excavation and removal of 800 cubic yards of petroleum-contaminated soil	NW corner of Block 37 Site	City of Seattle	ATC, 2019
1990 to 1995	Operation of SVE system	Recovery of 4,262 pounds of gasoline (June to August 1990)		UNOCAL	ATC, 2019
1991 to 1993	LPH removal	Recovery of 465 gallons of LPH		UNOCAL	ATC, 2019
2001	Removal of waste/heating oil USTs and gasoline spill using a vacuum truck (May)	Removal of 500 gallons of gasoline product from excavation	SW corner of Block 37 Site	Tosco Corporation	ATC, 2019
	Gasoline fluid recovery (manual) from groundwater monitoring wells (May to December)	-Removal of 4 gallons of LPH -Removal of 12,100 gallons of impacted groundwater	SW corner of Block 37 (and adjacent wells)	Tosco Corporation	ATC, 2019
2003	Installation/operation of new AS/SVE system (AS/SVE trench, SVE wells, and deep AS wells)	1,410 tons of petroleum-impacted soil removed during system install.System operated 2003 to 2008 & extracted 1,939 lbs. of petroleum hydrocarbons. LPH removed = 43,632 gallons.	SW corner of Block 37 Site	Conoco Phillips	ATC, 2019
2006 to 2007	Phase 1 Excavation (aka Mercer Cleanup Project)	Excavation and removal of 16,172 tons of soil from Westlake Ave N and Terry Avenue N ROWs	West of Block 37 Property boundary, along east side of Westlake Avenue N	City of Seattle	ATC, 2019
2007 to 2008	Biweekly EFR (utilizing recovery wells in Terry Avenue N)	Removal of 28,142 gallons of impacted groundwater from wells	Terry Avenue N	Conoco Phillips	ATC, 2019
2003 to 2008		Removal of 1,940 pounds of petroleum hydrocarbons			
2008	-Demolition of Westlake 76 Station -Removal of all aboveground structures and existing conveyance piping for remediation wells cut and capped		SW corner of Block 37 Site	Conoco Phillips	ATC, 2019
2008 to 2009	Phase 2 Excavation (aka Mercer Cleanup Project) -Soil excavation -Installation of slurry(gravity) wall	-Excavation of 54,450 tons of soil up to depths of 25 ft bgs	-Excavation within Phase 2 excavation area of the Block 37 Site (not including the SE corner) -Gravity wall around Phase 2 excavation area	Conoco Phillips	ATC, 2019
2009	Phase 2 Excavation (aka Mercer Cleanup Project) -Backfill and surface restoration (July) -Confirmation soil sampling		-Within entire Block 37 Site (not including the SE corner)		
2013	Phase 2 Excavating (aka Mercer Cleanup Project) -Installation of SVE and AS wells (July) -Installation of remedial wells (Aug to Nov)		Streets surrounding the Block 37 Site (Terry Avenue N, Mercer Street, Valley Street, and Westlake Avenue N)	Conoco Phillips	ATC, 2019
	-Connection of remediation wells/conveyance piping (in Mercer Street and Valley Street ROWs) to new aboveground AS/SVE treatment system (Aug to Dec)		SE corner of Block 37 Site	Conoco Phillips	
1/2017 to 12/2018	Restart and operation of AS/SVE Systems	36 SVE Wells (19 in Mercer St & 17 in Terry Ave) and 16 horizontal wells (7 in Valley St & 9 in Westlake Ave N.)	City ROW surrounding the Block 37 Property	Phillips 66	ATC,2019
Apr-19	Decommissioning of AS/SVE System	Removal of all system components	Block 37 Site	Phillips 66	ATC, 2019

Notes
[1]Refer to Figures 4-12 and 4-13 of the Remedial Investigation Work Plan.
aka = also known as
AS = air sparge
EFR = enhanced fluid recovery
ft bgs = feet below ground surface
LPH = liquid petroleum hydrocarbons
ROW = (City of Seattle) right-of-way
SVE = soil vapor extraction
UST = underground storage tank

References
ATC. 2019. *Remediation System Decommissioning*. Phillips 66 Facility No. 255353 (AOC #1396). 600 Westlake Ave North, Seattle, Washington. August 20.

Table 5-1. Groundwater COPC Screening Summary
Block 37 Site | Seattle, WA
Remedial Investigation Work Plan

								All Wells[1, 2]							Wells north of Valley St[3]: SMW-3, MW-209, MW-210, MW-211													
		GW-1 Protect Drinking Water GW-Detail-PW	GW-2 Protect Surface Water GW-Detail-SW-FW	GW-3 Protect Sediment Mod.747-1FW	GW-4 Screening Level Protect Indoor Air GW-Detail-PW	GW-5 Natural Background	Laboratory PQL	Total Number of Samples Analyzed:	Sample Results Reported as Not Detected:	Sample Results Reported as Detected:	% Detection	Min:	Max:	Geometric Mean:	Total Number of Samples Analyzed:	Sample Results Reported as Not Detected:	Sample Results Reported as Detected:	% Detection	Min:	Max:	Geometric Mean:	Total number of samples > SLs	Detected samples exceeding GW-1 Protect Drinking Water GW-Detail-PW	Detected samples exceeding GW-2 Protect Surface Water GW-Detail-SW-FW	Detected samples exceeding GW-3 Protect Sediment Mod.747-1FW	Detected samples exceeding GW-4 Screening Level Protect Indoor Air GW-Detail-PW	GW-5 Natural Background	Detected samples exceeding Laboratory PQL[5]
Analyte								**Representative Samples[6]**																				
TPH (µg/L)	GRO[4]	**800**	**800**	NE	NE	NE	100	654	475	179	27%	53.2	61,200	1,194.04	91	90	1	1%	189.00	189.00	189.00	0	**90**	**90**	NE	NE	NE	167
	DRO[5]	**500**	500	NE	NE	NE	200	471	291	180	38%	80	15,500	438.48	70	54	16	23%	85.1	273	144.25926	0	**76**	76	NE	NE	NE	128
	ORO[5]	**500**	500	NE	NE	NE	200	470	360	110	23%	101	49,100	583.54	70	68	2	3%	510	605	555.47	2	**45**	45	NE	NE	NE	108
	TEH[6]	**500**	500	NE	NE	NE	400	461	46	415	90%	100	55,090	554.16	67	3	64	96%	100	765	285.44	2	**137**	137	NE	NE	NE	161
	Kerosene	**500**	500	NE	NE	NE	100	353	222	131	37%	83.2	21,400	1,067.47	62	57	5	8%	85.1	150	108.40	0	**92**	92	NE	NE	NE	124
VOCs[7] (µg/L)	Benzene	5	**0.44**	69,000	**2.4**	NE	0.2	651	504	147	23%	0.20	3,380	14.25	91	91	0	0%	NA	NA	NA	0	90	**139**	0	**108**	NE	147
	Toluene	**640**	**53**	22,000,000	15,000	NE	1.0	651	558	93	14%	0.11	471	4.54	91	91	0	0%	NA	NA	NA	0	**0**	**12**	0	0	NE	78
	Ethylbenzene	**700**	**12**	19,000,000	2,800	NE	0.2	651	528	123	19%	0.23	1,920	32.50	91	91	0	0%	NA	NA	NA	0	**8**	**81**	0	0	NE	123
	Total Xylenes	1,600	**57**	35,000,000	**320**	NE	0.6	651	544	107	16%	1.0	12,300	119.95	91	90	1	1%	5.50	5.50	5.50	0	25	**58**	0	**42**	NE	107
	MTBE	**24**	NE	3,700,000	800	NE	1.0	176	172	4	2%	0.13	0.30	0.19	26	26	0	0%	NA	NA	NA	0	**0**	NE	0	0	NE	0
	Naphthalene	160	1,400	260,000	**8.9**	NE	0.1	430	303	127	30%	0.0	950	12.21	61	55	6	10%	2.10	4.0	2.47	0	19	0	0	**74**	NE	121
	EDB	0.05	NE	900	0.3	NE	**1.0**	56	56	0	0%	NA	NA	NA	8	8	0	0%	NA	NA	NA	0	0	NE	0	0	NE	**0**
	EDC	4.8	8.9	25,000	**3.5**	NE	1.0	59	59	0	0%	NA	NA	NA	8	8	0	0%	NA	NA	NA	0	0	0	0	**0**	NE	0
PAHs (µg/L)	1-Methylnaphthalene	**1.5**	NE	1,200	NE	NE	0.04	10	5	5	50%	0.01	1.1	0.06	3	2	1	33%	0.25	0.25	0.25	0	**0**	NE	0	NE	NE	2
	Acenaphthene	**480**	**30**	200,000	NE	NE	0.04	10	4	6	60%	0.014	2.6	0.07	3	1	2	67%	0.0	2.6	0.2	0	**0**	**0**	0	NE	NE	3
	Anthracene	**2,400**	**100**	210,000	NE	NE	0.04	10	9	1	10%	0.23	0.23	0.23	3	2	1	33%	0.23	0.23	0.23	0	**0**	**0**	0	NE	NE	1
	Dibenzofuran	8.0	NE	**4.3**	NE	NE	0.04	10	9	1	10%	0.13	0.13	0.13	3	2	1	33%	0.13	0.13	0.13	0	0	NE	**0**	NE	NE	1
	Fluoranthene	640	6.0	0.02	NE	NE	**0.04**	10	9	1	10%	0.36	0.36	0.36	3	2	1	33%	0.36	0.36	0.36	1	0	0	1	NE	NE	**1**
	Fluorene	**320**	**10**	83,000	NE	NE	0.04	10	7	3	30%	0.015	1.0	0.09	3	2	1	33%	1.0	1.0	1.0	0	**0**	**0**	0	NE	NE	2
	Naphthalene	160	1,400	260,000	**8.9**	NE	0.10	101	82	19	19%	0.02	30.00	0.25	6	6	0	0%	NA	NA	NA	0	0	0	0	**2**	NE	13
	Phenanthrene	NE	NE	NE	NE	NE	**0.04**	10	9	1	10%	0.42	0.42	0.42	3	2	1	33%	0.42	0.42	0.42	1	NE	NE	NE	NE	NE	**1**
	Pyrene	240	8.0	0.015	NE	NE	**0.04**	10	9	1	10%	0.40	0.40	0.40	3	2	1	33%	0.40	0.40	0.40	1	0	0	1	NE	NE	**1**
cPAHs (µg/L)[9]	Benzo(a) pyrene	0.2	0.000016	0.0019	NE	NE	**0.01**	100	98	2	2%	0.009	0.017	0.0125	6	6	0	0%	NA	NA	NA	0	0	2	2	NE	NE	**1**
	Benzo(a) anthracene	NE	0.00016	0.005	NE	NE	**0.01**	100	94	6	6%	0.014	0.220	0.0371	6	4	2	33%	0.02	0.04	0.03	2	NE	6	6	NE	NE	**6**
	Benzo(b) fluoranthene[8]	NE	0.00016	0.003	NE	NE	**0.01**	100	97	3	3%	0.017	0.039	0.0233	6	6	0	0%	NA	NA	NA	0	NE	3	3	NE	NE	**3**
	Benzo(j,k) fluoranthene[8]	NE	0.0016	0.0031	NE	NE		100	97	3	3%	0.011	0.023	0.0152	6	6	0	0%	NA	NA	NA		NE	3	3	NE	NE	
	Chrysene	NE	0.016	0.0098	NE	NE	**0.01**	100	95	5	5%	0.012	0.048	0.0231	6	5	1	17%	0.04	0.04	0.04	1	NE	4	5	NE	NE	**5**
	Dibenz(a,h) anthracene	NE	0.000016	0.001	NE	NE	**0.01**	100	99	1	1%	0.02	0.02	0.02	6	5	1	17%	0.02	0.02	0.02	1	NE	1	1	NE	NE	**1**
	Indeno(1,2,3-cd)pyrene	NE	0.00016	0.00092	NE	NE	**0.01**	100	99	1	1%	0.02	0.02	0.02	6	5	1	17%	0.02	0.02	0.02	1	NE	1	1	NE	NE	**1**
	TTEC[7]	0.2	0.0097	0.0043	NE	NE	**0.0151**	90	84	6	7%	0.00180	0.0300	0.00945	3	2	1	33%	0.0018	0.0018	0.0018	0	0	3	5	NE	NE	**2**
cVOCs (µg/L)	PCE	**5.0**	**2.4**	330,000	25	NE	1.0	54	54	0	0%	NA	NA	NA	2	2	0	0%	NA	NA	NA	0	**0**	**0**	0	0	NE	0
	TCE	4.0	0.3	8,200	1.4	NE	**1.0**	54	53	1	2%	0.19	0.19	0.19	2	2	0	0%	NA	NA	NA	0	0	0	0	0	NE	**0**
	cis-1,2-DCE	**16**	NE	2,700,000	180	NE	1.0	54	28	26	48%	0	46	4.31	2	2	0	0%	NA	NA	NA	NA	**5**	NE	0	0	NE	23
	trans-1,2-DCE	100	100	27,000,000	**77**	NE	1.0	54	54	0	0%	NA	NA	NA	2	2	0	0%	NA	NA	NA	0	0	0	0	**0**	NE	0
	Vinyl Chloride	0.29	0.02	3,800	0.33	NE	**0.2**	54	32	22	41%	0	127	11.32	2	2	0	0%	NA	NA	NA	0	17	22	0	17	NE	**19**
Metals (µg/L)	Arsenic (Total)	0.58	0.018	380	NE	**8**	3.3	107	35	72	67%	0.24	140	5.41	9	0	9	100%	0.2	2.9	0.9	6	68	72	0	NE	**29**	51
	Arsenic (Dissolved)	0.58	0.018	380	NE	**8**	3.3	92	33	59	64%	0.20	78	4.10	9	0	9	100%	0.20	3.10	0.75	6	55	59	0	NE	**18**	36
	Barium (Total)	**2,000**	**1,000**	400,000	NE	NE	28	100	3	97	97%	14.9	180	86.53	9	0	9	100%	48.0	116	80.46	0	**0**	**0**	0	NE	NE	94
	Barium (Dissolved)	**2,000**	**1,000**	400,000	NE	NE	28	89	3	86	97%	2.0	171	69.98	9	0	9	100%	52.1	111	78.82	0	**0**	**0**	0	NE	NE	81
	Cadmium	5.0	0.72	110	NE	NE	**4.4**	7	7	0	0%	NA	NA	NA	0	0	0	0%	NA	NA	NA	0	0	0	0	NE	NE	**0**
	Chromium (Total)	**100**	**74**	25,000	NE	NE	11	107	84	23	21%	0.53	19.00	1.56	9	5	4	44%	0.53	1.10	0.8	0	**0**	**0**	0	NE	NE	1
	Chromium (Dissolved)	**100**	**74**	25,000	NE	NE	11	89	67	22	25%	0.49	6.40	1.08	9	5	4	44%	0.50	0.97	0.72	0	**0**	**0**	0	NE	NE	0
	Lead (Total)[10]	**15**	2.5	**2.1**	NE	NE	0.5	537	297	240	45%	0.03	7,810	2.30	92	63	29	32%	0.03	5.88	0.42	4	22	111	**124**	NE	NE	193
	Lead (Dissolved)[10]	**15**	2.5	**2.1**	NE	NE	0.5	500	405	95	19%	0.08	10.00	0.6	83	72	11	13%	0.13	2.00	0.24	0	0	23	**26**	NE	NE	45
	Selenium	50	5.0	19	NE	NE	**20**	0	0	0	0%	NA	NA	NA	0	0	0	0%	NA	NA	NA	0	0	0	0	NE	NE	**0**
	Silver	80	3.2	66	NE	NE	**10**	0	0	0	0%	NA	NA	NA	0	0	0	0%	NA	NA	NA	0	0	0	0	NE	NE	**0**
	Mercury	2.0	0.012	3.8	1.1	NE	**0.50**	7	7	0	0%	NA	NA	NA	0	0	0	0%	NA	NA	NA	0	0	0	0	0	NE	**0**
PCBs - Total (µg/L)		0.22	0.0000070	0.031	NE	NE	**0.175**	7	7	0	0%	NA	NA	NA	0	0	0	0%	NA	NA	NA	0	0	0	0	NE	NE	**0**

Notes:
1. Applies to groundwater samples collected from all wells listed in Table 4-4.
2. Groundwater data collected in 2009 or more recently are considered representative of site conditions and are included in calcualations for this table.
3. Applies to groundwater samples collected from wells north of Valley Street (SMW-3, MW-209, MW-210, MW-211).
4. TPH as gasoline-range organics (GRO) analyzed by Ecology Method NWTPH-Gx.
5. TPH as diesel-range organics (DRO) and motor oil-range organics (ORO) analyzed by Ecology Method NWTPH-Dx without acid/silica gel cleanup.
6. Results are DRO+ORO calculations. A value of half the detection limit was used for non-detect values. Due to significant overlap between the two hydrocarbons, when both kerosene and diesel values are present for a sample the higher concentration and/or detection limit was used for the total extractable hydrocarbon calculation. Beginning in May 2022, results were quantified by the laboratory as hydrocarbon range of C10 to C36 (diesel and oil ranges).
7. VOC analysis by EPA Method 8020A, 8021B or 8260B.
8. For benzo(b)fluoranthene and benzo(k) fluoranthene, the screening level for total benzofluoranthenes was applied to each constituent.
9. cPAHs are subject to WAC-173-340 Toxicity Equivalent Concentration calculations. The MTCA Method A cleanup level for TTEC is based on benzo(a)pyrene.
10. Total lead analysis by EPA Method 6020.

cPAH = carcinogenic polycyclic aromatic hydrocarbon
DRO = diesel-range organics
EDB = 1,2-dibromoethane
EDC = 1,2-dichloroethane
GRO = gasoline-range organics
MTBE = methyl tert-butyl ether
MTCA = Model Toxics Control Act
NA = not applicable
NE = not established
ORO = oil-range organics
PAH = polycyclic aromatic hydrocarbon
PCB = polychlorinated biphenyl
TPH = total petroleum hydrocarbon
TTEC = total toxicity equivalent concentration
VOC = volatile organic compound

Table 5-2. Soil COPC Screening Summary
Remedial Investigation Work Plan
Block 37 Site
600 - 630 Westlake Avenue North | Seattle, Washington

							All Samples											
		SL-1 Direct Contact	SL-2 Protect Drinking Water Vadose Zone	SL-5 Protect Drinking Water Saturated Zone	SL-10 Natural Background	Laboratory PQL	Total Number of Samples Analyzed:	Sample Results Reported as Not Detected:	Sample Results Reported as Detected:	% Detection	Min:	Max:	Geometric Mean:	Detected samples exceeding SL-1 Direct Contact	Detected samples exceeding SL-2 Protect Drinking Water Vadose Zone	Detected samples exceeding SL-5 Protect Drinking Water Saturated Zone	Detected samples exceeding SL-10 Natural Background	Detected samples exceeding Laboratory PQL[3]
Analyte							Representative Samples[4]											
TPH (mg/kg)	TPH[7]	NE	NE	**2,000**	NE	NE	9	0	9	100%	8.6	750	87.4	NE	NE	**0**	NE	NE
	GRO[8]	1,500	**30**	**30**	NE	5	744	502	242	33%	1.55	8,600	35.19	12	**12**	**95**	NE	211
	DRO[10]	NE	**2,000**	**2,000**	NE	15	679	468	211	31%	10.9	3,400	64.4	NE	**1**	**1**	NE	194
	ORO[10]	NE	**2,000**	**2,000**	NE	10	668	483	185	28%	29	1,540	136	NE	**0**	**0**	NE	185
	TEH[11]	NE	**2,000**	**2,000**	NE	3.44	688	0	688	100%	2.5	4,620	51.9	NE	**1**	**1**	NE	681
	Kerosene	NE	**2000**	**2,000**	NE	NA	290	262	28	10%	14.3	653	59.4	NE	**0**	**0**	NE	262
VOCs[12] (mg/kg)	Benzene	18	**0.027**	0.0017	NE	**0.02**	746	499	247	33%	0.001000	24	0.088084	1	**34**	200	NE	**179**
	Toluene	6,400	**4.5**	**0.27**	NE	0.05	746	604	142	19%	0.001050	1,000	0.160485	0	**2**	**54**	NE	92
	Ethylbenzene	8,000	**5.9**	**0.34**	NE	0.05	746	561	185	25%	0.000813	17,000	0.327941	1	**4**	**77**	NE	134
	Total Xylenes	16,000	**14**	**0.83**	NE	0.15	745	550	195	26%	0.006440	99,000	0.857484	1	**4**	**80**	NE	137
	EDB	0.50	0.00027	0.000018	NE	**0.05**	46	39	7	15%	0.00091	0.0129	0.00286	0	0	7	NE	**0**
	EDC	11	0.023	0.0016	NE	**0.05**	34	34	0	0%	NA	NA	NA	0	0	0	NE	**0**
	MTBE	560	**0.1**	0.0072	NE	**0.05**	610	589	21	3%	0.001550	8	0.043724	0	**0**	12	NE	**7**
PAHs (mg/kg)	Naphthalene	1,600	**4.5**	**0.24**	NE	0.2	640	541	99	15%	0.0019	63.4	0.3324	0	**3**	**50**	NE	58
	Acenaphthene	4,800	**49**	**2.5**	NE	0.01	12	9	3	25%	0.0094	0.0197	0.0123	0	**0**	**0**	NE	2
	Acenaphthylene	NE	NE	NE	NE	0.01	12	10	2	17%	0.0094	0.0100	0.009695	NE	NE	NE	NE	1
	Anthracene	24,000	**1,100**	**57**	NE	0.01	12	9	3	25%	0.009	0.019	0.012	0	**0**	**0**	NE	2
	Benzo(ghi)perylene	NE	NE	NE	NE	0.01	12	7	5	42%	0.0094	0.0698	0.0232	NE	NE	NE	NE	4
	Fluoranthene	3,200	**630**	**32**	NE	0.01	12	8	4	33%	0.0094	0.0213	0.0132	0	**0**	**0**	NE	3
	Fluorene	3,200	**51**	**2.6**	NE	0.01	12	9	3	25%	0.0094	0.0329	0.0146	0	**0**	**0**	NE	2
	1-Methyl naphthalene	34	**0.082**	0.0042	NE	**0.01**	24	19	5	21%	0.0100	0.882	0.0474	0	**0**	4	NE	**5**
	2-Methyl naphthalene	320	**1.7**	**0.089**	NE	0.01	24	19	5	21%	0.0100	1.62	0.0654	0	**0**	**1**	NE	5
	Phenanthrene	NE	NE	NE	NE	0.01	12	7	5	42%	0.0094	0.104	0.0199	NE	NE	NE	NE	4
	Pyrene	2,400	**330**	**16**	NE	0.01	12	7	5	42%	0.0094	0.0456	0.0195	0	**0**	**0**	NE	4
cPAHs (mg/kg)	Benzo(a)anthracene	NE	NE	NE	NE	0.01	58	44	14	24%	0.00061	0.11	0.00510	NE	NE	NE	NE	5
	Benzo(a)pyrene	**0.19**	3.9	**0.19**	NE	0.01	58	39	19	33%	0.00054	0.141	0.00764	**0**	0	**0**	NE	12
	Benzo(b)fluoranthene	NE	NE	NE	NE	0.01 (total benzofluoranthenes)	58	39	19	33%	0.00059	0.13	0.00729	NE	NE	NE	NE	12
	Benzo(j,k)fluoranthene	NE	NE	NE	NE		58	49	9	16%	0.00036	0.041	0.00336	NE	NE	NE	NE	
	Chrysene	NE	NE	NE	NE	0.01	58	37	21	36%	0.00037	0.1000	0.00813	NE	NE	NE	NE	14
	Dibenz(a,h)anthracene	NE	NE	NE	NE	0.01	58	53	5	9%	0.00035	0.021	0.00607	NE	NE	NE	NE	3
	Indeno(1,2,3-cd)pyrene	NE	NE	NE	NE	0.01	58	43	15	26%	0.000350	0.076000	0.004620	NE	NE	NE	NE	6
	TTEC[13]	**0.19**	3.9	**0.19**	NE	0.0151	58	35	23	40%	0.000191	0.1525	0.007750	**0**	0	**0**	NE	8
Metals (mg/kg)	Arsenic	0.67	4.67	0.234	**7.3**	1.0	68	59	9	13%	1.57	5.57	2.87	9	0	9	**0**	9
	Barium	16,000	**1,600**	**83**	NE	0.5	34	5	29	85%	19.5	96.2	43.5	0	**0**	**2**	NE	29
	Cadmium	80	0.69	0.035	**0.77**	0.15	50	50	0	0%	NA	NA	NA	0	0	0	**0**	0
	Chromium[14]	**120,000**	480,000	**24,000**	48	0.5	68	4	64	94%	1.53	59	19.47	**0**	0	**0**	2	64
	Lead[15]	**250**	3,000	**150**	17	0.5	692	59	633	91%	0.791	11,700	12.392	**12**	2	**21**	225	633
	Selenium	400	**5.2**	0.26	NE	**1**	16	16	0	0%	NA	NA	NA	0	**0**	0	NE	**0**
	Silver	400	**14**	**0.69**	NE	0.5	16	16	0	0%	NA	NA	NA	0	**0**	**0**	NE	0
	Mercury	NE	**2.1**	**0.10**	0.07	0.02	38	38	0	0%	NA	NA	NA	NE	**0**	**0**	0	0
cVOCs (mg/kg)	PCE	480	0.05	0.0028	NE	**0.05**	5	5	0	0%	NA	NA	NA	0	**0**	0	NE	0
	TCE	12	0.025	0.0015	NE	**0.05**	6	6	0	0%	NA	NA	NA	0	**0**	0	NE	0
	cis-1,2-DCE	160	**0.079**	0.0052	NE	0.05	5	5	0	0%	NA	NA	NA	0	**0**	0	NE	0
	trans-1,2-DCE	1600	**0.52**	0.032	NE	0.05	5	5	0	0%	NA	NA	NA	0	**0**	0	NE	0
	Vinyl Chloride	0.67	0.0017	0.00009	NE	**0.02**	5	5	0	0%	NA	NA	NA	0	0	0	NE	**0**
PCBs - Total (mg/kg)		1.0	**0.34**	0.017	NE	**0.033**	18	18	0	0%	NA	NA	NA	0	**0**	0	NE	**0**

Notes:

1. Ecology's MTCA Method A Cleanup Levels for Soil (WAC 173-340-900 Table 740-1).
2. For GRO, screening level exceedances assessed comparative to the more conservative screening level (30 mg/kg).
3. For benzo(b)fluoranthene and benzo(k) fluoranthene, the screening level for total benzofluoranthenes was applied to each constituent.
4. Rationale for selection of representative soil samples is described in Section 5. For most constituents, representative samples consist of soil samples that are still present and were not excavated (unexcavated) during the Phase 1 and Phase 2 excavations.
   For GRO and VOCs, representative samples include unexcavated samples that were collected following completion of AS/SVE remedial action in 2018.
5. Shaded cell indicates that one or more samples exceed the relevant screening level, and that this pathway is complete, as described in Section 5.
6. For duplicate samples provided in a single cell, the greater of the two concentrations were used for calculations.
7. TPH analysis by Method 4 18.1 (pertaining to the SMW# sample IDs).
8. TPH as gasoline range hydrocarbons (TPH-GRO) analysis by Ecology Method NWTPH-Gx/8021. The GRO data associated with the "Geoengineers 1992-Supplemental Subsurface Study" data was analyzed by EPA Method 8015-modified.
9. Ecology's TPH-GRO MTCA Method A Cleanup Levels for Soil has two levels: 100 mg/kg for gasoline mixtures without benzene and the total of ethylbenzene, toluene and xylene are less than 1% of the gasoline mixture; 30 mg/kg for all other gasoline mixtures.
10. TPH as diesel-range (DRO) and motor oil-range (ORO) analysis by Ecology Method NWTPH-Dx without acid/silica gel cleanup.
11. Results are DRO+ORO calculations. A value of half the detection limit was used for non-detect values. Due to significant overlap between the two hydrocarbons, when both kerosene and diesel values are present for a sample the higher concentration and/or detection limit was used for the total extractable hydrocarbon calculation. Beginning in May 2022, results were quar
12. VOCs analysis by EPA Method 8260, prepared by EPA Method 5035/5030B. Benzene, toluene, ethylbenzene, and xylenes (BTEX) analysis by EPA Method 8020A, 8021B, or 8260B. The VOC data associated with the "Geoengineers 1992-Supplemental Subsurface Study" data was analyzed by EPA Method 8020.
13. cPAHs are subject to WAC-173-340 Toxicity Equivalent Concentration calculations. The MTCA Method A cleanup level for TTEC is based on benzo(a)pyrene.
14. Ecology's Chromium MTCA Method A cleanup levels for Soil has two values: Trivalent Chromium = 2,000 mg/kg. Hexavalent Chromium = 19 mg/kg.
15. Total lead analysis by EPA Method 6010; prepared by EPA Method 3050.

cPAH = carcinogenic polycyclic aromatic hydrocarbon
DRO = diesel-range organics
EDB = 1,2-dibromoethane
EDC = 1,2-dichloroethane
GRO = gasoline-range organics
MTBE = methyl tert-butyl ether
MTCA = Model Toxics Control Act
NA = not applicable
NE = not established
ORO = oil-range organics
PAH = polycyclic aromatic hydrocarbon
PCB = polychlorinated biphenyl
TPH = total petroleum hydrocarbon
TTEC = total toxicity equivalent concentration
VOC = volatile organic compound

Table 6-1. Investigation Data Gaps Summary
Remedial Investigation Work Plan
Block 37 Site
600 - 630 Westlake Avenue North | Seattle, Washington

Data Gap No.[1]	Data Gap Description	Location	Media	Constituents[2,3]	Work Plan Figure No.	Rationale	Proposed Action for RI
1	Limited analytical parameters analyzed during previous investigations. (5)	Block 37 Site	Soil	Arsenic	Figures 4-9a through 4-9c	Not all COPCs (primarily) Arsenic have been analyzed for in soil samples collected in prior investigations and remedial actions conducted at the Block 37 Site. Lateral and vertical distribution of arsenic across the Site is needed.	Advance soil borings and analyze soil samples for Arsenic (Figure 7-1).
2	Exceedances of screening levels of GRO, benzene,and naphthalene in soil confirmation and soil boring samples. Vertical delineation of these contaminants is needed in portions of the Site. (1)	Phase 1 Excavations; Phase 2 Excavations-Area 1 and 2; Footprint of the former automotive servicing area and lumber mill features in the northern portion of the Block 37 Property	Soil	GRO, Benzene Naphthalene	Figures 5-2 and 5-3	Concentrations of one or more COPCs exceeded applicable screening levels in confirmation soil samples collected at the base of the excavations and soil borings. Concentrations of these COPCs are not known at deeper depths in these areas for confirming their vertical extent.	Advance soil borings in the areas specified; collect soil samples from depths below the excavation extents and from deeper depths not previously investigated in those areas; analyze the samples for those COPCs requiring vertical delineation. (Figure 7-1).
3	Isolated areas with limited confirmation soil sampling.(2)	Phase 1 Excavation Phase 2 Excavation-Area 1	Soil	COPCs	Figures 5-2 and 5-3	Confirmation soil sampling not conducted in the northern portion of the Block 37 Property (i.e., grid cells E6, E7, E8, F6, F7, G6, and G7; Phase 1 Excavation: A-A1.	Advance soil borings and analyze soil samples for COPCs applicable to the Block 37 Site (Figure 7-1).
4	Exceedances of screening levels in soil outside of the remedial excavation areas. (3)	Southeast corner of the Block 37 Property (east of Phase 2 Excavation-Area 2); Footprint of the former automotive servicing area and lumber mill features in the northern portion of the Block 37 Property	Soil	COPCs	Figures 4-3a through 4-9c	Borings and monitoring wells completed in this area had concentrations of COPCs exceeding screening levels.	Advance soil borings and analyze soil samples for COPCs applicable to the Block 37 Site (Figure 7-1).
5	Concentrations of COPCs in soil within the ROWs have not been assessed following AS/SVE remedial actions. (4)	ROWs surrounding the Block 37 Property (Valley Street, Terry Avenue N, Mercer St, Westlake Avenue N)	Soil	COPCs	Figures 4-3a through 4-9c	Comprehensive post-remedial action soil sampling in the ROWs has not been performed.	Advance soil borings and analyze soil samples for COPCs applicable to the Block 37 Site (Figure 7-1).
6	Limited analysis of arsenic during previous site investigations.	Block 37 Site	Groundwater	Arsenic	Figures 4-2g	Arsenic has not been analyzed in groundwater samples collected in prior investigations conducted at the Block 37 Site. Additional arsenic data will allow better understanding of the cause of the arsenic exceedances.	Install monitoring wells and analyze groundwater samples for arsenic.
7	Shallow water-bearing zone to the west, northwest, and south of the Phase 2 Excavation limits has not been adequately characterized.	Westlake Avenue North, Valley Street, and Mercer Street ROW to the west, north, and south of the Block 37 Property.	Groundwater	COPCs	Figure 4-2a though 4-2g	No monitoring wells were installed to the west of the Block 37 Property after the Westlake Avenue Phase 1 Excavation.	Install network of monitoring wells screened in the shallow water-bearing zone within/adjacent to the interim action excavation areas (Figure 7-2).
8	The vertical extent of groundwater impacts in the intermediate water-bearing zone has not been fully characterized.	Block 37 Site	Groundwater	COPCs	Figures 4-2a through 4-2g	Intermediate water-bearing zone has not been fully assessed along the northern portion of the Block 37 Property.	Install network of monitoring wells screened in the lower portion of the shallow water-bearing zone and upper portion of the intermediate water-bearing zone. The screened intervals will likely not be excavated during construction of the proposed building and Ecology will require confirmation that groundwater beneath the building footprint meets the MTCA CULs (Figure 7-2).
9	The vertical extent of COPCs beneath the shallow water-bearing zone has not been assessed within the ROWs.	ROWs surrounding the Block 37 Property (Valley Street, Terry Avenue N, Mercer St, Westlake Avenue N)	Groundwater	COPCs	Figures 4-2a through 4-2g	No monitoring wells have been installed in the ROWs surrounding the Block 37 Property to assess the vertical distribution of COPCs.	Install network of monitoring wells screened in the intermediate water-bearing zone.
10	Effects of the hydraulic barriers/construction dewatering on the fate and transport on COPCs.	Block 37 Site	Groundwater	NA	NA	To better understand the fate and transport of COPCs and groundwater flow.	Collect synoptic gw level measurements and obtain available information regarding local dewatering and foundation drainage designs. Evaluate groundwater gradients in the 3 water bearing zones.
11	Soil gas concentrations in areas with elevated volatile COPCs in soil/groundwater has not been assessed.	Block 37 Site	Soil Vapor	GRO, DRO, BTEX, naphthalene	NA	No vapor intrusion risk analysis has been performed. The vapor intrusion pathway is considered complete; therefore, vapor intrusion assessment is warranted.	Collect soil gas samples at select locations consistent with Ecology's Final VI Guidance (Ecology, March 2022).

Notes:

[1] Refer to Section 6 of the RI Work Plan.

[2] COPCs for the Block 37 Site (refer to Section 5.8 of the RI Work Plan):

COPCs in Soil	**COPCs in Groundwater**	**COPCs in Soil Gas**
TPHs - TPH-GRO, TPH-DRO, TPH-ORO, Kerosene	TPHs - TPH-GRO, TPH-DRO, TPH-ORO, Kerosene	TPHs - TPH-GRO and TPH-DRO
VOCs - BTEX	VOCs - BTEX	VOCs - BTEX and naphthalene
SVOCs - naphthalene	SVOCs - naphthalene	
Metals - arsenic, barium, chromium, lead	Metals - arsenic, barium, chromium, lead	

[3] COPCs specific to the Block 37 Site ROWs (refer to Section 5.8 of the RI Work Plan):

TPHs - TPH-GRO, TPH-DRO, TPH-ORO, Kerosene
VOCs - BTEX, MTBE, naphthalene
Metals - arsenic and lead

AS = air sparge
BTEX = benzene, toluene, ethylbenzene, total xylenes
COPC = contaminants of potential concern
cPAHs = carcinogenic polycyclic aromatic hydrocarbons
CUL = cleanup level
DRO = total petroleum hydrocarbons (TPH) as diesel-range organics
Ecology = Washington State Department of Ecology
GRO =TPH as gasoline-range organics
MTBE = methyl tert-butyl ether
MTCA = (Washington State) Model Toxics Control Act Cleanup
NA = not applicable
ORO = TPH as oil-range organics
RI = Remedial Investigation
ROW = City of Seattle Right-of-Way
SVE = soil vapor extraction
SVOCs = semi-volatile organic compounds
VI = Vapor Intrusion
VOCs = volatile organic compounds

Soil

Groundwater

Soil Vapor

References:

Washington State Department of Ecology (Ecology). 2016. Implementation Memorandum No. 14: Updated Process for Initially Assessing the Potential for Petroleum Vapor Intrusion. Toxics Cleanup Program Publication No. 16-09-046. March 2016

Washington State Department of Ecology (Ecology). 2018. Guidance for Evaluating Soil Vapor Intrusion in Washington State: Investigation and Remedial Action. Publication # 09-09-047 (Revised April). Available at https://apps.ecology.wa.gov/publications/documents/0909047.pdf. Accessed August 9, 2021.

Table 7-1. Proposed Sampling
Remedial Investigation Work Plan
Block 37 Site
600 - 630 Westlake Avenue North | Seattle, Washington

Proposed Sample ID	Proposed Sample Location: Former Excavation Grid Cell	Proposed Sample Location: Area of Block 37 Site	Rationale for Sample	Boring / Well Details: Total Depth (ft bgs)	Boring / Well Details: Soil Sample Depths[3] (ft bgs)	Boring / Well Details: Screen Interval (ft bgs)	Boring / Well Details: Water-bearing Zone	Analyses: TPHs: GRO	TPHs: DRO	TPHs: ORO	Analyses: VOCs: BTEX & Napthalene	Analyses: Metals: As and Pb	Comment
			Analytical Method: *Soil and Groundwater*					NWTPH-Gx	NWTPH-Dx		EPA 8260D	EPA 6010D	
			Analytical Method: *Soil Gas*					MA APH			EPA TO15	--	
PROPOSED SOIL BORINGS[1]													
AB-1	A3	Phase 2 Area 1 Excavation	To assess the lateral distribution of COPCs north of grid cell B 3 between 4 and 14 feet NAVD88	30	15, 20, 25, 30	--	--	x	x	x	x	x	
AB-2	A6	Phase 2 Area 1 Excavation	To assess the lateral distribution of COPCs north of boring SB-42 where concentrations of benzene exceeded screening levels at 9 and 14 feet NAVD88	30	15, 20, 25, 30	--	--	x	x	x	x	x	
AB-3	A 12/13	Phase 2 Area 1 Excavation	To assess the lateral distribution of naphthalene where concentrations exceeded screening levels at 14 feet NAVD88	30	15, 20, 25, 30	--	--	x	x	x	x	x	
AB-4	--	Adjacent North of Block 37 Property (Valley Street)	To assess the lateral extent of COPCs to the northeast of the Block 37 property	30	15, 20, 25, 30	--	--	x	x	x	x	x	Northeast corner of site, near street corner
AB-5	B/C 12/13	Phase 2 Area 1 Excavation	To assess the lateral distribution of COPCs southwest of grid cell B 14 between 2 and 14 feet NAVD88 and northwest of C 13 at 7 to 14 feet NAVD88	30	15, 20, 25, 30	--	--	x	x	x	x	x	
AB-6	B/C 15	Phase 2 Area 1 Excavation	To assess the lateral distribution of COPCs southeast of grid cell B 14 between 2 and 14 feet NAVD88	30	15, 20, 25, 30	--	--	x	x	x	x	x	
AB-7	D 3	Phase 2 Area 1 Excavation	To assess the lateral distribution of COPCs south of grid cell B 3 and east of D 1 and E 1 between 4 and 14 feet NAVD88 and southeast of C 5 between 7 and 14 feet NAVD88	30	15, 20, 25, 30	--	--	x	x	x	x	x	
AB-8	E/F 6/7	Phase 2 Area 1 Excavation	To assess COPCs in an area where no samples (including confirmation) were collected/analyzed during the 2009 excavation. Location is central to grid cells E 6, E 7, E 8, F 6, and F 7	30	15, 20, 25, 30	--	--	x	x	x	x	x	Collect sample from 7 to 14 feet NAVD88
AB-9	C 8/9	Phase 2 Area 1 Excavation	To assess the lateral distribution of COPCs (Pb) north of grid cell B 8 and B 9 between 1.5 and 14 feet NAVD88	30	15, 20, 25, 30	--	--	x	x	x	x	x	
AB-10	D 10	Phase 2 Area 1 Excavation	To assess the lateral distribution of COPCs (Pb) east of grid cell B 8 and B 9 between 1.5 and 14 feet NAVD88	30	15, 20, 25, 30	--	--	x	x	x	x	x	
AB-11	E 13	Phase 2 Area 1 Excavation	To assess the lateral distribution of COPCs south of grid cell C 13, southeast of D 12, east of E 12, northeast of F 12, and north of F 13 between 6 and 14 feet NAVD88	30	15, 20, 25, 30	--	--	x	x	x	x	x	
AB-12	D/E 15	Phase 2 Area 1 Excavation	To assess the lateral distribution of COPCs southeast of grid cell C13, east of D 12 and E 12, northeast of F 13, and north of F 15 between 6 and 14 feet NAVD88	30	15, 20, 25, 30	--	--	x	x	x	x	x	
AB-13	G/H 6/7	Phase 2 Area 1 Excavation	To assess COPCs in an area where no samples (including confirmation) were collected/analyzed during the 2009 excavation. Location is central to grid cells G 6 and G 7 and deep excavations to the southwest, east, and southeast	30	15, 20, 25, 30	--	--	x	x	x	x	x	Collect sample from 7 to 14 feet NAVD88
AB-14	J 7	Phase 2 Area 1 Excavation	To assess the lateral distribution of COPCs south of grid cell I 7, west of J 8, and north of K 7 between 7 and 14 feet NAVD88	30	15, 20, 25, 30	--	--	x	x	x	x	x	
AB-15	G 15	Phase 2 Area 1 Excavation	To assess the lateral distribution of COPCs east-southeast of grid cell F 13 between 6 and 14 feet NAVD88	30	15, 20, 25, 30	--	--	x	x	x	x	x	
AB-16	H 3	Phase 2 Area 1 Excavation	To assess the lateral distribution of COPCs southeast of grid cell G 1, south of G 2, west of H 3, and northwest of I 3, northeast of I 1, and east of H 1 between 4 and 14 feet NAVD88	30	15, 20, 25, 30	--	--	x	x	x	x	x	
AB-17	J/K 3	Phase 2 Area 1 Excavation	To assess the lateral distribution of COPCs southeast of grid cell I 4, northwest of K 4, northeast of K 2, east of J 2, and southeast of I 2 between 4 and 14 feet NAVD88	30	15, 20, 25, 30	--	--	x	x	x	x	x	
AB-18	I 12	Phase 2 Area 1 Excavation	To assess the lateral distribution of COPCs south of grid cell H 12, west of I 13, and north of J 12, and east of I 10 between 7 and 14 feet NAVD88	30	15, 20, 25, 30	--	--	x	x	x	x	x	
AB-19	B 12	Southeast Block 37 Property	To assess the vertical distribution of COPCs (TPH-DRO and TPH-ORO) near MW-45 below 21 feet NAVD88	30	10, 15, 20, 25, 30	--	--	x	x	x	x	x	This boring will be in the same boring as AMW-7
AB-20	A 14	Southeast Block 37 Property	To assess the vertical distribution of COPCs northeast of MW-45 below 21 feet NAVD88	30	10, 15, 20, 25, 30	--	--	x	x	x	x	x	The 25-ft sample from this location may be held for contingency analysis based on the analytical results for the 20-ft sample.
AB-21	B 15+	Southeast Block 37 Property	To assess the vertical distribution of COPCs (benzene) near MW-54	30	15, 20 25, 30	--	--	x	x	x	x	x	
AB-22	D/E 4/5	Phase 2 Area 2 Excavation	To assess the presence of COPCs related to waste oil below the Phase 2 Excavation	30	15, 20 25, 30	--	--	x	x	x	x	x	
AB-23	D 15+	Southeast Block 37 Property	To assess the lateral distribution of COPCs east of SB-6 and south of MW-54	30	10, 15, 20, 25, 30	--	--	x	x	x	x	x	The 25-ft sample from this location may be held for contingency analysis based on the analytical results for the 20-ft sample.
AB-24	G 3	Phase 2 Area 2 Excavation	To assess the lateral distribution of COPCs west of grid cell G 5 and H 5 below elevation 14 feet NAVD88	30	15, 20 25, 30	--	--	x	x	x	x	x	
AB-25	E 10	Phase 2 Area 2 Excavation	To assess the lateral distribution of COPCs at grid cell E 10 below elevation 14 feet NAVD88	30	15, 20 25, 30	--	--	x	x	x	x	x	
AB-26	G 12	Southeast Block 37 Property	To assess the lateral distribution of COPCs east of MW-50 and the vertical extent of naphthalene detected at MW-55 below 9 feet NAVD88	30	10, 15, 20, 25, 30	--	--	x	x	x	x	x	The 25-ft sample from this location may be held for contingency analysis based on the analytical results for the 20-ft sample.
AB-27	F 15+	Southeast Block 37 Property	To assess the lateral distribution of COPCs along the eastern boundary of the Block 37 Property south of boring AB-24 and north of well B-37-9	30	15, 20 25, 30			x	x	x	x	x	
AB-28	G 5	Phase 2 Area 2 Excavation	To assess the vertical distribution of COPCs (BTEX) at grid cell G 5 and G 6 below 14 feet NAVD88	30	15, 20 25, 30			x	x	x	x	x	
AB-29	--	North of Valley Street	Adjacent to MW-203, soil from MW-203 exceeding Pb	30	10, 20, 25, 30	--	--	x	x	x	x	x	North side of Valley St
AB-30	--	Adjacent East of Block 37 Property (Terry Avenue North)	Adjacent to MW-36, soil from MW-36 exceeding Pb and SVE area	25	7,15, 20, 30	--	--	x	x	x	x	x	Northeast corner of site
AB-31	--	Adjacent East of Block 37 Property (Terry Avenue North)	Adjacent to boring exceeding naphthalene and SVE area	30	5, 20, 25, 30	--	--	x	x	x	x	x	Northeast side of site
AB-32	--	Adjacent East of Block 37 Property (Terry Avenue North)	Adjacent MW-69 and TSVE-5, soil samples from MW-69 and TSVE exceeding naphthalene/DRO-ORO and SVE area	25	10,15,20	--	--	x	x	x	x	x	East side of site. The 25-ft sample from this location may be held for contingency analysis based on the analytical results for the 20-ft sample.
AB-33	--	Adjacent East of Block 37 Property (Terry Avenue North)	Adjacent to MW-68, soil from MW-68 high in benzene and naphthalene, SVE area	30	10, 15, 20, 25, 30	--	--	x	x	x	x	x	Southeast corner of site

Table 7-1. Proposed Sampling
Remedial Investigation Work Plan
Block 37 Site
600 - 630 Westlake Avenue North | Seattle, Washington

Proposed Sample ID	Proposed Sample Location: Former Excavation Grid Cell	Proposed Sample Location: Area of Block 37 Site	Rationale for Sample	Boring / Well Details: Total Depth (ft bgs)	Boring / Well Details: Soil Sample Depths[3] (ft bgs)	Boring / Well Details: Screen Interval (ft bgs)	Boring / Well Details: Water-bearing Zone	Analyses: TPHs: GRO	TPHs: DRO	TPHs: ORO	Analyses: VOCs: BTEX & Napthalene	Analyses: Metals: As and Pb	Comment
			Analytical Method: *Soil and Groundwater*					NWTPH-Gx	NWTPH-Dx		EPA 8260D	EPA 6010D	
			Analytical Method: *Soil Gas*					MA APH			EPA TO15	--	
AB-34	--	Adjacent South of Block 37 Property (Southeast of Phase 2 Area 2 Excavation)	Assess soil conditions in SVE area, adjacent to soil samples high in GRO	30	10, 20, 25, 30	--	--	x	x	x	x	x	Southeast corner of site
AB-35	J 8/9	Phase 2 Area 2 Excavation	Former UST Area	30	15, 20, 25, 30	--	--	x	x	x	x	x	Gas station UST locations/hoists
AB-36	I 2/3	Phase 2 Area 2 Excavation	Former Gas station area	30	15,20, 25, 30	--	--	x	x	x	x	x	Southwest corner of site. The 30-ft sample from this location may be held for contingency analysis based on the analytical results for the 25-ft sample.
AB-37	A-A-1	Phase 1 Excavation	Phase 1 Excavation area, GRO and benzene exceedances	30	15, 20, 25	--	--	x	x	x	x	x	Southwest corner of site. The 30-ft sample from this location may be held for contingency analysis based on the analytical results for the 25-ft sample.
AB-38	G-A-1	Phase 1 Excavation	Phase 1 Excavation area, GRO and benzene exceedances	30	15, 20, 25	--	--	x	x	x	x	x	West side of site
AB-39	E-A-1 / D-C-1	Phase 1 Excavation	Phase 1 Excavation area, GRO and benzene exceedances	30	15, 20, 25	--	--	x	x	x	x	x	West side of site
AB-40	C-A-1	Phase 1 Excavation	Phase 1 Excavation area, GRO and benzene exceedances	30	15, 20, 25	--	--	x	x	x	x	x	Northwest side of site adjacent to auto repair, gas station and mill
AB-41	--	Adjacent North of Block 37 Property (Valley Street)	Adjacent to borings exceeding naphthalene in SVE area	30	10, 15, 20	--	--	x	x	x	x	x	North of auto repair, gas station and mill
AB-42	--	Adjacent North of Block 37 Property (Valley Street)	Adjacent to AS/SVE Area	30	10, 15, 20	--	--	x	x	x	x	x	Northeast corner of site
AB-43	--	Adjacent North of Block 37 Property (Valley Street)	Adjacent to SB-21 and MW-204, GRO, benzene, naphthalene and Pb exceedences in both locations	30	10, 15, 20	--	--	x	x	x	x	x	Northwest corner of site, near street corner
AB-44	--	Adjacent West of Block 37 Property (Westlake Ave N)	In the area of Phase 1 Excavation Segment H, Cells A1 and B1 (between proposed boring locations AB-37 and AB-38, and east of AB-24). Where the highest concentrations of GRO, benzene, and naphthalene were at the base of the Phase 1 excavation.	30	15, 20, 25	--	--	x	x	x	x	x	This boring will be in the same boring as AMW-18
PROPOSED MONITORING WELLS[2]													
AMW-2	--	North of Phase 2 Area 1 Excavation	North side of Phase 2 Excavation area, downgradient of historic automotive operations, assessing intermediate water bearing zone	40	20, 25, 30	30 to 40	Intermediate	x	x	x	x	x	No intermediate well present along the north side of Property within Phase 2 excavation area
AMW-3	--	Valley Street ROW (North of Block 37 Property)	Assessing the intermediate water bearing zone north of Phase 2 Excavation	40	TBD	30 to 40	Intermediate	x	x	x	x	x	No intermediate wells present along the south side of Valley St, will be used to assess gradient between shallow and intermediate water bearing zones
AMW-4	--	North of Phase 2 Area 1 Excavation	North side of Phase 2 Excavation area, assessing intermediate water bearing zone	40	20,25,	30 to 40	Intermediate	x	x	x	x	x	No intermediate well present in northeastern portion of the Phase 2 excavation area, also assessing gradient between shallow and intermediate water bearing zones
AMW-5	--	Westlake Avenue N Sidewalk (West of Block 37 Property)	Assessing the shallow water bearing zone outside of Phase 2 Excavation Area along west side/downgradient	23	TBD	8 to 23	Shallow	x	x	x	x	x	No shallow well located in this portion of site, well to also be used to assess vertical gradient between shall and intermediate water bearing zones
AMW-6	--	Terry Avenue N (East of Block 37 Property)	Assessing the east side of the intermediate water bearing zone, outside of Phase 2 Excavation Area	40	TBD	30 to 40	Intermediate	x	x	x	x	x	Well to also be used to assess vertical gradient between shallow and intermediate water bearing zones
AMW-7	--	Block 37 Property: Adjacent to MW-45(unexcavated area)	Assessing the intermediate water bearing zone adjacent to wells with GRO, DRO, BTEX, kerosene exceeding screening levels	40	10, 15, 20	30 to 40	Intermediate	x	x	x	x	x	Well to also be used to assess vertical gradient between shallow and intermediate water bearing zones
AMW-8	--	Mercer Street ROW (South of Block 37 Property)	Assessing the intermediate water bearing zone adjacent to wells with DRO, TEH, kerosene exceeding screening levels	40	TBD	30 to 40	Intermediate	x	x	x	x	x	Well to also be used to assess vertical gradient between shallow and intermediate water bearing zones
AMW-9	--	Westlake Avenue N Sidewalk (West of Block 37 Property)	Assessing the shallow water bearing zone within the Phase 1 excavation area	23	15, 20	8 to 23	Shallow	x	x	x	x	x	Well to also be used to assess vertical gradient between shallow and intermediate water bearing zones
AMW-10	--	Westlake Avenue N Sidewalk (West of Block 37 Property)	Assessing the intermediate water bearing zone within the Phase 1 excavation area	40	25,30	30 to 40	Intermediate	x	x	x	x	x	Well to also be used to assess vertical gradient between shallow and intermediate water bearing zones
AMW-11	--	Westlake Avenue N Sidewalk (West of Block 37 Property)	Assessing the shallow water bearing zone within Phase 1 excavation area	23	15, 20	8 to 23	Shallow	x	x	x	x	x	All COPCs
AMW-12	--	Southeast Corner of Intersection Mercer St and Westlake Avenue (South of Block 38 Property)	Assessing the shallow water bearing zone downgradient of Block 37 Site	23	TBD	8 to 23	Shallow	x	x	x	x	x	
AMW-13	--	Southwest Corner of Intersection Mercer St and Westlake Avenue (Northwest of Block 44 Property)	Assessing the lateral distribution of COPCs (benzene and Pb) southeast of MW-206	23	TBD	8 to 23	Shallow	x	x	x	x	x	
AMW-14	--	Southeast Corner of Intersection Mercer St and Terry Avenue (South of Block 38 Property)	Assessing the lateral distribution of COPCs south of MW-71, MW-72, and MW-73	23	TBD	8 to 23	Shallow	x	x	x	x	x	
AMW-15	--	Southwest Corner of Intersection Mercer St and Terry Avenue	Assessing benzene exceedances adjacent to MW-207	23	TBD	8 to 23	Shallow	x	x	x	x	x	
AMW-16	--	Adjacent North of Block 37 Property (Valley Street)	Adjacent to SB-21 and MW-204, GRO, benzene, naphthalene and Pb exceedences in both locations	23	TBD	8 to 23	Shallow	x	x	x	x	x	Northwest corner of site, near street corner
AMW-17	--	Northwest of Project Site	Northwest of Block 37 property where limited data exists	40	TBD	5 to 18	Shallow	x	x	x	x	x	Northwest of site, adjacent to SMW-3
AMW-18	--	West of Block 37 Property (Westlake Ave N)	At the base of the Phase 1 excavation.	25	TBD	8 to 23	Shallow	x	x	x	x	x	Southest corner of site,in Westlake Ave N or sidewalk

Table 7-1. Proposed Sampling
Remedial Investigation Work Plan
Block 37 Site
600 - 630 Westlake Avenue North | Seattle, Washington

Proposed Sample ID	Proposed Sample Location: Former Excavation Grid Cell	Proposed Sample Location: Area of Block 37 Site	Rationale for Sample	Boring / Well Details: Total Depth (ft bgs)	Boring / Well Details: Soil Sample Depths[3] (ft bgs)	Boring / Well Details: Screen Interval (ft bgs)	Boring / Well Details: Water-bearing Zone	Analyses: TPHs: GRO	TPHs: DRO	TPHs: ORO	VOCs: BTEX & Napthalene	Metals: As and Pb	Comment
			Analytical Method: *Soil and Groundwater*					NWTPH-Gx	NWTPH-Dx		EPA 8260D	EPA 6010D	
			Analytical Method: *Soil Gas*					MA APH			EPA TO15	--	
EXISTING WELLS INCLUDED IN SAMPLING PROGRAM[2]													
PH-2/AMW-1	--	Phase 2 Area 1 Excavation	West side of Phase 2 Excavation area where limited data existed	23	20, 23	8 to 23	Shallow	x	x	x	x	x	
B-37-1 (GEI-1)	--	Phase 2 Area 1 Excavation	Assess COPCs in groundwater	--	--	26.75 to 36.75	Shallow	x	x	x	x	x	All COPCs, historic auto/gas station
B-37-2 (GEI-2)	--	Phase 2 Area 1 Excavation	Assess COPCs in groundwater	--	--	50.5 to 60.5	Intermediate	x	x	x	x	x	
B-37-3	--	Phase 2 Area 1 Excavation	Assess COPCs in groundwater	--	--	15 to 23.7	Shallow	x	x	x	x	x	All COPCs, historic auto/gas station
B-37-4	--	Phase 2 Area 1 Excavation	Assess COPCs in groundwater	--	--	15 to 25	Shallow	x	x	x	x	x	
B-37-5	--	Phase 2 Area 1 Excavation	Assess COPCs in groundwater	--	--	15 to 25	Shallow	x	x	x	x	x	
B-37-6	--	Phase 2 Area 1 Excavation	Assess COPCs in groundwater	--	--	15 to 25	Shallow	x	x	x	x	x	
B-37-7	--	Phase 2 Area 2 Excavation	Assess COPCs in groundwater	--	--	30.5 to 40.5	Shallow	x	x	x	x	x	
B-37-8	--	Phase 2 Area 2 Excavation	Assess COPCs in groundwater	--	--	30.5 to 40.5	Intermediate	x	x	x	x	x	
B-37-9	--	Phase 2 Area 2 Excavation	Assess COPCs in groundwater	--	--	29.5 to 39.5	Intermediate	x	x	x	x	x	
MW-45	--	Block 37 Property	Assess COPCs in groundwater	--	--	3 to 19	Shallow	x	x	x	x	x	
MW-50	--	Block 37 Property	Assess COPCs in groundwater	--	--	5 to 17	Shallow	x	x	x	x	x	
MW-54	--	Block 37 Property	Assess COPCs in groundwater	--	--	5 to 20	Shallow	x	x	x	x	x	
MW-209	--	North of Valley St	Assess COPCs in groundwater	--	--	5 to 20	Shallow	x	x	x	x	x	
MW-210	--	North of Valley St	Assess COPCs in groundwater	--	--	5 to 20	Shallow	x	x	x	x	x	
MW-211	--	North of Valley St	Assess COPCs in groundwater	--	--	5 to 20	Shallow	x	x	x	x	x	
MW-212	--	Block 37 Site	Assess COPCs in groundwater	--	--	10 to 25	Shallow	x	x	x	x	x	
MW-213	--	Valley St	Assess COPCs in groundwater	--	--	5 to 20	Shallow	x	x	x	x	x	
MW-214	--	Valley St	Assess COPCs in groundwater	--	--	7 to 17	Shallow	x	x	x	x	x	
MW-215	--	Valley St	Assess COPCs in groundwater	--	--	7 to 17	Shallow	x	x	x	x	x	
MW-216	--	Mercer St	Assess COPCs in groundwater	--	--	10 to 25	Shallow	x	x	x	x	x	
MW-217	--	Mercer St	Assess COPCs in groundwater	--	--	10 to 25	Shallow	x	x	x	x	x	
MW-218	--	Mercer St	Assess COPCs in groundwater	--	--	10 to 25	Shallow	x	x	x	x	x	
MW-219	--	Terry Ave N *	Assess COPCs in groundwater	--	--	5 to 20	Shallow	x	x	x	x	x	May be damaged
MWR-1	--	Block 37 Property	Assess COPCs in groundwater	--	--	8 to 18	Shallow	x	x	x	x	x	All COPCs, historic auto/gas station
MWR-2	--	Block 37 Property	Assess COPCs in groundwater	--	--	8 to 17	Shallow	x	x	x	x	x	
MWR-3	--	Block 37 Property	Assess COPCs in groundwater	--	--	8 to 17	Shallow	x	x	x	x	x	
MWR-4	--	Block 37 Property	Gauging groundwater level	--	--	8 to 17	Shallow	NA	NA	NA	NA	NA	Next to MWR-3, no sampling warranted
MWR-5	--	Block 37 Property	Assess COPCs in groundwater	--	--	8 to 17	Shallow	x	x	x	x	x	
MWR-6	--	Block 37 Property	Assess COPCs in groundwater	--	--	8 to 18	Shallow	x	x	x	x	x	
SMW-3	--	North of Valley St	Assess COPCs in groundwater	--	--	16 to 16.5	Shallow	x	x	x	x	x	
FMW-131	--	Block 37 Property	Assess COPCs in groundwater	--	--	63 to 73	Deep	x	x	x	x	x	
FMW-139	--	Block 37 Property	Gauging groundwater level	--	--	7 to 17	Shallow	NA	NA	NA	NA	NA	Next to MW-54, no sampling warranted
SOIL GAS													
ASG-1	--	TBD	To assess if petroleum hydrocarbon/VOC concentrations pose a future risk to indoor air quality through vapor intrusion	--	--	5 to 5.5	--	x	x	NA	x	NA	Locations to be based on soil/groundwater data
ASG-2	--	TBD	To assess if petroleum hydrocarbon/VOC concentrations pose a future risk to indoor air quality through vapor intrusion	--	--	5 to 5.5	--	x	x	NA	x	NA	
ASG-3	--	TBD	To assess if petroleum hydrocarbon/VOC concentrations pose a future risk to indoor air quality through vapor intrusion	--	--	5 to 5.5	--	x	x	NA	x	NA	
ASG-4	--	TBD	To assess if petroleum hydrocarbon/VOC concentrations pose a future risk to indoor air quality through vapor intrusion	--	--	5 to 5.5	--	x	x	NA	x	NA	
ASG-5	--	TBD	To assess if petroleum hydrocarbon/VOC concentrations pose a future risk to indoor air quality through vapor intrusion	--	--	5 to 5.5	--	x	x	NA	x	NA	

Notes
Select existing (accessible) monitoring wells will be selected for future groundwater monitoring.
[1]Refer to Figure 7-1 for locations of proposed soil borings. Boring depths may be extended based on field screening findings (e.g., elevated PID readings, sheen, etc.)
[2]Refer to Figure 7-2 for locations of proposed monitoring wells. Screen depth interval maybe modified based on field conditions.
[3] Deepest sample intervals held pending shalllower results.
'--' = not applicable or not analyzed
X = analysis included for this sample
AB = ATLAS boring
AMW = ATLAS monitoring well
APH = Air Phase Hydrocarbons
As = arsenic
ASG = ATLAS soil gas monitoring location
Ba = barium
BTEX = benzene, toluene, ethylbenzene, and total xylenes
Cr = chromium
DRO = diesel-range organics
EPA = Environmental Protection Agency Analytical Method
ft bgs = feet below ground surface
GRO = gasoline-range organics
MADEP = Massachusetts Department of Enviornmental Protection
MW = monitoring well
NA = not applicable
ORO = oil range organics
PAHs = polycyclic aromatic hydrocarbons, including naphthalene
Pb = lead
PCBs = polychlorinated biphenyls
ROW - (City of Seattle) right-of-way
SIM = Selective ion monitoring
TO-15 Compound List = VOC analyte list for method TO-15 as described in the Sampling and Analysis Plan (Appendix D)
TBD = to be determined
VOCs = volatile organic compounds, including BTEX, fuel additives, HVOCs, and naphthalene
* May not be accessible, believed to be covered by recent pavement

Table 7-2. Key Project Personnel
Remedial Investigation Work Plan
Block 37 Site
600 - 630 Westlake Avenue North | Seattle, Washington

Role	Agency	Name	Responsibility
Case Manager	Washington State Department of Ecology	Tena Seeds	Provide policy guidance and ensure that the project team is aware of and focuses on the key issues of importance to Ecology and the community. Point of contact for communications with the public and media.
Project Manager (Consultant)	Atlas Technical Consultants	Elisabeth Silver	Primary point of contact between Ecology (and other governmental agencies) overseeing the project team's task execution. Nexus for integrating environmental due diligence and redevelopment planning. Responsible for drafting monthly progress reports (submitted to Ecology), tracking budget and schedule, and ensuring quality of work products.
Project Manager / Quality Assurance Manager (Analytical Laboratory)	Pace Laboratory	Jennifer Gross	Primary point of contact for the analysis of environmental media collected at the Block 37 Site. Coordinate and provide laboratory analytical services in accordance with the laboratory quality assurance manual and other project-related communications.
Utility Locator	CNI Locates	Mitch Gasser	Conduct a utility locate and geophysical survey utilizing GPR and/or electromagnetics to determine the presence of utilities, USTs, and ancillary piping present beneath the Block 37 Site. The geophysical survey will dictate the placement of proposed boring and monitoring well locations.
Drillers	Cascade Drilling, Inc.	Kasey Goble / Ron Rider	Prime drilling contractor. On-site personnel will have completed any applicable OSHA training and will be required to comply with all site safety requirements covered in the HASP. Responsible for developing and implementing their own HASP.
Surveyor	True North Surveying, Inc.	TBD	Conduct survey of new well top of casing elevations and coordinates of new borings of the Block 37 Site.

Notes:
Ecology = Washington Department of Ecology
GPR = ground penetrating radar
HASP = Health and Safety Plan
OSHA = Occupational Safety and Health Administration
UST = underground storage tank

Table 8-1. Investigation Reporting and Schedule
Remedial Investigation Work Plan
Block 37 Site
600 - 630 Westlake Avenue North | Seattle, Washington

Report Title or Task	Submittal Deadline (to Ecology)[1,2]	Notes
Monthly Progress Reports	15th of each month	Summary of prior month's activities performed at the Block 37 Site
Draft RI Work Plan	October 4, 2021	Submitted to Ecology on 10/4/2021
Ecology Review: Draft RI Work Plan and existing data submittal into EIM	No later than 90 days (3 months) after the effective date of the Agreed Order.	Analytical data will be uploaded to the EIM database in accordance with WAC 173-340-840(5) for soil and groundwater analytical data not previously uploaded; and for soil and groundwater analytical data collected during the RI.
Final RI Work Plan	30 calendar days following receipt of Ecology's comments on the Draft RI Work Plan	
RI Field Investigations	Completed 180 days (6 months) after submittal of the Final RI Work Plan	
RI Validated Data	No later than 60 days after completion of RI field investigations	
Draft RI Report	TBD	
Ecology Review: Draft RI Report	90 days (3 months) following receipt of RI validated data	
Public Review: Draft RI Report	45 days following receipt of Ecology's comments on the Draft RI Report	
Draft FS Report	TBD	
Ecology Review: Draft FS Report	90 days (3 months) following Ecology's letter to proceed with the FS	
Public Review: Draft RI Report	45 days following receipt of Ecology's comments on the Draft FS Report	
Final RI Report	30 days following receipt of Ecology and the Public's comments on the Draft RI Report	
Final FS Report	30 days following receipt of Ecology and the Public's comments on the Draft FS Report	
Ecology Review: Preliminary Draft CAP	90 days (3 months) following Ecology approval of Final FS Report	

Notes:

[1] Washington Department of Ecology. 2021. *Agreed Order No. DE 19430*. Block 37 Site. Exhibit C: Schedule of Deliverables. May 4.

[2] Dates and time frames may change, based on changes to the scope of work, issues involving site access, and availability of subcontractors

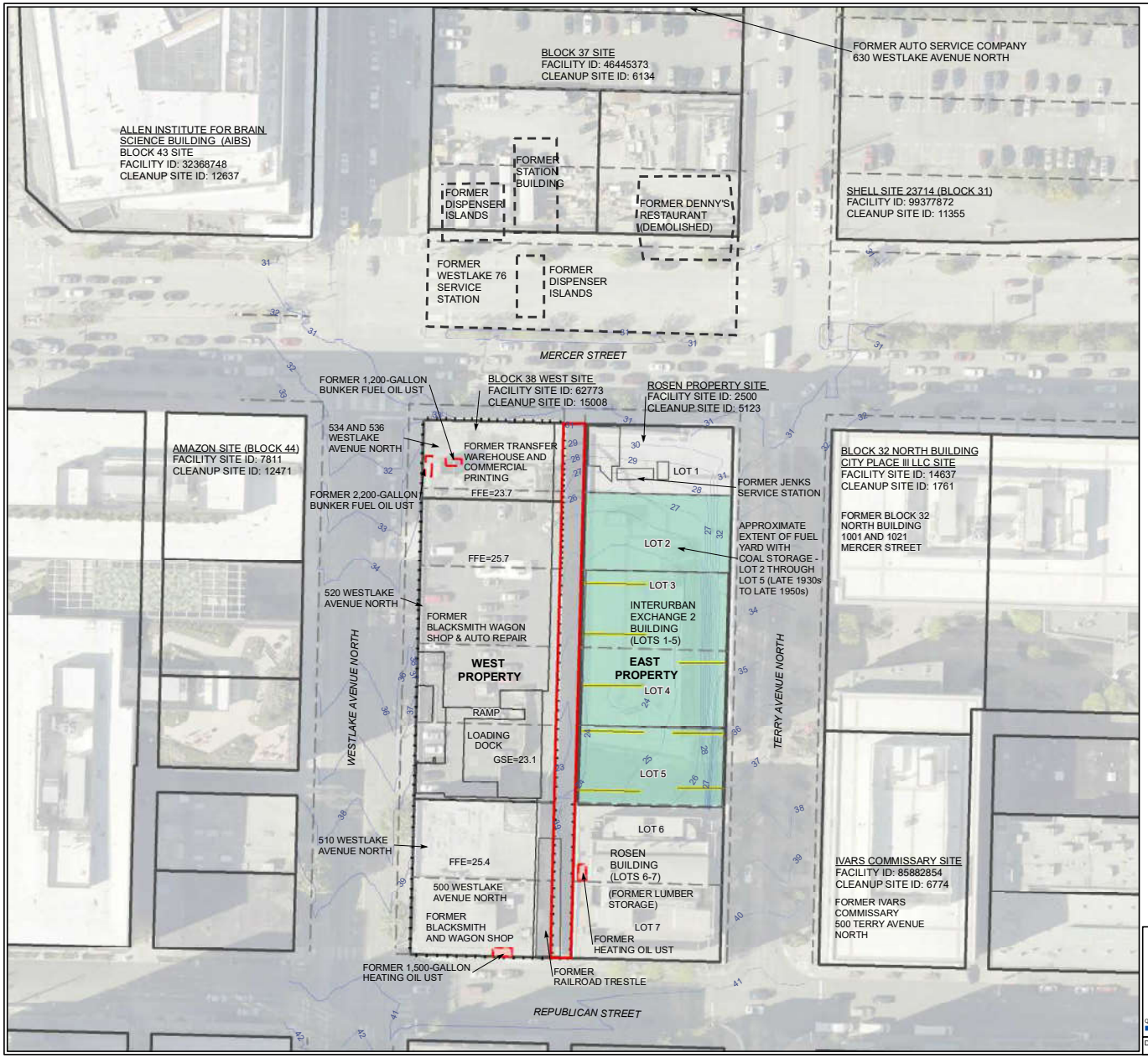
Ecology = Washington State Department of Ecology
CAP = Cleanup Action Plan
EIM = Environmental Information Management
FS = Feasibilty Study
RI = Remedial Investigation (of the Block 37 Site)
TBD = to be determined
WAC = Washington Administrative Code

APPENDICES

APPENDIX A

Block 38

Selected Figures



LEGEND

- PILE
- FORMER COAL STORAGE BINS (BASED ON 1953)
- BUILDING FEATURES (BUILDINGS ON BLOCK 38 WEST PROPERTY DEMOLISHED IN 2019)
- LOT LINE
- GROUND SURFACE ELEVATION CONTOUR
- FORMER FEATURE
- APPROXIMATE LOCATION OF FORMER HEATING OIL OR BUNKER FUEL OIL USTs
- PROPERTY BOUNDARY
- KING COUNTY PARCEL BOUNDARY

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

FFE = APPROXIMATE FINISH FLOOR ELEVATIONS OF GROUND FLOOR OF FORMER BUILDING
GSE = APPROXIMATE GROUND SURFACE ELEVATION OF FORMER LOADING DOCK AREA
UST = UNDERGROUND STORAGE TANK

N

0 80
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 2

PROPERTY MAP WITH HISTORICAL FEATURES
BLOCK 38 ALLEY
SEATTLE, WASHINGTON

FARALLON PN: 397-019

Drawn By: tperrin | Checked By: CS | Date: 1/7/2021 | Disc Reference:
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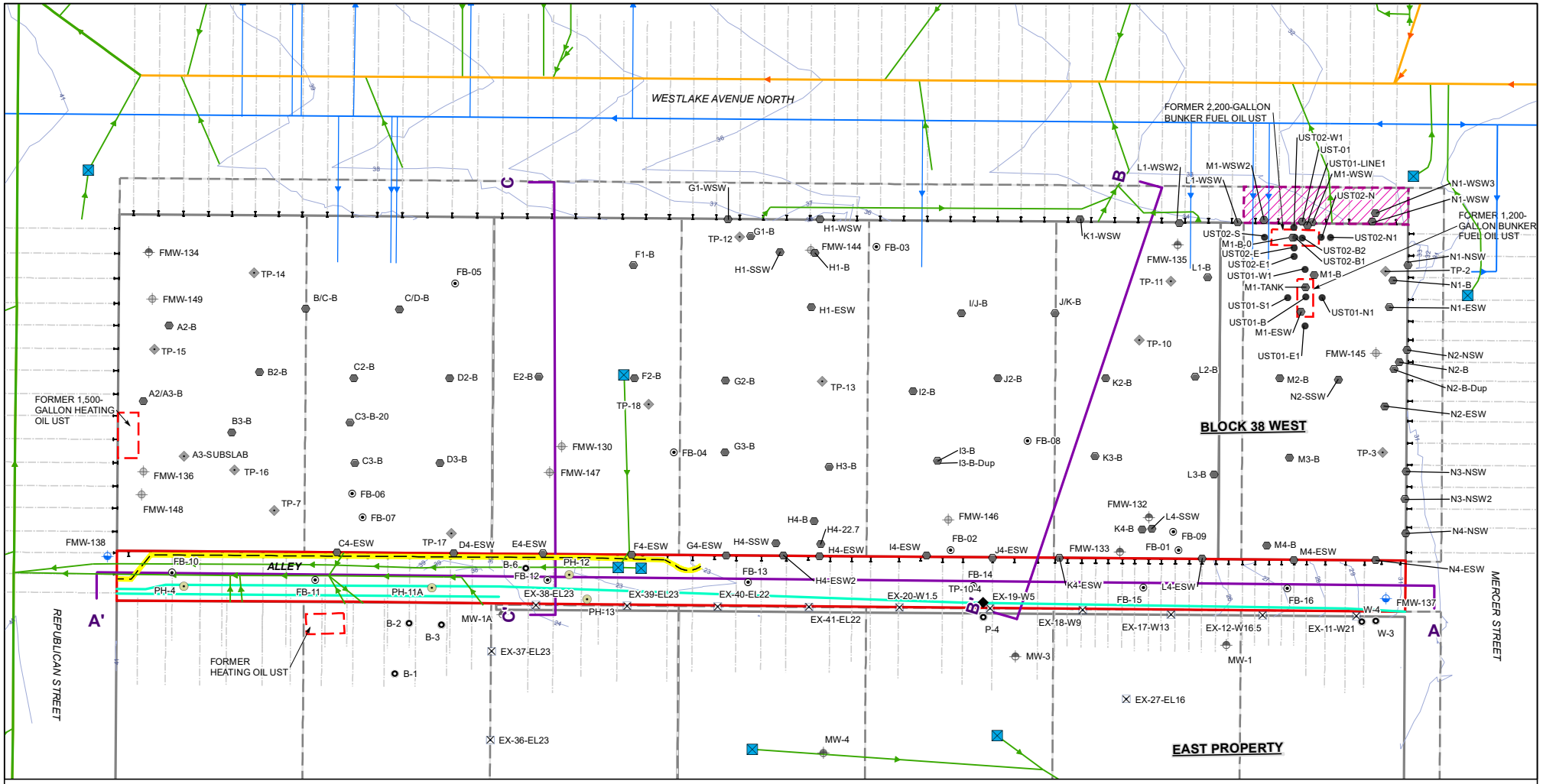

LEGEND

- DEEP OUTWASH AQUIFER
- DECOMMISSIONED SHALLOW WATER-BEARING ZONE MONITORING WELL
- DECOMMISSIONED INTERMEDIATE WATER-BEARING ZONE MONITORING WELL
- BORING (FARALLON)
- BORING
- EXCAVATION SAMPLE
- TEST PIT (GEOENGINEERS)
- POTHOLE (FARALLON)
- UST SAMPLE LOCATION (FARALLON)
- EXCAVATION SAMPLE LOCATION (FARALLON)
- TEST PIT (FARALLON)
- FORMER UNDERGROUND STORAGE TANKS (USTs)
- MECHANICAL EQUIPMENT AREA DECOMMISSIONED AND FILLED WITH CDF
- PROPERTY BOUNDARY
- KING COUNTY PARCELS
- LOT LINE
- LINE OF CROSS SECTION
- PILE
- TIEBACK
- CATCH BASIN
- SANITARY SEWER MAIN
- WATER LINE
- COMBINED MAIN
- FIBER OPTIC LINE
- PROPOSED GAS LINE

N

0 30

SCALE IN FEET

CDF = CONTROLLED DENSITY FILL
ELEVATION DATA PRESENTED IN FEET ABOVE MSL
IN THE NORTH AMERICAN VERTICAL DATUM OF 1988
ELEVATION SOURCE: BUSH, ROED, & HITCHINGS, INC. (2014)

NOTES:
1. ALL LOCATIONS ARE APPROXIMATE.
2. FIGURES WERE PRODUCED IN COLOR. GRAYSCALE COPIES MAY NOT REPRODUCE ALL ORIGINAL INFORMATION.

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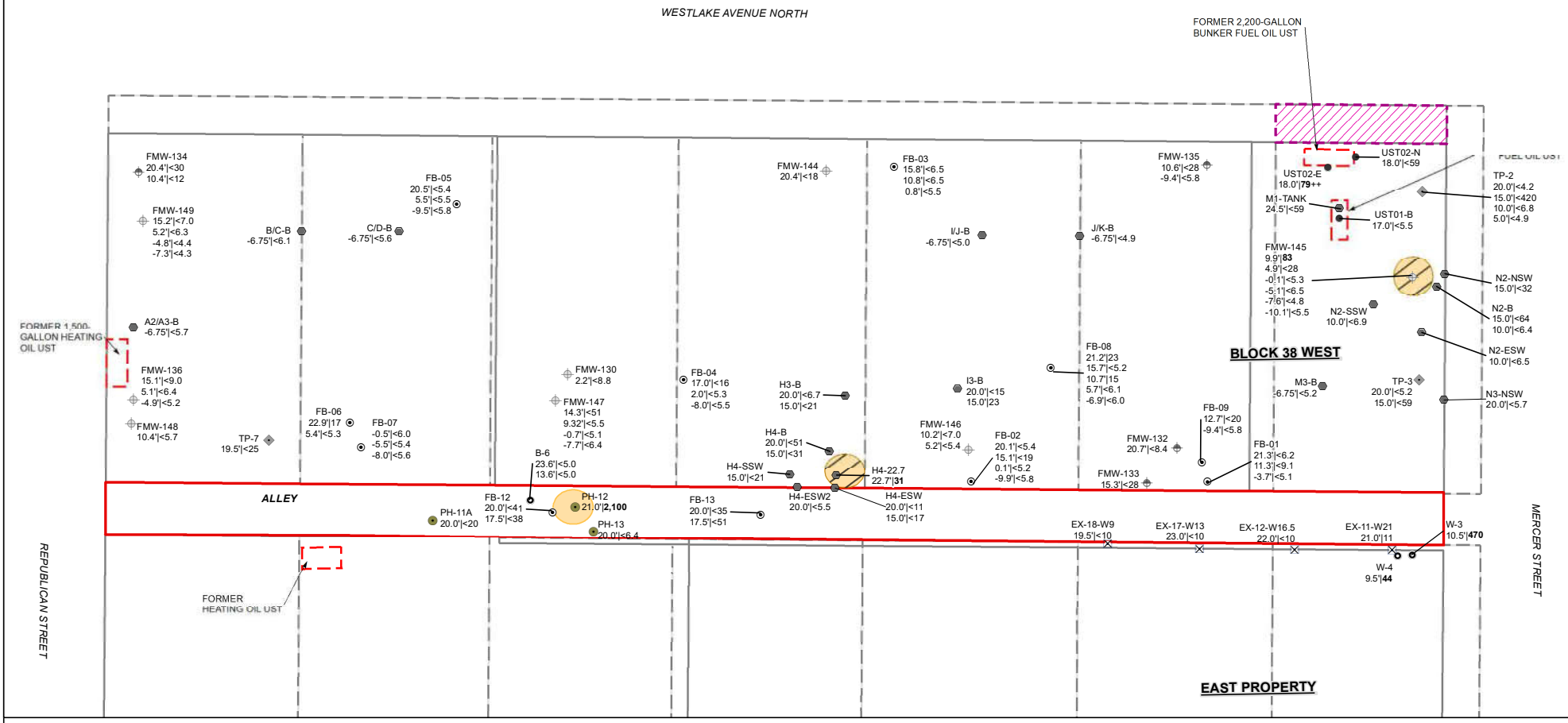
FIGURE 3

SITE PLAN WITH SOIL SAMPLE LOCATIONS AND CROSS SECTION LINES
BLOCK 38 ALLEY
SEATTLE, WASHINGTON

FARALLON PN: 397-019

Drawn By: tperrin
Checked By: CS
Date: 1/7/2021
Disc Reference: Q:\Projects\397 VULCAN\019_Block38\Mapfiles\017E_Alley IAWP 202011\Figure-03_BL38W_Alley_17E_202011.mxd



LEGEND

- DECOMMISSIONED SHALLOW WATER-BEARING ZONE MONITORING WELL
- DECOMMISSIONED INTERMEDIATE WATER-BEARING ZONE MONITORING WELL
- BORING (FARALLON)
- BORING (GEOENGINEERS)
- EXCAVATION SAMPLE (GEOENGINEERS)
- POTHOLE (FARALLON)
- UST SAMPLE LOCATION (FARALLON)
- EXCAVATION SAMPLE LOCATION (FARALLON)
- TEST PIT (FARALLON)
- ESTIMATED EXTENT OF SOIL EXCEEDING THE SCREENING LEVEL THAT WAS EXCAVATED AND REMOVED
- ESTIMATED EXTENT OF SOIL EXCEEDING THE SCREENING LEVEL
- MECHANICAL EQUIPMENT AREA DECOMMISSIONED AND FILLED WITH CDF
- PROPERTY BOUNDARY
- FORMER UNDERGROUND STORAGE TANKS (USTs)
- KING COUNTY PARCEL BOUNDARY
- LOT LINE

NOTES:
FOR SOIL SAMPLES:
ELEVATION IN FEET NAVD88 | GRO
ANALYTICAL RESULTS IN MILLIGRAMS PER KILOGRAM (mg/kg)

BOLD = DENOTES CONCENTRATIONS THAT EXCEED THE SCREENING LEVEL (MTCA METHOD A CLEANUP LEVEL)
< = DENOTES ANALYTE NOT DETECTED AT OR EXCEEDING THE REPORTING LIMIT LISTED
++ = FUEL PATTERN INDICATIVE OF HEAVY OIL; PRODUCT CONFIRMED AS BUNKER C FUEL OIL
CDF = CONTROLLED DENSITY FILL
GRO = TOTAL PETROLEUM HYDROCARBONS (TPH) AS GASOLINE-RANGE ORGANICS
MTCA = WASHINGTON STATE MODEL TOXICS CONTROL ACT CLEANUP REGULATION
NAVD88 = NORTH AMERICAN VERTICAL DATUM OF 1988

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FIGURE 4

SOIL ANALYTICAL RESULTS
FOR GRO
BLOCK 38 ALLEY
SEATTLE, WASHINGTON

FARALLON PN: 397-019

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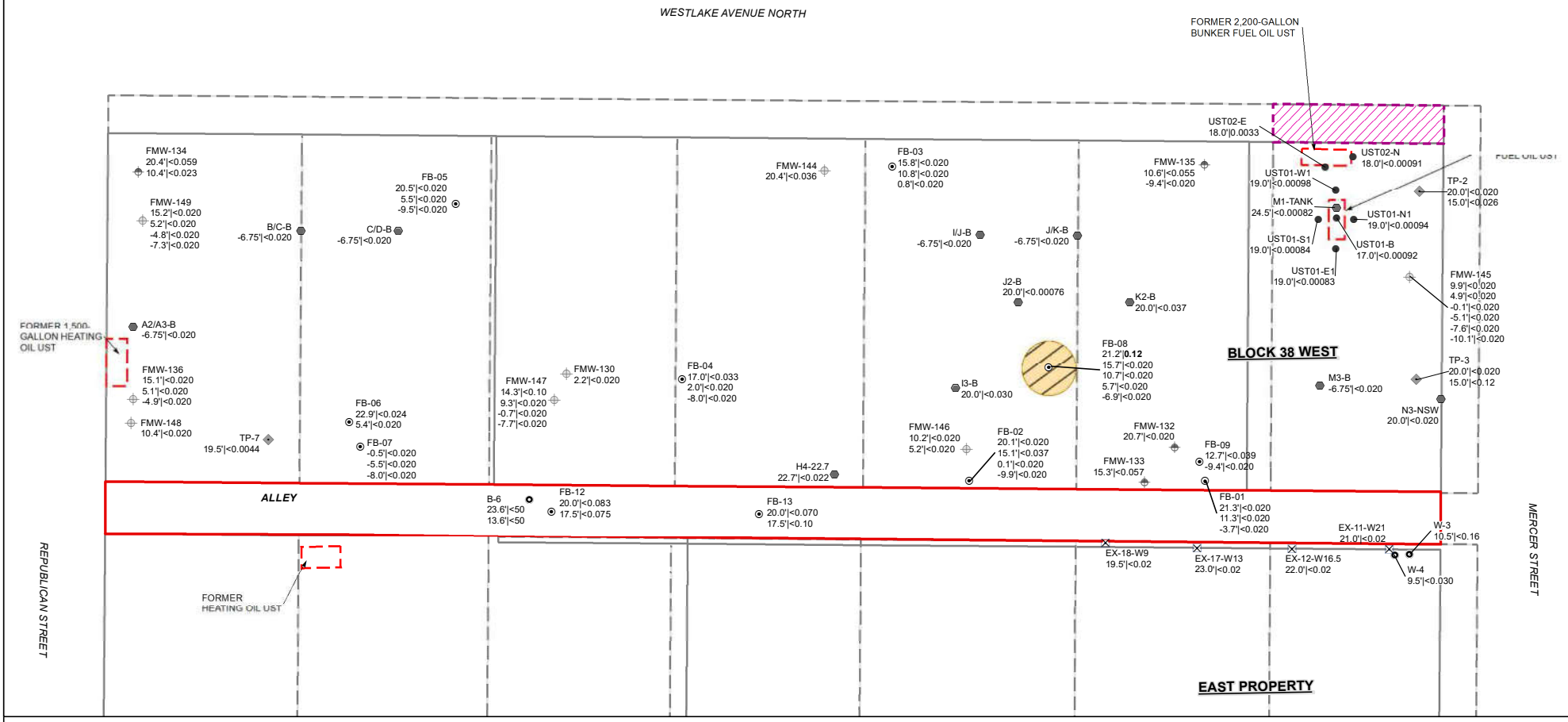
Document Path: Q:\Projects\397 VULCAN\019_Block38\Mapfiles\017E_Alley IAWP 202009\Figure-04_Soil-GRO_BL38W_AlleyTM_17E.mxd



LEGEND

- DECOMMISSIONED SHALLOW WATER-BEARING ZONE MONITORING WELL
- DECOMMISSIONED INTERMEDIATE WATER-BEARING ZONE MONITORING WELL
- BORING (FARALLON)
- BORING (GEOENGINEERS)
- EXCAVATION SAMPLE
- UST SAMPLE LOCATION (FARALLON)
- EXCAVATION SAMPLE LOCATION
- TEST PIT (FARALLON)
- ESTIMATED EXTENT OF SOIL EXCEEDING THE SCREENING LEVEL THAT WAS EXCAVATED AND REMOVED
- ESTIMATED EXTENT OF SOIL EXCEEDING THE SCREENING LEVEL
- MECHANICAL EQUIPMENT AREA DECOMMISSIONED AND FILLED WITH CDF
- PROPERTY BOUNDARY
- FORMER UNDERGROUND STORAGE TANKS (USTs)
- KING COUNTY PARCEL BOUNDARY
- LOT LINE

NOTES:
FOR SOIL SAMPLES :
ELEVATION IN FEET NAVD88 | BENZENE
ANALYTICAL RESULTS IN MILLIGRAMS PER KILOGRAM (mg/kg)

BOLD = DENOTES CONCENTRATIONS THAT EXCEED THE SCREENING LEVEL (MTCA METHOD A CLEANUP LEVEL)
< = DENOTES ANALYTE NOT DETECTED AT OR EXCEEDING THE REPORTING LIMIT LISTED
CDF = CONTROLLED DENSITY FILL
MTCA = WASHINGTON STATE MODEL TOXICS CONTROL ACT CLEANUP REGULATION
NAVD88 = NORTH AMERICAN VERTICAL DATUM OF 1988

N

0 30
SCALE IN FEET

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FIGURE 5
SOIL ANALYTICAL RESULTS FOR BENZENE
BLOCK 38 ALLEY
SEATTLE, WASHINGTON

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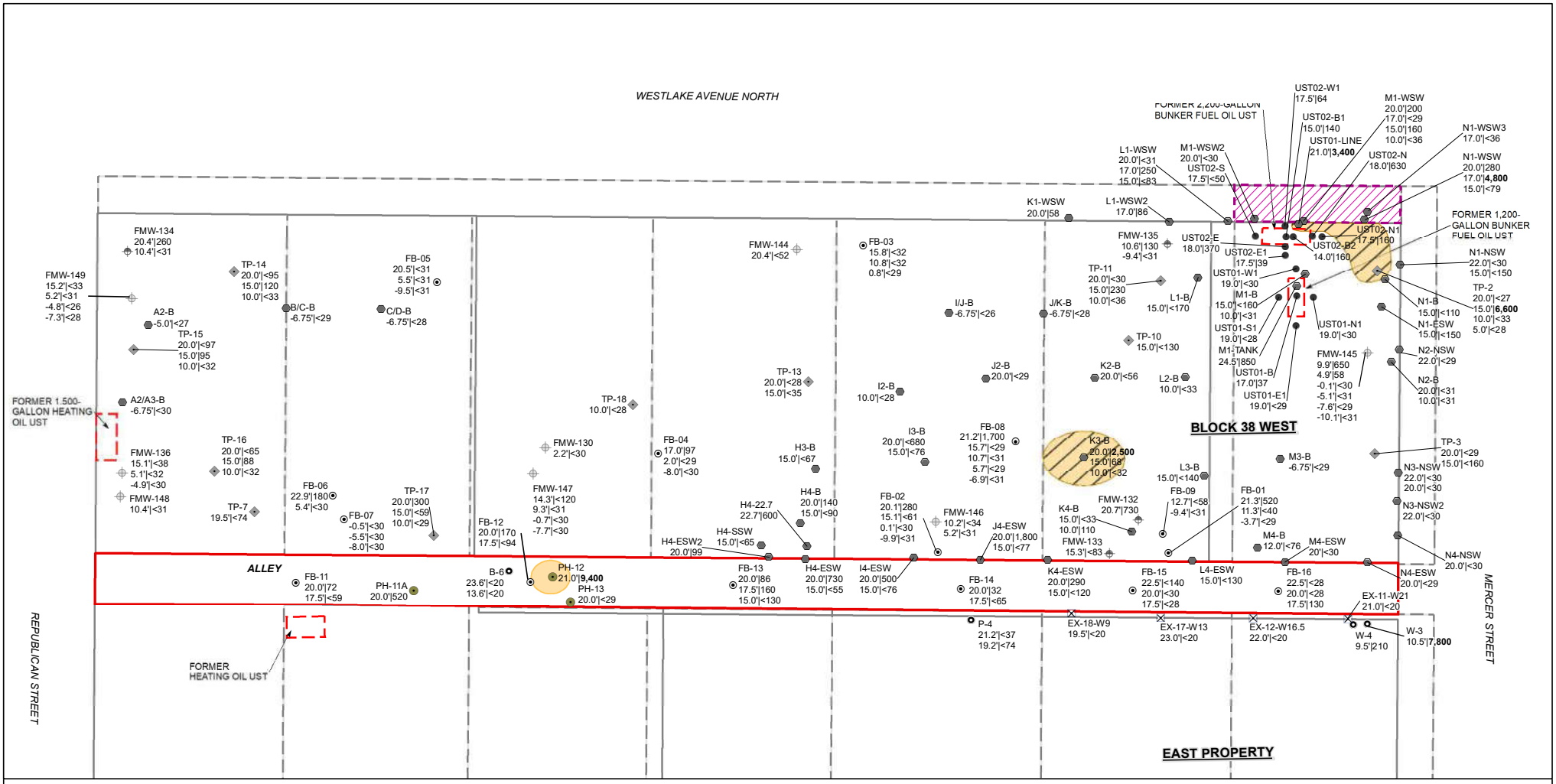
Drawn By: tperrin | Checked By: CS | Date: 1/7/2021 | Disc Reference:
Document Path: Q:\Projects\397 VULCAN\019_Block38\Mapfiles\017E_Alley IAWP 202011\Figure-05_Soil-Benzene_BL38W_AlleyTM_17E.mxd



LEGEND

- DECOMMISSIONED SHALLOW WATER-BEARING ZONE MONITORING WELL
- DECOMMISSIONED INTERMEDIATE WATER-BEARING ZONE MONITORING WELL
- BORING (FARALLON)
- BORING (GEOENGINEERS)
- EXCAVATION SAMPLE (GEOENGINEERS)
- POTHOLE (FARALLON)
- UST SAMPLE LOCATION (FARALLON)
- EXCAVATION SAMPLE LOCATION (FARALLON)
- TEST PIT (FARALLON)
- ESTIMATED EXTENT OF SOIL EXCEEDING THE SCREENING LEVEL THAT WAS EXCAVATED AND REMOVED
- ESTIMATED EXTENT OF SOIL EXCEEDING THE SCREENING LEVEL
- MECHANICAL EQUIPMENT AREA DECOMMISSIONED AND FILLED WITH CDF
- PROPERTY BOUNDARY
- FORMER UNDERGROUND STORAGE TANKS (USTs)
- KING COUNTY PARCEL BOUNDARY
- LOT LINE

NOTES:
FOR SOIL SAMPLES:
ELEVATION IN FEET NAVD88 | DRO
ANALYTICAL RESULTS IN MILLIGRAMS PER KILOGRAM (mg/kg)

BOLD = DENOTES CONCENTRATIONS THAT EXCEED THE SCREENING LEVEL (MTCA METHOD A CLEANUP LEVEL)
< = DENOTES ANALYTE NOT DETECTED AT OR EXCEEDING THE REPORTING LIMIT LISTED
CDF = CONTROLLED DENSITY FILL
DRO = TOTAL PETROLEUM HYDROCARBONS (TPH) AS DIESEL-RANGE ORGANICS
MTCA = WASHINGTON STATE MODEL TOXICS CONTROL ACT CLEANUP REGULATION
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FIGURE 6
SOIL ANALYTICAL RESULTS
FOR DRO
BLOCK 38 ALLEY
SEATTLE, WASHINGTON

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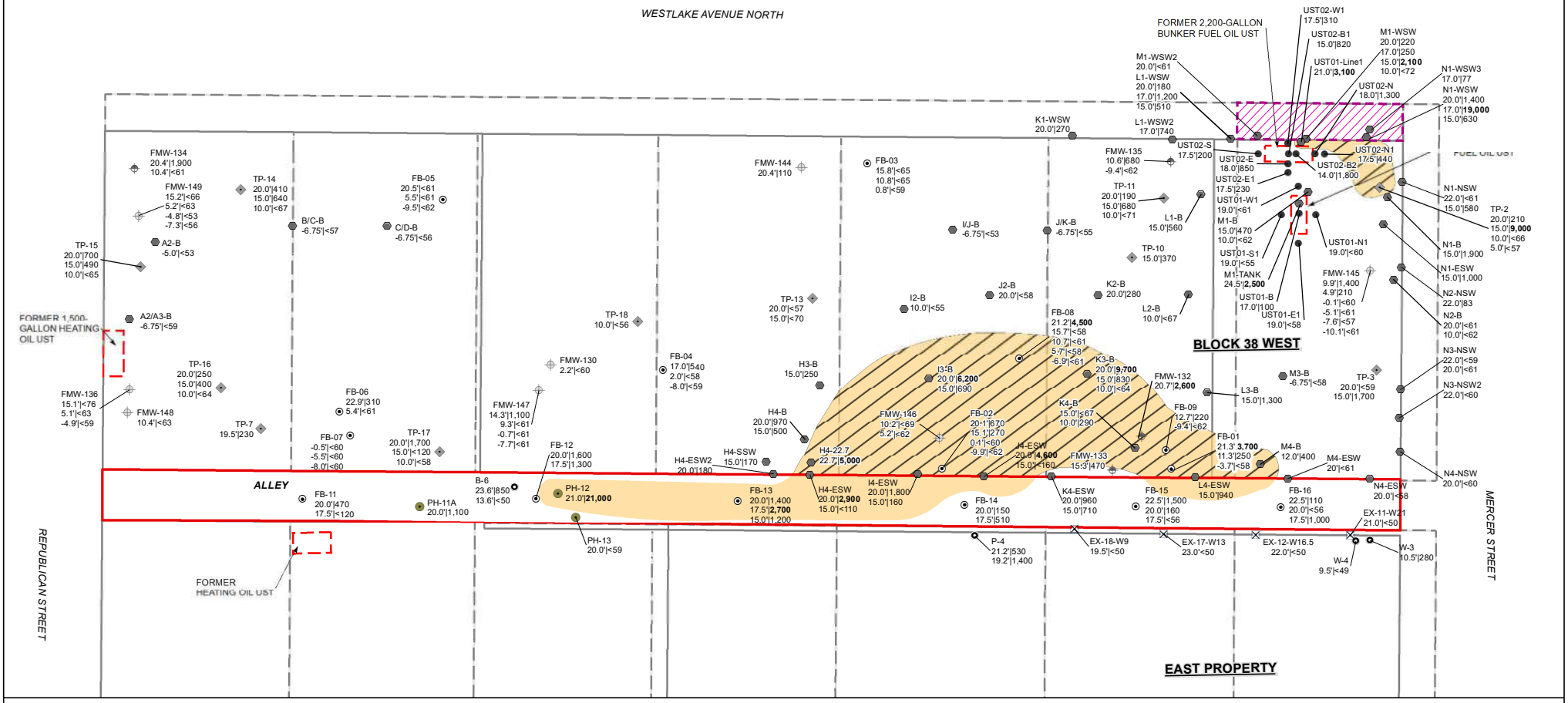
Drawn By: tperrin | Checked By: CS | Date: 1/7/2021 | Disc Reference:
Document Path: Q:\Projects\397 VULCAN\019_Block38\Mapfiles\017E_Alley IAWP 202011\Figure-06_Soil-DRO_BL38W_AlleyTM_17E.mxd



LEGEND

- DECOMMISSIONED SHALLOW WATER-BEARING ZONE MONITORING WELL
- DECOMMISSIONED INTERMEDIATE WATER-BEARING ZONE MONITORING WELL
- BORING (FARALLON)
- BORING (GEOENGINEERS)
- EXCAVATION SAMPLE (GEOENGINEERS)
- POTHOLE (FARALLON)
- UST SAMPLE LOCATION (FARALLON)
- EXCAVATION SAMPLE LOCATION (FARALLON)
- TEST PIT (FARALLON)
- ESTIMATED EXTENT OF SOIL EXCEEDING THE SCREENING LEVEL THAT WAS EXCAVATED AND REMOVED
- ESTIMATED EXTENT OF SOIL EXCEEDING THE SCREENING LEVEL
- MECHANICAL EQUIPMENT AREA DECOMMISSIONED AND FILLED WITH CDF
- PROPERTY BOUNDARY
- FORMER UNDERGROUND STORAGE TANKS (USTs)
- KING COUNTY PARCEL BOUNDARY
- LOT LINE

NOTES:
FOR 38 SOIL SAMPLES:
ELEVATION IN FEET NAVD88 | ORO
ANALYTICAL RESULTS IN MILLIGRAMS PER KILOGRAM (mg/kg)

BOLD = DENOTES CONCENTRATIONS THAT EXCEED THE SCREENING LEVEL (MTCA METHOD A CLEANUP LEVEL)
< = DENOTES ANALYTE NOT DETECTED AT OR EXCEEDING THE REPORTING LIMIT LISTED
CDF = CONTROLLED DENSITY FILL
ORO = TOTAL PETROLEUM HYDROCARBONS (TPH) AS OIL-RANGE ORGANICS
MTCA = WASHINGTON STATE MODEL TOXICS CONTROL ACT CLEANUP REGULATION
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FIGURE 7

SOIL ANALYTICAL RESULTS
FOR ORO
BLOCK 38 ALLEY
SEATTLE, WASHINGTON

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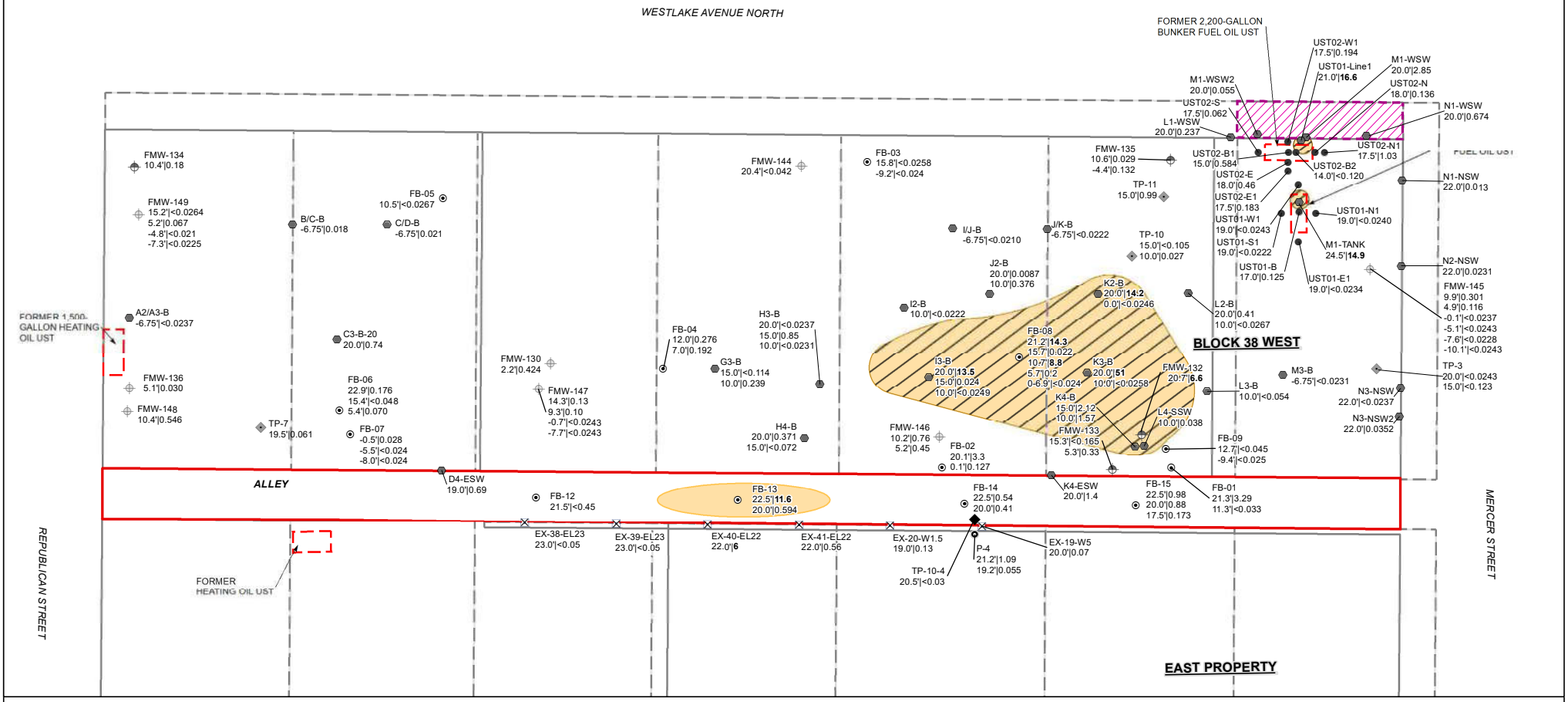
Document Path: Q:\Projects\397 VULCAN\019_Block38\Mapfiles\017E_Alley IAWP 202011\Figure-07_Soil-ORO_BL38W_AlleyTM_17E.mxd



LEGEND

- DECOMMISSIONED SHALLOW WATER-BEARING ZONE MONITORING WELL
- DECOMMISSIONED INTERMEDIATE WATER-BEARING ZONE MONITORING WELL
- BORING (FARALLON)
- BORING (GEOENGINEERS)
- EXCAVATION SAMPLE (GEOENGINEERS)
- TEST PIT (GEOENGINEERS)
- UST SAMPLE LOCATION (FARALLON)
- EXCAVATION SAMPLE LOCATION (FARALLON)
- TEST PIT (FARALLON)
- ESTIMATED EXTENT OF SOIL EXCEEDING THE SCREENING LEVEL THAT WAS EXCAVATED AND REMOVED
- ESTIMATED EXTENT OF SOIL EXCEEDING THE SCREENING LEVEL
- MECHANICAL EQUIPMENT AREA DECOMMISSIONED AND FILLED WITH CDF
- PROPERTY BOUNDARY
- FORMER UNDERGROUND STORAGE TANKS (USTs)
- KING COUNTY PARCEL BOUNDARY
- LOT LINE

NOTES:
FOR SOIL SAMPLES:
ELEVATION IN FEET NAVD88 | TOTAL NAPHTHALENES
ANALYTICAL RESULTS IN MILLIGRAMS PER KILOGRAM (mg/kg)

BOLD = DENOTES CONCENTRATIONS THAT EXCEED THE SCREENING LEVEL (MTCA METHOD A CLEANUP LEVEL)
< = DENOTES ANALYTE NOT DETECTED AT OR EXCEEDING THE REPORTING LIMIT LISTED FOR TOTAL TOXIC EQUIVALENT
CDF = CONTROLLED DENSITY FILL
MTCA = WASHINGTON STATE MODEL TOXICS CONTROL ACT CLEANUP REGULATION
NAVD88 = NORTH AMERICAN VERTICAL DATUM OF 1988

N

0 30
SCALE IN FEET

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FIGURE 8

SOIL ANALYTICAL RESULTS FOR TOTAL NAPHTHALENES
BLOCK 38 ALLEY
SEATTLE, WASHINGTON

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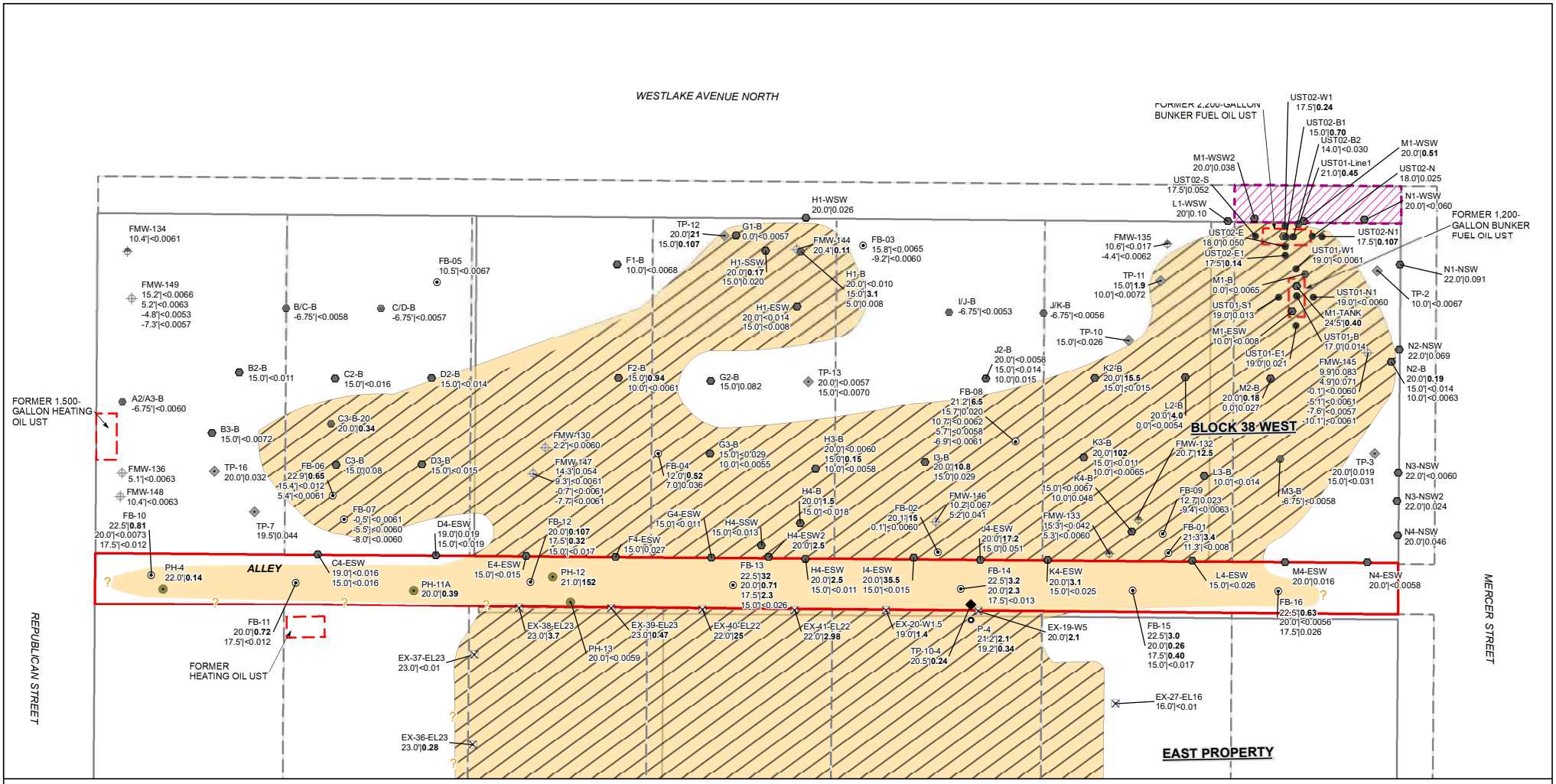
Drawn By: tperrin | Checked By: CS | Date: 1/7/2021 | Disc Reference:
Document Path: Q:\Projects\397 VULCAN\019_Block38\Mapfiles\017E_Alley IAWP 202011\Figure-08_Soil-Napth_BL38W_AlleyTM_17E.mxd



LEGEND

- DECOMMISSIONED SHALLOW WATER-BEARING ZONE MONITORING WELL
- DECOMMISSIONED INTERMEDIATE WATER-BEARING ZONE MONITORING WELL
- BORING (FARALLON)
- BORING (GEOENGINEERS)
- EXCAVATION SAMPLE
- TEST PIT (GEOENGINEERS)
- POTHOLE (FARALLON)
- UST SAMPLE LOCATION
- EXCAVATION SAMPLE LOCATION
- TEST PIT (FARALLON)
- ESTIMATED EXTENT OF SOIL EXCEEDING THE SCREENING LEVEL THAT WAS EXCAVATED AND REMOVED
- ESTIMATED EXTENT OF SOIL EXCEEDING THE SCREENING LEVEL (? WHERE INFERRED)
- MECHANICAL EQUIPMENT AREA DECOMMISSIONED AND FILLED WITH CDF
- PROPERTY BOUNDARY
- FORMER UNDERGROUND STORAGE TANKS (USTs)
- KING COUNTY PARCEL BOUNDARY
- LOT LINE

NOTES:
FOR SOIL SAMPLES:
DEPTH AND CONCENTRATIONS REPORTED AS:
ELEVATION IN FEET NAVD88 | cPAH TEC
ANALYTICAL RESULTS IN MILLIGRAMS PER KILOGRAM (mg/kg)

BOLD = DENOTES ELEVATION AND CONCENTRATIONS THAT EXCEED THE SCREENING LEVEL (MTCA METHOD A CLEANUP LEVEL)
< = DENOTES ANALYTE NOT DETECTED AT OR EXCEEDING THE REPORTING LIMIT LISTED FOR TOTAL TOXIC EQUIVALENT CONCENTRATION OF BENZO(A)PYRENE (mg/kg)
CDF = CONTROLLED DENSITY FILL
cPAHs = CARCINOGENIC POLYCYCLIC AROMATIC HYDROCARBONS
TEC = TOXIC EQUIVALENT CONCENTRATION OF BENZO(A)PYRENE FOR cPAH MIXTURE
MTCA = WASHINGTON STATE MODEL TOXICS CONTROL ACT CLEANUP REGULATION
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FIGURE 9

SOIL ANALYTICAL RESULTS
FOR cPAH TEC
BLOCK 38 ALLEY
SEATTLE, WASHINGTON

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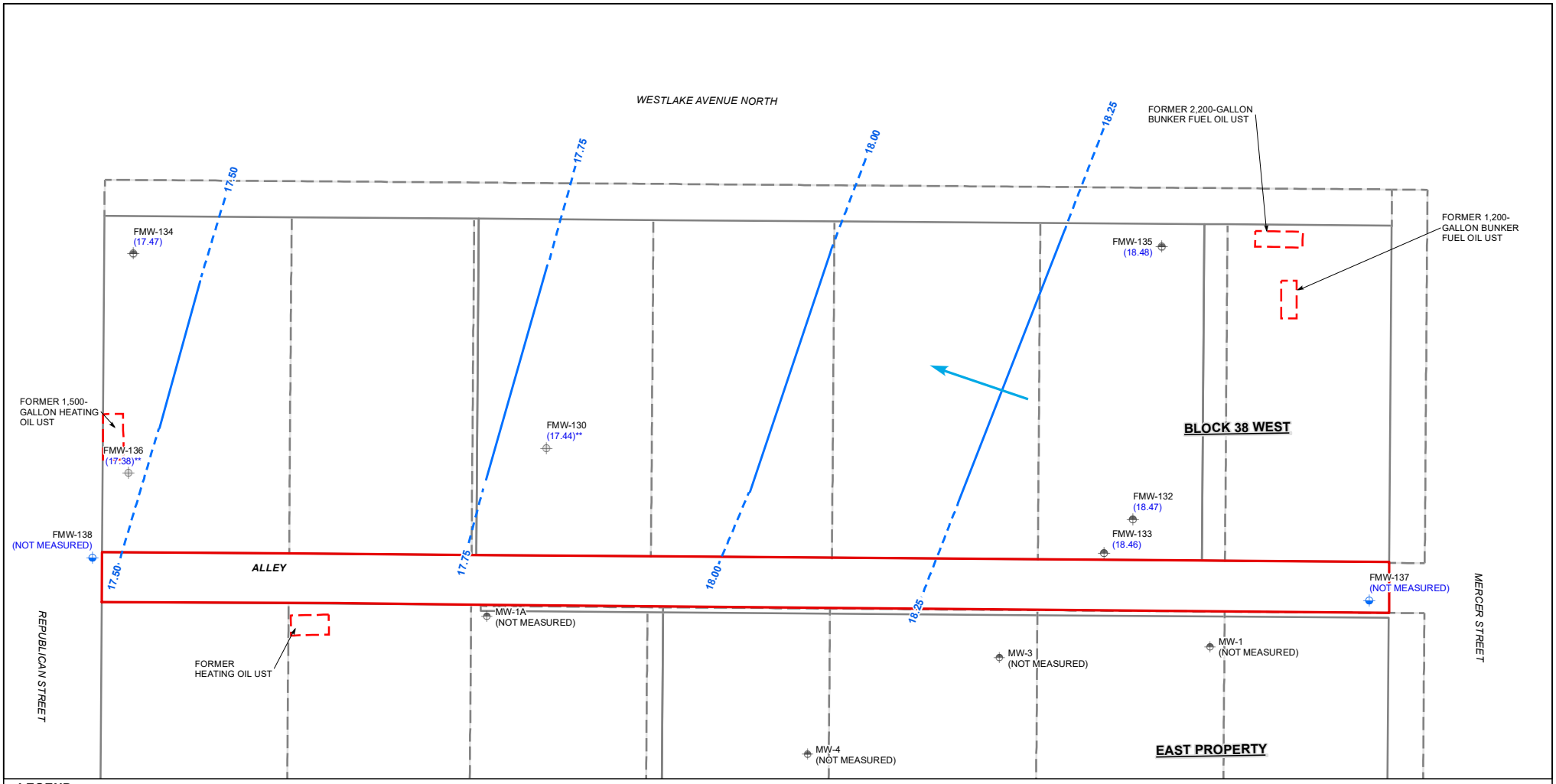

LEGEND

- DECOMMISSIONED SHALLOW WATER-BEARING ZONE MONITORING WELL
- DECOMMISSIONED INTERMEDIATE WATER-BEARING ZONE MONITORING WELL
- DEEP OUTWASH AQUIFER MONITORING WELL
- DECOMMISSIONED SHALLOW WATER-BEARING ZONE MONITORING WELL
- (18.48) GROUNDWATER ELEVATION (03/26/19) MEASURED IN FEET RELATIVE TO NAVD 88
- (17.44)** ELEVATION NOT USED IN CONTOURING
- PROPERTY BOUNDARY
- FORMER UNDERGROUND STORAGE TANKS (USTs)
- KING COUNTY PARCEL BOUNDARY
- LOT LINE
- 18.00- APPROXIMATE GROUNDWATER ELEVATION CONTOUR IN FEET NAVD88 (DASHED WHERE INFERRED)
- INFERRED GROUNDWATER FLOW DIRECTION

N

0 30

SCALE IN FEET

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 10
GROUNDWATER ELEVATION CONTOURS
SHALLOW WATER-BEARING ZONE
FOR MARCH 26, 2019
BLOCK 38 ALLEY
SEATTLE, WASHINGTON
FARALLON PN: 397-019

