



WASHINGTON STATE
DEPARTMENT OF
ECOLOGY

Southwest Regional Office
Toxics Cleanup Program
PO Box 47775
Olympia, WA 98504-7775
360-407-6240

TRANSMITTAL MEMO

Date: December 6, 2011

TO: Mr. Perry Pineda
Shell Oil Products US

RE: Jiffy Lube Vancouver
SW1069

Subject: Explanation of Timeline

NOTE: The determination date is the date Ecology approved the No Further Action status for the site. Final payment, EIM Data submission, once received, the NFA letter was released.

Ecology Determination date: December 6, 2011

Email Customer Notification: December 6, 2011

Payment received date: January 24, 2012

EIM Data successfully uploaded: August 4, 2011/// January 24, 2012

Ecology Determination letter mailed/sent: January 24, 2012



STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

PO Box 47775 • Olympia, Washington 98504-7775 • (360) 407-6300

December 6, 2011

Mr. Perry Pineda
Shell Oil Products US
26828 Maple Valley Hwy #174
Maple Valley, WA 98038

Re: No Further Action at the following Site:

- **Site Name:** Jiffy Lube Vancouver
- **Site Address:** 6317 NE Fourth Plain Boulevard, Vancouver, Washington
- **Facility/Site No.:** 62389552
- **Cleanup Site ID No.:** 2626
- **VCP Project No.:** SW1069

Dear Mr. Pineda:

The Washington State Department of Ecology (Ecology) received your request for an opinion on your independent cleanup of the Jiffy Lube Vancouver facility (Site). This letter provides our opinion. We are providing this opinion under the authority of the Model Toxics Control Act (MTCA), Chapter 70.105D RCW.

Issue Presented and Opinion

Is further remedial action necessary to clean up contamination at the Site?

NO. Ecology has determined that no further remedial action is necessary to clean up contamination at the Site.

This opinion is based on an analysis of whether the remedial action meets the substantive requirements of MTCA, Chapter 70.105D RCW, and its implementing regulations, Chapter 173-340 WAC (collectively "substantive requirements of MTCA"). The analysis is provided below.

Description of the Site

This opinion applies only to the Site described below. The Site is defined by the nature and extent of contamination associated with the following releases:

- Total petroleum hydrocarbons (TPH) in the gasoline-range (TPH-G), in the diesel-range (TPH-D), and in the heavy oil-range (TPH-O), polycyclic aromatic hydrocarbons (PAHs), volatile organic compounds (VOCs), and metals into the Soil.
- TPH-G, TPH-D, TPH-O, PAHs, and metals into the Groundwater.

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

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

Basis for the Opinion

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

1. Conestoga-Rovers & Associates (CRA), Cleanup Action Report, Former Jiffy Lube, 6317 Northeast Fourth Plain Boulevard, Vancouver, WA dated August 12, 2011.
2. URS Corporation (URS), Remedial Investigation and Cleanup Action Report, Former JLI Store No. 798, 6317 NE 4 Plain Blvd, Vancouver, Washington dated September 2010.
3. PBS Engineering + Environmental (PBS), Subsurface Investigation, Former Jiffy Lube, 6317 Northeast Fourth Plain Boulevard, Vancouver, Washington, 98682 dated March 2009.
4. Hahn and Associates, Inc. (HAI), Phase II Environmental Site Assessment, Approximately 1.7-Acre Property, 6221, 6317, and 6321 E Fourth Plain Boulevard, Vancouver, Washington dated December 6, 2005.
5. HAI, Phase I Environmental Site Assessment, Approximately 1.7-Acre Property, 6221, 6317, and 6321 E Fourth Plain Boulevard, Vancouver, Washington dated October 14, 2005.

Those documents are kept in the Central Files of the Southwest Regional Office of Ecology (SWRO) for review by appointment only. You can make an appointment by calling the SWRO resource contact at (360) 407-6365.

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

Analysis of the Cleanup

Ecology has concluded that **no further remedial action** is necessary to clean up contamination at the Site. That conclusion is based on the following analysis:

1. **Characterization of the Site.**

Ecology has determined your characterization of the Site is sufficient to establish cleanup standards and select a cleanup action. The Site is described above and in **Enclosure A**.

