March 22, 2016
Project No. 0818.02.01

Mary Monahan
Washington State Department of Ecology
Central Regional Office
1250 West Alder Street
Union Gap, Washington 98903-0009

Re: Quarterly Progress Report – February 2016
Former Tiger Oil Site
Facility Site ID: 469, Cleanup Site ID: 4919
2312 West Nob Hill Boulevard, Yakima, Washington 98902

Dear Ms. Monahan:

On behalf of the City of Yakima, Maul Foster & Alongi, Inc. (MFA) conducted the second post-remedial action quarterly groundwater event at the former Tiger Oil site (the Site), located at 2312 West Nob Hill Boulevard in Yakima, Washington (see Figure 1). This event fulfills the quarterly groundwater-monitoring event requirement as specified in the Washington State Department of Ecology-approved interim remedial action completion report (MFA, 2015a), as well as the progress reporting requirement specified in Section IX, of the Amended Consent Decree (ACD), No. 02-2-00956-2, and the amended cleanup action plan (Section 9-1) (Ecology, 2014). Monitoring activities were conducted as described in the groundwater monitoring plan (GMP) (MFA, 2015b) and in accordance with the monitoring requirements outlined in the Washington State Model Toxics Control Act (MTCA) (Washington Administrative Code 173-340-410).

BACKGROUND

Quarterly monitoring is a requirement of the ACD. The most recent groundwater-monitoring event was conducted in November 2015, following the interim remedial action completed in early May 2015. The interim remedial action included excavation of petroleum contaminated soil (PCS) and application of bioremediation products with the clean backfill. An increase in contaminant concentrations in groundwater often occurs over the initial six-months to a year following completion of remedial actions similar to the action conducted at the Site. Therefore, groundwater monitoring/sampling activities began six months after bioremediation product application to allow the initial and anticipated increase in dissolved phase petroleum hydrocarbon concentrations to occur and groundwater conditions to begin to stabilize.

Groundwater-monitoring results are evaluated quarterly to assess the performance and protectiveness of the remedial action by comparing indicator hazardous substance (IHS) concentrations in all monitoring network wells to MTCA Method A cleanup levels (CULs), as defined in the GMP. Monitoring wells included in the monitoring well network were defined in the GMP, with the exception of KMW-5 and MWG-2, which were included following a request by Ecology after the November 2015 sampling event (see Figure 2) (MFA, 2015b).

FIELD PROCEDURES

MFA used a water level probe to measure static water levels in the wells included in the groundwater-monitoring well network (see Table 1). If light nonaqueous-phase liquid (LNAPL) (i.e., free product) was encountered, the thickness of the LNAPL was measured using an oil/water interface meter. LNAPL was encountered in four monitoring wells (MW-7, MW-11, MW-13, and MWG-3) during the February 2016 monitoring event. The approximate thicknesses of LNAPL at these wells are presented in Figure 3.

Groundwater-monitoring and -sampling activities were conducted in general accordance with industry standard sampling protocols. The integrity of the well seal and cap were observed to ensure that contamination from the surface would not enter the well (see Table 2). All observed wells appeared in good condition at the time of sampling with the exception of KMW-7, MW-7, MW-9, and MW-10. New compression plugs, gaskets, locks, and/or bolts will be installed in these wells during the next scheduled sampling event (May 2016). Depth-to-water measurements at all wells designated for monitoring were measured before groundwater sampling activities began. Groundwater samples were collected only from wells included in the groundwater-monitoring well network that did not contain LNAPL. Water quality parameters were measured with a YSI meter (YSI 556MPS) and a turbidity meter (Hach 2100P) before sample collection and were recorded on field sampling data sheets (see Attachment A) and are summarized in Table 3. Thirteen groundwater samples, including a field duplicate, were collected using low-flow sampling techniques involving a peristaltic pump and disposable tubing. Groundwater-monitoring activities were conducted consistent with the sampling and analysis plan included as an appendix to the GMP (MFA, 2015b), with at least one pore volume extracted from the wells and field parameters stabilized before a sample was collected. A field duplicate was collected at monitoring well YMW-2.

Samples were submitted to OnSite Environmental, Inc., of Redmond, Washington, under standard chain-of-custody procedures. Samples were analyzed for IHSs, using the following analytical methods:

- Gasoline-range total petroleum hydrocarbons (TPH) by Northwest Total Petroleum Hydrocarbons Method Gx

- Benzene, toluene, ethylbenzene, and xylenes (BTEX) by U.S. Environmental Protection Agency Method 8021B

RESULTS AND DISCUSSION

Water level measurements, final field parameters, and analytical results are summarized in Tables 1, 3, and 4, respectively. Table 4 also includes analytical data from the wells sampled during monitoring events conducted in May and November 2015. The laboratory analytical report is included as Attachment B. A data validation memorandum (DVM), summarizing data evaluation procedures, usability of data, and deviations from field and/or laboratory methods, is included as Attachment C. Analytical data and the laboratory's internal quality assurance and quality control data were reviewed to assess whether they meet data quality objectives. The data were validated and are considered acceptable for their intended use.

Depth-to-water measurements and groundwater elevations are summarized in Table 1. The depth to water in monitoring wells with LNAPL was adjusted to account for the density of the LNAPL on top of the water column. Given the type of historical release at the Site, the density of gasoline (0.75 gram per cubic centimeter) was used to complete this adjustment. Groundwater flow direction during the February 2016 event was generally to the southeast, with an easterly tangent in the northern area of the Site, similar to previous observations (see Figure 4).

Figure 5 presents geologic cross-sections of two profiles of the Site from the northwest to southeast transect (A-A') and southwest to northeast transect (B-B'), both of which are identified in Figure 2. Additional features including the water table, LNAPL locations, and observed LNAPL thicknesses are also illustrated. An interpretation of LNAPL within the cross section was not provided due to the lack of information regarding the well screens and lithology of the well locations identified with LNAPL. Generally, the depths to water were slightly lower than recorded during the November 2015 event.

The LNAPL encountered in the four monitoring wells was clear and had a strong petroleum fuel odor. Monitoring wells with LNAPL present were not sampled because of the likelihood of highly elevated concentrations of IHSs in these wells, and laboratory analytical results of these samples would not be representative of the dissolved-phase gasoline petroleum hydrocarbons plume. Additional quarterly monitoring will allow for observation of the presence and thickness of LNAPL in the monitoring-well network over time. LNAPL thickness ranged from 0.08 to 0.29 foot, similar to the last event's observations (see Table 1).

Concentrations of gasoline-range TPH above the 800-micrograms-per-liter (ug/L) CUL were identified in the following monitoring wells (see Figure 6):

- MW-9: 19,000 ug/L
- YMW-1: 29,000 ug/L
- YMW-2: 13,000 ug/L
- YMW-3: 31,000 ug/L

Concentrations of benzene above the 5-ug/L CUL were identified in the following monitoring wells (see Figure 7):

- KMW-6: 42 ug/L
- KMW-7: 47 ug/L
- MW-9: 1,800 ug/L
- YMW-1: 2,200 ug/L
- YMW-2: 380 ug/L
- YMW-3: 3,100 ug/L

Concentrations of ethylbenzene, toluene, and total xylenes generally increased in the wells previously identified with IHSs exceeding associated laboratory detection limits during the November 2015 sampling event (see Table 4).

Concentrations of IHSs are anticipated to fluctuate both seasonally and spatially for at least a year following the completion of the interim remedial action due to the bulk source removal of PCS and application of bioremediation products to the subsurface. In situ bioremediation will result in an expedited breakdown of TPH and associated volatile organic compounds (VOCs) due to the changes in the contaminants and the soil matrix chemistry. It is often that, after bioremediation product application, a temporary increase in the concentrations of dissolved phase of gasoline-range TPH and associated VOCs occurs. The general increase in concentrations observed between the November 2015 and February 2016 events is likely the result of this continued breakdown of TPH and associated VOCs resulting in a temporary increase in concentrations. Interpretations of current isoconcentrations of gasoline-range TPH and benzene for the February 2016 event likely are not representative of the fluxes in groundwater and subsurface conditions. No exceedances of IHSs were identified in any sentry wells during this sampling event.

The locations of these exceedances are adjacent to and downgradient of the historical source area and the southeastern extent of the interim remedial action. The extent of the dissolved-phase plume and efficacy of the interim remedial action can be evaluated more representatively following the completion of additional monitoring events.

Investigation-derived waste generated during the February 2016 sampling event was properly drummed and labeled, and is temporarily stored on Site pending final off-site disposal with the accumulation of additional drums as monitoring events progress.

SUMMARY

The following is a summary of findings and opinions of the February 2016 monitoring event relative to prior groundwater monitoring event results:

- LNAPL was present in four monitoring wells in the compliance network (MW-7, MW-11, MW-13, and MWG-3), which is a decrease relative to the November 2015 sampling event in which LNAPL was also observed in YMW-3. Thicknesses of LNAPL are presented in Table 1.

- The overall direction of groundwater migration at the Site appears to be generally to the southeast, consistent with former documentation of groundwater flow direction by MFA and others. However, as observed during the November 2015 groundwater event, there is also an easterly component of the groundwater flow direction in the east-southeastern area of the former Tiger Oil property.

- Dissolved phase gasoline-range TPH concentrations reported during the February 2016 event increased in almost all monitoring wells relative to the November 2015 event.

- Benzene concentrations increased in all monitoring wells relative to the November 2015 monitoring event, with the exception of KMW-14 and KMW-16.

- Toluene, ethylbenzene, total xylene concentrations generally increased in wells with previous detections.

- It is anticipated that the dissolved-phase petroleum hydrocarbon plume will continue to fluctuate within the first year of completion of the interim remedial action. Quarterly monitoring over the next year-and-a-half will assess IHS concentrations and trends in groundwater quality conditions at the Site.

In our professional opinion, the increased concentrations of IHSs during this event are likely the result of increased mobilization of residual saturated soil impacts due to seasonal precipitation and continuing breakdown of TPH following the application of in-situ bioremediation product in May 2015.

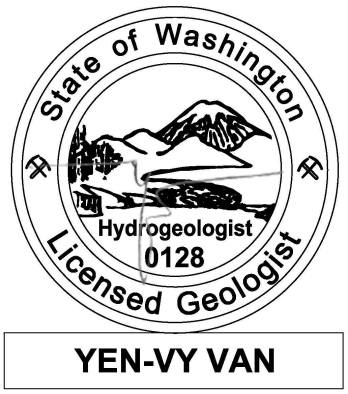
SCHEDULE

In accordance with the GMP (MFA, 2015b), the next quarterly monitoring event is scheduled for May 2016.

If you have any questions regarding this letter, please feel free to contact either of us.

Sincerely,

Maul Foster & Alongi, Inc.



3/22/16

Yen-Vy Van, LHG
Senior Hydrogeologist

Carolyn R. Wise, GIT
Staff Geologist

Attachments: Limitations
References
Tables
Figures
A—Field Sampling Data Sheets
B—Laboratory Analytical Report
C—Data Validation Memorandum

cc: Brett Sheffield, City of Yakima

LIMITATIONS

The services undertaken in completing this report were performed consistent with generally accepted professional consulting principles and practices. No other warranty, express or implied, is made. These services were performed consistent with our agreement with our client. This report is solely for the use and information of our client unless otherwise noted. Any reliance on this report by a third party is at such party's sole risk.

Opinions and recommendations contained in this report apply to conditions existing when services were performed and are intended only for the client, purposes, locations, time frames, and project parameters indicated. We are not responsible for the impacts of any changes in environmental standards, practices, or regulations subsequent to performance of services. We do not warrant the accuracy of information supplied by others, or the use of segregated portions of this report.

REFERENCES

Ecology. 2014. Amended cleanup action plan, Tiger Oil facility, 2312 West Nob Hill Boulevard, Yakima, Washington. Washington State Department of Ecology. June.

MFA. 2015a. Interim remedial action completion report—former Tiger Oil site, 2312 West Nob Hill Boulevard, Yakima, Washington. Maul Foster & Alongi, Inc., Bellingham, Washington. June 26.

MFA. 2015b. Groundwater monitoring plan—former Tiger Oil site, 2312 West Nob Hill Boulevard, Yakima, Washington. Prepared for the City of Yakima. Maul Foster & Alongi, Inc., Bellingham, Washington. August 26.