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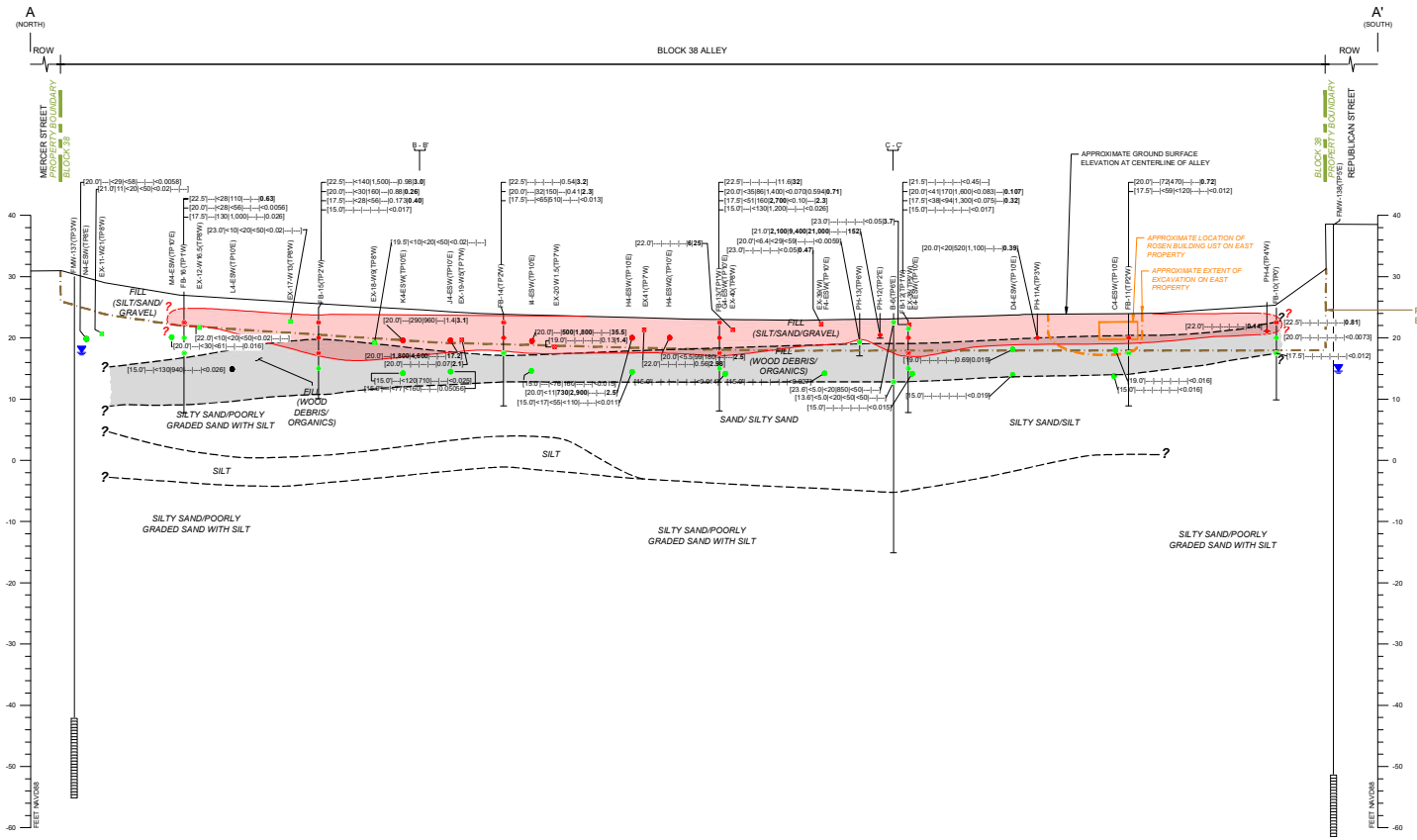
Document Path: Q:\Projects\397 VULCAN\019_Block38\Mapfiles\017E_Alley IAWP 202011\Figure-10_GW_Contours_BL38W_Alley.mxd



LEGEND

- BORING OR MONITORING WELL LOCATION TRANSPOSED (TP) IN FEET, EAST (E) OR WEST (W), TO CROSS-SECTION LINE.
- SOIL SAMPLE LOCATION
- APPROXIMATE GROUNDWATER ELEVATION
- STRATIGRAPHIC CONTACT
- BLANK CASING OR BORING
- STATIC GROUNDWATER ELEVATION (12/31/2019)
- WELL SCREEN INTERVAL

ALL SOIL ANALYTICAL RESULTS IN MILLIGRAMS PER KILOGRAM (mg/kg)

[20.1]<5.4|280|670|<0.020|3.3|**15**] SOIL ANALYTICAL RESULT:
[ELEVATION NAVD88|GRO|DRO|ORO|BENZENE|TOTAL NAPHTHALENES|cPAH TEC]

GRO = TOTAL PETROLEUM HYDROCARBONS (TPH) AS GASOLINE-RANGE ORGANICS
DRO = TPH AS DIESEL-RANGE ORGANICS
ORO = TPH AS OIL-RANGE ORGANICS
TOTAL NAPHTHALENES = SUM OF NAPHTHALENE, 1-METHYLNAPHTHALENE, AND 2-METHYLNAPHTHALENE
cPAH TEC = CARCINOGENIC POLYCYCLIC AROMATIC HYDROCARBONS TOXIC EQUIVALENT CONCENTRATION
BOLD = INDICATES CONCENTRATIONS THAT EXCEED THE WASHINGTON STATE MODEL TOXICS CONTROL ACT CLEANUP REGULATION (MTCA) SCREENING LEVELS
--- = SAMPLE NOT ANALYZED FOR CONSTITUENT
< = DENOTES ANALYTE NOT DETECTED AT OR EXCEEDING THE REPORTING LIMIT LISTED
NAVD88 = NORTH AMERICAN VERTICAL DATUM OF 1988

- APPROXIMATE AREA OF WOOD DEBRIS/ORGANICS LAYER
- ESTIMATED EXTENT OF SOIL EXCEEDING MTCA SCREENING LEVELS

RED INDICATES CONCENTRATIONS OF HAZARDOUS SUBSTANCES EXCEEDING THE APPLICABLE MTCA SCREENING LEVELS

GREEN INDICATES HAZARDOUS SUBSTANCES ANALYZED DID NOT EXCEED THE APPLICABLE MTCA SCREENING LEVELS

- EXCAVATION BORING (FARALLON)
- EXCAVATION SAMPLE (FARALLON)

10'
0'
0'
20'

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FIGURE 11

CROSS SECTION A-A'
BLOCK 38 ALLEY
SEATTLE, WASHINGTON

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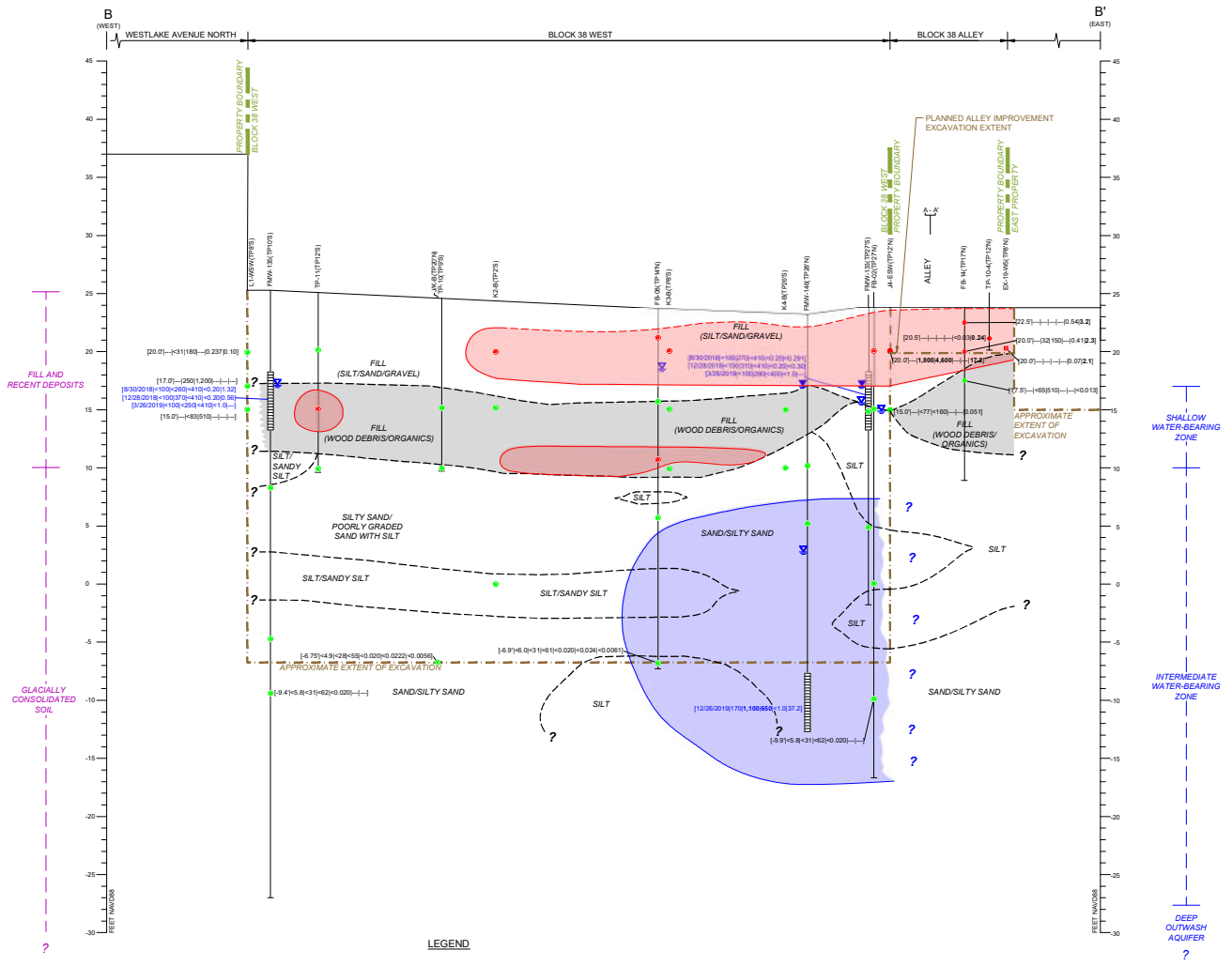

LEGEND

BORING OR MONITORING WELL LOCATION TRANSPOSED (TP) IN FEET, NORTH (N) OR SOUTH (S), TO CROSS-SECTION LINE

SOIL SAMPLE LOCATION

APPROXIMATE GROUNDWATER ELEVATION

STRATIGRAPHIC CONTACT

BLANK CASING OR BORING

STATIC GROUNDWATER ELEVATION (12/31/2019)

GROUNDWATER ELEVATION AT TIME OF DRILLING

WELL SCREEN INTERVAL

ALL GROUNDWATER ANALYTICAL RESULTS IN MICROGRAMS PER LITER (µg/l)

[12/26/2019|170|**1,100**|**650**|<1.0|37.2] GROUNDWATER ANALYTICAL RESULT [DATE SAMPLED|GRO|DRO|ORO|BENZENE|TOTAL NAPHTHALENES]

ALL SOIL ANALYTICAL RESULTS IN MILLIGRAMS PER KILOGRAM (mg/kg)

[-6.9'|<6.0|<31|<61|<0.020|<0.024|<0.0061] SOIL ANALYTICAL RESULT [ELEVATION IN FEET NAVD88|GRO|DRO|ORO|BENZENE|TOTAL NAPHTHALENES|cPAH TEC]

GRO = TOTAL PETROLEUM HYDROCARBONS (TPH) AS GASOLINE-RANGE ORGANICS

DRO = TPH AS DIESEL-RANGE ORGANICS

ORO = TPH AS OIL-RANGE ORGANICS

TOTAL NAPHTHALENES = SUM OF NAPHTHALENE, 1-METHYLNAPHTHALENE, AND 2-METHYLNAPHTHALENE

cPAH TEC = CARCINOGENIC POLYCYCLIC AROMATIC HYDROCARBONS TOXIC EQUIVALENT CONCENTRATION

BOLD = DENOTES CONCENTRATIONS THAT EXCEED THE SCREENING LEVELS (MTCA METHOD A CLEANUP LEVELS)

--- = SAMPLE NOT ANALYZED FOR CONSTITUENT

< = DENOTES ANALYTE NOT DETECTED AT OR EXCEEDING THE REPORTING LIMIT LISTED

NAVD88 = NORTH AMERICAN VERTICAL DATUM OF 1988

APPROXIMATE AREA OF WOOD DEBRIS/ORGANICS LAYER

ESTIMATED EXTENT OF SOIL EXCEEDING SCREENING LEVELS

ESTIMATED EXTENT OF GROUNDWATER EXCEEDING SCREENING LEVELS

RED INDICATES CONCENTRATIONS OF HAZARDOUS SUBSTANCES EXCEEDING THE APPLICABLE MTCA SCREENING LEVELS

GREEN INDICATES HAZARDOUS SUBSTANCES ANALYZED DID NOT EXCEED THE APPLICABLE MTCA SCREENING LEVELS

EXCAVATION BORING (FARALLON)

EXCAVATION SAMPLE (FARALLON)

5'
0'
0'
10'

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FIGURE 12

CROSS SECTION B-B'
BLOCK 38 ALLEY
SEATTLE, WASHINGTON

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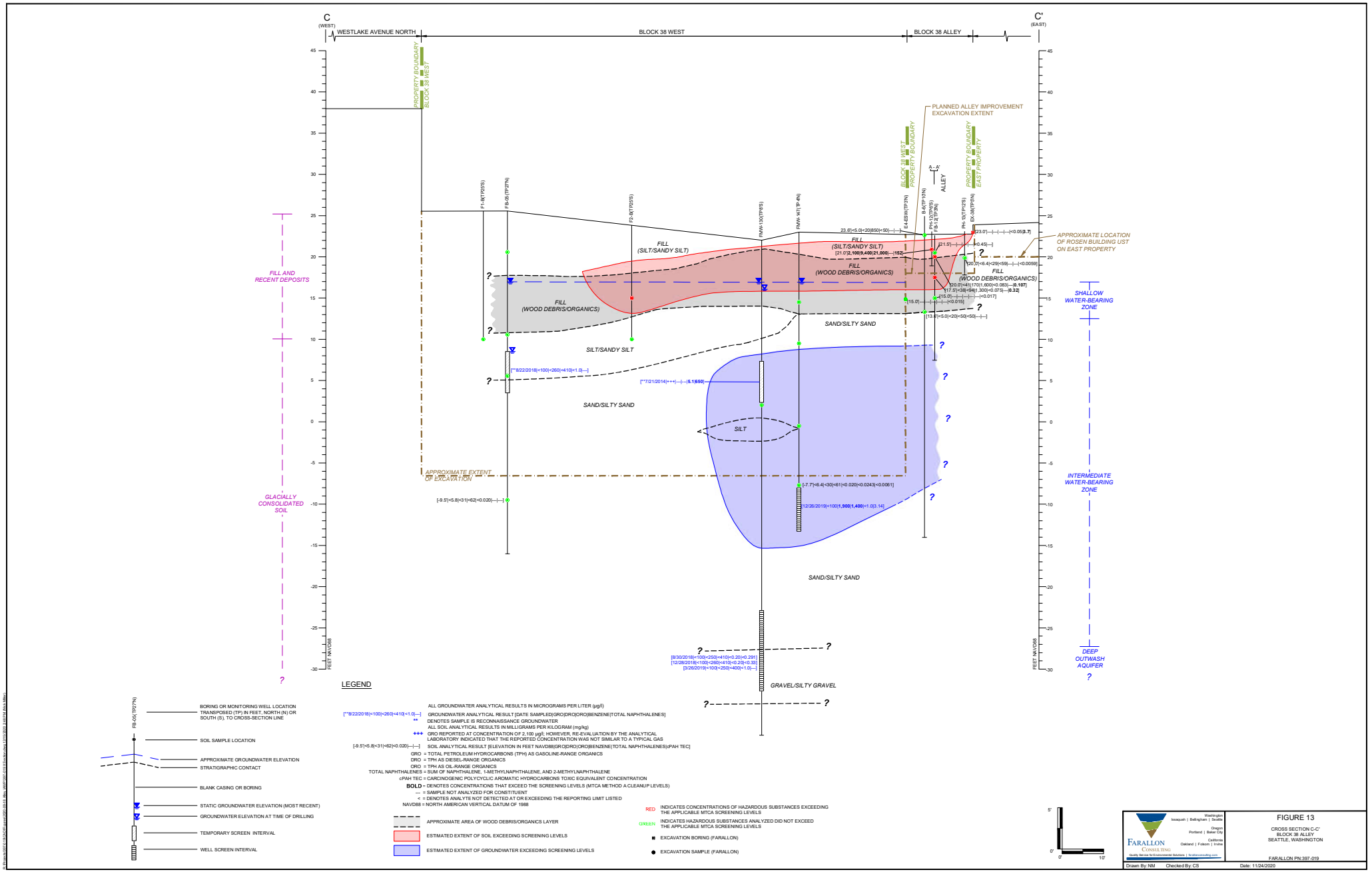
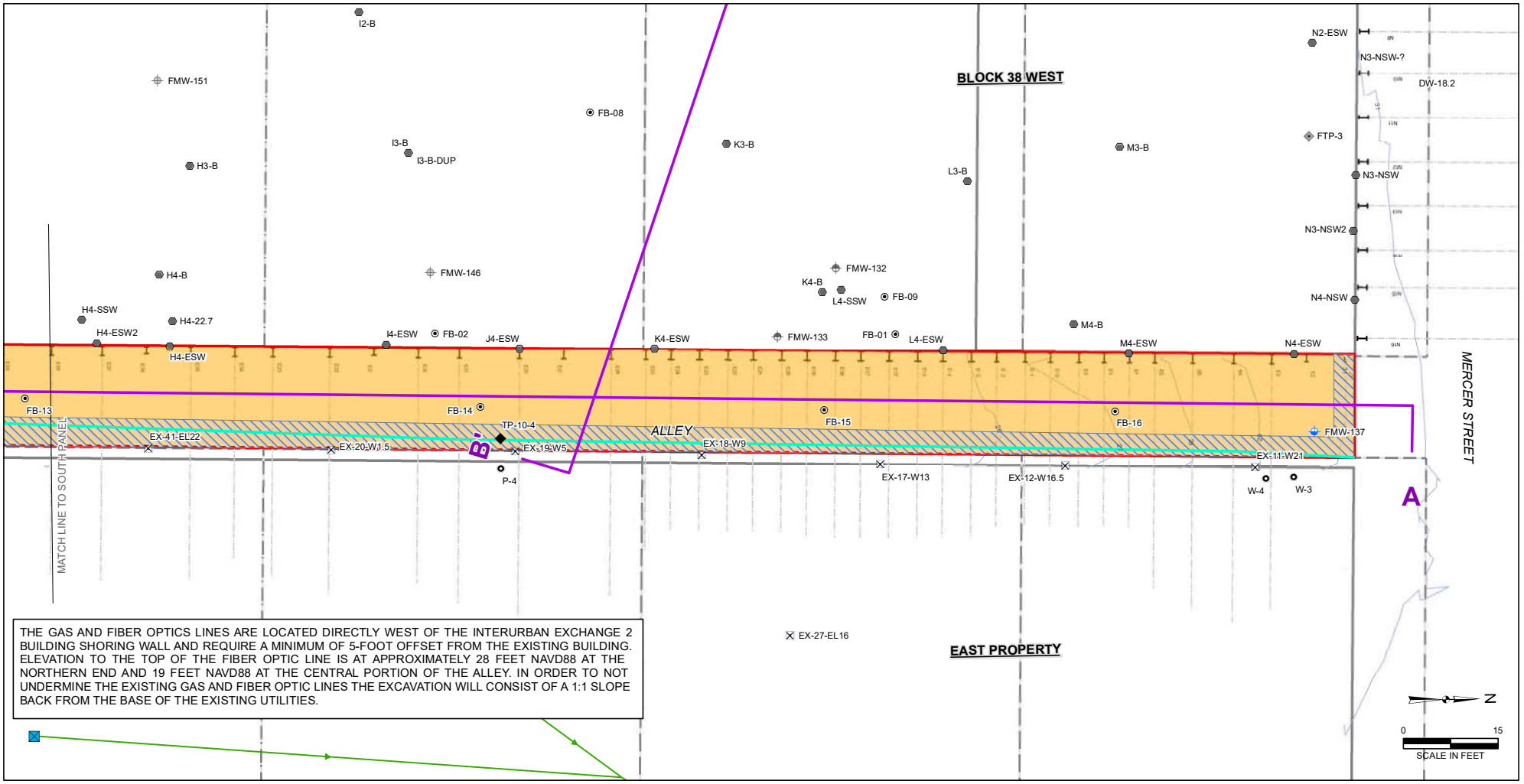


FIGURE 13

CROSS SECTION C-C'
BLOCK 38 ALLEY
SEATTLE, WASHINGTON

FARALLON PN:397-019

Drawn By: NM Checked By: CS Date: 11/24/2020



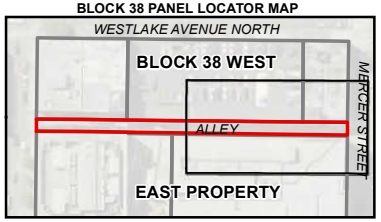
THE GAS AND FIBER OPTICS LINES ARE LOCATED DIRECTLY WEST OF THE INTERURBAN EXCHANGE 2 BUILDING SHORING WALL AND REQUIRE A MINIMUM OF 5-FOOT OFFSET FROM THE EXISTING BUILDING. ELEVATION TO THE TOP OF THE FIBER OPTIC LINE IS AT APPROXIMATELY 28 FEET NAVD88 AT THE NORTHERN END AND 19 FEET NAVD88 AT THE CENTRAL PORTION OF THE ALLEY. IN ORDER TO NOT UNDERMINE THE EXISTING GAS AND FIBER OPTIC LINES THE EXCAVATION WILL CONSIST OF A 1:1 SLOPE BACK FROM THE BASE OF THE EXISTING UTILITIES.

LEGEND

- DEEP OUTWASH AQUIFER
- DECOMMISSIONED SHALLOW WATER-BEARING ZONE MONITORING WELL
- DECOMMISSIONED INTERMEDIATE WATER-BEARING ZONE MONITORING WELL
- BORING (FARALLON)
- BORING (GEOENGINEERS)
- EXCAVATION SAMPLE (GEOENGINEERS)
- TEST PIT (GEOENGINEERS)
- EXCAVATION SAMPLE LOCATION (FARALLON)
- TEST PIT (FARALLON)
- CONSTRUCTION EXCAVATION AREA
- PROPERTY BOUNDARY
- KING COUNTY PARCELS
- LOT LINE
- CATCH BASIN
- SANITARY SEWER MAIN
- FIBER OPTIC LINE
- STRUCTURAL OR UTILITY PROTECTION/BUFFER/SLOPE BACK
- A A' LINE OF CROSS SECTION
- E36 PILE AND IDENTIFIER
- TIEBACK

ELEVATION DATA PRESENTED IN FEET ABOVE MSL IN THE NORTH AMERICAN VERTICAL DATUM OF 1988 ELEVATION SOURCE: BUSH, ROED, & HITCHINGS, INC. (2014)

BLOCK 38 PANEL LOCATOR MAP



NOTES:
1. ALL LOCATIONS ARE APPROXIMATE.
2. FIGURES WERE PRODUCED IN COLOR. GRAYSCALE COPIES MAY NOT REPRODUCE ALL ORIGINAL INFORMATION.

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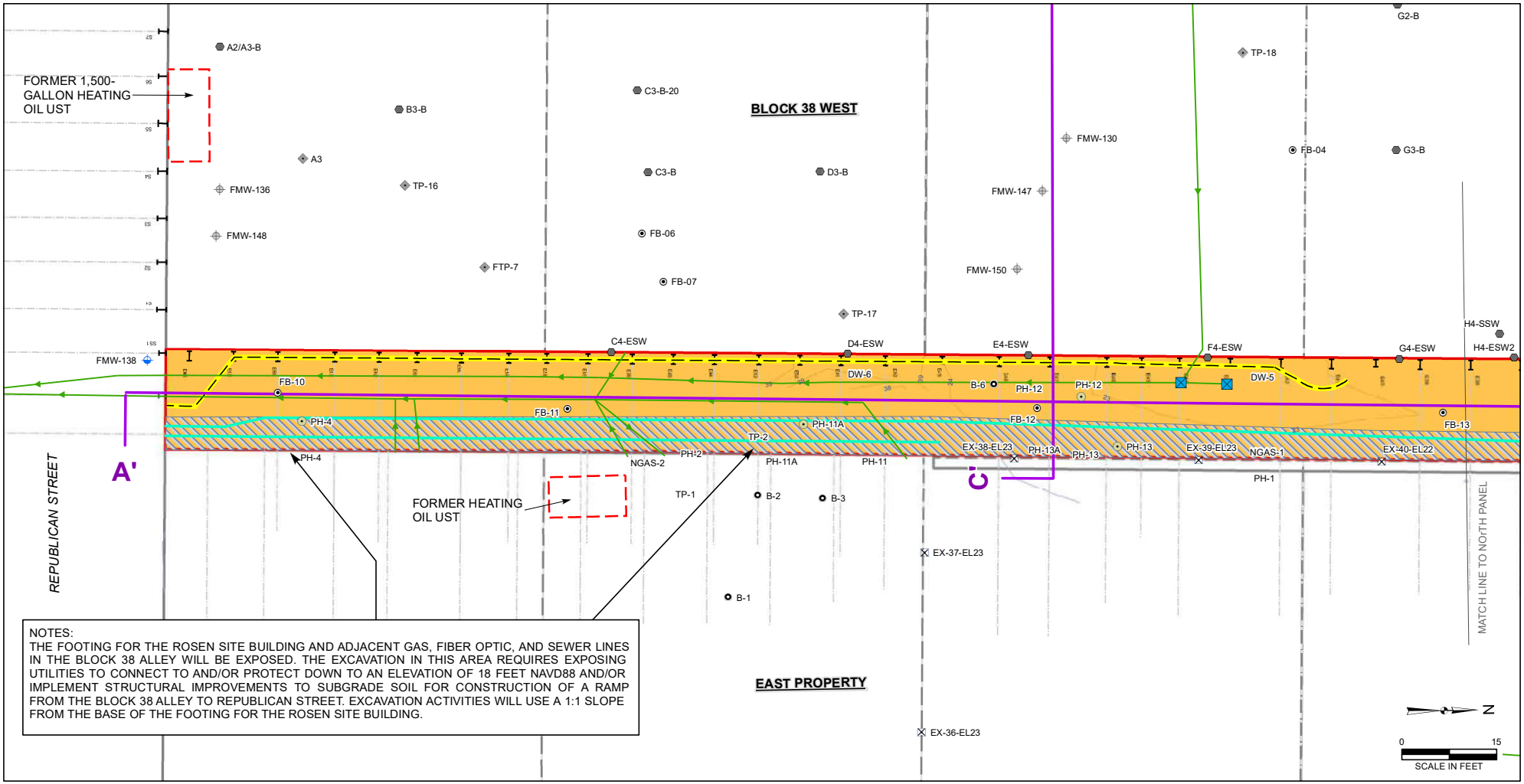
FIGURE 14

NORTH CONSTRUCTION EXCAVATION EXTENT
SOIL SAMPLE LOCATIONS
AND CROSS SECTION LINES
BLOCK 38 ALLEY
SEATTLE, WASHINGTON

FARALLON PN: 397-019

Drawn By: tperrin
Checked By: CS
Date: 2/3/2021
Disc Reference:
Q:\Projects\397 VULCAN\019_Block38\Mapfiles\017E_Alley IAWP 202011\Figure-14_AlleyNorth_BL38WEA_Grid_Alley_17E_202101.mxd



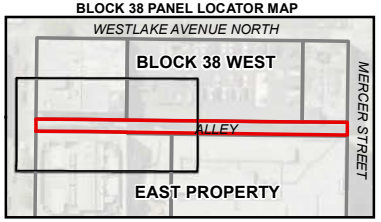
NOTES:
THE FOOTING FOR THE ROSEN SITE BUILDING AND ADJACENT GAS, FIBER OPTIC, AND SEWER LINES IN THE BLOCK 38 ALLEY WILL BE EXPOSED. THE EXCAVATION IN THIS AREA REQUIRES EXPOSING UTILITIES TO CONNECT TO AND/OR PROTECT DOWN TO AN ELEVATION OF 18 FEET NAVD88 AND/OR IMPLEMENT STRUCTURAL IMPROVEMENTS TO SUBGRADE SOIL FOR CONSTRUCTION OF A RAMP FROM THE BLOCK 38 ALLEY TO REPUBLICAN STREET. EXCAVATION ACTIVITIES WILL USE A 1:1 SLOPE FROM THE BASE OF THE FOOTING FOR THE ROSEN SITE BUILDING.

LEGEND

- DEEP OUTWASH AQUIFER WELL
- DECOMMISSIONED INTERMEDIATE WATER-BEARING ZONE MONITORING WELL
- BORING (FARALLON)
- BORING (GEOENGINEERS)
- EXCAVATION SAMPLE (GEOENGINEERS)
- POTHOLE (FARALLON)
- EXCAVATION SAMPLE LOCATION (FARALLON)
- TEST PIT (FARALLON)
- PROPERTY BOUNDARY
- CONSTRUCTION EXCAVATION
- KING COUNTY PARCELS
- LOT LINE
- CATCH BASIN
- SANITARY SEWER MAIN
- FIBER OPTIC LINE
- PROPOSED GAS LINE
- STRUCTURAL OR UTILITY PROTECTION/BUFFER/SLOPE BACK
- LINE OF CROSS SECTION
- E36 PILE AND IDENTIFIER
- TIEBACK

ELEVATION DATA PRESENTED IN FEET ABOVE MSL IN THE NORTH AMERICAN VERTICAL DATUM OF 1988 ELEVATION SOURCE: BUSH, ROED, & HITCHINGS, INC. (2014)

BLOCK 38 PANEL LOCATOR MAP



NOTES:
1. ALL LOCATIONS ARE APPROXIMATE.
2. FIGURES WERE PRODUCED IN COLOR. GRAYSCALE COPIES MAY NOT REPRODUCE ALL ORIGINAL INFORMATION.

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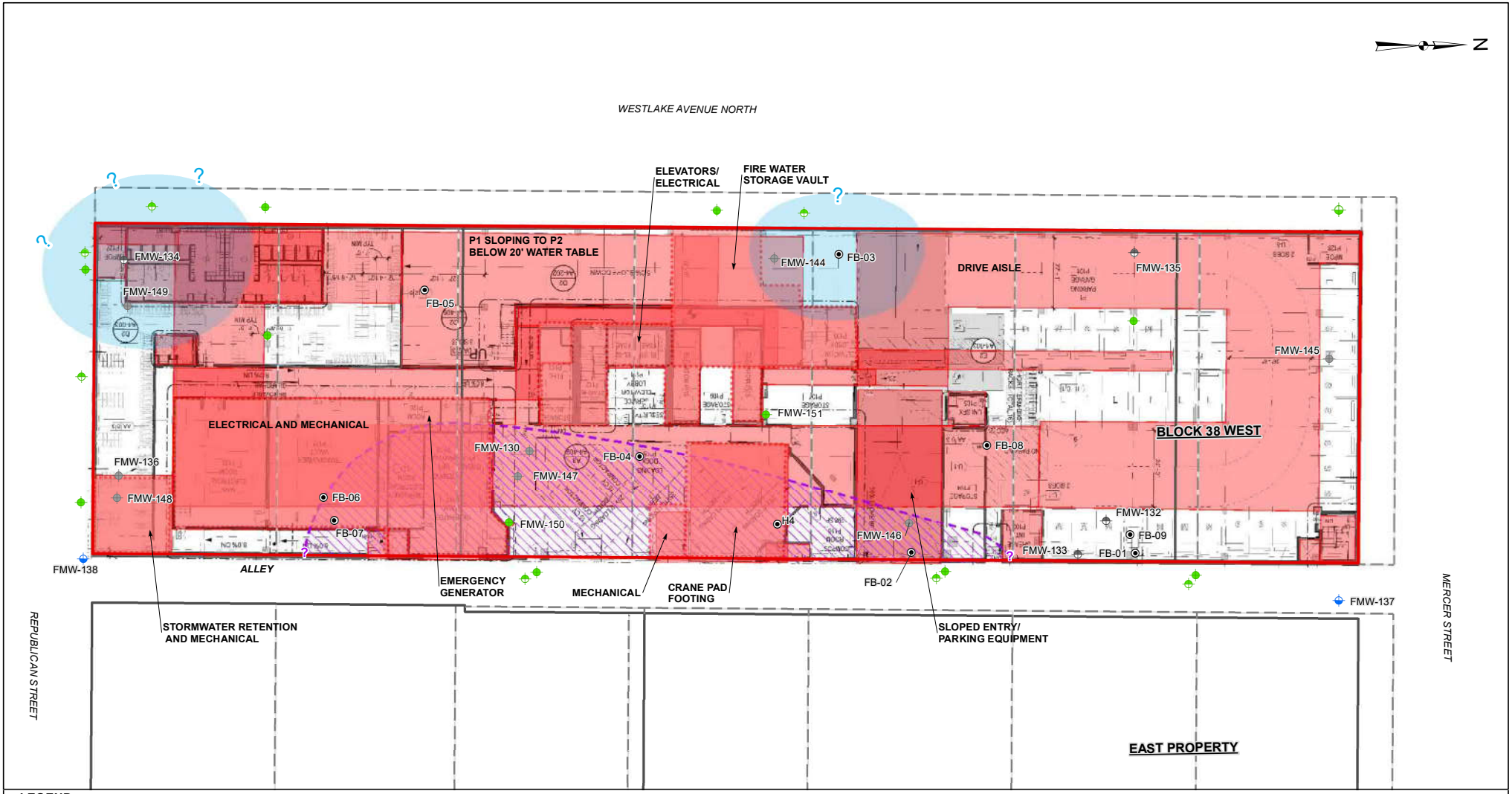
FIGURE 15

SOUTH CONSTRUCTION EXCAVATION EXTENT
SOIL SAMPLE LOCATIONS
AND CROSS SECTION LINES
BLOCK 38 ALLEY
SEATTLE, WASHINGTON

FARALLON PN: 397-019

Drawn By: tperrin | Checked By: CS | Date: 2/3/2021 | Disc Reference: Q:\Projects\397 VULCAN\019_Block38\Mapfiles\017E_Alley IAWP 202011\Figure-15_AlleySouth_BL38WEA_Grid_Alley_17E_202101.mxd



LEGEND

- BORING
- DECOMMISSIONED SHALLOW WATER-BEARING ZONE MONITORING WELL
- DECOMMISSIONED INTERMEDIATE WATER-BEARING ZONE MONITORING WELL
- DEEP OUTWASH AQUIFER MONITORING WELL
- PROPOSED FUTURE SHALLOW WATER-BEARING ZONE MONITORING WELL
- PROPOSED FUTURE INTERMEDIATE WATER-BEARING ZONE MONITORING WELL
- PROPOSED FUTURE DEEP OUTWASH AQUIFER MONITORING WELL
- AREAS WITH BUILDING CODE OR ACCESS RESTRICTIONS
- DRO AND/OR ORO DETECTED AT CONCENTRATIONS EXCEEDING SCREENING LEVELS (? ESTIMATED EXTENT INFERRED)
- DRO AND/OR ORO DETECTED AT CONCENTRATIONS EXCEEDING SCREENING LEVELS IN SHALLOW WATER-BEARING ZONE (? ESTIMATED EXTENT INFERRED)
- LOT LINE
- BLOCK 38 WEST PROPERTY BOUNDARY
- KING COUNTY PARCEL BOUNDARY

THE LOCATION OF PROPOSED EASTERN SHALLOW WATER-BEARING ZONE MONITORING WELLS WILL BE EVALUATED UPON COMPLETION OF SUPPLEMENTAL SUBSURFACE INVESTIGATION IN THE EAST-ADJACENT ALLEY.

DRO = TOTAL PETROLEUM HYDROCARBONS (TPH) AS DIESEL-RANGE ORGANICS
ORO = TPH AS OIL-RANGE ORGANICS

0 30
SCALE IN FEET

NOTES:
ALL LOCATIONS ARE APPROXIMATE.
FIGURES WERE PRODUCED IN COLOR. GRAYSCALE COPIES MAY NOT REPRODUCE ALL ORIGINAL INFORMATION.

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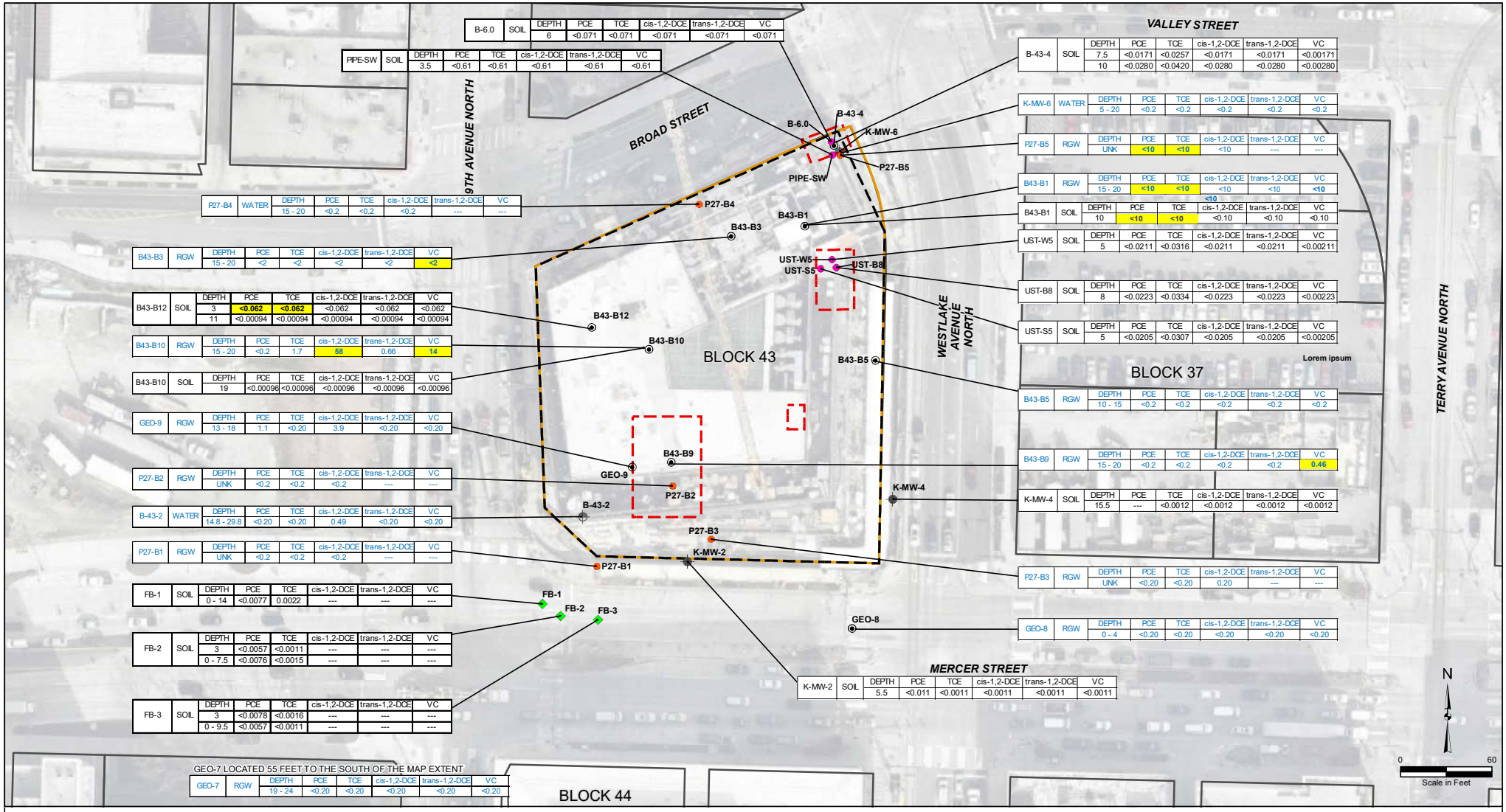
FIGURE 16

PROPOSED MONITORING WELL LOCATIONS
BLOCK 38 WEST SITE BLOCK 38 ALLEY
SEATTLE, WASHINGTON

FARALLON PN: 397-019

Drawn By: tperrin
Checked By: CS
Date: 1/7/2021
Disc Reference:
Document Path: Q:\Projects\397_VULCAN\019_Block38\Mapfiles\017E_Alley IAWP 202011\Figure-16_PropMW_Sitemap-parking_Alley_17E_202011.mxd

Block 43 Selected Figures



B-6.0	SOIL	DEPTH	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	VC
		6	<0.071	<0.071	<0.071	<0.071	<0.071

PIPE-SW	SOIL	DEPTH	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	VC
		3.5	<0.61	<0.61	<0.61	<0.61	<0.61

B-43-4	SOIL	DEPTH	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	VC
		7.5	<0.0171	<0.0257	<0.0171	<0.0171	<0.00171
		10	<0.0280	<0.0420	<0.0280	<0.0280	<0.00280

K-MW-6	WATER	DEPTH	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	VC
		5 - 20	<0.2	<0.2	<0.2	<0.2	<0.2

P27-B5	RGW	DEPTH	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	VC
		UNK	<10	<10	<10	---	---

B43-B1	RGW	DEPTH	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	VC
		15 - 20	<10	<10	<10	<10	<10

B43-B1	SOIL	DEPTH	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	VC
		10	<10	<10	<0.10	<0.10	<0.10

UST-W5	SOIL	DEPTH	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	VC
		5	<0.0211	<0.0316	<0.0211	<0.0211	<0.00211

UST-B8	SOIL	DEPTH	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	VC
		8	<0.0223	<0.0334	<0.0223	<0.0223	<0.00223

UST-S5	SOIL	DEPTH	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	VC
		5	<0.0205	<0.0307	<0.0205	<0.0205	<0.00205

P27-B4	WATER	DEPTH	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	VC
		15 - 20	<0.2	<0.2	<0.2	---	---

B43-B3	RGW	DEPTH	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	VC
		15 - 20	<2	<2	<2	<2	<2

B43-B12	SOIL	DEPTH	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	VC
		3	<0.062	<0.062	<0.062	<0.062	<0.062
		11	<0.00094	<0.00094	<0.00094	<0.00094	<0.00094

B43-B10	RGW	DEPTH	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	VC
		15 - 20	<0.2	1.7	58	0.66	14

B43-B10	SOIL	DEPTH	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	VC
		19	<0.00096	<0.00096	<0.00096	<0.00096	<0.00096

GEO-9	RGW	DEPTH	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	VC
		13 - 18	1.1	<0.20	3.9	<0.20	<0.20

P27-B2	RGW	DEPTH	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	VC
		UNK	<0.2	<0.2	<0.2	---	---

B-43-2	WATER	DEPTH	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	VC
		14.8 - 29.8	<0.20	<0.20	0.49	<0.20	<0.20

P27-B1	RGW	DEPTH	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	VC
		UNK	<0.2	<0.2	<0.2	---	---

FB-1	SOIL	DEPTH	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	VC
		0 - 14	<0.0077	0.0022	---	---	---

FB-2	SOIL	DEPTH	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	VC
		3	<0.0057	<0.0011	---	---	---
		0 - 7.5	<0.0076	<0.0015	---	---	---

FB-3	SOIL	DEPTH	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	VC
		3	<0.0078	<0.0016	---	---	---
		0 - 9.5	<0.0057	<0.0011	---	---	---

K-MW-4	SOIL	DEPTH	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	VC
		15.5	---	<0.0012	<0.0012	<0.0012	<0.0012

P27-B3	RGW	DEPTH	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	VC
		UNK	<0.20	<0.20	0.20	---	---

B43-B5	RGW	DEPTH	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	VC
		10 - 15	<0.2	<0.2	<0.2	<0.2	<0.2

B43-B9	RGW	DEPTH	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	VC
		15 - 20	<0.2	<0.2	<0.2	<0.2	0.46

GEO-8	RGW	DEPTH	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	VC
		0 - 4	<0.20	<0.20	<0.20	<0.20	<0.20

K-MW-2	SOIL	DEPTH	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	VC
		5.5	<0.011	<0.0011	<0.0011	<0.0011	<0.0011

GEO-7	RGW	DEPTH	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	VC
		19 - 24	<0.20	<0.20	<0.20	<0.20	<0.20

LEGEND

- SOIL BORING
- DECOMMISSIONED SHALLOW WATER-BEARING ZONE WELL
- DECOMMISSIONED INTERMEDIATE WATER-BEARING ZONE WELL
- TEST PIT
- POINT RECONNAISSANCE
- GRAB SAMPLE
- PROPERTY BOUNDARY
- LIMIT OF EXCAVATION
- UNDERGROUND STORAGE TANK SITE LOCATION

NOTES:
SOIL RESULTS IN MILLIGRAMS PER KILOGRAM (mg/kg)
GROUNDWATER RESULTS IN MICROGRAMS PER LITER (µg/l)
DEPTH MEASURED IN FEET BELOW GROUND SURFACE

1. ALL LOCATIONS ARE APPROXIMATE
2. FIGURES WERE PRODUCED IN COLOR. GRAYSCALE COPIES MAY NOT REPRODUCE ALL ORIGINAL INFORMATION.
3. LOCATIONS SHOWN ARE THOSE WHERE SOIL OR GROUNDWATER SAMPLES WERE TESTED FOR HALOGENATED VOLATILE ORGANIC COMPOUNDS PRIOR TO CONSTRUCTION OF THE BUILDING.
4. ONLY SELECT ANALYTES AND ANALYTES WITH DETECTIONS EXCEEDING THE LABORATORY REPORTING LIMIT ARE SHOWN.

PCE = TETRACHLOROETHENE
TCE = TRICHLOROETHENE
cis-1,2-DCE = CIS-1,2-DICHLOROETHENE
trans-1,2-DCE = TRANS-1,2-DICHLOROETHENE
VC = VINYL CHLORIDE
0.46 = DENOTES CONCENTRATIONS THAT EXCEED THE WASHINGTON STATE MODEL TOXICS CONTROL ACT (MTCA) CLEANUP LEVEL.
< = DENOTES ANALYTE NOT DETECTED AT OR EXCEEDING THE REPORTING LIMIT LISTED
--- = NO DATA AVAILABLE
RGW = RECONNAISSANCE GROUNDWATER SAMPLE
UNK = UNKNOWN
WATER = GROUNDWATER SAMPLE

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FIGURE 8

SOIL AND GROUNDWATER HVOC DATA
SOUTH LAKE UNION BLOCK 43 SITE
601 WESTLAKE AVENUE NORTH
SEATTLE, WASHINGTON

FARALLON PN: 397-020

Drawn By: jjones | Checked By: TC | Date: 10/12/2018 | Disc Reference:
Document Path: Q:\Projects\397_VULCAN\BL43_Closure\GW_Report_1810\Mapfiles\Figure-08_Soil-GW_HVOCs.mxd

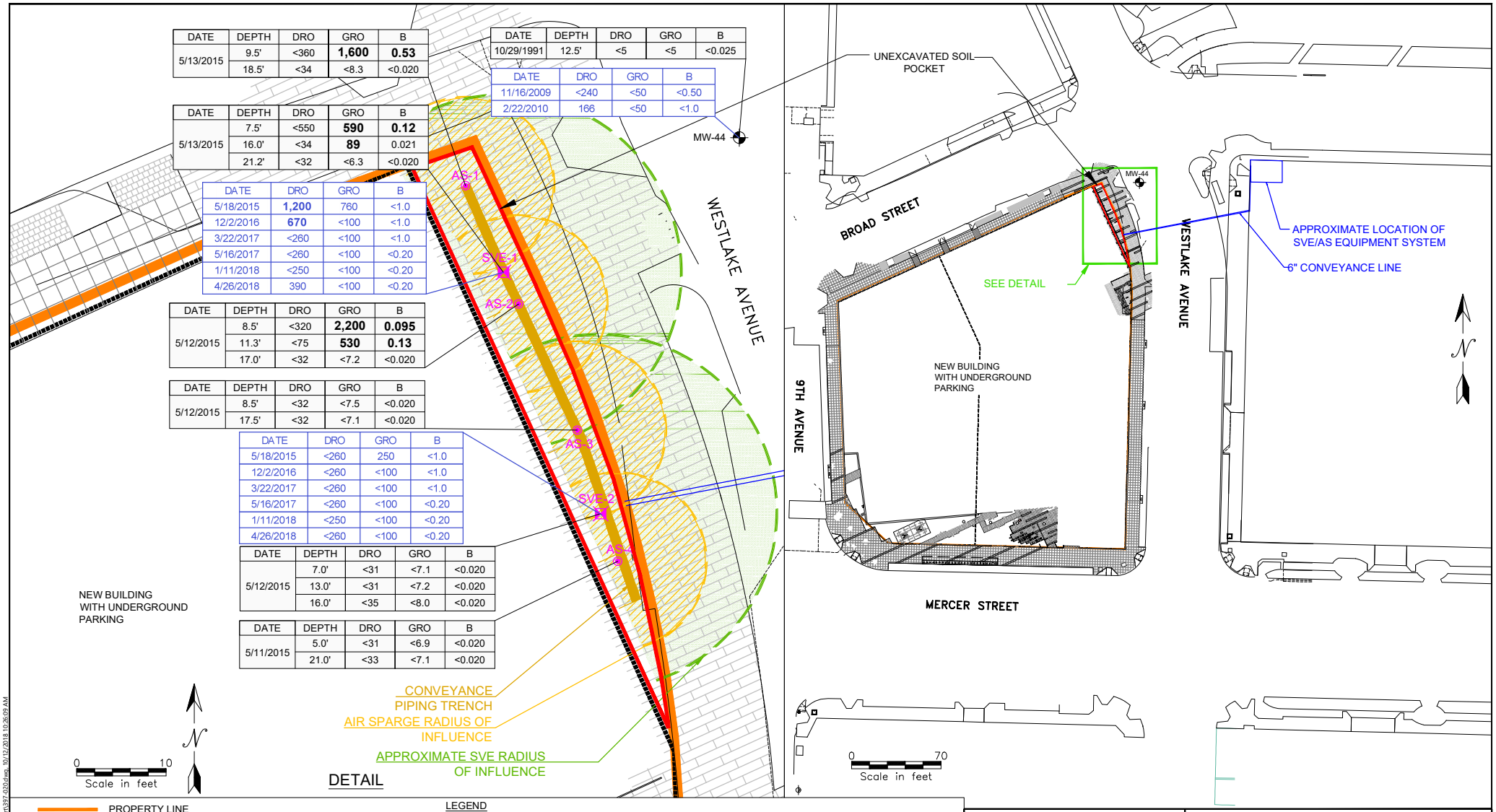

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FIGURE 9

REMEDIATION SYSTEM AT BLOCK 43 PROPERTY
SOUTH LAKE UNION BLOCK 43 SITE
601 WESTLAKE AVENUE NORTH
SEATTLE, WASHINGTON

FARALLON PN: 397-020

Drawn By: JJ | Checked By: TC | Date: 10/12/2018 | Disk Reference: 397-020

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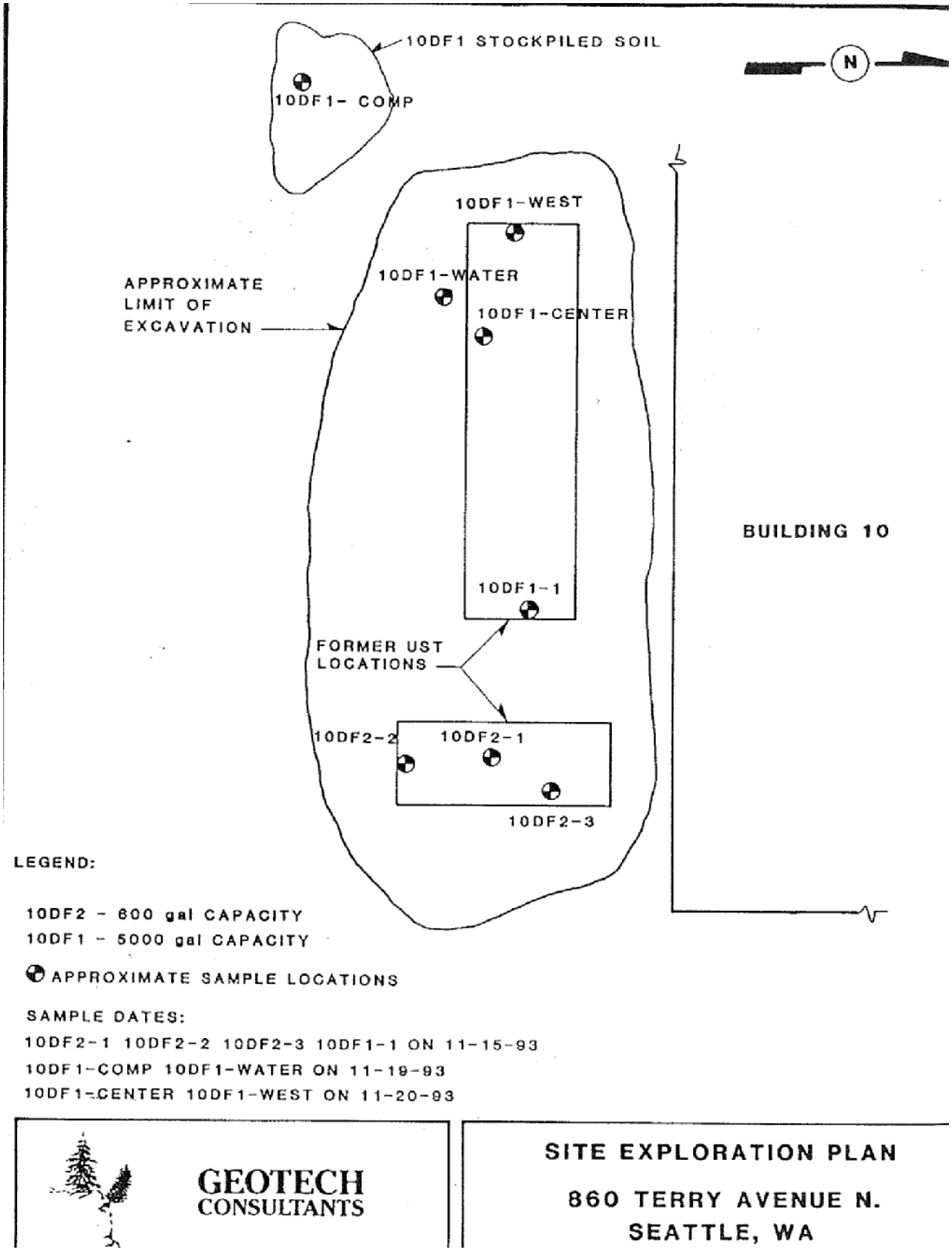
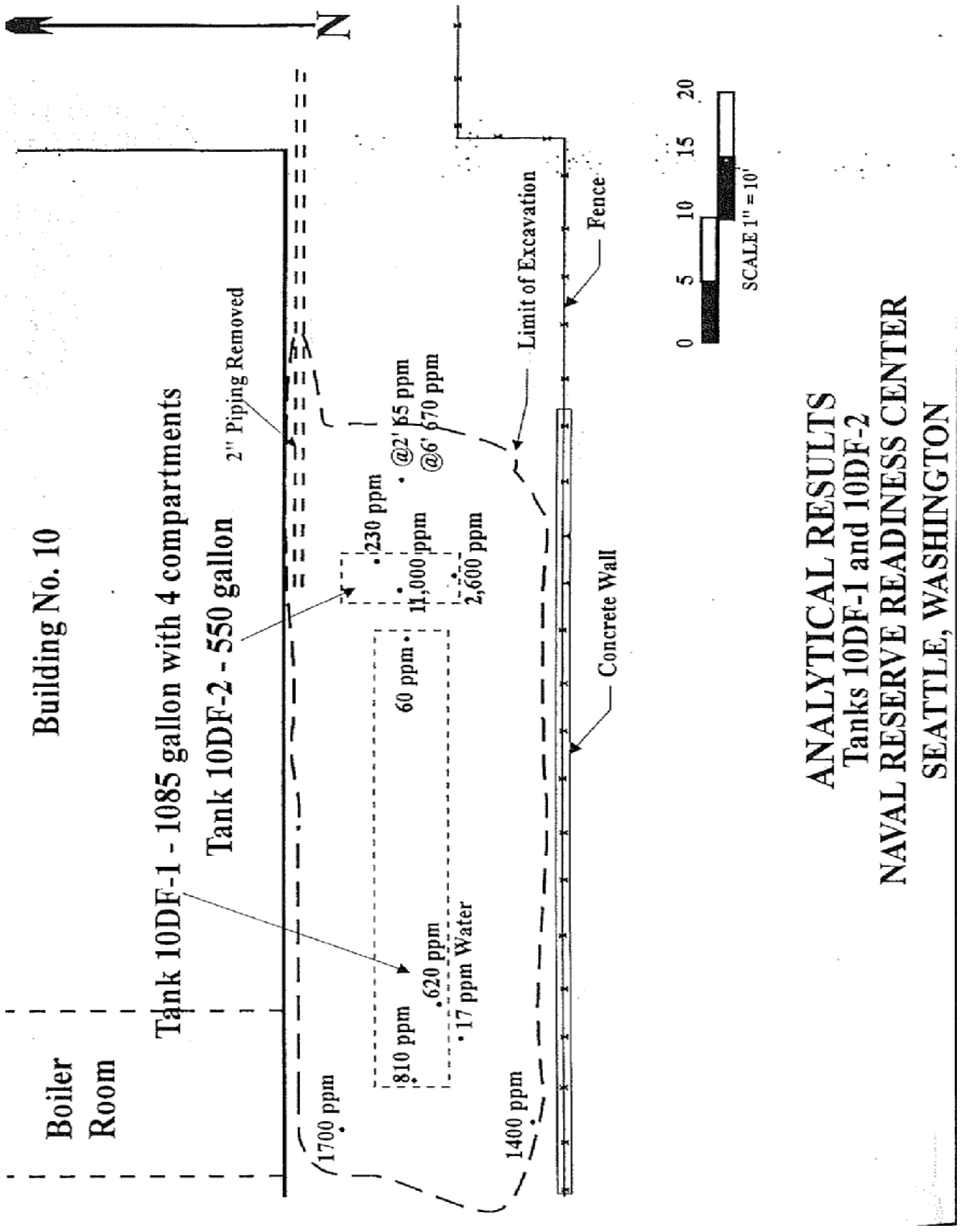
South Lake Union Park and Former Naval Reserve Readiness Center
Selected Figures

6.2 Site Plan

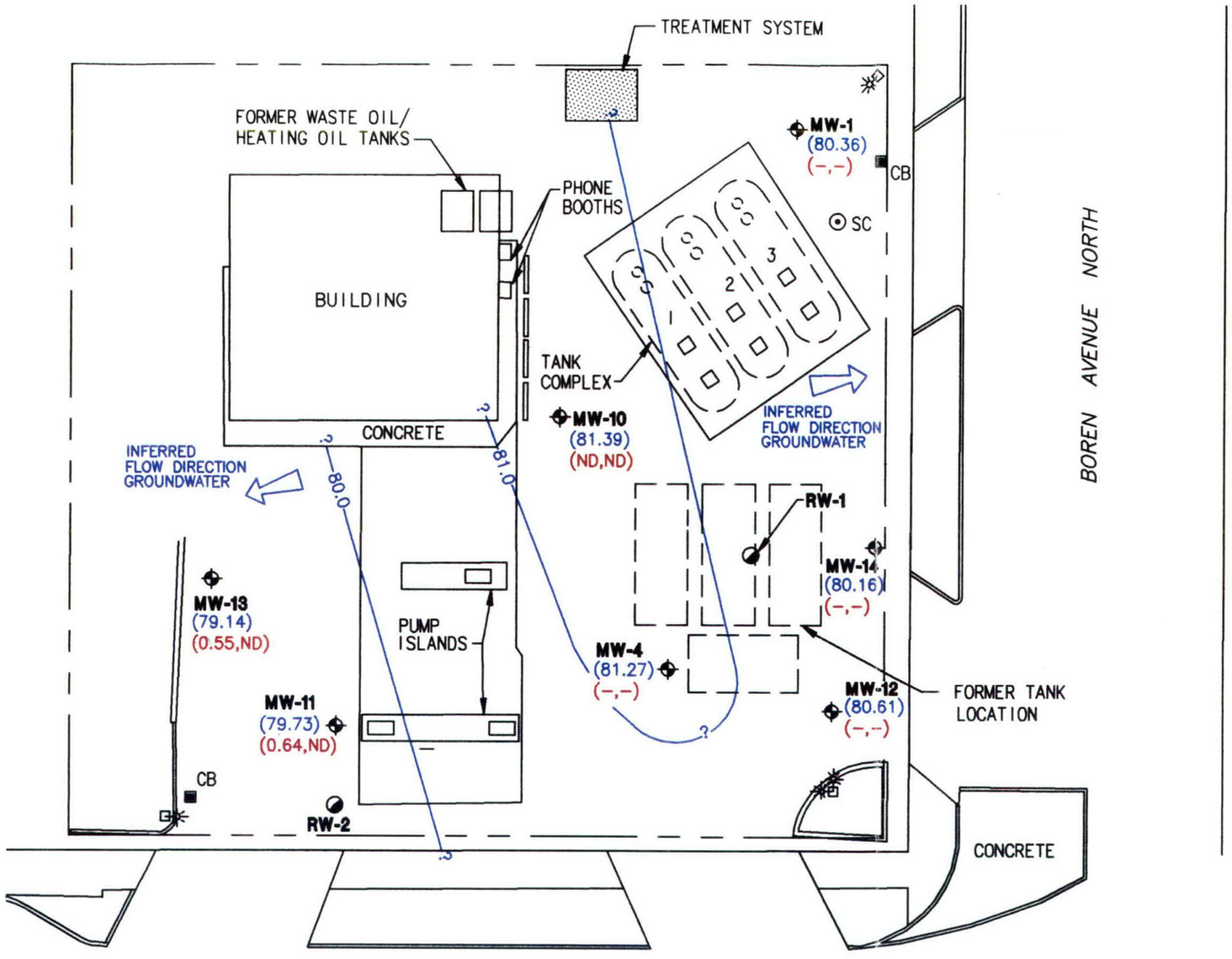

10DF1 STOCKPILED SOIL
10DF1- COMP
N
10DF1-WEST
10DF1-WATER
APPROXIMATE
LIMIT OF
EXCAVATION
10DF1-CENTER
BUILDING 10
10DF1-1
FORMER UST
LOCATIONS
10DF2-2
10DF2-1
10DF2-3
LEGEND:
10DF2 - 600 gal CAPACITY
10DF1 - 5000 gal CAPACITY
APPROXIMATE SAMPLE LOCATIONS
SAMPLE DATES:
10DF2-1 10DF2-2 10DF2-3 10DF1-1 ON 11-15-93
10DF1-COMP 10DF1-WATER ON 11-19-93
10DF1-CENTER 10DF1-WEST ON 11-20-93
GEOTECH
CONSULTANTS
SITE EXPLORATION PLAN
860 TERRY AVENUE N.
SEATTLE, WA

6.3 TPH-Dx Concentration Map



Block 31

Selected Figures



LEGEND

MW-10	Monitoring Well
RW-1	Recovery Well
WM	Water Meter
CB	Catch Basin
	Area Light
(80.98)	Measured Groundwater Elevation (feet) April 24, 1995
— 80.0 —	Relative Groundwater Elevation Contour (feet)
(0.55,ND)	Measured TPH–D and TPH–O Concentrations in Groundwater (ppm) March 23, 1995

NOTES:

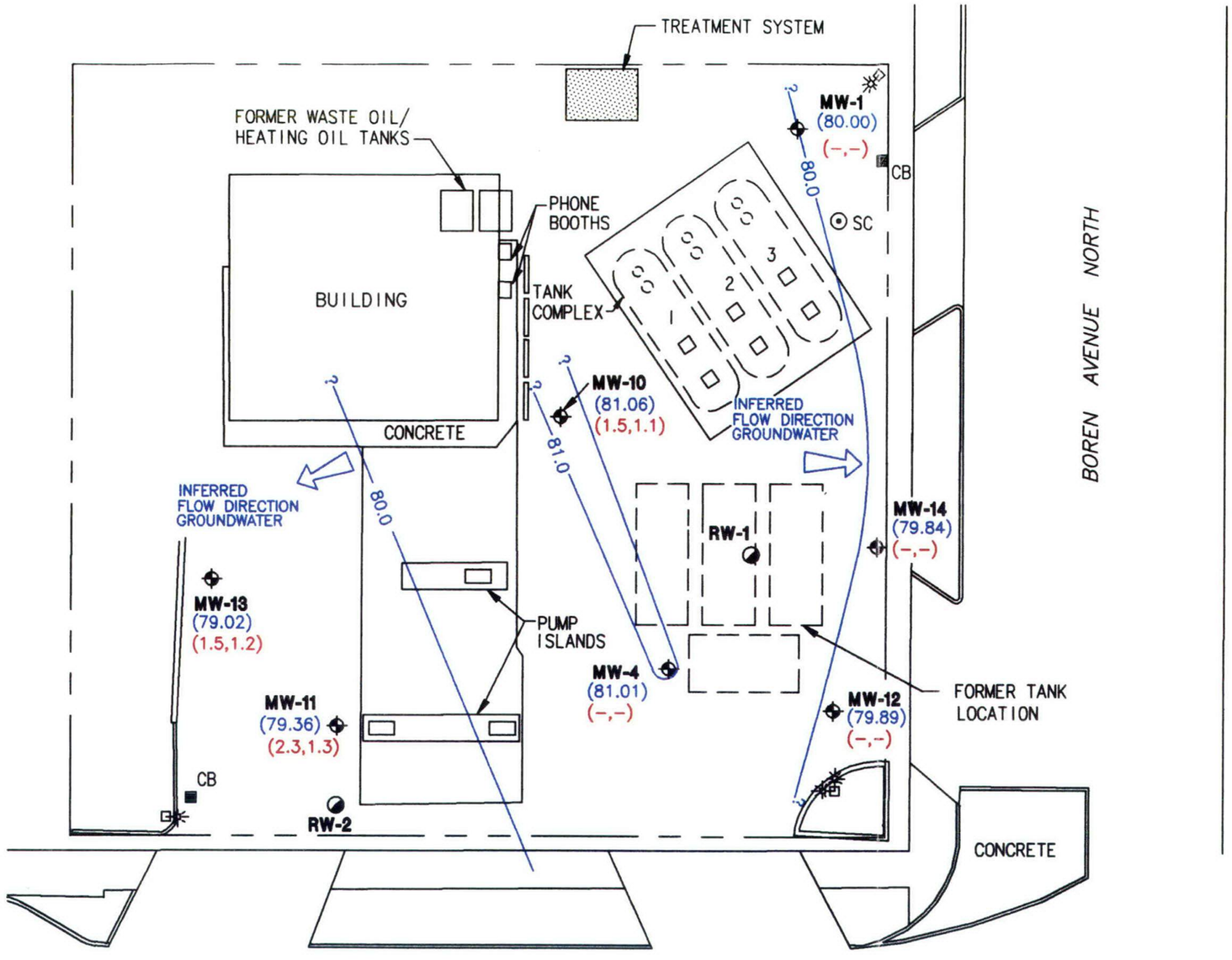
1. Tank 1 contains 10,000 gallons unleaded.
2. Tank 2 contains 10,000 gallons super unleaded.
3. Tank 3 contains 10,000 gallons regular.

EMCON

DATE 7-95
DWN. MLP
REV.
APPR.
PROJECT NO.
40556-008.040

Figure 2
FORMER SHELL SERVICE STATION
601 BOREN AVENUE NORTH
SEATTLE, WASHINGTON
SITE MAP-GROUNDWATER DATA (MARCH 23, 1995)

1=20 8-02-95 G:\DWG\0556\008\40BLC01



LEGEND

MW-1	Monitoring Well
RW-1	Recovery Well
WM	Water Meter
CB	Catch Basin
	Area Light
(80.00)	Measured Groundwater Elevation (feet) June 6, 1995
80.0	Relative Groundwater Elevation Contour (feet)
(1.5,1.1)	Measured TPH–D and TPH–O Concentrations in Groundwater (ppm) June 6, 1995

NOTES:

1. Tank 1 contains 10,000 gallons unleaded.
2. Tank 2 contains 10,000 gallons super unleaded.
3. Tank 3 contains 10,000 gallons regular.

0 20 40

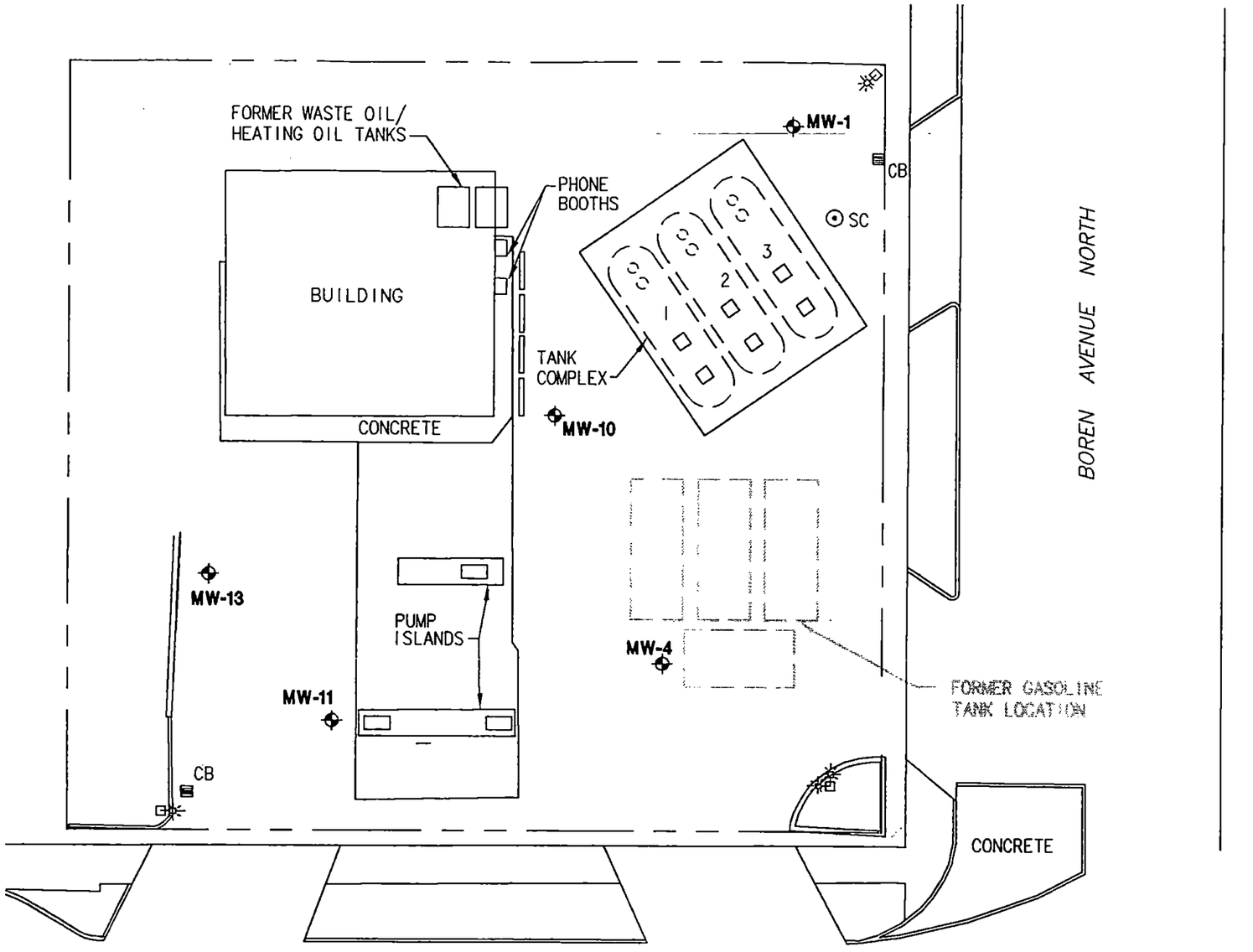
SCALE (ft)

EMCON

DATE 7-95
DWN. MLP
REV.
APPR.
PROJECT NO.
40556-008.040

Figure 3
FORMER SHELL SERVICE STATION
601 BOREN AVENUE NORTH
SEATTLE, WASHINGTON
SITE MAP-GROUNDWATER DATA
(JUNE 6, 1995)

1=20 8-02-95 G:\DWG\0556\008\40BLC02



LEGEND

MW-10	⊕	Monitoring Well Location
WM	□	Water Meter
CB	▤	Catch Basin
	☼	Area Light

NOTES:

1. Tank 1 contains 10,000 gallons unleaded.
2. Tank 2 contains 10,000 gallons super unleaded.
3. Tank 3 contains 10,000 gallons regular.

EMCON

DATE 7-95
DWN. MLP
REV.
APPR. ADS
PROJECT NO.
40556-008.050

Figure 2
FORMER SHELL SERVICE STATION
601 BOREN AVENUE NORTH
SEATTLE, WASHINGTON

SITE MAP - 1996

1=20 8-02-95 G:\DWG\0556\008\40BLC01

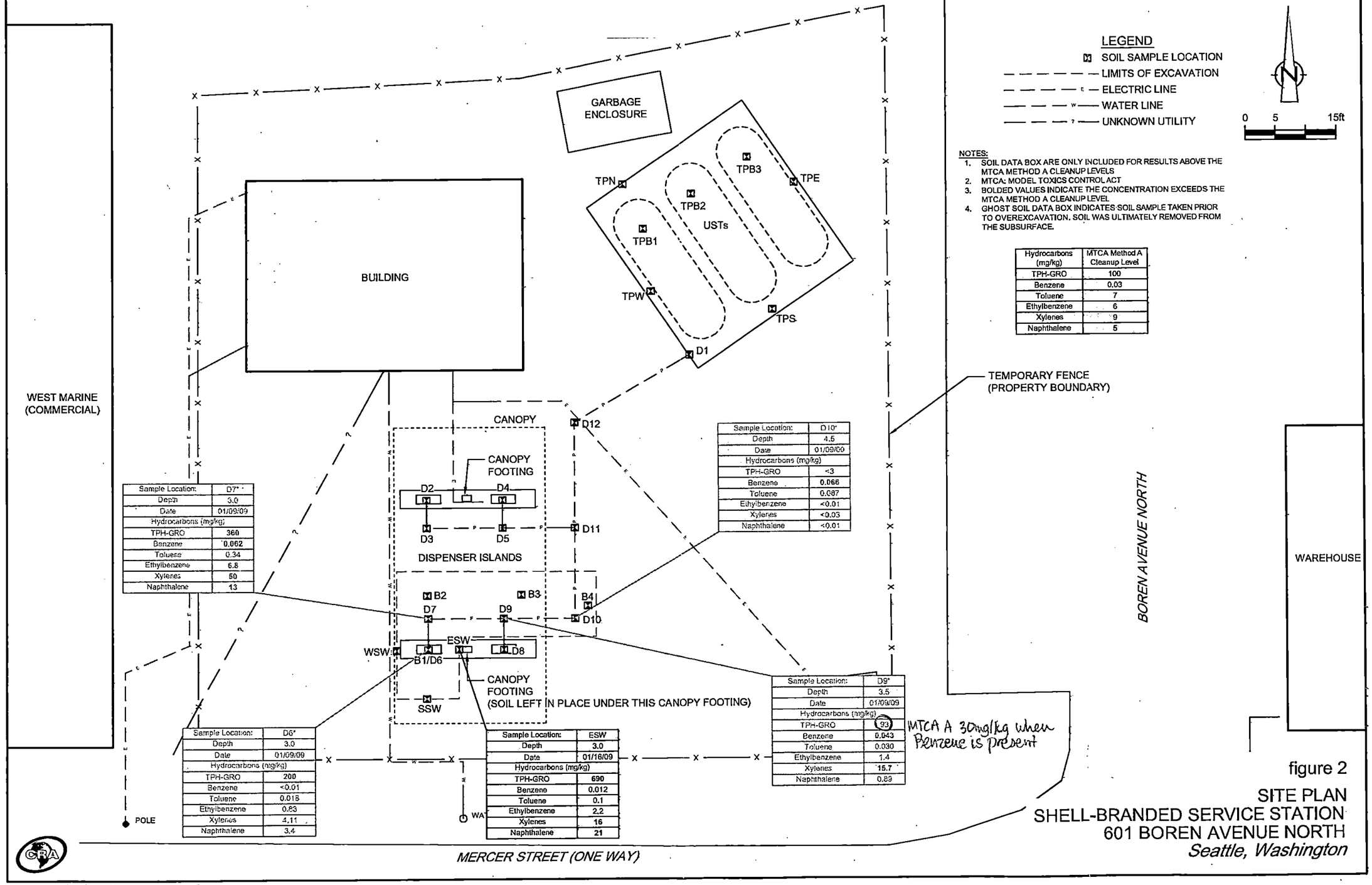


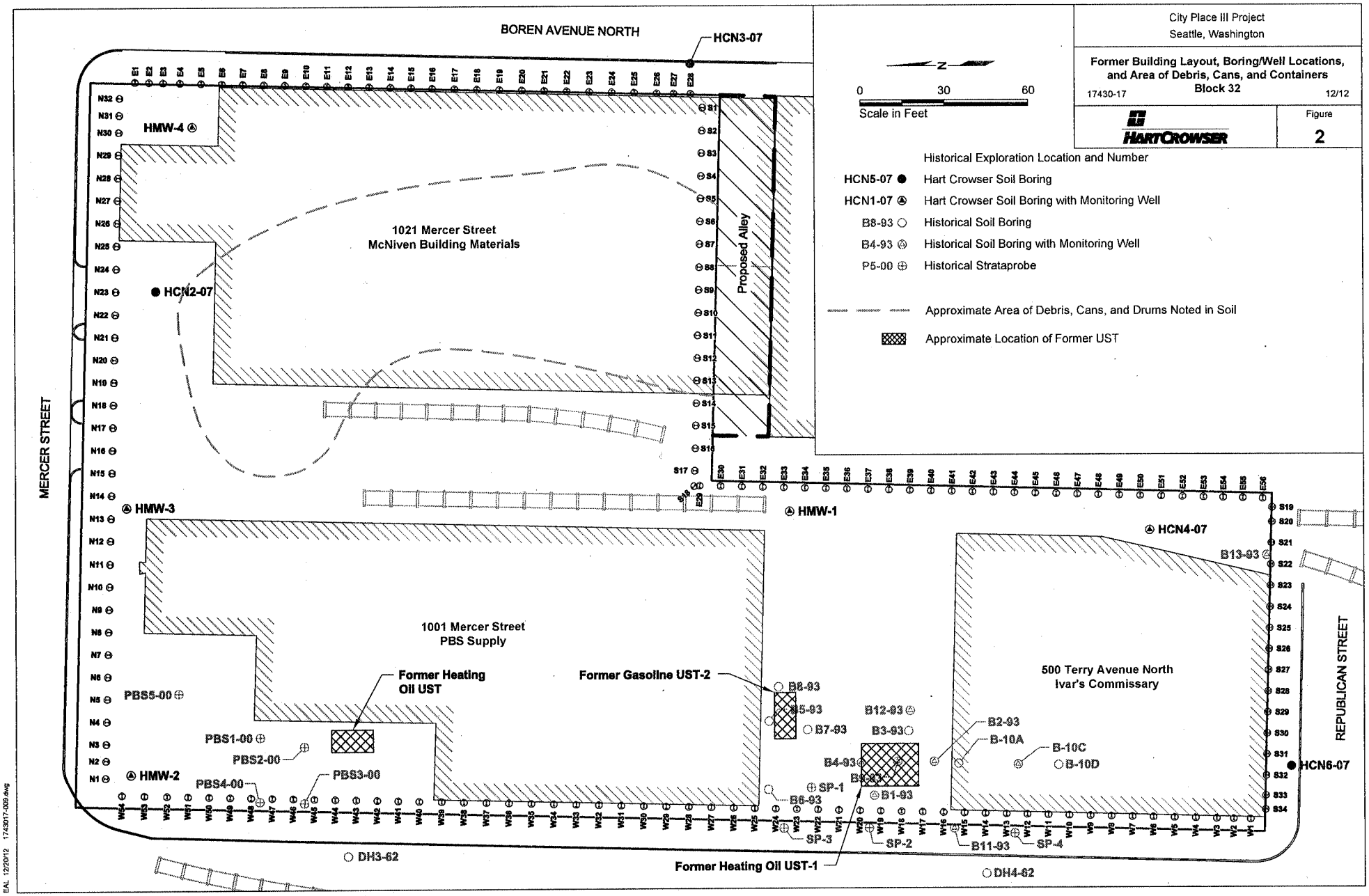
figure 2

SITE PLAN
SHELL-BRANDED SERVICE STATION
601 BOREN AVENUE NORTH
Seattle, Washington

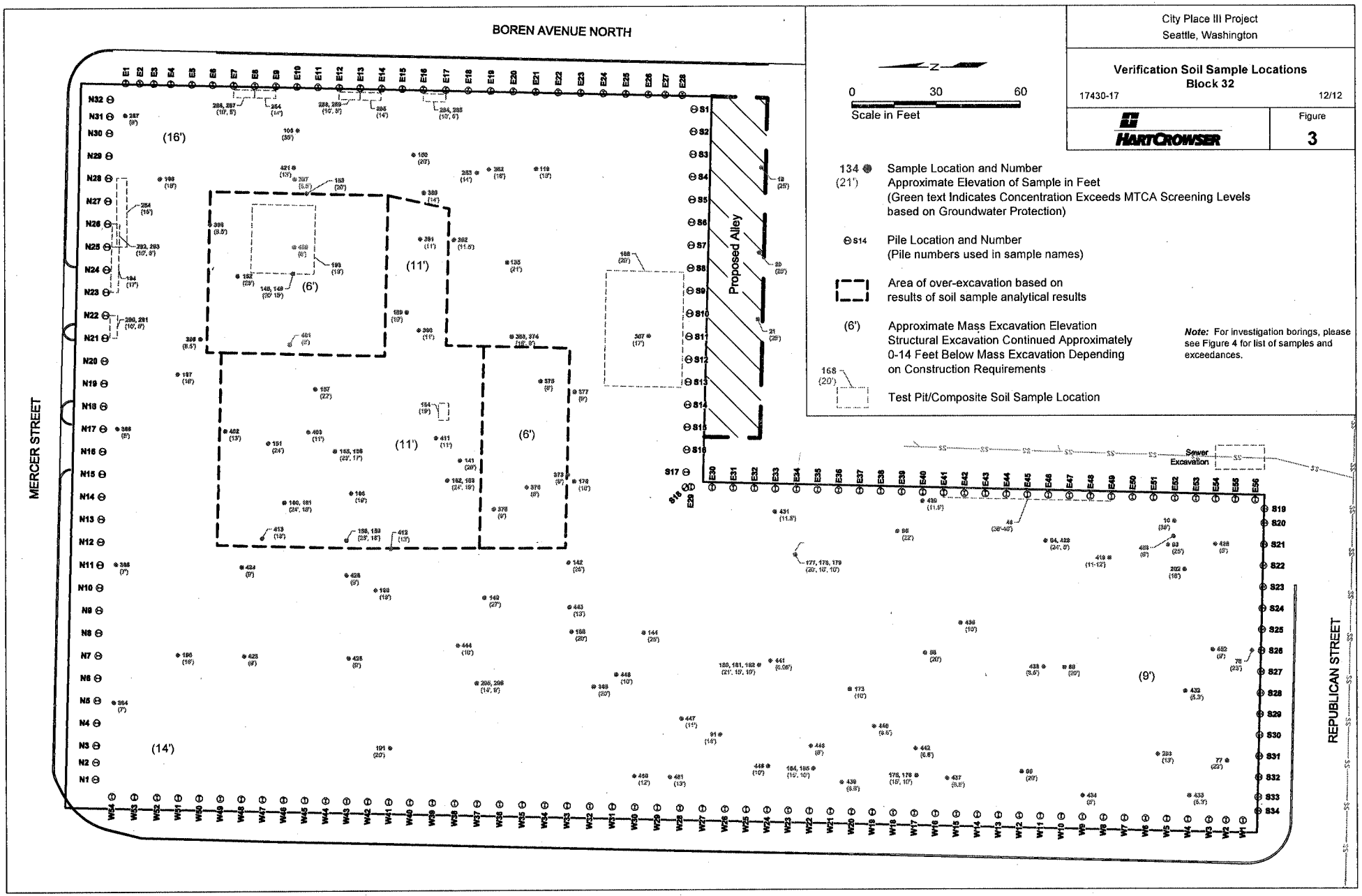
60331-001(003)GN-WA001 MAR 03/2009

Block 32

Selected Figures



EAL 12/20/12 17430/17-009.dwg



City Place III Project
Seattle, Washington

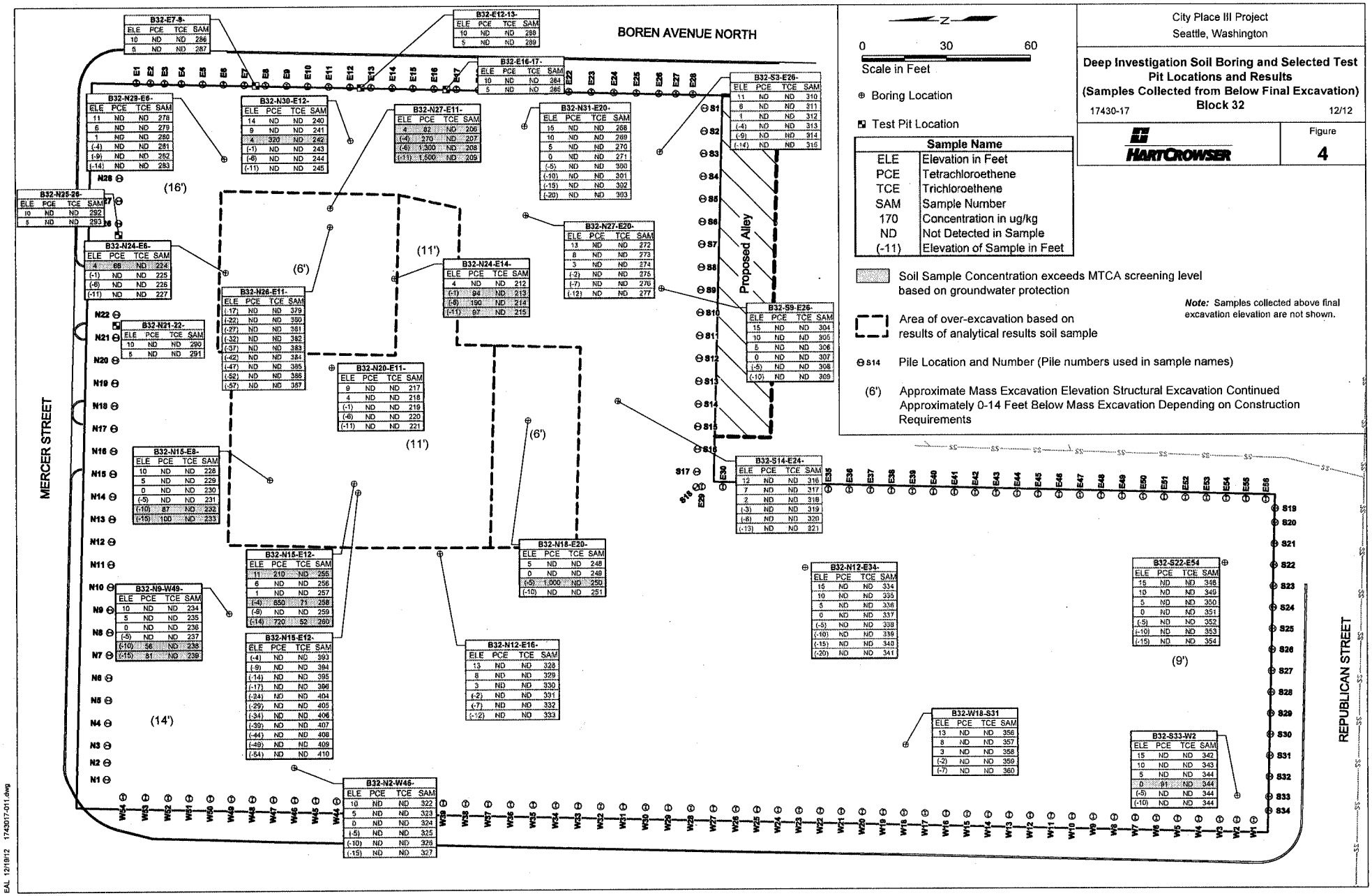
Verification Soil Sample Locations
Block 32

17430-17 12/12

HARTCROWSER

Figure **3**

EAL 12/19/12 1743017-010.dwg



City Place III Project
Seattle, Washington

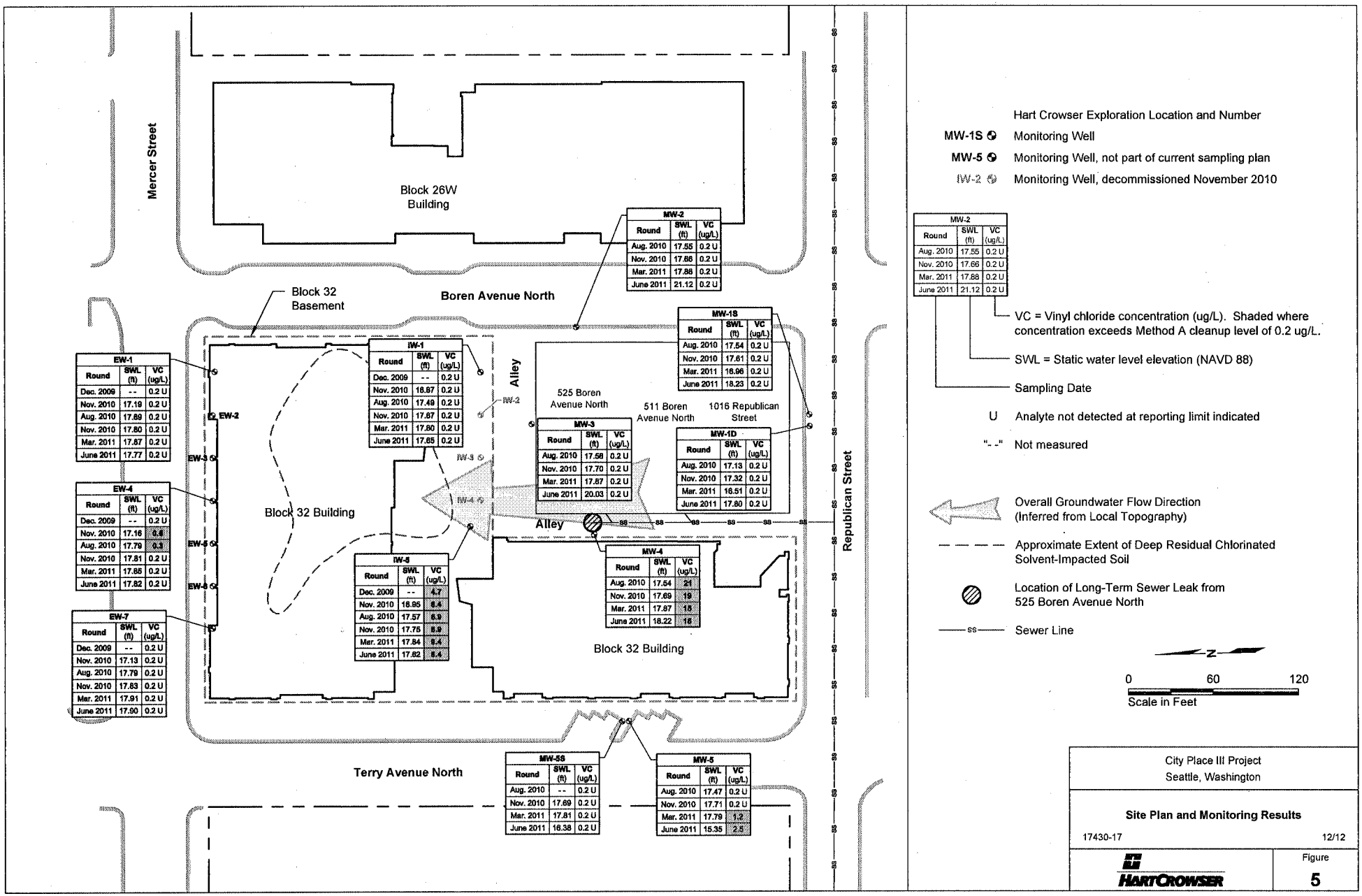
Deep Investigation Soil Boring and Selected Test Pit Locations and Results (Samples Collected from Below Final Excavation) Block 32

17430-17 12/12

HARTCROWSER

Figure 4

EAL 12/19/12 17430-17-011.dwg



MW-2		
Round	SWL (ft)	VC (ug/L)
Aug. 2010	17.55	0.2 U
Nov. 2010	17.66	0.2 U
Mar. 2011	17.88	0.2 U
June 2011	21.12	0.2 U

MW-1S		
Round	SWL (ft)	VC (ug/L)
Aug. 2010	17.54	0.2 U
Nov. 2010	17.61	0.2 U
Mar. 2011	18.06	0.2 U
June 2011	18.23	0.2 U

EW-1		
Round	SWL (ft)	VC (ug/L)
Dec. 2009	--	0.2 U
Nov. 2010	17.19	0.2 U
Aug. 2010	17.89	0.2 U
Nov. 2010	17.80	0.2 U
Mar. 2011	17.87	0.2 U
June 2011	17.77	0.2 U

IW-1		
Round	SWL (ft)	VC (ug/L)
Dec. 2009	--	0.2 U
Nov. 2010	18.87	0.2 U
Aug. 2010	17.49	0.2 U
Nov. 2010	17.87	0.2 U
Mar. 2011	17.80	0.2 U
June 2011	17.85	0.2 U

MW-3		
Round	SWL (ft)	VC (ug/L)
Aug. 2010	17.58	0.2 U
Nov. 2010	17.70	0.2 U
Mar. 2011	17.87	0.2 U
June 2011	20.03	0.2 U

MW-1D		
Round	SWL (ft)	VC (ug/L)
Aug. 2010	17.13	0.2 U
Nov. 2010	17.32	0.2 U
Mar. 2011	16.51	0.2 U
June 2011	17.80	0.2 U

EW-4		
Round	SWL (ft)	VC (ug/L)
Dec. 2009	--	0.2 U
Nov. 2010	17.16	0.8
Aug. 2010	17.79	0.3
Nov. 2010	17.81	0.2 U
Mar. 2011	17.85	0.2 U
June 2011	17.82	0.2 U

IW-5		
Round	SWL (ft)	VC (ug/L)
Dec. 2009	--	4.7
Nov. 2010	18.95	6.4
Aug. 2010	17.57	6.9
Nov. 2010	17.75	6.9
Mar. 2011	17.84	6.4
June 2011	17.82	6.4

MW-4		
Round	SWL (ft)	VC (ug/L)
Aug. 2010	17.54	21
Nov. 2010	17.69	19
Mar. 2011	17.87	18
June 2011	18.22	18

EW-7		
Round	SWL (ft)	VC (ug/L)
Dec. 2009	--	0.2 U
Nov. 2010	17.13	0.2 U
Aug. 2010	17.79	0.2 U
Nov. 2010	17.83	0.2 U
Mar. 2011	17.91	0.2 U
June 2011	17.90	0.2 U

MW-5S		
Round	SWL (ft)	VC (ug/L)
Aug. 2010	--	0.2 U
Nov. 2010	17.69	0.2 U
Mar. 2011	17.81	0.2 U
June 2011	16.38	0.2 U

MW-5		
Round	SWL (ft)	VC (ug/L)
Aug. 2010	17.47	0.2 U
Nov. 2010	17.71	0.2 U
Mar. 2011	17.79	1.2
June 2011	15.35	2.5

Hart Crowser Exploration Location and Number

MW-1S Monitoring Well

MW-5 Monitoring Well, not part of current sampling plan

IW-2 Monitoring Well, decommissioned November 2010

MW-2		
Round	SWL (ft)	VC (ug/L)
Aug. 2010	17.55	0.2 U
Nov. 2010	17.66	0.2 U
Mar. 2011	17.88	0.2 U
June 2011	21.12	0.2 U

VC = Vinyl chloride concentration (ug/L). Shaded where concentration exceeds Method A cleanup level of 0.2 ug/L.

SWL = Static water level elevation (NAVD 88)

Sampling Date

U Analyte not detected at reporting limit indicated

"--" Not measured

Overall Groundwater Flow Direction (Inferred from Local Topography)

Approximate Extent of Deep Residual Chlorinated Solvent-Impacted Soil

Location of Long-Term Sewer Leak from 525 Boren Avenue North

ss Sewer Line

N

0 60 120

Scale in Feet

City Place III Project
Seattle, Washington

Site Plan and Monitoring Results

17430-17 12/12

HARTCROWSER

Figure 5

EAL 12/20/12 1743017-012.dwg

700 Dexter Avenue North
Selected Figures

Explanation

- Approximate Property Boundary
- SW-A — Lake Monitoring Location
- Type 1 Perimeter Injection Well
- Type 2 Perimeter Injection Well
- MW101 — Shallow Zone Monitoring Well
- MW-165 — Treatment Zone A Monitoring Well
- MW-166 — Treatment Zone B Monitoring Well
- MW-167 — Treatment Zone C Monitoring Well
- MW-168 — Treatment Zone D Monitoring Well
- SV03 — Soil Vapor Monitoring Point

- PCE, TCE, cDCE, and VC were not detected in samples during the Remedial Investigation
- PCE, TCE, cDCE, and VC were not detected above their PCULs in samples during the Remedial Investigation
- PCE, TCE, cDCE, and/or VC were detected once or more above the their PCULs in samples during the Remedial Investigation
- Approximate extent of PCE, TCE, cDCE, and VC above the PCULs
- Approximate groundwater flow direction in unpumped conditions

N 231800
E 1268300

Preliminary Cleanup Levels (PCULs):
PCE = 5.0 µg/L
TCE = 4.0 µg/L
cDCE = 16 µg/L
VC = 0.29 µg/L

Well (Screen Elevation)	
PCE	TCE
cDCE	VC

Coordinate Reference Point
(NAD83, Washington State Plane North, US Feet)

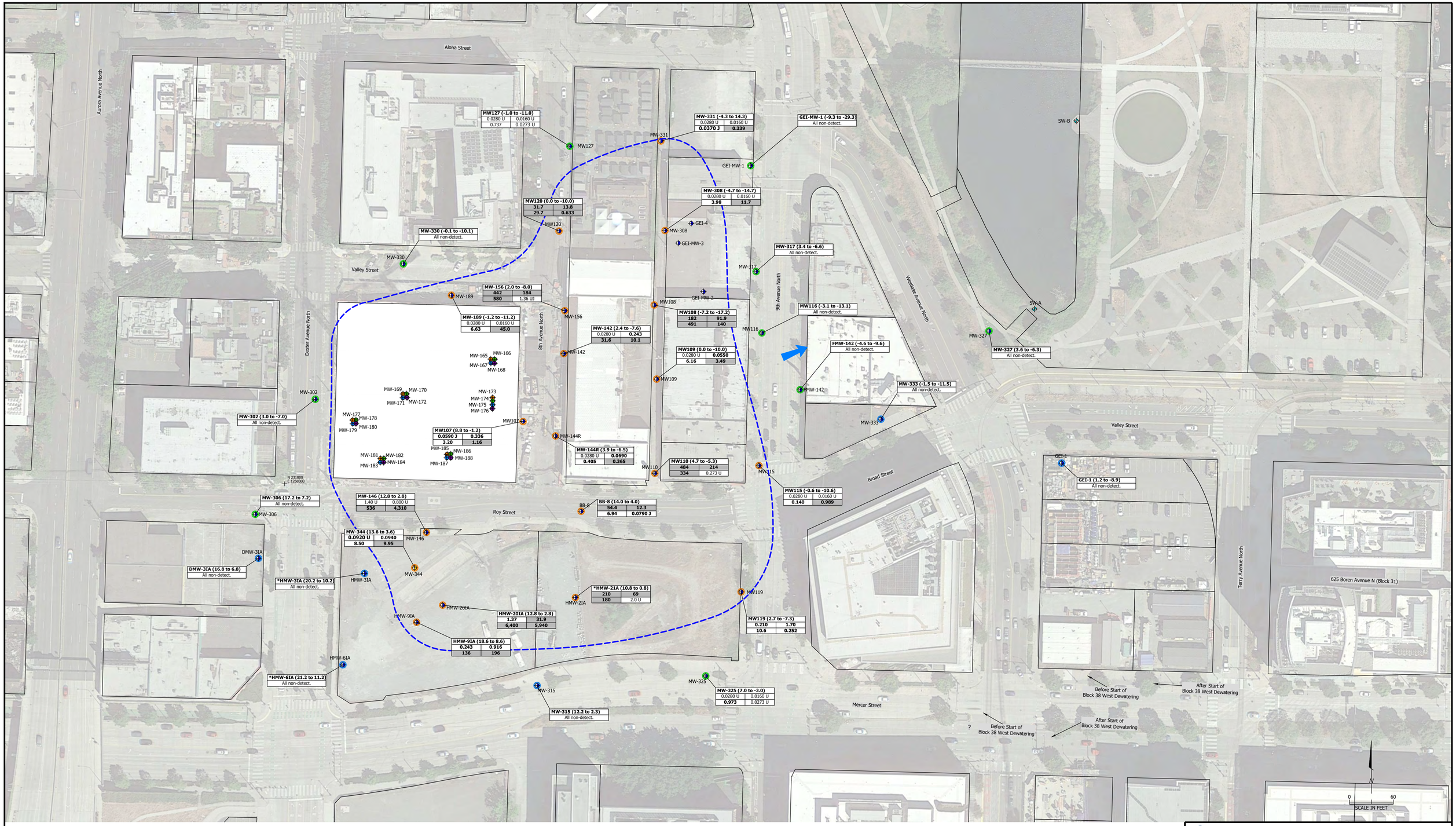
Notes:
All results shown from Quarter 2, 2021 when available. Locations indicated with * are the most recent available results prior to Quarter 2, 2021.
U = Not detected at or above the laboratory method detection limit (MDL)
J = The identification of the analyte is acceptable; the reported value is an estimate
J+ = The result is an estimated quantity, but the result may be biased high
J- = The result is an estimated quantity, but the result may be biased low
Detected results shown in bold, detections above the PCUL highlighted in gray
PCE = Perchloroethylene (tetrachloroethene)
TCE = Trichloroethene
cDCE = cis-1,2-Dichloroethene
VC = Vinyl Chloride
Results shown in micrograms per liter (µg/L)

PES Environmental, Inc.
Engineering & Environmental Services
AN NV5 COMPANY

FIGURE 41

2021 CVOCs in Groundwater - Shallow Zone
American Linen Supply Co Dexter Ave Site
700 Dexter Avenue North
Seattle, Washington

1413.001.02.502.01	1413001025020l_RI21_41-44	DRAFT	4/22
DWG NUMBER	DRAWING NUMBER	REVIEWED BY	DATE



Explanation

- Approximate Property Boundary
- SW-A — Lake Monitoring Location
- Type 1 Perimeter Injection Well
- Type 2 Perimeter Injection Well
- GEI-4 — Intermediate A Zone Monitoring Well
- MW-344 — 2021 Intermediate A Monitoring Well
- MW-165 — Treatment Zone A Monitoring Well
- MW-166 — Treatment Zone B Monitoring Well
- MW-167 — Treatment Zone C Monitoring Well
- MW-168 — Treatment Zone D Monitoring Well

- PCE, TCE, cDCE, and VC were not detected in samples during the Remedial Investigation
- PCE, TCE, cDCE, and VC were not detected above their PCULs in samples during the Remedial Investigation
- PCE, TCE, cDCE, and/or VC were detected once or more above the their PCULs in samples during the Remedial Investigation
- Approximate extent of PCE, TCE, cDCE, and VC above the PCULs
- Approximate groundwater flow direction in unpumped conditions

N 231800
E 1268300

Preliminary Cleanup Levels (PCULs):
PCE = 5.0 µg/L
TCE = 4.0 µg/L
cDCE = 16 µg/L
VC = 0.29 µg/L

Well (Screen Elevation)	
PCE	TCE
cDCE	VC

Coordinate Reference Point
(NAD83, Washington State Plane North, US Feet)

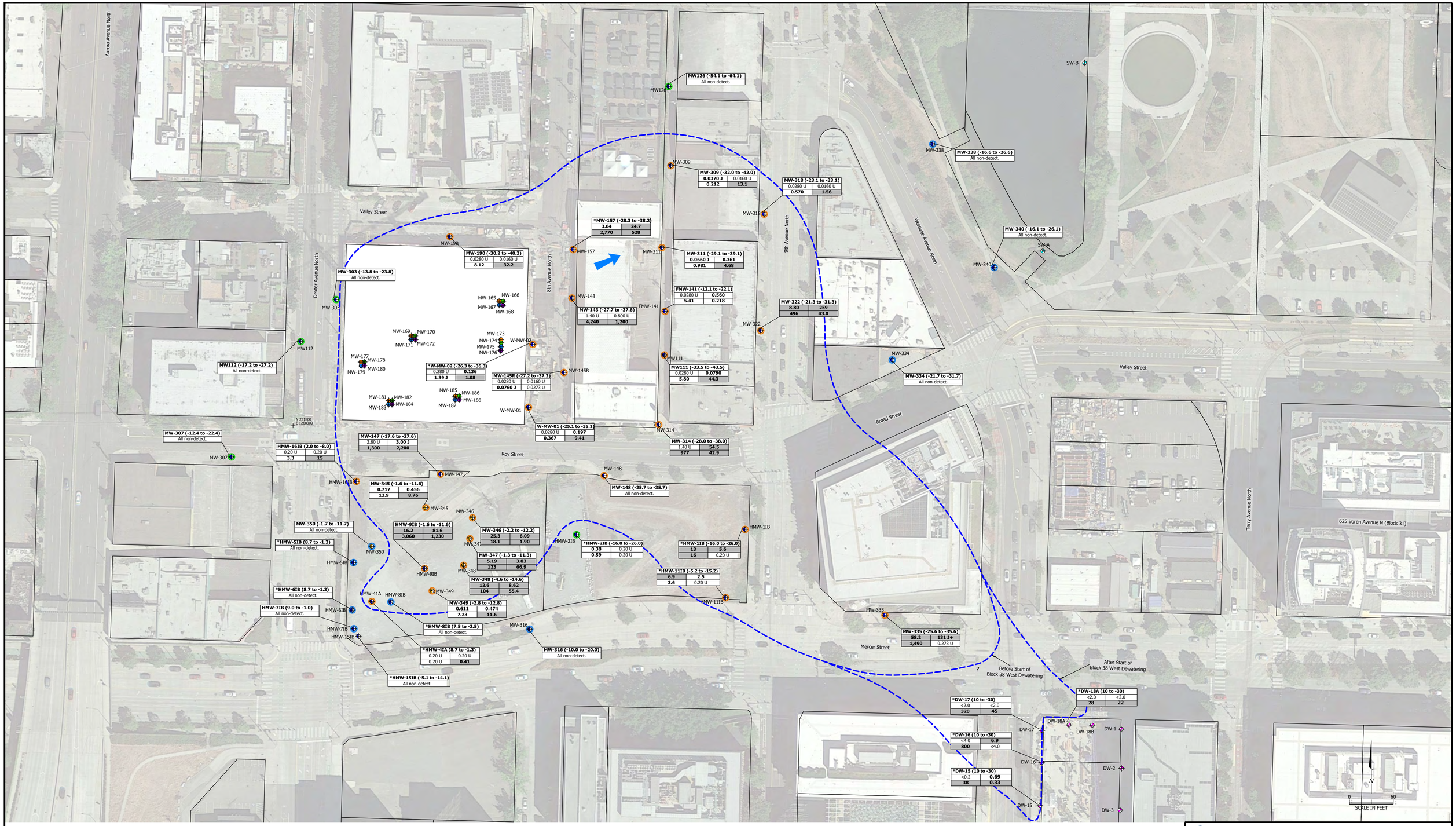
Notes:
All results shown from Quarter 2, 2021 when available. Locations indicated with * are the most recent available results prior to Quarter 2, 2021.
U = Not detected at or above the laboratory method detection limit (MDL)
J = The identification of the analyte is acceptable; the reported value is an estimate
J+ = The result is an estimated quantity, but the result may be biased high
J- = The result is an estimated quantity, but the result may be biased low
Detected results shown in bold, detections above the PCUL highlighted in gray
PCE = Perchloroethylene (tetrachloroethene)
TCE = Trichloroethene
cDCE = cis-1,2-Dichloroethene
VC = Vinyl Chloride
Results shown in micrograms per liter (µg/L)

PES Environmental, Inc.
Engineering & Environmental Services
AN NV5 COMPANY

FIGURE 42

2021 CVOCs in Groundwater - Intermediate A Zone
American Linen Supply Co Dexter Ave Site
700 Dexter Avenue North
Seattle, Washington

1413.001.02.502.01	1413001025020l_RI21_41-44	DRAFT	4/22
DWG NUMBER	DRAWING NUMBER	REVIEWED BY	DATE



Explanation

- Approximate Property Boundary
- SW-A — Lake Monitoring Location
- W-MW-02 — Intermediate B Zone Monitoring Well
- MW-345 — 2021 Intermediate B Monitoring Well
- MW-165 — Treatment Zone A Monitoring Well
- MW-166 — Treatment Zone B Monitoring Well
- MW-167 — Treatment Zone C Monitoring Well
- MW-168 — Treatment Zone D Monitoring Well
- DW-1 — Intermediate/Deep Dewatering Well (Farallon, 2/11/21)

- PCE, TCE, cDCE, and VC were not detected in samples during the Remedial Investigation
- PCE, TCE, cDCE, and VC were not detected above their PCULs in samples during the Remedial Investigation
- PCE, TCE, cDCE, and/or VC were detected once or more above the their PCULs in samples during the Remedial Investigation
- Approximate extent of PCE, TCE, cDCE, and VC above the PCULs
- Approximate groundwater flow direction in unpumped conditions

N 231800
E 1268300 Coordinate Reference Point (NAD83, Washington State Plane North, US Feet)

Preliminary Cleanup Levels (PCULs):
PCE = 5.0 µg/L
TCE = 4.0 µg/L
cDCE = 16 µg/L
VC = 0.29 µg/L

Well (Screen Elevation)	
PCE	TCE
cDCE	VC

Notes:
All results shown from Quarter 2, 2021 when available. Locations indicated with * are the most recent available results prior to Quarter 2, 2021.
U = Not detected at or above the laboratory method detection limit (MDL)
J = The identification of the analyte is acceptable; the reported value is an estimate
J+ = The result is an estimated quantity, but the result may be biased high
J- = The result is an estimated quantity, but the result may be biased low
Detected results shown in bold, detections above the PCUL highlighted in gray
< = Not detected at or above the laboratory method detection limit
PCE = Perchloroethylene (tetrachloroethene)
TCE = Trichloroethene
cDCE = cis-1,2-Dichloroethene
VC = Vinyl Chloride
Results shown in micrograms per liter (µg/L)

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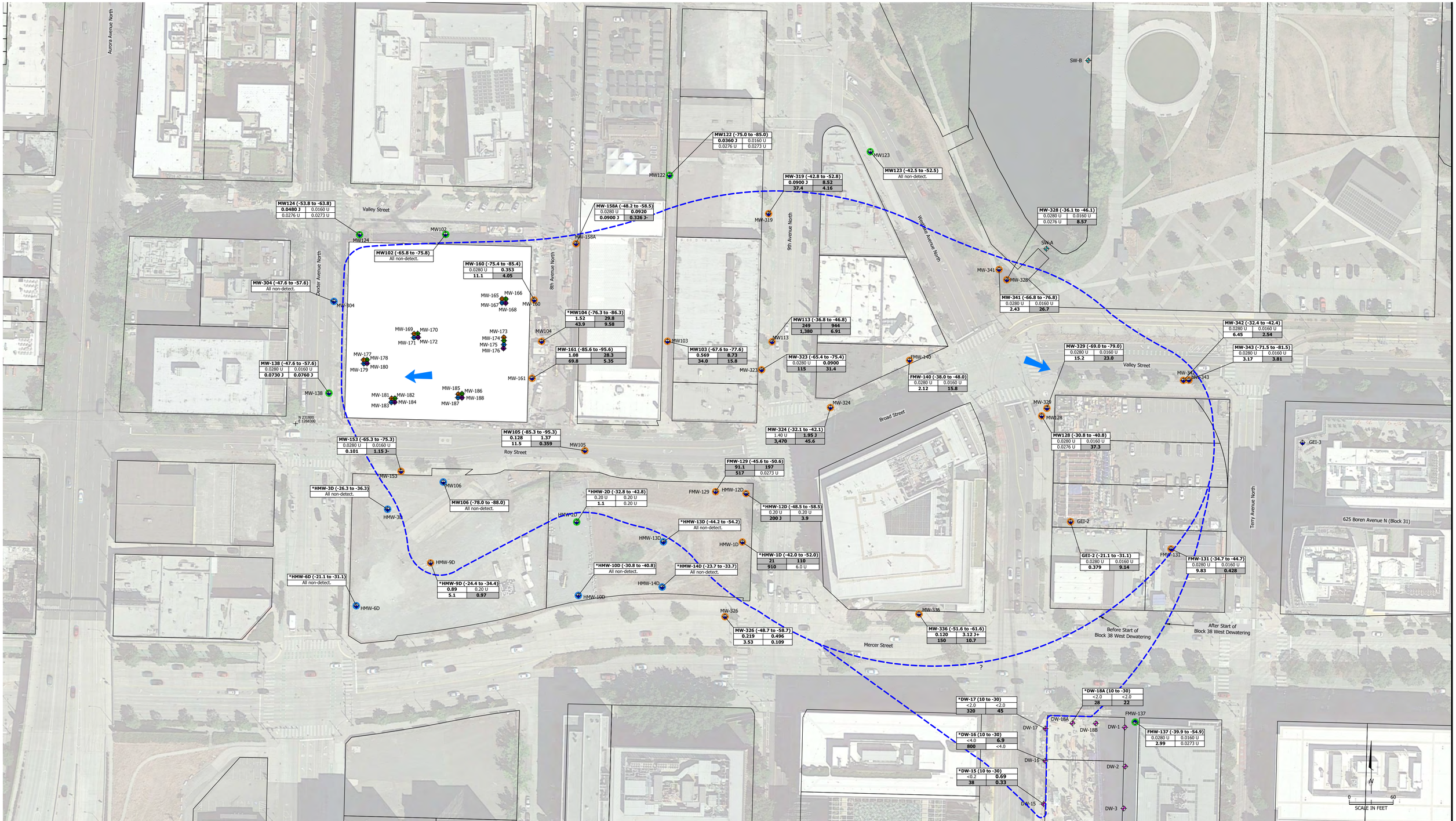
2021 CVOCs in Groundwater - Intermediate B Zone
American Linen Supply Co Dexter Ave Site
700 Dexter Avenue North
Seattle, Washington

FIGURE 43

1413.001.02.502.01	1413001025020 1_RI21_41-44	DRAFT	4/22
DWG NUMBER	DRAWING NUMBER	REVIEWED BY	DATE



Explanation

- Approximate Property Boundary
- SW-A Lake Monitoring Location
- MW105 Deep Zone Monitoring Well
- MW-165 Treatment Zone A Monitoring Well
- MW-166 Treatment Zone B Monitoring Well
- MW-167 Treatment Zone C Monitoring Well
- MW-168 Treatment Zone D Monitoring Well
- SV03 Soil Vapor Monitoring Point
- DW-1 Intermediate/Deep Dewatering Well (Farallon, 2/11/21)

- PCE, TCE, cDCE, and VC were not detected in samples during the Remedial Investigation
- PCE, TCE, cDCE, and VC were not detected above their PCULs in samples during the Remedial Investigation
- PCE, TCE, cDCE, and/or VC were detected once or more above the their PCULs in samples during the Remedial Investigation
- Approximate extent of PCE, TCE, cDCE, and VC above the PCULs
- Approximate groundwater flow direction in unpumped conditions

N 231800
E 1268300

Preliminary Cleanup Levels (PCULs):
PCE = 5.0 µg/L
TCE = 4.0 µg/L
cDCE = 16 µg/L
VC = 0.29 µg/L

Well (Screen Elevation)	
PCE	TCE
cDCE	VC

Coordinate Reference Point
(NAD83, Washington State Plane North, US Feet)

Notes:
All results shown from Quarter 2, 2021 when available. Locations indicated with * are the most recent available results prior to Quarter 2, 2021.
U = Not detected at or above the laboratory method detection limit (MDL)
J = The identification of the analyte is acceptable; the reported value is an estimate
J+ = The result is an estimated quantity, but the result may be biased high
J- = The result is an estimated quantity, but the result may be biased low
< = Not detected at or above the laboratory method detection limit
Detected results shown in bold, detections above the PCUL highlighted in gray
PCE = Perchloroethylene (tetrachloroethene)
TCE = Trichloroethene
cDCE = cis-1,2-Dichloroethene
VC = Vinyl Chloride
Results shown in micrograms per liter (µg/L)

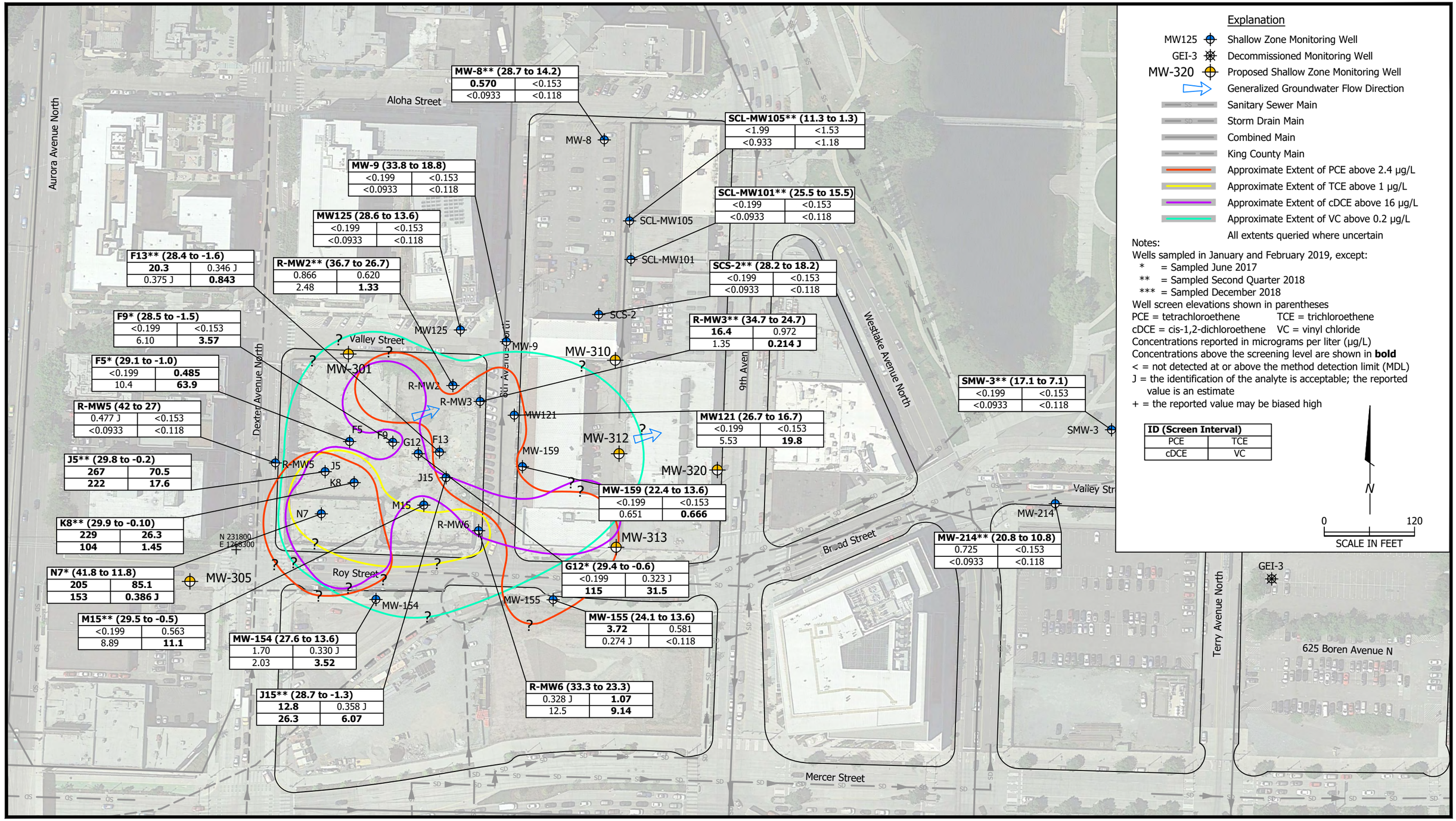
PES Environmental, Inc.
Engineering & Environmental Services
AN NV5 COMPANY

2021 CVOCs in Groundwater - Deep Zone

American Linen Supply Co Dexter Ave Site
700 Dexter Avenue North
Seattle, Washington

