STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
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April 14, 2015

Ms. Tona Wakefield
Wakefield Family LLC
P.O. Box 95
Carpenteria, CA 93014

Re: No Further Action at the following Site:

- **Site Name:** Former Arco Service Station 0855 (RD Wakefield)
- **Site Address:** 4603 Ocean Beach Highway, Longview, Washington
- **Facility/Site No.:** 54832356
- **Cleanup Site ID No.:** 6265
- **VCP Project No.:** SW0881

Dear Ms. Wakefield:

The Washington State Department of Ecology (Ecology) received your request for an opinion on your independent cleanup of the Former Arco Service Station 0855 (RD Wakefield) 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 release:

- Petroleum constituents in Soil and Groundwater

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. Request for Opinion, Former Arco Service Station #0855 (a.k.a RD Wakefield), 4603 Ocean Beach Highway, Longview, WA, dated October 17, 2014 by SLR International Corporation (SLR).

2. Groundwater Sampling Report – September 2014 Event, Former Arco Service Station #0855 (a.k.a RD Wakefield), 4603 Ocean Beach Highway, Longview, WA, dated October 17, 2014 by SLR.

3. Groundwater Sampling Report – March 2014 Event, Former Arco Service Station #0855 (a.k.a RD Wakefield), 4603 Ocean Beach Highway, Longview, WA, dated April 18, 2014 by SLR.

4. 2013 Deep Groundwater Remediation System Performance Report, Former Arco Service Station #0855 (a.k.a RD Wakefield), 4603 Ocean Beach Highway, Longview, WA, dated January 20, 2014 by SLR.

5. Groundwater Sampling Report – December 2012 Event, Former Arco Service Station #0855 (a.k.a RD Wakefield), 4603 Ocean Beach Highway, Longview, WA, dated February 25, 2013 by SLR.

6. Groundwater Sampling Report – September 2012 Event, Former Arco Service Station #0855 (a.k.a RD Wakefield), 4603 Ocean Beach Highway, Longview, WA, dated November 19, 2012 by SLR.

7. Quarterly Groundwater Sampling Report – June 2012 Event, Former Arco Service Station #0855 (a.k.a RD Wakefield), 4603 Ocean Beach Highway, Longview, WA, dated August 10, 2012 by SLR.

8. Quarterly Groundwater Sampling Report – March 2012 Event, Former Arco Service Station #0855 (a.k.a RD Wakefield), 4603 Ocean Beach Highway, Longview, WA, dated April 13, 2012 by SLR.

9. 2011 Deep Groundwater Remediation System Performance Report, Former Arco Service Station #0855 (a.k.a RD Wakefield), 4603 Ocean Beach Highway, Longview, WA, dated February 10, 2012 by SLR.

10. Quarterly Groundwater Sampling Report – December 2011 Event, Former Arco Service Station #0855 (a.k.a RD Wakefield), 4603 Ocean Beach Highway, Longview, WA, dated January 9, 2012 by SLR.

11. Quarterly Groundwater Sampling Report – September 2011 Event, Former Arco Service Station #0855 (a.k.a RD Wakefield), 4603 Ocean Beach Highway, Longview, WA, dated October 31, 2011 by SLR.

12. Likely No Further Action Needed Opinion Letter, Former Arco Service Station #0855 (a.k.a RD Wakefield), 4603 Oc01ean Beach Highway, Longview, WA, dated April 10, 2008 by Washington State Department of Ecology (Ecology).

These 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 these 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 below.

The Former Arco #0855 is located at 4601 Ocean Beach Highway in Longview, Cowlitz County, Washington. The Site slopes gently downward to the western and southwestern parts of the Site. The Site surface consists of asphalt or concrete except for gravel services above the two former underground storage tank (UST) basins and a dirt/grass surface within the planter at the eastern corner of the Site. A property location map (Figure 1) and property layout map (Figure 2) are included in the Enclosures.

From 1957 to 1977, Atlantic Richfield Corporation used the Site as a retail gasoline service station and automobile repair garage. The station operations were discontinued in 1977. The USTs and dispensers were inactive after 1977; however, they were not removed until 1999. From 1977 through 2005, the Site was leased to several commercial businesses. The Site has been vacant since December 2005. The existing structures at the Site consist of the former service station building, and the former canopy and dispenser island.

In July 1999, 3 Kings Environmental, Inc. (3 Kings) removed all of the USTs and collected soil samples from the extents of the excavations. The fuel dispensers were also

removed; however, the underground dispenser lines were capped at both ends and left in place. The USTs consisted of four gasoline tanks located in the western part of the Site, and a heating oil tank and a waste oil tank in the southwestern part of the Site. After removal of the USTs, a total of six soil samples were collected from the sidewalls and floor of the gasoline tank excavation. The soil sample analytical results showed that the analyte concentrations in all of the samples were below the method reporting limits (MRLs). A total of five soil samples were collected from the sidewalls and floor of the heating oil tank and waste oil tank excavation. The soil sample results indicated concentrations of diesel-range total petroleum hydrocarbons (TPH-Dx) from the northeastern and eastern sidewalls exceeded the current MTCA Method A cleanup levels. A soil sample collected from the western wall of the excavation contained levels of oil-range total petroleum hydrocarbons (TPH-O) greater than the MTCA Method A cleanup levels.

In March 2000, IT Corporation (IT) conducted an environmental assessment that consisted of drilling and sampling three soil borings, installing shallow groundwater monitoring wells (MW-1 to MW-3) and collecting groundwater samples. Soil sample analytical results showed that four samples collected near the former USTs and the former dispensers (MW-2 and MW-3), at depths ranging from 2 to 20 feet below ground surface (bgs), contained benzene, ethylbenzene, total xylenes, and gasoline-range TPH (TPH-Gx) concentrations that exceeded the current MTCA Method A cleanup levels. The groundwater analytical results indicated that samples collected from MW-2 and MW-3 contained benzene, toluene, ethylbenzene, total xylenes (BTEX), and TPH-Gx concentrations that exceeded the current MTCA Method A cleanup levels.