The Site is located at 6317 NE Fourth Plain Boulevard in Vancouver, Washington. The Site encompasses two parcels of property, both owned by the Housing Authority of City of Vancouver (VHA). One parcel (the westernmost) is currently an undeveloped parcel that was previously used as multi-unit housing and farming. The easternmost parcel was developed as a mixed-use commercial property, covered by two buildings and impervious (asphalt) surface. Drainage from this parcel was directed via surface flow or underground drainpipes westward and ultimately discharged to a dry well located on the west border just inside the western undeveloped parcel. Jiffy Lube International (JLI) operated an automotive maintenance facility on the Site from the mid-1980s to 2005, when JLI ceased operations at the Site. The JLI operations utilized three underground storage tanks (USTs) for storage of new oil and used oil. The USTs had capacities of 2,000 gallons for new motor oil, 1,000 gallons for motor oil, and 500 gallons for used oil. In 1995, the three USTs were decommissioned in place using controlled density fill. A restaurant also operated on the same parcel and was located on the eastern portion of the parcel, sharing the same parking lot.

In 2005, HAI conducted a Phase I and a Phase II Environmental Site Assessment (ESA) of the Site. The Phase I ESA identified recognized environmental concerns (RECs) and historical operations on the Site. The RECs identified were the former USTs that were decommissioned in 1995 and the storm water/dry well system on the Site. There was no oil/water separator connected to the storm water system. In November 2005, HAI conducted a Phase II ESA; however, the analytical results indicated no contamination was present at the sampled locations. Minimal documentation discussing the lack of contamination found during the 1995 UST decommissioning activity was also provided in an appendix to the Phase II ESA report; however, no laboratory analytical reports, sample depths, or boring logs were provided in that report.

In January 2009, PBS conducted a subsurface investigation of the Site. PBS concentrated on the area around the dry well and in the area in the assumed downgradient direction (southwest of dry well). PBS advanced nine borings to a maximum depth of 22 feet below ground surface (bgs). PBS collected soil and groundwater samples during their investigation (see Figure 3). The constituents of concern (COCs) were TPH-G, TPH-D, TPH-O, PAHs, VOCs, polychlorinated biphenyls, and metals for soil and groundwater. The analytical results indicated the dry well sediments and soil immediately adjacent to the dry well were contaminated by TPH-G, TPH-D, TPH-O, toluene, PAHs, cadmium, and total chromium¹ above the applicable MTCA Method A Soil Cleanup Levels (CULs) for unrestricted land uses. Groundwater analytical results indicated TPH-D, TPH-O, PAHs, total chromium, and total lead were present at concentrations above each analyte's respective MTCA Method A Groundwater CUL in both

¹ MTCA requires analysis for hexavalent chromium when total chromium concentrations exceed the hexavalent chromium CUL of 19 milligrams per kilogram (mg/kg).

the water from the dry well and the formation groundwater around the dry well (see Table 1 and Table 2).

In April 2009, attorneys for the VHA reported a suspected spill to the storm water catch basins at the Site. In October 2009, JLI entered the Site into Ecology's Voluntary Cleanup Program. In December 2009, the Ecology Site manager (ESM) had a teleconference with URS and representatives of the VHA to discuss future work at the Site. Per request, the ESM provided comments via email outlining further work to be completed at the Site.

In February 2010, URS delineated the vertical and horizontal extents of the soil contamination. In June 2010, URS removed the dry well and the contaminated soil around the dry well down to approximately 15 feet bgs (see Figure 3). The soil was analyzed for TPH-G, TPH-D, TPH-O, VOCs, fuel oxygenates, PAHs, and metals. Soil confirmation sample results indicated the contaminated soil had been removed. Contaminated soil was excavated and transported to a permitted off-Site landfill and the dry well was replaced. A monitoring well (MW-1) was installed south and down gradient² of the new dry well (see Figure 3). Also in June 2010, URS advanced two angled borings under the former JLI building and one vertical boring using direct-push methods to collect soil confirmation samples from below the former USTs, and a groundwater sample downgradient of the UST locations. Sample results indicated the soil and groundwater below the building were not impacted at concentrations above the applicable laboratory method reporting limits (see Table 1 and Table 2).