FIGURE 44

1413.001.02.502.01	14130010250201_RI21_41-44	DRAFT	4/22
DWG NUMBER	DRAWING NUMBER	REVIEWED BY	DATE



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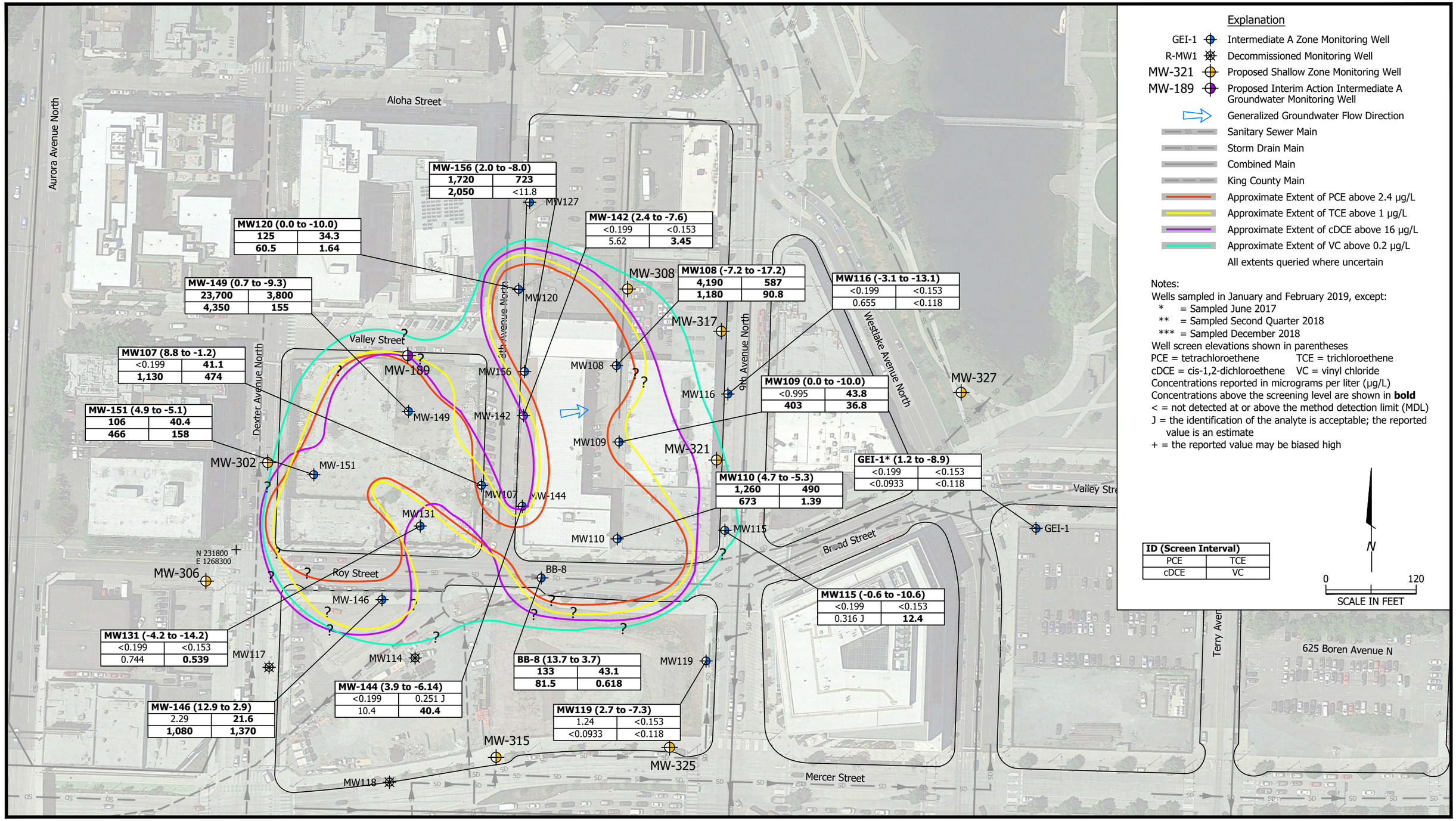
2019 CVOCs in Groundwater
Shallow Zone
Former American Linen Supply
700 Dexter Avenue North
Seattle, Washington

FIGURE
34

1413.001.02.003	141300102003_RIFS_34	WRH	12/19
JOB NUMBER	DRAWING NUMBER	REVIEWED BY	DATE



Explanation

- GEI-1 — Intermediate A Zone Monitoring Well
- R-MW1 — Decommissioned Monitoring Well
- MW-321 — Proposed Shallow Zone Monitoring Well
- MW-189 — Proposed Interim Action Intermediate A Groundwater Monitoring Well
- Generalized Groundwater Flow Direction
- Sanitary Sewer Main
- Storm Drain Main
- Combined Main
- King County Main
- Approximate Extent of PCE above 2.4 µg/L
- Approximate Extent of TCE above 1 µg/L
- Approximate Extent of cDCE above 16 µg/L
- Approximate Extent of VC above 0.2 µg/L
- All extents queried where uncertain

Notes:
Wells sampled in January and February 2019, except:
* = Sampled June 2017
** = Sampled Second Quarter 2018
*** = Sampled December 2018
Well screen elevations shown in parentheses
PCE = tetrachloroethene TCE = trichloroethene
cDCE = cis-1,2-dichloroethene VC = vinyl chloride
Concentrations reported in micrograms per liter (µg/L)
Concentrations above the screening level are shown in **bold**
< = not detected at or above the method detection limit (MDL)
J = the identification of the analyte is acceptable; the reported value is an estimate
+ = the reported value may be biased high

ID (Screen Interval)	
PCE	TCE
cDCE	VC

N

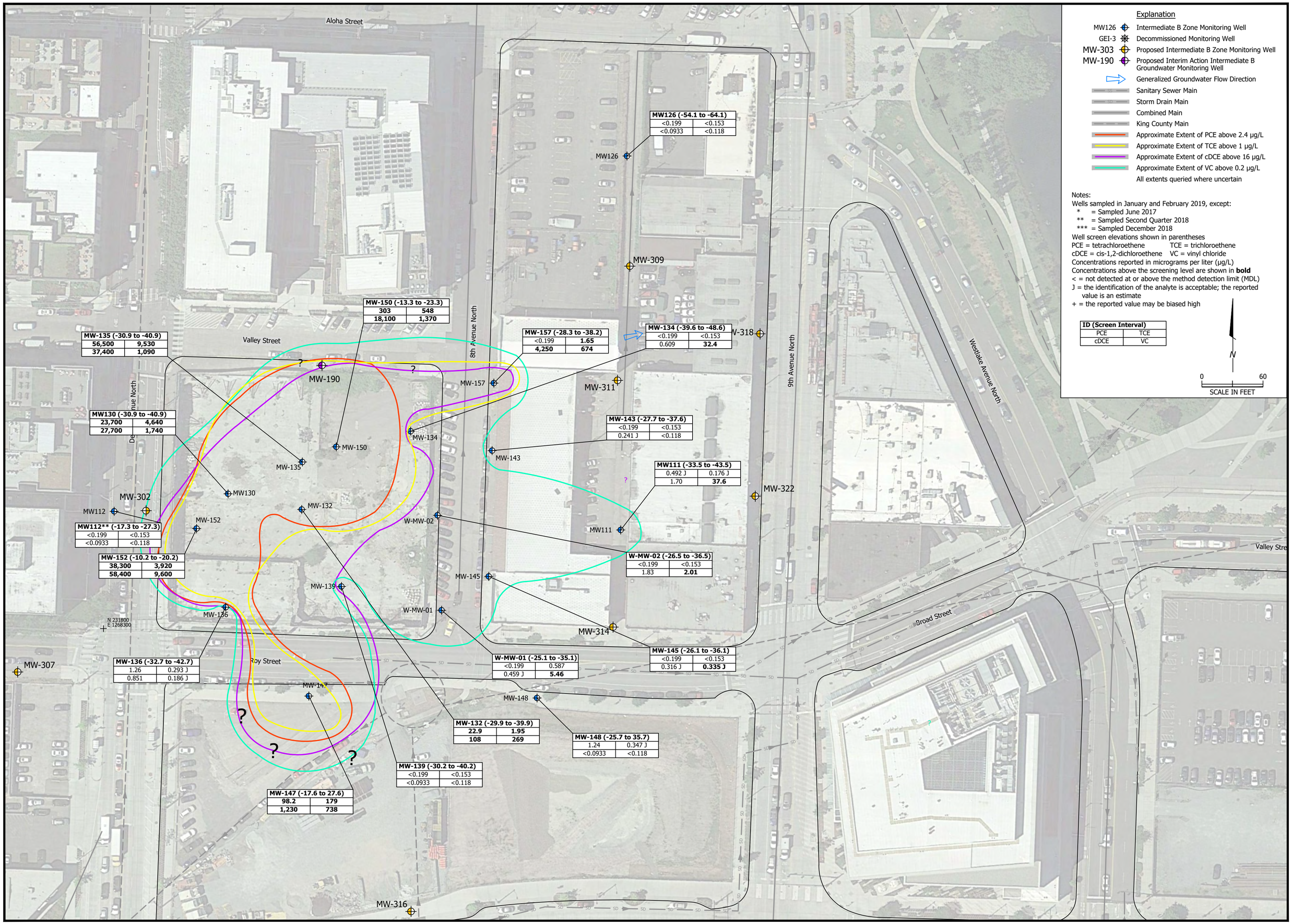
0 120
SCALE IN FEET

PES Environmental, Inc.
Engineering & Environmental Services

2019 CVOCs in Groundwater
Intermediate A Zone
Former American Linen Supply
700 Dexter Avenue North
Seattle, Washington

FIGURE
35

1413.001.02.003	141300102003_RIFS_35	WRH	12/19
JOB NUMBER	DRAWING NUMBER	REVIEWED BY	DATE



Explanation

- MW126 — Intermediate B Zone Monitoring Well
- GEI-3 — Decommissioned Monitoring Well
- MW-303 — Proposed Intermediate B Zone Monitoring Well
- MW-190 — Proposed Interim Action Intermediate B Groundwater Monitoring Well
- Generalized Groundwater Flow Direction
- Sanitary Sewer Main
- Storm Drain Main
- Combined Main
- King County Main
- Approximate Extent of PCE above 2.4 µg/L
- Approximate Extent of TCE above 1 µg/L
- Approximate Extent of cDCE above 16 µg/L
- Approximate Extent of VC above 0.2 µg/L
- All extents queried where uncertain

Notes:
Wells sampled in January and February 2019, except:
* = Sampled June 2017
** = Sampled Second Quarter 2018
*** = Sampled December 2018
Well screen elevations shown in parentheses
PCE = tetrachloroethene TCE = trichloroethene
cDCE = cis-1,2-dichloroethene VC = vinyl chloride
Concentrations reported in micrograms per liter (µg/L)
Concentrations above the screening level are shown in **bold**
< = not detected at or above the method detection limit (MDL)
J = the identification of the analyte is acceptable; the reported value is an estimate
+ = the reported value may be biased high

ID (Screen Interval)	
PCE	TCE
cDCE	VC

N

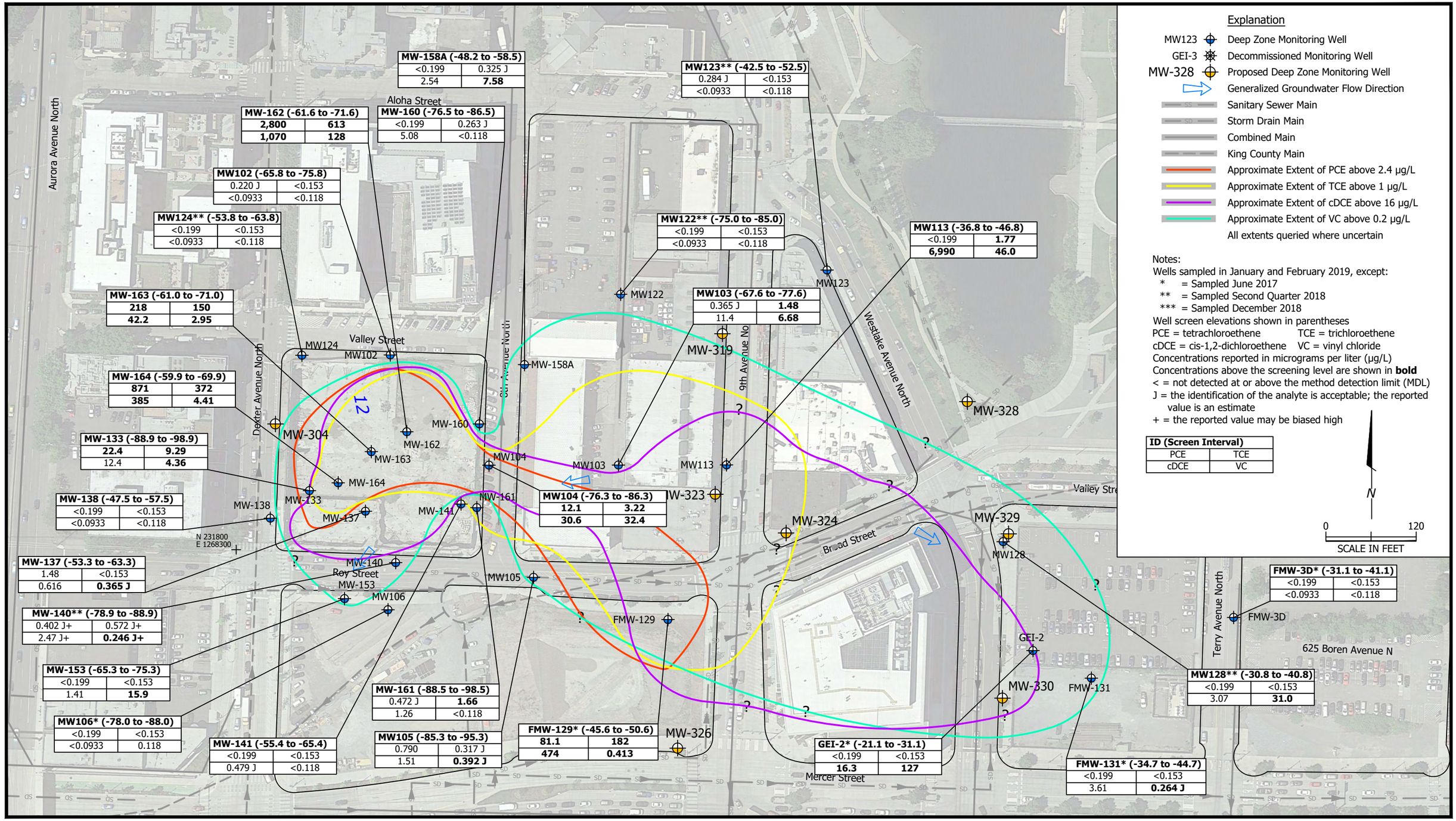
0 60
SCALE IN FEET

PES Environmental, Inc.
Engineering & Environmental Services

2019 CVOCs in Groundwater
Intermediate B Zone
Former American Linen Supply
700 Dexter Avenue North
Seattle, Washington

FIGURE
36

1413.001.02.003	141300102003_RIFS_36	WRH	12/19
JOB NUMBER	DRAWING NUMBER	REVIEWED BY	DATE

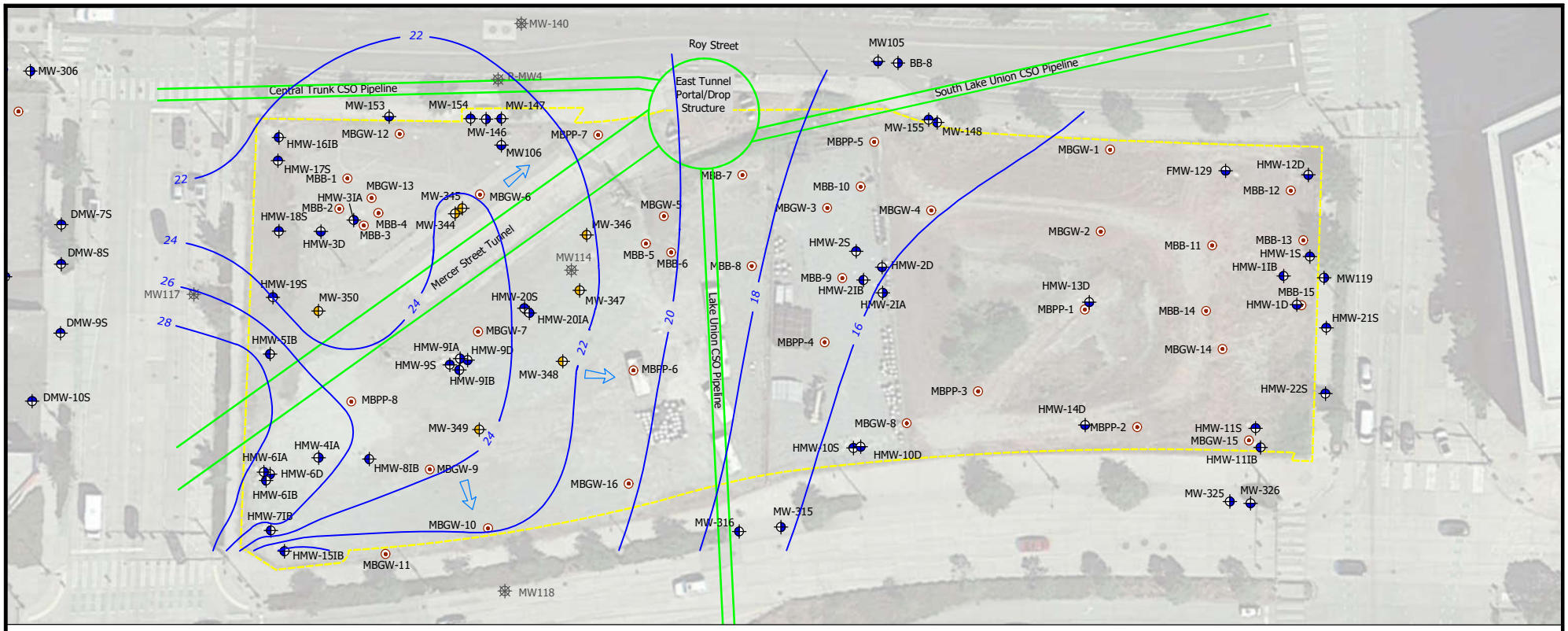


PES Environmental, Inc.
Engineering & Environmental Services

2019 CVOCs in Groundwater
Deep Zone
Former American Linen Supply
700 Dexter Avenue North
Seattle, Washington

FIGURE
37

1413.001.02.003	141300102003_RIFS_37	WRH	12/19
JOB NUMBER	DRAWING NUMBER	REVIEWED BY	DATE



Explanation

- Approximate SDOT Mercer Parcels Property Boundary
- Sanitary Sewer Pipe
- MW-310 — Shallow Zone Monitoring Well
- MW116 — Intermediate A Zone Monitoring Well
- W-MW-02 — Intermediate B Zone Monitoring Well
- MW105 — Deep Zone Monitoring Well
- MW-140 — Decommissioned Monitoring Well
- MW-344 — 2021 Intermediate A Monitoring Well
- MW-345 — 2021 Intermediate B Monitoring Well
- Soil Boring
- 28 — Intermediate B Zone Groundwater Contour August 16, 2021
- Generalized Groundwater Flow Direction

Note:
All investigation locations on the Seattle DOT Mercer Parcels shown for clarity.

N

0 50
SCALE IN FEET

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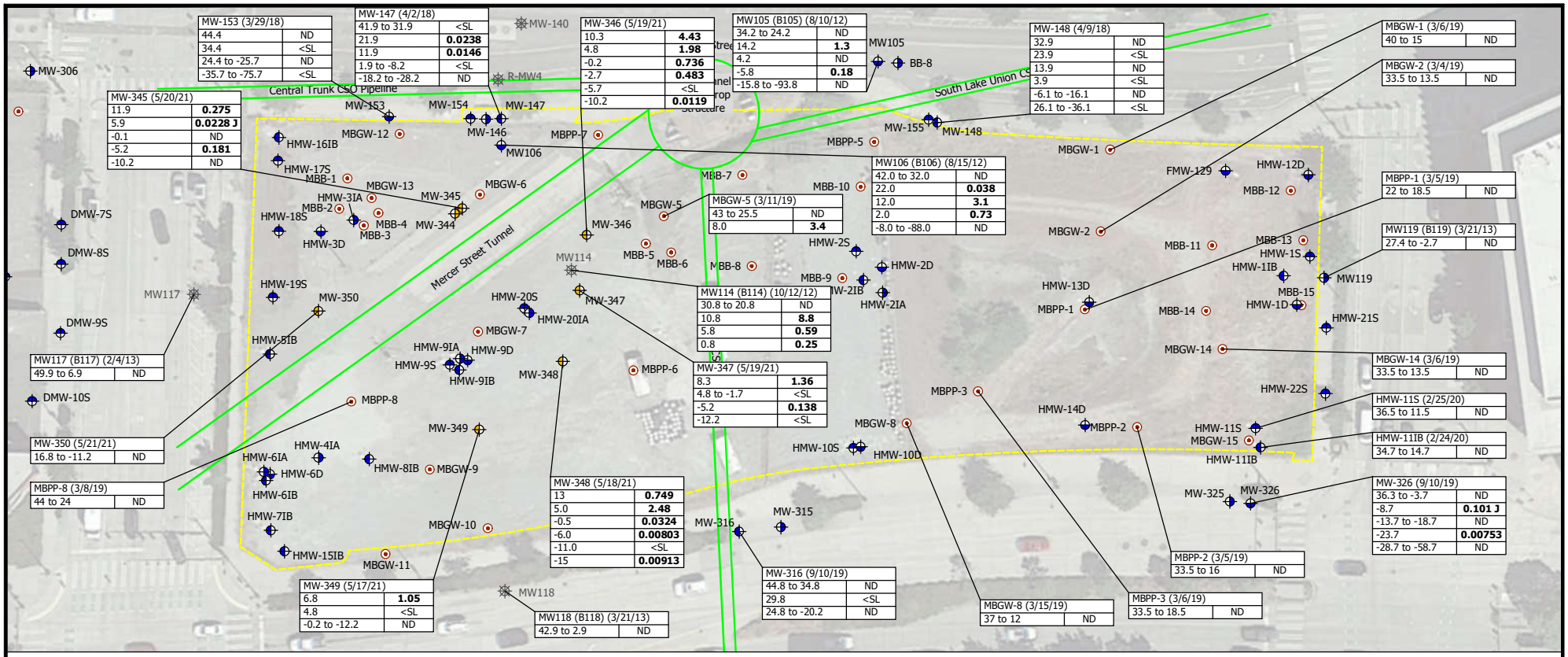
Seattle DOT Mercer Parcels Monitoring Well Locations
American Linen Supply Co Dexter Ave Site
700 Dexter Avenue North
Seattle, Washington

FIGURE
1

1413.001.02.501.09	14130010250109_IAWP_1-6	BLO	12/21
JOB NUMBER	DRAWING NUMBER	REVIEWED BY	DATE



Explanation

- Approximate SDOT Mercer Parcels Property Boundary
- Sanitary Sewer Pipe
- MW-310 — Shallow Zone Monitoring Well
- MW116 — Intermediate A Zone Monitoring Well
- W-MW-02 — Intermediate B Zone Monitoring Well
- MW105 — Deep Zone Monitoring Well
- MW-140 — Decommissioned Monitoring Well
- MW-344 — 2021 Intermediate A Monitoring Well
- MW-345 — 2021 Intermediate B Monitoring Well

Notes:
All investigation locations on the Seattle DOT Mercer Parcels shown for clarity
Data shown only for locations with PCE data in the Intermediate A or B zones
Results shown in milligrams per kilogram (mg/kg)
Tetrachloroethene (PCE) screening level (SL): 0.007 mg/kg
ND = PCE not detected at or above the laboratory reporting limit
J = The identification of the analyte is acceptable; the reported value is an estimate
<SL = PCE detected below the screening level of 0.007 mg/kg
PCE detections greater than or equal to the SL are shown in **bold**

Sample Location (Date)	
Elevation	PCE Concentration

N

0 50
SCALE IN FEET

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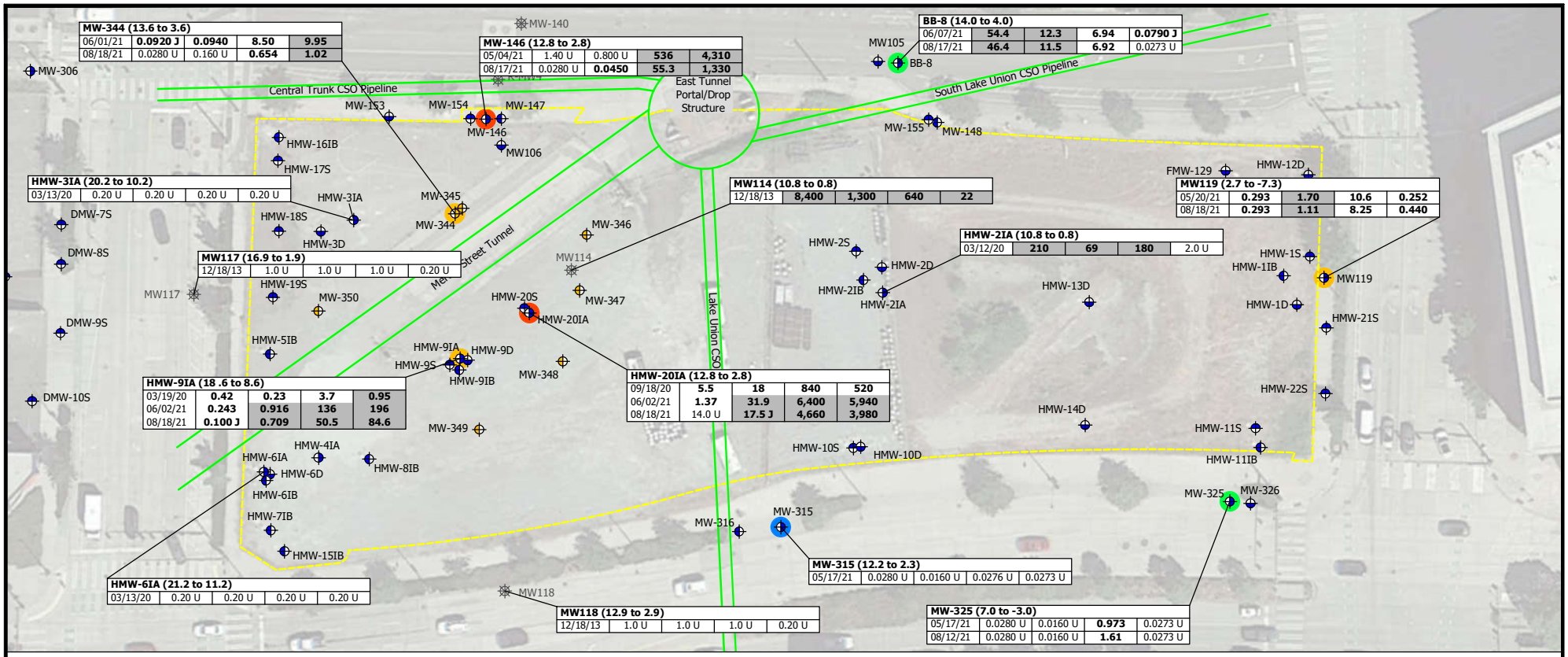
Seattle DOT Mercer Parcels Intermediate A and B Soil PCE Concentrations
American Linen Supply Co Dexter Ave Site
700 Dexter Avenue North
Seattle, Washington

FIGURE
2

1413.001.02.501.09	14130010250109_IAWP_1-6	BLO	12/21
JOB NUMBER	DRAWING NUMBER	REVIEWED BY	DATE



Explanation

- Approximate SDOT Mercer Parcels Property Boundary
- Sanitary Sewer Pipe
- MW-310 — Shallow Zone Monitoring Well
- MW116 — Intermediate A Zone Monitoring Well
- W-MW-02 — Intermediate B Zone Monitoring Well
- MW105 — Deep Zone Monitoring Well
- MW-140 — Decommissioned Monitoring Well
- MW-344 — 2021 Intermediate A Monitoring Well
- MW-345 — 2021 Intermediate B Monitoring Well

Notes:
All investigation locations on the Seattle DOT Mercer Parcels shown for clarity
PCE = tetrachloroethene
TCE = trichloroethene
cDCE = cis-1,2-dichloroethene
VC = vinyl chloride
Concentrations reported in micrograms per liter (µg/L)
U = not detected at or above the reporting limit
Concentrations detected above the reporting limit are shown in bold
Concentrations detected above the screening level are shown in bold and highlighted
J = The identification of the analyte is acceptable; the reported value is an estimate
J+ = The identification of the analyte is acceptable; the reported value is an estimate
The reported value may be biased high

MNA Evaluation

- Inadequate evidence for anaerobic biodegredation of CVOCs
- Limited evidence for anaerobic biodegredation of CVOCs
- Adequate evidence for anaerobic biodegredation of CVOCs
- Strong evidence for anaerobic biodegredation of CVOCs

Well Location (Screen Interval Elevation)				
Analyte	PCE	TCE	cDCE	VC
GW Screening Level	2.4	0.5	16	0.5

N

0 50

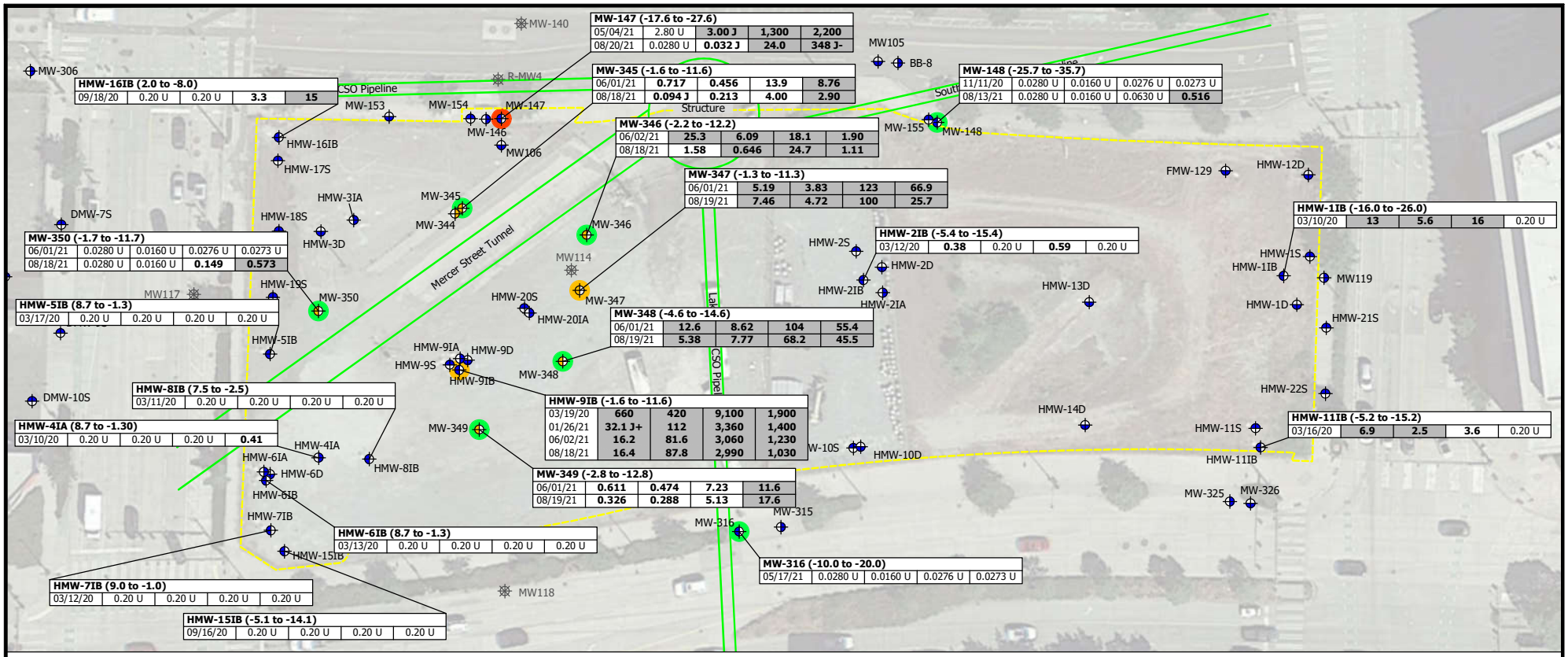
SCALE IN FEET

PES Environmental, Inc.
Engineering & Environmental Services
AN NV5 COMPANY

Seattle DOT Mercer Parcels Intermediate A Groundwater CVOC Concentrations
American Linen Supply Co Dexter Ave Site
700 Dexter Avenue North
Seattle, Washington

FIGURE 3

1413.001.02.501.09	14130010250109_IAWP_1-6	BLO	12/21
JOB NUMBER	DRAWING NUMBER	REVIEWED BY	DATE



Explanation

- Approximate SDOT Mercer Parcels Property Boundary
- Sanitary Sewer Pipe
- MW-310 — Shallow Zone Monitoring Well
- MW116 — Intermediate A Zone Monitoring Well
- W-MW-02 — Intermediate B Zone Monitoring Well
- MW105 — Deep Zone Monitoring Well
- MW-140 — Decommissioned Monitoring Well
- MW-344 — 2021 Intermediate A Monitoring Well
- MW-345 — 2021 Intermediate B Monitoring Well

Notes:
All investigation locations on the Seattle DOT Mercer Parcels shown for clarity
PCE = tetrachloroethene
TCE = trichloroethene
cDCE = cis-1,2-dichloroethene
VC = vinyl chloride
Concentrations reported in micrograms per liter (µg/L)
U = not detected at or above the reporting limit
Concentrations detected above the reporting limit are shown in bold
Concentrations detected above the screening level are shown in bold and highlighted
J = The identification of the analyte is acceptable; the reported value is an estimate
J+ = The identification of the analyte is acceptable; the reported value is an estimate
The reported value may be biased high

MNA Evaluation

- Inadequate evidence for anaerobic biodegredation of CVOCs
- Limited evidence for anaerobic biodegredation of CVOCs
- Adequate evidence for anaerobic biodegredation of CVOCs
- Strong evidence for anaerobic biodegredation of CVOCs

Well Location (Screen Interval Elevation)				
Analyte	PCE	TCE	cDCE	VC
GW Screening Level	2.4	0.5	16	0.5

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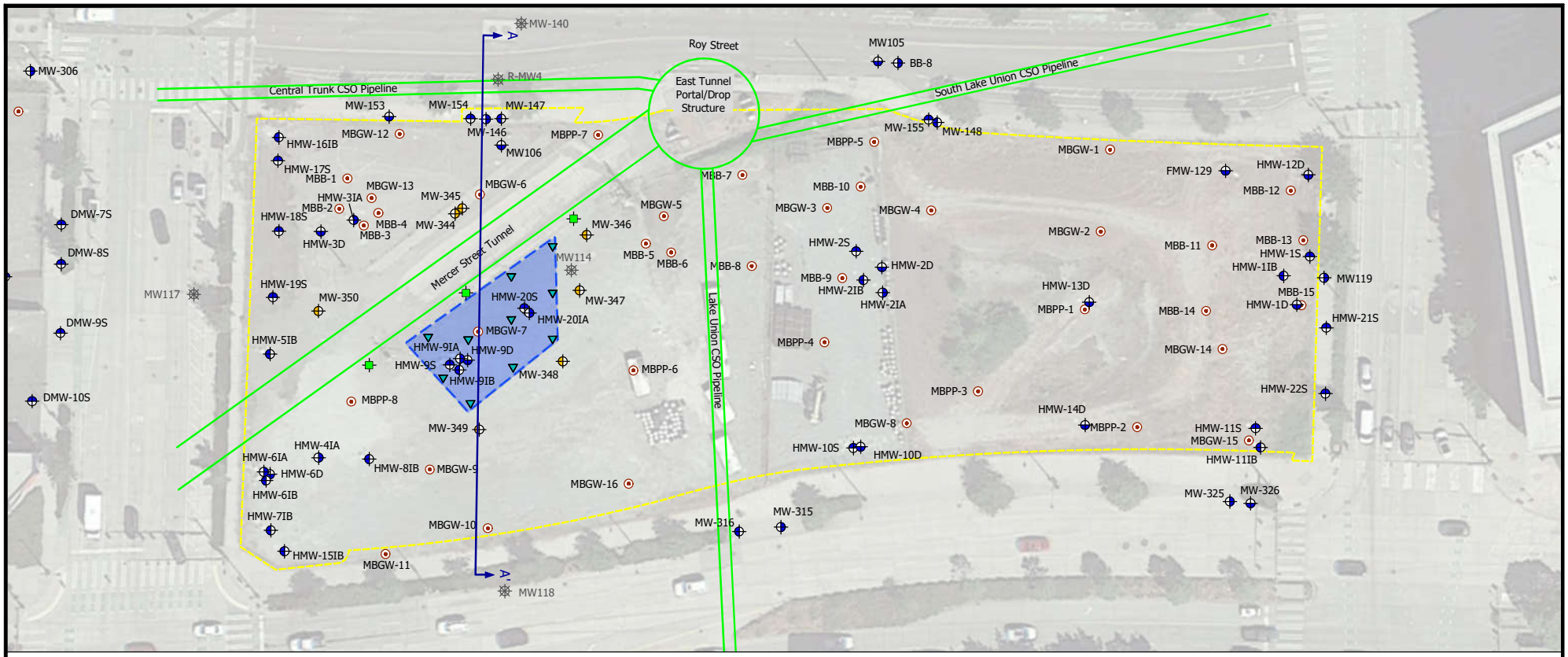
Seattle DOT Mercer Parcels Intermediate B Groundwater CVOC Concentrations
American Linen Supply Co Dexter Ave Site
700 Dexter Avenue North
Seattle, Washington

FIGURE 4

1413.001.02.501.09	14130010250109_IAWP_1-6	BLO	12/21
JOB NUMBER	DRAWING NUMBER	REVIEWED BY	DATE



Explanation

- Approximate SDOT Mercer Parcels Property Boundary
- Sanitary Sewer Pipe
- MW-310 — Shallow Zone Monitoring Well
- MW116 — Intermediate A Zone Monitoring Well
- W-MW-02 — Intermediate B Zone Monitoring Well
- MW105 — Deep Zone Monitoring Well
- MW-140 — Decommissioned Monitoring Well
- MW-344 — 2021 Intermediate A Monitoring Well
- MW-345 — 2021 Intermediate B Monitoring Well
- Soil Boring
- Potential Interim Action Area
- Preliminary location of dewatering wells located adjacent to Mercer Street Tunnel
- Approximate location of interim action injection well
- A A' — Geologic Cross Section Location (Arrows show direction of view) Cross-Section shown on Figure 6

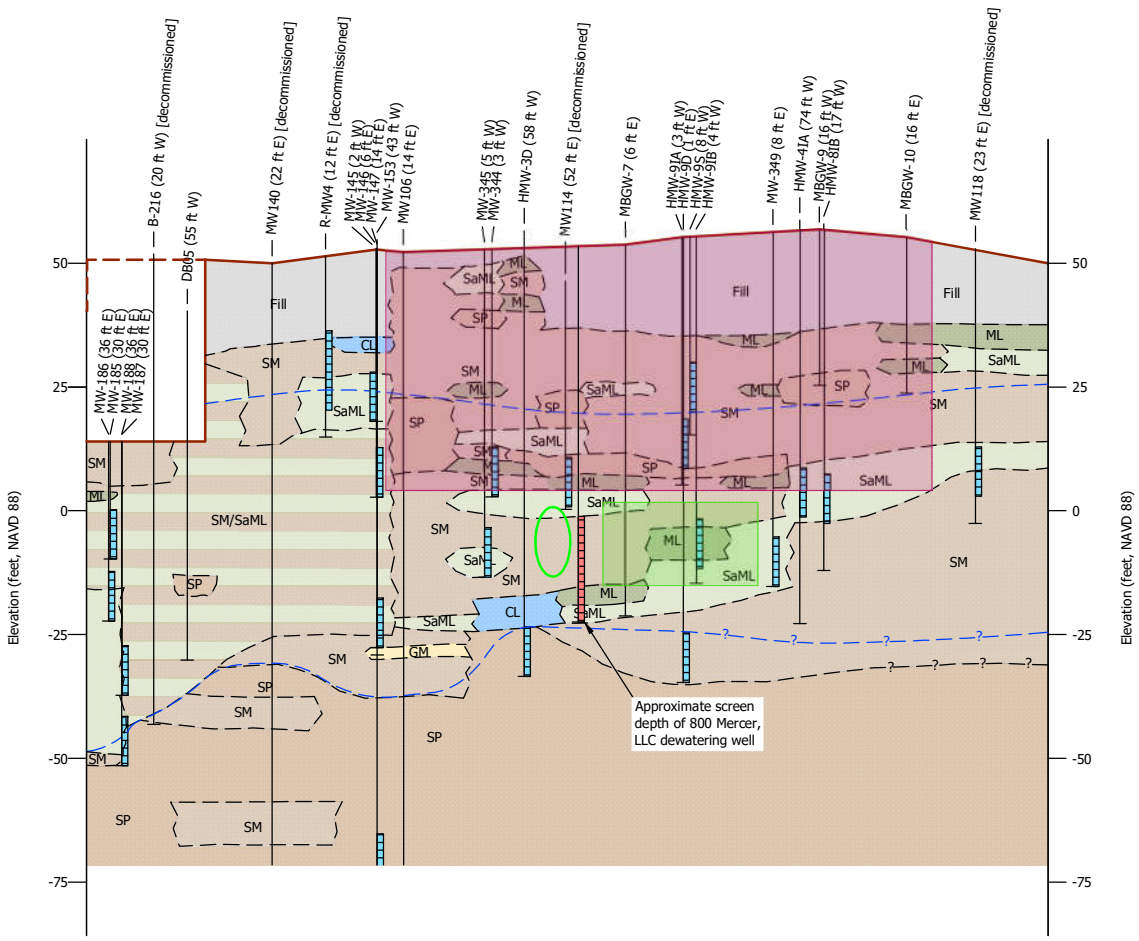
Note:
All investigation locations on the Seattle DOT Mercer Parcels shown for clarity.

PES Environmental, Inc.
Engineering & Environmental Services
AN NV5 COMPANY

Proposed Seattle DOT Mercer Parcels Interim Action Area
American Linen Supply Co Dexter Ave Site
700 Dexter Avenue North
Seattle, Washington

FIGURE
5

1413.001.02.501.09	14130010250109_IAWP_1-6	BLO	12/21
JOB NUMBER	DRAWING NUMBER	REVIEWED BY	DATE



Explanation

- Approximate Ground Surface Elevation
- Geologic Contact, queried where uncertain
- MW-145 — Lithologic Boring Location with Monitoring Well Screen
- [decom] Decommissioned Well
- (65 ft S) Approximate distance and direction to feature from line of cross section
- Approximate Mercer Tunnel Location (Mercer Tunnel shown to scale)
- SP/SM Interbedded Unit
- Approximate 800 Mercer, LLC Excavation
- Approximate Interim Action Treatment Zone

	Soil Description based on Unified Soil Classification System
Predominantly coarse-grained deposits	Fill
	(GP) Poorly Graded Gravel
	(SP) Poorly Graded Sand
	(GM) Silty Gravel
	(SM) Silty Sand
Predominantly fine-grained deposits	(SaML) Sandy Silt
	(ML) Silt with or without sand and gravel
	(SaCL) Sandy Clay
	(CL) Clay with or without sand and gravel
	(PT) Peat

25 — 0 Vertical Scale in Feet

0 — 50 Horizontal Scale in Feet

Vertical Exaggeration 2:1

PES Environmental, Inc.
Engineering & Environmental Services
AN NV5 COMPANY

Geologic Cross Section A-A' and Section of Interim Action Treatment Area
American Linen Supply Co Dexter Ave Site
700 Dexter Avenue North
Seattle, Washington

FIGURE 6

1413.001.02.501.09	14130010250109_IAWP_1-6	BLO	12/21
JOB NUMBER	DRAWING NUMBER	REVIEWED BY	DATE

APPENDIX B

Voluntary Cleanup Program

Washington State Department of Ecology
Toxics Cleanup Program

TERRESTRIAL ECOLOGICAL EVALUATION FORM

Under the Model Toxics Control Act (MTCA), a terrestrial ecological evaluation is necessary if hazardous substances are released into the soils at a Site. In the event of such a release, you must take one of the following three actions as part of your investigation and cleanup of the Site:

1. Document an exclusion from further evaluation using the criteria in WAC 173-340-7491.
2. Conduct a simplified evaluation as set forth in WAC 173-340-7492.
3. Conduct a site-specific evaluation as set forth in WAC 173-340-7493.

When requesting a written opinion under the Voluntary Cleanup Program (VCP), you must complete this form and submit it to the Department of Ecology (Ecology). The form documents the type and results of your evaluation.

Completion of this form is not sufficient to document your evaluation. You still need to document your analysis and the basis for your conclusion in your cleanup plan or report.

If you have questions about how to conduct a terrestrial ecological evaluation, please contact the Ecology site manager assigned to your Site. For additional guidance, please refer to https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Terrestrial-ecological-evaluation.

Step 1: IDENTIFY HAZARDOUS WASTE SITE	
Please identify below the hazardous waste site for which you are documenting an evaluation.	
Facility/Site Name: Block 37 Site	
Facility/Site Address: 600-630 Westlake Avenue North, Seattle, WA 98109	
Facility/Site No: 46445373	VCP Project No.: AO No. DE 19430

Step 2: IDENTIFY EVALUATOR			
Please identify below the person who conducted the evaluation and their contact information.			
Name: Elisabeth Silver			Title: Senior Project Manager
Organization: Atlas Technical Consultants			
Mailing address: 6347 Seaview Ave NW			
City: Seattle		State: WA	Zip code: 98107
Phone: 206-491-9754	Fax:	E-mail: Elisabeth.silver@oneatlas.com	

Step 3: DOCUMENT EVALUATION TYPE AND RESULTS

A. Exclusion from further evaluation.

1. Does the Site qualify for an exclusion from further evaluation?

☒ Yes *If you answered **"YES,"** then answer **Question 2**.*

☐ No or Unknown *If you answered **"NO" or "UNKNOWN,"** then skip to **Step 3B** of this form.*

2. What is the basis for the exclusion? *Check all that apply. Then skip to **Step 4** of this form.*

Point of Compliance: WAC 173-340-7491(1)(a)

☐ All soil contamination is, or will be,* at least 15 feet below the surface.

☐ All soil contamination is, or will be,* at least 6 feet below the surface (or alternative depth if approved by Ecology), and institutional controls are used to manage remaining contamination.

Barriers to Exposure: WAC 173-340-7491(1)(b)

☒ All contaminated soil, is or will be,* covered by physical barriers (such as buildings or paved roads) that prevent exposure to plants and wildlife, and institutional controls are used to manage remaining contamination.

Undeveloped Land: WAC 173-340-7491(1)(c)

☐ There is less than 0.25 acres of contiguous[#] undeveloped[±] land on or within 500 feet of any area of the Site and any of the following chemicals is present: chlorinated dioxins or furans, PCB mixtures, DDT, DDE, DDD, aldrin, chlordane, dieldrin, endosulfan, endrin, heptachlor, heptachlor epoxide, benzene hexachloride, toxaphene, hexachlorobenzene, pentachlorophenol, or pentachlorobenzene.

☐ For sites not containing any of the chemicals mentioned above, there is less than 1.5 acres of contiguous[#] undeveloped[±] land on or within 500 feet of any area of the Site.

Background Concentrations: WAC 173-340-7491(1)(d)

☐ Concentrations of hazardous substances in soil do not exceed natural background levels as described in WAC 173-340-200 and 173-340-709.

* An exclusion based on future land use must have a completion date for future development that is acceptable to Ecology.

[±] "Undeveloped land" is land that is not covered by building, roads, paved areas, or other barriers that would prevent wildlife from feeding on plants, earthworms, insects, or other food in or on the soil.

[#] "Contiguous" undeveloped land is an area of undeveloped land that is not divided into smaller areas of highways, extensive paving, or similar structures that are likely to reduce the potential use of the overall area by wildlife.

B. Simplified evaluation.

1. Does the Site qualify for a simplified evaluation?

☐ Yes *If you answered **"YES,"** then answer **Question 2** below.*

☐ No or Unknown *If you answered **"NO"** or **"UNKNOWN,"** then skip to **Step 3C** of this form.*

2. Did you conduct a simplified evaluation?

☐ Yes *If you answered **"YES,"** then answer **Question 3** below.*

☐ No *If you answered **"NO,"** then skip to **Step 3C** of this form.*

3. Was further evaluation necessary?

☐ Yes *If you answered **"YES,"** then answer **Question 4** below.*

☐ No *If you answered **"NO,"** then answer **Question 5** below.*

4. If further evaluation was necessary, what did you do?

☐ Used the concentrations listed in Table 749-2 as cleanup levels. *If so, then skip to **Step 4** of this form.*

☐ Conducted a site-specific evaluation. *If so, then skip to **Step 3C** of this form.*

5. If no further evaluation was necessary, what was the reason? *Check all that apply. Then skip to **Step 4** of this form.*

Exposure Analysis: WAC 173-340-7492(2)(a)

☐ Area of soil contamination at the Site is not more than 350 square feet.

☐ Current or planned land use makes wildlife exposure unlikely. Used Table 749-1.

Pathway Analysis: WAC 173-340-7492(2)(b)

☐ No potential exposure pathways from soil contamination to ecological receptors.

Contaminant Analysis: WAC 173-340-7492(2)(c)

☐ No contaminant listed in Table 749-2 is, or will be, present in the upper 15 feet at concentrations that exceed the values listed in Table 749-2.

☐ No contaminant listed in Table 749-2 is, or will be, present in the upper 6 feet (or alternative depth if approved by Ecology) at concentrations that exceed the values listed in Table 749-2, and institutional controls are used to manage remaining contamination.

☐ No contaminant listed in Table 749-2 is, or will be, present in the upper 15 feet at concentrations likely to be toxic or have the potential to bioaccumulate as determined using Ecology-approved bioassays.

☐ No contaminant listed in Table 749-2 is, or will be, present in the upper 6 feet (or alternative depth if approved by Ecology) at concentrations likely to be toxic or have the potential to bioaccumulate as determined using Ecology-approved bioassays, and institutional controls are used to manage remaining contamination.

C. Site-specific evaluation. A site-specific evaluation process consists of two parts: (1) formulating the problem, and (2) selecting the methods for addressing the identified problem. Both steps require consultation with and approval by Ecology. *See* WAC 173-340-7493(1)(c).

1. Was there a problem? *See* WAC 173-340-7493(2).

☐ Yes *If you answered **"YES,"** then answer **Question 2** below.*

☐ No *If you answered **"NO,"** then identify the reason here and then skip to **Question 5** below:*

- ☐ No issues were identified during the problem formulation step.
- ☐ While issues were identified, those issues were addressed by the cleanup actions for protecting human health.

2. What did you do to resolve the problem? *See* WAC 173-340-7493(3).

- ☐ Used the concentrations listed in Table 749-3 as cleanup levels. *If so, then skip to **Question 5** below.*
- ☐ Used one or more of the methods listed in WAC 173-340-7493(3) to evaluate and address the identified problem. *If so, then answer **Questions 3 and 4** below.*

3. If you conducted further site-specific evaluations, what methods did you use?
Check all that apply. See WAC 173-340-7493(3).

- ☐ Literature surveys.
- ☐ Soil bioassays.
- ☐ Wildlife exposure model.
- ☐ Biomarkers.
- ☐ Site-specific field studies.
- ☐ Weight of evidence.
- ☐ Other methods approved by Ecology. If so, please specify:

4. What was the result of those evaluations?

- ☐ Confirmed there was no problem.
- ☐ Confirmed there was a problem and established site-specific cleanup levels.

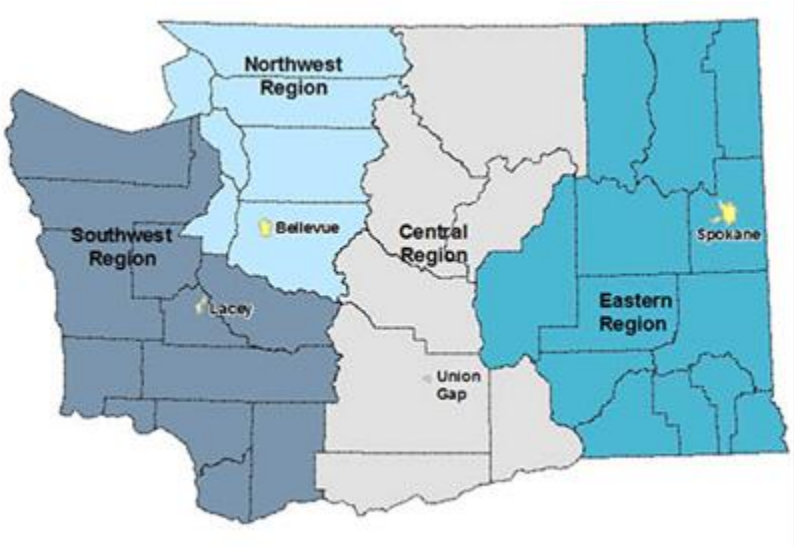
5. Have you already obtained Ecology's approval of both your problem formulation and problem resolution steps?

☐ Yes If so, please identify the Ecology staff who approved those steps:

☐ No

Step 4: SUBMITTAL

Please mail your completed form to the Ecology site manager assigned to your Site. If a site manager has not yet been assigned, please mail your completed form to the Ecology regional office for the County in which your Site is located.



Northwest Region: Attn: VCP Coordinator 3190 160th Ave. SE Bellevue, WA 98008-5452	**Central Region:** Attn: VCP Coordinator 1250 West Alder St. Union Gap, WA 98903-0009
Southwest Region: Attn: VCP Coordinator P.O. Box 47775 Olympia, WA 98504-7775	**Eastern Region:** Attn: VCP Coordinator N. 4601 Monroe Spokane WA 99205-1295

If you need this publication in an alternate format, please call the Toxics Cleanup Program at 360-407-7170. People with hearing loss can call 711 for Washington Relay Service. People with a speech disability can call 877-833-6341.

APPENDIX C

PCUL Modifications since March 10, 2017

Date	Sheet	Chemical/Parameter Modified	Modification	Consequences
January 2023	--	--	Updated the supplemental information document to include discussions of the South Lake Union version of the PCUL workbook and how to develop PCULs for marine sediment sites outside the LDW.	No changes to PCULs.
	Param	GI and ABS	Updated all values consistent with CLARC revisions released in September 2022. For SVOCs and herbicides not listed in CLARC, assumed default values of 0.8 for GI and 0.03 for ABS. For VOCs not listed in CLARC, assumed default values of 0.5 for GI and 0.1 for ABS.	Minor or no noticeable changes to PCULs.
	AR-Eq	Gasoline and diesel range hydrocarbons	Corrected Method C air noncancer values to 1,500 ug/m3 and commercial worker noncancer values to 390 ug/m3.	Method C air CULs increased by a factor of 30. There are now commercial worker screening levels.
	All	gamma-BHC	Eliminated this chemical because it's redundant with lindane.	No PCULs changed.
	PW	Nickel	Removed state MCL because it has been withdrawn.	The drinking water PCUL for nickel increased from 100 to 320 ug/L.
	PW and SW	cPAH TEQ	Set minimum ARAR value equal to minimum ARAR for benzo(a)pyrene based on advice from Policy	The drinking water PCUL for cPAH TEQ increased from 0.023 to 0.2 ug/L. The surface water PCUL decreased from 0.0097 to 1.6E-5 ug/L.
	Leach	Arsenic	Added 8 ug/L (natural background concentration) in the User Defined column and linked the leaching PCULs for protection of drinking water and surface water into the SL page.	Vadose zone leaching PCULs increased from 0.34 and 0.082 mg/kg (protect drinking and surface water, respectively) to 4.67 mg/kg. Saturated zone leaching PCULs increased from 0.017 and 0.0041 mg/kg (protect drinking water and surface water, respectively) to 0.234 mg/kg. Arsenic soil PCULs ultimately adjust up to the natural background concentration of 7.3 mg/kg, so there's no change in the most stringent PCULs.
	All	PFBA	Added new chemical to all pages.	There are now PCULs for PFBA.
	Param	DDD, DDE, cis-1,2-DCE	Updated toxicity values consistent with CLARC updates.	DDD and DDE PCULs are driven by cancer effects so most stringent PCULs didn't change. There are now cis-1,2-DCE PCULs for air and vapor intrusion.
August 2022	Param	Listed on CLARC VI Page	Updated values for 1,2,3-trichloropropane, 1,4-dioxane, and sulfide from 'no' to 'YES' consistent with CLARC.	Soil vapor screening levels now calculate for these chemicals.
	PW	Tetrahydrofuran	Correction: there are no MCLs for this chemical.	Groundwater PCUL for drinking water increased from 6 to 7,200 ug/L.
	AR	Tetrahydrofuran	Corrected a copy-down error.	Air & soil vapor PCULs decreased by a factor of about 2.
	AR-Eq, AR-Det	All chemicals	Added commercial VI screening levels consistent with CLARC guidance.	These screening levels aren't called into the AR summary page but they are available for site-specific evaluations.
	All	Lindane, PFBS, PFHxS, PFOS, PFOA, PFNA, GenX	Added new chemicals to all pages.	PCULs are now calculated for 7 new chemicals.
	AR-Det, AR, VI	TCE	Added new columns for short-term action levels to protect against cardiac birth defects for both unrestricted and commercial worker scenarios, consistent with VI Guidance Appendix A.	Use the action levels to determine whether immediate action (further sampling or mitigation) is needed per VI Guidance Appendix A. The action levels do not replace cleanup levels.
	Param	Chlordane	Updated toxicity and chemical property values for cis and trans forms to be consistent with CLARC. Previously, the cis and trans forms weren't in CLARC and the PCUL spreadsheet used the values for chlordane.	No changes to most stringent groundwater PCULs. Most stringent soil PCULs for saturated zone increased by a factor of 1.3. Air PCULs are no longer being calculated because there are no inhalation toxicity values.
	Param	Multiple	Updated ABS values to be consistent with CLARC.	Changes to some sediment PCULs for chemicals not included in the LDW ROD.
	Param	Dibenzofuran	Removed ABS value to be consistent with CLARC.	Most stringent PCULs didn't change.
	Param	4-Chlorotoluene	Updated toxicity and chemical property values to be consistent with CLARC.	Soil and groundwater PCULs are now being calculated.
	Param	Manganese	Revised oral RfD to 4.67E-2 mg/kg-day for nondietary exposures (drinking water, soil, and sediment) to be consistent with the notes in CLARC. The dietary RfD of 1.4E-1 mg/kg-day is hard-entered into the calculation for Equation 730-1 on the GW-Eq page. However this calculation can't be performed because there is no BCF value.	No changes to most stringent PCULs.
	Param	Mutagens	Added column indicating whether the chemical is listed as a mutagen in CLARC. PCULs for mutagens were already hand-entered from CLARC to ensure the adjustments for mutagenicity were included	No changes to PCULs.
	Param	All chemicals	Added RfCs and IURs and calculated inhalation RfDs and CPFs. Previously, inhalation RfDs and CPFs were hand-entered from CLARC.	The calculated values for inhalation RfDs and CPFs look the same as the hand-entered values used previously when presented with three significant digits, but there are differences beyond the third digit that affect downstream calculations. PCULs calculated using MTCA equations now match CLARC more closely.
	AR-Det, AR	All chemicals	Removed deep soil gas screening levels and re-named shallow soil gas screening levels to simply soil gas screening levels, consistent with Ecology's (2022) updated vapor intrusion guidance.	All soil gas results will be screened against the same screening levels regardless of depth.
January 2022	SL, GW, Sed, AR	Multiple chemicals	Net result of multiple modifications noted below for chemicals of particular interest.	PCULs for hexavalent chromium decreased up to 4 orders of magnitude due to addition of new oral CPF and classification as a mutagen. Sediment PCULs for cPAH TEQ increased by factor of 6.5 due to EPA's Explanation of Significant Differences. Soil PCULs for PCBs decreased five-fold due to increase in the Koc.
	All	diisopropyl ether, tetrahydrofuran	Added two new chemicals.	There are now PCULs for these two chemicals.
	PW	PCB TEQ	Removed MCL because it applies only to TCDD, not TEQ.	Most stringent PCUL didn't change because it's driven by protection of surface water.
	SL-Eq, GW-Eq, AR-Eq	Mutagenic chemicals	Hand-entered soil, groundwater, and air equation values from July CLARC for hexavalent chromium, benzidine, n-nitrosodimethylamine, and 1,2-dibromo-3-chloropropane. These CULs have adjustments to account for higher cancer risk during childhood because they cause cancer via a mutagenic mode of action. Equation values for additional mutagens had been hand-entered during previous updates.	Air CULs decreased by a factor of 3.8. Soil contact CULs decreased but most stringent soil PCULs are driven by leaching. Most stringent groundwater PCULs didn't change for some of the mutagens because they were driven by water quality criteria that didn't change. Most stringent groundwater PCULs for n-nitrosodimethylamine, 1,2-dibromo-3-propane, and ethylene oxide decreased. Most stringent groundwater PCUL for chromium VI decreased primarily because there is now an oral CPF (see other modifications made in this version).
	SedMMA	Mutagenic chemicals	New page that calculates sediment CULs for beach play scenario for mutagenic chemicals hexavalent chromium, benzo(a)pyrene, benzidine, n-nitrosodimethylamine, 1,2-dibromo-3-chloropropane, ethylene oxide, methylene chloride, trichloroethene, and 1,2,3-trichloropropane.	Sediment PCUL for benzo(a)pyrene didn't change because the LDW CUL is preferred. Sediment PCULs for other mutagens decreased by factor of 5.3.
	Param	PCB TEQ	Changed values for ABS and AB1 to be consistent with dioxins.	Most stringent soil PCULs decreased by 75%. Most stringent groundwater and sediment PCULs didn't change.
	Param	Multiple chemicals	Per July CLARC update, revised Hcc for about 75 chemicals, Koc or Kd for about 25 chemicals, and INH for about 30 chemicals.	Many leaching and VI PCULs changed.
	Sed	PCP, dibenzofuran, n-nitrosodiphenylamine	Corrected unit errors on benthic criteria.	Most stringent PCULs didn't change because the LDW ROD CULs were entered correctly and they take precedence.
	Param	Chromium VI	Added oral CPF per July CLARC update.	There are now cancer-based CULs for chromium via oral exposure pathways (soil contact, drinking water, and surface water).
	Param	Acetone	Deleted inhalation RfD per November RSL update.	There is now no air CUL for acetone.

PCUL Modifications since March 10, 2017

Date	Sheet	Chemical/Parameter Modified	Modification	Consequences
	All	2,3,7,8-TCDD	Added a row for 2,3,7,8-TCDD because MCLs and WQC are for this congener only.	Air PCULs and most stringent soil PCULs are the same for dioxin/furan TEQ and TCDD. Sediment PCULs and most stringent groundwater PCULs are different.
	Sed	Multiple chemicals	Added new columns H for organic carbon-normalized benthic SCOs and K for organic carbon-normalized benthic CSLs. These columns are for information only and are not used for calculating groundwater partitioning to sediment.	No PCULs changed.
	Param	1,2,3-Trichlorobenzene	Corrected previous error by adding oral RfD.	There are now equation values for groundwater and soil.
	Sed	cPAH TEQ	Updated CULs & RALs based on the LDW Explanation of Significant Difference.	Minimum sediment CUL increased from 0.09 to 0.59 mg/kg.
	Sed	1,2-Dichlorobenzene	Corrected typo in CUL for RAO 3 from 0.036 to 0.035 mg/kg.	Sediment PCUL decreased slightly.
	SW	Methylmercury	Updated ARARs to be consistent with CLARC.	Most stringent ARAR didn't change.
	Sed	Multiple chemicals	For nonbioaccumulative chemicals, revised lower tier (column Q) and upper tier (column R) risk-based concentrations to adjust up to PQL (column F) when the risk-based concentration falls below the PQL.	Some sediment PCULs increased.
	SL-Det	Hexachlorobenzene	Added 31 mg/kg for simplified TEE columns K and L.	Most stringent PCUL didn't change.
	SL	Lead & nickel	Corrected natural background concentrations (SL-10 in column Q) to 24 mg/kg for lead and 48 mg/kg for nickel.	Most stringent PCUL didn't change for lead but increased for nickel.
May 2021	GW, SW	Multiple	Removed columns indicating which aquatic life WQC are for the dissolved fraction because program policy is to use total analyses even when the WQC is based on the dissolved fraction.	No PCULs changed
	SW	Cyanide	Added state WQC.	Minimum ARAR didn't change.
	SW	Aquatic Life Literature Values	Added values for BTEX from Implementation Memo 23.	No changes to PCULs for benzene or ethylbenzene. PCUL to protect surface water for toluene decreased from 130 to 102 ug/L. There is now a PCUL to protect surface water for xylenes.
	GW-Eq	Weathered gas	Corrected a typo in the Method B surface water equation value based on Method A: from 100 to 1,000 ug/L.	Most stringent PCUL for weathered gas increased from 100 to 1,000 ug/L.
	Leach	GRO, DRO, ORO	Copied PCULs for SL-2 to SL-3 and PCULs for SL-5 to SL-6.	There are now soil leaching PCULs for protection of surface water.
	SL	Individual cPAHs	Eliminated soil CULs for individual cPAHs. TCP policy is to set soil CULs only for cPAH TEQ.	There are now no soil PCULs for individual cPAHs. The soil PCULs for cPAH TEQ did not change. There is an individual TEE PCUL for benzo(a)pyrene, but it is higher than the most stringent cPAH TEQ PCUL. In most cases, the cPAH TEQ PCUL will over-ride the benzo(a)pyrene TEE PCUL.
	Param	Multiple	Updated the following toxicity data consistent with the February 2021 CLARC update: RfDo value for 1,3-dichloropropane; RfDi values for bromochloromethane, trans-1,2-dichloroethene, and molybdenum; CWA aquatic life criteria for lead and methylmercury.	There are now soil, ground water, and sediment PCULs for 1,3-dichloropropane. Ground water PCULs for lead decreased from 8.1 to 5.6 ug/L. There is now an air PCUL for moybdenum (it's not volatile so the PCUL would apply to airborne dust). There are now air and VI PCULs for trans-1,2-DCE.
	Param	Multiple	Reclassified multiple chemicals as to whether they are subject to vapor intrusion based on the February 2021 CLARC update.	The list of chemicals that have values on the AR page changed. This affects ground water PCULs for vapor intrusion. The ground water PCULs for hexachlorocyclopentadiene decreased from 1 to 0.22 ug/L. The nonpotable ground water PCUL for acetone decreased from 3.6E8 to 1.5E7 ug/L. The ground water PCULs for trans-1,2-dichloroethylene decreased from 100 ug/L (potable) and 1,000 ug/L (nonpotable) both to 80 ug/L. There are now nonpotable ground water PCULs for dibromomethane, n-propylbenzene, and 1,3,5-trimethylbenzene.
	Param	Multiple	Updated Koc and Hcc values consistent with the February CLARC update.	Many Koc and Hcc values changed, some barely noticeably. About 60 chemicals have Koc values for the first time, allowing leaching PCULs to be calculated, including cyanide, TBT, benzyl alcohol, dimethylphthalate, and 1,4-dioxane.
September 2020	SW, GW	New columns	New columns indicate which aquatic life WQC apply to dissolved fraction and the cases where the surface water PCUL is driven by aquatic life WQC that apply to dissolved fraction.	No PCULs changed.
	All	2,3,7,8-TCDD	Removed because it's redundant with dioxin/furan TEQ.	Dioxin/furan TEQ PCULs didn't change.
	All	Sulfide, n-hexane, weathered gas	Added new chemicals.	PCULs are available for three new chemicals. PCULs for gasoline range hydrocarbons now differentiate between fresh and weathered.
	Sed	Upper Tier Risk-Based Concentration for Bioaccumulatives	Added new column to incorporate regional background into calculation for bioaccumulatives or default to natural background if regional not available. Revised logic in SMS Upper Tier Sediment PCUL to point to new column.	No PCULs changed because there are no regional background concentrations.
	Param	Multiple	Made the following updates consistent with CLARC: new RfDi for antimony; revised Kd/Koc values for PCBs, benzene, bis-2-chloroethyl ether, chloroform, 1,1-dichloroethane, 1,3-dichloropropene, diethyl phthalate, and TCE; revised Hcc values for mercury, 1-methylnaphthalene, and total xylenes.	The mercury PCUL for vapor intrusion increased by a factor of 2.8. Other PCULs did not change by noticeable amounts.
	Sed-Eq	Multiple	Reorganized columns to show sediment contact PCULs for each scenario (beach play, clamming, and netfishing) as well as the overall minimum scenario.	No PCULs changed.
	SL-Eq	Vinyl chloride	Revised Method C cancer calculation to use default CPFo of 1.5 per mg/kg-day rather than the hand-entered CPFo of 0.75 per mg/kg-day. The previous CPFo assumed that no pregnant women would be present in industrial workplaces.	Method C soil direct contact PCUL for vinyl chloride decreased by 2.
	SL-Det	Site-specific TEE for ORO	Added 1,600 mg/kg for plants and 260 mg/kg for soil biota under the site-specific TEE for ORO alone per advice from Policy.	The most stringent soil PCUL for ORO decreased from 2,000 to 260 mg/kg.
	Multiple	Sheet name	Changed several sheet names to shorten and/or clarify.	No changes to PCULs.
	Param	Listed on CLARC VI Page	New column that indicates whether a chemical is considered volatile for the purpose of calculating ground water and soil vapor VI screening levels. The VI and AR-Det pages link to this column.	Some chemicals that had VI screening levels before do not have screening levels now and vice versa.
	PW	MCL, MCLG	Based on advice from Policy, deleted federal secondary MCLs and added state secondary MCLs.	Potable ground water PCUL for aluminum increased from 50 to 16,000 ug/L; associated soil leaching PCULs also increased. No other ground water PCULs changed.
	SL, GW	Protect Sediment is 'TBD'	Eliminated column because only four chemicals had X's in this column and it wasn't adding much useful information.	No PCULs changed.
	SL-Eq	Method C direct contact CULs for all petroleum mixtures	Added 29,000 mg/kg based on MTCATPH11 calculation for most toxic fraction (aromatics EC >10-12).	Method C direct contact soil PCULs now available for petroleum mixtures, but concentrations this high are likely to be greater than residual saturation, in which case the PCUL must default to residual saturation.
	Sed-Eq	cPAH TEQ	Hand-entered CULs from SCUM Table 9-3 because SCUM includes adjustments for early life exposures to mutagens.	The PCULs for sediment contact changed, but the sediment PCUL for cPAH TEQ is based on the ROD value so it didn't change.
	SL	Natural Background	Previous values came from the executive summary of Ecology's (1994) *Natural Background Soil Metals Concentrations in Washington State* . Updated values to the 90th percentile values found in Table 7, which is considered more accurate.	Background concentrations changed as follows: arsenic increased from 7 to 7.3 mg/kg; cadmium decreased from 0.8 to 0.77 mg/kg; lead decreased from 24 to 16.83 mg/kg; and nickel decreased from 48 to 38 mg/kg.

PCUL Modifications since March 10, 2017

Date	Sheet	Chemical/Parameter Modified	Modification	Consequences
May 2020	Param	PBT and DMMP	Corrected benzo(g,h,i)perylene to indicate bioaccumulative under PBT. Updated cadmium, copper, nickel, silver, and zinc to indicate not bioaccumulative under 2018 edition of DMMP.	No impacts for LDW sites because these chemicals were not considered bioaccumulative based on results of EPA's human health and ecological risk assessments.
	Param	ABS	Changed dermal absorption from the default values in MTCA Eq. 740-3 to the default values in EPA's Risk Assessment Guidance for Superfund Vol. 1 Part E text and Exhibit 3-4 to be consistent with SCUM.	Combined results of these two changes: Sediment PCULsfor 44 chemicals didn't change. PCULs for 61 chemicals increased by a factor of less than 1.2. PCULs for 13 chemicals increased by a factor of 1.6. PCULs for 4,4'-DDD and total DDD increased by a factor of 1.9. PCULs for 4,4'-DDE and total DDE increased by a factor of 2.5.
	Param	GI	Changed the default gastrointestinal absorption fraction (AB1 in MTCA, GI in SCUM) (aka relative bioavailability) for certain metals to chemical-specific values in EPA's Risk Assessment Guidance for Superfund Vol. 1 Part E Exhibit 4-1.	
	SL-Eq, GW-Eq, SW-Eq, AR-Eq	Methylene chloride, 1,2,3-trichloropropane	Updated Method B cancer equation values by hand-entering from CLARC to include age-dependent adjustment factors because these chemicals are mutagenic. Adjusted the surface water value to account for the LDW fish consumption rate of 97.5 g/day.	Air PCUL for methylene chloride decreased from 250 to 66 ug/m3 but most stringent soil and ground water PCULs didn't change. Most stringent soil PCULs for 1,2,3-trichloropropane decreased from 0.033 to 0.0063 mg/kg, most stringent ground water PCULs from 0.0015 to 0.00038 ug/L.
	Param	4-Nitroaniline	Added oral CPF from the January 2020 CLARC update.	The most stringent soil PCUL decreased from 320 to 50 mg/kg. The most stringent ground water PCUL decreased from 64 to 4.4 ug/L.
	Param	Ethylene	Changed listing to ethylene oxide and input toxicity values from CLARC.	There are now PCULs for ethylene oxide.
	Sed	SCOs and CSLs	Added the regular SCO and CSL benthic criteria (in addition to AETs) for use in developing site-specific CULs. No calculations key off these columns.	No changes to PCULs.
	Sed	Total PCB congeners	Removed benthic criteria because they don't apply to total congeners.	Sediment PCUL didn't change because it was based on natural background due to bioaccumulation.
	Param	RfDi for arsenic	Updated to 4.29E-6 mg/kg-day per CLARC.	Noncancer PCULs decreased by a factor of 0.13, but arsenic PCULs are driven by natural background so no change in final PCULs.
	SW	cis and trans 1,3-Dichloropropene	Added values for Washington Toxics Rule.	ground water PCULs decreased from 2 to 1.2 ug/L.
	PW SW Leach	cPAHs	Removed MCLs and WQC for cPAH TEQ because they are specific to individual cPAHs rather than TEQ. Based on advice from Policy, eliminated leaching calculations for individual cPAHs. Set the ground water PCUL for protection of surface water for cPAH TEQ to the PCUL for benzo(a)pyrene.	cPAH TEQ PCULs for drinking water and ground water to surface water are now calculated based on Method B equations rather than ARARs. The TEQ drinking water CUL decreased from 0.2 to 0.0023 ug/L. The TEQ ground water PCUL to protect surface water increased from 1.6E-5 to 1.19E-2 ug/L. However, the PCULs to protect surface water for individual cPAHs range from 1.6E-5 to 1.6E-2 ug/L. There is a soil PCUL for protection of surface water via ground water for cPAH TEQ but not for individual cPAHs.
	Param	INH for mercury	Changed to 1 because the vapor pressure is less than benzene.	The potable ground water PCUL for mercury increased by a factor of 2.
	Param	CPFi for arsenic	Updated the value from 2.1 to 15.	The air PCUL for arsenic decreased by approximately a factor of 7.
	All	All	Added 2,3,4,5-tetrachlorophenol, bis(chloromethyl)ether, cyanide, sulfates, nitrates, and weathered diesel. Added 10 new chemicals in Method 8151A (chlorinated herbicides): 2,4-D, 2,4,-DB, 2,4,5-TP, 2,4,5-T, dalapon, dicamba, dichloroprop, dinoseb, MCPA, MCPP.	PCULs available for 15 new chemicals. New distinction between fresh & weathered diesel for protection of aquatic life. Pentachlorophenol and 4-nitrophenol are also on 8151 analyte list, but were already covered in the SVOC section.
	Param	Soil foc and sediment foc	Added cells at top of page which are linked to Eqtn page. Calculation of Kd for organics is keyed to these cells, except for ionizing organics which are hand-entered in the Kd inorganics column.	No PCULs changed.
	SW	PCB TEQ	Used ARARs for dioxin/furan TEQ instead of PCB Aroclors.	PCUL to protect surface water decreased from 7E-6 to 4.4E-9 ug/L.
	SW	Petroleum	Added values from Implementation Memo 23 in the Aquatic Life: Literature Values column. Added Method A values in WA State WQC Human Health column [WAC 173-340-730(3)(b)(iii)(C)].	Ground water PCULs for protection of surface water are now available.
	Param	Soil Koc and Kd	For ionizing organics, transferred values in Kd column to Koc column	No changes to PCULs.
	Sed	Total Aroclors	Added average PQL from SCUM Appendix D.	Allows PQL to be used as sediment PCUL instead of defaulting to text message "PQL".
June 2019	SL-Eq	TPH-G	Added 1,500 mg/kg default direct contact PCUL from *Model Remedies for Sites with Petroleum Contaminated Soils* .	Most stringent soil PCUL didn't change because it's driven by the leaching pathway.
	747-1	TPH rows	Added 30 mg/kg as leaching PCUL for TPH-G in vadose and saturated zones to protect drinking water. Added 2,000 mg/kg as leaching PCUL for all other petroleum rows in vadose and saturated zones to protect drinking water. There are no leaching PCULs to protect surface water.	The most stringent TPH-G soil PCUL for nonpotable ground water increased from 30 mg/kg to 120 mg/kg. There are now no PCULs for TPH-O for nonpotable ground water.
	All	--	Added column on far right that allows specific chemicals of interest to be identified for easy filtering.	No PCULs changed.
	Mods	--	Re-ordered list of modifications to show most recent modifications first.	No PCULs changed.
	Chems	multiple	Added additional synonyms from May 2019 CLARC update.	No PCULs changed.
	GW-Eq Sed-Eq	Benzo(a)pyrene, cPAH TEQ	Hand-entered the cancer-based CULs for surface water and beach play scenario to include age-dependent adjustment factors because cPAHs are mutagenic. Calculations are shown in Attachment 1a and 1b of the supplemental information paper.	Surface water PCULs decreased from 0.060 to 0.012 μg/L, but ground water PCULs for protection of surface water didn't change because they're driven by the WQC of 1.6E-5 μg/L. SMS CUL for benzo(a)pyrene decreased from 0.85 to 0.27 mg/kg, but sediment PCUL didn't change because it prefers LDW ROD CUL of 1.6 mg/kg. SMS CUL for cPAH TEQ remained unchanged at 9E-3 mg/kg, based on PQL, because cPAHs are bioaccumulative.
	Param	Endosulfan sulfate	Added oral RfD of 6E-3 mg/kg-day from EPA's May 2019 regional screening level update.	The most stringent soil PCUL changed from no value to 480 mg/kg. No changes to ground water or air PCULs.
	Param	Vanadium	Replaced toxicity values for vanadium with those for vanadium pentoxide because the latter come from higher quality sources. Vanadium is unlikely to be present in metallic form in the environment.	No change in the most stringent soil PCULs. Most stringent PCUL for potable ground water increased from 80 ug/L to 140 ug/L. Sediment PCUL increased from 1,100 mg/kg to 1,970 mg/kg.
	Param	Manganese	Revised oral RfD from 0.14 to 0.0467 mg/kg-day; a modifying factor of 3 was included to account for nondietary exposures per CLARC. The full RfD of 0.14 mg/kg-day would be used to calculate surface water CULs, but such a calculation isn't possible due to a lack of BCF.	No change in most stringent PCULs for ground water. PCULs for soil decreased from 1,200 to 1,100 mg/kg due to a revision in natural background rather than the change in the RfD.
	Param	Benzaldehyde	Added oral CPF from the May 2019 CLARC update.	Potable ground water PCUL decreased from 800 to 11 ug/L. All of the soil PCULs decreased from 8,000 to 250 mg/kg.
	Param	Target organs	Added new columns for target organs for oral and inhalation exposures per the May 2019 CLARC update.	No PCULs changed. The target organs can be used for evaluating additive hazards.
	Param	DDD, DDE	Added oral RfDs from the May 2019 CLARC update.	No PCULs changed because they are driven by cancer effects.
	Param	Dibromochloro-methane	Removed inhalation CPF because it's not in the May 2019 CLARC update.	There are now no PCULs for air or soil vapor.
	Param	Formaldehyde	Added oral CPF from the May 2019 CLARC update.	PCUL for potable ground water decreased from 1,600 to 2.1 ug/L. All soil PCULs decreased from 16,000 to 48 mg/kg.

PCUL Modifications since March 10, 2017

Date	Sheet	Chemical/Parameter Modified	Modification	Consequences
	Param	Bromobenzene	Added Koc and Hcc from the May 2019 CLARC update.	No change in ground water PCULs. It's now possible to calculate soil leaching PCULs. The most stringent soil PCUL for the vadose zone, potable ground water, decreased from 640 mg/kg (direct contact) to 0.56 mg/kg (leaching). The most stringent soil PCUL for the saturated zone, potable ground water, decreased from 640 to 0.033 mg/kg.
	Param	4-Nitroaniline	Added oral RfD from the May 2019 CLARC update.	There are now PCULs for soil and potable ground water.
	Param	Trichlorotrifluoro-ethane; 1,2,4-trimethylbenzene	Changed the references for toxicity values per the May 2019 CLARC update.	No PCULs changed.
	SL	Natural background	Corrected natural background concentrations for iron and manganese from the body of Ecology's 1994 report. The values in the executive summary have typos.	The PCULs for iron didn't change because they weren't adjusted to background. The PCULs for manganese decreased from 1,200 mg/kg to 1,100 mg/kg.
	All	Diesel & oil range hydrocarbons	Added a row for total diesel and oil range hydrocarbons because the Method A soil and ground water CULs apply to the sum of diesel and oil.	PCULs are now expressed for diesel alone, oil alone, and diesel plus oil combined.
	All	Xylenes	Removed rows for m-, m,p-, and o-xylenes so that only total xylenes is listed. The MCL is specified for total xylenes, so it doesn't make sense to screen individual isomers.	PCULs are available only for total xylenes.
April 2019	All	Di(2-ethylhexyl)adipate; 1,2-, 1,3-, and 1,4-dinitrobenzene; 3-methylphenol; and 2,3,4,6-tetrachlorophenol	Added 6 new chemicals detected at LDW sites.	PCULs now available for 6 new chemicals
	All	Chromium	Added a new line to separate total and trivalent chromium.	Separate PCULs are provided for total and trivalent chromium
	Param	cPAH TEQ	Removed the RfDs for benzo(a)pyrene from the cPAH TEQ line per advice from Jim White.	Soil and ground water PCULs were not affected because they're driven by the cancer endpoint. Air and soil vapor PCULs for cPAH TEQ increased because they were driven by the noncancer endpoint.
December 2018	Param	RfDo for toxaphene	Updated from "na" to 9E-5 mg/kg-day based on EPA's November 2018 Regional Screening Level update.	PCULs now available for noncancer effects, but PCULs for cancer effects are lower so no change in most stringent PCULs.
	747-1	Arsenic	Added a reference to Table 1, where issues related to natural background concentrations are discussed.	No PCULs changed.
	All	CAS No.	Deleted this column on all sheets except 'Chems' to save space.	No PCULs changed.
	Sed	SMS Upper Tier (columns R and BB)	Corrected coding to use regional background rather than natural background	There are no established regional background concentrations so no PCULs changed.
	GW-VI	Column C	Updated title of column from Ecology's 2009 guidance document to the CLARC vapor intrusion web page and updated values to be consistent with that page.	No PCULs changed.
	GW-Detail-PW	Federal MCLs	Added secondary MCLs per the 2001 *Concise Explanatory Statement* (page 173).	The potable water PCUL for aluminum decreased from 16,000 to 50 ug/L. Iron decreased from 11,000 to 300 ug/L. Manganese decreased from 2,200 to 50 ug/L.
	SL	Natural Background	Modified values to be consistent with the number of significant digits in the executive summary of Ecology's (1994) *Natural Background Soil Metals Concentrations in Washington State* .	Small changes in the significant digits to soil PCULs adjusted to natural background.
June 2018	Multiple	Representative PQLs	Eliminated PQL columns on all pages except Sed page. Changed PQL column on Sed page from a link to a hard entry.	No changes to PCULs.
	Multiple	Multiple	Miscellaneous editing and formatting to keep spreadsheet and white paper clear and internally consistent.	No changes to PCULs.
	Param	1,2-Dichloropropane	Corrected calculation of CPFi from inhalation unit risk.	CPFi decreased by a factor of 10. Air and soil gas PCULs increased 10X.
	Param	Methyl isobutyl ketone	Updated the references for the RfDs to CLARC because toxicity data have been removed from EPA's regional screening levels but not from CLARC.	No changes to PCULs.
	Param	bis(2-Chloro-1-methylethyl) ether	Removed CPFs and RfDi because they've been removed from EPA's regional screening levels	Soil and ground water PCULs increased by factors ranging 2.7 to 508. PCULs no longer available for air or soil gas.
	GW-Eq	Surface water CULs for TCE	Over-wrote calculated values with values from CLARC guidance.	Surface water equation value increased by a factor of 4, but the PCUL didn't change because the ARAR is lower.
	GW	Natural background for arsenic	Method A CUL replaced by the 90th percentile for the Puget Sound Basin in Ecology's (2013) draft *Ambient Ground Water Arsenic Concentrations in Washington State.*	Most stringent ground water PCULs increased from 5 ug/L to 8 ug/L. Soil leaching PCULs increased accordingly.
	SL-Detail	GRO and DRO	Updated ecological indicator soil concentrations for protection of plants and soil biota from Ecology's (2017) Implementation Memo 17.	Minimum TEE PCULs increased slightly. The increased TEE PCUL for DRO is the most stringent soil PCUL.
	AR-Eq	GRO and DRO	Added Method B and C noncancer air PCUL of 140 ug/m3 from Implementation Memo 18 (Ecology 2018).	Air PCULs and soil gas PCULs are now available for GRO and DRO.
	AR-Eq	Vinyl chloride	The Method C cancer calculation had been using a hand-entered CPFi for exposures during adulthood only. It was modified to use the CPFi for exposures from childhood to account for the possibility of a pregnant woman being exposed in the workplace.	The Method C air PCUL for vinyl chloride decreased by a factor of 2. The ground water and soil gas screening levels decreased accordingly.
December 2017	AR	--	Re-named soil gas PCULs for vapor intrusion to SG-1 and SG-2 and re-labed them as screening levels rather than PCULs. No changes to PCUL or screening level values.	No changes to PCULs.
	GW GW-Detail-PW	--	Re-labeled ground water PCUL for vapor intrusion to a screening level rather than a PCUL. No changes to PCUL or screening level values.	No changes to PCULs.
	Param	LDW COC for human consump seafood	Changed entry for 4,4'-DDT from "no" to "YES" to be consistent with the entry for total DDT.	Sediment PCUL for 4,4'-DDT now defaults to the PQL.
	Param	RfDo	Added oral RfDs for 4,4'-DDD and 4,4'-DDE based on the November 2017 regional screening level update.	Noncancer PCULs now calculated for 4,4'-DDD and 4,4'-DDE. The soil direct contact PCUL for 4,4'-DDD is driven by the new noncancer value.
	Param	PQLs for total DDD, DDE, DDT	Copied down PQLs from 4,4'- analytes for consistency.	Sediment PCUL for total DDT now has a numerical value based on the PQL instead of the text message "PQL."
October 2017	Param	Carcinogenic PAHs	Updated the Koc values to be consistent with Table 2 of Implementation Memo 10 (2015).	PCULs didn't change noticeably.
	Param	Ethylbenzene	Removed the CPFi value because Ecology decided not to treat ethylbenzene as a carcinogen.	Air PCUL and VI screening levels increased because the cancer calculation was removed.
	SL-Detail SL	TEE screening levels	Added site-specific TEE screening levels to the SL-Detail page and linked the minimum into the SL summary page instead of the simplified TEE screening levels, because the site-specific screening levels are more conservative. Double-checked and corrected the simplified TEE screening levels on the SL-Detail page.	Many TEE PCULs decreased.
	Param	Mercury, inorganic	Changed INH value to 2.	No change to the drinking water PCUL because it's driven by the MCL.

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Date	Sheet	Chemical/Parameter Modified	Modification	Consequences
September 2017	SL-Eq	Benzo(a)pyrene, cPAH TEQ	Hand-entered new Method B carcinogen equation values to account for early life stage exposures because cPAHs are mutagenic. Method C carcinogen equation values weren't updated because they assume industrial land use where children aren't exposed.	Soil direct contact CULs decreased by a factor of 5.
	GW-Eq	Benzo(a)pyrene, cPAH TEQ	Hand-entered new Method B drinking water carcinogen equation values to account for early life stage exposures because cPAHs are mutagenic. Method B carcinogen equation values for surface water weren't updated due to a lack of fish consumption rates for appropriate child age ranges.	No changes to drinking water PCULs because they're driven by the MCL. Surface water PCULs wouldn't change even if the equation values were updated because they would be driven by the WQC.
	Air-Eq	Benzo(a)pyrene, cPAH TEQ	Hand-entered new Method B carcinogen equation values to account for early life stage exposures because cPAHs are mutagenic. Method C carcinogen equation values weren't updated because they'll be used primarily at industrial sites where children aren't exposed.	No changes to air CULs, soil gas SLs, or ground water SLs for VI because they're driven by the noncancer values.
	SL-Eq	Vinyl chloride	Hand-entered an oral CPF of 0.75 per mg/kg-day in the Method C carcinogen equation to account for lack of childhood exposure at industrial sites. Vinyl chloride is considered mutagenic.	Soil direct contact CUL increased by a factor of 2.
	Air-Eq	Vinyl chloride	Hand-entered an inhalation CPF of 0.0155 per mg/kg-day in the Method C carcinogen equation to account for lack of childhood exposure at industrial sites. Vinyl chloride is considered mutagenic.	Air CUL increased by a factor of 2.
August 2017	SL-Detail	Method C CUL (column J)	Entered the Method A industrial land use CUL.	There is now a Method C direct contact CUL for lead.
	Eq.1(VI)	Listed in Table B-1 Ecology (2009) VI Guidance?	Added this new column and populated it according to Ecology's updated VI guidance. Ground water PCULs to protect indoor air via vapor intrusion for both Method B (GW-4, Column G) and Method C (Column I) occur only when the answer in this new column is "Yes."	Decreased the number of chemicals for which PCUL GW-4 was calculated.
	Param	Total PCB TEQ	Copied Koc and BCF from Total PCB Aroclors and Total PCB congeners.	Leaching PCULs now calculated for PCB TEQ.
	GW-Detail-SW	Total PCB TEQ	Copied the ARARs from PCBs rather than dioxin/furan TEQ, per recommendation of Jim White.	No effect on ground water PCULs.
July 2017	SL GW	--	Added horizontal lines in "Basis" columns to aid in read-across.	No changes to PCULs.
	GW-Detail-PW	--	Corrected typo in heading for Column M.	No changes to PCULs.
	GW-Detail-SW	--	Corrected typos in headings for Columns L and P.	No changes to PCULs.
	Chems	Chem Class	Eliminated columns because it wasn't being used.	No changes to PCULs.
	All	--	Unhid Columns A (sort order), updated values, corrected links, and corrected borders.	No changes to PCULs.
	Param	Toxicity values	The following chemicals and parameters were updated consistent with USEPA's revised Regional Screening Levels, June 2017. 123-, 124-, and 135-Trimethylbenzene: RfDo and RfDi Trichlorotrifluoroethane: RfDi 12-Dichloropropane: RfDo, CPFo, and CPFi	Associated PCULs on multiple pages changed.
June 2017	Param	Total dioxin/furan TEQ	Added BCF of 5,000 (from 2,3,7,8-TCDD).	Surface water PCUL now calculated for dioxin/furan TEQ.
	GW-Detail-SW	40 CFR 131.45	Changed name to Washington Toxics Rule per discussion with Water Quality Program.	No PCULs changed.
	GW-Detail-SW	40 CFR 131.45	In cases where EPA approved Washington's modified WQC for human health (Aug 2016), removed the (duplicate) values from the WA Toxics Rule column.	These values remain in the WA State column, so no PCULs changed.
	GW-Detail-SW	40 CFR 131.36	Removed column because it's no longer applicable per discussion with Water Quality Program.	These values were present in other aquatic life columns, so no PCULs changed.
	Param	Arsenic	Corrected oral carcinogenic potency factor from 1 to 1.5 per mg/kg-day.	All PCULs for arsenic changed.
May 2017	SL-Eq	TCE	Hand-entered Method C cancer PCUL for soil contact from CLARC guidance. Other soil PCULs were entered correctly from the guidance.	Method C direct contact soil PCULs for TCE changed.
	AR-Eq	TCE	Hand-entered Method B and C, noncancer and cancer, PCULs for air from CLARC guidance. PCULs were being calculated per default equation which is incorrect for TCE.	Method B and C air PCULs for TCE changed.
April 2017	All	Formaldehyde	Added to all pages	

PCUL Workbook - Groundwater Summary for Freshwater Sites

Sort Order	Chemical (all concentrations are in ug/L)	Most Stringent PCUL Potable Water GW #s 1-5	Most Stringent PCUL Nonpotable Water GW #s 2-5	User-Defined PCUL Specify GW #s	GW-1 Protect Drinking Water PW	GW-2 Protect Surface Water SW-FW	GW-3 Protect Sediment PartitFW	GW-4 Screening Level Protect Indoor Air VI	GW-5 Natural Background	Basis - Potable GW: Drinking Water	Basis - Potable GW: Surface Water	Basis - Potable GW: Sediment	Basis - Potable GW: Indoor Air	Basis - Potable GW: Nat. Background	Basis - Nonpotable GW: Surface Water	Basis - Nonpotable GW: Sediment	Basis - Nonpotable GW: Indoor Air	Basis - Nonpotable GW: Nat. Background	Select Use an 'X' to identify chemicals of interest for filtering
1	***PCBs***									***PCBs***									
2	Total PCB Aroclors	7.0E-06	7.0E-06		2.2E-01	7.0E-06	3.1E-02	na	na		X				X				
3	Total PCB congeners	7.0E-06	7.0E-06		2.2E-01	7.0E-06	9.0E-03	na	na		X				X				
4	Total PCB TEQ	4.4E-09	4.4E-09		3.4E-07	4.4E-09	1.8E-06	na	na		X				X				
5	***Dioxins/Furans***									***Dioxins/Furans***									
6	Total dioxin/furan TEQ	2.8E-09	2.8E-09		3.4E-07	2.8E-09	4.0E-06	na	na		X				X				
7	2,3,7,8-TCDD	5.0E-09	5.0E-09		3.4E-06	5.0E-09	TBD	na	na		X				X				
8	Total chlorinated dioxins	0.0E+00	0.0E+00		na	na	TBD	na	na										
9	Total chlorinated furans	0.0E+00	0.0E+00		na	na	TBD	na	na										
10	***Inorganics***									***Inorganics***									
11	Cyanide, free	5.0E+00	5.2E+00		5.0E+00	5.2E+00	1.2E+04	na	na	X					X				
12	Nitrate	1.0E+04	na		1.0E+04	na	na	na	na	X									
13	Nitrite	1.0E+03	na		1.0E+03	na	na	na	na	X									
14	Sulfate	2.5E+05	na		2.5E+05	na	na	na	na	X									
15	Sulfide	2.0E+00	2.0E+00		na	2.0E+00	na	na	na		X				X				
16	***Metals***									***Metals***									
17	Aluminum	8.7E+01	8.7E+01		1.6E+04	8.7E+01	1.3E+05	na	na		X				X				
18	Antimony	5.6E+00	5.6E+00		6.0E+00	5.6E+00	1.4E+03	na	na		X				X				
19	Arsenic	8.0E+00	8.0E+00		5.8E-01	1.8E-02	3.8E+02	na	8.0E+00					X					X
20	Barium	1.0E+03	1.0E+03		2.0E+03	1.0E+03	4.0E+05	na	na		X				X				
21	Beryllium	4.0E+00	2.3E+01		4.0E+00	7.6E+01	2.3E+01	na	na	X						X			
22	Cadmium	7.2E-01	7.2E-01		5.0E+00	7.2E-01	1.1E+02	na	na		X				X				
23	Chromium, total	1.0E+02	na		1.0E+02	na	na	na	na	X									
24	Chromium, trivalent	7.4E+01	7.4E+01		2.4E+04	7.4E+01	2.5E+04	na	na		X				X				
25	Chromium, hexavalent	4.6E-02	3.6E-01		4.6E-02	3.6E-01	TBD	na	na	X					X				
26	Cobalt	4.8E+00	1.3E+03		4.8E+00	na	1.3E+03	na	na	X						X			
27	Copper	1.1E+01	1.1E+01		6.4E+02	1.1E+01	1.8E+04	na	na		X				X				
28	Iron	3.0E+02	1.0E+03		3.0E+02	1.0E+03	5.3E+06	na	na	X					X				
29	Lead	2.1E+00	2.1E+00		1.5E+01	2.5E+00	2.1E+00	na	na			X				X			
30	Manganese	5.0E+01	5.0E+01		5.0E+01	5.0E+01	3.5E+04	na	na	X	X				X				
31	Mercury, inorganic	1.2E-02	1.2E-02		2.0E+00	1.2E-02	3.8E+00	1.1E+00	na		X				X				
32	Methylmercury	7.7E-01	7.7E-01		1.6E+00	7.7E-01	TBD	na	na		X				X				
33	Molybdenum	8.0E+01	4.7E+04		8.0E+01	na	4.7E+04	na	na	X						X			
34	Nickel	5.2E+01	5.2E+01		3.2E+02	5.2E+01	7.7E+02	na	na		X				X				
35	Selenium	5.0E+00	5.0E+00		5.0E+01	5.0E+00	1.9E+01	na	na		X				X				
36	Silver	3.2E+00	3.2E+00		8.0E+01	3.2E+00	6.6E+01	na	na		X				X				
37	Thallium	6.2E-02	6.2E-02		1.6E-01	6.2E-02	6.3E+01	na	na		X				X				
38	Tin	9.6E+03	4.6E+05		9.6E+03	na	4.6E+05	na	na	X						X			
39	Vanadium	1.4E+02	3.0E+02		1.4E+02	na	3.0E+02	na	na	X						X			
40	Zinc	1.0E+02	1.0E+02		4.8E+03	1.0E+02	5.1E+04	na	na		X				X				
41	***Metals - Butyltins***									***Metals - Butyltins***									
42	Monobutyltin	na	na		na	na	na	na	na										
43	Dibutyltin	na	na		na	na	na	na	na										
44	Tributyltin oxide	1.6E-05	1.6E-05		4.8E+00	7.2E-02	1.6E-05	na	na			X				X			
45	Tetrabutyltin	na	na		na	na	na	na	na										
46	***SVOCs - PAHs***									***SVOCs - PAHs***									
47	Acenaphthene	3.0E+01	3.0E+01		4.8E+02	3.0E+01	2.0E+05	na	na		X				X				
48	Acenaphthylene	na	na		na	na	na	na	na										
49	Anthracene	1.0E+02	1.0E+02		2.4E+03	1.0E+02	2.1E+05	na	na		X				X				
50	Benzo(a)anthracene	1.6E-04	1.6E-04		na	1.6E-04	5.0E-03	na	na		X				X				
51	Benzo(b)fluoranthene	1.6E-04	1.6E-04		na	1.6E-04	3.0E-03	na	na		X				X				
52	Benzo(k)fluoranthene	1.6E-03	1.6E-03		na	1.6E-03	3.1E-03	na	na		X				X				
53	Total benzofluoranthenes	na	na		na	na	na	na	na										
54	Benzo(g,h,i)perylene	na	na		na	na	na	na	na										
55	Benzo(a)pyrene	1.6E-05	1.6E-05		2.0E-01	1.6E-05	1.9E-03	na	na		X				X				
56	Chrysene	9.8E-03	9.8E-03		na	1.6E-02	9.8E-03	na	na			X				X			
57	Dibenz(a,h)anthracene	1.6E-05	1.6E-05		na	1.6E-05	1.0E-03	na	na		X				X				
58	Dibenzofuran	4.3E+00	4.3E+00		8.0E+00	na	4.3E+00	na	na			X				X			
59	Fluoranthene	2.0E-02	2.0E-02		6.4E+02	6.0E+00	2.0E-02	na	na			X				X			
60	Fluorene	1.0E+01	1.0E+01		3.2E+02	1.0E+01	8.3E+04	na	na		X				X				
61	Indeno(1,2,3-cd)pyrene	1.6E-04	1.6E-04		na	1.6E-04	9.2E-04	na	na		X				X				
62	Methyl isopropyl phenanthrene (retene)	na	na		na	na	na	na	na										
63	1-Methylnaphthalene	1.5E+00	1.2E+03		1.5E+00	na	1.2E+03	na	na	X						X			
64	2-Methylnaphthalene	3.2E+01	2.5E+04		3.2E+01	na	2.5E+04	na	na	X						X			
65	Naphthalene	8.9E+00	8.9E+00		1.6E+02	1.4E+03	2.6E+05	8.9E+00	na				X				X		
66	Phenanthrene	na	na		na	na	na	na	na										
67	Pyrene	1.5E-02	1.5E-02		2.4E+02	8.0E+00	1.5E-02	na	na			X				X			
68	Total LPAHs	na	na		na	na	na	na	na										
69	Total HPAHs	na	na		na	na	na	na	na										
70	Total PAHs	na	na		na	na	na	na	na										
71	Total cPAH TEQ	4.3E-03	4.3E-03		2.0E-01	9.7E-03	4.3E-03	na	na			X				X			
72	***Other SVOCs***									***Other SVOCs***									
73	Aniline	1.5E+01	9.4E+04		1.5E+01	na	9.4E+04	na	na	X						X			
74	Azobenzene	4.0E-01	na		4.0E-01	na	na	na	na	X									
75	Benzidine	2.0E-05	2.0E-05		1.0E-04	2.0E-05	5.8E-02	na	na		X				X				
76	Benzoic acid	1.0E+04	1.0E+04		6.4E+04	na	1.0E+04	na	na			X				X			
77	Benzyl alcohol	1.6E+03	1.5E+07		1.6E+03	na	1.5E+07	na	na	X						X			
78	Bis(2-chloroethoxy)methane	4.8E+01	5.1E+05		4.8E+01	na	5.1E+05	na	na	X						X			
79	Bis(2-chloroethyl)ether	2.0E-02	2.0E-02		4.0E-02	2.0E-02	1.5E+03	na	na		X				X				
80	Bis(chloromethyl)ether	2.0E-04	1.5E+01		2.0E-04	1.0E+02	1.5E+01	na	na	X						X			
81	Bis(2-chloro-1-methylethyl)ether	6.3E-01	1.0E+02		6.3E-01	1.0E+02	2.3E+04	na	na	X					X				
82	2,6-Bis(1,1-dimethylethyl) phenol	na	na		na	na	na	na	na										
83	Bis(2-ethylhexyl) phthalate	4.5E-02	4.5E-02		6.0E+00	4.5E-02	9.0E-01	na	na		X				X				
84	4-Bromophenyl phenyl ether	na	na		na	na	na	na	na										
85	Butyl benzyl phthalate	1.3E-02	1.3E-02		4.6E+01	1.3E-02	2.6E+03	na	na		X				X				
86	Butyl diphenyl phosphate	na	na		na	na	na	na	na										
87	Carbazole	na	na		na	na	na	na	na										
88	4-Chloroaniline	4.4E-01	2.0E+03		4.4E-01	na	2.0E+03	na	na	X						X			
89	4-Chloro-3-methylphenol	3.6E+01	3.6E+01		1.6E+03	3.6E+01	2.2E+06	na	na		X				X				
90	2-Chloronaphthalene	1.0E+02	1.0E+02		6.4E+02	1.0E+02	5.1E+05	na	na		X				X				
91	2-Chlorophenol	1.5E+01	1.5E+01		4.0E+01	1.5E+01	5.2E+05	na	na		X				X				
92	4-Chlorophenyl phenyl ether	na	na		na	na	na	na	na										
93	Dibutyl phthalate	8.0E+00	8.0E+00		1.6E+03	8.0E+00	4.7E+01	na	na		X				X				
94	Dibutyl phenyl phosphate	na	na		na	na	na	na	na										
95	1,2-Dichlorobenzene	6.0E+02	7.0E+02		6.0E+02	7.0E+02	9.6E+06	2.5E+03	na	X					X				
96	1,3-Dichlorobenzene	2.0E+00	2.0E+00		na	2.0E+00	na	na	na		X				X				
97	1,4-Dichlorobenzene	5.0E+00	5.0E+00		7.5E+01	6.0E+01	6.1E+04	5.0E+00	na				X				X		
98	3,3'-Dichlorobenzidine	3.1E-03	3.1E-03		1.9E-01	3.1E-03	4.0E+02	na	na		X				X				
99	2,4-Dichlorophenol	1.0E+01	1.0E+01		4.8E+01	1.0E+01	1.8E+05	na	na		X				X				
100	Di(2-ethylhexyl)adipate	4.0E+02	1.6E+03		4.0E+02	na	1.6E+03	na	na	X						X			
101	Diethyl phthalate	2.0E+02	2.0E+02		1.3E+04	2.0E+02	7.0E+07	na	na		X				X				
102	Dimethyl phthalate	6.0E+02	6.0E+02		na	6.0E+02	na	na	na		X				X				
103	2,4-Dimethylphenol	8.5E+01	8.5E+01		3.2E+02	8.5E+01	4.4E+05	na	na		X				X				
104	1,2-Dinitrobenzene	1.6E+00	2.9E+03		1.6E+00	na	2.9E+03	na	na	X						X			
105	1,3-Dinitrobenzene	1.6E+00	na		1.6E+00	na	na	na	na	X									
106	1,4-Dinitrobenzene	1.6E+00	3.0E+03		1.6E+00	na	3.0E+03	na	na	X						X			
107	4,6-Dinitro-2-methylphenol (DNOC)	1.3E+00	2.0E+00		1.3E+00	2.0E+00	1.2E+03	na	na	X					X				
108	2,4-Dinitrophenol	1.0E+01	1.0E+01		3.2E+01	1.0E+01	4.2E+05	na	na		X				X				
109	2,4-Dinitrotoluene	3.9E-02	3.9E-02		2.8E-01	3.9E-02	3.4E+02	na	na		X				X				
110	2,6-Dinitrotoluene	5.8E-02	7.1E+01		5.8E-02	na	7.1E+01	na	na	X						X			
111	Di-n-octyl phthalate	1.9E-01	1.9E-01		1.6E+02	na	1.9E-01	na	na			X				X			
112	1,4-Dioxane	4.4E-01	4.7E+03		4.4E-01	na	3.7E+04	4.7E+03	na	X									
113	1,2-Diphenylhydrazine	1.0E-02	1.0E-02		1.1E-01	1.0E-02	5.5E+01	na	na		X				X				
114	Hexachlorobenzene	5.0E-06	5.0E-06		2.7E-01	5.0E-06	2.5E-03	2.4E-01	na		X				X				
115	Hexachlorobutadiene	1.0E-02	1.0E-02		5.6E-01	1.0E-02	6.6E-02	6.4E-01	na		X				X				
116	Hexachlorocyclopentadiene	1.0E+00	1.0E+00		4.8E+01	1.0E+00	1.9E+05	4.2E+00	na		X				X				
117	Hexachloroethane	2.0E-02	2.0E-02		1.1E+00	2.0E-02	2.2E+04	3.8E+00	na		X				X				
118	Isophorone	2.7E+01	2.7E+01		9.2E+01	2.7E+01	5.9E+05	na	na		X				X				
119	2-Methoxynaphthalene	na	na		na	na	na	na	na										
120	2-Methylphenol (o-cresol)	8.0E+02	1.7E+06		8.0E+02	na	1.7E+06	na	na	X						X			
121	3-Methylphenol (m-cresol)	8.0E+02	1.7E+06		8.0E+02	na	1.7E+06	na	na	X						X			
122	4-Methylphenol (p-cresol)	1.5E+02	1.5E+02		1.6E+03	na	1.5E+02	na	na			X				X			
123	2-Nitroaniline	1.6E+02	7.2E+05		1.6E+02	na	7.2E+05	na	na	X						X			
124	3-Nitroaniline	na	na		na	na	na	na	na										
125	4-Nitroaniline	4.4E+00	5.9E+04		4.4E+00	na	5.9E+04	na	na	X						X			
126	Nitrobenzene	1.0E+01	1.0E+01		1.6E+01	1.0E+01	5.3E+05	na	na		X				X				
127	2-Nitrophenol	na	na		na	na	na	na	na										
128	4-Nitrophenol	na	na		na	na	na	na	na										
129	n-Nitrosodimethylamine	2.3E-04	6.5E-04		2.3E-04	6.5E-04	1.4E+01	na	na	X					X				
130	n-Nitrosodiphenylamine	6.2E-01	6.2E-01		1.8E+01	6.2E-01	5.2E+03	na	na		X				X				
131	n-Nitrosodi-n-propylamine	4.4E-03	4.4E-03		1.3E-02	4.4E-03	2.9E+01	na	na		X				X				
132	Pentachlorophenol	2.0E-03	2.0E-03		1.0E+00	2.0E-03	4.0E+02	na	na		X				X				
133	Phenol	9.8E+01	9.8E+01		4.8E+03	4.0E+03	9.8E+01	na	na			X				X			
134	Pyridine	8.0E+00	3.6E+05		8.0E+00	na	3.6E+05	na	na	X						X			
135	2,3,4,5-Tetrachlorophenol	na	na		na	na	na	na	na										
136	2,3,4,6-Tetrachlorophenol	4.8E+02	1.1E+06		4.8E+02	na	1.1E+06	na	na	X						X			
137	1,2,4-Trichlorobenzene	3.6E-02	3.6E-02		1.5E+01	3.6E-02	1.4E+03	3.9E+01	na		X				X				
138	2,4,5-Trichlorophenol	3.0E+02	3.0E+02		1.6E+03	3.0E+02	7.3E+05	na	na		X				X				
139	2,4,6-Trichlorophenol	2.5E-01	2.5E-01		8.0E+00	2.5E-01	1.4E+04	na	na		X				X				
140	***Volatile Organic Compounds***									***Volatile Organic Compounds***									
141	Acetone	7.2E+03	2.0E+09		7.2E+03	na	2.0E+09	na	na	X						X			

PCUL Workbook - Groundwater Summary for Freshwater Sites

Sort Order	Chemical (all concentrations are in ug/L)	Most Stringent PCUL Potable Water GW #s 1-5	Most Stringent PCUL Nonpotable Water GW #s 2-5	User-Defined PCUL Specify GW #s	GW-1 Protect Drinking Water PW	GW-2 Protect Surface Water SW-FW	GW-3 Protect Sediment PartitFW	GW-4 Screening Level Protect Indoor Air VI	GW-5 Natural Background	Basis - Potable GW: Drinking Water	Basis - Potable GW: Surface Water	Basis - Potable GW: Sediment	Basis - Potable GW: Indoor Air	Basis - Potable GW: Nat. Background	Basis - Nonpotable GW: Surface Water	Basis - Nonpotable GW: Sediment	Basis - Nonpotable GW: Indoor Air	Basis - Nonpotable GW: Nat. Background	Select Use an 'X' to identify chemicals of interest for filtering
142	Acrolein	1.0E+00	1.0E+00		4.0E+00	1.0E+00	1.1E+06	2.9E+00	na		X				X				
143	Acrylonitrile	1.9E-02	1.9E-02		8.1E-02	1.9E-02	1.3E+04	1.2E+01	na		X				X				
144	Benzaldehyde	1.1E+01	8.1E+05		1.1E+01	na	8.1E+05	na	na	X						X			
145	Benzene	4.4E-01	4.4E-01		5.0E+00	4.4E-01	6.9E+04	2.4E+00	na		X				X				
146	Bromobenzene	6.4E+01	6.3E+02		6.4E+01	na	1.3E+06	6.3E+02	na	X							X		
147	Bromochloromethane	na	na		na	na	na	na	na										
148	Bromoethane	na	na		na	na	na	na	na										
149	Bromoform	4.6E+00	4.6E+00		5.5E+01	4.6E+00	1.5E+05	2.2E+02	na		X				X				
150	Bromomethane	1.1E+01	1.1E+01		1.1E+01	1.0E+02	2.7E+06	1.1E+01	na				X				X		
151	2-Butoxyethanol (EGBE)	8.0E+02	2.0E+07		8.0E+02	na	2.0E+07	na	na	X						X			
152	n-Butylbenzene	4.0E+02	1.5E+06		4.0E+02	na	1.5E+06	na	na	X						X			
153	sec-Butylbenzene	8.0E+02	3.4E+06		8.0E+02	na	3.4E+06	na	na	X						X			
154	tert-Butylbenzene	8.0E+02	4.4E+06		8.0E+02	na	4.4E+06	na	na	X						X			
155	Carbon disulfide	8.0E+02	8.4E+02		8.0E+02	na	1.6E+08	8.4E+02	na	X							X		
156	Carbon tetrachloride	2.0E-01	2.0E-01		5.0E+00	2.0E-01	3.1E+04	6.2E-01	na		X				X				
157	Chlorobenzene	1.0E+02	1.0E+02		1.0E+02	1.0E+02	3.3E+06	3.4E+02	na	X	X				X				
158	Chloroethane	1.5E+04	1.5E+04		na	na	na	1.5E+04	na				X				X		
159	2-Chloroethyl vinyl ether	na	na		na	na	na	na	na										
160	Chloroform	1.2E+00	1.2E+00		1.4E+01	6.0E+01	1.3E+05	1.2E+00	na				X				X		
161	Chloromethane	1.5E+02	1.5E+02		na	na	na	1.5E+02	na				X				X		
162	3-Chloro-1-propene (allyl chloride)	1.5E+00	1.5E+00		2.1E+00	na	2.2E+05	1.5E+00	na				X				X		
163	2-Chlorotoluene	1.6E+02	2.1E+06		1.6E+02	na	2.1E+06	na	na	X						X			
164	4-Chlorotoluene	1.6E+02	2.2E+06		1.6E+02	na	2.2E+06	na	na	X						X			
165	Dibromochloromethane	6.0E-01	6.0E-01		5.2E+00	6.0E-01	3.0E+04	na	na		X				X				
166	1,2-Dibromo-3-chloropropane	4.2E-02	4.2E-02		1.4E-01	na	4.1E+02	4.2E-02	na				X				X		
167	Dibromomethane	8.0E+01	8.7E+01		8.0E+01	na	3.9E+06	8.7E+01	na	X							X		
168	Dichlorobromomethane	7.3E-01	7.3E-01		7.1E+00	7.3E-01	4.0E+04	1.4E+00	na		X				X				
169	trans-1,4-Dichloro-2-butene	na	na		na	na	na	na	na										
170	Dichlorodifluoromethane	4.2E+00	4.2E+00		1.6E+03	na	2.6E+08	4.2E+00	na				X				X		
171	1,1-Dichloroethane	7.7E+00	1.1E+01		7.7E+00	na	7.1E+05	1.1E+01	na	X							X		
172	1,2-Dichloroethane (EDC)	3.5E+00	3.5E+00		4.8E+00	8.9E+00	2.5E+04	3.5E+00	na				X				X		
173	1,1-Dichloroethylene	7.0E+00	1.3E+02		7.0E+00	3.0E+02	5.3E+07	1.3E+02	na	X							X		
174	cis-1,2-Dichloroethylene	1.6E+01	1.8E+02		1.6E+01	na	2.7E+06	1.8E+02	na	X							X		
175	trans-1,2-Dichloroethylene	7.7E+01	7.7E+01		1.0E+02	1.0E+02	2.7E+07	7.7E+01	na				X				X		
176	1,2-Dichloroethylene (mixed isomers)	na	na		na	na	na	na	na										
177	1,2-Dichloropropane	7.1E-01	7.1E-01		5.0E+00	7.1E-01	5.7E+04	1.0E+01	na		X				X				
178	1,3-Dichloropropane	1.6E+02	7.2E+06		1.6E+02	na	7.2E+06	na	na	X						X			
179	2,2-Dichloropropane	na	na		na	na	na	na	na										
180	1,1-Dichloropropene	na	na		na	na	na	na	na										
181	cis-1,3-Dichloropropene	2.2E-01	2.2E-01		4.4E-01	2.2E-01	2.6E+04	1.6E+00	na		X				X				
182	trans-1,3-Dichloropropene	2.2E-01	2.2E-01		4.4E-01	2.2E-01	2.6E+04	1.6E+00	na		X				X				
183	Diisopropyl ether	na	na		na	na	na	na	na										
184	Ethane	na	na		na	na	na	na	na										
185	Ethylbenzene	1.2E+01	1.2E+01		7.0E+02	1.2E+01	1.9E+07	2.8E+03	na		X				X				
186	Ethylene oxide	3.7E-02	5.4E-02		3.7E-02	na	6.9E+03	5.4E-02	na	X							X		
187	Ethyl ether	1.6E+03	3.9E+08		1.6E+03	na	3.9E+08	na	na	X						X			
188	Ethylene dibromide (EDB)	5.0E-02	3.0E-01		5.0E-02	na	9.0E+02	3.0E-01	na	X							X		
189	Formaldehyde	2.1E+00	3.7E+05		2.1E+00	na	3.7E+05	na	na	X						X			
190	n-Hexane	4.1E+00	4.1E+00		4.8E+02	na	2.2E+06	4.1E+00	na				X				X		
191	2-Hexanone	4.0E+01	7.3E+03		4.0E+01	na	3.2E+06	7.3E+03	na	X							X		
192	Isopropylbenzene (cumene)	8.0E+02	9.1E+02		8.0E+02	na	6.2E+06	9.1E+02	na	X							X		
193	4-Isopropyltoluene	na	na		na	na	na	na	na										
194	Methane	na	na		na	na	na	na	na										
195	Methyl ethyl ketone (2-butanone)	4.8E+03	1.7E+06		4.8E+03	na	4.5E+08	1.7E+06	na	X							X		
196	Methyl iodide	na	na		na	na	na	na	na										
197	Methyl isobutyl ketone	6.4E+02	4.7E+05		6.4E+02	na	5.3E+07	4.7E+05	na	X							X		
198	Methyl tert-butyl ether (MTBE)	2.4E+01	8.0E+02		2.4E+01	na	3.7E+06	8.0E+02	na	X							X		
199	Methylene chloride	5.0E+00	1.0E+01		5.0E+00	1.0E+01	9.7E+05	7.8E+02	na	X					X				
200	2-Pentanone	na	na		na	na	na	na	na										
201	n-Propylbenzene	8.0E+02	2.3E+03		8.0E+02	na	5.3E+06	2.3E+03	na	X							X		
202	Styrene	1.0E+02	8.2E+03		1.0E+02	na	9.6E+06	8.2E+03	na	X							X		
203	1,1,1,2-Tetrachloroethane	1.7E+00	7.1E+00		1.7E+00	na	5.9E+04	7.1E+00	na	X							X		
204	1,1,2,2-Tetrachloroethane	1.0E-01	1.0E-01		2.2E-01	1.0E-01	8.1E+03	5.9E+00	na		X				X				
205	Tetrachloroethylene (PCE)	2.4E+00	2.4E+00		5.0E+00	2.4E+00	3.3E+05	2.5E+01	na		X				X				
206	Tetrahydrofuran	7.2E+03	1.3E+06		7.2E+03	na	6.3E+07	1.3E+06	na	X							X		
207	Toluene	5.3E+01	5.3E+01		6.4E+02	5.3E+01	2.2E+07	1.5E+04	na		X				X				
208	1,2,3-Trichlorobenzene	6.4E+00	2.6E+04		6.4E+00	na	2.6E+04	na	na	X						X			
209	1,1,1-Trichloroethane	2.0E+02	5.4E+03		2.0E+02	1.0E+04	1.3E+09	5.4E+03	na	X							X		
210	1,1,2-Trichloroethane	3.5E-01	3.5E-01		3.0E+00	3.5E-01	2.9E+04	5.1E+00	na		X				X				
211	Trichloroethylene (TCE)	3.0E-01	3.0E-01		4.0E+00	3.0E-01	8.2E+03	1.4E+00	na		X				X				
212	Trichlorofluoroethane	na	na		na	na	na	na	na										
213	Trichlorofluoromethane	1.2E+02	1.2E+02		2.4E+03	na	3.8E+08	1.2E+02	na				X				X		
214	1,2,3-Trichloropropane	3.8E-04	1.1E+01		3.8E-04	na	1.1E+01	2.1E+01	na	X						X			
215	Trichlorotrifluoroethane	1.7E+02	1.7E+02		2.4E+05	na	1.5E+10	1.7E+02	na				X				X		
216	1,2,3-Trimethylbenzene	8.0E+01	4.1E+02		8.0E+01	na	6.8E+05	4.1E+02	na	X							X		
217	1,2,4-Trimethylbenzene	8.0E+01	2.4E+02		8.0E+01	na	6.9E+05	2.4E+02	na	X							X		
218	1,3,5-Trimethylbenzene	8.0E+01	1.7E+02		8.0E+01	na	7.1E+05	1.7E+02	na	X							X		
219	Vinyl acetate	7.8E+03	7.8E+03		8.0E+03	na	7.4E+08	7.8E+03	na				X				X		
220	Vinyl chloride	2.0E-02	2.0E-02		2.9E-01	2.0E-02	3.8E+03	3.3E-01	na		X				X				
221	Total xylenes	5.7E+01	5.7E+01		1.6E+03	5.7E+01	3.5E+07	3.2E+02	na		X				X				
222	***PFAS***									***PFAS***									
223	GenX (HFPO-DA)	2.4E-02	2.0E+03		2.4E-02	na	2.0E+03	na	na	X						X			
224	Perfluorobutanoic acid (PFBA)	8.0E+00	3.5E+05		8.0E+00	na	3.5E+05	na	na	X						X			
225	Perfluorobutanesulfonic acid (PFBS)	3.5E-01	3.1E+04		3.5E-01	na	3.1E+04	na	na	X						X			
226	Perfluorohexanesulfonic acid (PFHxS)	6.5E-02	7.0E+02		6.5E-02	na	7.0E+02	na	na	X						X			
227	Perfluorononanoic acid (PFNA)	9.0E-03	1.0E+02		9.0E-03	na	1.0E+02	na	na	X						X			
228	Perfluorooctanesulfonic acid (PFOS)	1.5E-02	0.0E+00		1.5E-02	na	TBD	na	na	X									
229	Perfluorooctanoic acid (PFOA)	1.0E-02	2.1E+02		1.0E-02	na	2.1E+02	na	na	X						X			
230	***Petroleum Hydrocarbons***									***Petroleum Hydrocarbons***									
231	Gasoline range hydrocarbons, fresh	8.0E+02	8.0E+02		8.0E+02	8.0E+02	na	na	na	X	X				X				
232	Gasoline range hydrocarbons, weathered	1.0E+03	1.0E+03		1.0E+03	1.0E+03	na	na	na	X	X				X				
233	Diesel range hydrocarbons, fresh	1.5E+02	1.5E+02		5.0E+02	1.5E+02	na	na	na		X				X				
234	Diesel range hydrocarbons, weathered	5.0E+02	5.0E+02		5.0E+02	5.0E+02	na	na	na	X	X				X				
235	Oil range hydrocarbons	5.0E+02	5.0E+02		5.0E+02	5.0E+02	na	na	na	X	X				X				
236	Total diesel & oil range hydrocarbons	5.0E+02	5.0E+02		5.0E+02	5.0E+02	na	na	na	X	X				X				
237	***Pesticides***									***Pesticides***									
238	Aldrin	4.1E-08	4.1E-08		2.6E-03	4.1E-08	4.1E-04	na	na		X				X				
239	alpha-BHC (alpha-HCH)	4.8E-05	4.8E-05		1.4E-02	4.8E-05	6.0E+00	na	na		X				X				
240	beta-BHC (beta-HCH)	1.3E-03	1.3E-03		4.9E-02	1.3E-03	6.6E-01	na	na		X				X				
241	delta-BHC (delta-HCH)	na	na		na	na	na	na	na										
242	cis-Chlordane	3.0E-04	3.0E-04		4.0E+00	na	3.0E-04	na	na			X				X			
243	trans-Chlordane	3.0E-04	3.0E-04		4.0E+00	na	3.0E-04	na	na			X				X			
244	Chlordane	2.2E-05	2.2E-05		1.3E+00	2.2E-05	TBD	na	na		X				X				
245	Chlorpyrifos	4.1E-02	4.1E-02		1.6E+01	4.1E-02	TBD	na	na		X				X				
246	4,4'-DDD	7.9E-06	7.9E-06		3.6E-01	7.9E-06	4.4E-04	na	na		X				X				
247	4,4'-DDE	8.8E-07	8.8E-07		1.3E-01	8.8E-07	2.3E-04	na	na		X				X				
248	4,4'-DDT	1.2E-06	1.2E-06		2.6E-01	1.2E-06	2.9E-05	na	na		X				X				
249	Total DDD	3.6E-01	0.0E+00		3.6E-01	na	TBD	na	na	X									
250	Total DDE	1.3E-01	0.0E+00		1.3E-01	na	TBD	na	na	X									
251	Total DDT	2.6E-01	0.0E+00		2.6E-01	na	TBD	na	na	X									
252	Diazinon	1.7E-01	1.7E-01		1.1E+01	1.7E-01	TBD	na	na		X				X				
253	Dieldrin	7.0E-08	7.0E-08		5.5E-03	7.0E-08	7.8E-04	na	na		X				X				
254	Endosulfan I	5.6E-02	5.6E-02		na	5.6E-02	TBD	na	na		X				X				
255	Endosulfan II	5.6E-02	5.6E-02		na	5.6E-02	TBD	na	na		X				X				
256	Endosulfan sulfate	9.0E+00	9.0E+00		9.6E+01	9.0E+00	7.4E+03	na	na		X				X				
257	Endrin	2.0E-03	2.0E-03		2.0E+00	2.0E-03	TBD	na	na		X				X				
258	Endrin aldehyde	3.4E-02	3.4E-02		na	3.4E-02	na	na	na		X				X				
259	Endrin ketone	na	na		na	na	na	na	na										
260	Heptachlor	3.4E-07	3.4E-07		9.7E-02	3.4E-07	2.1E-03	5.1E-01	na		X				X				
261	Heptachlor epoxide	2.4E-06	2.4E-06		4.8E-02	2.4E-06	TBD	na	na		X				X				
262	Lindane (gamma-BHC)	8.0E-02	8.0E-02		2.0E-01	8.0E-02	9.0E+01	na	na		X				X				
263	Malathion	1.0E-01	1.0E-01		3.2E+02	1.0E-01	2.7E+06	na	na		X				X				
264	Methoxychlor	2.0E-02	2.0E-02		4.0E+01	2.0E-02	7.6E+02	na	na		X				X				
265	Mirex	1.0E-03	1.0E-03		2.4E-03	1.0E-03	TBD	1.5E-02	na		X				X				
266	Nonachlor	na	na		na	na	na	na	na										
267	Toxaphene	3.2E-05	3.2E-05		8.0E-01	3.2E-05	TBD	na	na		X				X				
268	***Herbicides***									***Herbicides***									
269	2,4-D	7.0E+01	1.3E+03		7.0E+01	1.3E+03	4.1E+06	na	na	X					X				
270	2,4-DB	na	na		na	na	na	na	na										
271	2,4,5-TP	5.0E+01	1.0E+02		5.0E+01	1.0E+02	4.2E+05	na	na	X					X				
272	2,4,5-Trichlorophenoxyacetic acid (2,4,5-T)	1.6E+02	7.4E+05		1.6E+02	na	7.4E+05	na	na	X						X			
273	Dalapon	2.0E+02	6.0E+06		2.0E+02	na	6.0E+06	na	na	X						X			
274	Dicamba	4.8E+02	4.2E+06		4.8E+02	na	4.2E+06	na	na	X						X			
275	Dichloroprop	na	na		na	na	na	na	na										
276	Dinoseb	7.0E+00	2.8E+03		7.0E+00	na	2.8E+03	na	na	X						X			
277	2-Methyl-4-chlorophenoxy acetic acid (MCPA)	8.0E+00	7.0E+04		8.0E+00	na	7.0E+04	na	na	X						X			
278	(2-Methyl-4-chlorophenol)2-propionic acid (MCPP)	1.6E+01	1.2E+05		1.6E+01	na	1.2E+05	na	na	X						X			
									Number of Chemicals:	96	105	13	15	1	115	60	37	1	0

