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Chevron Environmental Management Company and King County

Five-Year Review Report

Former Chevron Bulk Plant No. 100-1327

Facilities North/King County (Metro)

Seattle, WA

March 2014

ARCADIS

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ARCADIS

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Acronyms and Abbreviations

ARCADIS	ARCADIS US, Inc.
ASTs	Aboveground Storage Tanks
CAP	Cleanup Action Plan
CD	Consent Decree
Chevron	Chevron Environmental Management Company
CLARC	Model Toxics Control Act Cleanup Regulation
COCs	Chemicals of Concern
cPAHs	Carcinogenic Polyaromatic Hydrocarbons
CULs	Cleanup levels
DNAPL	Dense Non-Aqueous Phase Liquid
DRO	diesel range organics
Ecology	Washington State Department of Ecology
gpm	Gallons per Minute
GRO	gasoline range organics
HRO	Heavy oil range organics
LNAPL	Light Non-Aqueous Phase Liquid
MCL	maximum contaminant level
MDL	method detection limit
Metro	King County, Seattle, Washington
mg/kg	milligrams per kilogram
µg/L	micrograms per liter
msl	mean sea level
MTCA	Model Toxics Control Act
MW	Groundwater Monitoring Well
POC	Point of Compliance
PPCD	Prospective Purchaser Consent Decree
ROW	Right of Way
the Site	Former Chevron Bulk Plant No. 100-1327
Touchstone	Touchstone Corporation
TPH	Total Petroleum Hydrocarbon
USTs	Underground Storage Tanks

1. Introduction

On behalf of Chevron Environmental Management Company (Chevron) and King County, ARCADIS US, Inc. (ARCADIS), has prepared this Five-Year Review Report to document ongoing compliance with Metro-Chevron-Ecology Consent Decree (CD) #99-2-08651-1SEA and Exhibit A – Cleanup Action Plan (CAP) at former Chevron Bulk Plant No. 100-1327 (the Site) located at Facilities North / King County (Metro), Seattle, Washington. The Site and surrounding area are shown on **Figures 1** and **2**.

Historical and recent data were compiled and evaluated to update the status of groundwater and soil remediation at the Site, and anticipated work to move the Site towards closure. This report also includes background information used to evaluate the Site status including but not limited to a summary of the regulatory requirements at the Site, historical remedial actions, and previous correspondence from the Washington State Department of Ecology (Ecology).

The Cleanup Action Plan (CAP), which is Exhibit A to the CD, evaluated surface water and concluded (CAP Section 3.6.2) that: "The results of the risk evaluation indicated that the Site poses minimal risk of groundwater to surface water when statistical averaging and chemical migration from groundwater and surface water are considered."

As such, and as defined in the Consent Decree (Exhibit B to the CD), the Site does not include Lake Union or its sediments. As a result, and as explicitly stated in Section V, Part 4 of the CD, Lake Union sediments are not discussed in this document. Section V, Part 4 of the CD states:

> *The concentrations of hazardous substances in the soil and groundwater exceed cleanup levels promulgated pursuant to the MTCA. The potential for hazardous substances to be present in the sediments in Lake Union and any cleanup thereof, if necessary, are not addressed in this Decree. Any future action concerning or related in any way to the sediments in Lake Union shall be addressed in a document other than this Decree, and this Decree shall not be amended or interpreted to address the sediments in Lake Union.*

Within the framework established by the CD, the objectives of this Five-Year Review Report are to:

- Summarize the current Site status,
- Document CAP compliance to date, and
- Briefly describe the anticipated remaining actions to complete the CD/CAP.

2. Site Description

The Site is located at 1602 North Northlake Way along the north shore of Lake Union in a mixed-use residential and commercial neighborhood. This property is divided into two operable areas: a North Yard located on the north side of North Northlake Way and a South Yard located adjacent to the north shore of Lake Union and south of North Northlake Way (**Figure 3**). The Site boundary as outlined in the CAP includes a public right of way (ROW) between the North and South Yard.

2.1 North Yard

The portion of the Site that is located between North 34th Street (to the north) and North Northlake Place (to the south), and between Woodlawn Avenue North (to the west) and Densmore Avenue North (to the east) is the North Yard. In 2009, Touchstone Corporation (Touchstone) purchased the North Yard property and entered into a Prospective Purchase Consent Decree (PPCD) to perform additional cleanup actions.

2.2 South Yard

The South Yard is bounded by Lake Union on the southwest, private property on the northwest, North Northlake Place on the northeast, and a property occupied by the Seattle Harbor Patrol on the southeast.

2.3 Public Right of Way between North and South Yard

The portion of the Site between the North Yard and South Yard at N Northlake Place and N Northlake Way is referred to as the Public ROW in this report. This area is shown on **Figure 3**.

2.4 Offsite Area and Adjacent Sites

Other cleanup sites in the vicinity are shown on **Figure 2** and include but are not limited to Northlake Shipyard, with metals-impacted sediments as the primary medium of concern (Ecology, 1994), and the Gas Works Park site, with coal-tar (i.e., dense non-aqueous phase liquid [DNAPL]) and metals-impacted groundwater, soils, and sediments (Ecology, 2005). The Gas Works Park site also includes the Seattle Harbor Patrol, which had underground storage tanks (USTs) and has been affected by migration of contaminants from Gas Works Park.

3. Historical Site Use

Between 1925 and 1927, Standard Oil of California (later Chevron) developed the North and South Yards as a marine bulk fuel storage and distribution facility. The North Yard included eleven aboveground storage tanks (ASTs), transfer piping, truck loading racks, and various small buildings. The petroleum product stored in the North Yard was linked to the South Yard fuel dock by underground piping. According to the CAP, the ASTs historically stored gasoline, diesel, fuel oil, refined oil, gasoline distillates, and lubricating oils.

Detailed information on historic bulk-fuel handling at the Site is not available. Based on the knowledge of typical industry practices and the existing and former structures, it can be inferred that bulk quantities of fuel were delivered to the facility by barge. Per the Draft Remedial Investigation/Feasibility Study*:*

> *These fuels would have been pumped through the underground pipelines that connected the Lake Union docks to the ASTs in the North Yard. Fuel would then have been transferred from the storage tanks into trucks at the tank truck loading rack. Fuels and other various products may also have been dispensed to vessels moored at the Lake Union docks.* (AGI, 1993)

Metro acquired the property in 1982 and used it for diesel fueling operations until April 1992, when all remaining diesel products were removed from the Site. Only three truck deliveries of diesel were received in 1991. According to Metro staff, no gasoline products were ever received or stored onsite by Metro. Metro decommissioned the fueling equipment in 1992 and used the property as a maintenance operations base until selling the North Yard as described in Section 3.1.

3.1 North Yard

The following summarizes the chronology of the North Yard:

- 1925 – Standard Oil Company of California (Chevron) develops North Yard and reportedly constructs the ASTs and piping.

- 1927 – Chevron constructs the garage along the north boundary and the tank-truck loading racks.

- 1950 – Available maps show various small buildings and sheds associated with oil delivery on the southern portion on the North Yard.

- 1982 – Metro purchases the property for diesel fueling operations. Metro also used the North Yard property for parking, private offices, lunch and meeting rooms, restrooms, locker rooms, record storage, and a woodworking and paint shop.

- 1992 – Metro decommissions fueling equipment and cleans and caps pipelines leading from North Yard to South Yard

- 1998 – Chevron, Metro, and Ecology enter into CD for the Site.

- 2007 – Touchstone and Ecology enter into PPCD for the North Yard.

- 2009 – Touchstone purchases the North Yard from Metro.

3.2 South Yard

The following summarizes the chronology of the South Yard:

- Prior to 1908 – Puget Sound Sheet Metal Works reportedly occupies the South Yard. A number of wood-frame buildings were reportedly present.

- 1912 – A tannery reportedly occupies the South Yard until the late 1920s.

- 1950 – Chevron uses a building in the South Yard as a warehouse.

- 1960 – Chevron and a chemical company (California Spray and Chemical Company) reportedly occupies the South Yard. No information on California Spray and Chemical Company activities is available.

- 1982 – Metro purchases the South Yard property. Metro uses the property in connection with its diesel fueling operations at the North Yard. Metro also uses the South Yard property to store equipment and materials and as a parking lot.

- 1992 – Metro decommissions fueling equipment and cleans and caps pipelines leading from North Yard to South Yard.

- 1998 – Chevron, Metro, and Ecology enter into CD for the Site.

3.3 Public Right of Way between North and South Yard

Two sets of subsurface piping were used to transfer product from the South Yard to the North Yard. In 1992, the subsurface piping was cleaned and capped at the South Wall of the AST containment area. In 1998, an inspection of piping pits and pipe connections indicated no surface or shallow (within 0.5 ft) petroleum staining or detection in the eight locations tested. The subsurface piping that was closed in place is located under the former North Yard office area, beneath the South Yard and under the dock.

4. Cleanup Action Plan

A CAP was developed for the Site by Foster Wheeler in 1998 (Foster Wheeler, 1998). The CAP describes the cleanup actions to be completed by Chevron and King County Metro pursuant to the Consent Decree.

4.1 Cleanup Action Plan and Specific Requirements

The CAP includes two phases of soil and groundwater remediation. Phase I (previously completed) was focused on the North Yard and consisted of demolition of the ASTs, removal of the aboveground piping and associated structures, and remediation of the North Yard shallow soils containing metals from AST sand blasting and painting activities. The objective of Phase II (previously completed, but monitoring continues) was to address the Lower Yard soil and groundwater. Phase II consisted of in situ groundwater remediation to address impacted groundwater (i.e., hydrogen peroxide injection with monitoring and contingencies as necessary).

Cleanup levels (CULs) for the chemicals of concern (COCs) in soil and groundwater were developed in the CAP and are described below. CULs were based on estimates of the highest beneficial use and the reasonable maximum exposure expected to occur under current and potential future Site use conditions.

The soil CULs established in the CAP are currently only applicable to soils outside of the North Yard because the North Yard will be cleaned up by Touchstone to cleanup levels required in its PPCD (see Section 4.2). The CAP specified that shallow soils [depth of 2 ft below ground surface (bgs) or less] collected in 1993 from hand borings in the South Yard that exceeded soil CULs will require evaluation to assess current concentrations, and if current concentrations exceed soil CULs, then these shallow soils in the South Yard will be remediated by natural attenuation and monitoring or by another Ecology-approved method. For subsurface soil at or near groundwater (outside of the North Yard or “Tank Farm”), the CAP specified addressing soil with concentrations exceeding soil CULs by groundwater remediation (CAP Section 5.3.2.).

The CAP also imposed institutional controls. The North and South Yards are zoned and anticipated to remain zoned industrial/commercial (IC-45; industrial commercial with a height limit of 45 feet). The CAP includes the following institutional controls:

- Restrictive covenants limiting Site use to commercial or industrial purposes, extraction or use of groundwater beneath the Site, and excavation activities.

- Engineering controls to restrict Site access at the North and South Yards, including maintaining the existing fencing and containment wall to restrict Site access and paving of the North Yard with asphalt for use as a parking lot.

4.2 Touchstone PPCD for North Yard

In 2009, Touchstone purchased the North Yard portion of the Site from King County/Municipality of Metropolitan of Seattle (Metro). Touchstone plans to build an office building with underground parking on this portion of the Site. In 2007, Touchstone sought a PPCD from Ecology and planned to remediate the North Yard to Model Toxics Control Act (MTCA) Method A unrestricted soil CULs. Touchstone and Ecology entered into a PPCD which states that after Touchstone remediates the North Yard soils, it may request an amendment to the existing Restrictive Covenant to remove restrictions that were placed on the North Yard property based on the Method C soil CULs approved in the Chevron/Metro Consent Decree.

According to the terms of its PPCD, Touchstone is required to remediate soil contamination in the North Yard, primarily through excavation and offsite disposal of contaminated soil, including the following if necessary: construction dewatering, testing and treatment of water during construction, and basement sump testing and treatment following construction. However, Touchstone is not responsible for remediation of off-property soil contamination or groundwater contamination on and outside of the North Yard property boundary. Soil not included in the PPCD (i.e., soils in the South Yard and in the ROW) and groundwater contamination remaining at the Site (including the North Yard) after Touchstone completes its redevelopment of the North Yard property will remain the responsibility of Chevron and Metro under their Consent Decree.

4.3 Consent Decree Groundwater Cleanup Levels

Groundwater CULs at the Site were based on MTCA Method B surface water CULs (Foster Wheeler, 1998). As defined by MTCA, the point of compliance (POC) is the point where CULs shall be attained. The POC for groundwater in the North Yard and the South Yard are the respective southern property boundaries. The MTCA Method B surface water CULs for COCs at the Site are:

Groundwater COC	Groundwater CUL micrograms per liter (µg/L)
Benzene	43
Toluene	48,500

Groundwater COC	Groundwater CUL micrograms per liter (µg/L)
Ethylbenzene	6,910
Naphthalene	9,880
Benzo(a)anthracene	0.0296
Benzo(a)pyrene	0.0296
Benzo(b)fluoranthene	0.0296
Benzo(k)fluoranthene	0.0296
Chrysene	0.0296
Dibenz(a,h)anthracene	0.0296
Indeno(1,2,3-cd)pyrene	0.0296
Arsenic	0.0982
Lead	5

4.4 Consent Decree Soil Cleanup Levels

Soil CULs for the South Yard are summarized in the table below and were based on MTCA Method A Industrial soil CULs (metals), Method C Industrial soil CULs (benzene and PAHs), and Method B Interim Total Petroleum Hydrocarbon (TPH) Policy using a residual saturation based evaluation (TPH).

Soil COC	Soil CUL milligrams per kilogram (mg/kg)
Inorganic Chemicals	
Arsenic	200
Cadmium	10
Chromium	500
Lead	1,000
Mercury	1
PAHs	
Benzo(a)anthracene	18
Benzo(b)fluoranthene	18
Benzo(k)fluoranthene	18
Benzo(a)pyrene	18
Chrysene	18
Dibenzo(a,h)anthracene	18
Indeno(1,2,3-cd)pyrene	18
Naphthalene	18

Soil COC	Soil CUL milligrams per kilogram (mg/kg)
Fluoranthene	18
Other Petroleum	
TPH-Gasoline	4,520
TPH-Diesel	5,140
TPH-Oil	5,780
Benzene	4,530

4.5 Previous Remediation Activities

Remediation was conducted at the North and South Yard as summarized below.

4.5.1 North Yard Remediation

Groundwater and soil remediation at the North Yard included the following:

- Prior to 1998: North Yard ASTs were cleaned and closed and aboveground piping was removed.
- 1992: Subsurface piping was cleaned and capped at the South Wall of the AST containment area. Piping closed in place remains at the North Yard under the former office area.
- 1998: Piping pits and pipe connections were inspected. No surface or shallow (within 0.5 ft) petroleum staining or vapor was detected in the vicinity of the exposed piping connections.
- 1999: North Yard ASTs were removed and shallow North Yard soil was removed to address shallow metals in soils. Surface soils (upper 3-6 inches) that exceeded soil CULs were removed.
- 1997-2010: Light non-aqueous phase liquid (LNAPL) was removed through bailing, skimming, and sorbent socks.
- 2001: Three enhanced fluid recovery events were conducted and no measurable LNAPL was recovered.

4.5.2 South Yard Remediation

Groundwater and soil remediation at the South Yard and in the Public ROW has included the following:

- 1992: Subsurface piping was cleaned and capped at the South Wall of the AST containment area. Piping that was cleaned and closed in place remains in the Public ROW beneath North Northlake Way, beneath the South Yard to the north end of the dock, and on the dock.

- 1998: Piping pits and pipe connections were inspected. No surface or shallow (within 0.5 ft) petroleum staining or vapor was detected.

- 1999-2000: Hydrogen peroxide was pilot tested and a full-scale system was installed to inject hydrogen peroxide into several groundwater monitoring wells (MW-3, MW-6, MW-7, MW-8, MW-9, MW-10, MW-11, MW-12, MW-15, MW-22, MLU-1, MLU-3, and AGI-2).

- 2002-2003: A biosparge system was installed and operated.

- October 2003: Monitoring well MW-8 was abandoned, test pits were completed to characterize the soil, and 350 tons of soil were excavated, and MW-8A was installed after excavation.

4.6 Tasks to Complete the Consent Decree and Cleanup

A letter from Ecology dated July 27, 2005 (Ecology Letter, 2005) estimated that the cleanup and Consent Decree were approximately 70 to 80 percent complete. The letter stated that three tasks should be considered to complete the Consent Decree and cleanup, as described below. The 2007 Touchstone PPCD separately covers the remediation (e.g., excavation and offsite disposal of 15,000 to 25,000 cubic yards of contaminated soil, according to Section 4.4 of the PPCD) of North Yard property soils and dewatering/groundwater management during construction. Therefore, of the tasks identified in the 2005 Ecology letter, excavation of North Yard soils is not addressed in this report, and only the other remaining tasks—those related to the North Yard groundwater post-construction, the South Yard, or the Public ROW—are presented below.

4.6.1 Localized Pockets of Contamination

Ecology requested further investigation in the vicinity of groundwater monitoring well MW-22 (located between the North Yard and the South Yard) to further characterize soils (Ecology Letter, 2005). In accordance with the Ecology's request, SAIC conducted an investigation to further delineate soil impacts (SAIC, 2006) around MW-22, which included 15 sample locations in close proximity to MW-22 (**Figure 3**). Only two soil samples from this investigation exceeded soil CULs (GRO at P-1B and P-3; 16 ft bgs), and both exceedances were in saturated soil samples collected below the groundwater table. SAIC concluded that these impacts were likely due to transport of petroleum along the water table from a source (loading rack) in the North Yard.

The soil impacts in the vicinity of MW-22 have been adequately characterized. Those impacts are limited to saturated zone soils that slightly exceed the GRO residual-saturation soil CUL. LNAPL has never been observed in groundwater monitoring well MW-22, MW-15, or other downgradient wells. Therefore, as described further in Section 6.1.2, it has been empirically demonstrated that the soil that exceeds the CULs is limited to the immediate vicinity of MW-22 and is not causing any soil to exceed the residual saturation for the soils (i.e., no LNAPL). These data support the conclusion that soil in the vicinity of MW-22 is not a source area that could contaminate other parts of the Site or off-site property. No further action is proposed at this time.

4.6.2 Elevated Arsenic and cPAHs in Groundwater

Ecology noted that arsenic observed in groundwater exceeded the Method B groundwater CUL of 0.0982 µg/L at MW-21, MW-8A, and MW-25. Ecology suggested addressing these arsenic concentrations with continued monitoring, by evaluating the arsenic background level for this Site, and by petitioning Ecology for a Site-specific cleanup level.

As described in Section 6.2.2, arsenic concentrations in groundwater in the Public ROW and in the South Yard are likely elevated due to background conditions, and not due to any specific conditions at the Site. The current Site-specific CUL does not account for typical regional background concentrations of arsenic in groundwater, potential migration of arsenic from nearby sites, or potential arsenic leaching to groundwater from fill materials placed by others throughout the area (prior to Site operations) to fill-in the northern shoreline of Lake Union. In addition, the Site-specific groundwater CUL is three orders of magnitude lower than the Method A groundwater CUL based on natural background (5 µg/L) and four orders of magnitude lower than

the federal drinking water maximum contaminant level (MCL) for arsenic (10 µg/L). The Method B CUL is also less than the EPA reporting and method detection limits for arsenic in water, which are 1 µg/L and 0.4 µg/L, respectively.

During the three most recent groundwater monitoring events (2011, 2012, and 2013), arsenic concentrations were either less than detection limits or were detected at concentrations less than the MTCA Method A groundwater CUL of 5 µg/L (along the shoreline at wells MW-4, MW-8A, MW-25, and MW-26 and at MLU-1.) During the most recent sampling event (April 2013), groundwater compliance wells AGI-2, MW-7, MW-19, MW-20, and MW-21, upgradient of the shoreline, exceeded the Method B groundwater CUL for arsenic.

Ecology also noted that carcinogenic PAHs (cPAHs) were above the Method B groundwater CUL in groundwater at MW-19. Ecology suggested continued monitoring of this well and indicated it would consider a request to amend the CD to change the cleanup level from Method B (0.0296 µg/L) to the practical quantitation limit (PQL) of 1.0 µg/L.[1] Since 2003, cPAHs have not been detected at concentrations greater than 1.0 µg/L in groundwater monitoring compliance wells.

To determine whether cPAHs are dissolved in groundwater or sorbed to fine grained soils, filtered and unfiltered samples have been collected and analyzed since 2012. The filtered sample results are not considered unless cPAHs are first detected in the unfiltered sample. As described in Section 5.3.2, in 2012 cPAHs were detected above groundwater CULs in an unfiltered groundwater sample from MW-4; however, PAHs were not detected in the filtered sample, indicating PAHs are likely sorbed to fine-grained soils and not dissolved in groundwater. In April 2013, PAHs were not detected in unfiltered or filtered samples. The filtered and unfiltered sample analytical data are empirically evaluated in Section 6.1 to show that cPAH concentrations in groundwater are in compliance with CULs for Site POCs.

[1] Ecology's MTCA regulations define the "practical quantitation limit" or "PQL" as the lowest concentration that can be reliably measured within specified limits of precision, accuracy, representativeness, completeness, and comparability during routine laboratory operating conditions, using Ecology-approved methods. The PQL is an extrapolation from the *method detection limit*, or "MDL," which is the minimum concentration of a compound that can be measured and reported with ninety-nine percent (99%) confidence that the value is greater than zero (WAC 173-340-200).

4.6.3 Compliance Monitoring

Ecology requested that the Compliance Monitoring Plan be revised to account for Touchstone's proposed soil excavation, and that monitoring be conducted following the completion of Touchstone's excavation activities.

The CAP designated Site monitoring wells as either groundwater monitoring wells or compliance monitoring wells. Monitoring wells MW-24, MW-3, MW-9, MW-27, MW-28, MW-11, MW-10, MW-12, MW-22, MW-15, MW-14, and MLU-3 are designated as Site groundwater monitoring wells (**Figure 3**). Monitoring wells MW-19, MW-20, MW-21, AGI-2, MW-7, MW-8 (replaced with MW-8A), MW-25, MW-26, MW-4, and MLU-1 are designated as compliance monitoring wells (**Figure 3**) and these wells are to be monitored quarterly. The CAP specified that compliance with MTCA requirements are met once COCs in all compliance wells are below CULs for five consecutive quarters (i.e., a total of five monitoring events over approximately 1.25 years at 3-month intervals).

Per Ecology's direction, ARCADIS submitted a Revised Groundwater Compliance Monitoring Plan on March 31, 2011 (ARCADIS, 2011). Under the Revised Groundwater Compliance Monitoring Plan, compliance monitoring wells will be sampled on an annual basis until Touchstone's cleanup actions in the North Yard are complete. Quarterly gauging and bailing of LNAPL will continue at wells MW-3, MW-9, MW-27, SMPN-1, SMPN-2, and SMPN-3 until Touchstone initiates cleanup actions in the North Yard.

Then, during Touchstone's cleanup and construction activities, LNAPL gauging and bailing will be suspended, and Touchstone will excavate and remove five Site monitoring wells (MW-3, MW-27, SMPN-1, SMPN-2, and SMPN-3) that are within the footprint of Touchstone's proposed redevelopment of the North Yard. These wells are not compliance wells and their absence will not affect compliance monitoring.

Following completion of Touchstone's North Yard cleanup actions, a revised Groundwater Compliance Monitoring Plan will be submitted to Ecology for approval. It is anticipated that the revised plan will propose to change the groundwater monitoring frequency from quarterly to semi-annually.

While the CAP requires five consecutive quarters of groundwater monitoring to confirm compliance, Ecology has indicated that if monitoring is conducted semi-annually, then

Ecology may require five consecutive semi-annual groundwater monitoring events to confirm compliance (i.e., five consecutive events spread over approximately 2.5 years).

5. Site Characterization

This section summarizes the Site geology and hydrogeology and historical and current characterization of soil and groundwater. **Figure 3** shows investigation locations (hand augers, soil borings, monitoring wells, and piezometers). **Figures 4**, **5**, **6**, and **7** present the geologic information described in this section in geologic cross-sections. **Figures 8**, **9**, and **10** present the soil and groundwater analytical and LNAPL monitoring information described in this section.

5.1 Geology and Hydrogeology

5.1.1 Site Stratigraphy

The North Yard and South Yard stratigraphy consists of fill material placed over native soils. The fill material was placed in the 20th Century and consists of loosely compacted yellowish-brown to grayish-brown sand and silty sand with occasional gravel and/or debris (vegetative and anthropogenic). The North Yard is underlain by 20th Century fill to approximately 10 to 20 feet bgs, and the South Yard is underlain by 20th Century fill to approximately 15 to 35 feet bgs, respectively. The 20th Century fill is underlain by Vashon Stade Deposits to the maximum depth explored in the North Yard (approximately 85 feet bgs) and to the maximum depth explored in the South Yard (approximately 55 feet bgs). The Vashon Stade Deposits consist of hard, dense, gray and tightly compacted sand, silt, and gravel deposited during the advance and retreat of the Vashon Stade Glacier (i.e., advance outwash, glacial till, and recessional sand). Cross-section locations are shown on **Figure 4**, and geologic cross-sections are shown on **Figures 5, 6, and 7**.

5.1.2 Groundwater Flow

The historical groundwater flow direction has seasonally fluctuated from the southeast toward the southwest. Generally, groundwater discharges to Lake Union. However, groundwater elevations are occasionally lower than the Lake Union water level. The Lake Union water level is maintained by the Hiram M. Chittenden Locks at approximately 20 to 22 feet above mean sea level (msl). Groundwater gradient information collected in 1993 indicated that during these Lake Union water level changes, groundwater gradients may reverse near the lake (AGI, 1993). Quarterly groundwater gradient information collected from 1993 to present indicates that the Site groundwater gradient does not change and is always toward Lake Union. If groundwater gradients do reverse when lake levels are lowered, it is a temporary

phenomenon and/or is not measured in groundwater monitoring wells as close as 20 feet inland from the shoreline. As such, any groundwater gradient reversal that may occur near the shoreline would not affect groundwater flow in the Public ROW or the North Yard portions of the Site.

Groundwater elevation data and historical and recent LNAPL thicknesses and removal data are presented in **Table 1**. Well construction details are presented in **Table 9**. The horizontal hydraulic gradient present onsite is approximately 0.03 ft/ft. The gradient in the North Yard is much steeper, as this area is 30 feet higher in elevation than the South Yard.

Historically, groundwater elevations across the Site have ranged from approximately 17.2 feet above msl to 27.6 feet above msl in monitoring wells MW-25 (located in the South Yard) and MW-27 (located in the North Yard), respectively. Historical groundwater level monitoring shows a fluctuation of up to approximately 6.5 feet in groundwater water elevation in the North Yard (e.g., MW-3 and MW-9).

5.1.3 Previous Aquifer Testing

In June to July 1998, slug tests and aquifer drawdown tests were performed. Based on the slug tests, the hydraulic conductivity at three Site groundwater monitoring wells (MW-11, MW-14, and MW-16) ranged from approximately 12 to 56 feet/day. This aquifer testing data was used by Foster Wheeler Environmental to estimate a sustainable yield of 2 gallons per minute (gpm) with a range of 0.5 to 3 gpm.

5.2 Soil and LNAPL

Soil samples in excess of Site soil CULs and LNAPL at the Site are further described in this section, and supporting data are presented in **Tables 1** to **6** and **Figures 8** and **10**.

Soil impacts were historically most significant and widespread within the North Yard. LNAPL has been observed in the North Yard and along its downgradient border within the Public ROW portion of the Site. With the exception of a few historical shallow soil samples collected in 1993 in the South Yard, South Yard soil samples meet Site soil CULs. LNAPL has never been observed at the South Yard.

5.2.1 North Yard Soil and LNAPL Data

Historically, shallow soil in the North Yard was impacted by metals, and these soils were excavated and disposed of offsite as part of Phase I remediation in 1999 (SAIC, 2006). Deeper petroleum hydrocarbon-impacted soils and LNAPL have been observed within the North Yard. The following subsections summarize the historical exceedances of Site soil CULs and the current status of the soils in the North Yard. Section 3.1 of Touchstone's PPCD requires Touchstone to remediate the North Yard soil to MTCA Method A CULs (i.e., unrestricted site use) during Site redevelopment.

5.2.1.1 North Yard LNAPL

LNAPL was historically observed at North Yard monitoring wells MW-3, MW-10, MW-12, MW-27, MW-28, SMPN-1, SMPN-2, and SMPN-3, with historical thicknesses ranging from 0.01 ft. to a maximum of 3.64 ft. at MW-3 in 2006. The thickness of LNAPL measured in the North Yard monitoring wells has significantly decreased over time. During the most recent monitoring event, LNAPL was measured in North Yard monitoring wells at thicknesses of 0.01 ft at several wells to a maximum of 0.67 at MW-9. LNAPL data are presented in **Tables 1, 2,** and **6** and shown on **Figure 10**.

5.2.1.2 Petroleum Hydrocarbons in North Yard Soil In Excess of Site CULs

Petroleum hydrocarbons, including diesel range organics (DRO) and gasoline range organics (GRO), exceed soil CULs (Touchstone PPCD and CAP CULs) at multiple locations in the North Yard. These impacted soils will be removed by Touchstone during its redevelopment of the North Yard under the PPCD. Heavy oil range organics (HRO) and cPAH were not detected above cleanup levels in North Yard soil samples. Soil data are presented in **Tables 3** and **4.**

5.2.1.3 Metals in North Yard Soil in Excess of Site CULs

Soils exceeding CULs for one or more metals were present in the top 3 to 6 inches in the North Yard tank farm area. Arsenic and lead concentrations exceeded soil CULs at multiple locations within the North Yard including at HB1 (0.2 ft), HB2 (0.1 ft), HB3 (0.1 ft), HB4 (0.1 ft), HA-06 (0-0.5 ft), and HA-22 (dup) (0-0.5 ft). Mercury concentrations exceeded soil CULs at HB1 (0.2 ft), HB2 (0.1 ft), HB3 (0.1 ft), and HB4 (0.1 ft). Cadmium concentrations exceeded soil CULs at HB1 (0.2 ft). As part of the Phase I cleanup implemented under the CD, these impacted soils were excavated and

disposed of offsite by Metro in 1999. Historical soil metals data are presented in **Table 5.**

5.2.2 South Yard Soil and LNAPL Data

South Yard soil samples have met Site CULs with the exception of four historical soil samples summarized in the following subsections. LNAPL has not been observed at any monitoring wells located in the South Yard (**Tables 1, 2,** and **6; Figure 10**).

5.2.2.1 Petroleum Hydrocarbons in South Yard Soil In Excess of Site CULs

In the South Yard, only one soil sample has exceeded the soil CUL for GRO. In 1993, the GRO concentration in a soil sample from AGI-2 (12.5 ft bgs) was 5,500 mg/kg, in excess of the GRO soil CUL (4,520 mg/kg). This well has never had measureable levels of LNAPL indicating that LNAPL is not present in South Yard soil at the residual saturation limit. Two shallow hand-auger soil samples collected in 1993 from the South Yard (HB8 at 1 ft bgs; HS4 at 0.3 ft bgs) exceeded the DRO soil CUL. HRO and cPAH were not detected above cleanup levels in South Yard soil samples (**Tables 3** and **4; Figure 8).** No other soil samples have exceeded the South Yard soil CULs for petroleum hydrocarbons.

5.2.2.2 Metals in South Yard Soils In Excess of Site CULs

One shallow hand-auger soil sample collected in 1993 from the South Yard (HB7 at 0.4 ft) exceeded the lead soil CUL. No other South Yard soil samples exceeded the lead soil CUL and other metals were not detected above soil CULs in South Yard soil samples (**Table 5** and **Figure 8**)**.**

5.2.3 Public ROW Soil and LNAPL Data

Historical soil data in excess of Site soil CULs in the Public ROW between North Yard and South Yard at the Site are summarized in the following subsections, and supporting data are presented in **Tables 1** to **6** and **Figures 8** and **10**.

5.2.3.1 Public ROW LNAPL

LNAPL was historically observed at only one well in the Public ROW, monitoring well MW-9, which is located directly adjacent to the North Yard source area. In 2012, the LNAPL thickness in MW-9 was 1.00 ft and during the most recent monitoring event in

2013, LNAPL thickness in MW-9 was 0.67 ft. In 2007, soil borings B-8 and B-19 were drilled downgradient of MW-9, and only a slight sheen was observed on the soil samples when these borings were installed. LNAPL has never been observed at the downgradient compliance monitoring wells MW-19, MW-20, and MW-21 (**Figure 10**). This indicates that the LNAPL that is observed at MW-9 is likely from the North Yard and suggests that Touchstone's cleanup of North Yard soils will address the source of LNAPL at MW-9. LNAPL data are presented in **Tables 1**, **2**, and **6** and shown on **Figure 10**.

In addition, and as described in Section 6.1.2.1 and **Appendix A** to this Report, it is proposed to use dual-phase extraction (DPE) to remove any remaining LNAPL in the immediate vicinity of MW-9 and will be addressed in coordination with Touchstone's dewatering and excavation under its PPCD.

5.2.3.2 Petroleum Hydrocarbons in Public ROW Soil in Excess of Site CULs

When evaluating all historical soil data for the Public ROW portion of the Site, GRO concentrations were found to exceed soil CULs in the Public ROW at five locations, all of which are located adjacent to or downgradient of the North Yard: P-1B (16 ft), P-3 (16 ft), SB-8 (12.5 ft), B-14 (12.5 ft bgs) and B-23 (10 ft). DRO concentrations exceed soil CULs at SB-8 (12.5 ft bgs) and B-23 (10 ft bgs) (**Figure 8**), which borders the North Yard south property line.

Only one cPAH with a Site soil CUL, naphthalene, has been detected above soil CULs in the Public ROW. Concentrations of naphthalene exceed soil CULs at SB-8 (12.5 ft) and B-23 (10 ft bgs). The fluoranthene concentration at SB-8 (12.5 ft) was equal to the soil CUL. Samples containing concentrations of COCs in excess of their respective CULs were collected at or below the groundwater table. HRO was not detected above soil CULs in the Public ROW. Soil data are presented in **Tables 3** and **4.** Given the spatial locations, depths, and concentrations at which these contaminants were found, it appears that they likely migrated there from a source area, most likely the North Yard. Similarly, the soil data do not suggest that the Public ROW is a source area for contaminants that could readily migrate to other parts of the Site or offsite. As such, with the exception of LNAPL extraction in the vicinity of MW-9 (see Section 6.1.2.1) no further action is proposed in the Public ROW at this time.

5.2.3.3 Metals in Public ROW Soil in Excess of Site CULs

Metals were not detected above soil CULs in the Public ROW (**Table 5**).

5.3 Groundwater

5.3.1 Groundwater Monitoring Wells and Compliance Requirements

As described in Section 4.6.3, ARCADIS is currently conducting groundwater monitoring in accordance with the Revised Groundwater Compliance Monitoring Plan (ARCADIS, 2011). Annual groundwater monitoring includes sampling of compliance monitoring wells. In addition, gauging and bailing of LNAPL will continue at monitoring wells MW-3, MW-9, MW-27, SMPN-1, SMPN-2, and SMPN-3 on a quarterly basis until cleanup actions are initiated in the North Yard by Touchstone. LNAPL gauging and bailing will be suspended at these monitoring wells during construction activities as described in Section 4.6.3.

5.3.2 Petroleum Hydrocarbons and PAHs in Groundwater

Historically, monitoring wells located within the North Yard have had benzene samples that exceed groundwater CULs, at concentrations greater than those observed in downgradient compliance monitoring wells in the Public ROW and South Yard. North Yard wells are not compliance wells and have not been sampled since 2010. However, groundwater monitoring of the downgradient compliance wells has continued, and the data indicate that benzene concentrations are decreasing or stable at compliance wells, with the exception of one monitoring event in September 2012, when benzene concentrations in MW-7 and AGI-2 exceeded the Site groundwater CUL. However, benzene, toluene, and ethylbenzene samples collected in April 2013 from compliance monitoring wells did not exceed the CULs (ARCADIS, 2013).

During each sampling event since 2012, one unfiltered and one field filtered sample (i.e., two separate samples) have been collected for cPAHs to determine whether cPAHs detected in excess of CULs are dissolved or sorbed to fine-grained sediments. Results from the filtered samples are considered only when concentrations of cPAHs are detected in the unfiltered samples. In September 2012, PAHs exceeded groundwater CULs in the unfiltered sample collected from MW-4; however, PAHs were not detected in the filtered sample, indicating PAHs are likely sorbed to fine-grained soils and not dissolved in groundwater. PAHs were not detected at concentrations greater than the groundwater CULs in unfiltered or filtered samples collected in April 2013 (ARCADIS, 2013).

Groundwater data are presented in **Tables 7** and **8** and shown on **Figure 9.**

5.3.3 Arsenic in Groundwater

Arsenic concentrations in several Public ROW (North Yard compliance well) and South Yard monitoring wells exceed the groundwater CUL (0.0982 µg/L). During the most recent sampling event (April 2013), samples from the three compliance wells in the Public ROW (MW-19, MW-20, and MW-21) contained arsenic concentrations (0.42 µg/L, 1.4 µg/L and 11.6 µg/L, respectively) above the Site groundwater CUL. Groundwater arsenic data are presented in **Table 8**.

In the South Yard, three monitoring wells are located on the northeast side of the South Yard along North Northlake Place (AGI-2, MW-7, and MLU-1). April 2013 samples from monitoring wells AGI-2 and MW-7 (11.6 µg/L and 5.3 µg/L, respectively) exceeded the arsenic Site groundwater CUL. Arsenic was not detected in monitoring well MLU-1.

Four South Yard monitoring wells are located adjacent to the current shoreline (MW-4, MW-8A, MW-25, and MW-26). Along the shoreline, data from at least three monitoring events (2011, 2012, and 2013) indicate arsenic concentrations were either not detected or were detected slightly above the method detection limit (MDL) of 0.4 µg/L. In April 2013, arsenic was not detected above the MDL in MW-8A, MW-26, and MW-4, but arsenic was detected in MW-25 (0.90 µg/L) at a concentration above the MDL but less than the method PQL of 1 µg/L (ARCADIS, 2013). Thus, although there are low concentrations of dissolved arsenic throughout the North Yard and Public ROW, groundwater that discharges from the Site to Lake Union does not contain measureable concentrations of dissolved arsenic, or contains concentrations close to the PQL and less than background, as discussed in Section 6.2.2. Therefore, Site groundwater is not impacting arsenic levels in Lake Union.

6. Evaluation of Remaining Groundwater and Soil Exceedances and Compliance with the CAP

As discussed in Section 5, as a result of multiple Site investigations and groundwater monitoring activities, Site impacts have been fully delineated. Only limited areas of Site groundwater and soil currently have concentrations greater than the Site CULs. Each remaining CUL exceedance or LNAPL observation is discussed below. The limited areas of the Site where CUL exceedances remain are shown on **Figures 8, 9,** and **10**, and analytical data for these soil samples are presented on **Tables 3, 4,** and **5.** LNAPL observations are summarized in **Tables 2** and **6**.

6.1 Soil and LNAPL

At the South Yard and in the Public ROW, soil samples in excess of Site CULs were limited to petroleum hydrocarbons (GRO, DRO, and PAHs), and one historical soil sample that exceeded the lead CUL at the South Yard (HB7) (**Figures 8** and **10**). These historical shallow soil exceedances in the South Yard (i.e., DRO at HS4 and HB8) are not considered representative of current conditions. Pursuant to Section 5.3.2 of the CAP, shallow soils (depth of 2 ft bgs or less) collected from hand borings in 1993 from the South Yard that exceeded soil CULs will require evaluation to assess current concentrations, and if current concentrations exceed soil CULs, then these shallow soils will be remediated by natural attenuation and monitoring or by another Ecology-approved method. If necessary, current shallow soil conditions could be confirmed with a new soil sample at these locations. Additional soil characterization was undertaken in 2003 and 350 cubic yards were excavated. No further soil cleanup action is contemplated in the South Yard or the Public ROW.

The remaining limited petroleum hydrocarbon soil exceedances are located within deeper soils that are at or near the groundwater table. Pursuant to Section 5.3.2 of the CAP, soils in the saturated zone are to be evaluated and addressed as part of the groundwater cleanup actions. The CD defines two endpoints that must be met for saturated soil: petroleum hydrocarbon contamination must not be leaching to groundwater and no free product can be present (i.e., soil concentrations must not exceed residual saturation.) These endpoints are evaluated below in Sections 6.1.1 and 6.1.2 to empirically demonstrate that outside of the North Yard, the Site complies with these endpoints for GRO and DRO. The Site soil CULs for GRO and DRO were based on residual saturation as described in Section 6.1.2.

The soil CUL for PAHs was based on Method C Industrial CULs for direct contact. Soil samples confirm that South Yard soils meet the soil CUL for PAHs (18 mg/kg). In the Public ROW, two historical samples, SB-8 (12.5 ft bgs, in 1993) and B-23 (10 ft bgs, in 2007), were at or above the PAH CUL. These sample locations are on the North Yard property line and in the northwestern corner of Gas Works Park, respectively. The 1993 soil sample from SB-8 (12.5 ft bgs) had an estimated naphthalene concentration of 25 mg/kg, above the CUL. The 2007 soil sample from B-23 (10 ft bgs) had a naphthalene concentration of 20.1 mg/kg, above the CUL. These two soil samples were collected from at least 10 feet below the ground surface (at or near groundwater), and there is very limited potential risk for direct contact or other significant human exposure to these soils. These soils are not accessible to the general public or workers at the North or South Yard. The direct-contact pathway is further limited because it is a paved and heavily traveled Public ROW so excavation activities are tightly controlled by the City of Seattle, and there is no potential for extraction or use of groundwater except for construction dewatering, which cannot be done without regulatory involvement and approval.

Based on these considerations and under Section 5.3.2 of the CAP, the two exceedances of the soil CUL for PAHs are evaluated for compliance with the CD's groundwater requirements. Section 6.1.1 evaluates the potential for these limited PAH exceedances of soil CULs to leach to groundwater and empirically demonstrates that these soils comply with this endpoint.

6.1.1 Compliance with Potential Leaching from Soil to Groundwater Endpoint

An empirical demonstration will be used to demonstrate compliance with WAC 173-340-740(3)(b)(iii)(A), by showing that remaining COCs in Site soils will not cause an exceedance of groundwater CULs. As defined under WAC 173-340-747(3)(f) and WAC 173-340-747(9), the following are required for the empirical demonstration:

- The measured groundwater concentration is less than or equal to the applicable groundwater cleanup level established under WAC 173-340-720; and

- The measured soil concentration will not cause an exceedance of the applicable groundwater cleanup level established under WAC 173-340-720 at any time in the future. Specifically, it must be demonstrated that a sufficient amount of time has elapsed for migration of hazardous substances from soil into groundwater to occur and that the characteristics of the site (e.g., depth to groundwater and infiltration) are representative of future site conditions. This demonstration may also include a

measurement or calculation of the attenuating capacity of soil between the source of the hazardous substance and the groundwater table using site-specific data.

For this Site, compliance with the CD is defined as meeting groundwater CULs at the designated compliance monitoring wells. The groundwater sampling results summarized in Figure 9 demonstrate that the limited remaining soil impacted with PAHs, GRO, and/or DRO above soil CULs (see Figure 8) is not resulting in elevated petroleum hydrocarbons and cPAHs (benzene, toluene, and ethylbenzene) in downgradient compliance monitoring wells (MW-19, MW-20, MW-21, AGI-2, MW-7, MW-8A, MW-25, MW-26, MW-4, and MLU-1) and is not causing an exceedance of groundwater CULs. This empirical demonstration shows that remaining COCs in Site soils are compliant with the leaching-to-groundwater endpoint because those soil concentrations are not causing exceedances of groundwater CULs at designated POCs.

6.1.2 Compliance with Residual Saturation of Soils Endpoint

When petroleum hydrocarbons are released to soil, some of the liquid will dissolve in the soil pore water,[2] some will adsorb to the soil particles, some will vaporize in the soil pore air, and some will be held by capillary force in liquid form (LNAPL) in the soil pore spaces. The threshold concentration at which LNAPL becomes continuous in the soil pore space is called residual saturation or Csat. At concentrations just below Csat, the LNAPL exists in small, isolated blebs. The concentration at which the isolated LNAPL blebs become connected to form streamers is called residual saturation. At concentrations below residual saturation, the isolated blebs are relatively immobile. At concentrations above residual saturation, the LNAPL streamers can migrate downward under the force of gravity, and the LNAPL can reach groundwater if a sufficient volume is present.

A residual saturation-based evaluation was used to determine soil CULs for GRO (4,520 mg/kg) and for DRO (5,140 mg/kg). These Csat values are conservative in that they assume these COCs will shift to an LNAPL state at relatively low concentrations, which would more readily trigger further cleanup requirements than an assumption based on higher concentrations. Data provided in the Cleanup Levels and Risk

[2] "Pore water" is water found in the spaces between soil or sediment particles. See generally http://toxics.usgs.gov/definitions/pore_water.html (last visited March 19, 2014) and sources cited therein.

Calculations under the Model Toxics Control Act Cleanup Regulation (CLARC) [Ecology, 2001 (p. 343)] indicate that residual Csat values for silt to fine sand can actually range as high as 9,643 mg/kg for GRO and 22,857 mg/kg for DRO. Residual Csat values for fine to medium sand can range as high as 5,625 mg/kg for GRO and 13,333 mg/kg for DRO. As such the Csat values used in this residual saturation evaluation are protective because they assume GRO and DRO will shift to an LNAPL state at relatively low concentrations, when in fact that may not be the case, and they may actually remain entrained up to much higher concentrations.

Under Ecology's MTCA regulations, an empirical demonstration may be used to show that LNAPL in soil is not impacting groundwater if the following three criteria can be met [WAC 173-340-747(10)(c)]:

- LNAPL is not accumulating on or in groundwater.
- The soil contamination has been present sufficiently long for LNAPL to reach groundwater.
- Site conditions will not change in the future to promote LNAPL migration.

Compliance with each of these criteria is discussed below.

6.1.2.1 Criterion One: LNAPL is not accumulating on or in groundwater

The Site meets the first criteria in WAC 173-340-747(10)(c) because there is no LNAPL in the compliance monitoring wells in the Public ROW or the South Yard downgradient of the limited soil exceedances, which demonstrates that GRO and DRO are not exceeding the residual saturation concentration (**Table 2** and **Figure 10**), meaning that LNAPL is not accumulating in or on groundwater.

As discussed above and shown in Figure 8, GRO and/or DRO sample concentrations exceeded soil CULs in the Public ROW at five locations which are adjacent to or downgradient of the North Yard: P-1B (16 ft bgs), P-3 (16 ft bgs), SB-8 (12.5 ft bgs), B-14 (12.5 ft bgs), and B-23 (10 ft bgs). Two of these soil samples (B-23 and B-14) were collected adjacent to North Yard wells (MW-9 and MW-10) with LNAPL but downgradient compliance wells have never had LNAPL observed (**Figure 10**). It is anticipated that the remediation of soils in the North Yard will also address the remaining LNAPL observed along the downgradient border of the North Yard.

The remaining three soil samples (P-1B, P-3, and SB-8) were collected further away from the North Yard, and LNAPL has never been observed in groundwater wells downgradient of these locations. Based on this empirical demonstration, these three soil exceedances in the Public ROW are not resulting in residual saturation and thus do not have the potential to impact Site groundwater. Further, these soils do not pose a risk to the public or to workers in the area because they are located from 12.5 to 16 feet bgs, and the surface itself is a paved, heavily traveled City ROW.

In the South Yard, one soil sample taken in 1993 from AGI-2 (12.5 ft bgs; 5,500 mg/kg GRO) exceeded the soil CUL (4,520 mg/kg). From 1999 to 2013, the groundwater elevation has been above 12.5 feet bgs in 12 out of 35 monitoring events (**Tables 1** and **2**). However, LNAPL has never been observed in monitoring well AGI-2 or downgradient monitoring wells. This empirically demonstrates that the single soil sample that exceeded soil CULs in 1993 has not caused an exceedance of the residual saturation levels and is therefore not a risk to groundwater.

6.1.2.2 Criterion Two: Soil contamination has been present sufficiently long for LNAPL to reach groundwater

This Site has not been used for petroleum-related activities since Metro removed all diesel products from the Site in 1992, more than two decades ago. Given the relatively high hydraulic conductivity at the Site (see Section 5.1.3), soil contamination has been present sufficiently long for LNAPL to reach groundwater. However, LNAPL is not present outside of the North Yard with exception of monitoring well MW-9, which is immediately adjacent to and downgradient of the North Yard. Data collected during the 2007 soil assessment (SAIC, 2007), groundwater gauging and LNAPL observations, and the conceptual site model indicate that the North Yard is the source of LNAPL measured in MW-9, which is discussed further in Section 6.2.1.4. This empirical demonstration shows that the Site meets the second criteria in WAC 173-340-747(10)(c).

6.1.2.3 Criterion Three: Site conditions will not change in the future to promote LNAPL migration

Future Site conditions will not change to promote LNAPL migration: Touchstone is redeveloping the North Yard into a commercial building, which will perpetuate the impervious surface cap (building and paving) there and, more importantly remediate the LNAPL source area through excavation and offsite disposal of contaminated soils. The Public ROW is not a source area for LNAPL and will remain in use as a paved city street, sidewalks, and bike path. The South Yard is not a source area for LNAPL. The

third criterion in WAC 173-340-747(10)(c) is met because future Site conditions will not promote future LNAPL migration, and after Touchstone's cleanup and the polishing remedial actions at MW-9 the potential for future LNAPL occurrence or migration will be reduced or eliminated.