From July 2010 to June 2011, CRA conducted four quarters of groundwater monitoring from MW-1. The groundwater was analyzed for TPH-G, TPH-D, TPH-O, VOCs, fuel oxygenates, carcinogenic PAHs, and metals. Analytical results indicated contaminant groundwater concentrations were either not identified at the applicable laboratory method detection limit or were below the applicable MTCA Method A CUL.

2. Establishment of cleanup standards.

Ecology has determined the cleanup levels and points of compliance you established for the Site meet the substantive requirements of MTCA. The Site soil and groundwater was evaluated using MTCA Method A CULs.

Standard points of compliance were established for the Site. The point of compliance for protection of groundwater was established in the soil throughout the Site. For soil CULs based on human exposure via direct contact or other exposure pathways where contact with the soil is required to complete the pathway, the point of compliance was established in the soil throughout the Site from the ground surface to 15 feet bgs. In addition, the point of compliance for the groundwater was established throughout the Site from the uppermost level of the saturated zone extending vertically to the lowest most depth that could potentially be affected by the Site.

² The location for MW-1 was chosen based on the area-wide groundwater gradient.

3. Selection of cleanup action.

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

The method selected to remediate the contaminated soil and groundwater involved source removal, excavation of contaminated material and contaminated stormwater structures, and off-Site disposal of the contaminated soil and other material.

4. Cleanup.

Ecology has determined the cleanup you performed meets the cleanup standards established for the Site.

Approximately 136 tons of contaminated soil was transported off Site and disposed of at the Waste Management landfill in Hillsboro, Oregon. The dry well was replaced with a new structure, connected to the City of Vancouver storm water sewer system, and the system was backfilled with clean material. Four consecutive quarters of groundwater monitoring analytical results indicated the contamination source had been removed and was no longer a source of contamination of the Site groundwater.

Limitations of the Opinion

1. Opinion does not settle liability with the state.

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

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

To settle liability with the state and obtain protection from contribution claims, a person must enter into a consent decree with Ecology under RCW 70.105D.040(4).

2. Opinion does not constitute a determination of substantial equivalence.

To recover remedial action costs from other liable persons under MTCA, one must demonstrate that the action is the substantial equivalent of an Ecology-conducted or Ecology-supervised action. This opinion does not determine whether the action you performed is substantially equivalent. Courts make that determination. See RCW 70.105D.080 and WAC 173-340-545.

Mr. Perry Pineda
December 6, 2011
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3. State is immune from liability.

The state, Ecology, and its officers and employees are immune from all liability, and no cause of action of any nature may arise from any act or omission in providing this opinion. See RCW 70.105D.030(1)(i).

Termination of Agreement

Thank you for cleaning up the Site under the Voluntary Cleanup Program (VCP). This opinion terminates the VCP Agreement governing this project (#SW1069).

For more information about the VCP and the cleanup process, please visit our web site: www.ecy.wa.gov/programs/tcp/vcp/vcpmain.htm. If you have any questions about this opinion or the termination of the Agreement, please contact me at (360) 407-7404.

Sincerely,



Eugene Radcliff, L.G.
VCP Site Manager
SWRO Toxics Cleanup Program

GER/ksc:Jiffy Lube Site NFA SW1069

Enclosures (4): A – Description and Diagram of the Site

Figure 1	Vicinity Map
Figure 3	Soil Investigation Data Map
Table 1	Summary of Soil Analytical Results (2 of 3)
Table 2	Summary of Groundwater Monitoring Data (1 of 2)

By certified mail: (7009 3410 0000 1272 3359)

cc: Mr. Roy A. Johnson, Housing Authority of City of Vancouver
Ms. Barbara A. Jacobson, Partner, LEED® AP, K&L Gates LLP
Mr. Justin Foslien, P.G., Conestoga-Rovers & Associates (CRA)
Mr. Bryan DeDoncker, Clark County Health
Mr. Scott Rose – Ecology
Ms. Dolores Mitchell – Ecology (without enclosures)