PCUL Workbook - Soil Summary for Freshwater Sites

Sort Order	Chemical (all concentrations are in mg/kg)	Most Stringent Soil PCUL Vadose Zone Potable GW SL #s 1-4, 8-10	Most Stringent Soil PCUL Saturated Zone Potable GW SL #s 1, 5-10	Most Stringent Soil PCUL Vadose Zone Nonpotable GW SL #s 1, 3, 4, 8-10	Most Stringent Soil PCUL Saturated Zone Nonpotable GW SL #s 1, 6-10	User-Defined Soil PCUL Specify SL #s	SL-1 Direct Contact SL-Det	SL-2 Protect Drinking Water Vadose Zone LeachFW	SL-3 Protect Surface Water via Ground Water Vadose Zone LeachFW	SL-4 Protect Sediment via Ground Water Vadose Zone LeachFW	SL-5 Protect Drinking Water Saturated Zone LeachFW	SL-6 Protect Surface Water via Ground Water Saturated Zone LeachFW	SL-7 Protect Sediment via Ground Water Saturated Zone LeachFW	SL-8 Protect Sediment via Erosion SMS Lower Tier SedFW	SL-9 Site-Specific TEE Unrest. Land Use SL-Det	SL-10 Natural Background Ecology (1994)
1	***PCBs***															
2	Total PCB Aroclors	1.1E-05	5.5E-07	1.1E-05	5.5E-07		1.0E+00	3.4E-01	1.1E-05	4.8E-02	1.7E-02	5.5E-07	2.4E-03	1.2E-02	6.5E-01	na
3	Total PCB congeners	1.1E-05	5.5E-07	1.1E-05	5.5E-07		1.0E+00	3.4E-01	1.1E-05	1.4E-02	1.7E-02	5.5E-07	7.0E-04	3.5E-03	6.5E-01	na
4	Total PCB TEQ	6.9E-09	3.5E-10	6.9E-09	3.5E-10		1.3E-05	5.3E-07	6.9E-09	2.8E-06	2.6E-08	3.5E-10	1.4E-07	7.0E-07	na	na
5	***Dioxins/Furans***															
6	Total dioxin/furan TEQ	5.2E-06	5.2E-06	5.2E-06	5.2E-06		1.3E-05	1.7E-06	1.4E-08	2.0E-05	8.4E-08	6.9E-10	1.0E-06	5.0E-06	na	5.2E-06
7	2,3,7,8-TCDD	5.2E-06	5.2E-06	5.2E-06	5.2E-06		1.3E-05	1.7E-05	2.5E-08	TBD	8.4E-07	1.2E-09	TBD	PQL	na	5.2E-06
8	Total chlorinated dioxins	2.0E-06	2.0E-06	2.0E-06	2.0E-06		na	na	na	TBD	na	na	TBD	PQL	2.0E-06	na
9	Total chlorinated furans	2.0E-06	2.0E-06	2.0E-06	2.0E-06		na	na	na	TBD	na	na	TBD	PQL	2.0E-06	na
10	***Inorganics***															
11	Cyanide, free	5.0E+01	5.0E+01	5.0E+01	5.0E+01		5.0E+01	na	na	na	na	na	na	1.2E+02	na	na
12	Nitrate	1.3E+05	1.3E+05	1.3E+05	1.3E+05		1.3E+05	na	na	na	na	na	na	3.1E+05	na	na
13	Nitrite	8.0E+03	8.0E+03	8.0E+03	8.0E+03		8.0E+03	na	na	na	na	na	na	1.9E+04	na	na
14	Sulfate	na	na	na	na		na	na	na	na	na	na	na	na	na	na
15	Sulfide	3.9E+01	3.9E+01	3.9E+01	3.9E+01		na	na	na	na	na	na	na	3.9E+01	na	na
16	***Metals***															
17	Aluminum	3.3E+04	3.3E+04	3.3E+04	3.3E+04		8.0E+04	4.8E+05	2.6E+03	3.8E+06	2.4E+04	1.3E+02	1.9E+05	1.9E+05	5.0E+01	3.3E+04
18	Antimony	5.0E+00	2.5E-01	5.0E+00	2.5E-01		3.2E+01	5.4E+00	5.1E+00	1.2E+03	2.7E-01	2.5E-01	6.2E+01	6.2E+01	5.0E+00	na
19	Arsenic	7.3E+00	7.3E+00	7.3E+00	7.3E+00		6.7E-01	4.7E+00	4.7E+00	2.2E+02	2.3E-01	2.3E-01	1.1E+01	1.1E+01	7.0E+00	7.3E+00
20	Barium	1.0E+02	4.1E+01	1.0E+02	4.1E+01		1.6E+04	1.6E+03	8.2E+02	3.3E+05	8.3E+01	4.1E+01	1.6E+04	1.6E+04	1.0E+02	na
21	Beryllium	1.0E+01	3.2E+00	1.0E+01	1.0E+01		1.6E+02	6.3E+01	1.2E+03	3.7E+02	3.2E+00	6.0E+01	1.8E+01	1.8E+01	1.0E+01	6.1E-01
22	Cadmium	7.7E-01	7.7E-01	7.7E-01	7.7E-01		8.0E+01	6.9E-01	9.9E-02	1.6E+01	3.5E-02	5.0E-03	8.0E-01	8.0E-01	4.0E+00	7.7E-01
23	Chromium, total	4.8E+01	4.8E+01	4.8E+01	4.8E+01		na	na	na	na	na	na	na	7.2E+01	4.2E+01	4.8E+01
24	Chromium, trivalent	1.5E+03	7.4E+01	1.5E+03	7.4E+01		1.2E+05	4.8E+05	1.5E+03	5.1E+05	2.4E+04	7.4E+01	2.5E+04	2.5E+04	na	na
25	Chromium, hexavalent	1.8E-02	8.9E-04	1.4E-01	6.9E-03		3.8E-01	1.8E-02	1.4E-01	TBD	8.9E-04	6.9E-03	TBD	PQL	na	na
26	Cobalt	4.3E+00	2.2E-01	2.0E+01	2.0E+01		2.4E+01	4.3E+00	na	1.1E+03	2.2E-01	na	5.7E+01	5.7E+01	2.0E+01	na
27	Copper	3.6E+01	3.6E+01	3.6E+01	3.6E+01		3.2E+03	2.8E+02	5.0E+00	8.0E+03	1.4E+01	2.5E-01	4.0E+02	4.0E+02	5.0E+01	3.6E+01
28	Iron	3.6E+04	3.6E+04	3.6E+04	3.6E+04		5.6E+04	1.5E+02	5.0E+02	2.7E+06	7.6E+00	2.5E+01	1.3E+05	1.3E+05	na	3.6E+04
29	Lead	2.1E+01	2.1E+01	2.1E+01	2.1E+01		2.5E+02	3.0E+03	5.0E+02	4.2E+02	1.5E+02	2.5E+01	2.1E+01	2.1E+01	5.0E+01	1.7E+01
30	Manganese	1.1E+03	1.1E+03	1.1E+03	1.1E+03		3.7E+03	6.5E+01	6.5E+01	4.5E+04	3.3E+00	3.3E+00	2.3E+03	2.3E+03	1.1E+03	1.1E+03
31	Mercury, inorganic	7.0E-02	7.0E-02	7.0E-02	7.0E-02		na	2.1E+00	1.3E-02	4.0E+00	1.0E-01	6.3E-04	2.0E-01	2.0E-01	1.0E-01	7.0E-02
32	Methylmercury	4.0E-01	4.0E-01	4.0E-01	4.0E-01		8.0E+00	2.2E+02	1.1E+02	TBD	1.1E+01	5.4E+00	TBD	PQL	4.0E-01	na
33	Molybdenum	2.0E+00	1.6E+00	2.0E+00	2.0E+00		4.0E+02	3.2E+01	na	1.9E+04	1.6E+00	na	9.6E+02	9.6E+02	2.0E+00	na
34	Nickel	3.8E+01	3.8E+01	3.8E+01	3.8E+01		1.6E+03	4.2E+02	6.8E+01	1.0E+03	2.1E+01	3.4E+00	5.0E+01	5.0E+01	3.0E+01	3.8E+01
35	Selenium	1.0E-01	2.6E-02	1.0E-01	2.6E-02		4.0E+02	5.2E+00	5.2E-01	2.0E+00	2.6E-01	2.6E-02	1.0E-01	1.0E-01	3.0E-01	na
36	Silver	5.5E-01	2.8E-02	5.5E-01	2.8E-02		4.0E+02	1.4E+01	5.5E-01	1.1E+01	6.9E-01	2.8E-02	5.7E-01	5.7E-01	2.0E+00	na
37	Thallium	8.8E-02	4.4E-03	8.8E-02	4.4E-03		8.0E-01	2.3E-01	8.8E-02	8.9E+01	1.1E-02	4.4E-03	4.5E+00	4.5E+00	1.0E+00	na
38	Tin	5.0E+01	5.0E+01	5.0E+01	5.0E+01		4.8E+04	4.8E+04	na	2.3E+06	2.4E+03	na	1.1E+05	1.1E+05	5.0E+01	na
39	Vanadium	2.0E+00	2.0E+00	2.0E+00	2.0E+00		7.2E+02	2.9E+03	na	6.0E+03	1.4E+02	na	3.0E+02	3.0E+02	2.0E+00	na
40	Zinc	8.6E+01	8.5E+01	8.6E+01	8.5E+01		2.4E+04	6.0E+03	1.3E+02	6.4E+04	3.0E+02	6.5E+00	3.2E+03	3.2E+03	8.6E+01	8.5E+01
41	***Metals - Butyltins***															
42	Monobutyltin	5.4E-01	5.4E-01	5.4E-01	5.4E-01		na	na	na	na	na	na	na	5.4E-01	na	na
43	Dibutyltin	9.1E-01	9.1E-01	9.1E-01	9.1E-01		na	na	na	na	na	na	na	9.1E-01	na	na
44	Tributyltin oxide	2.1E-03	4.2E-04	2.1E-03	4.2E-04		2.4E+01	2.5E+03	3.7E+01	8.4E-03	1.2E+02	1.9E+00	4.2E-04	2.1E-03	na	na
45	Tetrabutyltin	9.7E-02	9.7E-02	9.7E-02	9.7E-02		na	na	na	na	na	na	na	9.7E-02	na	na
46	***SVOCs - PAHs***															
47	Acenaphthene	3.1E+00	1.6E-01	3.1E+00	1.6E-01		4.8E+03	4.9E+01	3.1E+00	2.0E+04	2.5E+00	1.6E-01	1.0E+03	4.8E+03	2.0E+01	na
48	Acenaphthylene	na	na	na	na		na	na	na	na	na	na	na	na	na	na
49	Anthracene	4.7E+01	2.4E+00	4.7E+01	2.4E+00		2.4E+04	1.1E+03	4.7E+01	9.7E+04	5.7E+01	2.4E+00	4.9E+03	2.4E+04	na	na
50	Benzo(a)anthracene	na	na	na	na		na	na	na	na	na	na	na	na	na	na
51	Benzo(b)fluoranthene	na	na	na	na		na	na	na	na	na	na	na	na	na	na
52	Benzo(k)fluoranthene	na	na	na	na		na	na	na	na	na	na	na	na	na	na
53	Total benzofluoranthenes	1.2E-02	1.2E-02	1.2E-02	1.2E-02		na	na	na	na	na	na	na	1.2E-02	na	na
54	Benzo(g,h,i)perylene	5.0E-03	5.0E-03	5.0E-03	5.0E-03		na	na	na	na	na	na	na	5.0E-03	na	na
55	Benzo(a)pyrene	3.1E-04	1.6E-05	3.1E-04	1.6E-05		1.9E-01	3.9E+00	3.1E-04	3.6E-02	1.9E-01	1.6E-05	1.8E-03	9.0E-03	1.2E+01	na
56	Chrysene	na	na	na	na		na	na	na	na	na	na	na	na	na	na
57	Dibenz(a,h)anthracene	na	na	na	na		na	na	na	na	na	na	na	na	na	na
58	Dibenzofuran	2.0E-01	4.1E-02	2.0E-01	4.1E-02		8.0E+01	1.5E+00	na	8.1E-01	7.6E-02	na	4.1E-02	2.0E-01	na	na
59	Fluoranthene	5.0E-03	1.0E-03	5.0E-03	1.0E-03		3.2E+03	6.3E+02	5.9E+00	2.0E-02	3.2E+01	3.0E-01	1.0E-03	5.0E-03	na	na
60	Fluorene	1.6E+00	8.0E-02	1.6E+00	8.0E-02		3.2E+03	5.1E+01	1.6E+00	1.3E+04	2.6E+00	8.0E-02	6.6E+02	3.2E+03	3.0E+01	na
61	Indeno(1,2,3-cd)pyrene	na	na	na	na		na	na	na	na	na	na	na	na	na	na
62	Methyl isopropyl phenanthrene (retene)	na	na	na	na		na	na	na	na	na	na	na	na	na	na
63	1-Methylnaphthalene	8.2E-02	4.2E-03	1.5E+01	3.3E+00		3.4E+01	8.2E-02	na	6.5E+01	4.2E-03	na	3.3E+00	1.5E+01	na	na
64	2-Methylnaphthalene	1.7E+00	8.9E-02	3.2E+02	7.0E+01		3.2E+02	1.7E+00	na	1.4E+03	8.9E-02	na	7.0E+01	3.2E+02	na	na
65	Naphthalene	4.5E+00	2.4E-01	3.8E+01	2.0E+00		1.6E+03	4.5E+00	3.8E+01	7.2E+03	2.4E-01	2.0E+00	3.8E+02	1.6E+03	na	na
66	Phenanthrene	na	na	na	na		na	na	na	na	na	na	na	na	na	na
67	Pyrene	5.0E-03	1.0E-03	5.0E-03	1.0E-03		2.4E+03	3.3E+02	1.1E+01	2.0E-02	1.6E+01	5.5E-01	1.0E-03	5.0E-03	na	na
68	Total LPAHs	na	na	na	na		na	na	na	na	na	na	na	na	na	na
69	Total HPAHs	na	na	na	na		na	na	na	na	na	na	na	na	na	na
70	Total PAHs	1.7E+01	1.7E+01	1.7E+01	1.7E+01		na	na	na	na	na	na	na	1.7E+01	na	na
71	Total cPAH TEQ	2.1E-02	4.2E-03	2.1E-02	4.2E-03		1.9E-01	3.9E+00	1.9E-01	8.4E-02	1.9E-01	9.4E-03	4.2E-03	2.1E-02	na	na
72	***Other SVOCs***															
73	Aniline	8.3E-02	5.5E-03	6.0E+01	3.4E+01		1.8E+02	8.3E-02	na	5.1E+02	5.5E-03	na	3.4E+01	6.0E+01	na	na
74	Azobenzene	9.1E+00	9.1E+00	9.1E+00	9.1E+00		9.1E+00	na	na	na	na	na	na	1.0E+01	na	na
75	Benzidine	5.6E-07	3.0E-08	5.6E-07	3.0E-08		8.2E-04	2.8E-06	5.6E-07	1.6E-03	1.5E-07	3.0E-08	8.5E-05	3.6E-04	na	na
76	Benzoic acid	2.9E+00	2.9E+00	2.9E+00	2.9E+00		3.2E+05	2.6E+02	na	4.0E+01	1.8E+01	na	2.9E+00	2.9E+00	na	na
77	Benzyl alcohol	7.1E+00	4.9E-01	6.1E+03	4.8E+03		8.0E+03	7.1E+00	na	6.8E+04	4.9E-01	na	4.8E+03	6.1E+03	na	na
78	Bis(2-chloroethoxy)methane	2.1E-01	1.4E-02	1.8E+02	1.5E+02		2.4E+02	2.1E-01	na	2.2E+03	1.4E-02	na	1.5E+02	1.8E+02	na	na
79	Bis(2-chloroethyl)ether	1.1E-04	7.3E-06	1.1E-04	7.3E-06		9.1E-01	2.2E-04	1.1E-04	8.3E+00	1.4E-05	7.3E-06	5.5E-01	1.0E+00	na	na
80	Bis(chloromethyl)ether	4.5E-03	4.5E-03	4.5E-03	4.5E-03		4.5E-03	na	na	na	na	na	na	5.0E-03	na	na
81	Bis(2-chloro-1-methylethyl)ether	3.5E-03	2.3E-04	5.9E-01	3.8E-02		1.4E+01	3.5E-03	5.9E-01	1.3E+02	2.3E-04	3.8E-02	8.3E+00	1.6E+01	na	na
82	2,6-Bis(1,1-dimethylethyl) phenol	na	na	na	na		na	na	na	na	na	na	na	na	na	na
83	Bis(2-ethylhexyl) phthalate	1.0E-01	5.0E-03	1.0E-01	5.0E-03		7.1E+01	1.3E+01	1.0E-01	2.0E+00	6.7E-01	5.0E-03	1.0E-01	5.0E-01	na	na
84	4-Bromophenyl phenyl ether	na	na	na	na		na	na	na	na	na	na	na	na	na	na
85	Butyl benzyl phthalate	3.6E-03	1.8E-04	3.6E-03	1.8E-04		5.3E+02	1.3E+01	3.6E-03	7.3E+02	6.4E-01	1.8E-04	3.7E+01	1.8E+02	na	na
86	Butyl diphenyl phosphate	na	na	na	na		na	na	na	na	na	na	na	na	na	na
87	Carbazole	9.0E-01	9.0E-01	9.0E-01	9.0E-01		na	na	na	na	na	na	na	9.0E-01	na	na
88	4-Chloroaniline	2.7E-03	1.7E-04	1.7E+00	8.0E-01		5.0E+00	2.7E-03	na	1.3E+01	1.7E-04	na	8.0E-01	1.7E+00	na	na
89	4-Chloro-3-methylphenol	5.0E-01	2.8E-02	5.0E-01	2.8E-02		8.0E+03	2.2E+01	5.0E-01	3.1E+04	1.2E+00	2.8E-02	1.7E+03	6.1E+03	na	na
90	2-Chloronaphthalene	5.4E+00	2.8E-01	5.4E+00	2.8E-01		6.4E+03	3.4E+01	5.4E+00	2.7E+04	1.8E+00	2.8E-01	1.4E+03	6.4E+03	na	na
91	2-Chlorophenol	1.8E-01	1.0E-02	1.8E-01	1.0E-02		4.0E+02	4.7E-01	1.8E-01	6.1E+03	2.7E-02	1.0E-02	3.5E+02	1.2E+03	na	na
92	4-Chlorophenyl phenyl ether	na	na	na	na		na	na	na	na	na	na	na	na	na	na
93	Dibutyl phthalate	2.8E-01	1.5E-02	2.8E-01	1.5E-02		8.0E+03	5.7E+01	2.8E-01	1.7E+00	3.0E+00	1.5E-02	8.7E-02	3.8E-01	2.0E+02	na
94	Dibutyl phenyl phosphate	na	na	na	na		na	na	na	na	na	na	na	na	na	na
95	1,2-Dichlorobenzene	7.0E+00	4.0E-01	8.2E+00	4.7E-01		7.2E+03	7.0E+00	8.2E+00	1.1E+05	4.0E-01	4.7E-01	6.4E+03	2.1E+04	na	na
96	1,3-Dichlorobenzene	2.3E-02	1.3E-03	2.3E-02	1.3E-03		na	na	2.3E-02	na	na	1.3E-03	na	na	na	na
97	1,4-Dichlorobenzene	9.8E-01	5.4E-02	9.8E-01	5.4E-02		1.9E+02	1.2E+00	9.8E-01	1.0E+03	6.8E-02	5.4E-02	5.5E+01	2.0E+02	2.0E+01	na

Sort Order	Chemical	Basis - Vadose, Potable GW							Basis - Saturated, Potable GW							Basis - Vadose, Nonpotable GW						Basis - Satur., Nonpotable GW						Select Use an 'X' to identify chemicals of interest for filtering
		Direct Contact	Drinking Water	Surface Water via GW	Sediment via GW	Bank Erosion	TEE	Nat. Background	Direct Contact	Drinking Water	Surface Water via GW	Sediment via GW	Bank Erosion	TEE	Nat. Background	Direct Contact	Surface Water via GW	Sediment via GW	Bank Erosion	TEE	Nat. Background	Direct Contact	Surface Water via GW	Sediment via GW	Bank Erosion	TEE	Nat. Background	
1	***PCBs***																											
2	Total PCB Aroclors			X							X						X						X					
3	Total PCB congeners			X							X						X						X					
4	Total PCB TEQ			X							X						X						X					
5	***Dioxins/Furans***																											
6	Total dioxin/furan TEQ							X							X						X						X	
7	2,3,7,8-TCDD							X							X						X						X	
8	Total chlorinated dioxins						X							X						X						X		
9	Total chlorinated furans						X							X						X						X		
10	***Inorganics***																											
11	Cyanide, free	X							X							X						X						
12	Nitrate	X							X							X						X						
13	Nitrite	X							X							X						X						
14	Sulfate																											
15	Sulfide					X							X						X						X			
16	***Metals***																											
17	Aluminum							X							X						X						X	
18	Antimony						X				X									X			X					
19	Arsenic							X							X						X						X	
20	Barium						X				X									X			X					
21	Beryllium						X			X										X						X		
22	Cadmium							X							X						X						X	
23	Chromium, total							X							X						X						X	
24	Chromium, trivalent			X							X						X						X					
25	Chromium, hexavalent		X							X							X						X					
26	Cobalt		X							X										X						X		
27	Copper							X							X						X						X	
28	Iron							X							X						X						X	
29	Lead					X						X	X						X					X	X			
30	Manganese							X							X						X						X	
31	Mercury, inorganic							X							X						X						X	
32	Methylmercury						X							X						X						X		
33	Molybdenum						X			X										X						X		
34	Nickel							X							X						X						X	
35	Selenium					X					X								X				X					
36	Silver			X							X						X						X					
37	Thallium			X							X						X						X					
38	Tin						X							X						X						X		
39	Vanadium						X							X						X						X		
40	Zinc						X								X					X							X	
41	***Metals - Butyltins***																											
42	Monobutyltin					X							X						X						X			
43	Dibutyltin					X							X						X						X			
44	Tributyltin oxide					X						X							X					X				
45	Tetrabutyltin					X							X						X						X			
46	***SVOCs - PAHs***																											
47	Acenaphthene			X							X						X						X					
48	Acenaphthylene																											
49	Anthracene			X							X						X						X					
50	Benzo(a)anthracene																											
51	Benzo(b)fluoranthene																											
52	Benzo(k)fluoranthene																											
53	Total benzofluoranthenes					X							X						X						X			
54	Benzo(g,h,i)perylene					X							X						X						X			
55	Benzo(a)pyrene			X							X						X						X					
56	Chrysene																											
57	Dibenz(a,h)anthracene																											
58	Dibenzofuran					X						X							X					X				
59	Fluoranthene					X						X							X					X				
60	Fluorene			X							X						X						X					
61	Indeno(1,2,3-cd)pyrene																											
62	Methyl isopropyl phenanthrene (retene)																											
63	1-Methylnaphthalene		X							X									X					X				
64	2-Methylnaphthalene		X							X						X								X				
65	Naphthalene		X							X							X						X					
66	Phenanthrene																											
67	Pyrene					X						X							X					X				
68	Total LPAHs																											
69	Total HPAHs																											
70	Total PAHs					X							X						X						X			
71	Total cPAH TEQ					X						X							X					X				
72	***Other SVOCs***																											
73	Aniline		X							X									X					X				
74	Azobenzene	X							X							X						X						
75	Benzidine			X							X						X						X					
76	Benzoic acid					X						X							X					X				
77	Benzyl alcohol		X							X									X					X				
78	Bis(2-chloroethoxy)methane		X							X									X					X				
79	Bis(2-chloroethyl)ether			X							X						X						X					
80	Bis(chloromethyl)ether	X							X							X						X						
81	Bis(2-chloro-1-methylethyl)ether		X							X							X						X					
82	2,6-Bis(1,1-dimethylethyl) phenol																											
83	Bis(2-ethylhexyl) phthalate			X							X						X						X					
84	4-Bromophenyl phenyl ether																											
85	Butyl benzyl phthalate			X							X						X						X					
86	Butyl diphenyl phosphate																											
87	Carbazole					X							X						X						X			
88	4-Chloroaniline		X							X									X					X				
89	4-Chloro-3-methylphenol			X							X						X						X					
90	2-Chloronaphthalene			X							X						X						X					
91	2-Chlorophenol			X							X						X						X					
92	4-Chlorophenyl phenyl ether																											
93	Dibutyl phthalate			X							X						X						X					
94	Dibutyl phenyl phosphate																											
95	1,2-Dichlorobenzene		X							X							X						X					
96	1,3-Dichlorobenzene			X							X						X						X					
97	1,4-Dichlorobenzene			X							X						X						X					

PCUL Workbook - Soil Summary for Freshwater Sites

Sort Order	Chemical (all concentrations are in mg/kg)	Most Stringent Soil PCUL Vadose Zone Potable GW SL #s 1-4, 8-10	Most Stringent Soil PCUL Saturated Zone Potable GW SL #s 1, 5-10	Most Stringent Soil PCUL Vadose Zone Nonpotable GW SL #s 1, 3, 4, 8-10	Most Stringent Soil PCUL Saturated Zone Nonpotable GW SL #s 1, 6-10	User-Defined Soil PCUL Specify SL #s	SL-1 Direct Contact SL-Det	SL-2 Protect Drinking Water Vadose Zone LeachFW	SL-3 Protect Surface Water via Ground Water Vadose Zone LeachFW	SL-4 Protect Sediment via Ground Water Vadose Zone LeachFW	SL-5 Protect Drinking Water Saturated Zone LeachFW	SL-6 Protect Surface Water via Ground Water Saturated Zone LeachFW	SL-7 Protect Sediment via Ground Water Saturated Zone LeachFW	SL-8 Protect Sediment via Erosion SMS Lower Tier SedFW	SL-9 Site-Specific TEE Unrest. Land Use SL-Det	SL-10 Natural Background Ecology (1994)
98	3,3'-Dichlorobenzidine	3.2E-05	1.9E-06	3.2E-05	1.9E-06		2.2E+00	2.0E-03	3.2E-05	4.2E+00	1.2E-04	1.9E-06	2.4E-01	7.6E-01	na	na
99	2,4-Dichlorophenol	6.9E-02	4.3E-03	6.9E-02	4.3E-03		2.4E+02	3.3E-01	6.9E-02	1.2E+03	2.1E-02	4.3E-03	7.7E+01	1.8E+02	na	na
100	Di(2-ethylhexyl)adipate	2.9E+02	2.9E+02	2.9E+02	2.9E+02		8.3E+02	na	na	na	na	na	na	2.9E+02	na	na
101	Diethyl phthalate	1.1E+00	7.4E-02	1.1E+00	7.4E-02		6.4E+04	7.2E+01	1.1E+00	3.9E+05	4.7E+00	7.4E-02	2.6E+04	4.9E+04	1.0E+02	na
102	Dimethyl phthalate	2.8E+00	1.9E-01	2.8E+00	1.9E-01		na	na	2.8E+00	na	na	1.9E-01	na	na	2.0E+02	na
103	2,4-Dimethylphenol	1.2E+00	6.6E-02	1.2E+00	6.6E-02		1.6E+03	4.4E+00	1.2E+00	6.1E+03	2.5E-01	6.6E-02	3.5E+02	1.2E+03	na	na
104	1,2-Dinitrobenzene	6.1E+00	6.1E+00	6.1E+00	6.1E+00		8.0E+00	na	na	na	na	na	na	6.1E+00	na	na
105	1,3-Dinitrobenzene	6.1E+00	6.1E+00	6.1E+00	6.1E+00		8.0E+00	na	na	na	na	na	na	6.1E+00	na	na
106	1,4-Dinitrobenzene	6.1E+00	6.1E+00	6.1E+00	6.1E+00		8.0E+00	na	na	na	na	na	na	6.1E+00	na	na
107	4,6-Dinitro-2-methylphenol (DNOC)	2.4E-02	1.3E-03	3.8E-02	2.1E-03		6.4E+00	2.4E-02	3.8E-02	2.3E+01	1.3E-03	2.1E-03	1.2E+00	4.9E+00	na	na
108	2,4-Dinitrophenol	4.0E-02	2.9E-03	4.0E-02	2.9E-03		1.6E+02	1.3E-01	4.0E-02	1.7E+03	9.2E-03	2.9E-03	1.2E+02	1.2E+02	2.0E+01	na
109	2,4-Dinitrotoluene	6.1E-04	3.4E-05	6.1E-04	3.4E-05		3.2E+00	4.4E-03	6.1E-04	5.3E+00	2.4E-04	3.4E-05	3.0E-01	1.1E+00	na	na
110	2,6-Dinitrotoluene	9.2E-04	5.1E-05	2.3E-01	6.2E-02		6.7E-01	9.2E-04	na	1.1E+00	5.1E-05	na	6.2E-02	2.3E-01	na	na
111	Di-n-octyl phthalate	1.4E-01	2.7E-02	1.4E-01	2.7E-02		8.0E+02	4.5E+02	na	5.5E-01	2.3E+01	na	2.7E-02	1.4E-01	na	na
112	1,4-Dioxane	1.8E-03	1.3E-04	1.0E+01	1.0E+01		1.0E+01	1.8E-03	na	1.5E+02	1.3E-04	na	1.1E+01	1.1E+01	na	na
113	1,2-Diphenylhydrazine	3.4E-04	1.8E-05	3.4E-04	1.8E-05		1.3E+00	3.7E-03	3.4E-04	1.9E+00	2.0E-04	1.8E-05	9.8E-02	4.3E-01	na	na
114	Hexachlorobenzene	8.0E-06	4.0E-07	8.0E-06	4.0E-07		6.3E-01	4.4E-01	8.0E-06	4.0E-03	2.2E-02	4.0E-07	2.0E-04	1.0E-03	1.7E+01	na
115	Hexachlorobutadiene	2.1E-04	1.1E-05	2.1E-04	1.1E-05		1.3E+01	1.2E-02	2.1E-04	1.4E-03	6.3E-04	1.1E-05	7.5E-05	3.0E-04	na	na
116	Hexachlorocyclopentadiene	3.2E-02	1.7E-03	3.2E-02	1.7E-03		4.8E+02	1.5E+00	3.2E-02	6.1E+03	8.1E-02	1.7E-03	3.2E+02	1.4E+03	1.0E+01	na
117	Hexachloroethane	1.6E-04	9.7E-06	1.6E-04	9.7E-06		2.5E+01	8.8E-03	1.6E-04	1.7E+02	5.3E-04	9.7E-06	1.1E+01	2.8E+01	na	na
118	Isophorone	1.4E-01	9.5E-03	1.4E-01	9.5E-03		1.1E+03	4.9E-01	1.4E-01	3.1E+03	3.2E-02	9.5E-03	2.1E+02	3.6E+02	na	na
119	2-Methoxynaphthalene	na	na	na	na		na	na	na	na	na	na	na	na	na	na
120	2-Methylphenol (o-cresol)	8.1E+00	4.7E-01	3.0E+03	9.9E+02		4.0E+03	8.1E+00	na	1.7E+04	4.7E-01	na	9.9E+02	3.0E+03	na	na
121	3-Methylphenol (m-cresol)	3.0E+03	3.0E+03	3.0E+03	3.0E+03		4.0E+03	na	na	na	na	na	na	3.0E+03	na	na
122	4-Methylphenol (p-cresol)	2.6E-01	8.5E-02	2.6E-01	8.5E-02		8.0E+03	1.6E+01	na	1.5E+00	9.4E-01	na	8.5E-02	2.6E-01	na	na
123	2-Nitroaniline	1.0E+00	6.4E-02	6.1E+02	2.9E+02		8.0E+02	1.0E+00	na	4.5E+03	6.4E-02	na	2.9E+02	6.1E+02	na	na
124	3-Nitroaniline	na	na	na	na		na	na	na	na	na	na	na	na	na	na
125	4-Nitroaniline	1.8E-02	1.3E-03	1.7E+01	1.7E+01		5.0E+01	1.8E-02	na	2.4E+02	1.3E-03	na	1.7E+01	1.7E+01	na	na
126	Nitrobenzene	6.4E-02	4.1E-03	6.4E-02	4.1E-03		1.6E+02	1.0E-01	6.4E-02	3.4E+03	6.5E-03	4.1E-03	2.1E+02	4.7E+02	4.0E+01	na
127	2-Nitrophenol	na	na	na	na		na	na	na	na	na	na	na	na	na	na
128	4-Nitrophenol	7.0E+00	7.0E+00	7.0E+00	7.0E+00		na	na	na	na	na	na	na	na	7.0E+00	na
129	n-Nitrosodimethylamine	1.0E-06	7.1E-08	2.9E-06	2.0E-07		3.7E-03	1.0E-06	2.9E-06	6.2E-02	7.1E-08	2.0E-07	4.3E-03	5.6E-03	na	na
130	n-Nitrosodiphenylamine	3.5E-02	1.8E-03	3.5E-02	1.8E-03		2.0E+02	1.0E+00	3.5E-02	2.9E+02	5.2E-02	1.8E-03	1.5E+01	7.0E+01	2.0E+01	na
131	n-Nitrosodi-n-propylamine	4.2E-05	2.5E-06	4.2E-05	2.5E-06		1.4E-01	1.2E-04	4.2E-05	2.8E-01	7.0E-06	2.5E-06	1.7E-02	4.9E-02	na	na
132	Pentachlorophenol	3.2E-05	1.8E-06	3.2E-05	1.8E-06		2.5E+00	1.6E-02	3.2E-05	6.4E+00	8.8E-04	1.8E-06	3.6E-01	3.6E-01	3.0E+00	na
133	Phenol	1.2E-01	4.7E-02	1.2E-01	4.7E-02		2.4E+04	3.7E+01	3.1E+01	7.6E-01	2.3E+00	1.9E+00	4.7E-02	1.2E-01	3.0E+01	na
134	Pyridine	4.3E-02	2.9E-03	8.0E+01	8.0E+01		8.0E+01	4.3E-02	na	2.0E+03	2.9E-03	na	1.3E+02	2.3E+02	na	na
135	2,3,4,5-Tetrachlorophenol	na	na	na	na		na	na	na	na	na	na	na	na	na	na
136	2,3,4,6-Tetrachlorophenol	1.8E+03	1.8E+03	1.8E+03	1.8E+03		2.4E+03	na	na	na	na	na	na	1.8E+03	na	na
137	1,2,4-Trichlorobenzene	1.3E-03	7.0E-05	1.3E-03	7.0E-05		3.4E+01	5.6E-01	1.3E-03	5.1E+01	2.9E-02	7.0E-05	2.7E+00	1.2E+01	2.0E+01	na
138	2,4,5-Trichlorophenol	4.0E+00	5.7E-01	4.0E+00	5.7E-01		8.0E+03	5.8E+01	1.1E+01	2.6E+04	3.0E+00	5.7E-01	1.4E+03	6.1E+03	4.0E+00	na
139	2,4,6-Trichlorophenol	2.9E-03	1.7E-04	2.9E-03	1.7E-04		8.0E+01	9.2E-02	2.9E-03	1.6E+02	5.3E-03	1.7E-04	9.5E+00	3.1E+01	1.0E+01	na
140	***Volatile Organic Compounds***															
141	Acetone	2.9E+01	2.1E+00	7.2E+04	7.2E+04		7.2E+04	2.9E+01	na	7.9E+06	2.1E+00	na	5.6E+05	5.8E+05	na	na
142	Acrolein	4.0E-03	2.9E-04	4.0E-03	2.9E-04		4.0E+01	1.6E-02	4.0E-03	4.5E+03	1.2E-03	2.9E-04	3.2E+02	3.2E+02	na	na
143	Acrylonitrile	7.9E-05	5.6E-06	7.9E-05	5.6E-06		1.9E+00	3.4E-04	7.9E-05	5.3E+01	2.4E-05	5.6E-06	3.7E+00	4.2E+00	na	na
144	Benzaldehyde	4.6E-02	3.3E-03	2.5E+02	2.4E+02		2.5E+02	4.6E-02	na	3.4E+03	3.3E-03	na	2.4E+02	2.8E+02	na	na
145	Benzene	2.4E-03	1.5E-04	2.4E-03	1.5E-04		1.8E+01	2.7E-02	2.4E-03	3.7E+02	1.7E-03	1.5E-04	2.4E+01	4.1E+01	na	na
146	Bromobenzene	5.6E-01	3.3E-02	6.4E+02	6.4E+02		6.4E+02	5.6E-01	na	1.1E+04	3.3E-02	na	6.7E+02	1.9E+03	na	na
147	Bromochloromethane	na	na	na	na		na	na	na	na	na	na	na	na	na	na
148	Bromoethane	na	na	na	na		na	na	na	na	na	na	na	na	na	na
149	Bromoform	3.0E-02	1.9E-03	3.0E-02	1.9E-03		1.3E+02	3.6E-01	3.0E-02	1.0E+03	2.3E-02	1.9E-03	6.3E+01	1.4E+02	na	na
150	Bromomethane	5.1E-02	3.3E-03	4.5E-01	3.0E-02		1.1E+02	5.1E-02	4.5E-01	1.2E+04	3.3E-03	3.0E-02	8.1E+02	9.1E+02	na	na
151	2-Butoxyethanol (EGBE)	3.2E+00	2.3E-01	6.1E+03	5.9E+03		8.0E+03	3.2E+00	na	8.2E+04	2.3E-01	na	5.9E+03	6.1E+03	na	na
152	n-Butylbenzene	1.4E+01	7.1E-01	4.0E+03	2.7E+03		4.0E+03	1.4E+01	na	5.2E+04	7.1E-01	na	2.7E+03	1.2E+04	na	na
153	sec-Butylbenzene	2.5E+01	1.3E+00	8.0E+03	5.4E+03		8.0E+03	2.5E+01	na	1.0E+05	1.3E+00	na	5.4E+03	2.3E+04	na	na
154	tert-Butylbenzene	1.9E+01	1.0E+00	8.0E+03	5.7E+03		8.0E+03	1.9E+01	na	1.1E+05	1.0E+00	na	5.7E+03	2.3E+04	na	na
155	Carbon disulfide	4.1E+00	2.5E-01	8.0E+03	8.0E+03		8.0E+03	4.1E+00	na	8.4E+05	2.5E-01	na	5.1E+04	6.5E+04	na	na
156	Carbon tetrachloride	1.6E-03	8.8E-05	1.6E-03	8.8E-05		1.4E+01	4.1E-02	1.6E-03	2.5E+02	2.2E-03	8.8E-05	1.3E+01	3.2E+01	na	na
157	Chlorobenzene	8.6E-01	5.1E-02	8.6E-01	5.1E-02		1.6E+03	8.6E-01	8.6E-01	2.8E+04	5.1E-02	5.1E-02	1.7E+03	4.7E+03	4.0E+01	na
158	Chloroethane	na	na	na	na		na	na	na	na	na	na	na	na	na	na
159	2-Chloroethyl vinyl ether	na	na	na	na		na	na	na	na	na	na	na	na	na	na
160	Chloroform	7.4E-02	4.8E-03	3.1E-01	2.0E-02		3.2E+01	7.4E-02	3.1E-01	6.8E+02	4.8E-03	2.0E-02	4.5E+01	7.2E+01	na	na
161	Chloromethane	na	na	na	na		na	na	na	na	na	na	na	na	na	na
162	3-Chloro-1-propene (allyl chloride)	1.1E-02	6.8E-04	4.8E+01	4.8E+01		4.8E+01	1.1E-02	na	1.2E+03	6.8E-04	na	7.2E+01	1.1E+02	na	na
163	2-Chlorotoluene	1.9E+00	1.1E-01	1.6E+03	1.4E+03		1.6E+03	1.9E+00	na	2.5E+04	1.1E-01	na	1.4E+03	4.7E+03	na	na
164	4-Chlorotoluene	1.9E+00	1.1E-01	1.6E+03	1.4E+03		1.6E+03	1.9E+00	na	2.5E+04	1.1E-01	na	1.4E+03	4.7E+03	na	na
165	Dibromochloromethane	2.8E-03	1.9E-04	2.8E-03	1.9E-04		1.2E+01	2.4E-02	2.8E-03	1.4E+02	1.7E-03	1.9E-04	9.4E+00	1.3E+01	na	na
166	1,2-Dibromo-3-chloropropane	8.9E-04	5.6E-05	2.3E-01	1.7E-01		2.3E-01	8.9E-04	na	2.6E+00	5.6E-05	na	1.7E-01	3.6E-01	na	na
167	Dibromomethane	4.2E-01	2.8E-02	8.0E+02	8.0E+02		8.0E+02	4.2E-01	na	2.0E+04	2.8E-02	na	1.4E+03	2.3E+03	na	na
168	Dichlorobromomethane	3.4E-03	2.3E-04	3.4E-03	2.3E-04		1.6E+01	3.3E-02	3.4E-03	1.9E+02	2.2E-03	2.3E-04	1.3E+01	1.8E+01	na	na
169	trans-1,4-Dichloro-2-butene	na	na	na	na		na	na	na	na	na	na	na	na	na	na
170	Dichlorodifluoromethane	3.8E+01	5.3E-01	1.6E+04	1.6E+04		1.6E+04	3.8E+01	na	6.0E+06	5.3E-01	na	8.5E+04	1.3E+05	na	na
171	1,1-Dichloroethane	4.1E-02	2.6E-03	1.8E+02	1.8E+02		1.8E+02	4.1E-02	na	3.8E+03	2.6E-03	na	2.4E+02	3.9E+02	na	na
172	1,2-Dichloroethane (EDC)	2.3E-02	1.6E-03	4.3E-02	2.9E-03		1.1E+01	2.3E-02	4.3E-02	1.2E+02	1.6E-03	2.9E-03	8.3E+00	1.2E+01	na	na
173	1,1-Dichloroethylene	4.6E-02	2.5E-03	2.0E+00	1.1E-01		4.0E+03	4.6E-02	2.0E+00	3.5E+05	2.5E-03	1.1E-01	1.9E+04	3.2E+04	na	na
174	cis-1,2-Dichloroethylene	7.9E-02	5.2E-03	1.6E+02	1.6E+02		1.6E+02	7.9E-02	na	1.3E+04	5.2E-03	na	8.7E+02	1.3E+03	na	na
175	trans-1,2-Dichloroethylene	5.2E-01	3.2E-02	5.2E-01	3.2E-02		1.6E+03	5.2E-01	5.2E-01	1.4E+05	3.2E-02	3.2E-02	8.8E+03	1.3E+04	na	na
176	1,2-Dichloroethylene (mixed isomers)	na	na	na	na		na	na	na	na	na	na	na	na	na	na
177	1,2-Dichloropropane	3.6E-03	2.4E-04	3.6E-03	2.4E-04		2.7E+01	2.5E-02	3.6E-03	2.9E+02	1.7E-03	2.4E-04	1.9E+01	3.0E+01	7.0E+02	na
178	1,3-Dichloropropane	8.8E-01	5.7E-02	1.6E+03	1.6E+03		1.6E+03	8.8E-01	na	3.9E+04	5.7E-02	na	2.6E+03	4.7E+03	na	na
179	2,2-Dichloropropane	na	na	na	na		na	na	na	na	na	na	na	na	na	na
180	1,1-Dichloropropene	na	na	na	na		na	na	na	na	na	na	na	na	na	na
181	cis-1,3-Dichloropropene	1.1E-03	6.9E-05	1.1E-03	6.9E-05		1.0E+01	2.3E-03	1.1E-03	1.4E+02	1.4E-04	6.9E-05	8.2E+00	1.1E+01	na	na
182	trans-1,3-Dichloropropene	1.1E-03	6.9E-05	1.1E-03	6.9E-05		1.0E+01	2.3E-03	1.1E-03	1.4E+02	1.4E-04	6.9E-05	8.2E+00	1.1E+01	na	na
183	Diisopropyl ether	na	na	na	na		na	na	na	na	na	na	na	na	na	na
184	Ethane	na	na	na	na		na	na	na	na	na	na	na	na	na	na
185	Ethylbenzene	1.0E-01	5.9E-03	1.0E-01	5.9E-03		8.0E+03	5.9E+00	1.0E-01	1.6E+05	3.4E-01	5.9E-03	9.5E+03	2.5E+04	na	na
186	Ethylene oxide	1.5E-04	1.1E-05	6.0E-01	6.0E-01		6.0E-01	1.5E-04	na	2.8E+01	1.1E-05	na	2.0E+00	2.1E+00	na	na
187	Ethyl ether	6.8E+00	4.7E-01	1.6E+04	1.6E+04		1.6E+04	6.8E+00	na	1.6E+06	4.7E-01	na	1.1E+05	1.3E+05	na	na
188	Ethylene dibromide (EDB)	2.7E-04	1.8E-05	5.0E-01	3.2E-01		5.0E-01	2.7E-04	na	4.8E+00	1.8E-05	na	3.2E-01	5.5E-01	na	na
189	Formaldehyde	8.4E-03	6.0E-04	4.8E+01	4.8E+01		4.8E+01	8.4E-03	na	1.5E+03	6.0E-04	na	1.1E+02	1.1E+02	na	na
190	n-Hexane	7.2E+01	1.8E+00	4.8E+03	4.8E+03		4.8E+03	7.2E+01	na	3.4E+05	1.8E+00	na	8.3E+03	3.9E+04	na	na
191	2-Hexanone	1.7E-01	1.2E-02	4.0E+02	4.0E+02		4.0E+02	1.7E-01	na	1.4E+04	1.2E-02	na	9.7E+02	1.2E+03	na	na
192	Isopropylbenzene (cumene)	1.5E+01	7.9E-01	8.0E+03	6.1E+03		8.0E+03	1.5E+01	na	1.1E+05	7.9E-01	na	6.1E+03	2.3E+04	na	na
193	4-Isopropyltoluene	na	na	na	na		na	na	na	na	na	na	na	na	na	na
194	Methane	na	na	na	na		na	na	na	na	na	na	na	na	na	na

Sort Order	Chemical	Basis - Vadose, Potable GW							Basis - Saturated, Potable GW							Basis - Vadose, Nonpotable GW						Basis - Satur., Nonpotable GW						Select Use an 'X' to identify chemicals of interest for filtering
		Direct Contact	Drinking Water	Surface Water via GW	Sediment via GW	Bank Erosion	TEE	Nat. Background	Direct Contact	Drinking Water	Surface Water via GW	Sediment via GW	Bank Erosion	TEE	Nat. Background	Direct Contact	Surface Water via GW	Sediment via GW	Bank Erosion	TEE	Nat. Background	Direct Contact	Surface Water via GW	Sediment via GW	Bank Erosion	TEE	Nat. Background	
98	3,3'-Dichlorobenzidine			X							X						X						X					
99	2,4-Dichlorophenol			X							X						X						X					
100	Di(2-ethylhexyl)adipate					X							X						X						X			
101	Diethyl phthalate			X							X						X						X					
102	Dimethyl phthalate			X							X						X						X					
103	2,4-Dimethylphenol			X							X						X						X					
104	1,2-Dinitrobenzene					X							X						X						X			
105	1,3-Dinitrobenzene					X							X						X						X			
106	1,4-Dinitrobenzene					X							X						X						X			
107	4,6-Dinitro-2-methylphenol (DNOC)		X							X							X						X					
108	2,4-Dinitrophenol			X							X						X						X					
109	2,4-Dinitrotoluene			X							X						X						X					
110	2,6-Dinitrotoluene		X							X									X					X				
111	Di-n-octyl phthalate					X						X							X					X				
112	1,4-Dioxane		X							X						X						X						
113	1,2-Diphenylhydrazine			X							X						X						X					
114	Hexachlorobenzene			X							X						X						X					
115	Hexachlorobutadiene			X							X						X						X					
116	Hexachlorocyclopentadiene			X							X						X						X					
117	Hexachloroethane			X							X						X						X					
118	Isophorone			X							X						X						X					
119	2-Methoxynaphthalene																											
120	2-Methylphenol (o-cresol)		X							X									X					X				
121	3-Methylphenol (m-cresol)					X							X						X						X			
122	4-Methylphenol (p-cresol)					X						X							X					X				
123	2-Nitroaniline		X							X									X					X				
124	3-Nitroaniline																											
125	4-Nitroaniline		X							X									X					X				
126	Nitrobenzene			X							X						X						X					
127	2-Nitrophenol																											
128	4-Nitrophenol						X							X						X						X		
129	n-Nitrosodimethylamine		X							X							X						X					
130	n-Nitrosodiphenylamine			X							X						X						X					
131	n-Nitrosodi-n-propylamine			X							X						X						X					
132	Pentachlorophenol			X							X						X						X					
133	Phenol					X						X							X					X				
134	Pyridine		X							X						X						X						
135	2,3,4,5-Tetrachlorophenol																											
136	2,3,4,6-Tetrachlorophenol					X							X						X						X			
137	1,2,4-Trichlorobenzene			X							X						X						X					
138	2,4,5-Trichlorophenol						X				X									X			X					
139	2,4,6-Trichlorophenol			X							X						X						X					
140	*Volatile Organic Compounds*																											
141	Acetone		X							X						X						X						
142	Acrolein			X							X						X						X					
143	Acrylonitrile			X							X						X						X					
144	Benzaldehyde		X							X						X								X				
145	Benzene			X							X						X						X					
146	Bromobenzene		X							X						X						X						
147	Bromochloromethane																											
148	Bromoethane																											
149	Bromoform			X							X						X						X					
150	Bromomethane		X							X							X						X					
151	2-Butoxyethanol (EGBE)		X							X									X					X				
152	n-Butylbenzene		X							X						X								X				
153	sec-Butylbenzene		X							X						X								X				
154	tert-Butylbenzene		X							X						X								X				
155	Carbon disulfide		X							X						X						X						
156	Carbon tetrachloride			X							X						X						X					
157	Chlorobenzene		X	X						X	X						X						X					
158	Chloroethane																											
159	2-Chloroethyl vinyl ether																											
160	Chloroform		X							X							X						X					
161	Chloromethane																											
162	3-Chloro-1-propene (allyl chloride)		X							X						X						X						
163	2-Chlorotoluene		X							X						X								X				
164	4-Chlorotoluene		X							X						X								X				
165	Dibromochloromethane			X							X						X						X					
166	1,2-Dibromo-3-chloropropane		X							X						X								X				
167	Dibromomethane		X							X						X						X						
168	Dichlorobromomethane			X							X						X						X					
169	trans-1,4-Dichloro-2-butene																											
170	Dichlorodifluoromethane		X							X						X						X						
171	1,1-Dichloroethane		X							X						X						X						
172	1,2-Dichloroethane (EDC)		X							X							X						X					
173	1,1-Dichloroethylene		X							X							X						X					
174	cis-1,2-Dichloroethylene		X							X						X						X						
175	trans-1,2-Dichloroethylene		X	X						X	X						X						X					
176	1,2-Dichloroethylene (mixed isomers)																											
177	1,2-Dichloropropane			X							X						X						X					
178	1,3-Dichloropropane		X							X						X						X						
179	2,2-Dichloropropane																											
180	1,1-Dichloropropene																											
181	cis-1,3-Dichloropropene			X							X						X						X					
182	trans-1,3-Dichloropropene			X							X						X						X					
183	Diisopropyl ether																											
184	Ethane																											
185	Ethylbenzene			X							X						X						X					
186	Ethylene oxide		X							X						X						X						
187	Ethyl ether		X							X						X						X						
188	Ethylene dibromide (EDB)		X							X						X								X				
189	Formaldehyde		X							X						X						X						
190	n-Hexane		X							X						X						X						
191	2-Hexanone		X							X						X						X						
192	Isopropylbenzene (cumene)		X							X						X								X				
193	4-Isopropyltoluene																											
194	Methane																											

PCUL Workbook - Soil Summary for Freshwater Sites

Sort Order	Chemical (all concentrations are in mg/kg)	Most Stringent Soil PCUL Vadose Zone Potable GW SL #s 1-4, 8-10	Most Stringent Soil PCUL Saturated Zone Potable GW SL #s 1, 5-10	Most Stringent Soil PCUL Vadose Zone Nonpotable GW SL #s 1, 3, 4, 8-10	Most Stringent Soil PCUL Saturated Zone Nonpotable GW SL #s 1, 6-10	User-Defined Soil PCUL Specify SL #s	SL-1 Direct Contact SL-Det	SL-2 Protect Drinking Water Vadose Zone LeachFW	SL-3 Protect Surface Water via Ground Water Vadose Zone LeachFW	SL-4 Protect Sediment via Ground Water Vadose Zone LeachFW	SL-5 Protect Drinking Water Saturated Zone LeachFW	SL-6 Protect Surface Water via Ground Water Saturated Zone LeachFW	SL-7 Protect Sediment via Ground Water Saturated Zone LeachFW	SL-8 Protect Sediment via Erosion SMS Lower Tier SedFW	SL-9 Site-Specific TEE Unrest. Land Use SL-Det	SL-10 Natural Background Ecology (1994)
195	Methyl ethyl ketone (2-butanone)	2.0E+01	1.4E+00	4.8E+04	4.8E+04		4.8E+04	2.0E+01	na	1.8E+06	1.4E+00	na	1.3E+05	1.4E+05	na	na
196	Methyl iodide	na	na	na	na		na	na	na	na	na	na	na	na	na	na
197	Methyl isobutyl ketone	2.7E+00	1.9E-01	6.4E+03	6.4E+03		6.4E+03	2.7E+00	na	2.3E+05	1.9E-01	na	1.6E+04	1.9E+04	na	na
198	Methyl tert-butyl ether (MTBE)	1.0E-01	7.2E-03	5.6E+02	5.6E+02		5.6E+02	1.0E-01	na	1.5E+04	7.2E-03	na	1.1E+03	1.2E+03	na	na
199	Methylene chloride	2.2E-02	1.5E-03	4.3E-02	3.0E-03		9.4E+01	2.2E-02	4.3E-02	4.2E+03	1.5E-03	3.0E-03	2.9E+02	3.3E+02	na	na
200	2-Pentanone	na	na	na	na		na	na	na	na	na	na	na	na	na	na
201	n-Propylbenzene	1.6E+01	8.8E-01	8.0E+03	5.9E+03		8.0E+03	1.6E+01	na	1.1E+05	8.8E-01	na	5.9E+03	2.3E+04	na	na
202	Styrene	2.2E+00	1.2E-01	3.0E+02	3.0E+02		1.6E+04	2.2E+00	na	2.1E+05	1.2E-01	na	1.2E+04	4.7E+04	3.0E+02	na
203	1,1,1,2-Tetrachloroethane	9.8E-03	6.3E-04	3.8E+01	2.2E+01		3.8E+01	9.8E-03	na	3.4E+02	6.3E-04	na	2.2E+01	4.3E+01	na	na
204	1,1,2,2-Tetrachloroethane	5.6E-04	3.7E-05	5.6E-04	3.7E-05		5.0E+00	1.2E-03	5.6E-04	4.5E+01	8.0E-05	3.7E-05	3.0E+00	5.5E+00	na	na
205	Tetrachloroethylene (PCE)	2.4E-02	1.3E-03	2.4E-02	1.3E-03		4.8E+02	5.0E-02	2.4E-02	3.3E+03	2.8E-03	1.3E-03	1.8E+02	5.3E+02	na	na
206	Tetrahydrofuran	3.0E+01	2.1E+00	2.1E+04	1.9E+04		7.2E+04	3.0E+01	na	2.7E+05	2.1E+00	na	1.9E+04	2.1E+04	na	na
207	Toluene	3.7E-01	2.3E-02	3.7E-01	2.3E-02		6.4E+03	4.5E+00	3.7E-01	1.5E+05	2.7E-01	2.3E-02	9.3E+03	2.1E+04	2.0E+02	na
208	1,2,3-Trichlorobenzene	2.0E-01	1.1E-02	2.0E+01	2.0E+01		6.4E+01	2.0E-01	na	8.2E+02	1.1E-02	na	4.3E+01	1.9E+02	2.0E+01	na
209	1,1,1-Trichloroethane	1.5E+00	8.4E-02	7.4E+01	4.2E+00		1.6E+05	1.5E+00	7.4E+01	1.0E+07	8.4E-02	4.2E+00	5.7E+05	1.3E+06	na	na
210	1,1,2-Trichloroethane	1.9E-03	1.3E-04	1.9E-03	1.3E-04		1.8E+01	1.7E-02	1.9E-03	1.6E+02	1.1E-03	1.3E-04	1.1E+01	1.9E+01	na	na
211	Trichloroethylene (TCE)	1.9E-03	1.1E-04	1.9E-03	1.1E-04		1.2E+01	2.5E-02	1.9E-03	5.2E+01	1.5E-03	1.1E-04	3.1E+00	6.2E+00	na	na
212	Trichlorofluoroethane	na	na	na	na		na	na	na	na	na	na	na	na	na	na
213	Trichlorofluoromethane	2.3E+01	7.9E-01	2.4E+04	2.4E+04		2.4E+04	2.3E+01	na	3.7E+06	7.9E-01	na	1.3E+05	1.9E+05	na	na
214	1,2,3-Trichloropropane	2.4E-06	1.5E-07	6.3E-03	4.4E-03		6.3E-03	2.4E-06	na	7.0E-02	1.5E-07	na	4.4E-03	9.5E-03	na	na
215	Trichlorotrifluoroethane	7.6E+03	1.2E+02	2.4E+06	2.4E+06		2.4E+06	7.6E+03	na	4.8E+08	1.2E+02	na	7.4E+06	1.9E+07	na	na
216	1,2,3-Trimethylbenzene	1.3E+00	7.3E-02	8.0E+02	6.2E+02		8.0E+02	1.3E+00	na	1.1E+04	7.3E-02	na	6.2E+02	2.3E+03	na	na
217	1,2,4-Trimethylbenzene	1.3E+00	7.2E-02	8.0E+02	6.2E+02		8.0E+02	1.3E+00	na	1.1E+04	7.2E-02	na	6.2E+02	2.3E+03	na	na
218	1,3,5-Trimethylbenzene	1.3E+00	7.1E-02	8.0E+02	6.3E+02		8.0E+02	1.3E+00	na	1.2E+04	7.1E-02	na	6.3E+02	2.3E+03	na	na
219	Vinyl acetate	3.3E+01	2.3E+00	8.0E+04	8.0E+04		8.0E+04	3.3E+01	na	3.1E+06	2.3E+00	na	2.2E+05	2.3E+05	na	na
220	Vinyl chloride	1.2E-04	6.2E-06	1.2E-04	6.2E-06		6.7E-01	1.7E-03	1.2E-04	2.2E+01	9.0E-05	6.2E-06	1.2E+00	1.5E+00	na	na
221	Total xylenes	5.1E-01	3.0E-02	5.1E-01	3.0E-02		1.6E+04	1.4E+01	5.1E-01	3.1E+05	8.3E-01	3.0E-02	1.8E+04	5.1E+04	na	na
222	***PFAS***															
223	GenX (HFPO-DA)	1.0E-04	7.2E-06	2.4E-01	2.4E-01		2.4E-01	1.0E-04	na	8.6E+00	7.2E-06	na	6.0E-01	7.0E-01	na	na
224	Perfluorobutanoic acid (PFBA)	4.4E-02	2.9E-03	8.0E+01	8.0E+01		8.0E+01	4.4E-02	na	1.9E+03	2.9E-03	na	1.3E+02	2.3E+02	na	na
225	Perfluorobutanesulfonic acid (PFBS)	1.8E-03	1.2E-04	1.8E+01	1.1E+01		2.4E+01	1.8E-03	na	1.6E+02	1.2E-04	na	1.1E+01	1.8E+01	na	na
226	Perfluorohexanesulfonic acid (PFHxS)	4.1E-04	2.6E-05	5.9E-01	2.8E-01		7.8E-01	4.1E-04	na	4.4E+00	2.6E-05	na	2.8E-01	5.9E-01	na	na
227	Perfluorononanoic acid (PFNA)	8.0E-05	4.8E-06	1.5E-01	5.3E-02		2.0E-01	8.0E-05	na	8.9E-01	4.8E-06	na	5.3E-02	1.5E-01	na	na
228	Perfluorooctanesulfonic acid (PFOS)	1.7E-04	9.9E-06	2.4E-01	2.4E-01		2.4E-01	1.7E-04	na	TBD	9.9E-06	na	TBD	PQL	na	na
229	Perfluorooctanoic acid (PFOA)	6.3E-05	4.0E-06	1.8E-01	8.5E-02		2.4E-01	6.3E-05	na	1.3E+00	4.0E-06	na	8.5E-02	1.8E-01	na	na
230	***Petroleum Hydrocarbons***															
231	Gasoline range hydrocarbons, fresh	3.0E+01	3.0E+01	3.0E+01	3.0E+01		1.5E+03	3.0E+01	3.0E+01	na	3.0E+01	3.0E+01	na	na	1.2E+02	na
232	Gasoline range hydrocarbons, weathered	1.0E+02	1.0E+02	1.0E+02	1.0E+02		1.5E+03	1.0E+02	1.0E+02	na	1.0E+02	1.0E+02	na	na	1.2E+02	na
233	Diesel range hydrocarbons, fresh	2.6E+02	2.6E+02	2.6E+02	2.6E+02		na	2.0E+03	2.0E+03	na	2.0E+03	2.0E+03	na	3.4E+02	2.6E+02	na
234	Diesel range hydrocarbons, weathered	2.6E+02	2.6E+02	2.6E+02	2.6E+02		na	2.0E+03	2.0E+03	na	2.0E+03	2.0E+03	na	3.4E+02	2.6E+02	na
235	Oil range hydrocarbons	2.6E+02	2.6E+02	2.6E+02	2.6E+02		na	2.0E+03	2.0E+03	na	2.0E+03	2.0E+03	na	3.6E+03	2.6E+02	na
236	Total diesel & oil range hydrocarbons	2.6E+02	2.6E+02	2.6E+02	2.6E+02		na	2.0E+03	2.0E+03	na	2.0E+03	2.0E+03	na	na	2.6E+02	na
237	***Pesticides***															
238	Aldrin	4.0E-08	2.0E-09	4.0E-08	2.0E-09		5.9E-02	2.5E-03	4.0E-08	4.0E-04	1.3E-04	2.0E-09	2.0E-05	1.0E-04	1.0E-01	na
239	alpha-BHC (alpha-HCH)	1.9E-06	9.8E-08	1.9E-06	9.8E-08		1.6E-01	5.4E-04	1.9E-06	2.3E-01	2.8E-05	9.8E-08	1.2E-02	5.4E-02	6.0E+00	na
240	beta-BHC (beta-HCH)	6.1E-05	3.2E-06	6.1E-05	3.2E-06		5.6E-01	2.3E-03	6.1E-05	3.1E-02	1.2E-04	3.2E-06	1.6E-03	7.2E-03	6.0E+00	na
241	delta-BHC (delta-HCH)	6.0E+00	6.0E+00	6.0E+00	6.0E+00		na	na	na	na	na	na	na	na	6.0E+00	na
242	cis-Chlordane	1.0E-04	2.0E-05	1.0E-04	2.0E-05		4.0E+01	5.4E+00	na	4.0E-04	2.7E-01	na	2.0E-05	1.0E-04	1.0E+00	na
243	trans-Chlordane	1.0E-04	2.0E-05	1.0E-04	2.0E-05		4.0E+01	5.4E+00	na	4.0E-04	2.7E-01	na	2.0E-05	1.0E-04	1.0E+00	na
244	Chlordane	2.3E-05	1.1E-06	2.3E-05	1.1E-06		2.9E+00	1.3E+00	2.3E-05	TBD	6.4E-02	1.1E-06	TBD	PQL	1.0E+00	na
245	Chlorpyrifos	6.1E-03	3.1E-04	6.1E-03	3.1E-04		8.0E+01	2.4E+00	6.1E-03	TBD	1.2E-01	3.1E-04	TBD	PQL	na	na
246	4,4'-DDD	7.3E-06	3.6E-07	7.3E-06	3.6E-07		4.2E+00	3.4E-01	7.3E-06	4.0E-04	1.7E-02	3.6E-07	2.0E-05	1.0E-04	7.5E-01	na
247	4,4'-DDE	1.5E-06	7.6E-08	1.5E-06	7.6E-08		2.9E+00	2.2E-01	1.5E-06	4.0E-04	1.1E-02	7.6E-08	2.0E-05	1.0E-04	7.5E-01	na
248	4,4'-DDT	1.6E-05	8.1E-07	1.6E-05	8.1E-07		2.9E+00	3.5E+00	1.6E-05	4.0E-04	1.7E-01	8.1E-07	2.0E-05	1.0E-04	7.5E-01	na
249	Total DDD	3.4E-01	1.7E-02	7.5E-01	7.5E-01		4.2E+00	3.4E-01	na	TBD	1.7E-02	na	TBD	PQL	7.5E-01	na
250	Total DDE	2.2E-01	1.1E-02	7.5E-01	7.5E-01		2.9E+00	2.2E-01	na	TBD	1.1E-02	na	TBD	PQL	7.5E-01	na
251	Total DDT	7.5E-01	1.7E-01	7.5E-01	7.5E-01		2.9E+00	3.5E+00	na	TBD	1.7E-01	na	TBD	PQL	7.5E-01	na
252	Diazinon	1.1E-02	5.6E-04	1.1E-02	5.6E-04		5.6E+01	7.2E-01	1.1E-02	TBD	3.7E-02	5.6E-04	TBD	PQL	na	na
253	Dieldrin	3.6E-08	1.8E-09	3.6E-08	1.8E-09		6.3E-02	2.8E-03	3.6E-08	4.0E-04	1.4E-04	1.8E-09	2.0E-05	1.0E-04	7.0E-02	na
254	Endosulfan I	7.8E-03	3.9E-04	7.8E-03	3.9E-04		na	na	7.8E-03	TBD	na	3.9E-04	TBD	PQL	na	na
255	Endosulfan II	7.8E-03	3.9E-04	7.8E-03	3.9E-04		na	na	7.8E-03	TBD	na	3.9E-04	TBD	PQL	na	na
256	Endosulfan sulfate	1.8E+00	9.1E-02	1.8E+00	9.1E-02		4.8E+02	1.9E+01	1.8E+00	1.5E+03	9.7E-01	9.1E-02	7.5E+01	3.7E+02	na	na
257	Endrin	4.4E-04	2.2E-05	4.4E-04	2.2E-05		2.4E+01	4.4E-01	4.4E-04	TBD	2.2E-02	2.2E-05	TBD	PQL	2.0E-01	na
258	Endrin aldehyde	2.4E-03	1.2E-04	2.4E-03	1.2E-04		na	na	2.4E-03	na	na	1.2E-04	na	na	na	na
259	Endrin ketone	8.5E-03	8.5E-03	8.5E-03	8.5E-03		na	na	na	na	na	na	na	8.5E-03	na	na
260	Heptachlor	6.6E-08	3.3E-09	6.6E-08	3.3E-09		2.2E-01	1.9E-02	6.6E-08	4.1E-04	9.5E-04	3.3E-09	2.0E-05	1.0E-04	4.0E-01	na
261	Heptachlor epoxide	4.9E-07	2.5E-08	4.9E-07	2.5E-08		1.1E-01	9.9E-03	4.9E-07	TBD	5.0E-04	2.5E-08	TBD	PQL	4.0E-01	na
262	Lindane (gamma-BHC)	2.5E-03	1.3E-04	2.5E-03	1.3E-04		9.1E-01	6.2E-03	2.5E-03	2.8E+00	3.3E-04	1.3E-04	1.5E-01	6.3E-01	6.0E+00	na
263	Malathion	4.6E-04	3.2E-05	4.6E-04	3.2E-05		1.6E+03	1.5E+00	4.6E-04	1.3E+04	1.0E-01	3.2E-05	8.7E+02	1.2E+03	na	na
264	Methoxychlor	3.2E-02	1.6E-03	3.2E-02	1.6E-03		4.0E+02	6.4E+01	3.2E-02	1.2E+03	3.2E+00	1.6E-03	6.1E+01	3.0E+02	na	na
265	Mirex	7.1E-03	3.6E-04	7.1E-03	3.6E-04		5.6E-02	1.7E-02	7.1E-03	TBD	8.7E-04	3.6E-04	TBD	PQL	na	na
266	Nonachlor	na	na	na	na		na	na	na	na	na	na	na	na	na	na
267	Toxaphene	6.1E-05	3.1E-06	6.1E-05	3.1E-06		9.1E-01	1.5E+00	6.1E-05	TBD	7.6E-02	3.1E-06	TBD	PQL	na	na
268	***Herbicides***															
269	2,4-D	3.2E-01	2.2E-02	6.0E+00	4.1E-01		8.0E+02	3.2E-01	6.0E+00	1.9E+04	2.2E-02	4.1E-01	1.3E+03	1.8E+03	na	na
270	2,4-DB	na	na	na	na		na	na	na	na	na	na	na	na	na	na
271	2,4,5-TP	3.8E-01	2.3E-02	7.5E-01	4.6E-02		6.4E+02	3.8E-01	7.5E-01	3.1E+03	2.3E-02	4.6E-02	1.9E+02	4.9E+02	na	na
272	2,4,5-Trichlorophenoxyacetic acid (2,4,5-T)	9.8E-01	6.3E-02	6.1E+02	2.9E+02		8.0E+02	9.8E-01	na	4.5E+03	6.3E-02	na	2.9E+02	6.1E+02	na	na
273	Dalapon	8.1E-01	5.8E-02	1.8E+03	1.7E+03		2.4E+03	8.1E-01	na	2.5E+04	5.8E-02	na	1.7E+03	1.8E+03	na	na
274	Dicamba	2.2E+00	1.5E-01	1.8E+03	1.3E+03		2.4E+03	2.2E+00	na	1.9E+04	1.5E-01	na	1.3E+03	1.8E+03	na	na
275	Dichloroprop	na	na	na	na		na	na	na	na	na	na	na	na	na	na
276	Dinoseb	6.3E-01	3.2E-02	6.1E+01	1.3E+01		8.0E+01	6.3E-01	na	2.5E+02	3.2E-02	na	1.3E+01	6.1E+01	na	na
277	2-Methyl-4-chlorophenoxy acetic acid (MCPA)	3.7E-02	2.5E-03	3.0E+01	2.2E+01		4.0E+01	3.7E-02	na	3.2E+02	2.5E-03	na	2.2E+01	3.0E+01	na	na
278	(2-Methyl-4-chlorophenol)2-propionic acid (MCPP)	8.0E-02	5.4E-03	6.1E+01	3.9E+01		8.0E+01	8.0E-02	na	5.7E+02	5.4E-03	na	3.9E+01	6.1E+01	na	na

Sort Order	Basis - Vadose, Potable GW							Basis - Saturated, Potable GW							Basis - Vadose, Nonpotable GW						Basis - Satur., Nonpotable GW						Select Use an 'X' to identify chemicals of interest for filtering
	Direct Contact	Drinking Water	Surface Water via GW	Sediment via GW	Bank Erosion	TEE	Nat. Background	Direct Contact	Drinking Water	Surface Water via GW	Sediment via GW	Bank Erosion	TEE	Nat. Background	Direct Contact	Surface Water via GW	Sediment via GW	Bank Erosion	TEE	Nat. Background	Direct Contact	Surface Water via GW	Sediment via GW	Bank Erosion	TEE	Nat. Background	
195		X							X						X						X						
196																											
197		X							X						X						X						
198		X							X						X						X						
199		X							X							X						X					
200																											
201		X							X						X								X				
202		X							X										X						X		
203		X							X						X								X				
204			X							X						X						X					
205			X							X						X						X					
206		X							X									X					X				
207			X							X						X						X					
208		X							X										X						X		
209		X							X							X						X					
210			X							X						X						X					
211			X							X						X						X					
212																											
213		X							X						X						X						
214		X							X						X								X				
215		X							X						X						X						
216		X							X						X								X				
217		X							X						X								X				
218		X							X						X								X				
219		X							X						X						X						
220			X							X						X						X					
221			X							X						X						X					
222	***PFAS***																										
223		X							X						X						X						
224		X							X						X						X						
225		X							X									X					X				
226		X							X									X					X				
227		X							X									X					X				
228		X							X						X						X						
229		X							X									X					X				
230	***Petroleum Hydrocarbons***																										
231		X	X						X	X						X						X					
232		X	X						X	X						X						X					
233						X							X						X						X		
234						X							X						X						X		
235						X							X						X						X		
236						X							X						X						X		
237	***Pesticides***																										
238			X							X						X						X					
239			X							X						X						X					
240			X							X						X						X					
241						X							X						X						X		
242					X						X							X					X				
243					X						X							X					X				
244			X							X						X						X					
245			X							X						X						X					
246			X							X						X						X					
247			X							X						X						X					
248			X							X						X						X					
249		X							X										X						X		
250		X							X										X						X		
251						X			X										X						X		
252			X							X						X						X					
253			X							X						X						X					
254			X							X						X						X					
255			X							X						X						X					
256			X							X						X						X					
257			X							X						X						X					
258			X							X						X						X					
259					X							X						X						X			
260			X							X						X						X					
261			X							X						X						X					
262			X							X						X						X					
263			X							X						X						X					
264			X							X						X						X					
265			X							X						X						X					
266																											
267			X							X						X						X					
268	***Herbicides***																										
269		X							X							X						X					
270																											
271		X							X							X						X					
272		X							X									X					X				
273		X							X									X					X				
274		X							X									X					X				
275																											
276		X							X									X					X				
277		X							X									X					X				
278		X							X									X					X				
Number of Chemicals:	5	85	83	0	28	18	11	5	88	87	12	16	11	12	46	97	0	49	23	11	30	101	49	16	19	12	0

PCUL Workbook - MTCA Method B and C, Groundwater for Protection of Indoor Air (Vapor Intrusion)

Sort Order	Chemical	Listed on CLARC VI Page Param	Hcc at 13°C (unitless) Param	AR-1 MTCA-B Air (ug/m3) Air-Det	GW-4 MTCA-B Ground Water Protect Indoor Air (ug/L) VI Guidance Eq. 1	MTCA-C Air (ug/m3) Air-Det	MTCA-C Ground Water Protect Indoor Air via Vapor Intrusion (ug/L) VI Guidance Eq. 1	Commercial Air (ug/m3) Air-Det	Ground Water Protect Indoor Air via Vapor Intrusion Commercial (ug/L) VI Guidance Eq. 1	TCE Short-Term Action Level for Cardiac Birth Defects Commercial Worker Groundwater (ug/L) VI Guidance	Select Use an 'X' to identify chemicals of interest for filtering
1	***PCBs***										
2	Total PCB Aroclors	no	1.70E-02	4.39E-03	na	4.39E-02	na	2.05E-02	na	na	
3	Total PCB congeners	no	1.70E-02	4.39E-03	na	4.39E-02	na	2.05E-02	na	na	
4	Total PCB TEQ	no	1.70E-02	6.58E-08	na	6.58E-07	na	3.07E-07	na	na	
5	***Dioxins/Furans***										
6	Total dioxin/furan TEQ	no	2.04E-03	6.58E-08	na	6.58E-07	na	3.07E-07	na	na	
7	2,3,7,8-TCDD	no	2.04E-03	6.58E-08	na	6.58E-07	na	3.07E-07	na	na	
8	Total chlorinated dioxins	no	2.04E-03	0.00E+00	na	0.00E+00	na	na	na	na	
9	Total chlorinated furans	no	2.04E-03	2.29E+00	na	5.00E+00	na	na	na	na	
10	***Inorganics***										
11	Cyanide, free	no	4.15E-03	3.66E-01	na	8.00E-01	na	3.11E+00	na	na	
12	Nitrate	no	0.00E+00	na	na	na	na	na	na	na	
13	Nitrite	no	0.00E+00	na	na	na	na	na	na	na	
14	Sulfate	no	0.00E+00	na	na	na	na	na	na	na	
15	Sulfide	no	0.00E+00	na	na	na	na	na	na	na	
16	***Metals***										
17	Aluminum	no	0.00E+00	2.29E+00	na	5.00E+00	na	1.95E+01	na	na	
18	Antimony	no	0.00E+00	1.37E-01	na	3.00E-01	na	1.17E+00	na	na	
19	Arsenic	no	0.00E+00	5.81E-04	na	5.81E-03	na	2.72E-03	na	na	
20	Barium	no	0.00E+00	2.29E-01	na	5.00E-01	na	1.95E+00	na	na	
21	Beryllium	no	0.00E+00	1.04E-03	na	1.04E-02	na	4.87E-03	na	na	
22	Cadmium	no	0.00E+00	1.39E-03	na	1.00E-02	na	6.49E-03	na	na	
23	Chromium, total	no	0.00E+00	na	na	na	na	na	na	na	
24	Chromium, trivalent	no	0.00E+00	na	na	na	na	na	na	na	
25	Chromium, hexavalent	no	0.00E+00	7.80E-06	na	2.98E-04	na	1.39E-04	na	na	
26	Cobalt	no	0.00E+00	2.78E-04	na	2.78E-03	na	1.30E-03	na	na	
27	Copper	no	0.00E+00	na	na	na	na	na	na	na	
28	Iron	no	0.00E+00	na	na	na	na	na	na	na	
29	Lead	no	0.00E+00	na	na	na	na	na	na	na	
30	Manganese	no	0.00E+00	2.29E-02	na	5.00E-02	na	1.95E-01	na	na	
31	Mercury, inorganic	YES	1.24E-01	1.37E-01	1.11E+00	3.00E-01	2.42E+00	1.17E+00	9.42E+00	na	
32	Methylmercury	no	0.00E+00	na	na	na	na	na	na	na	
33	Molybdenum	no	0.00E+00	9.14E-01	na	2.00E+00	na	7.79E+00	na	na	
34	Nickel	no	0.00E+00	9.62E-03	na	9.00E-02	na	4.49E-02	na	na	
35	Selenium	no	0.00E+00	9.14E+00	na	2.00E+01	na	7.79E+01	na	na	
36	Silver	no	0.00E+00	na	na	na	na	na	na	na	
37	Thallium	no	0.00E+00	na	na	na	na	na	na	na	
38	Tin	no	0.00E+00	na	na	na	na	na	na	na	
39	Vanadium	no	0.00E+00	3.20E-03	na	7.00E-03	na	2.73E-02	na	na	
40	Zinc	no	0.00E+00	na	na	na	na	na	na	na	
41	***Metals - Butyltins***										
42	Monobutyltin	no	0.00E+00	na	na	na	na	na	na	na	
43	Dibutyltin	no	0.00E+00	na	na	na	na	na	na	na	
44	Tributyltin oxide	no	1.23E-05	na	na	na	na	na	na	na	
45	Tetrabutyltin	no	0.00E+00	na	na	na	na	na	na	na	
46	***SVOCs - PAHs***										
47	Acenaphthene	no	2.50E-03	na	na	na	na	na	na	na	
48	Acenaphthylene	no	0.00E+00	na	na	na	na	na	na	na	
49	Anthracene	no	6.51E-04	na	na	na	na	na	na	na	
50	Benzo(a)anthracene	no	9.60E-05	na	na	na	na	na	na	na	
51	Benzo(b)fluoranthene	no	6.04E-06	na	na	na	na	na	na	na	
52	Benzo(k)fluoranthene	no	4.28E-06	na	na	na	na	na	na	na	
53	Total benzofluoranthenes	no	0.00E+00	na	na	na	na	na	na	na	
54	Benzo(g,h,i)perylene	no	0.00E+00	na	na	na	na	na	na	na	
55	Benzo(a)pyrene	no	3.61E-06	9.14E-04	na	2.00E-03	na	7.79E-03	na	na	
56	Chrysene	no	3.87E-05	na	na	na	na	na	na	na	
57	Dibenz(a,h)anthracene	no	7.45E-07	na	na	na	na	na	na	na	
58	Dibenzofuran	no	1.84E-05	na	na	na	na	na	na	na	
59	Fluoranthene	no	9.14E-05	na	na	na	na	na	na	na	
60	Fluorene	no	1.23E-03	na	na	na	na	na	na	na	
61	Indeno(1,2,3-cd)pyrene	no	2.09E-06	na	na	na	na	na	na	na	
62	Methyl isopropyl phenanthrene (retene)	no	0.00E+00	na	na	na	na	na	na	na	
63	1-Methylnaphthalene	no	6.32E-03	na	na	na	na	na	na	na	
64	2-Methylnaphthalene	no	7.00E-03	na	na	na	na	na	na	na	
65	Naphthalene	YES	8.28E-03	7.35E-02	8.88E+00	7.35E-01	8.88E+01	3.44E-01	4.15E+01	na	
66	Phenanthrene	no	0.00E+00	na	na	na	na	na	na	na	
67	Pyrene	no	1.15E-04	na	na	na	na	na	na	na	
68	Total LPAHs	no	0.00E+00	na	na	na	na	na	na	na	
69	Total HPAHs	no	0.00E+00	na	na	na	na	na	na	na	
70	Total PAHs	no	0.00E+00	na	na	na	na	na	na	na	
71	Total cPAH TEQ	no	8.94E-06	1.10E-03	na	4.17E-02	na	1.95E-02	na	na	
72	***Other SVOCs***										
73	Aniline	no	3.60E-05	4.57E-01	na	1.00E+00	na	3.89E+00	na	na	
74	Azobenzene	no	0.00E+00	8.06E-02	na	8.06E-01	na	3.77E-01	na	na	
75	Benzidine	no	4.89E-10	9.80E-06	na	3.73E-04	na	1.74E-04	na	na	
76	Benzoic acid	no	5.20E-07	na	na	na	na	na	na	na	
77	Benzyl alcohol	no	4.92E-06	na	na	na	na	na	na	na	
78	Bis(2-chloroethoxy)methane	no	6.56E-05	na	na	na	na	na	na	na	
79	Bis(2-chloroethyl)ether	no	2.79E-04	7.58E-03	na	7.58E-02	na	3.54E-02	na	na	
80	Bis(chloromethyl)ether	no	9.41E-02	4.03E-05	na	4.03E-04	na	1.88E-04	na	na	
81	Bis(2-chloro-1-methylethyl)ether	no	1.35E-03	2.50E-01	na	2.50E+00	na	1.17E+00	na	na	
82	2,6-Bis(1,1-dimethylethyl) phenol	no	0.00E+00	na	na	na	na	na	na	na	
83	Bis(2-ethylhexyl) phthalate	no	2.34E-06	1.04E+00	na	1.04E+01	na	4.87E+00	na	na	
84	4-Bromophenyl phenyl ether	no	0.00E+00	na	na	na	na	na	na	na	
85	Butyl benzyl phthalate	no	1.47E-05	na	na	na	na	na	na	na	
86	Butyl diphenyl phosphate	no	0.00E+00	na	na	na	na	na	na	na	
87	Carbazole	no	0.00E+00	na	na	na	na	na	na	na	
88	4-Chloroaniline	no	1.73E-05	na	na	na	na	na	na	na	
89	4-Chloro-3-methylphenol	no	4.00E-05	na	na	na	na	na	na	na	
90	2-Chloronaphthalene	no	4.84E-03	na	na	na	na	na	na	na	
91	2-Chlorophenol	no	2.08E-04	na	na	na	na	na	na	na	
92	4-Chlorophenyl phenyl ether	no	0.00E+00	na	na	na	na	na	na	na	
93	Dibutyl phthalate	no	1.00E-05	na	na	na	na	na	na	na	
94	Dibutyl phenyl phosphate	no	0.00E+00	na	na	na	na	na	na	na	
95	1,2-Dichlorobenzene	YES	3.65E-02	9.14E+01	2.50E+03	2.00E+02	5.48E+03	7.79E+02	2.13E+04	na	
96	1,3-Dichlorobenzene	no	5.09E-02	na	na	na	na	na	na	na	
97	1,4-Dichlorobenzene	YES	4.58E-02	2.27E-01	4.96E+00	2.27E+00	4.96E+01	1.06E+00	2.32E+01	na	
98	3,3'-Dichlorobenzidine	no	1.16E-09	7.35E-03	na	7.35E-02	na	3.44E-02	na	na	
99	2,4-Dichlorophenol	no	7.46E-05	na	na	na	na	na	na	na	
100	Di(2-ethylhexyl)adipate	no	3.63E-06	na	na	na	na	na	na	na	
101	Diethyl phthalate	no	6.52E-06	na	na	na	na	na	na	na	
102	Dimethyl phthalate	no	2.29E-06	na	na	na	na	na	na	na	
103	2,4-Dimethylphenol	no	1.41E-05	na	na	na	na	na	na	na	
104	1,2-Dinitrobenzene	no	5.00E-07	na	na	na	na	na	na	na	
105	1,3-Dinitrobenzene	no	0.00E+00	na	na	na	na	na	na	na	
106	1,4-Dinitrobenzene	no	8.42E-07	na	na	na	na	na	na	na	
107	4,6-Dinitro-2-methylphenol (DNOC)	no	5.72E-05	na	na	na	na	na	na	na	
108	2,4-Dinitrophenol	no	3.52E-06	na	na	na	na	na	na	na	
109	2,4-Dinitrotoluene	no	4.83E-07	2.81E-02	na	2.81E-01	na	1.31E-01	na	na	
110	2,6-Dinitrotoluene	no	7.26E-06	na	na	na	na	na	na	na	
111	Di-n-octyl phthalate	no	1.49E-05	na	na	na	na	na	na	na	
112	1,4-Dioxane	YES	1.06E-04	5.00E-01	4.72E+03	5.00E+00	4.72E+04	2.34E+00	2.20E+04	na	
113	1,2-Diphenylhydrazine	no	5.90E-06	1.14E-02	na	1.14E-01	na	5.31E-02	na	na	
114	Hexachlorobenzene	YES	2.22E-02	5.43E-03	2.45E-01	5.43E-02	2.45E+00	2.54E-02	1.14E+00	na	
115	Hexachlorobutadiene	YES	1.78E-01	1.14E-01	6.38E-01	1.14E+00	6.38E+00	5.31E-01	2.98E+00	na	
116	Hexachlorocyclopentadiene	YES	2.17E-02	9.14E-02	4.21E+00	2.00E-01	9.22E+00	7.79E-01	3.59E+01	na	
117	Hexachloroethane	YES	5.98E-02	2.27E-01	3.80E+00	2.27E+00	3.80E+01	1.06E+00	1.78E+01	na	
118	Isophorone	no	1.13E-04	9.14E+02	na	2.00E+03	na	7.79E+03	na	na	
119	2-Methoxynaphthalene	no	0.00E+00	na	na	na	na	na	na	na	
120	2-Methylphenol (o-cresol)	no	1.98E-05	2.74E+02	na	6.00E+02	na	2.34E+03	na	na	
121	3-Methylphenol (m-cresol)	no	1.33E-05	2.74E+02	na	6.00E+02	na	2.34E+03	na	na	
122	4-Methylphenol (p-cresol)	no	1.55E-05	2.74E+02	na	6.00E+02	na	2.34E+03	na	na	
123	2-Nitroaniline	no	6.10E-07	2.29E-02	na	5.00E-02	na	1.95E-01	na	na	
124	3-Nitroaniline	no	0.00E+00	na	na	na	na	na	na	na	
125	4-Nitroaniline	no	1.08E-08	2.74E+00	na	6.00E+00	na	2.34E+01	na	na	
126	Nitrobenzene	no	3.97E-04	6.25E-02	na	6.25E-01	na	2.92E-01	na	na	
127	2-Nitrophenol	no	6.10E-07	na	na	na	na	na	na	na	
128	4-Nitrophenol	no	1.08E-08	na	na	na	na	na	na	na	
129	n-Nitrosodimethylamine	no	3.65E-05	4.70E-05	na	1.79E-03	na	8.34E-04	na	na	
130	n-Nitrosodiphenylamine	no	4.95E-05	9.62E-01	na	9.62E+00	na	4.49E+00	na	na	
131	n-Nitrosodi-n-propylamine	no	2.20E-04	1.25E-03	na	1.25E-02	na	5.84E-03	na	na	
132	Pentachlorophenol	no	1.00E-06	4.90E-01	na	4.90E+00	na	2.29E+00	na	na	
133	Phenol	no	5.35E-06	9.14E+01	na	2.00E+02	na	7.79E+02	na	na	
134	Pyridine	no	4.67E-04	na	na	na	na	na	na	na	
135	2,3,4,5-Tetrachlorophenol	no	0.00E+00	na	na	na	na	na	na	na	
136	2,3,4,6-Tetrachlorophenol	no	3.61E-04	na	na	na	na	na	na	na	
137	1,2,4-Trichlorobenzene	YES	2.37E-02	9.14E-01	3.86E+01	2.00E+00	8.44E+01	7.79E+00	3.29E+02	na	
138	2,4,5-Trichlorophenol	no	2.57E-05	na	na	na	na	na	na	na	
139	2,4,6-Trichlorophenol	no	4.13E-05	8.06E-01	na	8.06E+00	na	3.77E+00	na	na	
140	***Volatile Organic Compounds***										
141	Acetone	YES	8.57E-04	na	na	na	na	na	na	na	
142	Acrolein	YES	3.11E-03	9.14E-03	2.94E+00	2.00E-02	6.43E+00	7.79E-02	2.50E+01	na	
143	Acrylonitrile	YES	3.18E-03	3.68E-02	1.16E+01	3.68E-01	1.16E+02	1.72E-01	5.40E+01	na	
144	Benzaldehyde	no	4.76E-04	na	na	na	na	na	na	na	
145	Benzene	YES	1.34E-01	3.21E-01	2.39E+00	3.21E+00	2.39E+01	1.50E+00	1.12E+01	na	
146	Bromobenzene	YES	4.32E-02	2.74E+01	6.35E+02	6.00E+01	1.39E+03	2.34E+02	5.41E+03	na	
147	Bromochloromethane	no	3.59E-02	1.83E+01	na	4.00E+01	na	1.56E+02	na	na	
148	Bromoethane	no	0.00E+00	na	na	na	na	na	na	na	

Sort Order	Chemical	Listed on CLARC VI Page Param	Hcc at 13°C (unitless) Param	AR-1 MTCA-B Air (ug/m3) Air-Det	GW-4 MTCA-B Ground Water Protect Indoor Air (ug/L) VI Guidance Eq. 1	MTCA-C Air (ug/m3) Air-Det	MTCA-C Ground Water Protect Indoor Air via Vapor Intrusion (ug/L) VI Guidance Eq. 1	Commercial Air (ug/m3) Air-Det	Ground Water Protect Indoor Air via Vapor Intrusion Commercial (ug/L) VI Guidance Eq. 1	TCE Short-Term Action Level for Cardiac Birth Defects Commercial Worker Groundwater (ug/L) VI Guidance	Select Use an 'X' to identify chemicals of interest for filtering
149	Bromoform	YES	1.05E-02	2.27E+00	2.16E+02	2.27E+01	2.16E+03	1.06E+01	1.01E+03	na	
150	Bromomethane	YES	2.10E-01	2.29E+00	1.09E+01	5.00E+00	2.38E+01	1.95E+01	9.27E+01	na	
151	2-Butoxyethanol (EGBE)	no	2.53E-05	7.31E+02	na	1.60E+03	na	6.23E+03	na	na	
152	n-Butylbenzene	no	2.93E-01	na	na	na	na	na	na	na	
153	sec-Butylbenzene	no	2.75E-01	na	na	na	na	na	na	na	
154	tert-Butylbenzene	no	2.06E-01	na	na	na	na	na	na	na	
155	Carbon disulfide	YES	3.83E-01	3.20E+02	8.36E+02	7.00E+02	1.83E+03	2.73E+03	7.12E+03	na	
156	Carbon tetrachloride	YES	6.75E-01	4.17E-01	6.17E-01	4.17E+00	6.17E+00	1.95E+00	2.88E+00	na	
157	Chlorobenzene	YES	6.63E-02	2.29E+01	3.45E+02	5.00E+01	7.54E+02	1.95E+02	2.94E+03	na	
158	Chloroethane	YES	3.12E-01	4.57E+03	1.47E+04	1.00E+04	3.21E+04	3.89E+04	1.25E+05	na	
159	2-Chloroethyl vinyl ether	no	0.00E+00	na	na	na	na	na	na	na	
160	Chloroform	YES	9.18E-02	1.09E-01	1.18E+00	1.09E+00	1.18E+01	5.08E-01	5.53E+00	na	
161	Chloromethane	YES	2.69E-01	4.11E+01	1.53E+02	9.00E+01	3.35E+02	3.50E+02	1.30E+03	na	
162	3-Chloro-1-propene (allyl chloride)	YES	2.79E-01	4.17E-01	1.49E+00	1.00E+00	3.58E+00	1.95E+00	6.98E+00	na	
163	2-Chlorotoluene	no	7.08E-02	na	na	na	na	na	na	na	
164	4-Chlorotoluene	no	8.07E-02	na	na	na	na	na	na	na	
165	Dibromochloromethane	no	2.10E-02	na	na	na	na	na	na	na	
166	1,2-Dibromo-3-chloropropane	YES	2.60E-03	1.10E-04	4.23E-02	4.17E-03	1.60E+00	1.95E-03	7.49E-01	na	
167	Dibromomethane	YES	2.11E-02	1.83E+00	8.67E+01	4.00E+00	1.90E+02	1.56E+01	7.38E+02	na	
168	Dichlorobromomethane	YES	4.90E-02	6.76E-02	1.38E+00	6.76E-01	1.38E+01	3.16E-01	6.44E+00	na	
169	trans-1,4-Dichloro-2-butene	no	1.49E-01	5.95E-04	na	5.95E-03	na	2.78E-03	na	na	
170	Dichlorodifluoromethane	YES	1.08E+01	4.57E+01	4.23E+00	1.00E+02	9.26E+00	3.89E+02	3.60E+01	na	
171	1,1-Dichloroethane	YES	1.42E-01	1.56E+00	1.10E+01	1.56E+01	1.10E+02	7.30E+00	5.14E+01	na	
172	1,2-Dichloroethane (EDC)	YES	2.76E-02	9.62E-02	3.48E+00	9.62E-01	3.48E+01	4.49E-01	1.63E+01	na	
173	1,1-Dichloroethylene	YES	7.03E-01	9.14E+01	1.30E+02	2.00E+02	2.84E+02	7.79E+02	1.11E+03	na	
174	cis-1,2-Dichloroethylene	YES	1.00E-01	1.83E+01	1.83E+02	4.00E+01	4.00E+02	1.56E+02	1.56E+03	na	
175	trans-1,2-Dichloroethylene	YES	2.38E-01	1.83E+01	7.68E+01	4.00E+01	1.68E+02	1.56E+02	6.54E+02	na	
176	1,2-Dichloroethylene (mixed isomers)	YES	2.39E-01	na	na	na	na	na	na	na	
177	1,2-Dichloropropane	YES	6.54E-02	6.76E-01	1.03E+01	4.00E+00	6.12E+01	3.16E+00	4.83E+01	na	
178	1,3-Dichloropropane	no	2.09E-02	na	na	na	na	na	na	na	
179	2,2-Dichloropropane	no	0.00E+00	na	na	na	na	na	na	na	
180	1,1-Dichloropropene	no	0.00E+00	na	na	na	na	na	na	na	
181	cis-1,3-Dichloropropene	YES	3.93E-01	6.25E-01	1.59E+00	6.25E+00	1.59E+01	2.92E+00	7.43E+00	na	
182	trans-1,3-Dichloropropene	YES	3.93E-01	6.25E-01	1.59E+00	6.25E+00	1.59E+01	2.92E+00	7.43E+00	na	
183	Diisopropyl ether	no	6.27E-02	na	na	na	na	2.73E+03	na	na	
184	Ethane	no	0.00E+00	na	na	na	na	na	na	na	
185	Ethylbenzene	YES	1.64E-01	4.57E+02	2.79E+03	1.00E+03	6.10E+03	3.89E+03	2.37E+04	na	
186	Ethylene oxide	YES	4.10E-03	2.20E-04	5.37E-02	8.33E-03	2.03E+00	3.89E-03	9.50E-01	na	
187	Ethyl ether	no	3.27E-02	na	na	na	na	na	na	na	
188	Ethylene dibromide (EDB)	YES	1.41E-02	4.17E-03	2.96E-01	4.17E-02	2.96E+00	1.95E-02	1.38E+00	na	
189	Formaldehyde	no	9.75E-06	1.37E+01	na	3.00E+01	na	8.98E-01	na	na	
190	n-Hexane	YES	4.47E+01	1.83E+02	4.09E+00	4.00E+02	8.95E+00	2.73E+03	6.10E+01	na	
191	2-Hexanone	YES	1.89E-03	1.37E+01	7.26E+03	3.00E+01	1.59E+04	1.17E+02	6.18E+04	na	
192	Isopropylbenzene (cumene)	YES	2.01E-01	1.83E+02	9.10E+02	4.00E+02	1.99E+03	1.56E+03	7.75E+03	na	
193	4-Isopropyltoluene	no	0.00E+00	na	na	na	na	na	na	na	
194	Methane	no	0.00E+00	na	na	na	na	na	na	na	
195	Methyl ethyl ketone (2-butanone)	YES	1.34E-03	2.29E+03	1.71E+06	5.00E+03	3.73E+06	1.95E+04	1.45E+07	na	
196	Methyl iodide	no	0.00E+00	na	na	na	na	na	na	na	
197	Methyl isobutyl ketone	YES	2.94E-03	1.37E+03	4.66E+05	3.00E+03	1.02E+06	1.17E+04	3.97E+06	na	
198	Methyl tert-butyl ether (MTBE)	YES	1.20E-02	9.62E+00	8.01E+02	9.62E+01	8.01E+03	4.49E+01	3.74E+03	na	
199	Methylene chloride	YES	8.43E-02	6.60E+01	7.83E+02	6.00E+02	7.12E+03	1.17E+03	1.39E+04	na	
200	2-Pentanone	no	0.00E+00	na	na	na	na	na	na	na	
201	n-Propylbenzene	YES	2.02E-01	4.57E+02	2.26E+03	1.00E+03	4.95E+03	3.89E+03	1.93E+04	na	
202	Styrene	YES	5.60E-02	4.57E+02	8.16E+03	1.00E+03	1.79E+04	3.89E+03	6.95E+04	na	
203	1,1,1,2-Tetrachloroethane	YES	4.75E-02	3.38E-01	7.11E+00	3.38E+00	7.11E+01	1.58E+00	3.32E+01	na	
204	1,1,2,2-Tetrachloroethane	YES	7.35E-03	4.31E-02	5.86E+00	4.31E-01	5.86E+01	2.01E-01	2.74E+01	na	
205	Tetrachloroethylene (PCE)	YES	3.84E-01	9.62E+00	2.50E+01	4.00E+01	1.04E+02	4.49E+01	1.17E+02	na	
206	Tetrahydrofuran	YES	1.75E-03	2.29E+03	1.31E+06	5.00E+03	2.86E+06	7.79E+03	4.45E+06	na	
207	Toluene	YES	1.49E-01	2.29E+03	1.53E+04	5.00E+03	3.36E+04	1.95E+04	1.31E+05	na	
208	1,2,3-Trichlorobenzene	no	1.72E-02	na	na	na	na	na	na	na	
209	1,1,1-Trichloroethane	YES	4.20E-01	2.29E+03	5.44E+03	5.00E+03	1.19E+04	1.95E+04	4.63E+04	na	
210	1,1,2-Trichloroethane	YES	1.78E-02	9.14E-02	5.14E+00	2.00E-01	1.12E+01	7.30E-01	4.10E+01	na	
211	Trichloroethylene (TCE)	YES	2.32E-01	3.30E-01	1.42E+00	2.00E+00	8.62E+00	2.85E+00	1.23E+01	3.10E+01	
212	Trichlorofluoroethane	no	0.00E+00	na	na	na	na	na	na	na	
213	Trichlorofluoromethane	YES	2.68E+00	3.20E+02	1.19E+02	7.00E+02	2.61E+02	2.73E+03	1.02E+03	na	
214	1,2,3-Trichloropropane	YES	6.68E-03	1.37E-01	2.05E+01	3.00E-01	4.49E+01	1.17E+00	1.75E+02	na	
215	Trichlorotrifluoroethane	YES	1.37E+01	2.29E+03	1.67E+02	5.00E+03	3.65E+02	1.95E+04	1.42E+03	na	
216	1,2,3-Trimethylbenzene	YES	6.62E-02	2.74E+01	4.14E+02	6.00E+01	9.06E+02	2.34E+02	3.53E+03	na	
217	1,2,4-Trimethylbenzene	YES	1.15E-01	2.74E+01	2.39E+02	6.00E+01	5.22E+02	2.34E+02	2.03E+03	na	
218	1,3,5-Trimethylbenzene	YES	1.64E-01	2.74E+01	1.67E+02	6.00E+01	3.66E+02	2.34E+02	1.42E+03	na	
219	Vinyl acetate	YES	1.17E-02	9.14E+01	7.81E+03	2.00E+02	1.71E+04	7.79E+02	6.66E+04	na	
220	Vinyl chloride	YES	8.50E-01	2.84E-01	3.34E-01	2.84E+00	3.34E+00	1.33E+00	1.56E+00	na	
221	Total xylenes	YES	1.41E-01	4.57E+01	3.24E+02	1.00E+02	7.09E+02	3.89E+02	2.76E+03	na	
222	***PFAS***										
223	GenX (HFPO-DA)	no	1.02E-02	na	na	na	na	na	na	na	
224	Perfluorobutanoic acid (PFBA)	no	4.87E-03	na	na	na	na	na	na	na	
225	Perfluorobutanesulfonic acid (PFBS)	no	0.00E+00	na	na	na	na	na	na	na	
226	Perfluorohexanesulfonic acid (PFHxS)	no	0.00E+00	na	na	na	na	na	na	na	
227	Perfluorononanoic acid (PFNA)	no	0.00E+00	na	na	na	na	na	na	na	
228	Perfluorooctanesulfonic acid (PFOS)	no	1.81E-05	na	na	na	na	na	na	na	
229	Perfluorooctanoic acid (PFOA)	no	1.46E-04	na	na	na	na	na	na	na	
230	***Petroleum Hydrocarbons***										
231	Gasoline range hydrocarbons, fresh	YES	0.00E+00	4.60E+01	na	1.50E+03	na	3.90E+02	na	na	
232	Gasoline range hydrocarbons, weathered	YES	0.00E+00	4.60E+01	na	1.50E+03	na	3.90E+02	na	na	
233	Diesel range hydrocarbons, fresh	no	0.00E+00	4.60E+01	na	1.50E+03	na	3.90E+02	na	na	
234	Diesel range hydrocarbons, weathered	no	0.00E+00	4.60E+01	na	1.50E+03	na	3.90E+02	na	na	
235	Oil range hydrocarbons	no	0.00E+00	na	na	na	na	na	na	na	
236	Total diesel & oil range hydrocarbons	no	0.00E+00	na	na	na	na	na	na	na	
237	***Pesticides***										
238	Aldrin	no	8.08E-05	5.10E-04	na	5.10E-03	na	2.38E-03	na	na	
239	alpha-BHC (alpha-HCH)	no	2.74E-04	1.39E-03	na	1.39E-02	na	6.49E-03	na	na	
240	beta-BHC (beta-HCH)	no	1.80E-05	4.72E-03	na	4.72E-02	na	2.20E-02	na	na	
241	delta-BHC (delta-HCH)	no	0.00E+00	na	na	na	na	na	na	na	
242	cis-Chlordane	no	1.99E-02	na	na	na	na	na	na	na	
243	trans-Chlordane	no	1.99E-03	na	na	na	na	na	na	na	
244	Chlordane	no	1.99E-03	2.50E-02	na	2.50E-01	na	1.17E-01	na	na	
245	Chlorpyrifos	no	1.20E-04	na	na	na	na	na	na	na	
246	4,4'-DDD	no	2.70E-04	3.62E-02	na	3.62E-01	na	1.69E-01	na	na	
247	4,4'-DDE	no	4.39E-04	2.58E-02	na	2.58E-01	na	1.20E-01	na	na	
248	4,4'-DDT	no	1.28E-04	2.58E-02	na	2.58E-01	na	1.20E-01	na	na	
249	Total DDD	no	2.70E-04	3.62E-02	na	3.62E-01	na	1.69E-01	na	na	
250	Total DDE	no	4.39E-04	2.58E-02	na	2.58E-01	na	1.20E-01	na	na	
251	Total DDT	no	1.28E-04	2.58E-02	na	2.58E-01	na	1.20E-01	na	na	
252	Diazinon	no	4.62E-06	na	na	na	na	na	na	na	
253	Dieldrin	no	8.78E-05	5.43E-04	na	5.43E-03	na	2.54E-03	na	na	
254	Endosulfan I	no	2.90E-04	na	na	na	na	na	na	na	
255	Endosulfan II	no	1.60E-05	na	na	na	na	na	na	na	
256	Endosulfan sulfate	no	1.33E-05	na	na	na	na	na	na	na	
257	Endrin	no	2.60E-04	na	na	na	na	na	na	na	
258	Endrin aldehyde	no	1.71E-04	na	na	na	na	na	na	na	
259	Endrin ketone	no	0.00E+00	na	na	na	na	na	na	na	
260	Heptachlor	YES	3.77E-03	1.92E-03	5.10E-01	1.92E-02	5.10E+00	8.98E-03	2.38E+00	na	
261	Heptachlor epoxide	no	2.01E-04	9.62E-04	na	9.62E-03	na	4.49E-03	na	na	
262	Lindane (gamma-BHC)	no	2.10E-04	8.06E-03	na	8.06E-02	na	3.77E-02	na	na	
263	Malathion	no	2.00E-07	na	na	na	na	na	na	na	
264	Methoxychlor	no	8.30E-06	na	na	na	na	na	na	na	
265	Mirex	YES	3.32E-02	4.90E-04	1.48E-02	4.90E-03	1.48E-01	2.29E-03	6.90E-02	na	
266	Nonachlor	no	0.00E+00	na	na	na	na	na	na	na	
267	Toxaphene	no	2.45E-04	7.81E-03	na	7.81E-02	na	3.65E-02	na	na	
268	***Herbicides***										
269	2,4-D	no	1.45E-06	na	na	na	na	na	na	na	
270	2,4-DB	no	9.36E-08	na	na	na	na	na	na	na	
271	2,4,5-TP	no	3.70E-07	na	na	na	na	na	na	na	
272	2,4,5-Trichlorophenoxyacetic acid (2,4,5-T)	no	3.55E-07	na	na	na	na	na	na	na	
273	Dalapon	no	1.04E-06	na	na	na	na	na	na	na	
274	Dicamba	no	8.91E-08	na	na	na	na	na	na	na	
275	Dichloroprop	no	0.00E+00	na	na	na	na	na	na	na	
276	Dinoseb	no	1.86E-05	na	na	na	na	na	na	na	
277	2-Methyl-4-chlorophenoxy acetic acid (MCPA)	no	5.44E-08	na	na	na	na	na	na	na	
278	(2-Methyl-4-chlorophenol)2-propionic acid (MCPP)	no	7.44E-07	na	na	na	na	na	na	na	

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APPENDIX D

APPENDIX D
REMEDIAL INVESTIGATION SAMPLING AND ANALYSIS PLAN
QUALITY ASSURANCE PROJECT PLAN

Block 37 Site
Phillips 66 Facility No. 255353 (AOC 1396)
Ecology Agreed Order No. DE 19430
600-630 Westlake Avenue North
Seattle, Washington

Prepared for

Phillips 66 Company
Remediation Management
76 Broadway
Sacramento, CA 95818

Prepared by

Atlas
6347 Seaview Avenue NW
Seattle, WA 98107

August 23, 2023

TABLE OF CONTENTS

TABLES

ATTACHMENTS

1.0 INTRODUCTION

Atlas Environmental Company (Atlas, formerly known as ATC) has prepared this Sampling and Analysis Plan (SAP) and Quality Assurance Project Plan (QAPP) on behalf of Phillips 66 Company (P66) and City Investors XI L.L.C. (City Investors) in accordance with Agreed Order No. DE 19430 (AO) effective May 4, 2021, and entered into by the Washington State Department of Ecology (Ecology), P66 and City Investors (Ecology, 2021).

The Block 37 Site as defined in the AO generally encompasses 1.59 acres consisting of the Block 37 Property, together with areas where hazardous substances (other than consumer products in consumer use) that were deposited, stored, disposed of, or placed at the Block 37 Property have come to be located, including without limitation portions of the City of Seattle (City) rights-of-way (ROWs) including Westlake Avenue North to the west, Mercer Street to the south, Valley Street to the north, and Terry Avenue to the east.. The property located at 600-630 Westlake Avenue (Block 37 Property) is comprised of six King County parcels (numbers 408880-3236, 408880-3235, 408880-3240, 408880-3345, 408880-3355, and 198720-0015). The work being performed in conjunction with this SAP and QAPP will further characterize the nature and extent of contamination at the Block 37 Site.

This SAP and QAPP has been prepared in accordance with the Washington State Model Toxics Control Act Cleanup Regulation (MTCA) as established in Section 820 of Chapter 173-340 of the Washington Administrative Code (WAC 173-340-820) and *Guidelines for Preparing Quality Assurance Project Plans for Environmental Studies* (Ecology, 2016). The purpose of the SAP and QAPP is to provide details regarding the proposed scope of work, the process by which the work will be implemented, and the protocols for ensuring the data collected meets quality assurance and quality control (QA/QC) standards.

2.0 SCOPE OF WORK

The objective of the proposed Remedial Investigation (RI) scope of work is to further characterize soil, groundwater, and soil gas conditions at the Block 37 Site (Site), and address data gaps in the understanding of the distribution of site contaminants of potential concern (COPCs). The RI will consist of the following elements:

- Advancement of 59 soil borings to target depths up to 40 feet below ground surface (bgs) within the previous Phase 1 and 2 Excavation areas that are shown in **Figure 4-1** of the RI Work Plan and various depths in areas outside the previously excavated areas to address data gaps. The proposed boring locations and rationale are shown on **Figure 7-1** and **Table 7-1** of the RI Work Plan, respectively.
- Collection of soil samples from each boring and analysis for relevant COPCs outlined herein.
- Installation of seventeen monitoring wells screened in the shallow water-bearing zone (AMW-2 through AMW-18), of which two will likely have screens also penetrating the upper portion of the intermediate water-bearing zone. The proposed monitoring well locations are shown on **Figure 7-2** of the RI Work Plan.
- Collection of groundwater samples from the new monitoring wells and from selected existing monitoring wells for analysis for COPCs. Groundwater monitoring will be conducted on a quarterly basis for up to one year.

- Collection of soil gas samples at up to five locations noted with total petroleum hydrocarbon (TPH) as gasoline range organics (GRO) and volatile organic compounds (VOCs) in soil and/or groundwater that could pose a vapor intrusion risk. Soil gas sampling will be conducted during two events to evaluate fluctuations caused by different weather conditions.

3.0 INVESTIGATION METHODS AND PROCEDURES

Standard operating procedures for the activities to be performed during the RI are provided in **Attachment 1** and generally discussed below.

3.1 Pre-Field Activities

At least 72 hours prior to the beginning of subsurface soil work, Atlas will physically mark the location of the proposed borings and monitoring wells to aid in underground utility locating. Atlas will review publicly available Seattle Public Utility maps and any utility maps provided by City Investors. Atlas will notify Underground Services Alert at least 48 hours prior to commencing drilling activities. Additionally, a private utility locater will conduct a ground penetrating radar (GPR) and conductive survey in the vicinity of the borings. If underground utilities are identified at the proposed drilling locations, alternative drilling locations will be selected in consultation with Ecology. Additionally, Atlas will notify and coordinate with current property owners associated with boring or well locations proposed on adjacent properties outside of the Block 37 Property.

A site-and-project-specific health and safety plan (HASP) has been prepared to identify potential physical and chemical hazards associated with the proposed field activities, and to specify personal protective equipment and safety monitoring requirements. The HASP will be kept on file at Atlas's Seattle, Washington office and on P66's electronic database (LiveLink). A copy will be made available onsite during field activities as well. The HASP is provided in **Appendix E** of the RI Work Plan.