TABLES

Table 1
Water Level Data
City of Yakima
Former Tiger Oil Site
Yakima, Washington

Location	MP Elevation (feet, NAVD 88)	Measurement Date	LNAPL Thickness (feet)	Depth to Water (feet)	Change in Water Level (feet)[a]	Depth to Water Corrected for Presence of LNAPL (feet)[b]	Groundwater Elevation (feet, NAVD 88)
KMW-5	1082.85	5/27/2015	--	9.11	--	NA	1073.74
		2/1/2016	--	8.78	0.33	NA	1074.07
KMW-6	1083.58	5/28/2015	--	8.82	--	NA	1074.76
		11/3/2015	--	8.43	0.39	NA	1075.15
		02/01/2016	--	8.45	-0.02	NA	1075.13
KMW-7	1091.96	05/29/2015	--	13.47	--	NA	1078.49
		11/02/2015	--	12.64	0.83	NA	1079.32
		02/01/2016	--	12.85	-0.21	NA	1079.11
KMW-8	1092.11	05/29/2015	--	13.48	--	NA	1078.63
KMW-10	1090.63	05/29/2015	--	13.10	--	NA	1077.53
KMW-14	1082.40	05/28/2015	--	12.66	--	NA	1069.74
		11/03/2015	--	12.37	0.29	NA	1070.03
		02/01/2016	--	12.27	0.10	NA	1070.13
KMW-15	1083.54	11/03/2015	--	10.90	--	NA	1072.64
		02/01/2016	--	10.86	-0.04	NA	1072.68
KMW-16	1083.27	05/28/2015	--	11.05	--	NA	1072.22
		11/03/2015	--	10.67	0.38	NA	1072.60
		02/02/2016	--	10.67	0.00	NA	1072.60
KMW-18	1085.34	05/27/2015	--	9.70	--	NA	1075.64
KMW-24	1087.47	05/29/2015	--	10.25	--	NA	1077.22
MW-7	1090.30	05/29/2015	1.44	13.78	--	12.70	1077.60
		11/04/2015	0.29	12.20	1.58	11.98	1078.32
		02/01/2016	0.29	12.30	-0.10	12.08	1078.22
MW-9	1091.48	05/28/2015	--	14.20	--	NA	1077.28
		11/03/2015	--	13.98	0.22	NA	1077.50
		02/01/2016	--	14.21	-0.23	NA	1077.27
MW-10	1092.11	05/29/2015	--	13.19	--	NA	1078.92
		11/02/2015	--	12.36	0.83	NA	1079.75
		02/01/2016	--	12.54	-0.18	NA	1079.57
MW-11	1091.68	05/29/2015	0.55	14.51	--	14.10	1077.58
		11/04/2015	0.01	13.35	1.16	13.34	1078.34
		02/01/2016	0.10	13.52	-0.17	13.45	1078.24

Table 1
Water Level Data
City of Yakima
Former Tiger Oil Site
Yakima, Washington

Location	MP Elevation (feet, NAVD 88)	Measurement Date	LNAPL Thickness (feet)	Depth to Water (feet)	Change in Water Level (feet)[a]	Depth to Water Corrected for Presence of LNAPL (feet)[b]	Groundwater Elevation (feet, NAVD 88)
MW-13	1091.27	05/28/2015	--	10.10	--	NA	1081.17
		11/04/2015	0.20	14.03	-3.93	13.88	1077.39
		02/01/2016	0.21	14.10	-0.07	13.94	1077.33
MWG-1	1083.98	05/28/2015	--	9.71	--	NA	1074.27
MWG-2	1085.47	02/01/2016	--	8.90	--	NA	1076.57
MWG-3	1084.15	05/28/2015	--	7.60	--	NA	1076.55
		11/03/2015	0.06	7.10	0.55	7.06	1077.10
		02/01/2016	0.08	7.10	0.01	7.04	1077.11
S-1	1088.82	05/28/2015	--	11.79	--	NA	1077.03
S-2	1085.74	05/27/2015	--	8.73	--	NA	1077.01
YMW-1	1089.05	05/29/2015	--	12.00	--	NA	1077.05
		11/04/2015	--	11.40	0.60	NA	1077.65
		02/01/2016	--	11.49	-0.09	NA	1077.56
YMW-2	1090.86	05/29/2015	--	13.73	--	NA	1077.13
		11/04/2015	--	13.10	0.63	NA	1077.76
		02/01/2016	--	13.17	-0.07	NA	1077.69
YMW-3	1089.53	05/29/2015	--	12.28	--	NA	1077.25
		11/04/2015	0.06	11.68	0.60	11.64	1077.90
		02/01/2016	--	11.75	-0.07	NA	1077.78

NOTES:

-- = free product (LNAPL) not observed; therefore, product thickness was not measured.

LNAPL = light nonaqueous-phase liquid.

MP = measuring point.

NA = not applicable.

NAVD 88 = North American Vertical Datum of 1988.

[a]Change in water level is relative to the two most recent sampling events.

[b]Water level corrected for presence of free product, using an assumed product density of 0.75 gram per cubic centimeter (American Petroleum Institute).

Table 2
Monitoring Wells Conditions Summary
City of Yakima - Former Tiger Oil Site
Yakima, Washington

Location	Date	Well Diameter (inches)	Monument	Gasket	Lock	Functional Compression Plug	Bolts	Notes
KMW-5	2/1/2016	4	Y	Y	Y	Y	3	--
KMW-6	2/1/2016	4	Y	Y	Y	Y	3	--
KMW-7	2/1/2016	4	Y	N	N	N	0	Plug, lock, gasket, and bolts to be replaced during May 2016 monitoring event.
KMW-14	2/1/2016	4	Y	Y	Y	Y	3	--
KMW-15	2/1/2016	4	Y	Y	Y	Y	3	--
KMW-16	2/1/2016	4	Y	Y	Y	Y	3	--
MW-7	2/1/2016	2	Y	N	N	N	0	Plug, lock, gasket, and bolts to be replaced during May 2016 monitoring event.
MW-9	2/1/2016	2	Y	N	N	N	2	Plug, lock, gasket, and bolts to be replaced during May 2016 monitoring event.

Table 2
Monitoring Wells Conditions Summary
City of Yakima - Former Tiger Oil Site
Yakima, Washington

Location	Date	Well Diameter (inches)	Monument	Gasket	Lock	Functional Compression Plug	Bolts	Notes
MW-10	2/1/2016	2	Y	N	Y	Y	3	Gasket to be replaced during May 2016 monitoring event.
MW-11	2/1/2016	2	Y	Y	Y	Y	2	--
MW-13	2/1/2016	2	Y	Y	Y	Y	2	--
MWG-2	2/1/2016	2	Y	Y	Y	Y	3	--
MWG-3	2/1/2016	2	Y	Y	Y	Y	3	--
YMW-1	2/1/2016	2	Y	Y	Y	Y	2	--
YMW-2	2/1/2016	2	Y	Y	Y	Y	2	--
YMW-3	2/1/2016	2	Y	Y	Y	Y	2	--

NOTES:
N = no.
Y = yes.

Table 3
Final Water Quality Field Parameters
City of Yakima
Former Tiger Oil Site
Yakima, Washington

Location	Date	pH	Temperature (degrees C)	Conductivity (uS/cm)	DO (mg/L)	ORP	Turbidity (NTU)
KMW-5	5/27/2015	7.02	18.01	1,098	0.34	28.6	7.03
	2/2/2016	6.63	14.75	879	1.49	256.6	6.06
KMW-6	5/28/2015	7.98	16.45	816	1.78	-30.3	2.42
	11/3/2015	7.05	17.94	965	1.69	74.2	0.36
	2/1/2016	6.81	15.47	840	2.30	293.9	2.82
KMW-7	5/29/2015	7.33	16.61	123	7.44	123.6	2.33
	11/2/2015	7.05	16.55	934	2.92	6.3	1.04
	2/3/2016	7.40	15.31	832	3.39	187.0	3.78
KMW-8	5/29/2015	7.41	17.19	889	7.35	114.2	9.62
KMW-10	5/29/2015	7.27	21.30	795	5.24	132.6	3.81
KMW-14	5/28/2015	6.99	15.71	1,266	0.14	-33.5	6.88
	11/3/2015	6.51	17.93	1,230	0.22	-12.3	7.32
	2/2/2016	6.84	15.64	959	0.38	287.7	5.66
KMW-15	11/3/2015	6.95	17.85	930	2.06	63.3	1.14
	2/2/2016	7.12	14.97	768	4.02	292.1	5.48
KMW-16	5/28/2015	7.56	16.80	879	0.81	10.9	1.71
	11/3/2015	6.88	18.27	1,147	0.20	26.3	1.13
	2/2/2016	6.80	14.64	935	0.69	258.0	3.12
KMW-18	5/27/2015	7.05	17.82	846	4.80	70.1	27.83
KMW-24	5/29/2015	7.51	15.96	771	7.41	22.4	1.52
MW-7	5/29/2015	--	--	--	--	--	--
	11/4/2015	--	--	--	--	--	--
	2/1/2016	--	--	--	--	--	--
MW-9	5/28/2015	7.09	22.55	1,186	1.57	-28.5	153.20
	11/3/2015	6.65	14.67	1,375	0.61	-40.2	15.83
	2/2/2016	6.58	10.00	1,198	0.50	244.2	14.40
MW-10	5/29/2015	--	--	--	--	--	--
	11/2/2015	6.98	16.53	1,114	2.68	108.2	12.78
	2/3/2016	7.25	11.86	1,980	4.25	250.1	30.80
MW-11	5/29/2015	--	--	--	--	--	--
	11/4/2015	--	--	--	--	--	--
	2/1/2016	--	--	--	--	--	--
MW-13	5/28/2015	7.06	21.03	906	1.28	58.0	49.35
	11/4/2015	--	--	--	--	--	--
	2/1/2016	--	--	--	--	--	--

Table 3
Final Water Quality Field Parameters
City of Yakima
Former Tiger Oil Site
Yakima, Washington

Location	Date	pH	Temperature (degrees C)	Conductivity (uS/cm)	DO (mg/L)	ORP	Turbidity (NTU)
MWG-1	5/28/2015	7.45	17.08	843	4.71	24.1	2.62
MWG-2	2/3/2016	7.29	13.62	774	3.45	279.3	22.2
MWG-3	5/28/2015	8.16	16.94	872	0.08	-156.0	1.34
	11/3/2015	--	--	--	--	--	--
	2/1/2016	--	--	--	--	--	--
S-1	5/28/2015	8.09	17.69	822	2.48	-7.7	2.32
S-2	5/27/2015	7.40	16.74	1,145	0.28	-86.4	2.25
YMW-1	5/29/2015	--	--	--	--	--	--
	11/4/2015	6.87	15.83	1,154	1.42	-46.3	4.98
	2/2/2016	6.87	15.15	1,202	0.33	232.6	6.03
YMW-2	5/29/2015	--	--	--	--	--	--
	11/4/2015	6.98	16.40	987	1.52	48.3	4.11
	2/1/2016	6.37	14.98	1,110	0.79	327.9	8.98
YMW-3	5/29/2015	--	--	--	--	--	--
	11/4/2015	--	--	--	--	--	--
	2/1/2016	6.50	15.09	1,505	0.39	208.30	2.77

NOTES:

-- = sample not analyzed or collected.

C = Celsius.

DO = dissolved oxygen.

NA = final field parameters not available.

NTU = nephelometric turbidity unit.

mg/L = milligrams per liter.

ORP = oxygen reduction potential.

uS/cm = microsiemens per centimeter.