In October 2000, SECOR International, Inc. (SECOR) conducted a subsurface investigation to delineate the extent of hydrocarbon-impacted groundwater. A total of four wells were installed (MW4 through MW-7) and six soil borings (GP-1 through GP-3, and GP-5 through GP-7). Soil sample analytical results showed that samples collected from on-Site borings MW4 and MW-7, at 5 feet bgs, contained TPH-Gx, total xylenes, and naphthalene concentrations that exceeded the MTCA Method A cleanup levels. The groundwater sample analytical results showed that the samples from MW-3 and MW-4 contained BTEX, 1,2-dichloroethane (EDC), naphthalene, and TPH-Gx concentrations that exceeded the current MTCA Method A cleanup levels. The samples collected from the other wells and the off-Site well points did not contain analyte concentrations above MTCA Method A cleanup levels.

SLR conducted a remedial investigation at the Site from May 2005 to August 2006. The investigation consisted of drilling and sampling 24 on-Site and six off-Site soil borings, completing eight of the borings with deep groundwater monitoring wells and four of the borings with shallow groundwater monitoring wells, and collecting groundwater samples from the new and existing wells. Based on the soil sample analytical results, soil containing petroleum hydrocarbon concentrations greater than the MTCA Method A cleanup levels were present in the northeast, northern, and western parts of the Site (near the dispenser island and former UST basin). Localized areas of soil contamination greater than the MTCA Method A cleanup levels, were also present in the west-central part of the Site near the former used oil and heating oil USTs. From May 2005 through

August 2006, gasoline free product was present on the groundwater in shallow monitoring wells MW-3.

Based on the October 2006 investigation, SLR completed a Feasibility Study (FS) to determine remedial options for the Site. A comparative analysis of the four options outlined in the FS was performed and it was determined that Alternative 2 (Soil Excavation, Shallow Groundwater/Product Extraction, and Natural Attenuation) was the preferred alternative. This recommendation also included a contingency to potentially implement Alternative 3 (Soil Excavation, Shallow Groundwater/Product Extraction, Deep Groundwater Recovery, and Natural Attenuation) should concentrations in the deeper groundwater fail to decrease over time.

In September 2007, approximately 3400 tons of petroleum-contaminated soils (PCS) were excavated and hauled to the Hillsboro Landfill for disposal. An additional 20,785 gallons of shallow groundwater were extracted and treated prior to discharge to the local sanitary sewer. Confirmation soil samples collected following the excavation did not exceed the MTCA Method A Cleanup Levels.

In April 2008, Ecology prepared an opinion letter on both the FS and the remedial excavation and sampling work conducted, noting that the proposed work would likely be sufficient to meet the requirements of MTCA.

Quarterly groundwater monitoring was conducted between 2007 and 2009. One shallow well (MW-10) and four deep wells (DMW-4, 5, 9, and 10) continued to have exceedances of the MTCA Method A Cleanup Levels. To remediate the remaining impacted groundwater, a deep groundwater recovery well (RW-1) was installed. The recovery and treatment system initially operated at the Site between June 2009 and July 2011. The system was deactivated after groundwater concentrations were near or below the MTCA Method A Cleanup Levels in all of the deep wells.

From September 2009 through December 2012, groundwater samples were collected on an annual basis from all wells and on a quarterly basis for wells MW-10, DMW-5, DMW-9, and DMW-10. Results from the sampling events showed that at least four quarters of concentrations below the MTCA Method A Cleanup Levels in all wells with the exception of DMW-10.

Additional wells (DMW-11 and DMW-12) were installed in the deeper aquifer in May 2013 to further delineate the extent of the deeper groundwater impacts surrounding DMW-10. Groundwater samples collected from the three wells (DMW-10, 11, and 12) indicated that only DMW-10 had a concentration of benzene [38 micrograms per liter (µg/L)], greater than the MTCA Method A Cleanup Level of 5 µg/L.

To address the remaining benzene impacts in DMW-10, another recovery well (RMW-2) was installed in the deeper aquifer near DMW-10, and groundwater was pumped and treated between June and October 2013. Influent samples collected from the treatment system dropped below the MTCA Method A Cleanup Levels in October 2013. During

the entire operation of the treatment system, approximately 2,149,779 gallons of groundwater were removed and treated.

Groundwater monitoring continued through March 2014 and all samples collected were below the MTCA Method A Cleanup Levels. A final annual groundwater sampling event was conducted in September 2014 and all samples tested were either below the MTCA Method A Cleanup Levels or the laboratory method detection limits. All groundwater sample results including historical data are presented on Table 2 included in the Enclosures.

The uppermost geology beneath the Site consists of approximately 3 to 10 feet of sand and gravel fill. In areas where the fill is not present, approximately 2 feet of silty topsoil exists. The fill or topsoil is underlain by a clayey silt unit that ranges in thickness from 4.5 to 15.5 feet. Laterally discontinuous silty sand lenses up to 2 feet thick are interbedded within the clayey silt. The clayey silt is typically underlain by a sandy silt unit, and is up to 7 feet thick. A sand unit that is at least 25.5 feet thick occurs beneath the clayey silt. The unconfined groundwater occurs at depths ranging from 4 to 7.5 feet bgs. The semi-confined groundwater primarily occurs within a sand unit that is located beneath the clayey silt unit (at depths below 20 feet bgs). The groundwater flow directions in the shallow unit and the semi-confined aquifer are inconsistent and there are flow components in several directions. There is a downward vertical gradient from the shallow water-bearing unit to the semi-confined aquifer and the units appear to be hydraulically connected. The September 2014 shallow and deep aquifer elevations are presented on Figures 2 and 3, both included in the Enclosures.

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.

a. Cleanup levels.

MTCA Method A Cleanup Levels for unrestricted land use for soil and groundwater were used to characterize the Site.

b. Points of compliance.

Standard points of compliance were used for the Site. The point of compliance for protection of groundwater was established in the soils throughout the Site. For soil cleanup levels 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 soils 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.

3. Selection of cleanup action.

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

Impacted soil excavation and disposal was used at the Site. A groundwater pumping and treatment system was also operated at the Site between 2007 and 2013.

4. Cleanup.

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

The USTs have been removed from the Site and approximately 3400 tons of petroleum PCS were excavated and hauled to the Hillsboro Landfill for disposal. A groundwater extraction system was operated on the Site between 2007 and 2013 and approximately 2,149,779 gallons of groundwater were removed, treated, and discharged to the sanitary sewer.

Quarterly groundwater monitoring has occurred at the Site and at least four quarters of sampling with detections below MTCA Method A Cleanup Levels has been achieved in wells on the Site.

Listing of the Site

Based on this opinion, Ecology will remove the Site from our Confirmed and Suspected Contaminated Sites List.