3.2 Field Screening and Soil Sampling

Soil samples will be collected from the soil borings and monitoring wells for lithologic profiling, field screening and chemical analysis. Monitoring well locations will be advanced using hollow stem auger drilling methods. Soil samples will be collected using a 2.5-inch diameter Standard Penetration Test (SPT) split spoon sampler on a minimum of five-foot intervals, however shorter intervals will be considered on an as-needed basis. Direct push techniques (DPT) will be used for the borings advanced within the Phase 1 and Phase 2 Excavation areas. If feasible, soil borings outside of the former excavation areas will also be advanced using DPT drilling method unless refusal conditions are encountered. The DPT soil samples will be collected continuously from 5 feet bgs to the total depth of the boring.

Soil samples will be field-screened for the presence of VOCs using a portable photoionization detector (PID). Field screening will be conducted by placing a portion of the collected soil into a sealable plastic bag and then monitoring headspace vapor concentrations using a PID. Soil lithology will be described in general accordance with American Society for Testing and Materials (ASTM) D2488 and the Unified Soil Classification System (USCS). A detailed field log of each boring will be prepared in the field noting soil type, soil color, groundwater depth, moisture, (density, stiffness, and plasticity as applicable), and PID readings.

The proposed soil boring and monitoring well locations as well as the investigation rationale are presented in the RI Work Plan, on **Table 7-1** and the boring/monitoring well locations are depicted

in RI Work Plan **Figures 7-1** and **7-2,** respectively. The borings will be advanced to at least 5 feet below the estimated bottom of excavation depth within the Phase 1 and 2 Excavation areas and at various depths in areas outside the previously excavated areas. Based on field screening results, borings may be extended to greater depths to delineate the vertical extent of apparent contamination. Up to three samples will be collected from each boring for chemical analysis as follows:

- Borings/monitoring wells within Phase 1 and 2 Excavation areas will be sampled at 15 feet, 20 feet, and 25 feet bgs, corresponding to elevations at approximately 14 feet, 9 feet, and 4 feet relative to the North American Vertical Datum of 1988 (NAVD88). If warranted, additional samples will be considered for analysis to assist in the vertical delineation of contamination.
- Borings/monitoring wells located outside of former excavation areas will be sampled at various depths as presented in **Table 7-1** of the RI Work Plan.
- Additional analytical samples will be collected from each boring/monitoring well and archived at the analytical laboratory for potential future analysis (within holding times) if additional delineation appears to be warranted based on the analytical results.

Field staff will wear clean disposable nitrile gloves (or equivalent) for each soil sample collected. Durable labels will be filled out with indelible ink and attached to appropriate sample containers immediately prior to sample collection.

Soil samples selected for analysis will be placed in laboratory-prepared volatile organic analysis (VOA) vials with septum lids or jars with Teflon™ lids. Following Ecology requirements, soil samples for GRO and VOC analysis will be collected in accordance with U.S. Environmental Protection Agency (EPA) Method 5035A. Those samples will be obtained from the macro-core sampler (such as an Encore® or TerraCore®) using a hand-held plunger set to collect the appropriate volume of soil for subsequent analysis. Soil collected in the plunger will be transferred to laboratory prepared VOA vials equipped with septum lids. Samples for non-volatile analysis will be transferred to laboratory-prepared jars equipped with Teflon™ lids.

All soil samples will be labeled and immediately placed in a cooler containing ice and kept cool until delivery to the laboratory. Standard chain-of-custody procedures will be observed during transport of the samples to the laboratory.

Soil samples from each boring will be analyzed for the following COPCs, as outlined in **Table 7-1** of the RI Work Plan, using the methods described in Section 5.1 of this SAP/QAPP:

- GRO
- TPH as diesel range organics (DRO), oil range organics (ORO), and kerosene
- Benzene, toluene, ethylbenzene, and total xylenes (BTEX)
- Naphthalene
- Arsenic
- Lead

3.3 Groundwater Sampling

Wells will be constructed of 2-inch diameter PVC, with 10 feet of screen intercepting the associated water table to be monitored (shallow wells approximately 5 to 20 feet bgs, and intermediate wells approximately 30 to 40 feet bgs). The screened interval for wells installed in the intermediate water-bearing zone will need to be determined on a location-specific basis as the interval of the glacially consolidated soil appears variable at the Block 37 Site.

The new monitoring wells will be sampled at least 5 days after well development is completed. A select number of the existing monitoring wells located on the Block 37 Site will also be sampled during the first monitoring event following the new well installation. Groundwater monitoring will be conducted up to 4 times (quarterly), to gather sufficient data to characterize current groundwater conditions. The groundwater monitoring program is presented on **Table 7-1** of the RI Work Plan. The majority of the monitoring wells will be sampled using a peristaltic pump (e.g., wells having groundwater levels < 20 feet bgs). Wells with groundwater levels greater than 20 feet bgs will be sampled using a bladder pump or equivalent. Prior to purging, a synoptic measurement of groundwater levels will be made in the monitoring wells. The wells will be opened and allowed to equilibrate before water level measurements are taken. Depth to water will be measured to the nearest 0.01 foot using an oil/water interface probe or water level indicator, as appropriate, and will be collected at the north side of the casing, which will be marked on the top of the well casing (TOC). Field staff will wear clean disposable nitrile gloves (or equivalent) for each groundwater sample collected. Dedicated, clean disposable tubing will be used at each well for purging and sample collection. The tubing inlet be placed near the top of the water column.

The wells will be purged using low-flow purging techniques until the physical parameters have stabilized. The low-flow pumping rate for purging and sampling to minimize drawdown will be less than 500 ml/min. The maximum drawdown requirement during purging will be 0.1 meter. Measurements will be recorded on a well-purging record form. During purging, groundwater will be pumped through a multi-parameter flow-through cell meter installed in line with the discharge tubing to measure field groundwater physical parameters (pH, temperature, specific conductivity, DO, ORP, and turbidity). During purging, field parameters will be measured until the last three readings of each parameter has stabilized. Field parameter data will be recorded on a sampling log form. The criteria for stabilization and frequency of reading during purging will be based on EPA guidance for groundwater sampling and low-flow purging. Field parameter data will be recorded on a sampling log form. All monitoring equipment will be calibrated prior to use and will be documented.

The shallow water bearing zone beneath the Block 37 Site may not yield sufficient quantities of water to allow all of the groundwater field parameters to stabilize and/or may be pumped dry. If a well is fully purged during the low-flow purging process, the well will be allowed to recharge prior to sampling. Once purging of the monitoring well is considered complete, a groundwater sample will be collected. Durable labels will be filled out with indelible ink and attached to appropriate sample container immediately prior to sample collection. The flow rate for sample collection to minimize potential volatilization will not be greater than 100 ml/min. Prior to collecting the sample, the discharge tube leading to the multiparameter meter will be disconnected, and the groundwater sample will be collected directly in laboratory supplied glassware containing the appropriate preservative. VOAs will be inverted to ensure no air bubbles are present in the sample container. If a bubble is present, the cap will be removed and additional volume will added, taking care to

limit spilling VOA contents, and the process will be repeated. Samples taken for dissolved metals will be field-filtered using single-use disposable 0.45-micrometer filter cartridges. Each sample will be labeled with a unique sample identification number. Samples will be placed in a cooler with ice and submitted to the analytical laboratory for analysis under chain-of-custody protocol.

Groundwater samples from each well will be analyzed for the COPCs outlined in the RI Work Plan using the methods described in Section 5.1 of this SAP/QAPP:

- GRO
- DRO, ORO, and kerosene
- BTEX
- Naphthalene
- Total and dissolved arsenic
- Total and dissolved lead

3.4 Soil Gas Sampling

Soil gas samples will be collected using soil gas probes installed at select locations based on field screening and analytical results from borings/monitoring wells on the Block 37 Property and surrounding ROWs. The soil gas probes will be allowed to equilibrate for a minimum of 24 hours prior to sampling. Soil gas samples will be collected in 1-liter Summa® canisters. Prior to purging or sampling, a shut-in test of the sampling manifold will be conducted to check for leaks in the sampling train. The above-ground valves, lines and fittings downstream from the top of the probe will be assembled in the sampling configuration. The system will then be evacuated to a minimum measured vacuum of approximately 100 inches of water using a Summa® canister. The measured vacuum will be observed on the sampling manifold gauge for at least one minute. After the shut-in test has been completed and no leaks have been observed, the sampling train will not be altered.

Leak tests will be conducted to assess leakage in the sample train during sampling, helium or equivalent tracer gas will be pumped into a small shroud covering the sample point and the sampling train and will be used as the leak check compound during the soil gas sampling. Helium concentrations will be monitored using a helium meter and recorded in the field logbook. If the helium test indicates that the sampling system is not tight, then the system will be inspected and adjusted, and the helium test repeated until it has been determined the sampling train is free of leaks. After at least three purge volumes have been extracted and the sample train leak testing apparatus has been assembled, soil gas samples will be collected using batch certified 1-liter Summa® canister. The initial vacuum of the canister will be verified to be greater than 25 inches of mercury and recorded in the field logbook. The following procedures will be used to collect soil gas samples:

1. Confirm the valve is closed.
2. Open valve a half turn.
3. Allow sample to be collected until the vacuum of the canister is approximately 5 inches of mercury.
4. Close valve by hand, tightening knob clockwise.
5. Verify and record final vacuum of canister on chain-of-custody and in field logbook (repeat steps used to verify initial vacuum).

6. Replace brass cap on canister.
7. Fill out canister sample tag (verify that sample ID and date of collection recorded on the sample tag match what is recorded on the chain-of-custody).
8. Fill out chain-of-custody (note canister serial numbers on the chain-of-custody).
9. Ship samples to selected Ecology accredited analytical laboratory.

Soil gas samples will be analyzed for BTEX and naphthalene by EPA Method TO-15 and TPH (EC5-8 Aliphatics; EC9-12 Aliphatic; and EC9-18 Aromatics) by the Massachusetts Department of Environmental Protection (MADEP) air phase hydrocarbon (APH) Test Methods WSC-CAM-IX.

3.5 Decontamination Procedures

Reusable drilling and sampling equipment will be decontaminated in accordance with the standard operating procedures described in **Attachment 1**.

3.6 Investigative-Derived Waste Management and Sampling

Investigation-derived waste (IDW) generated during the field activities will be placed into labeled 55-gallon drums or roll-off containers and temporarily stored on-site pending characterization and disposal at a P66-approved facility. IDW will include soil cuttings and liquids (decontamination and purge water). Waste profiling analytical samples will be collected from the drummed IDW in order to properly dispose of the waste. Laboratory analysis of the IDW will be subject to the requirements of the disposal facility and P66 criteria. Based on current information, it is unlikely that chlorinated VOC (CVOC) -impacted media from the American Linen CVOC Plume will be encountered during the Block 37 RI fieldwork. If CVOCs are encountered at the location and depth intervals of the explorations, they will be assessed after completion of the data gaps evaluation and COVC-containing waste will be disposed of at an appropriate waste facility.

Disposable waste (gloves, tubing, paper towels, etc.) will be contained in garbage bags and disposed in approved waste containers.

4.0 SAMPLE HANDLING

The labeling and sample handling methods to be used during the RI are presented below.

4.1 Sample Documentation

Each sample container will have a durable adhesive label with a unique identifier. The sample identifier will be recorded in field report forms and on the chain-of-custody form. Sample labels will include the following:

- Client name;
- Project name;
- Date and time sampled;
- Sample identifier;
- Requested sample analysis;
- Analyte preservative(s), if any; and
- Sampler's initials

The chain-of-custody form will include the following:

- Project number
- Sample identifier;
- Date and time of sample collection;
- Number of containers;
- Requested sample analysis;
- Analyte preservative(s), if any; and
- Sampler's initials

Atlas field personnel will enter all samples on the chain-of-custody form before transporting the samples offsite.

4.2 Sample Designation

Sample designation and labeling procedures for soil, groundwater, and soil gas samples are presented below.

4.2.1 Soil Sample Identifiers

Soil samples will be assigned a unique sample identifier that will include the soil boring location and the depth of the sample stated in feet bgs. For example, a soil sample collected from boring AB-1 at a depth of 10 feet bgs would be assigned the identifier AB-1-10. The unique identifier will be used to reference the sample on all field forms and in tables, figures, etc.

4.2.2 Groundwater Sample Identifiers

Water samples will be assigned a sample identifier that will include the soil boring (for grab samples from temporary monitoring points) or monitoring well location identifier. For example, a water sample collected from monitoring well AMW-1 would be assigned the identifier AMW-1. A grab sample taken from a boring would be followed by a "W", for example. AB-1-W. The sample identifier will be recorded on the sample label, Field Report form, and chain-of-custody form.

4.2.3 Soil Gas Sample Identifiers

Soil gas samples will be assigned a sample identifier that will include the sample location identifier. For example, a soil gas sample collected from monitoring point one would be assigned the identifier ASG-1. The sample identifier will be recorded on the sample label, Field Report form, and chain-of-custody form

4.3 Sample Containers, Preservation Procedures, and Hold Times

Sample container requirements for soil, groundwater, and soil gas samples are based on the medium to be sampled and the types of analyses to be performed. The containers, preservation procedures, and hold times for soil, groundwater, and soil gas will follow standard laboratory protocols. Sample containers, preservation procedures, and holding times are presented in **Table 1** of this SAP/QAPP.

4.4 Field Quality Assurance/Quality Control Samples

Field duplicate samples will be collected during sampling to assess the precision of laboratory analytical and field sampling methods. Field duplicates for soil and groundwater samples will be collected at a frequency of one duplicate sample per 20 groundwater samples collected. Field

duplicates will be submitted blind to the laboratory and have a unique sample location identifier. For example, a duplicate sample collected from monitoring well AMW-1 would be labeled as DUP1." Field duplicate precision will be assessed using relative percent difference (RPD) limits of 50% for soil samples and 30% for groundwater and soil gas samples. See Section 9.1.1 for further discussion of data precision.

4.5 Sample Packaging and Shipment

The following procedures will be used for soil and groundwater sample packaging and should meet regulatory standards and requirements of the laboratory performing the analysis:

- A durable sample label will be placed on the corresponding sample container(s) at the time of sample collection;
- Bubble-wrap or an equivalent will be used to protect sample containers from breakage;
- Sample container information will be checked against the information recorded on the Field Report forms and chain-of-custody forms before being placed into a cooler and to ensure that all samples and requested analysis are listed and are placed into the correct cooler;
- One copy of the chain-of-custody form will be retained by the field personnel by detaching the carbon copy of the laboratory-provided chain-of-custody, scanning/photographing the chain-of-custody form, or saving a copy of the electronic chain-of-custody form to the project file;
- Remaining paperwork, including a copy of the chain-of-custody, will be sealed in a plastic bag and placed inside of the cooler;
- Field personnel will fill resealable bags with ice and double-bag the ice in resealable bags, which will be placed in the cooler;
- If the cooler is being shipped to the laboratory, the cooler will be taped shut using strapping tape or shipping tape and custody seals will be affixed to the outside of the cooler on two sides;
- The laboratory address will be affixed to the cooler as well as Atlas's return address; and
- The sealed sample coolers will be transported to the analytical laboratory in a timely manner to ensure temperature requirements and hold times for the required analysis are met.

Laboratory personnel will assume responsibility for the samples once they are received and will document the handling of containers. Laboratory personnel will also adhere to standard chain-of-custody procedures to track each sample through all stages of laboratory processing.

5.0 LABORATORY ANALYSIS

This section describes the details of the laboratory analysis associated with soil, groundwater, and soil gas samples that will be collected during the RI. Laboratory analyses will be conducted by Pace Analytical (Pace). The soil gas APH analysis will be conducted by Fremont Analytical (Fremont). Pace and Fremont are accredited by Ecology and meet the QA/QC requirements of Ecology and the U.S. EPA.

5.1 Laboratory Analyses

Soil and groundwater will be analyzed for the following COPCs using the following methods:

- BTEX, and naphthalene by EPA Method 8260D
- GRO using Ecology Method Northwest TPH-gasoline extended (NWTPH-Gx) and DRO and ORO using Ecology Method Northwest TPH-diesel extended (NWTPH-Dx). TPH pattern profiles will be evaluated against laboratory standard chromatograms for gasoline (GRO), diesel (DRO), and motor oil (ORO), as well as kerosene. Kerosene will only be evaluated for presence/absence based on chromatographic pattern matching to the laboratory standard for kerosene.
- Arsenic and lead by EPA Method 6010D. For groundwater, these metals will include both total and dissolved analysis.

Soil gas samples will be analyzed for the following COPCs using the following methods:

- BTEX and naphthalene by EPA Method TO-15
- TPH by MADEP APH Method

5.2 Reporting Limits

The analytical methods identified above will have reporting limits (or practical quantitation limits) that are presented in Section 9, QAPP **Tables 2, 3,** and **4**. The laboratory reporting limits are based on current laboratory data and may be modified during the investigation as methodology is refined. Instances may arise where high sample concentration, heterogeneity of samples, or matrix interferences preclude achieving the laboratory reporting limits.

6.0 FIELD DOCUMENTATION

Documentation of field activities will be provided on Field Report forms, boring logs, Low-Flow Well Purging and Sampling Data forms, Soil Sample Data Logs, sample and waste material labels, Waste Inventory forms, and chain-of-custody forms. Documentation generated during field events will be retained in the project files and included in deliverables, as appropriate. The field forms and logs are provided in Attachments 2 through 8 and are described below.

6.1 Field Report Form

Field personnel will keep a daily field log on a Field Report Form (**Attachment 2**) which will summarize each day's events. Notes recorded by field personnel will be descriptive enough to allow independent parties to reconstruct the sampling procedures. Field documentation will include the following, at a minimum: date onsite, job number, project identification and location, weather conditions, sample collection data, personnel present and responsibilities, field equipment used, and any activities performed in a manner that deviates from this SAP. In addition, if other forms or documents are completed or used during the field event, they will be cited in and attached to the Field Report form. Completed Field Report forms will be signed by field personnel. Photographs will be taken of representative soil conditions and other key observations during the field program.

6.2 Boring Logs

Boring logs will be prepared by qualified field personnel during the drilling of borings and monitoring wells. The boring logs will include lithologic descriptions using the Unified Soil Classification System (USCS) and will include field screening information on the potential presence of contamination (**Attachment 3**). Monitoring well construction details will be included on the boring logs.

6.3 Low-Flow Well Purging and Sampling Data Form

A Low-Flow Well Purging and Sampling Data form (**Attachment 4**) will be used to record the depth to groundwater, well purging information, and other pertinent hydrologic measurements and supplementary information collected during groundwater sampling at each temporary and existing permanent monitoring well location. The form will be completed by the field personnel at the time of sample collection.

6.4 Soil Sample Data Log

A Soil Sample Data Log will be used to record information regarding soil samples collected. The log will include the sample location and identification, depth, sample time, field screening results, types and number of containers collected, and a brief lithologic description (**Attachment 5**).

6.5 Sample Label

Durable labels will be filled out with indelible ink and attached to appropriate sample containers immediately prior to sample collection. The label will include the medium, sample date and time, sample identification, project name, sampler's initials, and analyte preservative(s) if any (**Attachment 6**).

6.6 Waste Material Label

A waste material label will be filled out and affixed to the waste container immediately upon filling. The label will be filled out in indelible ink and will include the job number and name, address where the waste was generated, container contents, date, consultant's name and phone number, and sampler's initials (**Attachment 7**).

6.7 Waste Inventory Form

A Waste Inventory form will be used to document, and track waste generated during the field events. The form will include information on the waste container, origin of the waste, type of waste, date generated, date removed from the Site, transporter, and disposal location (**Attachment 7**).

6.8 Chain-Of-Custody Form

The chain-of-custody form provides an accurate written record that can be used to trace the possession and handling of the sample from the moment of its collection through the reporting of analytical results. The chain-of-custody form will include the client name, project name and number, date and time sampled, sample identifier, sampler's initials, and requested sample analysis (**Attachment 8**).

7.0 PROJECT ORGANIZATION AND RESPONSIBILITIES

A list of members and responsibilities of the project planning team, decision-makers, and interested parties is summarized below.

Regulatory Agency
Ecology is the lead regulatory agency and the Site Manager for this AO is:

Tena Seeds, PE
Washington State Department of Ecology
Telephone: (425) 457-3143
tena.seeds@ecy.wa.gov

Project Principal
The Project Principal provides support for all project activities and reviews data and deliverables prior to their submittal to P66, City Investors and Ecology. The Project Principal at Atlas for the Block 37 Site is:

Elisabeth Silver, LG
Atlas Technical Consultants
Telephone: (206) 781-1449
Elisabeth.Silver@oneatlas.com

Project Manager
The Project Manager is responsible for project implementation. The Project Manager will be responsible for ensuring the quality of the technical aspects of the project and implementing the SAP. The Project Manager for Atlas is:

Elisabeth Silver, LG
Atlas Technical Consultants
6347 Seaview Avenue NW
Seattle, Washington 98107
Telephone: (206) 781-1449
Elisabeth.Silver@oneatlas.com

Project Data Manager

The Project Data Manager will manage the data as it comes in, perform data validation, and submit data to Ecology's EIM database.

The Project Data Managers for Atlas are:

Danielle Cook
Atlas Technical Consultants
5319 SW Westgate Drive, Suite 123
Portland, OR 97221
Telephone: (971) 319-6950
Danielle.Cook@oneatlas.com

And

Todd Stanford, REHS, CEM
Atlas Technical Consultants
86 Long Court, Suite A
Thousand Oaks, CA 91360
Telephone: (805) 370-1551
Todd.Stanford@oneatlas.com

Field Staff
The field staff are responsible for supervising contractors, collecting samples, coordinating sample deliveries to the laboratory, documenting field activities, and communicating progress updates to the Project Manager, including deviations from the SAP.

Laboratory
Pace Analytical (Pace) in Minneapolis, Minnesota will perform analytical services and will be responsible for implementing specific QA/QC requirements.

8.0 REPORTING

Atlas personnel will observe and document all RI field activities at the Block 37 Site. The laboratory analytical data will be validated by an Atlas chemist to evaluate if any data usability issues were identified. The results will be summarized in a draft RI report that will be submitted to P66 and City Investors for review, and then, after incorporating any comments, will be submitted to Ecology for Agency review in accordance with the Schedule of Deliverable in Exhibit C of the AO. The report will document the findings of the RI activities and the conceptual sit model will be updated based on the findings. The report will include laboratory reports, summary tables, figures, and appendices pertinent to the data collected during the field activities. The report will be prepared and signed by a Washington licensed geologist or engineer. The Agency Review Draft RI Report will be submitted 90 days followed receipt of validated RI data. After Ecology's review of the document, the report will be prepared for public review (Public Review Draft RI Report) and submitted to Ecology within 45 days of resolving any comments received from the agency.

9.0 QUALITY ASSURANCE PROJECT PLAN

This section describes the analytical program to be conducted for each sample selected for chemical analysis, as well as the laboratory QA objectives and QC protocols required to ensure collection of representative and useable data.

9.1 Data Quality Objectives

Data quality objectives (DQOs) will be used to ensure that the data collected during the site investigation are of sufficient quality. Atlas will meet quality standards by ensuring that sampling locations are suitable, a sufficient number of samples are collected, and that field screening is conducted properly.

The quality of the field sampling methods and laboratory data will be assessed using the parameters of precision, accuracy, representativeness, comparability, completeness, and sensitivity. QC procedures for the aforementioned parameters are described in the following sections. Laboratory DQOs have been established by Pace, are specified in Pace's Quality Assurance Manual, and are summarized in **Tables 2-4** for soil, groundwater, and soil gas matrices. The DQOs presented in **Tables 2-4** were provided by Pace for informational purposes; the most current laboratory DQOs in place at the time of sample analysis will be used for data validation and assessment.

9.1.1 Precision

Precision is a measure of the degree to which two or more measurements are in agreement. For duplicate or replicate measurements, precision is expressed as the relative percent difference

(RPD) of a data pair or relative standard deviation (RSD) for replicate measurements (i.e., three or more replicates).

Field precision will be assessed through the collection and measurement of field duplicate samples. Field duplicates will be collected at a frequency of one duplicate for each 20 samples or less. At least one field duplicate for each matrix type (solid/liquid/air/) will be collected. Field precision will be assessed using RPDs of less than 50% for soil samples and less than 30% for groundwater and soil gas samples.

Precision in the laboratory will be assessed through the calculation of RPDs between the following data:

- Matrix Spike and Matrix Spike Duplicate (MS/MSD) sample data;
- Laboratory Control Sample and Laboratory Control Sample Duplicate (LCS/LCSD) data;
- Parent and associated field duplicate sample data; and
- Parent and matrix duplicate sample data (as applicable).

Laboratory precision limits are summarized in **Tables 2-4** for groundwater, soil, and soil gas samples. Field duplicate precision will be assessed using RPD limits of 50% for soil samples and 30% for groundwater and soil gas samples.

9.1.2 Accuracy

Accuracy is the degree of agreement between an observed value and an accepted reference value. Accuracy is a measure of bias in the system. The accuracy of a measurement is affected by errors introduced through sampling, field contamination, sample preservation and handling, matrix interference, sample preparation procedures and analytical techniques.

Accuracy in the field for samples submitted to the laboratory will be assessed through the use of trip blanks, equipment rinsate blanks, and adherence to sample collection and preservation requirements, and holding times. One trip blank will be included in each cooler that contain samples for VOC analysis (VOCs and/or TPH-GRO).

Accuracy in the laboratory will be assessed quantitatively through the analysis of matrix spike/matrix spike duplicates (MS/MSD), Laboratory Control Sample/laboratory control sample duplicates (LCS/LCSD), and response factors for calibration standards.

Accuracy of the lab analysis can be expressed as percent recovery in the samples that are spiked, and the acceptance limits for percent recovery are based on the analytical method used.

Laboratory accuracy limits are summarized in **Tables 2-4**

9.1.3 Representativeness

Representativeness is the degree to which sample data accurately and precisely represent a characteristic of a population, a sampling point, or an environmental condition. A quantitative evaluation of representativeness is performed by assessing the results from trip, equipment rinsate, and laboratory blanks associated with the samples.

Representativeness can be achieved by ensuring that the number and location of sampling points and the sample collection and analysis techniques are appropriate for the specific investigation.

Adherence to the sampling techniques and following specified sampling procedures will ensure that representative data is collected. Equipment rinsate blanks and trip blanks will be used to determine whether analytical results are truly representative of the site or were generated by the sampling and/or analytical process.

Representativeness in the laboratory can be achieved by following proper preparation and analytical procedures, evaluating matrix duplicates, and meeting holding times. Method blanks will be used to determine whether analytical results are truly representative of the site or were generated by the sampling and/or analytical process.

9.1.4 Completeness

Completeness is a measure of the amount of valid observations, measurements, and samples obtained during site investigation activities compared to the amount that was expected to be obtained under normal conditions.

Field completeness is a measure of valid observations, measurements, and actual number of samples collected compared to those samples scheduled for collection. Field completeness for this project is anticipated to be greater than 95%.

Laboratory completeness is a measure of the amount of valid measurements obtained from all the measurements collected during a project. Analytical completeness for this project is expected to be greater than 95%.

Data qualified as “estimated” will be considered valid for assessing completeness, based upon laboratory accuracy limits.

9.1.5 Comparability

Comparability is an expression of the confidence with which one data set can be compared with another. Comparability is dependent on the proper design of the sampling program and will be satisfied by ensuring the standard sampling procedures are followed and standard analytical methods are used. Project results may be compared to results produced by other projects that took place in the same study area.

Analytical data will be compared when similar sampling and analytical procedures are followed and documented. Comparability will be dependent on the sample matrices and the assessment of sample matrices when comparing field measurements.

9.2 Data Quality Control

Initial data reduction, evaluation, and reporting will be performed by the laboratory, as specified in the laboratory Quality Assurance Manual. The Atlas Project Data Manager, or another qualified designee, will then validate the analytical data by reviewing the following types of QC information, as appropriate:

- Method deviations;
- Sample extraction and hold times;
- Method reporting limits;
- Blank samples (e.g., equipment rinsate, trip, and laboratory method);
- Field and/or laboratory duplicate samples;

- RPD (for precision);
- LCS/LCSD and/or MS/MSD samples (for accuracy);
- Surrogate recoveries; and
- Percent completeness.

Atlas will review field records and the results of field observations and measurements to ensure that procedures were properly performed and documented. Field procedures will be reviewed for the following elements:

- Completeness and legibility of field logs;
- Preparation and frequency of field QC samples;
- Field equipment calibration and maintenance; and
- Chain-of-custody forms.

9.3 Laboratory Data Package Requirements

Laboratory data packages will consist of a laboratory report and electronic data deliverable. Laboratory reports will include the following elements:

- Case narrative;
- Analytical notes;
- QC sample results;
- Sample cross-reference;
- Analytical results;
- Copies of completed Chain of Custody forms;
- Data qualifiers and abbreviations.

Electronic data deliverables (EDDs) will be submitted by the laboratory in Ecology's Environmental Information Management (EIM) format. The electronic data deliverable will include at a minimum:

- Sample identification information;
- Sample media;
- Sampling, laboratory receiving, extraction, and analysis dates;
- Analyte and Chemical Abstracts Service Reference No.;
- Reported concentrations and reporting units;
- Analytical method detection limits;
- Laboratory reporting limits and reporting units; and
- QA/QC results, including identification of MS/MSD and laboratory duplicate samples, and;
- Surrogate recoveries (where applicable).

9.4 Corrective Action

Corrective action for laboratory data outliers will be the responsibility of the Laboratory Project Manager. Corrective procedures to be implemented by the Project Manager or other project staff may include:

- Identifying the source of deviation from the quality standards set forth in the SAP and its supporting documents;
- Re-analyzing soil and/or groundwater samples if holding time criteria permit or after discussion with the project manager or project chemist;

- Re-sampling and analyzing soil and/or groundwater if necessary to meet the quality standards set forth in this SAP;
- Evaluating and amending sampling, analytical, and/or data transfer procedures; and/or
- Qualifying data to indicate the level of uncertainty.

During field operations and sampling procedures, field team members will be responsible for identifying and correcting equipment malfunctions and documenting sampling procedures in a manner that will enable the Project Manager to evaluate whether corrective action is warranted.

Equipment malfunctions, variances in sampling protocols, and corrective actions taken by field team members will be documented in the field notes. The Project Manager will evaluate the field notes upon submittal to determine whether the corrective action taken was adequate to meet project quality standards or whether additional corrective action is required.

9.5 Data Management

The final repository for sample analytical information will be Ecology's EIM system. Atlas will directly transfer the analytical data provided by the laboratory into the Ecology EIM System, which will reduce errors produced by manual data entry. Atlas will ensure that the electronic laboratory data is correct before uploading it into EIM and confirm that the upload was completed successfully. Field measurements and other data requiring manual entry will be reviewed by Atlas personnel other than the data entry staff prior to submission to the EIM System. Electronic copies of field notes and field forms will be saved for the file.

9.6 Data Validation

Atlas will review all chemical data with regard to the following:

- Chain-of-custody/documentation;
- Sample preservation and holding times;
- Blanks (laboratory method, trip, and/or rinsate blanks);
- Reporting limits;
- Surrogate recoveries (where applicable);
- MS/MSD recoveries;
- LCS and/or LCSD recoveries; and
- Laboratory and/or field duplicate RPDs.

Data validation will be based on the QA/QC criteria as recommended in the methods identified in this SAP and in the National Functional Guidelines for Organic Superfund Methods Data Review and/or National Functional Guidelines for Inorganic Superfund Methods Data Review (EPA 2017a, 2017b). The findings of the data validation will be summarized in a data validation report and all data qualifiers assigned to the results will be summarized.

Data usability, conformance with the QA/QC objectives, and any deviations that may have affected the quality of the data, as well as the basis of application of qualifiers, will be included in the final reporting of the data. Any required corrective actions based on the evaluation of the analytical data will be determined by the laboratory in consultation with the Atlas Project Manager and may include qualification or rejection of the data.

Table 1
Sample Containers, Preservatives, and Holding Time Requirements
Sampling and Analysis Plan / Quality Assurance Project Plan
Phillips 66 Facility No. 255353 (AOC 1396)

Parameter	Analytical Method	Matrix	Minimum Sample Amount per Container	Container Type	Preservation	Extraction Holding Time	Analysis Holding Time
VOCs	EPA Method 8260D	Groundwater	40mL	3x40mL VOA glass vials with teflon septum	HCl to pH<2, no headspace, cool to <6°C, >0°C	NA	14 days
		Soil	5g/2oz[1]	2x40mL tared VOA vials with sodium bisulfate 1x40 mL tared VOA vial with methanol 1x2oz glass jar with teflon-lined lid (minimize headspace)	Sodium bisulfate to pH<2, methanol, no headspace (2oz glass jar), cool to <6°C, >0°C	NA	14 days
	TO-15	Soil Gas	6L	6L Summa canister, starting vacuum requirement minimum of -26 in/Hg	None	NA	30 days
PAHs	EPA Method 8270E-SIM	Groundwater	40mL	2x40mL amber glass vials with teflon-lined lid	Cool to <6°C, >0°C	7 days	40 days (after extraction)
		Soil	4oz	1x4oz glass jar with teflon-lined lid	Cool to <6°C, >0°C	14 days	40 days (after extraction)
TPHs	NWPTH-Gx	Groundwater	40mL	3x40mL VOA glass vials with teflon septum	HCl to pH<2, no headspace, cool to <6°C, >0°C	NA	14 days
		Soil	5g/2oz[1]	2x40mL tared VOA vial with methanol 1x2oz glass jar with teflon-lined lid (minimize headspace)	Methanol, no headspace (2oz glass jar), cool to <6°C, >0°C	NA	14 days
	NWPTH-Dx	Groundwater	250mL	2x250mL amber glass bottle with teflon-lined lid	HCl to pH<2, no headspace, cool to <6°C, >0°C	14 days	40 days (after extraction)
		Soil	4oz	1x4oz glass jar with teflon-lined lid	Cool to <6°C, >0°C	14 days	40 days (after extraction)
APHs	MA APH (Modified TO-15)	Soil Gas	6L	6L Summa canister, starting vacuum requirement minimum of -26 in/Hg	None	NA	30 days
Metals	EPA Method 6010D/7470A	Groundwater	250mL	1x250mL HDPE	HNO3 to pH<2, cool to <6°C, >0°C	NA	180 days
	EPA Method 6010D/7471B	Soil	4oz	1x4oz glass jar with teflon-lined lid	Cool to <6°C, >0°C	NA	180 days

Notes:
1. EPA Method 5035A collection requirement; 5 grams per VOA vial or 2oz. per glass jar
Information provided by Pace Analytical laboratory, located in Minneapolis, Minnesota
EPA - United States Environmental Protection Agency
g - gram
HCl - hydrochloric acid
HDPE - high-density polyethylene
HNO_3 - nitric acid
mL - milliliter
NA - not applicable
oz - ounce
PAH - polycyclic aromatic hydrocarbon
TPH - total petroleum hydrocarbon
VOA - volatile organic analysis
VOC - volatile organic compound

Table 2
Groundwater Data Quality Objectives
Sampling and Analysis Plan / Quality Assurance Project Plan
Phillips 66 Facility No. 255353 (AOC 1396)

		Pace Analytical Laboratory[a]						
Parameter	**Analytical Method**	**MDL**	**Reporting Limit**	**LCS/LCSD Accuracy (%)**	**LCS/LCSD Precision (%)**	**MS/MSD Accuracy (%)**	**MS/MSD Precision (%)**	**Surrogate (%)**
VOCs (ug/L)	EPA Method 8260D							
1,1,1-Trichloroethane		0.174	1	72 - 129	20	62 - 136	30	--
1,1,2,2-Tetrachloroethane		0.175	1	74 - 125	20	63 - 127	30	--
1,1,2-Trichloroethane		0.196	1	75 - 125	20	65 - 128	30	--
1,1-Dichloroethane		0.141	1	72 - 128	20	63 - 128	30	--
1,1-Dichloroethene		0.104	1	67 - 130	20	59 - 135	30	--
1,2-Dibromoethane (EDB)		0.191	1	75 - 125	20	64 - 125	30	--
1,2-Dichloroethane		0.145	1	74 - 125	20	58 - 125	30	--
1,2-Dichloropropane		0.239	4	75 - 125	20	65 - 125	30	--
2-Butanone		1.52	5	66 - 129	20	54 - 129	30	--
4-Methyl-2-pentanone		0.733	5	74 - 129	20	61 - 130	30	--
Acetone		2.94	20	50 - 150	20	30 - 150	30	--
Benzene		0.119	1	73 - 125	20	60 - 125	30	--
Bromodichloromethane		0.207	1	75 - 125	20	63 - 127	30	--
Bromoform		0.239	4	64 - 134	20	62 - 134	30	--
Bromomethane		1.88	4	30 - 150	20	30 - 150	30	--
Carbon Tetrachloride		0.141	1	63 - 135	20	63 - 142	30	--
Chlorobenzene		0.108	1	75 - 125	20	65 - 128	30	--
Chloroethane		0.409	1	61 - 142	20	61 - 142	30	--
Chloroform		0.143	1	75 - 125	20	63 - 125	30	--
Chloromethane		0.224	4	64 - 129	20	56 - 132	30	--
cis-1,2-Dichloroethene		0.171	1	74 - 125	20	63 - 125	30	--
cis-1,3-Dichloropropene		0.156	4	75 - 126	20	61 - 126	30	--
Dibromochloromethane		0.168	1	71 - 131	20	70 - 131	30	--
Ethylbenzene		0.069	1	75 - 125	20	61 - 125	30	--
m,p-Xylene		0.178	2	75 - 125	20	62 - 125	30	--
Methyl tert-butyl Ether (MTBE)		0.181	1	75 - 125	20	61 - 125	30	--
Methylene Chloride		0.829	4	69 - 125	20	58 - 125	30	--
Naphthalene		0.201	4	69 - 127	20	54 - 127	30	--
o-Xylene		0.115	1	75 - 125	20	60 - 127	30	--
Styrene		0.126	1	75 - 127	20	66 - 132	30	--
Tetrachloroethene		0.101	1	69 - 131	20	66 - 138	30	--
Toluene		0.113	1	75 - 125	20	61 - 125	30	--
trans-1,2-Dichloroethene		0.152	1	69 - 130	20	60 - 135	30	--
trans-1,3-Dichloropropene		0.126	4	74 - 128	20	64 - 128	30	--
Trichloroethene		0.126	0.4	75 - 130	20	65 - 137	30	--
Trichlorofluoromethane		0.102	1	71 - 133	20	69 - 140	30	--
Vinyl Chloride		0.063	0.2	67 - 129	20	63 - 132	30	--
1,2-Dichlorobenzene-d4 (surrogate)		--	--	--	--	--	--	70 - 130
4-Bromofluorobenzene (surrogate)		--	--	--	--	--	--	75 - 125
Toluene-d8 (surrogate)		--	--	--	--	--	--	75 - 125
PAHs (ug/L)	EPA Method 8270E-SIM							
1-Methylnaphthalene		0.008	0.04	40 - 125	20	70 - 130	30	--
2-Methylnaphthalene		0.015	0.04	38 - 125	20	70 - 130	30	--
Acenaphthene		0.011	0.04	43 - 125	20	70 - 130	30	--
Acenaphthylene		0.011	0.04	43 - 125	20	70 - 130	30	--
Anthracene		0.008	0.04	52 - 125	20	70 - 130	30	--
Benzo(a)anthracene[b]		0.016	0.04	59 - 125	20	70 - 130	30	--
Benzo(a)pyrene[b]		0.012	0.04	62 - 125	20	70 - 130	30	--
Total Benzofluoranthenes[b]		0.026	0.12	63 - 125	20	70 - 130	30	--
Benzo(g,h,i)perylene		0.016	0.04	60 - 125	20	70 - 130	30	--
Chrysene[b]		0.015	0.04	61 - 125	20	70 - 130	30	--
Dibenzo(a,h)anthracene[b]		0.016	0.04	63 - 125	20	70 - 130	30	--
Dibenzofuran		0.017	0.04	45 - 125	20	70 - 130	30	--
Fluoranthene		0.017	0.04	64 - 125	20	70 - 130	30	--
Fluorene		0.010	0.04	52 - 125	20	70 - 130	30	--
Indeno(1,2,3-cd)pyrene[b]		0.016	0.04	63 - 125	20	70 - 130	30	--
Naphthalene		0.016	0.04	39 - 125	20	70 - 130	30	--
Phenanthrene		0.016	0.04	60 - 125	20	70 - 130	30	--
Pyrene		0.013	0.04	64 - 125	20	70 - 130	30	--
TTEC		--	--	--	--	--	--	--
2-Fluorobiphenyl (Surrogate)		--	--	--	--	--	--	48 - 125
Terphenyl-d14 (Surrogate)		--	--	--	--	--	--	51 - 126
TPHs (ug/l)								
Gasoline-Range TPH	NWTPH-Gx	42.8	100	75 - 127	20	71 - 139	30	--
a,a,a-Trifluorotoluene (Surrogate)		--	--	--		--	--	50 - 150
Diesel-Range TPH	NWPTH-Dx	118	400	50 - 150	20	50 - 150	30	--
Oil-Range TPH	NWPTH-Dx	190	400	50 - 150	20	50 - 150	30	--
n-Triacontane (Surrogate)		--	--	--	--	--	--	50 - 150
o-Terphenyl (Surrogate)		--	--	--	--	--	--	50 - 150

Table 2
Groundwater Data Quality Objectives
Sampling and Analysis Plan / Quality Assurance Project Plan
Phillips 66 Facility No. 255353 (AOC 1396)

Parameter	Analytical Method	Pace Analytical Laboratory[a] MDL	Reporting Limit	LCS/LCSD Accuracy (%)	LCS/LCSD Precision (%)	MS/MSD Accuracy (%)	MS/MSD Precision (%)	Surrogate (%)
Metals (mg/L)								
Arsenic	EPA Method 6010D	0.0000916	0.0005	80 - 120	20	75 - 125	20	--
Barium	EPA Method 6010D	0.000191	0.010	80 - 120	20	75 - 125	20	--
Cadmium	EPA Method 6010D	0.000280	0.003	80 - 120	20	75 - 125	20	--
Chromium	EPA Method 6010D	0.000403	0.010	80 - 120	20	75 - 125	20	--
Lead	EPA Method 6010D	0.00258	0.010	80 - 120	20	75 - 125	20	--
Selenium	EPA Method 6010D	0.00589	0.020	80 - 120	20	75 - 125	20	--
Silver	EPA Method 6010D	0.000494	0.010	80 - 120	20	75 - 125	20	--
Mercury	EPA Method 7470A	0.0000703	0.0002	80 - 120	20	75 - 125	20	--

Notes:

[a]Pace Analytical laboratory information was obtained in August 2021 and August 2023; however, the most current laboratory limits in place at the time of sample analysis will be used.
[b]These compounds are considered carcinogenic PAHs (cPAHs). cPAHs are subject to WAC173-340 Toxicity Equivalent Concentration calculations. The MTCA screening level for TTEC is based on benzo(a)pyrene.
cPAH - carcinogenic polycyclic aromatic hydrocarbon
EDB - 1,2-dibromoethane (ethylene dibromide)
EDC - 1,2-dichloroethane (ethylene dichloride)
EPA - United States Environmental Protection Agency
LCS - laboratory control sample
LCSD - laboratory control sample duplicate
MDL - method detection limit
mg/L - miligram per liter
MS - matrix spike
MSD - matrix spike duplicate
MTBE - methyl tert-butyl ether
MTCA - Model Toxics Control Act
NE - not established
PAH - polycyclic aromatic hydrocarbon
RPD - relative percent difference
SIM - selected ion monitoring
TPH - total petroleum hydrocarbon
TTEC - total toxicity equivalency calculation
ug/L - microgram per liter
VOC - volatile organic compound
WAC - Washington Administrative Code

Table 3
Soil Data Quality Objectives
Sampling and Analysis Plan / Quality Assurance Project Plan
Phillips 66 Facility No. 255353 (AOC 1396)

		Pace Analytical Laboratory[a]						
Parameter	Analytical Method	MDL	Reporting Limit	LCS/LCSD Accuracy (%)	LCS/LCSD Precision (%)	MS/MSD Accuracy (%)	MS/MSD Precision (%)	Surrogate (%)
VOCs (ug/kg)	EPA Method 8260D							
1,1,1-Trichloroethane		0.37	1	69 - 126	20	10 - 144	35	--
1,1,2,2-Tetrachloroethane		0.231	1	68 - 128	20	10 - 160	35	--
1,1,2-Trichloroethane		0.425	1	78 - 123	20	10 - 160	35	--
1,1-Dichloroethane		0.268	1	70 - 127	20	10 - 147	37	--
1,1-Dichloroethene		0.355	1	65 - 131	20	10 - 155	37	--
1,2-Dibromoethane (EDB)		0.25	1	74 - 128	20	10 - 148	34	--
1,2-Dichloroethane		0.45	1	65 - 131	20	10 - 148	35	--
1,2-Dichloropropane		0.164	1	74 - 125	20	10 - 148	37	--
2-Butanone		4.68	10	30 - 160	24	10 - 160	40	--
4-Methyl-2-pentanone		0.95	10	56 - 143	20	10 - 160	35	--
Acetone		20.7	50	10 - 160	31	10 - 160	40	--
Benzene		0.375	1	70 - 123	20	10 - 149	37	--
Bromodichloromethane		0.725	1	73 - 121	20	10 - 143	37	--
Bromoform		0.424	1	64 - 132	20	10 - 146	36	--
Bromomethane		1.17	5	56 - 147	20	10 - 149	38	--
Carbon Tetrachloride		0.248	1	66 - 128	20	10 - 145	37	--
Chlorobenzene		0.192	1	76 - 128	20	10 - 152	39	--
Chloroethane		1	5	61 - 134	20	10 - 146	40	--
Chloroform		1.03	5	72 - 123	20	10 - 146	37	--
Chloromethane		0.65	2.5	51 - 138	20	10 - 159	37	--
cis-1,2-Dichloroethene		0.475	1	73 - 125	20	10 - 149	37	--
cis-1,3-Dichloropropene		0.425	1	76 - 127	20	10 - 151	37	--
Dibromochloromethane		0.224	1	74 - 127	20	10 - 146	37	--
Ethylbenzene		0.3	1	74 - 126	20	10 - 160	38	--
m,p-Xylene		0.332	2	76 - 126	20	10 - 156	40	--
Methyl tert-butyl Ether (MTBE)		0.35	1	66 - 132	20	11 - 147	35	--
Methylene Chloride		1	5	68 - 123	20	10 - 141	37	--
Naphthalene		0.498	5	59 - 130	20	10 - 160	36	--
o-Xylene		0.5	1	79 - 124	20	10 - 156	40	--
Styrene		0.223	1	72 - 127	20	10 - 160	40	--
Tetrachloroethene		0.325	1	70 - 136	20	10 - 156	39	--
Toluene		1.23	5	75 - 121	20	10 - 156	38	--
trans-1,2-Dichloroethene		0.5	1	71 - 125	20	10 - 150	37	--
trans-1,3-Dichloropropene		0.675	1	73 - 127	20	10 - 148	37	--
Trichloroethene		0.2	1	76 - 126	20	10 - 156	38	--
Trichlorofluoromethane		0.356	5	61 - 142	20	10 - 160	40	--
Vinyl Chloride		0.226	1	63 - 134	20	10 - 160	37	--
1,2-Dichlorobenzene-d4 (surrogate)		--	--	--	--	--	--	70 - 130
4-Bromofluorobenzene (surrogate)		--	--	--	--	--	--	67 - 138
Dibromofluorobenzene (surrogate)		--	--	--	--	--	--	65 - 129
Toluene-d8 (surrogate)		--	--	--	--	--	--	75 - 131
PAHs (ug/kg)	EPA Method 8270E-SIM							
1-Methylnaphthalene		1.33	10	56 - 125	20	53 - 125	30	--
2-Methylnaphthalene		0.913	10	56 - 125	20	56 - 125	30	--
Acenaphthene		3.14	10	59 - 125	20	30 - 150	30	--
Acenaphthylene		2.59	10	57 - 125	20	46 - 125	30	--
Anthracene		1.61	10	64 - 125	20	43 - 125	30	--
Benzo(a)anthracene[b]		1.16	10	66 - 125	20	30 - 150	30	--
Benzo(a)pyrene[b]		0.903	10	71 - 125	20	30 - 150	30	--
Total Benzofluoranthenes[b]		2.43	30	75 - 125	20	30 - 150	30	--
Benzo(g,h,i)perylene		1.30	10	34 - 125	20	30 - 150	30	--
Chrysene[b]		1.42	10	71 - 125	20	30 - 150	30	--
Dibenzo(a,h)anthracene[b]		1.20	10	75 - 125	20	30 - 150	30	--
Dibenzofuran		2.66	10	34 - 125	20	32 - 134	30	--
Fluoranthene		2.03	10	74 - 125	20	30 - 150	30	--
Fluorene		2.10	10	65 - 125	20	30 - 150	30	--
Indeno(1,2,3-cd)pyrene[b]		1.10	10	74 - 125	20	30 - 150	30	--
Naphthalene		2.96	10	54 - 125	20	48 - 125	30	--
Phenanthrene		1.69	10	72 - 125	20	30 - 150	30	--
Pyrene		1.19	10	72 - 125	20	30 - 150	30	--
TTEC[b]		--	--	--	--	--	--	--
2-Fluorobiphenyl (Surrogate)		--	--	--	--	--	--	38 - 125
Terphenyl-d14 (Surrogate)		--	--	--	--	--	--	31 - 125
TPHs (mg/kg)								
Gasoline-Range TPH	NWTPH-Gx	2.09	5	70 - 125	20	53 - 150	30	--
a,a,a-Trifluorotoluene (Surrogate)		--	--	--		--	--	50 - 150
Diesel-Range TPH	NWPTH-Dx	3.04	15	50 - 150	20	50 - 150	30	--
Oil-Range TPH	NWPTH-Dx	3.44	10	50 - 150	20	50 - 150	30	--
n-Triacontane (Surrogate)		--	--	--	--	--	--	50 - 150
o-Terphenyl (Surrogate)		--	--	--	--	--	--	50 - 150
Metals (mg/kg)								
Arsenic	EPA Method 6010D	0.153	1.00	80 - 120	20	75 - 125	20	--
Barium	EPA Method 6010D	0.0149	0.50	80 - 120	20	75 - 125	20	--
Cadmium	EPA Method 6010D	0.0341	0.15	80 - 120	20	75 - 125	20	--
Chromium	EPA Method 6010D	0.0312	0.50	80 - 120	20	75 - 125	20	--
Lead	EPA Method 6010D	0.103	0.50	80 - 120	20	75 - 125	20	--
Selenium	EPA Method 6010D	0.329	1.00	80 - 120	20	75 - 125	20	--
Silver	EPA Method 6010D	0.0351	0.50	80 - 120	20	75 - 125	20	--
Mercury	EPA Method 7471B	0.00868	0.02	80 - 120	20	80 - 120	20	--

Notes:

[a]Pace Analytical laboratory information was obtained in August 2021; however, the most current laboratory limits in place at the time of sample analysis will be used.

[b]These compounds are considered carcinogenic PAHs (cPAHs). cPAHs are subject to WAC173-340 Toxicity Equivalent Concentration calculations. The MTCA screening level for TTEC is based on benzo(a)pyrene.

cPAH - carcinogenic polycyclic aromatic hydrocarbon
EDB - 1,2-dibromoethane (ethylene dibromide)
EDC - 1,2-dichloroethane (ethylene dichloride)
EPA - United States Environmental Protection Agency
(I) - industrial properties
LCS - laboratory control sample
LCSD - laboratory control sample duplicate
MDL - method detection limit
mg/kg - miligram per kilogram
MS - matrix spike
MSD - matrix spike duplicate
MTBE - methyl tert-butyl ether
MTCA - Model Toxics Control Act
NE - not established
PAH - polycyclic aromatic hydrocarbon
RPD - relative percent difference
SIM - selected ion monitoring
TPH - total petroleum hydrocarbon
TTEC - total toxicity equivalency calculation
(U) - urestricted land use
ug/kg - microgram per kilogram
VOC - volatile organic compound
WAC - Washington Administrative Code

Table 4
Soil Gas Data Quality Objectives
Sampling and Analysis Plan / Quality Assurance Project Plan
Phillips 66 Facility No. 255353 (AOC 1396)

		Method B CULs and Screening Levels[a]		Pace Analytical Laboratory[b]				
Parameter	**Analytical Method**	**Indoor Air**	**Soil Gas**	**MDL**	**Reporting Limit**	**LCS/LCSD Accuracy (%)**	**LCS/LCSD Precision (%)**	**Surrogate (%)**
VOCs (ug/m^3)	EPA Method TO-15							
1,1,1-Trichloroethane		2,286	76,000	0.186	1.11	70 - 130	25	--
1,1,2,2-Tetrachloroethane		0.043	1.4	0.372	1.40	70 - 132	25	--
1,1,2-Trichloroethane		0.091	3.0	0.197	0.555	70 - 134	25	--
1,1-Dichloroethane		1.6	52	0.165	0.823	70 - 133	25	--
1,1-Dichloroethene		91	3,000	0.138	0.806	70 - 130	25	--
1,2-Dibromoethane (EDB)		0.00417	0.14	0.300	0.050	70 - 138	25	--
1,2-Dichloroethane (EDC)		0.096	3.2	0.194	0.823	70 - 132	25	--
1,2-Dichloropropane		0.68	23	0.269	0.939	70 - 134	25	--
2-Butanone		1,371	46,000	0.465	3.00	50 - 139	25	--
4-Methyl-2-pentanone		2,286	76,000	0.321	4.16	70 - 139	25	--
Acetone		14,171	470,000	1.81	6.04	64 - 130	25	--
Benzene		0.32	11	0.114	0.325	70 - 131	25	--
Bromodichloromethane		0.068	2.3	0.237	1.36	70 - 133	25	--
Bromoform		2.3	76	1.62	5.25	70 - 137	25	--
Bromomethane		2.3	76	0.150	0.789	64 - 134	25	--
Carbon Tetrachloride		0.42	14	0.280	1.28	70 - 131	25	--
Chlorobenzene		23	760	0.155	0.936	70 - 130	25	--
Chloroethane		4,571	150,000	0.224	0.536	69 - 141	25	--
Chloroform		0.11	3.6	0.183	0.496	70 - 130	25	--
Chloromethane		41	1,400	0.0851	0.420	70 - 130	25	--
cis-1,2-Dichloroethene		18.3	610	0.195	0.806	70 - 137	25	--
cis-1,3-Dichloropropene		0.625[c]	21[c]	0.255	2.31	70 - 144	25	--
Dibromochloromethane		NE	NE	0.515	1.73	70 - 132	25	--
Ethylbenzene		457	15,000	0.309	0.883	70 - 142	25	--
m,p-Xylene		46[d]	1,500[d]	0.642	1.77	70 - 141	25	--
Methyl tert-butyl Ether (MTBE)		9.6	320	0.126	3.66	70 - 143	25	--
Methylene Chloride		66	2,200	0.593	3.53	70 - 130	25	--
Naphthalene		0.074	2.5	2.17	0.20	67 - 132	25	--
o-Xylene		46	1,500	0.271	0.883	70 - 141	25	--
Styrene		457	15,000	0.385	0.866	70 - 142	25	--
Tetrachloroethene		9.6	320	0.292	0.689	70 - 130	25	--
Toluene		2,286	76,000	0.244	0.766	70 - 138	25	--
trans-1,2-Dichloroethene		18	610	0.168	0.806	70 - 130	25	--
trans-1,3-Dichloropropene		0.625[c]	21[c]	0.544	2.31	70 - 145	25	--
Trichloroethene		0.33	11	0.196	0.546	70 - 130	25	--
Trichlorofluoromethane		320	11,000	0.233	1.14	69 - 135	25	--
Vinyl Chloride		0.28	9.5	0.0868	0.260	70 - 137	25	--
THC as Gasoline		140	4,700	106.0000	211.000	70 - 130	25	--
1,4-Dichlorobenzene-d4 (Surrogate)		--	--	--	--	--	--	70 - 130
Hexane-d14 (Surrogate)		--	--	--	--	--	--	70 - 130
Toluene-d8 (Surrogate)		--	--	--	--	--	--	70 - 130
TPHs (aliphatics and aromatics) (ug/m^3)								
Diesel-Range TPH	MA APH (EPA Method TO-15)	46	1,500					--
a,a,a-Trifluorotoluene (Surrogate)		--		--	--	--	--	
(Surrogate)		--		--	--	--	--	

Notes:

[a]PModel Toxics control Act Cleanup Regulation, WAS 173-340. MTCA Method B values are from Ecology website CLARC tables downloaded August 2021 https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Contamination-clean-up-tools/CLARC/Data-tables), when available.

[b]Pace Analytical laboratory information was obtained in August 2021; however, the most current laboratory limits in place at the time of sample analysis will be used.

[c]The MTCA Method B screening levels are listed under 1,3-dichloropropene.

[d]The MTCA Method B screening levels are listed under total xylenes.

EDB - 1,2-dibromoethane (ethylene dibromide)
EDC - 1,2-dichloroethane (ethylene dichloride)
EPA - United States Environmental Protection Agency
LCS - laboratory control sample
LCSD - laboratory control sample duplicate
MDL - method detection limit
ug/m^3 - microgram per cubic meter
MS - matrix spike
MSD - matrix spike duplicate
MTBE - methyl tert-butyl ether
MTCA - Model Toxics Control Act
NE - not established
RPD - relative percent difference
TPH - total petroleum hydrocarbon
VOC - volatile organic compound

STANDARD OPERATING PROCEDURES

STANDARD OPERATING PROCEDURE
SOIL-GAS SAMPLING PROCEDURES

PURPOSE AND APPLICATION

The purpose of this standard operating procedure (SOP) is to provide field personnel with the methodology for collecting and documenting soil-gas samples from soil-gas probes. The step- by-step guidelines provided in this SOP are to be followed by the field crew during all site visits, as applicable.

EQUIPMENT AND SUPPLIES/REAGENTS

The following equipment is necessary to purge and sample a soil-gas probe:

- Socket wrench set.
- Helium Shroud large enough to fully encapsulate the soil-gas probe, sampling manifold, and sampling canister.
- Non-refillable steel cylinder filled with ultra-pur Helium.
- Needle valve fitting for helium cylinder
- Helium Gas Analyzer, supplied by FEI
- Crescent wrenches:
    - 9/16" crescent wrench;
    - 1/2" inch crescent wrench or adjustable crescent wrench.
- ¼" high-density polyethylene (HDPE) tubing provided by laboratory.
- ¼" brass Swagelok fittings, provided by laboratory.
- 1L summa canisters, as described in project-specific plans, or as required by the analytical laboratory at a minimum.
- Sampling manifold equipped with stainless steel tubing, compression fittings, in-line filter and restrictor, vacuum gauge, and a 3-way compression fitting valve; quantity of manifolds dependent on number of soil-gas samples to be collected.
- Personal protective equipment as described in the site-specific Health and Safety Plan (HASP).
- Materials necessary to provide required documentation, (e.g., sample labels, Field Report forms, Chain of Custody form).
- Sampling-support equipment (e.g., boxes, bubble wrap, clear tape, garbage bags, paper towels, nitrile gloves, shipping supplies).

DECONTAMINATION

A designated manifold, sampling canister, and tubing should be used at each soil-gas probe. Tubing, manifolds, and canisters should never be used for more than one soil-gas probe location.

Decontamination of equipment is not required, however, new nitrile gloves should be donned for every new soil-gas probe location.

PROCEDURES FOR SOIL-GAS SAMPLING

Setup, manifold leak check procedures, sample collection, and post-sampling procedures for dedicated and non-dedicated monitoring wells are presented below.

Setup

- Turn on the helium analyzer to begin equilibration; this should take a few minutes. The analyzer is considered to be equilibrated when it reads zero ppmV.
- Connect the sampling manifold tee to the soil probe. Ensure the manifold valve is turned with the arrow pointed down in the vertical position. This creates a "closed" system.
- Connect the sample line on the left side of the manifold to the 1L summa canister.

Manifold Leak Check Procedures

- Prior to sampling, the shroud components should be connected and tested for any leaks.
    - Note the initial pressure reading on the manifold vacuum gauge.
    - In order to perform a leak check between the canister and manifold valve, turn the canister valve counter-clockwise 1 ¼ turns to open it, and then quickly close it. Wait five minutes, and then read the vacuum gauge again. If the vacuum gauge needle has not moved more than o.5 Hg, the system is considered to be leak-tight between the canister and the manifold valve.

Filling the Shroud with Helium

- Open the canister valve all the way and place the shroud over the canister. Since the manifold valve is in the downward position, the system is still closed between the canister and the manifold; no air will flow into the canister.
- Connect the equilibrated analyzer probe to the silicone tubing at the top of Port 2, and open the pinch valve. Since the helium source has not been connected yet, the probe should continue to read "0 ppmV".
- Ensure that the needle valve on Port 1 is turned all the way clockwise (closed). Connect the helium source to Port 1 and open the cylinder valve.
- To begin the flow of helium into the shroud, slowly turn the shroud needle valve counter clockwise to open.
- Once the analyzer reads 20% helium (200,000 ppmV), turn the needle valve clockwise to close port 1 and re-pinch the Teflon valve on Port 2 to close the shroud environment.
- Remove the analyzer from Port 2 and allow it to re-equilibrate in the presence of ambient air.

Helium Probe Leak Check Procedures

- Connect the equilibrated analyzer to Port 3.
- Turn the manifold valve counter-clockwise to open the flow between the soil-gas probe and the the helium analyzer. The analyzer will now be measuring the concentration between the soil probe and the manifold valve.
- If the analyzer reads less than 1,000 ppmV after five minutes, then the components are considered to be leak-tight between the probe and the valve.

Sample Collection

- Record the initial pressure of the summa canister on the Chain of Custody form.
- To begin sampling, turn the manifold valve clockwise to connect the soil-gas probe to the canister. The manifold is calibrated to sample at approximately 200mL/min, so sampling will be complete after five minutes for a 1L summa canister.
- Open the shroud and turn the canister valve clockwise to close.
- Disconnect the helium cylinder, analyzer, and canister from the shroud and manifold. Place all items in their original boxes.

Post-Sampling

- Record the final pressure of the sample canister on the Chain of Custody form.
- Cap the soil-gas probe tubing and close the monument and record any soil-gas probe integrity concerns on the Field Report form.
- Dispose of spent HDPE tubing and set aside spent Swagelok fittings for return to lab.

DOCUMENTATION

Document the soil-gas probe sampling activities on the Field Report form. Track samples on a Chain of Custody form.

STANDARD OPERATING PROCEDURE
EQUIPMENT DECONTAMINATION PROCEDURES

PURPOSE AND APPLICATION

The purpose of this standard operating procedure (SOP) is to provide field personnel with the methodology for decontaminating sampling equipment during various field activities. The step-by-step guidelines provided in this SOP are to be followed by the field crew during all site visits, as applicable.

EQUIPMENT AND SUPPLIES/REAGENTS

The following equipment is necessary to properly decontaminate field equipment during various field tasks:

- Rinse water or distilled water.
- Deionized water.
- Liquinox or other phosphate-free detergent.
- Paper towels.
- Labeled squirt bottles.
- Long-handled hard-bristle brushes (for sediment and soil).
- Cotton swabs.
- Plastic sheeting, garbage bags, and aluminum foil (for sediment and soil).
- Core liner caps or plastic wrap and rubber bands (for sediment and soil).
- Extension arm for cleaning core liners (for sediment and soil).
- Plastic 5-gallon bucket.
- U.S. Department of Transportation-approved drum(s) for decontamination water unless other water-handling arrangements have been made. Separate drums are needed for liquid and solid wastes. Liquid wastes should not be added to drums containing solid wastes.

Dilute Liquinox with distilled water in a squirt bottle in accordance with the instructions on the Liquinox package, and label the bottle. Fill another squirt bottle with distilled water, and label the bottle.

FIELD EQUIPMENT TO BE DECONTAMINATED AFTER USE

Decontaminate the following field equipment at the conclusion of field work each day, in accordance with the procedures outlined in this SOP:

- Water-level meter.
- Horiba/YSI multiparameter probe.
- Bladder pump.
- Submersible pump.
- Sediment and soil collection and processing equipment.

WATER-LEVEL METER DECONTAMINATION

Decontaminate the water-level meter after measuring the water level at a monitoring well before moving to a new monitoring well, using the following procedures:

- Spray the bottom half of a paper towel with the diluted Liquinox solution, and the upper half with deionized water.
- Grip the measuring tape of the water-level meter with the paper towel in one hand with the Liquinox side down toward the monitoring well casing.
- Begin slowly reeling up the water-level meter while maintaining firm contact between the measuring tape and the paper towel.
- Ensure that no debris or contamination remains on the measuring tape of the water-level meter once it has been reeled up.
- Use a clean new paper towel for each successive decontamination of the measuring tape of the water-level meter.

HORIBA/YSI MULTIPARAMETER PROBE DECONTAMINATION

Decontaminate the Horiba/YSI multiparameter probe at the end of each workday or after sampling a monitoring well with high concentrations of contamination, using the following procedures:

- Remove the multiparameter probe from the flow-through cell, and thoroughly spray each component with deionized water.
- Use a cotton swab to gently clean around each sensor probe, ensuring that all contaminated water and material has been washed away.
- Refill the protective dissolved oxygen and pH probe caps with deionized water, and replace prior to storage.
- Once the multiparameter probe has been adequately cleaned, replace the protective shield, and return the probe to the case. If the device appears to be overly wet, allow it to air-dry with the case open.

- Do not use Liquinox to clean any probes on the Horiba multiparameter probe, as it may damage the device.

BLADDER PUMP DECONTAMINATION

Decontaminate the bladder pump after sampling a well and at the end of each workday, using the following procedures:

- After extracting the bladder pump from the well, break down the pump, remove and dispose of the used bladder, and spray each component with the diluted Liquinox solution, followed by deionized water.
- Wipe away any visible contamination or debris with a paper towel.
- Capture cleaning water in a liquid waste dram for proper disposal.
- Ensure that all contamination and Liquinox solution is washed off all components before reassembling the device, installing a new bladder, and moving to sample a new well.

SUBMERSIBLE PUMP DECONTAMINATION

Decontaminate the submersible pump after purging water from any well, using the following procedures:

- After extracting the submersible pump from the well, thoroughly spray down the pump with the diluted Liquinox solution, followed by deionized water.
- Wipe away any visible contamination or debris with a paper towel.
- Purge clean water through the pump and tubing to ensure that contaminated water has been cleared from all lines.
- Capture cleaning water in a liquid waste drum for proper disposal.

SEDIMENT AND SOIL SAMPLING AND PROCESSING EQUIPMENT DECONTAMINATION

Decontaminate sampling equipment used to collect and process sediment and soil samples, using the following procedures:

- Place contaminated equipment and decontamination tools on plastic sheeting.
- Thoroughly rinse all used equipment with distilled water in a 5-gallon bucket to remove excess sediment or soil.
- Pour one capful of Liquinox solution into a 5-gallon bucket filled with tap water or distilled water.
- Using a long-handled hard-bristle brush, thoroughly scrub the equipment with the Liquinox solution until no sediment or soil particles remain.

- Holding the equipment over a 5-gallon bucket, double-rinse the equipment with distilled water until no Liquinox solution remains. Do not allow clean equipment to come into contact with a contaminated surface.
- Drain the equipment and place it in a clean, dry place to prevent recontamination.
- If decontaminated equipment will not be re-used immediately, wrap stainless steel equipment (e.g., bowls, spoons) in aluminum foil with the dull side facing the equipment. Seal polycarbonate core liners with core caps or cellophane plastic. Rubber-band ends to ensure a proper seal.
- After decontamination has been completed, place disposable items into a garbage bag, and store decontamination water in a drum.

STANDARD OPERATING PROCEDURE
MONITORING WELL CONSTRUCTION

PURPOSE AND APPLICATION

The purpose of this standard operating procedure (SOP) is to provide field personnel with the methodology for monitoring well construction and installation. Monitoring well construction ultimately is at the discretion of the Project Manager, and is based on the geology at the site and the use of the monitoring well. Groundwater monitoring wells in the Puget Sound region, for example, typically are constructed using 2-inch-diameter Schedule 40 polyvinyl chloride well casing with 0.010-inch slotted screens because of the finer-grained materials prevalent in the region. Slot and sand sizes may be increased at the discretion of the Project Manager, depending on local geology. Monitoring wells must be installed and decommissioned by a licensed well driller, and constructed in general accordance with Chapter 173-360, Minimum Standards for Construction and Maintenance of Wells, of the Washington Administrative Code in Washington; with Rule 0410 of Division 240 of Chapter 690, Well Construction Standards – General, of the Oregon Administrative Rules in Oregon; with Bulletins 74-81 and 74-90, California Well Standards, from the California Department of Water Resources in California; and with the federal and/or state standards established for well construction specified in the project-specific field sampling plan in other states.

EQUIPMENT AND SUPPLIES/REAGENTS

The following equipment is necessary for the construction and installation of monitoring wells:

- Monitoring well construction equipment (e.g., water-level meter, photoionization detector, tape measure, camera, plastic sheeting), as applicable.
- Monitoring well construction materials (e.g., well casing [screened and blank], filter pack sand, bentonite and/or Volclay Grout annular seal material, concrete, locking casing cap, well-head monument [flush-mounted or stove-pipe monument, as appropriate] complete with locking top, bollards for placement around well-head monument as applicable), provided by the driller.
- Materials necessary to provide required documentation, including Boring Log, Monitoring Well Construction Data form, and Field Report form.
- Personal protective equipment as described in the site-specific Health and Safety Plan.
- Decontamination equipment.
- U.S. Department of Transportation-approved drum(s) for decontamination wastewater and excess soil cuttings. Separate drums are needed for liquid and solid wastes. Liquid wastes should not be added to drums containing solid wastes.

DECONTAMINATION

Before arrival at the site, upon relocation at the site, and upon demobilization from the site, decontaminate equipment that will come into contact with potentially contaminated soil and groundwater.

PROCEDURES

Follow the instructions below for monitoring well construction and installation:

- Don appropriate personal protective equipment as described in the site-specific Health and Safety Plan.
- Before installing the casing, discuss the geology and groundwater conditions at the site with the Project Manager to confirm the depth the monitoring well screen should be placed at, and the length of screen to be used.
- Measure the depth to the bottom of the borehole to calculate the appropriate placement and length of the screened interval, filter pack, annular seal, and concrete surface seal. Calculate the approximate volumes of the filter pack and the seal material required for the specific monitoring well bore annulus and monitoring well casing diameter. Ensure that the filter pack extends from the bottom of the monitoring well intake to approximately 2 to 5 feet above the top of the monitoring well intake, and is approximately 2 to 4 inches thick. The monitoring well casing should be centered in the borehole. Ensure that the annular seal is a minimum of 2 feet thick above the top of the filter pack, and that the concrete seal is a minimum of 2 feet in depth from the surface.
- Prior to installation, measure and check the lengths of the monitoring well screen and the blank casing, and confirm the slot size and the sand filter pack size, the type of bentonite seal and/or Volclay Grout seal, and the monitoring well-head monument. For boreholes completed to depths deeper than the planned installation depth of the monitoring well casing, backfill the borehole with bentonite, sand, or pea gravel. Record the type and brand of the monitoring well construction materials used on a Monitoring Well Construction Data form.
- Record on a Field Report form the start and completion times for the various stages of monitoring well construction such as installation of the monitoring well casing into the borehole, filter pack and seal emplacement, and well-head monument placement.
- Record on a Monitoring Well Construction Data form the volumes of filter pack, the bentonite seal, and the concrete used to construct the monitoring well, and check against calculated volumes to confirm proper placement and amount. During the construction process, record any irregularities such as bridging of the filter pack or seal material that could indicate construction problems.
- Upon completion of monitoring well installation, measure the total monitoring well depth and the depth to groundwater, and record the measurements on the Monitoring Well Construction Data form.

- Place a mark or notch on the northern side of the top of the monitoring well casing to provide a monument for the measurement of water levels.

DOCUMENTATION

Document monitoring well construction activities on the Monitoring Well Construction Data form and the Field Report form.

REFERENCES

U.S. Environmental Protection Agency. 1991. *Handbook of Suggested Practices for the Design and Installation of Ground-Water Monitoring Wells*. EPA160014-891034. March.

———. 1996. *Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures*. EPA/540/S-95/504. April.

STANDARD OPERATING PROCEDURE
MONITORING WELL DEVELOPMENT

PURPOSE AND APPLICATION

The purpose of this standard operating procedure (SOP) is to provide field personnel with the methodology for monitoring well development. All monitoring wells should be developed to create an effective filter pack around the monitoring well screen, rectify damage to the formation caused by drilling, remove fine particulates from the formation near the borehole, and assist in restoring the natural water quality of the aquifer in the vicinity of the monitoring well. The step-by-step guidelines provided in this SOP are to be followed by the field crew performing or overseeing monitoring well development.

EQUIPMENT AND SUPPLIES/REAGENTS

The following equipment is necessary to properly develop a groundwater monitoring well:

- Monitoring well key, socket wrench or speed wrench, socket set, padlock key, or other monitoring well-access equipment.
- Electric water-level meter long enough to reach the bottom of the monitoring well, calibrated to 0.01 foot.
- Two-inch-diameter (or appropriately sized) surge block.
- Monitoring well-purging equipment (e.g., silicone line, polyvinyl chloride pipe, plug, submersible or non-submersible pump, tubing, power supply, extension cord), as applicable.
- U.S. Department of Transportation-approved drum(s) for decontamination wastewater unless other water-handling arrangements have been made. Separate drums are needed for liquid and solid wastes. Liquid wastes should not be added to drums containingsolid wastes.
- Materials necessary to provide required documentation (e.g., Field Report form, Monitoring Well Construction Data form, and Waste Inventory Tracking Sheet).
- Personal protective equipment as described in the site-specific Health and Safety Plan.
- Decontamination equipment.

DECONTAMINATION

Before arrival at the site, upon relocation at the site, and upon demobilization from the site, decontaminate equipment that will come into contact with groundwater, in accordance with SOP EQ-01 Equipment Decontamination Procedures

PROCEDURES

Follow the instructions below for each monitoring well:

- Don appropriate personal protective equipment as described in the site-specific Health and Safety Plan.
- Brush away soil and vegetation, and pump standing water away from the monitoring well opening.
- Open the monitoring well cap.
- Measure the depth to water and the total depth of the monitoring well to the nearest 0.01 foot using a decontaminated water-level meter. Record the measurements on the Monitoring Well Construction Data form.
- Calculate the unit purge volume using the formula and the input values from the table below:

$$V = [X(\textit{monitoring well depth} - \textit{water level})] + [Y(\textit{monitoring well depth} - \textit{bottom of seal or water level, whichever is lowest in depth})]$$

Where:
V = monitoring well volume, including annular space
X = internal casing volume per unit length (gallons per linear foot)
Y = annular volume per unit length (gallons per linear foot)

Borehole Diameter (inches)	Casing Diameter (inches)	Volumecasing (X) (gallons per linear foot)	Volumeannulus (Y) (gallons per linear foot)
7	2	0.17	0.68
8	2	0.17	0.98
10	4	0.65	1.34
12	4	0.65	2.07
12	6	1.47	1.70
14	8	2.61	1.98

Development Procedures – Existing and New Monitoring Wells

Existing wells in a monitoring well network may require redevelopment if an excessive amount of fines are present in the monitoring well casing that could interfere with stabilization of water-quality parameters or collection of representative water-quality samples.

The instructions below are to be followed for development of existing and new monitoring wells:

For existing monitoring wells only:

- Remove the pump and/or any dedicated tubing from the monitoring well.

For existing and new monitoring wells:

- Attach one length of twine to the decontaminated surge block (or use a drill rig or tripod) and lower the surge block to within 0.25 foot of the bottom of the monitoring well.
- Surge the monitoring well by vigorously moving the surge block up and down from 0.25 foot from the bottom of the monitoring well to 1 foot above the top of the screened interval for a minimum of 5 minutes to create a surging action across the screened interval, which will bring finer-grained material into suspension. Move the surge block up and down in 3-foot sections until the entire monitoring well screen length has been surged. Record on the Monitoring Well Construction Data form the number of times the surge block is raised and lowered, and total surge time.
- Remove the surge block.
- If a submersible pump is to be used for monitoring well development, gently lower the pump into the monitoring well to within 1 foot of the bottom of the screened interval. If a non-submersible pump is to be used, lower the tubing to within 1 foot of the bottom of the screened interval.
- Begin purging the monitoring well at a rate sufficient to remove fines without pumping the monitoring well dry. Record on the Monitoring Well Construction Data form the volume of water pumped from the monitoring well.
- Surge and pump the monitoring well, including saturated annular space, a minimum of three and a maximum of five monitoring well volumes. If the monitoring well runs dry, let the monitoring well recharge. Then commence purging until a minimum of three monitoring well volumes have been purged. If this event is the first time the monitoring well has been developed and water was added during the drilling process, remove the volume of water introduced during drilling and monitoring well construction. Purging has been completed when *one* of the following has occurred:
    - The minimum purge volume has been removed; OR
    - Five purge volumes and the drilling process water volume have been removed.
- Measure the total depth of the monitoring well after development, and record on the Monitoring Well Construction Data form the total volume of water pumped from the monitoring well.
- Record on the Monitoring Well Construction Data form a description of the suspended particle content, and additional information such as unique odor or water color.

- Containerize the purge water in a U.S. Department of Transportation-approved drum(s) unless other water-handling arrangements have been made. Separate drums are needed for liquid and solid wastes. Liquid wastes should not be added to drums containing solid wastes.
- Upon completion of monitoring well development, properly seal, secure, and label the drums. Record the number and contents of the drums on a Waste Inventory Tracking Sheet. At a minimum, the drum label(s) should include:
    - Boring/monitoring well ID.
    - Facility name.
    - Drum contents.
    - Date.
    - Drum number.
- Close the monitoring well and record any monitoring well-integrity concerns on the Field Report form and the Monitoring Well Construction Data form.
- Decontaminate all equipment.

DOCUMENTATION

Document monitoring well development activities on the Monitoring Well Construction Data form. Record the number and contents of the drums on a Waste Inventory Tracking Sheet.

REFERENCE

U.S. Environmental Protection Agency. 1991. *Handbook of Suggested Practices for the Design and Installation of Ground-Water Monitoring Wells.* Document No. 160014-891034. March.

STANDARD OPERATING PROCEDURE
LOW-FLOW GROUNDWATER SAMPLING PROCEDURES

PURPOSE AND APPLICATION

The purpose of this standard operating procedure (SOP) is to provide field personnel with the methodology for collecting and documenting groundwater samples from monitoring wells using U.S. Environmental Protection Agency (EPA) low-flow groundwater sampling procedures (EPA 1996, 2017) for chemical analysis to ensure consistent and representative sampling. The step-by-step guidelines provided in this SOP are to be followed by the field crew conducting groundwater sampling.

EQUIPMENT AND SUPPLIES/REAGENTS

The following equipment is necessary to properly purge and sample a monitoring well:

- Monitoring well key, hand drill, socket set, padlock key, or other monitoring well-access equipment.
- Electronic water-level meter long enough to reach the bottom of the monitoring well, calibrated to 0.01 foot. Alternatively, to measure for light nonaqueous-phase liquid thickness in addition to groundwater, use an oil-water interface probe.
- Monitoring well purging and sampling equipment:
    - Submersible pump (bladder or Gaindfos): the pump, control box, and power source (typically a portable generator or a 12-volt battery); or
    - Peristaltic pump: the pump with pump head, silicone tubing, tubing connectors (as needed), and power source (typically a 12-volt battery).
- Sample tubing of project- and site-specific type and length.
- Bailer, if a pump is not used, or if light nonaqueous-phase liquid requires removal.
- Sufficient number of 55-gallon drums, including lids, gaskets, and fasteners, to contain all purge water, unless other water-handling arrangements have been made.
- Flow-through water-quality meter(s) to measure temperature, pH, specific conductivity, dissolved oxygen, oxidation-reduction potential (ORP), and turbidity.
- Air-space monitoring equipment if required (photoionization detector or multi-gas meter).
- Decontamination equipment and supplies (e.g., buckets, scrub brushes, deionized or distilled water, potable water, Liquinox detergent).
- Materials necessary to provide required documentation, (e.g., sample labels, Field Report forms, Low-Flow Well Purging and Sampling Data form, Chain of Custody form, Waste Inventory Tracking Sheet).

- Sample containers with the chemical preservatives appropriate for the samples, as described in project-specific plans, or as required by the analytical laboratory at a minimum.
- Personal protective equipment as described in the site-specific Health and Safety Plan (HASP).
- Sampling-support equipment (e.g., sample coolers, ice, bubble wrap, clear tape, duct tape, resealable plastic bags, garbage bags, paper towels, distilled water, nitrile gloves, shipping supplies).
- U.S. Department of Transportation-approved drum(s) for purge water, unless other water-handling arrangements have been made. Separate drums are needed for liquid and solid wastes. Liquid wastes should not be added to drums containing solid wastes.

DECONTAMINATION

Before arrival at the site, upon relocation at the site, and upon demobilization from the site, decontaminate reusable equipment that will come into contact with the monitoring well(s) and/or be used to acquire samples.

PROCEDURES FOR LOW-FLOW GROUNDWATER SAMPLING

Low-flow groundwater sampling procedures have been developed for monitoring wells with a dedicated pump (dedicated monitoring wells) and for monitoring wells without a dedicated pump (non-dedicated monitoring wells). Setup, purging, sample collection, and post-sampling procedures for dedicated and non-dedicated monitoring wells are presented below.

Setup

Setup procedures differ slightly for dedicated versus non-dedicated monitoring wells. Follow the instructions below for the monitoring wells as indicated:

- Calibrate the water-quality meter for the field parameters specified in the project-specific plans. At a minimum, collect temperature, pH, and specific conductivity during purging and prior to sampling. Record on the Field Report form the equipment calibration andmaintenance performed. Decontaminate the water-quality meter between monitoring wellsby rinsing with distilled or deionized water. Manage the rinsate water used in collecting
these measurements in the same manner as for purge water, as defined in project-specific plans.
- Don appropriate personal protective equipment as described in the site-specific HASP, including nitrile gloves for activities that might involve contact with groundwater or equipment. Change gloves between each monitoring well at a minimum, or when

contaminants could be introduced into a monitoring well or onto decontaminated equipment.

- Brush away soil and/or vegetation, and pump standing water away from the monitoring well opening. If necessary, place a plastic drop cloth around the monitoring well-head to prevent sampling equipment from contacting the ground surface.
- Inspect the condition of the monitoring well (e.g., locked monitoring well cap, tightness of monitoring well cap, well-marked measuring point on casing, disturbance of surface casing, straightness of monitoring well casing, condition of concrete pad). Indicate the monitoring well condition on the Low-Flow Well Purging and Sampling Data form.
- Open the monitoring well cap. If the site-specific HASP identifies organic compounds as potential contaminants of concern, screen the monitoring well headspace and the breathing zone headspace (if specified in the HASP) for organic vapors using the appropriate field monitoring instrument (e.g., photoionization detector, multi-gas meter).
- Measure and record the depth to water using a decontaminated water-level meter.
- If light nonaqueous-phase liquid may be present (see site-specific plans), obtain a sample from the monitoring well using a bailer (if a dedicated pump is not in use). Alternatively, measure free-floating product thickness using an oil-water interface probe.
- Calculate the monitoring well casing volume as follows:

  Monitoring well casing volume in gallons = $(\pi r^2) * h (7.4\%$ gallons/cubic foot)

  Where:

  r = radius of the inside of the monitoring well casing in feet

  h = length of the water column in the monitoring well casing (i.e., the depth to the bottom of the monitoring well minus the depth to water, both measured from the mark at the top of the monitoring well casing), in feet

- **For monitoring wells with dedicated pumps and tubing**: Set up a flow-through cell in preparation for purging. Connect dedicated tubing from the monitoring well to the flow-through cell. Set tubing and/or pump to the correct water depth in accordance with the constituents being sampled for, as described in project-specific plans. **DO NOT IMMERSE water-quality probes or meters in purge water containing nonaqueous-phase liquids, which could damage the probes.** Turn the pump controller to its lowest setting, set the memory in the flow-through cell to record readings every 3 minutes, and turn on the pump. Begin purging slowly (i.e., less than 500 milliliters per minute [ml/min]) to prevent drawing down the water table.

- **For monitoring wells with non-dedicated pumps**: Connect dedicated silicon tubing to the peristaltic pump. Place the tubing intake at the midpoint of the screen, or at the depth pre-determined in the project-specific plans. If using a bladder pump, insert the bladder pump and attach the dedicated polyethylene tubing so the pump intake is at the approximate midpoint of the screened interval, or set the pump intake to the depth pre-determined in the project-specific plans.

Purging Procedures

The purging instructions below are to be followed for dedicated and non-dedicated monitoring wells:

- Begin purging, and initiate water-quality testing for temperature, pH, specific conductivity, dissolved oxygen, ORP, and turbidity. Purge monitoring wells using a peristaltic or bladder pump, and dedicated polyethylene and silicon tubing. Record water-quality parameters eveiy 3 minutes.
- Record water levels every 3 minutes, as possible. It is imperative that the water level not drop by more than 0.33 foot during the low-flow purging process. If the water level drops more than 0.33 foot during purging, reduce the flow rate on the pump. Recommended purge rates generally are less than 500 ml/min. Actual purge rates will vary based on aquifer material and monitoring well construction. If the water level continues to drop by more than 0.33 foot during the low-flow purging at a rate less than 100 ml/min, notify and consult with the Project Manager on how to proceed.
- Record flow rates every 3 minutes. Ensure that the flow rate does not exceed 500 ml/min during the low-flow purging process.

Purging Requirements

Continue purging at a constant rate until the water-quality parameters have stabilized for three successive measurements according to the stability criteria provided in the table below. Before samples can be collected from each monitoring well, the groundwater must stabilize according to following criteria:

- Drawdown is no greater than 0.33 foot for low-flow sampling, and
- The water-quality parameters should stabilize according to the criteria specified below:

Water-Quality Parameter	Stability Criterion
Turbidity (if required)	10% for values greater than 5 NTU or three consecutive values < 5 NTU
Dissolved oxygen	10% for values greater than 0.5 mg/l, or three consecutive values <0.5 mg/l
Specific conductivity	3%
Oxidation-reduction potential	+/- 10 millivolts
pH	+/- 0.1 unit
Temperature	3%

Notes:
mg/l = milligrams per liter
NTU = nephelometric turbidity unit

Although under some circumstances, a monitoring well may not stabilize according to the above criteria, the monitoring well can still be sampled if the monitoring well does not meet stability criteria due to the instrument accuracy, or the water level drops below the minimum value using low-flow sampling procedures. For example, a fluctuation in ORP greater than 10 millivolts does not meet the stability criterion. However, because the accuracy range of the ORP instrument is ±20 millivolt, the stability criterion would be considered satisfied and within the range of instrument accuracy. Consult the manual for the instrument to determine the accuracy range.

Also, if the water level drops below the minimum value using low-flow sampling procedures (i.e., the pump intake, or the top of the screen if the aquifer is confined) during purging and one monitoring well volume of groundwater has been removed from the monitoring well, or the monitoring well runs dry during the purging procedure, sample the monitoring well as soon as the water level has recovered sufficiently to allow collection of the volume of groundwater necessary for all samples. Use the following equation to determine the minimum volume of groundwater to remove before sampling:

Minimum purge volume = 2*[500 milliliters + M*(length of tubing in feet)]

Where: M = volume (in milliliters) contained in a 1-foot length of tubing

The value of M is provided below for the inner diameters of tubing listed:

Inner Diameter (inches)	M (milliliters)
0.125	2.4
0.25	9.7
0.5	39

Record on the Field Report form and the Low-Flow Well Purging and Sampling Data form if any monitoring well did not meet the drawdown and stability criteria and explain the rationale for sampling the monitoring well at the time it was sampled. If stability criteria have not been achieved following completion of all entries in the Low-Flow Well Purging and Sampling Data form, notify

and consult with the Project Manager whether to continue purging until stability criteria have been achieved or begin sample collection.

Sample Collection

During low-flow sampling, do not stop pumping once the purging requirements have been met. Turn down the flow rate on the pump so the water flow is minimal, but maintain sufficient pressure in the system to prevent water from the tubing or flow-through cell from flowing back into the monitoring well. Disconnect the pump discharge hose from the flow-through cell, or cut the tubing just before the connection to the flow-through cell. It is imperative not to lower the water table or disturb the water column. Fill pre-cleaned laboratory-supplied sample containers directly from the pump discharge tube into the proper sample container, and fill to capacity. Place a bucket beneath the sampling tube to catch any unsampled water between filling the sample jars. When collecting groundwater samples for multiple analyses, collect the samples in the order listed below per the EPA (1992) groundwater sampling technical guidance:

- Volatile organic compounds (VOCs);
- Dissolved gases and total organic carbon;
- Semivolatile organic compounds;
- Metals and cyanide;
- Major water quality cations and anions;
- Radionuclides; and
- Dissolved (filtered) inorganics (if required).

When collecting samples for VOCs, adjust the flow rate as low as possible without introducing air bubbles into the system. When filling the VOC containers, hold the cap in hand to minimize contamination, and direct the flow from the pump discharge tubing down the side of the sample container to minimize aeration. Fill all VOC sample containers to the top, ensuring a positive meniscus when the cap is screwed down on the container. Tap the filled VOC container, and invert several times to ensure no air bubbles are present in the sample container. If an air bubble is present, the VOC sample must be recollected using a fresh VOC sample container. If sampling for other analytes, the flow rate may be increased.

If dissolved inorganics are required, attach a new disposable 0.45-micrometer filter cartridge to the discharge line. Collect filtered samples last. Pre-rinse the disposable filter cartridges by running a minimum of 0.25 gallon of groundwater through them (collecting the groundwater into a waste bucket) prior to collecting the samples directly into the sample container. Alternate field filtration methods may be specified in the project-specific plans. Remove the pump and/or tubing from the monitoring well.

Post-Sampling

- Record the depth to water of well to determine whether the water level changed from the original reading.
- Close and lock the monitoring well or tap and record any monitoring well integrity concerns on the Field Report form and the Low-Flow Well Purging and Sampling Data form.
- Transfer purge, wash, and rinse water into a U.S. Department of Transportation-approved drum(s) and label. Separate drums are needed for liquid and solid wastes. Do not add liquidwastes to drums containing solid wastes.

PROCEDURES FOR RECONNAISSANCE GROUNDWATER SAMPLING

Collect reconnaissance groundwater samples from borings using direct-push or hollow-stem auger drilling methods and 0.75- or 2-inch-inside-diameter temporary monitoring well casing and 0.010-inch slotted screen. In some cases, alternate well casing diameters or screen slot sizes may be appropriate based on the drilling equipment or project-specific requirements. Follow the instructions below for reconnaissance groundwater sample collection:

- Withdraw the drill casing when the desired sampling depth has been reached, so the temporary monitoring well screen is exposed to water-bearing material.
- Insert disposable polyethylene tubing to the approximate midpoint of the temporary monitoring well screen. Attach the appropriate length of pre-cleaned disposable silicon tubing from the polyethylene tubing to connect with the peristaltic or bladder pump.
- Set up the peristaltic or bladder pump in preparation for purging. Turn the pump to its lowest setting and turn on the pump. Begin purging slowly to prevent drawing down the water table.
- Purge each temporary monitoring well point using a peristaltic or bladder pump until visual turbidity is as low as possible, or until the temporary monitoring well is purged dry of water.
- Purge a minimum of 1 to 2 liters before sample collection, if possible. If the temporary monitoring well is completely dewatered during purging, collect samples when sufficient recharge has occurred to allow filling of the sample containers.
- Slow the pumping rate to less than 500 ml/min to reduce the potential for volatilization of chemicals during sample collection.
- Collect the sample as described above.
- If insufficient groundwater is available to collect a sample using a peristaltic or bladder pump (i.e., the boring pumps dry or cannot maintain a sufficient flow of less than 100 ml/min) or if the depth to groundwater exceeds the maximum practicable limit for sampling using a peristaltic or bladder pump, use a disposable polyethylene bailer lowered

into the monitoring well screen to collect a groundwater sample from the screened interval, if possible.

DOCUMENTATION

Document the monitoring well purging and sampling activities on the Low-Flow Well Purging and Sampling Data form and on the Field Report form. Track samples on a Chain of Custody form. Track waste generated during groundwater sampling on a Waste Inventory Tracking Sheet.

REFERENCES

U.S. Environmental Protection Agency. 1992. *RCRA Ground-Water Monitoring: Draft Technical Guidance.* Office of Solid Waste. November.

———. 1996. *Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures.* EPA/540/S-95/504. April.

———. 2017. *Low Stress (low flow) Purging and Sampling Procedure for the Collection of Groundwater Samples from Monitoring Wells.* EQASOP-GW4. September.

STANDARD OPERATING PROCEDURE
DRILLING SOIL SAMPLE COLLECTION

PURPOSE AND APPLICATION

The purpose of this standard operating procedure (SOP) is to provide field personnel with the methodology for collecting and documenting soil core samples using a hollow-stem-auger drill rig, a direct-push drill rig, and a sonic drill rig. All drilling operations will be conducted by a licensed drilling subcontractor in accordance with subcontractor SOPs. This SOP presents the procedures that will be performed by Atlas field staff once the soil core has been collected by the drilling subcontractor. The step-by-step guidelines provided in this SOP are to be followed by the field crew conducting subsurface soil sampling.

EQUIPMENT AND SUPPLIES/REAGENTS

The following equipment is necessary to properly collect soil samples from borings:

- Personal protective equipment (PPE) as described in the site-specific Health and Safety Plan.
- Differential global positioning system, if required in project-specific plans. Discuss the methodology for recording the location of the sample point with the Project Manager before conducting the field work.
- Photoionization detector (PID) to monitor and record soil headspace readings.
- Applicable soil sampling equipment, including:
    - Stainless steel hand-auger.
    - Wooden or steel stakes to stabilize cores on table while sampling.
    - Folding table.
    - Utility knife.
    - Stainless steel spoons or scoops.
    - Six-mil plastic sheeting.
    - Resealable plastic bags.
    - Duct tape.
    - Aluminum foil.
    - Tape measure.
    - Five-gallon buckets, and scrub brushes.
    - Alconox phosphate-free cleanser.
    - Laboratory-provided certified pre-cleaned sample containers.

    - Soil sample plunger and syringes for sampling volatile organic compounds (VOCs) using U.S. Environmental Protection Agency (EPA) Method 5035A.
- Materials necessary to provide required documentation, including:
    - Camera.
    - White board and dry-erase markers, if specified in project-specific plan.
    - Sample labels.
    - Field Report forms.
    - Boring Log forms.
    - Chain of Custody forms.
    - Chain-of-custody seals for the sample cooler(s).
- U.S. Department of Transportation-approved drum(s) for decontamination wastewater and excess soil cuttings. Separate drums are needed for liquid and solid wastes. Liquid wastes should not be added to drums containing solid wastes.
- Decontamination equipment.
- Sampling support equipment (e.g., sample coolers, ice, bubble wrap, clear packing tape, heavy resealable plastic bags, razor knives, garbage bags, paper towels, distilled water, nitrile gloves).

DECONTAMINATION

Reusable equipment that will come into contact with soil boring samples or will be used to acquire soil samples is to be decontaminated before arrival at the site, between soil samples collected, upon relocation at the site, and upon demobilization from the site.

PROCEDURES

Prior to drilling, all underground utilities must be located, and cleared with an air-knife or other method approved by the Atlas Health and Safety Coordinator.

Collect soil samples from areas known or suspected to have the lowest concentrations of constituents of concern first, with areas of higher concentrations of constituents of concern sampled last, unless the Project Manager indicates a different project-specific sampling protocol. The procedures listed below may be modified, with approval from the field team lead and the Project Manager. Any modifications must be identified in the project-specific sampling plans or, at a minimum, details must be noted on the Field Report form.

Soil core collection methods differ for hollow-stem-auger, direct-push, and sonic drilling techniques, each summarized below:

- Hollow-stem-auger: Collect soil core samples using a standard 18-inch-length (6-inch waste barrel) Dames & Moore split-spoon sampler with a 2.5-inch inner diameter that can be used with or without brass or stainless steel liners.
- Direct-push: Collect soil core samples using 5-foot macrocore samplers with acetate sample liners.
- Sonic: Collect soil core samples using a standard 6-inch-diameter stainless steel sampling rod. Use a 2.5-, 5.0-, or 10-foot polyethylene liner inside the sampling rod for soil sample collection.

Record the specific drilling and soil sampling equipment used on the Boring Log form and on the Field Report form.

Setup

The instructions below are to be followed at each boring site:

- Don appropriate PPE as described in the site-specific Health and Safety Plan.
- Ensure that each borehole has been cleared to a minimum depth of 5 feet below ground surface using an air knife, per the Atlas health and safety policy.
- Set up a temporary sampling table adjacent to the drill rig to log and collect soil samples from the soil cores as they are recovered during drilling. During sunny conditions, consider using a portable canopy for protection from the sun. Lay plastic sheeting over the table to keep the surface clean and to prevent potential cross-contamination between borings and soil samples. Designate clean areas for decontaminated sampling equipment and laboratory-provided certified pre-cleaned soil sample containers.
- Set up 5-gallon buckets for decontaminating soil sampling equipment between samples. These decontamination buckets are separate from the buckets provided by the drillers for their split spoons and core barrels.
- Calibrate the PID to monitor headspace for selected soil core samples in accordance with the equipment manual.

Sample Collection and Processing

The instructions listed below are to be followed for collecting samples using lined and unlined split-spoon and tube samplers:

- Don a new pair of nitrile sampling gloves for each individual soil sample collected, and prior to decontaminating sampling equipment to avoid potential cross-contamination.

- Ensure that the drillers have properly decontaminated all drill shoes and caps prior to initiating drilling operations. Drill shoes and caps must be decontaminated between sampling intervals and stations. Replace dirty or ineffective decontamination water as needed throughout the workday.
- Ensure that the drillers position the sampling rig over the sample station and remove any surface material or debris that would interfere with sampling. Note on the Field Report form any surface material removed.
- Note on the Field Report form and the Boring Log forms any difficulties encountered during drilling operations. Include the number of blow counts (if applicable) or any resistance encountered during drilling operations.
- Place the core tube, core liner, or split spoon on a new piece of aluminum foil on the sample logging/processing table. If necessary, use wood or metal stakes as shims to stabilize the tube, liner, or split spoon on the sample logging/processing table.
- If a core liner is used, split the liner open with a decontaminated utility knife, taking care not to penetrate the soil in the liner with the blade or knife.
- Briefly examine the soil sample visually for obvious signs of contamination, and take PID readings.
- Take care to:
    - **Not** collect soil in contact with the sidewalls of the sampler or liner.
    - Always use decontaminated stainless-steel spoons or scoops to handle the soil within a given sample interval.
    - Always don a new pair of nitrile gloves before processing each sample interval in each soil core to prevent cross-contamination in the soil core.
- When sampling for VOCs, collect them as soon as possible after opening the core tube, split spoon, or core liner. Use a decontaminated stainless steel spoon to collect the VOC samples with minimal disturbance to soil by placing a representative amount of soil from the length and depth of the desired sample interval directly into the laboratory-provided VOC sample container with no headspace, and seal it tightly. Follow the sample collection guidelines provided by the manufacturer or the analytical laboratory when using a plunger-type sampling device in accordance with EPA Method 5035A.
- Retain approximately 100 grams of the soil sample in a heavy resealable plastic bag or glass sample container, shake the sealed bag to volatilize the contaminants in the soil, and wait approximately 5 minutes before measuring for headspace analysis using the PID (Washington State Department of Ecology 2011). Insert the PID probe tip into a small opening in the top of the bag, and record the PID units on the Boring Log form. Reseal the bag after taking the headspace reading in case further assessment of the sample is needed. Do not puncture the resealable plastic bag to obtain headspace readings.

- If specified in the project-specific plans, photograph each section of the boring, including in the photograph notations on a white board documenting sample location identifier, date, orientation, depth, and site markers.
- Describe the soil samples in accordance with ASTM International Standard D-2488-00, *Standard Practice for Description and Identification of Soils*.
- Record on the Field Report form any deviations from the project-specified sampling procedures or from this SOP, or any obstacle encountered.
- Examine the remaining soil core sample for lithology using the Unified Soil Classification System, and record the lithology on the Boring Log form.
- Discard excess soil cuttings in a labeled waste drum or a soil bin. Do not add soil to a liquid waste drum.
- Backfill the borehole, as appropriate.
- Upon completion of sampling at a boring, measure the boring's location to an on-site permanent datum, collect the location using the differential global positioning system, or have the sample location surveyed by a licensed surveyor.
- Decontaminate the soil sampling equipment, and don a new pair of sampling gloves before collecting each new soil sample.

DOCUMENTATION

Document the soil sampling activities on the Boring Log form, the Chain of Custody form, and the Field Report form.

REFERENCE

American Society for Testing Materials. 1989. *Standard Method for Penetration Test and Split-Barrel Sampling of Soils.* Method D-1586-11.

U.S. Environmental Protection Agency. 1987. *A Compendium of Superfund Field Operation Methods.* EPA Document No. 540-P-87-001. December 1.

Washington State Department of Ecology. 2011. *Guidance for Remediation of Petroleum Contaminated Sites.* Ecology Publication No. 10-09-057. Toxics Cleanup Program. September.

STANDARD OPERATING PROCEDURE
FIELD HANDLING OF INVESTIGATION-DERIVED WASTE

PURPOSE AND APPLICATION

The purpose of this standard operating procedure (SOP) is to provide field personnel with the methodology for containerizing, labeling, and tracking investigation-derived waste (IDW), and for exchanging information with the Project Manager. IDW may include soil cuttings, purge water, development water, and/or decontamination water.

This SOP has been developed in compliance with Washington State Dangerous Waste Regulations (Chapter 173-303 of the Washington Administrative Code), Oregon Hazardous Waste Management Rules (Division 100 of Chapter 340 of the Oregon Administrative Record), Environmental Health Standards for the Management of Hazardous Waste (Division 4.5 of Title 22 of the California Code of Regulations), and the U.S. Environmental Protection Agency Resource Conservation and Recovery Act (Parts 239 through 282 of Title 40 of the Code of Federal Regulations).

EQUIPMENT AND SUPPLIES/REAGENTS

The following equipment is necessary to properly containerize, label, and track IDW:

- U.S. Department of Transportation-approved drum(s) constructed of a material that does not react with the contaminants of concern for the project. Atlas typically uses lined open-top steel drums. Use a polyethylene drum for a material suspected to be corrosive.
- Labels appropriate to the characteristics of the IDW as indicated by the Project Manager:
    - Non-Hazardous Waste Labels: For IDW known to be nonhazardous based on previous data and waste profdes.
    - Hazardous Waste or Washington State Dangerous Waste Labels: For IDW known to be hazardous/dangerous based on previous data and waste profiles.
    - On Hold Pending Analysis Labels: For waste not previously characterized, pending receipt of analytical results. On Hold Pending Analysis labels are temporary, and should be replaced with the applicable waste label once the waste has been characterized.
    - Major risk labels associated with the waste characteristics.
- Waste Inventory Tracking Sheet.
- Grease marking pencil or paint pen.
- Indelible ink pen.
- Crescent wrench, speed wrench, socket wrench, or other hand tool to seal the drum(s).

- Sampling supplies, if needed, including:
    - Stainless steel or plastic bowls and spoons for homogenizing soil and/or solids samples, depending on the analysis to be performed;
    - Glass or stainless steel container for homogenizing liquid samples, depending on the analysis to be performed; and
    - Stainless steel hand-auger or a glass tube, depending on the medium being sampled (i.e., soil/solids or liquid).

PROCEDURES

Follow the instructions below to inspect, label, and inventory IDW drums, and to containerize IDW:

- Inspect new drums brought to the site to ensure that they do not have dents or corrosion, and are in good condition. Lined or coated drums are preferred.
- Inspect drums remaining at the site from previous project work. Notify the Project Manager if a drum is leaking, damaged, or improperly labeled.
- Place soil and solids into separate drums from those containing liquids such as purge water, development water, and decontamination water. Do not add liquid IDW to drums containing soil or solids. Do not fill drums containing liquid IDW above 85 percent capacity, particularly in areas known to reach freezing temperatures.
- Discuss with the Project Manager whether chlorinated solvents or other contaminants of concern detected in areas of the site would cause IDW from that area to be characterized as hazardous/dangerous waste. Hazardous/dangerous waste should be drummed separate from nonhazardous/dangerous waste, where possible, to minimize the amount of hazardous/dangerous waste generated.
- Use a grease pencil or paint pen to clearly mark the lid and the label of each drum with a unique identifier such as a number or a letter. Verify that no two drums have the same identifier marked on the lid or label, including drums remaining from previous project work.
- Inventory each Atlas-generated drum and its contents on a Waste Inventory Tracking Sheet.
- Track any waste added to an existing dram on a Waste Inventory Tracking Sheet.
- Label each drum with a completed Non-Hazardous Waste, Hazardous Waste/Washington State Dangerous Waste, On Hold Pending Analysis, or other appropriate waste label. List the client's name as the Shipper or Generator, and the accumulation start date as the date when waste was first placed into the drum. If waste was added to an existing drum, add that date to the accumulation dates on the drum label. If the waste in the drum has been designated as hazardous/dangerous, add a major risk label(s) pertaining to the waste characteristics associated with that designation (e.g. flammable, reactive, corrosive,

toxic). Consult the Project Manager with questions about appropriate major risk labels. All labels should be placed with the top of the label toward the top of the drum. Do not place a drum label sideways or upside down.

Use care when drumming, labeling, and tracking **IDW**. Mistakes in the disposal of waste can result in serious legal and financial repercussions for Atlas and the client.

DRUM SAMPLING

Sampling and analysis of wastes for hazardous/dangerous waste characterization purposes is to be conducted in accordance with U.S. Environmental Protection Agency Publication No. SW-846, *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*. Samples collected in California for hazardous waste characterization are to adhere to the requirements specified in California Code of Regulations Sections 66261.21 to 66261.24 of Title 22, Characteristics of Hazardous Waste. Discuss with the Project Manager the specific analyses to be performed prior to sample collection. The instructions below are to be followed for drum sampling, using composite sampling techniques to sample soil, solids, and liquid wastes:

- Collect soil/solids samples from various locations and depths in the drum using a hand-auger or other decontaminated apparatus. Place all samples into a single decontaminated stainless steel bowl using decontaminated stainless steel tools, or into a plastic bowl using plastic spoons, depending on the analyses to be performed. Homogenize the samples in the bowl.
- Place samples of the homogenized soil/solids from the bowl into sample jars for analysis.
- Collect liquid samples from the drum using a glass sampling tube. Insert the tube to the base of the drum to fill the entire tube with liquid. Place the liquid into sample jars for analysis.

DRUM STORAGE

Follow the instructions below for drum storage:

- Label and store the drams in an area approved by the client.
- Store hazardous/dangerous waste drams in a secured area.

DOCUMENTATION

Document IDW drums on the Waste Inventory Tracking Sheet as described above. Provide the original Waste Inventory Tracking Sheet and the original field notes to the Project Manager.

REFERENCE

U.S. Environmental Protection Agency. *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*. Publication No. SW-846. Third Edition, Final Updates I (1993), II (1995), IIA (1994), IIB (1995), III (1997), IIIA (1999), IIIB (2005), IV (2008), and V (2015).

ATLAS	**Field Report**	**FLD-100** Revision 1.0 6/1/2016

ATC Branch: Seattle - 10282	Date:	Page of
ATC Representative(s):	Project:	
Role:	Location:	
Contact Information: (206) 781-1449	Project No:	Task No: --
Scope of Work: ___ Monitoring ___ Assessment __ Remediation ___ Closure	Weather:	Temperature:
	Contractor:	

Time:	Comments:

Equipment Used:		
Contractor Hours (per Person):	Staff / Technician Hours:	Mileage:
Copies To:	Project Manager:	
	Reviewed By:	

Borehole Log

FLD-106
Revision 0.0
Jul-08

ATC Branch: Seattle - 10282		Date	Borehole ID
ATC Representative(s)		Project	
Contact Information: (206) 781-1449		Location:	
Attach Field Diagram (Form FLD-101) illustrating boring/well location		Project No.	Task No.
Initial Depth to GW Date and Time	Initial Depth to GW	Drilling Contractor	
Final Depth to GW Date and Time:	Final Depth to GW	Rig Type / Drilling Method / Sampler Type	
Boring Completion Information:		Boring Diameter	Total Boring Depth
If boring completed as well, complete Well Completion Details (Form FLD 106b).		Logged By:	Monitoring Equipment

Depth (Ft bgs)	Recovery (inches)	Blow Counts 6" Increment	Sample ID	Sample Time	Vapor Reading (ppm)	USCS Soil Classification	SOIL TYPE DESCRIPTION (Modifier, Munsell Color, Density, Moisture, etc)	Relative Density / Consistency	% Gravel	% Sand	% Silt	% Clay	Gradation: Well	Gradation: Medium	Gradation: Poor	Grain Shape: Angular	Grain Shape: Subangular	Grain Shape: Subrounded	Grain Shape: Rounded	Plasticity: None	Plasticity: Low	Plasticity: Medium	Plasticity: High	Cementation: None	Cementation: Light	Cementation: Moderate	Cementation: Heavy
0'																											
5'																											
10'																											
15'																											
20'																											

Relative Density Scale for Coarse Grain: 1) v. loose, 2) loose, 3) med. Dense, 4) dense, 5) v. dense
Relative Density Scale for Fines: 1) v. soft, 2) soft, 3) med. stiff, 4) stiff, 5) v. stiff, 6) hard

25'																													
30'																													
35'																													
40'																													

ATLAS	Well Completion Log	FLD-106b Revision 0.0 Jul-08

ATC Branch: Seattle - 10282			Date		Well ID
ATC Representative(s)			Project		
Contact Information: (206) 781-1449			Location:		
Attach Field Diagram (Form FLD-101) illustrating boring/well location			Project No.		Task No.
Initial Depth to GW Date and Time	Initial Depth to GW		Drilling Contractor		
Final Depth to GW Date and Time:	Final Depth to GW		Rig Type	Drilling Method	Sampler Type
Well Completion Information:			Well Diameter	Total Well Depth	Monitoring Equipment
Notes:			Logged By:		

Depth (Ft bgs)	Recovery (inches)	Blow Counts / 6" Increment	Sample ID	Sample Time	Vapor Reading (ppm)	USCS Soil Classification	SOIL TYPE DESCRIPTION (Modifier, Munsell Color, Density, Moisture, etc)	Well Completion Details		
0'										
5'										
10'										
15'										
20'										
25'										

Depth (Ft bgs)	Recovery (inches)	Blow Counts / 6" Increment	Sample ID	Sample Time	Vapor Reading (ppm)	USCS Soil Classification	SOIL TYPE DESCRIPTION (Modifier, Munsell Color, Density, Moisture, etc)	Well Completion Details		
30'										
35'										
40'										

Monitoring Well Purging and Sampling Log

FLD-103
Revision 1.0
Jul-08

ATC Branch: Seattle - 10282	Date:	Page of
ATC Representative(s):	Project:	
	Location:	
Contact Information: (206) 781-1449	Project No:	Task No:
Well ID:		
	Weather:	Temperature:

Purging & Sampling Instrumentation & Method

Water Level Meter (Model/ID): **Envirotape**	Interface Probe (Model/ID): **NA**
Water Quality Meter (Model/ID): **YSI 556 MPS**	Decontamination Method: **Alconox/DI Water**

Purging Method: _____ PVC Bailer _____Vacuum Truck _____ Submersible Pump ___ Peristaltic Pump Other: _____

3 Well Volumes _____ Low Flow ____ Micro Purge _____ Intake Depth (feet below TOC) _____

Sampling Method: _____ Teflon Bailer _____ Disposable Bailer ____ Dedicated Tubing Other: _____

Casing Volume Information	Purging Calculations
Casing Diameter **(Circle)**: **2"** **4"** **6"** **Other**	Casing Volumes (CV):
Casing Multiplier (CM)(gallons/foot): **0.16** **0.65** **1.47**	WC _____ x CM _____ = _____ (CV)(gal) x 3.0 CV (gal) =_____ PV

Monitoring Measurements

Depth to LNAPL (feet):	Total Well Depth (feet):
Depth to Water (DTW)(feet):	Water Column (WC)(feet):
LNAPL Thickness (ft):	Purging Start Time:

Purging Data

Time (24 Hours)	DTW (Feet)	Cum. Vol. Purged (Gallons)	Temp (ºC) (± 1º)	Specific Cond. (uS/cm) (± 5%)	Turbidity NTU	Dissolved Oxygen (mg/L) (± 10%)	pH (± 0.1)	ORP (mV) (± 10 mV)	Other

Sample Data

Sample ID:	Time of Sample:	Filtered (yes/no)	Preservatives	Analytical Parameters
Container Types, Volumes, & Quantities:				
6-40ml VOAs		NO	HCl	Gx, VOCs
2-250ml PE		NO/Lab Filtered	HNO3	Pb, Dissolved Pb

Well Recovery Data

Maximum Drawdown (DTW*m*)(feet):	Approximate Flow Rate (GPM):
Recovery Type: _____ Fast _____ Slow	% Recovery =

Purge Water Disposition (Attach Drum Inventory Log - FLD 108):

Comments:

ATLAS

Monitoring Well Purging and Sampling Log

FLD-103a

Revision 1.0

Jul-08

Time (24 Hours)	DTW (Feet)	Cum. Vol. Purged (Gallons)	Temp (ºC) (± 1º)	Specific Cond. (uS/cm) (± 5%)	Turbidity NTU	Dissolved Oxygen (mg/L) (± 10%)	pH (± 0.1)	ORP (± 10 mV)	Other

Comments:

Soil Sampling Log

FLD-105
Revision 0.0
Jul-08

ATC Branch: Seattle - 10282	Date:	Page of
ATC Representative(s):	Project:	
Contact Information: (206) 781-1449	Location:	
Scope of Work:	Project No:	Task No:
____ Monitoring ____ Assessment ____ Remediation ____ Closure ____ Other	Weather:	Temperature:
Attach Field Diagram (Form FLD-101) illustrating soil sample location(s)	Contractor:	

Soil Sample Identification	Sample Location (dispenser, excavation, stockpile, UST, Other)	Sample Information				Soil Impact Observations	
		Sample Time	Sample Depth (feet bgs)	USCS Soil Classification	Saturation (dry, moist, wet)	Odors/Type (none, mild, strong)	PID (ppmV)

Comments:

Notes: B = Bottom D = Dispenser PP = Product Piping SP = Stockpile SW = Sidewall UST = Underground Storage Tank PID = Photoionization Detector
N = North S = South E = East W = West NE = Northeast NW = Northwest SE = Southeast NW = Northwest bgs = below ground surface ppmV = parts per million volume

Example: Sample Label

CLIENT _____

PROJECT _____

SAMPLE ID _____

DATE _____ *TIME* _____

UNPRESERVED

CLIENT _____

PROJECT _____

SAMPLE ID _____

DATE _____ *TIME* _____

UNPRESERVED

CLIENT _____

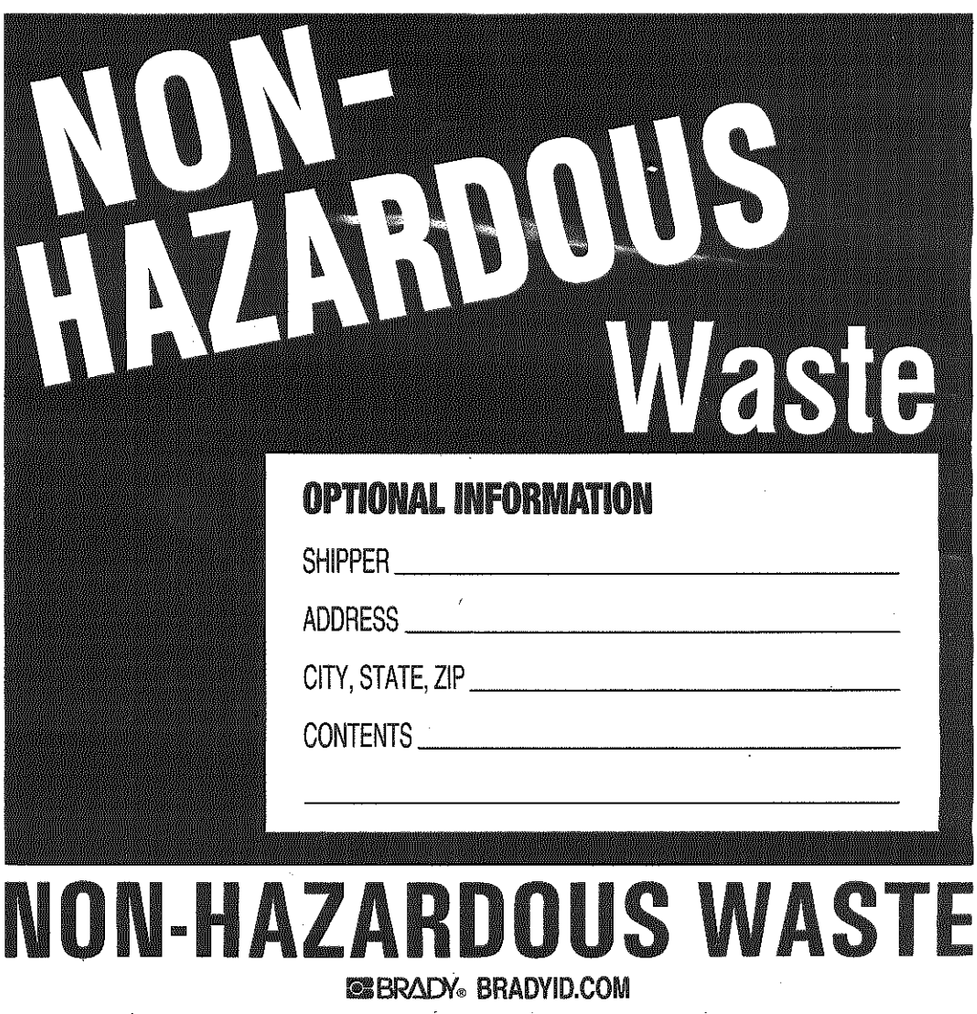
PROJECT _____

SAMPLE ID _____

DATE _____ *TIME* _____

UNPRESERVED

Example: Waste Label



Drum Inventory Log

FLD-108
Revision 0.0
Jul-08

ATC Branch: Seattle - 10282	Date:	Page of
ATC Representative(s):	Project:	
Contact Information: (206) 781-1449	Location:	
Scope of Work: ___ Monitoring ___ Assessment ___ Remediation ___ Closure	Project No:	Task No:

Drum ID	Source ID(s)	Type of Material (Soil / Sludge / Water)	Quantity of Material in Drum	Date Waste Generated

Comments:	Drum Location Sketch:
Photographs (Y/N)	
Date Drum Pickup Scheduled:	# of Drums From This Event:
Verified Pick up:	Total # of Drums at Site:

CHAIN-OF-CUSTODY Analytical Request Document

Pace Analytical®

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevent fields

LAB USE ONLY- Affix Workorder/Login Label Here or List Pace Workorder Number or MTJL Log-in Number Here

ALL SHADED AREAS are for LAB USE ONLY

Company:	Billing Information:
Address:	
Report To:	Email To:
Copy To:	Site Collection Info/Address:
Customer Project Name/Number:	State: County/City: Time Zone Collected: / [ ] PT [ ] MT [ ] CT [ ] ET
Phone: Email:	Site/Facility ID #: Compliance Monitoring? [ ] Yes [ ] No
Collected By (print):	Purchase Order #: Quote #: DW PWS ID #: DW Location Code:
Collected By (signature):	Turnaround Date Required: Immediately Packed on Ice: [ ] Yes [ ] No
Sample Disposal: [ ] Dispose as appropriate [ ] Return [ ] Archive: _____ [ ] Hold:_____	Rush: [ ] Same Day [ ] Next Day [ ] 2 Day [ ] 3 Day [ ] 4 Day [ ] 5 Day (Expedite Charges Apply) Field Filtered (if applicable): [ ] Yes [ ] No Analysis: _____

* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Vapor (V), Other (OT)

Container Preservative Type **

Lab Project Manager:

** Preservative Types: (1) nitric acid, (2) sulfuric acid, (3) hydrochloric acid, (4) sodium hydroxide, (5) zinc acetate, (6) methanol, (7) sodium bisulfate, (8) sodium thiosulfate, (9) hexane, (A) ascorbic acid, (B) ammonium sulfate, (C) ammonium hydroxide, (D) TSP, (U) Unpreserved, (O) Other _____

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start) Date	Collected (or Composite Start) Time	Composite End Date	Composite End Time	Res Cl	# of Ctns

Analyses

Lab Profile/Line:

Lab Sample Receipt Checklist:

Custody Seals Present/Intact	Y N NA
Custody Signatures Present	Y N NA
Collector Signature Present	Y N NA
Bottles Intact	Y N NA
Correct Bottles	Y N NA
Sufficient Volume	Y N NA
Samples Received on Ice	Y N NA
VOA - Headspace Acceptable	Y N NA
USDA Regulated Soils	Y N NA
Samples in Holding Time	Y N NA
Residual Chlorine Present	Y N NA
Cl Strips: _____	
Sample pH Acceptable	Y N NA
pH Strips: _____	
Sulfide Present	Y N NA
Lead Acetate Strips: _____	

LAB USE ONLY:
Lab Sample # / Comments:

Customer Remarks / Special Conditions / Possible Hazards:

Type of Ice Used: Wet Blue Dry None

Packing Material Used:

Radchem sample(s) screened (<500 cpm): Y N NA

SHORT HOLDS PRESENT (<72 hours): Y N N/A

Lab Tracking #:

Samples received via: FEDEX UPS Client Courier Pace Courier

Lab Sample Temperature Info:
Temp Blank Received: Y N NA
Therm ID#: _____
Cooler 1 Temp Upon Receipt: _____oC
Cooler 1 Therm Corr. Factor: _____oC
Cooler 1 Corrected Temp: _____oC
Comments:

Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:
Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:
Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:

MTJL LAB USE ONLY

Table #:
Acctnum:
Template:
Prelogin:
PM:
PB:

Trip Blank Received: Y N NA
HCL MeOH TSP Other

Non Conformance(s): YES / NO

Page: _____
of: _____

APPENDIX E

Health and Safety Plan

Prepared For:

Phillips 66 – AOC 1396

600-630 Westlake Avenue North

Seattle, Washington 98109

Atlas Project #: Z076000082

Prepared By:

Atlas Technical Consultants

6347 Seaview Avenue NW

Seattle, Washington 98107

REVIEW AND APPROVAL

CLIENT: Phillips 66 **PROJECT NUMBER:** Z076000082

SITE NAME: AOC 1396 **SITE LOCATION:** Seattle, Washington

PROJECT DESCRIPTION: Work associated with environmental investigation, including groundwater monitoring and sampling, remediation, system operation and maintenance, and remediation system decommissioning. Observation of earthwork activities during property redevelopment (performed by third party) which may involve work near or in excavations, work around heavy equipment, and soil and groundwater sample collection.