Table 4
Summary of Groundwater Analytical Results
City of Yakima
Former Tiger Oil Site
Yakima, Washington

Location	Sample Type	Collection Date	Chemicals of Interest				
			Benzene	Ethylbenzene	Toluene	Xylenes[a]	Gasoline TPH
Units			ug/l	ug/l	ug/l	ug/L	ug/l
MTCA Method A Cleanup Level (ug/L)			5	700	1,000	1,000	800[b]
KMW-5	GW	5/27/2015	1 U	1 U	1 U	1 U	100 U
	GW	02/02/2016	1 U	1 U	1 U	1 U	100 U
KMW-6	GW	05/28/2015	**47**	**1.6**	1 U	1 U	100 U
	GW	11/03/2015	**15**	**18**	**7.4**	**35.6**	**410**
	GW	02/01/2016	**42**	**22**	4 U	**7.4**	100 U
KMW-7	GW	05/29/2015	**8.4**	**14**	**2**	**88**	**620**
	GW	11/02/2015	**13**	**21**	1 U	**5.6**	**350**
	GW	02/03/2016	**47**	**41**	1 U	**2.6**	**610**
KMW-8	GW	05/29/2015	1 U	1 U	1 U	1 U	100 U
KMW-10	GW	05/29/2015	**830**	**1,200**	**4,000**	**6,400**	**81,000**
KMW-14	GW	05/28/2015	**1.9**	1 U	1 U	1 U	100 U
	GW	11/03/2015	**5.5**	1 U	1 U	1 U	100 U
	GW	02/02/2016	**3**	1 U	1 U	1 U	100 U
KMW-15	GW	11/03/2015	1 U	1 U	1 U	1 U	100 U
	GW	02/02/2016	1 U	1 U	1 U	1 U	100 U
KMW-16	GW	05/28/2015	**60**	**9.6**	1 U	**5.1**	**280**
	GW	11/03/2015	1 U	1 U	1 U	1 U	100 U
	GW	02/02/2016	1 U	1 U	1 U	1 U	**200**
KMW-18	GW	05/27/2015	1 U	1 U	1 U	1 U	100 U
KMW-24	GW	05/29/2015	1 U	1 U	1 U	1 U	100 U
	DUP		**1.7**	1 U	1 U	1 U	100 U
MW-9	GW	05/28/2015	**1,200**	**740**	**1,900**	**2,780**	**28,000**
	GW	11/03/2015	**1,800**	**720**	**1,400**	**2,240**	**18,000**
	GW	02/02/2016	**1,800**	**850**	**1,500**	**2,670**	**19,000**
MW-10	GW	11/02/2015	1 U	1 U	1 U	1 U	100 U
	GW	02/03/2016	1 U	1 U	1 U	1 U	100 U
MW-13	GW	05/28/2015	**32**	**1,500**	**510**	**12,500**	**92,000**
MWG-1	GW	05/28/2015	1 U	1 U	1 U	1 U	100 U
MWG-2	GW	02/03/2016	1 U	1 U	1 U	1 U	100 U
MWG-3	GW	05/28/2015	**3,300**	**2,700**	**710**	**8,000**	**64,000**
S-1	GW	05/28/2015	1 U	**7.2**	1 U	**3.2**	**200**
S-2	GW	05/27/2015	**1,300**	**200**	10 U	**56**	**1,600**

Table 4
Summary of Groundwater Analytical Results
City of Yakima
Former Tiger Oil Site
Yakima, Washington

Location	Sample Type	Collection Date	Chemicals of Interest				
			Benzene	Ethylbenzene	Toluene	Xylenes[a]	Gasoline TPH
Units			ug/l	ug/l	ug/l	ug/L	ug/l
MTCA Method A Cleanup Level (ug/L)			5	700	1,000	1,000	800[b]
YMW-1	GW	11/04/2015	**990**	**470**	**1,400**	**1,430**	**11,000**
	GW	02/02/2016	**2,200**	**840**	**3,900**	**3,350**	**29,000**
YMW-2	GW	11/04/2015	**72**	**150**	**130**	**770**	**3,700**
	DUP		**76**	**160**	**140**	**840**	**4,100**
	GW	02/01/2016	**380**	**300**	**630**	**2,510**	**13,000**
	DUP		**380**	**310**	**650**	**2,630**	**13,000**
YMW-3	GW	02/01/2016	**3,100**	**1,200**	**1,800**	**5,700**	**31,000**

NOTES:

Detected results are indicated by bold font.

Shaded result values indicate exceedance of MTCA Method A cleanup level.

DUP = groundwater duplicate sample.

GW = groundwater sample.

MTCA = Model Toxics Control Act.

TPH = total petroleum hydrocarbons.

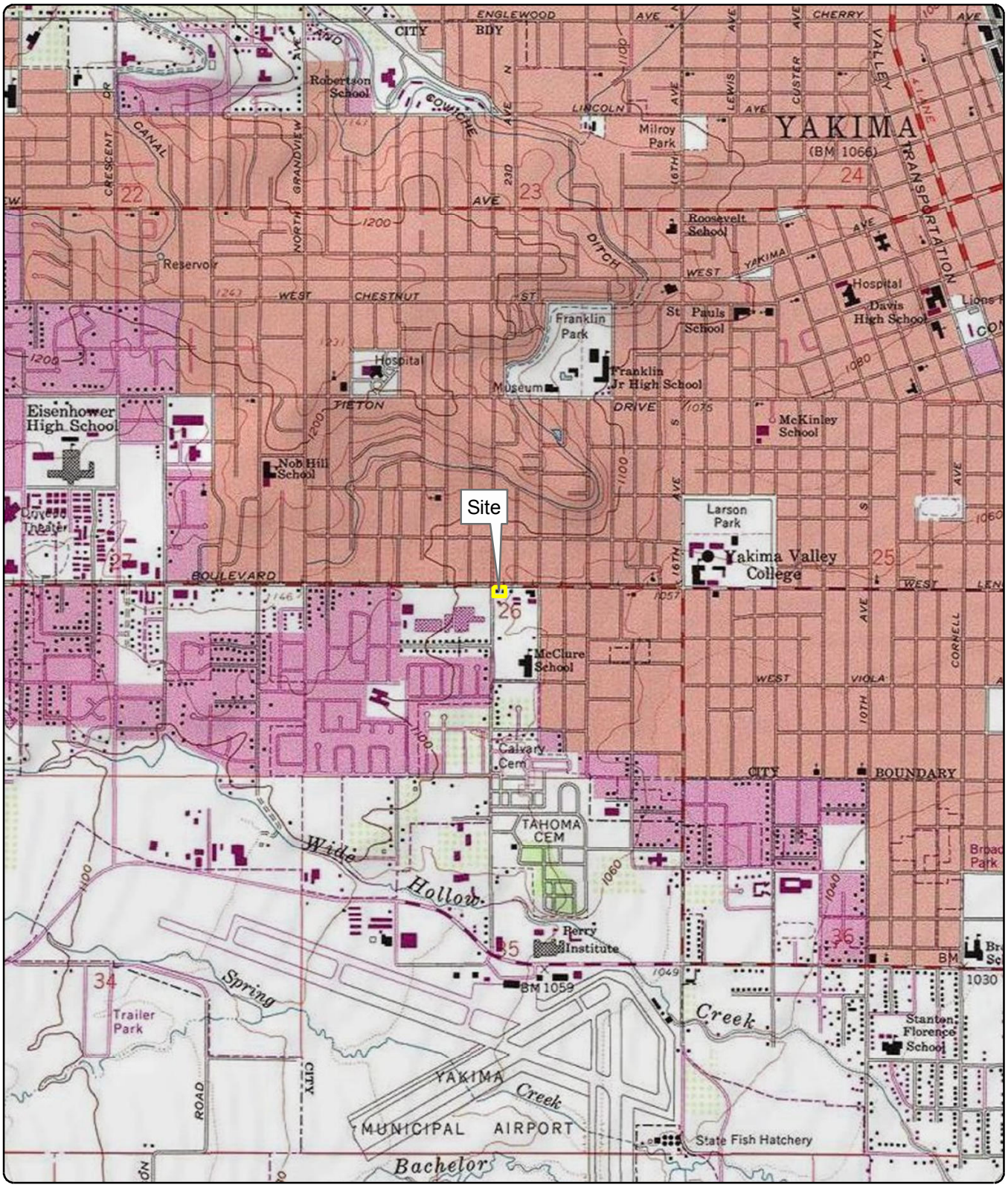
U = Result is non-detect.

ug/L = micrograms per liter.

[a]Xylenes = Sum of m,p- and o-xylene. Non-detect results are summed at half of the non-detect value. The highest non-detect value is used when both results are non-detect.

[b]MTCA Method A cleanup level for gasoline with benzene present.

FIGURES



Site Address: 2312 West Nob Hill Boulevard, Yakima, Washington 98902
Source: Taxlots obtained from City of Yakima GIS,
US Geological Survey (1990) 7.5-minute
topographic quadrangle: Yakima West
Section 26, Township 13 North, Range 18 East

Legend

Property Taxlot

Figure 1
Site Location

City of Yakima
Former Tiger Oil Site
Yakima, Washington

0 1,000 2,000
Feet

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Path: X:\0818.02 City of Yakima\Projects\GW Monitoring Plan\Fig1_Site Location.mxd
Print Date: 12/14/2015
Approved By: yvan
Produced By: jmiller
Project: 0818.02.01-01

Figure 2
Groundwater Monitoring Well Network

City of Yakima
Former Tiger Oil Site
Yakima, Washington

NOB HILL BOULEVARD

SOUTH 24TH AVENUE

KMW-8
A
MW-10
YMW-3
XOCHIMILCO MEXICAN RESTAURANT
KMW-7
MW-7
YMW-1
FORMER TIGER OIL CONVENIENCE STORE
MW-11
YMW-2
ONE LOVE SMOKE SHOP
KMW-10
B
MWG-3
KMW-24
B'
KMW-18
S-2
SAFEWAY SHOPPING CENTER PARKING LOT
KMW-5
KMW-6
KMW-15
KMW-16
MW-13
MW-9
S-1
MWG-2
MWG-1
KMW-14
A'

Legend

- GW Monitoring Network Well
- Monitoring Well
- Sentry Monitoring Well
- Cross Section Transect (see Figure 5)
- Former Tiger Oil Property Boundary

0 25 50
Feet

Sources: Aerial photograph obtained from Esri ArcGIS Online; Infiltration Gallery delineated by Maul Foster & Alongi, Inc.; stormwater line and taxlot boundaries obtained from City of Yakima; all other features obtained from PLSA Engineering & Surveying.

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Path: X:\0818.02 City of Yakima\Projects\Quarterly GW Monitoring\Fig2_GW Monitoring Well Network_TransectLine.mxd
Print Date: 2/29/2016
Approved By: mstringer
Produced By: cwise
Project: 0818.02.01.06

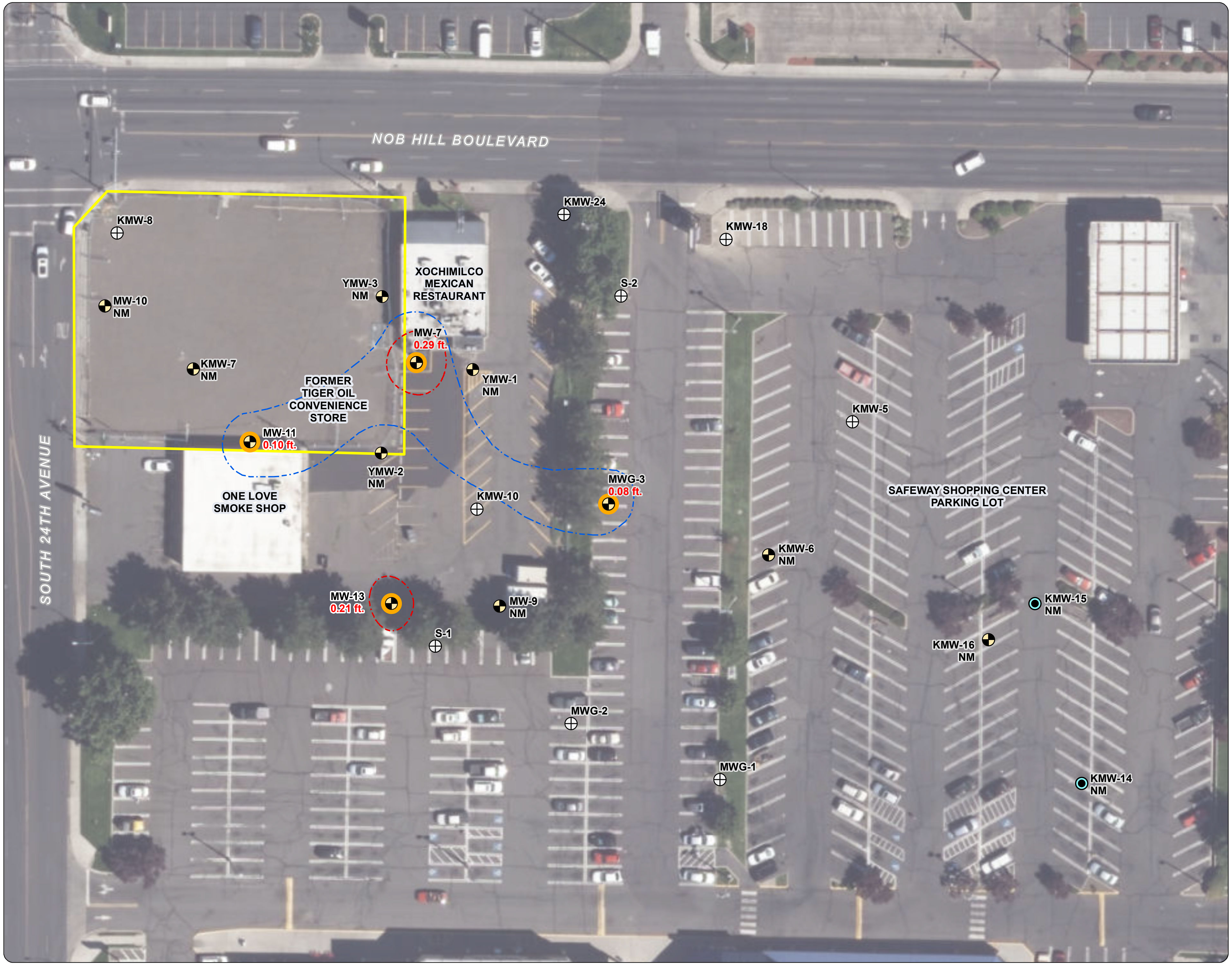

Figure 3
Light Nonaqueous-Phase Liquid Thickness Contour – February 2016

City of Yakima
Former Tiger Oil Site
Yakima, Washington

Legend

Approximate LNAPL Thickness Contours

- 0.01 ft contour
- 0.1 ft contour

- Monitoring Network Well
- Monitoring Well
- Sentry Monitoring Well
- Monitoring Well, LNAPL Present (thickness in feet)
- Former Tiger Oil Property Boundary

0 25 50
Feet

Notes:
1. Depth measurements are in feet below ground surface.
2. Not all the wells included in the figure are included in the monitoring well network.
3. LNAPL = light non aqueous-phase liquid
4. NM = not measured

Sources:
Aerial photograph obtained from Esri ArcGIS Online
Taxlot boundaries obtained from City of Yakima
All other features obtained from PLSA Engineering and Surveying.