6.1.2.4 Conclusion of Empirical Demonstration for Residual Saturation of Soils Endpoint

This empirical demonstration successfully shows that the remaining limited exceedances of GRO and DRO soil CULs meet the three residual saturation criteria in WAC 173-340-747(10)(c) and that the South Yard and Public ROW complies with the residual saturation endpoint. In addition, Touchstone will remediate the North Yard in accordance with their PPCD, which will remove the LNAPL source area.

6.1.2.5 LNAPL in the Vicinity of MW-9

As described above, the source of LNAPL measured in MW-9 is within the North Yard property. Touchstone's remedial excavation and subsequent redevelopment will remove the source of this LNAPL, and the remaining LNAPL will be located within a finite horizontal and vertical area immediately adjacent to MW-9. Following Touchstone's excavation, the remaining area where LNAPL may be present is estimated to be approximately 900 square feet (ft^2), compared to the nearly 40,000 ft^2 where LNAPL is currently distributed throughout the North Yard. To address this small remaining area of LNAPL in the immediate vicinity of MW-9, dual phase extraction (DPE) will be conducted during construction activities, while Touchstone has the North Yard dewatered for excavation. DPE involves extracting groundwater and soil-vapor simultaneously from the same extraction well using a high-vacuum pump. A down-hole stinger is inserted into the well to extract groundwater. Extracting the groundwater will remove LNAPL, and groundwater in contact with LNAPL, in the saturated soil while vapor extraction removes petroleum hydrocarbons and LNAPL through volatilization in vadose zone soils. Ultimately the goal of the down-hole stinger is to dewater the saturated zone within the well screen, exposing more soil to volatilization through vapor extraction.

Although previous applications of DPE technology have had little success in recovering LNAPL from the North Yard and eliminating or reducing LNAPL recurrence there, it is anticipated that applying DPE at MW-9 during Touchstone's excavation and dewatering on the North Yard will be more successful in achieving LNAPL reduction objectives due to the smaller area of LNAPL as described above and the lowered water table conditions as described below. Previous DPE attempts to remove LNAPL from

groundwater in the North Yard were conducted at point-source locations (i.e., within monitoring wells) in an attempt to address relatively large volume of LNAPL (i.e., LNAPL within the majority of the North Yard). In comparison, MW-9 is a small area where DPE will be applied with a conservative targeted remedial radius of influence (ROI) of approximately 18 feet. The remedial ROI is considered to be conservative because it is greater than the area of observed LNAPL occurrences. As described below and in **Appendix A**, DPE should be able to remove LNAPL from this much smaller area especially in conjunction with the lowered water table conditions anticipated to occur during Touchstone's dewatering.

Coordinating DPE activities at MW-9 with Touchstone's dewatering will be beneficial and is anticipated to be effective. Under static (normal) groundwater elevation conditions, it is very difficult to significantly reduce LNAPL saturations to residual values by fluid gravity drainage (liquid extraction) techniques; non-aqueous fluid mobility is constrained as residual saturation conditions are approached. Under these conditions, enhanced LNAPL recovery and removal techniques are typically needed to improve LNAPL recovery efficiency, either by applying high vacuum and soil dewatering over extended periods of time to volatize a significant fraction of the LNAPL volume in the soil, or enhancing non-aqueous fluid mobility via a surfactant pre-treatment in the near-wellbore soil prior to the fluid extraction event.

However, during periods of falling water table conditions, like those that will occur when Touchstone dewaters the North Yard during excavation activities, the LNAPL volume trapped in soil under two-phase conditions (water-saturated soil) located below the natural static water table is progressively exposed to three-phase conditions (air-water-LNAPL) as the soil is de-saturated. Under three-phase conditions, LNAPL droplets in the soil coalesce, and the LNAPL phase is more mobile for a given saturation than under two-phase conditions. This results in a temporarily-enhanced mobility of LNAPL in the de-saturated soil interval. This effect gives rise to the common observation of LNAPL thickness increase when water table elevation drops. As the water table falls, LNAPL recovery is therefore much more efficient via gravity drainage (fluid extraction events). In some cases, applied high vacuum in conjunction with fluid extraction (DPE configuration) can further enhance liquid drainage by improving the dewatering cone of depression around the extraction well.

In summary, applying these concepts to this Site, Touchstone's excavation-related dewatering of the North Yard is expected to dewater soil around MW-9 over a sustained period of time. Applying DPE to MW-9 in conjunction with Touchstone's

extended dewatering is anticipated to result in much more substantial and effective LNAPL recovery and mitigation of LNAPL recurrence at MW-9.

If Touchstone's dewatering activities do not dewater groundwater from the area surrounding MW-9 it is anticipated that the down-hole stinger will accomplish dewatering during the DPE event.

In order to further increase the efficiency of the DPE event, it is anticipated that monitoring well MW-9 will be removed by over-drilling and replaced with a new larger diameter (6-inch) well. A larger 6-inch diameter well will accomplish several goals:

1. Allow for a larger diameter down-hole stinger, which will result in increased flow and groundwater extraction.

2. Allow for a larger open area within the well screen, which will maximize the groundwater flow area per lineal foot of screen while minimizing the likelihood of well fouling through fines accumulation.

3. Allow for a large-diameter down-hole pump if dewatering is not achieved in the area of MW-9 by Touchstone's dewatering activities or through the use of a down-hole stinger.

A detailed implementation plan for DPE is included as **Appendix A**.

To further increase the efficiency of the DPE event and to enhance the hydraulic connection between the well and surrounding formation, the replacement monitoring well for MW-9 will be developed through water jetting. Water jetting as a well development tool is conducted by introducing high velocity water into the well screen while simultaneously extracting water from the well. The result is ultimately to create a filter pack surrounding the well where it is coarsest near the well and becomes progressively finer until it blends with the native formation. Water jetting is an extremely effective way of ensuring that hydraulic connection between the well and the formation by removing fine-grained sediments and fluids introduced during drilling. The ARCADIS standard operating procedure for water jetting is included as **Appendix B**.

Alternative Approach for LNAPL removal

If DPE events do not successfully remove measureable LNAPL in the vicinity of monitoring well MW-9, surfactant-enhanced DPE events may be a viable alternative.

Surfactant injection and subsequent extraction has been successfully used as an alternative soil and groundwater remediation solution at LNAPL-impacted sites. Addition of small volumes of surfactant solution to the near-wellbore soil immediately prior to the total water extraction event has been shown to be successful in helping to improve LNAPL recovery during fluid extraction events. Surfactant reduces surface tension between LNAPL and groundwater creating micelles to more readily remove LNAPL with vacuum extraction. Other advantages of surfactant injection include increased biodegradation following LNAPL removal (Paria 2008). Several studies indicate a temporary increase in the solubility of LNAPL and an increased dissolution of molecules in the aqueous phase, which increases the bioavailability to microorganisms.

This technology consists of the addition of surfactants into the subsurface to enhance LNAPL recoverability and its removal. If conducted, four percent bio-surfactant solution would be gravity fed into MW-9. A mobile DPE event would remove a minimum of three times the injected volume and MW-9 and nearby piezometers would be monitored to determine the frequency and extent of recurring measurable LNAPL. If this approach is implemented, two piezometers would be installed; one downgradient and one cross-gradient of the estimated LNAPL boundary to monitor and address potential LNAPL migration during treatment.

6.2 Groundwater

Under the Site CD, the POCs are defined as designated monitoring wells along the southwesterly margin of the Public ROW and in the South Yard. See Section 4.6.3 and **Figure 3**. At each of these wells, Groundwater currently meets groundwater CULs (i.e., MTCA method B surface water CULs) with the exception of arsenic. Thus groundwater is in compliance with the CD except for arsenic.

6.2.1 Petroleum Hydrocarbons

In 2013, concentrations of benzene, toluene, ethylbenzene, and PAHs in groundwater samples were less than groundwater CULs at the Site compliance monitoring wells (**Figure 9**). Remediation of the North Yard is anticipated to further reduce concentrations of these COCs. Future monitoring is expected to confirm that groundwater continues to meet CULs.

6.2.2 Arsenic

As recommended by Ecology (Ecology Letter, 2005), background arsenic concentrations were evaluated specifically for this report to support the development of a Site-specific cleanup level that considers background concentrations and laboratory quantification limits. The current Site-specific arsenic CUL (0.0982 µg/L) does not account for regional background conditions and is an order of magnitude lower than the federal method detection limits (0.4 µg/L) and three orders of magnitude lower than the federal MCL (10 µg/L) for safe drinking water.[3] Documented arsenic concentrations at the Site are in line with geologic background and concentrations in urban fill material ubiquitous to the area. The following lines of evidence indicate background conditions at the Site are responsible for arsenic concentrations in groundwater in the Public ROW and in the South Yard at the shoreline:

- Background concentrations of arsenic in groundwater in western Washington and in King County are well above the Site CUL for arsenic (**Figure 11**),

- The historical shoreline of Lake Union was significantly altered prior to Site operations (between approximately 1907 and 1919) by extensive fill placement conducted by others (**Figure 12**). The majority of the South Yard and the Public ROW area are within this area of historical fill placement, and shallow fill material is present in the Public ROW and South Yard that contains anthropogenic materials, such as treated wood and wood debris, that may be a source of arsenic detected in groundwater. The monitoring wells in the Public ROW and South Yard are screened in this fill material (**Figures 5, 6, and 7**), and

- The Site is potentially located on the margin of the documented area-wide footprint of the former ASARCO smelter, a well-known source of arsenic in surface soils (**Figure 11**).

[3] "MCL" stands for "maximum contaminant level" which means the maximum concentration of a contaminant established by either the Washington state board of health or the United States Environmental Protection Agency under the Federal Safe Drinking Water Act (42 U.S.C. 300f et seq.) and published in chapter 248-54 WAC or 40 C.F.R. 141. See WAC 173-340-200.

6.2.2.1 Evaluation of Background Sources of Arsenic

Arsenic is naturally occurring in rocks and soil, water, air, plants, and animals [U.S. Environmental Protection Agency (USEPA) 2001]. Natural activities such as volcanic action, erosion of rocks, and forest fires may also release arsenic to the environment (USEPA 2001). Anthropogenic activities that may release arsenic to the environment include industrial activities (e.g., wood preserving, paints, dyes, metals, and semi-conductors), agricultural applications, mining, and smelting (USEPA 2001).

Background concentrations of arsenic in western Washington may be attributed to both natural occurences and anthropogenic releases of arsenic. Arsenic occurs naturally in Washington State soils at concentrations of approximately 5 to 9 mg/kg (Ecology 2013a). Background groundwater concentrations of arsenic in Washington were evaluated by Ecology in 2010. Results were summarized in the document "Draft Revisions to Method A Ground Water Cleanup Levels" (Ecology 2010). As described in this document, arsenic sampling data were obtained from the Washington Department of Health (DOH) Drinking Water Program, including over 18,000 sample results from 6,776 drinking water wells (2000 through 2010). Evaluation of this state-wide groundwater monitoring data indicate that 10.7 µg/L represents the 90th percentile of background arsenic in groundwater. In western Washington, concentrations ranged from 0.2 µg/L to 310 µg/L with a mean of 6.59 µg/L. Regionally, high arsenic concentrations (>25 µg/L) were detected in 12 western WA counties, including King County. Based on this, Ecology was considering raising the Method A value for arsenic from 5 µg/L to 10 µg/L (the recommended change was not adopted). This change was proposed based on the background concentrations for the state of Washington.

The Site is potentially located on the margin of the documented area-wide arsenic contamination from the former ASARCO smelter emissions. From 1889 to 1985, the Asarco Company operated a copper smelter in Tacoma. Air pollution from the smelter settled on the surface soil over more than 1,000 square miles, predominantly in the northeast direction based on predominant wind direction. Arsenic, lead, and other heavy metals were deposited and remain in the soil (Ecology 2013a). **Figure 11** illustrates the area likely to contain elevated levels of arsenic at concentrations up to 20 mg/kg based on soil sampling results (Ecology 2013a).

6.2.2.2 Historical Shoreline Development

Prior to construction of the neighboring former manufactured gas plant (MGP), the historical shoreline (1907) was located approximately 100 to 200 feet inland from the current shoreline (Sanborn, 1905). During construction of the MGP, significant quantities of fill were placed to extend the shoreline to its current configuration. Based on the information reviewed, the majority of this fill placement occurred between 1907 and 1919. The South Yard and likely the Public ROW area is located on fill placed to extend the shoreline during this time period. **Figure 12** illustrates the approximate shoreline in 1905 relative to the current shoreline.

At Gas Works Park, this fill material placed along Lake Union reportedly consisted of a mixture of gravel, sand, silt, and clay, and contained anthropogenic materials from the MGP site, including debris, cinders, lampblack, various wastes and by-products (Floyd Snider 2007). As described in the Gas Works Sediment Area Draft Western Study Area RI/FS, this shoreline fill was considered a potentially significant source of PAH contamination at Gas Works Park. The general description of this fill material (gravel, sand, silt, and clay) resembles the fill material described in several of the Site monitoring wells and soil borings; however, as described below only one soil boring was observed to have MGP-related materials and that boring was located in the northwest corner of Gas Works Park.

6.2.2.3 Presence of Fill Material

Boring logs were evaluated to determine if the elevated levels of arsenic detected in the Public ROW and South Yard monitoring wells are associated with fill material. Historically placed fill material which included treated wood and debris may contribute to elevated arsenic in groundwater in the Public ROW and South Yard.

In the Public ROW area, multiple boring logs indicate the presence of anthropogenic material, primarily wood materials. Some of these borings are in the former railroad ROW and wood debris may be associated with former railroad tracks/ties. Boring Logs for MW-20 and MW-21 do not indicate the presence of anthropogenic materials; however, these wells are screened in fill material, as shown in Figure C-C' (**Figure 7**). In the Public ROW adjacent to the North Yard (upgradient of MW-20 and MW-22), woody debris was observed in the upper 5.5 ft at soil borings B-20 and B-22 (**Figure 6**). In the northwest corner of Gas Works Park (east of MW-20 and MW-21), soil borings P2 and P3 included observations of fill material and wood materials in the upper 10 ft of soil. One soil boring (P1A), which is located in the northwest corner of

Gas Works Park, contained fill material over a similar depth including lampblack/pitch from approximately 0.5 to 3.5 ft bgs.

Monitoring wells present in the South Yard are also screened in fill material and are well within the area of historically placed fill as described in Section 1.3 (**Figure 7**). Boring logs indicate the presence of fill material within the screened interval of several of these monitoring wells. Monitoring wells MLU-1 and AGI-2 contain wood material, and MLU-3 contains anthropogenic materials including wood material described as a potential railroad tie.

6.2.2.4 Comparison to Groundwater Cleanup Levels

Groundwater CULs and laboratory limits for arsenic include the following:

- The MTCA Method B CUL for arsenic in groundwater is 0.0982 µg/L.
- The MTCA Method A Groundwater CUL for Arsenic is 5 µg/L (WAC 173-340-900 Table 720-1), based upon natural background.
- The federal safe drinking water MCL for arsenic is 10 µg/L and is frequently used as the groundwater cleanup standard.
- The USEPA Method 6020 Contract Required Quantitation Limit (or PQL) for arsenic in water is 1 µg/L with a MDL of 0.4 µg/L. MTCA indicates that where the PQL is higher than the cleanup level, the cleanup level shall be considered to have been attained under the conditions of WAC 173-340-707. The MTCA Method B CUL is an order of magnitude less than the PQL (the value that can be quantified or reliably detected); therefore, a concentration less than the PQL of 1 µg/L would be considered in compliance with the MTCA Method B CUL of 0.0982 µg/L.

Based on the evaluation of background arsenic concentrations in groundwater, the arsenic concentrations in Site monitoring wells are consistent with documented background concentrations of arsenic in groundwater in western Washington. Background concentrations of arsenic in groundwater in western Washington are generally consistent with the state CUL and the federal safe drinking water MCL, which is intended to be protective of human health. Site compliance for arsenic in groundwater should be based on a concentration of 10 µg/L due to background concentrations and based on consideration of the analytical quantification limits and the federal MCL.

7. Conclusions

This report was prepared to provide Ecology with the information it needs to complete its Five-Year Review for the Site. This report documents the efforts undertaken to fully delineate each area of the Site as well as the limited remaining impacts. Metals-contaminated soil was excavated and removed from the North Yard during Phase I of the CD CAP implementation. The Touchstone remediation and redevelopment of the North Yard will remove the only remaining source area of petroleum hydrocarbons, which will further reduce LNAPL in MW-9, as well as concentrations of COCs in downgradient groundwater. Remaining measurable LNAPL in the immediate vicinity of MW-9 will be remediated using DPE events.

The following items are the only remaining issues to be resolved in order to fulfill the requirements of the CD:

- LNAPL: Conduct polishing remediation at MW-9 using DPE events during Touchstone's redevelopment.

- South Yard Shallow Soils: If necessary, current conditions could be established by collecting a new shallow soil sample at the location of HB7, HB8, and HS4 in the South Yard to confirm shallow soil meet soil CULs for Site COCs.

- Groundwater Monitoring:

  - Conduct baseline groundwater monitoring data prior to Touchstone's development in April 2014.

  - Submit a revised Groundwater Monitoring Plan to modify groundwater monitoring following completion of North Yard remediation by Touchstone.

  - Conduct groundwater monitoring for five consecutive semi-annual events following Touchstone's remedial excavation activities.

As suggested by Ecology in their 2005 letter, it is requested that going forward, compliance with Site arsenic and cPAH groundwater CULs be demonstrated by:

- Allowing use of filtered groundwater samples for determining compliance with cPAH groundwater CULs, and

- Allowing use of a compliance limit of10 µg/L for arsenic in groundwater based on documented regional background concentrations, analytical quantification limits, and the federal MCL for safe drinking water.

The arsenic and cPAH groundwater CULs in the CD are less than current laboratory quantitation limits. Therefore, in accordance with MTCA, where groundwater samples do not have concentrations greater than the practical quantitation limit and the practical quantitation limit is higher than the CUL, the CUL shall be considered to have been attained under the conditions of WAC 173-340-707. Under these criteria the Site has attained CULs for arsenic and cPAHs.

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ARCADIS

Tables

Table 1

Light Non Aqueous Phase Liquid Thickness/Removal Data

Former Chevron Bulk Plant #1001327

1602 North Northlake Place

Seattle, Washington

WELL ID/ DATE	TOC *(ft.)*	Depth To Product *(ft.)*	DTW *(ft.)*	GWE *(ft.)*	LNAPLT *(ft.)*	LNAPL Removed (gallons)
MW-3						
08/11/99	104.07	--	--	--	--	--
10/22/99	104.07	--	--	--	--	--
05/24/01	104.07	9.99	10.25	94.03	0.26	--
06/27/01	104.07	--	--	--	--	--
03/18/02	104.07	8.59	9.28	95.34	0.69	--
12/31/02	104.07	--	--	--	--	--
03/26/03	104.07	--	7.02	97.05	0.00	--
06/26/03	104.07	10.49	11.49	93.38	1.00	2.75
07/21/03	104.07	--	--	--	--	2.50
08/28/03	104.07	--	--	--	--	3.00
10/16/03	104.07	11.55	13.89	92.05	2.34	1.75
11/21/03	104.07	--	--	--	--	3.50
12/17/03	104.07	10.27	11.02	93.65	0.75	2.00
01/29/04	104.07	9.82	10.59	94.10	0.77	1.75
02/18/04	104.07	9.77	10.32	94.19	0.55	0.75
03/30/04	104.07	9.28	9.93	94.66	0.65	0.75
09/22/04	104.07	10.61	11.35	93.31	0.74	1.50
03/15/05	104.07	10.82	12.98	92.82	2.16	3.00
9/28/05*	104.07	--	11.25	--	<3.0	3.50
03/29/06	104.07	8.76	12.40	94.58	3.64	6.50
03/21/07	104.07	9.13	10.67	94.63	1.54	2.00
03/25/08	104.07	9.73	10.38	94.21	0.65	1.00
09/08-09/08	104.07	10.55	11.02	93.43	0.47	1.50
12/11/08	104.07	10.79	12.10	93.02	1.31	2.50
03/30-31/09	104.07	--	9.70	94.37	0.00	0.00
06/15/09	104.07	9.79	10.97	94.04	1.18	2.50[1]
09/10-11/09	104.07	10.94	12.21	92.88	1.27	1.66[1]
02/23/10	104.07	8.75	11.25	94.82	2.50	1.75[1]
03/15/10	104.07	8.60	11.25	94.94	2.65	2.50[2]
03/23/12	**104.07**	**11.90**	**12.00**	**92.15**	**0.10**	**0.50**
06/01/12			**INACCESSIBLE**			
04/22/13			**INACCESSIBLE**			
06/26/13			**INACCESSIBLE**			
09/18/13			**INACCESSIBLE**			
10/14/13			**INACCESSIBLE**			
MW-9						
08/11/99	103.67	--	--		--	--
10/21/99	103.67	--	--	--	--	--
05/24/01	103.67	14.02	14.07	--	0.05	--
06/21/01	103.67	13.74	13.78	89.92	0.04	--

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Former Chevron Bulk Plant #1001327

1602 North Northlake Place

Seattle, Washington

WELL ID/ DATE	TOC *(ft.)*	Depth To Product *(ft.)*	DTW *(ft.)*	GWE *(ft.)*	LNAPLT *(ft.)*	LNAPL Removed (gallons)
MW-9 (cont)				103.67		
06/27/01	103.67	--	13.79	89.88	0.00	--
03/18/02	103.67	12.82	13.51	90.71	0.69	--
10/16/02	103.67	--	--	--	0.54	--
11/11/02	103.67	--	--	--	0.90	--
12/31/02	103.67	--	--	--	0.91	--
02/27/03	103.67	--	--	--	0.02	--
03/26/03	103.67	--	--	--	0.09	--
04/28/03	103.67	13.18	13.25	90.48	0.07	--
05/30/03	103.67	13.43	13.52	90.22	0.09	--
06/26/03	103.67	13.86	13.90	89.80	0.04	0.10
07/21/03	103.67	--	--	--	0.21	2.00
08/28/03	103.67	--	--	--	0.23	0.75
10/16/03	103.67	15.41	15.98	88.15	0.57	2.00
11/21/03	103.67	--	--	--	0.01	0.25
12/17/03	103.67	--	--	--	0.00	0.00
01/29/04	103.67	14.13	14.16	89.53	0.03	0.10
02/18/04	103.67	10.94	11.11	92.70	0.17	0.25
03/30/04	103.67	13.69	13.80	89.96	0.11	0.25
09/22/04	103.67	9.49	9.52	94.17	0.03	0.25
03/15/05	103.67	14.52	14.81	89.09	0.29	0.25
09/28/05	103.67	15.06	15.31	88.56	0.25	<0.01
03/29/06	103.67	13.00	13.26	90.62	0.26	<0.5
03/21/07	103.67	13.41	13.73	90.20	0.32	0.19
03/25/08	103.67	--	13.93	89.74	0.00	<0.25
09/08-09/08	103.67	14.22	14.23	89.45	0.01	0.00
12/11/08	103.67	15.11	15.16	88.55	0.05	0.02
03/30-31/09	103.67	--	14.06	89.61	0.00	0.00
06/15/09	103.67	--	13.32	90.35	0.00	0.00
09/10-11/09	103.67	--	14.80	88.87	0.00	0.00
02/23/10	103.67	12.80	13.10	90.81	0.30	0.21[1]
03/15/10	103.67	13.10	13.33	90.52	0.23	0.18[1]
3/14/2011[1]	103.67	--	12.71	90.96	0.00	--
9/24/2011[1]	36.46	--	14.62	21.84	0.00	--
12/08/2011[1]	36.46	--	12.87	23.59	0.00	--
03/23/12	36.46	10.35	10.55	26.07	0.20	0.50
06/01/12	36.46	11.55	11.75	24.87	0.20	1.00
04/22/13	**36.46**	**10.40**	**11.07**	**25.93**	**0.67**	--
06/26/13	**36.46**	**12.30**	**12.45**	**24.13**	**0.15**	--
09/18/13	**36.46**	**14.20**	**14.51**	**22.20**	**0.31**	--
10/14/13	**36.46**	**13.99**	**14.10**	**22.45**	**0.11**	--

Table 1

Light Non Aqueous Phase Liquid Thickness/Removal Data

Former Chevron Bulk Plant #1001327

1602 North Northlake Place

Seattle, Washington

WELL ID/ DATE	TOC *(ft.)*	Depth To Product *(ft.)*	DTW *(ft.)*	GWE *(ft.)*	LNAPLT *(ft.)*	LNAPL Removed (gallons)
MW-10						
08/11/99	100.30	--	--	--	--	--
10/21/99	100.30	--	--	--	--	--
04/12/00	100.30	--	7.34	92.96	0.00	--
06/27/00	100.30	--	8.95	91.35	0.00	--
09/28/00	100.30	--	10.08	90.22	0.00	--
01/15/01	100.30	--	10.16	90.14	0.00	--
01/15/01	100.30	--	10.16	90.14	0.00	--
05/24/01	100.30	--	9.14	91.16	0.00	--
06/21/01	100.30	--	7.97	92.33	0.00	--
06/27/01	100.30	--	9.07	91.23	0.00	--
06/27/01	100.30	--	9.07	91.23	0.00	--
03/18/02	100.30	--	7.09	93.21	0.00	--
07/02/02	100.30	--	8.37	91.93	0.00	--
12/31/02	100.30	--	--	--	0.96	--
02/27/03	100.30	--	--	--	0.17	--
03/26/03	100.30	--	--	--	0.04	--
04/28/03	100.30	--	8.80	91.50	0.00	--
05/30/03	100.30	--	8.76	91.54	0.00	--
06/26/03	100.30	8.69	8.99	91.55	0.30	6.00
07/21/03	100.30	--	--	--	0.06	1.00
08/28/03	100.30	--	--	--	0.14	6.00
10/16/03	100.30	10.54	11.56	89.56	1.02	18.50
11/21/03	100.30	--	--	--	1.33	7.00
12/17/03	100.30	--	--	--	0.15	0.75
01/29/04	100.30	8.61	8.61	91.69	0.00	--
02/18/04	100.30	8.58	8.72	91.69	0.14	0.25
03/30/04	100.30	8.41	8.47	91.88	0.06	0.25
09/22/04	100.30	9.56	9.64	90.72	0.08	0.50
03/15/05	100.30	9.83	10.20	90.40	0.37	0.25
10/04/05	100.30	10.39	11.20	89.75	0.81	1.75
03/29/06	100.30	7.63	8.35	92.53	0.72	2.00
03/21/07	100.30	7.49	7.95	92.72	0.46	0.44
03/25/08	100.30	8.68	8.68	91.62	0.00	0.00
09/08-09/08	100.30	9.34	9.39	90.95	0.05	0.20
12/11/08	100.30	9.59	9.90	90.65	0.31	1.00

Table 1

Light Non Aqueous Phase Liquid Thickness/Removal Data

Former Chevron Bulk Plant #1001327

1602 North Northlake Place

Seattle, Washington

WELL ID/ DATE	TOC *(ft.)*	Depth To Product *(ft.)*	DTW *(ft.)*	GWE *(ft.)*	LNAPLT *(ft.)*	LNAPL Removed (gallons)
MW-10 (cont)						
03/30-31/09	100.30	8.20	8.44	92.05	0.24	1.11[1]
06/15/09	100.30	8.10	8.31	92.16	0.21	0.34[1]
09/10-11/09	100.30	10.12	10.14	90.18	0.02	0.00
02/23/10	100.30	7.13	7.14	93.17	0.01	0.00
03/15/10	100.30	--	7.24	93.06	0.00	0.00
MW-12						
08/11/99	100.11	--	--	--	--	--
10/21/99	100.11	--	--	--	--	--
05/24/01	100.11	--	8.30	91.81	0.00	--
06/21/01	100.11	--	--	--	--	--
06/27/01	100.11	9.00	9.01	91.11	0.01	--
03/18/02	100.11	7.87	7.91	92.23	0.04	--
12/31/02	100.11	--	--	--	0.02	--
04/28/03	100.11	7.27	7.36	92.82	0.09	--
05/30/03	100.11	7.37	7.42	92.73	0.05	--
06/26/03	100.11	Sheen	8.32	91.79	Sheen	0.10
07/21/03	100.11	--	--	--	0.01	0.50
08/28/03	100.11	--	--	--	0.03	0.75
10/16/03	100.11	9.36	9.48	90.73	0.12	0.75
11/21/03	100.11	--	--	--	0.00	0.00
12/17/03	100.11	--	--	--	0.00	0.00
01/29/04	100.11	8.44	8.44	91.67	0.00	0.00
02/18/04	100.11	7.54	7.54	92.57	0.00	0.00
03/30/04	100.11	7.84	7.84	92.27	0.00	0.00
09/22/04	100.11	8.65	8.69	91.45	0.04	0.25
03/15/05	100.11	8.78	8.79	91.33	0.01	0.00
10/04/05	100.11	13.65	13.67	86.46	0.02	<0.01
03/29/06	100.11	7.51	7.51	92.60	0.00	0.00
03/21/07	100.11	7.32	7.32	92.79	0.00	0.00
03/25/08	100.11	--	8.09	92.02	0.00	0.00
09/08-09/08	100.11	--	8.65	91.46	0.00	0.00
12/11/08	100.11	8.61	8.62	91.50	0.01	0.00
03/30-31/09	100.11	7.53	7.54	92.58	0.01	0.00
06/15/09	100.11	--	7.92	92.19	0.00	0.00

Table 1

Light Non Aqueous Phase Liquid Thickness/Removal Data

Former Chevron Bulk Plant #1001327

1602 North Northlake Place

Seattle, Washington

WELL ID/ DATE	TOC *(ft.)*	Depth To Product *(ft.)*	DTW *(ft.)*	GWE *(ft.)*	LNAPLT *(ft.)*	LNAPL Removed (gallons)
MW-12 (cont)						
09/10-11/09	100.11	9.22	9.23	90.89	0.01	0.00
02/23/10	100.11	--	6.90	93.21	0.00	0.00
03/15/10	100.11	--	7.23	92.88	0.00	0.00
MW-27						
09/13/99	101.17	--	--	--	--	--
10/22/99	101.17	--	--	--	--	--
01/06/00	101.17	--	--	--	--	--
05/24/01	101.17	10.38	11.11	90.64	0.73	--
06/27/01	101.17	9.29	10.07	91.72	0.78	--
03/18/02	101.17	9.00	9.07	92.16	0.07	--
10/16/02	101.17	--	--	--	0.05	--
12/31/02	101.17	--	--	--	0.02	--
06/26/03	101.17	10.83	11.08	90.29	0.25	0.25
07/21/03	101.17	--	--	--	0.46	4.00
08/28/03	101.17	--	--	--	0.21	8.00
10/16/03	101.17	--	5.97	95.20	0.00	0.00
11/21/03	101.17	--	--	--	--	0.00
12/17/03	101.17	--	--	--	--	0.00
01/29/04	101.17	9.71	10.23	91.36	0.52	2.00
02/18/04	101.17	9.97	10.59	91.08	0.62	1.75
03/30/04	101.17	9.77	10.54	91.25	0.77	3.00
09/22/04	101.17	9.91	9.98	91.25	0.07	0.70
03/15/05	101.17	11.21	11.76	89.85	0.55	0.50
03/29/06	101.17	--	9.14	92.03	0.00	0.00
03/21/07	101.17	7.90	7.91	93.27	0.01	<0.01
03/25/08	101.17	--	10.57	90.60	0.00	0.00
09/08-09/08	101.17	10.66	10.83	90.48	0.17	0.28
12/11/08	101.17	11.18	11.19	89.99	0.01	0.00
03/30-31/09	101.17	9.91	9.92	91.26	0.01	0.00
06/15/09	101.17	9.66	9.67	91.51	0.01	0.00
09/10-11/09	101.17	11.10	11.27	90.04	0.17	0.33[1]
02/23/10	101.17	--	9.37	91.80	0.00	0.00
03/15/10	101.17	9.47	9.48	91.70	0.01	0.00
3/14/2011[1]	101.17	27.70	27.77	73.46	0.07	0.050[5]
11/16/11	34.01	--	11.27	22.74	0.00	--
12/08/11	34.01	9.69	9.78	24.30	0.09	0.050[1]
03/23/12	34.01	8.15	8.18	25.85	0.03	1.00

Table 1

Light Non Aqueous Phase Liquid Thickness/Removal Data

Former Chevron Bulk Plant #1001327

1602 North Northlake Place

Seattle, Washington

WELL ID/ DATE	TOC *(ft.)*	Depth To Product *(ft.)*	DTW *(ft.)*	GWE *(ft.)*	LNAPLT *(ft.)*	LNAPL Removed (gallons)
MW-27 (cont)						
06/01/12	34.01	8.25	8.45	25.72	0.20	1.00
04/22/13	**34.01**	**7.33**	**7.34**	**26.68**	**0.01**	--
06/26/13	**34.01**	--	**6.67**	**27.34**	--	--
09/18/13	**34.01**	--	**10.76**	**23.25**	--	--
10/14/13	**34.01**	--	**10.16**	**23.85**	--	--
MW-28						
03/21/07	100.35	6.48	6.86	-6.56	0.38	0.25
03/25/08	100.35	7.08	7.25	-7.11	0.17	0.25
09/08-09/08	100.35	8.00	8.04	92.34	0.04	0.16
12/11/08	100.35	8.14	8.15	92.21	0.01	0.00
03/30-31/09	100.35	6.83	6.84	93.52	0.01	0.00
06/15/09	100.35	7.20	7.21	93.15	0.01	0.00
09/10-11/09	100.35	8.13	8.16	92.21	0.03	0.00
02/23/10	100.35	6.38	6.39	93.97	0.01	0.00
03/15/10	100.35	--	6.05	94.30	0.00	0.00
03/14/11	100.35	--	5.3	95.05	0.00	0.00
SMPN-1						
03/15/05	--	Sheen	11.23	--	Sheen	0.00
10/04/05	--	11.72	11.96	--	0.24	<1/16
03/29/06	--	--	9.84	--	0.00	0.00
03/21/07	--	--	9.89	--	0.00	0.00
03/25/08	--	--	10.36	--	0.00	0.00
09/08-09/08	100.99	10.67	10.68	90.32	0.01	0.00
12/11/08	100.99	--	11.30	89.69	0.00	0.00
03/30-31/09	100.99	10.30	10.31	90.69	0.01	0.00
06/15/09	100.99	9.72	9.73	91.27	0.01	0.00
09/10-11/09	100.99	--	11.13	89.86	0.00	0.00
02/23/10	100.99	--	9.86	91.13	0.00	0.00
03/15/10	100.99	--	9.83	91.17	0.01	0.00
11/16/11	33.78	--	11.27	22.51	0.00	--
12/08/11	33.78	9.78	9.79	24.00	0.01	0.050[1]
03/23/12	33.78	8.25	8.27	25.53	0.02	0.50
6/1/2012	33.78	--	8.85	24.93	--	--
4/22/2013	**33.78**	**--**	**8.75**	**25.03**	**--**	**--**
06/26/13	**33.78**	**--**	**9.54**	**24.24**	**--**	**--**
09/18/13	**33.78**	**--**	**11.29**	**22.49**	**--**	**--**
10/14/13	**33.78**	**--**	**10.49**	**23.29**	**--**	**--**
SMPN-2						
03/15/05	--	11.20	11.21	--	0.01	0.00
03/29/06	--	--	9.48	--	0.00	0.00
03/21/07	--	9.15	9.20	--	0.05	<0.05
03/25/08	--	--	10.11	--	0.00	0.00
09/08-09/08	101.24	10.50	10.51	90.74	0.01	0.00

Table 1

Light Non Aqueous Phase Liquid Thickness/Removal Data

Former Chevron Bulk Plant #1001327

1602 North Northlake Place

Seattle, Washington

WELL ID/ DATE	TOC *(ft.)*	Depth To Product *(ft.)*	DTW *(ft.)*	GWE *(ft.)*	LNAPLT *(ft.)*	LNAPL Removed (gallons)
SMPN-2 (cont)						
12/11/08	101.24	11.05	11.06	90.19	0.01	0.00
03/30-31/09	101.24	10.11	10.12	91.13	0.01	0.00
06/15/09	101.24	9.50	9.51	91.74	0.01	0.00
09/10-11/09	101.24	10.98	10.99	90.26	0.01	0.00
02/23/10	101.24	10.98	9.23	92.01	0.00	0.00
03/15/10	101.24	9.36	9.37	91.88	0.01	0.00
03/14/11	101.24	--	8.93	92.31	0.00	--
11/16/11	33.85	9.96	9.97	23.89	0.01	0.050[1]
12/08/11	33.85	--	9.61	24.24	0.00	--
03/23/12	33.85	8.10	8.12	25.75	0.02	0.50
6/1/2012	33.85	8.30	8.40	25.53	0.10	1.00
4/22/2013	**33.85**	**--**	**7.88**	**25.97**	**--**	**--**
06/26/13	**33.85**	**--**	**8.70**	**25.15**	**--**	**--**
09/18/13	**33.85**	**10.81**	**10.82**	**23.04**	**0.01**	**--**
10/14/13	**33.85**	**--**	**10.50**	**23.35**	**--**	**--**
SMPN-3						
03/15/05	--	--	11.46	--	0.00	0.00
03/29/06	--	--	9.56	--	0.00	0.00
03/21/07	--	--	9.03	--	0.00	0.00
03/25/08	--	--	10.30	--	0.00	0.00
09/08-09/08	101.02	10.66	10.67	90.36	0.01	0.00
12/11/08	101.02	--	11.26	89.76	0.00	0.00
03/30-31/09	101.02	10.27	10.28	90.75	0.01	0.00
06/15/09	101.02	--	9.59	91.43	0.00	0.00
09/10-11/09	101.02	--	11.08	11.09	0.01	0.00
02/23/10	101.02	--	9.44	91.58	0.00	0.00
03/15/10	101.02	--	9.51	91.52	0.01	0.00
03/14/11	101.02	--	9.12	91.90	0.00	--
11/16/11	33.81	10.94	11.06	22.85	0.12	0.050[1]
12/08/11	33.81	--	9.73	24.08	0.00	--
03/23/12	33.81	--	8.30	25.51	0.00	--
06/01/12	33.81	--	8.05	25.76	0.00	--
04/22/13	**33.81**	**--**	**8.30**	**25.51**	**--**	**--**
06/26/13	**33.81**	**--**	**9.02**	**24.79**	**--**	**--**
09/18/13	**33.81**	**--**	**11.06**	**22.75**	**--**	**--**
10/14/13	**33.81**	**--**	**10.52**	**23.29**	**--**	**--**

Table 1

Light Non Aqueous Phase Liquid Thickness/Removal Data

Former Chevron Bulk Plant #1001327

1602 North Northlake Place

Seattle, Washington

Data prior to 2010, and the notes below, were provided by SAIC.

EXPLANATIONS:

-- = Not Applicable or Not included in monitoring program

DTW = Depth to water

GWE = Groundwater elevation in feet (based on arbitrary benchmark @ 100 feet)

LNAPLT = Light Non Aqueous Phase Liquid Thickness

Groundwater Elevation calculated using the following formula to account for the effect of LNAPL. GWE = (Survey elevation - DTW)+(0.8 * LNAPLT)

* Interface probe not recognizing LNAPL, bailer dropped in well, LNAPL thickness > 3 feet.

[1] LNAPL + water removed.

[2] LNAPL only removed

Table 2
Groundwater LNAPL Summary
Former Chevron Bulk Plant #1001327
1602 North Northlake Place
Seattle, Washington

WELL ID	DATE	SIGNIFICANCE	LNAPLT *(ft.)*	LOCATION	WELL STATUS
MW-3	03/29/06	Maximum Thickness	3.64	North Yard	Monitoring
MW-3	03/23/12	Most Recent Observation	0.10	North Yard	Monitoring
MW-4	08/10/99 - 12/26/12	--	Never Observed	South Yard	Monitoring
MW-7	08/10/99 - 12/26/12	--	Never Observed	South Yard	Monitoring
MW-8A	12/15/03 - 12/26/12	--	Never Observed	South Yard	Monitoring
MW-9	12/26/12	Maximum Thickness	1.00	ROW	Monitoring
MW-9	04/22/13	Most Recent Observation	0.67	ROW	Monitoring
MW-10	12/31/02	Maximum Thickness	0.96	North Yard	Monitoring
MW-10	02/23/10	Most Recent Observation	0.01	North Yard	Monitoring
MW-11	08/11/99 - 03/14/11	--	Never Observed	ROW	Monitoring
MW-12	09/10-11/09	Maximum Thickness/Most Recent Observation	0.01	North Yard	Monitoring
MW-14	07/26/01 - 03/15/10	--	Never Observed	ROW	Monitoring
MW-15	08/10/99 - 03/14/11	--	Never Observed	ROW	Monitoring
MW-19	08/11/99 - 12/26/12	--	Never Observed	Surrounding	Monitoring
MW-20	08/11/99 - 12/26/12	--	Never Observed	ROW	Monitoring
MW-21	08/10/99 - 12/26/12	--	Never Observed	ROW	Monitoring
MW-22	08/10/99 - 03/14/11	--	Never Observed	ROW	Monitoring
MW-24	03/21/07 - 12/26/12	--	Never Observed	North Yard	Monitoring
MW-25	08/09/99 - 12/26/12	--	Never Observed	South Yard	Monitoring
MW-26	08/09/99 - 12/26/12	--	Never Observed	South Yard	Monitoring
MW-27	05/24/01	Maximum Thickness	0.73	North Yard	Monitoring
MW-27	04/22/13	Most Recent Observation	0.01	North Yard	Monitoring
MW-28	03/21/07	Maximum Thickness	0.38	North Yard	Monitoring
MW-28	09/15/10	Most Recent Observation	0.01	North Yard	Monitoring
AGI-2	08/10/99 - 04/23/2013	--	Never Observed	South Yard	Monitoring
MLU-1	08/10/99 - 12/26/12	--	Never Observed	South Yard	Monitoring
SMPN-1	10/04/05	Maximum Thickness	0.24	North Yard	Monitoring
SMPN-1	09/20/12	Most Recent Observation	0.18	North Yard	Monitoring
SMPN-2	09/15/10	Maximum Thickness	0.18	North Yard	Monitoring
SMPN-2	09/20/12	Most Recent Observation	0.16	North Yard	Monitoring
SMPN-3	11/16/11	Maximum Thickness/Most Recent Observation	0.12	North Yard	Monitoring
MW-8	08/10/99 - 09/15/03	--	Never Observed	South Yard	Abandoned
MW-16	03/21/07 - 03/31/09	--	Never Observed	North Yard	Abandoned
MLU-3	08/20/99 - 07/26/01	--	Never Observed	South Yard	Monitoring

Table 3
Historic Soil Hydrocarbon Analytical Results
Former Chevron Bulk Plant #1001327
1602 North Northlake Place
Seattle, Washington

Boring ID	Location	Soil Status	Date	Depth (ft.)	Benzene (mg/kg)		Toluene (mg/kg)		Ethylbenzene (mg/kg)		m-Xylenes (mg/kg)		o-Xylenes (mg/kg)		p-Xylenes (mg/kg)		m,p-Xylenes (mg/kg)		Xylene (mg/kg)		TPH (mg/kg)	WTPH-418.1 (mg/kg)	GRO (mg/kg)		DRO (mg/kg)		HRO (mg/kg)	
Soil Cleanup Level[1]					**4530**		**NA**		**NA**		**NA**		**NA**		**NA**		**NA**		**NA**		**NA**	**NA**	**4520**		**5140**		**5780**	
MTCA Method A Cleanup Levels[2]					**0.03**		**7**		**6**		**NA**		**NA**		**NA**		**NA**		**NA**		**NA**	**NA**	**30**		**2000**		**2000**	
P-1B-14	ROW	Not Removed	6/14/2006	14	1.27		0.286		10.9										8.94				1810		4590		559	U
P-1B-16	ROW	Not Removed	6/14/2006	16	6.53		2.16	U	63.7										14.50				5150		1660		282	U
P-2-15	ROW	Not Removed	5/17/2006	15	0.478		0.445	U	3.26										3.67				766		4350		571	U
P-2-20	ROW	Not Removed	5/17/2006	20	0.456		0.0471	U	0.450										0.536				51.3		225		29.4	U
P-3-14.5	ROW	Not Removed	6/12/2006	14.5	0.0309	U	0.0516	U	0.0516	U				U					0.103	U			5.16	U	11.8	U	29.5	U
P-3-16	ROW	Not Removed	6/12/2006	16	9.54		2.03	U	9.38										24.2				4750					
P-3-19	ROW	Not Removed	6/12/2006	19	0.0252	U	0.041	U	0.041	U				U					0.0842	U			4.82		11.4	U	28.4	U
P-4-14	ROW	Not Removed	6/12/2006	14	0.0286	U	0.0477	U	0.0477	U									0.0954				4.77	U	11.4	U	28.6	U
P-5-13.5	ROW	Not Removed	5/17/2006	13.5	0.0252	U	0.042	U	0.042	U				U					0.0841	U			4.20	U	10.9	U	27.2	U
P-6A-16	ROW	Not Removed	6/12/2006	16	1.73		0.923	U	5.12										4.07				1650		39.5		27.7	U
P-6A-19	ROW	Not Removed	6/12/2006	19	1.41		1.92		3.80										12.3				2170		303		37.0	
P-7-14.5	ROW	Not Removed	6/13/2006	14.5	0.0315	U	0.0525	U	0.0525	U				U					0.105	U			5.25	U	12.1	U	30.3	U
P-8-14.5	ROW	Not Removed	6/13/2006	14.5	0.0319	U	0.0532	U	0.0532	U				U					0.106	U			5.32	U	11.7	U	29.3	U
P-9-13	ROW	Not Removed	5/17/2006	13	0.0231	U	0.0385	U	0.385	U				U					0.771	U			3.85	U	10.8	U	26.9	U
P-10-12	ROW	Not Removed	6/14/2006	12	0.0286	U	0.0477	U	0.0477	U				U					0.0953	U			4.77	U	10.6	U	26.5	U
P-10-15	ROW	Not Removed	6/14/2006	15	0.0262	U	0.0436	U	0.0436	U				U					0.0872	U			4.36	U	10.4	U	25.9	U
P-10-16	ROW	Not Removed	6/14/2006	16	0.0303	U	0.0505	U	0.0505	U				U					0.101	U			5.05	U	11.6	U	29.0	U
P-11-12.5	ROW	Not Removed	5/17/2006	12.5	0.0278	U	0.0463	U	0.0463	U				U					0.0925	U			4.63	U	11.7	U	29.2	U
HB1	North Yard	Removed	7/28/1993	0.2	0.25	U	0.25	U	0.25	U			0.25	U			0.25	U					20.0	U		Y	430	
HB1	North Yard	Not Removed	7/28/1993	1.8																			20.0	U	900		100	U
HB2	North Yard	Removed	7/28/1993	0.1	0.25	U	0.25	U	0.25	U			0.25	U			0.25	U					20.0	U		Y	120	
HB2	North Yard	Not Removed	7/28/1993	2	0.25	U	0.43		3.7				5.5				17	J					1,200		310		100	U
HB2 (dup)	North Yard	Not Removed	7/28/1993	2																			20.0	U	320		100	U
HB3	North Yard	Removed	7/28/1993	0.1	0.25	U	0.25	U	0.25	U			0.25	U			0.25	U					20.0	U		Y	160	
HB3	North Yard	Not Removed	7/28/1993	1.8	0.25	U	0.25	U	1.9				3.2				5.7						840		380		100	U
HB4	North Yard	Removed	7/28/1993	0.1	0.25	U	0.25	U	0.25	U			0.25	U			0.25	U					20.0	U		Y	390	
HB4 (dup)	North Yard	Removed	7/28/1993	0.1	0.25	U	0.25	U	0.25	U			0.25	U			0.25	U					20.0	U		Y	400	
HS1	North Yard	Not Removed	7/28/1993	NA																			20	U	14,000			Y
HS2	North Yard	Not Removed	7/28/1993	NA																			20	U	14,000		100	U
HS3	North Yard	Not Removed	7/28/1993	NA																				Y	2,200			Y
HS5	North Yard	Not Removed	7/28/1993	NA																			20	U	7,700		100	U
MW1	North Yard	Not Removed	8/5/1993	18	0.25	U	0.25	U	0.25	U			0.25	U			0.25	U					11		50	U	100	U
MW1	North Yard	Not Removed	8/5/1993	10																			20	U	50	U	100	U
MW2	North Yard	Not Removed	8/6/1993	10																			20	U	50	U	100	U
MW2	North Yard	Not Removed	8/6/1993	14																			20	U	2,900		100	U
MW3	North Yard	Not Removed	8/9/1993	6.5	0.25	U	0.25	U	3.2				0.25	U			11						2,300			Y		Y
MW3	North Yard	Not Removed	8/9/1993	12	0.6		0.25	U	15.00	J			0.25	U			27	J					3,400		4,600		100	U
MW3	North Yard	Not Removed	8/9/1993	16																			20	U	98		100	U
MW5	North Yard	Not Removed	8/10/1993	5																			20	U	50	U	100	U
MW5	North Yard	Not Removed	8/10/1993	8.4																			20	U	50	U	100	U
MW6	North Yard	Not Removed	8/11/1993	5	0.25	U	1.1	J	13				11				45							Y	8,000		100	U
MW6	North Yard	Not Removed	8/11/1993	12.5																				Y		Y	100	U
MW6	North Yard	Not Removed	8/11/1993	17	3.8		58		35				38				110							Y	11,000		100	U
MW10	North Yard	Not Removed	8/17/1993	11	9.9		79		82				110				290						6,700		1,800		100	U
MW12	North Yard	Not Removed	7/28/1993	10																			20	U	50	U	100	U
SB1	North Yard	Not Removed	8/11/1993	2.5	0.25	U	0.25	U	0.25	U			0.25	U			0.25	U						Y	1,600		100	U
SB2	North Yard	Not Removed	8/11/1993	2.5	0.25	U	0.25	U	0.11	J			0.25	U			0.3							Y	3,600		100	U
SB3	North Yard	Not Removed	8/12/1993	2.5	0.25	U	0.25	U	0.85				0.25	U			2.2						780		50	U	100	U
SB4	North Yard	Not Removed	8/12/1993	7.5																				Y	1,100		100	U
SB5	North Yard	Not Removed	8/12/1993	7.5																			20	U	50	U	100	U
SB7	North Yard	Not Removed	8/13/1993	6	0.28		11.00		7.6				15				31						760			Y	100	U
SB7	North Yard	Not Removed	8/13/1993	14																			20	U	50	U	100	U
SB7	North Yard	Not Removed	8/13/1993	18																			20	U	50	U	100	U
SB9	North Yard	Not Removed	8/17/1993	6.5	0.25	U	0.25	U	5.3				0.25	U			18						3,100		810	J	100	U
SB10	North Yard	Not Removed	8/17/1993	6	3.1		30		25				41				89							Y	1,000	J	100	U
SB10	North Yard	Not Removed	8/17/1993	17.5																			20	U	50	U	100	U
Vault		Not Removed	7/28/1993																				20	U	50	U	320	
AGI-2	South Yard	Not Removed	6/25/1993	12.5	14		67		150				110				260						5500.0			Y	100	U