Limitations of the Opinion

1. Opinion does not settle liability with the state.

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

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

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

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

To recover remedial action costs from other liable persons under MTCA, one must demonstrate that the action is the substantial equivalent of an Ecology-conducted or

Ecology-supervised action. This opinion does not determine whether the action you performed is substantially equivalent. Courts make that determination. *See* RCW 70.105D.080 and WAC 173-340-545.

3. State is immune from liability.

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

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 (#SW0881)

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 by phone at 360-407-7263 or e-mail at tmid461@ecy.wa.gov.

Sincerely,

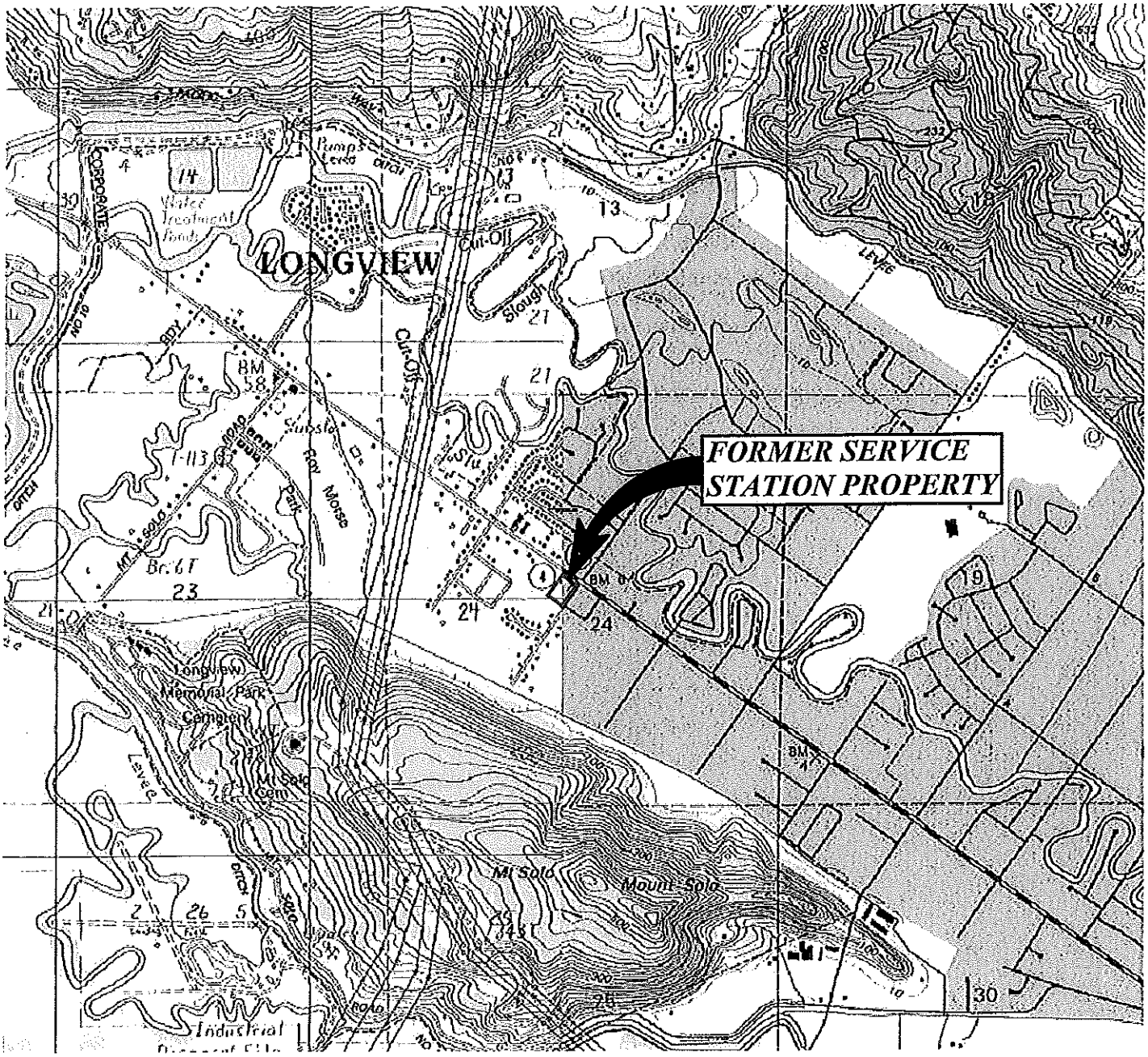
Thomas Middleton L.HG.
SWRO Toxics Cleanup Program

TMM: ANF

Enclosures: Figure 1 – Site Location Map
Figure 2 – Site Layout Map and Sept 2014 Shallow GW Elevations
Figure 3 – Site Layout Map and Sept 2014 Deep GW Elevations
Table 2 – Current and Historical Groundwater Sample Results

cc: Mike Staton
Paul Turner - Ecology
Scott Rose - Ecology
Dolores Mitchell, Ecology

By Certified Mail: 70092250000190351385



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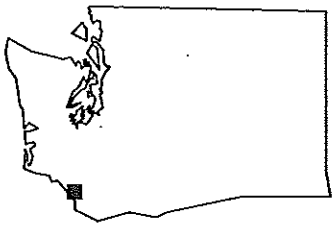
SCALE IN FEET



WASHINGTON

SOURCE: USGS 7.5 Minute Quadrangles Kelso, 1970 Contour Interval 20 Feet and Abernathy Mtn., 1986 Contour Interval 20 Feet.