PREPARED BY: Melody Ryback **TITLE:** Staff Scientist **DATE:** 2/23/2023

Elisabeth Silver	Elisabeth Silver	2/23/2023
Project Manager	**Signature**	**Date**
Reviewer's Name	**Signature**	**Date**

This Health and Safety Plan (HASP) has been written for the use of Atlas and its employees. It may also be used as a guidance document by properly trained and experienced Atlas subcontractors. However, Atlas does not guarantee the health or safety of any person working on this project site.

Due to the potential hazardous nature of this site and the activity occurring thereon, it is not possible to discover, evaluate, and provide protection for all possible hazards which may be encountered. Strict adherence to the health and safety guidelines set forth herein will reduce, but not eliminate, the potential for injury at this site. The health and safety guidelines in this Plan were prepared specifically for this site and should not be used on any other site without prior research by trained health and safety specialists. All site personnel have the authority to "Stop Work" if unsafe conditions are present or discovered during site activities.

Atlas claims no responsibility for use of this plan by others. The plan is written for the specific site conditions, purposes, dates, and personnel specified and must be amended if these conditions change.

Table of Contents

EMERGENCY INFORMATION

Site Emergency Numbers	
Police, Fire and Ambulance Emergencies	**911**
CORE Health Networks *(24 hour Injury/Illness Case Management)*	**(855) 282-6331**
Poison Control Center	**(800) 222-1222**
Nationwide Call Before You Dig	**811 (Washington One Call 1-800-424-5555)**
National Response Center	**(800) 424-8802**
EPA Region # Main Office (enter region #)	**(206) 553-1263**
State Environmental Agency	**(425) 649-7000**

HOSPITAL AND ROUTE INFORMATION

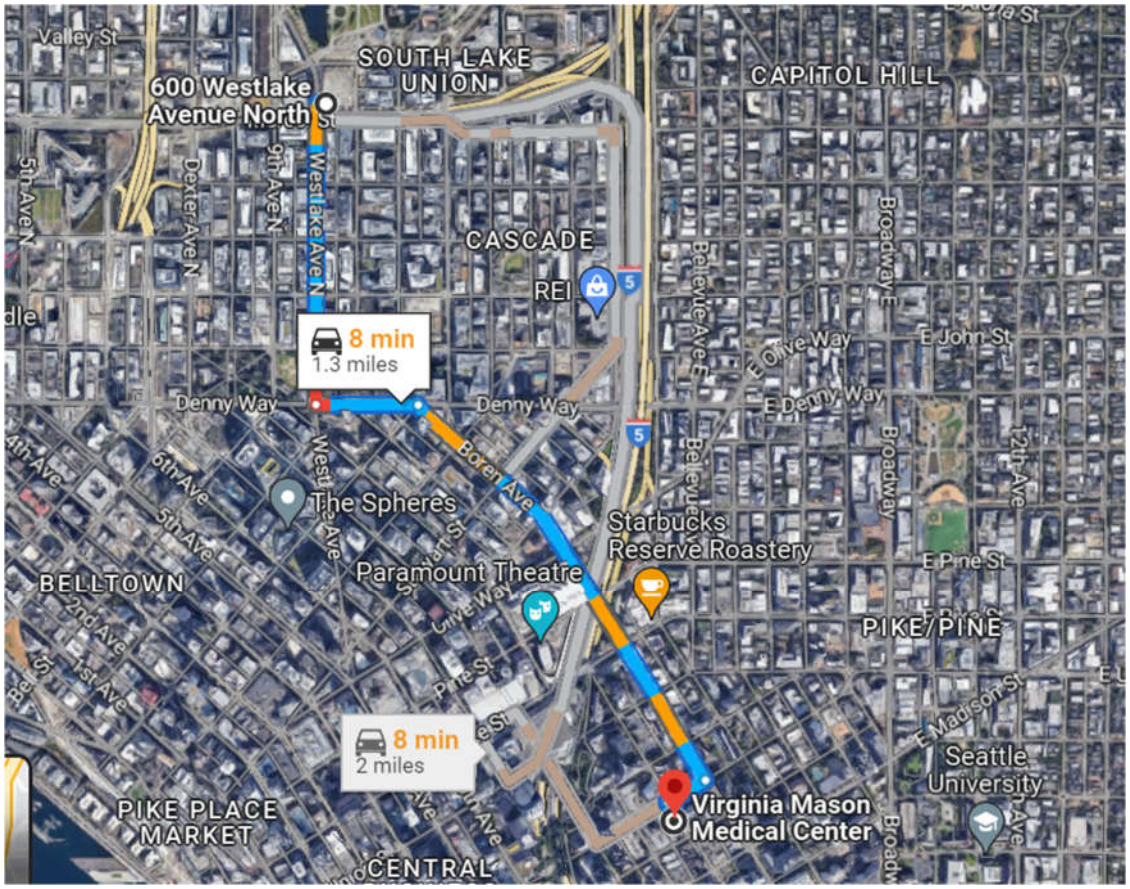
Virginia Mason Hospital – Emergency Room
1010 Spring Street
Seattle, Washington 98104
(206) 223-6600

Approximate travel time is 7-9 minutes, total distance 1.3 miles.

Directions from 600 Westlake Avenue North:

1. Turn right onto Terry Avenue North
2. Turn right onto Mercer Street
3. Turn left on Westlake Avenue North, continue for 0.4 miles
4. Turn left onto Denny Way
5. Turn right onto Boren Avenue, continue for 0.7 miles
6. Turn right onto Seneca Street
7. Turn left into hospital complex. Emergency room will be on the right.

EMERGENCY MEDICAL ROUTE TO HOSPITAL



OCCUPATIONAL MEDICAL CLINIC AND ROUTE INFORMATION

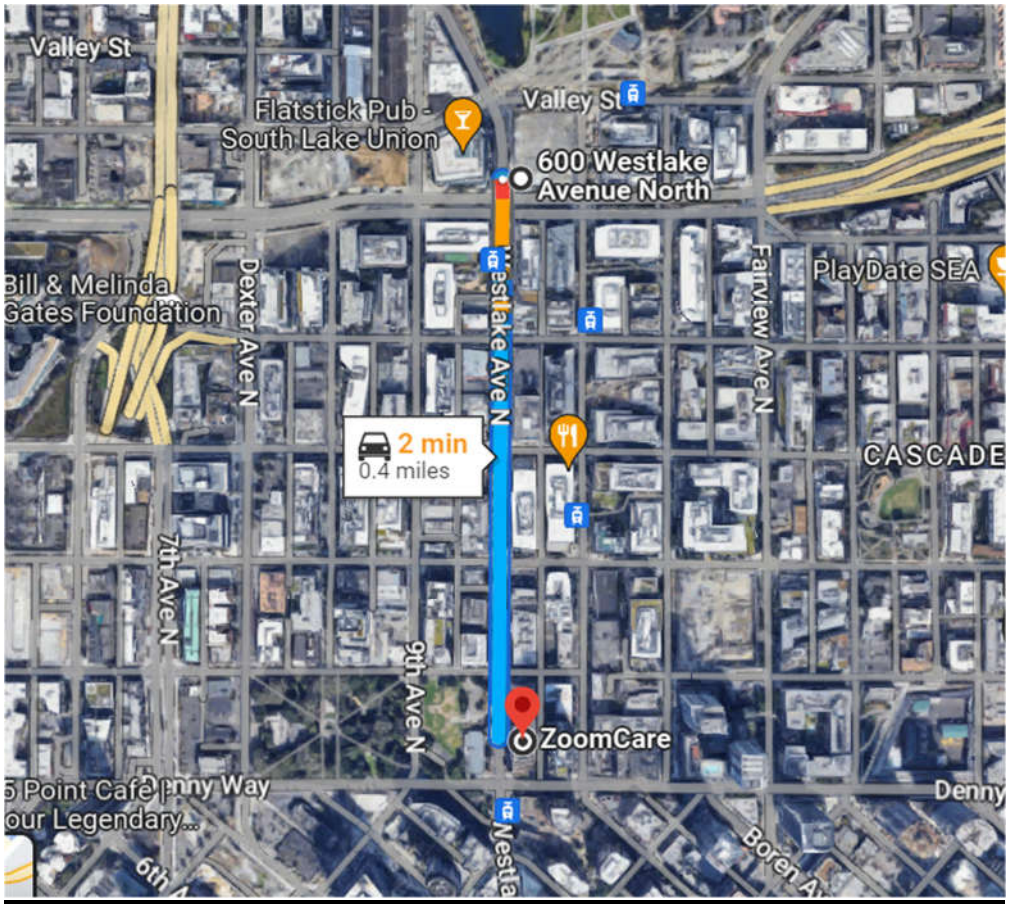
ZoomCare
116 Westlake Avenue North
Seattle, Washington 98109
(503) 684-8252

Approximate travel time is 2 minutes, total distance 0.4 miles.

Directions from 600 Westlake Avenue North:

1. Turn right onto Terry Avenue North
2. Turn right onto Mercer Street
3. Turn left on Westlake Avenue North, continue for 0.4 miles
4. Urgent Care will be on the left.

ROUTE TO OCCUPATIONAL CLINIC



EMERGENCY ASSEMBLY LOCATION

Dependent on the site's hazards and work location, the exact location of the emergency assembly location will be communicated during the daily tailgate safety meeting.

FIRST-AID MEASURES

In the event thEat an employee exhibits symptoms of exposure, contact **CORE Health Networks** immediately for phone assessment of injury/illness. The following procedures will be used:

Class of contaminant: Petroleum contaminated soil and groundwater.

Eye Contact: Flush eye immediately with copious amount of water for a minimum of 15 minutes. Repeat until irritation is eliminated and seek medical attention.

Skin Contact: Wash exposed area with soap and water for at least 15 minutes. If dermatitis or severe reddening occurs, seek medical attention.

Inhalation: Move the person into fresh air. If symptoms persist, seek medical attention.

Ingestion: Do not induce vomiting. Seek immediate medical attention.

IMPORTANT NUMBERS:

Title	Name	Phone Number
Project Manager:	Elisabeth Silver	(206) 491-9754
Site Safety and Health Officer:	On-site Atlas Personnel	(206) 781-1449
Site Supervisor:	On-site Atlas Personnel	(206) 781-1449
Regional Safety Coordinator:	Brandon Huff	(208) 841-0218
Client Contact:	Eli Gurian	(562) 506-4855
State Utility Locate Service:	National Call Before You Dig	811

1.0 INTRODUCTION

All personnel and visitors who may enter work areas on this site must comply with the requirements of this Health and Safety Plan (HASP). All site personnel have the authority to "Stop Work" if unsafe conditions are present.

1.1. Scope and Applicability of the Site Health and Safety Plan

This HASP has been prepared by Atlas for the activities associated with the sampling of soil/water/soil vapor, and installation of temporary monitoring wells to identify potentially hazardous materials through remediation/soil excavation at the project site at 600 Westlake Avenue North, in Seattle, Washington (site).

The principal hazardous chemical contaminants in the SOIL/WATER at the site are expected to be diesel, gasoline, BTEX, and lead. Appendix B contains Safety Data Sheets (SDS) for the potential onsite contaminates.

The health and safety protocols established in this HASP are based on the Atlas Health and Safety Policy Manual, the Occupational Safety and Health Administration (OSHA) Regulations, past field experiences, specific site conditions, and chemical hazards known or anticipated to be present from available site data. The following HASP is intended solely for use during the proposed activities described in the project documents and technical specifications. Specifications herein are subject to review and revision based on actual conditions encountered in the field during site characterization activities. Such changes must be listed on the HASP List of Approved Amendments and/or Changes (see Appendix C).

Before site operations begin, all employees, including subcontractors for Atlas working on this project site will have read this HASP and all revisions. Such changes must be listed on the HASP List of Approved Amendments and/or Changes (see Appendix C). By signing this form all individuals recognize the requirements of the HASP, known or suspected hazards, and will adhere to the protocols required for the project site.

Before site operations begin, all employees, including subcontractors for Atlas working on this project site will have read this HASP and all revisions. Before work begins, all affected workers will sign the HASP Acknowledgement Form (see Appendix C). By signing this form, all individuals recognize the requirements of the HASP, known or suspected hazards, and will adhere to the protocols required for the project site.

1.2. Historical Overview

The former Phillips 66 service station is located at 600 Westlake Avenue North, in Seattle, Washington. Petroleum hydrocarbon impacts from a reported historical release have been detected in soil and groundwater in the vicinity of the site. Atlas operated a soil vapor extraction (SVE) and air sparge (AS) remedial system, which was subsequently removed in April 2019.

1.3. Visitors

All visitors to the site must participate in a site H&S discussion that informs them of the hazards at the site and the potential activities that Atlas or its subcontractors are performing. All visitors must sign the Atlas Visitors Log (see Appendix C).

Visitors are not allowed in the work area while work is being performed unless properly trained and are wearing the required PPE.

1.4. Subcontractor Activities

All subcontractors used at the Site have been pre-approved in the Atlas Subcontractor Prequalification System or through Atlas' manual subcontractor approval process. Subcontractor Details will be updated after approval of additional remedial actions.

Subcontractor Details	
Name of Subcontractor:	
Contact Name:	
Contact Phone Number:	
Anticipated Dates Onsite:	
Activities to be Performed:	

Subcontractor Details	
Name of Subcontractor:	
Contact Name:	
Contact Phone Number:	
Anticipated Dates Onsite:	
Activities to be Performed:	

2.0 PROJECT ORGANIZATION

The following are specific roles and responsibilities for key site personnel.

2.1. Project Manager (PM)

The Project Manager (PM) has the primary responsibility for the fulfillment of the terms of the contract and overseeing operations for the purpose that includes meeting company legal and safety requirements. It is the PM's responsibility to manage the scope of the project, provide for the H&S of all employees working and communicate with the Client regarding the progress toward project goals. The PM will inform the Regional Safety Coordinator (RSC) of all HASP modifications, violations and incidents. The PM responsibilities include:

- Provide personnel time to read and understand the HASP and complete any training required to work on the project site.
- Conduct project start-up health and safety briefing for onsite personnel and subcontractors.
- Check that each subcontractor is approved in Atlas' subcontractor system and that each subcontractor's site workers have appropriate training.
- Verify Atlas employees are medically cleared and have completed all necessary training.
- That hazards identified during any site audits or while working are corrected. If necessary for immediate hazards, shut down field operations if hazards cannot be corrected or the hazards present an immediate threat to life and health.
- Develop HASP.
- Determine and provide all necessary safety systems and PPE.

2.2. Site Supervisor

The Site Supervisor is responsible for field operations and reports to the Project Manager and is the onsite coordinator and overseer of operations. It is their duty to supervise the site personnel, coordinate the activities of the subcontractor personnel and verify that the scope of work is followed and modified, when necessary. The Site Supervisor's specific responsibilities include:

- Executing the work plan and schedule as detailed by the Project Manager
- Coordination with the SSHO on health and safety issues
- Ensuring site work compliance with the requirements of the HASP

2.3. Site Safety and Health Officer (SSHO)

The site Safety and Health Officer (SSHO) has the responsibility and authority to implement this HASP and to verify compliance. The SSHO reports to the Project Manager. The SSHO is on-site during all work operations and has the responsibility to halt site work if unsafe conditions are detected or if deviations in the work plan occur. The responsibilities of the SSHO at the site include the following:

- Managing the H&S functions on the site;
- Ensuring compliance with the HASP and use of PPE;
- Conducting daily Tailgate Safety Meetings for site personnel and subcontractors. The following topics should be covered:

  - Hazard Communication (i.e., SDS location, proper PPE to be used, chemical hazards of non-routine tasks).
  - Work zone setup and equipment movement
  - Review of all applicable JSA(s).
  - Discuss tasks to be performed, associated hazards and procedures to protect employees from those hazards.
  - Review site safety requirements.
  - Review site emergency procedures
- Conducting daily safety inspections of the site looking for unsafe acts or conditions and providing corrective action as appropriate.

2.4. Regional Safety Coordinator (RSC)

The Regional Safety Coordinator (RSC) is responsible for providing professional health and safety advice to the project. The RSC will review and provide support for concerns regarding the health and safety of field personnel assigned to this project, including:

- If requested by the Project Manager, review and approval of HASP;
- Review of incident reports, inspections and air monitoring results;
- When required, the RSC will conduct a field audit of the site to evaluate the adequacy of the protective measures and work with the PM to implement any necessary changes.

2.5. Field Personnel

The field personnel include technicians, engineers, scientists, geologists and subcontractors who perform work on this site. Each individual team member will be responsible for understanding and personally complying with the requirements of this HASP. Field personnel will report health and safety violations to either the site Supervisor or the SSHO. H&S responsibilities, as discussed in this HASP that are shared by all site personnel include:

- Complying with the requirements of the HASP
- Reporting unsafe acts or conditions
- Wearing correct PPE for the task
- Stopping any unsafe work
- Following the JSA and/or correct steps for a task.
- Assist other field personnel with being safe and meeting the requirements of this HASP.

3.0 TASK/OPERATION HEALTH AND SAFETY RISK ANALYSIS SUMMARY

This chapter describes the identified and anticipated hazards associated with this site based on the environmental conditions, tasks to be performed and the control measures necessary to protect workers from these hazards. The assessment looked at the general, chemical, physical and biological hazards that may be encountered while working on this site. Using this information, appropriate control methods are selected to eliminate the identified risks or effectively control them.

3.1. Job Safety Analysis (JSA)

The purpose of the JSA is to identify the routine health and safety hazards associated with the routine site tasks and operations. JSAs for the anticipated tasks that will be performed onsite are maintained in Appendix A. A single JSA may be used for a task/operation performed in multiple locations if the hazards, potential exposures and controls are the same at each location. Field personnel are expected to modify JSAs for the site as new hazards are identified and create JSAs if one is not available for a task that will be performed.

3.2. Chemical Exposure Assessment

Hazardous chemicals may be used on the site to support site operations. The Atlas H&S Policy No. 08 – Hazard Communication Program requires Atlas to provide employees, contractors, subcontractors and visitors with information on the health effects of these chemicals and necessary actions to protect against exposure. This information is transmitted through Safety Data Sheets (SDS), container labels, training and a written Hazard Communication Program.

Site activities will adhere to the Program as described in the Atlas Policy. All site personnel, including subcontractors, will be briefed on the Program as part of the site orientation training before starting work. In accordance with this Program, the PM and/or SSHO will check that each chemical brought to the site is accompanied by its SDS. A copy of each SDS will be maintained and be made available to each site personnel who may be potentially exposed to the chemical. In addition, the SSHO will check that all subcontractors bring at least one copy of SDS for each chemical they bring onto the site. The SSHO will also check that all chemical containers brought to the site are labeled as to its contents and appropriate hazard warnings according to the Program. The location of all SDSs will be identified during the daily tailgate safety meeting and may be included in Appendix B of this HASP or maintained in a separate area.

3.3. Potential Chemical Hazards Associated with the Project Site

The following chemical hazard evaluation for the project site is based on historical and previous investigations of the site. The evaluation has been conducted to identify hazardous substances that potentially may be present at the site and to ensure that work activities, PPE and emergency response are consistent with the specific contaminants that could be encountered.

Chemical impacted material has been identified on the site. The potential contaminants that might be encountered during the field activities and exposure limits are listed below.

3.3.1. Table 3-1 Chemical Time Weighted Averages, PEL's and STEL's (if applicable).

Name (Constituent)	PEL	TWA (8hr)	STEL
Gasoline Products			
Gasoline, unleaded with Ethanol (contains up to 5% benzene)	none	300 ppm 900 mg/ m^3	500 ppm 1500 mg/ m^3
Gasoline, leaded, all grades (petroleum)	none	300 ppm 900 mg/ m^3	500 ppm 1500 mg/ m^3
Diesel Fuel	**N/E	100 mg/ m^3	**N/E
Commonly Used Chemicals			
Alconox (cleaning/detergent)	**N/E	5 mg/m^3	**N/E
Tetrachloroethylene (dry cleaning components)	25 ppm 170 mg/ m^3	25 ppm 170 mg/ m^3	100 ppm
Perchloroethylene (dry cleaning components)	100 ppm	200 ppm	100 ppm

**N/E – Not Established by OSHA or NIOSH.

3.4. Chemical Hazard Exposure Routes

Exposure routes for chemical impacted material:

- Inhalation of dust, vapor, particulates or due to the presence of hazardous materials from soil or ground water.
- Ingestion of soil/water via hand to mouth contact.
- Absorption through the skin from contact with contaminated soil/water.

To protect field personnel, the following procedures will be used as needed:

- Establishment of work zones
- Use of PPE
- Decontamination procedures
- Atmospheric monitoring

3.5. Noise Hazards and Controls

Exposure to high levels of noise may occur when working near heavy equipment, tools and remediation systems. Depending upon the environment surrounding the project site airports, factory machines, etc. may produce high levels of noise. Employees exposed to noise levels in excess of the action level of 85 decibels (A-weighted, Slow Response) will be included in a Hearing Conservation Program according to Atlas H&S Policy No. 47 – Hearing Conservation. The SSHO may evaluate employee noise exposures using a noise survey meter or a noise dosimeter. The RSC may conduct additional noise monitoring to determine the appropriate response to be taken. Employees will be provided with ear plugs and/or earmuffs when exposed to noise levels in excess of the 8-hour Permissible Exposure Limit (PEL) of 90 decibel (A-

weighted, Slow Response). This hearing protection must have a Noise Reduction Rating (NRR) to protect hearing in accordance with Policy No. 34 and reduce the exposure level to below 90 dba.

3.6. Biological Hazards

Site activities may expose workers to other hazards such as poisonous plants, insects, animals, and indigenous pathogens. Protective clothing and respiratory protection equipment and training on how to identify poisonous plants, animals and insects, can greatly reduce the chances of exposure. Thoroughly washing any exposed body parts, clothing, and equipment will also protect against infections. If working in wooded/grassy areas, use appropriate insect repellants (containing DEET and/or Permethrin) and apply per the manufacturers' directions.

3.6.1. Poison Oak, Poison Sumac, Poison Ivy

- Avoid contact with plants.
- Use barrier products such as IvyX Pre-contact, IvyBlock, or other products on exposed skin where potential direct contact or contact through clothing is possible. Re-apply periodically throughout the day to exposed skin.
- Cover as much skin as practical; wear long sleeves, long pants, socks, boots, gloves, neckerchiefs, hats and other clothing articles. Wear impermeable gloves over cotton/leather gloves.
- Remove gloves before eating or taking bathroom breaks. Clean hands thoroughly with Tecnu, IvyX post-contact, or other product before eating or bathroom breaks. Ensure you do not touch your face or hands with a contaminated glove or other article of clothing.
- Separate contaminated field clothing and wash in hot water. Heavy contaminations may not be able to be removed and the clothing will need to be discarded.
- Clean all objects that may have urushiol on its surface. Besides clothing, urushiol can stick to many surfaces, including tools and equipment.
- Protect your vehicle interior by placing a large towel or bedsheet over the seats. Wash hands with Tecnu before and after removing contaminated clothes.
- Wash contaminated skin with Tecnu, IvyX Post-contact, or other product immediately. Do not delay since urushiol takes only a few minutes to affect your skin.
- Shower (do not take a bath) and thoroughly wash your entire body with warm, soapy water as soon as possible.
- Dermatitis can present in many forms which include itchy skin, redness or streaks, hives, swelling, small or large blisters or scabs after bursting after urushiol exposure.

3.6.2. Ants

- Look at your surroundings during site setup. If present in large numbers move the work area. If unable to move the work area stop work and contact the PM.
- Workers should take the following steps to prevent fire ant stings and bites:
- Do not disturb or stand on or near ant mounds.
- Be careful when lifting items (including animal carcasses) off the ground, as they may be covered in ants.
- Fire ants may also be found on trees or in water, so always look over the area before starting to work.

3.6.3. Bee/Hornets/Wasp

- Look at your surroundings during site setup. If present in large numbers move the work area. If unable to move the work area stop work and contact the PM.
- Bees, wasps, and hornets are most abundant in the warmer months. Nests and hives may be found in trees, under roof eaves, in attics or on equipment such as ladders.
- Avoid perfumed soaps, shampoos, and deodorants.
- Wear clothing to cover as much of the body as possible.
- Remain calm and still if a single stinging insect is flying around. (Swatting at an insect may cause it to sting.)
- If you are attacked by several stinging insects at once, run to get away from them. (Bees release a chemical when they sting, which may attract other bees.)
- If a bee comes inside your vehicle, stop the car slowly, and open all the windows.
- Workers with a history of severe allergic reactions to insect bites or stings should consider carrying an epinephrine auto injector (EpiPen) and should wear a medical identification bracelet or necklace stating their allergy.

3.6.4. Ticks

- Avoid vegetation when possible. Stay to the center on trails where the vegetation is the shortest.
- Be especially vigilant if vegetation contacts your body above your knee. Remember that ticks find a place on vegetation to lie in wait until a host comes along and brushes across them.
- Apply CDC-recommended insect repellents: DEET or permethrin according to label directions up to, and above, parts of body and clothing where contact with vegetation occurs.
- DEET is most effective in higher concentrations from 20-30% (Deep Woods OFF! & Cutter Backwoods). Spray directly onto your exposed skin. Apply to face by spraying hands and then wiping on skin avoiding eyes and mouth.
- Reapplication throughout the day is needed since it only works while volatilizing.
- Do not apply DEET to skin underneath clothing.
- Permethrin is more effective at repelling ticks than DEET and is applied to clothing only.
- Re-application each day is not needed since it is effective on clothes for several consecutive days and after laundering. Launder separately from other clothes. Do not apply permethrin to your skin.
- For best protection apply permethrin to clothing, including footwear, socks and hats, and DEET to exposed skin.
- Always tuck shirt into pants and tuck pants into tightly woven socks. Small ticks can crawl through the fabric of some socks. Wear a hat to cover your exposed head.
- Check for ticks on clothing during field work and at every rest break.
- At the end of the day, before entering your vehicle, do a thorough tick check with your field partner.
- Reapply permethrin to clothing to knock down ticks and prevent them from entering the vehicle with you.

- As soon as possible after field work, remove clothing and check yourself before conducting office work. Check again while bathing and changing. Be sure to look closely and feel carefully for small, nymph “seed” ticks on waistline, neck, hairline, behind ears, under arms, and groin.
- Keep field gear and clothing out of living spaces and bag soiled field clothes until washing (separately in hot water).
- If you discover an embedded tick, call Core Health. Nurses there can help you with first aid and remind you of the symptoms to be alert for afterward.

3.6.5. Snakes

- Walk only as fast as you can watch the path ahead. If you see a snake, back away slowly. Most snakes avoid people if possible and bite only when threatened or surprised.
- When working in known snake habitats, snake gaiters must be worn by all site employees.
- Do not place your hands or feet in locations where you cannot see the surrounding area.
- When possible, avoid areas of tall vegetation.
- Tap or poke the ground ahead of you with a walking stick before entering an area where you can't see your feet. Snakes will try to avoid you if given enough warning.
- When in an area known to have snakes, wear long pants and boots. If work must be conducted in areas with tall grass or other cover where snakes may be present, also wear snake gaiters.
- Never handle a snake. Even non-venomous snakes can bite and cause serious injury.

3.6.6. Dogs

- If an unsecured dog is seen on or near the project site, stop work and all employees are to take shelter in a building or vehicle until the dog leaves the area or the dog is secured by authorities or its owner. Contact animal control if the dog does not leave on its own.

3.7. Lightning

Weather conditions can change quickly when working. In the event lightning is seen, thunder is heard, or storm notifications in the area are issued, all outdoor work must stop and all onsite employees are to take shelter inside a building or vehicle. Work can resume 30 minutes after the last observed sign of lightning, sound of thunder and the threat of subsequent storm activity is deemed safe. Before resuming work, onsite employees should contact the Project Manager to determine if additional storm activity will be occurring. The use of online weather activity maps (webpages), weather applications, and public safety notification services, can be very helpful when assessing approaching storms in the area. If storm activity will continue, onsite employees should secure the site and either reschedule work or wait in a building or vehicle until the storm activity (see above) is no longer a threat.

3.8. General Public

When working in unsecured locations onsite employees must setup a work zone that keeps the general public away from or provides a barrier to any hazards created by the work performed onsite.

All employees are expected to treat the general public respectfully and to limit our engagement and interaction. In the event an employee feels threatened by the general public; work must stop,

and the employee should seek protection in a building, withdraw from the area and/or contact local authorities. Work should only resume when the threat has been eliminated.

3.9. Hand and Power Tools

In order to complete the various tasks for the project, personnel will utilize hand and power tools. The use of hand and power tools introduce a variety of hazards including injury from being struck by flying objects, cut or struck by the tool, fire and electrocution. Proper PPE must be worn while using these tools. Ground Fault Circuit Interrupters (GFCIs) are required for all portable corded electric tools.

For specific PPE and procedures associated with a tool see the JSA for the task in which the tool is being used and the manufacturer's instruction manual.

3.10. Slip, Trip and Falls

Working in and around the project site will pose slip, trip and fall hazards due to equipment, tools/supplies and slippery surfaces from weather and from activities performed onsite. Good housekeeping must be maintained at all times. Tools and equipment no longer in use must be removed from the work area and secured. Traction control devices must be worn when working on slippery surfaces. A general site walk should be conducted prior to the start of work to identify trip hazards. These identified trip hazards should be correct or visibly marked to warn onsite employees.

3.11. Material Handling

Proper manual lifting of material will be required by site personnel and if not done correctly could result in injury. No one is to lift any object greater than 50 pounds or any object that is large or awkward by themselves. If possible, the use of equipment and tools to help lift and move the material is required.

Employees must be trained on proper lifting techniques prior to arriving at the project site.

3.12. Fire and Explosion

All equipment used to transfer flammable material, including contaminated soil or water must be grounded and bonded to prevent static buildup. An appropriately rated fire extinguisher must be maintained and available for use on site.

3.13. Moving Equipment

Field personnel working in the immediate vicinity of heavy equipment may encounter injuries from contact from the equipment.

Spotters must be used when heavy equipment is used onsite or moving from one location to another and the route and designation discussed with all site personnel prior to movement. Equipment must be equipped with back up alarms.

All site employees must wear at least an ANSI class 2 reflective vest or shirt.

3.14. Vehicular Traffic

Work zones will be established out of local traffic patterns whenever possible and clearly marked. All site personnel must wear high visibility PPE based on the amount and speed of the traffic.

3.15. Heat Stress

All employees and visitors, must adhere to the following procedures when heat stress conditions exist.

The SSHO will have training in first-aid and Cardiopulmonary Resuscitation (CPR), including training in heat-related illnesses. The SSHO must also be trained on the requirements of the Atlas Policy for Industrial Hygiene (Policy No. 31), which contains the requirement for heat stress monitoring. All workers should be capable of recognizing and treating the signs and symptoms of heat stress conditions. During potential heat stress conditions, ice should be readily available to rapidly cool victims.

Water will be made available at the site for employee fluid replacement. When heat stress is a hazard, employees will be provided with balanced, electrolyte solutions to replace fluid and electrolyte loss. Employees will be provided with replacement fluids at a minimum rate of 8 ounces every 15 to 20 minutes per person.

Acclimatization is a gradual physiological adaptation that improves an individual's ability to tolerate heat stress. Full-heat acclimatization requires up to 3 weeks of continued physical activity under heat-stress conditions similar to those anticipated for the work. Acclimatization loss begins when the work activity in heat stress conditions is discontinued. A noticeable loss usually occurs within 3 – 4 days.

3.16. Rest Breaks

All rest breaks will be taken out of the zone of exclusion in a cooler, shaded, rest area. The frequency of rest breaks will be based on the level of physical activity, temperature and humidity and will be discussed during the daily tailgate meeting. At any time, the frequency of rest breaks can be increased if the SSHO or other site employees determine it to be necessary.

Heat stress and heat strain are conditions resulting from environmental factors including temperature, relative humidity, radiant heat transfer, and air movement, as they are affected by clothing. The primary objective of the heat stress management program is to prevent heat stroke which is life threatening and the most serious of the heat-induced disabilities. Extra caution should be taken for workers who are not acclimated to working in the heat.

The following Heat Stress Index should be used as a guide to evaluate heat stress situations.

3.16.1. Table 3-2: Heat Stress Index

Heat Stress Index									
Temp. °F	Relative Humidity								
	10%	20%	30%	40%	50%	60%	70%	80%	90%
105°	98°	104°	110°	120°	132°				
102°	97°	101°	108°	117°	125°				
100°	95°	99°	105°	110°	120°	132°			
98°	93°	97°	101°	106°	110°	125°			
96°	91°	95°	98°	104°	108°	120°	128°		
94°	89°	93°	95°	100°	105°	111°	122°		
92°	87°	90°	92°	96°	100°	106°	114°	122°	
90°	85°	88°	90°	92°	96°	100°	106°	114°	122°
88°	82°	86°	87°	89°	93°	95°	100°	106°	115°
86°	80°	84°	85°	87°	90°	92°	96°	100°	109°
84°	78°	81°	83°	85°	86°	89°	91°	95°	99°
82°	77°	79°	80°	81°	84°	86°	89°	91°	95°
80°	75°	77°	78°	79°	81°	83°	85°	86°	89°
78°	72°	75°	77°	78°	79°	80°	81°	83°	85°
76°	70°	72°	75°	76°	77°	77°	77°	78°	79°
74°	68°	70°	73°	74°	75°	75°	75°	76°	77°

NOTES: Add 10° F when protective clothing (use of a respirator and/or chemical protective clothing such as Tyvek, arch flash or flame resistant) is being used; Add 10° F when in direct sunlight.

HSI Temp	Category	Injury Threat
> 130° F	Extreme Danger	No work unless emergency exists. Contact Atlas RSC and Corporate H&S Group prior to proceeding. Heat cramps or exhaustion likely, heat stroke possible if exposure is prolonged and there is physical activity.
105°-130° F	Danger	Contact RSC prior to proceeding. Requires strict adherence to ACGIH Heat Stress Guidelines, including use of on-site WBGT equipment. Heat cramps or exhaustion likely, heat stroke possible if exposure is prolonged and there is physical activity.
90°-105° F	Extreme Caution	Heat cramps or exhaustion likely, heat stroke possible if exposure is prolonged and there is physical activity.
80°-90° F	Caution	Heat cramps or exhaustion likely, heat stroke possible if exposure is prolonged and there is physical activity.
< 80° F	Normal Range	Typical conditions for time of year. Little or no danger under normal circumstances. As always, anticipate problems and work safely.

3.17. Cold Stress

This procedure applies to all employees who perform field work in cold environments at risk of cold stress injury and intended to protect workers from the most severe effects of cold stress.

Atlas site employees have been trained in cold stress as part of their HAZWOPER 40-hour initial training, site workers will receive refresher training by the SSHO in cold stress safety and health procedures. The training program will include, as a minimum, instruction in the following areas:

- Proper first-aid treatment
- Proper clothing practices
- Proper eating and drinking habits
- Recognition of impending frostbite
- Recognition of the signs and symptoms of impending hypothermia or excessive cooling of the body when shivering does not occur
- Safe working practices

The SSHO will be trained in first aid, CPR and cold stress conditions.

Frostbite and hypothermia are two types of cold injury that personnel must be protected against during the performance of field duties. The objective is to prevent the deep body temperature from falling below 96.8° F and to prevent cold injury to body extremities. Two factors influence the development of a cold injury; the ambient temperature, and wind velocity.

The SSHO will monitor environmental conditions by recording ambient temperature and estimated wind-speed. Information contained in Tables 3-3 will be used to evaluate the possibility of hypothermia among workers on-site. No work will be conducted when the temperature and wind speed combine for a temperature of less than -20° F.

Use appropriate cold weather clothing when temperatures are at or below 40°F as exposed skin surfaces must be protected. These protective items can include facemask, hand wear, and foot wear. Workers handling evaporative solvents during cold stress conditions will take special precautions to avoid soaking gloves and clothing because of the added danger of prolonged skin contact and evaporative cooling. Personnel will wear protective clothing appropriate for the level of cold and planned physical activity. The objective is to protect all parts of the body, with emphasis on the hands and feet. Eye protection against glare and ultraviolet light should be worn in snowy and icy conditions.

The work rate should not be so great as to cause heavy sweating that could result in wet clothing. If heavy work must be done, opportunities for rest breaks will be provided where workers have the opportunity to change into dry clothing. Conversely, plan work activities to minimize time spent sitting or standing still. Rest breaks should be taken in a warm, dry area. Windbreaks can also be used to shield the work area from the cooling effects of wind.

When frostbite, hypothermia, or other cold stress symptoms are suspected, treat the patient to relieve symptoms or transport them to the medical facility identified in this HASP.

3.17.1. Table 3-3: Hypothermia Evaluation

Estimated Wind Speed (mph)	Actual Temperature Reading (˚F)											
	50˚	40˚	30˚	20˚	10˚	0˚	-10˚	-20˚	-30˚	-40˚	-50˚	-60˚
	Equivalent chill Temperature (˚ F)											
Calm	50˚	40˚	30˚	20˚	10˚	0˚	-10˚	-20˚	-30˚	-40˚	-50˚	-60˚
5 mph	48˚	37˚	27˚	16˚	6˚	-5˚	-15˚	-26˚	-36˚	-47˚	-57˚	-68˚
10 mph	40˚	28˚	16˚	4˚	-9˚	-24˚	-33˚	-46˚	-58˚	-70˚	-83˚	-95˚
15 mph	36˚	22˚	9˚	-5˚	-18˚	-32˚	-45˚	-58˚	-72˚	-85˚	-99˚	-112˚
20 mph	32˚	18˚	4˚	-10˚	-25˚	-39˚	-53˚	-67˚	-82˚	-96˚	-110˚	-121˚
25 mph	30˚	16˚	0˚	-15˚	-29˚	-44˚	-59˚	-74˚	-88˚	-104˚	-118˚	-133˚
30 mph	28˚	13˚	-2˚	-18˚	-33˚	-48˚	-63˚	-79˚	-94˚	-109˚	-125˚	-140˚
35 mph	27˚	11˚	-4˚	-20˚	-35˚	-51˚	-67˚	-82˚	-98˚	-113˚	-129˚	-145˚
40 mph	26˚	10˚	-6˚	-21˚	-37˚	-53˚	-69˚	-85˚	-100˚	-116˚	-132˚	-148˚
(Wind speeds > 40 mph have little additional effect)	**LITTLE DANGER** If < hour with dry skin. Maximum danger of false sense of security				**INCREASING DANGER** Danger from freezing of exposed flesh within one minute.			**GREAT DANGER** Flesh may freeze within 30 seconds.				
	Trench foot and immersion foot may occur at any point on this chart.											

* Developed by U.S. Army Research Institute of Environmental Medicine, Natick, MA

4.0 AIR MONITORING AND PERSONAL PROTECTIVE EQUIPMENT

4.1. Site Air Monitoring Requirements

To prevent exposure to hazardous atmospheres and aid in the selection of respiratory protection, monitoring for the presence of airborne contaminants will occur when knowledge of the site indicates their potential presence. One or more of the following direct-reading instruments may be used to aid in this determination;

- Photoionization Detectors (PID) and
- Flame Ionization Detectors (FID) will measure non-specific organic gases and vapors.
- Combustible Gas Indicators (CGI) will detect explosive atmospheres.
- Oxygen (O_2) meters will detect fluctuations in oxygen concentrations.

These instruments should be calibrated or bump tested daily and whenever the readings may be erratic. All readings should be recorded in the field log books according to the monitoring program. All employees responsible for using these devices must be shown how to properly calibrate and configure the equipment. A manual on how to use the equipment must always be maintained with the equipment.

All direct-reading instruments or equipment that are needed to monitor for hazardous atmospheres on this project site are listed in Tables 4-1, 4-2 and 4-3.

The breathing zone of the employee(s) anticipated to have the highest potential for exposure for each task will be monitored using an appropriate combination of some or all of these direct-reading instruments. Air monitoring will occur every 15 minutes during non-intrusive activities, or every 5 feet of penetration during intrusive activities. Site tasks and air monitoring requirements are shown in Table 4-1. Additional site monitoring may occur at the discretion of the SSHO, site supervisor, or RSC.

All air monitoring equipment must be calibrated as per manufacturer's instructions.

If any of the action levels listed in Tables 4-2 or 4-3 are met, work must immediately stop. No employee is authorized to work in conditions that require respiratory protection without first contacting your RSC. If any of the action levels listed in Table 4-2 or 4-3 are met, work must immediately stop. Contact must be made with the PM informing them that the Respiratory Protection Plan, Appendix H will be followed.

4.1.1. Table 4-1: Site Air Monitoring Requirements

Site Activity	Instrument	Frequency	Location	Caution
Site Excavation and Construction Activities	PID	Every 15 minutes or 5 feet of penetration / Ongoing, during soil excavation	In work area near activity	Communicate with equipment operator before sampling

Air monitoring results obtained from the breathing zone during field activities will be recorded in field logbooks on an ongoing basis as part of the standard data that is recorded. The Air Quality Monitoring Record will be completed if a PID reading >10 ppm is measured, see Appendix A.

The action levels were developed using the following assumptions.

- Atlas assumed the primary substance of gasoline is Naphtha with a TWA of 300 ppm.
- The remaining chemical components of gasoline were assumed to each account for 15% of the gasoline mixture.
    - Assumed benzene is one of the components of gasoline.
- The exposure levels to the individual chemicals averaged 50 ppm (TWA).
- The chemical makeup of gasoline used to calculate the action level is based on the current mixture of gasoline prior to release into soil or water.

Air monitoring information will be utilized to evaluate personnel exposure and assess the need for respiratory protection. PID readings measured in the employees breathing zone will be used to determine the level of protection required. PID readings refer to readings above background, which are sustained for at least 5 minutes and are measured during the performance of field tasks.

4.2. Action Levels for Respiratory Protection

The first and foremost means of protecting employees from injuries or exposures is to eliminate the exposure. The general hierarchy for controlling potential exposures is: (1) engineering controls; (2) administrative controls; and (3) the use of PPE. PPE is a means of preventing injury or exposure when exposure elimination and/or other control means are not feasible.

The initial level of protection and the upgrading to respiratory protection action levels at which the PPE will be upgraded are determined based on the identification of specific chemicals expected to be present at a site and the established OSHA Permissible Exposure Levels (PEL) or ACGIH Threshold Limit Values (TLVs), whichever is lower. In the event more than one chemical is expected or exists at a site, the most hazardous chemical will dictate the level of personal protection required. Table 4-2 and -3 shows the action levels for levels of personal protection equipment.

4.2.1. Table 4-2: Action Levels for Petroleum Contaminate Soil/Water

Monitoring Equipment	Hazard	Action Level Above Background	Action
PID/FID	Organic gas/vapor	< 10 ppm	Level D.
		10 to 50 ppm	Level C. Move upwind and continue air monitoring, cease operations, or use detector tube(s) for (contaminant) and reference Table 4-3 below.
		> 50 ppm	Immediate Withdrawal. Contact the PM and RSC for further instructions to proceed.

If readings exceed the range for level of protection indicated, personnel should stop work, withdraw and not return until an appropriate level of protection has been donned. Upgrading protection must be communicated to the SSHO, who will in turn convey this information to the RSC. Upon review of measurements, the RSC may further adjust the PPE requirements.

Air monitoring equipment used on the site should be calibrated according to the following:

Types	Frequency	Gas Standard
PID	Daily	100 ppm isobutylene in air

Field personnel, in conjunction with the SSHO and RSC, may choose to allow ventilation of vapors before resuming work in respirators. If ventilation is conducted, additional air monitoring will be performed prior to the resumption of work.

4.3. Levels of Protection

The protection levels may include all or some of the following, based on work scope.

4.3.1. Level D:

- See Section 8.0 of this HASP for minimum PPE requirements.

4.3.2. Level C:

- Half-face or full-face, air purifying respirator (NIOSH approved) with organic vapor cartridge. Refer to the Respiratory Protection Plan.
- Disposable, hooded, chemical-resistant clothing*
- Disposable, chemical-resistant outer gloves
- Disposable, inner nitrile gloves (8 mil minimum)
- Chemical-resistant boots with steel toe
- Disposable boot covers*
- Hard hat*
- Goggle
- Face Shield*
- Coveralls*
- Hearing protection*

4.4. Respiratory Protection

Respiratory protection requirements for employees are described in detail within Appendix H - Respiratory Protection Plan. Basic rules of respiratory usage are listed below:

- Facial hair that contacts or interferes with the seal of the mask-to-face is not allowed on personnel required to wear respirators.
- Respirator cartridges should be replaced after approximately 8-hours of continuous or intermittent usage, unless otherwise noted. Cartridges should also be replaced if they become damaged, after the expiration date is exceeded, if breakthrough (smell and/or taste) occurs or if filters become clogged causing resistance to breathing.

- Contact lenses may be worn when respiratory protection is required, in conjunction with additional eye protection to protect against particles or splashes, provided there is no interference with the respirator seal and the chemical in the atmosphere does not prevent their use.
- Respirators must be cleaned and disinfected after each day's use or more often, if necessary.
- Prior to donning, respirators will be inspected for worn or deteriorated parts. Emergency respirators or self-contained devices will be inspected at least once a month and after each use.
- After donning, personnel should perform a positive and negative user fit-check to determine if a good seal has been achieved.
- Any employee assigned a respirator or required to wear a respirator will receive an annual medical evaluation, annual respirator fit test and receive respiratory protection training.

5.0 HEALTH SURVEILLANCE PROGRAM

5.1. Employee Medical Examinations

All Atlas employees involved in work at this site will participate in Atlas' Medical Surveillance Program administered by Atlas' medical management provider. Atlas has worked with its medical provider to develop a medical exam that evaluates employees for potential chemical exposure. The medical examinations provided to Atlas employees meet the requirements in 29 CFR 1910.120(f).

Any subcontractors or visitors that will work in an area where there is potential for exposure to onsite contaminates must also undergo a medical exam that meets 29 CFR 1910.120(f) and be cleared by a physician to work.

When respirators are required as determined by section 4.0 of this HASP, each employee will also have current respirator clearance.

The PM for this project site is responsible for checking on the medical clearance for any Atlas employee working on this site.

A post-project, follow-up exam may be required if an exposure incident is reported or an employee shows specific symptoms associated with the known or suspected hazardous chemicals. The RSC and the Project Manager will determine when post-project exams are required.

6.0 SITE SECURITY AND CONTROL

6.1. Work Zones

Restricted site areas will include, but not necessarily be limited to, the following zones:

- Exclusion Zone or Hot Zone - any area where contamination is either known or likely to be present in concentrations that could pose a threat to human health and safety or that potential for harm to personnel exists because of the type of work activities being conducted. Appropriate PPE and warning signs should be utilized in this area.
- Contamination Reduction Zone - any area where workers conduct personal and equipment decontamination.
- Support Zone - areas where access is controlled, but the chance to encounter hazardous materials or conditions are minimal.

Access to the work zones will be controlled by work zone delineators (e.g. traffic cones, flags, vehicles, DOT approved devices, temporary or permanent fencing, and/or safety barrier tape). Additionally, Atlas employees should follow the requirements of Atlas Policy No. 49, Work Zones in Traffic Areas for additional information. The delineation of the work zone will be discussed during the tailgate safety meeting.

In the event on-site personnel must upgrade their personal protective equipment, the work zones may require substantial modification in order to provide for the safety of nearby personnel not associated with this work. Any upgrade level will be communicated by the site supervisor to the PM. The PM will then inform the RSC of this occurrence.

6.2. Buddy System

The buddy system is preferred when working on this project site. The Buddy System means that personnel work in pairs and stay in close visual contact to be able to observe one another and summon rapid assistance in case of emergency.

6.3. Lone Worker

When working alone, no worker should be left without means of summoning help quickly. All lone workers at a minimum must have a phone with service coverage and carry identification with them. The minimum expectation for lone workers:

- Call the PM or BSO on arrival and departure.
- Provide an anticipated length of time on site and tasks to be performed.

The PM should attempt to contact the lone worker if they fail to check in at the designated time. If communication cannot be maintained, a STOP Work must occur.

6.4. Site Communication

Site communication may be in the form of hand signals, voice, or other communication devices. All forms of communication should be understood by all workers and discussed during the daily tailgate meeting prior to starting work.

6.5. Roadway Work Zones

When work is conducted in a city street or public right-of-way, the work zone and traffic control must be setup according to the Traffic Control Plan in Appendix I.

7.0 DECONTAMINATION PROCEDURES

All personnel and equipment must undergo appropriate decontaminated prior to leaving the project site. The decontamination of personnel and equipment will be performed within the exclusion and contamination reduction zones. The SSHO will visually watch the decontamination process and verify it is completed. The decontamination solution to be used onsite:

- Alconox/Liquinox and water for removal of low-molecular weight hydrocarbons, inorganic compounds, salts, some organic acids, and other polar compounds.

The hands and face of each employee must be thoroughly washed upon leaving the work area. Trash receptacles will be provided for all disposable PPE.

Field equipment will be decontaminated according to the work plan. This may include manual removal of gross contamination with shovels or other tools, followed by a high-pressure, hot water sprayer. Decontamination with high-pressure and hot water poses the possibility of a splash and/or mist inhalation hazard, the task should be performed using Level D personal protective equipment with a face shield at a minimum.

Field tool including split-barrel soil samplers, brass liners, and sample knives and trowels will be decontaminated. The field tools may be scrubbed visually clean using the decontamination solution with a stiff, long-bristled scrub brush. Following scrubbing with the decontamination solution, the tools may be rinsed with distilled water or isopropyl alcohol.

All materials and equipment used for decontamination should be disposed of in accordance with local, State, and/or Federal Regulations. Clothing, tools, buckets, brushes, and all other equipment that is contaminated must be properly packaged and stored on the site until disposal arrangements are finalized. Clothing not completely decontaminated on-site should be secured in plastic bags before being removed from the site and taken to an appropriate cleaning facility.

8.0 STANDARD OPERATING PROCEDURES (SOPS)

As tasks are performed, the JSA must be reviewed by all onsite workers to identify additional precautions that must be taken. Any changes to the SOPs must be approved by the PM and RSC.

At a minimum, the following PPE must be worn at all times by all workers and visitors to this project site:

- Hard hat
- Long pants
- Shirt with sleeves
- Safety glasses
- Safety toed boots with ankle support
- Work gloves – the type of gloves worn may change based on task being performed.
- ANSI Class 2 safety vest (other garments, jackets, and shirts that meet the class 2 requirements may be worn in place of the safety vest).
- See JSA for task to be performed for specifics on type of PPE and any additional PPE.

The following SOPs will apply when working on this project site:

- Eating, drinking, chewing gum, tobacco products or any item that could facilitate hand-to-mouth transfer of contaminates are prohibited in the exclusion and contamination reduction zone or in any area known to be contaminated. Personnel must wash their hands and face and remove any contaminated PPE before handling these items.
- When decontamination procedures for outer garments are in effect, the entire body should be thoroughly washed as soon as possible after the protective garment is removed.
- Contact with contaminated or suspected contaminated surfaces should be avoided. When possible, do not walk through puddles, leachate or discolored surfaces; kneel on the ground; lean, sit, or place equipment on drums, containers, or the ground.
- All personnel and visitors must be familiar with SOPs and any additional instructions and information contained in this HASP. All employees, visitors and subcontractors will read and sign an acknowledgement of the HASP before entering the site.
- All personnel must be or will be made aware of symptoms for heat or cold related illnesses.

- All personnel will be made aware of the location of the SDSs for the chemicals on-site.
- All loose clothing, jewelry, hair, or other items that could be caught in moving parts or snagged on equipment must be secured.
- All personnel going to the site must be trained on all tasks they are expected to perform and thoroughly briefed on anticipated hazards, equipment, safety practices, emergency procedures, and communications needed for this project site.
- Personnel on the site must use the buddy system when engaged in Level C, B or A work tasks. The purpose of the buddy system is to provide rapid assistance to employees in the event of an emergency.
- Personnel unfamiliar with a task must stop work and verify how to perform the task safely.
- All personnel have the responsibility to stop anyone from performing an unsafe act or stop work if they see a safety hazard.
- Warning signals for site evacuation must be established by the SSHO and discussed during the tailgate safety meeting. A clear unobstructed entrance and exit must be maintained.
- Personnel and equipment in any contaminated area should be minimized.
- Work areas for various operational activities will be established, defined and discussed during the tailgate safety meeting.
- Procedures for leaving a contaminated area will be planned and implemented during the daily tailgate safety meeting. Work areas and decontamination procedures will be established based on expected tasks to be performed.
- Daily and ongoing inspections of site operations will be conducted by the SSHO to check compliance with this HASP. If changes in operations are necessary, the HASP must be modified to reflect these changes.
- All hand and power tools will be inspected prior to use and removed from the work area when no longer needed.
- Fire prevention and protection (appropriate signs for flammable liquids, smoking areas, storage areas of combustible or flammable materials, etc.) will be according to Atlas H&S Policy No. 19 – Fire Protection.
- Site tailgate safety meetings will be held daily to discuss anticipated site conditions and daily activities. This meeting will be summarized on the Tailgate Safety Meeting Form, see Appendix C.
- A GFCI will be used on any extension cord or plugged in item.

9.0 CONTINGENCY PLAN

There are numerous potential emergency situations that may occur while working on this project site. If an emergency does occur, it is important that employees stop work and as soon as reasonably possible contact the PM. All emergency procedures including location of stop switches, emergency equipment and muster location must be discussed during the tailgate safety meeting and with all visitors.

9.1. Medical Emergencies

The name, address, telephone number, travel distance, and travel time to the nearest medical treatment facility are found in the Emergency Information section of this HASP. A map and direction for locating the facility is also available in the Emergency Information section.

An emergency first-aid kit will be readily accessible and identified on the site, and personnel will have CPR and first-aid training. Location of the first aid kit will be identified and discussed during the daily tailgate meeting. The first-aid kit will contain equipment necessary to protect employees against exposure to bloodborne pathogens. All employees must receive bloodborne pathogens training and if requested could receive Hepatitis B vaccinations according to the Atlas H&S Policy No. 15 – Bloodborne Pathogens if exposed to bodily fluids.

Any person who becomes ill or injured in the exclusion zone must be decontaminated as well as possible with consideration to which risk will be greater, the spread of contamination or the health of the individual. If the injury or illness is minor, full decontamination should be completed and first-aid administered before transport. If the patient's condition is serious, at least partial decontamination should be completed.

The following steps should be followed if an injury or illness case occurs regardless of severity of the injury:

- Check the area to make sure the scene is safe.
- Assess the employee's condition and if life threatening or if your training dictates call 911.
  - If 911 is called, Core Health should be contacted after talking with 911.
  - Emergency personnel must be informed if potential chemical contamination is suspected. If possible, initiate decontamination procedures to prevent contamination of responding personnel.
- Call Core Health, if the injury is not life threatening for first aid guidance.
  - A fellow employee may call for the injured employee.
  - Provide your name, Office and phone number.
  - If provided with first aid advice from Core Health, employees are authorized to secure (go to Walgreens, CVS, etc.) the items recommended by the nurse to treat the injury.
  - It is important for the injured employee to follow the advice of the nurse even when not at work (evenings, weekends).
- Begin providing first-aid using universal precautions while using proper PPE.
- If Core Health directs the injured employee to an occupational clinic for evaluation have a fellow employee drive them.
  - If someone is not available to transport the injured employee to the clinic, please let Core Health know. Based on the injury the injured employee may be able to drive themselves, but only after speaking with Core Health.
- Contact the PM as soon as it can be done safely or once the situation is stable.
  - If you cannot reach your manager, call the Office Manager or Branch Safety Officer.
  - Provide a detailed description of what and how the injury occurred. A fellow employee may make this call also.
- Complete and submit a written account of the injury within 24 hours to the Atlas incident reporting system.

9.2. Emergency Equipment

1. Eyewash containers or equipment will be available onsite.
2. First Aid Kit
3. An emergency spill cleanup kit will be available at the site at all times. Unplanned releases will be reported to the SSHO and/or site Supervisor as soon as possible.
4. A multipurpose dry chemical (Class A, B, and C) fire extinguisher rated not less than 2A:10B:C, will be maintained on the site. Atlas employees are not trained in firefighting techniques and use of a fire extinguisher should be limited to cases of small or incipient stage fires. Always ensure you have an exit before attempting to fight a fire, notification has been completed and help is on the way.

9.3. Site Evacuation Conditions

The following conditions will necessitate the cessation of field work in the area of concern, withdrawal from the work area and revisions to this HASP:

- Fires and/or explosions
- The atmospheric conditions listed in Table 4-2 of this HASP are met.
- Flammable atmosphere readings above 10 percent LEL
- Oxygen readings above 23.5 percent oxygen concentration
- Oxygen readings at or below 19.5 percent oxygen concentration
- PID readings over 50 ppm sustained for more than 5 minutes

9.4. Gas Line, Electrical Line or Chemical Line Strike

In the event of a strike or potential strike all operations must stop and equipment turned off if safe to do so.

Onsite employees must immediately contact 911 or onsite emergency response and begin evacuation of the surrounding areas if there is no area alarm.

Once emergency services have been notified and all site personnel evacuated including the surround areas, contact the PM.

9.5. Non-Atlas Emergencies

In the event that an emergency occurs onsite that was not caused by project work, but may affect the safety of onsite staff all work must stop. If safe to do so, the site should be secured and employees moved to a safe location.

These events may include but are not limited to:

- General public medical emergency
- Vehicle incident
- Police activity – violence/theft

9.6. Emergency Communication System

Emergency contacts and telephone numbers are provided at the beginning of this HASP. Employees will be provided with a communication device for onsite and offsite communications. These devices may include radios or mobile telephones. If an emergency occurs on-site, the site supervisor is responsible for checking that the appropriate emergency contact has been notified.

At the time of the emergency response, the site supervisor or designee will brief the emergency personnel on the status of the emergency, including site conditions.

Field personnel may need to use hand signals if there are noisy working conditions on the site. Any use of hand signals should be discussed during the tailgate safety meeting.

9.7. Emergency Response Follow-Up

If there is an incident or emergency response, the SSHO will notify the PM and RSC. The PM or BSO must complete an Incident Report through the company's Incident Management System. Prior to resuming work, a site safety meeting will be held to discuss the circumstances surrounding the incident and what should be done to prevent a re-occurrence.

10.0 TRAINING

It is the responsibility of the PM and each subcontractor's supervising manager to determine if Atlas and subcontractor employees meet these training requirements.

10.1. General Training Requirements

All Atlas and subcontractor employees working on this project site will have received, at a minimum, the following training prior to arrival.

- PPE use
- All tools and equipment to be used by the employee
- Hazard Communication
- Proper housekeeping
- Slip, trip and fall prevention
- Fire extinguisher training
- Temperature – Heat and Cold injuries/illnesses
- Safe lifting
- Noise
- CPR/First Aid

10.2. Hazwoper

All Atlas and subcontractor employees that work in the project exclusion zone, decontamination area or may be exposed to onsite contaminates must have completed the 40-hour training requirement of 29 CFR 1910.120(e) (Hazwoper) and maintain that training by completing an annual 8 hour Hazwoper refresher training.

10.3. Site Supervisor's Training

Onsite supervisors on this project who are directly responsible for or who supervise workers must complete, in addition to the initial 40-hour Hazwoper training, 8 additional hours of specialized supervisory training in compliance with the OSHA regulations.

10.4. Client/Facility Specific Training

The client or facility requires all Atlas and subcontractor employees to have completed the following training prior to working:

- Phillips 66 Specific Health and Safety Training
    - Fire Safety and Fire Extinguishers

- Near Miss and Incident Reporting
- Safety Knives
- Spille Reporting Requirements
- Stakeholder Engagement (Parts 1 and 2)
- Contractor Safety Video

10.5. Site Safety Training and Briefing Topics

The SSHO will conduct site-specific health and safety briefing (tailgate safety meeting) for field personnel before the start of all field work. All site workers including the site supervisor, Atlas employees and subcontractor personnel must attend. At the conclusion of the meeting, personnel are to sign the HASP Agreement and Acknowledgement Form and Tailgate Safety Meeting Form found in Appendix C.

As additional people are assigned to the site, it is the responsibility of the SSHO to ensure that new personnel are briefed on health and safety protocols and ensure that they have reviewed and signed the HASP Agreement and Acknowledgement Form.

The Tailgate Safety Meeting will cover:

- Site-specific health and safety procedures
- Client-specific health and safety policies and procedures
- Incidents and reporting
- JSA for tasks to be performed
- Health effects of various chemicals used on the site
- Emergency response actions pertaining to operations on-site
- Contents of this HASP

Additionally, daily site tailgate safety meetings will review past activities, plan the day's tasks, understand any near-miss and "lessons learned", establish safe working procedures for anticipated hazards and provide pertinent safety and health training and motivation.

10.6. Visitors

All visitors entering the designated work zones will be subject to all applicable health and safety requirements during field operations at this site. All visitors to a work site will be given the opportunity to review the HASP, will be escorted at all times, and will be required to stay a safe distance from site activities. The site supervisor and/or the SSHO will be responsible for briefing all visitors on the site hazards, site safety precautions, and the site emergency response plan.

APPENDIX A

Job Safety Analyses (JSA)

JOB SAFETY ANALYSIS (JSA)

DESCRIPTION OF JOB:	REVISION DATE:	JSA CREATED ON:	PAGE:
Accessing a Closed Drum	6/23/2020	04/07/2020	1 of 4

MINIMUM REQUIRED PERSONAL PROTECTIVE EQUIPMENT			
☒ REFLECTIVE VEST	☒ LONG PANTS	☐ AIR PURIFYING RESPIRATOR:	☐ OTHER:
☒ HARD HAT	☒ CUT RESISTANT GLOVE LEVEL: 3	☐ SUPPLIED AIR RESPIRATOR	☐ OTHER:
☒ SAFETY TOED BOOTS	☐ IMPACT RESISTANT GLOVE LEVEL:	☐ CHEMICAL RESISTANT CLOTHING:	☐ OTHER:
☒ SAFETY GLASSES	☐ CHEMICAL RESISTANT GLOVE:		☐ OTHER:
☐ FACE SHIELD	☐ HEARING PROTECTION	☐ GOGGLES:	☐ OTHER:
REQUIRED TOOLS / EQUIPMENT / SUPPLIES			
☒ DRINKING WATER	☐ RATCHET WITH EXTENSION	☐ OTHER:	☐ OTHER:
☒ BUG REPELLENT	☐ WELL MAGNET	☐ OTHER:	☐ OTHER:
☐ TRAFFIC CONTROL DEVICES	☐ AIR MONITORING: **Choose an item.**	☐ OTHER:	☐ OTHER:
☐ LADDER	☐ LOCKOUT/TAGOUT EQUIPMENT	☐ OTHER:	☐ OTHER:

STOP WORK

Atlas and Subcontractor employees must stop work and contact off-site senior personnel when a change in condition, process, or job phase develops on the project site that is not addressed by this JSA or within the project specific HASP. The JSA should be modified with new steps, hazards, and safe procedures agreed upon by all Atlas and Subcontractor employees at the project site and approved by off-site senior personnel. Documentation of the modification and review by all affected personnel must take place.

1) JOB STEPS	2) POTENTIAL HAZARDOUS CONDITIONS / UNSAFE PRACTICES	3) SAFE PROCEDURES and PREVENTATIVE MEASURES
Obtain supplies and tools from truck	• Hand injuries – cuts and scrapes	• Wear cut resistant gloves. • Watch hand placement – always know where your hands are and avoid pinch points. • Do not place your hand in direct path of a tool or between two objects.
	• Slip, trip and falls	• Do not jump from the back of pickup trucks. Always step down. • Maintain three points of contact when dismounting truck.
Walk to and from the drum.	• Slip, trip and falls	• Maintain housekeeping and plan your route before walking to make sure the path is clear. • Set up work zone with enough room for staging of equipment and supplies such that there are aisle ways for walking and working. • If on pavement or concrete sweep up loose sand, dirt or rock. • Ensure steel toed boots are maintained and still have grip for traction. • Keep foot wear clean of mud and other debris. • Be deliberate with footing while walking in fields.

JOB SAFETY ANALYSIS (JSA)

DESCRIPTION OF JOB:	REVISION DATE:	JSA CREATED ON:	PAGE:
Accessing a Closed Drum	6/23/2020	04/07/2020	2 of 4

MINIMUM REQUIRED PERSONAL PROTECTIVE EQUIPMENT			
☒ REFLECTIVE VEST	☒ LONG PANTS	☐ AIR PURIFYING RESPIRATOR:	☐ OTHER:
☒ HARD HAT	☒ CUT RESISTANT GLOVE LEVEL: 3	☐ SUPPLIED AIR RESPIRATOR	☐ OTHER:
☒ SAFETY TOED BOOTS	☐ IMPACT RESISTANT GLOVE LEVEL:	☐ CHEMICAL RESISTANT CLOTHING:	☐ OTHER:
☒ SAFETY GLASSES	☐ CHEMICAL RESISTANT GLOVE:		☐ OTHER:
☐ FACE SHIELD	☐ HEARING PROTECTION	☐ GOGGLES:	☐ OTHER:
REQUIRED TOOLS / EQUIPMENT / SUPPLIES			
☒ DRINKING WATER	☐ RATCHET WITH EXTENSION	☐ OTHER:	☐ OTHER:
☒ BUG REPELLENT	☐ WELL MAGNET	☐ OTHER:	☐ OTHER:
☐ TRAFFIC CONTROL DEVICES	☐ AIR MONITORING: Choose an item.	☐ OTHER:	☐ OTHER:
☐ LADDER	☐ LOCKOUT/TAGOUT EQUIPMENT	☐ OTHER:	☐ OTHER:

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1) JOB STEPS	2) POTENTIAL HAZARDOUS CONDITIONS / UNSAFE PRACTICES	3) SAFE PROCEDURES and PREVENTATIVE MEASURES
		• If drum needs to be moved, use drum dolly. Do not attempt to move the drum without the proper PPE and tools.
Walk to and from the drum	• Weather	• Prevent heat and cold illnesses by: drinking water frequently and moderately; rest frequently; wear appropriate clothing & eat light meals. • Adjust work schedule to avoid temperature extremes. • Use Sunscreen. • Layer clothing to adjust to changing environmental temperatures. • Avoid drinks with excessive caffeine (coffee, tea, or soda) or consume alcohol before or the night before work begins. • Use the buddy system (work in pairs).
Opening the drum	• Hand injuries – cuts and scrapes	• Wear cut resistant gloves. • Watch hand placement – always know where your hands are at and avoid pinch points. • Do not place your hand in direct path of a tool or between two objects.

JOB SAFETY ANALYSIS (JSA)

DESCRIPTION OF JOB:	REVISION DATE:	JSA CREATED ON:	PAGE:
Accessing a Closed Drum	6/23/2020	04/07/2020	3 of 4

MINIMUM REQUIRED PERSONAL PROTECTIVE EQUIPMENT			
☒ REFLECTIVE VEST	☒ LONG PANTS	☐ AIR PURIFYING RESPIRATOR:	☐ OTHER:
☒ HARD HAT	☒ CUT RESISTANT GLOVE LEVEL: 3	☐ SUPPLIED AIR RESPIRATOR	☐ OTHER:
☒ SAFETY TOED BOOTS	☐ IMPACT RESISTANT GLOVE LEVEL:	☐ CHEMICAL RESISTANT CLOTHING:	☐ OTHER:
☒ SAFETY GLASSES	☐ CHEMICAL RESISTANT GLOVE:		☐ OTHER:
☐ FACE SHIELD	☐ HEARING PROTECTION	☐ GOGGLES:	☐ OTHER:
REQUIRED TOOLS / EQUIPMENT / SUPPLIES			
☒ DRINKING WATER	☐ RATCHET WITH EXTENSION	☐ OTHER:	☐ OTHER:
☒ BUG REPELLENT	☐ WELL MAGNET	☐ OTHER:	☐ OTHER:
☐ TRAFFIC CONTROL DEVICES	☐ AIR MONITORING: **Choose an item.**	☐ OTHER:	☐ OTHER:
☐ LADDER	☐ LOCKOUT/TAGOUT EQUIPMENT	☐ OTHER:	☐ OTHER:

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1) JOB STEPS	2) POTENTIAL HAZARDOUS CONDITIONS / UNSAFE PRACTICES	3) SAFE PROCEDURES and PREVENTATIVE MEASURES
		• Access drum by opening the Bung only if possible and it allows needed access. • Use socket or appropriate wrench when opening lid.
	• Chemical contact - inhalation	• Stand upwind. • Do not place face near drum opening. • Monitor the area with a PID while performing site operations when site is known to contain free product or has a history of free product. • Respirator use required if 10 ppm is maintained for 5 minutes.

JOB SAFETY ANALYSIS (JSA)

DESCRIPTION OF JOB:	REVISION DATE:	JSA CREATED ON:	PAGE:
Accessing a Closed Drum	6/23/2020	04/07/2020	4 of 4

STOP WORK

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Please explain additional steps, changes or amendments to this JSA in the provided space below. Prior to starting work ensure that all employees understand and agree with the changes in this JSA.

By signing this JSA form, you are acknowledging that you have read, reviewed and understand the job steps, potential hazardous conditions and unsafe conditions and the safe procedures, preventative measures required to perform the task safely and the requirement to Stop Work when a change in condition, process, or job phase develops on the project site that is not addressed by this JSA or within the project specific HASP.

Print Name	Signature	Company	Date

JOB SAFETY ANALYSIS (JSA)

DESCRIPTION OF JOB:	REVISION DATE:	JSA CREATED ON:	PAGE:
Excavating contaminated soil	11/3/2020	2/10/2005	1 of 5

MINIMUM REQUIRED PERSONAL PROTECTIVE EQUIPMENT			
☒ REFLECTIVE VEST	☐ LONG PANTS	☐ AIR PURIFYING RESPIRATOR:	☐ OTHER:
☒ HARD HAT	☒ CUT RESISTANT GLOVE LEVEL: 3	☐ SUPPLIED AIR RESPIRATOR	☐ OTHER:
☒ SAFETY TOED BOOTS	☒ IMPACT RESISTANT GLOVE LEVEL: 3	☐ CHEMICAL RESISTANT CLOTHING:	☐ OTHER:
☒ SAFETY GLASSES	☐ CHEMICAL RESISTANT GLOVE:		☐ OTHER:
☐ FACE SHIELD	☐ HEARING PROTECTION	☐ GOGGLES:	☐ OTHER:
REQUIRED TOOLS / EQUIPMENT / SUPPLIES			
☐ DRINKING WATER	☐ RATCHET WITH EXTENSION	☐ OTHER:	☐ OTHER:
☐ BUG REPELLENT	☐ WELL MAGNET	☐ OTHER:	☐ OTHER:
☒ TRAFFIC CONTROL DEVICES	☒ AIR MONITORING: PID	☐ OTHER:	☐ OTHER:
☐ LADDER	☐ LOCKOUT/TAGOUT EQUIPMENT	☐ OTHER:	☐ OTHER:

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1) JOB STEPS	2) POTENTIAL HAZARDOUS CONDITIONS / UNSAFE PRACTICES	3) SAFE PROCEDURES and PREVENTATIVE MEASURES
Entering/Exiting excavator	• Falls	• Face the surface of the equipment and use the manufacturer's designed hand and foot holds to climb in and out of the cab of the equipment using three points of contact. • Set park brake, turn equipment off, and lock controls before leaving the equipment • Always maintain three points of contacting when climbing in or out of the equipment. • Never jump off the equipment.
Moving excavator	• Co-workers, contact with pedestrian	• Use mirrors to watch for people. • Only approach the equipment after the operator has removed their hand from the control and indicated that it is safe to approach. • Do not operate the machine while pedestrians or employees are in the swing radius of the excavation arm. • Stay alert and use a spotter. • All employees must wear a high visibility traffic vest.
	• Non-Essential (unauthorized personnel)	• Establish an adequate work zone. • Minimize entry of all non-essential (unauthorized personnel) into the work zone.

JOB SAFETY ANALYSIS (JSA)

DESCRIPTION OF JOB:	REVISION DATE:	JSA CREATED ON:	PAGE:
Excavating contaminated soil	11/3/2020	2/10/2005	2 of 5

MINIMUM REQUIRED PERSONAL PROTECTIVE EQUIPMENT		
	• Vehicles	• Use mirrors to watch for traffic. • Do not operate machine while traffic is passing. • Use a spotter.
Remove contaminated soil	• Striking under ground utilities • Unidentified utilities	• Prior to digging the State's one call service must be contacted at least 48 hours before start of operations. • A private locating company should be used to identify any on-site underground utilities. • A valid ticket must be obtained and within dates. • Review as built drawings of the area. • Use a spotter to help identify any areas that appear to have back fill. • Stop if pea gravel or back fill is encountered! • Use a scrapping motion by digging 3 – 4 inches at a time for the first 5 feet.
	• Overhead hazards	• Spotter must be used when the equipment is operating or moved. Identify all overhead utilities or structures before moving equipment into position. • Must maintain a minimum of 10 feet from all overhead utility lines.
	• Contact with hazardous material	• Wear nitrile gloves under leather, cotton, or craftsman gloves. • Wear safety glasses
	• Hazardous atmosphere	• Monitor the environment for hazardous and explosive environments with a PID, FID or 4 gas monitor. • Stop work if 10 PPM is reached in the breathing zone and sustained for 5 minutes.
	• Falls into excavation	• All personnel should maintain a distance of 2 feet from the edge of the excavation. • Setup an exclusion zone around the excavation 3 feet from the edge.
	• Excavation collapse	• Competent Person for excavations must be on site to evaluate soil type. No one can enter the excavation until the Competent Person approves and performs a documented inspection. • Sloping, benching, or shoring must be used if the

JOB SAFETY ANALYSIS (JSA)

DESCRIPTION OF JOB:	REVISION DATE:	JSA CREATED ON:	PAGE:
Excavating contaminated soil	11/3/2020	2/10/2005	3 of 5

MINIMUM REQUIRED PERSONAL PROTECTIVE EQUIPMENT		
		Competent Person directs it or if the excavation exceeds 5 feet or more. • There should be no standing water in the excavation. • Limit the amount of time someone must be in an excavation. • Ladders or a means of safely climbing in and out of the excavation must used if the excavation is greater than 4 feet and place every 25 feet. The competent person may require ladders or another means of ingress and egress at depths less than 4 feet. • Spoil piles should be kept at least 2 feet from the edge of the excavation. • Daily inspections of the excavation must be conducted by the Competent Person. • Heavy equipment is not allowed any closer than 2 feet from the edge of the excavation.
Remove contaminated soil.	• Equipment tipping over	• Only qualified operators are allowed to operate the equipment. • The operator should always check the of operation before moving the equipment grade, elevation change, and weak ground conditions. • Operate the equipment from operator seat only. • Seat belt must be worn at all times when ever in the cab of the equipment. • The operator should know and respect the safe limits of the equipment. Use caution when operating on inclines. • Do not undermine machine • Move machine slowly over rough terrain. • Stay back from steep slopes and soft shoulders. • The equipment should remain at least two feet from the edge of the excavation. • A spotter should be used at all times while the equipment is in operation.
	Equipment Failure	• Perform and document daily inspection of all cabling, hydraulics, motors, fluid levels and hoses. • Replace any hoses or connections that appear to be

JOB SAFETY ANALYSIS (JSA)

DESCRIPTION OF JOB:	REVISION DATE:	JSA CREATED ON:	PAGE:
Excavating contaminated soil	11/3/2020	2/10/2005	4 of 5

MINIMUM REQUIRED PERSONAL PROTECTIVE EQUIPMENT		
		weak or leaking.
	Blowing dust	• Water should be used to wet the soil and keep dust down. • The site safety officer should evaluate the weather conditions to determine if the windy conditions warrant stopping work. • Wear goggles during windy, dusty conditions.

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Print Name	Signature	Company	Date

JOB SAFETY ANALYSIS (JSA)

DESCRIPTION OF JOB:	REVISION DATE:	JSA CREATED ON:	PAGE:
Excavating contaminated soil	11/3/2020	2/10/2005	5 of 5

JOB SAFETY ANALYSIS (JSA)

DESCRIPTION OF JOB:	REVISION DATE:	JSA CREATED ON:	PAGE:
Excavation of Well Head	10/5/2020	05/14/2020	1 of 3

MINIMUM REQUIRED PERSONAL PROTECTIVE EQUIPMENT			
☐ REFLECTIVE VEST	☒ LONG PANTS	☐ AIR PURIFYING RESPIRATOR:	☐ OTHER:
☐ HARD HAT	☒ CUT RESISTANT GLOVE LEVEL: 3	☐ SUPPLIED AIR RESPIRATOR	☐ OTHER:
☒ SAFETY TOED BOOTS	☐ IMPACT RESISTANT GLOVE LEVEL:	☐ CHEMICAL RESISTANT CLOTHING:	☐ OTHER:
☒ SAFETY GLASSES	☐ CHEMICAL RESISTANT GLOVE:		☐ OTHER:
☐ FACE SHIELD	☒ HEARING PROTECTION	☐ GOGGLES:	☐ OTHER:
REQUIRED TOOLS / EQUIPMENT / SUPPLIES			
☐ DRINKING WATER	☐ RATCHET WITH EXTENSION	☐ OTHER:	☐ OTHER:
☐ BUG REPELLENT	☐ WELL MAGNET	☐ OTHER:	☐ OTHER:
☒ TRAFFIC CONTROL DEVICES	☐ AIR MONITORING: Choose an item.	☐ OTHER:	☐ OTHER:
☐ LADDER	☐ LOCKOUT/TAGOUT EQUIPMENT	☐ OTHER:	☐ OTHER:

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1) JOB STEPS	2) POTENTIAL HAZARDOUS CONDITIONS / UNSAFE PRACTICES	3) SAFE PROCEDURES and PREVENTATIVE MEASURES
Equipment inspection	• Slips, Trips, Falls	• 3 points of contact • Do not climb on parts of equipment that are inaccessible.
	• Equipment Failure	• Only stop on designated area. • Performed by qualified operator. • Document inspection and remove equipment from service if parts are broken.
	• Moving Parts (Contact with)	• Do not touch moving parts. • Keep others out of area. • Perform inspection with assistance if needed when inspecting moving parts.
Excavating	• Swing Radius, Line of Fire	• Stay out of swing radius. • Stay out of skid steer house area. • Ensure all alarms are operable.
	• Blind Side	• Stay out of blind side. • Notify operator before approaching excavator. • Keep all personnel out of swing radius and away from equipment. • Use a spotter.

JOB SAFETY ANALYSIS (JSA)

DESCRIPTION OF JOB:	REVISION DATE:	JSA CREATED ON:	PAGE:
Excavation of Well Head	10/5/2020	05/14/2020	2 of 3

	• Dust Leaving Site	• Use water as needed for dust control. • Operator use your spotter.
	• Utility Strike	• Know where utilities have been, marked and avoid contact. • Designate observation area. • Never perform work near utilities. If needed, STOP work and identify solution through PM or RSC.
Creating Stock Pile	• Cave in, Sluff	• Keep stock pile at a minimum of 2 ft. away from edge of excavation • Keep personnel away from edge of excavation
	• Hazardous Atmosphere	• Excavation inspection to be completed by competent person • PID or 4 gas meter for entry (see separate JSA).
	• Trip Hazards	• Keep equipment at safe distance from excavation (exposed well head)
Sample from Bucket	• Debris from Bucket Falling, Bucket in Line of Fire	• Make eye contact / hands off disengage controls, confirm via radio. • Designate sampling area. • Move equipment not being used.
	• Debris in Bucket	• Inspect debris in bucket, brush off top of sampling area. • Proper positioning of body, 50 lb. limit • Radio communications are required at all times. Operator must have parking brake engaged and hands off wheel.
	• Slips, Trips, Falls – Hose Around Site	• Good housekeeping / watch out for steps • Eliminate PVC from ground. • Radio communications are required at all times. Operator must have parking brake engaged and hands off wheel. • Use clear glasses if needed • Use cell phone in support zone • 4 gas meter in cab to monitor breathing zone

JOB SAFETY ANALYSIS (JSA)

DESCRIPTION OF JOB:	REVISION DATE:	JSA CREATED ON:	PAGE:
Excavation of Well Head	10/5/2020	05/14/2020	3 of 3

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Print Name	Signature	Company	Date

JOB SAFETY ANALYSIS (JSA)

DESCRIPTION OF JOB:	REVISION DATE:	JSA CREATED ON:	PAGE:
Excavation or Trenching Activity	8/31/2020	04/16/2020	1 of 4

MINIMUM REQUIRED PERSONAL PROTECTIVE EQUIPMENT			
☒ REFLECTIVE VEST	☒ LONG PANTS	☐ AIR PURIFYING RESPIRATOR:	☐ OTHER:
☒ HARD HAT	☒ CUT RESISTANT GLOVE LEVEL: 3	☐ SUPPLIED AIR RESPIRATOR	☐ OTHER:
☒ SAFETY TOED BOOTS	☐ IMPACT RESISTANT GLOVE LEVEL:	☐ CHEMICAL RESISTANT CLOTHING:	☐ OTHER:
☒ SAFETY GLASSES	☐ CHEMICAL RESISTANT GLOVE:		☐ OTHER:
☐ FACE SHIELD	☒ HEARING PROTECTION	☐ GOGGLES:	☐ OTHER:
REQUIRED TOOLS / EQUIPMENT / SUPPLIES			
☐ DRINKING WATER	☐ RATCHET WITH EXTENSION	☐ OTHER:	☐ OTHER:
☐ BUG REPELLENT	☐ WELL MAGNET	☐ OTHER:	☐ OTHER:
☒ TRAFFIC CONTROL DEVICES	☐ AIR MONITORING: **Choose an item.**	☐ OTHER:	☐ OTHER:
☐ LADDER	☐ LOCKOUT/TAGOUT EQUIPMENT	☐ OTHER:	☐ OTHER:

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1) JOB STEPS	2) POTENTIAL HAZARDOUS CONDITIONS / UNSAFE PRACTICES	3) SAFE PROCEDURES and PREVENTATIVE MEASURES
Transportation of Heavy Equipment to and from the project Site	• See JSA Driving	• See JSA Driving
Unload Heavy Equipment	• See JSA Unloading Heavy Equipment	• See JSA Unloading Heavy Equipment
Moving Heavy Equipment at the Project Site	• Pedestrians/Vehicles	• Onsite personnel should wear traffic reflective vest. • Spotters must be used whenever the equipment is being operated. • Backup alarm is required on heavy equipment.
	• Tipping Over	• Only qualified operators on equipment. • Check area of operation before moving machine. • No riders on equipment or in bucket. • Lower bucket and lock controls before leaving machine. • Operate machine from operator seat only. • Know safe limits of machine. • Wear seat belt. • Use caution when operating on inclines. • Do not undermine machine.

JOB SAFETY ANALYSIS (JSA)

DESCRIPTION OF JOB:	REVISION DATE:	JSA CREATED ON:	PAGE:
Excavation or Trenching Activity	8/31/2020	04/16/2020	2 of 4

		• Move machine slowly over rough terrain • Do not move heavy loads to outer limits of machine • Stay back from steep slopes and soft shoulders
	• Overhead Hazards	• Spotter must be used whenever moving heavy equipment onsite. • Driver and spotter should walk the travel path and discuss the movement of the equipment.
Moving Heavy Equipment at the Project Site.	• Heavy Equipment	• Spotters must be used at all times when heavy equipment is being operated. • All onsite personnel must wear safety reflective vest. • Operator must follow spotters hand signals and remove hands from controls when not working. • Site personnel should only approach the spotter • Backup alarm is required on heavy equipment.
Remove Soil	• Slips, Trips, Falls	• Maintain housekeeping. • Set up work zone with enough room for staging of equipment and supplies such that there are aisle ways for walking and working. • If on pavement or concrete sweep up loose sand, dirt or rock • Wear slip resistant steel toed boots. • Keep foot wear clean of mud and other debris. • Setup areas away from snow and ice. • If ice is present wear yak-traks on boots.
Remove Soil	• Pedestrians	• Caution tape or snow fence should be used to surround the entire site. • Onsite personnel must wear traffic reflective vest. • Never lift, swing, or move load over anyone or equipment • Keep windows clean • Keep ground personnel in view
	• Entrapment	• Competent Person must be on site to evaluate soil type and document inspection (daily) of safe entry. • No one can enter the trench until the competent person approves. • Sloping, benching or shoring must be used if the Competent Person directs it or if the trench exceeds 5 feet or more.

JOB SAFETY ANALYSIS (JSA)

DESCRIPTION OF JOB:	REVISION DATE:	JSA CREATED ON:	PAGE:
Excavation or Trenching Activity	8/31/2020	04/16/2020	3 of 4

		• There should be no standing water in the trench. • Limit the amount of time someone must be in a trench. • Ladders or a means of safely climbing in and out of the trench must used if the trench is greater than 4 feet and place every 25 feet. The competent person may require ladders or another means at depths less than 4 feet. • Spoil piles should be kept at least 2 feet from the edge of the trench. • Heavy equipment not allowed any closer than 2 feet from the edge of the trench.
Remove Soil	• Noise	• Hearing protection is required in the exclusion zone when heavy equipment is in use.
	• Underground Utilities	• The State's One Call Service should be contacted at least 2 days prior to the start of the project. • A private locator is required and Atlas staff should be onsite while private locator is working. • For the first five (5) feet the equipment operator shall use a technique of scraping the ground to a depth of not more than 3 inches at a time. This technique allows the equipment operator to "feel" the presence of an unmarked utility line. • A spotter must be used to help visually identify utility lines. • If pea gravel, fill material, or refusal is encountered stop operations and report the incident to the Project Manager and Branch Safety Officer. • Hand digging within 18 inches of marked utility lines is required.
Remove Soil	• Overhead Utilities	• All over head utilities must be identified before work begins. • There should be at least 10 feet distance between the heavy equipment and the utility line. • See HASP for more information on clearance.
	• See JSA Loading Soil with End Loader	• See JSA Loading Soil with End Loader
Loading Soil for Removal	• See JSA for Soil Removal	• See JSA for Soil Removal.

JOB SAFETY ANALYSIS (JSA)

DESCRIPTION OF JOB:	REVISION DATE:	JSA CREATED ON:	PAGE:
Excavation or Trenching Activity	8/31/2020	04/16/2020	4 of 4

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JOB SAFETY ANALYSIS (JSA)

DESCRIPTION OF JOB:	REVISION DATE:	JSA CREATED ON:	PAGE:
Field Work Observations and Note Taking		04/20/2020	1 of 2

MINIMUM REQUIRED PERSONAL PROTECTIVE EQUIPMENT			
☒ REFLECTIVE VEST	☒ LONG PANTS	☐ AIR PURIFYING RESPIRATOR:	☐ OTHER:
☒ HARD HAT	☒ CUT RESISTANT GLOVE LEVEL: 3	☐ SUPPLIED AIR RESPIRATOR	☐ OTHER:
☒ SAFETY TOED BOOTS	☐ IMPACT RESISTANT GLOVE LEVEL:	☐ CHEMICAL RESISTANT CLOTHING:	☐ OTHER:
☒ SAFETY GLASSES	☐ CHEMICAL RESISTANT GLOVE:		☐ OTHER:
☐ FACE SHIELD	☒ HEARING PROTECTION	☐ GOGGLES:	☐ OTHER:
REQUIRED TOOLS / EQUIPMENT / SUPPLIES			
☐ DRINKING WATER	☐ RATCHET WITH EXTENSION	☐ OTHER:	☐ OTHER:
☒ BUG REPELLENT	☐ WELL MAGNET	☐ OTHER:	☐ OTHER:
☐ TRAFFIC CONTROL DEVICES	☒ AIR MONITORING: PID	☐ OTHER:	☐ OTHER:
☐ LADDER	☐ LOCKOUT/TAGOUT EQUIPMENT	☐ OTHER:	☐ OTHER:

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1) JOB STEPS	2) POTENTIAL HAZARDOUS CONDITIONS / UNSAFE PRACTICES	3) SAFE PROCEDURES and PREVENTATIVE MEASURES
Walking Around a Site: Observing/Assessing Health & Safety and Miscellaneous Data Collection	• Traffic and Movement of Equipment • Adjusting Safety Cones and Tape • Slips, Trips, Falls	• Don PPE • Apply bug spray if needed. • Communicate your intentions to others involved. Make sure they understand where and what you will be doing before you do it. • Have field staff maintain housekeeping. • Have field staff set up work zone with enough room for staging of equipment and supplies such that there are aisle ways for walking and working. • Have field staff pickup tools that are not needed and place out of the way.
Walking Around a Site: Observing/Assessing Health & Safety and Miscellaneous Data Collection	• Hand Injuries • Noise • Hazardous Atmosphere • Insects	• Be aware of your hand placement at all times. • Limit exposure to noise to the minimum duration necessary, and to wear hearing protection as required for the safe completion of the job tasks. • Operate in a well ventilated area. • Stand upwind while observing. • Have field staff use a PID or FID to monitor the area for potential hazardous atmospheres.

JOB SAFETY ANALYSIS (JSA)

DESCRIPTION OF JOB:	REVISION DATE:	JSA CREATED ON:	PAGE:
Field Work Observations and Note Taking		04/20/2020	2 of 2

		• Do a quick tick check when work has been completed

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Print Name	Signature	Company	Date

JOB SAFETY ANALYSIS (JSA)

DESCRIPTION OF JOB: Gauging the water level of a well	REVISION DATE: 12/23/2020	JSA CREATED ON: 05/12/2020	PAGE: 1 of 3

MINIMUM REQUIRED PERSONAL PROTECTIVE EQUIPMENT			
☒ REFLECTIVE VEST ☒ HARD HAT ☒ SAFETY TOED BOOTS ☒ SAFETY GLASSES ☒ FACE SHIELD	☒ LONG PANTS ☒ CUT RESISTANT GLOVE LEVEL: 3 ☐ IMPACT RESISTANT GLOVE LEVEL: ☒ CHEMICAL RESISTANT GLOVE: nitrile gloves ☐ HEARING PROTECTION	☐ AIR PURIFYING RESPIRATOR: ☐ SUPPLIED AIR RESPIRATOR ☐ CHEMICAL RESISTANT CLOTHING: ☒ GOGGLES:	☐ OTHER: ☐ OTHER: ☐ OTHER: ☐ OTHER: ☐ OTHER:
REQUIRED TOOLS / EQUIPMENT / SUPPLIES			
☐ DRINKING WATER ☐ BUG REPELLENT ☐ TRAFFIC CONTROL DEVICES ☐ LADDER	☐ RATCHET WITH EXTENSION ☐ WELL MAGNET ☐ AIR MONITORING: **Choose an item.** ☐ LOCKOUT/TAGOUT EQUIPMENT	☒ OTHER: ☐ OTHER: ☐ OTHER: ☐ OTHER:	☐ OTHER: ☐ OTHER: ☐ OTHER: ☐ OTHER:

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1) JOB STEPS	2) POTENTIAL HAZARDOUS CONDITIONS / UNSAFE PRACTICES	3) SAFE PROCEDURES and PREVENTATIVE MEASURES
Obtain supplies and tools from truck	• Hand injuries – cuts and scrapes • Muscle Strains	• Don PPE • Watch hand placement – always know where your hands are at. • Do not place your hand in direct path of a tool or between two objects. • Use proper lifting procedures.

JOB SAFETY ANALYSIS (JSA)

DESCRIPTION OF JOB: Gauging the water level of a well	REVISION DATE: 12/23/2020	JSA CREATED ON: 05/12/2020	PAGE: 2 of 3

Walk to and from well	• Slip, trip and falls • Weather • Traffic • Struck by/crushed by hazards	• Do not jump from the back of pickup trucks. Always step down. • Maintain three points of contact while climbing and descending. Always face the object you are climbing. • Set up work zone with enough room for staging of equipment and supplies such that there are aisle ways for walking and working. • Be deliberate with footing while walking in fields. In fields look down while walking. Limit carrying objects that could block or obstruct your view of the pathway. • Prevent heat and cold illnesses by: drinking water frequently and moderately; rest frequently; wear light colored clothing; eat light meals. • Adjust work schedule to avoid temperature extremes. Layer clothing to adjust to changing environmental temperatures • Set up exclusion zone to avoid traffic or heavy equipment.
Lower and raise water level meter into well	• Chemical contact – inhalation	• Stand upwind. • Do not place face near welling opening. Bring the measurement tape to you to read. Breathing zone should be at least 2 feet away from the well opening. • Monitor the area with a PID while performing site operations if well is known to contain free product • Respirator use required if 10 ppm is maintained for 5 minutes. • Bring tape measure to face to read.
Decon equipment	• Chemical contact – hand • Splash Hazards	• Wear nitrile gloves • Wear safety glasses • Face shield while pouring or cleaning decon buckets.

JOB SAFETY ANALYSIS (JSA)

DESCRIPTION OF JOB: Gauging the water level of a well	REVISION DATE: 12/23/2020	JSA CREATED ON: 05/12/2020	PAGE: 3 of 3

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JOB SAFETY ANALYSIS (JSA)

DESCRIPTION OF JOB:	REVISION DATE:	JSA CREATED ON:	PAGE:
Hand Augering		12-29-2020	1 of 4

MINIMUM REQUIRED PERSONAL PROTECTIVE EQUIPMENT			
☒ REFLECTIVE VEST	☒ LONG PANTS	☐ AIR PURIFYING RESPIRATOR:	☐ OTHER:
☒ HARD HAT	☒ CUT RESISTANT GLOVE LEVEL: 3	☐ SUPPLIED AIR RESPIRATOR	☐ OTHER:
☒ SAFETY TOED BOOTS	☐ IMPACT RESISTANT GLOVE LEVEL:	☐ CHEMICAL RESISTANT CLOTHING:	☐ OTHER:
☒ SAFETY GLASSES	☒ CHEMICAL RESISTANT GLOVE:		☐ OTHER:
☐ FACE SHIELD	☐ HEARING PROTECTION	☐ GOGGLES:	☐ OTHER:
REQUIRED TOOLS / EQUIPMENT / SUPPLIES			
☐ DRINKING WATER	☐ RATCHET WITH EXTENSION	☐ OTHER:	☐ OTHER:
☐ BUG REPELLENT	☐ WELL MAGNET	☐ OTHER:	☐ OTHER:
☒ TRAFFIC CONTROL DEVICES	☒ AIR MONITORING: PID	☐ OTHER:	☐ OTHER:
☐ LADDER	☐ LOCKOUT/TAGOUT EQUIPMENT	☐ OTHER:	☐ OTHER:

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1) JOB STEPS	2) POTENTIAL HAZARDOUS CONDITIONS / UNSAFE PRACTICES	3) SAFE PROCEDURES and PREVENTATIVE MEASURES
Unload / Load Equipment	• Hand Injuries	• Always watch hand placement – do not place your hand in direct path of a tool. • Use craftsman, cotton or leather work gloves.
	• Back Injuries	• Use proper lifting procedures – avoid lifting with the back and twisting. • If over 50 pounds or awkward ask for assistance.
	• Slips, Trips, Falls	• Maintain housekeeping. • Set up work zone with enough room for staging of equipment and supplies such that there are aisle ways for walking and working. • If on pavement or concrete sweep up loose sand, dirt or rock. • Wear slip resistant steel toed boots. • Keep foot wear clean of mud and other debris. • Dry up water as quickly as possible.
Setup Work Area	• See JSA for Site Setup	• See JSA for Site Setup

JOB SAFETY ANALYSIS (JSA)

DESCRIPTION OF JOB:	REVISION DATE:	JSA CREATED ON:	PAGE:
Hand Augering		**12-29-2020**	**2 of 4**

Asphalt/Concrete Cutting	• See JSA for Asphalt and Concrete Cutting	• See JSA for Asphalt and Concrete Cutting
Assemble Hand Auger Tools	• Dropping of Tools	• Use craftsman, cotton or leather work gloves. Keep gloves clean and dry.
	• Back Injuries	• Use proper lifting procedures – avoid lifting with the back and twisting. • If over 50 pounds or awkward ask for assistance.
	• Foot Injuries	• Wear safety toed boots
Clear Hole	• Hand Injuries	• Always watch hand placement – do not place your hand in direct path of a tool. • Take frequent breaks and change hand position • Use craftsman, cotton or leather work gloves. Keep gloves clean and dry.
	• Back Injuries	• Use proper lifting procedures – avoid lifting with the back and twisting. • If over 50 pounds or awkward ask for assistance.
	• Slips, Trips, Falls	• Maintain housekeeping. • Set up work zone with enough room for staging of equipment and supplies such that there are aisle ways for walking and working. • If on pavement or concrete sweep up loose sand, dirt or rock. • Wear slip resistant safety toed boots. • Keep foot wear clean of mud and other debris. • Dry up water as quickly as possible. • Put tools away if they are no longer needed.
	• Underground Utilities	• Contact the state's one call service at least 48 hours prior to digging. • Use private locator company. • Look at existing site plans prior to beginning work to determine potential location of underground utilities. • Watch for pea gravel or fill material. • Stay at least 5 feet away from all marked utility lines. • Ensure all affected utilities are marked or have no conflict.

JOB SAFETY ANALYSIS (JSA)

DESCRIPTION OF JOB:	REVISION DATE:	JSA CREATED ON:	PAGE:
Hand Augering		**12-29-2020**	**3 of 4**

	• Chemical Contact – Inhalation and Skin	• Wear nitrile gloves when contacting soil and contaminated equipment. Nitrile gloves can be worn under strong work gloves such as leather or cotton gloves to help protect against cuts and pinches. • Have a PID monitoring the breathing zone and exclusion zone.
Remove Debris	• Back Injuries	• Use proper lifting procedures – avoid lifting with the back and twisting. • Do not lift over 50 pounds without assistance. • Use cart or wheelbarrow to move soil debris or place directly in a drum. • See JSA for wheelbarrow.
	• Hand and Foot Injuries	• Always watch hand placement – do not place your hand in direct path of a tool or object. • Use craftsman, cotton or leather work gloves. Keep gloves clean and dry. • Wear safety toed boots.
Handling Drum	• See JSA for Drum Handling	• See JSA for Drum Handling

JOB SAFETY ANALYSIS (JSA)

DESCRIPTION OF JOB:	REVISION DATE:	JSA CREATED ON:	PAGE:
Hand Augering		12-29-2020	4 of 4

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Print Name	Signature	Company	Date

JOB SAFETY ANALYSIS (JSA)

DESCRIPTION OF JOB:	REVISION DATE:	JSA CREATED ON:	PAGE:
Having Open Discussions in the Field		12-31-2020	1 of 2

MINIMUM REQUIRED PERSONAL PROTECTIVE EQUIPMENT			
☒ REFLECTIVE VEST	☒ LONG PANTS	☐ AIR PURIFYING RESPIRATOR:	☐ OTHER:
☒ HARD HAT	☒ CUT RESISTANT GLOVE LEVEL: 3	☐ SUPPLIED AIR RESPIRATOR	☐ OTHER:
☒ SAFETY TOED BOOTS	☐ IMPACT RESISTANT GLOVE LEVEL:	☐ CHEMICAL RESISTANT CLOTHING:	☐ OTHER:
☒ SAFETY GLASSES	☐ CHEMICAL RESISTANT GLOVE:		☐ OTHER:
☐ FACE SHIELD	☐ HEARING PROTECTION	☐ GOGGLES:	☐ OTHER:
REQUIRED TOOLS / EQUIPMENT / SUPPLIES			
☒ DRINKING WATER	☐ RATCHET WITH EXTENSION	☐ OTHER:	☐ OTHER:
☐ BUG REPELLENT	☐ WELL MAGNET	☐ OTHER:	☐ OTHER:
☒ TRAFFIC CONTROL DEVICES	☐ AIR MONITORING: **Choose an item.**	☐ OTHER:	☐ OTHER:
☐ LADDER	☐ LOCKOUT/TAGOUT EQUIPMENT	☐ OTHER:	☐ OTHER:

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1) JOB STEPS	2) POTENTIAL HAZARDOUS CONDITIONS / UNSAFE PRACTICES	3) SAFE PROCEDURES and PREVENTATIVE MEASURES
Standing on the Site Having Open Discussions with Team members, Visitors to the Site	• Traffic and Moving Equipment	• Communicate intentions to all involved. • Discuss a plan for open communication with equipment drivers. • Use barriers to block people from vehicles if possible. • Stand clear of any walking/vehicle path ways.
	• Slips, Trips, Falls	• Maintain proper housekeeping on site, avoid placing trip hazards in a walkway. • Ensure members on site are protected from active roadways, vehicular and pedestrian traffic.
	• Noise	• Wear hearing protection. • Consider moving away from loud running equipment and have discussions in quiet area.
	• Hazardous Atmosphere	• Stay in a well ventilated area. • Stand upwind if work is being performed. • If needed, use a PID to monitor the area while discussions are taking place.

JOB SAFETY ANALYSIS (JSA)

DESCRIPTION OF JOB:	REVISION DATE:	JSA CREATED ON:	PAGE:
Having Open Discussions in the Field		12-31-2020	2 of 2

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Print Name	Signature	Company	Date

JOB SAFETY ANALYSIS (JSA)

DESCRIPTION OF JOB:	REVISION DATE:	JSA CREATED ON:	PAGE:
Low Flow Groundwater Sampling Using Pumps	11/4/2020	10/29/2020	1 of 5

MINIMUM REQUIRED PERSONAL PROTECTIVE EQUIPMENT			
☒ REFLECTIVE VEST	☒ LONG PANTS	☐ AIR PURIFYING RESPIRATOR:	☐ OTHER:
☒ HARD HAT	☒ CUT RESISTANT GLOVE LEVEL: General	☐ SUPPLIED AIR RESPIRATOR	☐ OTHER:
☒ SAFETY TOED BOOTS	☐ IMPACT RESISTANT GLOVE LEVEL:	☐ CHEMICAL RESISTANT CLOTHING:	☐ OTHER:
☒ SAFETY GLASSES	☒ CHEMICAL RESISTANT GLOVE: Nitrile		☐ OTHER:
☐ FACE SHIELD	☐ HEARING PROTECTION	☐ GOGGLES:	☐ OTHER:
REQUIRED TOOLS / EQUIPMENT / SUPPLIES			
☐ DRINKING WATER	☒ RATCHET WITH EXTENSION	☐ OTHER:	☐ OTHER:
☐ BUG REPELLENT	☒ WELL MAGNET	☐ OTHER:	☐ OTHER:
☐ TRAFFIC CONTROL DEVICES	☒ AIR MONITORING: **Choose an item.**	☐ OTHER:	☐ OTHER:
☐ LADDER	☐ LOCKOUT/TAGOUT EQUIPMENT	☐ OTHER:	☐ OTHER:

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Spot vehicle into proper position. Create appropriate exclusion zone.	• See JSA: Site Set Up	• See JSA: Site Set Up • Ensure pathways are clear of vehicles, pedestrians and objects. • If available, coworker should spot vehicle into position. • Walk route and around vehicle before moving vehicle into position.
Open well vault and obtain Depth-to-Water level. Document data.	• See JSA: Opening/Closing a Well Vault	• See JSA: Opening/Closing a Well Vault
Organize tools and prepare pump, tubing and rope to lower low-flow pump into well.	• Slips/Trips/Falls/Pinch Points • Property Damage	• Ensure exclusion zone is large enough to: move around well to be sampled, vehicle used to power pump and to temporarily store needed equipment, well vault lid and associated parts. • Avoid climbing into bed of truck. Load equipment with this in mind. • Maintain proper housekeeping. Ensure clear pathways. Ensure there is no water or liquid near vehicle or could be walked through during purge event. • Have buckets arranged and ready to capture purge water (do not allow purge water to flow directly onto the ground).

JOB SAFETY ANALYSIS (JSA)

DESCRIPTION OF JOB:	REVISION DATE:	JSA CREATED ON:	PAGE:
Low Flow Groundwater Sampling Using Pumps	11/4/2020	10/29/2020	2 of 5

MINIMUM REQUIRED PERSONAL PROTECTIVE EQUIPMENT		
		• Ensure rope and tubing are the correct size, strength and length to support and lower pump into the well to desired depth. • Ensure meters and incidental equipment is properly stored and secured to prevent falling to ground or into well.
Rig/attach pump controller-box to vehicle battery. Attach pump to rope and discharge tubing.	• Slips/Trips/Falls/Pinch Points • Locking keys in vehicle • Property damage • Hand injury • Electrical shock	• Roll-down front and back windows (on battery-side of vehicle) in order to connect controller-box cable to vehicle battery. This also prevents accidently locking keys inside the vehicle. • Turn vehicle engine off. Fully open vehicle hood and ensure it is securely open and cannot close on its own. • Attach controller-box to vehicle battery. Attach Red/Positive cable first; then attach Black/Ground cable next. • Restart vehicle engine. Briefly engage/start controller-box to ensure it turns on and is properly attached to vehicle battery. • Ensure rope and tubing are securely connected to appropriate connection points.
Lower pump slowly into well to desired depth. Secure safety rope in order to hold pump at desired depth.	• Slips/Trips/Falls/Pinch Points • Hand injury • Property damage • Losing control of pump and dropping it into the well, uncontrollably • Tubing and rope binding or terminating before desired depth is reached.	• Ensure proper housekeeping: tools, equipment allow for room to work with rope and tubing lower pump into well. • Ensure safety rope is secured to pump. • Wear leather/Craftsman-type work gloves to control rope and tubing. • Ensure safety rope is not tangled or creating slip/trip/fall hazard. • Use PVC or wooden dowel to act as an “axel” while uncoiling/unspinning tubing while lowering pump. • Lower pump slowly. Pay close attention to hand placement. Communicate actions to coworker. Use buddy system. • Know where and how pump will be secured when at desired depth before lowering pump into position. • Securely attach safety rope in order to suspend pump at desired depth as directed by Project Manager (PM).
Start pump. Begin purge event. Gather, document data and collect water samples as directed by Project Manager.	• Electrical shock • Exposure to contaminated water • Slips/Trips/Falls/Pinch Points • Spilling contaminated water onto ground	• Ensure controller-box is connected properly to vehicle battery: Red to Red. Black to Black. • Turn on vehicle engine. Turn on pump at controller-box. (You will hear pump being engaged at controller-box.)

DESCRIPTION OF JOB:	REVISION DATE:	JSA CREATED ON:	PAGE:
Low Flow Groundwater Sampling Using Pumps	11/4/2020	10/29/2020	3 of 5

MINIMUM REQUIRED PERSONAL PROTECTIVE EQUIPMENT		
		• Wait and observe water being discharged from discharge hose. • Capture discharged water in bucket. Using measuring cup or flow-through YSI meter, document and record parameters as directed by PM. • Ensure proper housekeeping. Watch footing around tubing and open well vault. Ensure ground water is being captured in bucket, drum, etc. Be sure to not spill contents onto the ground. • Never hurry. Be patient. If, after extended period of time, water does not reach ground surface and is not discharging from well, Stop Work and contact PM for support; several issues can prevent pump from bringing water to ground surface. • Wear nitrile gloves while collecting water samples into laboratory containers.
Terminate purge event. Remove pump from well.	• Hand Injury • Slips/Trips/Falls/Pinch Points • Electrical shock • Exposure to contamination	• After collecting data and water samples as directed by PM, turn pump off at the controller-box, turn vehicle engine off and disconnect controller-box from vehicle battery: Disconnect Black/Ground first, then Red/Positive second. (Sampling protocol may require vehicle engine is turned off before capturing water samples in laboratory containers to prevent exhaust from vehicle contaminating water samples.) • Remove pump from well by pulling safety rope and tubing at the same time; this will prevent entanglement of rope and tubing. However, lifting of the pump from the well should be accomplished by the safety rope and not the tubing. • Wear leather/Craftsman-type work gloves to control rope and tubing. • Ensure enough room is available to allow for rope and tubing to gather on the ground outside of the well. Watch footing and avoid stepping onto rope and tubing. • Once removed from the well, use scissors to cut tubing in order to free pump from tubing. Disconnect safety rope. • Secure pump on tailgate, in a decon bucket or another appropriate location. Discard tubing in trash bag or another appropriate manner. (PM may direct that tubing is to be

JOB SAFETY ANALYSIS (JSA)

DESCRIPTION OF JOB:	REVISION DATE:	JSA CREATED ON:	PAGE:
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MINIMUM REQUIRED PERSONAL PROTECTIVE EQUIPMENT		
		reused. In that case, secure tubing as it would be secured for transport away from site.) Secure safety rope.
Decontaminate pump and reconfigure it for the next usage. Secure purge water and decon water as directed by PM.	• Splash/spilling hazards • Slips/Trips/Falls/ Pinch Points • Property damage	• Break down pump into its various parts and place in decon bucket. • Gently wash various parts and then place parts into rinse water decon bucket. A third rinse may be directed by PM using mineral-free water. Avoid splashing decon water. • Do not allow decon water to spill onto the ground. Wear decon gloves in order to avoid submerging hands into decon water. • Reassemble various parts and ensure pump is reconfigured and ready to be lowered into the next well. (When purge event is complete, the pump should be secure in a manner in which it is totally reconfigured and ready to be lowered into a well, regardless of when pump will be used again.) • Ensure pump is secured from falling to the ground. • When event is completed, secure or dispose of purge water and decon water as directed by PM.
Secure tools and equipment for transport. Ensure well vault is securely and properly closed.	• See JSA: Opening/Closing a Well Vault	• See JSA: Opening/Closing a Well Vault

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STOP WORK

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JOB SAFETY ANALYSIS (JSA)

DESCRIPTION OF JOB:	REVISION DATE:	JSA CREATED ON:	PAGE:
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MINIMUM REQUIRED PERSONAL PROTECTIVE EQUIPMENT			
☒ REFLECTIVE VEST	☒ LONG PANTS	☐ AIR PURIFYING RESPIRATOR:	☐ OTHER:
☒ HARD HAT	☐ CUT RESISTANT GLOVE LEVEL:	☐ SUPPLIED AIR RESPIRATOR	☐ OTHER:
☒ SAFETY TOED BOOTS	☐ IMPACT RESISTANT GLOVE LEVEL:	☐ CHEMICAL RESISTANT CLOTHING:	☐ OTHER:
☒ SAFETY GLASSES	☐ CHEMICAL RESISTANT GLOVE:		☐ OTHER:
☐ FACE SHIELD	☐ HEARING PROTECTION	☐ GOGGLES:	☐ OTHER:
REQUIRED TOOLS / EQUIPMENT / SUPPLIES			
☒ DRINKING WATER	☒ RATCHET WITH EXTENSION	☐ OTHER:	☐ OTHER:
☐ BUG REPELLENT	☒ WELL MAGNET	☐ OTHER:	☐ OTHER:
☒ TRAFFIC CONTROL DEVICES	☒ AIR MONITORING: PID	☐ OTHER:	☐ OTHER:
☐ LADDER	☐ LOCKOUT/TAGOUT EQUIPMENT	☐ OTHER:	☐ OTHER:

STOP WORK

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1) JOB STEPS	2) POTENTIAL HAZARDOUS CONDITIONS / UNSAFE PRACTICES	3) SAFE PROCEDURES and PREVENTATIVE MEASURES
Obtain Supplies and Tools from Truck	• Hand Injuries – Cuts and Scrapes	• Glove - _____. • Watch hand placement – always know where your hands are at. • Do not place your hand in direct path of a tool or between two objects.
	• Slips, Trips, Falls	• Do not jump from the back of pickup trucks. • Always step down, facing the truck and maintaining three (3) points of contact.
Walk to and from Well	• Slips, Trips, Falls	• Maintain housekeeping. • Set up work zone with enough room for staging of equipment and supplies such that there are aisle ways for walking and working. • If on pavement or concrete sweep up loose sand, dirt or rock. • Wear slip resistant steel toed boots. • Keep foot wear clean of mud and other debris. • Be deliberate with footing while walking in fields. • Limit the amount of tools and supplies that you carry so that you can see your path.

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DESCRIPTION OF JOB:	REVISION DATE:	JSA CREATED ON:	PAGE:
Opening and Closing a Well Vault	4-16-2021	05/13/2020	2 of 4

Walk to and from Well	• Weather	• Prevent heat and cold illnesses by: drinking water frequently and moderately; rest frequently; wear light colored clothing; eat light meals. • Adjust work schedule to avoid temperature extremes. • Use sunscreen. • Layer clothing to adjust to changing environmental temperatures. • Avoid drinks with caffeine (coffee, tea, or soda) or alcohol. • Use the buddy system (work in pairs).
Remove Locks and Bolts	• Hand Injuries – Cuts and Scrapes	• Glove - _____. • Use a ratchet extension while unbolting the well. • Watch hand placement – always know where your hands are at. • Do not place your hand in direct path of a tool or between two objects.
Remove/Replace Well Vault Lid	• Hand Injuries – Cuts, Scrapes, Pinches	• Glove - _____ while opening wells. • Watch hand placement – always know where your hands are at. • Do not place your hand in direct path of a tool or between two objects. • Lift the well cover with the magnet. When removing the magnet lift with your legs, don't jerk upward.
	• Insects – Bees, Wasps, Hornets, Black Widow Spiders	• If insects are encountered notify the Project Manager so that an exterminator can be called. • Open wells slowing looking under the lid. • Shut down site do not proceed.
	• Sharp Metal at Well Opening	• Glove - _____. • Watch hand placement – always know where your hands are at.
	• Back Injuries	• Use proper lifting procedures – avoid lifting with the back and twisting.
	• Pressure	• Remove cap slowly. • Listen for hissing sound. • Do not place face near welling opening.

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DESCRIPTION OF JOB:	REVISION DATE:	JSA CREATED ON:	PAGE:
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Remove/Replace Well Vault Lid	• Chemical Contact - Inhalation	• Stand upwind while removing cap. • Do not place face near welling opening. • Monitor the area with a PID while performing site operations when the well is known to contain free product. • Respirator use required if 10 ppm is maintained for 5 minutes.
	• Chemical Contact - Hand	• Glove - _____.

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DESCRIPTION OF JOB:	REVISION DATE:	JSA CREATED ON:	PAGE:
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MINIMUM REQUIRED PERSONAL PROTECTIVE EQUIPMENT			
☒ REFLECTIVE VEST	☒ LONG PANTS	☐ AIR PURIFYING RESPIRATOR:	☐ OTHER:
☒ HARD HAT	☒ CUT RESISTANT GLOVE LEVEL: 3	☐ SUPPLIED AIR RESPIRATOR	☐ OTHER:
☒ SAFETY TOED BOOTS	☐ IMPACT RESISTANT GLOVE LEVEL:	☐ CHEMICAL RESISTANT CLOTHING:	☐ OTHER:
☒ SAFETY GLASSES	☐ CHEMICAL RESISTANT GLOVE:		☐ OTHER:
☐ FACE SHIELD	☐ HEARING PROTECTION	☐ GOGGLES:	☐ OTHER:
REQUIRED TOOLS / EQUIPMENT / SUPPLIES			
☐ DRINKING WATER	☐ RATCHET WITH EXTENSION	☐ OTHER:	☐ OTHER:
☐ BUG REPELLENT	☐ WELL MAGNET	☐ OTHER:	☐ OTHER:
☒ TRAFFIC CONTROL DEVICES	☐ AIR MONITORING: **Choose an item.**	☐ OTHER:	☐ OTHER:
☐ LADDER	☐ LOCKOUT/TAGOUT EQUIPMENT	☐ OTHER:	☐ OTHER:

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1) JOB STEPS	2) POTENTIAL HAZARDOUS CONDITIONS / UNSAFE PRACTICES	3) SAFE PROCEDURES and PREVENTATIVE MEASURES
Drive around site	• Traffic	• Use defensive driving techniques
	• Pedestrians	• Yield to all pedestrians. • Use defensive driving techniques
Load/Unload Equipment and Supplies	• Vehicles	• When backing the drill rig, vehicles with trailers, or other large vehicles a spotter must be used. • Use barrier controls with a height of at least 36 inches. • Wear traffic reflective vest. • Caution tape or snow fence should be used to surround the work site.
	• Pedestrians	• Use barrier controls with a height of at least 36 inches. • Place signs indicating authorized personnel only at entrance to site. • When backing the drill rig, vehicles with trailers, or other large vehicles a spotter must be used. • Caution tape or snow fence should be used to surround the work site.

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DESCRIPTION OF JOB:	REVISION DATE:	JSA CREATED ON:	PAGE:
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		• Always keep yourself facing mobile equipment onsite, including excavator buckets. Keep in mind, mobile equipment has the right of way, not pedestrians.
Load/Unload Equipment and Supplies	• Weather	• Prevent heat and cold illnesses by: drinking water frequently and moderately; rest frequently; wear light colored clothing; eat light meals. • Adjust work schedule to avoid temperature extremes. • Sunscreen • Layer clothing to adjust to changing environmental temperatures • Avoid drinks with caffeine (coffee, tea, or soda) or alcohol. • Use the buddy system (work in pairs).
	• Slips, Trips, Falls	• Maintain housekeeping. • Set up work zone with enough room for staging of equipment and supplies such that there are aisle ways for walking and working. • If on pavement or concrete sweep up loose sand, dirt or rock • Wear slip resistant steel toed boots. • Keep foot wear clean of mud and other debris. • Setup areas away from snow and ice. • If ice is present wear Yaktrax on boots.
	• Insects and animals	• Look around area before setting up for the presence of bee nests and cob webs. • Do not disturb – leave them alone. • If stray dogs are present go indoors or the cab of the truck and wait for it to leave. Call animal control. • If you encounter bees or poisonous spiders leave the area and call the Project Manager. • Keep hands and feet out of areas you cannot see.
	• Back injuries	• Use proper lifting procedures – avoid lifting with the back and twisting. • Do not lift over 50 pounds without assistance.
	• Hand Injuries	• Wear work gloves – leather or craftsman while setting up. • Watch hand placement – always know where your hands are at.