Enclosure A

Description and Diagrams of the Site

Enclosure A
Site Description, Figures and Tables

Media of Concern: Soil and Groundwater

The Jiffy Lube Vancouver (Site) is located at 6317 NE Fourth Plain Boulevard in Vancouver, Clark County, Washington (see Figure 1). The Site has been zoned for community commercial (CC) purposes. The CC zoning district is designed to provide for retail goods and services purchased regularly by residents of several nearby neighborhoods. The parcel on which the Jiffy Lube facility (eastern parcel) is located encompasses approximately 0.88 acres and contains two buildings, the other building being a restaurant. The Site is bordered on the north by NE Fourth Plain Boulevard, on the east by commercial/retail parcels, on the south by light industrial property, and on the west by office commercial industrial property. The Clark County Assessor's office notes the Site as being comprised of two parcels, the western parcel (currently undeveloped) having an assigned tax parcel number of 29450000 and the eastern parcel having an assigned tax parcel number of 29460000. The latitude and longitude coordinates of the Site are 45° 38' 35" North, 122° 36' 26" West.

The Clark County Geographic Information System indicates the Site is approximately 190 feet above sea level and is located in south-central Vancouver on a broad, flat plain that slopes slightly to the southwest. The soil in the area is classified as Lauren gravelly loam, a non-hydric soil with 0 to 8 percent slopes. The soil lies on top of unconsolidated sedimentary deposits (Pleistocene catastrophic flood deposits), the Troutdale Gravel Aquifer, and then the Columbia River Basalt Group as the basement complex. Site boring logs indicate the Site is underlain by sand with silt, sand, and sand with gravel down to 25 feet below ground surface (bgs).

Groundwater was reported to be 16 to 22 feet bgs at the Site and the regional groundwater gradient is predominantly to the southwest and is assumed to follow that trend on the Site. Most of the area around the Site is well developed and covered with impervious surface. The Site has one dry well that collects parking lot storm water in catch basins in the parking lot and directs the water into the dry well for infiltration under the ground surface.

The Site lies within the Lower Burnt Bridge Creek Sub Watershed, which is part of the Burnt Bridge Creek Watershed. The parcel is designated as a very low risk for flooding, a low risk during an earthquake, and a low risk for liquefaction; the area is reported to have very dense soil. County records also indicate the Site is within an area with a high archeological probability buffer.



figure 1

VICINITY MAP
FORMER JIFFY LUBE FACILITY
6317 NORTHEAST 4TH PLAIN BOULEVARD
Vancouver, Washington