SLR

22122 20th AVE SE
BLDG. H, SUITE 150
BOTHELL, WA 98021

T: 425-402-8800
F: 425-402-8488

DATE	04/11
DWN.	BDT
APPR.	
REVIS.	
PROJECT NO.	101.00173.00011

FIGURE 1
FORMER ARCO SERVICE STATION #0855
LONGVIEW, WASHINGTON

PROPERTY LOCATION MAP

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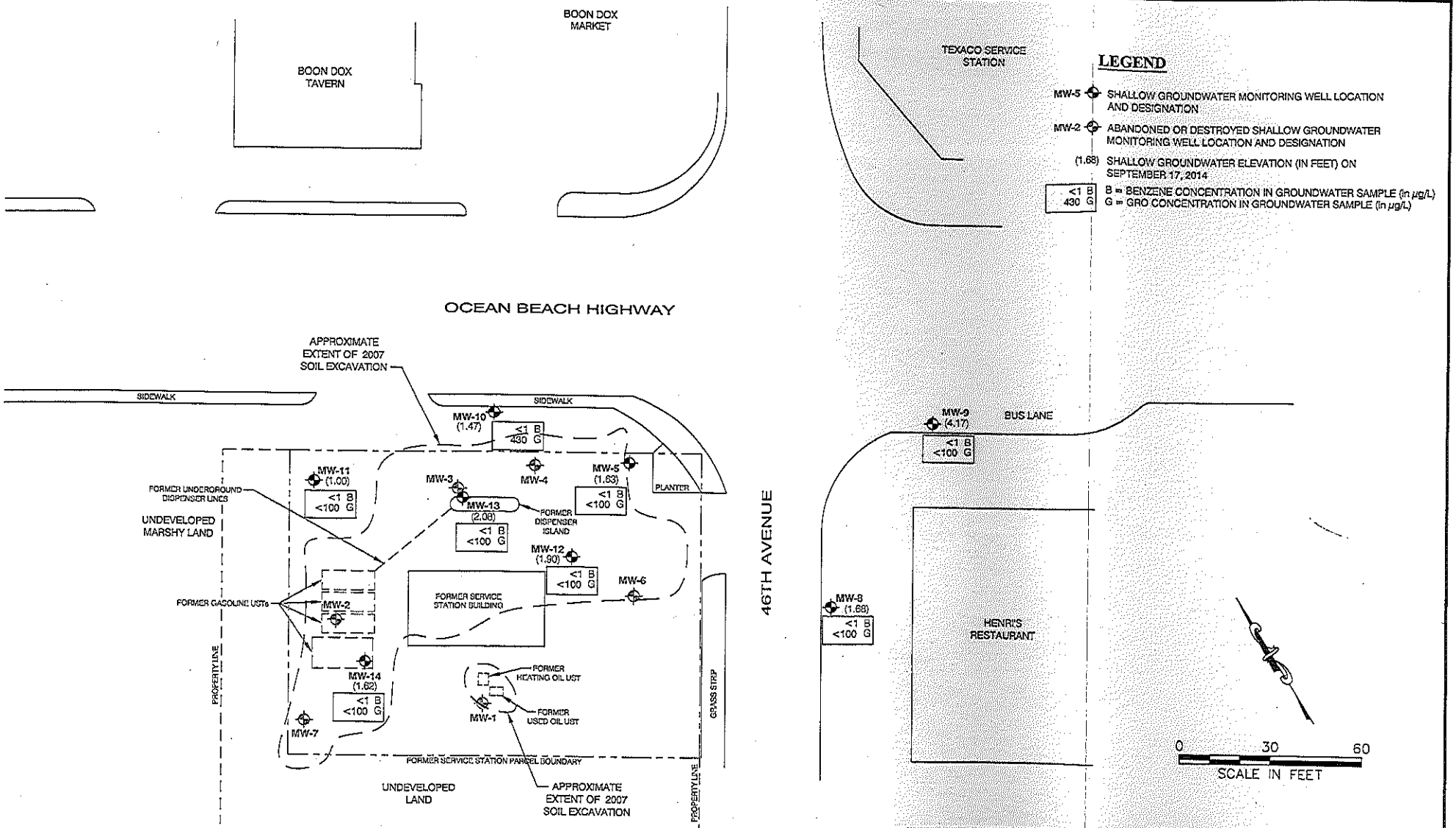

SLR

22118 20th AVE SE
BUILDING G, SUITE 202
BOTHELL, WA 98021
T: 425-402-8800
F: 425-402-8488

DATE	9/15
DWN.	MEH
APPR.	MDS
REVIS.	
PROJECT NO.	101.00173.00011

FIGURE 2
FORMER ARCO SERVICE STATION #0855
LONGVIEW, WASHINGTON
SHALLOW GROUNDWATER ELEVATIONS AND GROUNDWATER SAMPLING RESULTS SEPTEMBER 2014

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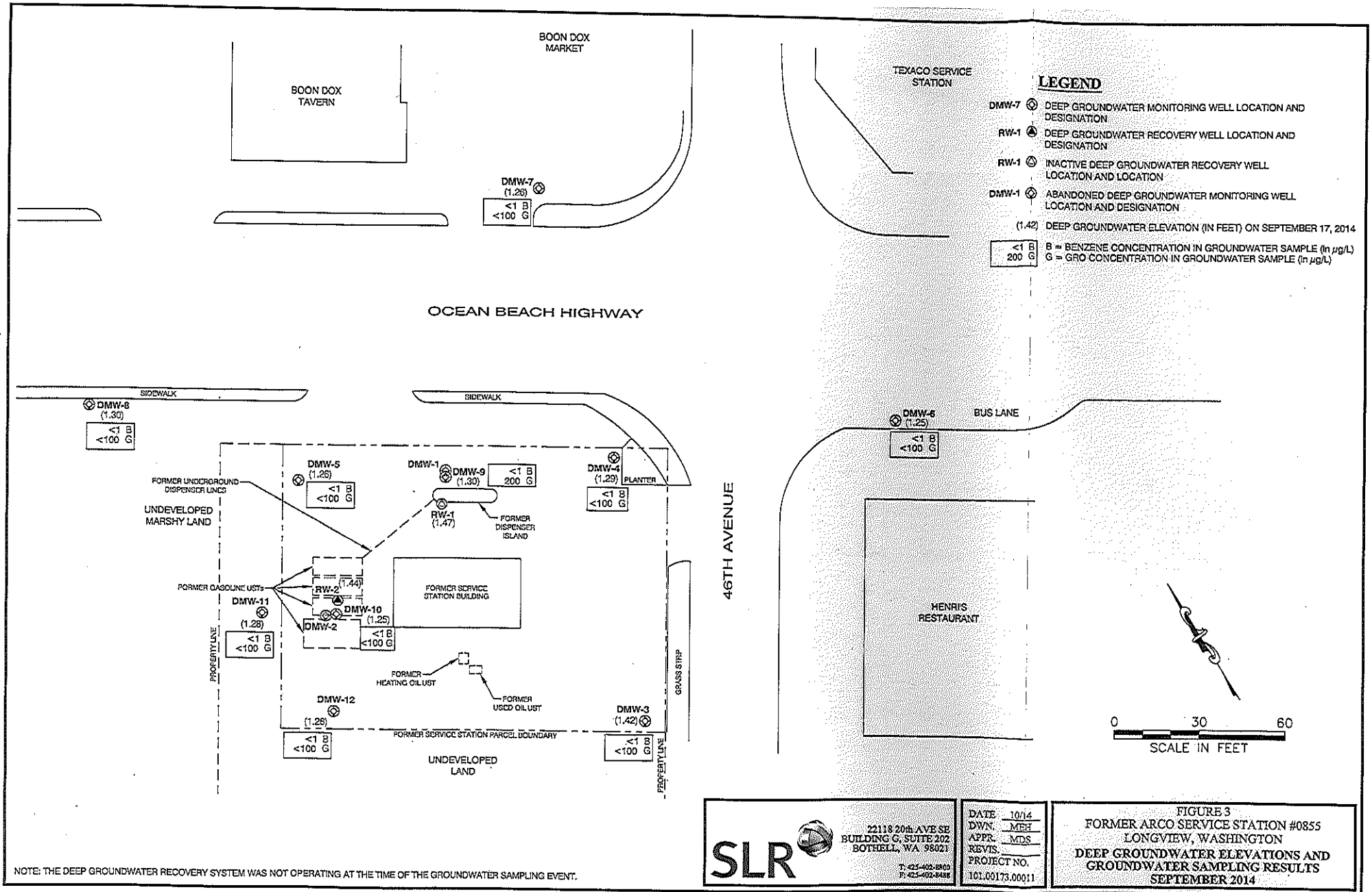