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		• Do not place your hand in direct path of a tool or between two objects.
	• Heavy Equipment	• Spotters must be used at all times when heavy equipment is being operated. • All onsite personnel must wear safety reflective vest. • Operator must follow spotters hand signals and remove hands from controls when not working. • Site personnel should only approach the spotter • Backup alarm is required on heavy equipment. • Always keep yourself facing mobile equipment onsite, including excavator buckets. Keep in mind, mobile equipment has the right of way, not pedestrians.
Underground Utility Locate	• Vehicles	• Wear traffic reflective vest. • A spotter should walk with the utility locator looking for hazards whenever the locator is looking down.
	• Weather	• Prevent heat and cold illnesses by: drinking water frequently and moderately; rest frequently; wear light colored clothing; eat light meals. • Adjust work schedule to avoid temperature extremes. • Sunscreen • Layer clothing to adjust to changing environmental temperatures • Avoid drinks with caffeine (coffee, tea, or soda) or alcohol. • Use the buddy system (work in pairs).
	• Slips, Trips, Falls	• Wear slip resistant steel toed boots with ankle support. • Keep foot wear clean of mud and other debris. • If ice is present wear Yaktrax on boots.
	• Insects and Animals	• Look around area before setting up for the presence of bee nests and cob webs. • Do not disturb – leave them alone. • If stray dogs are present go indoors or the cab of the truck and wait for it to leave. Call animal control. • If you encounter bees or poisonous spiders leave the area and call the Project Manager. • Keep hands and feet out of areas you cannot see.

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JOB SAFETY ANALYSIS (JSA)

DESCRIPTION OF JOB:	REVISION DATE:	JSA CREATED ON:	PAGE:
Soil Sampling	**8/4/2021**	**08/24/2020**	**1 of 3**

MINIMUM REQUIRED PERSONAL PROTECTIVE EQUIPMENT			
☒ REFLECTIVE VEST	☒ LONG PANTS	☐ AIR PURIFYING RESPIRATOR:	☒ OTHER: **Disposable Boot Covers**
☒ HARD HAT	☒ CUT RESISTANT GLOVE LEVEL: 3	☐ SUPPLIED AIR RESPIRATOR	☐ OTHER:
☒ SAFETY TOED BOOTS	☐ IMPACT RESISTANT GLOVE LEVEL:	☒ CHEMICAL RESISTANT	☐ OTHER:
☒ SAFETY GLASSES	☒ CHEMICAL RESISTANT GLOVE: Nitrile	CLOTHING: **Tyvek Coverall**	☐ OTHER:
☐ FACE SHIELD	☐ HEARING PROTECTION	☐ GOGGLES:	☐ OTHER:
REQUIRED TOOLS / EQUIPMENT / SUPPLIES			
☐ DRINKING WATER	☐ RATCHET WITH EXTENSION	☐ OTHER:	☐ OTHER:
☐ BUG REPELLENT	☐ WELL MAGNET	☐ OTHER:	☐ OTHER:
☐ TRAFFIC CONTROL DEVICES	☐ AIR MONITORING: **Choose an item.**	☐ OTHER:	☐ OTHER:
☐ LADDER	☐ LOCKOUT/TAGOUT EQUIPMENT	☐ OTHER:	☐ OTHER:

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1) JOB STEPS	2) POTENTIAL HAZARDOUS CONDITIONS / UNSAFE PRACTICES	3) SAFE PROCEDURES and PREVENTATIVE MEASURES
Walking to sampling area and sample prep area	• Vehicles, struck by	• Wear high visibility & reflective vest. • Never cross mobile equipment path unless eye contact with operator has been made successfully. • Don't assume the operator sees you. • Stay out of blind spots! (gain eye contact first)
	• Tripping Hazards	• Maintain a clear path between the sample location and the preparation area. • Walk pathway prior to collecting samples to remove any items (tools, debris) that could cause trip hazards. • Limit the amount of tools, materials or supplies that are carried so that you can still see the ground. • Use designated paths whenever possible & be sure path is clear. • Wear safety toed boots with ankle support. • Do not jump from the back of pickup trucks. • Always step down, facing the truck and maintain three (3) points of contact. • Set down all supplies and tools while climbing into and out of the back of the pickup.

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Soil Sampling	• Hot Tools	• Keep all metal tools and sampling equipment out of direct contact with the sun. Keep in shade. • Wear gloves (Kevlar, cotton, leather) while handling hot tools if needed.
	• Chemical Contacts - Skin	• If you must sample from the contaminated soil pile, don a tyvek coverall. • Nitrile gloves should be worn when sampling soil.
	• Heavy Equipment	• The equipment operator should remove hands from the controls. Prior to the start of work identify a set of procedures with the equipment operator on how to get the operator's attention. • Only approach after the spotter or operator has made eye contact with you and indicates it is safe to do so. • Wear a high visibility & reflective vest. • Only sample when the operator has removed their hands from the controls.
	• Dust Exposure	• See JSA for Dust Suppression. • Wear safety glasses.
	• Chemical Contact – Inhalation/Ingestion	• Soil must be wet at all times to reduce blowing soil. • Stand up wind of the excavation. • Wash hands after sampling.

JOB SAFETY ANALYSIS (JSA)

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JOB SAFETY ANALYSIS (JSA)

DESCRIPTION OF JOB:	REVISION DATE:	JSA CREATED ON:	PAGE:
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MINIMUM REQUIRED PERSONAL PROTECTIVE EQUIPMENT			
☒ REFLECTIVE VEST ☒ HARD HAT ☒ SAFETY TOED BOOTS ☒ SAFETY GLASSES ☐ FACE SHIELD	☒ LONG PANTS ☒ CUT RESISTANT GLOVE LEVEL: 3 ☐ IMPACT RESISTANT GLOVE LEVEL: ☐ CHEMICAL RESISTANT GLOVE: ☐ HEARING PROTECTION	☐ AIR PURIFYING RESPIRATOR: ☐ SUPPLIED AIR RESPIRATOR ☐ CHEMICAL RESISTANT CLOTHING: ☐ GOGGLES:	☐ OTHER: ☐ OTHER: ☐ OTHER: ☐ OTHER: ☐ OTHER:
REQUIRED TOOLS / EQUIPMENT / SUPPLIES			
☒ DRINKING WATER ☒ BUG REPELLENT ☒ TRAFFIC CONTROL DEVICES ☐ LADDER	☐ RATCHET WITH EXTENSION ☐ WELL MAGNET ☐ AIR MONITORING: **Choose an item.** ☐ LOCKOUT/TAGOUT EQUIPMENT	☒ OTHER: ☐ OTHER: ☐ OTHER: ☐ OTHER:	☐ OTHER: ☐ OTHER: ☐ OTHER: ☐ OTHER:

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1) JOB STEPS	2) POTENTIAL HAZARDOUS CONDITIONS / UNSAFE PRACTICES	3) SAFE PROCEDURES and PREVENTATIVE MEASURES
Walk to survey area.	• Slips, Trips, Falls • Insects, Ticks • Traffic, heavy equipment • Poisonous plants • Weather	• Don PPE • Wear bug spray. • Treat clothes with Permethrin. • Identify poisonous plants in the work area and avoid them. • Check for ticks after the job has been completed and when at home. • Identify rough terrain and avoid. • If icy or there is snow on the ground wear yaktraks/ice cleats. • Set up area away from heavy traffic areas. • Check weather/temperature and don appropriate clothing.

JOB SAFETY ANALYSIS (JSA)

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Complete Survey Work	• Slips, Trips and Falls	• Maintain housekeeping. • Set up work zone with enough room for staging of equipment and supplies such that there are aisle ways for walking and working. • If on pavement or concrete sweep up loose sand, dirt or rock. • Wear slip resistant safety toed boots. • Keep foot wear clean of mud and other debris. • Be aware of puddles, black ice, and slippery surfaces. • Walk cautiously, and if possible, around loose debris, rocks, sharp objects on the ground.
	• Insects, ticks, poisonous plants, snakes	• Wear bug spray. • Treat clothes with Permethrin. • Identify poisonous plants in the work area and avoid them. • Check for ticks after the job has been completed and when at home.
	• Hand cuts and pinches	• Be alert for hand injuries. • Do not use your hand as the tool. • Use the right tool for the job. • Be aware of hand placement – do not place hands in the path of hammers, knifes or between objects. • Wear cotton, leather or craftsman work gloves.
	• Noise	• Wear hearing protection
	• Electrical Hazards	• Check for overhead electrical hazards. • Keep 10’ minimum clearance of any electrical line.
	• Traffic, heavy construction equipment	• Use cones to set up a work zone. • Work from behind the vehicle and use vehicle as a barrier. • Do not work between vehicle and moving equipment.

JOB SAFETY ANALYSIS (JSA)

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STOP WORK

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Print Name	Signature	Company	Date

JOB SAFETY ANALYSIS (JSA)

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MINIMUM REQUIRED PERSONAL PROTECTIVE EQUIPMENT			
☒ REFLECTIVE VEST	☒ LONG PANTS	☐ AIR PURIFYING RESPIRATOR:	☐ OTHER:
☒ HARD HAT	☒ CUT RESISTANT GLOVE LEVEL: 3	☐ SUPPLIED AIR RESPIRATOR	☐ OTHER:
☒ SAFETY TOED BOOTS	☐ IMPACT RESISTANT GLOVE LEVEL:	☐ CHEMICAL RESISTANT CLOTHING:	☐ OTHER:
☒ SAFETY GLASSES	☐ CHEMICAL RESISTANT GLOVE:		☐ OTHER:
☐ FACE SHIELD	☐ HEARING PROTECTION	☐ GOGGLES:	☐ OTHER:
REQUIRED TOOLS / EQUIPMENT / SUPPLIES			
☒ DRINKING WATER	☐ RATCHET WITH EXTENSION	☒ OTHER: **Class III high viz for night work**	☐ OTHER:
☐ BUG REPELLENT	☐ WELL MAGNET	☐ OTHER:	☐ OTHER:
☒ TRAFFIC CONTROL DEVICES	☐ AIR MONITORING: **Choose an item.**	☐ OTHER:	☐ OTHER:
☐ LADDER	☐ LOCKOUT/TAGOUT EQUIPMENT	☐ OTHER:	☐ OTHER:

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1) JOB STEPS	2) POTENTIAL HAZARDOUS CONDITIONS / UNSAFE PRACTICES	3) SAFE PROCEDURES and PREVENTATIVE MEASURES
Arrive onsite	• Struck by vehicle	• Don PPE
Performing Maintenance of Traffic (MOT) operations	• Struck by Vehicle	• Use MUTCD traffic control procedures. • Use MUTCD-approved traffic control devices. • Wear DOT Class II (minimum) safety vests at all times. • Wear DOT Class III if performing night work.
Erect barriers and create effective exclusion zone.	• Struck by vehicle / Contact with pedestrians or equipment • Muscle strain	• While setting up barriers use vehicle to protect from traffic. • Use proper lifting techniques while lifting cones or other barriers. • Barriers shall be erected and have a combination height of 42” per ATC procedure. This can be achieved using multiple methods. (Cones with flags) • Barriers shall be effective for the type of traffic in the area at that particular time. • Consider using more physical barriers like cones with bars or fencing instead of cones only.
Take down barriers	• Muscle Strain • Struck by Vehicle	• Use proper lifting techniques while loading barrier devices.

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		• Try to use Atlas vehicle as a barrier from traffic with putting items away.

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JOB SAFETY ANALYSIS (JSA)

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MINIMUM REQUIRED PERSONAL PROTECTIVE EQUIPMENT			
☒ REFLECTIVE VEST	☒ LONG PANTS	☐ AIR PURIFYING RESPIRATOR:	☐ OTHER:
☒ HARD HAT	☒ CUT RESISTANT GLOVE LEVEL: 3	☐ SUPPLIED AIR RESPIRATOR	☐ OTHER:
☒ SAFETY TOED BOOTS	☐ IMPACT RESISTANT GLOVE LEVEL:	☐ CHEMICAL RESISTANT CLOTHING:	☐ OTHER:
☒ SAFETY GLASSES	☐ CHEMICAL RESISTANT GLOVE:		☐ OTHER:
☐ FACE SHIELD	☐ HEARING PROTECTION	☐ GOGGLES:	☐ OTHER:
REQUIRED TOOLS / EQUIPMENT / SUPPLIES			
☐ DRINKING WATER	☐ RATCHET WITH EXTENSION	☐ OTHER:	☐ OTHER:
☐ BUG REPELLENT	☐ WELL MAGNET	☐ OTHER:	☐ OTHER:
☐ TRAFFIC CONTROL DEVICES	☐ AIR MONITORING: **Choose an item.**	☐ OTHER:	☐ OTHER:
☐ LADDER	☐ LOCKOUT/TAGOUT EQUIPMENT	☐ OTHER:	☐ OTHER:

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1) JOB STEPS	2) POTENTIAL HAZARDOUS CONDITIONS / UNSAFE PRACTICES	3) SAFE PROCEDURES and PREVENTATIVE MEASURES
Pickup/Set down supplies/tools	• Back injuries • Cuts to the Hands • Finger Pinch • Muscle Strain	• Follow proper lifting procedures – lift with your legs. Do not lift more than 50 pounds without assistance. • Have a clear path of travel before lifting any equipment. • Keep back straight, do not twist upper torso. • Watch hand placement, do not place hands between pinch points. • Check object for sharp edges. • Don PPE • Ensure a power grip is used.
Carry Supplies/Tools	• Back Injuries • Slips, Trips, Falls • Muscle Strain	• If carrying material over a long distance, use a cart or hand dolly to assist. • Use designated paths whenever possible. • Limit the amount of material you are carrying so that you can see the path while walking. • Do not jump from the back of pickup trucks. • Always step down, facing the truck and maintaining three (3) points of contact. • Set down all supplies and tools while climbing into and out of the back of the pickup. • Make sure pathway is clear before lifting the item.

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Set down supplies	• Finger pinch • Muscle Strain • Slip, Trip, Fall	• Gently set down items. • Use legs and keep back straight. • Make sure hands are not placed under item and will not be pinched by the ground. • If fatigued while carrying the item to the final destination set item down and take a break. • Ensure supplies are sent down on a solid sturdy surface.

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MINIMUM REQUIRED PERSONAL PROTECTIVE EQUIPMENT			
☒ REFLECTIVE VEST ☒ HARD HAT ☒ SAFETY TOED BOOTS ☒ SAFETY GLASSES ☒ FACE SHIELD	☒ LONG PANTS ☒ CUT RESISTANT GLOVE LEVEL: 3 ☐ IMPACT RESISTANT GLOVE LEVEL: ☒ CHEMICAL RESISTANT GLOVE: Nitrile gloves ☒ HEARING PROTECTION	☐ AIR PURIFYING RESPIRATOR: ☐ SUPPLIED AIR RESPIRATOR ☐ CHEMICAL RESISTANT CLOTHING: ☐ GOGGLES:	☐ OTHER: ☐ OTHER: ☐ OTHER: ☐ OTHER: ☐ OTHER:
REQUIRED TOOLS / EQUIPMENT / SUPPLIES			
☐ DRINKING WATER ☐ BUG REPELLENT ☒ TRAFFIC CONTROL DEVICES ☐ LADDER	☐ RATCHET WITH EXTENSION ☐ WELL MAGNET ☒ AIR MONITORING: PID ☐ LOCKOUT/TAGOUT EQUIPMENT	☐ OTHER: ☐ OTHER: ☐ OTHER: ☐ OTHER:	☐ OTHER: ☐ OTHER: ☐ OTHER: ☐ OTHER:

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1) JOB STEPS	2) POTENTIAL HAZARDOUS CONDITIONS / UNSAFE PRACTICES	3) SAFE PROCEDURES and PREVENTATIVE MEASURES
Moving equipment into position.	• Pedestrians	• When backing equipment into place a spotter must be used. • Back-up alarm on equipment.
	• Other vehicles	• When backing equipment into place a spotter must be used. • Spotter must have on traffic safety vest. • Equipment driver should yield to other vehicles.
	• Overhead obstacles	• Driver and spotter should walk the travel path and discuss the movement of the equipment. • When backing equipment into place a spotter must be used.
	• Damage to private property	• When backing equipment into place a spotter must be used. • Driver and spotter should walk the travel path and discuss the movement of the equipment.
Site Setup	• See JSA for site setup	• See JSA for site setup
Raising and lowering the mast of the drill.	• Equipment Failure	• See JSA for drill operation. • Perform and document daily inspection of all cabling, hydraulics, motors, fluid levels and hoses.

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		• Never place any part of body underneath mast when drill is in motion.
	• Equipment Tipping over	• Do not drive with mast in the raised position. • If the ground appears unstable a qualified individual should determine if it is safe to place the drill rig at that site. • Set all brakes, put gearboxes in neutral, and disengage all hoist levers. • Set riggers/stabilizers prior to raising the mast. • Level and stabilized the drill rig before raising
Raising and lowering the mast of the drill.	• Over Head Utilities	• A spotter will be used as the driller raises the mast to ensure that the path of the mast does not come in contact with overhead lines. • Setup drill rig at least 10 feet from overhead power lines. • Position the rig to avoid overhead power lines as defined by the voltage and local zoning requirements.
	• Over Head Obstacles	• A spotter will be used as the driller raises the mast to ensure that overhangs, tree branches or canopies are not in the path of the mast. • Have everyone stand clear of the mast. Unauthorized operators do not need to be in the area.
	• Falling objects	• Set up work zone with enough room for staging of equipment and supplies such that there are aisle ways for walking and working. • Do not allow employees on the deck when the mast is being raised. • Only the operator should be next to the equipment when raising the mast. • Inform all personnel before raising the mast.
Connect baler	• Back Injuries from baler and other heavy objects	• Use proper lifting procedures – avoid lifting with the back and twisting. • If over 50 pounds or awkward ask for assistance. • Attach the baler and use a winch cable as a mechanical lift.
	• Contact with contaminated water	• Wear nitrile gloves under cotton, leather or craftsman gloves.
	• Hand Injuries – cuts, pinches, fractures or crushed	• Be alert for hand injuries.

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		• Do not use your hand as the tool. Use hammers to move objects that are stuck. • Use the right tool for the job. • Be aware of hand placement – do not place hands in the path of hammers, knifes or between objects. • Wear cotton, leather or craftsman gloves. • Communicate your intentions to others involved. Make sure they understand where and what you will be doing before you do it.
	• Slips, Trips and Falls	• Maintain housekeeping. • Set up work zone with enough room for staging of equipment and supplies such that there are aisle ways for walking and working. • If on pavement or concrete sweep up loose sand, dirt or rock before lifting or moving equipment. • Wear slip resistant steel toed boots. • Keep foot wear clean of mud and other debris. Setup a boot cleaning area if needed. • Dry up water as quickly as possible. • Pickup tools that are not needed and place out of the way. • Walk your pathway before carrying an item. • Maintain three points of contact when climbing up and down. Always face the climbing surface.
	• Equipment Failure	• Perform and document daily inspection of all cabling, hydraulics, motors, fluid levels and hoses. • Keep all unnecessary employees away from the area. • Drill needs to be completely stopped and ensure no movement is possible before attaching and removing parts from the mast.
Baling water	• Hand pinch/cuts/crushed	• Be alert for hand injuries. • Do not use your hand as the tool. • Use the right tool for the job. • Be aware of hand placement – do not place your hands between object. • Wear cotton, leather or craftsman work gloves with nitrile gloves under them. • Do not hold onto winch cable – moving parts shall not be contacted with hands or fingers.

JOB SAFETY ANALYSIS (JSA)

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	• Contact with contaminated water	• Wear nitrile gloves.
	• Moving baler and winch	• No loose clothing. • Do not approach the moving cable or baler. • Wait for the operator to indicate it is safe to approach. • Wear cotton, leather or craftsman gloves. • Keep all unnecessary employees away from the area.
Baling water	• Slips, trips and falls	• Maintain housekeeping. • Set up work zone with enough room for staging of equipment and supplies such that there are aisle ways for walking and working. • If on pavement or concrete sweep up loose sand, dirt or rock. • Wear slip resistant steel toed boots. • Keep foot wear clean of mud and other debris.
	• Equipment Failure	• Perform and document daily inspection of all cabling, hydraulics, motors, fluid levels and hoses. • Keep all unnecessary employees away from the area.
	• Noise	• Wear hearing protection when drill is in motion.
	• Hazardous Atmosphere	• Monitor the environment using a PID. • Do not do the work, or use a respirator if levels of contaminants exceed the action level. • Prior to work starting identify potential hazardous air contaminants.
	• Hydraulic Hose Breaking	• Check all lines and connections for cracks, tears or weakness prior to start of operations. • Maintain lines in a manner that would prevent deterioration. • Remove and replace all lines that show wear and tear.
Emptying Baler	• Contact with contaminated water	• Wear nitrile gloves • Wear face shield and safety glasses. • Use a hook to open the baler and allow the water to escape.
	• Equipment Failure	• Perform and document daily inspection of all cabling, hydraulics, motors, fluid levels and hoses. • Keep all unnecessary employees away from the area.

JOB SAFETY ANALYSIS (JSA)

DESCRIPTION OF JOB:	REVISION DATE:	JSA CREATED ON:	PAGE:
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	• Hand injuries	• Be alert for hand injuries and never make contact with moving parts. • Do not use your hand as the tool. • Use the right tool for the job. • Be aware of hand placement – do not place your hands between object. • Wear leather or craftsman work gloves with nitrile gloves under them.
Drum moving	• See JSA drum handling	• See JSA drum handling

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MINIMUM REQUIRED PERSONAL PROTECTIVE EQUIPMENT			
☒ REFLECTIVE VEST	☒ LONG PANTS	☐ AIR PURIFYING RESPIRATOR:	☐ OTHER:
☒ HARD HAT	☒ CUT RESISTANT GLOVE LEVEL: 3	☐ SUPPLIED AIR RESPIRATOR	☐ OTHER:
☒ SAFETY TOED BOOTS	☐ IMPACT RESISTANT GLOVE LEVEL:	☐ CHEMICAL RESISTANT CLOTHING:	☐ OTHER:
☒ SAFETY GLASSES	☐ CHEMICAL RESISTANT GLOVE:		☐ OTHER:
☒ FACE SHIELD	☒ HEARING PROTECTION	☐ GOGGLES:	☐ OTHER:
REQUIRED TOOLS / EQUIPMENT / SUPPLIES			
☐ DRINKING WATER	☐ RATCHET WITH EXTENSION	☐ OTHER:	☐ OTHER:
☐ BUG REPELLENT	☐ WELL MAGNET	☐ OTHER:	☐ OTHER:
☒ TRAFFIC CONTROL DEVICES	☐ AIR MONITORING: **Choose an item.**	☐ OTHER:	☐ OTHER:
☐ LADDER	☐ LOCKOUT/TAGOUT EQUIPMENT	☐ OTHER:	☐ OTHER:

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1) JOB STEPS	2) POTENTIAL HAZARDOUS CONDITIONS / UNSAFE PRACTICES	3) SAFE PROCEDURES and PREVENTATIVE MEASURES
Develop Sand Pack	• Back injuries	• Use proper lifting procedures – avoid lifting with the back and twisting. • If over 50 pounds or awkward ask for assistance. • Use cart or wheelbarrow to move the bags of sand close to the well opening.
	• Hand pinch/cuts/crushed	• Always watch hand placement – do not place your hand in direct path of a tool. • Use craftsman, cotton or leather work gloves.
	• Dust	• Pour contents of bag near the well opening. • Stand upwind and allow the wind to take any dust generated away from your breathing zone. • Pour contents slowly. • Do not use a chopping motion to open the bag this will cause dust to contact eyes.
Place PVC pipe	• Back injuries	• Use proper lifting procedures – avoid lifting with the back and twisting. • If over 50 pounds or awkward ask for assistance.
	• Falling pipe	• Use proper attachment to lift casing, string or fishline are strongest.

JOB SAFETY ANALYSIS (JSA)

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	• Hand injuries	• Be alert for hand injuries and do not place hands underneath pipe or where they can become pinched. • Do not use your hand as the tool. Use a hammer to move objects that are stuck. • Use the right tool for the job. • Be aware of hand placement – do not place hands in the path of hammers, knifes or between objects. • Wear cotton, leather or craftsman gloves. • Communicate your intentions to others involved. Make sure they understand where and what you will be doing before you do it.
Remove auger as well is advanced	• Back injuries	• Use proper lifting procedures – avoid lifting with the back and twisting. • If over 50 pounds or awkward ask for assistance. • Use a winch cable as a mechanical lift for auger pieces. • Tip the auger up on one end and roll the auger into place.
	• Hot auger	• Do not touch the auger without gloves and never touch when moving/rotating. • Allow auger to cool down before handling. • Use water to assist with cooling process.
	• Hand pinch/cuts/crushed	• Be alert for hand injuries. • Do not use your hand as the tool. Use a hammer to move objects that are stuck. • Use the right tool for the job. • Be aware of hand placement – do not place hands in the path of hammers, knifes or between objects. • Wear cotton, leather or craftsman gloves. • Communicate your intentions to others involved. Make sure they understand where and what you will be doing before you do it.
	• Slips, Trips and Falls	• Maintain housekeeping. • Set up work zone with enough room for staging of equipment and supplies such that there are aisle ways for walking and working. • If on pavement or concrete sweep up loose sand, dirt or rock before lifting or moving equipment. • Wear slip resistant steel toed boots.

JOB SAFETY ANALYSIS (JSA)

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		• Keep foot wear clean of mud and other debris. Setup a boot cleaning area if needed. • Dry up water as quickly as possible. • Continue to clean and remove cuttings from drilling area. • Pickup tools that are not needed and place out of the way. • Walk your pathway before carrying an item. • Maintain three points of contact when climbing up and down. Always face the climbing surface. • If breaking a bolt on an auger make sure you have clean foot wear and work area, face the wrench and only use one foot on the wrench while holding onto a secure area that will not move.
Mixing water and grout	• Back injuries	• Use proper lifting procedures – avoid lifting with the back and twisting. • If over 50 pounds or awkward ask for assistance. • Take turns mixing the grout or if possible use an automated mixer. • Do not lean over the drum while mixing. Take breaks when needed and change position.
	• Noise	• Wear hearing protection when pump and drill rig are operating
	• Splash with water grout mix	• Wear face shield with safety glasses • Slowly introduce water into the mix and use a long handle shovel to mix.
	• Hand pinch/cuts/crushed	• Wear work gloves – cotton, leather or craftsman while working. • Watch hand placement – always know where your hands are at. • Do not place your hand in direct path of a tool or between two objects.
	• Dust	• Pour contents of bag near the drum or mixing container opening. • Stand upwind and allow the wind to take any dust generated away from your breathing zone. • Pour contents slowly. • Do not use a chopping motion to open the bag this will cause dust to contact eyes.

JOB SAFETY ANALYSIS (JSA)

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		• Use dust goggles.
Mixing water and grout	• Slips, trips and falls	• Maintain housekeeping. • Set up work zone with enough room for staging of equipment and supplies such that there are aisle ways for walking and working. • If on pavement or concrete sweep up loose sand, dirt or rock. • Wear slip resistant steel toed boots. • Keep foot wear clean of mud and other debris. • Dry up water as quickly as possible. • Place pallet of material close to work area to minimize walking and carrying items.
	• Chemical contact – skin	• Do not contact wet grout without nitrile gloves on. Nitrile gloves can be worn under other gloves. • Wash off with clean water. • Do not use hands to mix.
Place well vault	• Back injuries	• Use proper lifting procedures – avoid lifting with the back and twisting. • If over 50 pounds or awkward ask for assistance.
	• Hand pinch/cuts/crushed	• Be alert for hand injuries. • Do not use your hand as the tool. • Use the right tool for the job. • Be aware of hand placement – do not place your hands between object. • Wear cotton, leather or craftsman work gloves.
	• Slips, trips and falls	• Set up work zone with enough room for staging of equipment and supplies such that there are aisle ways for walking and working. • If on pavement or concrete sweep up loose sand, dirt or rock. • Wear slip resistant steel toed boots. • Keep foot wear clean of mud and other debris.
Pumping grout around well casing	• Pressurized lines	• Reverse pump to remove excess pressure. • Open bleed off valve. • Slowly disconnect pipes allowing excess pressure to escape. • Wear face shield when disconnecting and pumping grout around well vault.

JOB SAFETY ANALYSIS (JSA)

DESCRIPTION OF JOB:	REVISION DATE:	JSA CREATED ON:	PAGE:
Well Installation	10/20/2020	10/13/2020	5 of 6

	• Back injuries	• Use proper lifting procedures – avoid lifting with the back and twisting. • If over 50 pounds or awkward ask for assistance.
Pumping grout around well casing	• Slips, Trips and Falls	• Maintain housekeeping. • Set up work zone with enough room for staging of equipment and supplies such that there are aisle ways for walking and working. • If on pavement or concrete sweep up loose sand, dirt or rock. • Wear slip resistant steel toed boots. • Keep foot wear clean of mud and other debris. • Dry up water as quickly as possible.
	• Hand cuts and pinches	• Be alert for hand injuries. • Do not use your hand as the tool. • Use the right tool for the job. • Be aware of hand placement – do not place hands in the path of hammers, knifes or between objects. • Wear cotton, leather or craftsman work gloves.
	• Noise	• Wear hearing protection
	• Valve Failing	• Clean valves and pipe after every use. • Verify valves are operational before the start of the work. If the valve is difficult to move, make sure system is off and remove valve to determine if it needs to be replaced or cleaned. • Do not force a valve open. The use of only one hand is needed to open a functional valve.

JOB SAFETY ANALYSIS (JSA)

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Print Name	Signature	Company	Date

APPENDIX B

Chemical Hazard Information

Safety Data Sheets (SDS)

SAFETY DATA SHEET

Version 6.6
Revision Date 09/06/2022
Print Date 02/18/2023

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifiers

Product name : Naphthalene

Product Number : 147141
Brand : Aldrich
Index-No. : 601-052-00-2
CAS-No. : 91-20-3

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals, Synthesis of substances

1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich Inc.
3050 SPRUCE ST
ST. LOUIS MO 63103
UNITED STATES

Telephone : +1 314 771-5765
Fax : +1 800 325-5052

1.4 Emergency telephone

Emergency Phone # : 800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 Hours/day; 7 Days/week

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

Flammable solids (Category 2), H228
Acute toxicity, Oral (Category 4), H302
Carcinogenicity (Category 2), H351
Short-term (acute) aquatic hazard (Category 1), H400
Long-term (chronic) aquatic hazard (Category 1), H410

For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 GHS Label elements, including precautionary statements

Pictogram

Signal Word Warning

Hazard statement(s)

H228	Flammable solid.
H302	Harmful if swallowed.
H351	Suspected of causing cancer.
H410	Very toxic to aquatic life with long lasting effects.

Precautionary statement(s)

P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P210	Keep away from heat/ sparks/ open flames/ hot surfaces. No smoking.
P240	Ground/bond container and receiving equipment.
P241	Use explosion-proof electrical/ ventilating/ lighting/ equipment.
P264	Wash skin thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P273	Avoid release to the environment.
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
P301 + P312 + P330	IF SWALLOWED: Call a POISON CENTER/ doctor if you feel unwell. Rinse mouth.
P308 + P313	IF exposed or concerned: Get medical advice/ attention.
P370 + P378	In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.
P391	Collect spillage.
P405	Store locked up.
P501	Dispose of contents/ container to an approved waste disposal plant.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none

SECTION 3: Composition/information on ingredients

3.1 Substances

Formula	:	C10H8
Molecular weight	:	128.17 g/mol
CAS-No.	:	91-20-3
EC-No.	:	202-049-5
Index-No.	:	601-052-00-2

Component	Classification	Concentration
Naphthalene		
	Flam. Sol. 2; Acute Tox. 4; Carc. 2; Aquatic Acute 1; Aquatic Chronic 1; H228, H302, H351, H400, H410	<= 100 %

For the full text of the H-Statements mentioned in this Section, see Section 16.

SECTION 4: First aid measures

4.1 Description of first-aid measures

General advice
Show this material safety data sheet to the doctor in attendance.

If inhaled
After inhalation: fresh air. Call in physician.

In case of skin contact
In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower. Consult a physician.

In case of eye contact
After eye contact: rinse out with plenty of water. Call in ophthalmologist. Remove contact lenses.

If swallowed
After swallowing: immediately make victim drink water (two glasses at most). Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed
No data available

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture
Carbon oxides
Combustible.
Vapors are heavier than air and may spread along floors.
Forms explosive mixtures with air on intense heating.
Development of hazardous combustion gases or vapours possible in the event of fire.

5.3 Advice for firefighters
Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

5.4 Further information
Remove container from danger zone and cool with water. Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
Advice for non-emergency personnel: Avoid inhalation of dusts. Avoid substance contact. Ensure adequate ventilation. Keep away from heat and sources of ignition. Evacuate the danger area, observe emergency procedures, consult an expert.

For personal protection see section 8.

6.2 Environmental precautions
Do not let product enter drains. Risk of explosion.

6.3 Methods and materials for containment and cleaning up
Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up dry. Dispose of properly. Clean up affected area. Avoid generation of dusts.

6.4 Reference to other sections
For disposal see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling
Work under hood. Do not inhale substance/mixture.

Advice on protection against fire and explosion
Keep away from open flames, hot surfaces and sources of ignition.Take precautionary measures against static discharge.

Hygiene measures
Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.
For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Storage conditions
Tightly closed. Keep away from heat and sources of ignition.

Storage class
Storage class (TRGS 510): 4.1B: Flammable solid hazardous materials

7.3 Specific end use(s)
Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Ingredients with workplace control parameters

Component	CAS-No.	Value	Control parameters	Basis
Naphthalene	91-20-3	TWA	10 ppm	USA. ACGIH Threshold Limit Values (TLV)
	Remarks	Confirmed animal carcinogen with unknown relevance to humans Danger of cutaneous absorption		

		TWA	10 ppm 50 mg/m3	USA. NIOSH Recommended Exposure Limits
		ST	15 ppm 75 mg/m3	USA. NIOSH Recommended Exposure Limits
		TWA	10 ppm 50 mg/m3	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
		PEL	0.1 ppm 0.5 mg/m3	California permissible exposure limits for chemical contaminants (Title 8, Article 107)
		Skin		

Biological occupational exposure limits

Component	CAS-No.	Parameters	Value	Biological specimen	Basis
Naphthalene	91-20-3	1-Naphthol + 2-Naphthol			ACGIH - Biological Exposure Indices (BEI)
	Remarks	End of shift (As soon as possible after exposure ceases)			

8.2 Exposure controls

Appropriate engineering controls
Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.

Personal protective equipment

Eye/face protection
Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Safety glasses

Skin protection
This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).
Full contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min
Material tested:KCL 741 Dermatril® L

This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).
Splash contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min
Material tested:KCL 741 Dermatril® L

Body Protection
Flame retardant antistatic protective clothing.

Respiratory protection
required when dusts are generated. Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.

Control of environmental exposure
Do not let product enter drains. Risk of explosion.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

a)	Appearance	Form: flakes, granules Color: white
b)	Odor	aromatic
c)	Odor Threshold	No data available
d)	pH	No data available
e)	Melting point/freezing point	Melting point/range: 80 - 82 °C (176 - 180 °F) - lit.
f)	Initial boiling point and boiling range	218 °C 424 °F - lit.
g)	Flash point	78.5 °C (173.3 °F) - closed cup - ISO 2719
h)	Evaporation rate	No data available
i)	Flammability (solid, gas)	The substance or mixture is a flammable solid with the category 2. - Flammability (solids)
j)	Upper/lower flammability or explosive limits	Upper explosion limit: 5.9 %(V) Lower explosion limit: 0.9 %(V)
k)	Vapor pressure	0.072 hPa at 20 °C (68 °F) - OECD Test Guideline 104
l)	Vapor density	No data available
m)	Density	1.08 g/cm3 at 24.7 °C (76.5 °F) - OECD Test Guideline 109
	Relative density	No data available
n)	Water solubility	0.0308 g/l at 25 °C (77 °F) - OECD Test Guideline 105 - slightly soluble
o)	Partition coefficient: n-octanol/water	log Pow: 3.4 at 25 °C (77 °F) - OECD Test Guideline 107 - Bioaccumulation is not expected.
p)	Autoignition temperature	526 - 587 °C (979 - 1089 °F) at 1,013 hPa - DIN 51794
q)	Decomposition temperature	No data available
r)	Viscosity	No data available
s)	Explosive properties	No data available
t)	Oxidizing properties	none

9.2 Other safety information

Surface tension	31.8 mN/m at 100.0 °C (212.0 °F)

SECTION 10: Stability and reactivity

10.1 Reactivity

Forms explosive mixtures with air on intense heating.
A range from approx. 15 Kelvin below the flash point is to be rated as critical.
The following applies in general to flammable organic substances and mixtures: in correspondingly fine distribution, when whirled up a dust explosion potential may generally be assumed.

10.2 Chemical stability

The product is chemically stable under standard ambient conditions (room temperature) .

10.3 Possibility of hazardous reactions

Violent reactions possible with:
Oxidizing agents
chromium(VI) oxide
benzoyl chloride
aluminium chloride
Risk of explosion with:
nitrogen oxides

10.4 Conditions to avoid

Heat, flames and sparks.
Strong heating.

10.5 Incompatible materials

No data available

10.6 Hazardous decomposition products

In the event of fire: see section 5

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity
LD50 Oral - Mouse - female - 710 mg/kg
(OECD Test Guideline 401)
LC50 Inhalation - Rat - male and female - 4 h - > 0.4 mg/l - vapor

(OECD Test Guideline 403)
LD50 Dermal - Rabbit - 20,000 mg/kg
Remarks: (RTECS)
No data available

Skin corrosion/irritation
Skin - Rabbit
Result: No skin irritation - 24 h
Remarks: (ECHA)

Serious eye damage/eye irritation
Eyes - Rabbit
Result: No eye irritation - 24 h
Remarks: (ECHA)

Respiratory or skin sensitization
Maximization Test - Guinea pig
Result: negative
(OECD Test Guideline 406)

Germ cell mutagenicity
Test Type: Mutagenicity (mammal cell test): chromosome aberration.
Test system: Chinese hamster ovary cells
Metabolic activation: Metabolic activation
Method: OECD Test Guideline 473
Result: positive
Test Type: Ames test
Test system: Salmonella typhimurium
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: negative

Test Type: unscheduled DNA synthesis assay
Species: Rat
Cell type: Liver cells
Application Route: Oral
Method: OECD Test Guideline 486
Result: negative

Test Type: Micronucleus test
Species: Mouse
Cell type: Bone marrow
Application Route: Intraperitoneal
Method: US-EPA
Result: negative
Remarks: (ECHA)

Carcinogenicity
Suspected of causing cancer.

IARC:	2B - Group 2B: Possibly carcinogenic to humans (Naphthalene)
	No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC. (Naphthalene)
NTP:	No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
OSHA:	No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

Reproductive toxicity
No data available

Specific target organ toxicity - single exposure
No data available

Specific target organ toxicity - repeated exposure
No data available

Aspiration hazard
No data available

11.2 Additional Information

Repeated dose toxicity - Rat - male and female - Oral - 91 Days - NOAEL (No observed adverse effect level) - 200 mg/kg - LOAEL (Lowest observed adverse effect level) - 400 mg/kg

Repeated dose toxicity - Mouse - male and female - Oral - 90 Days - NOAEL (No observed adverse effect level) - 100 mg/kg

Repeated dose toxicity - Rat - male and female - Dermal - 90 Days - NOAEL (No observed adverse effect level) - 1,000 mg/kg

Repeated dose toxicity - Rat - male and female - inhalation (vapor) - 90 Days - NOAEL (No observed adverse effect level) - 300 mg/kg

RTECS: QJ0525000
Absorption into the body leads to the formation of methemoglobin which in sufficient concentration causes cyanosis. Onset may be delayed 2 to 4 hours or longer., Naphthalene is retinotoxic and systemic absorption of its vapors above 15ppm, may result in:, cataracts, optic neuritis, corneal injury, Eye irritation, Ingestion may provoke the following symptoms:, hemolytic anemia, hemoglobinuria, Nausea, Headache, Vomiting, Gastrointestinal disturbance, Convulsions, anemia, Kidney injury may occur., Seizures., Coma.
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Heart -

SECTION 12: Ecological information

12.1 Toxicity

Toxicity to fish	flow-through test LC50 - Oncorhynchus mykiss (rainbow trout) - 1.6 mg/l - 96 h (OECD Test Guideline 203)
	flow-through test LC50 - Pimephales promelas (fathead minnow) - 7.9 mg/l - 96 h (OECD Test Guideline 203)
Toxicity to daphnia and other aquatic invertebrates	static test EC50 - Daphnia magna (Water flea) - 2.16 mg/l - 48 h (OECD Test Guideline 202)
Toxicity to algae	static test EC50 - Pseudokirchneriella subcapitata (green algae) - 2.96 mg/l - 4 h Remarks: (ECHA)

12.2 Persistence and degradability

Biodegradability	aerobic - Exposure time 28 d Result: 2 % - Not readily biodegradable. (OECD Test Guideline 302C)

12.3 Bioaccumulative potential

Bioaccumulation — Cyprinus carpio (Carp) - 56 d
at 25 °C(Naphthalene)

Bioconcentration factor (BCF): 36.5 - 168
(OECD Test Guideline 305)

Remarks: Bioaccumulation is unlikely.

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Endocrine disrupting properties

No data available

12.7 Other adverse effects

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product

Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself. See www.retrologistik.com for processes regarding the return of chemicals and containers, or contact us there if you have further questions.

SECTION 14: Transport information

DOT (US)

UN number: 1334 Class: 4.1 Packing group: III
Proper shipping name: Naphthalene, refined
Reportable Quantity (RQ): 100 lbs
Marine pollutant: yes Poison Inhalation Hazard: No

IMDG

UN number: 1334 Class: 4.1 Packing group: III EMS-No: F-A, S-G
Proper shipping name: NAPHTHALENE, REFINED
Marine pollutant : yes

IATA

UN number: 1334 Class: 4.1 Packing group: III
Proper shipping name: Naphthalene, refined

SECTION 15: Regulatory information

SARA 302 Components
This material does not contain any components with a section 302 EHS TPQ.

SARA 313 Components
This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

SARA 311/312 Hazards
Fire Hazard, Acute Health Hazard, Chronic Health Hazard

Massachusetts Right To Know Components
No components are subject to the Massachusetts Right to Know Act.

SECTION 16: Other information

Further information
The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

The branding on the header and/or footer of this document may temporarily not visually match the product purchased as we transition our branding. However, all of the information in the document regarding the product remains unchanged and matches the product ordered. For further information please contact mlsbranding@sial.com.

Version: 6.6 Revision Date: 09/06/2022 Print Date: 02/18/2023

SAFETY DATA SHEET

SDS ID NO.: 0127MAR019
Revision Date 03/19/2018

1. IDENTIFICATION

Product Name: Marathon Petroleum Gasoline - All Grades

Synonym: Gasoline; Regular Unleaded Gasoline; Conventional Regular Unleaded Gasoline; Mid Grade Unleaded Gasoline; Conventional Mid Grade Unleaded Gasoline; Premium Unleaded Gasoline; Conventional Premium Unleaded Gasoline; Sub-Octane Gasoline; Regular RBOB; Super RBOB; Premium RBOB; RBOB; Reformulated Blend Stock For Oxygenated Blending; 84 Octane Gasoline; CBOB; Premium CBOB; Conventional Blend Stock for Oxygenate Blending; Recreational Gasoline; Recreational Gasoline; Recreational Unleaded Gasoline; 89 Recreational Gasoline; Brand 89 Recreational Gasoline; 7.0 Max RVP 89 Recreational Gasoline; BR 7.0 Max RVP 89 Recreational Gasoline; 90 Recreational Gasoline; 90 Marina Gasoline; Brand EX 90 UL Recrtnl Gasoline; Brand 91 Recreational Gasoline; 91 Recreational Gasoline; 91 Marina Gasoline; 90 Octane Midgrade Gasoline with No Ethanol; 7.8# New York CBOB Gasoline Blend Grade; Non-Summer New York CBOB Gasoline Blend Grade 0125MAR019; 0126MAR019; 0134MAR019; 0313MAR019; 0314MAR019

Product Code: 0127MAR019
Chemical Family: Complex Hydrocarbon Substance

Recommended Use: Fuel.
Restrictions on Use: All others.

Manufacturer, Importer, or Responsible Party Name and Address:

MARATHON PETROLEUM COMPANY LP
539 South Main Street
Findlay, OH 45840

SDS information (M-F, 8-5 EST): 1-419-421-3070

Emergency Telephone (24/7): CHEMTREC: 1-800-424-9300 CCN#: 13740

2. HAZARD IDENTIFICATION

Classification

OSHA Regulatory Status
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Flammable liquids	Category 1
Skin corrosion/irritation	Category 2
Germ cell mutagenicity	Category 1B
Carcinogenicity	Category 1A
Reproductive toxicity	Category 2
Specific target organ toxicity (single exposure)	Category 3
Specific target organ toxicity (repeated exposure)	Category 1
Aspiration toxicity	Category 1

Acute aquatic toxicity	Category 2
Chronic aquatic toxicity	Category 2

Hazards Not Otherwise Classified (HNOC)
Static accumulating flammable liquid

Label elements

EMERGENCY OVERVIEW

Danger

EXTREMELY FLAMMABLE LIQUID AND VAPOR
May accumulate electrostatic charge and ignite or explode
May be fatal if swallowed and enters airways
Causes skin irritation
May cause respiratory irritation
May cause drowsiness or dizziness
May cause genetic defects
May cause cancer
Suspected of damaging fertility or the unborn child
Causes damage to organs (blood, blood-forming organs, immune system) through prolonged or repeated exposure
Toxic to aquatic life with long lasting effects

Appearance Clear yellow liquid **Physical State** Liquid **Odor** Hydrocarbon

Precautionary Statements - Prevention
Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking
Keep container tightly closed
Ground/bond container and receiving equipment
Use explosion-proof electrical/ventilating/lighting/equipment
Use only non-sparking tools.
Take action to prevent static discharges
Do not eat, drink or smoke when using this product
Do not breathe mist/vapors/spray
Use only outdoors or in a well-ventilated area
Wear protective gloves/protective clothing/eye protection/face protection
Wash hands and any possibly exposed skin thoroughly after handling
Avoid release to the environment

Precautionary Statements - Response
IF exposed, concerned or you feel unwell: Get medical attention
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower
If skin irritation occurs: Get medical attention
Wash contaminated clothing before reuse
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Call a POISON CENTER or doctor if you feel unwell
IF SWALLOWED: Immediately call a POISON CENTER or doctor
Do NOT induce vomiting
In case of fire: Use water spray, fog or regular foam for extinction
Collect spillage

Precautionary Statements - Storage
Store in a well-ventilated place. Keep container tightly closed
Keep cool
Store locked up

Precautionary Statements - Disposal
Dispose of contents/container at an approved waste disposal plant

3. COMPOSITION/INFORMATION ON INGREDIENTS

Gasoline is a complex combination of hydrocarbons consisting of paraffins, cycloparaffins, aromatic and olefinic hydrocarbons having molecular chains ranging in length from four to ten carbons. May contain small amounts of dye and other additives (>0.02%) which are not considered hazardous at the concentrations used.

Composition Information:

Name	CAS Number	% Concentration
Gasoline	86290-81-5	100
Heptane (mixed isomers)	142-82-5	2.5-26
Butane (mixed isomers)	106-97-8	0.5-19
Pentane (mixed isomers)	78-78-4	6.5-19
Hexane Isomers (other than n-Hexane)	107-83-5	2-12
Toluene	108-88-3	3-9.5
Xylene (mixed isomers)	1330-20-7	3.5-9.5
Benzene	71-43-2	0.1-4.9
n-Hexane	110-54-3	0.1-4.5
Cumene	98-82-8	0-4
1,2,4 Trimethylbenzene	95-63-6	1-4
Ethylbenzene	100-41-4	0.5-2.5
Cyclohexane	110-82-7	0-1.5
Octane	111-65-9	0-1.5
1,2,3-Trimethylbenzene	526-73-8	0-1
Naphthalene	91-20-3	0.1-0.5

Benzene concentration is percent by volume. All other concentrations are percent by weight unless material is a gas. Gas concentrations are in percent by volume.

4. FIRST AID MEASURES

First Aid Measures

General Advice: In case of accident or if you feel unwell, seek medical advice immediately (show directions for use or safety data sheet if possible).

Inhalation: Remove to fresh air. If not breathing, institute rescue breathing. If breathing is difficult, ensure airway is clear, give oxygen and continue to monitor. If heart has stopped, immediately begin cardiopulmonary resuscitation (CPR). Keep affected person warm and at rest. If symptoms occur get medical attention.

Skin Contact: Immediately wash exposed skin with plenty of soap and water while removing contaminated clothing and shoes. May be absorbed through the skin in harmful amounts. Get medical attention if irritation persists. Any injection injury from high pressure equipment should be evaluated immediately by a physician as potentially serious (See NOTES TO PHYSICIAN).

Place contaminated clothing in closed container until cleaned or discarded. If clothing is to be laundered, inform the person performing the operation of contaminant's hazardous properties. Destroy contaminated, non-chemical resistant footwear.

Eye Contact: Flush immediately with large amounts of water for at least 15 minutes. Eyelids should be held away from the eyeball to ensure thorough rinsing. Gently remove contacts while

flushing. Get medical attention if irritation persists.

Ingestion: Do not induce vomiting because of danger of aspirating liquid into lungs, causing serious damage and chemical pneumonitis. If spontaneous vomiting occurs, keep head below hips, or if patient is lying down, turn body and head to side to prevent aspiration and monitor for breathing difficulty. Never give anything by mouth to an unconscious person. Keep affected person warm and at rest. GET IMMEDIATE MEDICAL ATTENTION.

Most important signs and symptoms, both short-term and delayed with overexposure

Adverse Effects: Irritating to the skin and mucous membranes. Symptoms may include redness, itching, and inflammation. May cause nausea, vomiting, diarrhea, and signs of nervous system depression: headache, drowsiness, dizziness, loss of coordination, disorientation and fatigue. Aspiration hazard. May cause coughing, chest pains, shortness of breath, pulmonary edema and/or chemical pneumonitis. Prolonged or repeated exposure may cause adverse effects on blood, blood-forming organs, and immune system. Repeated or prolonged skin contact may cause drying, reddening, itching and cracking.

Indication of any immediate medical attention and special treatment needed

Notes To Physician: INHALATION: This material (or a component) sensitizes the myocardium to the effects of sympathomimetic amines. Epinephrine and other sympathomimetic drugs may initiate cardiac arrhythmias in individuals exposed to this material. Administration of sympathomimetic drugs should be avoided.

SKIN: Leaks or accidents involving high-pressure equipment may inject a stream of material through the skin and initially produce an injury that may not appear serious. Only a small puncture wound may appear on the skin surface but, without proper treatment and depending on the nature, original pressure, volume, and location of the injected material, can compromise blood supply to an affected body part. Prompt surgical debridement of the wound may be necessary to prevent irreversible loss of function and/or the affected body part. High pressure injection injuries may be SERIOUS SURGICAL EMERGENCIES.

INGESTION: This material represents a significant aspiration and chemical pneumonitis hazard. Induction of emesis is not recommended.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media
For small fires, Class B fire extinguishing media such as CO2, dry chemical, foam (AFFF/ATC) or water spray can be used. For large fires, water spray, fog or foam (AFFF/ATC) can be used. Firefighting should be attempted only by those who are adequately trained and equipped with proper protective equipment.

Unsuitable extinguishing media
Do not use straight water streams to avoid spreading fire.

Specific hazards arising from the chemical
This product has been determined to be an extremely flammable liquid per the OSHA Hazard Communication Standard and should be handled accordingly. May accumulate electrostatic charge and ignite or explode. Vapors may travel along the ground or be moved by ventilation and ignited by many sources such as pilot lights, sparks, electric motors, static discharge, or other ignition sources at locations distant from material handling. Flashback can occur along vapor trail. For additional fire related information, see NFPA 30 or the Emergency Response Guidebook 128.

Hazardous combustion products
Smoke, carbon monoxide, and other products of incomplete combustion.

Explosion data
Sensitivity to Mechanical Impact No.
Sensitivity to Static Discharge Yes.

Special protective equipment and precautions for firefighters

Firefighters should wear full protective clothing and positive-pressure self-contained breathing apparatus (SCBA) with a full face-piece, as appropriate. Avoid using straight water streams. Water may be ineffective in extinguishing low flash point fires, but can be used to cool exposed surfaces. Avoid excessive water spray application. Water spray and foam (AFFF/ATC) must be applied carefully to avoid frothing and from as far a distance as possible. Keep run-off water out of sewers and water sources.

Additional firefighting tactics
FIRES INVOLVING TANKS OR CAR/TRAILER LOADS: Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Cool containers with flooding quantities of water until well after the fire is out. Do not direct water at source of leak or safety devices; icing may occur. Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank. ALWAYS stay away from tanks engulfed in fire. For massive fire, use unmanned hose holders or monitor nozzles: if this is impossible, withdraw from area and let fire burn.

EVACUATION: Consider initial downwind evacuation for at least 1000 feet. If tank, rail car or tank truck is involved in a fire, ISOLATE for 5280 feet (1 mile) in all directions; also, consider initial evacuation of 5280 feet (1 mile) in all directions.

NFPA	Health 1	Flammability 3	Instability 0	Special Hazard -

6. ACCIDENTAL RELEASE MEASURES

Personal precautions: Keep public away. Isolate and evacuate area. Shut off source if safe to do so. Eliminate all ignition sources.

Protective equipment: Use personal protection measures as recommended in Section 8.

Emergency procedures: Advise authorities and National Response Center (800-424-8802) if the product has entered a water course or sewer. Notify local health and pollution control agencies, if appropriate.

Environmental precautions: Avoid release to the environment. Avoid subsoil penetration. Ethanol in gasoline phase seperates in contact with water. Monitor downstream for dissolved ethanol or other appropriate indicators.

Methods and materials for containment: Contain liquid with sand or soil. Prevent spilled material from entering storm drains, sewers, and open waterways.

Methods and materials for cleaning up: Use suitable absorbent materials such as vermiculite, sand, or clay to clean up residual liquids. Recover and return free product to proper containers. When recovering free liquids ensure all equipment is grounded and bonded. Use only non-sparking tools.

7. HANDLING AND STORAGE

Safe Handling Precautions: NEVER SIPHON THIS PRODUCT BY MOUTH. Use appropriate grounding and bonding practices. Static accumulating flammable liquid. Bonding and grounding may be insufficient to eliminate the hazard from static electricity. Do not expose to heat, open flames, strong oxidizers or other sources of ignition. Vapors may travel along the ground or be moved by ventilation. Flashback may occur along vapor trails. No smoking. Use only non-sparking tools. Avoid contact with skin, eyes and clothing. Avoid breathing fumes, gas, or vapors. Use only with adequate ventilation. Avoid repeated and prolonged skin contact. Use personal protection measures as recommended in Section 8. Exercise good personal hygiene including removal of soiled clothing and prompt washing with soap and water. Do not cut, drill, grind or weld on empty containers since explosive residues may remain. Refer to applicable EPA, OSHA, NFPA and consistent state and local requirements.

Hydrocarbons are basically non-conductors of electricity and can become electrostatically charged during mixing, filtering, pumping at high flow rates or loading and transfer operations. If this charge reaches a sufficiently high level, sparks can form that may ignite the vapors of flammable liquids. Sudden release of hot organic chemical vapors or mists from process equipment operating under elevated temperature and pressure, or sudden ingress of air into vacuum equipment may result in ignition of vapors or mists without the

presence of obvious ignition sources. Nozzle spouts must be kept in contact with the containers or tank during the entire filling operation.

Portable containers should never be filled while in or on a motor vehicle or marine craft. Containers should be placed on the ground. Static electric discharge can ignite fuel vapors when filling non-grounded containers or vehicles on trailers. The nozzle spout must be kept in contact with the container before and during the entire filling operation. Use only approved containers.

A buildup of static electricity can occur upon re-entry into a vehicle during fueling especially in cold or dry climate conditions. The charge is generated by the action of dissimilar fabrics (i.e., clothing and upholstery) rubbing across each other as a person enters/exits the vehicle. A flash fire can result from this discharge if sufficient flammable vapors are present. Therefore, do not get back in your vehicle while refueling.

Cellular phones and other electronic devices may have the potential to emit electrical charges (sparks). Sparks in potentially explosive atmospheres (including fueling areas such as gas stations) could cause an explosion if sufficient flammable vapors are present. Therefore, turn off cellular phones and other electronic devices when working in potentially explosive atmospheres or keep devices inside your vehicle during refueling.

High-pressure injection of any material through the skin is a serious medical emergency even though the small entrance wound at the injection site may not initially appear serious. These injection injuries can occur from high-pressure equipment such as paint spray or grease or guns, fuel injectors, or pinhole leaks in hoses or hydraulic lines and should all be considered serious. High pressure injection injuries may be SERIOUS SURGICAL EMERGENCIES (See First Aid Section 4).

Storage Conditions: Store in properly closed containers that are appropriately labeled and in a cool, well-ventilated area. Do not store near an open flame, heat or other sources of ignition.

Incompatible Materials Strong oxidizing agents.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Name	ACGIH TLV	OSHA PELS:	OSHA - Vacated PELs	NIOSH IDLH
Gasoline 86290-81-5	300 ppm TWA 500 ppm STEL	-	300 ppm TWA 900 mg/m³ TWA 500 ppm STEL 1500 mg/m³ STEL	-
Heptane (mixed isomers) 142-82-5	400 ppm TWA 500 ppm STEL	TWA: 500 ppm TWA: 2000 mg/m³	400 ppm TWA 1600 mg/m³ TWA 500 ppm STEL 2000 mg/m³ STEL	750 ppm
Butane (mixed isomers) 106-97-8	1000 ppm STEL	-	800 ppm TWA 1900 mg/m³ TWA	-
Pentane (mixed isomers) 78-78-4	1000 ppm TWA	-	-	-
Hexane Isomers (other than n-Hexane) 107-83-5	500 ppm TWA 1000 ppm STEL	-	500 ppm TWA 1800 mg/m³ TWA 1000 ppm STEL 3600 mg/m³ STEL	-
Toluene 108-88-3	20 ppm TWA	TWA: 200 ppm Ceiling: 300 ppm	100 ppm TWA 375 mg/m³ TWA 150 ppm STEL 560 mg/m³ STEL	500 ppm
Xylene (mixed isomers) 1330-20-7	100 ppm TWA 150 ppm STEL	TWA: 100 ppm TWA: 435 mg/m³	100 ppm TWA 435 mg/m³ TWA 150 ppm STEL 655 mg/m³ STEL	900 ppm
Benzene	0.5 ppm TWA	TWA: 10 ppm (applies to	25 ppm Ceiling	500 ppm

71-43-2	2.5 ppm STEL Skin - potential significant contribution to overall exposure by the cutaneous route	industry segments exempt from the benzene standard) TWA: 1 ppm STEL: 5 ppm (see 29 CFR 1910.1028)	1 ppm TWA 5 ppm STEL	
n-Hexane 110-54-3	50 ppm TWA Skin - potential significant contribution to overall exposure by the cutaneous route	TWA: 500 ppm TWA: 1800 mg/m³	50 ppm TWA 180 mg/m³ TWA	1100 ppm
Cumene 98-82-8	50 ppm TWA	TWA: 50 ppm TWA: 245 mg/m³ Skin	50 ppm TWA 245 mg/m³ TWA Limit applies to skin	900 ppm
1,2,4 Trimethylbenzene 95-63-6	25 ppm TWA	-	25 ppm TWA 125 mg/m³ TWA	-
Ethylbenzene 100-41-4	20 ppm TWA	TWA: 100 ppm TWA: 435 mg/m³	100 ppm TWA 435 mg/m³ TWA 125 ppm STEL 545 mg/m³ STEL	800 ppm
Cyclohexane 110-82-7	100 ppm TWA	TWA: 300 ppm TWA: 1050 mg/m³	300 ppm TWA 1050 mg/m³ TWA	1300 ppm
Octane 111-65-9	300 ppm TWA	TWA: 500 ppm TWA: 2350 mg/m³	300 ppm TWA 1450 mg/m³ TWA 375 ppm STEL 1800 mg/m³ STEL	1000 ppm
1,2,3-Trimethylbenzene 526-73-8	25 ppm TWA	-	25 ppm TWA 125 mg/m³ TWA	-
Naphthalene 91-20-3	10 ppm TWA Skin - potential significant contribution to overall exposure by the cutaneous route	TWA: 10 ppm TWA: 50 mg/m³	10 ppm TWA 50 mg/m³ TWA 15 ppm STEL 75 mg/m³ STEL	250 ppm

Notes: The manufacturer has voluntarily elected to provide exposure limits contained in OSHA's 1989 air contaminants standard in its SDSs, even though certain of those exposure limits were vacated in 1992.

Engineering measures: Local or general exhaust required in an enclosed area or when there is inadequate ventilation. Use mechanical ventilation equipment that is explosion-proof.

Personal protective equipment

Eye protection: Use goggles or face-shield if the potential for splashing exists.

Skin and body protection: Use nitrile rubber, Viton® or PVA gloves for repeated or prolonged skin exposure. Glove suitability is based on workplace conditions and usage. Contact the glove manufacturer for specific advice on glove selection and breakthrough times.

Respiratory protection: Use a NIOSH approved organic vapor chemical cartridge or supplied air respirators when there is the potential for airborne exposures to exceed permissible exposure limits or if excessive vapors are generated. Observe respirator assigned protection factors (APFs) criteria cited in federal OSHA 29 CFR 1910.134. Self-contained breathing apparatus should be used for fire fighting.

Hygiene measures: Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes and clothing.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical State Liquid
Appearance Clear yellow liquid

Color	Yellow
Odor	Hydrocarbon
Odor Threshold	No data available.

Property	**Values (Method)**
Melting Point / Freezing Point	No data available.
Initial Boiling Point / Boiling Range	24-210 °C / 75-410 °F (ASTM D86)
Flash Point	-43 °C / -45 °F
Evaporation Rate	No data available.
Flammability (solid, gas)	Not applicable.
Flammability Limit in Air (%):	
Upper Flammability Limit:	7.6
Lower Flammability Limit:	1.4
Explosion limits:	No data available.
Vapor Pressure	5.5-15 psi (ASTM D4814)
Vapor Density	3-4
Specific Gravity / Relative Density	0.70-0.76
Water Solubility	No data available.
Solubility in other solvents	No data available.
Partition Coefficient	2.13-4.5
Decomposition temperature	No data available.
pH:	Not applicable
Autoignition Temperature	280 °C / 536 °F
Kinematic Viscosity	No data available.
Dynamic Viscosity	No data available.
Explosive Properties	No data available.
VOC Content (%)	100%
Density	No data available.
Bulk Density	Not applicable.

10. STABILITY AND REACTIVITY

Reactivity	The product is non-reactive under normal conditions.
Chemical stability	The material is stable at 70°F (21°C), 760 mmHg pressure.
Possibility of hazardous reactions	None under normal processing.
Hazardous polymerization	Will not occur.
Conditions to avoid	Excessive heat, sources of ignition, open flame.
Incompatible Materials	Strong oxidizing agents.
Hazardous decomposition products	None known under normal conditions of use.

11. TOXICOLOGICAL INFORMATION

Potential short-term adverse effects from overexposures

Inhalation	May cause irritation of respiratory tract. May cause drowsiness or dizziness. Breathing high concentrations of this material in a confined space or by intentional abuse can cause irregular heartbeats which can cause death.
Eye contact	Exposure to vapor or contact with liquid may cause mild eye irritation, including tearing, stinging, and redness.
Skin contact	Irritating to skin. Effects may become more serious with repeated or prolonged contact. May be absorbed through the skin in harmful amounts.

Ingestion May be fatal if swallowed or vomited and enters airways. May cause irritation of the mouth, throat and gastrointestinal tract.

Acute toxicological data

Name	Oral LD50	Dermal LD50	Inhalation LC50
Gasoline 86290-81-5	14000 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	> 5.2 mg/L (Rat) 4 h
Heptane (mixed isomers) 142-82-5	-	3000 mg/kg (Rabbit)	103 g/m³ (Rat) 4 h
Butane (mixed isomers) 106-97-8	-	-	658 mg/L (Rat) 4 h
Pentane (mixed isomers) 78-78-4	-	-	450 mg/L (Mouse) 2 h
Hexane Isomers (other than n-Hexane) 107-83-5	> 5000 mg/kg (Rat)	-	-
Toluene 108-88-3	> 2000 mg/kg (Rat)	8390 mg/kg (Rabbit)	12.5 mg/L (Rat) 4 h
Xylene (mixed isomers) 1330-20-7	> 2000 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	> 5.04 mg/L (Rat) 4 h
Benzene 71-43-2	> 2000 mg/kg (Rat)	> 5000 mg/kg (Rabbit)	> 20 mg/l (Rat) 4 h
n-Hexane 110-54-3	15000 mg/kg (Rat)	3000 mg/kg (Rabbit)	48000 ppm (Rat) 4 h
Cumene 98-82-8	> 2000 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	> 20 mg/L (Rat) 6 h
1,2,4 Trimethylbenzene 95-63-6	3280 mg/kg (Rat)	> 3160 mg/kg (Rabbit)	18,000 mg/m³ (Rat) 4 h
Ethylbenzene 100-41-4	> 2000 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	17.2 mg/L (Rat) 4 h
Cyclohexane 110-82-7	> 5000 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	13.9 mg/L (Rat) 4 h
Octane 111-65-9	-	-	118 g/m³ (Rat) 4 h
1,2,3-Trimethylbenzene 526-73-8	-	-	-
Naphthalene 91-20-3	490 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	> 340 mg/m³ (Rat) 1 h

Delayed and immediate effects as well as chronic effects from short and long-term exposure

NAPHTHAS: In a large epidemiological study on over 15,000 employees at several petroleum refineries and amongst residents located near these refineries, no increased risk of kidney cancer was observed in association with gasoline exposures (a similar material). In a similar study, no increased risk of kidney cancer was observed among petroleum refinery workers, but there was a slight trend in the incidence of kidney cancers among service station employees, especially after a 30-year latency period. Altered mental state, drowsiness, peripheral motor neuropathy, irreversible brain damage (so-called Petrol Sniffer's Encephalopathy), delirium, seizures, and sudden death have been reported from repeated overexposure to some hydrocarbon solvents, naphthas, and gasoline.

ISOPARAFFINS: Studies in laboratory animals have shown that long-term exposure to similar materials (isoparaffins) can cause kidney damage and kidney cancer in male laboratory rats. However, in-depth research indicates that these findings are unique to the male rat, and that these effects are not relevant to humans.

C9 AROMATIC HYDROCARBONS: A developmental inhalation study was conducted in laboratory mice. Increased implantation losses, reduced fetal weights, delayed ossification and an increased incidence of cleft palate were observed at the highest exposure level (1,500 ppm). This exposure level was extremely toxic to pregnant female mice (44% mortality). Reduced fetal body weights were also observed at 500 ppm. A multi-generation reproduction inhalation study was conducted in laboratory rats.

Reductions in pup weights, pup weight gain, litter size, and pup survival were observed at 1,500 ppm, an exposure level at which significant maternal toxicity was observed. Reduced pup weight gain was also observed at 500 ppm.

BUTANES: Studies in laboratory animals indicate exposure to extremely high levels of butanes (1-10 or higher vol.% in air) may cause cardiac arrhythmias (irregular heartbeats) which may be serious or fatal.

PENTANES: Studies of pentane isomers in laboratory animals indicate exposure to extremely high levels (roughly 10 vol.%) may induce cardiac arrhythmias (irregular heartbeats) which may be serious or fatal.

TOLUENE: Case studies of persons abusing toluene suggest isolated incidences of adverse effects on the fetus including birth defects. Abuse of toluene at high concentrations (e.g., glue sniffing and solvent abuse) has been associated with adverse effects on the liver, kidney and nervous system, and can cause CNS depression, cardiac arrhythmias, and death. Studies of workers indicate longterm exposure may be related to impaired color vision and hearing. Some studies of workers suggest longterm exposure may be related to neurobehavioral and cognitive changes. Some of these effects have been observed in laboratory animals following repeated exposure to high levels of toluene. Several studies of workers suggest longterm exposure may be related to small increases in spontaneous abortions and changes in some gonadotropic hormones. However, the weight of evidence does not indicate toluene is a reproductive hazard to humans. Studies in laboratory animals indicate some changes in reproductive organs following high levels of exposure, but no significant effects on mating performance or reproduction were observed. Case studies of persons abusing toluene suggest isolated incidences of adverse effects on the fetus including birth defects. Findings in laboratory animals have been largely negative. Positive findings include small increases in minor skeletal and visceral malformations and developmental delays following very high levels of maternal exposure. Studies of workers indicate long-term exposure may be related to effects on the liver, kidney and blood, but these appear to be limited to changes in serum enzymes and decreased leukocyte counts. Adverse effects on the liver, kidney, thymus and nervous system were observed in animal studies following very high levels of exposure. The relevance of these findings to humans is not clear at this time.

XYLENES, ALL ISOMERS: Overexposure to xylene may cause upper respiratory tract irritation, headache, cyanosis, blood serum changes, nervous system damage and narcosis. Effects may be increased by the use of alcoholic beverages. Evidence of liver and kidney impairment were reported in workers recovering from a gross overexposure. Effects from Prolonged or Repeated Exposure: Impaired neurological function was reported in workers exposed to solvents including xylene. Studies in laboratory animals have shown evidence of impaired hearing following high levels of exposure. Studies in laboratory animals suggest some changes in reproductive organs following high levels of exposure but no significant effects on reproduction were observed. Studies in laboratory animals indicate skeletal and visceral malformations, developmental delays, and increased fetal resorptions following extremely high levels of maternal exposure with evidence of maternal toxicity. The relevance of these observations to humans is not clear at this time. Adverse effects on the liver, kidney, bone marrow (changes in blood cell parameters) were observed in laboratory animals following high levels of exposure. The relevance of these observations to humans is not clear at this time.

BENZENE: Studies of workers exposed to benzene show clear evidence that overexposure can cause cancer and other diseases of the blood forming organs including Acute Myelogenous Leukemia (AML), and Aplastic Anemia (AA), an often fatal disease. Some studies suggest overexposure to benzene may also be associated with Myelodysplastic Syndrome (MDS). Findings from a case control study of workers exposed to benzene was reported during the 2009 Benzene Symposium in Munich included an increase in Acute Myeloid Leukemias and Non-Hodgkins Lymphoid Neoplasms (NHLN) of the subtype follicular lymphoma (FL) in some occupational categories. Some studies of workers exposed to benzene have shown an association with increased rates of chromosome aberrations in circulating lymphocytes. One study of women workers exposed to benzene

suggested a weak association with irregular menstruation. However, other studies of workers exposed to benzene have not demonstrated clear evidence of an effect on fertility or reproductive outcome in humans. Benzene can cross the placenta and affect the developing fetus. Cases of AA have been reported in the offspring of persons severely overexposed to benzene. Studies in laboratory animals indicate that prolonged, repeated exposure to high levels of benzene vapor can cause bone marrow suppression and cancer in multiple organ systems. Studies in laboratory animals show evidence of adverse effects on male reproductive organs following high levels of exposure but no significant effects on reproduction have been observed. Embryotoxicity has been reported in studies of laboratory animals but effects were limited to reduced fetal weight and minor skeletal variations. Benzene has been classified as a proven human carcinogen by OSHA and a Group 1 (Carcinogenic to Humans) material by IARC. The current proposed IARC classification for benzene is summarized as follows: Sufficient evidence for Acute Myeloid Leukemia; limited evidence for Acute Lymphatic Leukemia, Chronic Lymphatic Leukemia, Non-Hodgkin Lymphoma, and Multiple Myeloma.

N-HEXANE: Long-term or repeated exposure to n-hexane can cause peripheral nerve damage. Initial symptoms are numbness of the fingers and toes. Also, motor weakness can occur in the digits, but may also involve muscles of the arms, thighs and forearms. The onset of these symptoms may be delayed for several months to a year after the beginning of exposure. Testicular atrophy and partial to full loss of the germ cell line were observed in sub-chronic high-dose inhalation studies of laboratory rodents. These effects appeared irreversible. Rodent reproduction studies have shown evidence of reduced fetal weight but no frank malformations.

CUMENE: Overexposure to cumene may cause upper respiratory tract irritation and CNS depression. Studies in laboratory animals indicate evidence of respiratory tract hyperplasia, and adverse effects on the liver, kidney and adrenal glands following high level exposure. The relevance of these findings to humans is not clear at this time. Findings from lifetime laboratory rodent inhalation studies were as follows: In F344/N rats: an increased incidence of renal carcinomas and adenomas, respiratory epithelial adenomas, and interstitial cell adenomas of the testes. In B6C3F1 mice: an increased incidence of carcinomas and adenomas of the bronchi and lung, liver neoplasms, hemangiosarcomas of the spleen, and adenomas of the thyroid.

1,2,4-TRIMETHYLBENZENE: The following information pertains to a mixture of C9 aromatic hydrocarbons, over 40% of which was composed of 1,2,4-trimethylbenzene. A developmental inhalation study was conducted in laboratory mice. Increased implantation losses, reduced fetal weights, delayed ossification and an increased incidence of cleft palate were observed at the highest exposure level (1,500 ppm). This exposure level was extremely toxic to pregnant female mice (44% mortality). Reduced fetal body weights were also observed at 500 ppm. A multi-generation reproduction inhalation study was conducted in laboratory rats. Reductions in pup weights, pup weight gain, litter size, and pup survival were observed at 1,500 ppm, an exposure level at which significant maternal toxicity was observed. Reduced pup weight gain was also observed at 500 ppm. Embryotoxicity has been reported in studies of laboratory animals. Adverse effects included increased implantation losses, reduced fetal weights, delayed ossification and an increased incidence of cleft palate.<n><n>

ETHYLBENZENE: Findings from a 2-year inhalation study in rodents conducted by NTP were as follows: Effects were observed only at the highest exposure level (750 ppm). At this level the incidence of renal tumors was elevated in male rats (tubular carcinomas) and female rats (tubular adenomas). The incidence of tumors was also elevated in male mice (alveolar and bronchiolar carcinomas) and female mice (hepatocellular carcinomas). IARC has classified ethyl benzene as "possibly carcinogenic to humans" (Group 2B). Studies in laboratory animals indicate some evidence of post-implantation deaths following high levels of maternal exposure. The relevance of these findings to humans is not clear at this time. Studies in laboratory animals indicate limited evidence of renal malformations, resorptions, and developmental delays following high levels of maternal exposure with evidence of maternal toxicity. The relevance of these findings to humans is not clear at this time. Studies in laboratory animals have demonstrated evidence of ototoxicity (hearing loss)

following exposure levels as low as 300 ppm for 5 days. Studies in laboratory animals indicate some evidence of adverse effects on the liver, kidney, thyroid, and pituitary gland.

NAPHTHALENE: Severe jaundice, neurotoxicity (kernicterus) and fatalities have been reported in young children and infants as a result of hemolytic anemia from overexposure to naphthalene. Persons with glucose 6-phosphate dehydrogenase (G6PD) deficiency are more prone to the hemolytic effects of naphthalene. Adverse effects on the kidney have been reported in persons overexposed to naphthalene but these effects are believed to be a consequence of hemolytic anemia, and not a direct effect. Hemolytic anemia has been observed in laboratory animals exposed to naphthalene. Laboratory rodents exposed to naphthalene vapor for 2 years (lifetime studies) developed non-neoplastic and neoplastic tumors and inflammatory lesions of the nasal and respiratory tract. Cataracts and other adverse effects on the eye have been observed in laboratory animals exposed to high levels of naphthalene. Findings from a large number of bacterial and mammalian cell mutation assays have been negative. A few studies have shown chromosomal effects (elevated levels of Sister Chromatid Exchange or chromosomal aberrations) in vitro. Naphthalene has been classified as Possibly Carcinogenic to Humans (2B) by IARC, based on findings from studies in laboratory animals.

CARBON MONOXIDE: is a chemical asphyxiant with no warning properties (such as odor). At 400-500 ppm for 1 hour headache and dyspnea may occur. If activity is increased, symptoms of overexposure may include nausea, irritability, increased respiration, tinnitus, sweating, chest pain, confusion, impaired judgement, dizziness, weakness, drowsiness, ataxia, irregular heart beat, cyanosis and pallor. Levels in excess of 1000 ppm can result in collapse, loss of conciousness, respiratory failure and death. Extremely high concentrations (12,800 ppm) can cause immediate unconsciousness and death in 1-3 minutes. Repeated anoxia can lead to central nervous system damage and peripheral neuropathy, with loss of sensation in the fingers, amnesia, and mental deterioration and possible congestive heart failure. Damage may also occur to the fetus, lung, liver, kidney, spleen, cardiovascular system and other organs.

WHOLLY-VAPORIZED UNLEADED GASOLINE: Lifetime exposure to wholly vaporized unleaded gasoline produced an increased incidence of liver tumors in female mice exposed to the highest exposure concentration (2056 ppm) and α-2 urinary globulin-mediated kidney tumors in male rats. No exposure-related tumors were observed in male mice or female rats. The male-specific rat kidney tumors are not considered relevant to human health. Mice receiving lifetime repeated skin application of various petroleum naphthas exhibited an irritation-dependent increased incidence of skin tumors. Additional studies suggest that these tumors occur through a mechanism that may not be relevant to human health. Epidemiological data from over 18,000 petroleum marketing and distribution workers showed no increased risk of leukemia, multiple myeloma, or kidney cancer resulting from gasoline exposure. Unleaded gasoline has been identified as possibly carcinogenic to humans (2B) by the International Agency for Research on Cancer (IARC).

COMBUSTION ENGINE EXHAUST: Chronic inhalation studies of gasoline engine exhaust in mice, rats and hamsters did not produce any carcinogenic effects. Condensates/extracts of gasoline engine exhaust produced an increase in tumors compared to controls when testing by skin painting, subcutaneous injection, intratracheal instillation or implantation into the lungs. Gasoline exhaust has been classified as possibly carcinogenic to humans (2B) by the International Agency for Research on Cancer (IARC).

Adverse effects related to the physical, chemical and toxicological characteristics

Signs and Symptoms

Irritating to the skin and mucous membranes. Symptoms may include redness, itching, and inflammation. May cause nausea, vomiting, diarrhea, and signs of nervous system depression: headache, drowsiness, dizziness, loss of coordination, disorientation and fatigue. Aspiration hazard. May cause coughing, chest pains, shortness of breath, pulmonary edema and/or chemical pneumonitis. Prolonged or repeated exposure may cause damage to organs. Repeated or prolonged skin contact may cause drying, reddening, itching and cracking.

Sensitization Not expected to be a skin or respiratory sensitizer.

Mutagenic effects May cause genetic defects.

Carcinogenicity May cause cancer.

Cancer designations are listed in the table below

Name	ACGIH (Class)	IARC (Class)	NTP	OSHA
Gasoline 86290-81-5	Confirmed animal carcinogen (A3)	Possible human carcinogen (2B)	Not Listed	Not Listed
Heptane (mixed isomers) 142-82-5	Not Listed	Not Listed	Not Listed	Not Listed
Butane (mixed isomers) 106-97-8	Not Listed	Not Listed	Not Listed	Not Listed
Pentane (mixed isomers) 78-78-4	Not Listed	Not Listed	Not Listed	Not Listed
Hexane Isomers (other than n-Hexane) 107-83-5	Not Listed	Not Listed	Not Listed	Not Listed
Toluene 108-88-3	Not Classifiable (A4)	Not Classifiable (3)	Not Listed	Not Listed
Xylene (mixed isomers) 1330-20-7	Not classifiable (A4)	Not classifiable (3)	Not Listed	Not Listed
Benzene 71-43-2	Confirmed human carcinogen (A1)	Carcinogenic to humans (1)	Known to be human carcinogen	Known carcinogen
n-Hexane 110-54-3	Not Listed	Not Listed	Not Listed	Not Listed
Cumene 98-82-8	Not listed	Possible human carcinogen (2B)	Reasonably anticipated to be a human carcinogen	Not listed
1,2,4 Trimethylbenzene 95-63-6	Not Listed	Not Listed	Not Listed	Not Listed
Ethylbenzene 100-41-4	Confirmed animal carcinogen (A3)	Possible human carcinogen (2B)	Not Listed	Not Listed
Cyclohexane 110-82-7	Not Listed	Not Listed	Not Listed	Not Listed
Octane 111-65-9	Not Listed	Not Listed	Not Listed	Not Listed
1,2,3-Trimethylbenzene 526-73-8	Not Listed	Not Listed	Not Listed	Not Listed
Naphthalene 91-20-3	Confirmed animal carcinogen (A3)	Possible human carcinogen (2B)	Reasonably anticipated to be a human carcinogen	Not Listed

Reproductive toxicity Suspected of damaging fertility or the unborn child.

Specific Target Organ Toxicity (STOT) - single exposure Respiratory system. Central nervous system.

Specific Target Organ Toxicity (STOT) - repeated exposure Blood. Blood-forming organs. Immune system.

Aspiration hazard May be fatal if swallowed or vomited and enters airways.

12. ECOLOGICAL INFORMATION

Ecotoxicity This product should be considered toxic to aquatic organisms, with the potential to cause long lasting adverse effects in the aquatic environment.

Name	Algae/aquatic plants	Fish	Toxicity to Microorganisms	Crustacea
Gasoline 86290-81-5	72-hr EC50 = 56 mg/l Algae	96-hr LC50 = 11 mg/l Rainbow trout (static)	-	48-hr LC50 = 7.6 mg/l Daphnia magna
Heptane (mixed isomers)	-	96-hr LC50 = 375 mg/L	-	-

142-82-5		Tilapia		
Butane (mixed isomers) 106-97-8	-	-	-	-
Pentane (mixed isomers) 78-78-4	-	96-hr LC50 = 3.1 mg/L Rainbow trout	-	48-hr EC50 = >1 - <10 mg/L Daphnia magna
Hexane Isomers (other than n-Hexane) 107-83-5	-	-	-	-
Toluene 108-88-3	72-hr EC50 = 12.5 mg/l Algae	96-hr LC50 <= 10 mg/l Rainbow trout	-	48-hr EC50 = 5.46-9.83 mg/l Daphnia magna 48-hr EC50 = 11.5 mg/l Daphnia magna (Static)
Xylene (mixed isomers) 1330-20-7	72-hr EC50 = 11 mg/l Algae	96-hr LC50 = 8 mg/l Rainbow trout	-	48-hr LC50 = 3.82 mg/l Daphnia magna
Benzene 71-43-2	72-hr EC50 = 29 mg/l Algae	96-hr LC50 = 5.3 mg/l Rainbow trout (flow-through)	-	48-hr EC50 = 8.76-15.6 mg/l Daphnia magna (Static)
n-Hexane 110-54-3	-	96-hr LC50 = 2.5 mg/l Fathead minnow	-	-
Cumene 98-82-8	72-hr EC50 = 2.6 mg/l Algae	96-hr LC50 = 6.04-6.61 mg/l Fathead minnow (Flow-through) 96-hr LC50 = 2.7 mg/l Rainbow trout (semi-static)	-	48-hr EC50 = 7.9-14.1 mg/l Daphnia magna (static)
1,2,4 Trimethylbenzene 95-63-6	-	96-hr LC50 = 7.19-8.28 mg/l Fathead minnow (flow-through)	-	48-hr EC50 = 6.14 mg/L Daphnia magna
Ethylbenzene 100-41-4	72-hr EC50 = 1.7-7.6 mg/l Algae	96-hr LC50 = 4 mg/L Rainbow trout	-	48-hr EC50 = 1-4 mg/L Daphnia magna
Cyclohexane 110-82-7	72-hr EC50 = 500 mg/l Algae	96-hr LC50 = 3.96-5.18 mg/l Fathead minnow	-	48-hr EC50 = 1.7-3.5 mg/L Bay shrimp
Octane 111-65-9	-	-	-	48-hr LC50 = 0.38 mg/l Daphnia magna
1,2,3-Trimethylbenzene 526-73-8	-	96-hr LC50 = 7.72 mg/l Fathead Minnow (flow-through)	-	-
Naphthalene 91-20-3	-	96-hr LC50 = 0.91-2.82 mg/l Rainbow trout (static) 96-hr LC50 = 1.99 mg/l Fathead minnow (static)	-	48-hr LC50 = 1.6 mg/l Daphnia magna

Persistence and degradability Expected to be inherently biodegradable. The presence of ethanol in this product may impede the biodegradation of benzene, toluene, ethylbenzene and xylene in groundwater, resulting in elongated plumes of these constituents.

Bioaccumulation Has the potential to bioaccumulate.

Mobility in soil May partition into air, soil and water.

Other adverse effects No information available.

13. DISPOSAL CONSIDERATIONS

Description of Waste Residues
This material may be a flammable liquid waste.

Safe Handling of Wastes
Handle in accordance with applicable local, state, and federal regulations. Use personal protection measures as required. Use appropriate grounding and bonding practices. Use only non-sparking tools. Do not expose to heat, open flames, strong oxidizers or other sources of ignition. No smoking.

Disposal of Wastes / Methods of Disposal
The user is responsible for determining if any discarded material is a hazardous waste (40 CFR 262.11). Dispose of in accordance with federal, state and local regulations.

Methods of Contaminated Packaging Disposal
Empty containers should be completely drained and then discarded or recycled, if possible. Do not cut, drill, grind or weld on empty containers since explosive residues may be present. Dispose of in accordance with federal, state and local regulations.

14. TRANSPORT INFORMATION

DOT (49 CFR 172.101):

UN Proper Shipping Name:	Gasoline
UN/Identification No:	UN 1203
Class:	3
Packing Group:	II

TDG (Canada):

UN Proper Shipping Name:	Gasoline
UN/Identification No:	UN 1203
Transport Hazard Class(es):	3
Packing Group:	II

15. REGULATORY INFORMATION

US Federal Regulatory Information:

US TSCA Chemical Inventory Section 8(b): This product and/or its components are listed on the TSCA Chemical Inventory.

EPA Superfund Amendment & Reauthorization Act (SARA):

SARA Section 302: This product does not contain any component(s) included on EPA's Extremely Hazardous Substance (EHS) List.

Name	CERCLA/SARA - Section 302 Extremely Hazardous Substances and TPQs
Gasoline	NA
Heptane (mixed isomers)	NA
Butane (mixed isomers)	NA
Pentane (mixed isomers)	NA
Hexane Isomers (other than n-Hexane)	NA
Toluene	NA
Xylene (mixed isomers)	NA
Benzene	NA
n-Hexane	NA
Cumene	NA
1,2,4 Trimethylbenzene	NA
Ethylbenzene	NA
Cyclohexane	NA
Octane	NA
1,2,3-Trimethylbenzene	NA
Naphthalene	NA

SARA Section 304: This product may contain component(s) identified either as an EHS or a CERCLA Hazardous substance which in case of a spill or release may be subject to SARA reporting requirements:

Name	Hazardous Substances RQs
Gasoline	NA
Heptane (mixed isomers)	NA
Butane (mixed isomers)	NA
Pentane (mixed isomers)	NA
Hexane Isomers (other than n-Hexane)	NA

Toluene	1000 lb final RQ 454 kg final RQ
Xylene (mixed isomers)	100
Benzene	10
n-Hexane	5000
Cumene	5000
1,2,4 Trimethylbenzene	NA
Ethylbenzene	1000
Cyclohexane	1000
Octane	NA
1,2,3-Trimethylbenzene	NA
Naphthalene	100 lb final RQ 45.4 kg final RQ

SARA Section 311/312: The following EPA hazard categories apply to this product:

Acute Health Hazard
Chronic Health Hazard
Fire Hazard

SARA Section 313: This product may contain component(s), which if in exceedance of the de minimus threshold, may be subject to the reporting requirements of SARA Title III Section 313 Toxic Release Reporting (Form R).

Name	CERCLA/SARA 313 Emission reporting:
Gasoline	None
Heptane (mixed isomers)	None
Butane (mixed isomers)	None
Pentane (mixed isomers)	None
Hexane Isomers (other than n-Hexane)	None
Toluene	1.0 % de minimis concentration
Xylene (mixed isomers)	1.0 % de minimis concentration
Benzene	0.1 % de minimis concentration
n-Hexane	1.0 % de minimis concentration
Cumene	1.0 % de minimis concentration
1,2,4 Trimethylbenzene	1.0 % de minimis concentration
Ethylbenzene	0.1 % de minimis concentration
Cyclohexane	1.0 % de minimis concentration
Octane	None
1,2,3-Trimethylbenzene	None
Naphthalene	0.1 % de minimis concentration

State and Community Right-To-Know Regulations:
The following component(s) of this material are identified on the regulatory lists below:

Gasoline

Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Not Listed
New Jersey Right-To-Know:	SN 0957
Pennsylvania Right-To-Know:	Present
Massachusetts Right-To Know:	Present
Florida Substance List:	Not Listed
Rhode Island Right-To-Know:	Not Listed
Michigan Critical Materials Register List:	Not Listed
Massachusetts Extraordinarily Hazardous Substances:	Not Listed
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	Carcinogen; Flammable - third degree
New Jersey - Environmental Hazardous	SN 0957 TPQ: 10000 lb (Under N.J.A.C. 7:1G, environmental

Substances List:	hazardous substances in mixtures such as gasoline or new and used petroleum oil may be reported under these categories)
Illinois - Toxic Air Contaminants:	Present
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	Not Listed

Heptane (mixed isomers)

Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Not Listed
New Jersey Right-To-Know:	SN 1339
Pennsylvania Right-To-Know:	Present
Massachusetts Right-To Know:	Present
Florida Substance List:	Not Listed
Rhode Island Right-To-Know:	Toxic; Flammable
Michigan Critical Materials Register List:	Not Listed
Massachusetts Extraordinarily Hazardous Substances:	Not Listed
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	Flammable - third degree
New Jersey - Environmental Hazardous Substances List:	Not Listed
Illinois - Toxic Air Contaminants:	Not Listed
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	Not Listed

Butane (mixed isomers)

Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Not Listed
New Jersey Right-To-Know:	SN 0273
Pennsylvania Right-To-Know:	Present
Massachusetts Right-To Know:	Present
Florida Substance List:	Not Listed
Rhode Island Right-To-Know:	Toxic; Flammable
Michigan Critical Materials Register List:	Not Listed
Massachusetts Extraordinarily Hazardous Substances:	Not Listed
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	Flammable - fourth degree
New Jersey - Environmental Hazardous Substances List:	SN 0273 TPQ: 500 lb
Illinois - Toxic Air Contaminants:	Not Listed
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	Not Listed

Pentane (mixed isomers)

Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Not Listed
New Jersey Right-To-Know:	SN 1064
Pennsylvania Right-To-Know:	Present
Massachusetts Right-To Know:	Present
Florida Substance List:	Not Listed
Rhode Island Right-To-Know:	Not Listed
Michigan Critical Materials Register List:	Not Listed
Massachusetts Extraordinarily Hazardous Substances:	Not Listed
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	Flammable - fourth degree
New Jersey - Environmental Hazardous Substances List:	SN 1064 TPQ: 500 lb
Illinois - Toxic Air Contaminants:	Not Listed
New York - Reporting of Releases Part 597 -	Not Listed

List of Hazardous Substances:	
Hexane Isomers (other than n-Hexane)	
Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Not Listed
New Jersey Right-To-Know:	SN 1285
Pennsylvania Right-To-Know:	Present
Massachusetts Right-To Know:	Present
Florida Substance List:	Not Listed
Rhode Island Right-To-Know:	Not Listed
Michigan Critical Materials Register List:	Not Listed
Massachusetts Extraordinarily Hazardous Substances:	Not Listed
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	Flammable - third degree
New Jersey - Environmental Hazardous Substances List:	Not Listed
Illinois - Toxic Air Contaminants:	Not Listed
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	Not Listed
Toluene	
Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Developmental toxicity, initial date 1/1/91 Female reproductive toxicity, initial date 8/7/09
New Jersey Right-To-Know:	SN 1866
Pennsylvania Right-To-Know:	Environmental hazard
Massachusetts Right-To Know:	Present
Florida Substance List:	Not Listed
Rhode Island Right-To-Know:	Toxic (skin); Flammable (skin)
Michigan Critical Materials Register List:	100 lb Annual usage threshold
Massachusetts Extraordinarily Hazardous Substances:	Not Listed
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	Flammable - third degree; Teratogen
New Jersey - Environmental Hazardous Substances List:	SN 1866 TPQ: 500 lb
Illinois - Toxic Air Contaminants:	Present
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	1000 lb RQ (air); 1 lb RQ (land/water)
Xylene (mixed isomers)	
Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Not Listed
New Jersey Right-To-Know:	SN 2014
Pennsylvania Right-To-Know:	Environmental hazard
Massachusetts Right-To Know:	Present
Florida Substance List:	Not Listed
Rhode Island Right-To-Know:	Toxic (skin); Flammable (skin)
Michigan Critical Materials Register List:	100 lb Annual usage threshold all isomers
Massachusetts Extraordinarily Hazardous Substances:	Not Listed
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	Flammable - third degree
New Jersey - Environmental Hazardous Substances List:	SN 2014 TPQ: 500 lb
Illinois - Toxic Air Contaminants:	Present
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	1000 lb RQ (air); 1 lb RQ (land/water)
Benzene	
Louisiana Right-To-Know:	Not Listed

California Proposition 65:	Carcinogen, initial date 2/27/87 Developmental toxicity, initial date 12/26/97 Male reproductive toxicity, initial date 12/26/97
New Jersey Right-To-Know:	SN 0197
Pennsylvania Right-To-Know:	Environmental hazard; Special hazardous substance
Massachusetts Right-To Know:	Carcinogen; Extraordinarily hazardous
Florida Substance List:	Not Listed
Rhode Island Right-To-Know:	Toxic (skin); Flammable (skin); Carcinogen (skin)
Michigan Critical Materials Register List:	100 lb Annual usage threshold
Massachusetts Extraordinarily Hazardous Substances:	Carcinogen; Extraordinarily hazardous
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Present
New Jersey - Special Hazardous Substances:	Carcinogen; Flammable - third degree; Mutagen
New Jersey - Environmental Hazardous Substances List:	SN 0197 TPQ: 500 lb
Illinois - Toxic Air Contaminants:	Present
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	10 lb RQ (air); 1 lb RQ (land/water)

n-Hexane

Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Not Listed
New Jersey Right-To-Know:	SN 1340
Pennsylvania Right-To-Know:	Present
Massachusetts Right-To Know:	Present
Florida Substance List:	Not Listed
Rhode Island Right-To-Know:	Toxic; Flammable
Michigan Critical Materials Register List:	Not Listed
Massachusetts Extraordinarily Hazardous Substances:	Not Listed
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	Flammable - third degree
New Jersey - Environmental Hazardous Substances List:	SN 1340 TPQ: 500 lb
Illinois - Toxic Air Contaminants:	Present
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	1 lb RQ (air); 1 lb RQ (land/water)

Cumene

Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Carcinogen, initial date 4/6/10
New Jersey Right-To-Know:	SN 0542
Pennsylvania Right-To-Know:	Environmental hazard
Massachusetts Right-To Know:	Present
Florida Substance List:	Not Listed
Rhode Island Right-To-Know:	Toxic (skin); Flammable (skin)
Michigan Critical Materials Register List:	Not Listed
Massachusetts Extraordinarily Hazardous Substances:	Not Listed
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	Flammable - third degree
New Jersey - Environmental Hazardous Substances List:	SN 0542 TPQ: 500 lb
Illinois - Toxic Air Contaminants:	Present
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	5000 lb RQ (air); 1 lb RQ (land/water)

1,2,4 Trimethylbenzene

Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Not Listed
New Jersey Right-To-Know:	SN 1929

Pennsylvania Right-To-Know:	Present
Massachusetts Right-To Know:	Present
Florida Substance List:	Not Listed
Rhode Island Right-To-Know:	Toxic
Michigan Critical Materials Register List:	Not Listed
Massachusetts Extraordinarily Hazardous Substances:	Not Listed
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	Not Listed
New Jersey - Environmental Hazardous Substances List:	Not Listed
Illinois - Toxic Air Contaminants:	Present
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	Not Listed

Ethylbenzene

Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Carcinogen, initial date 6/11/04
New Jersey Right-To-Know:	SN 0851
Pennsylvania Right-To-Know:	Environmental hazard
Massachusetts Right-To Know:	Present
Florida Substance List:	Not Listed
Rhode Island Right-To-Know:	Toxic; Flammable
Michigan Critical Materials Register List:	Not Listed
Massachusetts Extraordinarily Hazardous Substances:	Not Listed
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	Carcinogen; flammable - Third degree
New Jersey - Environmental Hazardous Substances List:	SN 0851 TPQ: 500 lb
Illinois - Toxic Air Contaminants:	Present
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	1000 lb RQ (air); 1 lb RQ (land/water)

Cyclohexane

Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Not Listed
New Jersey Right-To-Know:	SN 0565
Pennsylvania Right-To-Know:	Environmental hazard
Massachusetts Right-To Know:	Present
Florida Substance List:	Not Listed
Rhode Island Right-To-Know:	Toxic; Flammable
Michigan Critical Materials Register List:	Not Listed
Massachusetts Extraordinarily Hazardous Substances:	Not Listed
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	Flammable - third degree
New Jersey - Environmental Hazardous Substances List:	SN 0565 TPQ: 500 lb
Illinois - Toxic Air Contaminants:	Not Listed
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	1000 lb RQ (air); 1 lb RQ (land/water)

Octane

Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Not Listed
New Jersey Right-To-Know:	SN 1434
Pennsylvania Right-To-Know:	Present
Massachusetts Right-To Know:	Present
Florida Substance List:	Not Listed
Rhode Island Right-To-Know:	Toxic; Flammable

Michigan Critical Materials Register List:	Not Listed
Massachusetts Extraordinarily Hazardous Substances:	Not Listed
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	Flammable - third degree
New Jersey - Environmental Hazardous Substances List:	Not Listed
Illinois - Toxic Air Contaminants:	Not Listed
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	Not Listed

1,2,3-Trimethylbenzene

Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Not Listed
New Jersey Right-To-Know:	SN 1929
Pennsylvania Right-To-Know:	Present
Massachusetts Right-To Know:	Present
Florida Substance List:	Not Listed
Rhode Island Right-To-Know:	Toxic
Michigan Critical Materials Register List:	Not Listed
Massachusetts Extraordinarily Hazardous Substances:	Not Listed
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	Not Listed
New Jersey - Environmental Hazardous Substances List:	Not Listed
Illinois - Toxic Air Contaminants:	Present
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	Not Listed

Naphthalene

Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Carcinogen, initial date 4/19/02
New Jersey Right-To-Know:	SN 1322 SN 3758
Pennsylvania Right-To-Know:	Environmental hazard Present (particulate)
Massachusetts Right-To Know:	Present
Florida Substance List:	Not Listed
Rhode Island Right-To-Know:	Toxic; Flammable
Michigan Critical Materials Register List:	Not Listed
Massachusetts Extraordinarily Hazardous Substances:	Not Listed
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	Carcinogen
New Jersey - Environmental Hazardous Substances List:	SN 1322 TPQ: 500 lb (Reportable at the de minimis quantity of >0.1%)
Illinois - Toxic Air Contaminants:	Present
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	100 lb RQ (air); 1 lb RQ (land/water)

Canada DSL/NDSL Inventory: This product and/or its components are listed either on the Domestic Substances List (DSL) or are exempt.

Canadian Regulatory Information: This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the SDS contains all of the information required by those regulations.

Name	Canada - WHMIS: Classifications of Substances:	Canada - WHMIS: Ingredient Disclosure:
Gasoline	B2,D2A,D2B	0.1%
Heptane (mixed isomers)	B2,D2B	1%

Butane (mixed isomers)	A,B1	1%
Pentane (mixed isomers)	B2	1%
Hexane Isomers (other than n-Hexane)	B2	1%
Toluene	B2,D2A,D2B	0.1%
Xylene (mixed isomers)	B2,D2A,D2B	m-, o-isomers 1.0%; p-isomer 0.1%
Benzene	B2,D2A,D2B	0.1%
n-Hexane	B2,D2A,D2B	1%
Cumene	B2,D2A	0.1%
1,2,4 Trimethylbenzene	B3,D2B	1%
Ethylbenzene	B2,D2A,D2B	0.1%
Cyclohexane	B2,D2B	1%
Octane	B2,D2B	1%
1,2,3-Trimethylbenzene	B3	1%
Naphthalene	B4,D2A	0.1%

Note: Not applicable.

16. OTHER INFORMATION

Prepared By Toxicology and Product Safety

Revision Notes

Revision Date 03/19/2018
Previous Publish Date 11/06/2017
Revised Sections The following sections (§) have been updated:
2. HAZARD IDENTIFICATION
3. COMPOSITION/INFORMATION ON INGREDIENTS
4. FIRST AID MEASURES
11. TOXICOLOGICAL INFORMATION

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information is intended as guidance for safe handling, use, processing, storage, transportation, accidental release, clean-up and disposal and is not considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

Safety Data Sheet

Stock Number: 31880
Date of the latest revision of the safety data sheet: 20-04-2022
Supercedes: 20-04-2022
2 Letter ISO country code/language code: CA/EN

Diesel/Biodiesel 80:20 Blend Standard

1 Identification

(a) Product Identifier: **Diesel/Biodiesel 80:20 Blend Standard**
Stock Number: 31880
(b) Other means of identification:

Synonyms: None Known
Molecular Formula: CH2Cl2

(c) Recommended use and restrictions on use:
Recommended use: For Laboratory use only

Restrictions on use: Uses other than recomended use.

(d) Initial Supplier Identifier:	**Manufacturer**	**Supplier**
	Restek Corporation 110 Benner Circle Bellefonte, Pa. 16823	Chromatographic Specialties 300 Laurier Blvd./Bag 1150 Brockville, Ontario Canada K6V 5W1
Tel No.:	814-353-1300	1-800-267-8103
Email address:	www.restek.com	www.chromspec.com
(e) Emergency telephone number and any restrictions on the use of that number, if applicable:	800-424-9300 (CHEMTREC)	703-527-3887

2 Hazard identification

(a) Classification of the hazardous product, namely the appropriate category or subcategory of the hazard class identified in Subparts 2 to 19 of Part 7 or Subparts 1 to 11 of Part 8, or a name that is its substantive equivalent, or for Subpart 20 of Part 7 and Subpart 12 of Part 8, the category of the hazard class or a description of the identified hazard:

Carcinogenicity Category 2
Acute Toxicity - Oral Category 4

(b) Information elements referred to in section 3 of Annex 3 of the GHS and in paragraphs 3(1)(d) to (f) of these Regulations for each of those categories or subcategories. If the required information element is a symbol, either the name of the symbol or the symbol itself may be used:

GHS Hazard class symbols:


Warning word: Warning

Hazard statements:
Harmful if swallowed
Suspected of causing cancer/.

Precautionary statements:

Prevention:
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Wash thoroughly after handling.
Do not eat, drink or smoke when using this product.
Wear protective gloves/protective clothing/eye protection/face protection.

Response:
IF SWALLOWED: Call a POISON CENTER/doctor/ if you feel unwell.
IF exposed or concerned: Get medical advice/ attention.
Rinse mouth.

Storage: Store locked up.

Disposal: Dispose of contents/container to a suitable disposal site in accordance with local/national/international regulations.

(c) Other hazards known to the supplier with respect to the hazardous product:

Physical hazards not otherwise classified: None Known

Health hazards not otherwise classified: None Known

3 Composition/information on ingredients

Chemical Name	Common name and synonyms	CAS registry number and any unique identifiers	Concentration
Dichloromethane	None Known	75-09-2	99.5
Diesel/Biodiesel Blend (80:20)	None Known	un:ARM-30	0.5

4 First-aid measures

(a) A description of necessary first aid measures, subdivided according to the different routes of exposure (inhalation, ingestion, skin and eye contact):

Inhalation:	Remove to fresh air. If breathing is difficult, have a trained individual administer oxygen. If not breathing, give artificial respiration and have a trained individual administer oxygen. Get medical attention immediately
Eye contact:	Continue to flush eyes while awaiting medical attention Serious harm (damage) may result if treatment is delayed. Immediately flush eyes with plenty of water for at least 20 minutes retracting eyelids often. Tilt the head to prevent chemical from transferring to the uncontaminated eye. Get immediate medical attention and monitor the eye daily as advised by your physician.
Skin Contact:	Wash with soap and water. Remove contaminated clothing, launder immediately, and discard contaminated leather goods. Get medical attention immediately.
Ingestion:	Never give anything by mouth to an unconscious person Do not induce vomiting and seek medical attention immediately. Drink two glasses of water or milk to dilute. Provide medical care provider with this SDS.
(b) The most important symptoms and effects, whether acute or delayed:	Harmful if swallowed
(c) An indication of immediate medical attention and special treatment needed, if necessary:	No additional first aid information available

5 Fire-fighting measures

(a) Suitable and unsuitable extinguishing media:

Suitable extinguishing media:	Use methods suitable to fight surrounding fire. Use alcohol resistant foam, carbon dioxide, or dry chemical when fighting fires. Water or foam may cause frothing if liquid is burning but it still may be a useful extinguishing agent if carefully applied to the surface of the fire. Do Not direct a stream of water into the hot burning liquid.
Unsuitable extinguishing media:	None Known
(b) Specific hazards arising from the hazardous product, such as the nature of any hazardous combustion:	No data available
Hazardous Combustion Products:	Carbon dioxide, Carbon monoxide
(c) Special protective equipment and precautions for firefighters:	Use methods for the surrounding fire.

6 Accidental release measures

(a) Personal precautions, protective equipment and emergency procedures:	Exposure to the spilled material may be severely irritating or toxic. Follow personal protective equipment recommendations found in Section 8 of this SDS. Personal protective equipment needs must be evaluated based on information provided on this sheet and the special circumstances created by the spill including; the material spilled, the quantity of the spill, the area in which the spill occurred, and the expertise of employees in the area responding to the spill. Never exceed any occupational exposure limits.
(b) Methods and materials for containment and cleaning up:	Prevent the spread of any spill to minimize harm to human health and the environment if safe to do so. Wear complete and proper personal protective equipment following the recommendation of Section 8 at a minimum. Dike with suitable absorbent material like granulated clay. Gather and store in a sealed container pending a waste disposal evaluation.

7 Handling and storage

(a) Precautions for safe handling:	Toxic or severely irritating material. Avoid contacting and avoid breathing the material. Use only in a well ventilated area.
(b) Conditions for safe storage, including any incompatibilities:	
Conditions for safe storage:	Store in a cool dry place. Isolate from incompatible materials.
Materials to Avoid/Chemical Incompatibility:	Strong oxidizing agents Caustics (bases)

8 Exposure controls/personal protection

(a) Control parameters, including occupational exposure limit values or biological limit values and the source of those values:

Canada – Alberta – Occupational Exposure Limits:

Chemical Name	Occupational Exposure Limits - TWAs	Occupational Exposure Limits - STELs	Occupational Exposure Limits - Ceiling
Dichloromethane	50 ppm TWA; 174 mg/m3 TWA	No data available	No data available

Canada – British Columbia– Occupational Exposure Limits:

Chemical Name	Occupational Exposure Limits - TWAs	Occupational Exposure Limits - STELs	Occupational Exposure Limits - Ceiling

Dichloromethane	25 ppm TWA	No data available	No data available

Canada – Manitoba – Occupational Exposure Limits:

Chemical Name	Occupational Exposure Limits - TWAs	Occupational Exposure Limits - STELs	Occupational Exposure Limits - Ceiling
Dichloromethane	50 ppm TWA	No data available	No data available

Canada – New Brunswick – Occupational Exposure Limits:

Chemical Name	Occupational Exposure Limits - TWAs	Occupational Exposure Limits - STELs	Occupational Exposure Limits - Ceiling
Dichloromethane	50 ppm TWA; 174 mg/m3 TWA	No data available	No data available

Canada – Newfoundland & Labrador – Occupational Exposure Limits:

Chemical Name	Occupational Exposure Limits - TWAs	Occupational Exposure Limits - STELs	Occupational Exposure Limits - Ceiling
Dichloromethane	50 ppm TWA	No data available	No data available

Canada – Northwest Territories – Occupational Exposure Limits:

Chemical Name	Occupational Exposure Limits - TWAs	Occupational Exposure Limits - STELs	Occupational Exposure Limits - Ceiling
Dichloromethane	50 ppm TWA	75 ppm STEL (regulated under Dichloromethane); 63 ppm STEL	No data available

Canada – Nova Scotia – Occupational Exposure Limits:

Chemical Name	Occupational Exposure Limits - TWAs	Occupational Exposure Limits - STELs	Occupational Exposure Limits - Ceiling
Dichloromethane	50 ppm TWA	No data available	No data available

Canada – Nunavut – Occupational Exposure Limits:

Chemical Name	Occupational Exposure Limits - TWAs	Occupational Exposure Limits - STELs	Occupational Exposure Limits - Ceiling
Dichloromethane	50 ppm TWA	75 ppm STEL (regulated under Dichloromethane); 63 ppm STEL	No data available

Canada – Ontario – Occupational Exposure Limits:

Chemical Name	Occupational Exposure Limits - TWAs	Occupational Exposure Limits - STELs	Occupational Exposure Limits - Ceiling
Dichloromethane	50 ppm TWA	No data available	No data available

Canada – Prince Edward Island – Occupational Exposure Limits:

Chemical Name	Occupational Exposure Limits - TWAs	Occupational Exposure Limits - STELs	Occupational Exposure Limits - Ceiling
Dichloromethane	50 ppm TWA	No data available	No data available

Canada – Quebec – Occupational Exposure Limits:

Chemical Name	Occupational Exposure Limits - TWAEVs	Occupational Exposure Limits - STEVs	Occupational Exposure Limits - Ceiling
Dichloromethane	50 ppm TWAEV; 174 mg/m3 TWAEV	No data available	No data available

Canada – Saskatchewan – Occupational Exposure Limits:

Chemical Name	Occupational Exposure Limits - TWAs	Occupational Exposure Limits - STELs	Occupational Exposure Limits - Ceiling
Dichloromethane	50 ppm TWA	63 ppm STEL; 75 ppm STEL (regulated under Dichloromethane)	No data available

Canada - Yukon – Occupational Exposure Limits:

Chemical Name	Occupational Exposure Limits - TWAs	Occupational Exposure Limits - STELs	Occupational Exposure Limits - Ceiling
Dichloromethane	200 ppm TWA; 700 mg/m3 TWA; 720 mg/m3 TWA (regulated under Dichloromethane)	250 ppm STEL; 870 mg/m3 STEL; 200 ppm STEL (regulated under Dichloromethane); 720 mg/m3 STEL (regulated under Dichloromethane)	No data available

Chemical Name	OSHA PEL	ACGIH TLV-TWA	ACGIH STEL	IDLH
Dichloromethane	25 ppm TWA	50 ppm TWA	None Known	2300 ppm IDLH

(b) Appropriate engineering controls: Local exhaust ventilation or other engineering controls are normally required when handling or using this product to avoid overexposure.

(c) Individual protection measures, such as personal protective equipment:

Respiratory Protection:	Respiratory protection may be required to avoid overexposure when handling this product. General or local exhaust ventilation is the preferred means of protection. Use a respirator if general room ventilation is not available or sufficient to eliminate symptoms.
Respirator Type(s):	None required where adequate ventilation is provided. If airborne concentrations are above the applicable exposure limits, use NIOSH/MSHA approved respiratory protection.
Eye and face protection:	Wear chemically resistant safety glasses with side shields when handling this product. Wear additional eye protection such as chemical splash goggles and/or face shield when the possibility exists for eye contact with splashing or spraying liquid, or airborne material. Do not wear contact lenses. Have an eye wash station available.
Skin Protection:	Avoid skin contact by wearing chemically resistant gloves, an apron and other protective equipment depending upon conditions of use. Inspect gloves for chemical break-through and replace at regular intervals. Clean protective equipment regularly. Wash hands and other exposed areas with mild soap and water before eating, drinking, and when leaving work.
Hand protection:	No information available
Other protective equipment:	No data available
General hygiene conditions:	Wear protective gloves/protective clothing/eye protection/face protection. Do not eat, drink or smoke when using this product. Wash thoroughly after handling.

9 Physical and chemical properties

(a) Appearance, such as physical state and colour:	
Physical state:	No data available
Colour:	Colorless
(b) Odour:	Strong
(c) Odour threshold:	ND
(d) pH:	Not applicable
(e) Melting point and freezing point:	
Melting point (°C):	No data available
Freezing point (°C):	No data available
(f) Initial boiling point and boiling range (°C):	39
(g) Flash point (°C):	No data available

(h) Evaporation rate:	No data available
(i) Flammability, in the case of solids and gases:	No data available
(j) Upper and lower flammability or explosive limits:	
Upper flammable or explosive limit, % in air:	No data available
Lower flammable or explosive limit, % in air:	No data available
(k) Vapour pressure:	No data available
(l) Vapour density:	2.93
(m) Relative density:	1.3254 - 1.3258 g/cm3 at 20 °C
(n) Solubility:	Moderate; 50-99%
(o) Partition coefficient — n-octanol/water:	No data available
(p) Auto-ignition temperature (°C):	556
(q) Decomposition temperature (°C):	No data available
(r) Viscosity:	0

10 Stability and reactivity

(a) Reactivity:	Not expected to be reactive
(b) Chemical stability:	Stable under normal conditions.
(c) Possibility of hazardous reactions:	None expected under standard conditions of storage
(d) Conditions to avoid, including static discharge, shock or vibration:	High temperatures Contamination
(e) Incompatible materials:	Strong oxidizing agents Caustics (bases)
(f) Hazardous decomposition products:	Carbon dioxide Carbon monoxide

11 Toxicological information

Description of the various toxic health effects and the data used to identify those effects:

(a) Information on the likely routes of exposure (inhalation, ingestion, skin and eye contact):	Eye contact, Skin contact, Ingestion, Absorption, Inhalation
(b) Symptoms related to the physical, chemical and toxicological characteristics:	Harmful if swallowed

(c) Delayed and immediate effects, and chronic effects from short-term and long-term exposure:

Immediate effects from short term exposure:

Inhalation Toxicity:	Harmful! Can cause systemic damage (see "Target Organs) Inhalation may cause severe central nervous system depression (including

unconsciousness).

Skin Contact: Contact causes severe skin irritation and possible burns.

Eye Contact: Contact with the eyes may cause moderate to severe eye injury. Eye contact may result in tearing and reddening, but not likely to permanently injure eye tissue. Temporary vision impairment (cloudy or blurred vision) is possible.

Ingestion Toxicity: Harmful if swallowed. May cause systemic poisoning.

Delayed and chronic effects from long term exposure:

Carcinogenicity: Contains a probable or known human carcinogen.

Reproductive and Developmental Toxicity: No data available

Mutagenicity: No data available

Inhalation: Upon prolonged and/or repeated exposure, can cause moderate respiratory irritation, dizziness, weakness, fatigue, nausea and headache. Harmful! Can cause systemic damage upon prolonged and/or repeated exposure (see "Target Organs)

Skin Absorption: Upon prolonged or repeated exposure, harmful if absorbed through the skin. May cause severe irritation and systemic damage

STOT-single exposure: Based on available data, the classification criteria are not met.

STOT-repeated exposure: Based on available data, the classification criteria are not met.

Aspiration hazard: Based on available data, the classification criteria are not met.

(d) Numerical measures of toxicity, including ATEs

Chemical Name	LD50 Oral	LD50 Dermal	LC50 Inhalation
Dichloromethane	ORAL LD50 Rat 1600 mg/kg	DERMAL LD50 Rat > 2000 mg/kg	INHALATION LC50-6H Rat 53 MG/L

Classification has been based on toxicological information of the components in Section 3.

12 Ecological information

(a) ecotoxicity (aquatic and terrestrial, if available): Moderate ecological hazard. This product may be dangerous to plants and/or wildlife.
Keep out of waterways.

Ecological Toxicity Data:

Chemical Name	CAS registry number and any unique identifiers	Aquatic EC50 Crustacea	Aquatic ERC50 Algae	Aquatic LC50 Fish
No data available				

(b) Persistence and degradability: No data
No data
(c) Bioaccumulative potential: No data
(d) Mobility in soil: No data available
(e) Other adverse effects: None Known

13 Disposal considerations

Information on safe handling for disposal and methods of disposal, including any contaminated packaging: Spent or discarded material is a hazardous waste.

14 Transport information

Carriage of dangerous goods by road (TDG), rail or inland waterways:

(a) UN number: UN1593
(b) United Nations proper shipping name as provided for in the United Nations Model Regulations: Dichloromethane
(c) Transport hazard class as provided in the United Nations Model Regulations: 6.1
(d) Packing group as provided in the United Nations Model Regulations: III

International carriage of dangerous goods by air (IATA):

(a) UN number: UN1593
(b) United Nations proper shipping name as provided for in the United Nations Model Regulations: Dichloromethane
(c) Transport hazard class as provided in the United Nations Model Regulations: 6.1
(d) Packing group as provided in the United Nations Model Regulations: III

(e) Environmental hazards according to the International Maritime Dangerous Goods Code and the United Nations No

Model Regulations:	
(f) Transport in bulk (according to Annex II of the International Convention for the Prevention of Pollution From Ships, 1973, as modified by the Protocol of 1978 (MARPOL 73/78) and the International Code for the Construction and Equipment of Ships carryi:	No data available
(g) Special precautions in connection with transport or conveyance either within or outside the premises:	No data available

15 Regulatory information

Safety, health and environmental regulations, made within or outside Canada, specific to the product in question:

Canada - Domestic Substances List (DSL):

Chemical Name	CAS No	Canada - Domestic Substances List (DSL)
Dichloromethane	75-09-2	Yes

Canada - Non-Domestic Substances List (NDSL):

Chemical Name	CAS No	Canada - Non-Domestic Substances List (NDSL)
Dichloromethane	75-09-2	No

Canada - Controlled Drugs and Substances:

Chemical Name	CAS No	Schedule I	Schedule II	Schedule III	Schedule IV	Schedule V	Schedule VII	Schedule VIII
Dichloromethane	75-09-2	No	No	No	No	No	No	No

Chemical Name	CAS No	Class A Precursors	Class B Precursors	Exempt Precursors	Class 1 Targeted Substances	Class 2 Targeted Substances
Dichloromethane	75-09-2	No	No	No	No	No

Canada - CEPA - Schedule III Export Control List:

Chemical Name	CAS No	Part 1 Prohibited Substances	Part 2 Substances Subject to Notification or Consent	Part 3 Restricted Substances	Export Control List
Dichloromethane	75-09-2	No	No	No	No

Canada CEPA - 2015 Greenhouse Gases (GHG) Subject to Mandatory Reporting:

Chemical Name	CAS No	Canada CEPA - 2015 Greenhouse Gases (GHG) Subject to Mandatory Reporting
Dichloromethane	75-09-2	No

Canada - Narcotic Control Regulations (C.R.C., c. 1041):

Chemical Name	CAS No	Canada - Narcotic Control Regulations (C.R.C., c. 1041)
Dichloromethane	75-09-2	No

Canada - Ontario - Toxics Reduction - List of Priority Toxics:

Chemical Name	CAS No	Canada - Ontario - Toxics Reduction - List of Priority Toxics
Dichloromethane	75-09-2	No

Stockholm Convention on Persistent Organic Pollutants:

Chemical Name	CAS No	Stockholm Convention on Persistent Organic Pollutants
Dichloromethane	75-09-2	No

Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade:

Chemical Name	CAS No	Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade .
Dichloromethane	75-09-2	No

(United Nations) - Kyoto Protocol - Convention on Climate Change - Greenhouse Gases (GHGs):

Chemical Name	CAS No	(United Nations) - Kyoto Protocol - Convention on Climate Change - Greenhouse Gases (GHGs)
Dichloromethane	75-09-2	No

Montreal Protocol on Substances that Deplete the Ozone Layer:

Chemical Name	CAS No	Montreal Protocol on Substances that Deplete the Ozone Layer
Dichloromethane	75-09-2	No

Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal.:

Chemical Name	CAS No	Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal.
Dichloromethane	75-09-2	No

16 Other information

Date of the latest revision of the safety data sheet:	04-20-2022
Revision Number:	4
Reason for revision:	

Disclaimer:

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SAFETY DATA SHEET

Benzene

Section 1. Identification

GHS product identifier : Benzene

Chemical name : benzene

Other means of identification : benzene, purebenzol; cyclohexatriene; phenyl hydride; phene; coal naphtha; pyrobenzol

Product type : Liquid.