Table 3
Historic Soil Hydrocarbon Analytical Results
Former Chevron Bulk Plant #1001327
1602 North Northlake Place
Seattle, Washington

Boring ID	Location	Soil Status	Date	Depth (ft.)	Benzene (mg/kg)		Toluene (mg/kg)		Ethylbenzene (mg/kg)		m-Xylenes (mg/kg)	o-Xylenes (mg/kg)		p-Xylenes (mg/kg)	m,p-Xylenes (mg/kg)		Xylene (mg/kg)	TPH (mg/kg)	WTPH-418.1 (mg/kg)	GRO (mg/kg)		DRO (mg/kg)		HRO (mg/kg)	
Soil Cleanup Level[1]					**4530**		**NA**		**NA**		**NA**	**NA**		**NA**	**NA**		**NA**	**NA**	**NA**	**4520**		**5140**		**5780**	
MTCA Method A Cleanup Levels[2]					**0.03**		**7**		**6**		**NA**	**NA**		**NA**	**NA**		**NA**	**NA**	**NA**	**30**		**2000**		**2000**	
HB5	South Yard	Not Removed	7/28/1993	1																20	U	50	U	100	U
HB7	South Yard	Not Removed	7/28/1993	0.4																20	U		Y	330	
HB8	South Yard	Not Removed	7/28/1993	1																20	U	7,500		100	U
HB9	South Yard	Not Removed	7/28/1993	1																20	U	50	U	100	U
HS4	South Yard	Not Removed	7/28/1993	0.3																20	U	15,000		100	U
MW4	South Yard	Not Removed	8/10/1993	2.5																20	U	50	U	100	U
MW4	South Yard	Not Removed	8/10/1993	10																20	U	50	U	100	U
MW7	South Yard	Not Removed	8/12/1993	10	0.25	U	0.49		2.50			4.7			7.6					560		50	U	100	U
MW7	South Yard	Not Removed	8/12/1993	14																20	U	50	U	100	U
MW8	South Yard	Removed	8/12/1993	2.5																20	U	50	U	100	U
MW8	South Yard	Removed	8/12/1993	10																20	U	50	U	100	U
SB8	ROW	Not Removed	8/13/1993	12.5	2.50		0.25	U	67.00			0.25	U		210.0	J				7,600		16,000	J	100	U
SB11	South Yard	Not Removed	8/19/1993	12.5																20	U	50	U	100	U
TP9	South Yard	Not Removed	7/28/1993	11.5																20	U	50	U	100	U
TP10	South Yard	Not Removed	7/30/1993	3																20	U	50	U	100	U
TP10 Duplicate (TPA)	South Yard	Not Removed	7/30/1993	3																20	U	50	U	100	U
TP10	South Yard	Not Removed	7/30/1993	7																20	U	50	U	100	U
TP10	South Yard	Not Removed	7/30/1993	12	0.025	U	0.025	U	0.025	U					0.082	J				20	U	50	U	100	U
TP10 Duplicate	South Yard	Not Removed	7/30/1993	12																20	U	50	U	100	U
TP10 Replicate	South Yard	Not Removed	7/30/1993	12																20	U	50	U	100	U
TP11	South Yard	Not Removed	7/30/1993	5.5																20	U	50	U	100	U
TP12	South Yard	Not Removed	7/30/1993	5																20	U	50	U	100	U
AGI1	Surrounding	Not Removed	6/22/1993	12.5																20	U	50	U	100	U
MW9	North Yard	Not Removed	8/13/1993	15	0.25	U	0.25	U	0.25	U		0.25	U		0.25	U				31		50	U	100	U
MW11	Surrounding	Not Removed	8/17/1993	10																20	U	50	U	100	U
MW13	Surrounding	Not Removed	8/18/1993	17.5																20	U	50	U	100	U
TP1	North Yard	Not Removed	7/28/1993	4.5																20	U	50	U	100	U
TP2	Surrounding	Not Removed	7/28/1993	2																20	U	50	U	100	U
TP3	Surrounding	Not Removed	7/28/1993	1																20	U	50	U	100	U
TP4	Surrounding	Not Removed	7/28/1993	4																20	U	50	U	100	U
TP5	ROW	Not Removed	7/29/1993	4																	Y	50	U	100	U
TP5	ROW	Not Removed	7/29/1993	7	0.025	U	0.025	U	0.025	U		0.025	U		0.025	U				20	U	50	U	100	U
TP6	North Yard	Not Removed	7/29/1993	7.5																20	U	50	U	100	U
P-1	North Yard	Not Removed	4/1/1988	2.5																1	U	1.6	U		
P-1	North Yard	Not Removed	4/1/1988	7.5																1	U	1.6	U		
P-2	North Yard	Not Removed	4/1/1988	2.5																1.4		1.6	U		
P-2	North Yard	Not Removed	4/1/1988	7.5																1.5		1.6	U		
P-4	South Yard	Not Removed	4/1/1988	5	7															1	U	1.6	U		
P-5	South Yard	Not Removed	4/1/1988	18	320		6		95		72	11		130						1.9		1.6	U		
TP-1	ROW	Not Removed	4/1/1988	5																1	U	1.6	U		
TP-2	ROW	Not Removed	4/1/1988	5																2.4		1.6	U		
TP-3	ROW	Not Removed	4/1/1988	5																1	U	1.6	U		
MLU-1	South Yard	Not Removed	4/22/1991	3														280							
MLU-1	South Yard	Not Removed	4/22/1991	11														35							
MLU-2	South Yard	Not Removed	4/23/1991	9														640							
MLU-3	South Yard	Not Removed	4/23-24/1991	3														49							
SS-01	North Yard	Not Removed	4/1/1991	0-1	0.050	U	0.050	U	0.050	U		0.050	U		0.050	U		2,000		50	U				
SS-02	North Yard	Not Removed	4/1/1991	0-1														290							
SS-03	North Yard	Not Removed	4/1/1991	0-1																		220			
SS-04	North Yard	Not Removed	4/1/1991	0-1														35							
SS-05	North Yard	Not Removed	4/1/1991	0-1														29							
SS-06	North Yard	Not Removed	4/1/1991	0-1	0.050	U	0.050	U	0.050	U		0.050	U		0.050	U		59		50	U				
SS-07	North Yard	Not Removed	4/1/1991	0-1														79							
SS-08	North Yard	Not Removed	4/1/1991	0-1	0.050	U	0.050	U	0.050	U		0.050	U		0.050	U		71		50	U				
SS-09	Surrounding	Not Removed	4/1/1991	0-1	0.050	U	0.050	U	0.050	U		0.050	U		0.050	U		200		50	U				
SS-10	Surrounding	Not Removed	4/1/1991	0-1														390							
SS-11	Surrounding	Not Removed	4/1/1991	0-1	0.050	U	0.050	U	0.050	U		0.050	U		0.050	U		740		50	U				
SS-12	Surrounding	Not Removed	4/1/1991	0-1														230							

Table 3
Historic Soil Hydrocarbon Analytical Results
Former Chevron Bulk Plant #1001327
1602 North Northlake Place
Seattle, Washington

Boring ID	Location	Soil Status	Date	Depth (ft.)	Benzene (mg/kg)		Toluene (mg/kg)		Ethylbenzene (mg/kg)		m-Xylenes (mg/kg)	o-Xylenes (mg/kg)		p-Xylenes (mg/kg)	m,p-Xylenes (mg/kg)		Xylene (mg/kg)		TPH (mg/kg)	WTPH-418.1 (mg/kg)		GRO (mg/kg)		DRO (mg/kg)		HRO (mg/kg)	
Soil Cleanup Level[1]					**4530**		**NA**		**NA**		**NA**	**NA**		**NA**	**NA**		**NA**		**NA**	**NA**		**4520**		**5140**		**5780**	
MTCA Method A Cleanup Levels[2]					**0.03**		**7**		**6**		**NA**	**NA**		**NA**	**NA**		**NA**		**NA**	**NA**		**30**		**2000**		**2000**	
SS-13	Surrounding	Not Removed	4/1/1991	0-1															830									
SS-14	Surrounding	Not Removed	4/1/1991	0-1															370									
SS-15	Surrounding	Not Removed	4/1/1991	0-1															370									
SS-16	Surrounding	Not Removed	4/1/1991	0-1															1,200									
SS-18	Surrounding	Not Removed	4/1/1991	0-1															400									
SS-19	North Yard	Not Removed	4/1/1991	0-1	0.050	U	0.050	U	0.050	U		0.050	U		0.050	U			4,800			50	U					
SS-20	North Yard	Not Removed	4/1/1991	0-1															1,600									
SS-21	North Yard	Not Removed	4/1/1991	0-1	0.050	U	1.5		2			4.7			3.6				3,600					85				
SS-22	North Yard	Not Removed	4/1/1991	0-1															3,000									
SS-23	North Yard	Not Removed	4/1/1991	0-1															980									
SS-24	North Yard	Not Removed	4/1/1991	0-1															1,100									
WYTP1A	North Yard	Not Removed	4/1/1991	2-3																100	U							
WYTP1B	North Yard	Not Removed	4/1/1991	3-4																110								
WYTP1C	North Yard	Not Removed	4/1/1991	4-6																100	U							
WYTP2A	North Yard	Not Removed	4/1/1991	2-3																100	U	20	U	50	U	100	U	
WYTP2B	North Yard	Not Removed	4/1/1991	3-4																100	U	20	U	50	U	100	U	
WYTP2C	North Yard	Not Removed	4/1/1991	4-6																		20	U	50	U	100	U	
WYTP3A	North Yard	Not Removed	4/1/1991	2-3																1400								
WYTP3B	North Yard	Not Removed	4/1/1991	3-4																11000								
WYTP4A	North Yard	Not Removed	4/1/1991	2-3																100	U							
WYTP4B	North Yard	Not Removed	4/1/1991	3-4																100	U							
B1	NA	Not Removed	4/1/1991	NA																		20	U	50	U	100	U	
B2	NA	Not Removed	4/1/1991	NA	0.050	U	3.3		0.65								13					20	U	50	U	100	U	
B3	NA	Not Removed	4/1/1991	NA	0.050	U	0.73		0.25								2.6					20	U	50	U	100	U	
MW18-11	ROW	Not Removed	7/1/1997	11	0.050	U	0.050	U	0.050	U							0.10	U				5.0	U	10.0	U	25.0	U	
MW19-11	ROW	Not Removed	7/1/1997	11	0.050	U	0.050	U	0.050	U							0.10	U				5.0	U	207.0		492.0		
MW20-12	ROW	Not Removed	7/2/1997	12	0.050	U	0.050	U	0.050	U							0.551					15.3		10.0	U	25.0	U	
MW21-11	ROW	Not Removed	7/3/1997	11	0.050	U	0.050	U	0.050	U							0.10	U				5.0	U	10.0	U	25.0	U	
MW22-11	ROW	Not Removed	7/2/1997	11	0.050	U	0.050	U	0.050	U							0.10	U				5.0	U	10.0	U	25.0	U	
MW23-11	Surrounding	Not Removed	7/2/1997	11	0.050	U	0.050	U	0.050	U							0.10	U				5.0	U	10.0	U	25.0	U	
MW24-21	North Yard	Not Removed	7/3/1997	21	0.050	U	0.050	U	0.050	U							0.10	U				5.0	U	10.0	U	25.0	U	
Stockpile	NA	Not Removed	7/3/1997	NA	0.050	U	0.050	U	0.050	U							0.10	U				5.0	U	154.0		25.0	U	
S-1-17	South Yard	Not Removed	12/8/2003	NA	0.03	U	ND		ND								ND					5	U	10	U	25	U	
S-2-15	South Yard	Not Removed	12/8/2003	NA	0.544		ND		ND								0.159					5	U	26.9		55.6		
S-3-15	South Yard	Not Removed	12/8/2003	NA	0.266		ND		ND								0.231					5	U	10	U	25	U	
S-4-15	South Yard	Not Removed	12/8/2003	NA	0.03	U	ND		ND								ND					5	U	10	U	25	U	
S-5-15	South Yard	Not Removed	12/8/2003	NA	1.77		ND		0.07								0.469					5	U	16.8		33.7		
S-6-17	South Yard	Not Removed	12/8/2003	NA	0.03	U	ND		ND								ND					5	U	10	U	25	U	
MW-8A-20	South Yard	Not Removed	11/18/2003	NA	0.03	U																5	U	10	U	25	U	
AS-1	South Yard	Not Removed	11/7/2001	10	0.0300	U	0.0500	U	0.0500	U							0.100	U				5.0	U	10.0	U	25.0	U	
AS-2	South Yard	Not Removed	11/7/2001	15	0.330		0.756		2.59								11.3					322		29.3		25.0	U	
AS-3	South Yard	Not Removed	11/7/2001	10	0.0300	U	0.0500	U	0.0500	U							0.100	U				5.0	U	10.0	U	25.0	U	
AS-4	South Yard	Not Removed	11/7/2001	15	0.0300	U	0.0500	U	0.0500	U							0.100	U				5.0	U	10.0	U	25.0	U	
AS-5	South Yard	Not Removed	11/7/2001	10	0.0300	U	0.0500	U	0.0500	U							0.100	U				5.0	U	26.7		25.0	U	
AS-5	South Yard	Not Removed	11/7/2001	15	0.406		0.0500	U	0.321								1.26					42.3		10.0	U	25.0	U	
AS-6	South Yard	Not Removed	11/7/2001	15	0.0300	U	0.0500	U	0.0500	U							0.100	U				5.0	U	10.0	U	25.0	U	
MW-25	South Yard	Not Removed	8/5/1999	10.5	0.05	U																5	U	10	U	25	U	
MW-25	South Yard	Not Removed	8/5/1999	11	0.05	U																5	U	10	U	25	U	
MW-25	South Yard	Not Removed	8/5/1999	20.5	0.05	U																5	U	10	U	25	U	
MW-26	South Yard	Not Removed	8/5/1999	10.5	0.05	U																5	U	160		256		
MW-26	South Yard	Not Removed	8/5/1999	20	0.05	U																5	U	21.4		44.4		
MW-27	North Yard	Not Removed	8/6/1999	10	0.05	U																512		10	U	25	U	
MW-27	North Yard	Not Removed	8/6/1999	10.5	0.05	U																23.9		10	U	25	U	
MW-27	North Yard	Not Removed	8/6/1999	20.5	0.05	U																5.72		10	U	25	U	
MW-28	North Yard	Not Removed	8/6/1999	10.5	0.104																	178		120		73		
MW-28	North Yard	Not Removed	8/6/1999	15.5	0.05	U																6.01		10.0	U	25	U	

Table 3
Historical Soil Hydrocarbons Analytical Results
Former Chevron Bulk Plant #1001327
1602 North Northlake Place
Seattle, Washington

EXPLANATIONS:

(mg/kg) = Milligrams per kilogrom
N/A = Not Available
(dup) = Duplicate
ND = Non-detect
EPA = Environmental Protection Agency
ROW = Public Right of Way
(ft.) = Feet
bgs = below ground surface
Depth = distance bgs
J = Laboratory flag for estimated value
U = Not detected, value shown is detection limit
TPH = Total Petroleum Hydrocarbon
GRO = Gasoline Range Organics
DRO = Diesel Range Organics
HRO = Heavy Oil

ANALYTICAL METHOD:

BTEX and GRO analyzed by NWTPH-Gx EPA method 8021B
DRO and HRO analyzed by NWTPH-Dx
TPH analyzed by EPA 8015 modified

NOTES

1 - Site specific cleanup levels developed in 1998 Draft Cleanup Action Plan.
2 - MTCA Method A cleanup levels for industrial sites adopted for North Yard by Touchstone in 2006 Draft Cleanup Action Plan

Table 4
Historic Soil PAH Analytical Results
Former Chevron Bulk Plant #1001327
1602 North Northlake Place
Seattle, Washington

Boring ID	Location	Soil Status	Date	Depth (ft.)	PAHs (total) (mg/kg)	Carcinogenic PAHs (total) (mg/kg)	Acenaphthene (mg/kg)	Acenaphthylene (mg/kg)	Anthracene (mg/kg)	Benzo (g,h,i) perylene (mg/kg)	Fluoranthene (mg/kg)	Fluorene (mg/kg)	1-Methylnaphthalene (mg/kg)	2-Methylnaphthalene (mg/kg)	Naphthalene (mg/kg)	Phenanthrene (mg/kg)	Pyrene (mg/kg)	Benzo (a) anthrace (mg/kg)
Soil Cleanup Level[1]					**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**18**	**NA**	**NA**	**NA**	**18**	**NA**	**NA**	**18**
MTCA Method A Cleanup Levels[2]					**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**2**	**NA**	**NA**	**NA**	**2**	**NA**	**NA**	**2**
HB1	North Yard	Removed	7/28/1993	0.2			0.17 U	0.17 U	0.014	0.095	0.34	0.017 U	0.17 U	0.32	0.2	0.16	0.16	0.038
HB1	North Yard	Not Removed	7/28/1993	1.8			0.47 J	0.17 U	0.0083 U	0.046 J	0.017 U	2 J	11 J	10 J	1.7 J	0.0083 U	0.017 U	0.017
HB2	North Yard	Removed	7/28/1993	0.1			0.17 U	0.17 U	0.0083 U	0.084	0.21	0.017 U	0.17 U	0.17 U	0.083 U	0.1	0.1	0.064
HB2	North Yard	Not Removed	7/28/1993	2			0.17 U	0.17 U	0.0083 U	0.017 U	0.017 U	0.096	4.9	8.7	6.5	0.0083 U	0.017 U	0.017
HB2 (dup)	North Yard	Not Removed	7/28/1993	2			0.17 U	0.17 U	0.0083 U	0.017 U	0.017 U	0.025	1.1	2	1.7	0.0083 U	0.017 U	0.017
HB3	North Yard	Removed	7/28/1993	0.1			0.17 U	0.17 U	0.0083 U	0.077	0.017 U	0.017 U	0.17 U	0.17 U	0.099	0.11	0.11	0.034
HB3	North Yard	Not Removed	7/28/1993	1.8			0.17 U	0.17 U	0.0083 U	0.017 U	0.017 U	0.32	1.9	3	0.71	0.6	0.017 U	0.017
HB4	North Yard	Removed	7/28/1993	0.1			0.17 U	0.17 U	0.017	0.11	0.68	0.017 U	0.17 U	0.17 U	0.6	0.3	0.34	0.089
HB4 (dup)	North Yard	Removed	7/28/1993	0.1			0.17 U	0.17 U	0.016	0.1	0.61	0.017 U	0.17 U	0.23	0.083 U	0.27	0.3	0.079
MW2	North Yard	Not Removed	8/6/1993	14			0.17 U	0.17 U	0.0083 U	0.017 U	0.017 U	0.35	3	0.4	0.083 U	0.45	0.017 U	0.017
MW3	North Yard	Not Removed	8/9/1993	12			0.3	0.17 U	0.0083 U	0.017 U	0.017 U	1.1	5.7	10	2.8	1.6	0.017 U	0.017
MW6	North Yard	Not Removed	8/11/1993	17			1.1 J	0.17 U	0.0083 U	0.017 U	0.017 U	3.4 J	19 J	24 J	6.7 J	3.5 J	0.017 U	0.017
MW10	North Yard	Not Removed	8/17/1993	11			0.17 U	0.17 U	0.0083 U	0.017 U	0.017 U	0.55	4.6	8.5	4.6	1	0.017 U	0.017
SB4	North Yard	Not Removed	8/12/1993	7.5			0.17 U	0.17 U	0.0083 U	0.017 U	0.017 U	1	5	3.3	0.083 U	1.1	0.017 U	0.017
SB9	North Yard	Not Removed	8/17/1993	6.5			0.17 U	0.17 U	0.0083 U	0.062	0.017 U	0.017 U	0.17 U	0.38	0.24	0.12	0.42	0.017
SB10	North Yard	Not Removed	8/17/1993	6			0.17 U	0.17 U	0.0083 U	0.017 U	0.017 U	0.11	4.3	6.6	3.5	0.23	0.13	0.017
Vault	NA	Not Removed	7/28/1993	NA			0.17 U	0.17 U	0.0083 U	0.1	0.017 U	0.037	0.17 U	0.17 U	0.083 U	0.076	0.017 U	0.017
HB7	South Yard	Not Removed	7/28/1993	0.4			0.17 U	0.17 U	0.042	0.4	0.66	0.017 U	0.17 U	0.32	0.21	0.38	0.47	0.16
HB8	South Yard	Not Removed	7/28/1993	1			0.17 U	0.17 U	0.035	0.082	0.017 U	0.027	0.017 U	0.53	0.38	0.43	0.36	0.15
SB8	ROW	Not Removed	8/13/1993	12.5			1.9 J	0.17 U	0.0083 U	0.017 U	18 J	8.3 J	50 J	73 J	25 J	16 J	0.017 U	0.33
MW3 (dup)	North Yard	Not Removed	8/9/1993	12			0.3	0.17 U	0.0083 U	0.017 U	0.017 U	1		9.4	3.1	1.5	0.017 U	0.017
MLU-1	South Yard	Not Removed	4/22/1991	3	1.57	0.91												
MLU-1	South Yard	Not Removed	4/22/1991	11	6.04	1.81												
S-1-17	South Yard	Not Removed	12/8/2003	NA							0.0221				0.01 U			0.0187
S-2-15	South Yard	Not Removed	12/8/2003	NA							0.229				0.0786			0.0832
S-3-15	South Yard	Not Removed	12/8/2003	NA							0.01 U				0.01 U			0.01
S-4-15	South Yard	Not Removed	12/8/2003	NA							0.01 U				0.01 U			0.01
S-5-15	South Yard	Not Removed	12/8/2003	NA							0.446				0.04			0.218
S-6-17	South Yard	Not Removed	12/8/2003	NA							0.01 U				0.01 U			0.01
MW-8A-20	South Yard	Not Removed	11/18/2003	NA							0.01 U				0.01 U			0.01
AS-1	South Yard	Not Removed	11/7/2001	10							0.330 U				0.330 U			0.330
AS-2	South Yard	Not Removed	11/7/2001	15							0.345				0.842			0.330
AS-3	South Yard	Not Removed	11/7/2001	10							0.330 U				0.330 U			0.330
AS-4	South Yard	Not Removed	11/7/2001	15							0.330 U				0.330 U			0.330
AS-5	South Yard	Not Removed	11/7/2001	10							0.330 U				0.330 U			0.330
AS-5	South Yard	Not Removed	11/7/2001	15							0.330 U				0.330 U			0.330
AS-6	South Yard	Not Removed	11/7/2001	15							0.330 U				0.330 U			0.330
MW-25	South Yard	Not Removed	8/5/1999	10.5							0.330 U				0.330 U			0.330
MW-25	South Yard	Not Removed	8/5/1999	11							0.330 U				0.330 U			0.330
MW-25	South Yard	Not Removed	8/5/1999	20.5							1.03				0.330 U			0.434
MW-26	South Yard	Not Removed	8/5/1999	10.5							1.19				0.330 U			0.501
MW-26	South Yard	Not Removed	8/5/1999	20							0.330 U				0.330 U			0.330
MW-27	North Yard	Not Removed	8/6/1999	10							0.330 U				0.330 U			0.330
MW-27	North Yard	Not Removed	8/6/1999	10.5							0.330 U				0.330 U			0.330
MW-27	North Yard	Not Removed	8/6/1999	20.5							0.330 U				0.330 U			0.330
MW-28	North Yard	Not Removed	8/6/1999	10.5							0.330 U				0.330 U			0.330
MW-28	North Yard	Not Removed	8/6/1999	15.5							0.330 U				0.330 U			0.330
B-1-11	North Yard	Not Removed	7/31/2007	11							0.0109 U		0.0109 U	0.0109 U	0.0109 U			0.0109
B-2-12.5	ROW	Not Removed	7/31/2007	12.5							0.011 U		0.0110 U	0.0110 U	0.0110 U			0.0110
B-3-8	ROW	Not Removed	7/30/2007	8							0.166		0.0423 U	0.0423 U	0.0423 U			0.0423
B-3-10	ROW	Not Removed	7/31/2007	10							0.0109 U		0.0109 U	0.0109 U	0.0109 U			0.0109
B-3-15	ROW	Not Removed	7/31/2007	15							0.0118 U		0.0118 U	0.0118 U	0.0118 U			0.0118
B-4-6	North Yard	Not Removed	7/31/2007	6							0.0111 U		0.179	0.341	0.0163			0.0111
B-4-15	North Yard	Not Removed	7/31/2007	15							0.0104 U		0.0104 U	0.0104 U	0.0104 U			0.0104
B-5-4	North Yard	Not Removed	7/31/2007	4							0.0107 U		0.0250	0.04	0.0107 U			0.0107
B-5-15	North Yard	Not Removed	7/31/2007	15							0.0112 U		0.0112 U	0.0112 U	0.0112 U			0.0112
B-6-6	North Yard	Not Removed	7/31/2007	6							0.0263		2.49	4.63	0.0113 U			0.0113
B-6-15	North Yard	Not Removed	8/1/2007	15							0.011 U		0.464	0.906	0.283			0.0110
B-7-4	North Yard	Not Removed	8/1/2007	4							0.0112 U		0.0112 U	0.0112 U	0.0112 U			0.0112
B-7-12.5	North Yard	Not Removed	8/1/2007	12.5							0.0111 U		0.119	0.24	0.117			0.0111
B-7-17.5	North Yard	Not Removed	8/1/2007	17.5							0.0113 U		0.0113 U	0.0113 U	0.0113 U			0.0113
B-8-12.5	Surrounding	Not Removed	8/2/2007	12.5							0.0111 U		0.0111 U	0.0111 U	0.0111 U			0.0111
B-9-6	ROW	Not Removed	7/31/2007	6							0.11 U		3.00	3.32	0.1100 U			0.1100
B-9-15	ROW	Not Removed	8/2/2007	15							0.0114 U		0.573	1.08	0.226			0.0114
DUP-1-080207 F	ROW	Not Removed	8/2/2007	15							0.045 U		1.13	2.22	0.460			0.0450
B-9-22.5	ROW	Not Removed	8/2/2007	22.5							0.0116 U		0.0116 U	0.0124	0.0116 U			0.0116
B-10-6	North Yard	Not Removed	8/1/2007	6							0.0116 U		0.0116 U	0.0116 U	0.0116 U			0.0116
B-11-12.5	ROW	Not Removed	8/2/2007	12.5							0.0114 U		0.0114 U	0.0114 U	0.0114 U			0.0114
B-12-12.5	ROW	Not Removed	8/2/2007	12.5							0.0111 U		14.6	29.1	5.00			0.0111
B-12.20	ROW	Not Removed	8/2/2007	20							0.011 U		0.128	0.214	0.023			0.0110
B-13-8	ROW	Not Removed	8/2/2007	8							0.044 U		1.8700	3.05	0.0440 U			0.0440
B-13-15	ROW	Not Removed	8/3/2007	15							0.0109 U		0.0109 U	0.0109 U	0.0109 U			0.0109
B-13-20	ROW	Not Removed	8/3/2007	20							0.0113 U		0.0113 U	0.0113 U	0.0113 U			0.0113
B-14-2.5	Surrounding	Not Removed	8/3/2007	2.5							0.011 U		0.0110 U	0.0110 U	0.0110 U			0.0110

Table 4
Historic Soil PAH Analytical Results
Former Chevron Bulk Plant #1001327
1602 North Northlake Place
Seattle, Washington

Boring ID	Location	Soil Status	Date	Depth (ft.)	PAHs (total) (mg/kg)	Carcinogenic PAHs (total) (mg/kg)	Acenaphthene (mg/kg)	Acenaphthylene (mg/kg)	Anthracene (mg/kg)	Benzo (g,h,i) perylene (mg/kg)	Fluoranthene (mg/kg)	Fluorene (mg/kg)	1-Methylnaphthalene (mg/kg)	2-Methylnaphthalene (mg/kg)	Naphthalene (mg/kg)	Phenanthrene (mg/kg)	Pyrene (mg/kg)	Benzo (a) anthrace (mg/kg)
Soil Cleanup Level[1]					**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**18**	**NA**	**NA**	**NA**	**18**	**NA**	**NA**	**18**
B-14-12.5	Surrounding	Not Removed	8/3/2007	12.5							0.0448 U		0.806	1.19	0.708			0.0448
DUP-2-080307 E	Surrounding	Not Removed	8/3/2007	12.5							0.0111 U		0.590	1.09	0.558			0.0111
B-15-12.5	Surrounding	Not Removed	8/3/2007	12.5							0.0112 U		0.0112 U	0.0112 U	0.0112 U			0.0112
B-15-17.5	Surrounding	Not Removed	8/3/2007	17.5							0.0108 U		0.0108 U	0.0108 U	0.0108 U			0.0108
B-16-20	North Yard	Not Removed	8/6/2007	20							0.0109 U		0.0109 U	0.0109 U	0.0109 U			0.0109
B-17-20	Surrounding	Not Removed	8/3/2007	20							0.0115 U		0.0115 U	0.0115 U	0.0115 U			0.0115
B-18-22.5	Surrounding	Not Removed	8/6/2007	22.5							0.0112 U		0.0112 U	0.0112 U	0.0112 U			0.0112
B-19-15	Surrounding	Not Removed	8/6/2007	15							0.0124 U		0.0124 U	0.0124 U	0.0124 U			0.0124
B-20-10	ROW	Not Removed	8/6/2007	10							0.0209		1.05	1.94	0.0108 U			0.0108
B-20-17.5	ROW	Not Removed	8/6/2007	17.5							0.0214		0.431	0.687	0.147			0.0115
DUP-3-080607 E	ROW	Not Removed	8/6/2007	17.5							0.0116 U		0.353	0.565	0.123			0.0116
B-20-20	ROW	Not Removed	8/6/2007	20							0.0116 U		0.0474	0.0707	0.0116 U			0.0116
B-21-8	ROW	Not Removed	8/6/2007	8							0.0882		2.45	1.62	0.0241 U			0.0241
B-21-12.5	ROW	Not Removed	8/7/2007	12.5							0.0107 U		0.0107 U	0.0107 U	0.0107 U			0.0107
B-21-20	ROW	Not Removed	8/7/2007	20							0.0113 U		0.0121	0.0166	0.0113 U			0.0113
B-22-8	ROW	Not Removed	8/6/2007	8							0.0729		2.53	2.57	0.235			0.0607
B-22-17.5	ROW	Not Removed	8/7/2007	17.5							0.011 U		0.459	0.728	0.285			0.0110
DUP-4-0807 B-2	ROW	Not Removed	8/7/2007	17.5							0.0112 U		0.797	1.23	0.555			0.0112
B-22-22.5	ROW	Not Removed	8/7/2007	22.5							0.0107 U		0.0107 U	0.0107 U	0.0107 U			0.0107
B-23-6	ROW	Not Removed	8/6/2007	6							0.0123 U		0.0811	0.0344	0.0123 U			0.0123
B-23-10	ROW	Not Removed	8/7/2007	10							0.618 U		19.4	34.4	20.1			0.6180
B-23-17.5	ROW	Not Removed	8/7/2007	17.5							0.0221 U		0.125	0.211	0.0869			0.0221

Table 4
Historic Soil PAH Analytical Results
Former Chevron Bulk Plant #1001327
1602 North Northlake Place
Seattle, Washington

Boring ID	Location	Soil Status	Date	Depth (ft.)	ne	Benzo (a) pyrene (mg/kg)		Benzo (b) flouranthene (mg/kg)		Benzo (k) flouranthene (mg/kg)		Chrysene (mg/kg)		Dibenzo (a,h) anthracene (mg/kg)		Indeno (1,2,3-c,d) pyrene (mg/kg)	
Soil Cleanup Level[1]						**18**		**18**		**18**		**18**		**18**		**18**	
MTCA Method A Cleanup Levels[2]						**2**		**2**		**2**		**2**		**2**		**2**	
HB1	North Yard	Removed	7/28/1993	0.2		0.056		0.062		0.035		0.049		0.034	U	0.051	
HB1	North Yard	Not Removed	7/28/1993	1.8	U	0.017	U	0.017	U	0.017	U	0.017	U	0.034	U	0.017	U
HB2	North Yard	Removed	7/28/1993	0.1		0.082		0.1		0.052		0.068		0.034	U	0.074	
HB2	North Yard	Not Removed	7/28/1993	2	U	0.017	U	0.017	U	0.017	U	0.017	U	0.034	U	0.017	U
HB2 (dup)	North Yard	Not Removed	7/28/1993	2	U	0.017	U	0.017	U	0.017	U	0.017	U	0.034	U	0.017	U
HB3	North Yard	Removed	7/28/1993	0.1		0.05		0.055		0.029		0.04		0.034	U	0.042	
HB3	North Yard	Not Removed	7/28/1993	1.8	U	0.017	U	0.017	U	0.017	U	0.017	U	0.034	U	0.017	U
HB4	North Yard	Removed	7/28/1993	0.1		0.1		0.13		0.067		0.11		0.034	U	0.093	
HB4 (dup)	North Yard	Removed	7/28/1993	0.1		0.099		0.12		0.061		0.1		0.034	U	0.087	
MW2	North Yard	Not Removed	8/6/1993	14	U	0.017	U	0.017	U	0.017	U	0.017	U	0.034	U	0.017	U
MW3	North Yard	Not Removed	8/9/1993	12	U	0.017	U	0.017	U	0.017	U	0.017	U	0.034	U	0.017	U
MW6	North Yard	Not Removed	8/11/1993	17	U	0.017	U	0.017	U	0.017	U	0.017	U	0.034	U	0.017	U
MW10	North Yard	Not Removed	8/17/1993	11	U	0.017	U	0.017	U	0.017	U	0.017	U	0.034	U	0.017	U
SB4	North Yard	Not Removed	8/12/1993	7.5	U	0.017	U	0.017	U	0.017	U	0.017	U	0.034	U	0.017	U
SB9	North Yard	Not Removed	8/17/1993	6.5	U	0.017	U	0.036		0.017	U	0.028		0.034	U	0.03	
SB10	North Yard	Not Removed	8/17/1993	6	U	0.017	U	0.017	U	0.017	U	0.017	U	0.034	U	0.017	U
Vault	NA	Not Removed	7/28/1993	NA	U	0.017	U	0.017	U	0.017	U	0.017	U	0.034	U	0.017	U
HB7	South Yard	Not Removed	7/28/1993	0.4		0.2		0.23		0.11		0.19		0.034	U	0.3	
HB8	South Yard	Not Removed	7/28/1993	1		0.049		0.14		0.055		0.017	U	0.034	U	0.017	U
SB8	ROW	Not Removed	8/13/1993	12.5	J	0.017	U	0.017	U	0.017	U	0.017	U	0.034	U	0.017	U
MW3 (dup)	North Yard	Not Removed	8/9/1993	12	U	0.017	U	0.017	U	0.017	U	0.017	U	0.034	U	0.017	U
MLU-1	South Yard	Not Removed	4/22/1991	3													
MLU-1	South Yard	Not Removed	4/22/1991	11													
S-1-17	South Yard	Not Removed	12/8/2003	NA		0.0221		0.0162		0.0196		0.017		0.0349		0.0392	
S-2-15	South Yard	Not Removed	12/8/2003	NA		0.0906		0.0518		0.0629		0.098		0.0472		0.0684	
S-3-15	South Yard	Not Removed	12/8/2003	NA	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
S-4-15	South Yard	Not Removed	12/8/2003	NA	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
S-5-15	South Yard	Not Removed	12/8/2003	NA		0.224		0.0158		0.161		0.236		0.0689		0.121	
S-6-17	South Yard	Not Removed	12/8/2003	NA	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
MW-8A-20	South Yard	Not Removed	11/18/2003	NA	U	0.0131		0.01	U	0.01	U	0.011		0.01	U	0.01	U
AS-1	South Yard	Not Removed	11/7/2001	10	U	0.330	U	0.330	U	0.330	U	0.330	U	0.330	U	0.330	U
AS-2	South Yard	Not Removed	11/7/2001	15	U	0.330	U	0.330	U	0.330	U	0.330	U	0.33	U	0.33	U
AS-3	South Yard	Not Removed	11/7/2001	10	U	0.330	U	0.330	U	0.330	U	0.330	U	0.33	U	0.33	U
AS-4	South Yard	Not Removed	11/7/2001	15	U	0.330	U	0.330	U	0.330	U	0.330	U	0.33	U	0.33	U
AS-5	South Yard	Not Removed	11/7/2001	10	U	0.330	U	0.330	U	0.330	U	0.330	U	0.33	U	0.33	U
AS-5	South Yard	Not Removed	11/7/2001	15	U	0.330	U	0.330	U	0.330	U	0.330	U	0.33	U	0.33	U
AS-6	South Yard	Not Removed	11/7/2001	15	U	0.330	U	0.330	U	0.330	U	0.330	U	0.33	U	0.33	U
MW-25	South Yard	Not Removed	8/5/1999	10.5	U	0.330	U	0.330	U	0.330	U	0.330	U	0.330	U	0.330	U
MW-25	South Yard	Not Removed	8/5/1999	11	U	0.330	U	0.330	U	0.330	U	0.330	U	0.330	U	0.330	U
MW-25	South Yard	Not Removed	8/5/1999	20.5		0.366		0.327		0.13		0.469		0.330	U	0.189	
MW-26	South Yard	Not Removed	8/5/1999	10.5		0.494		0.509		0.208		0.525		0.330	U	0.297	
MW-26	South Yard	Not Removed	8/5/1999	20	U	0.330	U	0.330	U	0.330	U	0.330	U	0.330	U	0.330	U
MW-27	North Yard	Not Removed	8/6/1999	10	U	0.330	U	0.330	U	0.330	U	0.330	U	0.330	U	0.330	U
MW-27	North Yard	Not Removed	8/6/1999	10.5	U	0.330	U	0.330	U	0.330	U	0.330	U	0.330	U	0.330	U
MW-27	North Yard	Not Removed	8/6/1999	20.5	U	0.330	U	0.330	U	0.330	U	0.330	U	0.330	U	0.330	U
MW-28	North Yard	Not Removed	8/6/1999	10.5	U	0.330	U	0.330	U	0.330	U	0.330	U	0.330	U	0.330	U
MW-28	North Yard	Not Removed	8/6/1999	15.5	U	0.330	U	0.330	U	0.330	U	0.330	U	0.330	U	0.330	U
B-1-11	North Yard	Not Removed	7/31/2007	11	U	0.0109	U	0.0109	U	0.0109	U	0.011	U	0.0109	U	0.0109	U
B-2-12.5	ROW	Not Removed	7/31/2007	12.5	U	0.011	U	0.011	U	0.011	U	0.011	U	0.011	U	0.011	U
B-3-8	ROW	Not Removed	7/30/2007	8	U	0.0423	U	0.0423	U	0.0423	U	0.321		0.0423	U	0.0423	U
B-3-10	ROW	Not Removed	7/31/2007	10	U	0.0109	U	0.0109	U	0.0109	U	0.011	U	0.0109	U	0.0109	U
B-3-15	ROW	Not Removed	7/31/2007	15	U	0.0118	U	0.0118	U	0.0118	U	0.012	U	0.0118	U	0.0118	U
B-4-6	North Yard	Not Removed	7/31/2007	6	U	0.0111	U	0.0111	U	0.0111	U	0.011	U	0.0111	U	0.0111	U
B-4-15	North Yard	Not Removed	7/31/2007	15	U	0.0104	U	0.0104	U	0.0104	U	0.01	U	0.0104	U	0.0104	U
B-5-4	North Yard	Not Removed	7/31/2007	4	U	0.0107	U	0.0107	U	0.0107	U	0.011	U	0.0107	U	0.0107	U
B-5-15	North Yard	Not Removed	7/31/2007	15	U	0.0112	U	0.0112	U	0.0112	U	0.011	U	0.0112	U	0.0112	U
B-6-6	North Yard	Not Removed	7/31/2007	6	U	0.0113	U	0.0113	U	0.0113	U	0.023		0.0113	U	0.0113	U
B-6-15	North Yard	Not Removed	8/1/2007	15	U	0.011	U	0.011	U	0.011	U	0.011	U	0.011	U	0.011	U
B-7-4	North Yard	Not Removed	8/1/2007	4	U	0.0112	U	0.0112	U	0.0112	U	0.011	U	0.0112	U	0.0112	U
B-7-12.5	North Yard	Not Removed	8/1/2007	12.5	U	0.0111	U	0.0111	U	0.0111	U	0.011	U	0.0111	U	0.0111	U
B-7-17.5	North Yard	Not Removed	8/1/2007	17.5	U	0.0113	U	0.0113	U	0.0113	U	0.011	U	0.0113	U	0.0113	U
B-8-12.5	Surrounding	Not Removed	8/2/2007	12.5	U	0.0111	U	0.0111	U	0.0111	U	0.011	U	0.0111	U	0.0111	U
B-9-6	ROW	Not Removed	7/31/2007	6	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U
B-9-15	ROW	Not Removed	8/2/2007	15	U	0.0114	U	0.0114	U	0.0114	U	0.011	U	0.0124		0.0114	U
DUP-1-080207 I	ROW	Not Removed	8/2/2007	15	U	0.045	U	0.045	U	0.045	U	0.045	U	0.045	U	0.045	U
B-9-22.5	ROW	Not Removed	8/2/2007	22.5	U	0.0116	U	0.0116	U	0.0116	U	0.012	U	0.0116	U	0.0116	U
B-10-6	North Yard	Not Removed	8/1/2007	6	U	0.0116	U	0.0116	U	0.0116	U	0.012	U	0.0116	U	0.0116	U
B-11-12.5	ROW	Not Removed	8/2/2007	12.5	U	0.0114	U	0.0114	U	0.0114	U	0.011	U	0.0114	U	0.0114	U
B-12-12.5	ROW	Not Removed	8/2/2007	12.5	U	0.0111	U	0.0111	U	0.0111	U	0.051		0.0111	U	0.0111	U
B-12.20	ROW	Not Removed	8/2/2007	20	U	0.011	U	0.011	U	0.011	U	0.011	U	0.011	U	0.011	U
B-13-8	ROW	Not Removed	8/2/2007	8	U	0.044	U	0.044	U	0.044	U	0.044	U	0.044	U	0.044	U
B-13-15	ROW	Not Removed	8/3/2007	15	U	0.0109	U	0.0109	U	0.0109	U	0.011	U	0.0109	U	0.0109	U
B-13-20	ROW	Not Removed	8/3/2007	20	U	0.0113	U	0.0113	U	0.0113	U	0.011	U	0.0113	U	0.0113	U
B-14-2.5	Surrounding	Not Removed	8/3/2007	2.5	U	0.011	U	0.011	U	0.011	U	0.011	U	0.011	U	0.011	U

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1602 North Northlake Place
Seattle, Washington

Boring ID	Location	Soil Status	Date	Depth (ft.)	ne	Benzo (a) pyrene (mg/kg)		Benzo (b) flouranthene (mg/kg)		Benzo (k) flouranthene (mg/kg)		Chrysene (mg/kg)		Dibenzo (a,h) anthracene (mg/kg)		Indeno (1,2,3-c,d) pyrene (mg/kg)	
Soil Cleanup Level[1]						**18**		**18**		**18**		**18**		**18**		**18**	
B-14-12.5	Surrounding	Not Removed	8/3/2007	12.5	U	0.0448	U	0.0448	U	0.0448	U	0.045	U	0.0448	U	0.0448	U
DUP-2-080307 I	Surrounding	Not Removed	8/3/2007	12.5	U	0.0111	U	0.0111	U	0.0111	U	0.011	U	0.0111	U	0.0111	U
B-15-12.5	Surrounding	Not Removed	8/3/2007	12.5	U	0.0112	U	0.0112	U	0.0112	U	0.011	U	0.0112	U	0.0112	U
B-15-17.5	Surrounding	Not Removed	8/3/2007	17.5	U	0.0108	U	0.0108	U	0.0108	U	0.011	U	0.0108	U	0.0108	U
B-16-20	North Yard	Not Removed	8/6/2007	20	U	0.0109	U	0.0109	U	0.0109	U	0.011	U	0.0109	U	0.0109	U
B-17-20	Surrounding	Not Removed	8/3/2007	20	U	0.0115	U	0.0115	U	0.0115	U	0.012	U	0.0115	U	0.0115	U
B-18-22.5	Surrounding	Not Removed	8/6/2007	22.5	U	0.0112	U	0.0112	U	0.0112	U	0.011	U	0.0112	U	0.0112	U
B-19-15	Surrounding	Not Removed	8/6/2007	15	U	0.0124	U	0.0124	U	0.0124	U	0.012	U	0.0124	U	0.0124	U
B-20-10	ROW	Not Removed	8/6/2007	10	U	0.0108	U	0.0108	U	0.0108	U	0.011		0.0108	U	0.0108	U
B-20-17.5	ROW	Not Removed	8/6/2007	17.5	U	0.0115	U	0.0115	U	0.0115	U	0.012	U	0.0115	U	0.0115	U
DUP-3-080607 I	ROW	Not Removed	8/6/2007	17.5	U	0.0116	U	0.0116	U	0.0116	U	0.012	U	0.0116	U	0.0116	U
B-20-20	ROW	Not Removed	8/6/2007	20	U	0.0116	U	0.0116	U	0.0116	U	0.012	U	0.0116	U	0.0116	U
B-21-8	ROW	Not Removed	8/6/2007	8	U	0.0241	U	0.0241	U	0.0241	U	0.024	U	0.0241	U	0.0241	U
B-21-12.5	ROW	Not Removed	8/7/2007	12.5	U	0.0107	U	0.0107	U	0.0107	U	0.011	U	0.0107	U	0.0107	U
B-21-20	ROW	Not Removed	8/7/2007	20	U	0.0113	U	0.0113	U	0.0113	U	0.011	U	0.0113	U	0.0113	U
B-22-8	ROW	Not Removed	8/6/2007	8	U	0.0607	U	0.0607	U	0.0607	U	0.061	U	0.0607	U	0.0607	U
B-22-17.5	ROW	Not Removed	8/7/2007	17.5	U	0.011	U	0.011	U	0.011	U	0.011	U	0.011	U	0.011	U
DUP-4-0807 B-2	ROW	Not Removed	8/7/2007	17.5	U	0.0112	U	0.0112	U	0.0112	U	0.011	U	0.0112	U	0.0112	U
B-22-22.5	ROW	Not Removed	8/7/2007	22.5	U	0.0107	U	0.0107	U	0.0107	U	0.011	U	0.0107	U	0.0107	U
B-23-6	ROW	Not Removed	8/6/2007	6	U	0.0123	U	0.0123	U	0.0123	U	0.012	U	0.0123	U	0.0123	U
B-23-10	ROW	Not Removed	8/7/2007	10	U	0.618	U	0.618	U	0.618	U	0.618	U	0.618	U	0.618	U
B-23-17.5	ROW	Not Removed	8/7/2007	17.5	U	0.0221	U	0.0221	U	0.0221	U	0.022	U	0.0221	U	0.0221	U

Table 4
Historical Soil PAHs Analytical Results
Former Chevron Bulk Plant #1001327
1602 North Northlake Place
Seattle, Washington

EXPLANATIONS:

(mg/kg) = Milligrams per kilogrom
N/A = Not Available
(dup) = Duplicate
ND = Non-detect
EPA = Environmental Protection Agency
PAH = Poly Aromatic Hydrocarbons
(ft.) = Feet
bgs = below ground surface
Depth = distance bgs
J = Laboratory flag for estimated value
U = Not detected, value shown is detection limit
ROW = Public Right of Way

ANALYTICAL METHOD:

Selected PAHs by EPA Method 8270C SIM

NOTES

1 - Site specific cleanup levels developed in 1998 Draft Cleanup Action Plan.
2 - MTCA Method A cleanup levels for industrial sites adopted for North Yard by Touchstone in 2006 Draft Cleanup Action Plan

Table 5
Historic Soil Metals Analytical Results
Former Chevron Bulk Plant #1001327
1602 North Northlake Place
Seattle, Washington