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Project: 0818.02.01-06
Produced By: cwise
Approved By: mstringer
Print Date: 3/15/2016
Path: X:\0818.02 City of Yakima\Projects\Quarterly GW Monitoring\Fig3_LNAPL Concentration_201602.mxd

Figure 4
Groundwater Potentiometric Map
February 2016

City of Yakima
Former Tiger Oil Site
Yakima, Washington

NOB HILL BOULEVARD

SOUTH 24th AVENUE

MW-10
1,079.57'

YMW-3
1,077.78'

XOCHIMILCO MEXICAN RESTAURANT

MW-7
1,078.22'

KMW-7
1,079.11'

FORMER TIGER OIL CONVENIENCE STORE

YMW-1
1,077.56'

KMW-5
1,074.07'

MW-11
1,078.24'

1,079

1,078

YMW-2
1,077.69'

ONE LOVE SMOKE SHOP

MWG-3
1,077.11'

SAFEWAY SHOPPING CENTER PARKING LOT

KMW-6
1,075.13'

MW-13
1,077.33'

MW-9
1,077.27'

KMW-15
1,072.68'

KMW-16
1,072.60'

1,077'

1,076'

1,075'

1,074'

1,073'

1,072'

1,071'

MWG-2
1,076.57'

KMW-14
1,070.13'

Legend

- Monitoring Network Well
- Groundwater Flow Direction
- Groundwater Elevation Contour (1 ft., NAVD 88)
- Former Tiger Oil Property Boundary
- Adjacent Taxlot Boundaries

0 25 50
Feet

Source:
Aerial photograph obtained from Esri ArcGIS Online.

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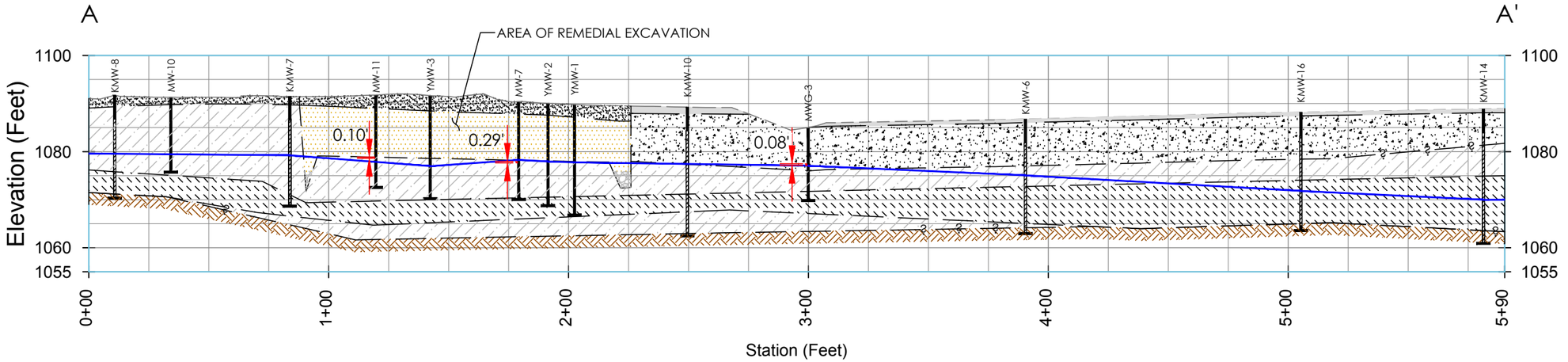
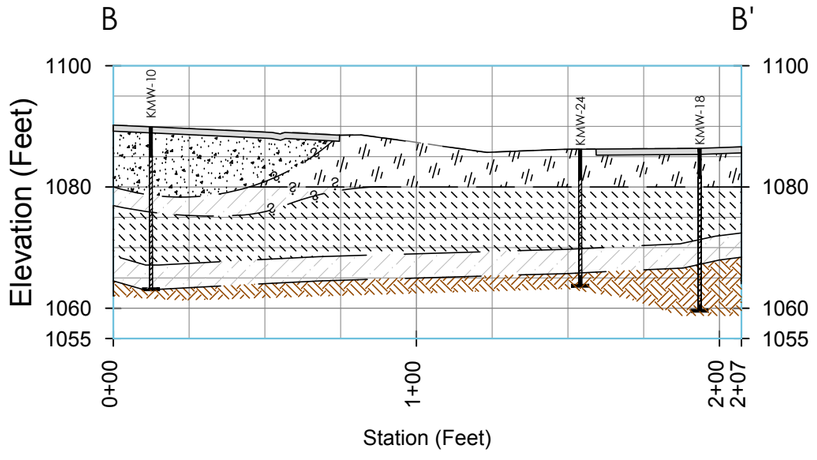
Path: X:\0818.02 City of Yakima\Projects\Quarterly GW Monitoring\Fig4_GW Elevation Contour 201602.mxd
Project: 0818.02.01.06 Produced By: cwise Approved By: mstringer Print Date: 3/15/2016

WATER LEVEL AND LNAPL THICKNESS CROSS-SECTIONS
FEBRUARY 2016



PROFILE VIEW OF SECTION NW-SE TRANSECT
HORIZONTAL SCALE: 1" = 40' VERTICAL SCALE: 1" = 20'
VERTICAL EXAGGERATION: 2



PROFILE VIEW OF SECTION SW-NE TRANSECT
HORIZONTAL SCALE: 1" = 40' VERTICAL SCALE: 1" = 20'
VERTICAL EXAGGERATION: 2

LEGEND

- ASPHALT
- ML
- SW/SM
- GM/SP MIX
- SM/ML
- O/CL
- GM/GP
- QUARRY SPALLS
- GROUNDWATER LEVEL
- X.XX' — LIGHT NONAQUEOUS-PHASE LIQUID (LNAPL) THICKNESS AT WELL LOCATION
- SCREENED WELL CASING

REFER TO FIGURE 2 FOR PLAN VIEW OF TRANSECT LINES.

0 50' 100'

NOTE: BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALE ACCORDINGLY.

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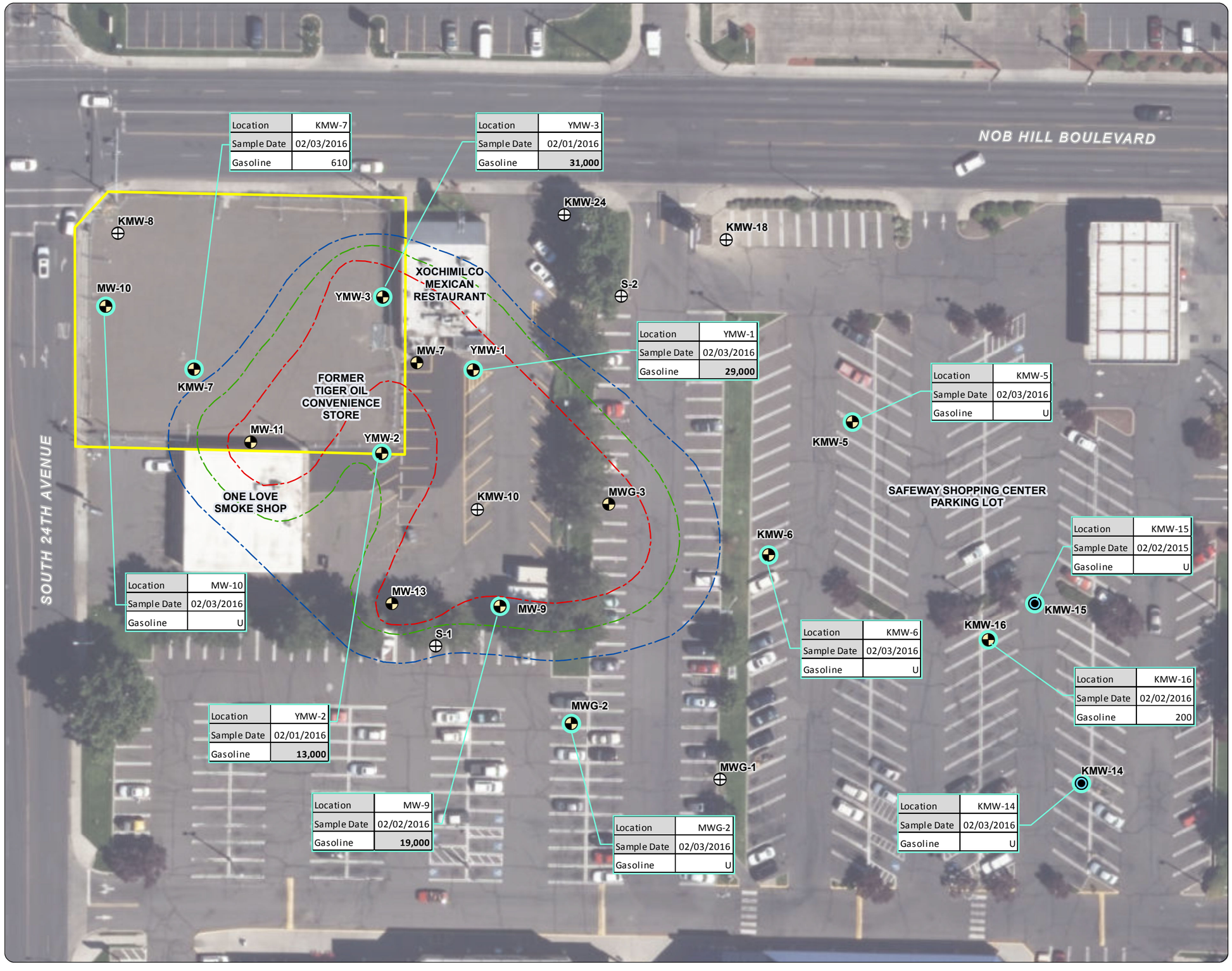
MFA JOB #: 0818.01.02
ISSUE DATE: 02/12/16
CHECKED: Y. VAN
DRAWN: Z. PYLE

ASBUILT: INTERIM ACTION
TRANSECT CROSS-SECTIONS
FORMER TIGER OIL SITE
CITY OF YAKIMA
YAKIMA, WASHINGTON

FIGURE
5

Figure 6
Gasoline TPH Isoconcentration Contours – February 2016

City of Yakima
Former Tiger Oil Site
Yakima, Washington



Legend

Approximate Gasoline Isoconcentration

- 800 ug/L contour
- 10,000 ug/L contour
- 20,000 ug/L contour

- Monitoring Network Well
- Monitoring Well
- Sentry Monitoring Well
- Sample Analyzed
- Former Tiger Oil Property Boundary

0 25 50
Feet

Notes:
1. Monitoring Network Wells containing LNAPL were not sampled.
2. Shaded and bolded result values indicate exceedance of MTCA Method A cleanup level of 800 ug/L.
3. LNAPL = light nonaqueous-phase liquid
4. MTCA = Model Toxics Control Act
4. TPH = total petroleum hydrocarbons
5. U = Result is non-detect
6. ug/L = micrograms per liter

Sources: Aerial photograph obtained from Esri ArcGIS Online; Infiltration Gallery delineated by Maul Foster & Alongi, Inc.; stormwater line and taxlot boundaries obtained from City of Yakima; all other features obtained from PLSA Engineering & Surveying.