NOTE: THE DEEP GROUNDWATER RECOVERY SYSTEM WAS NOT OPERATING AT THE TIME OF THE GROUNDWATER SAMPLING EVENT.

SLR
22118 20th AVE SE
BUILDING G, SUITE 202
BOTHELL, WA 98021
T: 425-402-8800
F: 425-402-8488

DATE 10/14
DWN. MEH
APPR. MDS
REVIS.
PROJECT NO. 101.00173.00011

FIGURE 3
FORMER ARCO SERVICE STATION #0855
LONGVIEW, WASHINGTON
DEEP GROUNDWATER ELEVATIONS AND GROUNDWATER SAMPLING RESULTS
SEPTEMBER 2014

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Table 2
Groundwater Sample Analytical Results - Petroleum Hydrocarbons
Former Arco Service Station #0855
Longview, Washington

Well Number	Sample Date	Benzene[a] (µg/L)	Toluene[a] (µg/L)	Ethylbenzene[a] (µg/L)	Total Xylenes[a] (µg/L)	GRO[b] (µg/L)	DRO[c] (µg/L)
MTCA Method A Cleanup Levels[d]		5	1,000	700	1,000	800	500
Shallow Monitoring Wells							
MW-1	03/27/00	ND	ND	ND	ND	ND	ND
	05/23/00	ND	ND	ND	ND	ND	NA
	07/20/00	ND	ND	ND	ND	ND	NA
	10/18/00	ND	ND	1.61	ND	404	NA
	01/18/01	ND	ND	ND	ND	95.6	NA
	04/18/01	ND	ND	ND	ND	NA	NA
	07/17/01	ND	2.63	1.46	ND	386	NA
	10/18/01	ND	ND	ND	ND	ND	NA
	01/16/02	ND	ND	ND	ND	104	NA
	07/09/03	<0.50	<0.50	<0.50	<1.0	<50	<250
	05/25/05	<1.0	<1.0	<1.0	<2.0	<100	<50
	11/30/05	<1.0	<1.0	<1.0	<3.0	<100	<50
	Well abandoned in September 2007.						
MW-2	03/27/00	6.89	49.5	599	2,490	17,100	ND
	05/23/00	26.2	16.2	614	1,770	13,200	NA
	07/20/00	11.9	11.8	304	330	7,220	NA
	10/18/00	3.67	1.23	13.9	7.55	743	NA
	01/18/00	ND	ND	41.1	5.62	691	NA
	04/18/01	ND	ND	8.73	ND	NA	NA
	07/17/01	ND	1.26	14	ND	430	NA
	10/18/01	2.11	ND	3.64	ND	304	NA
	01/16/02	1.16	0.81	37.1	6.71	370	NA
	07/09/03	0.86	<0.50	6.43	1.28	131	<250
	05/30/05	<1.0	<1.0	<1.0	<2.0	<100	52
	12/01/05	<1.0	<1.0	<1.0	<3.0	120	<50
	Well abandoned in September 2007.						
MW-3	03/07/00	7,520	12,900	2,780	14,500	93,700	ND
	05/23/00	4,710	8,330	2,280	11,200	65,200	NA
	07/20/00	10,700	22,600	3,160	17,400	145,000	NA
	10/18/00	12,900	33,000	4,890	26,700	179,000	NA
	01/18/01	9,380	17,200	3,940	20,230	121,000	NA
	04/18/01	7,700	15,300	3,430	16,990	NA	NA
	07/17/01	10,100	21,400	4,120	20,900	940,000	NA
	10/18/01	7,200	19,700	3,340	17,300	139,000	NA
	01/16/02	13,600	26,600	3,920	20,800	177,000	NA
	07/09/03	11,800	20,100	4,560	21,200	124,000	3,750
	05/25/05	Not sampled due to presence of free product.					
	11/28/05	Not sampled due to presence of free product.					
	Well abandoned in September 2007.						
MW-4	11/15/00	1,310	53.6	2,430	7,250	45,500	NA
	01/18/01	1,130	ND	2,030	2,764	29,400	NA
	04/18/01	1,280	ND	1,700	2,591	NA	NA
	07/17/01	1,610	35	2,870	1,870	34,900	NA
	10/18/01	1,040	ND	2,300	1,320	33,000	NA
	01/16/02	733	ND	920	948	19,300	NA
	07/09/03	906	39.1	1,350	156	14,100	798
	05/24/05	310	2.90	410	185[e]	9,600	2,300
	12/01/05	990	140	1,100	1,353[e]	11,000	2,900[f]
	Well abandoned in September 2007.						