Boring ID	Location	Soil Status	Date	Depth (ft.)	Antimony (mg/kg)	Arsenic (mg/kg)	Barium (mg/kg)	Beryllium (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Copper (mg/kg)	Lead (mg/kg)	Mercury (mg/kg)	Nickel (mg/kg)	Selenium (mg/kg)	Silver (mg/kg)	Zinc (mg/kg)
Soil Cleanup Level[1]					**NA**	**200**	**NA**	**NA**	**10**	**500**	**NA**	**1000**	**1**	**NA**	**NA**	**NA**	**NA**
MTCA Method A Cleanup Levels[2]					**NA**	**20**	**NA**	**NA**	**2**	**19/2,000[3]**	**NA**	**1000**	**1**	**NA**	**NA**	**NA**	**NA**
P-11-12.5	Surrounding	Not Removed	5/17/2006	12.5													
HB1	North Yard	Removed	7/28/1993	0.2	120 J	380 J		0.3	11	56	440	3,900	1.5	43	0.5 U	1.3	2,400
HB1	North Yard	Not Removed	7/28/1993	1.8	3.5 J	15 J		0.25 U	9.6	26	19	170	0.15	34	0.5 U	0.093	280
HB2	North Yard	Removed	7/28/1993	0.1	1,100 J	3,000 J	0.01 U	0.66	22	190	3,200	7,200	3.3	36	1.5 J	6.9	5,800
HB2	North Yard	Not Removed	7/28/1993	2	3.2 J	27 J	0.83	0.25 U	0.14	29	23	18	0.1 U	33	0.5 U	0.053	50
HB2 (dup)	North Yard	Not Removed	7/28/1993	2													
HB3	North Yard	Removed	7/28/1993	0.1	790 J	3,000 J		1.2	2.9	280	3,600	6,400	7.6	37	1.4 J	6.5	5,900
HB3	North Yard	Not Removed	7/28/1993	1.8	4.1 J	14 J		0.25 U	0.42	13	18	73	0.49	18	0.5 U	0.037	55
HB4	North Yard	Removed	7/28/1993	0.1	530 J	2,500 J		0.76	7.8	240	2,500	5,300	12	34	1.7 J	4.1	5,900
HB4 (dup)	North Yard	Removed	7/28/1993	0.1	150 J	600 J		0.32	3.7	69	560	2,000	24	35	0.5 U	1	1,400
HA-01-01	North Yard	Removed	7/28/1993	0-0.5		84					86	700					390
HA-01-02	North Yard	Not Removed	7/28/1993	0.5-1.5		10			0.53 U		17 J	56					140 J
HA-02-01	North Yard	Removed	7/28/1993	0-0.5		100					110	820					350
HA-02-02	North Yard	Not Removed	7/28/1993	0.5-1.0		15					26 J	130					88 J
HA-03-01	North Yard	Removed	7/28/1993	0-0.5		13					9.5	5.8					58
HA-03-02	North Yard	Not Removed	7/28/1993	0.5-1.2		7			0.6 U		8.5 J	13					49 J
HA-04-01	North Yard	Removed	7/28/1993	0-0.5		22					78	200					150
HA-20-01 (dup)	North Yard	Removed	7/28/1993	0-0.5		20					59	130					130
HA-04-02	North Yard	Not Removed	7/28/1993	0.5-1.5		11					32 J	80					92 J
HA-05-01	North Yard	Removed	7/28/1993	0-0.5		11 U					11	13					33
HA-05-02	North Yard	Not Removed	7/28/1993	0.5-1.5		2.9			0.53 U		9 J	5.3 U					27 J
HA-06-01	North Yard	Removed	7/28/1993	0-0.5		390					560	2,000					1,100
HA-22-01 (dup)	North Yard	Removed	7/28/1993	0-0.5		430					510	1,600					1,100
HA-06-02	North Yard	Not Removed	7/28/1993	0.5-1.5		12			1.9		58 J	110					260 J
HA-07-01	North Yard	Removed	7/28/1993	0-0.5		45					64	84					140
HA-07-02	North Yard	Not Removed	7/28/1993	0.5-1.5		6.3			0.59 U		18 J	5.9 U					45 J
HA-08-01	North Yard	Removed	7/28/1993	0-0.5		12					25	23					88
HA-08-02	North Yard	Not Removed	7/28/1993	0.5-1.5		3.3					14 J	5.3 U					33 J
HA-09-01	North Yard	Removed	7/28/1993	0-0.5		11					41	190					230
HA-09-02	North Yard	Not Removed	7/28/1993	0.5-1.25		11					27 J	88					170 J
HA-10-01	North Yard	Removed	7/28/1993	0-0.5		34					53	140					120
HA-10-02	North Yard	Not Removed	7/28/1993	0.5-1.0		24					48 J	210					110 J
HA-11-01	North Yard	Removed	7/28/1993	0-0.5		33					51	700					280
HA-11-02	North Yard	Not Removed	7/28/1993	0.5-1.1		12					18 J	380					130 J
HA-12-01	North Yard	Removed	7/28/1993	0-0.5		55					72	460					250
HA-12-02	North Yard	Not Removed	7/28/1993	0.5-1.5		9.6			0.56 U		13 J	47					65 J
MW3	North Yard	Not Removed	8/9/1993	6.5								25 U					
SB9	North Yard	Not Removed	8/17/1993	6.5								35					
HB7	South Yard	Not Removed	7/28/1993	0.4	6.3 J	95 J		0.25 U	9.1	32	170	1300	0.9	47	0.5 U	0.46	900
HB9	South Yard	Not Removed	7/28/1993	1	2.5 UR	1.6 J		0.25 U	0.2	18	11	5.9	0.1 U	24	0.5 U	0.031	89
MW8	South Yard	Removed	8/12/1993	2.5	2.5 UR	2.9		0.25 U	0.18	23	18	12	0.1 U	24	0.5 U	0.027	55
TP10	South Yard	Not Removed	7/30/1993	12	2.5 UR	1.4 R		0.25 U	0.01 UR	22	9.9	2.2	0.1 U	30	0.5 U	0.024	21
TP12	South Yard	Not Removed	7/30/1993	5	2.5 UR	1.7		0.25 U	0.04	24	10	1.5 U	0.1 U	32	0.5 U	0.019	25
HB10	Surrounding	Not Removed	7/28/1993	0.1	3.1	23		0.25 U	0.83	28	86	170	0.21	35	0.5 U	0.46	160
HB11	ROW	Not Removed	7/28/1993	0.1	2.5 U	11		0.25 U	0.6	23	27	73	0.1 U	31	0.5 U	0.05	91
HB12	Surrounding	Not Removed	7/28/1993	0.1	3.5 U	4.2		0.25 U	0.29	20	15	24	0.1 U	25	0.5 U	0.03	52
HB13	Surrounding	Not Removed	7/28/1993	0.1	4.5 U	10		0.25 U	1.1	23	27	150	0.16	30	0.5 U	0.1	150
HB14	Surrounding	Not Removed	7/28/1993	0.1	5.5 U	9.7		0.25 U	0.84	24	52	200	0.16	28	0.5 U	0.13	150
P-4	South Yard	Not Removed	4/1/1988	5								0.5 U					
P-5	South Yard	Not Removed	4/1/1988	18								0.5 U					
MLU-1	South Yard	Not Removed	4/22/1991	3					2.3								
MLU-3	South Yard	Not Removed	4/23-24/1991	9					2.3								
MLU-3	South Yard	Not Removed	4/23-24/1991	11					2.5								
MW20-12	ROW	Not Removed	7/3/1997	12		0.200 U	1.16		0.0050 U	0.0100 U		0.200 U	0.0010 U		0.150 U	0.0200 U	
MW22-11	ROW	Not Removed	7/3/1997	11		0.200 U	1.00		0.0050 U	0.0100 U		0.200 U	0.0010 U		0.150 U	0.0200 U	
S-1-17	South Yard	Removed	12/8/2003	17		1.4			0.5 U	29.8		2.88	0.2 U				
S-2-15	South Yard	Removed	12/8/2003	15		2.84			0.562 U	36.9		9.19	0.2 U				
S-3-15	South Yard	Removed	12/8/2003	15		1.36			0.694 U	20.9		2.39	0.2 U				
S-4-15	South Yard	Removed	12/8/2003	15		1.25			0.617 U	18.8		1.95	0.2 U				
S-5-15	South Yard	Removed	12/8/2003	15		2.59			0.694 U	19.9		16.6	0.2 U				
S-6-17	South Yard	Removed	12/8/2003	17		1.03			0.595 U	27.2		1.47	0.2 U				
MW-8A-20	South Yard	Not Removed	11/18/2003	20		1.45			0.5 U	70.3		3.89	0.135 U				
B-1-11	North Yard	Not Removed	7/31/2007	11		1.13			0.375 U	14.3		1.61	0.1010 U				

Table 5
Historic Soil Metals Analytical Results
Former Chevron Bulk Plant #1001327
1602 North Northlake Place
Seattle, Washington

Boring ID	Location	Soil Status	Date	Depth (ft.)	Antimony (mg/kg)	Arsenic (mg/kg)	Barium (mg/kg)	Beryllium (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Copper (mg/kg)	Lead (mg/kg)	Mercury (mg/kg)	Nickel (mg/kg)	Selenium (mg/kg)	Silver (mg/kg)	Zinc (mg/kg)
Soil Cleanup Level[1]					**NA**	**200**	**NA**	**NA**	**10**	**500**	**NA**	**1000**	**1**	**NA**	**NA**	**NA**	**NA**
MTCA Method A Cleanup Levels[2]					**NA**	**20**	**NA**	**NA**	**2**	**19/2,000[3]**	**NA**	**1000**	**1**	**NA**	**NA**	**NA**	**NA**
B-2-12.5	ROW	Not Removed	7/31/2007	12.5		1.06			0.455 U	14.3		1.32	0.1110 U				
B-3-8	ROW	Not Removed	7/30/2007	8		1.37			0.525 U	27.1		2.80	0.0992 U				
B-3-10	ROW	Not Removed	7/31/2007	10		1.29			0.487 U	15.7		2.16	0.1120 U				
B-3-15	ROW	Not Removed	7/31/2007	15		0.814			0.506 U	15.1		1.48	0.1100 U				
B-4-6	North Yard	Not Removed	7/31/2007	6		1.32			0.526 U	15.5		2.10	0.0975 U				
B-4-15	North Yard	Not Removed	7/31/2007	15		1.10			0.531 U	13.1		1.08	0.0926 U				
B-5-4	North Yard	Not Removed	7/31/2007	4		1.18			0.545 U	17.1		2.10	0.1060 U				
B-5-15	North Yard	Not Removed	7/31/2007	15		0.968			0.452 U	12.9		1.14	0.0974 U				
B-6-6	North Yard	Not Removed	7/31/2007	6		1.46			0.534 U	16.1		2.53	0.1180 U				
B-6-15	North Yard	Not Removed	8/1/2007	15		3.45			0.562 U	33.9		1.66	0.1020 U				
B-7-4	North Yard	Not Removed	8/1/2007	4		1.12			0.487 U	15.2		1.85	0.0948 U				
B-7-12.5	North Yard	Not Removed	8/1/2007	12.5		1.24			0.511 U	27.5		2.09	0.0959 U				
B-7-17.5	North Yard	Not Removed	8/1/2007	17.5		0.867			0.526 U	12.9		1.11	0.0981 U				
B-8-12.5	Surrounding	Not Removed	8/2/2007	12.5		1.64			0.574 U	24.4		1.82	0.1130 U				
B-9-6	ROW	Not Removed	7/31/2007	6		0.900			0.481 U	14.2		1.48	0.0983 U				
B-9-15	ROW	Not Removed	8/2/2007	15		1.20			0.572 U	17.2		1.34	0.0935 U				
DUP-1-080207 B-9-15	ROW	Not Removed	8/2/2007	15		0.960			0.519 U	14.5		1.19	0.1130 U				
B-9-22.5	ROW	Not Removed	8/2/2007	22.5		0.913			0.597 U	13.6		1.13	0.1130 U				
B-10-6	North Yard	Not Removed	8/1/2007	6		1.14			0.518 U	16.1		2.11	0.1070 U				
B-11-12.5	ROW	Not Removed	8/2/2007	12.5		0.993			0.591 U	17.0		1.31	0.1060 U				
B-12-12.5	ROW	Not Removed	8/2/2007	12.5		0.971			0.410 U	16.9		1.24	0.1060 U				
B-12.20	ROW	Not Removed	8/2/2007	20		0.706			0.519 U	12.6		0.924	0.1020 U				
B-13-8	ROW	Not Removed	8/2/2007	8		2.02			0.545 U	22.2		2.37	0.1100 U				
B-13-15	ROW	Not Removed	8/3/2007	15		1.18			0.536 U	15.5		1.09	0.1010 U				
B-13-20	ROW	Not Removed	8/3/2007	20		1.69			0.586 U	17.8		1.43	0.1000 U				
B-14-2.5	Surrounding	Not Removed	8/3/2007	2.5		1.13			0.492 U	16.3		1.34	0.1030 U				
B-14-12.5	Surrounding	Not Removed	8/3/2007	12.5		1.20			0.418 U	25.6		1.75	0.1130 U				
DUP-2-080307 B-14-15	Surrounding	Not Removed	8/3/2007	12.5		1.53			0.380 U	29.9		1.49	0.1100 U				
B-15-12.5	Surrounding	Not Removed	8/3/2007	12.5		0.738			0.516 U	27.6		1.41	0.1000 U				
B-15-17.5	Surrounding	Not Removed	8/3/2007	17.5		2.37			0.572 U	18.4		1.27	0.1090 U				
B-16-20	North Yard	Not Removed	8/6/2007	20		0.983			0.562 U	17.3		2.41	0.1030 U				
B-17-20	Surrounding	Not Removed	8/3/2007	20		1.40			0.435 U	17.5		1.25	0.1130 U				
B-18-22.5	Surrounding	Not Removed	8/6/2007	22.5		1.12			0.547 U	15.6		1.44	0.1080 U				
B-19-15	Surrounding	Not Removed	8/6/2007	15		1.15			0.621 U	25.5		1.57	0.1290 U				
B-20-10	ROW	Not Removed	8/6/2007	10		1.03			0.548 U	19.3		1.57	0.1030 U				
B-20-17.5	ROW	Not Removed	8/6/2007	17.5		1.06			0.537 U	17.3		1.50	0.1150 U				
DUP-3-080607 B-20-17.5	ROW	Not Removed	8/6/2007	17.5		1.03			0.543 U	17.9		1.49	0.1100 U				
B-20-20	ROW	Not Removed	8/6/2007	20		0.809			0.481 U	12.3		1.15	0.1160 U				
B-21-8	ROW	Not Removed	8/6/2007	8		1.46			0.534 U	19.7		2.42	0.1270 U				
B-21-12.5	ROW	Not Removed	8/7/2007	12.5		1.39			0.526 U	24.9		2.04	0.0999 U				
B-21-20	ROW	Not Removed	8/7/2007	20		0.933			0.555 U	18.0		1.27	0.1070 U				
B-22-8	ROW	Not Removed	8/6/2007	8		1.15			0.513 U	14.8		1.86	0.1020 U				
B-22-17.5	ROW	Not Removed	8/7/2007	17.5		1.33			0.453 U	18.0		2.38	0.1100 U				
DUP-4-0807 B-22-17.5	ROW	Not Removed	8/7/2007	17.5		2.01			0.473 U	17.4		2.30	0.1140 U				
B-22-22.5	ROW	Not Removed	8/7/2007	22.5		0.783			0.461 U	11.4		1.02	0.0962 U				
B-23-6	ROW	Not Removed	8/6/2007	6		0.894			0.617 U	14.7		2.26	0.1190 U				
B-23-10	ROW	Not Removed	8/7/2007	10		0.883			0.618 U	14.1		4.11	0.1040 U				
B-23-17.5	ROW	Not Removed	8/7/2007	17.5		1.91			0.442 U	15.3		1.59	0.1140 U				

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Historical Soil Metals Analytical Results
Former Chevron Bulk Plant #1001327
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EXPLANATIONS:

(mg/kg) = Milligrams per kilogrom
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(dup) = Duplicate
ND = Non-detect
EPA = Environmental Protection Agency
ROW = Public Right of Way
(ft.) = Feet
bgs = below ground surface
Depth = distance bgs
J = Laboratory flag for estimated value
U = Not detected, value shown is detection limit

ANALYTICAL METHOD:

Metals by EPA Method 6000/7000 series

NOTES:

1 - Site specific cleanup levels developed in 1998 Draft Cleanup Action Plan.
2 - MTCA Method A cleanup levels for industrial sites adopted for North Yard by Touchstone in 2006 Draft Cleanup Action Plan
3 - Chromium VI/Chromium III

Table 6

Historical Soil LNAPL Observations

Former Chevron Bulk Plant #1001327

1602 North Northlake Place

Seattle, Washington

Boring ID	Date	Location	Depth Interval (ft bgs)	Observation
B-1	7/30/07 - 7/31/07	North Yard	1 - 10	Slight Sheen
B-2	7/30/07 - 7/31/07	ROW	0.5 - 3	Slight Sheen
B-2	7/30/07 - 7/31/07	ROW	5.5 - 10	Slight Sheen
B-3	7/30/07 - 7/31/07	ROW	0.5 - 7.5	Slight Sheen
B-3	7/30/07 - 7/31/07	ROW	7.5 - 10	Heavy Sheen
B-3	7/30/07 - 7/31/07	ROW	14 - 17.8	Slight Sheen
B-4	7/30/07 - 7/31/07	North Yard	0.5 - 7.5	Slight Sheen
B-5	7/31/2007	North Yard	1 - 6	Slight Sheen
B-5	7/31/2007	North Yard	8 - 10	Slight Sheen
B-6	7/31/07 - 8/1/07	North Yard	0.5 - 5.5	Slight Sheen
B-6	7/31/07 - 8/1/07	North Yard	5.5 - 7	Moderate Sheen
B-6	7/31/07 - 8/1/07	North Yard	7 - 10	Heavy Sheen
B-6	7/31/07 - 8/1/07	North Yard	10 - 12	Moderate Sheen
B-6	7/31/07 - 8/1/07	North Yard	12 - 17	Heavy Sheen
B-7	8/1/2007	North Yard	3 - 6	Moderate Sheen
B-7	8/1/2007	North Yard	6 - 16	Slight Sheen
B-8	8/1/07 - 8/2/07	Surrounding	1 - 9	Slight Sheen
B-9	8/1/07 - 8/2/07	ROW	6 - 12	Heavy Sheen
B-9	8/1/07 - 8/2/07	ROW	12 - 22	Slight Sheen
B-10	8/1/2007	North Yard	2 - 5.5	Slight Sheen
B-11	8/2/2007	ROW	2 - 4	Slight Sheen
B-11	8/2/2007	ROW	6 - 10	Slight Sheen
B-12	8/2/2007	ROW	1 - 11.5	Slight Sheen
B-12	8/2/2007	ROW	12 - 14	Heavy Sheen
B-12	8/2/2007	ROW	14 - 16.5	Slight Sheen
B-13	8/2/07 - 8/3/07	ROW	0.8 - 3.5	Slight Sheen
B-13	8/2/07 - 8/3/07	ROW	7.5 - 12	Heavy Sheen
B-13	8/2/07 - 8/3/07	ROW	12 - 14	Heavy Sheen
B-13	8/2/07 - 8/3/07	ROW	14 - 17	Slight Sheen
B-14	8/2/07 - 8/3/07	Surrounding	3 - 9.3	Slight Sheen
B-14	8/2/07 - 8/3/07	Surrounding	12 - 19	Heavy Sheen
B-15	8/3/2007	Surrounding	0.5 - 9.3	Slight Sheen
B-15	8/3/2007	Surrounding	12 - 16.5	Moderate Sheen
B-15	8/3/2007	Surrounding	16.5 - 19	Slight Sheen
B-16	8/3/07 - 8/6/07	North Yard	9 - 17	Slight Sheen
B-17	8/1/07 - 8/3/07	Surrounding	5.3 - 7.5	Very Slight Sheen
B-17	8/1/07 - 8/3/07	Surrounding	7.5 - 9.5	Slight Sheen
B-19	8/3/07 - 8/6/07	Surrounding	0.3 - 12	Slight Sheen

Table 6

Historical Soil LNAPL Observations

Former Chevron Bulk Plant #1001327
1602 North Northlake Place
Seattle, Washington

Boring ID	Date	Location	Depth Interval (ft bgs)	Observation
B-20	8/6/2007	ROW	0.8 - 12	Slight Sheen
B-20	8/6/2007	ROW	12 - 14.5	Moderate Sheen
B-20	8/6/2007	ROW	14.5 - 17	Heavy Sheen
B-20	8/6/2007	ROW	17 - 20.5	Slight Sheen
B-21	8/6/07 - 8/7/07	ROW	1 - 5.5	Slight Sheen
B-21	8/6/07 - 8/7/07	ROW	7.5 - 9.5	Heavy Sheen
B-21	8/6/07 - 8/7/07	ROW	9.5 - 12	Slight Sheen
B-22	8/6/07 - 8/7/07	ROW	1 - 7.5	Slight Sheen
B-22	8/6/07 - 8/7/07	ROW	7.5 - 12	Heavy Sheen
B-22	8/6/07 - 8/7/07	ROW	12 - 15	Moderate Sheen
B-22	8/6/07 - 8/7/07	ROW	15 - 22.5	Slight Sheen
B-23	8/6/07 - 8/7/07	ROW	5.5 - 12	Heavy Sheen
B-23	8/6/07 - 8/7/07	ROW	12 - 15	Moderate Sheen
B-23	8/6/07 - 8/7/07	ROW	15 - 17	Slight Sheen
B-23	8/6/07 - 8/7/07	ROW	20 - 20.5	Slight Sheen
P-1B	6/14/2006	ROW	0.5 - 12.5	Slight Sheen
P-1B	6/14/2006	ROW	12.5 - 18	Heavy Sheen
P-2	5/17/2006	ROW	8 - 10.5	Slight Sheen
P-2	5/17/2006	ROW	14 - 16	Heavy Sheen
P-3	6/12/2006	ROW	0.5 - 10.5	Slight Sheen
P-3	6/12/2006	ROW	15.5 - 16.5	Moderate Sheen
P-4	6/12/2006	ROW	0.5 - 9	Slight Sheen
P-4	6/12/2006	ROW	9 - 13	Very Slight Sheen
P-4	6/12/2006	ROW	13.5 - 21	Slight Sheen
P-6	5/18/2006	ROW	5.5 - 12	Slight Sheen
P-6A	6/12/2006	ROW	4 - 13	Slight Sheen
P-7	6/12/2006	ROW	0.5 - 13.5	Slight Sheen
P-7	6/12/2006	ROW	13.5 - 15.5	Very Slight Sheen
P-7	6/12/2006	ROW	15.5 - 21.5	Slight Sheen
P-8	6/12/2006	ROW	0.5 - 16.5	Slight Sheen
P-10	6/14/2006	ROW	3.5 - 10	Slight Sheen
P-10	6/14/2006	ROW	12 - 15	Very Slight Sheen
P-12	6/14/2006	Surrounding	3.3 - 10	Slight Sheen

Note:

ROW = Public Right-of-Way

Table 7

Groundwater Monitoring and Analytical Results

Former Chevron Bulk Plant #1001327

1602 North Northlake Place

Seattle, Washington

WELL ID DATE	TOC* *(ft.)*	DTW *(ft.)*	GWE *(ft.)*	LNAPLT *(ft.)*	LNAPL Removed (gallons)	B *(µg/L)*	T *(µg/L)*	E *(µg/L)*	X *(µg/L)*	Napthalene *(µg/L)*
Groundwater Cleanup Level						***43***	***48,500***	***6,910***	***--***	***9,880***
MW-3										
08/11/99	104.07	--	--	0.00	--	**168**	4.29	20.60	--	3.34
10/21/99	104.07	--	--	0.00	--	**149**	<3.25	<5.9	--	0.54[6]
10/22/99	104.07	--	--	0.00	--	**149**	<2.30	<4.00	--	--
05/24/01	104.07	10.25	94.03	0.26	--	--	--	--	--	--
06/27/01	104.07	--	--	0.00	--	--	--	--	--	--
03/18/02	104.07	9.28	95.34	0.69	--	--	--	--	--	--
12/21/02	104.07	--	--	0.00	--	--	--	--	--	--
03/26/03	104.07	7.02	97.05	0.00	--	--	--	--	--	--
06/26/03	104.07	11.49	93.38	1.00	--	--	--	--	--	--
07/21/03	104.07	--	--	0.00	--	--	--	--	--	--
08/28/03	104.07	--	--	0.00	--	--	--	--	--	--
10/16/03	104.07	13.89	92.05	2.34	--	--	--	--	--	--
11/21/03	104.07	--	--	0.00	--	--	--	--	--	--
12/17/03	104.07	11.02	93.65	0.75	--	--	--	--	--	--
01/29/04	104.07	10.59	94.10	0.77	--	--	--	--	--	--
02/18/04	104.07	10.32	94.19	0.55	--	--	--	--	--	--
03/30/04	104.07	9.93	94.66	0.65	--	--	--	--	--	--
09/22/04	104.07	11.35	93.31	0.74	--	--	--	--	--	--
03/15/05	104.07	12.98	92.82	2.16	--	--	--	--	--	--
09/28/05	104.07	11.25	--	<3.0	--	--	--	--	--	--
03/29/06	104.07	12.40	94.58**	3.64	--	NOT SAMPLED DUE TO THE PRESENCE OF LNAPL				--
03/21/07	104.07	10.67	94.63**	1.54	--	NOT SAMPLED DUE TO THE PRESENCE OF LNAPL				--
03/25/08	104.07	10.38	94.21**	0.65	--	NOT SAMPLED DUE TO THE PRESENCE OF LNAPL				--
09/08-09/08[1]	104.07	11.02	93.43**	0.47	1.50[5]	--	--	--	--	--
12/11/08[1]	104.07	12.10	93.02**	1.31	2.50[5]	--	--	--	--	--
03/30-31/09[1]	104.07	9.70	94.37	0.00	--	--	--	--	--	--
06/15/09[1]	104.07	10.97	94.04**	1.18	2.50[5]	--	--	--	--	--
09/10-11/09[1]	104.07	12.21	92.88**	1.27	1.66[5]	--	--	--	--	--
02/23/10[1]	104.07	11.25	94.82**	2.50	1.75[5]	--	--	--	--	--
03/15/10[1]	104.07	11.25	94.94**	2.65	2.50[12]	--	--	--	--	--
09/15/10	104.07		INACCESSIBLE			--	--	--	--	--
12/04/10	104.07		INACCESSIBLE			--	--	--	--	--
03/23/12	104.07	12.00	92.15**	0.10	0.50	--	--	--	--	--
06/01/12	104.07		INACCESSIBLE			--	--	--	--	--
04/22/13	**104.07**		**INACCESSIBLE**			--	--	--	--	--
MW-4										
08/10/99	--	--	--	0.00	--	<1.00	<1.00	<1.00	--	<1.00
10/20/99	--	--	--	0.00	--	--	--	--	--	--
07/26/01	--	15.46	--	0.00	--	<1.00	<1.00	<1.00	--	<1.00

Table 7
Groundwater Monitoring and Analytical Results
Former Chevron Bulk Plant #1001327
1602 North Northlake Place
Seattle, Washington

WELL ID DATE		TOC* *(ft.)*	DTW *(ft.)*	GWE *(ft.)*	LNAPLT *(ft.)*	LNAPL Removed (gallons)	B *(µg/L)*	T *(µg/L)*	E *(µg/L)*	X *(µg/L)*	Napthalene *(µg/L)*
Groundwater Cleanup Level							***43***	***48,500***	***6,910***	**--**	***9,880***
MW-4 (cont)											
10/11/02		--	--	--	0.00	--	<0.500	<0.500	<0.500	--	--
12/31/02		--	16.88	--	0.00	--	<0.500	<0.500	<0.500	--	--
02/27/03		--	16.22	--	0.00	--	<0.500	<0.500	<0.500	--	--
03/26/03		--	15.38	--	0.00	--	<0.500	<0.500	<0.500	--	--
04/28/03		--	15.12	--	0.00	--	<0.500	0.536	<0.500	--	--
05/30/03		--	15.02	--	0.00	--	<0.500	<0.500	<0.500	--	--
06/25/03		--	15.39	--	0.00	--	<0.500	<0.500	<0.500	--	<0.100
09/16/03		--	16.76	--	0.00	--	<0.500	<0.500	<0.500	--	<1.00
12/15/03		--	16.8	--	0.00	--	<0.500	<0.500	<0.500	--	<1.00
03/25/04		--	15.85	--	0.00	--	<0.500	<0.500	<0.500	--	<0.119
09/22/04		--	15.94	--	0.00	--	--	--	--	--	--
03/14/05		--	16.26	--	0.00	--	--	--	--	--	--
03/29/06		--	15.71	--	0.00	--	--	--	--	--	--
03/21/07		--	15.77	--	0.00	--	0.590	<0.500	<0.500	--	<5.00
03/25/08		--	15.78	--	0.00	--	<0.5	1.2	<0.5	--	0.022
09/08-09/08		--	15.91	--	0.00	--	<0.5	<0.5	<0.5	--	<1.0
12/11/08		--	MONITORED/SAMPLED SEMI-ANNUALLY				--	--	--	--	--
03/30-31/09		--	15.54	--	0.00	--	<0.5	<0.5	<0.5	--	<1.0
09/10-11/09		--	16.39	--	0.00	--	<0.5	<0.5	<0.5	--	<1.0
03/15/10		--	12.67	--	0.00	--	0.6	<0.5	<0.5	--	<1.0
09/15/10		--	16.25	--	0.00	--	<0.5	<0.5	<0.5	--	<1.0
03/14/11		--	15.55	--	0.00	--	--	--	--	--	--
09/25/11		33.92	16.55	17.37	0.00	--	0.5	<0.2	<0.2	--	<1.0
10/10/11		33.92	16.20	17.72	0.00	--	--	--	--	--	--
06/21/12		33.92	14.49	19.43	0.00	--	--	--	--	--	--
09/20/12		33.92	16.60	17.32	0.00	--	--	--	--	--	--
09/21/12		33.92	16.59	17.33	0.00	--	<0.5	<0.5	<0.5	--	<0.030
12/26/12		33.92	16.62	17.30	0.00	--	<0.5	<0.5	<0.5	--	--
04/22/13		**33.92**	**15.18**	**18.74**	**0.00**	**--**	**<0.5**	**<0.5**	**<0.5**	**--**	**<0.030**
06/26/13		**33.92**	**15.15**	**18.77**	**0.00**	**--**	--	--	--	--	--
09/18/13		**33.92**	**15.98**	**17.94**	**0.00**	**--**	**--**	**--**	**--**	**--**	**--**
10/14/13		**33.92**	**16.26**	**17.66**	**0.00**	**--**	--	--	--	--	--
MW-7											
08/10/99		98.39	--	--	0.00	--	**683**	491	2550	--	673
10/20/99		98.39	--	--	0.00	--	**172**	80.4	177	--	--
07/26/01		98.39	12.61	85.78	0.00	12.61	**162**	58.5	314	--	149
04/03/02		98.39	13.03	85.36	0.00	13.03	**58.0**	22.2	346	--	96.2
07/02/02		98.39	12.13	86.26	0.00	12.13	**46.9**	9.88	158	--	--
09/03/02		98.39	13.76	84.63	0.00	13.76	42.0	21.9	153	--	--
09/03/02	(D)	98.39	13.76	84.63	0.00	13.76	**88.8**	37.2	498	--	--
10/11/02		98.39	14.87	83.52	0.00	14.87	41.4	15.8	145	--	--
03/26/03		98.39	13.12	85.27	0.00	13.12	10.1	15.6	108	--	--
04/28/03		98.39	12.33	86.06	0.00	12.33	31.5	35.5	664	--	--
05/30/03		98.39	11.76	86.63	0.00	11.76	7.34	11.6	106	--	--
06/25/03		98.39	13.14	85.25	0.00	13.14	16.4	27.4	446	--	34.6
09/16/03		98.39	13.93	84.46	0.00	13.93	**< 50.0**	78.6	1190	--	583

Table 7
Groundwater Monitoring and Analytical Results
Former Chevron Bulk Plant #1001327
1602 North Northlake Place
Seattle, Washington

WELL ID DATE		TOC* *(ft.)*	DTW *(ft.)*	GWE *(ft.)*	LNAPLT *(ft.)*	LNAPL Removed (gallons)	B *(µg/L)*	T *(µg/L)*	E *(µg/L)*	X *(µg/L)*	Napthalene *(µg/L)*
Groundwater Cleanup Level							***43***	***48,500***	***6,910***	**--**	***9,880***
MW-7 (cont)											
12/15/03		98.39	13.96	84.43	0.00	13.96	25.9	44.9	1470	--	550
03/21/07		98.39	UNABLE TO LOCATE		--	--	--	--	--	--	--
03/25/08		98.39	UNABLE TO LOCATE		--	--	--	--	--	--	--
09/08-09/08		98.39	UNABLE TO LOCATE		--	--	--	--	--	--	--
12/11/08		98.39	MONITORED SEMI-ANNUALLY			--	--	--	--	--	--
03/30-31/09		98.39	UNABLE TO LOCATE		--	--	--	--	--	--	--
09/10-11/09		98.39	UNABLE TO LOCATE		--	--	--	--	--	--	--
03/15/10[11]		98.39	13.07	85.32	0.00	0.00	27	4.9	230	--	490
09/15/10		98.39	13.4	84.99	0.00	0.00	38	6	270	--	570
03/14/11		98.39	12.85	85.54	0.00	--	--	--	--	--	--
06/21/12		31.13	12.19	18.94	0.00	--	--	--	--	--	--
09/20/12		31.13	13.74	17.39	0.00	--	**46**	6.9	120	--	530
12/26/12		31.13	15.67	15.46	0.00	--	34	6.0	240	--	--
04/22/13		**31.13**	**12.40**	**18.73**	**0.00**	**--**	**31**	**4.5**	**82**	**--**	**340**
06/26/13		**31.13**	**12.30**	**18.83**	**0.00**	**--**	**--**	**--**	**--**	**--**	**--**
09/18/13		**31.13**	**13.15**	**17.98**	**0.00**	**--**	**--**	**--**	**--**	**--**	**--**
10/14/13		**31.13**	**13.37**	**17.76**	**0.00**	**--**	**--**	**--**	**--**	**--**	**--**
MW-8A											
12/15/03		97.60	13.32	84.28	0.00	--	14.8	2.46	37.7	--	8.61
03/25/04		97.60	12.24	85.36	0.00	--	12.0	1.33	2.54	--	0.267
09/23/04		97.60	12.30	85.30	0.00	--	14.8	0.757	2.00	--	0.319
09/23/04	(D)	97.60	12.30	85.30	0.00	--	13.3	0.671	1.75	--	0.319
03/14/05		97.60	12.68	84.92	0.00	--	8.3	1.72	4.54	--	3.61
03/29/06		97.60	12.14	85.46	0.00	--	<0.500	<0.500	<0.500	--	<1.0
03/21/07		97.60	12.21	85.39	0.00	--	<0.500	<0.500	<0.500	--	<5.00
03/25/08		97.60	12.13	85.47	0.00	--	<0.5	<0.5	<0.5	--	<1.0
09/08-09/08		97.87	12.32	85.55	0.00	--	<0.5	<0.5	<0.5	--	<1.0
12/11/08		97.87	MONITORED/SAMPLED SEMI-ANNUALLY				--	--	--	--	--
03/30-31/09		97.87	12.04	85.83	0.00	--	<0.5	<0.5	<0.5	--	<1.0
09/10-11/09		97.87	12.80	85.07	0.00	--	<0.5	<0.5	<0.5	--	<1.0
03/15/10		97.87	12.23	85.64	0.00	--	<0.5	<0.5	<0.5	--	1.1
09/15/10		97.87	12.66	85.21	0.00	--	<0.5	<0.5	3.00	--	<1.0
03/14/11		97.87	12.19	85.68	0.00	--	--	--	--	--	--
11/16/11		30.31	13.14	17.17	0.00	--	<0.2	<0.2	<0.2	--	<1.0
06/21/12		30.31	11.45	18.86	0.00	--	--	--	--	--	--
06/21/12	(D)	30.31	11.45	18.86	0.00	--	--	--	--	--	--
09/20/12		30.31	12.97	17.34	0.00	--	--	--	--	--	--
09/21/12		30.31	12.97	17.34	0.00	--	<0.5	<0.5	<0.5	--	<0.030
12/26/12		30.31	13.07	17.24	0.00	--	<0.5	<0.5	<0.5	--	--
04/23/13		**30.31**	**11.70**	**18.61**	**0.00**	**--**	**<0.5**	**<0.5**	**<0.5**	**--**	**<0.030**
06/26/13		**30.31**	**11.50**	**18.81**	**0.00**	**--**	**--**	**--**	**--**	**--**	**--**
09/18/13		**30.31**	**12.37**	**17.94**	**0.00**	**--**	**--**	**--**	**--**	**--**	**--**
10/14/13		**30.31**	**12.65**	**17.66**	**0.00**	**--**	**--**	**--**	**--**	**--**	**--**
MW-9											
08/11/99		103.67	--	--	0.00	--	<20.0	<20.0	46.7	--	129
10/21/99		103.67	--	--	0.00	--	<0.800	<0.500	20.5	--	110[6]
05/24/01		103.67	14.07	89.64	0.05	--	--	--	--	--	--
06/21/01		103.67	13.78	89.92	0.04	--	--	--	--	--	--
06/27/01		103.67	13.79	89.88	0.00	--	<5.00	<5.00	52.6	--	109
03/18/02		103.67	13.51	90.71	0.69	--	--	--	--	--	--
10/16/02		103.67	--	--	0.54	--	--	--	--	--	--
11/11/02		103.67	--	--	0.90	--	--	--	--	--	--
12/31/02		103.67	--	--	0.91	--	--	--	--	--	--

Table 7

Groundwater Monitoring and Analytical Results

Former Chevron Bulk Plant #1001327

1602 North Northlake Place

Seattle, Washington

WELL ID DATE	TOC* *(ft.)*	DTW *(ft.)*	GWE *(ft.)*	LNAPLT *(ft.)*	LNAPL Removed (gallons)	B *(µg/L)*	T *(µg/L)*	E *(µg/L)*	X *(µg/L)*	Napthalene *(µg/L)*
Groundwater Cleanup Level						***43***	***48,500***	***6,910***	*--*	***9,880***
MW-9 (cont)										
02/27/03	103.67	--	--	0.02	--	--	--	--	--	--
03/26/03	103.67	--	--	0.09	--	--	--	--	--	--
04/28/03	103.67	13.25	90.48	0.07	--	--	--	--	--	--
05/30/03	103.67	13.52	90.22	0.09	--	--	--	--	--	--
06/26/03	103.67	13.90	89.80	0.04	--	--	--	--	--	--
07/21/03	103.67	--	--	0.21	--	--	--	--	--	--
08/28/03	103.67	--	--	0.23	--	--	--	--	--	--
10/16/03	103.67	15.98	88.15	0.57	--	--	--	--	--	--
11/21/03	103.67	--	--	0.01	--	--	--	--	--	--
12/17/03	103.67	--	--	0.00	--	--	--	--	--	--
01/29/04	103.67	14.16	89.53	0.03	--	--	--	--	--	--
02/18/04	103.67	11.11	92.70	0.17	--	--	--	--	--	--
03/25/04	103.67	13.66	90.01	0.00	--	6.71	2.56	39.5	--	168
03/30/04	103.67	13.80	89.96	0.11	--	--	--	--	--	--
09/22/04	103.67	9.52	94.17	0.03	--	--	--	--	--	--
03/15/05	103.67	14.81	89.09	0.29	--	--	--	--	--	--
09/28/05	103.67	15.31	88.56	0.25	--	--	--	--	--	--
03/29/06	103.67	13.26	90.62**	0.26	--	NOT SAMPLED DUE TO THE PRESENCE OF LNAPL				--
03/21/07	103.67	13.73	90.20**	0.32	--	NOT SAMPLED DUE TO THE PRESENCE OF LNAPL				--
03/25/08	103.67	13.93	89.74**	0.00	--	NOT SAMPLED DUE TO THE PRESENCE OF LNAPL				--
09/08-09/08[1]	103.67	14.23	89.45**	0.01	--	20	<10[2]	16	--	37
12/11/08[1]	103.67	15.16	88.55**	0.05	0.02[5]	SAMPLED SEMI-ANNUALLY			--	--
03/30-31/09[1]	103.67	14.06	89.61	0.00	--	<20[8]	<50[8]	35	62	50
06/15/09[1]	103.67	13.32	90.35	0.00	--	SAMPLED SEMI-ANNUALLY			--	--
09/10-11/09[1]	103.67	14.80	88.87	0.00	--	<10[8]	<10[8]	16	--	36
02/23/10[1]	103.67	13.10	90.81**	0.30	0.21[5]	--	--	--	--	--
03/15/10[1]	103.67	13.33	90.52**	0.23	0.18[5]	NOT SAMPLED DUE TO THE PRESENCE OF LNAPL				--
9/15/10[1]	103.67	15.05	89.06**	0.55	0.20[5]	NOT SAMPLED DUE TO THE PRESENCE OF LNAPL				--
12/4/10[1]	103.67	14.50	89.27**	0.13	0.20[5]	NOT SAMPLED DUE TO THE PRESENCE OF LNAPL				--
3/14/2011[1]	103.67	12.71	90.96	0.00	--	--	--	--	--	--
9/24/2011[1]	36.46	14.62	21.84	0.00	--	--	--	--	--	--
12/08/2011[1]	36.46	12.87	23.59	0.00	--	--	--	--	--	--
03/23/12	36.46	10.55	26.07**	0.20	0.50	NOT SAMPLED DUE TO THE PRESENCE OF LNAPL				--
06/01/12	36.46	11.75	24.87**	0.20	1.00	NOT SAMPLED DUE TO THE PRESENCE OF LNAPL				--
09/20/12	36.46	14.47	22.41**	0.52	--	NOT SAMPLED DUE TO THE PRESENCE OF LNAPL				--
12/26/12	36.46	11.60	25.66**	1.00	--	NOT SAMPLED DUE TO THE PRESENCE OF LNAPL				--
04/22/13	**36.46**	**11.07**	**25.93****	**0.67**	**--**	**NOT SAMPLED DUE TO THE PRESENCE OF LNAPL**				
06/26/13	**36.46**	**12.45**	**24.13****	**0.15**	**--**	--	--	--	--	--
09/18/13	**36.46**	**14.51**	**22.20****	**0.31**	**--**	--	--	--	--	--
10/14/13	**36.46**	**14.10**	**22.45****	**0.11**	**--**	--	--	--	--	--
MW-10										
08/11/99	100.30	--	--	0.00	--	**226**	292	625	--	121
10/21/99	100.30	--	--	0.00	--	**431**	455	838	--	--
04/12/00	100.30	7.34	92.96	0.00	--	**662**	542	749	--	105
06/27/00	100.30	8.95	91.35	0.00	--	**325**	168	136	--	64.5
09/28/00	100.30	10.08	90.22	0.00	--	**437**	339	291	--	32.7
01/15/01	100.30	10.16	90.14	0.00	--	**352**	266	137	--	63.6

Table 7
Groundwater Monitoring and Analytical Results
Former Chevron Bulk Plant #1001327
1602 North Northlake Place
Seattle, Washington

WELL ID DATE		TOC* *(ft.)*	DTW *(ft.)*	GWE *(ft.)*	LNAPLT *(ft.)*	LNAPL Removed (gallons)	B *(µg/L)*	T *(µg/L)*	E *(µg/L)*	X *(µg/L)*	Napthalene *(µg/L)*
Groundwater Cleanup Level							***43***	***48,500***	***6,910***	*--*	***9,880***
MW-10 (cont)											
01/15/01	(D)	100.30	10.16	90.14	0.00	--	**315**	234	117	--	33.9
05/24/01		100.30	9.14	91.16	0.00	--	--	--	--	--	--
06/21/01		100.30	7.97	92.33	0.00	--	--	--	--	--	--
06/27/01		100.30	9.07	91.23	0.00	--	**591**	328	295	--	79.5
06/27/01	(D)	100.30	9.07	91.23	0.00	--	**1,090**	765	936	--	262
03/18/02		100.30	7.09	93.21	0.00	--	**1,190**	1,010	976	--	130
07/02/02		100.30	8.37	91.93	0.00	--	**844**	742	871	--	--
09/28/02		100.30	10.08	90.22	0.00	--	--	--	--	--	--
12/31/02		100.30	--	--	0.96	--	--	--	--	--	--
02/27/03		100.30	--	--	0.17	--	--	--	--	--	--
03/29/06		100.30	8.35	92.53	0.72	--	NOT SAMPLED DUE TO THE PRESENCE OF LNAPL				--
03/21/07		100.30	7.95	92.72	0.46	--	NOT SAMPLED DUE TO THE PRESENCE OF LNAPL				--
03/25/08		100.30	8.68	91.62	0.005	--	NOT SAMPLED DUE TO THE PRESENCE OF LNAPL				--
09/08-09/08[1]		100.30	9.39	90.95**	0.05	0.20[5]	NOT SAMPLED DUE TO THE PRESENCE OF LNAPL				--
12/11/08[1]		100.30	9.90	90.65**	0.31	1.00[5]	SAMPLED SEMI-ANNUALLY			--	--
03/30-31/09[1]		100.30	8.44	92.05**	0.24	1.11[5]	NOT SAMPLED DUE TO THE PRESENCE OF LNAPL				--
06/15/09[1]		100.30	8.31	92.16**	0.21	0.34[5]	SAMPLED SEMI-ANNUALLY			--	--
09/10-11/09[1]		100.30	10.14	90.18**	0.02	0.00	NOT SAMPLED DUE TO THE PRESENCE OF LNAPL				--
02/23/10[1]		100.30	7.14	93.17**	0.01	0.00	--	--	--	--	--
03/15/10[1]		100.30	7.24	93.06	0.00	0.00	**1,200**	250	980	--	110
9/15/10[1,13]		100.30	9.48	90.82	0.00	0.00	**970**	180	920	--	130
12/04/10		100.30	UNABLE TO LOCATE		--	--	--	--	--	--	--
MW-11											
08/11/99		100.59	--	--	0.00	--	<1.00	<1.00	<1.00	--	<1.01
10/22/99		100.59	--	--	0.00	--	<0.500	<0.500	<0.500	--	<0.0082
06/21/01		100.59	11.30	89.29	0.00	--	<1.00	<1.00	<1.00	--	<1.00
03/18/02		100.59	10.96	89.63	0.00	--	1.18	2.77	2.57	--	<1.00
09/16/03		100.59	13.03	87.56	0.00	--	<0.500	<0.500	<0.500	--	<1.00
12/15/03		100.59	13.92	86.67	0.00	--	<0.500	<0.500	<0.500	--	2.21
03/25/04		100.59	11.17	89.42	0.00	--	<0.500	<0.500	<0.500	--	<0.101
09/22/04		100.59	12.05	88.54	0.00	--	--	--	--	--	--
03/14/05		100.59	11.90	88.69	0.00	--	--	--	--	--	--
03/29/06		100.59	10.32	90.27	0.00	--	--	--	--	--	--
03/21/07		100.59	8.36	92.23	0.00	--	<0.500	<0.500	<0.500	--	<5.01
03/25/08		100.59	9.38	91.21	0.00	--	<0.5	<0.5	<0.5	--	0.060
03/25/08	(D)	100.59	9.38	91.21	0.00	--	<0.5	<0.5	<0.5	--	0.058

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Former Chevron Bulk Plant #1001327
1602 North Northlake Place
Seattle, Washington

WELL ID DATE		TOC* *(ft.)*	DTW *(ft.)*	GWE *(ft.)*	LNAPLT *(ft.)*	LNAPL Removed (gallons)	B *(µg/L)*	T *(µg/L)*	E *(µg/L)*	X *(µg/L)*	Napthalene *(µg/L)*
Groundwater Cleanup Level							***43***	***48,500***	***6,910***	**--**	***9,880***
MW-11(cont)											
09/08-09/08		100.59	10.35	90.24	0.00	--	<0.5	<0.5	<0.5	--	<1.0
12/11/08		100.59	10.63	89.96	0.00	--	SAMPLED SEMI-ANNUALLY			--	--
03/30-31/09		100.59	9.60	90.99	0.00	--	<0.5	<0.5	<0.5	--	<1.0
06/15/09		100.59	INACCESSIBLE		--	--	--	--	--	--	--
09/10-11/09	NP[9]	100.61	8.07	92.54	0.00	--	<0.5	<0.5	<0.5	--	<1.0
02/23/10		100.61	8.60	92.01	0.00	--	--	--	--	--	--
03/15/10		100.61	8.75	91.86	0.00	--	<0.5	<0.5	<0.5	--	<1.0
09/15/10		100.61	10.27	90.34	0.00	--	<0.5	<0.5	<0.5	--	<1.0
12/04/10		100.61	10.37	90.24	0.00	--	--	--	--	--	--
03/14/11		100.61	9.33	91.28	0.00	--	--	--	--	--	--
10/14/13		**100.61**	**11.04**	**89.57**	**0.00**	**--**	**--**	**--**	**--**	**--**	**--**
MW-12											
08/11/99		100.11	--	--	0.00	--	**1590**	218	466	--	87.5
10/21/99		100.11	--	--	0.00	--	**491**	1200	230	--	6.8[6]
03/25/04		101.11	7.54	93.57	0.00	--	**510**	294	454	--	98.5
03/29/06		100.11	7.51	92.60	0.00	--	NOT SAMPLED DUE TO THE PRESENCE OF LNAPL				--
03/21/07		100.11	7.32	92.79	0.00	--	NOT SAMPLED DUE TO THE PRESENCE OF LNAPL				--
03/25/08		100.11	8.09	92.02	0.00	--	NOT SAMPLED DUE TO THE PRESENCE OF LNAPL				--
09/08-09/08		100.11	8.65	91.46	0.00	--	**530**	130	230	--	65
12/11/08[1]		100.11	8.62	91.50**	0.01	--	SAMPLED SEMI-ANNUALLY			--	--
03/30-31/09[1]		100.11	7.54	92.58**	0.01	--	**750**	640	270	--	170
06/15/09		100.11	7.92	92.19	0.00	--	--	--	--	--	--
09/10-11/09[1]		100.11	9.23	90.89**	0.01	--	**510**	140	180	--	44
02/23/10[1]		100.11	6.90	93.21	0.00	--	--	--	--	--	--
03/15/10[1]		100.11	7.23	92.88	0.00	--	**630**	260	250	--	110
09/15/10[1,13]		100.11	8.62	91.49	0.00	--	**490**	130	230	--	67
12/04/10		100.11	LOCATED BEHIND LOCKED GATE			--	--	--	--	--	--
MW-14											
07/26/01		98.87	13.05	85.82	0.00	--	<1.00	<1.00	<1.00	--	<1.00
03/29/06		98.87	13.32	85.55	0.00	--	--	--	--	--	--
03/21/07		98.87	13.33	85.54	0.00	--	--	--	--	--	--
03/25/08		98.87	13.38	85.49	0.00	--	--	--	--	--	--
09/08-09/08		98.87	13.50	85.37	0.00	--	--	--	--	--	--
12/11/08		98.87	MONITORED SEMI-ANNUALLY			--	--	--	--	--	--
03/30-31/09		98.87	13.10	85.77	0.00	--	--	--	--	--	--
09/10-11/09		98.87	14.00	84.87	0.00	--	--	--	--	--	--
03/15/10		98.87	13.49	85.38	0.00	--	--	--	--	--	--
09/15/10		98.87	UNABLE TO LOCATE - COVERED BY LANDSCAPING					**--**	**--**	**--**	**--**