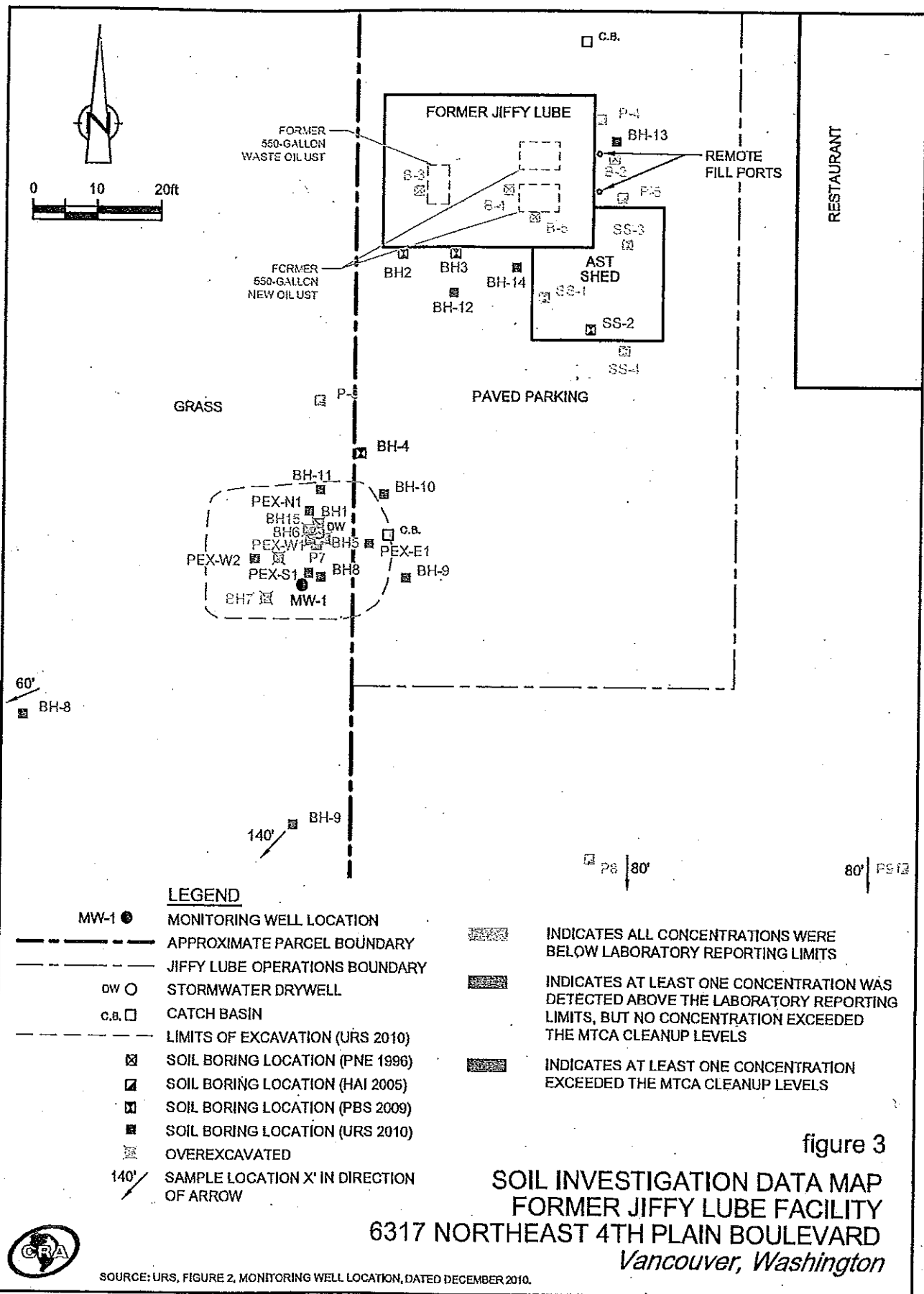


TABLE 1

SUMMARY OF SOIL ANALYTICAL RESULTS
FORMER JEFFERIE LUBE FACILITY
6317 NORTHEAST 4TH PLAIN BOULEVARD
VANCOUVER, WASHINGTON