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Path: X:\0818.02 City of Yakima\Projects\Quarterly GW Monitoring\Fig6_GasolineConcentration_20160216v10_3.mxd
Project: 0818.02.01.06 Produced By: cwise Approved By: mstringer Print Date: 3/15/2016

Figure 7
Benzene Isoconcentration Contours – February 2016

City of Yakima
Former Tiger Oil Site
Yakima, Washington

NOB HILL BOULEVARD

SOUTH 24TH AVENUE

Location	KMW-7
Sample Date	02/03/2016
Benzene	**47**
Ethylbenzene	41
Total Xylene	2.6
Toluene	U

Location	YMW-3
Sample Date	02/01/2016
Benzene	**3,100**
Ethylbenzene	**1,200**
Total Xylene	**5,700**
Toluene	**1,800**

Location	YMW-1
Sample Date	02/02/2016
Benzene	**2,200**
Ethylbenzene	**840**
Total Xylene	**3,350**
Toluene	**3,900**

Location	KMW-5
Sample Date	02/02/2016
Benzene	U
Ethylbenzene	U
Total Xylene	U
Toluene	U

Location	KMW-6
Sample Date	02/01/2016
Benzene	**42**
Ethylbenzene	22
Total Xylene	7.4
Toluene	U

Location	KMW-15
Sample Date	02/02/2015
Benzene	U
Ethylbenzene	U
Total Xylene	U
Toluene	U

Location	KMW-16
Sample Date	02/02/2015
Benzene	U
Ethylbenzene	U
Total Xylene	U
Toluene	U

Location	KMW-14
Sample Date	02/02/2015
Benzene	3
Ethylbenzene	U
Total Xylene	U
Toluene	U

Location	MW-10
Sample Date	02/03/2016
Benzene	U
Ethylbenzene	U
Total Xylene	U
Toluene	U

Location	YMW-2
Sample Date	02/01/2016
Benzene	**380**
Ethylbenzene	310
Total Xylene	**2,630**
Toluene	650

Location	MW-9
Sample Date	02/02/2016
Benzene	**1,800**
Ethylbenzene	**850**
Total Xylene	**2,670**
Toluene	**1,500**

Location	MWG-2
Sample Date	02/02/2016
Benzene	U
Ethylbenzene	U
Total Xylene	U
Toluene	U

KMW-8, MW-10, KMW-7, YMW-3, KMW-24, KMW-18, S-2, XOCHIMILCO MEXICAN RESTAURANT, MW-7, YMW-1, FORMER TIGER OIL CONVENIENCE STORE, MW-11, YMW-2, ONE LOVE SMOKE SHOP, KMW-10, MWG-3, KMW-5, KMW-6, KMW-15, KMW-16, MW-13, MW-9, S-1, MWG-2, MWG-1, SAFEWAY SHOPPING CENTER PARKING LOT, KMW-14

MTCA A Cleanup Level (ug/L)				
Benzene	Ethylbenzene	Xylenes[8]	Toluene	Gasoline TPH
5	700	1000	1000	800

Legend

Approximate Benzene Isoconcentration

- 5 ug/L contour
- 1,000 ug/L contour
- 10,000 ug/L contour

- Monitoring Network Well
- Monitoring Well
- Sentry Monitoring Well
- Sample Analyzed
- Former Tiger Oil Property Boundary

0 25 50
Feet

Notes:
1. Monitoring Network Wells containing LNAPL were not sampled.
2. Shaded and bolded result values indicate exceedance of the MTCA Method A cleanup level.
3. BTEX = benzene, toluene, ethylbenzene, total xylenes
4. LNAPL = light nonaqueous-phase liquid
5. MTCA = Model Toxics Control Act
6. U = Result is non-detect
7. ug/L = micrograms per liter
8. Xylenes = the sum of m,p- and o-xylene. Non-detect results are summed at half of the non-detect value. The highest non-detect value is used when both results are non-detect.

Sources: Aerial photograph obtained from Esri ArcGIS Online; Infiltration Gallery delineated by Maul Foster & Alongi, Inc.; stormwater line and taxlot boundaries obtained from City of Yakima; all other features obtained from PLSA Engineering & Surveying.

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Path: X:\0818.02 City of Yakima\Projects\Quarterly GW Monitoring\Fig7_BTEXConcentration_201602.mxd
Print Date: 03/14/2016
Approved By: mstringer
Produced By: jmiller
Project: 0818.02.01-06

ATTACHMENT A

FIELD SAMPLING DATA SHEETS

Maul Foster & Alongi, Inc.

400 E. Mill Plain Blvd, Suite 400, Vancouver, WA 98660 (360) 694-2691 Fax. (360) 906-1958

Water Field Sampling Data Sheet

Client Name	City of Yakima	**Sample Location**	KMW-5
Project #	0818.02.01	**Sampler**	C. Wise
Project Name	Tiger Oil - W. Nob Hill Blvd.	**Sampling Date**	2/2/2016
Sampling Event	February 2016	**Sample Name**	KMW5-GW-020216
Sub Area		**Sample Depth**	12
FSDS QA:	AWV 2/11/2016	**Easting**	**Northing**	**TOC**

Hydrology/Level Measurements

					(Product Thickness)	(Water Column)	(Gallons/ft x Water Column)
Date	**Time**	**DT-Bottom**	**DT-Product**	**DT-Water**	**DTP-DTW**	**DTB-DTW**	**Pore Volume**
2/1/2016	16:50	18.9		8.78		10.12	6.61

(0.75" = 0.023 gal/ft) (1" = 0.041 gal/ft) (1.5" = 0.092 gal/ft) (2" = 0.163 gal/ft) (3" = 0.367 gal/ft) (4" = 0.653 gal/ft) (6" = 1.469 gal/ft) (8" = 2.611 gal/ft)

Water Quality Data

Purge Method	**Time**	**Purge Vol (gal)**	**Flowrate l/min**	**pH**	**Temp (C)**	**E Cond (uS/cm)**	**DO (mg/L)**	**ORP**	**Turbidity**
(2) Peristaltic Pump	2:05:00 PM	6.75	0.3	6.72	14.53	887	1.64	170.5	8.87
	2:10:00 PM	7.15	0.3	6.74	14.57	887	1.57	183.8	7.55
	2:17:00 PM	7.71	0.3	6.75	14.74	879	1.57	209.6	7.37
	2:23:00 PM	8.01	0.2	6.73	14.79	881	1.58	233.9	6.92
	2:28:00 PM	8.26	0.2	6.67	14.77	881	1.51	246.9	6.81
	2:32:00 PM	8.51	0.2	6.66	14.68	881	1.53	252.6	6.34
Final Field Parameters	2:36:00 PM	8.76	0.2	6.63	14.75	879	1.49	256.6	6.06

Methods: (1) Submersible Pump (2) Peristaltic Pump (3) Disposable Bailer (4) Vacuum Pump (5) Dedicated Bailer (6) Inertia Pump (7) Other (specify)

Water Quality Observations:

Clear. No sheen or odor.

Sample Information

Sampling Method	**Sample Type**	**Sampling Time**	**Container Code/Preservative**	**#**	**Filtered**
(2) Peristaltic Pump	Groundwater	2:40:00 PM	VOA-Glass	3	No
			Amber Glass		
			White Poly		
			Yellow Poly		
			Green Poly		
			Red Total Poly		
			Red Dissolved Poly		
			Total Bottles	3	

General Sampling Comments

Began purge at 13:25.

Signature _____

Maul Foster & Alongi, Inc.

400 E. Mill Plain Blvd, Suite 400, Vancouver, WA 98660 (360) 694-2691 Fax. (360) 906-1958

Water Field Sampling Data Sheet

Client Name	City of Yakima	**Sample Location**	KMW-6		
Project #	0818.02.01	**Sampler**	C. Wise		
Project Name	Tiger Oil - W. Nob Hill Blvd.	**Sampling Date**	2/1/2016		
Sampling Event	February 2016	**Sample Name**	KMW6-GW-020116		
Sub Area		**Sample Depth**	12		
FSDS QA:	AWV 2/11/2016	**Easting**		**Northing**	**TOC**

Hydrology/Level Measurements

					(Product Thickness)	(Water Column)	(Gallons/ft x Water Column)
Date	**Time**	**DT-Bottom**	**DT-Product**	**DT-Water**	**DTP-DTW**	**DTB-DTW**	**Pore Volume**
2/1/2016	16:15	19.03		8.45		10.58	6.91

(0.75" = 0.023 gal/ft) (1" = 0.041 gal/ft) (1.5" = 0.092 gal/ft) (2" = 0.163 gal/ft) (3" = 0.367 gal/ft) (4" = 0.653 gal/ft) (6" = 1.469 gal/ft) (8" = 2.611 gal/ft)

Water Quality Data

Purge Method	**Time**	**Purge Vol (gal)**	**Flowrate l/min**	**pH**	**Temp (C)**	**E Cond (uS/cm)**	**DO (mg/L)**	**ORP**	**Turbidity**
(2) Peristaltic Pump	5:05:00 PM	7	0.3	6.78	15.35	839	2.76	315.1	5.12
	5:12:00 PM	7.56	0.3	6.83	15.36	843	2.39	303.3	4.78
	5:17:00 PM	7.96	0.3	6.81	15.41	842	2.35	299.3	4.36
Final Field Parameters	5:22:00 PM	8.36	0.3	6.81	15.47	840	2.3	293.9	2.82

Methods: (1) Submersible Pump (2) Peristaltic Pump (3) Disposable Bailer (4) Vacuum Pump (5) Dedicated Bailer (6) Inertia Pump (7) Other (specify)

Water Quality Observations:

Clear. Slight odor. Some organic-like debris present at beginning of purge.

Sample Information

Sampling Method	**Sample Type**	**Sampling Time**	**Container Code/Preservative**	**#**	**Filtered**
(2) Peristaltic Pump	Groundwater	5:30:00 PM	VOA-Glass	3	No
			Amber Glass		
			White Poly		
			Yellow Poly		
			Green Poly		
			Red Total Poly		
			Red Dissolved Poly		
			Total Bottles	3	

General Sampling Comments

Began purge at 16:25.

Signature _____

Maul Foster & Alongi, Inc.

400 E. Mill Plain Blvd, Suite 400, Vancouver, WA 98660 (360) 694-2691 Fax. (360) 906-1958

Water Field Sampling Data Sheet

Client Name	City of Yakima	**Sample Location**	KMW-7
Project #	0818.02.01	**Sampler**	C. Wise
Project Name	Tiger Oil - W. Nob Hill Blvd.	**Sampling Date**	2/3/2016
Sampling Event	February 2016	**Sample Name**	KMW7-GW-020316
Sub Area		**Sample Depth**	16
FSDS QA:	AWV 2/11/2016	**Easting**	**Northing**	**TOC**

Hydrology/Level Measurements

					(Product Thickness)	(Water Column)	(Gallons/ft x Water Column)
Date	**Time**	**DT-Bottom**	**DT-Product**	**DT-Water**	**DTP-DTW**	**DTB-DTW**	**Pore Volume**
2/1/2016	14:25	20		12.85		7.15	4.67

(0.75" = 0.023 gal/ft) (1" = 0.041 gal/ft) (1.5" = 0.092 gal/ft) (2" = 0.163 gal/ft) (3" = 0.367 gal/ft) (4" = 0.653 gal/ft) (6" = 1.469 gal/ft) (8" = 2.611 gal/ft)

Water Quality Data

Purge Method	Time	Purge Vol (gal)	Flowrate l/min	pH	Temp (C)	E Cond (uS/cm)	DO (mg/L)	ORP	Turbidity
(2) Peristaltic Pump	11:05:00 AM	4.75	0.3	7.34	15.11	844	3.38	169.9	6.26
	11:10:00 AM	5.15	0.3	7.39	15.5	834	3.35	178.4	4.3
	11:15:00 AM	5.55	0.3	7.4	15.42	833	3.35	184.3	4.27
Final Field Parameters	11:20:00 AM	5.95	0.3	7.4	15.31	832	3.39	187	3.78

Methods: (1) Submersible Pump (2) Peristaltic Pump (3) Disposable Bailer (4) Vacuum Pump (5) Dedicated Bailer (6) Inertia Pump (7) Other (specify)

Water Quality Observations: Clear. Slight odor. No sheen.

Sample Information

Sampling Method	Sample Type	Sampling Time	Container Code/Preservative	#	Filtered
(2) Peristaltic Pump	Groundwater	11:30:00 AM	VOA-Glass	3	No
			Amber Glass		
			White Poly		
			Yellow Poly		
			Green Poly		
			Red Total Poly		
			Red Dissolved Poly		
			Total Bottles	3	

General Sampling Comments Began purge at 10:20.

Signature _____

Maul Foster & Alongi, Inc.