Table 7

Groundwater Monitoring and Analytical Results

Former Chevron Bulk Plant #1001327

1602 North Northlake Place

Seattle, Washington

WELL ID DATE		TOC* *(ft.)*	DTW *(ft.)*	GWE *(ft.)*	LNAPLT *(ft.)*	LNAPL Removed (gallons)	B *(µg/L)*	T *(µg/L)*	E *(µg/L)*	X *(µg/L)*	Napthalene *(µg/L)*
Groundwater Cleanup Level							***43***	***48,500***	***6,910***	***--***	***9,880***
MW-15											
08/10/99		98.83	--	--	0.00	--	3.28	2.89	35.4	--	12.5
10/20/99		98.83	13.96	84.87	0.00	--	6.92	57.1	47.7	--	1.4[6]
07/26/01		98.83	13.04	85.79	0.00	--	13.8	9.00	18.1	--	10.30
03/18/02		98.83	13.62	85.21	0.00	--	<1.00	1.49	2.46	--	<1.01
06/26/03		98.83	13.05	85.78	0.00	--	0.719	<0.500	0.612	--	--
09/16/03		98.83	14.35	84.48	0.00	--	2.85	30.6	39.6	--	42.2
03/29/06		98.83	13.00	85.83	0.00	--	--	--	--	--	--
03/21/07		98.83	13.33	85.50	0.00	--	--	--	--	--	--
03/25/08		98.83	13.36	85.47	0.00	--	--	--	--	--	--
09/08-09/08		98.83	13.46	85.37	0.00	--	--	--	--	--	--
12/11/08		98.83	MONITORED SEMI-ANNUALLY			--	--	--	--	--	--
03/30-31/09		98.83	13.12	85.71	0.00	--	--	--	--	--	--
09/10-11/09		98.83	13.97	84.86	0.00	--	--	--	--	--	--
03/15/10		98.83	15.50	83.33	0.00	--	--	--	--	--	--
09/15/10		98.83	15.87	82.96	0.00	MONITORING ONLY			--	--	--
03/14/11		98.83	14.99	83.84	0.00	--	--	--	--	--	--
MW-19											
08/11/99		98.10	--	--	0.00	--	<1.00	<1.00	<1.00	--	<1.00
10/20/99		98.10	--	--	0.00	--	<0.500	<0.500	<0.500	--	<0.021
06/21/01		98.10	11.99	86.11	0.00	--	<1.00	<1.00	<1.00	--	<1.00
06/26/03		98.10	12.02	86.08	0.00	--	<0.500	<0.500	<0.500	--	<0.100
09/16/03		98.10	13.67	84.43	0.00	--	<0.500	<0.500	<0.500	--	<1.00
12/15/03		98.10	13.60	84.50	0.00	--	<0.500	<0.500	<0.500	--	<1.00
03/26/04		98.10	12.74	85.36	0.00	--	<0.500	<0.500	<0.500	--	0.197
03/26/04	(D)	98.10	12.74	85.36	0.00	--	<0.500	<0.500	<0.500	--	0.112
09/23/04		98.10	12.82	85.28	0.00	--	<0.500	<0.500	<0.500	--	<1.00
03/14/05		98.10	13.16	84.94	0.00	--	<0.500	<0.500	<0.500	--	<0.100
03/14/05	(D)	98.10	13.16	84.94	0.00	--	<0.500	<0.500	<0.500	--	<0.100
03/29/06		98.10	12.63	85.47	0.00	--	<0.500	<0.500	<0.500	--	<1.00
03/29/06	(D)	98.10	12.63	85.47	0.00	--	<0.500	<0.500	<0.500	--	<1.00
03/21/07		98.10	12.71	85.39	0.00	--	<0.500	<0.500	<0.500	--	<5.00
03/21/07	(D)	98.10	12.71	85.39	0.00	--	<0.500	<0.500	<0.500	--	<5.00
03/25/08		98.10	12.70	85.40	0.00	--	<0.5	<0.5	<0.5	--	0.026
03/25/08	(D)	98.10	12.70	85.40	0.00	--	<0.5	<0.5	<0.5	--	0.023
09/08-09/08		98.10	12.81	85.29	0.00	--	<0.5	<0.5	<0.5	--	<5.03
12/11/08		98.10	MONITORED/SAMPLED SEMI-ANNUALLY				--	--	--	--	--

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Former Chevron Bulk Plant #1001327
1602 North Northlake Place
Seattle, Washington

WELL ID DATE		TOC* *(ft.)*	DTW *(ft.)*	GWE *(ft.)*	LNAPLT *(ft.)*	LNAPL Removed (gallons)	B *(µg/L)*	T *(µg/L)*	E *(µg/L)*	X *(µg/L)*	Napthalene *(µg/L)*
Groundwater Cleanup Level							***43***	***48,500***	***6,910***	**--**	***9,880***
MW-19 (cont)											
03/30-31/09		98.10	12.57	85.53	0.00	--	<0.5	<0.5	<0.5	--	<1.0
09/10-11/09		98.10	13.30	84.80	0.00	--	<0.5	<0.5	<0.5	--	<1.0
03/15/10		98.10	12.85	85.25	0.00	--	<0.5	<0.5	<0.5	--	<1.0
09/15/10		98.10	13.18	84.92	0.00	--	<0.5	<0.5	<0.5	--	<1.0
11/16/11		30.87	13.62	17.25	0.00	--	<0.2	<0.2	<0.2	--	<1.0
06/21/12		30.87	11.93	18.94	0.00	--	--	--	--	--	--
09/20/12		30.87	13.50	17.37	0.00	--	<0.5	<0.5	<0.5	--	0.083
12/26/12		30.87	13.55	17.32	0.00	--	<0.5	<0.5	<0.5	--	--
04/24/13		**30.87**	**12.18**	**18.69**	**0.00**	**--**	**<0.5**	**<0.5**	**<0.5**	**--**	**<0.030**
06/26/13		**30.87**	**12.08**	**18.79**	**0.00**	**--**	**--**	**--**	**--**	**--**	**--**
09/18/13		**30.87**	**12.91**	**17.96**	**0.00**	**--**	**--**	**--**	**--**	**--**	**--**
10/14/13		**30.87**	**13.10**	**17.77**	**0.00**	**--**	**--**	**--**	**--**	**--**	**--**
MW-20											
08/11/99		98.74	--	--	0.00	--	**57.7**	2.19	148	--	82.1
10/20/99		98.74	13.99	84.75	0.00	--	**71.8**	5.69	184	--	25[6]
09/28/00		98.74	13.41	85.33	0.00	--	--	--	--	--	--
06/21/01		98.74	12.61	86.13	0.00	--	1.66	<1.00	2.68	--	<1.00
03/19/02		98.74	13.69	85.05	0.00	--	<1.00	<1.00	3.48	--	1.77
03/19/02	(D)	98.74	13.69	85.05	0.00	--	<1.00	<1.00	3.3	--	2.21
06/26/03		98.74	12.92	85.82	0.00	--	26.5	2.28	61.0	--	20.9[6]
09/16/03		98.74	14.29	84.45	0.00	--	28.9	3.04	35.7	--	12.5
12/15/03		98.74	14.34	84.40	0.00	--	<0.500	<0.500	<0.500	--	<1.00
03/26/04		98.74	13.36	85.38	0.00	--	0.877	<0.500	0.731	--	<0.100
03/14/05		98.74	13.80	84.94	0.00	--	--	--	--	--	--
03/29/06		98.74	13.26	85.48	0.00	--	--	--	--	--	--
03/21/07		98.74	13.33	85.41	0.00	--	<0.500	<0.500	<0.500	--	<5.00
03/25/08		98.74	13.33	85.41	0.00	--	0.5	<0.5	<0.5	--	0.019
09/08-09/08		98.74	13.42	85.32	0.00	--	7.0	1.7	1.2	--	<5.0[4]
12/11/08		98.74	MONITORED/SAMPLED SEMI-ANNUALLY				--	--	--	--	--
03/30-31/09		98.74	INACCESSIBLE		--	--	--	--	--	--	--
09/10-11/09		98.74	13.92	84.82	0.00	--	1.4	0.8	1.1	--	<5.0[10]
03/15/10		98.74	13.46	85.28	0.00	--	<0.5	<0.5	<0.5	--	2.1
09/15/10		98.74	13.79	84.95	0.00	--	1.60	1.00	1.20	--	4.5
11/16/11	(D)	31.49	14.22	17.27	0.00	--	1.50	0.90	0.80	--	8.40
06/21/12		31.49	12.53	18.96	0.00	--.					
09/20/12		31.49	14.11	17.38	0.00	--	3.20	1.30	1.40	--	0.47
12/26/12		31.49	14.20	17.29	0.00	--	<0.5	<0.5	<0.5	--	--
04/23/13		**31.49**	**12.80**	**18.69**	**0.00**	**--**	**<0.5**	**<0.5**	**<0.5**	**--**	**0.04**
06/26/13		**31.49**	**12.70**	**18.79**	**0.00**	**--**	**--**	**--**	**--**	**--**	**--**
09/18/13		**31.49**	**13.52**	**17.97**	**0.00**	**--**	**--**	**--**	**--**	**--**	**--**
10/14/13		**31.49**	**13.72**	**17.77**	**0.00**	**--**	**--**	**--**	**--**	**--**	**--**
MW-21											
08/10/99		98.52	--	--	0.00	--	12.1	1.93	<1.00	--	<1.00
10/19/99		98.52	--	--	0.00	--	9.69	1.49	<0.750	--	--
06/21/01		98.52	12.31	86.21	0.00	--	2.46	<1.00	<1.00	--	<1.00
06/21/01	(D)	98.52	12.31	86.21	0.00	--	2.70	<1.00	<1.00	--	1.76
03/18/02		98.52	13.36	85.16	0.00	--	10.5	1.25	<1.00	--	4.09
06/26/03		98.52	12.66	85.86	0.00	--	5.82	0.687	0.850	--	1.37
09/16/03		98.52	13.98	84.54	0.00	--	5.43	0.86	<0.500	--	7.01
12/15/03		98.52	14.05	84.47	0.00	--	4.95	0.88	<0.500	--	12.4

Table 7
Groundwater Monitoring and Analytical Results
Former Chevron Bulk Plant #1001327
1602 North Northlake Place
Seattle, Washington

WELL ID DATE		TOC* *(ft.)*	DTW *(ft.)*	GWE *(ft.)*	LNAPLT *(ft.)*	LNAPL Removed (gallons)	B *(µg/L)*	T *(µg/L)*	E *(µg/L)*	X *(µg/L)*	Napthalene *(µg/L)*
Groundwater Cleanup Level							***43***	***48,500***	***6,910***	**--**	***9,880***
MW-21 (cont)											
03/26/04		98.52	13.08	85.44	0.00	--	5.28	0.854	<0.500	--	10.1
09/23/04		98.52	13.19	85.33	0.00	--	5.45	0.806	<0.500	--	<5
03/14/05		98.52	13.51	85.01	0.00	--	4.55	0.693	<0.500	--	3.57
03/29/06		98.52	12.98	85.54	0.00	--	4.19	0.800	<0.500	--	4.01
03/21/07		98.52	13.00	85.52	0.00	--	4.31	0.860	<0.500	--	6.06
03/25/08		98.52	13.02	85.50	0.00	--	4.4	0.6	<0.5	--	12
09/08-09/08		98.52	13.14	85.38	0.00	--	6.0	0.6	<0.5	--	18
12/11/08		98.52	MONITORED/SAMPLED SEMI-ANNUALLY				--	--	--	--	--
03/30-31/09		98.52	12.86	85.66	0.00	--	6.0	0.8	0.6	--	15
09/10-11/09		98.52	13.63	84.89	0.00	--	5.1	0.7	<0.5	--	<15[10]
03/15/10		98.52	13.15	85.37	0.00	--	3.6	0.6	<0.5	--	<20[10]
09/15/10		98.52	13.51	85.01	0.00	--	2.50	0.50	<0.5	--	11.00
03/14/11		98.52	13.05	85.47	0.00	--	--	--	--	--	--
09/24/11		31.26	13.51	17.75	0.00	--	<0.2	<0.2	<0.2	--	<1.0
10/10/11		31.26	13.83	17.43	0.00	--	--	--	--	--	--
06/21/12		31.26	12.24	19.02	0.00	--	--	--	--	--	--
09/20/12		31.26	13.82	17.44	0.00	--	<7.0	0.7	<0.5	--	0.84
12/26/12	(D)	31.26	13.86	17.40	0.00	--	2.7	0.6	0.5	--	--
12/26/12		31.26	13.86	17.40	0.00	--	2.7	0.6	0.6	--	--
04/23/13		**31.26**	**12.47**	**18.79**	**0.00**	**--**	**11.0**	**0.8**	**0.9**	**--**	**1.3**
06/26/13		**31.26**	**12.39**	**18.87**	**0.00**	**--**	--	--	--	--	--
09/18/13		**31.26**	**13.25**	**18.01**	**0.00**	**--**	--	--	--	--	--
10/14/13						**INACCESSIBLE**					
MW-22											
08/10/99		99.76	--	--	0.00	--	**1,140**	44.9	93.5	--	7.56
10/22/99		99.76	--	--	0.00	--	**1,680**	109	191	--	--
01/06/00		99.76	--	--	0.00	--	**1,410**	46.8	105	--	--
01/15/01		99.76	--	--	0.00	--	**2,040**	161	254	--	19.2
06/21/01		99.76	13.53	86.23	0.00	--	**1,710**	64.8	144	--	<50.0
03/18/02		99.76	14.41	85.35	0.00	--	**1,920**	85.5	242	--	21.3
07/02/02		99.76	13.56	86.20	0.00	--	**2,000**	84.9	288	--	--
09/03/02		99.76	14.95	84.81	0.00	--	**2,020**	66.8	312	--	--
12/31/02		99.76	15.22	84.54	0.00	--	**2,360**	159	385	--	--
06/25/03		99.76	13.91	85.85	0.00	--	**1,950**	84.4	273	--	--
09/16/03		99.76	15.15	84.61	0.00	--	**2,590**	189	425	--	<50.0
12/17/03		99.76	15.03	84.73	0.00	--	**1,250**	52.9	188	--	15.8
12/17/03	(D)	99.76	15.03	84.73	0.00	--	**1,920**	59	207	--	18.5
03/25/04		99.76	14.20	85.56	0.00	--	**1,630**	35.4	208	--	14.9
09/22/04		99.76	14.28	85.48	0.00	--	--	--	--	--	--
03/14/05		99.76	14.70	85.06	0.00	--	--	--	--	--	--
03/29/06		99.76	14.21	85.55	0.00	--	--	--	--	--	--
03/21/07		99.76	14.31	85.45	0.00	--	**840**	54.5	117	--	20.8
03/25/08		99.76	14.35	85.41	0.00	--	**730**	31	90	--	5.5
09/08-09/08		99.76	14.47	85.29	0.00	--	**880**	46	130	--	14
12/11/08		99.76	MONITORED/SAMPLED SEMI-ANNUALLY				--	--	--	--	--

Table 7
Groundwater Monitoring and Analytical Results
Former Chevron Bulk Plant #1001327
1602 North Northlake Place
Seattle, Washington

WELL ID DATE	TOC* *(ft.)*	DTW *(ft.)*	GWE *(ft.)*	LNAPLT *(ft.)*	LNAPL Removed (gallons)	B *(µg/L)*	T *(µg/L)*	E *(µg/L)*	X *(µg/L)*	Napthalene *(µg/L)*
Groundwater Cleanup Level						***43***	***48,500***	***6,910***	***--***	***9,880***
MW-22 (cont)										
03/30-31/09	99.76	14.09	85.67	0.00	--	**830**	37	98	--	7.3
09/10-11/09	99.76	15.02	84.74	0.00	--	**1,100**	42	130	--	10
03/15/10	99.76	14.46	85.30	0.00	--	**720**	25	70	--	5.0
09/15/10	99.76	14.82	84.94	0.00	--	**820**	50	100	--	6.9
03/14/11	99.76	14.25	85.51	0.00	--	--	--	--	--	--
MW-24										
03/21/07	--	23.01	--	0.00	--	<0.500	<0.500	<0.500	--	<5.00
03/25/08	--	23.35	--	0.00	--	--	--	--	--	--
09/08-09/08	--	23.84	--	0.00	--	--	--	--	--	--
12/11/08	--	MONITORED SEMI-ANNUALLY			--	--	--	--	--	--
03/30-31/09	--	23.60	--	0.00	--	--	--	--	--	--
09/10-11/09	--	24.13	--	0.00	--	--	--	--	--	--
03/15/10	--	22.76	--	0.00	--	--	--	--	--	--
09/15/10	--	23.71	--	0.00	--	--	--	--	--	--
03/14/11	--	22.39	--	0.00	--	--	--	--	--	--
12/26/12	69.77	22.42	47.35	0.00	--	--	--	--	--	--
MW-25										
08/09/99	98.17	--	--	0.00	--	<1.00	<1.00	<1.00	--	<1.00
10/19/99	98.17	14.37	83.80	0.00	--	<0.500	<0.500	<0.500	--	<0.023
01/06/00	98.17	--	--	0.00	--	<0.500	<0.500	<0.500	--	--
07/27/00	98.17	12.41	85.76	0.00	--	<1.00	<1.00	<1.00	--	<1.00
09/29/00	98.17	13.16	85.01	0.00	--	--	--	--	--	--
09/29/00	98.17	13.16	85.01	0.00	--	--	--	--	--	--
07/26/01	98.17	12.65	85.52	0.00	--	<1.00	<1.00	<1.00	--	<1.00
03/19/02	98.17	13.12	85.05	0.00	--	2.06	<1.00	<1.00	--	<1.00
07/02/02	98.17	12.04	86.13	0.00	--	28.4	11.5	2.85	--	--
09/03/02	98.17	13.61	84.56	0.00	--	**68.0**	0.810	<0.500	--	--
10/11/02	98.17	--	98.17	0.00	--	**61**	<0.500	<0.500	--	--
12/31/02	98.17	13.97	84.20	0.00	--	0.557	<0.500	<0.500	--	--
03/26/03	98.17	13.34	84.83	0.00	--	3.20	0.617	<0.500	--	--
04/28/03	98.17	12.13	86.04	0.00	--	15.5	1.64	1.56	--	--
05/30/03	98.17	12.1	86.07	0.00	--	21.8	0.872	2.69	--	--
06/25/03	98.17	12.49	85.68	0.00	--	9.06	0.545	1.33	--	<0.100
09/15/03	98.17	13.78	84.39	0.00	--	<0.500	<0.500	<0.500	--	<1.00
12/15/03	98.17	13.88	84.29	0.00	--	<0.500	<0.500	<0.500	--	1.76
03/25/04	98.17	12.80	85.37	0.00	--	<0.500	<0.500	<0.500	--	<0.100
09/22/04	98.17	12.94	85.23	0.00	--	<0.500	<0.500	<0.500	--	<0.100

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Former Chevron Bulk Plant #1001327
1602 North Northlake Place
Seattle, Washington

WELL ID DATE	TOC* *(ft.)*	DTW *(ft.)*	GWE *(ft.)*	LNAPLT *(ft.)*	LNAPL Removed (gallons)	B *(µg/L)*	T *(µg/L)*	E *(µg/L)*	X *(µg/L)*	Napthalene *(µg/L)*
Groundwater Cleanup Level						***43***	***48,500***	***6,910***	***--***	***9,880***
MW-25 (cont)										
03/14/05	98.17	13.25	84.92	0.00	--	<0.500	<0.500	<0.500	--	<0.100
03/29/06	98.17	12.72	85.45	0.00	--	<0.500	<0.500	<0.500	--	<1.00
03/21/07	98.17	12.51	85.66	0.00	--	<0.500	<0.500	<0.500	--	<5.00
03/25/08	98.17	12.78	85.39	0.00	--	<0.5	<0.5	<0.5	--	0.013
09/08-09/08	98.17	12.89	85.28	0.00	--	<0.5	<0.5	<0.5	--	<1.0
12/11/08	98.17	MONITORED/SAMPLED SEMI-ANNUALLY				--	--	--	--	--
03/30-31/09	98.17	12.60	85.57	0.00	--	<0.5	<0.5	<0.5	--	<1.0
09/10-11/09	98.17	13.41	84.76	0.00	--	<0.5	<0.5	<0.5	--	<1.0
03/15/10	98.17	12.95	85.22	0.00	--	<0.5	<0.5	<0.5	--	1.6
09/15/10	98.17	13.25	84.92	0.00	--	<0.5	<0.5	<0.5	--	<1.0
03/14/11	98.17	12.88	85.29	0.00	--	--	--	--	--	--
09/25/11	30.91	13.50	17.41	0.00	--	<0.2	<0.2	<0.2	--	<1.0
10/10/11	30.91	13.30	17.61	0.00	--	--	--	--	--	--
06/21/12	30.91	12.01	18.90	0.00	--	--	--	--	--	--
09/20/12	30.91	13.56	17.35	0.00	--	<0.5	<0.5	<0.5	--	0.054
12/26/12	30.91	13.76	17.15	0.00	--	<0.5	<0.5	<0.5	--	--
04/22/13	**30.91**	**12.30**	**18.61**	**0.00**	**--**	**<0.5**	**<0.5**	**<0.5**	**--**	**<0.031**
06/26/13	**30.91**	**12.26**	**18.65**	**0.00**	**--**	**--**	**--**	**--**	**--**	**--**
09/18/13	**30.91**	**12.97**	**17.94**	**0.00**	**--**	**--**	**--**	**--**	**--**	**--**
10/14/13	**30.91**	**13.22**	**17.69**	**0.00**	**--**	**--**	**--**	**--**	**--**	**--**
MW-26										
08/09/99	97.87	--	--	0.00	--	<1.00	<1.00	<1.00	--	<1.00
10/19/99	97.87	--	--	0.00	--	<0.500	<0.500	<0.500	--	<0.0099
01/06/00	97.87	13.78	84.09	0.00	--	0.621	<0.500	<0.500	--	--
04/12/00	97.87	12.12	85.75	0.00	--	<1.00	<1.00	<1.00	--	<1.00
06/27/00	97.87	12.55	85.32	0.00	--	<1.00	<1.00	<1.00	--	<1.00
07/26/01	97.87	12.15	85.72	0.00	--	<1.00	<1.00	<1.00	--	<1.00
03/19/02	97.87	12.79	85.08	0.00	--	<1.00	<1.00	<1.00	--	<1.00
12/31/02	97.87	13.97	83.90	0.00	--	<0.500	<0.500	<0.500	--	--
02/27/03	97.87	12.88	84.99	0.00	--	<0.500	<0.500	<0.500	--	--
03/26/03	97.87	13.12	84.75	0.00	--	<0.500	<0.500	<0.500	--	--
04/28/03	97.87	11.78	86.09	0.00	--	<0.500	<0.500	<0.500	--	--
05/30/03	97.87	11.73	86.14	0.00	--	<0.500	<0.500	<0.500	--	--
06/25/03	97.87	12.09	85.78	0.00	--	<0.500	<0.500	<0.500	--	<0.100
09/15/03	97.87	13.49	84.38	0.00	--	<0.500	<0.500	<0.500	--	<1.00
12/15/03	97.87	13.48	84.39	0.00	--	<0.500	<0.500	<0.500	--	<1.00
09/22/04	97.87	12.55	85.32	0.00	--	<0.500	<0.500	<0.500	--	<0.100
03/14/05	97.87	12.94	84.93	0.00	--	<0.500	<0.500	<0.500	--	<0.100
03/29/06	97.87	12.37	85.50	0.00	--	<0.500	<0.500	<0.500	--	<1.00
03/21/07	97.87	UNABLE TO LOCATE		--	--	--	--	--	--	--
03/25/08	97.87	12.46	85.41	0.00	--	<0.5	<0.5	<0.5	--	0.011
09/08-09/08	97.87	12.59	85.28	0.00	--	<0.5	<0.5	<0.5	--	<1.0
12/11/08	97.87	MONITORED/SAMPLED SEMI-ANNUALLY				--	--	--	--	--

Table 7
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1602 North Northlake Place
Seattle, Washington

WELL ID DATE		TOC* *(ft.)*	DTW *(ft.)*	GWE *(ft.)*	LNAPLT *(ft.)*	LNAPL Removed (gallons)	B *(µg/L)*	T *(µg/L)*	E *(µg/L)*	X *(µg/L)*	Napthalene *(µg/L)*
Groundwater Cleanup Level							***43***	***48,500***	***6,910***	**--**	***9,880***
MW-26 (cont)											
03/30-31/09		97.87	12.25	85.62	0.00	--	<0.5	<0.5	<0.5	--	<1.0
09/10-11/09		97.87	13.01	84.86	0.00	--	<0.5	<0.5	<0.5	--	<1.0
03/15/10		97.87	12.60	85.27	0.00	--	<0.5	<0.5	<0.5	--	1.2
09/15/10		97.87	12.94	84.93	0.00	--	<0.5	<0.5	<0.5	--	<1.0
03/14/11		97.87	12.25	85.62	0.00	--	--	--	--	--	--
09/24/11		30.62	13.20	17.42	0.00	--	<0.2	<0.2	<0.2	--	<1.0
10/10/11		30.62	13.00	17.62	0.00	--	--	--	--	--	--
06/21/12		30.62	11.68	18.94	0.00	--	--	--	--	--	--
09/20/12		30.62	13.25	17.37	0.00	--	--	--	--	--	--
09/21/12		30.62	13.28	17.34	0.00	--	<0.5	<0.5	<0.5	--	<0.030
09/21/12	(D)	30.62	13.28	17.34	0.00	--	<0.5	<0.5	<0.5	--	<0.030
12/26/12		30.62	13.24	17.38	0.00	--	<0.5	<0.5	<0.5	--	--
04/22/13		**30.62**	**11.90**	**18.72**	**0.00**	**--**	**<0.5**	**<0.5**	**<0.5**	**--**	**<0.031**
06/26/13		**30.62**	**11.85**	**18.77**	**0.00**	**--**	**--**	**--**	**--**	**--**	**--**
09/18/13		**30.62**	**12.68**	**17.94**	**0.00**	**--**	**--**	**--**	**--**	**--**	**--**
10/14/13		**30.62**	**12.89**	**17.73**	**0.00**	**--**	**--**	**--**	**--**	**--**	**--**
MW-27											
09/13/99		101.17	--	--	--	--	10.8	<0.500	<1.00	--	<0.100
10/22/99		101.17	--	--	--	--	4.44	<0.500	<0.500	--	5.8[6]
01/06/00		101.17	--	--	--	--	10.5	<2.50	<2.50	--	--
05/24/01		101.17	11.11	90.64	0.73	--	--	--	--	--	--
06/27/01		101.17	10.07	91.72	0.72	--	--	--	--	--	--
03/18/02		101.17	9.07	92.16	0.07	--	--	--	--	--	--
10/16/02		101.17	--	--	0.05	--	--	--	--	--	--
12/31/02		101.17	--	--	0.02	--	--	--	--	--	--
06/26/03		101.17	11.08	90.29	0.25	--	--	--	--	--	--
07/21/03		101.17	--	--	0.46	--	--	--	--	--	--
08/28/03		101.17	--	--	0.21	--	--	--	--	--	--
10/16/03		101.17	5.97	95.20	0.00	--	--	--	--	--	--
11/21/03		101.17	--	--	0.00	--	--	--	--	--	--
12/17/03		101.17	--	--	0.00	--	--	--	--	--	--
03/29/06		101.17	9.14	92.03	0.00	--	--	--	--	--	--
03/21/07		101.17	7.91	93.27	0.01	--	--	--	--	--	--
03/25/08		101.17	10.57	90.60	0.00	--	--	--	--	--	--
09/08-09/08[1]		101.17	10.83	90.48**	0.17	0.28[5]	--	--	--	--	--
12/11/08[1]		101.17	11.19	89.99**	0.01	--	--	--	--	--	--
03/30-31/09[1]		101.17	9.92	91.26**	0.01	--	--	--	--	--	--
06/15/09		101.17	9.67	91.51**	0.01	--	--	--	--	--	--
09/10-11/09[1]		101.17	11.27	90.04**	0.17	0.35[5]	--	--	--	--	--
02/23/10[1]		101.17	9.37	91.80	0.00	--	--	--	--	--	--
03/15/10[1]		101.17	9.48	91.70**	0.01	--	--	--	--	--	--
09/15/10[1]		101.17	11.21	90.13**	0.21	0.053[5]	--	--	--	--	--
12/04/10		101.17	10.56	90.67**	0.08	0.050[5]	--	--	--	--	--
3/14/2011[1]		101.17	27.77	73.40	0.07	0.050[5]	--	--	--	--	--
11/16/11		34.01	11.27	22.74	0.00	--	--	--	--	--	--
12/08/11		34.01	9.78	24.30	0.09	0.050[5]	--	--	--	--	--
03/23/12		34.01	8.18	25.85	0.03	1.0	--	--	--	--	--
06/01/12		34.01	8.45	25.72**	0.20	1.0	--	--	--	--	--
09/20/12		34.01	11.30	22.89**	0.23	--	--	--	--	--	--
12/26/12		34.01	6.44	27.59**	0.03	--	--	--	--	--	--
04/22/13		**34.01**	**7.34**	**26.68****	**0.01**	**--**	**--**	**--**	**--**	**--**	**--**
06/26/13		**34.01**	**6.67**	**27.34**	**0.00**	**--**	**--**	**--**	**--**	**--**	**--**
09/18/13		**34.01**	**10.76**	**23.25**	**0.00**	**--**	**--**	**--**	**--**	**--**	**--**
10/14/13		**34.01**	**10.16**	**23.85**	**0.00**	--	--	--	--	--	--

Table 7

Groundwater Monitoring and Analytical Results

Former Chevron Bulk Plant #1001327

1602 North Northlake Place

Seattle, Washington

WELL ID DATE	TOC* *(ft.)*	DTW *(ft.)*	GWE *(ft.)*	LNAPLT *(ft.)*	LNAPL Removed (gallons)	B *(µg/L)*	T *(µg/L)*	E *(µg/L)*	X *(µg/L)*	Napthalene *(µg/L)*
Groundwater Cleanup Level						***43***	***48,500***	***6,910***	***--***	***9,880***
MW-28										
08/11/99	100.35	--	--	0.00	--	**1,810**	1,450	884	--	238
10/21/99	100.35	--	--	0.00	--	**2,890**	2,700	1,350	--	180[6]
10/21/99	100.35	--	--	0.00	--	**2,700**	2,480	1,280	--	--
01/06/00	100.35	6.93	93.42	0.00	--	**1,770**	2,090	1,180	--	--
07/27/00	100.35	7.45	92.90	0.00	--	**1,840**	2,420	702	--	356
09/29/00	100.35	8.5	91.85	0.00	--	**927**	902	450	--	--
01/15/01	100.35	8.59	91.76	0.00	--	**1,970**	2,070	635	--	98.8
06/21/01	100.35	7.66	92.69	0.00	--	**1,950**	3,130	1,190	--	272
03/18/02	100.35	6.02	94.33	0.00	--	--	--	--	--	--
06/26/03	100.35	7.57	92.78	0.00	--	**1,230**	615	1,290	--	--
09/15/03	100.35	8.96	91.39	0.00	--	**848**	175	916	--	272
12/15/03	100.35	7.56	92.79	0.00	--	**881**	474	1,010	--	284
03/25/04	100.35	7.07	93.28	0.00	--	**712**	281	854	--	288
09/22/04	100.35	8.16	92.19	0.00	--	--	--	--	--	--
03/14/05	100.35	8.45	91.90	0.00	--	--	--	--	--	--
03/29/06	100.35	6.64	93.71	0.00	--	--	--	--	--	--
03/21/07	100.35	6.86	93.49	0.38	--	NOT SAMPLED DUE TO THE PRESENCE OF LNAPL				--
03/25/08	100.35	7.25	93.24	0.17	--	NOT SAMPLED DUE TO THE PRESENCE OF LNAPL				--
09/08-09/08[1]	100.35	8.04	92.34**	0.04	0.16[5]	--	--	--	--	--
12/11/08[1]	100.35	8.15	92.21**	0.01	--	--	--	--	--	--
03/30-31/09[1]	100.35	6.84	93.52**	0.01	--	--	--	--	--	--
06/15/09[1]	100.35	7.21	93.15**	0.01	--	--	--	--	--	--
09/10-11/09[1]	100.35	8.16	92.21**	0.03	--	--	--	--	--	--
02/23/10[1]	100.35	6.39	93.97**	0.01	--	--	--	--	--	--
03/15/10[1]	100.35	6.05	94.30	0.00	--	--	--	--	--	--
9/15/10[1]	100.35	7.76	92.60**	0.01	--	--	--	--	--	--
12/04/10	100.35	LOCATED BEHIND LOCKED GATE			--	--	--	--	--	--
3/14/2011[1]	100.35	5.3	95.05	--	--	--	--	--	--	--
AGI-2										
08/10/99	97.95	--	--	0.00	--	38.8	11.7	1.57	--	<1.00
10/20/99	97.95	--	--	0.00	--	20.3	12.1	5.14	--	0.097
01/15/01	97.95	13.61	84.34	0.00	--	41.2	17.8	7.44	--	--
06/21/01	97.95	11.83	86.12	0.00	--	**296**	<10.0	<10.0	--	<10.0
07/26/01	97.95	12.19	85.76	0.00	--	**397.0**	14.9	16.9	--	<1.00
03/18/02	97.95	12.91	85.04	0.00	--	**43.2**	78.9	17.6	--	1.68
03/18/02	97.95	12.91	85.04	0.00	--	40.5	72.8	16.4	--	<2.00
05/07/02	97.95	11.95	86.00	0.00	--	6.16	2.24	2.76	--	--
06/06/02	97.95	12.51	85.44	0.00	--	4.58	1.52	2.04	--	--
07/02/02	97.95	11.9	86.05	0.00	--	3.60	2.52	2.00	--	--
09/03/02	97.95	13.65	84.30	0.00	--	3.48	2.59	3.16	--	--

Table 7
Groundwater Monitoring and Analytical Results
Former Chevron Bulk Plant #1001327
1602 North Northlake Place
Seattle, Washington

WELL ID DATE		TOC* *(ft.)*	DTW *(ft.)*	GWE *(ft.)*	LNAPLT *(ft.)*	LNAPL Removed (gallons)	B *(µg/L)*	T *(µg/L)*	E *(µg/L)*	X *(µg/L)*	Napthalene *(µg/L)*
Groundwater Cleanup Level							***43***	***48,500***	***6,910***	**--**	***9,880***
AGI-2 (cont)											
12/31/02		97.95	13.75	84.20	0.00	--	1.10	1.36	1.34	--	--
03/26/03		97.95	12.62	85.33	0.00	--	40.3	481	302	--	--
04/28/03		97.95	12.98	84.97	0.00	--	27.7	351	190	--	--
05/30/03		97.95	12.19	85.76	0.00	--	19.4	358	200	--	--
06/25/03		97.95	12.66	85.29	0.00	--	3.34	1.23	7.70	--	<0.100
09/15/03		97.95	13.51	84.44	0.00	--	1.01	0.832	1.40	--	<1.00
12/15/03		97.95	13.59	84.36	0.00	--	0.688	0.599	0.851	--	<1.00
03/26/04		97.95	12.33	85.62	0.00	--	2.06	1.12	1.56	--	<1.00
09/22/04		97.95	12.67	85.28	0.00	--	--	--	--	--	--
03/14/05		97.95	12.99	84.96	0.00	--	--	--	--	--	--
03/29/06		97.95	12.45	85.50	0.00	--	--	--	--	--	--
03/21/07		97.95	12.30	85.65	0.00	--	0.78	<0.500	0.58	--	<5.00
03/25/08		97.95	12.53	85.42	0.00	--	--	--	--	--	--
09/08-09/08		97.95	12.63	85.32	0.00	--	--	--	--	--	--
12/11/08		97.95	MONITORED SEMI-ANNUALLY			--	--	--	--	--	--
03/30-31/09		97.95	12.33	85.62	0.00	--	--	--	--	--	--
09/10-11/09		97.95	13.11	84.84	0.00	--	11	3.5	5.8	--	2.1
03/15/10		97.95	15.92	82.03	0.00	--	3.5	0.9	2.0	--	4.9
09/15/10		97.95	12.99	84.96	0.00	--	19.0	6.5	15.0	--	2.4
03/14/11		97.95	12.58	85.37	--	--	--	--	--	--	--
06/21/12		30.68	11.69	18.99	0.00	--	--	--	--	--	--
09/20/12		30.68	13.31	17.37	0.00	--	**61.0**	12.0	6.2	--	0.86
12/26/12		30.68	13.41	17.27	0.00	--	11	3.6	1.4	--	--
04/23/13		**30.68**	**11.96**	**18.72**	**0.00**	**--**	**5.1**	**1.1**	**5.9**	**--**	**0.63**
04/23/13	**(D)**	**30.68**	**11.96**	**18.72**	**1.00**	**--**	**4.2**	**1.4**	**3.9**	**--**	**0.60**
06/26/13		**30.68**	**11.90**	**18.78**	**0.00**	**--**	--	--	--	--	--
09/18/13		**30.68**	**12.72**	**17.96**	**0.00**	**--**	--	--	--	--	--
10/14/13		**30.68**	**12.94**	**17.74**	**0.00**	**--**	--	--	--	--	--
MLU-1											
08/10/99		100.18	--	--	0.00	--	<1.00	<1.00	<1.00	--	<1.00
10/20/99		100.18	15.33	84.85	0.00	--	<0.500	<0.500	<0.500	--	0.023
01/06/00		100.18	15.75	84.43	0.00	--	<0.500	<0.500	<0.500	--	--
04/12/00		100.18	14.35	85.83	0.00	--	<1.00	<1.00	<1.00	--	<1.00
06/27/00		100.18	14.24	85.94	0.00	--	<1.00	<1.00	<1.00	--	<1.00
09/29/00		100.18	15.12	85.06	0.00	--	--	--	--	--	--
06/25/03		100.18	14.41	85.77	0.00	--	<0.500	<0.500	<0.500	--	<0.100
09/15/03		100.18	15.72	84.46	0.00	--	0.6280	<0.500	<0.500	--	<1.00
12/15/03		100.18	15.70	84.48	0.00	--	<0.500	<0.500	<0.500	--	<1.00
03/25/04		100.18	14.75	85.43	0.00	--	<0.500	<0.500	<0.500	--	<0.100
09/22/04		100.18	14.88	85.30	0.00	--	--	--	--	--	--
03/14/05		100.18	15.21	84.97	0.00	--	--	--	--	--	--
03/29/06		100.18	14.65	85.53	0.00	--	--	--	--	--	--
03/21/07		100.18	14.64	85.54	0.00	--	<0.500	<0.500	<0.500	--	<5.00
03/25/08		100.18	14.70	85.48	0.00	--	--	--	--	--	--

Table 7
Groundwater Monitoring and Analytical Results
Former Chevron Bulk Plant #1001327
1602 North Northlake Place
Seattle, Washington

WELL ID DATE	TOC* *(ft.)*	DTW *(ft.)*	GWE *(ft.)*	LNAPLT *(ft.)*	LNAPL Removed (gallons)	B *(µg/L)*	T *(µg/L)*	E *(µg/L)*	X *(µg/L)*	Napthalene *(µg/L)*
Groundwater Cleanup Level						***43***	***48,500***	***6,910***	**--**	***9,880***
MLU-1 (cont)										
09/08-09/08	100.18	UNABLE TO LOCATE		--	--	--	--	--	--	--
12/11/08	100.18	MONITORED SEMI-ANNUALLY			--	--	--	--	--	--
03/30-31/09	100.18	UNABLE TO LOCATE		--	--	--	--	--	--	--
09/10-11/09	100.18	15.32	84.86	0.00	--	<0.5	<0.5	<0.5	--	<1.0
03/15/10	100.18	14.82	85.36	0.00	--	<0.5	<0.5	<0.5	--	1.7
09/15/10	100.18	15.21	84.97	0.00	--	<0.5	<0.5	<0.5	--	<1.0
03/14/11	100.18	14.19	85.99	0.00	--	--	--	--	--	--
06/21/12	32.90	13.96	18.94	0.00	--	--	--	--	--	--
09/20/12	32.90	15.51	17.39	0.00	--	--	--	--	--	--
09/21/12	32.90	15.51	17.39	0.00	--	<0.5	<0.5	<0.5	--	<0.031
12/26/12	32.90	15.31	17.59	0.00	--	<0.5	<0.5	<0.5	--	--
04/22/13	**32.90**	**14.14**	**18.76**	**0.00**	**--**	**<0.5**	**<0.5**	**<0.5**	**--**	**<0.030**
06/26/13	**32.90**	**14.05**	**18.85**	**0.00**	**--**	**--**	**--**	**--**	**--**	**--**
09/18/13	**32.90**	**14.92**	**17.98**	**0.00**	**--**	**--**	**--**	**--**	**--**	**--**
10/14/13	**32.90**	**15.50**	**17.40**	**0.00**	**--**	**--**	**--**	**--**	**--**	**--**
SMPN-1										
03/15/05	--	11.23	--	0.00	--	--	--	--	--	--
10/04/05	--	11.96	--	0.24	--	--	--	--	--	--
03/29/06	--	9.84	--	0.00	--	--	--	--	--	--
03/21/07	--	9.89	--	0.00	--	--	--	--	--	--
03/25/08	--	10.36	--	0.00	--	--	--	--	--	--
09/08-09/08[1]	100.99	10.68	90.32**	0.01	--	--	--	--	--	--
12/11/08[1]	100.99	11.30	89.69	0.00	--	--	--	--	--	--
03/30-31/09[1]	100.99	10.31	90.69**	0.01	--	--	--	--	--	--
06/15/09[1]	100.99	9.73	91.27**	0.01	--	--	--	--	--	--
09/10-11/09[1]	100.99	11.13	89.86	0.00	--	--	--	--	--	--
02/23/10[1]	100.99	9.86	91.13	0.00	--	--	--	--	--	--
03/15/10[1]	100.99	9.83	91.17**	0.01	--	--	--	--	--	--
09/15/10[1]	100.99	11.13	89.87**	0.01	--	--	--	--	--	--
12/4/10[1]	100.99	10.53	90.46	0.00	--	--	--	--	--	--
11/16/11	33.78	11.27	22.51	0.00	--	--	--	--	--	--
12/08/11	33.78	9.79	24.00**	0.01	0.050[5]	--	--	--	--	--
03/23/12	33.78	8.27	25.53**	0.02	0.50	--	--	--	--	--
06/01/12	33.78	8.85	24.93	0.00	--	--	--	--	--	--
09/20/12	33.78	11.14	22.78**	0.18	--	--	--	--	--	--
12/26/12	33.78	8.50	25.28	0.00	--	--	--	--	--	--
04/22/13	**33.78**	**8.75**	**25.03**	**0.00**	**--**	**--**	**--**	**--**	**--**	**--**
06/26/13	**33.78**	**9.54**	**24.24**	**0.00**	**--**	**--**	**--**	**--**	**--**	**--**
09/18/13	**33.78**	**11.29**	**22.49**	**0.00**	**--**	**--**	**--**	**--**	**--**	**--**
10/14/13	**33.78**	**10.49**	**23.29**	**0.00**	**--**	**--**	**--**	**--**	**--**	**--**
SMPN-2										
03/15/05	--	11.21	--	0.01	--	--	--	--	--	--
03/29/06	--	9.48	--	0.00	--	--	--	--	--	--
03/21/07	--	9.20	--	0.05	--	--	--	--	--	--
03/25/08	--	10.11	--	0.00	--	--	--	--	--	--
09/08-09/08[1]	101.24	10.51	90.74**	0.01	--	--	--	--	--	--
12/11/08	101.24	11.06	90.19**	0.01	--	--	--	--	--	--
03/30-31/09	101.24	10.12	91.13**	0.01	--	--	--	--	--	--
06/15/09	101.24	9.51	91.74**	0.01	--	--	--	--	--	--
09/10-11/09	101.24	10.99	90.26**	0.01	--	--	--	--	--	--
02/23/10	101.24	9.23	92.01	0.00	--	--	--	--	--	--
03/15/10	101.24	9.37	91.88**	0.01	--	--	--	--	--	--
09/15/10	101.24	11.07	90.31**	0.18	--	--	--	--	--	--
12/04/10	101.24	10.35	90.95**	0.07	--	--	--	--	--	--

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Groundwater Monitoring and Analytical Results
Former Chevron Bulk Plant #1001327
1602 North Northlake Place
Seattle, Washington

WELL ID DATE		TOC* *(ft.)*	DTW *(ft.)*	GWE *(ft.)*	LNAPLT *(ft.)*	LNAPL Removed (gallons)	B *(µg/L)*	T *(µg/L)*	E *(µg/L)*	X *(µg/L)*	Napthalene *(µg/L)*
Groundwater Cleanup Level							***43***	***48,500***	***6,910***	**--**	***9,880***
SMPN-2(cont)											
03/14/11		101.24	8.93	92.31	0.00	--	--	--	--	--	--
11/16/11		33.85	9.97	23.89	0.01	0.050[5]	--	--	--	--	--
12/08/11		33.85	9.61	24.24	0.00	--	--	--	--	--	--
03/23/12		33.85	8.12	25.75**	0.02	0.50	--	--	--	--	--
06/01/12		33.85	8.40	25.53**	0.10	1.00	--	--	--	--	--
09/20/12		33.85	11.11	22.87**	0.16	--	--	--	--	--	--
12/26/12		33.85	8.51	25.34	0.00	--	--	--	--	--	--
04/22/13		**33.85**	**7.88**	**25.97**	**0.00**	**--**	**--**	**--**	**--**	**--**	**--**
06/26/13		**33.85**	**8.70**	**25.15**	**0.00**	**--**	**--**	**--**	**--**	**--**	**--**
09/18/13		**33.85**	**10.82**	**23.04****	**0.01**	**--**	**--**	**--**	**--**	**--**	**--**
10/14/13		**33.85**	**10.50**	**23.35**	**0.00**	**--**	**--**	**--**	**--**	**--**	**--**
SMPN-3											
03/15/05		--	11.46	--	0.00	--	--	--	--	--	--
03/29/06		--	9.56	--	0.00	--	--	--	--	--	--
03/21/07		--	9.03	--	0.00	--	--	--	--	--	--
03/25/08		--	10.30	--	0.00	--	--	--	--	--	--
09/08-09/08[1]		101.02	10.67	90.36**	0.01	--	--	--	--	--	--
12/11/08		101.02	11.26	89.76	0.00	--	--	--	--	--	--
03/30-31/09		101.02	10.28	90.75**	0.01	--	--	--	--	--	--
06/15/09		101.02	9.59	91.43	0.00	--	--	--	--	--	--
09/10-11/09		101.02	11.09	89.94**	0.01	--	--	--	--	--	--
02/23/10		101.02	9.44	91.58	0.00	--	--	--	--	--	--
03/15/10		101.02	9.51	91.52**	0.01	--	--	--	--	--	--
09/15/10		101.02	11.14	89.88	0.00	--	--	--	--	--	--
12/04/10		101.02	10.49	90.53	0.00	--	--	--	--	--	--
03/14/11		101.02	9.12	91.90	0.00	--	--	--	--	--	--
11/16/11		33.81	11.06	22.85	0.12	0.050[5]	--	--	--	--	--
12/08/11		33.81	9.73	24.08	0.00	--	--	--	--	--	--
03/23/12		33.81	8.30	25.51	0.00	--	--	--	--	--	--
06/01/12		33.81	8.05	25.76	0.00	--	--	--	--	--	--
09/20/12		33.81	11.22	22.59	0.00	--	--	--	--	--	--
12/26/12		33.81	8.89	24.92	0.00	--	--	--	--	--	--
04/22/13		**33.81**	**8.30**	**25.51**	**0.00**	**--**	**--**	**--**	**--**	**--**	**--**
06/26/13		**33.81**	**9.02**	**24.79**	**0.00**	**--**	**--**	**--**	**--**	**--**	**--**
09/18/13		**33.81**	**11.06**	**22.75**	**0.00**	**--**	**--**	**--**	**--**	**--**	**--**
10/14/13		**33.81**	**10.52**	**23.29**	**0.00**	**--**	**--**	**--**	**--**	**--**	**--**
MW-8											
08/09/99		97.87	--	--	0.00	--	**186**	15.4	39.0	--	9.23
10/20/99		97.87	13.06	84.81	0.00	--	31.4	2.47	2.97	--	0.35[6]
01/06/00		97.87	--	--	0.00	--	**710**	26.5	304	--	--
04/12/00		97.87	12.57	85.30	0.00	--	28.2	1.72	4.16	--	1.88
06/27/00		97.87	12.61	85.26	0.00	--	29.5	1.47	3.09	--	<1.00
09/28/00		97.87	12.88	84.99	0.00	--	20.3	1.23	1.39	--	4
01/15/01		97.87	13.70	84.17	0.00	--	17.7	2.14	12.3	--	--
06/21/01		97.87	11.77	86.10	0.00	--	**197**	<10.0	26.7	--	<10.0
07/26/01		97.87	12.18	85.69	0.00	--	**157**	7.03	42.5	--	6.86
07/26/01	(D)	97.87	12.18	85.69	0.00	--	**147**	7.07	42.2	--	6.36
03/19/02		97.87	12.84	85.03	0.00	--	**1,450**	22.0	166	--	32.0
03/19/02	(D)	97.87	12.84	85.03	0.00	--	**1,430**	21.7	169	--	30.0
04/03/02		97.87	12.48	85.39	0.00	--	**1,000**	22.3	199	--	36.5
04/03/02	(D)	97.87	12.48	85.39	0.00	--	**1,030**	21.9	213	--	37.3
05/07/02		97.87	11.86	86.01	0.00	--	**472**	13.7	152	--	--
06/06/02		97.87	12.39	85.48	0.00	--	**476**	14.1	79.8	--	--
07/02/02		97.87	11.79	86.08	0.00	--	**291**	14.0	58.9	--	--