Table 2
Groundwater Sample Analytical Results - Petroleum Hydrocarbons
Former Arco Service Station #0855
Longview, Washington

Well Number	Sample Date	Benzene[a] (µg/L)	Toluene[a] (µg/L)	Ethylbenzene[a] (µg/L)	Total Xylenes[a] (µg/L)	GRO[b] (µg/L)	DRO[c] (µg/L)
MTCA Method A Cleanup Levels[d]		5	1,000	700	1,000	800	500
Shallow Monitoring Wells (continued)							
MW-5	11/15/00	ND	ND	ND	ND	ND	NA
	01/18/01	ND	ND	ND	ND	786	NA
	04/18/01	9.42	ND	6.76	10.1	NA	NA
	07/17/01	1.83	1.16	1.90	3.28	694	NA
	10/18/01	3.05	1.39	1.48	1.45	647	NA
	01/16/02	52.3	3.82	48	24.9	2,800	NA
	07/09/03	1.26	0.99	1.54	4.64	615	<250
	05/24/05	<1.0	<1.0	<1.0	<2.0	460	120
	11/28/05	<1.0	<1.0	<1.0	<3.0	420	230[f]
	12/11/07	<1.0	<1.0	<1.0	<3.0	140	<50
	03/11/08	<1.0	<1.0	<1.0	<3.0	<100	<50
	07/02/08	<1.0	<1.0	<1.0	<3.0	<100	<50
	10/02/08	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/03/09	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/14/10	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/14/11	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/11/12	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/10/13	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/17/14	<1.0	<1.0	<1.0	<3.0	<100	NA
MW-6	11/15/00	ND	ND	ND	ND	131	NA
	01/18/01	ND	ND	ND	ND	732	NA
	04/18/01	ND	ND	ND	ND	NA	NA
	07/17/01	ND	1.35	1.33	5.79	892	NA
	10/18/01	ND	ND	2.60	5.48	1,000	NA
	01/16/02	ND	0.72	1.58	2.78	810	NA
	07/09/03	<0.50	0.53	1.15	4.84	462	958
	05/25/05	<1.0	<1.0	<1.0	<2.0	370	270
	11/28/05	<1.0	<1.0	<1.0	<1.0	NA	<1.0
	Well destroyed in November 2007.						
MW-7	11/15/00	ND	ND	ND	1.35	113	NA
	01/18/01	ND	ND	ND	ND	242	NA
	04/18/01	ND	ND	ND	ND	NA	NA
	07/17/01	ND	ND	ND	ND	275	NA
	10/18/01	ND	ND	ND	ND	286	NA
	01/16/02	ND	ND	ND	ND	362	NA
	07/09/03	<0.50	<0.50	<0.50	1.48	232	2,050
	05/25/05	<1.0	<1.0	<1.0	<2.0	<100	220
	11/30/05	<1.0	<1.0	<1.0	<3.0	<100	140
	Well abandoned in September 2007.						
MW-8	05/25/05	<1.0	<1.0	<1.0	<3.0	<100	<70
	11/29/05	<1.0	<1.0	<1.0	<3.0	<100	<50
	12/11/07	<1.0	<1.0	<1.0	<3.0	<100	<50
	03/11/08	<1.0	<1.0	<1.0	<3.0	<100	<50
	07/01/08	<1.0	<1.0	<1.0	<3.0	<100	<50
	10/01/08	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/03/09	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/14/10	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/14/11	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/12/12	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/09/13	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/17/14	<1.0	<1.0	<1.0	<3.0	<100	NA

Table 2
Groundwater Sample Analytical Results - Petroleum Hydrocarbons
Former Arco Service Station #0855
Longview, Washington

Well Number	Sample Date	Benzene[a] (µg/L)	Toluene[a] (µg/L)	Ethylbenzene[a] (µg/L)	Total Xylenes[a] (µg/L)	GRO[b] (µg/L)	DRO[c] (µg/L)
MTCA Method A Cleanup Levels[d]		5	1,000	700	1,000	800	500
Shallow Monitoring Wells (continued)							
MW-9	05/25/05	<1.0	<1.0	<1.0	<3.0	<100	<50
	11/28/05	<1.0	<1.0	<1.0	<3.0	<100	<50
	12/11/07	<1.0	<1.0	<1.0	<3.0	<100	<50
	03/11/08	<1.0	<1.0	<1.0	<3.0	<100	<50
	07/02/08	<1.0	<1.0	<1.0	<3.0	<100	<50
	10/02/08	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/03/09	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/14/10	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/14/11	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/12/12	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/10/13	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/17/14	<1.0	<1.0	<1.0	<3.0	<100	NA
MW-10	05/25/05	45	<1.0	110	<2.0	1,000	1,200
	11/30/05	31	<1.0	110	<3.0	1,400	1,000[f]
	12/11/07	9.0	3.0	65	<3.0	3,100	1,000[g]
	03/11/08	16	2.0	40	<3.0	3,000	1,200[g]
	07/03/08	18	2.0	53	41	2,500	1,100[g]
	10/02/08	<1.0	<1.0	<1.0	<3.0	1,300	NA
	09/03/09	<1.0	<1.0	2.0	<3.0	200	NA
	12/15/09	3.0	<1.0	11	<3.0	310	NA
	03/18/10	<1.0	<1.0	<1.0	<3.0	<100	NA
	06/15/10	<1.0	<1.0	<1.0	<3.0	170	NA
	09/14/10	<1.0	<1.0	<1.0	<3.0	180	NA
	09/14/11	1.5	<1.0	<1.0	<3.0	120	NA
	09/12/12	<1.0	<1.0	<1.0	<3.0	160	NA
	09/10/13	1.1	<1.0	<1.0	<3.0	120	NA
	09/17/14	<1.0	<1.0	1.1	<3.0	430	NA
MW-11	12/05/05	<1.0	<1.0	<1.0	<3.0	<100	<50
	12/11/07	<1.0	<1.0	<1.0	<3.0	<100	<50
	03/11/08	<1.0	<1.0	<1.0	<3.0	<100	<50
	07/02/08	<1.0	<1.0	<1.0	<3.0	<100	<50
	10/02/08	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/03/09	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/14/10	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/14/11	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/11/12	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/10/13	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/18/14	<1.0	<1.0	<1.0	<3.0	<100	NA
MW-12	12/11/07	<1.0	<1.0	<1.0	<3.0	<100	<50
	03/11/08	<1.0	<1.0	<1.0	<3.0	<100	<50
	07/02/08	<1.0	<1.0	<1.0	<3.0	<100	<50
	10/02/08	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/03/09	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/14/10	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/14/11	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/12/12	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/10/13	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/18/14	<1.0	<1.0	<1.0	<3.0	<100	NA