Sample ID	Consultant	Sample Date	Depth ft	HYDROCARBONS										PRIMARY VOCs										OXYGENATES										TOTAL METALS				METALS		PAHs
				TPH _g	TPH _d	TPH _o	B	T	E	X	EDB	EDC	MTBE	TAME	TBA	DPE	ETBE	Chromium/ 2000	Cadmium	Lead	Hexavalent Chromium																			
				(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)																	
B2	PNE 1996	12/26/1995	6-8	<20	<50	<100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
B3	PNE 1996	12/26/1995	6-8	<20	<50	<100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
B4	PNE 1996	12/26/1995	6-8	<20	<50	<100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
B5	PNE 1996	12/26/1995	6-8	<20	<50	<100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
P4	HAI 2005	11/10/2005	10-11	<20.9	<52.4	<105	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
P5	HAI 2005	11/10/2005	0.5-1	<24.2	<60.5	<121	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
P5	HAI 2005	11/10/2005	6.5-7	<18.9	<47.2	<94.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
P6	HAI 2005	11/10/2005	15-16	<22.4	<55.9	<112	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
P7	HAI 2005	11/10/2005	19-20	<23.6	<59.0	<118	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
P8	HAI 2005	11/10/2005	12-13	<22.1	<55.3	<111	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
P9	HAI 2005	11/10/2005	12.5-13.5	<22.1	<55.3	<111	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
BH-1-17*	PBS 2009	1/2/2009	13-14	<20.7	<50.6	<101	<0.015	<0.030	<0.0387	<0.116	<0.0327	<0.0327	<0.071	-	-	-	-	29.9	0.576	40.3	-	0.0912																		
BH-2-7*	PBS 2009	1/2/2009	7	<20.3	<50.6	<101	<0.015	<0.030	<0.031	<0.092	<0.0309	<0.0309	<0.062	-	-	-	-	-	-	-	-	-																		
BH-3-7*	PBS 2009	1/2/2009	7	<19.3	<48.2	<96.3	<0.015	<0.031	<0.037	<0.102	<0.0372	<0.0372	<0.074	-	-	-	-	-	-	-	-	-																		
SS-1-2	PBS 2009	1/2/2009	2	<19.5	<48.7	<97.4	<0.019	<0.037	<0.032	<0.097	<0.0324	<0.0324	<0.065	-	-	-	-	21.8	0.442	6.11	-	0.0667																		
SS-2-2	PBS 2009	1/2/2009	2	<20.5	<49.7	<108	<0.016	<0.032	<0.035	<0.105	<0.0349	<0.0349	<0.070	-	-	-	-	-	-	-	-	-																		
SS-4-2	PBS 2009	1/2/2009	2	<21.7	<54.7	<108	<0.018	<0.035	<0.035	<0.105	<0.0349	<0.0349	<0.070	-	-	-	-	-	-	-	-	-																		
BH-5-12	PBS 2009	2/2/2009	12	<26.0	<64.0	<128	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-																		
BH-6-12	PBS 2009	2/2/2009	12	<14.6	<35.7	<71.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-																		
BH-7-11	PBS 2009	2/2/2009	14-15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-																		
Drywell Sediment	PBS 2009	2/3/2009	7-13	50.9	10.500	79.500	7.05	0.259	1.083	-	-	-	-	-	-	-	-	277	277	184	-	1341																		
BH-8-17*	URS 2010	2/25/2010	17	<0.5	<5	<5	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010	<0.010	9.53	<1	3.66	-	<0.020																		
BH-9-17.5*	URS 2010	2/25/2010	17.5	<0.5	<5	<5	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010	<0.010	12.8	1.02	4.18	-	<0.020																		
BH-10-17.5*	URS 2010	2/25/2010	17.5	0.52	<5	<5	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010	<0.010	11.7	<1	3.82	-	<0.020																		
BH-11-17.5*	URS 2010	2/25/2010	17.5	<0.5	<5	<5	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010	<0.010	9.11	<1	3.58	-	<0.020																		
BH-12-16*	URS 2010	2/26/2010	16	<0.5	<5	<5	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010	<0.010	8.12	<1	2.75	-	<0.020																		
BH-12-16 DUP*	URS 2010	2/26/2010	16	<0.5	<5	<5	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010	<0.010	7.94	<1	3.01	-	<0.020																		
BH-13-20L.2*	URS 2010	2/26/2010	9.3	<0.5	<5	<5	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010	<0.010	10.4	<1	3.91	-	<0.020																		
BH-14-20L.2*	URS 2010	2/26/2010	9.3	<0.5	<5	<5	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010	<0.010	11.5	<1	4.35	-	<0.020																		
BH-15-20L.2*	URS 2010	2/25/2010	5-7	<0.5	<5	<5	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010	<0.010	-	-	-	-	-																		

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TABLE 1

SUMMARY OF SOIL ANALYTICAL RESULTS
FORMER JEFFERIE FACILITY
6317 NORTHEAST 4TH PLAIN BOULEVARD
VANCOUVER, WASHINGTON
TOTAL METALS