Table 7
Groundwater Monitoring and Analytical Results
Former Chevron Bulk Plant #1001327
1602 North Northlake Place
Seattle, Washington

WELL ID DATE		TOC* *(ft.)*	DTW *(ft.)*	GWE *(ft.)*	LNAPLT *(ft.)*	LNAPL Removed (gallons)	B *(µg/L)*	T *(µg/L)*	E *(µg/L)*	X *(µg/L)*	Napthalene *(µg/L)*
Groundwater Cleanup Level							***43***	***48,500***	***6,910***	*--*	***9,880***
MW-8 (cont)											
09/03/02		97.87	13.24	84.63	0.00	--	**284**	11.3	81.6	--	--
10/11/02		97.87	14.04	83.83	0.00	--	**238**	18	152.0	--	--
12/31/02		97.87	13.69	84.18	0.00	--	**165**	16.3	261	--	--
12/31/02	(D)	97.87	13.69	84.18	0.00	--	**192**	16.1	141	--	--
03/26/03		97.87	12.23	85.64	0.00	--	**767**	23.2	156	--	--
04/28/03		97.87	12.87	85.00	0.00	--	**683**	20.8	125	--	--
05/30/03		97.87	11.80	86.07	0.00	--	**467**	15.4	75.4	--	--
06/25/03		97.87	12.20	85.67	0.00	--	**305**	17.4	89.7	--	7.94
09/15/03		97.87	13.45	84.42	0.00	--	**159**	36.1	634	--	168
DECOMMISSIONED DECEMBER 2003											
MW-16											
03/21/07		--	14.49	--	0.00	--	<0.500	<0.500	<0.500	--	<5.00
03/25/08		--	15.25	--	0.00	--	--	--	--	--	--
09/08-09/08		--	18.51	--	0.00	--	--	--	--	--	--
12/11/08		--	MONITORED SEMI-ANNUALLY			--	--	--	--	--	--
03/30-31/09		--	16.11	--	0.00	--	--	--	--	--	--
ABANDONED											
MLU-3											
08/20/99		97.92	--	--	0.00	--	<1.00	<1.00	<1.00	--	<1.00
10/20/99		97.92	13.58	84.34	0.00	--	<0.500	<0.500	<0.500	--	0.057
07/26/01		97.92	12.05	85.87	0.00	--	<1.00	<1.00	<1.00	--	<1.00
NOT MONITORED/SAMPLED											
TRIP BLANK											
08/09/99		--	--	--	0.00	--	<1.00	<1.00	<1.00	--	<1.00
08/10/99		--	--	--	0.00	--	<1.00	<1.00	<1.00	--	<1.00
08/11/99		--	--	--	0.00	--	<1.00	<1.00	<1.00	--	<1.00
10/20/99		--	--	--	0.00	--	<0.500	<0.500	<0.500	--	--
01/07/00		--	--	--	0.00	--	<0.500	<0.500	<0.500	--	--
04/13/00		--	--	--	0.00	--	--	--	--	--	--
04/13/00		--	--	--	0.00	--	--	--	--	--	--
04/13/00		--	--	--	0.00	--	--	--	--	--	--
04/13/00		--	--	--	0.00	--	--	--	--	--	--
04/13/00		--	--	--	0.00	--	--	--	--	--	--
06/28/00		--	--	--	0.00	--	--	--	--	--	--
09/29/00		--	--	--	0.00	--	--	--	--	--	--
01/15/01		--	--	--	0.00	--	--	--	--	--	--
06/21/01		--	--	--	0.00	--	<1.00	<1.00	<1.00	--	<1.00
03/18/02		--	--	--	0.00	--	<1.00	<1.00	<1.00	--	<1.00

Table 7
Groundwater Monitoring and Analytical Results
Former Chevron Bulk Plant #1001327
1602 North Northlake Place
Seattle, Washington

WELL ID DATE	TOC* *(ft.)*	DTW *(ft.)*	GWE *(ft.)*	LNAPLT *(ft.)*	LNAPL Removed (gallons)	B *(µg/L)*	T *(µg/L)*	E *(µg/L)*	X *(µg/L)*	Napthalene *(µg/L)*
Groundwater Cleanup Level						***43***	***48,500***	***6,910***	***--***	***9,880***
TRIP BLANK (cont)										
03/19/02	--	--	--	0.00	--	<1.00	<1.00	<1.00	--	<1.00
04/03/02	--	--	--	0.00	--	<1.00	<1.00	<1.00	--	<1.00
09/03/02	--	--	--	0.00	--	<0.500	<0.500	1.09	--	--
12/31/02	--	--	--	0.00	--	<0.500	<0.500	<0.500	--	--
06/26/03	--	--	--	0.00	--	<0.500	<0.500	<0.500	--	--
09/15/03	--	--	--	0.00	--	<0.500	<0.500	<0.500	--	<1.00
12/15/03	--	--	--	0.00	--	<0.500	<0.500	<0.500	--	<1.00
03/25/04	--	--	--	0.00	--	<0.500	<0.500	<0.500	--	<1.00
09/23/04	--	--	--	0.00	--	<0.500	<0.500	<0.500	--	<1.00
03/14/05	--	--	--	0.00	--	<0.500	<0.500	<0.500	--	<1.00
03/29/06	--	--	--	0.00	--	<0.500	<0.500	<0.500	--	<1.00
03/21/07	--	--	--	0.00	--	<0.500	<0.500	<0.500	--	<5.00
03/25/08	--	--	--	0.00	--	<0.5	<0.5	<0.5	--	<1.0
FIELD BLANK										
08/20/99	--	--	--	0.00	--	<1.00	<1.00	<1.00	--	<1.00
10/20/99	--	--	--	0.00	--	--	--	--	--	--
10/20/99	--	--	--	0.00	--	--	--	--	--	--
10/20/99	--	--	--	0.00	--	--	--	--	--	--
10/22/99	--	--	--	0.00	--	--	--	1.1	--	--
10/22/99	--	--	--	0.00	--	<0.500	<0.500	<0.500	--	--
10/25/99	--	--	--	0.00	--	--	--	--	--	--
10/25/99	--	--	--	0.00	--	--	--	--	--	--
10/26/99	--	--	--	0.00	--	--	--	--	--	--
10/26/99	--	--	--	0.00	--	--	--	--	--	--
06/21/01	--	--	--	0.00	--	<1.00	<1.00	2.49	--	1.88
06/27/01	--	--	--	0.00	--	<1.00	<1.00	1.79	--	<1.00
07/26/01	--	--	--	0.00	--	1.22	<1.00	4.26	--	<1.00
03/19/02	--	--	--	0.00	--	<1.00	<1.00	<1.00	--	<1.00
09/03/02	--	--	--	0.00	--	0.857	<0.500	3.84	--	--
12/31/02	--	--	--	0.00	--	<0.500	<0.500	<0.500	--	--
09/17/03	--	--	--	0.00	--	<0.500	<0.500	<0.500	--	<1.00
12/17/03	--	--	--	0.00	--	<0.500	<0.500	<0.500	--	<1.00
03/26/04	--	--	--	0.00	--	<0.500	<0.500	<0.500	--	<1.00
09/23/04	--	--	--	0.00	--	<0.500	<0.500	<0.500	--	<1.00
03/14/05	--	--	--	0.00	--	<0.500	<0.500	<0.500	--	<1.00

Table 7
Groundwater Monitoring and Analytical Results
Former Chevron Bulk Plant #1001327
1602 North Northlake Place
Seattle, Washington

WELL ID DATE	TOC* *(ft.)*	DTW *(ft.)*	GWE *(ft.)*	LNAPLT *(ft.)*	LNAPL Removed (gallons)	B *(µg/L)*	T *(µg/L)*	E *(µg/L)*	X *(µg/L)*	Napthalene *(µg/L)*
Groundwater Cleanup Level						***43***	***48,500***	***6,910***	**--**	***9,880***
FIELD BLANK (cont)										
03/29/06	--	--	--	0.00	--	<0.500	<0.500	<0.500	--	<1.00
03/21/07	--	--	--	0.00	--	<0.500	<0.500	<0.500	--	<5.00
03/25/08	--	--	--	0.00	--	<0.5	<0.5	<0.5	--	<1.0
09/08-09/08	--	--	--	0.00	--	<0.5	<0.5	<0.5	<1.5	--
QA										
03/30-31/09	--	--	--	0.00	--	<0.5	<0.5	<0.5	<1.5	--
09/10-11/09	--	--	--	0.00	--	<0.5	<0.5	<0.5	<1.5	--
03/15/10	--	--	--	0.00	--	<0.5	<0.5	<0.5	<1.5	--
09/15/10	--	--	--	0.00	--	<0.5	<0.5	<0.5	<1.5	--
09/24/11	--	--	--	0.00	--	<0.2	<0.2	<0.2	<0.6	--
11/16/11	--	--	--	0.00	--	<0.2	<0.2	<0.2	<0.6	--

Table 7
Groundwater Monitoring and Analytical Results
Former Chevron Bulk Plant #1001327
1602 North Northlake Place
Seattle, Washington

EXPLANATIONS:

Groundwater monitoring data and laboratory analytical results prior to 2010 were compiled from reports prepared by SAIC.

TOC = Top of Casing elevation
DTW = Depth to Water
(ft.) = Feet
GWE = Groundwater Elevation
B = Benzene
T = Toluene
E = Ethylbenzene
X = Xylenes
-- = Not Measured/Not Analyzed
LNAPLT - Light Non-Aqueous Phase Liquid Thickness
NP = No Purge
(µg/L) = Micrograms per liter
QA = Quality Assurance/Trip Blank
(D) = Duplicate
ND = Non-detect

ANALYTICAL METHOD:

BTEX and Napthalene analyzed by EPA method 8021B

Bolded and shaded values exceed Model Toxics Control Act (MTCA) Method B Surface Water Cleanup Levels (CULs)
TOC elevations from wells were surveyed by OTAK on April 6, 25 and May 11, 2011. Survey data provided by ARCADIS
** Groundwater elevation corrected for the presence of LNAPL using a specific gravity of 0.80; Correction factor: [(TOC-DTW)+(LNAPLT x 0.80)].

[1] Absorbant sock in well.
[2] Laboratory report indicates due to the presence of an interferent near its retention time, the normal reporting limit was not attained for toluene. The presence or concentration of this compound cannot be determined due to the presence of this interferent.
[3] Laboratory report indicates the reporting limit for Naphthalene was raised due to the detection in the associated method blank.
[4] Laboratory report indicates the reporting limit for Naphthalene was raised to 5 µg/L due to the detection in the associated method blank.
[5] Product + water removed.
[6] Laboratory report indicates concentration exceeds the instrument calibration range.
[7] Laboratory report indicates estimated value.
[8] Laboratory report indicates due to the presence of interferents near their retention time, normal reporting limits were not attained for benzene and toluene. The presence or concentrations of these compounds cannot be determined below the reporting limits due to the presence of these interferents.
[9] No purge due to bent casing.
[10] Laboratory report indicates due to the presence of an interferent near its retention time, the normal reporting limit was not attained for naphthalene.. The presence or concentration of this compound cannot be determined due to the presence of this interferent.
[11] Laboratory report indicates the reporting limits were raised because sample dilution was necessary to bring internal standard within QC limits.
[12] Product only removed.
[13] Sheen in water.

Table 8
Groundwater PAHs and Metals Analytical Results
Former Chevron Bulk Plant #1001327
1602 North Northlake Place
Seattle, Washington

WELL ID/ DATE		Benzo (a) anthracene (µg/L)	Benzo (a) pyrene (µg/L)	Benzo (b) fluoranthene (µg/L)	Benzo (k) fluoranthene (µg/L)	Chrysene (µg/L)	Dibenz (a,h) anthracene (µg/L)	Indeno (1,2,3-cd) pyrene (µg/L)	Arsenic (µg/L)	Lead (µg/L)
Groundwater Cleanup Level		***0.0296***	***0.0296***	***0.0296***	***0.0296***	***0.0296***	***0.0296***	***0.0296***	***0.0982***	***5***
MW-3										
08/11/99		<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	**5.34**	4.39
10/21/99		.0044[3]	.0008[3]	.0062[3]	.0034[3]	.0028[3]	.0063[3]	.0057[3]	--	--
03/29/06		NOT SAMPLED DUE TO THE PRESENCE OF LNAPL			--	--	--	--	--	--
03/21/07		NOT SAMPLED DUE TO THE PRESENCE OF LNAPL			--	--	--	--	--	--
03/25/08		NOT SAMPLED DUE TO THE PRESENCE OF LNAPL			--	--	--	--	--	--
09/15/10		INACCESSIBLE	--	--	--	--	--	--	--	--
MW-4										
08/10/99		<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<1.0	<1.0
06/25/03		<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	--	--
09/16/03		0.0241	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	--	--
12/15/03		<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<1.0	<1.0
03/25/04		0.0137	<0.0119	<0.0119	<0.0119	0.0131	<0.0119	<0.0119	<1.0	<1.0
03/21/07		<0.00943	<0.00943	<0.00943	<0.00943	<0.00943	<0.00943	<0.00943	<1.0	<1.0
03/25/08		**0.030**	**0.025**	**0.031**	0.014	0.028	<0.0099	0.019	<0.70	1.4
09/08-09/08		**0.15**	**0.15**	**0.14**	**0.079**	**0.13**	<0.011	<0.011	<0.95	<0.050
03/30-31/09		<0.0098	<0.0098	<0.0098	<0.0098	<0.0098	<0.0098	<0.0098	<0.95	<0.050
09/10-11/09		0.012	0.013	0.014	<0.0098	0.012	<0.0098	<0.0098	<0.95	<0.050
03/15/10		**0.041**	**0.052**	**0.069**	0.027	**0.048**	<0.0099	0.016	<0.95	<0.050
09/15/10		**0.48**	**0.68**	**0.43**	**0.43**	**0.53**	**0.065**	**0.43**	<0.95	<0.052
9/25/2011[5]		<0.012	<0.012	0.012	<0.012	<0.012	<0.012	<0.012	<0.95	0.09
10/10/11		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--
06/21/12		**0.032**	**0.037**	**0.039**	0.018	**0.035**	<0.010	0.013	--	--
06/21/12	(F)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--
09/26/12		<0.0099	<0.0099	<0.0099	<0.0099	<0.0099	<0.0099	<0.0099	--	--
09/26/12	(F)	<0.0099	<0.0099	<0.0099	<0.0099	<0.0099	<0.0099	<0.0099	**<0.40**	<0.034
04/22/13		**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	--	--
04/22/13	**(F)**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.40**	**<0.050**
MW-7										
08/10/99		<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	**3.71**	4.64
10/20/99		0.0028[3]	0.0038[3]	0.0043[3]	0.0025[3]	0.0061[3]	0.0079[3]		--	--
06/25/03		<0.0100	<0.0100	<0.0100	0.900 (Q-20)	<0.0100	<0.0100	<0.0100	--	--
03/21/07		UNABLE TO LOCATE		--	--	--	--	--	--	--
03/25/08		UNABLE TO LOCATE		--	--	--	--	--	--	--

Table 8
Groundwater PAHs and Metals Analytical Results
Former Chevron Bulk Plant #1001327
1602 North Northlake Place
Seattle, Washington

WELL ID/ DATE		Benzo (a) anthracene (µg/L)	Benzo (a) pyrene (µg/L)	Benzo (b) fluoranthene (µg/L)	Benzo (k) fluoranthene (µg/L)	Chrysene (µg/L)	Dibenz (a,h) anthracene (µg/L)	Indeno (1,2,3-cd) pyrene (µg/L)	Arsenic (µg/L)	Lead (µg/L)
Groundwater Cleanup Level		***0.0296***	***0.0296***	***0.0296***	***0.0296***	***0.0296***	***0.0296***	***0.0296***	***0.0982***	***5***
MW-7 (cont)										
09/08-09/08		UNABLE TO LOCATE		--	--	--	--	--	--	--
09/10-11/09		UNABLE TO LOCATE		--	--	--	--	--	--	--
03/15/10		**0.14**[2]	**0.12**[2]	**0.21**[2]	**0.16**[2]	**0.18**[2]	0.013[2]	**0.041**[2]	**1.5**	1.1
09/15/10		**0.3**	**0.5**	**0.42**	**0.36**	**0.38**	**0.073**	**0.39**	**2.5**	1.7
06/21/12		0.011	<0.0096	<0.0096	<0.0096	<0.0096	<0.0096	<0.0096	--	--
06/21/12	(F)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--
09/20/12		<0.0099	<0.0099	<0.0099	<0.0099	<0.0099	<0.0099	<0.0099	--	--
09/20/12	(F)	<0.0098	<0.0098	<0.0098	<0.0098	<0.0098	<0.0098	<0.0098	**6.1**	1.6
04/22/13		**0.019**	**<0.010**	**0.011**	**<0.010**	**<0.010**	**0.012**	**0.016**	--	--
04/22/13	**(F)**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**5.3**	**0.85**
MW-8A										
12/15/03		--	--	--	--	--	--	--	--	--
03/25/04		**0.0650**	**0.0454**	**0.0299**	**0.0531**	**0.0568**	0.0274	**0.0419**	**2.49**	<1.0
09/23/04		<0.01	0.0220	<0.01	<0.01	0.0315	<0.01	<0.01	**1.2**	<1.0
09/23/04	(D)	**0.110**	**0.102**	**0.0980**	**0.120**	**0.104**	**0.0656**	**0.0937**	**1.11**	<1.0
03/14/05		0.0234	0.0135	0.0123	0.0209	0.0164	<0.01	0.0137	**5.2**	<1.0
03/29/06		<0.00952	<0.00952	0.0281	<0.00952	<0.00952	<0.00952	<0.00952	<1.0	<1.0
03/21/07		<0.00943	<0.00943	<0.00943	<0.00943	<0.00943	<0.00943	<0.00943	<1.0	<1.0
03/25/08		<0.0096	<0.0096	0.010	<0.0096	<0.0096	<0.0096	<0.0096	**0.92**	2.0
09/08-09/08		0.017	0.018	**0.031**	<0.0099	0.028	<0.0099	0.021	**1.1**	<0.050
03/30-31/09		<0.0099	<0.0099	<0.0099	<0.0099	<0.0099	<0.0099	<0.0099	<0.95	<0.050
09/10-11/09		0.012	0.017	**0.035**	0.011	0.021	<0.0098	0.022	<0.95	0.059
03/15/10		**0.036**	**0.062**	**0.14**	**0.099**	**0.079**	0.011	**0.040**	<0.95	0.062
09/15/10		<0.0098	<0.0098	<0.0098	<0.0098	<0.0098	<0.0098	<0.0098	**2.8**	<0.052
11/16/11		0.016	0.02	0.029	0.011	0.028	<0.0095	0.02	**0.99**	<0.080
06/21/12	(D)	<0.0095	<0.0095	<0.0095	<0.0095	<0.0095	<0.0095	<0.0095	--	--
06/21/12		<0.0095	<0.0095	<0.0095	<0.0095	<0.0095	<0.0095	<0.0095	--	--
06/21/12	(F)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--
09/21/12		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--
09/21/12	(F)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	**4.9**	0.13
04/23/13		**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	--	--
04/23/13	**(F)**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.40**	**<0.047**
MW-9										
08/11/99		<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	**4.33**	<1.0
10/21/99		<0.0083	<0.0083	<0.0083	<0.0083	<0.0083	<0.0083[3]	<0.0083	**17**	0.94
03/25/04		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**12.9**	<1.0
03/29/06		NOT SAMPLED DUE TO THE PRESENCE OF LNAPL			--	--	--	--	--	--
03/21/07		NOT SAMPLED DUE TO THE PRESENCE OF LNAPL			--	--	--	--	--	--
03/25/08		NOT SAMPLED DUE TO THE PRESENCE OF LNAPL			--	--	--	--	--	--
09/08-09/08		<0.10[1]	<0.10[1]	<0.10[1]	<0.10[1]	<0.10[1]	<0.10[1]	<0.10[1]	**9.5**	0.58

Table 8
Groundwater PAHs and Metals Analytical Results
Former Chevron Bulk Plant #1001327
1602 North Northlake Place
Seattle, Washington

WELL ID/ DATE	Benzo (a) anthracene (µg/L)	Benzo (a) pyrene (µg/L)	Benzo (b) fluoranthene (µg/L)	Benzo (k) fluoranthene (µg/L)	Chrysene (µg/L)	Dibenz (a,h) anthracene (µg/L)	Indeno (1,2,3-cd) pyrene (µg/L)	Arsenic (µg/L)	Lead (µg/L)
Groundwater Cleanup Level	***0.0296***	***0.0296***	***0.0296***	***0.0296***	***0.0296***	***0.0296***	***0.0296***	***0.0982***	***5***
MW-9 (cont)									
03/30-31/09	<0.0098	<0.0098	0.025	<0.0098	<0.0098	<0.0098	<0.0098	**7.7**	0.33
09/10-11/09	0.15	<0.098[1]	**0.41**	**0.10**	**0.56**	<0.098[1]	<0.098[1]	**8.0**	1.1
03/15/10	NOT SAMPLED DUE TO THE PRESENCE OF LNAPL			--	--	--	--	--	--
09/15/10	NOT SAMPLED DUE TO THE PRESENCE OF LNAPL			--	--	--	--	--	--
MW-10									
08/11/99	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<1.0	4.21
10/21/99	<0.008	<0.008	<0.008	<0.008	0.00333	<0.008[3]	<0.008[3]	--	--
04/12/00	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	--	--
06/27/00	--	--	--	--	--	--	--	**8.61**	**21.2**
09/28/00	--	--	--	--	--	--	--	**3.39**	**22**
03/29/06	NOT SAMPLED DUE TO THE PRESENCE OF LNAPL			--	--	--	--	--	--
03/21/07	NOT SAMPLED DUE TO THE PRESENCE OF LNAPL			--	--	--	--	--	--
03/25/08	NOT SAMPLED DUE TO THE PRESENCE OF LNAPL			--	--	--	--	--	--
09/08-09/08	NOT SAMPLED DUE TO THE PRESENCE OF LNAPL			--	--	--	--	--	--
03/30-31/09	NOT SAMPLED DUE TO THE PRESENCE OF LNAPL			--	--	--	--	--	--
09/10-11/09	NOT SAMPLED DUE TO THE PRESENCE OF LNAPL			--	--	--	--	--	--
03/15/10	**0.10**[2]	**0.054**[2]	**0.046**[2]	**0.059**[2]	**0.18**[2]	<0.0099[2]	<0.0099[2]	**3.8**	**10.9**
09/15/10	**0.52**	**0.17**	**0.3**	<0.096	**1.2**	<0.096	<0.096	**4.9**	**9.3**
MW-11									
08/11/99	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	**2.03**	<1.0
10/22/99	<0.0081	<0.0081	<0.0081	<0.0081	<0.0081	<0.0081[3]	<0.0081[3]	--	--
06/21/01	--	--	--	--	--	--	--	--	--
03/18/02	--	--	--	--	--	--	--	--	--
09/16/03	--	--	--	--	--	--	--	--	--
12/15/03	**0.0734**	<0.0100	**0.0632**	**0.0341**	<0.0100	**0.0878**	**0.0857**	**3.72**	<1.0
03/25/04	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	**3.06**	<1.0
03/21/07	<0.00971	<0.00971	<0.00971	<0.00971	<0.00971	<0.00971	<0.00971	**19.4**	<1.0

Table 8
Groundwater PAHs and Metals Analytical Results
Former Chevron Bulk Plant #1001327
1602 North Northlake Place
Seattle, Washington

WELL ID/ DATE	Benzo (a) anthracene (µg/L)	Benzo (a) pyrene (µg/L)	Benzo (b) fluoranthene (µg/L)	Benzo (k) fluoranthene (µg/L)	Chrysene (µg/L)	Dibenz (a,h) anthracene (µg/L)	Indeno (1,2,3-cd) pyrene (µg/L)	Arsenic (µg/L)	Lead (µg/L)
Groundwater Cleanup Level	***0.0296***	***0.0296***	***0.0296***	***0.0296***	***0.0296***	***0.0296***	***0.0296***	***0.0982***	***5***
MW-11 (cont)									
03/25/08	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	**19.0**	1.1
03/25/08	0.012	<0.0096	0.010	<0.0096	0.013	<0.0096	<0.0096	**16.9**	1.4
09/08-09/08	<0.011	<0.011	0.011	<0.011	0.012	<0.011	<0.011	**16.5**	<0.050
03/30-31/09	<0.0098	<0.0098	<0.0098	<0.0098	<0.0098	<0.0098	<0.0098	**19.2**	<0.050
09/10-11/09	0.024	**0.034**	**0.04**	0.016	**0.036**	<0.0098	0.019	**29.7**	<0.050
03/15/10	<0.0099	0.011	0.016	0.010	0.013	<0.0099	<0.0099	**13.4**	<0.050
09/15/10	0.013	0.017	0.018	0.012	0.02	<0.010	0.018	**16.6**	<0.052
MW-12									
08/11/99	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	**7.01**	**17.6**
10/21/99	<0.0083	<0.0083	<0.0083	<0.0083	<0.0083	<0.0083[3]	<0.0083	--	--
03/29/06	NOT SAMPLED DUE TO THE PRESENCE OF LNAPL			--	--	--	--	--	--
03/21/07	NOT SAMPLED DUE TO THE PRESENCE OF LNAPL			--	--	--	--	--	--
03/25/08	NOT SAMPLED DUE TO THE PRESENCE OF LNAPL			--	--	--	--	--	--
09/08-09/08	0.017[2]	0.010[2]	<0.0099[2]	<0.0099[2]	**0.039[2]**	<0.0099[2]	<0.0099[2]	**6.4**	1.8
03/30-31/09	0.014	<0.0098	0.012	<0.0098	0.028	<0.0098	<0.0098	**4.8**	2.8
09/10-11/09	**0.11**	<0.097[1]	<0.097[1]	<0.097[1]	**0.22**	<0.097[1]	<0.097[1]	**5.5**	1.6
03/15/10	0.025[2]	0.015[2]	0.012[2]	0.018[2]	**0.045[2]**	<0.010[2]	<0.010[2]	**4.6**	3.4
09/15/10	0.086[2]	0.028[2]	0.053[2]	0.011[2]	**0.18[2]**	<0.0096[2]	0.014[2]	**6.4**	2.2
MW-15									
08/10/99	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	**2.1**	<1.0
10/20/99	<0.0081	<0.0081	0.00153	<0.0081	<0.0081	<0.0081	<0.0081	--	--

Table 8
Groundwater PAHs and Metals Analytical Results
Former Chevron Bulk Plant #1001327
1602 North Northlake Place
Seattle, Washington

WELL ID/ DATE		Benzo (a) anthracene (µg/L)	Benzo (a) pyrene (µg/L)	Benzo (b) fluoranthene (µg/L)	Benzo (k) fluoranthene (µg/L)	Chrysene (µg/L)	Dibenz (a,h) anthracene (µg/L)	Indeno (1,2,3-cd) pyrene (µg/L)	Arsenic (µg/L)	Lead (µg/L)
Groundwater Cleanup Level		***0.0296***	***0.0296***	***0.0296***	***0.0296***	***0.0296***	***0.0296***	***0.0296***	***0.0982***	***5***
MW-19										
08/11/99		<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<1.0	<1.0
10/20/99		0.016	0.013	0.016	0.00743	0.015	0.00233	0.011	--	--
06/21/01		--	--	--	--	--	--	--	--	--
06/26/03		**0.264**	**0.282**	**0.174**	**0.118**	**0.179**	**0.155**	**0.189**	--	--
09/16/03		**0.171**	**0.185**	**0.197**	**0.0894**	**0.191**	**0.0977**	**0.147**	--	--
12/15/03		**0.524**	**0.479**	**0.374**	**0.376**	**0.474**	**0.154**	**0.484**	**5.27**	<1.0
03/26/04		**0.209**	**0.168**	**0.128**	**0.127**	**0.182**	**0.0433**	**0.107**	**2.86**	<1.0
03/26/04		**0.170**	**0.137**	**0.0967**	**0.106**	**0.150**	**0.0363**	**0.0882**	**2.28**	<1.0
09/23/04		**0.613**	**0.390**	**0.317**	**0.562**	**0.530**	**0.145**	**0.350**	**4.24**	2.93
03/14/05		**0.151**	**0.111**	**0.080**	**0.125**	**0.126**	0.0233	**0.076**	**1.71**	<1.0
03/14/05		**0.155**	**0.109**	**0.085**	**0.135**	**0.131**	0.0265	**0.085**	**2.19**	<1.0
03/29/06		**0.093**	**0.076**	**0.066**	**0.0775**	**0.087**	**0.0348**	**0.063**	**3.76**	<1.0
03/29/06		**0.042**	**0.030**	**0.041**	**0.0327**	**0.032**	0.0195	**0.033**	**3.47**	<1.0
03/21/07		**0.151**	**0.121**	**0.0874**	**0.139**	**0.153**	**0.0417**	**0.0927**	<1.0	<1.0
03/21/07		**0.154**	**0.131**	**0.0896**	**0.126**	**0.160**	**0.0374**	**0.0894**	<1.0	<1.0
03/25/08		**0.046**	**0.039**	**0.049**	0.021	**0.042**	<0.0097	0.027	**1.30**	12.9
03/25/08		**0.36**	**0.31**	**0.35**	**0.15**	**0.34**	**0.053**	**0.19**	**0.92**	3.5
09/08-09/08		**0.40**	**0.54**	**0.46**	**0.26**	**0.41**	**0.077**	**0.28**	<0.95	0.62
03/30-31/09		<0.0099	<0.0099	<0.0099	<0.0099	<0.0099	<0.0099	<0.0099	<0.95	0.42
09/10-11/09		**0.071**	**0.084**	**0.099**	**0.037**	**0.081**	0.012	**0.041**	<0.95	1.1
03/15/10		**0.24**	**0.30**	**0.32**	**0.15**	**0.29**	**0.046**	**0.18**	**0.98**	0.41
09/15/10		**0.61**	**0.91**	**0.55**	**0.57**	**0.66**	**0.1**	**0.59**	**1.8**	0.12
11/16/11		<0.0095	<0.0095	<0.0095	<0.0095	<0.0095	<0.0095	<0.0095	<0.95	<0.080
06/21/12		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--
06/21/12	(F)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--
09/20/12		<0.0098	<0.0098	<0.0098	<0.0098	<0.0098	<0.0098	<0.0098	--	--
09/20/12	(F)	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	**0.41**	<0.034
04/24/13		**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**--**	**--**
04/24/13	**(F)**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**0.42**	**0.13**
MW-20										
08/11/99		<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	**1.08**	<1.0
10/20/99		.0012[3]	.00082[3]	.0016[3]	0.0011[3]	.00088[3]	<0.008[3]	<0.008	--	--
09/28/00		--	--	--	--	--	--	--	**3.1**	<1.0
06/26/03		**0.375(I-02)**	<0.0100	<0.0100	0.154(I-02)	<0.0100	<0.0100	<0.0100	--	--
09/16/03		<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	--	--

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1602 North Northlake Place
Seattle, Washington

WELL ID/ DATE		Benzo (a) anthracene (µg/L)	Benzo (a) pyrene (µg/L)	Benzo (b) fluoranthene (µg/L)	Benzo (k) fluoranthene (µg/L)	Chrysene (µg/L)	Dibenz (a,h) anthracene (µg/L)	Indeno (1,2,3-cd) pyrene (µg/L)	Arsenic (µg/L)	Lead (µg/L)
Groundwater Cleanup Level		***0.0296***	***0.0296***	***0.0296***	***0.0296***	***0.0296***	***0.0296***	***0.0296***	***0.0982***	***5***
MW-20 (cont)										
12/15/03		<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	**4.36**	<1.0
03/26/04		<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	**2.53**	<1.0
03/21/07		<0.00980	<0.00980	<0.00980	<0.00980	<0.00980	<0.00980	<0.00980	**2.34**	<1.0
03/25/08		0.012	<0.0099	0.015	<0.0099	<0.0099	<0.0099	<0.0099	**3.2**	0.63
03/30-31/09		INACCESSIBLE	--	--	--	--	--	--	--	--
09/10-11/09		0.014	0.017	0.022	<0.010	0.013	<0.010	0.016	**2.4**	0.053
03/15/10		<0.010	<0.010	0.011	<0.010	<0.010	<0.010	0.011	**1.3**	0.10
09/15/10		0.011	0.018	0.014	0.011	0.012	<0.0095	0.02	**5.2**	<0.052
11/16/11	(D)	<0.0095	<0.0095	<0.0095	<0.0095	<0.0095	<0.0095	<0.0095	**4.50**	<0.080
06/21/12		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--
06/21/12	(F)	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	--	--
09/20/12		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--
09/20/12	(F)	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	**11.9**	<0.034
04/24/13		**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**--**	**--**
04/24/13	**(F)**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**1.4**	**<0.073**
MW-21										
08/10/99		<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	**13.8**	<1.0
10/19/99		<0.0078	<0.0078	<0.0078	<0.0078	<0.0078	<0.0078[3]	<0.0078	--	--
06/21/01		--	--	--	--	--	--	--	--	--
06/21/01		--	--	--	--	--	--	--	--	--
03/18/02		--	--	--	--	--	--	--	--	--
06/26/03		**0.569**	<0.0100	**0.646**	<0.0100	<0.0100	**3.06**	**2.35**	--	--
09/16/03		<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	--	--
12/15/03		<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	**12.6**	<1.0
03/26/04		<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	**15.2**	<1.0
09/23/04		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**14.6**	<1.0
03/14/05		<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	**16.8**	<1.0
03/29/06		<0.00952	<0.00957	<0.00958	<0.00956	<0.00953	<0.00954	<0.00955	**16.4**	<1.0
03/21/07		<0.0485	<0.0485	<0.0485	<0.0485	<0.0485	<0.0485	<0.0485	**16.2**	<1.0
03/25/08		<0.010	<0.010	<0.010	<0.010	0.011	<0.010	<0.010	**14.6**	0.33
09/08-09/08		0.011	0.022	0.017	0.012	0.012	<0.010	0.020	<0.95	0.058
03/30-31/09		<0.10	<0.10	<0.10	<0.10	0.018	<0.10	<0.10	**11.1**	<0.050
09/10-11/09		<0.0098	<0.0098	<0.0098	<0.0098	<0.0098	<0.0098	<0.0098	**9.9**	0.11
03/15/10		0.013	0.046	**0.045**	**0.038**	**0.039**	**0.075**	**0.080**	**8.5**	<0.050
09/15/10		0.011	<0.0098	<0.0098	<0.0098	0.021	<0.0098	<0.0098	**8.7**	<0.052
9/25/2011[5]		<0.0095	<0.0095	<0.0095	<0.0095	<0.0095	<0.0095	<0.0095	**1.60**	<0.08
10/10/11		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--
06/21/12		<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	--	--
06/21/12	(F)	<0.0095	<0.0095	<0.0095	<0.0095	<0.0095	<0.0095	<0.0095	--	--
09/20/12		<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	--	--
09/20/12	(F)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	**15.5**	0.052
04/23/13		**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**--**	**--**
04/23/13	**(F)**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**11.6**	**<0.047**

Table 8
Groundwater PAHs and Metals Analytical Results
Former Chevron Bulk Plant #1001327
1602 North Northlake Place
Seattle, Washington

WELL ID/ DATE		Benzo (a) anthracene (µg/L)	Benzo (a) pyrene (µg/L)	Benzo (b) fluoranthene (µg/L)	Benzo (k) fluoranthene (µg/L)	Chrysene (µg/L)	Dibenz (a,h) anthracene (µg/L)	Indeno (1,2,3-cd) pyrene (µg/L)	Arsenic (µg/L)	Lead (µg/L)
Groundwater Cleanup Level		***0.0296***	***0.0296***	***0.0296***	***0.0296***	***0.0296***	***0.0296***	***0.0296***	***0.0982***	***5***
MW-22										
08/10/99		<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	**1.66**	<1.0
10/22/99		.0017[3]	0.0013[3]	0.0024[3]	0.0012[3]	0.002[3]	<0.0079[3]	0.0015[3]	--	--
03/21/07		<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	**4.15**	<1.0
03/25/08		<0.0095	<0.0095	<0.0095	<0.0095	<0.0095	<0.0095	<0.0095	**3.5**	0.12
09/08-09/08		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	**6.4**	<0.050
03/30-31/09		<0.0099	<0.0099	<0.0099	<0.0099	<0.0099	<0.0099	<0.0099	**3.6**	<0.050
09/10-11/09		<0.0097	<0.0097	<0.0097	<0.0097	<0.0097	<0.0097	<0.0097	**3.9**	0.45
03/15/10		<0.0099	<0.0099	<0.0099	<0.0099	<0.0099	<0.0099	<0.0099	**4.8**	<0.050
09/15/10		<0.0095	<0.0095	<0.0095	<0.0095	<0.0095	<0.0095	<0.0095	**5.7**	<0.052
MW-24										
03/21/07		<0.00943	<0.00943	<0.00943	<0.00943	<0.00943	<0.00943	<0.00943	<1.00	<1.00
MW-25										
08/09/99		<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	**1.42**	3.71
10/19/99		<0.0079	<0.0079	<0.0079	<0.0079	<0.0079	<0.0079[3]	<0.0079	--	--
06/25/03		<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	--	--
09/15/03		<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	--	--
12/15/03		**0.064**	**0.0628**	<0.0100	<0.0100	**0.0448**	< 0.0100	**0.0608**	**17.6**	<1.0
03/25/04		0.0142	<0.0100	<0.0100	0.0117	0.0151	<0.0100	<0.0100	**10.1**	<1.0
09/22/04		<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	**3.97**	<1.0
03/14/05		0.014	0.012	0.013	0.0192	0.015	< 0.0100	0.010	**12.3**	<1.0
03/29/06		<0.00971	<0.00971	<0.00971	<0.00971	<0.00971	<0.00971	<0.00971	**9.81**	<1.0
03/21/07		0.0133	0.0111	<0.0100	<0.0100	0.0113	<0.0100	<0.0100	**7.23**	<1.0
03/25/08		<0.0095	<0.0095	<0.0095	<0.0095	<0.0095	<0.0095	<0.0095	**6.0**	0.15
09/08-09/08		<0.010	<0.010	<0.010	<0.010	0.019	<0.010	<0.010	<0.95	<0.050
03/30-31/09		<0.0097	<0.0097	<0.0097	<0.0097	<0.0097	<0.0097	<0.0097	<0.95	<0.050
09/10-11/09		<0.0098	<0.0098	<0.0098	<0.0098	<0.0098	<0.0098	<0.0098	<0.95	<0.050
03/15/10		0.021	0.022	0.025	0.011	0.025	<0.0096	0.013	<0.95	0.21
09/15/10		<0.0098	<0.0098	<0.0098	<0.0098	<0.0098	<0.0098	<0.0098	<0.95	<0.052
9/25/2011[5]		<0.0095	<0.0095	<0.0095	<0.0095	<0.0095	<0.0095	<0.0095	**1.60**	<0.08
10/10/11		<0.0096	<0.0096	<0.0096	<0.0096	<0.0096	<0.0096	<0.0096	--	--
06/21/12		<0.0099	<0.0099	<0.0099	<0.0099	<0.0099	<0.0099	<0.0099	--	--
06/21/12	(F)	<0.0095	<0.0095	<0.0095	<0.0095	<0.0095	<0.0095	<0.0095	--	--
09/20/12		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--
09/20/12	(F)	<0.0097	<0.0097	<0.0097	<0.0097	<0.0097	<0.0097	<0.0097	**2.3**	<0.034
04/22/13		**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**--**	**--**
04/22/13	**(F)**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**0.90**	**<0.073**

Table 8
Groundwater PAHs and Metals Analytical Results
Former Chevron Bulk Plant #1001327
1602 North Northlake Place
Seattle, Washington

WELL ID/ DATE		Benzo (a) anthracene (µg/L)	Benzo (a) pyrene (µg/L)	Benzo (b) fluoranthene (µg/L)	Benzo (k) fluoranthene (µg/L)	Chrysene (µg/L)	Dibenz (a,h) anthracene (µg/L)	Indeno (1,2,3-cd) pyrene (µg/L)	Arsenic (µg/L)	Lead (µg/L)
Groundwater Cleanup Level		***0.0296***	***0.0296***	***0.0296***	***0.0296***	***0.0296***	***0.0296***	***0.0296***	***0.0982***	***5***
MW-26										
08/09/99		<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<1.0	<1.0
10/19/99		.0042[3]	.0039[3]	.0051[3]	.0027[3]	.0044[3]	<0.0081[3]	.0033[3]	--	--
04/12/00		<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	--	--
06/25/03		<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	--	--
09/22/04		<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	**1.05**	<1.0
03/14/05		0.0236	0.014	0.015	0.0239	0.019	<0.0100	<0.0100	**1.26**	<1.0
03/29/06		<0.00952	<0.00952	<0.00952	<0.00952	<0.00952	<0.00952	<0.00952	<1.0	<1.0
03/25/08		<0.0099	0.011	<0.0099	<0.0099	<0.0099	<0.0099	<0.0099	<0.70	0.38
09/08-09/08		<0.0099	<0.0099	<0.0099	<0.0099	<0.0099	<0.0099	<0.0099	<0.95	<0.050
03/30-31/09		<0.0098	<0.0098	<0.0098	<0.0098	<0.0098	<0.0098	<0.0098	<0.95	<0.050
09/10-11/09		<0.0098	<0.0098	<0.0098	<0.0098	<0.0098	<0.0098	<0.0098	<0.95	<0.050
03/15/10		<0.0096	<0.0096	0.043[4]	<0.0096[4]	<0.0096	<0.0096	<0.0096	<0.95	<0.050
09/15/10		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.95	<0.052
9/25/2011[5]		<0.0096	<0.0096	<0.0096	<0.0096	<0.0096	<0.0096	<0.0096	<0.95	<0.08
10/10/11		<0.0096	<0.0096	<0.0096	<0.0096	<0.0096	<0.0096	<0.0096	--	--
06/21/12		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--
06/21/12	(F)	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	--	--
09/26/12		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--
09/26/12	(D)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--
09/26/12	(DF)	<0.0098	<0.0098	<0.0098	<0.0098	<0.0098	<0.0098	<0.0098	**0.53**	<0.034
09/26/12	(F)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	**0.49**	0.10
04/22/13		**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	--	--
04/22/13	**(F)**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.42**	**<0.073**
MW-27										
09/13/99		<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	--	--
10/22/99		.0041[3]	.0013[3]	.006[3]	.0033[3]	.0042[3]	<0.032	<0.032	--	--
09/15/10		NOT SAMPLED DUE TO THE PRESENCE OF LNAPL			--	--	--	--	--	--
MW-28										
08/11/99		<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	**9.21**	**6.82**
10/21/99		<0.0082	<0.0082	<0.0082	<0.0082	<0.0082	<0.0082[3]	<0.0082	--	--
10/21/99		<0.0081	<0.0081	<0.0081	<0.0081	<0.0081	<0.0081[3]	<0.0081	--	--
03/21/07		NOT SAMPLED DUE TO THE PRESENCE OF LNAPL			--	--	--	--	--	--
03/25/08		NOT SAMPLED DUE TO THE PRESENCE OF LNAPL			--	--	--	--	--	--
09/15/10		NOT SAMPLED DUE TO THE PRESENCE OF LNAPL			--	--	--	--	--	--

Table 8
Groundwater PAHs and Metals Analytical Results
Former Chevron Bulk Plant #1001327
1602 North Northlake Place
Seattle, Washington

WELL ID/ DATE		Benzo (a) anthracene (µg/L)	Benzo (a) pyrene (µg/L)	Benzo (b) fluoranthene (µg/L)	Benzo (k) fluoranthene (µg/L)	Chrysene (µg/L)	Dibenz (a,h) anthracene (µg/L)	Indeno (1,2,3-cd) pyrene (µg/L)	Arsenic (µg/L)	Lead (µg/L)
Groundwater Cleanup Level		***0.0296***	***0.0296***	***0.0296***	***0.0296***	***0.0296***	***0.0296***	***0.0296***	***0.0982***	***5***
AGI-2										
08/10/99		<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	**10.6**	1.84
10/20/99		.0014[3]	< 0.008	.0019[3]	.0014[3]	.0014[3]	< 0.008[3]	.0011[3]	--	--
06/25/03		<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	--	--
03/21/07		<0.00943	<0.00943	<0.00943	<0.00943	<0.00943	<0.00943	0.00994	**4.68**	<1.0
09/10-11/09		**0.29**	<0.097[1]	**0.18**	<0.097[1]	**0.32**	<0.097[1]	<0.097[1]	**6.0**	0.18
03/15/10		**0.43**	**0.12**	**0.23**	**0.14**	**0.51**	0.027	**0.095**	**4.9**	0.053
09/15/10		**0.55**	**0.15**	**0.2**	**0.17**	**0.61**	**0.03**	**0.17**	**7.7**	<0.052
06/21/12		0.011	<0.010	<0.010	<0.010	0.012	<0.010	<0.010	--	--
06/21/12	(F)	<0.0095	<0.0095	<0.0095	<0.0095	<0.0095	<0.0095	<0.0095	--	--
09/20/12		0.011	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--
09/20/12	(F)	<0.0099	<0.0099	<0.0099	<0.0099	<0.0099	<0.0099	<0.0099	**12.8**	0.073
04/23/13		**0.015**	**<0.010**	**<0.010**	**<0.010**	**0.015**	**<0.010**	**<0.010**	--	--
04/23/13	**(D)**	**0.015**	**<0.010**	**<0.010**	**<0.010**	**0.013**	**<0.010**	**<0.010**	--	--
04/23/13	**(F)**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**10.9**	**<0.073**
04/23/13	**(DF)**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**11.6**	**<0.047**
MLU-1										
08/10/99		<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<1.0	<1.0
10/20/99		.0012[3]	0.00091[3]	.0022[3]	<0.0079	<0.0079	<0.0079	.0013[3]	--	--
04/12/00		<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	--	--
06/25/03		**0.0476**	0.0264	<0.0100	0.0164	0.0285	<0.0100	0.0776	--	--
09/15/03		<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	--	--
12/15/03		<0.0100	0.0653	<0.0100	<0.0100	0.051	<0.0100	<0.0100	<1.0	<1.0
03/25/04		<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<1.0	<1.0
03/21/07		<0.00943	<0.00943	<0.00943	<0.00943	<0.00943	<0.00943	<0.00943	<1.0	<1.0
09/08-09/08		UNABLE TO LOCATE		--	--	--	--	--	--	--
09/10-11/09		0.012	0.011	0.021	<0.0098	0.014	<0.0098	0.011	<0.95	<0.050
03/15/10		<0.010	<0.010	0.066[4]	<0.010[4]	<0.010	<0.010	<0.010	<0.95	<0.050
09/15/10		<0.0095	<0.0095	<0.0095	<0.0095	<0.0095	<0.0095	<0.0095	<0.95	<0.052
06/21/12		<0.0096	<0.0096	<0.0096	<0.0096	<0.0096	<0.0096	<0.0096	--	--
06/21/12	(F)	<0.0096	<0.0096	<0.0096	<0.0096	<0.0096	<0.0096	<0.0096	--	--
09/26/12		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--
09/26/12	(F)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	**<0.40**	0.041
04/22/13		**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**--**	**--**
04/22/13	**(F)**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.40**	**0.097**
MW-8										
08/09/99		<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<1.0	1.21
10/20/99		<0.0081	<0.0081	<0.0081	<0.0081	<0.0081	<0.0081[3]	<0.0081	--	--
01/06/00		--	--	--	--	--	--	--	--	--
04/12/00		<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	--	--

Table 8
Groundwater PAHs and Metals Analytical Results
Former Chevron Bulk Plant #1001327
1602 North Northlake Place
Seattle, Washington

WELL ID/ DATE	Benzo (a) anthracene (µg/L)	Benzo (a) pyrene (µg/L)	Benzo (b) fluoranthene (µg/L)	Benzo (k) fluoranthene (µg/L)	Chrysene (µg/L)	Dibenz (a,h) anthracene (µg/L)	Indeno (1,2,3-cd) pyrene (µg/L)	Arsenic (µg/L)	Lead (µg/L)
Groundwater Cleanup Level	***0.0296***	***0.0296***	***0.0296***	***0.0296***	***0.0296***	***0.0296***	***0.0296***	***0.0982***	***5***
MW-8 (cont)									
06/27/00	--	--	--	--	--	--	--	<1.0	<1.0
09/28/00	--	--	--	--	--	--	--	**3.1**	<1.0
06/25/03	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	--	--
DECOMMISSIONED DECEMBER 2003									
MW-16									
03/21/07	<0.00980	<0.00980	<0.00980	<0.00980	<0.00980	<0.00980	<0.00980	<1.00	<1.00
ABANDONED									
MLU-3									
08/20/99	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<1.0	<1.0
10/20/99	0.0099	0.01	0.011	0.0075[3]	0.013	0.0019[3]	0.0075[3]	--	--
DISCONTINUED MONITORED/SAMPLING									

Table 8

Groundwater PAHs and Metals Analytical Results

Former Chevron Bulk Plant #1001327

1602 North Northlake Place

Seattle, Washington

EXPLANATIONS:

Groundwater monitoring data and laboratory analytical results prior to 2010 were compiled from reports prepared by SAIC.