Table 2
Groundwater Sample Analytical Results - Petroleum Hydrocarbons
Former Arco Service Station #0855
Longview, Washington

Well Number	Sample Date	Benzene[a] (µg/L)	Toluene[a] (µg/L)	Ethylbenzene[a] (µg/L)	Total Xylenes[a] (µg/L)	GRO[b] (µg/L)	DRO[c] (µg/L)
MTCA Method A Cleanup Levels[d]		5	1,000	700	1,000	800	500
Shallow Monitoring Wells (continued)							
MW-13	12/11/07	<1.0	<1.0	<1.0	<3.0	<100	<50
	03/11/08	<1.0	<1.0	<1.0	<3.0	<100	<50
	07/03/08	<1.0	<1.0	<1.0	<3.0	<100	<50
	10/02/08	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/03/09	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/14/10	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/14/11	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/11/12	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/10/13	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/17/14	<1.0	<1.0	<1.0	<3.0	<100	NA
MW-14	12/11/07	<1.0	<1.0	<1.0	<3.0	<100	<50
	03/11/08	<1.0	<1.0	<1.0	<3.0	<100	50
	07/02/08	<1.0	<1.0	<1.0	<3.0	<100	<50
	10/01/08	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/03/09	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/14/10	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/14/11	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/12/12	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/10/13	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/18/14	<1.0	<1.0	<1.0	<3.0	<100	NA
Deep Monitoring Wells							
DMW-1	12/07/05	4,000	160	1,100	4,090[e]	22,000	2,900[f]
	08/17/06	4,100	<1.0	520	841[e]	16,000	930[f]
		Well abandoned in September 2007.					
DMW-2	12/07/05	11	<1.0	40	46[f]	270	<50
	08/16/06	10	<1.0	5.6	<3.0	<100	<50
		Well abandoned in September 2007.					
DMW-3	12/07/05	<1.0	<1.0	<1.0	<3.0	<50	<50
	08/17/06	<1.0	<1.0	<1.0	<3.0	<100	<50
	12/11/07	<1.0	<1.0	<1.0	<3.0	<100	<50
	03/11/08	<1.0	<1.0	<1.0	<3.0	<100	<50
	07/02/08	<1.0	<1.0	<1.0	<3.0	<100	<50
	10/01/08	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/03/09	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/14/10	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/14/11	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/12/12	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/10/13	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/18/14	<1.0	<1.0	<1.0	<3.0	<100	NA
DMW-4	12/05/05	56	<1.0	<1.0	<3.0	230	<50
	08/17/06	5.7	<1.0	<1.0	<3.0	210	<50
	12/11/07	27	3.0	2.0	4.0	260	<50
	03/11/08	6.0	<1.0	<1.0	<3.0	230	68[g]
	07/02/08	<1.0	<1.0	<1.0	<3.0	<100	<50
	10/02/08	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/03/09	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/14/10	<1.0	1.2	<1.0	3.3	<100	NA
	09/14/11	<1.0	<1.0	<1.0	<3.0	<100	NA
	03/13/12	<1.0	<1.0	<1.0	<3.0	<100	NA
	06/15/12	1.0	<1.0	<1.0	<3.0	<100	NA
	09/11/12	<1.0	<1.0	<1.0	<3.0	<100	NA
	12/13/12	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/10/13	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/17/14	<1.0	<1.0	<1.0	<3.0	<100	NA

Table 2
Groundwater Sample Analytical Results - Petroleum Hydrocarbons
Former Arco Service Station #0855
Longview, Washington

Well Number	Sample Date	Benzene[a] (µg/L)	Toluene[a] (µg/L)	Ethylbenzene[a] (µg/L)	Total Xylenes[a] (µg/L)	GRO[b] (µg/L)	DRO[c] (µg/L)
MTCA Method A Cleanup Levels[d]		5	1,000	700	1,000	800	500
Deep Monitoring Wells (continued)							
DMW-5	12/05/05	36	<1.0	<1.0	<3.0	130	<50
	08/17/06	74	<1.0	<1.0	<3.0	170	<50
	12/11/07	41	<1.0	<1.0	<3.0	100	<50
	03/11/08	10	<1.0	<1.0	<3.0	<100	<50
	07/02/08	1.0	<1.0	<1.0	<3.0	<100	<50
	10/01/08	42	<1.0	<1.0	<3.0	110	NA
	09/03/09	<1.0	<1.0	<1.0	<3.0	<100	NA
	12/15/09	1.0	<1.0	<1.0	<3.0	<100	NA
	03/18/10	13	<1.0	<1.0	<3.0	<100	NA
	06/15/10	13	<1.0	<1.0	<3.0	<100	NA
	09/14/10	<1.0	<1.0	<1.0	<3.0	<100	NA
	12/14/10	9.0	<1.0	<1.0	<3.0	<100	NA
	03/16/11	11	<1.0	<1.0	<3.0	<100	NA
	06/16/11	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/14/11	<1.0	<1.0	<1.0	<3.0	<100	NA
	12/08/11	<1.0	<1.0	<1.0	<3.0	<100	NA
	03/13/12	3.0	<1.0	<1.0	<3.0	<100	NA
	09/11/12	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/10/13	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/18/14	<1.0	<1.0	<1.0	<3.0	<100	NA
DMW-6	08/16/06	<1.0	<1.0	<1.0	<3.0	<100	<50
	12/11/07	<1.0	<1.0	<1.0	<3.0	<100	<50
	03/11/08	<1.0	<1.0	<1.0	<3.0	<100	<50
	07/02/08	<1.0	<1.0	<1.0	<3.0	<100	<50
	10/02/08	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/03/09	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/14/10	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/14/11	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/12/12	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/10/13	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/17/14	<1.0	<1.0	<1.0	<3.0	<100	NA
DMW-7	08/16/06	<1.0	<1.0	<1.0	<3.0	<100	<50
	12/11/07	<1.0	<1.0	<1.0	<3.0	<100	<50
	03/11/08	<1.0	<1.0	<1.0	<3.0	<100	<50
	07/01/08	<1.0	<1.0	<1.0	<3.0	<100	<50
	10/01/08	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/03/09	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/14/10	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/14/11	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/11/12	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/09/13	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/17/14	<1.0	<1.0	<1.0	<3.0	<100	NA
DMW-8	08/16/06	<1.0	<1.0	<1.0	<3.0	<100	<50
	12/11/07	<1.0	<1.0	<1.0	<3.0	<100	<50
	03/11/08	<1.0	<1.0	<1.0	<3.0	<100	<50
	07/02/08	<1.0	<1.0	<1.0	<3.0	<100	<50
	10/02/08	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/03/09	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/14/10	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/14/11	<1.0	<1.0	<1.0	<3.0	<100	NA
	0911/12	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/09/13	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/17/14	<1.0	<1.0	<1.0	<3.0	<100	NA