400 E. Mill Plain Blvd, Suite 400, Vancouver, WA 98660 (360) 694-2691 Fax. (360) 906-1958

Water Field Sampling Data Sheet

Client Name	City of Yakima	**Sample Location**	KMW-14
Project #	0818.02.01	**Sampler**	C. Wise
Project Name	Tiger Oil - W. Nob Hill Blvd.	**Sampling Date**	2/2/2016
Sampling Event	February 2016	**Sample Name**	KMW14-GW-020216
Sub Area		**Sample Depth**	14.5
FSDS QA:	AWV 2/11/2016	**Easting**	**Northing**	**TOC**

Hydrology/Level Measurements

					(Product Thickness)	(Water Column)	(Gallons/ft x Water Column)
Date	**Time**	**DT-Bottom**	**DT-Product**	**DT-Water**	**DTP-DTW**	**DTB-DTW**	**Pore Volume**
2/1/2016	17:15	18.64		12.27		6.37	4.16

(0.75" = 0.023 gal/ft) (1" = 0.041 gal/ft) (1.5" = 0.092 gal/ft) (2" = 0.163 gal/ft) (3" = 0.367 gal/ft) (4" = 0.653 gal/ft) (6" = 1.469 gal/ft) (8" = 2.611 gal/ft)

Water Quality Data

Purge Method	**Time**	**Purge Vol (gal)**	**Flowrate l/min**	**pH**	**Temp (C)**	**E Cond (uS/cm)**	**DO (mg/L)**	**ORP**	**Turbidity**
(2) Peristaltic Pump	9:00:00 AM	4.25	0.3	6.81	15.85	992	0.83	274.5	9.4
	9:05:00 AM	4.65	0.3	6.87	15.92	985	0.74	272.3	9.08
	9:11:00 AM	5.15	0.3	6.89	15.76	980	0.65	272.7	7.82
	9:16:00 AM	5.55	0.3	6.88	15.6	969	0.52	275.9	7.14
	9:21:00 AM	5.95	0.3	6.86	15.68	964	0.44	282.6	6.96
	9:26:00 AM	6.35	0.3	6.84	15.66	961	0.41	285.8	5.72
Final Field Parameters	9:30:00 AM	6.67	0.3	6.84	15.64	959	0.38	287.7	5.66

Methods: (1) Submersible Pump (2) Peristaltic Pump (3) Disposable Bailer (4) Vacuum Pump (5) Dedicated Bailer (6) Inertia Pump (7) Other (specify)

Water Quality Observations:

Clear. No sheen or odor.

Sample Information

Sampling Method	**Sample Type**	**Sampling Time**	**Container Code/Preservative**	**#**	**Filtered**
(2) Peristaltic Pump	Groundwater	9:30:00 AM	VOA-Glass	3	No
			Amber Glass		
			White Poly		
			Yellow Poly		
			Green Poly		
			Red Total Poly		
			Red Dissolved Poly		
			Total Bottles	3	

General Sampling Comments

Began purge at 8:30.

Signature _____

Maul Foster & Alongi, Inc.

400 E. Mill Plain Blvd, Suite 400, Vancouver, WA 98660 (360) 694-2691 Fax. (360) 906-1958

Water Field Sampling Data Sheet

Client Name	City of Yakima	**Sample Location**	KMW-15		
Project #	0818.02.01	**Sampler**	C. Wise		
Project Name	Tiger Oil - W. Nob Hill Blvd.	**Sampling Date**	2/2/2016		
Sampling Event	February 2016	**Sample Name**	KMW15-GW-020216		
Sub Area		**Sample Depth**	13.5		
FSDS QA:	AWV 2/11/2016	**Easting**		**Northing**	**TOC**

Hydrology/Level Measurements

					(Product Thickness)	(Water Column)	(Gallons/ft x Water Column)
Date	**Time**	**DT-Bottom**	**DT-Product**	**DT-Water**	**DTP-DTW**	**DTB-DTW**	**Pore Volume**
2/1/2016	17:20	19.53		10.86		8.67	5.66

(0.75" = 0.023 gal/ft) (1" = 0.041 gal/ft) (1.5" = 0.092 gal/ft) (2" = 0.163 gal/ft) (3" = 0.367 gal/ft) (4" = 0.653 gal/ft) (6" = 1.469 gal/ft) (8" = 2.611 gal/ft)

Water Quality Data

Purge Method	Time	Purge Vol (gal)	Flowrate l/min	pH	Temp (C)	E Cond (uS/cm)	DO (mg/L)	ORP	Turbidity
(2) Peristaltic Pump	10:45:00 AM	5.75	0.3	7.18	15.11	767	4.02	232.4	6.92
	10:50:00 AM	6.15	0.3	7.18	15.27	768	4	248.1	5.55
	10:55:00 AM	6.55	0.3	7.17	15.34	768	3.99	260.7	5.41
	11:00:00 AM	6.95	0.3	7.15	15.16	768	3.99	272.7	5.34
	11:06:00 AM	7.43	0.3	7.12	15.06	768	3.97	284.2	5.26
	11:12:00 AM	7.91	0.3	7.12	14.98	767	3.99	289.6	5.64
Final Field Parameters	11:17:00 AM	8.31	0.3	7.12	14.97	768	4.02	292.1	5.48

Methods: (1) Submersible Pump (2) Peristaltic Pump (3) Disposable Bailer (4) Vacuum Pump (5) Dedicated Bailer (6) Inertia Pump (7) Other (specify)

Water Quality Observations: Clear. No sheen or odor.

Sample Information

Sampling Method	Sample Type	Sampling Time	Container Code/Preservative	#	Filtered
(2) Peristaltic Pump	Groundwater	11:20:00 AM	VOA-Glass	3	No
			Amber Glass		
			White Poly		
			Yellow Poly		
			Green Poly		
			Red Total Poly		
			Red Dissolved Poly		
			Total Bottles	3	

General Sampling Comments Began purge at 10:05.

Signature _____

Maul Foster & Alongi, Inc.

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Water Field Sampling Data Sheet

Client Name	City of Yakima	**Sample Location**	KMW-16
Project #	0818.02.01	**Sampler**	C. Wise
Project Name	Tiger Oil - W. Nob Hill Blvd.	**Sampling Date**	2/2/2016
Sampling Event	February 2016	**Sample Name**	KMW16-GW-020216
Sub Area		**Sample Depth**	14
FSDS QA:	AWV 2/11/2016	**Easting**	**Northing**	**TOC**

Hydrology/Level Measurements

					(Product Thickness)	(Water Column)	(Gallons/ft x Water Column)
Date	**Time**	**DT-Bottom**	**DT-Product**	**DT-Water**	**DTP-DTW**	**DTB-DTW**	**Pore Volume**
2/2/2016	11:30	20.32		10.67		9.65	6.3

(0.75" = 0.023 gal/ft) (1" = 0.041 gal/ft) (1.5" = 0.092 gal/ft) (2" = 0.163 gal/ft) (3" = 0.367 gal/ft) (4" = 0.653 gal/ft) (6" = 1.469 gal/ft) (8" = 2.611 gal/ft)

Water Quality Data

Purge Method	**Time**	**Purge Vol (gal)**	**Flowrate l/min**	**pH**	**Temp (C)**	**E Cond (uS/cm)**	**DO (mg/L)**	**ORP**	**Turbidity**
(2) Peristaltic Pump	12:15:00 PM	6.5	0.3	6.85	15.76	942	0.79	170.5	4.7
	12:20:00 PM	6.9	0.3	6.92	15.95	935	0.74	198.5	4.62
	12:25:00 PM	7.3	0.3	6.91	15.27	933	0.7	218	3.98
	12:30:00 PM	7.55	0.2	6.85	14.84	935	0.71	232.2	3.72
	12:35:00 PM	7.8	0.2	6.83	14.73	935	0.72	248.8	2.92
	12:40:00 PM	8.05	0.2	6.79	14.61	935	0.7	253.9	2.78
Final Field Parameters	12:45:00 PM	8.3	0.2	6.8	14.64	935	0.69	258	3.12

Methods: (1) Submersible Pump (2) Peristaltic Pump (3) Disposable Bailer (4) Vacuum Pump (5) Dedicated Bailer (6) Inertia Pump (7) Other (specify)

Water Quality Observations:

Clear. No sheen or odor.

Sample Information

Sampling Method	**Sample Type**	**Sampling Time**	**Container Code/Preservative**	**#**	**Filtered**
(2) Peristaltic Pump	Groundwater	12:50:00 PM	VOA-Glass	3	No
			Amber Glass		
			White Poly		
			Yellow Poly		
			Green Poly		
			Red Total Poly		
			Red Dissolved Poly		
			Total Bottles	3	

General Sampling Comments

Began purge at 11:40.

Signature _____

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Water Field Sampling Data Sheet

Client Name	City of Yakima	**Sample Location**	MW-7
Project #	0818.02.01	**Sampler**	
Project Name	Tiger Oil - W. Nob Hill Blvd.	**Sampling Date**	
Sampling Event	February 2016	**Sample Name**	
Sub Area		**Sample Depth**	
FSDS QA:	AWV 2/11/2016	**Easting**	**Northing**	**TOC**

Hydrology/Level Measurements

					(Product Thickness)	(Water Column)	(Gallons/ft x Water Column)
Date	**Time**	**DT-Bottom**	**DT-Product**	**DT-Water**	**DTP-DTW**	**DTB-DTW**	**Pore Volume**
2/1/2016	13:40	18.49	12.01	12.3	0.29	6.19	1

(0.75" = 0.023 gal/ft) (1" = 0.041 gal/ft) (1.5" = 0.092 gal/ft) (2" = 0.163 gal/ft) (3" = 0.367 gal/ft) (4" = 0.653 gal/ft) (6" = 1.469 gal/ft) (8" = 2.611 gal/ft)

Water Quality Data

Purge Method	**Time**	**Purge Vol (gal)**	**Flowrate l/min**	**pH**	**Temp (C)**	**E Cond (uS/cm)**	**DO (mg/L)**	**ORP**	**Turbidity**
(2) Peristaltic Pump									
Final Field Parameters									

Methods: (1) Submersible Pump (2) Peristaltic Pump (3) Disposable Bailer (4) Vacuum Pump (5) Dedicated Bailer (6) Inertia Pump (7) Other (specify)

Water Quality Observations:

Sample Information

Sampling Method	**Sample Type**	**Sampling Time**	**Container Code/Preservative**	**#**	**Filtered**
			VOA-Glass		
			Amber Glass		
			White Poly		
			Yellow Poly		
			Green Poly		
			Red Total Poly		
			Red Dissolved Poly		
			Total Bottles	0	

General Sampling Comments

A sample was not collected due to the presence of free product in the monitoring well.

Signature _____

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Water Field Sampling Data Sheet

Client Name	City of Yakima	**Sample Location**	MW-9
Project #	0818.02.01	**Sampler**	C. Wise
Project Name	Tiger Oil - W. Nob Hill Blvd.	**Sampling Date**	2/2/2016
Sampling Event	February 2016	**Sample Name**	MW9-GW-020216
Sub Area		**Sample Depth**	16
FSDS QA:	AWV 2/11/2016	**Easting**	**Northing**	**TOC**

Hydrology/Level Measurements

					(Product Thickness)	(Water Column)	(Gallons/ft x Water Column)
Date	**Time**	**DT-Bottom**	**DT-Product**	**DT-Water**	**DTP-DTW**	**DTB-DTW**	**Pore Volume**
2/1/2016	15:30	18.64		14.21		4.43	0.72

(0.75" = 0.023 gal/ft) (1" = 0.041 gal/ft) (1.5" = 0.092 gal/ft) (2" = 0.163 gal/ft) (3" = 0.367 gal/ft) (4" = 0.653 gal/ft) (6" = 1.469 gal/ft) (8" = 2.611 gal/ft)

Water Quality Data

Purge Method	**Time**	**Purge Vol (gal)**	**Flowrate l/min**	**pH**	**Temp (C)**	**E Cond (uS/cm)**	**DO (mg/L)**	**ORP**	**Turbidity**
(2) Peristaltic Pump	4:35:00 PM	0.75	0.1	6.33	10.7	1204	1.07	218.9	29.8
	4:40:00 PM	0.88	0.1	6.47	10.64	1203	0.57	235.9	26.3
	4:45:00 PM	1	0.1	6.49	10.53	1202	0.53	237.6	25.3
	4:50:00 PM	1.13	0.1	6.51	10.46	1202	0.49	239.6	24.7
	4:55:00 PM	1.26	0.1	6.54	10.28	1202	0.47	241.8	15.5
	5:00:00 PM	1.39	0.1	6.56	10.11	1200	0.49	242.9	15.3
Final Field Parameters	5:05:00 PM	1.52	0.1	6.58	10	1198	0.5	244.2	14.4

Methods: (1) Submersible Pump (2) Peristaltic Pump (3) Disposable Bailer (4) Vacuum Pump (5) Dedicated Bailer (6) Inertia Pump (7) Other (specify)

Water Quality Observations:

Strong odor and sheen. Dark-colored debris present during initial purge.

Sample Information

Sampling Method	**Sample Type**	**Sampling Time**	**Container Code/Preservative**	**#**	**Filtered**
(2) Peristaltic Pump	Groundwater	5:10:00 PM	VOA-Glass	3	No
			Amber Glass		
			White Poly		
			Yellow Poly		
			Green Poly		
			Red Total Poly		
			Red Dissolved Poly		
			Total Bottles	3	

General Sampling Comments

Began purge at 16:20.