LNAPL = Light Non-Aqueous Phase Liquid
PAH = Poly Aromatic Hydrocarbons
(µg/L) = Micrograms per liter
(Q-20) = The internal standard associated with this analyte was outside the normal acceptance criteria
(D) = Duplicate
(F) = Field Filtered
(I-02) = This sample was analyzed outside of the recommended holding time

ANALYTICAL METHOD:

Selected PAHs by EPA Method 8270C SIM
Arsenic and Lead by EPA Method 6020

Bolded and shaded values exceed Model Toxics Control Act (MTCA) Method B Surface Water Cleanup Levels (CULs)

[1] Laboratory report indicates due to the sample matrix an initial dilution was necessary to perform the analysis. Therefore, the reporting limits for the GC/MS semivolatile compounds were raised.

[2] Laboratory report indicates the surrogate data is outside the QC limits due to irresolvable matrix problems evident in the sample chromatogram.

[3] Laboratory report indicates estimated value.

[4] Laboratory report indicates Benzo (b) fluoranthene and benzo (k) fluoranthene were not resolved under the sample analysis conditions. The result reported for benzo (b) fluoranthene represents the combined total of both isomers.

[5] Laboratory report indicates the sample was extracted outside of the method required holding time

Table 9
Well Construction Details
Former Chevron Bulk Plant #1001327
1602 North Northlake Place
Seattle, Washington

Well ID	TOC Elevation (ft)	Total Boring Depth (ft bgs)	Screen Interval (ft bgs)		Screen Interval Elevation (ft)	
			Top	Bottom	Top	Bottom
AGI-2	30.68	41.5	8	23	22.68	7.68
AS-1	NS	38	36	38	SPARGE WELLS	
AS-2	NS	38	36	38	SPARGE WELLS	
AS-3	NS	45	41	44	SPARGE WELLS	
AS-4	NS	44	40	43	SPARGE WELLS	
AS-5	NS	44	40	43	SPARGE WELLS	
AS-6	NS	44	41	44	SPARGE WELLS	
MLU-1	32.9	24	10	20	22.9	12.9
MLU-2	NS	19	8	18	DECOMMISSIONED	
MLU-3	30.64	23	11	21	19.64	9.64
MW-1	NS	19.5	9.1	18.5	ABANDONED	
MW-2	NS	18	7.7	17.1	ABANDONED	
MW-3	NS	17.5	7.9	15.1	--	--
MW-4	33.92	21	9.7	19.4	24.22	14.52
MW-5	NS	8.8	5	8.5	ABANDONED	
MW-6	NS	18.2	8.8	17.8	ABANDONED	
MW-7	31.13	17	6.5	16.5	24.63	14.63
MW-8	NS	19.5	9.2	18.5	DECOMMISSIONED	
MW-8A	30.31	25.5	10	25	20.31	5.31
MW-9	36.46	28	12.5	21.9	23.96	14.56
MW-10	33.09	19.2	9.1	16.5	23.99	16.59
MW-11	33.29	19.8	6	15.5	27.29	17.79
MW-12	32.89	20.8	5.1	13.8	27.79	19.09
MW-13	NS	40.3	13.3	22.7	ABANDONED	
MW-14	31.61	19.5	9.2	15.6	22.41	16.01
MW-15	31.6	19.5	9.4	18.8	22.2	12.8
MW-16	NS	24.8	9.5	24.1	ABANDONED	
MW-17	NS	23.9	8.7	23	ABANDONED	
MW-18	NS	19.5	4	19	ABANDONED	
MW-19	30.87	20.5	4	19	26.87	11.87
MW-20	31.49	23	5	23	26.49	8.49
MW-21	31.26	23	5	23	26.26	8.26
MW-22	32.68	23	5	23	27.68	9.68
MW-23	NS	21	5	20	ABANDONED	
MW-24	69.77	36	15	35	54.77	34.77
MW-25	30.91	21.6	5	20	25.91	10.91
MW-26	30.62	21.5	5	20	25.62	10.62
MW-27	34.01	21.5	5	20	29.01	14.01
MW-28	33.13	21	5	20	28.13	13.13
SMPN-1	33.78	15.5	9.5	14.5	24.28	19.28

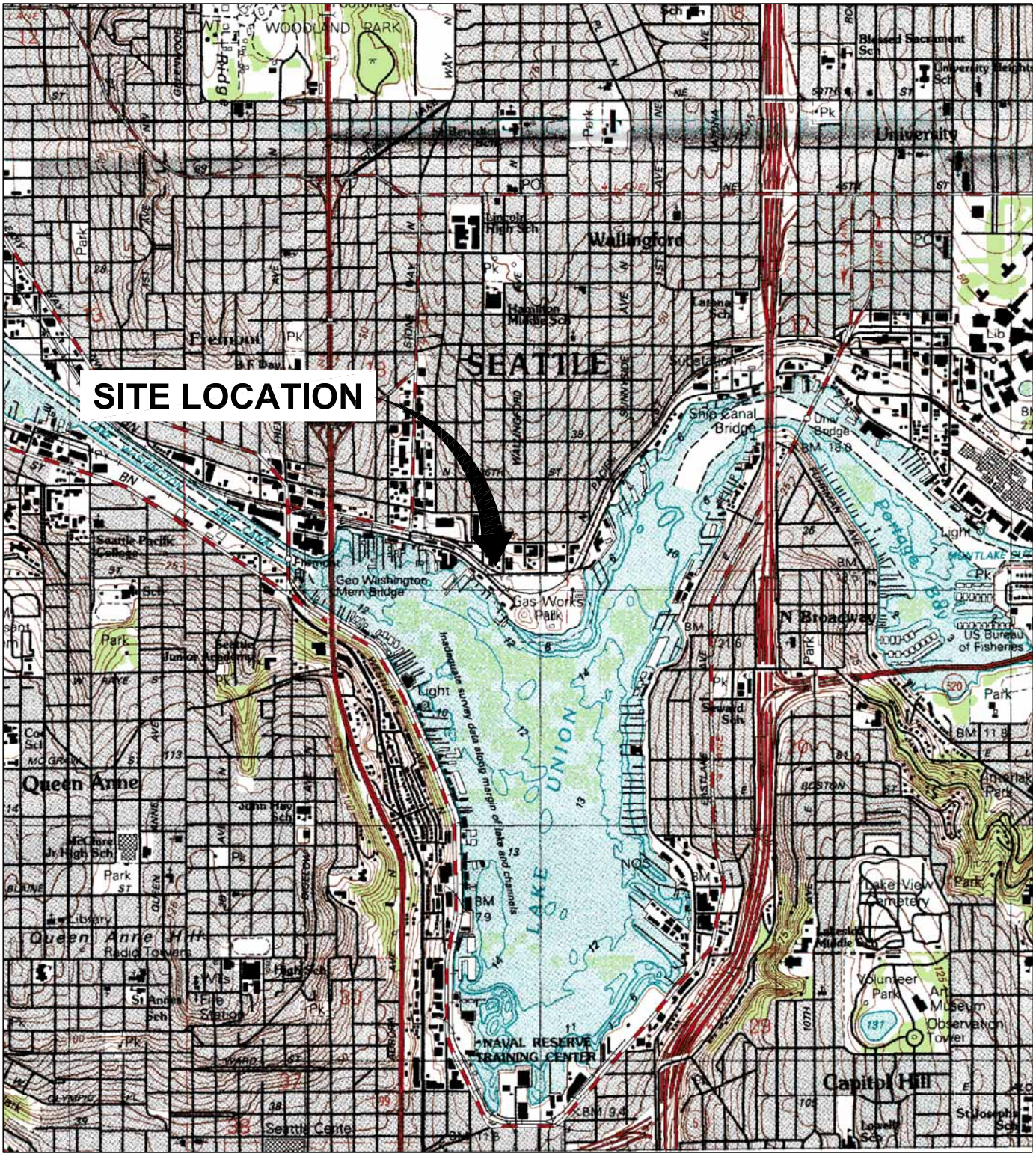
Table 9
Well Construction Details
Former Chevron Bulk Plant #1001327
1602 North Northlake Place
Seattle, Washington

Well ID	TOC Elevation (ft)	Total Boring Depth (ft bgs)	Screen Interval (ft bgs)		Screen Interval Elevation (ft)	
			Top	Bottom	Top	Bottom
SMPN-2	33.85	15.5	10	15	23.85	18.85
SMPN-3	33.81	15.5	10	15	23.81	18.81
SMPS-1	NS	15.5	10	15	--	--
SMPS-2	NS	15.5	10	15	--	--
SMPS-3	NS	15.5	10	15	--	--

Note:
NS = Not surveyed in 2011 OTAK survey

ARCADIS

Figures



REFERENCE: BASE MAP USGS 7.5. MIN. TOPO. QUAD., SEATTLE NORTH, WA.

0 2000' 4000'

Approximate Scale: 1 in. = 2000 ft.

FORMER CHEVRON BULK PLANT No. 100-1327
FACILITIES NORTH / KING COUNTY (METRO)
SEATTLE, WASHINGTON
FIVE-YEAR REVIEW REPORT

SITE LOCATION MAP

ARCADIS

FIGURE
1

CITY:(Reqd) DIV/GROUP:(Reqd) DB:(Reqd) LD:(Opt) PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(Opt)ON=*;OFF=*REF*
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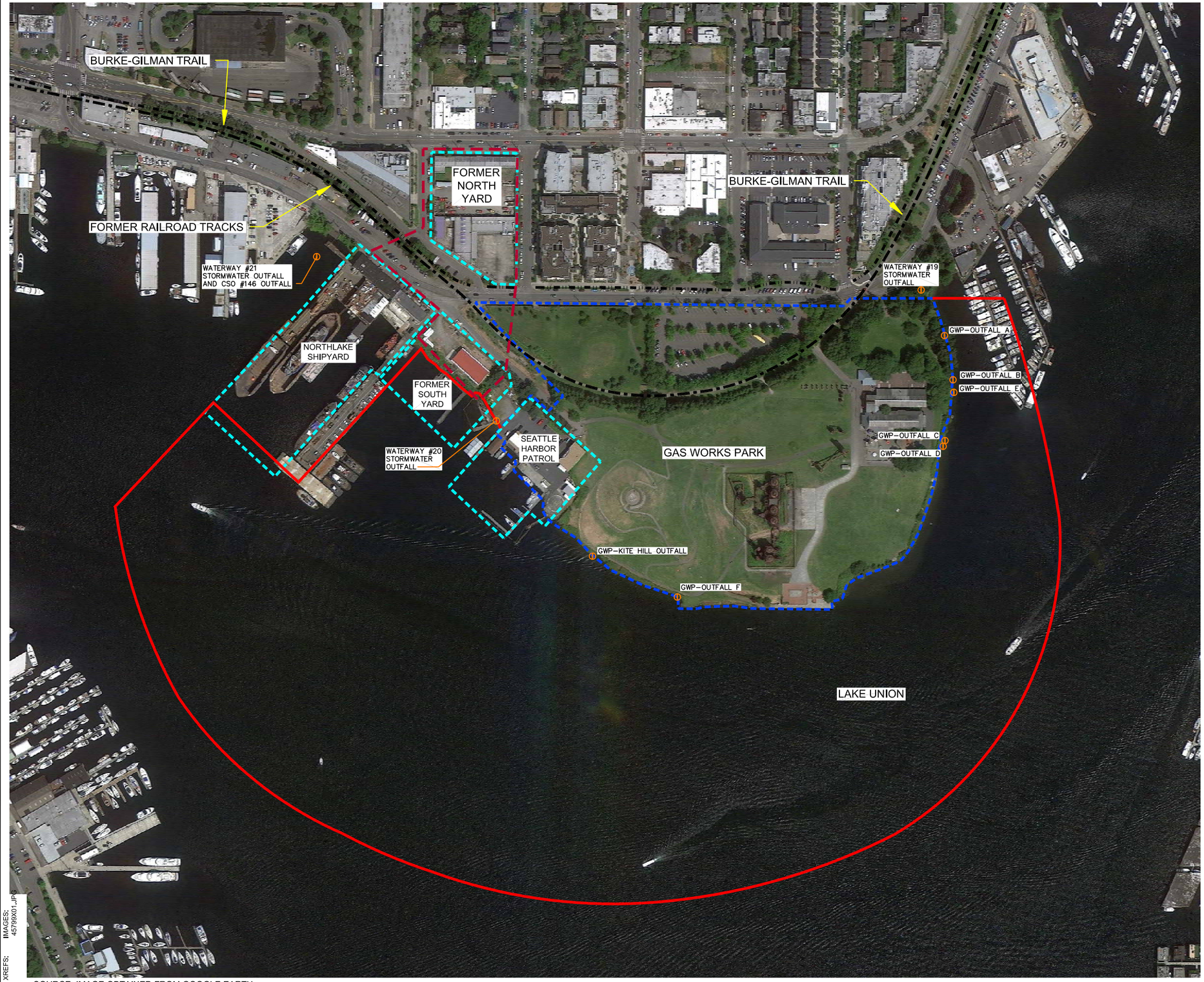

SOURCE: IMAGE OBTAINED FROM GOOGLE EARTH.

LEGEND:

- PROPERTY OR PARCEL BOUNDARY
- FORMER CHEVRON/METRO SITE CONSENT DECREE BOUNDARY
- GAS WORKS PARK SEDIMENT SITE AREA OF INVESTIGATION
- Φ OUTFALL
- GWP GAS WORKS PARK
- GAS WORKS PARK SITE UPLAND CONSENT DECREE AREA

NOTES:

1. OUTFALL LOCATIONS ARE APPROXIMATE.
2. SEATTLE HARBOR PATROL IS INCLUDED IN THE GAS WORKS PARK SITE.
3. FORMER CHEVRON/METRO SITE CONSENT DECREE BOUNDARY ESTABLISHED IN 1998 CLEANUP ACTION PLAN.

0 500' 1000'

GRAPHIC SCALE

FORMER CHEVRON BULK PLANT No. 100-1327
FACILITIES NORTH / KING COUNTY (METRO)
SEATTLE, WASHINGTON
FIVE-YEAR REVIEW REPORT

SITE SETTING MAP

ARCADIS

FIGURE
2

CITY: SYRACUSE, NY DIV/GROUP: ENV/CADD DB: E. KRAHMER, W.JONES PIC: J. VOGELEY PM/TM: G. SPRICK TR: M. MacDANIEL LYR: ON=*;OFF=*REF
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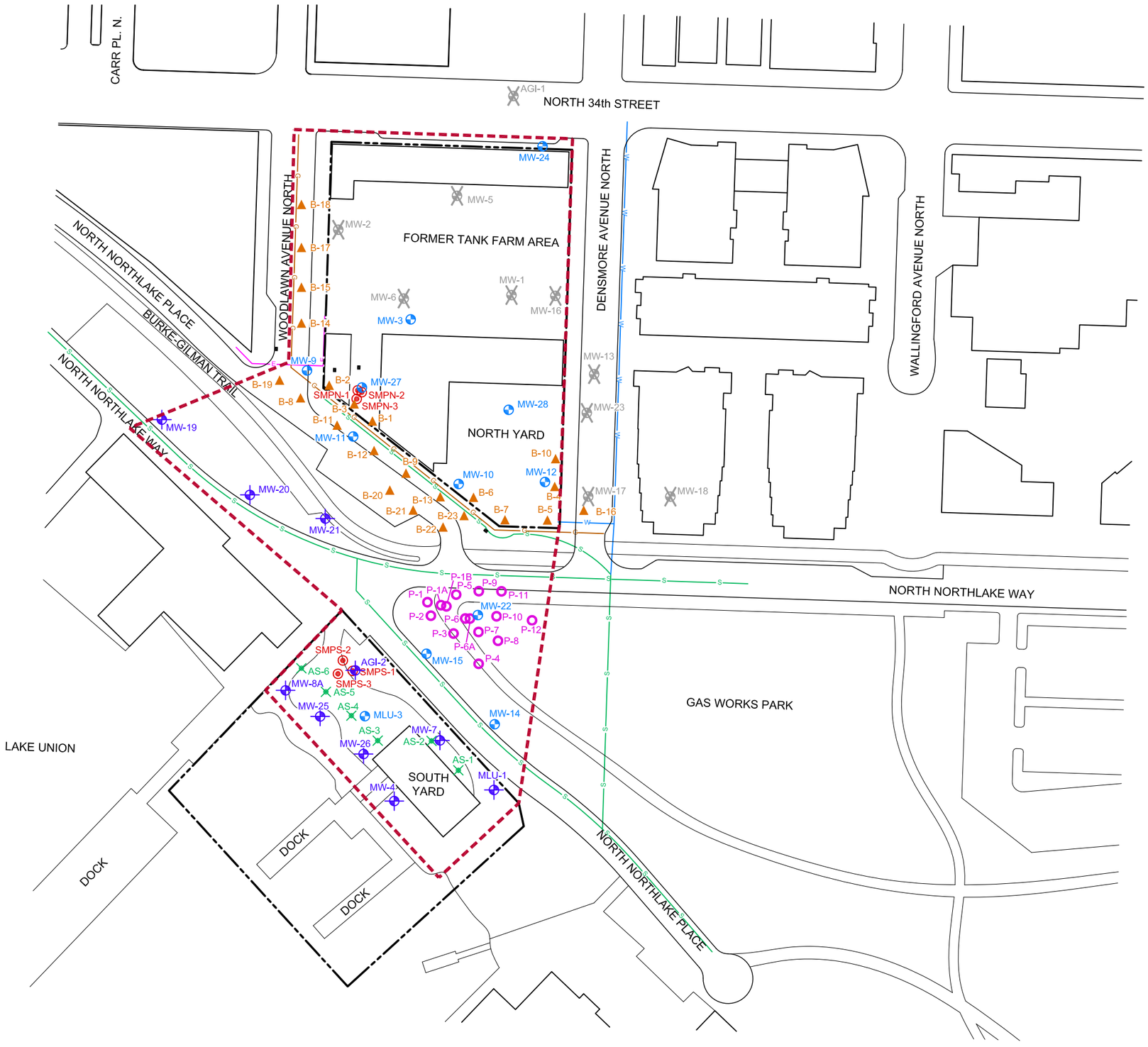

LEGEND:

- PROPERTY BOUNDARY
- FORMER CHEVRON/METRO SITE CONSENT DECREE BOUNDARY
- 2007 BORING LOCATIONS
- GROUNDWATER MONITORING WELL
- ABANDONED MONITORING WELL
- BIOSPARGE INJECTION WELL
- COMPLIANCE MONITORING WELL
- SMP LOCATION
- CATCH BASIN
- SOIL BORING LOCATION
- NATURAL GAS LINE (APPROX.)
- UNDERGROUND ELECTRIC LINE (APPROX.)
- WATER LINE (APPROX.)
- SEWER LINE (APPROX.)

NOTES:

1. BASE MAP FROM A DRAWING BY SAIC TITLED "SITE MAP", DATED 09–14–07, @ A SCALE OF 1" = 60'. REVISED IN ACCORDANCE WITH A SURVEY DRAWING BY OTAK CONDUCTED IN APRIL & MAY, 2011.
2. ALL LOCATIONS OTHER THAN MONITORING WELLS ARE APPROXIMATE.
3. FORMER CHEVRON/METRO SITE CONSENT DECREE BOUNDARY ESTABLISHED IN 1998 CLEANUP ACTION PLAN.

0 100' 200'

GRAPHIC SCALE

FORMER CHEVRON BULK PLANT No. 100-1327
FACILITIES NORTH / KING COUNTY (METRO)
SEATTLE, WASHINGTON
FIVE-YEAR REVIEW REPORT

SITE PLAN

ARCADIS

FIGURE
3

CITY: SYRACUSE, NY DIV/GROUP: ENV/CADD DB: E. KRAHMER, W.JONES PIC: J. VOGELEY PM/TM: G. SPRICK TR: M. MacDANIEL LYR: ON=*;OFF=*REF
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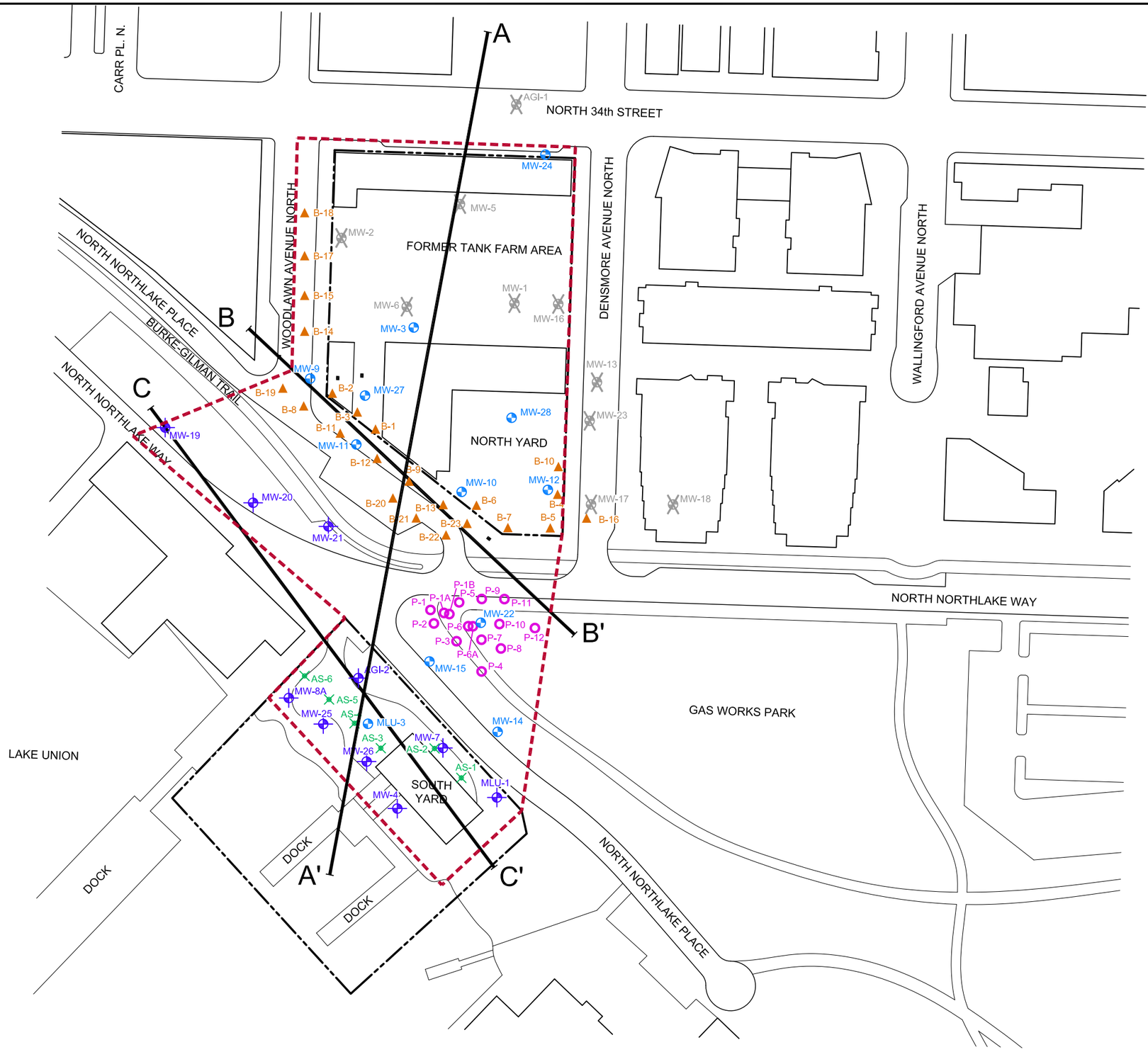

LEGEND:

- PROPERTY BOUNDARY
- FORMER CHEVRON/METRO SITE CONSENT DECREE BOUNDARY
- 2007 BORING LOCATIONS
- GROUNDWATER MONITORING WELL
- ABANDONED MONITORING WELL
- BIOSPARGE INJECTION WELL
- COMPLIANCE MONITORING WELL
- CATCH BASIN
- SOIL BORING LOCATION
- A—A' CROSS SECTION LOCATION

NOTES:

1. BASE MAP FROM A DRAWING BY SAIC TITLED "SITE MAP", DATED 09–14–07, @ A SCALE OF 1" = 60'. REVISED IN ACCORDANCE WITH A SURVEY DRAWING BY OTAK CONDUCTED IN APRIL & MAY, 2011.
2. ALL LOCATIONS OTHER THAN MONITORING WELLS ARE APPROXIMATE.
3. FORMER CHEVRON/METRO SITE CONSENT DECREE BOUNDARY ESTABLISHED IN 1998 CLEANUP ACTION PLAN.

0 100' 200'
GRAPHIC SCALE

FORMER CHEVRON BULK PLANT No. 100-1327
FACILITIES NORTH / KING COUNTY (METRO)
SEATTLE, WASHINGTON
FIVE-YEAR REVIEW REPORT

CROSS SECTION LOCATION MAP

ARCADIS

FIGURE
4

CITY: SYRACUSE, NY DIV/GROUP: ENV/CADD DB: E. KRAHMER, W. JONES PIC: J. VOGELEY PM/TM: G. SPRICK TR: M. MacDANIEL LYR: ON=*;OFF=*REF
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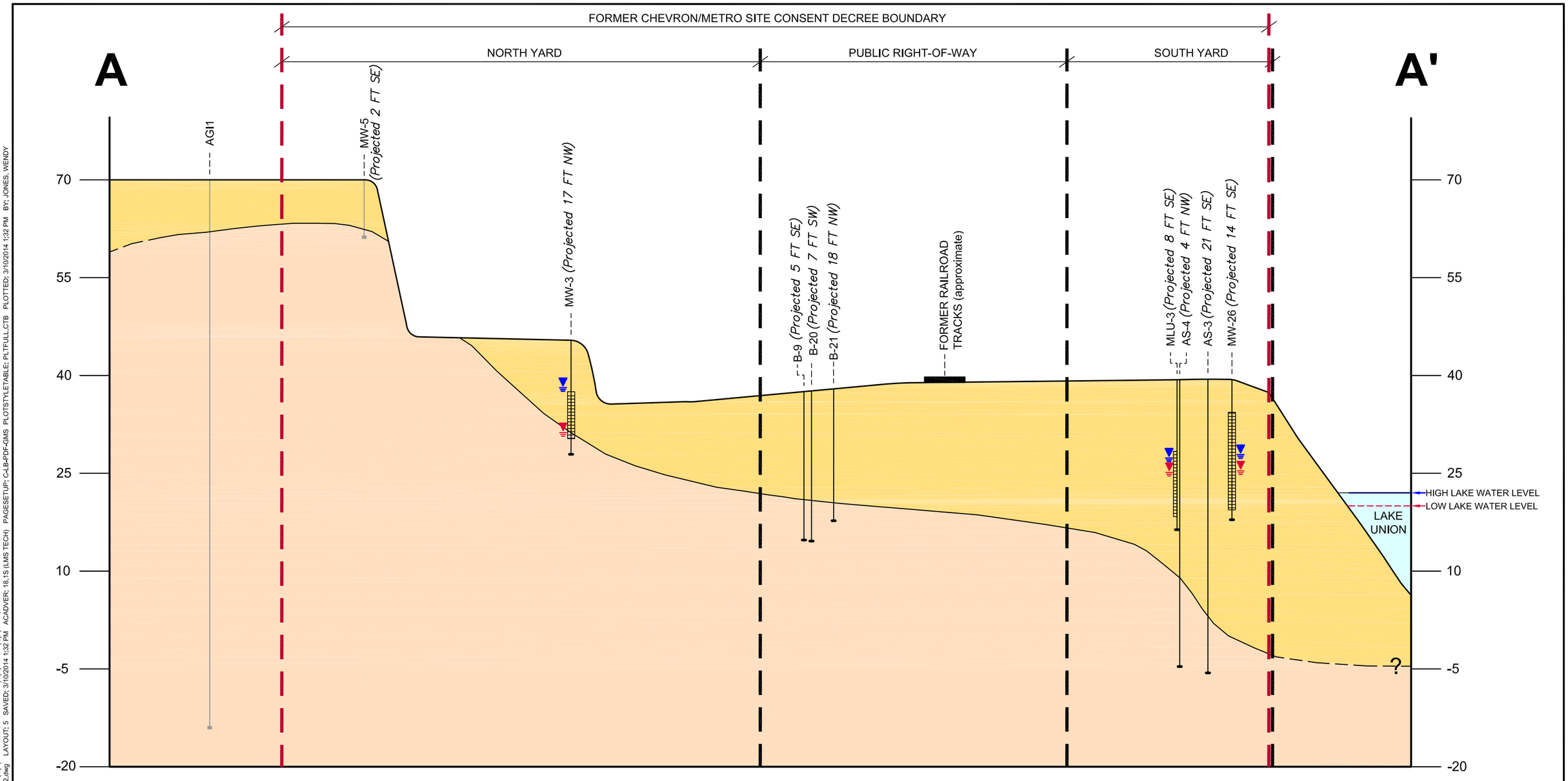

LEGEND:

MW-5 — WELL ID

GROUND SURFACE

GEOLOGIC CONTACT

WELL SCREEN

BOTTOM OF BORING

HISTORIC HIGH GROUNDWATER LEVEL

HISTORIC LOW GROUNDWATER LEVEL

PROPERTY BOUNDARY

FORMER CHEVRON/METRO SITE CONSENT DECREE BOUNDARY

20TH CENTURY FILL: LOOSELY COMPACTED YELLOWISH-BROWN TO GREYISH-BROWN SAND AND SILTY SAND WITH OCCASIONAL GRAVEL AND/OR DEBRIS (BOTH VEGETABLE AND ANTHROPOGENIC)

VASHON STADE DEPOSITS: HARD, DENSE, GREY AND TIGHTLY COMPACTED SAND, SILT, AND GRAVEL DEPOSITED DURING THE ADVANCE AND RETREAT OF THE VASHON STADE GLACIER (ADVANCE OUTWASH, GLACIAL TILL, RECESSIONAL SAND)

0 60' 120'
HORIZONTAL SCALE

0 15' 30'
VERTICAL SCALE

FORMER CHEVRON BULK PLANT No. 100-1327
FACILITIES NORTH / KING COUNTY (METRO)
SEATTLE, WASHINGTON
FIVE-YEAR REVIEW REPORT

CROSS-SECTION A-A'

ARCADIS

FIGURE 5

FORMER CHEVRON/METRO SITE CONSENT DECREE BOUNDARY

B

B'

B-19 *(Projected 20 FT SW)*
MW-9 *(Projected 5 FT NE)*
B-8 *(Projected 18 FT SW)*
B-2 *(Projected 8 FT NE)*
B-3 *(Projected 12 FT NE)*
B-11 *(Projected 14 FT SW)*
MW-11 *(Projected 10 FT SW)*
B-1 *(Projected 12 FT NE)*
B-12 *(Projected 7 FT SW)*
B-9 *(Projected 2 FT SW)*
B-13 *(Projected 23 FT NE)*
MW-10 *(Projected 25 FT NE)*
FORMER BURIED PIPELINES (approximate)
B-23 *(Projected 6 FT NE)*
P-11 *(Projected 21 FT SE)*
P-12 *(Projected 21 FT SE)*

50
40
30
20
10
0

?

0 40' 80'
HORIZONTAL SCALE

LEGEND:

MW-10 — WELL ID

``GROUND SURFACE

GEOLOGIC CONTACT

WELL SCREEN

BOTTOM OF BORING

HISTORIC HIGH GROUNDWATER LEVEL

HISTORIC LOW GROUNDWATER LEVEL

FORMER CHEVRON/METRO SITE CONSENT DECREE BOUNDARY

20TH CENTURY FILL: LOOSELY COMPACTED YELLOWISH-BROWN TO GREYISH-BROWN SAND AND SILTY SAND WITH OCCASIONAL GRAVEL AND/OR DEBRIS (BOTH VEGETABLE AND ANTHROPOGENIC)

VASHON STADE DEPOSITS: HARD, DENSE, GREY AND TIGHTLY COMPACTED SAND, SILT, AND GRAVEL DEPOSITED DURING THE ADVANCE AND RETREAT OF THE VASHON STADE GLACIER (ADVANCE OUTWASH, GLACIAL TILL, RECESSIONAL SAND)

FORMER CHEVRON BULK PLANT No. 100-1327
FACILITIES NORTH / KING COUNTY (METRO)
SEATTLE, WASHINGTON
FIVE-YEAR REVIEW REPORT

CROSS-SECTION B-B'

ARCADIS

FIGURE
6

CITY: SYRACUSE, NY DIV/GROUP: ENV/CADD DB: W.JONES PIC: J. VOGELEY PM/TM: G. SPRICK TR: M. MacDANIEL LYR: ON=*;OFF=REF
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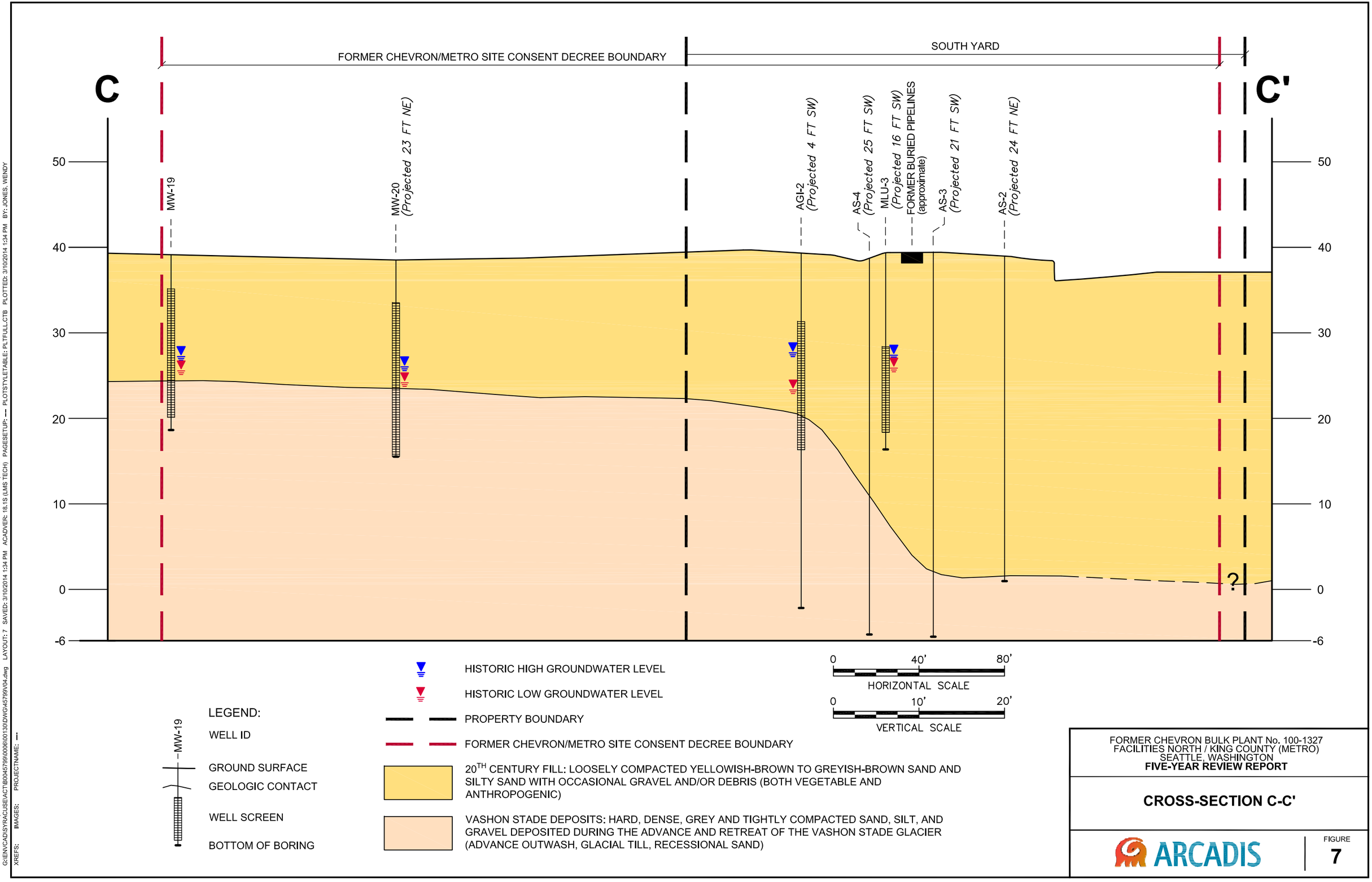
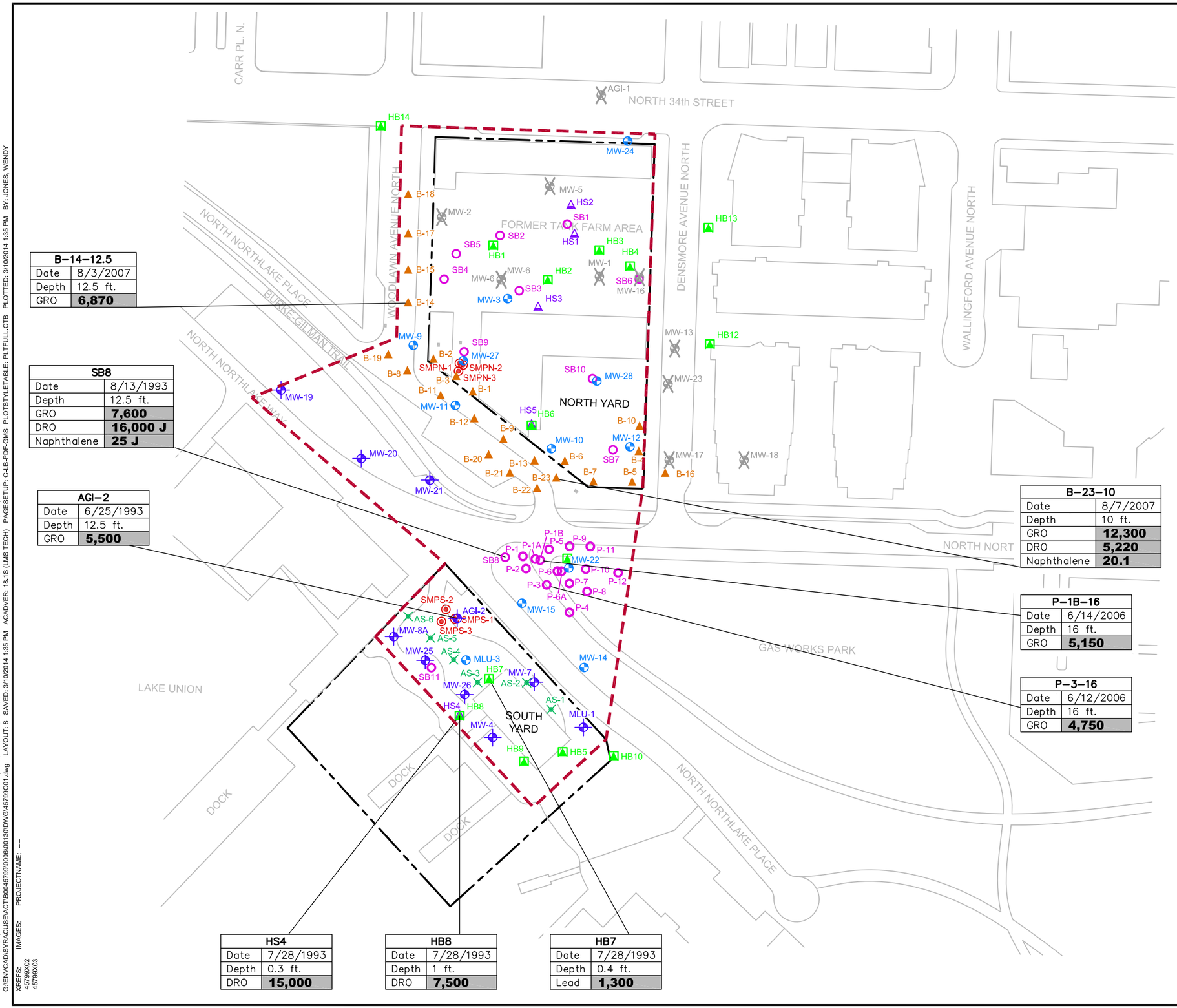


FORMER CHEVRON BULK PLANT No. 100-1327
FACILITIES NORTH / KING COUNTY (METRO)
SEATTLE, WASHINGTON
FIVE-YEAR REVIEW REPORT

CROSS-SECTION C-C'

ARCADIS

FIGURE
7



B–14–12.5	
Date	8/3/2007
Depth	12.5 ft.
GRO	**6,870**

SB8	
Date	8/13/1993
Depth	12.5 ft.
GRO	**7,600**
DRO	**16,000 J**
Naphthalene	**25 J**

AGI–2	
Date	6/25/1993
Depth	12.5 ft.
GRO	**5,500**

HS4	
Date	7/28/1993
Depth	0.3 ft.
DRO	**15,000**

HB8	
Date	7/28/1993
Depth	1 ft.
DRO	**7,500**

HB7	
Date	7/28/1993
Depth	0.4 ft.
Lead	**1,300**

B–23–10	
Date	8/7/2007
Depth	10 ft.
GRO	**12,300**
DRO	**5,220**
Naphthalene	**20.1**

P–1B–16	
Date	6/14/2006
Depth	16 ft.
GRO	**5,150**

P–3–16	
Date	6/12/2006
Depth	16 ft.
GRO	**4,750**

LEGEND:

- PROPERTY BOUNDARY
- FORMER CHEVRON/METRO SITE CONSENT DECREE BOUNDARY
- GROUNDWATER MONITORING WELL
- ABANDONED MONITORING WELL
- COMPLIANCE MONITORING WELL
- 2007 BORING LOCATIONS
- SOIL BORING LOCATION
- HAND BORING
- PRE–RI HAND SAMPLE

DATA BOX LEGEND

- < NON DETECT, REPORTING LIMIT SHOWN HERE
- -- NOT ANALYZED
- EXCEEDS SITE SPECIFIC SOIL CLEANUP LEVELS

DRO = DIESEL RANGE ORGANICS
GRO = GASOLINE RANGE ORGANICS
J = ESTIMATED CONCENTRATION

NOTES:

1. BASE MAP FROM A DRAWING BY SAIC TITLED "SITE MAP", DATED 09–14–07, @ A SCALE OF 1" = 60'. REVISED IN ACCORDANCE WITH A SURVEY DRAWING BY OTAK CONDUCTED IN APRIL & MAY, 2011.
2. ALL LOCATIONS OTHER THAN MONITORING WELLS ARE APPROXIMATE.
3. FORMER CHEVRON/METRO SITE CONSENT DECREE BOUNDARY ESTABLISHED IN 1998 CLEANUP ACTION PLAN.
4. SOIL CONCENTRATIONS IN MILLIGRAMS PER KILOGRAM ARE SHOWN ON THIS FIGURE FOR SOIL SAMPLES OUTSIDE OF THE NORTH YARD EXCEEDING SITE SPECIFIC SOIL CLEANUP LEVELS.

0 100' 200'
GRAPHIC SCALE

FORMER CHEVRON BULK PLANT No. 100-1327
FACILITIES NORTH / KING COUNTY (METRO)
SEATTLE, WASHINGTON
FIVE-YEAR REVIEW REPORT

REMAINING SOIL EXCEEDING SITE CLEANUP LEVELS

ARCADIS

FIGURE
8

CITY: SYRACUSE, NY DIV/GROUP: ENV/CADD DB: E. KRAHMER, W. JONES PIC: J. VOGELEY PM/TM: G. SPRICK TR: M. MacDANIEL LYR: ON=*;OFF=*REF
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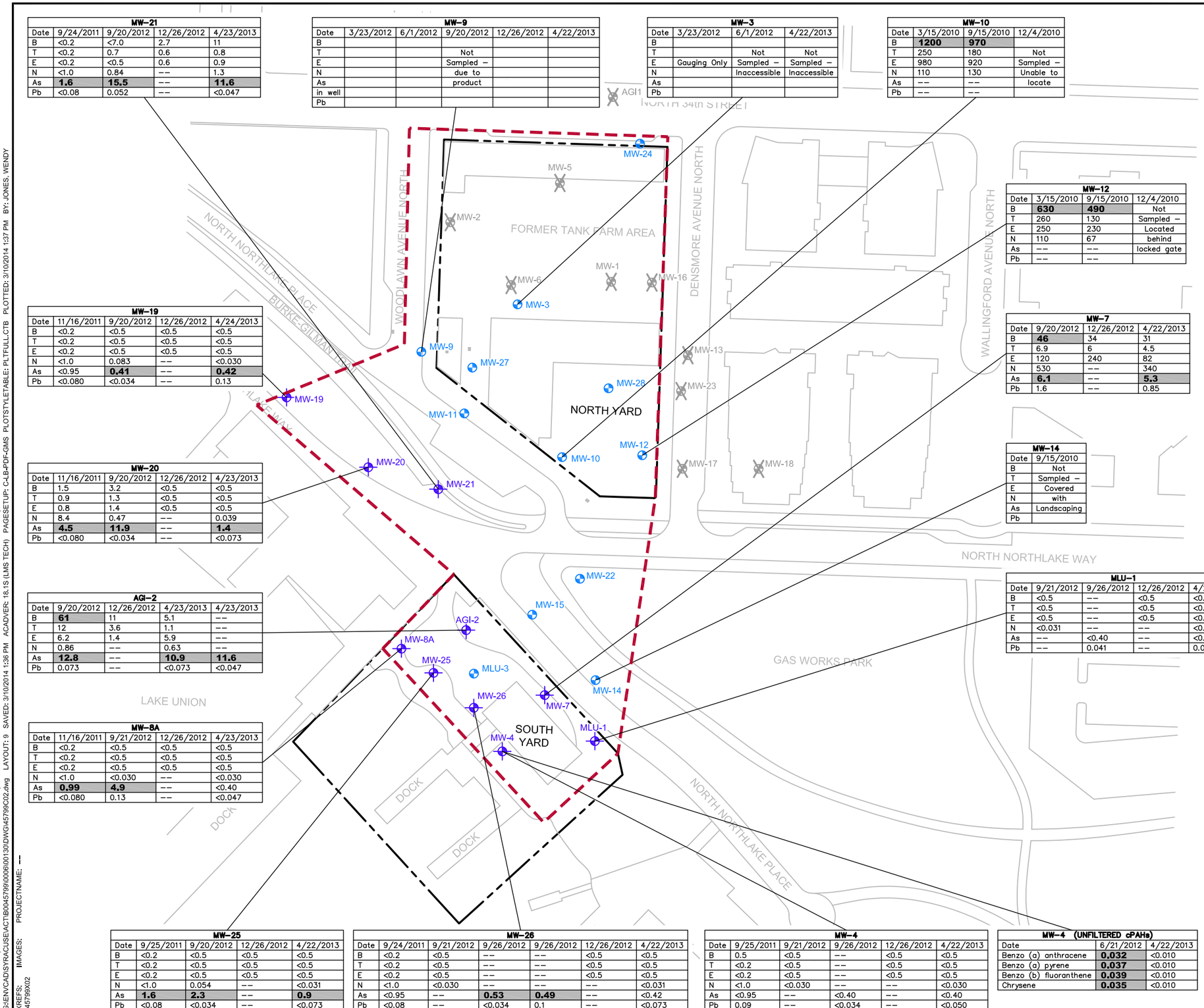

MW-21				
Date	9/24/2011	9/20/2012	12/26/2012	4/23/2013
B	<0.2	<7.0	2.7	11
T	<0.2	0.7	0.6	0.8
E	<0.2	<0.5	0.6	0.9
N	<1.0	0.84	--	1.3
As	**1.6**	**15.5**	--	**11.6**
Pb	<0.08	0.052	--	<0.047

MW-9					
Date	3/23/2012	6/1/2012	9/20/2012	12/26/2012	4/22/2013
B					
T			Not		
E			Sampled –		
N			due to		
As			product		
in well					
Pb					

MW-3			
Date	3/23/2012	6/1/2012	4/22/2013
B			
T		Not	Not
E	Gauging Only	Sampled –	Sampled –
N		Inaccessible	Inaccessible
As			
Pb			

MW-10			
Date	3/15/2010	9/15/2010	12/4/2010
B	**1200**	**970**	
T	250	180	Not
E	980	920	Sampled –
N	110	130	Unable to
As	--	--	locate
Pb	--	--	

MW-12			
Date	3/15/2010	9/15/2010	12/4/2010
B	**630**	**490**	Not
T	260	130	Sampled –
E	250	230	Located
N	110	67	behind
As	--	--	locked gate
Pb	--	--	

MW-19				
Date	11/16/2011	9/20/2012	12/26/2012	4/24/2013
B	<0.2	<0.5	<0.5	<0.5
T	<0.2	<0.5	<0.5	<0.5
E	<0.2	<0.5	<0.5	<0.5
N	<1.0	0.083	--	<0.030
As	<0.95	**0.41**	--	**0.42**
Pb	<0.080	<0.034	--	0.13

MW-7			
Date	9/20/2012	12/26/2012	4/22/2013
B	**46**	34	31
T	6.9	6	4.5
E	120	240	82
N	530	--	340
As	**6.1**	--	**5.3**
Pb	1.6	--	0.85

MW-20				
Date	11/16/2011	9/20/2012	12/26/2012	4/23/2013
B	1.5	3.2	<0.5	<0.5
T	0.9	1.3	<0.5	<0.5
E	0.8	1.4	<0.5	<0.5
N	8.4	0.47	--	0.039
As	**4.5**	**11.9**	--	**1.4**
Pb	<0.080	<0.034	--	<0.073

MW-14	
Date	9/15/2010
B	Not
T	Sampled –
E	Covered
N	with
As	Landscaping
Pb	

AGI-2				
Date	9/20/2012	12/26/2012	4/23/2013	4/23/2013
B	**61**	11	5.1	--
T	12	3.6	1.1	--
E	6.2	1.4	5.9	--
N	0.86	--	0.63	--
As	**12.8**	--	**10.9**	**11.6**
Pb	0.073	--	<0.073	<0.047

MLU-1				
Date	9/21/2012	9/26/2012	12/26/2012	4/22/2013
B	<0.5	--	<0.5	<0.5
T	<0.5	--	<0.5	<0.5
E	<0.5	--	<0.5	<0.5
N	<0.031	--	--	<0.030
As	--	<0.40	--	<0.40
Pb	--	0.041	--	0.097

MW-8A				
Date	11/16/2011	9/21/2012	12/26/2012	4/23/2013
B	<0.2	<0.5	<0.5	<0.5
T	<0.2	<0.5	<0.5	<0.5
E	<0.2	<0.5	<0.5	<0.5
N	<1.0	<0.030	--	<0.030
As	**0.99**	**4.9**	--	<0.40
Pb	<0.080	0.13	--	<0.047

MW-25				
Date	9/25/2011	9/20/2012	12/26/2012	4/22/2013
B	<0.2	<0.5	<0.5	<0.5
T	<0.2	<0.5	<0.5	<0.5
E	<0.2	<0.5	<0.5	<0.5
N	<1.0	0.054	--	<0.031
As	**1.6**	**2.3**	--	**0.9**
Pb	<0.08	<0.034	--	<0.073

MW-26						
Date	9/24/2011	9/21/2012	9/26/2012	9/26/2012	12/26/2012	4/22/2013
B	<0.2	<0.5	--	--	<0.5	<0.5
T	<0.2	<0.5	--	--	<0.5	<0.5
E	<0.2	<0.5	--	--	<0.5	<0.5
N	<1.0	<0.030	--	--	--	<0.031
As	<0.95	--	**0.53**	**0.49**	--	<0.42
Pb	<0.08	--	<0.034	0.1	--	<0.073

MW-4					
Date	9/25/2011	9/21/2012	9/26/2012	12/26/2012	4/22/2013
B	0.5	<0.5	--	<0.5	<0.5
T	<0.2	<0.5	--	<0.5	<0.5
E	<0.2	<0.5	--	<0.5	<0.5
N	<1.0	<0.030	--	--	<0.030
As	<0.95	--	<0.40	--	<0.40
Pb	0.09	--	<0.034	--	<0.050

MW-4 (UNFILTERED cPAHs)		
Date	6/21/2012	4/22/2013
Benzo (a) anthracene	**0.032**	<0.010
Benzo (a) pyrene	**0.037**	<0.010
Benzo (b) fluoranthene	**0.039**	<0.010
Chrysene	**0.035**	<0.010

LEGEND:

- PROPERTY BOUNDARY
- FORMER CHEVRON/METRO SITE CONSENT DECREE BOUNDARY
- GROUNDWATER MONITORING WELL
- ABANDONED MONITORING WELL
- COMPLIANCE MONITORING WELL

DATA BOX LEGEND

- < NON DETECT, REPORTING LIMIT SHOWN HERE
- -- NOT ANALYZED
- EXCEEDS SITE SPECIFIC GROUNDWATER CLEANUP LEVELS (MTCA METHOD B SURFACE WATER CLEANUP LEVELS)
- B = BENZENE
- T = TOLUENE
- E = ETHYLBENZENE
- N = NAPHTHALENE
- As = ARSENIC
- Pb = LEAD
- cPAH= CARCINOGENIC POLYAROMATIC HYDROCARBONS

NOTES:

1. BASE MAP FROM A DRAWING BY SAIC TITLED "SITE MAP", DATED 09-14-07, @ A SCALE OF 1" = 60'. REVISED IN ACCORDANCE WITH A SURVEY DRAWING BY OTAK CONDUCTED IN APRIL & MAY, 2011.
2. ALL LOCATIONS OTHER THAN MONITORING WELLS ARE APPROXIMATE.
3. FORMER CHEVRON/METRO SITE CONSENT DECREE BOUNDARY ESTABLISHED IN 1998 CLEANUP ACTION PLAN.
4. GROUNDWATER CONCENTRATIONS ARE MICROGRAMS PER LITER. cPAH RESULTS ARE ONLY SHOWN ON THIS FIGURE WHERE THE RESULTS EXCEEDED SITE cPAH GROUNDWATER CLEANUP LEVELS.