Table 2
Groundwater Sample Analytical Results - Petroleum Hydrocarbons
Former Arco Service Station #0855
Longview, Washington

Well Number	Sample Date	Benzene[a] (µg/L)	Toluene[a] (µg/L)	Ethylbenzene[a] (µg/L)	Total Xylenes[a] (µg/L)	GRO[b] (µg/L)	DRO[c] (µg/L)
MTCA Method A Cleanup Levels[d]		5	1,000	700	1,000	800	500
Deep Monitoring Wells (continued)							
DMW-9	12/11/07	6,100	1,900	970	3,100	27,000	600[g]
	03/11/08	3,000	150	380	880	13,000	450[g]
	07/03/08	3,600	3.0	320	610	9,500	520[g]
	10/02/08	3,300	4.0	140	270	8,600	NA
	09/03/09	2,800	4.0	320	1,100	14,000	NA
	12/15/09	980	2.0	<1.0	1,100	5,300	NA
	03/18/10	190	<1.0	10	200	1,600	NA
	06/15/10	50	<1.0	9.1	60	630	NA
	09/14/10	210	<1.0	5.2	120	1,000	NA
	12/14/10	3.3	<1.0	1.3	9.8	320	NA
	03/16/11	14	<1.0	2.0	3.7	310	NA
	06/16/11	87	<1.0	<1.0	33	700	NA
	09/14/11	<1.0	<1.0	<1.0	3.4	200	NA
	12/08/11	<1.0	<1.0	<1.0	<3.0	140	NA
	03/13/12	1.9	<1.0	<1.0	<3.0	310	NA
	06/15/12	<1.0	<1.0	<1.0	<3.0	160	NA
	09/11/12	<1.0	<1.0	<1.0	<3.0	230	NA
	09/10/13	<1.0	<1.0	<1.0	<3.0	160	NA
	09/17/14	<1.0	<1.0	<1.0	<3.0	200	NA
DMW-10	12/11/07	60	4.0	88	130	750	53[g]
	03/11/08	75	4.0	140	120	1,000	74[g]
	07/02/08	89	6.0	160	130	1,100	68[g]
	10/01/08	90	5.0	120	25	820	NA
	09/03/09	9.0	<1.0	2.0	<3.0	<100	NA
	12/15/09	20	<1.0	13	7.0	150	NA
	03/18/10	41	<1.0	21	13	310	NA
	06/15/10	34	2.3	14	12	340	NA
	09/14/10	12	<1.0	<1.0	<3.0	<100	NA
	12/14/10	32	1.7	7.1	11	120	NA
	03/16/11	27	1.2	8.2	11	220	NA
	06/16/11	27	1.8	<1.0	9.9	130	NA
	09/14/11	20	<1.0	<1.0	3.9	140	NA
	12/08/11	<1.0	<1.0	<1.0	<3.0	<100	NA
	03/13/12	37	1.0	3.6	14	260	NA
	06/15/12	51	1.4	1.7	20	400	NA
	09/11/12	29	<1.0	<1.0	<3.0	200	NA
	12/13/12	34	1.4	4.7	3.3	260	NA
	06/12/13	38	2.8	<1.0	4.0	300	NA
	09/09/13	2.0	<1.0	<1.0	<3.0	<100	NA
	12/13/13	1.5	<1.0	<1.0	<3.0	<100	NA
	03/20/14	1.1	<1.0	<1.0	<3.0	<100	NA
	06/16/14	<1:0	<1.0	<1.0	<3.0	<100	NA
	09/18/14	<1.0	<1.0	<1.0	<3.0	<100	NA

Table 2
Groundwater Sample Analytical Results - Petroleum Hydrocarbons
Former Arco Service Station #0855
Longview, Washington

Well Number	Sample Date	Benzene[a] (µg/L)	Toluene[a] (µg/L)	Ethylbenzene[a] (µg/L)	Total Xylenes[a] (µg/L)	GRO[b] (µg/L)	DRO[c] (µg/L)
MTCA Method A Cleanup Levels[d]		**5**	**1,000**	**700**	**1,000**	**800**	**500**
Deep Monitoring Wells (continued)							
DMW-11	05/06/13	<1.0	<1.0	<1.0	<3.0	<100	NA
	06/12/13	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/09/13	<1.0	<1.0	<1.0	<3.0	<100	NA
	12/13/13	<1.0	<1.0	<1.0	<3.0	<100	NA
	03/20/14	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/18/14	<1.0	<1.0	<1.0	<3.0	<100	NA
DMW-12	05/06/13	<1.0	<1.0	<1.0	<3.0	<100	NA
	06/12/13	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/09/13	<1.0	<1.0	<1.0	<3.0	<100	NA
	12/13/13	<1.0	<1.0	<1.0	<3.0	<100	NA
	03/20/14	<1.0	<1.0	<1.0	<3.0	<100	NA
	09/18/14	<1.0	<1.0	<1.0	<3.0	<100	NA

NOTES: Values in bold exceed the MTCA Method A cleanup levels.

All concentrations in micrograms per liter (µg/L).

ND = Not detected above the laboratory method reporting limit (MRL).

NA = Not analyzed.

[a] Benzene, toluene, ethylbenzene, and total xylenes (BTEX) by EPA Method 8021B or EPA Method 8260B.

[b] Gasoline-range organics (GRO) by Ecology Method NWTPH-Gx.

[c] Diesel-range organics (DRO) by Ecology Method NWTPH-Dx.

[d] Chapter 173-340 WAC, Model Toxics Control Act (MTCA) Cleanup Regulation, Method A Cleanup Levels. Amended February 12, 2001.

[e] Total xylenes calculated by using the formula: total xylenes concentration = (m, p-xylene concentration) + (o-xylene concentration).

[f] The laboratory reported that the DRO concentration is due to overlap from the gasoline range.

[g] The laboratory reported that the pattern of chromatogram peaks from the sample were not indicative of diesel.