Signature _____

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Water Field Sampling Data Sheet

Client Name	City of Yakima	**Sample Location**	MW-10
Project #	0818.02.01	**Sampler**	C. Wise
Project Name	Tiger Oil - W. Nob Hill Blvd.	**Sampling Date**	2/3/2016
Sampling Event	February 2016	**Sample Name**	MW10-GW-020316
Sub Area		**Sample Depth**	13.5
FSDS QA:	AWV 2/11/2016	**Easting**	**Northing**	**TOC**

Hydrology/Level Measurements

					(Product Thickness)	(Water Column)	(Gallons/ft x Water Column)
Date	**Time**	**DT-Bottom**	**DT-Product**	**DT-Water**	**DTP-DTW**	**DTB-DTW**	**Pore Volume**
2/1/2016	15:00	14.95		12.54		2.41	0.39

(0.75" = 0.023 gal/ft) (1" = 0.041 gal/ft) (1.5" = 0.092 gal/ft) (2" = 0.163 gal/ft) (3" = 0.367 gal/ft) (4" = 0.653 gal/ft) (6" = 1.469 gal/ft) (8" = 2.611 gal/ft)

Water Quality Data

Purge Method	**Time**	**Purge Vol (gal)**	**Flowrate l/min**	**pH**	**Temp (C)**	**E Cond (uS/cm)**	**DO (mg/L)**	**ORP**	**Turbidity**
(2) Peristaltic Pump	9:45:00 AM	0.25	0.2	7.05	11.59	2246	4.26	263.8	34.2
	9:50:00 AM	0.5	0.2	7.13	11.68	2189	4.25	259.6	28.9
	9:55:00 AM	0.63	0.1	7.18	11.9	2140	4.18	256	31.2
	10:00:00 AM	0.76	0.1	7.24	11.89	2049	4.2	252.1	32.2
Final Field Parameters	10:05:00 AM	0.89	0.1	7.25	11.86	1980	4.25	250.1	30.8

Methods: (1) Submersible Pump (2) Peristaltic Pump (3) Disposable Bailer (4) Vacuum Pump (5) Dedicated Bailer (6) Inertia Pump (7) Other (specify)

Water Quality Observations: Clear. No sheen or odor.

Sample Information

Sampling Method	**Sample Type**	**Sampling Time**	**Container Code/Preservative**	**#**	**Filtered**
(2) Peristaltic Pump	Groundwater	10:10:00 AM	VOA-Glass	3	No
			Amber Glass		
			White Poly		
			Yellow Poly		
			Green Poly		
			Red Total Poly		
			Red Dissolved Poly		
			Total Bottles	3	

General Sampling Comments Began purge at 9:40.

Signature _____

Maul Foster & Alongi, Inc.

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Water Field Sampling Data Sheet

Client Name	City of Yakima	**Sample Location**	MW-11
Project #	0818.02.01	**Sampler**	
Project Name	Tiger Oil - W. Nob Hill Blvd.	**Sampling Date**	
Sampling Event	February 2016	**Sample Name**	
Sub Area		**Sample Depth**	
FSDS QA:	AWV 2/11/2016	**Easting**	**Northing**	**TOC**

Hydrology/Level Measurements

					(Product Thickness)	(Water Column)	(Gallons/ft x Water Column)
Date	**Time**	**DT-Bottom**	**DT-Product**	**DT-Water**	**DTP-DTW**	**DTB-DTW**	**Pore Volume**
2/1/2016	14:00	14.9	13.42	13.52	0.1	1.38	0.22

(0.75" = 0.023 gal/ft) (1" = 0.041 gal/ft) (1.5" = 0.092 gal/ft) (2" = 0.163 gal/ft) (3" = 0.367 gal/ft) (4" = 0.653 gal/ft) (6" = 1.469 gal/ft) (8" = 2.611 gal/ft)

Water Quality Data

Purge Method	**Time**	**Purge Vol (gal)**	**Flowrate l/min**	**pH**	**Temp (C)**	**E Cond (uS/cm)**	**DO (mg/L)**	**ORP**	**Turbidity**
(2) Peristaltic Pump									
Final Field Parameters									

Methods: (1) Submersible Pump (2) Peristaltic Pump (3) Disposable Bailer (4) Vacuum Pump (5) Dedicated Bailer (6) Inertia Pump (7) Other (specify)

Water Quality Observations:

Sample Information

Sampling Method	**Sample Type**	**Sampling Time**	**Container Code/Preservative**	**#**	**Filtered**
			VOA-Glass		
			Amber Glass		
			White Poly		
			Yellow Poly		
			Green Poly		
			Red Total Poly		
			Red Dissolved Poly		
			Total Bottles	0	

General Sampling Comments

A sample was not collected due to the presence of free product in the monitoring well.

Signature _____

Maul Foster & Alongi, Inc.

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Water Field Sampling Data Sheet

Client Name	City of Yakima	**Sample Location**	MW-13
Project #	0818.02.01	**Sampler**	
Project Name	Tiger Oil - W. Nob Hill Blvd.	**Sampling Date**	
Sampling Event	February 2016	**Sample Name**	
Sub Area		**Sample Depth**	
FSDS QA:	AWV 2/11/2016	**Easting**	**Northing**	**TOC**

Hydrology/Level Measurements

					(Product Thickness)	(Water Column)	(Gallons/ft x Water Column)
Date	**Time**	**DT-Bottom**	**DT-Product**	**DT-Water**	**DTP-DTW**	**DTB-DTW**	**Pore Volume**
2/1/2016	15:15	17.82	13.89	14.1	0.21	3.72	0.61

(0.75" = 0.023 gal/ft) (1" = 0.041 gal/ft) (1.5" = 0.092 gal/ft) (2" = 0.163 gal/ft) (3" = 0.367 gal/ft) (4" = 0.653 gal/ft) (6" = 1.469 gal/ft) (8" = 2.611 gal/ft)

Water Quality Data

Purge Method	**Time**	**Purge Vol (gal)**	**Flowrate l/min**	**pH**	**Temp (C)**	**E Cond (uS/cm)**	**DO (mg/L)**	**ORP**	**Turbidity**
(2) Peristaltic Pump									
Final Field Parameters									

Methods: (1) Submersible Pump (2) Peristaltic Pump (3) Disposable Bailer (4) Vacuum Pump (5) Dedicated Bailer (6) Inertia Pump (7) Other (specify)

Water Quality Observations:

Sample Information

Sampling Method	**Sample Type**	**Sampling Time**	**Container Code/Preservative**	**#**	**Filtered**
			VOA-Glass		
			Amber Glass		
			White Poly		
			Yellow Poly		
			Green Poly		
			Red Total Poly		
			Red Dissolved Poly		
			Total Bottles	0	

General Sampling Comments

A sample was not collected due to the presence of free product in the monitoring well.

Signature _____

Maul Foster & Alongi, Inc.

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Water Field Sampling Data Sheet

Client Name	City of Yakima	**Sample Location**	MWG-2		
Project #	0818.02.01	**Sampler**	C. Wise		
Project Name	Tiger Oil - W. Nob Hill Blvd.	**Sampling Date**	2/3/2016		
Sampling Event	February 2016	**Sample Name**	MWG2-GW-020316		
Sub Area		**Sample Depth**	10.5		
FSDS QA:	AWV 2/11/2016	**Easting**		**Northing**	**TOC**

Hydrology/Level Measurements

					(Product Thickness)	(Water Column)	(Gallons/ft x Water Column)
Date	**Time**	**DT-Bottom**	**DT-Product**	**DT-Water**	**DTP-DTW**	**DTB-DTW**	**Pore Volume**
2/3/2016	8:30	13.91		8.9		5.01	0.82

(0.75" = 0.023 gal/ft) (1" = 0.041 gal/ft) (1.5" = 0.092 gal/ft) (2" = 0.163 gal/ft) (3" = 0.367 gal/ft) (4" = 0.653 gal/ft) (6" = 1.469 gal/ft) (8" = 2.611 gal/ft)

Water Quality Data

Purge Method	**Time**	**Purge Vol (gal)**	**Flowrate l/min**	**pH**	**Temp (C)**	**E Cond (uS/cm)**	**DO (mg/L)**	**ORP**	**Turbidity**
(2) Peristaltic Pump	8:50:00 AM	1.5	0.2	6.87	14	777	3.58	298.1	23.8
	8:55:00 AM	1.75	0.2	7.13	14.18	775	3.32	290.6	20.1
	9:00:00 AM	2	0.2	7.15	14.19	774	3.35	289.8	23.7
	9:05:00 AM	2.25	0.2	7.2	14.23	775	3.32	287.6	22.9
	9:10:00 AM	2.5	0.2	7.24	14.33	774	3.29	284.7	23.4
	9:15:00 AM	2.75	0.2	7.3	13.75	773	3.45	279.7	24.2
Final Field Parameters	9:20:00 AM	3	0.2	7.29	13.62	774	3.45	279.3	22.2

Methods: (1) Submersible Pump (2) Peristaltic Pump (3) Disposable Bailer (4) Vacuum Pump (5) Dedicated Bailer (6) Inertia Pump (7) Other (specify)

Water Quality Observations: Clear. No sheen or odor.

Sample Information

Sampling Method	**Sample Type**	**Sampling Time**	**Container Code/Preservative**	**#**	**Filtered**
(2) Peristaltic Pump	Groundwater	9:30:00 AM	VOA-Glass	3	No
			Amber Glass		
			White Poly		
			Yellow Poly		
			Green Poly		
			Red Total Poly		
			Red Dissolved Poly		
			Total Bottles	3	

General Sampling Comments Began purge at 8:40.

Signature _____

Maul Foster & Alongi, Inc.

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Water Field Sampling Data Sheet

Client Name	City of Yakima	**Sample Location**	MWG-3
Project #	0818.02.01	**Sampler**	
Project Name	Tiger Oil - W. Nob Hill Blvd.	**Sampling Date**	
Sampling Event	February 2016	**Sample Name**	
Sub Area		**Sample Depth**	
FSDS QA:	AWV 2/11/2016	**Easting**	**Northing**	**TOC**

Hydrology/Level Measurements

					(Product Thickness)	(Water Column)	(Gallons/ft x Water Column)
Date	**Time**	**DT-Bottom**	**DT-Product**	**DT-Water**	**DTP-DTW**	**DTB-DTW**	**Pore Volume**
2/1/2016	16:00	14.21	7.02	7.1	0.08	7.11	1.16

(0.75" = 0.023 gal/ft) (1" = 0.041 gal/ft) (1.5" = 0.092 gal/ft) (2" = 0.163 gal/ft) (3" = 0.367 gal/ft) (4" = 0.653 gal/ft) (6" = 1.469 gal/ft) (8" = 2.611 gal/ft)

Water Quality Data

Purge Method	**Time**	**Purge Vol (gal)**	**Flowrate l/min**	**pH**	**Temp (C)**	**E Cond (uS/cm)**	**DO (mg/L)**	**ORP**	**Turbidity**
(2) Peristaltic Pump									
Final Field Parameters									

Methods: (1) Submersible Pump (2) Peristaltic Pump (3) Disposable Bailer (4) Vacuum Pump (5) Dedicated Bailer (6) Inertia Pump (7) Other (specify)

Water Quality Observations:

Sample Information

Sampling Method	**Sample Type**	**Sampling Time**	**Container Code/Preservative**	**#**	**Filtered**
			VOA-Glass		
			Amber Glass		
			White Poly		
			Yellow Poly		
			Green Poly		
			Red Total Poly		
			Red Dissolved Poly		
			Total Bottles	0	

General Sampling Comments

A sample was not collected due to the presence of free product in the monitoring well. A strong odor was present in the well casing.

Signature _____

Maul Foster & Alongi, Inc.