0 100' 200'

GRAPHIC SCALE

FORMER CHEVRON BULK PLANT No. 100-1327
FACILITIES NORTH / KING COUNTY (METRO)
SEATTLE, WASHINGTON
FIVE-YEAR REVIEW REPORT

2011-2013 GROUNDWATER ANALYTICAL RESULTS

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FIGURE **9**

CITY: SYRACUSE, NY DIV/GROUP: ENV/CADD DB: E. KRAHMER, W. JONES PIC: J. VOGELEY PM/TM: G. SPRICK TR: M. MacDANIEL LYR: ON=*;OFF=*REF
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XREFS: IMAGES: PROJECTNAME: --
45799X02

MW-27		
DATE	5/24/2001	4/22/2013
SIGNIFICANCE	Maximum Thickness	Most Recent Observation
LNAPL	0.73 ft.	0.01' ft.

MW-3		
DATE	3/29/2006	3/23/2012
SIGNIFICANCE	Maximum Thickness	Most Recent Observation
LNAPL	3.64 ft.	0.1 ft.

SMPN-1		
DATE	10/4/2005	9/20/2012
SIGNIFICANCE	Maximum Thickness	Most Recent Observation
LNAPL	0.24 ft.	0.18 ft.

MW-9		
DATE	12/26/2012	4/22/2013
SIGNIFICANCE	Maximum Thickness	Most Recent Observation
LNAPL	1.0 ft.	0.67 ft.

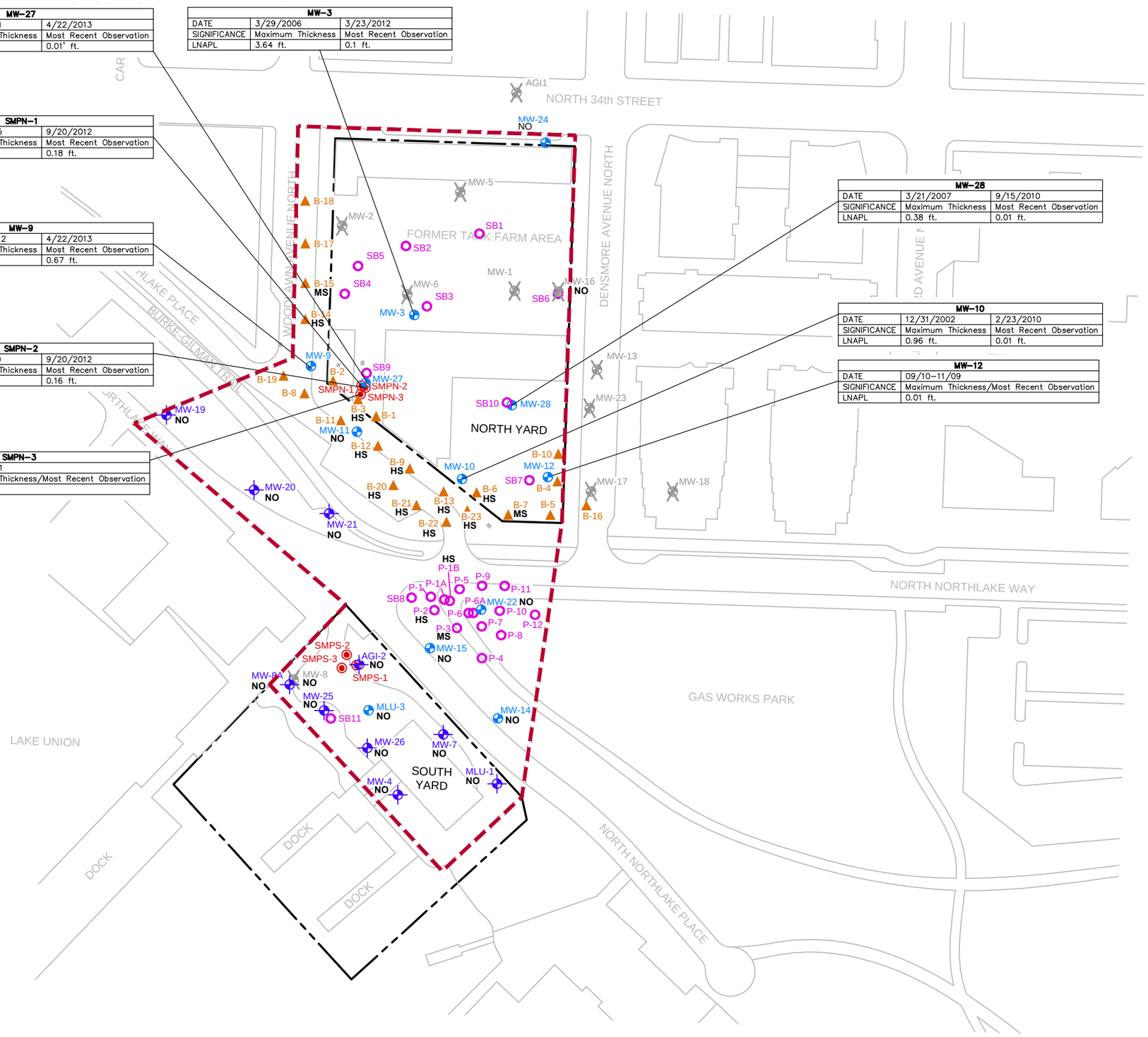
SMPN-2		
DATE	9/15/2010	9/20/2012
SIGNIFICANCE	Maximum Thickness	Most Recent Observation
LNAPL	0.18 ft.	0.16 ft.

SMPN-3	
DATE	11/16/2011
SIGNIFICANCE	Maximum Thickness/Most Recent Observation
LNAPL	0.12 ft.

MW-28		
DATE	3/21/2007	9/15/2010
SIGNIFICANCE	Maximum Thickness	Most Recent Observation
LNAPL	0.38 ft.	0.01 ft.

MW-10		
DATE	12/31/2002	2/23/2010
SIGNIFICANCE	Maximum Thickness	Most Recent Observation
LNAPL	0.96 ft.	0.01 ft.

MW-12	
DATE	09/10–11/09
SIGNIFICANCE	Maximum Thickness/Most Recent Observation
LNAPL	0.01 ft.



LEGEND:

- PROPERTY BOUNDARY
- FORMER CHEVRON/METRO SITE CONSENT DECREE BOUNDARY
- GROUNDWATER MONITORING WELL
- ABANDONED MONITORING WELL
- COMPLIANCE MONITORING WELL
- SMP LOCATION
- 2007 BORING LOCATIONS
- SOIL BORING LOCATION
- **NO** — LNAPL NEVER OBSERVED IN GROUNDWATER MONITORING WELL
- **LNAPL** — LIGHT NON–AQUEOUS PHASE LIQUID
- **HS** — HEAVY SHEEN OBSERVED IN SOIL BORING
- **MS** — MODERATE SHEEN OBSERVED IN SOIL BORING

NOTES:

1. BASE MAP FROM A DRAWING BY SAIC TITLED "SITE MAP", DATED 09–14–07, @ A SCALE OF 1" = 60'. REVISED IN ACCORDANCE WITH A SURVEY DRAWING BY OTAK CONDUCTED IN APRIL & MAY, 2011.
2. ALL LOCATIONS OTHER THAN MONITORING WELLS ARE APPROXIMATE.
3. FORMER CHEVRON/METRO SITE CONSENT DECREE BOUNDARY ESTABLISHED IN 1998 CLEANUP ACTION PLAN.
4. HISTORICAL SHEEN OBSERVATIONS ARE SHOWN FOR SOIL BORING LOCATIONS WHERE MODERATE OR HEAVY SHEEN WAS VISUALLY OBSERVED DURING SOIL SAMPLING.

0 100' 200'

GRAPHIC SCALE

FORMER CHEVRON BULK PLANT No. 100-1327
FACILITIES NORTH / KING COUNTY (METRO)
SEATTLE, WASHINGTON
FIVE-YEAR REVIEW REPORT

HISTORICAL LNAPL OBSERVATIONS

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FIGURE **10**

CITY: SYRACUSE, NY DIV/GROUP: ENV/CADD DB: E. KRAHMER, W.JONES PIC: J. VOGELEY PM/TM: G. SPRICK TR: M. MacDANIEL LYR: ON=*;OFF=REF
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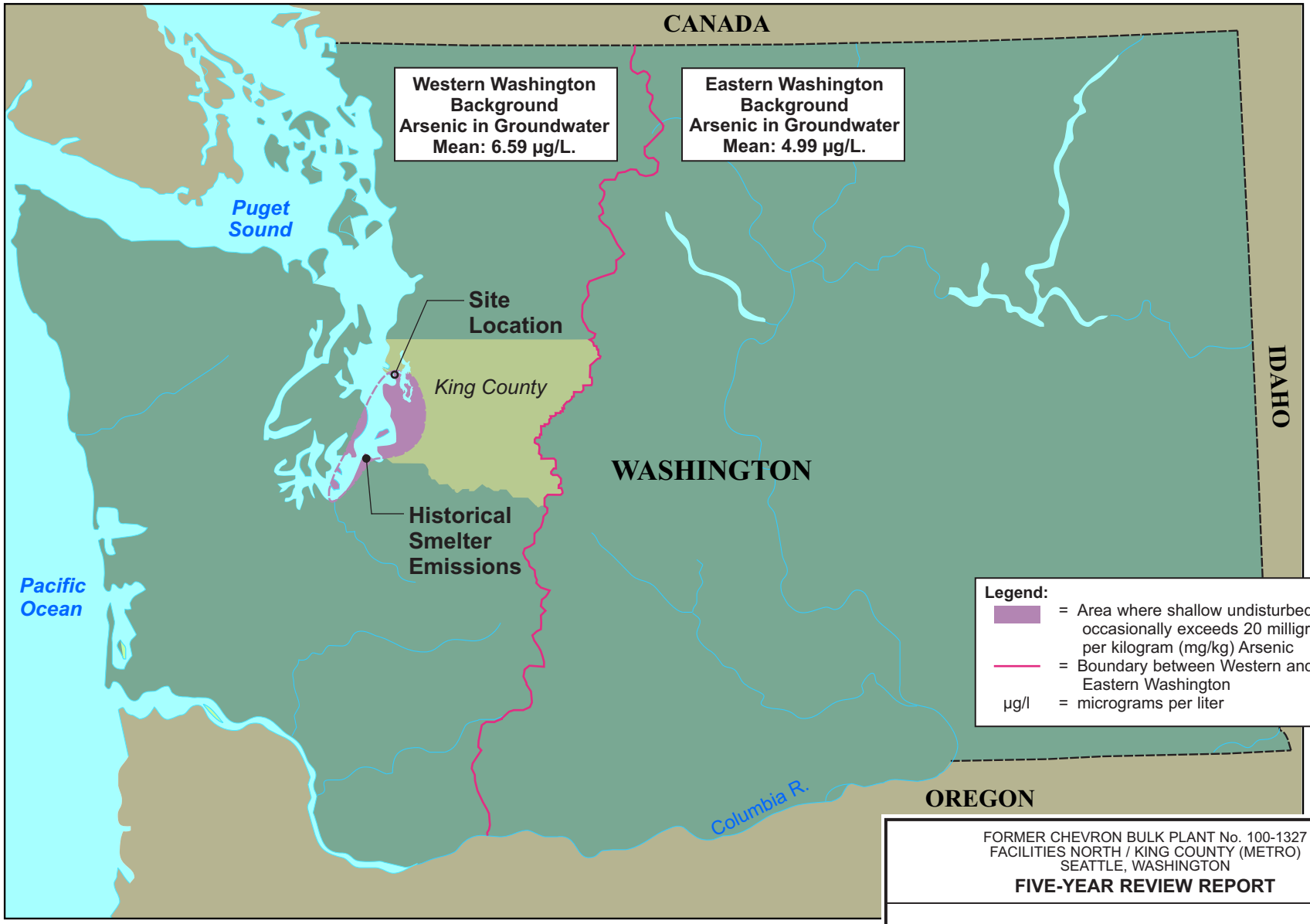
XREFS: IMAGES: PROJECTNAME: ----
45799X02



References:

Ecology. 2013. Tacoma Smelter Plume. Toxics Cleanup Program. Available online: http://www.ecy.wa.gov/programs/tcp/area_wide/AW/toolbox_chap2.html Ecology. 2010. Draft Revisions. MTCA Method A Groundwater Cleanup Levels. June.

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BACKGROUND ARSENIC IN WASHINGTON STATE

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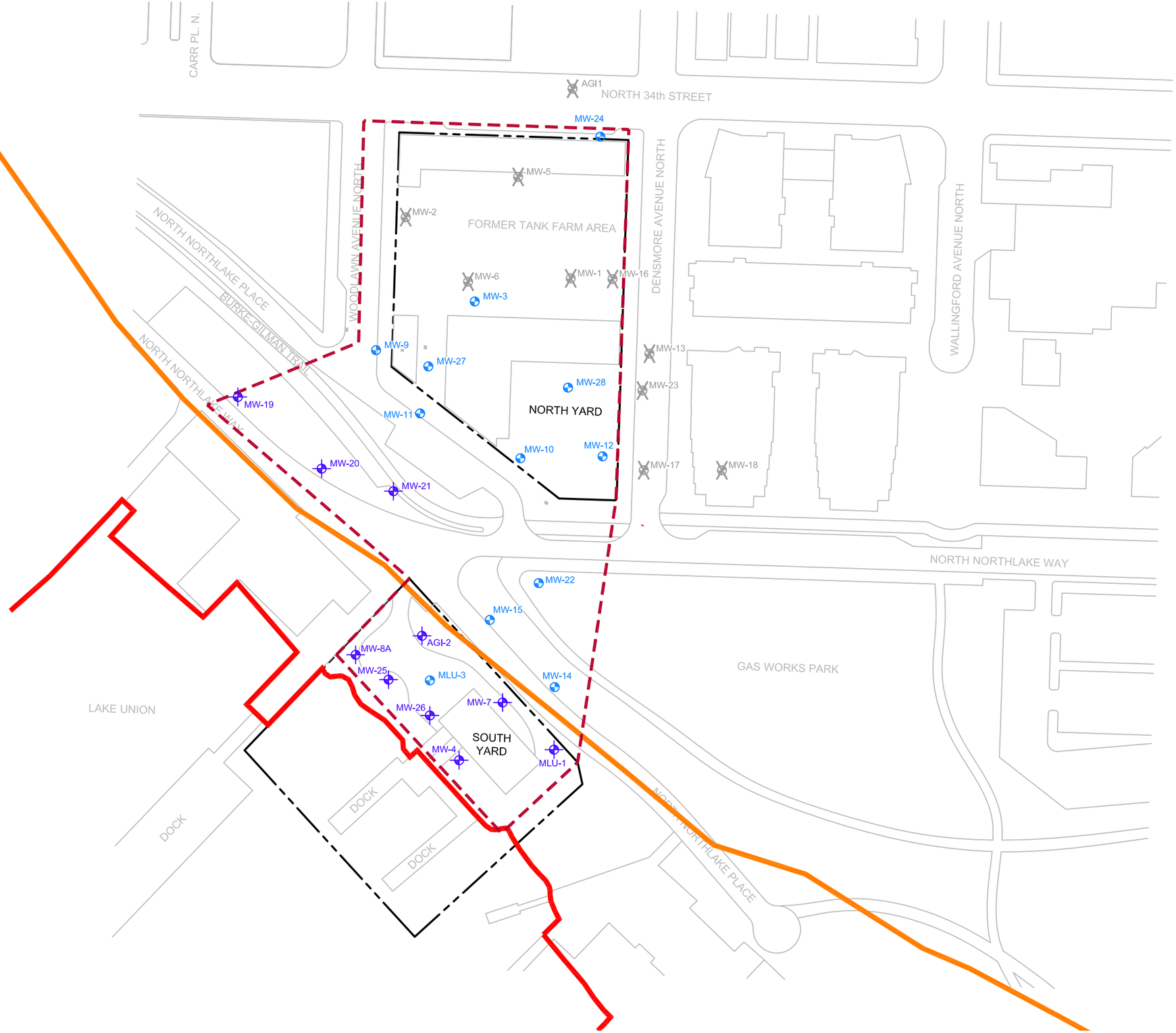
FIGURE
11



LEGEND:

- PROPERTY BOUNDARY
- FORMER CHEVRON/METRO SITE CONSENT DECREE BOUNDARY
- GROUNDWATER MONITORING WELL
- ABANDONED MONITORING WELL
- COMPLIANCE MONITORING WELL
- APPROXIMATE CURRENT SHORELINE
- APPROXIMATE 1905 SHORELINE

NOTES:

1. BASE MAP FROM A DRAWING BY SAIC TITLED "SITE MAP", DATED 09-14-07, @ A SCALE OF 1" = 60'. REVISED IN ACCORDANCE WITH A SURVEY DRAWING BY OTAK CONDUCTED IN APRIL & MAY, 2011.
2. ALL LOCATIONS OTHER THAN MONITORING WELLS ARE APPROXIMATE.
3. FORMER CHEVRON/METRO SITE CONSENT DECREE BOUNDARY ESTABLISHED IN 1998 CLEANUP ACTION PLAN.
4. APPROXIMATE LOCATION OF 1905 SHORELINE WAS DIGITIZED FROM AVAILABLE SANBORN MAPS.

0 100' 200'

GRAPHIC SCALE

FORMER CHEVRON BULK PLANT No. 100-1327
FACILITIES NORTH / KING COUNTY (METRO)
SEATTLE, WASHINGTON
FIVE-YEAR REVIEW REPORT

LAKE UNION HISTORIC SHORELINE

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FIGURE
12

CITY: SYRACUSE, NY DIV/GROUP: ENV/CADD DB: E. KRAHMER, W. JONES PIC: J. VOGELEY PM/TM: G. SPRICK TR: M. MacDANIEL LYR: ON=*;OFF=*REF
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XREFS: IMAGES: PROJECTNAME: ---
45799X02

Appendix A

Dual-Phase Extraction Through Vacuum Truck Extraction

ARCADIS U.S., Inc.
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Tel 206.325.5254
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Environment

Date:
March 7, 2014

Contact:
Scott Zorn

Phone:
(206) 726-4709

Email:
Scott.Zorn@ARCADIS-us.com

Our ref:
B0043799

Dual-Phase Extraction Through Vacuum Truck Extraction

Overview

The following implementation plan outlines the steps and procedures for conducting a one day dual-phase extraction (DPE) Vacuum Truck Extraction (VTE) event at the former Chevron Bulk Fuel Terminal No. 100-1327 located at 1602 North Northlake Way in Seattle, Washington. The objective of the VTE event is to dewater the smear zone and volatilize dissolved phase hydrocarbons trapped in soil pore space, and to remove light non-aqueous phase liquid (LNAPL) within the soil and groundwater surround monitoring well MW-9.

A vacuum truck will be connected to an extraction manifold fitted with a vacuum gauge, ball valve, a temporary knock out pot and sample ports for measuring extraction flow rate and photo-ionization detector (PID) readings. The event will run for a minimum duration of one day for approximately 8 hours per day (normal work day).

The manifold will contain a pitot tube, vapor sampling port, a vacuum gauge, and a flow control. Spiralite ® conveyance hosing will connect the manifold to MW-9, the well that will be used for vapor extraction. The well will be fitted with Campbell Well Seal ® or equivalent, and a 2-inch PVC vacuum hose that will be used as a stinger and be connected to aboveground conveyance piping. A well detail for MW-9 is shown on **Figure 1**.

The stinger will be placed approximately 6 inches above the bottom of the well in order to dewater MW-9. The vacuum truck will be capable of at least 18 in Hg vacuum,and operated to target a minimum casing vacuum of 8 inches of mercury (in Hg).

Pre-mob Office Work

ARCADIS will work with Touchstoneto coordinate the proposed work. All care will be taken to ensure that equipment being used will not interfere with Touchstone's construction activies, while taking advantage of dewatering activities conducted within the property boundary of the North Yard. ARCADIS field staff will review the field implementation plan and discuss with the project team the site specific hazards

and the sequence of activities that need to be conducted during a kick-off meeting. The field equipment checklist will be reviewed to ensure all the equipment required for pilot-testing is available and functioning.The Site specific health and safety plan (HASP) addresses the risks and hazards associated with the pilot-test activities. Task specific job safety analysis (JSAs) have been developed for specific activities. A copy of the HASP will be maintained on site.

Field Equipment

- Photoionization Detector (PID)
- Magnehelic Gauge
- Digital Manometer
- Extraction wellhead adaptors with vacuum gauges, stinger ports and bleed valves (see **Figure 1**) for 6-inch well
- Monitoring wellhead adaptors with vacuum gauges (one 6- inch well Campbell seal)
- Pitot Tube
- Handheld Anemometer
- Mini Condensate Trap – see note (a) below
- Fire Extinguisher
- First Aid Kit with emergency eye wash
- Oil/water interface probe
- LEL meter
- Pressure transducers (2)
- Gast Air sampling pump

Notes:
(a) For PID readings from manifold, mini condensate trap will be placed upstream of PID to separate liquid from the vapor stream. See **Figure 2** for construction details. See section *Mini Condensate Trap Operation* belowfor more detail.

System Setup Procedures

- Site HASP overview and tailgate meeting

  - Verify locations of emergency shutoffs. (station & system)
  - Location of site documents (HASP and system manual)
  - Location of fire extinguisher
  - Location of first aid kit, eye wash, emergency meet-up points
  - Locations of MW-9

- Field calibration required for all data collection equipment (FID/PID, etc.)

Equipment set up

- Assist subcontractor(s) to mobilize vac truck into position
- Connect System to Wells

Extraction Well
MW-9

  - Connect manifold to intake of Vacuum truck
  - Attach Campbell Well Seals® and hosing to extraction well (MW-9) . Check well heads to ensure connections are tight and correctly assembled.
  - Connect hoses between extraction well piping and manifold
  - Verify condition of hoses – check for leaks, damage, etc., replace if necessary. Verify system instrumentation (temperature transmitters, pressure/vacuum indicators, flow indicators, knockout totalizer) are intact
  - Notify office personnel of items to repair or replace, or other trouble spots observed during the visual inspection of system

Vacuum Truck Event

Prior to the VTE event, depth to water using a water level indicator and monitoring well headspace for volatile organic compound (VOC) concentrations using a PID will be measured at monitoring well MW-9.

During the VTE event, a 2-inch diameter schedule 40 PVC or flexible reinforce PVC hose stinger will be placed within the well The stinger inlet will be set approximalty 0.5 feet above the bottom of the well. Vacuum will then be applied to MW-9 using a vacuum truck. The vacuum should be adjusted so that the stinger vacuum and casing vacuum ratio approaches 1.

The following parameters will be collected during the VTE event:

- Extraction well casing vacuum

- Stinger vacuum
- Manifold vacuum and flow tare
- Baseline and recharge water levels in extraction well
- Vacuum at vacuum truck
- Influent PID/Flame ionization Detector (FID) reading
- Total volume of extracted groundwater and LNAPL

VTE Test

Prior to applying vacuum to the well, baseline depth to water and depth to LNAPL mearusements should be taken from the extraction well. Vaccum will be applied to the stinger with the casing bleed valve open. The casing bleed valve should then be slowly closed targeting a minimum vacuum of 8-inches of Hg or more. The ratio of the stinger vacuum to casing vacuum should be close to 1.

- If vacuum dead heads (ie) a mixture of water and air are no longer being extracted and the hose is full of water with high vacuum, open the bleed valve and call engineer.

Mini Condensate Trap Operation

To collect PID measurements, moisture must be removed prior to the measuring point, therefore, a mini condensate trap (**Figure 2**) will be installed upstream of the manifold arm. The procedure is described below:

- Tip the mini condensate trap up to let water drop out and take the reading on the downstream side of the condensate trap. Then place the mini condensate trap flat on the ground again to let the water evacuate the knock out chamber. Leave the mini condensate trap flat on the ground between reading measurements.

Please note – It will be easier to move the trap if the manifold is placed flat at a slight elevation – perhaps at the edge of the trailer.

Monitoring During Startup

- Monitor the vacuum at the MW-9 and record data in **Table 1** (attached).

- Call Engineer with data to determine if desired vacuum and flow rate have been met using these vacuum data points.
    - If target parameters are not met, discuss what changes can be made and proceed accordingly.

Monitoring During Operation

Once target operating parameters have been reached, the following data needs to be recorded periodically. Data will be filled in **Table 1** (attached).
Vacuum, PID, flow readings, temperature and other parameters as indicated on **Table 1** will be recorded at the following frequency:

Time Elapsed	Frequency
0-4 hours	Every 0.5 hours
4-8 hours	Every 1 hour

(As described above, mini condensate trap will be connected upstream of the manifold when taking PID measurements.)

- Based on the schedule shown above, record the following parameters on **Tables 1**:
    - Flow rate at Post mini KO pot via pitot tube
    - Vacuum and Flow at the manifold
    - Casing vacuum
    - Vacuum at the well casing
    - Flow and PID reading at MW-9. Mini condensate trap must be connected- see section mini condensate trap operation above.
    - Total extracted volume of water in vacuum truck

Attachments:

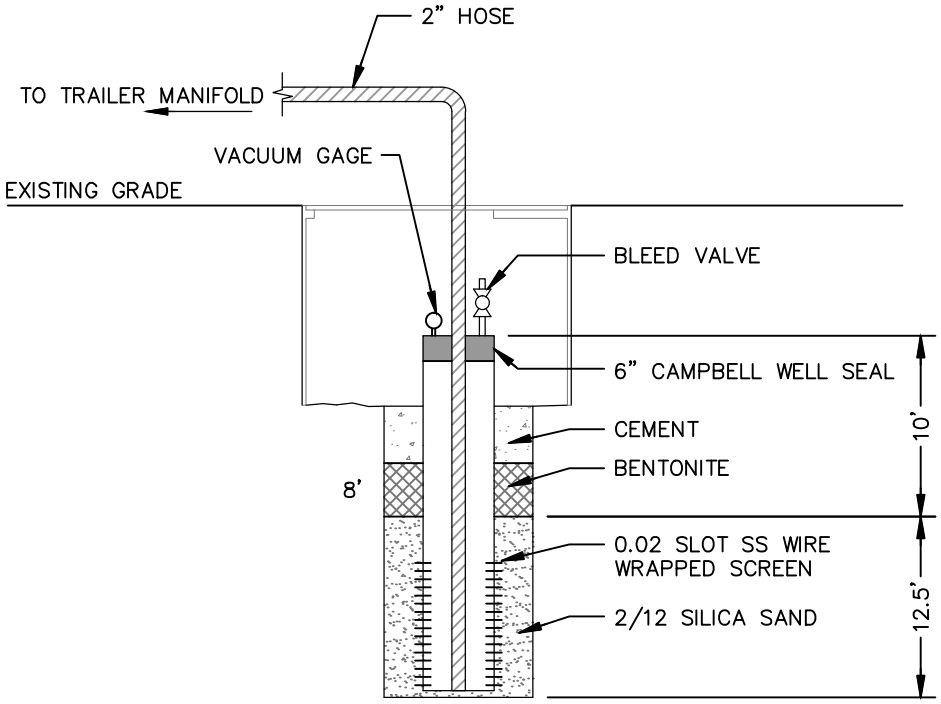
Table 1	Manifold and System Readings for MW-9
Figure 1	6-Inch Well Detail
Figure 2	Mini Condensation Trap

Table 1
Manifold and System Readings for MW-9

Client/Location:	**Date:**	**Page: __/__**
Job Name:	**Field Personnel:**	
Job Number:	**Ambient Temp (F):**	
Target Vacuum: 8 inHG	**Weather Conditions:**	
Target Flow Rate:	**Additional Information:**	
Air Sampling:		

Time	Manifold					Extraction Well		Water Flow Totalizer (gallons)	Comments/Notes
	PID (ppmv)	Vacuum (in wc or in hg Circle)	Magnehelic (in wc)	Temp (F)	Flow (scfm)	Casing Vacuum (in wc or in hg Circle)	Stinger Depth (ft bgs)		

*Note - not all fields will be used for all locations, see Figure 1 for more detail. If data is not available, mark with "N/A"



NOT TO SCALE

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6-INCH DPE WELL DETAIL

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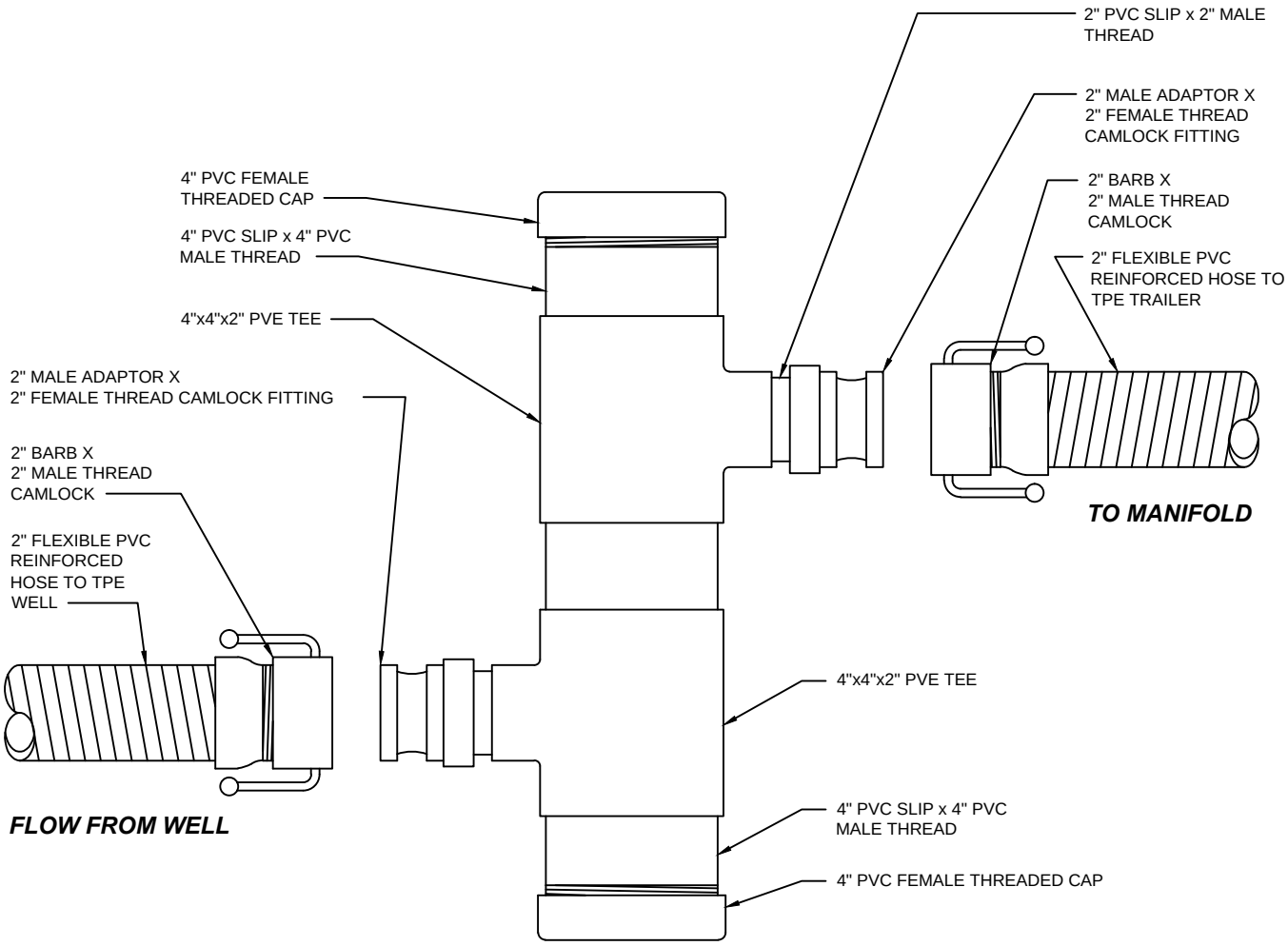
FIGURE
1



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SEATTLE, WASHINGTON
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MINI CONDENSATION TRAP

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FIGURE
2

Appendix B

Well Development – Water Jetting
Standard Operating Procedure

ARCADIS
Infrastructure, environment, facilities

Imagine the result

Well Development – Water Jetting

Standard Operating Procedure

Rev. #: 1

Rev Date: July 2, 2010

Approval Signatures

Prepared by: Erin Hauber Date: 7/6/10

Erin Hauber

Reviewed by: Royce Face Date: 7/6/10

Royce Face, PE. PG

Reviewed by: Kevin Wilson Date: July 2, 2010

Kevin Wilson, PG

1. Scope and Application

This standard operating procedure (SOP) provides an overview of jetting with water as a method of well development. While the goal of groundwater sampling is to obtain water samples that are representative of natural, undisturbed hydrogeologic conditions, all drilling methods disturb geologic materials around the well bore to some extent. Development of remediation wells (monitoring wells, piezometers, injection wells, extraction wells) is needed to repair (to the extent practicable) damage to the formation caused by drilling, and to remove fine-grained sediments and drilling fluids introduced during the drilling process. Well development enhances the hydraulic connection between the well and the surrounding formation, ensuring that the screen transmits groundwater that is representative of the surrounding formation. Periodic redevelopment may also be necessary to improve the operation of extraction or injection wells.

The ultimate goal of any development technique is to create a filter pack that is coarsest near the well screen and becomes progressively finer until it blends with the native formation. The ideal development would merge the filter pack seamlessly into the formation, without a noticeable change in grain size.

Development through jetting introduces high velocity water into the well screen while simultaneously evacuating water from the well (ideally maintaining an in-well water level that is equal to or below the static water level, but always less than 20 percent of the available head space in the well). Prior to and/or following jetting, the screened interval can be gently surged using a surge block, bailer, or inertia pump with optional surge block fitting to remove fines freed from filter pack during the jetting process.

Design and selection of the appropriate jetting equipment and delivery pressure will be based on site-specific parameters (well construction details), tubing, and pump specifications. The disposal of investigation derived waste (IDW) generated during the jetting process must also be taken into consideration.

In general, jetting involves lowering either single or multiple small diameter pipe(s) or tube(s) equipped with nozzles into the well screen and injecting a high velocity horizontal stream of water through the pipe(s) into the screen openings. The jets are moved vertically along the screened interval and rotated, if needed, to effectively address the entire screen surface area. Typical jetting assemblies include a submersible pump to extract the injected water and maintain the static water level, but alternate removal methods (air lifting, centrifugal pump) are acceptable.

Jetting tools usually have two to four nozzles; however, site conditions and well diameter will ultimately dictate the number of nozzles used at a specific well. Nozzle

orifice sizes are selected to produce velocities between approximately 100 and 300 feet per sec (ft/sec). The injected (and extracted) flow into the well and the approximate pressure delivered by the jetting pump to achieve the target jetting velocities can be determined by considering the following:

- screen material and opening configuration
- nozzle specifications
- pressure losses from pump manifold to nozzles
- pump and tubing pressure limitations
- screen exit velocity
- IDW generation and/or recirculation options.

The attached jetting design tool (see Section X. References) can be used to estimate the target manifold pressure and injection/extraction flow rate for a specific remediation well.

II. Personnel Qualifications

Well development activities will be performed by persons who have been trained in proper field procedures. Well development activities will be performed under the guidance of an experienced field geologist, engineer, or technician.

III. Equipment List

General materials for well development include:

- personal protective equipment (PPE) and any other safety equipment required by the site-specific Health and Safety Plan (HASP)
- cleaning equipment
- water level meter and/or oil/water interface probe
- water quality meter that is capable of recording pH, temperature, conductivity, and turbidity (optional)

- photoionization detector (PID) to measure headspace vapors (recommended; may be required by the site-specific HASP)
- plastic sheeting
- graduated pails
- drum(s) or tank(s) to contain purge water, and equipment to move the container(s)
- field notebook
- well construction logs (or summary table) indicating completed well depths and screened intervals
- monitoring well keys.

Materials needed specifically for development by jetting include:

- Down-hole jetting assembly consisting of:
  - Two or three jetting nozzles pointed outward in the horizontal plane.
    - Select jet nozzles rated for velocities between 150 and 300 ft/sec. Higher velocities may damage the well, whereas lower velocities will be less effective at penetrating the filter pack.
    - Nozzles should spray in a wide angle horizontal fan (e.g., 145°). An array of three nozzles with overlapping fans is preferred. If the combined spray arc is not a full 360°, the assembly will need to be rotated throughout the well development process.
    - The nozzles must be equally spaced to hydraulically balance the jetting tool.
    - Since a larger orifice will require a higher injection rate to achieve the same velocity, small-orifice jets (approximately 0.016 inch to 0.065 inch in diameter) are preferred.
  - A rate-controllable submersible pump (or alternate pumping device) attached below the jetting nozzles (or above the jetting nozzles, if jetting at the very bottom of the screen is required).
    - The pump capacity should be greater than the anticipated jetting flow required to jet at the target velocity (for the full array of jets).
  - A flexible rubber flange (or collar) attached between the jetting nozzles and the submersible pump.
    - The flange prevents flow from the jet to the pump from occurring within the well casing, thereby forcing the flow through the screen and filter pack.
    - Flanges should be constructed of flexible rubber and sized appropriately to slide freely up and down inside the well casing, yet provide a partial seal against vertical flow.

  - Associated tubing and control wire bundled together (e.g., with zip ties or heat shrink plastic wrapping). The jetting assembly must be sufficiently rigid and bundled to minimize friction between the well casing and the jetting tool and allow vertical movement and rotation (if necessary). Ease of jetting tool movement within the well can become a concern in small (i.e., 2-inch) diameter wells if the jetting tool is not properly designed.

- Above-grade jetting assembly consisting of:
  - potable water supply (e.g., 250-gallon water tote)
  - above-grade water pump (e.g., booster pump) and recirculation or pressure relief line into supply water tank, if needed
  - injection manifold consisting of the following:
    - poly vinyl chloride (PVC) or steel pipe, with an input connection from the water pump and branches to each jetting line (all piping and tubing must be pressure rated to withstand jetting pressures)
    - pressure gage
    - gate valves on each output line
  - Storage tank for extracted water
  - Filter unit (if recirculation is used)
    - If recirculation is being used, sediment must be removed prior to re-injection.
    - Sediment may erode nozzle orifices (thereby reducing delivered pressure), harm the jetting pump, and abrade screen material,

- Power supplies for jetting pump and submersible pump.

IV. Cautions

- Delivery pressures greater than 150 pounds per square inch (psi) are often required to achieve effective jetting velocities. All tubing/piping, connections, and pumps should be rated for the anticipated delivery pressures, and should be inspected for damage prior to and periodically during use.

- Care should be taken when testing the jetting tool above ground. Similar to a pressure washer, high pressure water exiting the jets may pose a risk if it comes into direct contact with skin.

- The type of screen opening greatly affects what percentage of the jetted water reaches the formation surrounding the filter pack (i.e., v-shaped continuous slot screens transfer the high velocity stream more effectively than louvered screens).

- Water exiting the jetting tool should not exceed the recommended screen exit velocity of 0.05 ft/sec to prevent possible damage to the well screen.

- Continuous movement of the jetting tool is recommended to minimize formation of cavities within the filter pack and to protect the screen.

- Water pressure should not exceed 100 psi when jetting PVC screens.

- Only use sediment-free water with the jetting tool to minimize damage to the well screen from abrasive particles, avoid erosion of the nozzle orifice (which could cause a reduction in nozzle velocity), and protect the jetting pump.

- Avoid using development fluids or materials that could impact groundwater or soil quality, or could be incompatible with the subsurface conditions.

V. Health and Safety Considerations

Field activities associated with well development by jetting will be performed in accordance with the site-specific HASP, a copy of which will be present onsite during such activities. Note that additional precautions may be required to account for the use of pressurized equipment or handling large storage vessels.

VI. Procedure

The procedures for developing a well using the jetting method are outlined below. These procedures are applicable to wells that are screened primarily in clay and silt formations.

1. Don appropriate PPE (as required by the HASP).

2. Using a non-phosphate cleaner (e.g., Alconox) and potable water, clean and double rinse all non-dedicated equipment that will enter the well (refer to separate equipment cleaning procedures where applicable).

3. Breathing zone testing is recommended (to be determined by the project team). If required:

    a. Open the well cover while standing upwind of the well; remove the well cap. Insert the PID probe approximately 4 to 6 inches into the casing or the well headspace; cover with gloved hand.

    b. Record the PID reading in the field notebook.

    c. If the well headspace reading is less than 5 PID units, proceed; if the headspace reading is greater than 5 PID units, screen the air within the breathing zone. If the PID reading in the breathing zone is below 5 PID

units, proceed. If the PID reading is above 5 PID units, move upwind from the well for 5 minutes to allow the volatiles to dissipate, then repeat the breathing zone test. If the reading is still above 5 PID units, don the appropriate respiratory protection in accordance with the requirements of the HASP. Record all PID readings.

4. Measure the depth to water and total well depth. Check for the presence of non-aqueous phase liquid (NAPL). *If NAPL is present do not continue development until consulting with the task manager (or TKI specialist).* Compare the well depth to the as-built construction details. Calculate the volume of water in the well casing.

5. Hydraulic testing is recommended to evaluate the effectiveness of the jetting process (implementation will be determined by the project team). If hydraulic testing is to be performed, the following process can be used:

    a. Lower a pump into the well and begin pumping while monitoring the water level in the well.

    b. Adjust the pumping rate to achieve steady flow from the well, with drawdown in the well at 20 to 30 percent of the original water column.

    c. Record this flow rate and drawdown and calculate the initial specific capacity: $\mathrm{SC} = \frac{\text{Flow (Q)}}{\text{drawdown } (\Delta h)}$

6. Determine final jetting/purging parameters and set-up:

    a. Calculate the operational jetting pressure (manifold gage reading) to achieve the target jet velocity (i.e., 150 to 300 ft/sec) based on the jet nozzle manufacturer's specifications (e.g., 200 psi at 0.5 gallons per minute [gpm]), tubing losses, and equipment pressure rating. See attached calculation worksheet.

    b. Water recirculation should not be completed unless approved by the project manager. Recirculation of sediment-laden water may damage the well screen or jetting pump.

    c. Lower the jetting tool into the well. Check that the swabbing flange is loose enough to permit the tool to move up and down inside the well casing without significant effort.

    d. Place a water level meter into the well to monitor the water level during development.

7. To maintain the static water level in the well, the rate of water extraction must equal or exceed the rate of injection. A water level above baseline will drive fines suspended in the water column into the formation and therefore decrease the effectiveness of development. Carefully monitor the water level

to insure that it does not exceed 20 percent of the available head space in the well.

8. Jet and purge the saturated portion of the well screen in 2-foot increments, as follows:

    a. Start jetting in the bottom 2-foot interval of the well screen (or as close to the bottom of the screen as practical, based on the jetting assembly). While jetting:

        i. Pump from beneath (or above) the jetting tool at a rate sufficient to maintain the water-level in the well at or below the static water level.

        ii. Gently swab the well while pumping by slowly moving the jetting tool up and down the well screen at no greater than 0.5 ft/sec. Vigorous surging is not appropriate. Do not reverse the up/down stroke suddenly.

        iii. Hold the jetting tool loosely and away from the body. If jetting/surging rates are imbalanced or a filter pack blockage prevents flow, the tool may push upward or downward. Do not force the tool to remain stationary; adjust jetting/surging rates as needed.

        iv. Do not let the tool remain in one position for longer than a few seconds.

    b. Continue jetting in the 2-foot interval for 10 minutes, rotating the tool (if necessary) and covering the well screen interval multiple times.

    c. Repeat steps 8a through 8b in the next 2-foot interval of screen until the entire length of the saturated screen interval has been developed.

    d. Sediment loading and turbidity of the extracted water should improve throughout the jetting process. Visual observations of the sediment and turbidity should be recorded in the field notes or the well development form (see Section X, References). The project team may opt to record water quality parameters (temperature, conductivity, pH, turbidity) during development.

9. Monitor and record water use (i.e., volume of potable water injected and volume of water purged by pumping) throughout the development process. Increasing the extraction rate or decreasing the injection rate may be necessary to prevent the water level in the well from rising above static conditions or to prevent the well from going dry.

10. After development, measure the depth to water and the total well depth, and check for the presence of non-aqueous phase liquid (NAPL). Confirm that the total depth of the well matches the as-built well depth within a reasonable tolerance. If a discrepancy exists, note it, and evaluate it to the degree feasible. Continue development if necessary.

11. If hydraulic testing was completed prior to development, a test should be completed at the end of development activities to ascertain the level of improvement (see Step 5). Additional development may be needed if the well does not meet design criteria.

12. When complete, re-secure the well cover.

13. Using a non-phosphate cleaner (e.g., Alconox) and potable water, clean and double rinse all non-dedicated equipment that entered the well (refer to separate equipment cleaning procedures where applicable). Place disposable materials in plastic bags for appropriate disposal, and decontaminate reusable, downhole pump components and/or bailer.

VII. Waste Management

IDW generated during well development may include disposable equipment and PPE, purged groundwater, and water associated with equipment cleaning. All disposable and liquid waste should be handled and disposed in accordance with project plans and applicable regulations.

VIII. Data Recording and Management

Well development activities will be documented in a proper field notebook and/or Personal Digital Assistant (PDA). Pertinent information will include:

- General Field Notes:
  - personnel present onsite
  - times of arrival and departure
  - significant weather conditions
  - timing of well development activities

- Jetting Field Notes:
  - observations of NAPL
  - manifold pressure
  - water levels before and during testing
  - observations of purge water color, turbidity, odor, and sheen over time
  - purge rate
  - initial and final total depth of well
  - hydraulic testing parameters (if specified by project technical lead)

IX. References

Jetting Design Tool

Well Development Form