Product use : Synthetic/Analytical chemistry.

Synonym : benzene, purebenzol; cyclohexatriene; phenyl hydride; phene; coal naphtha; pyrobenzol

SDS # : 001062

Supplier's details : Airgas USA, LLC and its affiliates
259 North Radnor-Chester Road
Suite 100
Radnor, PA 19087-5283
1-610-687-5253

24-hour telephone : 1-866-734-3438

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : FLAMMABLE LIQUIDS - Category 2
SKIN IRRITATION - Category 2
EYE IRRITATION - Category 2A
GERM CELL MUTAGENICITY - Category 1
CARCINOGENICITY - Category 1
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 1

GHS label elements

Hazard pictograms :

Signal word : Danger

Hazard statements : Highly flammable liquid and vapor.
Causes skin irritation.
Causes serious eye irritation.
May cause genetic defects.
May cause cancer.
Causes damage to organs through prolonged or repeated exposure.
May form explosive mixtures with air.

Precautionary statements

General : Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand.

Prevention : Obtain special instructions before use. Wear protective gloves. Wear protective clothing. Wear eye or face protection. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Use explosion-proof electrical, ventilating or lighting equipment. Use non-sparking tools. Take action to prevent static discharges. Keep container tightly closed. Do not breathe vapor. Do not eat, drink or smoke when using this product. Wash thoroughly after handling.

Section 2. Hazards identification

Response : IF exposed or concerned: Get medical advice or attention. Take off contaminated clothing and wash it before reuse. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice or attention.

Storage : Store locked up. Store in a well-ventilated place. Keep cool.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazards not otherwise classified : None known.

Section 3. Composition/information on ingredients

Substance/mixture : Substance

Chemical name : benzene

Other means of identification : benzene, purebenzol; cyclohexatriene; phenyl hydride; phene; coal naphtha; pyrobenzol

Product code : 001062

CAS number/other identifiers

CAS number : 71-43-2

Ingredient name	%	CAS number
benzene	100	71-43-2

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Skin contact : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Get medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Section 4. First aid measures

Eye contact : Causes serious eye irritation.

Inhalation : No known significant effects or critical hazards.

Skin contact : Causes skin irritation.

Frostbite : Try to warm up the frozen tissues and seek medical attention.

Ingestion : No known significant effects or critical hazards.

Over-exposure signs/symptoms

Eye contact : Adverse symptoms may include the following:, pain or irritation, watering, redness

Inhalation : No specific data.

Skin contact : Adverse symptoms may include the following:, irritation, redness

Ingestion : No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use dry chemical, CO_2, water spray (fog) or foam.

Unsuitable extinguishing media : Do not use water jet.

Specific hazards arising from the chemical : Highly flammable liquid and vapor. Runoff to sewer may create fire or explosion hazard. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapor/gas is heavier than air and will spread along the ground. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back.

Hazardous thermal decomposition products : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

Section 6. Accidental release measures

For emergency responders : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Do not get in eyes or on skin or clothing. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. Do not ingest. Empty containers retain product residue and can be hazardous. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Do not reuse container. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Do not breathe vapor or mist. Avoid exposure - obtain special instructions before use. Do not handle until all safety precautions have been read and understood.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Eliminate all ignition sources. Store locked up. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Section 8. Exposure controls/personal protection

Ingredient name	Exposure limits
benzene	**ACGIH TLV (United States, 3/2019).** **Absorbed through skin.** STEL: 8 mg/m³ 15 minutes. STEL: 2.5 ppm 15 minutes. TWA: 1.6 mg/m³ 8 hours. TWA: 0.5 ppm 8 hours. **NIOSH REL (United States, 10/2016).** STEL: 1 ppm 15 minutes. TWA: 0.1 ppm 10 hours. **OSHA PEL (United States, 5/2018).** STEL: 5 ppm 15 minutes. TWA: 1 ppm 8 hours. **OSHA PEL 1989 (United States, 3/1989).** STEL: 5 ppm 15 minutes. TWA: 1 ppm 8 hours. **OSHA PEL Z2 (United States, 2/2013).** AMP: 50 ppm 10 minutes. CEIL: 25 ppm TWA: 10 ppm 8 hours.

Appropriate engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles.

Skin protection

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. When there is a risk of ignition from static electricity, wear anti-static protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves.

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Section 8. Exposure controls/personal protection

Respiratory protection : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

Section 9. Physical and chemical properties

Appearance

Physical state : Liquid. [Watery liquid.]

Color : Colorless. Yellowish.

Odor : Characteristic.

Odor threshold : Not available.

pH : Not available.

Melting point : 5.49°C (41.9°F)

Boiling point : 80.09°C (176.2°F)

Critical temperature : 288.95°C (552.1°F)

Flash point : Closed cup: -11°C (12.2°F)

Evaporation rate : 3.5 (butyl acetate = 1)

Flammability (solid, gas) : Not available.

Lower and upper explosive (flammable) limits : Lower: 1.2%
Upper: 7.8%

Vapor pressure : 10 kPa (75.01 mm Hg) [room temperature]

Vapor density : 2.7 (Air = 1)

Specific Volume (ft ^{3}/lb) : 1.1403

Gas Density (lb/ft ^{3}) : 0.877 (20°C / 68 to °F)

Relative density : 0.88

Solubility : Not available.

Solubility in water : 1.88 g/l

Partition coefficient: n-octanol/water : 2.13

Auto-ignition temperature : 498°C (928.4°F)

Decomposition temperature : Not available.

Viscosity : Dynamic (room temperature): 0.6 mPa·s (0.6 cP)

Flow time (ISO 2431) : Not available.

Molecular weight : 78.12 g/mole

Aerosol product

Heat of combustion : -40611960 J/kg

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapor to accumulate in low or confined areas.

Incompatible materials : Reactive or incompatible with the following materials:
oxidizing materials

Section 10. Stability and reactivity

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Hazardous polymerization : Under normal conditions of storage and use, hazardous polymerization will not occur.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
benzene	LC50 Inhalation Gas. LD50 Oral	Rat Rat	10000 ppm 930 mg/kg	7 hours -

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
benzene	Eyes - Moderate irritant Eyes - Severe irritant Skin - Mild irritant Skin - Mild irritant Skin - Moderate irritant	Rabbit Rabbit Rat Rabbit Rabbit	- - - - -	88 mg 24 hours 2 mg 8 hours 60 Ul 24 hours 15 mg 24 hours 20 mg	- - - - -

Sensitization

Not available.

Mutagenicity

Not available.

Carcinogenicity

Not available.

Classification

Product/ingredient name	OSHA	IARC	NTP
benzene	+	1	Known to be a human carcinogen.

Reproductive toxicity

Not available.

Teratogenicity

Not available.

Specific target organ toxicity (single exposure)

Not available.

Specific target organ toxicity (repeated exposure)

Name	Category	Route of exposure	Target organs
benzene	Category 1	-	-

Aspiration hazard

Not available.

Information on the likely routes of exposure : Not available.

Section 11. Toxicological information

Potential acute health effects

Eye contact : Causes serious eye irritation.

Inhalation : No known significant effects or critical hazards.

Skin contact : Causes skin irritation.

Ingestion : No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : Adverse symptoms may include the following:, pain or irritation, watering, redness

Inhalation : No specific data.

Skin contact : Adverse symptoms may include the following:, irritation, redness

Ingestion : No specific data.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

Not available.

General : Causes damage to organs through prolonged or repeated exposure.

Carcinogenicity : May cause cancer. Risk of cancer depends on duration and level of exposure.

Mutagenicity : May cause genetic defects.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Not available.

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
benzene	Acute EC50 29000 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	72 hours
	Acute EC50 1600000 µg/l Fresh water	Algae - Selenastrum sp.	96 hours
	Acute EC50 9.23 mg/l Fresh water	Daphnia - Daphnia magna - Neonate	48 hours
	Acute LC50 21 mg/l Marine water	Crustaceans - Artemia salina	48 hours
	Acute LC50 5.28 ul/L Fresh water	Fish - Oncorhynchus gorbuscha - Fry	96 hours
	Chronic EC10 >1360 mg/l Fresh water	Algae - Scenedesmus subspicatus	96 hours
	Chronic NOEC 98 mg/l Fresh water	Daphnia - Daphnia magna	21 days
	Chronic NOEC 1.5 to 5.4 ul/L Marine water	Fish - Morone saxatilis - Juvenile (Fledgling, Hatchling, Weanling)	4 weeks

Section 12. Ecological information

Persistence and degradability

Not available.

Bioaccumulative potential

Product/ingredient name	$LogP_{ow}$	BCF	Potential
benzene	2.13	11	low

Mobility in soil

Soil/water partition coefficient (K_{OC}) : Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapor from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

United States - RCRA Toxic hazardous waste "U" List

Ingredient	CAS #	Status	Reference number
Benzene (I,T)	71-43-2	Listed	U019

Section 14. Transport information

	DOT	TDG	Mexico	IMDG	IATA
UN number	UN1114	UN1114	UN1114	UN1114	UN1114
UN proper shipping name	BENZENE	BENZENE	BENZENE	BENZENE	BENZENE
Transport hazard class(es)	3 	3 	3 	3 	3 
Packing group	II	II	II	II	II
Environmental hazards	No.	No.	No.	No.	No.

"Refer to CFR 49 (or authority having jurisdiction) to determine the information required for shipment of the product."

Section 14. Transport information

Additional information

DOT Classification : **Reportable quantity** 10 lbs / 4.54 kg [1.3675 gal / 5.1767 L]. Package sizes shipped in quantities less than the product reportable quantity are not subject to the RQ (reportable quantity) transportation requirements.
Limited quantity Yes.
Quantity limitation Passenger aircraft/rail: 5 L. Cargo aircraft: 60 L.

TDG Classification : Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.18-2.19 (Class 3).
Explosive Limit and Limited Quantity Index 1
Passenger Carrying Road or Rail Index 5

IATA : **Quantity limitation** Passenger and Cargo Aircraft: 5 L. Cargo Aircraft Only: 60 L. Limited Quantities - Passenger Aircraft: 1 L.

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to IMO instruments : Not available.

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 8(a) CDR Exempt/Partial exemption**: Not determined
Clean Water Act (CWA) 307: benzene
Clean Water Act (CWA) 311: benzene

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Listed

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List II Chemicals (Essential Chemicals) : Not listed

SARA 302/304

Composition/information on ingredients

No products were found.

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : Refer to Section 2: Hazards Identification of this SDS for classification of substance.

SARA 313

	Product name	CAS number	%
Form R - Reporting requirements	benzene	71-43-2	100
Supplier notification	benzene	71-43-2	100

SARA 313 notifications must not be detached from the SDS and any copying and redistribution of the SDS shall include copying and redistribution of the notice attached to copies of the SDS subsequently redistributed.

State regulations

Massachusetts : This material is listed.

Section 15. Regulatory information

New York : This material is listed.

New Jersey : This material is listed.

Pennsylvania : This material is listed.

California Prop. 65

⚠ **WARNING**: This product can expose you to Benzene, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

Ingredient name	No significant risk level	Maximum acceptable dosage level
Benzene	Yes.	Yes.

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

Montreal Protocol

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Not listed.

Rotterdam Convention on Prior Informed Consent (PIC)

Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

Inventory list

Australia : This material is listed or exempted.

Canada : This material is listed or exempted.

China : This material is listed or exempted.

Europe : This material is listed or exempted.

Japan : **Japan inventory (ENCS)**: This material is listed or exempted.
Japan inventory (ISHL): This material is listed or exempted.

New Zealand : This material is listed or exempted.

Philippines : This material is listed or exempted.

Republic of Korea : This material is listed or exempted.

Taiwan : This material is listed or exempted.

Thailand : Not determined.

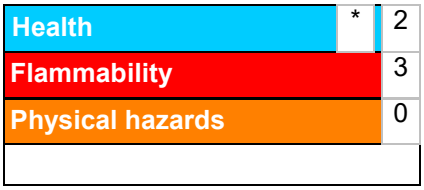
Turkey : This material is listed or exempted.

United States : This material is active or exempted.

Viet Nam : This material is listed or exempted.

Section 16. Other information

Hazardous Material Information System (U.S.A.)



Section 16. Other information

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings and the associated label are not required on SDSs or products leaving a facility under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered trademark and service mark of the American Coatings Association, Inc.

The customer is responsible for determining the PPE code for this material. For more information on HMIS® Personal Protective Equipment (PPE) codes, consult the HMIS® Implementation Manual.

National Fire Protection Association (U.S.A.)

Reprinted with permission from NFPA 704-2001, Identification of the Hazards of Materials for Emergency Response Copyright ©1997, National Fire Protection Association, Quincy, MA 02269. This reprinted material is not the complete and official position of the National Fire Protection Association, on the referenced subject which is represented only by the standard in its entirety.

Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

Procedure used to derive the classification

Classification	Justification
FLAMMABLE LIQUIDS - Category 2	Expert judgment
SKIN IRRITATION - Category 2	Expert judgment
EYE IRRITATION - Category 2A	Expert judgment
GERM CELL MUTAGENICITY - Category 1	Expert judgment
CARCINOGENICITY - Category 1	Expert judgment
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 1	Expert judgment

History

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Date of issue/Date of revision : 6/1/2020

Date of previous issue : No previous validation

Version : 1

Key to abbreviations : ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
UN = United Nations

References : Not available.

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.
Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

APPENDIX C

List of Approved Amendments/Changes

HASP Acknowledgement/Agreement Form

Visitors Log

Tailgate Safety Meeting Form

Equipment Calibration Log

HEALTH AND SAFETY PLAN (HASP)

List of Approved Amendments/Changes

Date	Name	Signature	Changes/Comments	Section Added
9/17/2019	Larry Brown		Update to include excavation/site redevelopment activity observation	Project Description/ Section1.1
9/17/2019	Larry Brown		Updated air monitoring requirements for work in or near excavations	4.1.1
9/17/2019	Larry Brown		Added Appendix G “Excavation and Trenching” guidance	Apdx G
9/17/2019	Larry Brown		Added JSAs for “Excavation of Contaminated Soils”, “Soil Sampling”, “Soil Sampling at Excavation from Excavator Bucket”	Apdx A
2/1/2021	Aynalem Degefa		Updated hospital route maps, added new safety contact numbers	
2/23/2023	Melody Ryback		Updated formatting from ATC to Atlas, updated urgent care location and map, updated safety contacts	
2/23/2023	Melody Ryback		Added JSAs for “Low Flow Groundwater Sampling Using Pumps”, “Traffic Control”	Apdx A

HEALTH AND SAFETY PLAN (HASP)

Acknowledgement/Agreement Form

(All Atlas, Subcontractor & Client Personnel Must Sign)

Client Site Name: Phillips 66 Westlake **Project site No:** AOC 1396

Atlas Project No.: Z076000082 **Task No:** _____

I acknowledge I have reviewed a copy of the Health and Safety Plan for this project, understand it, and agree to comply with all of its provisions. I also understand I could be prohibited by the site Health and Safety Coordinator or other Atlas personnel from working on this project for not complying with any aspect of this Health and Safety Plan:

PRINT NAME	SIGNATURE	COMPANY	DATE

Visitors Log

Client Site Name: Phillips 66 Westlake

Project site No: AOC 1396

Atlas Project No.: Z076000082

Task No: _____

PRINT NAME	SIGNATURE	COMPANY	DATE

Tailgate Safety Meeting Form

Site Name & Number: _____

Atlas Project Number: _____

Work Being Performed: _____

Date & Time of Meeting: _____

Name of Presenter: _____

NOTE: On the initial day of the project, the Project Manager or designee should conduct a visual inspection of the project site prior to the Tailgate Safety Meeting. This inspection should include a review of project site equipment, hazards, specific job tasks, activities or operations to be performed for that day. These specific items must be covered during the Tailgate Safety Meeting. For subsequent days, any changes to the site or operations must be covered in the Tailgate Safety Meeting. In addition, "Task-Specific" Job Safety Analysis (JSA) for the tasks/activities at the project site must be integrated into the HASP and Tailgate discussions. Tailgate Meetings should be performed each day. Employees, client representatives and subcontractors must review the Tailgate Safety Meeting, be briefed on the topics and acknowledge the HSE topics by signing this form. Individuals not fluent in the English language must have the site's health safety and environmental requirements translated to them.

Itemize the Specific Topics Discussed (if more space is needed use the back of this page):

☐ Emergency Evacuation area(s) ☐ Eye Wash / First Aid Kit / Fire Extinguisher ☐ HASP Location ☐ Hospital Route

5 KEY SAFETY CONCEPTS -

☐ **How is everyone feeling?** (Get a response) **Is everyone Rested & Mentally alert?** FOCUS IS KEY to staying injury free.

☐ **Watch out for & Coach your Coworkers** (COMMUNICATE HAZARDS when recognized).

☐ **No Improvising** – Use the proper tool for the job (Stop and Discuss ANY variance with Atlas)

☐ **No Willful Unsafe Acts** – Enjoy the day, but no horseplay or anything unsafe.

☐ **Everyone has STOP WORK authority** – USE IT whenever people aren't focused, for all near-misses and hazards.

☐ PPE is required at all times within Exclusion zone (Set the example, call out non-compliance/stop work). ☐ Proper PPE? (check)

☐ 50 lbs. or awkward, get lifting help. ☐ Eating, Drinking and use of Cell Phones in Designated Area Only.

☐ Spotters Needed for Backing Equipment. ☐ We will follow the Safe Work Plan for the work and initial each page. Major changes will need official approvals through Mark Wallinga and Jenn Williams. ☐ Use 3 part communication as we work today

☐ Caution crossing street (Use crosswalks - HAZARDS ARE HIGH). ☐ Today's Weather _____, Drink Fluids!

☐ Caution dealing with public (Irate/unstable pedestrians, customers, locals. Be aware, be courteous, don't antagonize).

☐ Keep Emotions in check. Communicate, Take Breaks when stressed, pushed, tired, not focused! (5 minute break or job shut down?)

☐ Maintain Housekeeping ☐ No FOBKs (**What else? Are there other items we haven't considered?)**

☐ **Subcontractor** – Discuss scope of work, JSA, Daily Tasks (What are we doing? What are the Hazards? What could go wrong?)

☐ JSA Reviewed? ☐ Changes to task? Get approval first. Use the GO-CARD. Contact supervisor if solutions are clear.

☐ Headcount? _____ (First time employees onsite [Sign HASP, PPE check, discuss site specifics and client expectations]).

☐ Any Shared Learning? (Site's SIRs/Hazards) ☐ Equipment Inspections ☐ Communication & Focus is Key.

☐ Everyone needs to sign the following documents: HASP, JSA and Tailgate Safety Meeting Form. ☐ Recognition to employees –if you see something, say something!

❑ **Client Requirements** - By checking the box to the left, the presenter of the Tailgate Meeting acknowledges that all client-specific requirements have been completed for both Atlas and Subcontractor employees.

***List the JSAs reviewed below. *What extra hazards are present on this site on this day?**

JSA:			

**Continued on next page.*

Tailgate Safety Meeting Form (Pg. 2)

JSAs Reviewed and Modification Documentation (If modification not required please note):

***By signing this Tailgate Safety Meeting form, you are acknowledging that you have read, reviewed and understand the health and safety topics discussed on this form.**

Daily Safety Tailgate Meeting Participants (Use the back of this form if needed)			
Print Name	**Signature**	**Company**	**Date**

***Tailgate Presenter must sign below that all information above was covered with all personnel on site.**

Print Name	Signature	Company	Date

APPENDIX D

Risks Associated with Drilling and Subsurface Activities

Checklist for Subsurface Activities

Monthly Heavy Equipment Checklist

RISKS ASSOCIATED WITH DRILLING AND SUBSURFACE ACTIVITIES

Drilling operations will conform to the Job Safety Analysis and Subsurface Investigation (Atlas Policy No. 46). During drilling operations, the subsurface is penetrated to obtain soil and/or groundwater samples. Contaminated soil cuttings and groundwater may be brought to the surface, creating a potential for exposure through skin contact and inhalation of vapors. The open borehole also creates a conduit for vapors to be released to the atmosphere. However, the amount of vapors released to the atmosphere is relatively small and vapors are usually quickly diluted and dispersed in air. Air monitoring is required to determine if protective equipment is necessary, as described in Section 4.0 of this HASP.

In addition to these chemical risks, the risk of drilling into a buried utility, such as a gas, water, electric line, or underground storage tank or other structures, is always present. Complete the Checklist for Subsurface Clearance (33-01) prior to any subsurface work and follow the procedures in Table D-1 for at least the first 5 feet of penetration:

Risks of injury associated with the drilling operation itself also exist. The risks of working near overhead electrical lines may also present a safety hazard. The SSHO will check for the presence of overhead lines and other obstructions. No drilling operations will be performed within 10 feet of overhead lines with voltages 0-50 kV. For other voltages refer to Atlas Electrical Safety Policy (No. 32) and Equipment (Drill Rigs, Mobile Equipment) Policy (No. 34). Whenever possible, stay at least two feet from turning or rotating machinery which includes but is not limited to augers, catheads, engines, power take off (PTO), and drill rods. Learn where the rig kill switch is to shut the rig off in case of an emergency. A discussion should be held with the driller on each drill rig at the startup of the field work to discuss the location and use of the kill switch and for documentation of a Safety Inspection such as the Monthly Heavy Equipment Safety Inspection Checklist found in this section.

TABLE D-1: Drilling/Probing Procedures

(First 5 Feet below Surface)

Step 1: Site Walk	Conduct site walk. Verify that the Checklist for Subsurface Clearance has been fully completed.
Step 2: Locate Markouts	Locate all utility markouts and borehole locations. Start intrusive activities at least five (5) feet away and perpendicular to all marked utility lines.
Step 3: Break Surface Cover	Use a jackhammer or concrete saw to break through the asphalt or concrete surface cover. The drill bit on the rig may also be used on the asphalt cover. Do **NOT** advance bit or cutting tools beyond the asphalt or concrete cover.
Step 4: Surface Boring	Use air knife with vacuum extractors, hand auger, or hand shovel to remove soil from the borehole to a depth of at least 5 feet below surface. The soil in the borehole should be excavated to a diameter of at least three inches greater than the diameter of the drill bit on the lead auger or drill stem that is to be used. If it is not possible to perform a surface boring which meets the diameter requirements as stated above, surface borings should be installed to the required depth of 5 feet surrounding the proposed well/boring location in such a manner that any lines/utilities passing through the proposed well/boring location will be encountered while installing the investigation borings/well. If pea gravel, fill material, or refusal is encountered, and was not expected to be encountered, abandon the boring and follow instructions from item #9 of section 5.4.1.
Step 5: Soil Sampling	If soil samples are required to be collected within the first 5 feet below surface, a hand auger should be utilized to collect native, undisturbed soil samples.
Step 6: Borehole Protection	If no piping or other structures are encountered within the first 5 feet below surface, normal drill/probe activities may proceed with **caution**. Containerize drill cuttings as appropriate. If excavation of the borehole is conducted the day before actual drilling is conducted, the borehole should be covered with barricades or cones and with a sheet of material sufficient in strength to support a person's weight until it is ready to be drilled. If the borehole is of sufficient size to potentially cause damage to a vehicle if driven over, the borehole should be covered with a material sufficient in strength to support vehicular weight. In lieu of barricades or cones and a material cover, the boring may be temporarily backfilled to surface. If a backfill material is utilized, it is important for the material to be flush with the surrounding pavement.

Appendix 46-01 – Subsurface Clearance Checklist

Must be completed prior to the start of subsurface work.

Project Number: _____ **Site Address:** _____

State One Call Ticket Information:			
Ticket Number:		**Expiration Date of Ticket:**	
Request Date of Ticket:		**Today's Date:**	

Complete Prior to the Start of Work	Yes	No (Stop Work)	Initials
State One Call system contacted within state required time requirement?	☐	☐	
Have all utilities listed on one call ticket been marked onsite or indicated as "no conflict"?	☐	☐	
Is the planned subsurface work area at least 5 feet from any known or marked utility?	☐	☐	
If the subsurface work is on private property, has a private locator located the private utilities?	☐	☐	
Location of all aboveground indicators of underground utilities leading from or to above ground structures been identified and verified as being out of planned subsurface work area?	☐	☐	
Have all utility markings onsite been photograph in relation to the planned subsurface work?	☐	☐	
Has a tailgate safety meeting been held and JSA reviewed with all employees to discuss the subsurface work that will be performed, signs of underground utilities and emergency procedures?	☐	☐	

Select Bore Clearing Method:

Air Knife/Hydro Vac	Hand Auger	N/A - Geotechnical	N/A - Excavation/Trench
☐	☐	☐	☐

Subsurface Clearance Checklist Completed By:

Printed Name	Signature	Date

Monthly Mobile/Heavy Equipment Safety Inspection Checklist

This form is to be completed by the qualified operator of the equipment

Date:		Project No.:		Site/Location:	
Equipment Type:		**Model No.:**		**Odometer:**	
Operator/Inspector Name:				**Machine Hours:**	

Warning: Do not operate a malfunctioning machine until corrective measures have been taken and all discrepancies have been cleared by a qualified operator/mechanic. In addition to elements on this checklist, the owner's manual for the specific piece of equipment being operated may contain other daily inspection checks and/or preventative maintenance procedures.

General Safety	☐	Operator Qualification	☐	PPE Supplies	☐	Fire Extinguisher (ready-to-use)
	☐	Owner's Manual (present)	☐	Markers (cones, barricades, etc.)	☐	First-Aid Kit (present & stocked)
	☐	Manufacturer Specs Followed	☐	Access Ladder (secure and ok)	☐	Housekeeping (clean)
	☐	Emergency Kit (signs, flares)	☐	Flashlight	☐	
Vehicle, Engine, and Hydraulic Systems (note any added fluid)	☐	Engine Oil (fluid level, condition)	☐	Fuel Level	☐	Other Fluid
	☐	Transmission (fluid level, fluid condition, unit operation)	☐	Brake Fluid	☐	Steering (power steering fluid level, no play in steering)
	☐	Radiator (coolant level, hose condition)	☐	Fan Belts (tension/condition)	☐	Brakes (vehicle, parking)
	☐	Hydraulic System (fluid level, fluid condition, hose condition, cylinders, leakage)	☐	Chassis (proper lubrication)	☐	Tires (condition, inflation)
	☐	Outriggers (operational, if equipped)	☐		☐	
Tracked Vehicles	☐	Track Tension (proper tension)	☐	Plates and/or Shoes	☐	Grouser Plates
	☐	Rollers	☐	Drive Sprockets		
Lights and alarms (clean and functional)	☐	Headlights (hi, low, run beams)	☐	Parking Lights	☐	Revolving Flashing Lights (if required)
	☐	Reverse Lights (backup)	☐	Equipment Work Lights	☐	Horn
	☐	Brake/Tail Lights	☐	Turn Signals/Hazard Flashers	☐	Reverse Alarms (backup)
Vehicle cab (clean and functional)	☐	Seatbelts (if required)	☐	Windshield Wipers	☐	Body Damage
	☐	Housekeeping	☐	2 Way Communication	☐	Speed/Hour Meter
	☐	Fuel Gauge	☐	Horn (operational)	☐	Windshield (glass ok, clean)
	☐	Controls Operational	☐	Mirrors (rear view, side)		

Maintenance/ Equipment Request	Corrected By:	Date:

Inspector Signature:		Date:	

APPENDIX E

Excavating & Trenching

11.1. Excavating and Trenching

All Atlas employees and subcontractors must be trained and be familiar with the OSHA Excavation Standard and the Atlas Employee Health and Safety Policy Manual, Policy No. 16 (Excavation and Trenching) and Policy No. 46 (Subsurface Investigation).

Underground Utilities

Prior to any work beginning, the estimated location of utility installations (such as sewer, telephone, fuel, electric, water lines, or any other underground installation) that reasonably may be expected to be encountered during excavation work must be determined prior to opening an excavation. Utility companies or owners will be contacted and advised of the proposed work and asked to establish the location of the utility underground installations. When utility companies or owners cannot respond to a request to locate underground utilities within 24-48 hours (unless a longer period is required by State or local law), or cannot establish the exact location of these installations, the work may proceed, provided that the work is conducted with caution, and provided detection equipment or other acceptable means to located utilities are used.

When excavation operations approach the estimated location of underground installations.

(approximately 18 inches from the installation), the exact location of the installations will be determined by a safe and acceptable means. While the excavation is open, underground installations will be protected, supported, or removed to safeguard employees.

Entering Excavations or Trenches

Daily inspections of excavations, the adjacent areas, and protective systems will be made by a "*Competent Person"* for evidence of a situation that could result in a possible cave-in, indications of failure of protective systems, hazardous atmospheres, or other hazardous conditions. An inspection will be conducted by the Competent Person prior to the start of work and as needed throughout the shift. Inspections will also be made after every rainstorm or other hazard increasing occurrence. All inspections made by the Competent Person should be recorded in the field log book.

No person(s) will perform work in a trench or excavation that contains accumulated water.

11.1.1. Access/Egress

A stairway, ladder, ramp, or other safe means of egress will be located in trench excavations that are 4 feet or more in depth so as to require no more than 25 feet of lateral travel distance in any direction.

11.1.2. Exposure to Falling Loads

No employee or subcontractor is permitted underneath loads handled by lifting or digging equipment. All personnel are required to stand away from any vehicle being loaded or unloaded to avoid being struck by spilling or falling materials. Operators may remain in the cabs of vehicles being loaded or unloaded when the equipment is provided with a cab shield and/or canopy adequate to protect the operator from falling materials.

11.1.3. Warning Systems

When mobile equipment is operated adjacent to an excavation and the operators/drivers do not have a clear and direct view of the edge of the excavation, a warning system such as barricades, hand or mechanical signals, or stop logs are required.

11.1.4. Protection from Loose Rock or Soil

Adequate protection will be provided to protect employees from loose rock or soil that could pose a hazard to personnel in the excavation. All temporary spoil piles will be kept at least 2 feet away from the edge of the excavation. Spoil piles should be placed to channel rainwater or other run-off water away from the excavation.

11.1.5. Hazardous Atmospheres

All excavations deeper than 4 feet deep and which have the potential to have a hazardous atmosphere or oxygen deficient atmospheres (Less than 19.5% oxygen) must be tested to ensure safe working conditions, prior to entry. Air monitoring will be conducted in accordance with Section 4.0 of the HASP.

11.1.6. Protective Systems

Each employee in an excavation must be protected from cave-ins by an adequate protective system except when excavations are made entirely in stable rock or the excavation is less than 5 feet in depth and examination by the Competent Person provides no indication of a potential cave-in. Protective systems consist of sloping or benching, use of trench boxes or other shielding mechanisms, or the use of a shoring system in accordance with the regulations.

APPENDIX F

Lockout/Tagout Procedures

12.0 LOCKOUT TAG OUT PROCEDURES

Definitions:

1. Lockout – involves using a device such as a padlock, blank pipe flange, chain key block, etc. to isolate energy from employee exposure.
2. Tagout – involves applying a tag to the energy isolating device with written information concerning the date and dame of person who applied the lock and tag.

12.1 Lockout/Tagout Policy

This procedure establishes the minimum requirements for lockout/tagout of electrical energy sources, mechanical, hydraulic, pneumatic, thermal or chemical process energy. It is to be used to ensure that conductors and circuit parts are disconnected from sources of electrical energy, locked (tagged), and tested before work begins where employees or sub-contractor could be exposed to dangerous conditions. Sources of stored energy, such as capacitors or springs, shall be relieved of their energy, and a mechanism shall be gaged to prevent the re-accumulation of energy. The name, address, telephone number, travel distance, and travel time to the nearest medical treatment facility are found in the Emergency Information section of this HASP. A map and direction for locating the facility is also available in the Emergency Information section.

Lockout/tagout procedures shall be used prior to performing tie-in operations, maintenance, repair or adjustment of any device where exposure to hazardous energy sources may occur.

12.2 Responsibility

All affected employees and subcontractors shall be instructed in the safety significance of the lockout/tagout procedure. All new or transferred employees and all other persons whose work operations are or might be in the area shall be instructed in the purpose and use of this procedure. The ATC Project Manager shall ensure that appropriate personnel receive instructions on their roles and responsibilities. All persons installing a lockout/tagout device shall sign their names and the date on the tag and on the Lockout/Tagout Isolation Record (see Appendix F 14-04).

12.3 Preparation for Lockout/Tagout

3. Review current diagrammatic drawings (or other equally effective means), tags, labels, and signs to identify and locate all disconnecting means to determine that the source of energy is interrupted by a physical break and not deenergized by a circuit interlock. Make a list of disconnecting means to be locked/tagged.
4. Review other work activities to identify where and how other personnel might be exposed to sources of energy. Establish energy control methods for control of other hazardous energy sources in the area.
5. Provide an adequately rated voltage detector to test each electrical phase conductor or circuit part to verify that they are deenergized. Test the voltage detector to make sure that it is working properly.

12.4 Lockout Procedure

1. Complete the Lockout/Tagout Isolation Record (see Policy 14-04).
2. All affected employees in the area shall be notified that a lockout is being performed.

3. The equipment being locked out shall be shut down using normal shutdown procedures. (i.e. operator's control station, stop button, etc.).
4. Any residual energy shall be identified and dissipated at this time.
5. All equipment energy sources shall be neutralized. (i.e. electrical disconnects shall be opened, valves closed, blanks inserted in piping, springs returned to neutral position, other energy sources as required).
6. The qualified employee performing the lockout shall place his/her personal lock and tag on EACH energy isolation point isolated in Step 4. If more than two (2) isolation points are required to lockout the device, a group lockbox may be used. A tag indicating all persons who applied a lock, date, time, equipment type, and number and duration of lockout shall also be applied at this time. A subcontractor representative and an ATC employee shall also apply a lock at this time.
7. Test the lockout by clearing the area and attempting to operate the machine or attempting to operate disconnecting means to determine that the operation is prohibited. A voltage-detecting instrument should be used for electrical components. Inspect the instrument prior to use for physical damage and operation.

12.5 Removal of Lockout/Tagout

1. Upon completion of the lockout an authorized employee must check the area for completeness of work. If the employee who initiated the lockout is available, he/she should conduct this inspection.
2. Remove all tools and nonessential items from the area.
3. Replace all guards.
4. Ensure all employees are clear of the equipment/process.
5. Notify all affected employees in the area that the lockout device(s) are being removed.
6. Remove lockout device(s).
7. Restart the machine to insure proper operation.

12.6 Group Lockout

1. When multiple isolation points, three (3) or more, must be controlled during a lockout, or when multiple persons (craft) are involved, a group lockout shall be used.
2. Follow the steps for a normal lockout as documented in steps 1-6 above.
3. Each key for the locks used maybe placed in a group lockout box or stay in possession of the user. If a group lockout box is used, it shall be kept in view of the work being performed when practical.
4. A Job Control Lock shall be installed on the group lockbox by a ATC Employee. This lock shall remain in place until the lockout has been completed.
5. Each employee shall remove their own lock when their portion of the work is completed or at the end of each shift.
6. Upon completion of the work, the ATC employee shall inspect the work area for completeness.
7. When all of the conditions of the lockout termination procedures have been satisfied, the Job Control Lock shall be removed from the group lockbox.

12.7 Emergency Removal Lockout/Tagout Device

1. If an employee leaves the facility without removing his/her lock and tag, an effort shall be made to notify the employee that the supervisor in charge will authorize the removal of their

lock. It must be deemed necessary that removal of the lock is required by at least two supervisory personnel, but only after confirming beyond any doubt it is safe to do so.

2. Verify the employee has left the site.
3. Check with co-workers.
4. Check the employee's timecard.
5. Attempt to reach him/her at home.
6. Verify the employee is not in the equipment.
7. Visually confirm the completeness of work.
8. Contact the Regional Safety Coordinator and the Project Manager.
9. Form 14-03, Lock Removal Report will be initiated by an authorized Atlas supervisor. Once all steps have been taken, an authorized employee under the direct supervision of an Atlas Supervisor shall be permitted to remove the lock.
10. Upon return to the site by the employee involved, he/she shall be informed of the removal.
11. A review of the incident may be conducted by the Atlas RSC Coordinator to determine any disciplinary actions necessary.

Appendix 33-04: Lockout Usage Log

Project Number:

Date On:	Date Off:	Authorized Employee(s)	Task/Reason for LOTO	Time On:	Time Off:	Types of Energy	Procedure Followed

APPENDIX G

Client Safety Requirements

Consider Glove Specification Charts

Notification Trees per Client Request

Remediation Management	Incident Management	Date: 04/04/2022
		Project Location: Washington Sites
Title: Notification Process		

Work-Related Incident Occurs

↓

Immediate Supervisor On Site / Lead RM Contractor

↓

FIRST CALL CATEGORY (Injury, Illness, Medical Need)

Life, Limb, or Eyesight at risk

↓

911/Emergency Services

Non-Life Threatening

↓

Medical Consultant
Core Health: 855-282-6331

↓

If necessary, Medical Consultant makes decision to proceed to Occupational Medical Clinic
NOTE: Injured person must be accompanied by supervisor or safety professional to clinic

SECOND CALL CATEGORY (Property or Vehicle Damage, Environmental Release, or Immediately After First Call Category)

↓

Atlas Project Manager / Branch Manager

Dan Pike: 541-829-1655 (C); 480-355-4637 (O)
Mike Donnelly: 602-510-3691 (C); 480-355-4656 (O)
Phil Schneider: 602-677-0983 (C); 480-355-4658 (O)

If Dan, Mike and Phil cannot be reached by phone, immediately call Cason Commander at ATC:

Atlas H&S Contact for Phillips 66
Cason Commander: 727-748-6802 (C)

Continue calling Dan, Mike, Phil, and Cason until you speak to one of them on the phone (do not leave a voice mail).

↓

If Dan, Mike and Phil cannot be reached by phone, immediately start calling the following Phillips 66 personnel **after** you finish speaking with Cason Commander (verify with Cason before you start calling Phillips 66 personnel):

Phillips 66 RM Program Manager
Eli Gurian: 562-506-4855 (C); 562-290-1535 (O)

Phillips 66 RM Regional Manager
If Eli cannot be reached by phone, immediately call:
Rich Solomon: 714-224-9921 (C); 562-290-1551 (O)

Phillips 66 RM Remediation Manager
If Eli and Rich cannot be reached by phone, immediately call:
Dan Fischman: 949-231-2922 (C); 565-290-1553 (O)

Cason Commander will call the Phillips 66 RM Safety Director (Jen Williams):

Phillips 66 RM Safety Director
Jen Williams: 918-815-1430 (C); 918-977-4525 (O)

NOTE: These calls shall take place *IMMEDIATELY* and continue until these people are reached by voice. If the first person does not answer, leave a voice mail and proceed to the next person. Email is *NOT* an approved means of notification.

TABLE OF CONTENTS

List of Appendices

1. SCOPE AND APPLICABILITY

The requirements stated herein apply to any individual or organization contracted or subcontracted to perform work on behalf of Phillips 66 Remediation Management, referred to as "RM" throughout this document. Note that RM may conduct remediation on retail properties branded under different brands (e.g., Phillips 66, 76, Circle K, etc.).

If a requirement cannot be met in a particular situation, a variance must be approved by the RM Program Manager after reviewing compensating safety measures.

2. SAFETY PHILOSOPHY - FIVE KEY PRINCIPLES

RM's Five Key Safety Principles are:

1.0 Report to work physically rested and mentally alert.
2.0 Observe and coach your coworkers to ensure that they work safely.
3.0 Do not improvise or take short cuts. Follow procedures!
4.0 There is zero tolerance for willful unsafe actions.
5.0 Stop all unsafe work.

All injuries, losses, and environmental releases are preventable and Contractor personnel must work toward the goal of zero incidents.

Contractors are required to maintain a safe and healthful workplace, and to identify and mitigate workplace hazards. The requirements contained in this document are minimum requirements. If other measures are required to maintain a safe workplace, it is the Contractor's responsibility to identify and implement protective measures.

At Phillips 66, we take the time to work safely—every job, every day!

3. THE PHILLIPS 66 LIFE-SAVING RULES

Phillips 66's "Life-Saving Rules" were developed based on an analysis of Phillips 66's 10 most-serious incidents. The Life-Saving Rules are designed to prevent serious incidents and injuries to workers on Phillips 66 work sites, and include the following:

1. Protect against falls and dropped objects.
2. Verify line-up and containment.
3. Control hazardous energy.
4. Follow safe rigging and lifting practices.
5. Operate vehicles and industrial equipment responsibility.
6. Perform excavations safely.
7. Assess and mitigate hazards before working.
8. Properly plan and execute hot work.
9. Work in confined spaces safely.
10. Maintain safety-system protection.

The Life-Saving Rules apply to all Phillips 66 work and are summarized on the poster presented in Appendix A

4. SAFE WORK PLAN

The Contractor shall comply with RM's Safe Work Plan (SWP) Program requirements. The SWP Program requirements include, but are not limited to, preparing an SWP before doing any work on an RM job site that will require subcontractor use, where the score on the Pre-Task Risk-Assessment form provided in Appendix B is 50 or more, or when requested by RM. As described in the SWP Program, the Contractor Project Manager and Contractor Health, Safety, and Environment (HSE) Representative is responsible for developing the SWP. The Contractor Project Manager will work closely with her or his Project Team and Subcontractors to complete the SWP, where applicable. The SWP will be based on the approved work scope and in alignment with RM's Contractor Safety Requirements and Contractor or site operating procedures—whichever are stricter. The Contractor Project Manager or Contractor HSE Representative will submit a draft of the SWP for first review as early as possible, but no later than two weeks in advance of the project kickoff. The SWP-development and SWP changed- condition processes are described in the Safe Work Plan Program.

5. HEALTH AND SAFETY PLAN

The Contractor shall prepare a written Health and Safety Plan (HASP) that complies with OSHA 1910.120(b) before commencing work on an RM job site. The HASP must be available on site for review. The HASP must be uploaded into Livelink as a project document in the site "Guidance" folder.

The HASP must be reviewed periodically and updated as needed to reflect current conditions and site hazards. The HASP must address site security.

The HASP must meet the requirements of federal and state regulations, industry standards, and accepted safety practices. When working within a Phillips 66 operating facility, the Contractor shall comply with all written policies and procedures specific to that facility (e.g., emergency management, lock/tag/try (LTT), work permits, etc.).

Bridging documents are required for some RM sites. Contractor Project Managers are required to work with the RM Program Manager to determine if a bridging document is required for each site they manage for RM. If it is determined that a bridging document is required for a particular RM site, the Contractor must create a bridging document that defines the policies, programs, and procedures that will be enforced for the specific job/project. In the event of a conflict between safety requirements, the more-protective requirements shall apply."

6. PRE-TASK RISK ASSESSMENT

The Pre-Task Risk Assessment (PTRA) is intended to assist in determining when a Safe Work Plan must be prepared. It is to be completed during the initial phase of all projects to determine overall risk. The final score will determine if a SWP is required (assuming no other SWP conditions, e.g. use of a subcontractor, are applicable) and what level of approval is needed. Example of PTRA provided in Appendix B.

7. HAZARD REDUCTION

The Contractor shall comply with the minimum requirements described in the RM's Hazard-Reduction Program (HRP). As described in the HRP, the principal HRP elements include hazard training, leadership empowerment and communication, hazard reporting, and employee recognition. The minimum requirements of the HRP apply to all personnel assigned to perform work on an RM project site. Contractors are required to determine and communicate the appropriate level of training for their subcontractors based on the work scope and prequalification Tier Level. RM's Tier Levels are specified in RM's ***"****Subcontractor Vetting and Evaluation Expectations for Phillips 66 Remediation Sites"* document provided in Appendix C.

8. JOB HAZARD ANALYSIS

8.1. PURPOSE

The purpose of the Job Hazard Analysis (JHA) procedure is to define the tools used to identify and reduce or eliminate hazards that may be present during specific tasks. JHA is also known throughout the industry by other names, including Job Safety Analysis (JSA).

8.2. OVERVIEW

A JHA is a documented review of the hazards associated with executing a specific task and the required actions taken to reduce the hazards. Injuries occur if workers do not recognize hazards and follow procedures. Establishing proper procedures is one of the benefits of conducting a JHA—that is, carefully studying and recording each step, identifying existing or potential hazards, and determining the best method to reduce or eliminate these hazards.
The benefits of the JHA are:

- To ensure complete communication of work scope
- To ensure common understanding of the required tasks and associated hazards and safeguards
- Evaluating tasks for possible improvement in methods
- Instructing new workers
- As a means to guide and document the pre-job discussion. It is RM's expectation that the SWP be used for that discussion.

The **GO Card** (Appendix D) is a pocket-sized checklist of items project teams should consider while conducting a JHA before commencing work each day. It includes questions designed to prompt discussion about procedures, equipment and tools, line of fire, site conditions, personal protective equipment, management of changing conditions, and the right and obligation to stop all unsafe work. The GO Card is not a requirements but a tool that can be referenced.

The results of a JHA are a list of steps with their associated hazards and preferred mitigation measures. Normally, the JHA is constructed in a tabular form with at least three columns - Job Steps, Potential Hazards, and Mitigating Measures. An example of a JHA form is included as Appendix E. Any form that identifies job steps, potential hazards, and mitigating measures is sufficient. If a new task is identified during the day, ***stop work!*** After the new task has been evaluated with a revised SWP or SWP Field Change and JHA, work may resume.

8.3. ROLES AND RESPONSIBILITIES

Contractors are responsible for:

- Determining appropriate scope for a JHA.
- Developing the JHA.
- Leading SWP discussions before beginning work activity.

Site workers are responsible for:

- Participating in the JHA, and SWP discussion.
- Compliance with steps to eliminate or reduce identified hazards.
- Identifying changes in personnel, hazards, site conditions and/or equipment and tools needed to complete the task.
- Stopping work if conditions change and a JHA modification is needed.
- Indicating their knowledge of the JHA by signature.

RM Program Managers are responsible for verifying JHA compliance during site audits.

8.4. REQUIREMENTS

8.4.1. When to Use

A JHA can be performed for any task in the workplace, whether the set of tasks is "special" or "routine." The SWP shall be used to guide the pre-job discussion of the JHA.

After a work scope is completed, the JHA for the next task should be discussed. Multiple JHAs for several tasks should not be discussed at the start of the day. Rather, discuss the JHA for the first task of the day. When that work scope is completed, the JHA for the next task should be discussed and the work scope completed. A typical workday includes several JHA discussions throughout the day as work progresses.

8.4.2. Scoping a Job for Analysis

Narrowly defined activities like "opening a valve" or "locking a gate" are termed in single actions and should not be considered for JHA. A job defined in terms of what is accomplished, like "installing a monitoring well" is too broad. A good "rule of thumb" is 6 to 8 steps per JHA. "Site mobilization" and "collecting groundwater samples" are examples of suitable JHA tasks.

8.4.3. Conducting the JHA

There are three simple steps to a JHA:

- Define the job by listing successive steps or activities.
- Carefully evaluate each job step to identify hazards. Only hazards that are identified can be corrected or eliminated.
- Develop safe procedures to eliminate the hazards and prevent the potential for accidents.

Step 1: Defining Job Steps. Before searching for hazards, a job should be broken down into sequential steps. This should be done with an experienced worker with a history of performing the

work in a safe manner. Each step should describe what is being done. Avoid these two common errors:

- Making the breakdown so detailed that an unnecessarily large number of steps result.
- Making the breakdown so broad or general that the basic steps are not recorded. Write down the basic steps in sequence.

Completely describe each step. Any deviation from regular procedure should also be recorded because it is this deviation that may lead to an incident. The wording for each step should start with an action word like "remove," "open," or "turn." The step is completed by naming the item to which the action applies, for example, "Apply label to sample" or "Remove core from auger."

Obtain agreement from the work crew that the steps are correctly written.

Step 2: Identifying Hazards. Identify hazards—both those caused by on-site conditions and those connected with the job procedure. It is not necessary to address overall site hazards identified in the Site HASP or the general site-wide procedures. For example, if the site speed limit is 10 mph, the hazards and mitigating measures associated with driving at excessive speeds need not be assessed in the JHA. Focus on the job steps of the task at hand. To do this, ask questions similar, but not necessarily limited to, those below about each step:

- Is there a danger of striking against, being struck by, or otherwise making harmful contact with an object?
- Can the worker be caught in, by, or between objects?
- Is there a potential for a slip or trip? Can the worker fall on the same level or to another level?
- Can strain be caused by pushing, pulling, lifting, bending, or twisting?
- Is the environment hazardous to safety or health? For example, are there potential concentrations of toxic gas, vapor, mist, dust, heat, or radiation? Are there hazards associated with the weather today that can affect our work?
- Are there fixed objects that may cause injury, such as sharp objects or edges?
- Can moving or rotating machinery or materials injure the worker?
- Will the worker be positioned to the equipment in a way that is potentially dangerous?
- Is the worker wearing clothing or PPE that could potentially cause an injury?
- Do suspended loads or potential energy pose hazards?
- Are there other task specific hazards?

Because hand injuries are the most commonly encountered injuries on RM projects, potential hand and finger hazards should be carefully considered when developing an SWP and performing a JHA.

Step 3: Developing Mitigating Measures. The final step in a JHA is to develop actions to mitigate the hazards. The principal solutions are:

- Change the physical conditions that create the hazards.
- Describe work practices that eliminate or limit the hazard.
- Specify personal protective equipment (PPE).
- Change or redesign the procedure.
- Reduce the frequency, if feasible.

Eliminating the hazard by changing the conditions that create the hazard is the desired safeguard. Where the hazard cannot be eliminated, mitigating measures must be specific. General precautions such as "be alert," "use caution," or "be careful" have limited value to mitigate a hazard. For example, the recommendation "Make certain the wrench does not slip or cause loss of balance" is incomplete.

It does not tell how to prevent the wrench from slipping. A better way to describe the safeguard is: "Set the wrench properly and securely. Test its grip by exerting light pressure on it. Brace yourself against something immovable or take a solid stance with feet wide apart before exerting full pressure to prevent loss of balance if the wrench slips."

Where PPE is required to mitigate the hazard, list the specific equipment. Using PPE will not prevent an accident but often minimizes injury severity.

A procedure that has been redesigned should be thoroughly examined for new hazards.

8.4.4. JHA Review Before Work Starts

The work crew shall use the SWP to refresh on job hazards and possibly identify other hazards and mitigating measures. The leader of the review shall involve all members of the work crew in this important pre-job discussion. JHA review should ask the question "What is it about **this** job on **this** day at **this** location that can cause a hazard?"

8.4.5. Revising the JHA

When field conditions change, the JHA shall be marked to include job steps, hazards, and mitigating measures of the revised conditions. The SWP Revision or SWP Field Change process should also be initiated.

If an incident or significant near miss occurs, ***stop work,*** review the JHA, and determine what changes are needed.

Any time a JHA is revised, training in the new job methods or protective measures should be provided to workers affected by the changes.

9. EMERGENCY RESPONSE

The HASP for each site must include an emergency-response plan.

For work at operating facilities, Contractors must have the appropriate training with regard to their conduct during an operating facility emergency.

During the emergency response or incident, the Contractor must make every effort to preserve evidence that may be needed during the incident investigation.

The Contractor shall notify the RM Program Manager immediately upon the initiation of post-accident substance-abuse testing. If an incident or near miss occurs and there is a question regarding the need for a substance-abuse test, the Program Manager should be consulted to help make the decision.

10. INCIDENT REPORTING

An **Incident** is an event that occurred with undesirable consequence such as fire, injury, property damage, spill, release, personnel exposure event, and regulatory enforcement action.

A **Near-miss** is an event with no consequences but given a slight shift in time or position could have resulted in fire, injury, property damage, process upset, spill, release, or other failure.

The Contractor shall be knowledgeable of environmental regulatory reporting requirements (e.g., spill and release reporting). The Contractor will not make reports to a regulatory agency unless specifically authorized by RM.

The Contractor shall immediately report by phone to the RM representatives (Program Manager and Site Business Unit Representative if work is within a Phillips 66 operating facility) all HSE incidents and near misses per RM's Incident/Near Miss Reporting guideline provided in Appendix F. HSE incidents and near misses must be entered into the RM database (IMPACT) by the RM Program Manager within 24 hours after the incident occurs.

If the RM Program Manager is not immediately available by telephone, the RM HSE Team Lead should be contacted. If the RM HSE Team Lead cannot be contacted, the Contractor should attempt to notify the Region Manager or any member of the RM Leadership Team.

The Contractor must continue to call until voice contact is accomplished with the RM Program Manager, Region Manager, or a member of the RM Leadership Team. Leaving a voice-mail message does not constitute voice contact. A Notification Process flow chart is provided in Appendix G

10.1. WORK-HOUR REPORTING AND ISNETWORLD MEMBERSHIP

RM requires that its Contractors maintain active membership in the ISNetworld Web-based contractor database service. Contractors must submit incident statistics, work hours, and program updates to ISNetworld. Work hours must be reported by close of business on the 8th day of the following month.

Because HSE incidents and near misses must be entered into the RM database (IMPACT) by the RM Program Manager within 24 hours after the incident occurs, Contractors must report incidents promptly.

11. OCCUPATIONAL MEDICAL-CASE MANAGEMENT

Contractors must have a comprehensive process for managing actual or suspected work-related injuries and illnesses—both for Contractor employees and Subcontractor employees. The program must include:

- A working relationship with an occupational injury-management service.
- Medical care when an injury or illness is suffered in the workplace.
- If treatment beyond first aid is required, transport of workers with non-life-threatening injuries to an approved occupational health clinic if one exists in the area. The location of the

occupational health clinic and the location of the hospital must be identified in the site-specific HASP.

- Accompanying injured workers to a clinic or health-care facility by a supervisor or safety professional.
- Worker training on the importance of prompt incident reporting and recordable injury criteria versus first-aid treatment.

12. WORKER HEALTH AND HYGIENE

Contractor must identify, evaluate, and control potential workplace health hazards.

Each Contractor must develop and implement a written Exposure Assessment Plan and strategies to minimize its employees' risk of exposure to health hazards. The plan shall be reviewed and revised periodically to reflect changes in work environment. The Exposure Assessment Plan shall address the following:

- Identification of agents/stressors that may present adverse health risk factors to workers
- Identification of work groups and/or tasks with potential for exposure
- A qualitative methodology for evaluating exposure potential or risk factor and prioritizing for quantitative evaluation as needed for further risk assessment
- Sampling strategies and data-evaluation methods used for quantitative assessments addressing who, what, when, and at what frequency, based on qualitative assessments and prior exposure monitoring
- Contractor employees will be required to participate in RM industrial hygiene sampling programs, where applicable.

Contractor will identify employees to be included in medical-surveillance programs as determined by the Exposure Assessment Plan. The Contractor must ensure that physical examinations required by regulation and/or RM program are offered to their employees.

13. SAFETY TRAINING

Each site worker is to view RM's Basic Safety Orientation video and the Stakeholder Engagement video initially before reporting to work at an RM site and at least once per year thereafter. In addition, Hazard-Reduction Program training and Safe Work Plan training are required initially before being assigned to a RM project site and annually thereafter.

Contractor personnel shall be instructed in incident/injury-reporting procedures.

Contractor shall ensure that personnel conducting work at a RM operating facility have completed the required site-specific safety training and fully understand the policies and procedures.

Contractor shall ensure personnel are familiar with all types of warning alarms and emergency procedures at the job site.

13.1. HAZWOPER TRAINING

Specific training requirements apply to operations that involve a potential for worker exposure to hazardous substances, including hazardous waste, as specified by 29 CFR §1910.120 Hazardous Waste Operations and Emergency Response (HazWOpER). Sites covered by this rule include:

- Hazardous-substance response operations under CERCLA, including any initial investigations of the site before exposure identification.
- Corrective actions involving cleanup conducted under RCRA.
- Operations at a State or local government-designated site.
- Operations involving storage, treatment, and disposal facilities regulated by 40 CFR §§264 and 265 pursuant to RCRA.
- Emergency response operations regardless of location when there has been a release or substantial threat of release of hazardous substances.

Contractors who enter a hazardous waste site must recognize and understand the health and safety hazards associated with the cleanup activity. The level of training provided must consist of the following:

- Be consistent with the worker's job functions and responsibilities
- Identify toxicity of the materials and the levels of potential exposure
- Include emergency preparedness.

Refresher training required by §1910.120 must be completed before the end of the twelfth month following initial training or the previous refresher training.

14. VACUUM TRUCK OPERATIONS

Vacuum truck operators must ensure that the truck and hoses are properly bonded and grounded before initiating vacuum operations. Vacuum-truck operations must comply with the requirements specified in API Standard 2219, "Safe Operation of Vacuum Trucks Handling Flammable and Combustible Liquids in Petroleum Service."

Vacuum truck operators must ensure that the material(s) to be collected are compatible with residual materials that may already be in the truck or the truck must be washed before use. Mixing some incompatible liquids may cause fires or explosions and/or create toxic vapors. Flammable and combustible materials may also be ignited by static electricity.

Hydrocarbons and other vapors created by the vacuum pump exhaust shall be vented away from the work area and away from areas where people are present. In some locations, vapors must be controlled according to air-emission regulations.

15. WASTE MANAGEMENT

Proper management of waste is critical to project-management success. Contractors should be familiar with the requirements of the RM Waste Management Processes specified in the Contractor's Phillips 66 Master Services Agreement and supporting documents, e.g. Contractor Manifest Signature Delegation Process. In addition, applicable waste management DOT/RCRA training needs to be current for contractor employees who are engaged in waste management activities.

All hazardous waste must be transported and disposed off-site within 90 days to a Phillips 66 RM-approved disposal facility unless satellite accumulation rules apply.

16. WORK PERMITS

Contractor shall have written programs that comply with OSHA regulations to safely address the dangers and hazards of working in confined spaces and conducting hot work.

A work permit shall be obtained from an authorized permit writer when required by a RM facility or operating department. Permit requirements may vary in facilities/operating areas.

16.1. HOT WORK

Hot work is a task or activity that requires electric or gas welding, flame cutting, any non-intrinsically safe electrical equipment, and other work equipment capable of producing flames, sparks, or ignition sources.

16.2. CONFINED-SPACE ENTRY

A "confined space" is a space that:

1. Is large enough and so configured that an employee can bodily enter and perform assigned work; AND
2. Has limited or restricted means for entry or exit; AND
3. Is not designed for continuous employee occupancy.

In addition to the criteria listed above, a Permit-Required Confined Space means a confined space that has one or more of the following characteristics:

1. Contains or has a potential to contain a hazardous atmosphere
2. Contains a material that has the potential for engulfing an entrant
3. Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward to a smaller cross- section, or
4. Contains any other recognized serious health hazard.

All confined spaces must be evaluated to determine if the hazard presents special precautions that are to be specified in a confined-space-entry permit. Generally, depressions and excavations of less than 4 feet depth are not considered confined spaces.

17. ENERGY ISOLATION

Note: Opening of live remediation systems (systems that have not been de-energized) or with a temperature in excess of 150 degrees Fahrenheit is prohibited.

Contractors are responsible to provide a “lock, tag, and try” (LTT) program in accordance with the OSHA standard (29 CFR 1910.147). The contractor program shall provide general requirements for management of subcontractors who perform work requiring LTT. Contractors shall verify personnel (including subcontractors) involved in LTT are trained and qualified for such work. Contractor shall

comply with any site specific LTT requirements, which shall be specifically addressed in the HASP and if applicable, in the bridging document or RM Memorandum Of Understanding (MOU) with the Business Unit.
Contractors (including subcontractors) shall perform electrical work in compliance with 29 CFR 1926 Subpart K, 29 CFR 1910 Subpart S, and NFPA 70E

Contractor shall ensure the electrical lines, air lines, gas lines or other lines containing hazardous materials or energy, shall be rendered safe by emptying, purging, disconnecting or other means before work may begin. Remediation systems that contain hazardous materials, including but not limited to petroleum liquids, hazardous chemicals, or petroleum/chemical vapors shall be gas tested prior to equipment opening to ensure the vapor space in the piping does not exceed ten percent of the lower explosive limit (LEL), contain total VOCs greater than 100 parts per million (ppm), or contain any level of hydrogen sulfide (H_2S) (i.e. any reading > 0 ppm) for systems that have the potential to contain H_2S.

If a zero-energy state cannot be verified or if hazardous materials are still present (i.e. failed gas test, cannot drain equipment, cannot de-energize), alternate safe work practices and/or the proper selection of respiratory protection must be developed with the Remediation Program Manager prior to opening or performing maintenance on the equipment.
For all remediation systems, RM has the following minimum expectation to perform energy isolation:

- An energy isolation log sheet shall be prepared. This sheet, at a minimum, must contain the following information:
    - Equipment to be isolated
    - Description and list of source and magnitude of hazardous energy
    - Describe means of isolation for each isolation point (e.g. lock, chain, tag, etc.)
    - Describe means of verification of zero energy state (e.g. operating on/off switch, open bleeder(s), etc.)
    - Note: Energy isolation logs can be prepared in advance. Any modifications to the pre-created isolation log sheet would require modification in the field to accurately capture the isolation points. At all times the energy isolation log sheet must reflect the actual isolation conditions.
- Responsible personnel performing maintenance on a remediation system must attest to having verified the equipment is in a zero-energy state prior to beginning work. RM recommends a section be included on the isolation log sheet to document this verification.
- When left unattended for a prolonged period (e.g. overnight) bleeders which are open or valves not in their standard operating position must be either tagged with a brightly colored tag for visual identification or logged on the equipment isolation sheet or both.
- After maintenance is complete and prior to returning the equipment to service, the following shall be performed:
    - The responsible person shall walk down all equipment to verify open bleeders, drains, vents, and valve positions are all in their correct operating state.
- If portions of a remediation system are to be demolished where portions remain in service, cut points must be pre-identified and tagged/labeled in the field prior to executing the demolition.

NOTE: Any deviation from this policy requires a variance that is approved by the RM Program Manager and the RM Safety Team Lead.

18. LONE WORKER SAFEGUARDS

Contractor shall provide a lone worker program that addresses personal safety, security, and communications to be utilized when working alone. No worker should be left alone without means of quickly summoning help should the worker become incapacitated due to injury or illness.

Contractors must carry some form of identification with them on their person and in vehicles (e.g., RM identification badge, driver's license, etc.).

19. REMEDIATION SYSTEM OPERATION

The Contractor shall comply with the requirements specified in the RM's Asset & Operating Integrity (A&OI) Program. As described in the A&OI Program, remediation equipment must be maintained to maximize equipment reliability and operating integrity. An effective program will prevent the uncontrolled release of materials and minimize the potential for significant HSE impacts while maximizing operating reliability.

20. SHORT-SERVICE EMPLOYEE PROGRAM

Contractor must have a mentoring program for workers new to the work site. A mentor can effectively demonstrate and coach less-experienced workers in the safe and proper operation of equipment and execution of project activities. A worker is generally considered a Short-Service Employee if he/she has less than 6 months' experience with his/her present employer, or in his/her present role. A mentoring system must be implemented to provide guidance to Short-Service Employees and assist with their development.

21. SUBCONTRACTOR QUALIFICATION

Requirements in this handbook also apply to subcontractors working on RM sites. As such, the Contractor is required to evaluate certain safety programs of proposed subcontractors for adequacy. Site workers are expected to perform in a manner consistent with the RM safety objectives, policies, and procedures.

22. FATIGUE MANAGEMENT

Working at the upper limits of hours per day and/or consecutive days is not sustainable and may lead to fatigue-related incidents. The Contractor must assess the potential for worker fatigue when planning shift length and work-set duration.

Shift length. Under normal conditions, shift length should not exceed 12 hours. Program pre-approval is required for shift time in excess of 14 hours. Shift length includes time spent traveling to the site if travel is within the scope of work.
A work shift that begins after 8:00 pm is limited to 10 hours unless a longer shift length is preapproved by the Program Manager.

Work sets (consecutive days or nights). Under normal conditions, the number of consecutive days worked must not exceed 14. The RM Program Manager may approve a work set greater than 14 days after review of a written variance request that considers the tasks to be performed, the types of errors that may occur from fatigue, the consequences of these errors, and mitigating measures to reduce errors and/or consequences. Program Managers should discourage performance of high-risk/high- consequence tasks by workers near the end of extended shifts or extended work sets.

When a work set is 14 days or greater, at least 36 hours' time off must be given before starting a new work shift.

23. RECORDKEEPING AND AUDITING

Contractor shall furnish upon request documentation for all HSE-required training, including documentation that site workers have viewed RM's Basic Safety Orientation and Stakeholder Engagement Training videos within the previous 12 months.

Managing Contractors must perform a minimum of one HSE audit per year at each active site; correct deficiencies found and report corrective actions and deficiencies to the RM Program Manager.

An "active" site is any site with an active status in EMS, assigned to a contractor due to an open environmental case (or other P66 obligation), and necessitates an annual inspection to verify site conditions. There are exceptions to sites that are active in EMS but have no current budget and no work on site. Those specific sites do not require an audit.

Contractor must use some method to track non-conformances to completion if the item cannot be corrected immediately when found.

Every site for which a construction, operating, or discharge permit has been issued by a governmental agency must be audited for permit compliance. The managing Contractor is required to maintain a checklist of permit requirements for each facility. The Contractor must submit a report attesting to permit compliance every two years for each site they manage. Any permit or regulatory noncompliance must be reported to the RM Program Manager and recorded in the IMPACT Compliance Audit module by the RM Program Manager.

24. GENERAL HEALTH AND SAFETY

24.1 Contractor shall comply with local, state, and federal occupational safety and health regulations and maintain required records.

24.2 Contractor shall establish a work zone as appropriate to protect site workers and the public. Contractor shall place suitable barriers at a minimum height of 28 inches where the potential for site visitation by the public or other pedestrians exists. Minimize the number of people in the work zone.

24.3 Required PPE for each job site must be specified in the HASP. Contractors must wear proper work attire for the task. Long pants are required. Long-sleeved shirts are highly recommended to better protect arms from cuts and scratches. Many operating facilities have site-specific PPE requirements, such as flame-retardant clothing. These shall be specifically addressed in the SWP, HASP, and, if applicable, in the bridging document.

Note: Additional protective clothing is required when working with Portland Cement and Bentonite to prevent contact dermatitis, or chemical burns. This shall be addressed in the Safe Work Plan.

24.4 Contractor is responsible for fire prevention in the work area.

24.5 Contractor is responsible for providing or arranging emergency medical and first aid care for its personnel, and any follow-up care which may become necessary. Refer to Section 20.0, Occupational Medical-Case Management.

24.6 Contractor personnel are subject to substance-abuse testing programs as required under the Master Services Agreement. Workers taking medication that may impair their physical and mental ability must be evaluated to determine if they can perform safety-sensitive work.

24.7 Provisions must be made to communicate safety and health requirements to non-English speaking workers.

24.8 Only use tools that are designed for the desired purpose. After-market modifications to tools (i.e., specialized drilling tools or "fishing" tools) must be approved in advance by the RM's Regional Manager and the RM's Safety Lead. Documentation must be available to show that the modification was approved by a qualified individual with expertise to evaluate the integrity of the modification.

24.9 Tools and equipment that do not meet the manufacturer's safety requirements for the intended use are not allowed on the job site.

24.10 During the daily equipment check or before use, verify that all emergency shut-off devices are functioning properly.

24.11 Worker(s) must not move a load unassisted if the weight and bulk exceeds the capability of the worker(s). Loads greater than 50 pounds should not be moved by a single person.

24.12 Contractor is responsible for providing Safety Data Sheets (SDSs) (also known as Material Safety Data Sheets or MSDSs) for all hazardous substances brought on site by the Contractor and keeping them in a location available to site workers. The Contractor is also required to have a list of the hazardous chemicals known to be present using a product identifier referenced on the appropriate SDS. The list may be compiled for the workplace as a whole or for individual work areas. SDSs are to be utilized for evaluating potential workplace hazards. Chemicals brought on to RM operating facilities may be subject to additional approval by the RM Business Unit.

24.13 Contractors required to work on a walking/working surface with an unprotected, exposed open edge with lower-level surface greater than 4 feet shall be protected from a fall. Assess the need for work at height and eliminate whenever possible. If not possible, then provide fall-protection systems and administrative controls to prevent workers from being exposed to falls from height. Personal fall-arrest systems shall be of the Self-Retracting Lanyard type, ANSI Z359.14 Class A. Use of conventional personal fall-arrest lanyards shall only be permitted when Self-Retracting Lanyards are not a suitable solution. Their use shall be approved in advance by RM HSE. If conventional energy-absorbing lanyards are approved for use, there must be adequate fall clearance from the anchorage point to a lower level/obstruction. Each

worker at the edge of an excavation 4 feet or more in depth shall be protected from falling by guardrail systems, fences, or barricades.

24.14 Contractors must comply with OSHA standards for working in excavations greater than 4 feet below ground level.

24.15 Contractor shall ensure no open excavations are left unattended in public or private roadways, trails, or walkways unless acceptable markings, barricades, and detours are provided and approval has been granted from the property owner before leaving the site.

24.16 Contractor shall identify overhead hazards and comply with required procedures and regulations for working or operating equipment near overhead power lines and obstructions.

24.17 Contractors are required to safely and responsibly manage exposure to biological hazards (e.g., insects, vegetation, and animals), sharps (e.g., used hypodermic needles and blades), and personal-security threats that may be present at project sites.

24.18 The possession of explosives without authorization from the RM representative is prohibited. Firearms are not allowed on a RM site.

25. SPECIFIC SAFETY PROCEDURES

Contractors must follow the specific safety procedures in this section.

25.1. EXCAVATION AND BOREHOLE CLEARING

Before performing any below-grade/subsurface work, the Contractor Project Manager is responsible for:

- Project Managers, or equally qualified individuals, are accountable for evaluating, selecting, and approving final locations for subsurface work.
- Conducting investigative and property-inspection activities to determine the proposed physical limits of the planned work. As-built drawings of underground utilities and structures and interviews with knowledgeable personnel should be utilized to obtain information about underground structures. Operating facilities must be consulted for concurrence with work plans. Operating facilities may have additional requirements and permitting systems that must be considered before work.
- Reviewing the proposed work plan with the RM Program Manager.
- Obtaining regulatory permits and maintaining valid permits for the duration of the project.
- Contacting the public utility-line locator ("One Call" Notification). The Contractor Project Manager must confirm that all entities identified by the public utility-line locator have responded. If a response is not received, other means must be used to assure that no active utilities are present. Many public utilities will not mark lines on private property.
- Notifying property owners and/or tenants according to the provisions of the applicable access agreement.

GENERAL REQUIREMENTS

Daylighting for excavations. Physically clearing to expose subsurface features to the perimeter and planned depth of an excavation is not required but should be considered if warranted by risk. Methods used to remove concrete or other surface cover should consider the potential for encountering subsurface features.

Concrete-saw cutting. A concrete saw must be operated according to the operation manual. The blade's features and specifications must match the sawing operation. Inspect the blade before use. Do not use a blade with any cracks, discoloration, or missing segments. Apply coolant as required during operation, and do not remove the blade from the cut line until it has stopped spinning. Exposure to Crystalline Silica must be addressed during concrete-saw cutting and mitigation measures included in Safe Work Plan.

Open holes must be covered or barricaded when left unattended or overnight. Operating facilities may have additional requirements for unattended boreholes or excavations.

Boreholes

Field crews must immediately stop work and reevaluate the work plan if unexpected fill material or structures are encountered. On operating sites, notify the Phillips 66 Operating Facility Contact. If damage has occurred, notify the RM Program Manager.

There may be instances where a shallow (<5 ft deep) borehole is being reused for replacement of a bollard, pipe support or similar structure. Re-use of existing shallow boreholes may be permitted on a site specific basis with prior approval of the RM Program Manager. In no instance should the diameter of the new structure exceed 100% of the preexisting borehole diameter or the length of the structure exceed the cleared preexisting depth. Great care must be taken to verify these measurements in the field.

The following Borehole Clearance Matrix provides specific requirements for operating or non-operating locations and must be consulted prior to any subsurface work. The Contractor Project Manager is responsible for preparing documentation to demonstrate compliance with the borehole clearance requirements by developing a clearance checklist for each specific borehole location.

Locations with a higher level of risk may choose to go above and beyond the listed minimum requirements. RM Program Managers shall determine if additional requirements are necessary.

Location	Borehole Clearance Requirements
Operating/Urban Areas To Include: Refinery, Terminal, Breakout Station, Pump Station, Crude Oil Trucking/Dump Station, Bulk Plants, Marketing Sites	* Contact the Public Utility Locator ("One Call" Notification). * Use of a private utility-line locator (PUL) or geophysical technology is required. * Review As-Built drawings. * Conduct borehole walkthrough of investigative and property-inspection activities to determine the proposed physical limits of planned work * Locate boreholes **at least** 5 feet perpendicular from utility mark-out line * All boreholes and sampling points must be cleared using air knife, hydro-excavation, or vacuum extraction. * Pre-clear holes to 120% or minimum 2 inches greater than proposed borehole diameter to a minimum depth of 10 feet below ground surface (ft bgs). * Must verify and document depth and plumb of borehole. * Schedule drilling for same day as clearance. If not feasible, cover or hard barricade the open hole. * The duration between clearance and drilling shall not exceed one week. * Locations to be drilled must be confirmed and re-verified by the outgoing responsible person and "handed off" to the next responsible person at the end of each shift change or a delay in drilling greater than 24-hours. * If backfill is required utilize PVC casing at surface to delineate the edge of cleared bore for proper drill rig alignment. * Additional Operating Unit Requests (Work Permit, Excavation Permit).
Non-Operating/Non-Urban Areas To Include: Pipelines and Abandoned Operating Sites	* Contact the Public Utility Locator ("One Call" Notification). * Review As-Built drawings, where applicable. * Conduct borehole walkthrough of investigative and property-inspection activities to determine the proposed physical limits of planned work. * Locate boreholes **at least** 5 feet perpendicular from utility mark-out lines. * All boreholes and sampling points must be cleared using air knife, hydro-excavation, or vacuum extraction. * Pre-clear holes to 120%, or minimum 2 inches greater than proposed borehole diameter, to a minimum depth of 5 ft bgs. * Must verify and document depth and plumb of borehole. * Schedule drilling for same day as clearance. If not feasible, cover or hard barricade the open hole. * The duration between clearance and drilling shall not exceed one week. * Locations to be drilled must be confirmed and re-verified by the outgoing responsible person and "handed off" to the next responsible person at the end of each shift change or a delay in drilling greater than 24-hours. * If backfill is required utilize PVC casing at surface to delineate the edge of cleared bore for proper drill rig alignment. NOTE: Use of a private utility-line locator (PUL) or geophysical technology is not required but encouraged and should be used where warranted by risk and determined by Program Manager.
Variances	* To deviate from the listed requirements a Standard Variance Request Form must be completed and approved by the Region Manager and Safety Team Lead. Justification and compensating measures must be included in the variance request. * Use of hand augers or hand probes are permitted only after a variance request has been submitted and approved.

PLUGGING/ABANDONMENT OF EXISTING MONITORING WELLS & PIEZOMETER

The method for the plugging and abandonment (P&A) of site monitoring wells and piezometers is typically dictated by state or local regulatory agencies that may require pre-approval before commencing field work.

In most cases, P&A can be accomplished by either pressure grouting using a Portland Cement/Bentonite slurry or by over-drilling.

Over-drilling involves the removal of material within the original borehole, including the casing, filter pack, and annular seal. This is achieved by using a bit or auger that is equal to the diameter of the original borehole. If a larger bit or auger is used whereby native materials are encountered, then underground (UG) utility pre-clearance requirements will apply unless a variance is granted by the RM Program Manager.

A variance can be obtained in specific cases where it is impractical to pre-clear holes as defined in Section 25.1 (that is to 120% of the proposed borehole diameter to a minimum depth of 5 feet below ground surface).
Consult with the RM Program Manager to determine the basis for seeking an UG pre-clearance variance for P&A activities.

25.2. DRILLING

25.2.1. Scope

These requirements are specific to hollow-stem auger, flight auger, air rotary, casing hammer, mud rotary, sonic, or direct-push drilling operations.

25.2.2. General Safety and Emergency Response

- The SWP and JHA must be specific to the rig to be utilized.
- The minimum drilling rig crew size is two (2) people.
- A first-aid kit must be available in an easily accessible area away from the drilling operation. Its location must be reviewed during the tailgate safety meeting.
- At least one minimum 20-pound fire extinguisher rated for type A-B-C fires must be readily accessible, removed from mounting brackets, at the site away from the drilling rig. Its location must be reviewed during the tailgate safety meeting.
- The crew must have access to cell phone or 2-way radio for communication in case of emergency.
- Work cannot be performed if lightning strikes are observed in the area.
- The use of cell phones is strictly prohibited during drilling. Cell phones must never be used within the exclusion zone.

25.2.3. Personal Protective Equipment (PPE) for Drilling

- Hearing protection with a minimum Noise-Reduction Rating (NRR) of 17 dB must be worn in the exclusion zone or when working within 20 feet of the operating rig. Most foam insert plugs and muffs meet or exceed this requirement.
- Secure loose clothing, hair wraps, strings on jackets and hoods, and shoelaces. Jewelry is not allowed to be worn. Eliminate protruding tools from tool belts.
- A face shield must be worn for splash protection during equipment decontamination and other activities involving splash hazards.

25.2.4. Equipment Safety

- The drilling contractor will complete a checklist daily to assure that equipment is in safe and operable condition. The checklist must be available on site for review.
- There will be no oil, fuel, or hydraulic-fluid leaks from equipment.
- Deck-engine gauges must be in working order.
- Rig controls and levers, including emergency shut-offs, must be legibly labeled. Wherever possible, pinch points should be identified and labeled.
- Adequate cribbing must be in place under the leveling jacks and outriggers to prevent tip-over or sinking into unstable soil.
- Secure the rig when it is in position but not in use. Set brakes and/or locks and chock wheels or tracks as conditions require.
- The exclusion zone must be marked with a continuous barrier at least 28 inches in height where the public or other pedestrians may visit the site.
- Never travel with the drill-rig mast in the raised or partially raised position.
- The drilling rig must be equipped with an operable emergency shut-off or "kill" switch. Persons working within the exclusion zone must know the location and operation of the emergency shut-off switch. The functionality of all emergency shut-off switches must be tested at the start of each workday.
- Augers, drill rods, or any down-hole equipment should only be cleaned when the drill rig is in neutral, the engine is idle, and the machinery has stopped rotating.
- Drill-rig repairs must be done by a person trained and qualified to perform the repair.
- Small equipment leaks that develop after work begins must be evaluated. If the leak does not impair the performance of the equipment and the leak can be contained, work may continue.
- Do not perform maintenance or refueling while the equipment is operating. Follow the manufacturer’s recommendations regarding minimum equipment cool-down periods for the specific equipment to be refueled.
- Use of catheads or open drum-powered winches is not allowed. A cathead is a spool mounted horizontally on the rear of the drill rig and is used along with a rope to tighten or loosen a section of drill casing to the drill casing string.
- Work must cease if cables or cable clamps become damaged or frayed.
- No body part is allowed within 12 inches of a turning auger.
- Broken or substandard equipment must not be brought to the site. Equipment that becomes broken must be tagged as such and shall not be used for any purpose.
- Equipment must not be used if guards are not in place.
- Vertical storage of drill rods and augers is not allowed unless the rig is specifically designed to accommodate this practice.
- Drilling rods and augers may not be removed in multiple sections. Drilling rods and augers must be broken down at each joint as they are removed from the hole. Manual tools must not be used in combination with powered rotation.

- Rig operator and helpers must be knowledgeable of any after-market modifications to drilling equipment and be trained in its use. Use, purpose, and precautions associated with after-market modifications must be specified on the procedures, SWP, JHA, or other documentation maintained at the site.
- If any down-hole equipment becomes stuck and normal rotation, pulling, or pushing is not possible, a written procedure for this task ("fishing") must be followed.

25.3. AIR EXCAVATION

There are several methods to clear boreholes or locate underground utilities and obstructions. Where air excavation is used, the following minimum requirements will be met.

- In addition to hand protection, the minimum protective equipment required in the exclusion zone during air-knife operation are goggles, face shield, and hearing protection.
- At some sites, ambient air monitoring and respiratory protection may be needed to minimize health exposures due to airborne dust or contaminants.
- Review operating and safety instructions of the air-excavation tool before use. Do not exceed the safe operating pressure.
- Check equipment before use. Inspect hoses, piping, valves, gauges, and wand for leaks, abrasion, corrosion, or other signs of damage. Verify all connections are tight and secure. Repair or replace damaged parts. Verify that the emergency shut-off devices are functional.
- A whip check is required for 100 psi or greater air hose at each connection, including the air-supply source.
- Do not disable any safety device on the apparatus.
- Do not point the wand at any person during operation.
- Do not use the air lance as a prying/digging tool.
- Evaluate the risk of static electricity from vacuum operations and employ grounding to mitigate where there is a fire risk.
- If vacuum capture is not effective, a shield may be needed for the first few inches of excavation to capture particles, fragments, and dust from ejecting. Protect any surface near the work area that could be damaged by ejected material.
- To prevent falls, keep the work area clear of tripping hazards. Cover or barricade open excavations as appropriate and at the end of the workday.

25.4. SAFETY KNIFE

25.4.1. Definitions

Fixed Open-Bladed Knife (FOBK) - A hand tool that has an exposed, prominent, sharp-edged blade that is fixed, or can be held/locked into a fixed position. Note that machetes, hatchets, and axes are examples of FOBKs.

Safety Knife - A hand tool that has an automatically retractable blade or a blade that is shielded to protect a body part from contact with the blade.

25.4.2. Tool Selection and Use

Use of shears or scissor-type cutter is preferred overuse of a safety knife. Multipurpose shears come in a wide variety of shapes and sizes and can perform virtually all the same cutting tasks as a knife, but with a lower degree of risk.

In choosing a safety knife, preference should be given to the tool that is designed such that the auto- retractable feature cannot be overridden. Do not disable or disconnect the safety feature of a safety knife. If the safety feature of the knife is broken or no longer functioning properly, it must be removed from service.

Always cut away from the body. When cutting right to left, use your left hand. When cutting left to right, use your right hand. If possible, use a vise or clamp to hold the item to be cut instead of attempting to hold it with your hands. Look for pinch points when using shears or cutting devices.

25.4.3. Requirements

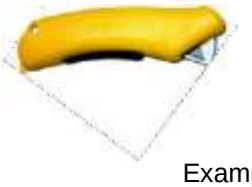
FOBKs shall not be used on an RM work site and are not allowed in the work zone.

Workers must be trained and familiar in the safe operation of safety knives by reviewing the manufacturer's instruction manual before use. Willfully overriding the safety features of a safety knife will result in discipline, up to and including dismissal from the job site. Cut-resistant gloves appropriate for the task must be worn when using a cutting tool.

Examples of **acceptable** auto-retractable or shielded safety knives are shown below:

Blade auto-retracts when it loses contact with the cutting surface.

Concealed blade



Auto-retracting blade guard

Examples of **prohibited** FOBKs include:

Utility knife

Pocket knife

Multipurpose tool

Machete

Axe

25.5. SAFE DRIVING

25.5.1. Scope

This procedure applies to drivers operating vehicles on projects actively managed by RM and includes employees, contractors, and subcontractors. This procedure does not apply to:

- Employees and Contractors who do not operate vehicles as part of their job duties.
- Third-party deliveries and shipments when not fully dedicated to the RM.
- Service vendors for things such as vending machines, laundry/uniform service, copier repair, automobile service, compressed-gas deliveries, and other similar incidental service vendors.
- Service contractors such as waste haulers and materials delivery with limited site access.
- Parties contracted to do work on RM work sites that are not under contract, subcontract, or purchase order to the RM.

25.5.2. Requirements

- The driver is responsible for safe operation of the vehicle at all times.
- Drivers shall have appropriate licenses and have received Defensive Driving training within the last two years.
- Driver shall require occupants of the vehicle to wear seat belts at all times during vehicle operation.
- Driver shall avoid distractions while driving. Drivers shall not use Portable Electronic Devices or Cellular Phones, even if the device is equipped with a “hands-free” option. If it is necessary to use such a device while traveling, the driver shall carefully pull off of the road and park in a safe location before using. GPS devices (portable or factory installed) may be used, but data entry or screen adjustment shall only be done when the vehicle is stopped.
- All wheeled vehicles, heavy equipment, and trailers must have the parking brake set, be placed in park or in gear for manual transmissions, and chock blocks at minimum 1 set of 2 appropriately placed. Vehicles under 14,000 lbs. gross vehicle weight (defined as the combined weight of the vehicle and all passengers and cargo) are excluded. Examples of vehicles that commonly exceed 14,000 lbs. gross vehicle weight include (but are not limited to) most drill rigs, rubber- tired backhoes, vacuum trucks, large walk-in vans, box trucks, and delivery vans, man-lift trucks, school buses, stake trucks, trash trucks, furniture vans, city buses, tractor part of tractor-trailers, cement trucks, and dump trucks.
- Vehicles may be left running only when operating auxiliary equipment or lights, and when the driver can ensure the vehicle is secure with the transmission in park or neutral, the parking brake set, and the wheels chocked where required or deemed necessary.

25.6. HOSE MANAGEMENT

- An anti-whip device (a.k.a. "whip check”) is required for 100 psi or greater air hose at each connection, including the air-supply source.
- A whip check is required for 300 psi or greater water hose at each connection, including at the water-supply source.
- Sand-blasting hose is required to have whip checks at all connections, regardless of pressure.
- Before use, pneumatic tools shall be secured to the whip to prevent the tool from becoming accidentally disconnected from the hose.
- Air hoses exceeding 1/2-inch inside diameter used to power hand tools (e.g., impact guns) shall have a safety device (e.g., air fuse) at the air-supply source or branch line to reduce pressure in case of hose failure.
- Secure ALL open-ended hoses to prevent whipping and to ensure discharge is routed to the appropriate location.
- When initially pressuring a hose, stand in a safe position that would protect you from a sudden rupture.

25.7. HAND PROTECTION

25.7.1. Requirements

- The primary focus of hand protection should always be to eliminate hand exposure to pinch points, crush points, impact zones, and other hand hazards. It is fully acknowledged that the use of any glove will not prevent all hand injuries, but their use, in many cases, minimizes the severity of an injury.

- Tasks shall be evaluated to determine what specific hand protection is required. Not all tasks that could occur at a remediation site are addressed in the guidance table below.
- Gloves for specialty activities such as electrical work or welding should be specified in the JHA and SWP.
- Gloves are required to be worn at all times on RM work sites. Having them on your person is not sufficient. You must don the appropriate gloves upon exiting a vehicle and entering the field. Gloves may be removed, if necessary, to write, interface with a keyboard, or to see to personal needs. Personnel shall wear hand protection appropriate to the hazard. Fingerless gloves are not allowed. Because remediation sites have many ubiquitous cut and puncture hazards, a cut- and puncture- resistant glove shall be the primary choice for daily use. Consult applicable Safety Data Sheets when working with chemicals to determine appropriate glove material and type.
- Visually inspect gloves before use for signs of penetration and damage due to impact, rough treatment, or abnormal wear that might reduce the degree of safety. Replace gloves when damaged.
- Contractors must verify with the responsible Phillips 66 asset's business unit regarding site-specific hand-protection requirements that may apply to a RM work site.

Refer to Appendix H for the Midstream hand-protection requirements.

Refer to Appendix I for the Refining hand-protection requirements.

- Incident reports for all finger/hand/wrist incidents shall include photos safely simulating the incident with the same glove type used, and must capture the following data:
  - Glove requirements specified in pre-job planning
  - Whether gloves were being worn at the time of the incident
  - Type, manufacturer, and model of glove used
  - Area of the hand or wrist affected by the incident Corrective actions must consider other controls/safeguards.

25.7.2. Glove Selection

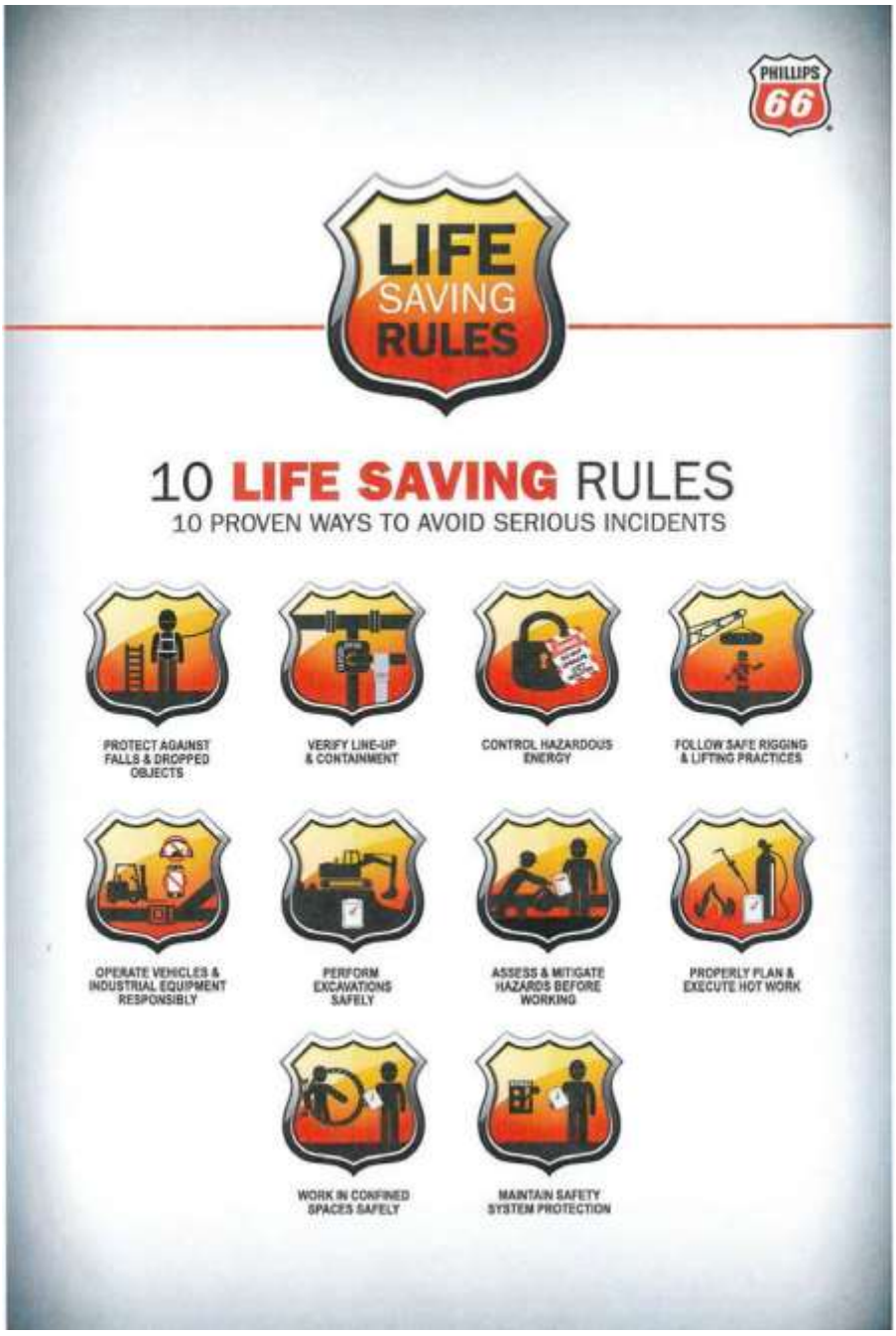
- Gloves should be selected based on the hazards of the task to be performed. Appropriate gloves (i.e., impact-resistant, cut-resistant, etc.) for the specific job task shall be worn until that task is completed. Glove-selection guidelines are provided in Appendix J.
- For cut resistance, glove liners may be worn, or a cut-resistant glove may be worn under another glove to provide cut protection.
- The worker should be able to perform her or his duties without removing his or her gloves.
- It is unlikely that a single glove will have all the protection characteristics needed for the job. Glove features should be carefully evaluated to determine the best fit. Many gloves are tested for resistance to hazards. ANSI ratings for cut resistance, puncture resistance, abrasion resistance, chemical permeation resistance, chemical-degradation resistance, ignition and flame resistance, heat degradation, vibration reduction and dexterity will help the user select a protective glove. It should be noted that the working surface of the glove is tested. A glove may have a high level of hazard resistance on the palm but have little or no protection on the back of the hand.
- Glove design will affect the amount of protection provided. Cuff and wrist design should be considered when selecting a glove.
- Gloves selected for protection from chemical exposure should also consider other hazards associated with the tasks, and should also protect against hazards such as cut, puncture, or

abrasion. A chemical-resistant glove may be worn over another glove to provide protection from multiples hazards.

- Globally, there are two different performance standards for hand protection, the European Standard EN388 and the ANSI/ISEA 105 Standard for the US. The test methods are not entirely identical and, therefore, cannot be directly correlated. In both standards, a higher rating is a more hazard-resistant glove. Glove ratings by the EN388 Standard are displayed as a four-digit number indicating the performance of the fabric in testing for Abrasion, Blade Cut, Tear, and Puncture, in that order.

- Glove ratings are not always printed on the glove or on a tag on the glove. Standards are usually printed on the box or can be accessed in catalogs, including internet catalogs, and product specification information.
- **Cut resistance**: The ANSI standards and EN standards for cut resistance cannot be directly correlated. From lowest to highest cut-resistance ratings, ANSI cut-resistance levels range from A1 to A9 and EN standards range from A to F.
- **Impact resistance**: Although ANSI has no impact-resistance standards, EN impact- resistance ratings are indicated with a “P” if a glove passed impact-resistance testing, “F” if a glove failed impact-resistance testing, and “X” if a glove was not tested for impact resistance. In general, gloves with thermoplastic resin components on the backhand and fingers provide impact and backhand protection and are marketed as such.
- **Puncture resistance**: ANSI puncture-resistance levels range from 1 (least resistant) to 5 (most resistant); EN puncture-resistance levels range from 1 (least resistant) to 4 (most resistant).
- **Abrasion resistance**: ANSI abrasion-resistance levels range from 0 (least resistant) to 6 (most resistant); EN abrasion-resistance levels range from 1 (least resistant) to 4 (most resistant).
- **Tear resistance**: Tear resistance is generally more of a quality consideration than a safety criterion, but it is often provided by glove manufacturers. Although ANSI has no tear- resistance standards, EN tear-resistance levels range from 1 (least resistant) to 4 (most resistant).

Appendix A:
Phillips 66 Live-Saving Rules Poster



Appendix B:
Task Risk Assessment Form

PRE-TASK RISK ASSESSMENT

The Pre-Task Risk Assessment (PTRA) will be completed during the initial planning phase of all projects. The final PTRA score will determine what level of approvals will be required for the Safe Work Plan.
Complete the PTRA for the entire project scope and not for each specific phase/task. If the scope of project changes or additional work phases are included, the PTRA will be updated and additional approvals may be required.

1. IF PTRA score is between 50 and 70 points, the SWP must be approved by Consultant Project Manager and Consultant HSE Representative.
2. IF PTRA score is 70 points or more, the SWP must be approved by Consultant Project Manager, Consultant HSE Representative, Phillips 66 HSE Team Lead and the Phillips 66 Program Manager.

YES	PERSONNEL	POINTS
	Lone Worker	30
	Specialty subcontractor (multi-industry) utilized	30
	No subcontractor ISN/EMR rating or safety variance required	20
	Work shift exceeds 12 hours including travel	20
	Workers have not performed this type of work (one or more)	20
	Workers are SSEs or not familiar with site (one or more)	15
	Total	**0**

YES	ENVIRONMENT	POINTS
	Adjacent to active roadway	30
	Close proximity to a water body (i.e., ocean, lake, river, stream, etc.)	20
	Unstable ground where additional support in required for equipment	20
	Biological hazards present (i.e., plant, insect, animal, etc.)	15
	Potential for heat stress, frost bite or extreme weather	10
	Sensitive Stakeholder (based on Project Team decision)	10
	Task performed after-hours (night shift), weekends, or is a security	10
	Work is adjacent to active railroad trackage	5
	Work within a process unit or adjacent to active operational area	5
	Total	**0**

YES	TASKS	POINTS
	Confined space entry	30
	Demolition (decommissioning/removal)	30
	Elevated work (> 4 feet) where fall or drop hazards exists	30
	Excavation greater than 4 foot deep to be entered by worker	30
	Exposure to live electrical equipment or potential for arc flash	30
	Exposure to potential hazardous atmosphere above OELs	30
	Heavy equipment use, specifically yellow iron	30
	Pile driving	30
	Rigging and lifting of equipment or materials	30
	Supplied air respiratory protection	30
	Underwater activities	30
	Drilling/Direct Push	20
	Vacuum truck operations for hydrocarbon recovery	20
	Hot Work, welding, grinding, etc.	15
	Potential exposure to silica/hazardous dust or particulate	15
	Radiation/NORM (Nuclear density gauge, RXF, etc.)	15
	System startup - potential for environmental release	15
	Task involves Lock, Tag, Try (LTT)	15
	Significant lifting, bending, handling of equipment	5
	Use of cutting tools or power tools	5
	Total	**0**

PERSONNEL + ENVIRONMENT + TASKS	TOTAL	0

Appendix C:
Subcontractor Vetting and Evaluation Expectations For Phillips 66 Remediation Sites

Tier 1 Major Contractors

Applicability: *All Drillers, Excavation contractors, Injection contractors (anyone doing subsurface intrusive work), All primary or lead subcontractors; Any contractor operating heavy equipment in exclusion zone (vacuum trucks, mobile treatment systems); Any contractor who performs tasks at multiple P66 sites throughout the year; any contractor on a jobsite for longer than 5 days; Any contractor performing dangerous or high risk tasks (as defined by Contractor); Any contractor working at a refinery or terminal; Any contractor working at a Superfund site; Any contractor tapping or removing pipelines that are on or near active pipelines*

RM Expectations: All standards applicable to Contractor shall apply to subcontractor, including but not limited to:

- Historic TRIR Performance as reported in ISNetworld or by review of OSHA logs to include citations issued by regulatory agencies
- P66 Insurance Requirements
- Written Health and Safety Program, including but not limited to:
  - Medical Monitoring Program
  - Drug and Alcohol Testing Program
  - Site Specific Health and Safety Programs
  - Job Hazard Analysis (JHA) Program
  - Behavior Based Safety Program
  - LTT, Confined Space, Hot Work, Excavations, Fall Protection & HazCom Programs (if applicable to their work)
  - Medical Case Management Program
  - Short Service Employee Program
  - PPE
- Evaluation of Safety Culture
- Evaluation of Safety Training Program and Safety Leadership
- Driver's Safety
- Glove Policy
- Review of Past Safety Performance on previous P66 projects
- Stop Work Authority policy
- Emergency Notification Process

Tier 2 Minor Contractors

Applicability: All secondary subcontractors (subs to a sub); All Contractors not covered in Tier 1 above; Any specialty or craft contractor entering an exclusion zone (e.g. plumbers, electricians, grass cutters, welders, surveyors, pipefitters, scaffold builders)

RM Expectations: All standards applicable to Contractor shall apply to subcontractor, including but not limited to:

- Historic TRIR Performance as reported in ISNetworld or by review of OSHA logs to include citations issued by regulatory agencies
- Reasonable Insurance Requirements
- Health and Safety Program, including but not limited to:

  - Medical Monitoring Program
  - Drug and Alcohol Testing Program
  - PPE
- Evaluation of Safety Culture
- Evaluation of Safety Training Program and Safety Leadership
- Review of Past Safety Performance on previous P66 projects
- Emergency Notification Process

Tier 3 Non Exclusion-Zone Services

Applicability: *Service providers not covered in Tier 1 or Tier 2 above; Any specialty or craft contractor not entering an exclusion zone but working at a jobsite (e.g. plumbers, electricians, grass cutters, surveyors, instrument technicians, maintenance or troubleshooters for HVAC or other equipment on site)*

- Reasonable Insurance Requirements
- Evaluation of Safety Culture
- Review of Health & Safety Programs applicable to work
- Review of Past Safety Performance on previous P66 projects
- Emergency Notification Process
- PPE

Tier 4 Vendors/Deliveries

Applicability: *Any subcontractor that typically delivers or picks up items at a jobsite but does not "work" at the site and/or is not supervised on a day to day basis are EXEMPT from these requirements. Included but not limited to, are:*

- Heavy equipment delivery
- Port-a-john delivery
- Sample coolers or overnight package deliveries
- UPS, FedEx etc.
- Municipal Utilities
- Utility locate and service
- Drum pick-up/delivery
- Off-site construction sites, fabrication shops, design and engineering firms

Appendix D:
GO Card

REMEDIATION MANAGEMENT GO CARD
USE FOR PRE-JOB JHA REVIEW

PROCEDURES

- Is there a work permit required for this task?
- What are the steps for the task?
- What is unclear about the procedures?
- Does the procedure address potential hazards?

EQUIPMENT & TOOLS

- What are the right tools for the job?
- What is the correct way to use the tools?
- Are our tools in good condition?

LINE OF FIRE

- What could we be struck by?
- What can we get caught in/on/between?
- What are potential slip/trip/fall hazards?
- What are potential hand/finger pinch points?

SITE CONDITIONS

- What extreme temperatures will we be in/around?
- What are the risks of inhaling, absorbing, swallowing hazardous substances?
- What are the noise levels?
- What are the energy sources we could come in contact with (LOTO)?
- Are there overhead or underground hazards?
- Are there flora/fauna/biological hazards?
- What are the security/stakeholder concerns?

PERSONAL PROTECTIVE EQUIPMENT

- What is the proper PPE for the task?
- What is the condition of your PPE?
- Is your safety monitoring equipment properly calibrated?

MANAGEMENT OF CHANGING CONDITIONS

- What would cause us to have to stop or rearrange the job?
- What would cause us to change our tools or equipment?
- What would cause us to have to change our location/position?
- What would cause us to have to change the type of PPE?
- What would cause us to have to replace the PPE?

YOU HAVE THE RIGHT AND THE OBLIGATION TO STOP ALL UNSAFE WORK.

CSB 14-1063

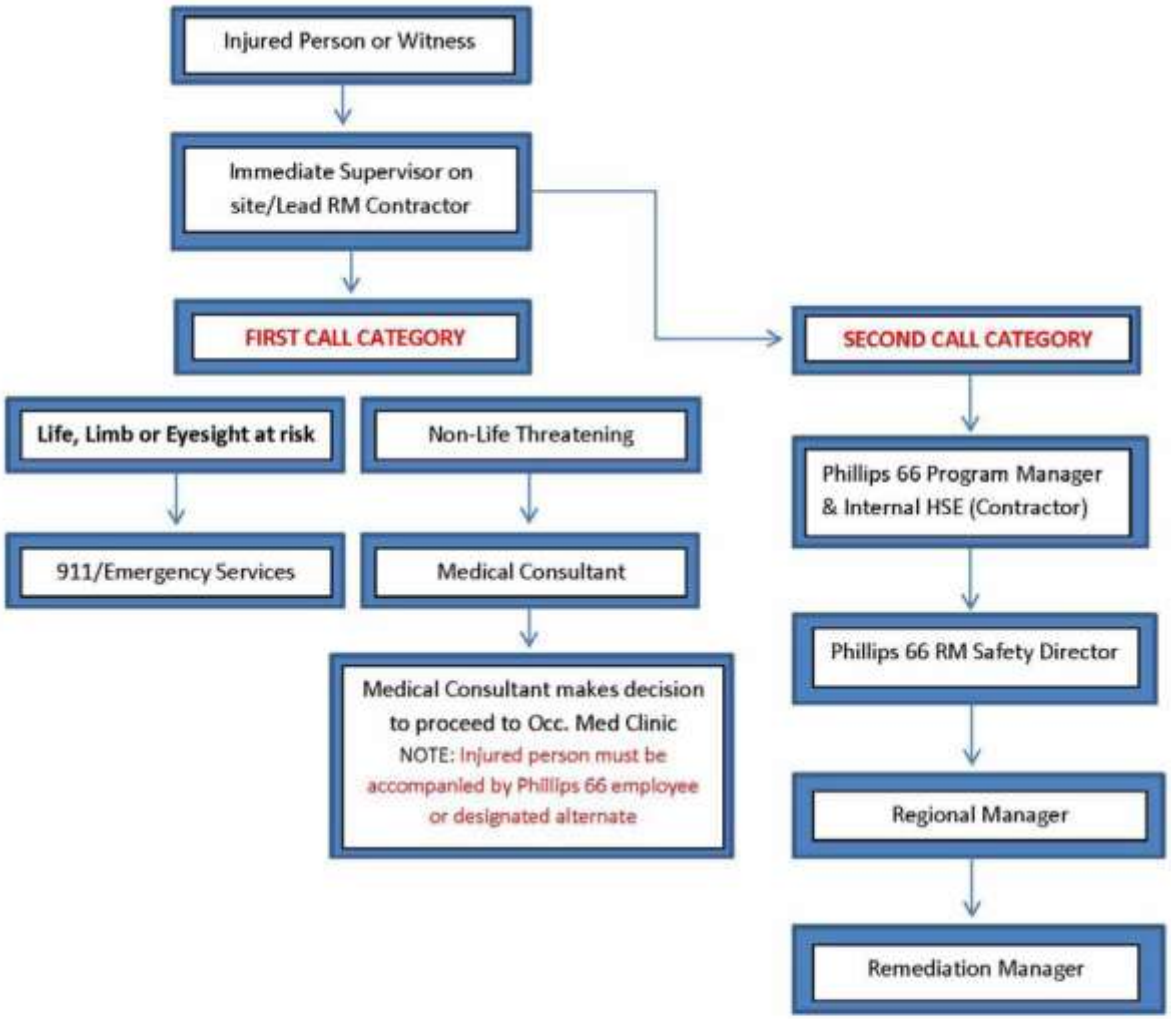
Appendix E:
Example of A Job Hazard Analysis Form

Job Hazard Analysis			
Job Description:		Worker roster/signatures:	
Date:		Analysis By:	
Sequence of basic job steps	Potential hazard(s)	Potential Hand and Finger Hazards	Steps to Eliminate Hazards or Reduce the Risk.
1			
2			
3			
4			
5			
6			
7			
8			

Appendix F:
Incident / Near Miss Reporting Guidelines

Incident/Near Miss Reporting	
The following are **incidents, injuries, illnesses, and near misses** that shall be entered into IMPACT. This list was created to drive improved understanding and consistency of reporting with the intent of increasing awareness, improving HSE systems and programs, ultimately resulting in reducing risk and injuries. Note: This includes unplanned events, incidents or near misses where there was a POTENTIAL for injury, illness, spill, release, etc. This list is not all-inclusive, but includes the more common types of incidents, near misses, audits and action items that may occur. Specific circumstances may vary the reporting requirements.	
Injury/Safety-Related/Fire/Emergency Incidents, Injuries, Near Misses, etc.	
1	All injuries (P66 employee or contractor) regardless of severity. Any bruise, scratch, laceration, muscle strain, fracture, broken tooth, sprain, burn, foreign body/irritation in eye, insect stings, snake/animal bites, pain, dizziness, or unconsciousness related to the work environment
2	Any type of incident listed on the Phillips 66 Risk Matrix Appendix A, What Good Looks Like Risk Ranking
3	Failure to complete a Job Safety Analysis or similar job pre-planning that involves all affected workers prior to commencing work
4	Any personnel fall on same level or from elevation, regardless of injury
5	Fall protection incident. Worker exposed to potential > 4 foot fall without required protection
6	Any fire or explosion, regardless of size or location on company property including smoldering incipient stage events, internal deflagration, pyrophoric
7	Any incident requiring Fire Brigade/HazMat/Rescue/Medical Response or ICS activation
8	Any incident involving Lifting/Rigging/Crane Operations, manlifts, slings
9	Any electrical shock or contact from arc flash
10	Fixed or personal gas monitor alarm activation
11	Failure to wear or require the use of specialized PPE when working on high risk systems
12	Failure to wear or require the use of respiratory protection when needed/required
13	Failure or degradation of Personal Protective Equipment in service
14	Facility evacuation or shelter in place
15	Falling objects independent of size from greater than 4 feet that did or could have resulted in injury or property damage
16	Confined space entry incident. Hazardous atmosphere in confined space while people were working in the space
17	Any LOTO/Energy isolation incident. Defeating an energy isolation device, failure to apply personal locks where required, etc.
18	Work permit incident. Any failure to perform joint job walk-down prior to issuing/receiving permit.
19	Hot work or hot tap incident
20	First break incident, equipment opened without being prepared for maintenance, opened wrong line, etc.
21	Issuing a permit to open process equipment that still contains hazardous pressure, LEL, H2S, HF, etc.
22	Excavation incident or procedure violations
23	Unauthorized/inappropriate personnel entry into barricaded areas, not signing into process units, present during unit startup/shutdown, etc.
24	Smoking, cell phone use, or other inappropriate equipment in process areas
25	Safety equipment failure (Fire Extinguisher, Safety Shower, etc.)
26	Expired or out of date equipment in use (example: slings in use past due on inspection)
27	Unauthorized equipment modification, or using a tool for other than its' intended purpose
28	All vehicle or Motor Carrier Incidents, including 3rd party transportation provider incidents
29	Safety barrier/ machine guarding degradation/failure
Occupational Health Incidents, Illnesses, Injuries, Near Misses, etc.	
30	All occupational related illnesses, regardless of severity (P66 employee or contractor), exposure symptoms, rashes, respiratory or skin irritations,
31	Any heat related injury or illness
32	Benzene present where employees are working >0.5 ppm
33	Unacceptable atmosphere present where employees are working: Low O2, High LEL, etc.
34	H2S present where employees are working > 20ppm
35	Personnel sprayed/splashed with hazardous materials (hydrocarbons, acids, caustics)
36	Lead: Work on coated equipment without proper lead assessment and use of protective equipment
37	Failure of respirator or supplied air breathing apparatus, respirator used without fit-testing or medical clearance
38	Disturbance of friable asbestos without respiratory protection or other asbestos procedure violation
39	Any reports of repetitive symptoms from workplace ergonomic or human factors design issues
40	Complaints of acute illness by employees, contractors or community
41	Odor/Noise complaint by employees, contractors or community
Environmental Incidents, Near Misses, etc.	
42	Environmental Events (examples: exceeding an EOL or RQ, flaring events, NPDES exceedances, Dry-weather flow, failed RATA tests, etc.)
43	Any incident (not paperwork issue) that will result in a Title V deviation/report (US Only). Example: CEMS failure
44	Flooding, and associated sewer backups
45	Tank roof incident, sinking tank roof, flooding tank room (drains left closed during rain event)
46	Leaks (not utility). Any oil/hydrocarbon release from primary containment regardless of volume
47	Any incident that affects the community: odor, noise, light, traffic disruption, exposure, injury, contamination, complaints, etc.
48	Toxic/Hazardous Substances Reportable Incident (TSCA/COSHH)
49	EOL exceeded
50	Missed regulatory-required periodic inspections (e.g., BWON sewer, hazardous waste container storage areas, open-ended lines, etc.)
51	Water effluent exceeds permit limits

Appendix G:
Incident-Notification Process Tree



Note: **These calls shall take place *IMMEDIATELY* and continue until these people are reached by voice, if the first person does not answer proceed to the next. Email is *NOT* an approved means of notification.**

Appendix H:
Phillips 66 Midstream Hand Protection & Glove Policy

Appendix I:
Phillips 66 Refining Hand Protection & Glove Policy

Cut, Puncture, & Impact Resistant Gloves		
Glove Picture	Glove Identifiers	Tasks Used For
	General Use Superior Endura Summer Part # 378GKGVB Winter Part # 378KGTVB	General Material Handling • Scaffold Erection & Demolition • Blind, Valve, or Spool Installation >2” • Valve Operation • Tool Use: Wrenches, Hammers, Etc. >20oz or >1 Inch Wrench • Rigging & Suspended Load Manipulation • Refractory Work • Jack Hammer Use • Chipping/cutting concrete • Chipping Insulation • Handling Glass • Using Knife or Open Blades • Handling Sheetmetal or Expanded Metal • Performing Tasks With Other Recognized Pinch Point Hazards
	High Dexterity Superior Dexterity Part # SKFGFNVB	
	Long Cuff General Use Superior Endura Summer Part # 375KGVB Winter Part # 75KGTVB	
	Superior Dexterity ANSI 105 A3 Or Equivalent Size 10 SAP# 13489685	Handling Glass Using Knife or Open Blades

Appendix J:
Glove-Selection Guidelines

Hazard	Tasks	Pre-2016 Standard*	2016 Standard	Representative Gloves*
Medium/heavy duty Impact hazards Cut/puncture	Drilling/direct push activities, staging to breakdown. Heavy materials handling Power tools Air knifing Hydro excavation	Plastic resin backhand protection ANSI Cut Level 3 or 4 EN388 Cut Level 3 or 4	Plastic resin backhand protection ANSI Cut Level A3 to A6 EN388 Cut Level C to F	HexArmor™ Chrome HexArmor™ GGT5 HexArmor™ L5 HexArmor™ Steel Leather Ringers Roughneck SuperCuff™
Medium/heavy duty Cut/puncture Oil/solvent-resistant	Tasks where materials are treated with oil or solvents.	ANSI Cut and Abrasion Level 3 EN388 Cut Level 3	ANSI Cut Level A3 ANSI Abrasion Level 3 EN388 Cut Level C	Memphis™ Ultra Tech Nitrile Cut & Splash Best™ Neoprene 6780 HexArmor™ Ten X Threesixty
Medium duty Cut/puncture Gloves with oily surface grip	Light materials handling Wet service	ANSI Cut and Abrasion Level 3 EN388 Cut Level 3 EN388 Abrasion Level 2 or 3	ANSI Cut Level A3 ANSI Abrasion Level 3 EN388 Cut Level C EN388 Abrasion Level 2 or 3	Best™ Zorb-It Ultimate HV 4567 Ansell™ Cut Protective Glove 97- 505
Medium/heavy duty Cut/puncture Abrasion	Light materials handling System O&M Use of hand tools Hand auguring Heavy-equipment operation	ANSI Cut and Abrasion Level 2 EN388 Cut and Abrasion Level 2 or 3	ANSI Cut Level A2 ANSI Abrasion Level 2 EN388 Cut Level B EN388 Abrasion Level 2 or 3	Perfect Fit™ PF570 HexArmor™ Level Six 9010/9012 Ironclad™ Cut Resistant Glove
Light duty Cut/puncture Abrasion	Handling soil samples or groundwater samples Opening spoons Well construction	ANSI Cut Level 2 EN388 Cut Level 2 Puncture-resistance Abrasion-resistance	ANSI Cut Level A2 EN388 Cut Level B Puncture-resistance Abrasion-resistance	Memphis™ Ninja Max N9676GL Memphis™ UltraTech Dyneema 9676 Memphis™ Ninja Ice (Cold Weather) Ansell™ Hyflex 11-511. 11624 Ansell™ Powerflex 80-813 Ironclad™ Workforce
Light duty	Observation	Cut-resistance (any level)	ANSI Cut Level A1 EN388 Cut Level A	

*Reference to ANSI and EN 388 glove testing standards. Listed gloves are good choices and generally meet the standards but are not the only gloves that can be used.

This selection chart is not intended to address all chemical hazards. Gloves used for chemical protection or to prevent contamination shall provide cut/puncture resistance or be used in tandem with cut/puncture protection.

Gloves available in high-visibility colors are preferred.

This table does not cover hand-protection requirements for all work that could be performed on a Phillips 66 Remediation Management project. Hand-protection requirements for heavier-duty work must be addressed in the Safe Work Plan for the proposed work.

Revision Summary *Added to document in 2018, previous edits not captured.*				
Rev.	**Approval Date**	**Revision Description Details**	**Communication**	**Revised by**
0	Unknown	Initial	Unknown	Unknown
1	4/18/2018	While previous revisions have occurred, for reasons unknown to current RM LT, they were not captured in a revision summary. This specific revision was to update Glove section and add Safe Work Plan and Hazard Reduction programs. Other minor changes and formatting took place at this time.	E-mail, Monthly Safety & Contractor meetings.	Jen Williams, HSE Team Lead
2	12/3/2019	Revised the Energy Isolation (LTT) section. Updated glove chart to include new P66 corporate requirements of Superior gloves. Added additional information on PPE for cement/bentonite.	E-mail, Monthly Safety & Contractor Meetings.	Jen Williams, HSE Team Lead
3	07/01/2020	Relocated the general health and safety to section 24 to better align with specific safety procedures, section 25. Made Hose Management a stand-alone section under specific procedures and added additional requirements.	E-mail, Monthly Safety & Contractor Meetings.	Jen Williams, HSE Team Lead
4	06/01/2021	Added the Borehole Clearance Matrix and additional requirements, including documentation of clearance policy by Contractors.	E-mail, Monthly Safety & Contractor Meetings.	Jen Williams, HSE Team Lead

Location	Borehole Clearance Requirements
Operating/Urban Areas To Include: Refinery, Terminal, Breakout Station, Pump Station, Crude Oil Trucking/Dump Station, Bulk Plants, Marketing sites	*Contact the Public Utility Locator ("One Call" Notification). *Use of a private utility-line locator (PUL) or geophysical technology is required. *Review As-Built drawings. *Conduct borehole walkthrough of investigative and property-inspection activities to determine the proposed physical limits of planned work.. *Locate boreholes **at least** 5 feet perpendicular from utility mark-out line *All boreholes and sampling points must be cleared using air knife, hydro-excavation, or vacuum extraction. *Pre-clear holes to 120% or minimum 2 inches greater than proposed borehole diameter to a minimum depth of 10 feet below grade surface (ft bgs). *Must verify and document depth and plumb of borehole. *Schedule drilling for same day as clearance. If not feasible, cover or hard barricade the open hole. *The duration between clearance and drilling shall not exceed one week. *Locations to be drilled must be confirmed and re-verified by the outgoing responsible person and "handed off" to the next responsible person at the end of each shift change or a delay in drilling greater than 24-hours. *If backfill is required utilize PVC casing at surface to delineate the edge of cleared bore for proper drill rig alignment. *Additional Operating Unit Requests (Work Permit, Excavation Permit).
Non-Operating/Non-Urban Areas To Include: Pipelines and Abandoned Operating Sites	*Contact the Public Utility Locator ("One Call" Notification). *Review As-Built drawings, where applicable. *Conduct borehole walkthrough of investigative and property-inspection activities to determine the proposed physical limits of planned work.. *Locate boreholes **at least** 5 feet perpendicular from utility mark-out lines. *All boreholes and sampling points must be cleared using air knife, hydro-excavation, or vacuum extraction. *Pre-clear holes to 120%, or minimum 2 inches greater than proposed borehole diameter, to a minimum depth of 5 ft bgs. *Must verify and document depth and plumb of borehole. *Schedule drilling for same day as clearance. If not feasible, cover or hard barricade the open hole. *The duration between clearance and drilling shall not exceed one week. *Locations to be drilled must be confirmed and re-verified by the outgoing responsible person and "handed off" to the next responsible person at the end of each shift change or a delay in drilling greater than 24-hours. *If backfill is required utilize PVC casing at surface to delineate the edge of cleared bore for proper drill rig alignment. NOTE: Use of a private utility-line locator (PUL) or geophysical technology is not required but encouraged and should be used where warranted by risk and determined by Program Manager.
Variances	*To deviate from the listed requirements a Standard Variance Request Form must be completed and approved by the Region Manager and Safety Team Lead. Justification and compensating measures must be included in the variance request. *Use of hand augers or hand probes are permitted only after a variance request has been submitted and approved.