Sample ID	Consultant	Sample Date	Sample Depth: MTCA Method A Cleanup Level ft	HYDROCARBONS			PRIMARY VOCs						OXYGENATES					TOTAL METALS				METALS		cPAHs
				TPH _g	TPH _d	TPH _o	B	T	E	X	EDB	EDC	MTBE	TAME	TBA	DIPE	ETBE	Chromium/ Cadmium	Lead	Chromium	PAHs			
				30/100 (mg/kg)	2000 (mg/kg)	2000 (mg/kg)	0.03 (mg/kg)	7 (mg/kg)	6 (mg/kg)	9 (mg/kg)	0.005 (mg/kg)	NE (mg/kg)	0.1 (mg/kg)	NE (mg/kg)	NE (mg/kg)	NE (mg/kg)	NE (mg/kg)	2000 (mg/kg)	2 (mg/kg)	250 (mg/kg)	19 (mg/kg)	0.1 (mg/kg)		
PEX-SI-14.5	URS 2010	6/8/2010	14.5	<2.46	4.31	42.0	<0.00768 a	<0.0615	<0.0615	<0.1845	<0.0807 b	<0.0307	<0.0615	-	-	-	-	13.4	0.332	5.32	<0.476	<0.003		
PEX-NI-14.5	URS 2010	6/8/2010	14.5	<2.62	3.06	29.3	<0.00819 a	<0.0655	<0.0655	<0.1965	<0.0927 b	<0.0327	<0.0655	-	-	-	-	20.7	0.315	7.11	<0.003	<0.003		
PEX-BI-14.5	URS 2010	6/8/2010	14.5	<2.74	<1.11	5.28	<0.00863 a	<0.0690	<0.0690	<0.207	<0.0345 b	<0.0345	<0.0690	-	-	-	-	9.01	0.209	4.29	<0.003	<0.003		
PEX-W2-14.5	URS 2010	6/8/2010	14.5	<3.21	2.67	19.1	<0.0100 a	<0.0903	<0.0903	<0.2413	<0.0402 b	<0.0402	<0.0903	-	-	-	-	20.6	0.313	8.41	0.746	0.225		
PEX-W2-14	URS 2010	6/10/2010	14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.003		
SS-1-20100806	URS 2010	6/8/2010	-	<2.40	1.18	5.68	<0.00749 a	<0.0599	<0.0599	<0.1799	<0.0300 b	<0.0300	<0.0599	-	-	-	-	17.9	0.577	8.11	<0.476	0.0048		
SS-2-20100806	URS 2010	6/8/2010	-	<2.46	<1.15	4.85	<0.00769 a	<0.0615	<0.0615	<0.1845	<0.0308 b	<0.0308	<0.0615	-	-	-	-	17.6	0.481	5.68	<0.491	<0.003		
SS-3-20100806	URS 2010	6/8/2010	-	<2.32	1.87	12.4	<0.00725 a	<0.0580	<0.0580	<0.1740	<0.0290 b	<0.0290	<0.0580	-	-	-	-	20.7	0.587	7.05	<0.496	<0.006		

Notes/Abbreviations

TPH_g = Total petroleum hydrocarbons as gasoline range organics analyzed by NWTTH-G; before June 2008, analyzed by Method WTPH-G; before June 1993, analyzed by Modified EPA Method 8015TPH_d = Total petroleum hydrocarbons as diesel range organics analyzed by NWTTH-Dx with Silica Gel CleanupTPH_o = Total petroleum hydrocarbons as heavy oil range organics analyzed by NWTTH-Dx with Silica Gel Cleanup

BTX = Benzene, toluene, ethylbenzene, xylenes analyzed by EPA Method 8260B, before June 2008, analyzed by EPA Method 8020

EDB = 1,2-Dichloroethane analyzed by EPA Method 8260B

EDC = 1,2-Dichloroethane analyzed by EPA Method 8260B

VOCs = Volatile organic compounds

MTBE = Methyl tertiary-butyl ether analyzed by EPA Method 8260B

TBA = Tertiary-butanol analyzed by EPA Method 8260B

DIPE = Diisopropyl ether analyzed by EPA Method 8260B

ETBE = Ethyl tertiary-butyl ether analyzed by EPA Method 8260B

TAME = Tertiary-amyyl methyl ether analyzed by EPA Method 8260B

Total lead chromium, and cadmium analyzed by EPA Method 6020

Heaveatium chromium analyzed by SM3500C-D

PAHs = polycyclic aromatic hydrocarbons analyzed by EPA Method 8270-SM

cPAHs = carcinogenic PAHs. The value in the table is total toxicity equivalency concentration

mg/kg = milligrams per kilogram

NE = Not established

ND = Not detectable

<x = Not detectable above reporting limit x

- = Not analyzed

Bolted concentrations indicate the concentration value exceeded the MTCA Method A cleanup levels

Shade indicates the soil sample has been excavated and removed from site.

* = Samples were additionally analyzed for one or more of the following: polychlorinated biphenyls (PCBs) by EPA Method 8082, full VOCs by EPA Method 8260B, RCPA-8 metals by EPA Method 6000/7000 series; all analytical results are below the laboratory reporting limits.

SUMMARY OF GROUNDWATER MONITORING DATA
FORMER JIFFY LUBE FACILITY
6317 NORTHEAST 4TH PLAIN BOULEVARD
VANCOUVER, WASHINGTON

Sample ID	Date	TOC	DTW	GWE	HYDROCARBONS				PRIMARY VOCs				OXYGENATE		HEAD		Chromium	
					TPH _g 800/1000 µg/L	TPH _h 500 µg/L	TPH _o 500 µg/L	B 5 µg/L	T 1000 µg/L	E 700 µg/L	X 1000 µg/L	EDB 0.01 µg/L	EDC 5 µg/L	MTBE 20 µg/L	Total 15 µg/L	Disolved NE µg/L	Total Hexavalent Chromium 100 µg/L	
MW-1	07/08/10	-	17.25	-	<100	<100	<100	<0.50	<1.0	<1.0	<1.0	<0.01	<0.50	<1.0	3.13	-	5.54	-
MW-1	10/26/10*	-	17.84	-	<80	<85.2	<47.6	<1.00	<1.00	<1.00	<3.00	<0.01	<1.00	<1.00	<1.00	<1.00	<2.00	<10.0
MW-1	03/14/11	-	14.63	-	<100	<96.2	<56.2	<1.00	<1.00	<1.00	<3.00	<0.005	<1.00	<1.00	<2.00	<2.00	<2.00	<10.0
MW-1	06/29/11	-	16.47	-	<100	<97.1	<243	<1.00	<1.00	<1.00	<3.00	<0.005	<1.00	<1.00	<2.00	<2.00	<2.00	<10.0
P-7	11/10/05	-	-	-	<40	<118	<147	<1.00	<1.00	<1.00	<2.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	-
P-8	11/10/05	-	-	-	<40	<118	<147	<1.00	<1.00	<1.00	<2.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	-
P-9	11/10/05	-	-	-	<40	<118	<147	<1.00	<1.00	<1.00	<2.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	-
BH1	01/02/09	-	20	-	<100	317	1,840	<1.00	0.33 J	<0.5	<2.00	-	-	-	-	35	59.3	-
BH2	01/02/09	-	21	-	<100	<250	<250	<0.25	<1.00	<0.5	<1.5	<0.50	<0.50	<1.00	-	-	-	-
BH3	01/02/09	-	22	-	<100	<250	<250	<0.25	<1.00	<0.5	<1.5	<0.50	<0.50	<1.00	-	-	-	-
BH4	02/09/09	-	20	-	<80	<250	<500	-	-	-	-	-	-	-	-	-	-	-
BH5	02/09/09	-	20	-	<80	657	2,670	<0.25	2.37	1.53	3.63	<0.5	<0.50	<1.00	<1.00	0.0889	0.778	-
BH6	02/09/09	-	20	-	<80	<250	<500	<0.25	<1.00	<0.5	<1.5	<0.5	<0.50	<1.00	<1.00	<1.0	0.667	-
BH7	02/09/09	-	20	-	<80	<243	<485	-	-	-	-	-	-	-	-	-	-	-
BH-8	2/25/2010	-	17	-	<100	<100	<100	<0.5	<1.00	<1.00	<1.00	<1.00	<0.50	<1.00	-	<1.00	<1.00	-
BH-9	2/25/2010	-	17.5	-	<100	<100	<100	<0.5	<1.00	<1.00	<1.00	<1.00	<0.50	<1.00	-	<1.00	<1.00	-
BH-10	2/25/2010	-	16	-	<100	<100	<100	<0.5	<1.00	<1.00	<1.00	<1.00	<0.50	<1.00	-	<1.00	<1.00	-
BH-11	2/25/2010	-	17.5	-	<100	<100	<100	<0.5	<1.00	<1.00	<1.00	<1.00	<0.50	<1.00	-	<1.00	<1.00	-
BH-12	2/25/2010	-	16	-	<100	<100	<100	<0.5	<1.00	<1.00	<1.00	<1.00	<0.50	<1.00	-	<1.00	<1.00	-

Notes

DTW = Depth to Water in feet below top of casing.

GWE = Groundwater Elevation in feet above mean sea level after 3/10/2010; before that, relative to arbitrary benchmarks.

GWE = Groundwater Elevation in feet relative to arbitrary benchmarks

TOC = Top of Casing in feet above mean sea level after 3/10/2010; before that, relative to arbitrary benchmarks (ground surface).

MICA = Model Toxics Control Act

VOCs = Volatile Organic Compounds

Depth to water from top of well casing.

NE = Not established

TPH_g = Total petroleum hydrocarbons as gasoline analyzed by NMTPH-Cx unless otherwise noted. The higher value is based on the assumption that no benzene is present in the groundwater sample. If any detectable amount of benzene is present in the groundwater sample, then the lower TPH_g-C cleanup level is applicable.