400 E. Mill Plain Blvd, Suite 400, Vancouver, WA 98660 (360) 694-2691 Fax. (360) 906-1958

Water Field Sampling Data Sheet

Client Name	City of Yakima	**Sample Location**	YMW-1
Project #	0818.02.01	**Sampler**	C. Wise
Project Name	Tiger Oil - W. Nob Hill Blvd.	**Sampling Date**	2/2/2016
Sampling Event	February 2016	**Sample Name**	YMW1-GW-020216
Sub Area		**Sample Depth**	14
FSDS QA:	AWV 2/11/2016	**Easting**	**Northing**	**TOC**

Hydrology/Level Measurements

					(Product Thickness)	(Water Column)	(Gallons/ft x Water Column)
Date	**Time**	**DT-Bottom**	**DT-Product**	**DT-Water**	**DTP-DTW**	**DTB-DTW**	**Pore Volume**
2/1/2016	15:40	19.73		11.49		8.24	1.34

(0.75" = 0.023 gal/ft) (1" = 0.041 gal/ft) (1.5" = 0.092 gal/ft) (2" = 0.163 gal/ft) (3" = 0.367 gal/ft) (4" = 0.653 gal/ft) (6" = 1.469 gal/ft) (8" = 2.611 gal/ft)

Water Quality Data

Purge Method	**Time**	**Purge Vol (gal)**	**Flowrate l/min**	**pH**	**Temp (C)**	**E Cond (uS/cm)**	**DO (mg/L)**	**ORP**	**Turbidity**
(2) Peristaltic Pump	3:30:00 PM	1.5	0.2	6.68	15.58	1278	0.73	332	8.11
	3:36:00 PM	1.8	0.2	6.76	15.7	1248	0.48	306.5	7.02
	3:42:00 PM	2.1	0.2	6.82	15.62	1228	0.38	278.5	7.32
	3:47:00 PM	2.35	0.2	6.87	15.49	1208	0.34	256.4	7.12
	3:52:00 PM	2.6	0.2	6.88	15.38	1206	0.33	242	6.34
	3:57:00 PM	2.85	0.2	6.87	15.17	1205	0.32	238	5.88
Final Field Parameters	4:02:00 PM	3.1	0.2	6.87	15.15	1202	0.33	232.6	6.03

Methods: (1) Submersible Pump (2) Peristaltic Pump (3) Disposable Bailer (4) Vacuum Pump (5) Dedicated Bailer (6) Inertia Pump (7) Other (specify)

Water Quality Observations:

Clear. Strong odor. No sheen.

Sample Information

Sampling Method	**Sample Type**	**Sampling Time**	**Container Code/Preservative**	**#**	**Filtered**
(2) Peristaltic Pump	Groundwater	4:10:00 PM	VOA-Glass	3	No
			Amber Glass		
			White Poly		
			Yellow Poly		
			Green Poly		
			Red Total Poly		
			Red Dissolved Poly		
			Total Bottles	3	

General Sampling Comments

Began purge at 15:10.

Signature _____

Maul Foster & Alongi, Inc.

400 E. Mill Plain Blvd, Suite 400, Vancouver, WA 98660 (360) 694-2691 Fax. (360) 906-1958

Water Field Sampling Data Sheet

Client Name	City of Yakima	**Sample Location**	YMW-2
Project #	0818.02.01	**Sampler**	C. Wise
Project Name	Tiger Oil - W. Nob Hill Blvd.	**Sampling Date**	2/1/2016
Sampling Event	February 2016	**Sample Name**	YMW2-GW-020116
Sub Area		**Sample Depth**	15
FSDS QA:	AWV 2/11/2016	**Easting**	**Northing**	**TOC**

Hydrology/Level Measurements

					(Product Thickness)	(Water Column)	(Gallons/ft x Water Column)
Date	**Time**	**DT-Bottom**	**DT-Product**	**DT-Water**	**DTP-DTW**	**DTB-DTW**	**Pore Volume**
2/1/2016	13:10	19.74		13.17		6.57	1.07

(0.75" = 0.023 gal/ft) (1" = 0.041 gal/ft) (1.5" = 0.092 gal/ft) (2" = 0.163 gal/ft) (3" = 0.367 gal/ft) (4" = 0.653 gal/ft) (6" = 1.469 gal/ft) (8" = 2.611 gal/ft)

Water Quality Data

Purge Method	**Time**	**Purge Vol (gal)**	**Flowrate l/min**	**pH**	**Temp (C)**	**E Cond (uS/cm)**	**DO (mg/L)**	**ORP**	**Turbidity**
(2) Peristaltic Pump	2:00:00 PM	1.5	0.2	6.37	14.87	899	1.17	308.3	11.6
	2:07:00 PM	1.85	0.2	6.44	14.77	933	0.98	325.8	
	2:12:00 PM	2.1	0.2	6.43	14.8	967	0.89	323.5	
	2:17:00 PM	2.35	0.2	6.41	14.9	1031	0.76	326.3	9.71
Final Field Parameters	2:25:00 PM	2.75	0.2	6.37	14.98	1110	0.79	327.9	8.98

Methods: (1) Submersible Pump (2) Peristaltic Pump (3) Disposable Bailer (4) Vacuum Pump (5) Dedicated Bailer (6) Inertia Pump (7) Other (specify)

Water Quality Observations: Clear. Slight odor. No sheen.

Sample Information

Sampling Method	**Sample Type**	**Sampling Time**	**Container Code/Preservative**	**#**	**Filtered**
(2) Peristaltic Pump	Groundwater	2:30:00 PM	VOA-Glass	6	No
			Amber Glass		
			White Poly		
			Yellow Poly		
			Green Poly		
			Red Total Poly		
			Red Dissolved Poly		
			Total Bottles	6	

General Sampling Comments Began purge at 13:34. Collected DUP-GW-020116 at 14:30.

Signature _____

Maul Foster & Alongi, Inc.

400 E. Mill Plain Blvd, Suite 400, Vancouver, WA 98660 (360) 694-2691 Fax. (360) 906-1958

Water Field Sampling Data Sheet

Client Name	City of Yakima	**Sample Location**	YMW-3
Project #	0818.02.01	**Sampler**	C. Wise
Project Name	Tiger Oil - W. Nob Hill Blvd.	**Sampling Date**	2/1/2016
Sampling Event	February 2016	**Sample Name**	YMW3-GW-020116
Sub Area		**Sample Depth**	14
FSDS QA:	AWV 2/11/2016	**Easting**	**Northing**	**TOC**

Hydrology/Level Measurements

					(Product Thickness)	(Water Column)	(Gallons/ft x Water Column)
Date	**Time**	**DT-Bottom**	**DT-Product**	**DT-Water**	**DTP-DTW**	**DTB-DTW**	**Pore Volume**
2/1/2016	13:45	19.7		11.75		7.95	1.3

(0.75" = 0.023 gal/ft) (1" = 0.041 gal/ft) (1.5" = 0.092 gal/ft) (2" = 0.163 gal/ft) (3" = 0.367 gal/ft) (4" = 0.653 gal/ft) (6" = 1.469 gal/ft) (8" = 2.611 gal/ft)

Water Quality Data

Purge Method	**Time**	**Purge Vol (gal)**	**Flowrate l/min**	**pH**	**Temp (C)**	**E Cond (uS/cm)**	**DO (mg/L)**	**ORP**	**Turbidity**
(2) Peristaltic Pump	3:25:00 PM	1.25	0.2	6.52	15.24	1556	0.79	266.6	4.6
	3:31:00 PM	1.55	0.2	6.5	15.1	1514	0.43	216.4	3.98
	3:38:00 PM	1.9	0.2	6.5	15.11	1512	0.42	215.3	3.16
Final Field Parameters	3:43:00 PM	2.15	0.2	6.5	15.09	1505	0.39	208.3	2.77

Methods: (1) Submersible Pump (2) Peristaltic Pump (3) Disposable Bailer (4) Vacuum Pump (5) Dedicated Bailer (6) Inertia Pump (7) Other (specify)

Water Quality Observations: Clear. Strong odor. No sheen.

Sample Information

Sampling Method	**Sample Type**	**Sampling Time**	**Container Code/Preservative**	**#**	**Filtered**
(2) Peristaltic Pump	Groundwater	3:50:00 PM	VOA-Glass	3	No
			Amber Glass		
			White Poly		
			Yellow Poly		
			Green Poly		
			Red Total Poly		
			Red Dissolved Poly		
			Total Bottles	3	

General Sampling Comments Began purge at 14:55.

Signature _____

ATTACHMENT B

LABORATORY ANALYTICAL REPORTS

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

February 10, 2016

Yen-Vy Van
Maul Foster & Alongi, Inc.
411 First Avenue S., Suite 610
Seattle, WA 98104

Re: Analytical Data for Project 0818.02.01
Laboratory Reference No. 1602-026

Dear Yen-Vy:

Enclosed are the analytical results and associated quality control data for samples submitted on February 3, 2016.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: February 10, 2016
Samples Submitted: February 3, 2016
Laboratory Reference: 1602-026
Project: 0818.02.01

Case Narrative

Samples were collected on February 1, 2, and 3, 2016 and received by the laboratory on February 3, 2016. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: February 10, 2016
Samples Submitted: February 3, 2016
Laboratory Reference: 1602-026
Project: 0818.02.01

NWTPH-Gx/BTEX

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**YMW2-GW-020116**					
Laboratory ID:	02-026-01					
Benzene	**380**	100	EPA 8021B	2-9-16	2-9-16	
Toluene	**630**	100	EPA 8021B	2-9-16	2-9-16	
Ethyl Benzene	**300**	100	EPA 8021B	2-9-16	2-9-16	
m,p-Xylene	**1700**	100	EPA 8021B	2-9-16	2-9-16	
o-Xylene	**810**	100	EPA 8021B	2-9-16	2-9-16	
Gasoline	**13000**	10000	NWTPH-Gx	2-9-16	2-9-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*101*	*71-111*				
Client ID:	**DUP-GW-020116**					
Laboratory ID:	02-026-02					
Benzene	**380**	100	EPA 8021B	2-9-16	2-9-16	
Toluene	**650**	100	EPA 8021B	2-9-16	2-9-16	
Ethyl Benzene	**310**	100	EPA 8021B	2-9-16	2-9-16	
m,p-Xylene	**1800**	100	EPA 8021B	2-9-16	2-9-16	
o-Xylene	**830**	100	EPA 8021B	2-9-16	2-9-16	
Gasoline	**13000**	10000	NWTPH-Gx	2-9-16	2-9-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*102*	*71-111*				
Client ID:	**YMW3-GW-020116**					
Laboratory ID:	02-026-03					
Benzene	**3100**	100	EPA 8021B	2-9-16	2-9-16	
Toluene	**1800**	100	EPA 8021B	2-9-16	2-9-16	
Ethyl Benzene	**1200**	100	EPA 8021B	2-9-16	2-9-16	
m,p-Xylene	**4000**	100	EPA 8021B	2-9-16	2-9-16	
o-Xylene	**1700**	100	EPA 8021B	2-9-16	2-9-16	
Gasoline	**31000**	10000	NWTPH-Gx	2-9-16	2-9-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*104*	*71-111*				

Date of Report: February 10, 2016
Samples Submitted: February 3, 2016
Laboratory Reference: 1602-026
Project: 0818.02.01

NWTPH-Gx/BTEX

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**KMW6-GW-020116**					
Laboratory ID:	02-026-04					
Benzene	**42**	4.0	EPA 8021B	2-9-16	2-9-16	
Toluene	**ND**	4.0	EPA 8021B	2-9-16	2-9-16	
Ethyl Benzene	**22**	4.0	EPA 8021B	2-9-16	2-9-16	
m,p-Xylene	**5.4**	4.0	EPA 8021B	2-9-16	2-9-16	
o-Xylene	**ND**	4.0	EPA 8021B	2-9-16	2-9-16	
Gasoline	**ND**	400	NWTPH-Gx	2-9-16	2-9-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*103*	*71-111*				
Client ID:	**KMW14-GW-020216**					
Laboratory ID:	02-026-05					
Benzene	**3.0**	1.0	EPA 8021B	2-9-16	2-9-16	
Toluene	**ND**	1.0	EPA 8021B	2-9-16	2-9-16	
Ethyl Benzene	**ND**	1.0	EPA 8021B	2-9-16	2-9-16	
m,p-Xylene	**ND**	1.0	EPA 8021B	2-9-16	2-9-16	
o-Xylene	**ND**	1.0	EPA 8021B	2-9-16	2-9-16	
Gasoline	**ND**	100	NWTPH-Gx	2-9-16	2-9-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*102*	*71-111*				
Client ID:	**KMW15-GW-020216**					
Laboratory ID:	02-026-06					
Benzene	**ND**	1.0	EPA 8021B	2-9-16	2-9-16	
Toluene	**ND**	1.0	EPA 8021B	2-9-16	2-9-16	
Ethyl Benzene	**ND**	1.0	EPA 8021B	2-9-16	2-9-16	
m,p-Xylene	**ND**	1.0	EPA 8021B	2-9-16	2-9-16	
o-Xylene	**ND**	1.0	EPA 8021B	2-9-16	2-9-16	
Gasoline	**ND**	100	NWTPH-Gx	2-9-16	2-9-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*101*	*71-111*				

Date of Report: February 10, 2016
Samples Submitted: February 3, 2016
Laboratory Reference: 1602-026
Project: 0818.02.01

NWTPH-Gx/BTEX

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**KMW16-GW-020216**					
Laboratory ID:	02-026-07					
Benzene	**ND**	1.0	EPA 8021B	2-9-16	2-9-16	
Toluene	**ND**	1.0	EPA 8021B	2-9-16	2-9-16	
Ethyl Benzene	**ND**	1.0	EPA 8021B	2-9-16	2-9-16	
m,p-Xylene	**ND**	1.0	EPA 8021B	2-9-16	2-9-16	
o-Xylene	**ND**	1.0	EPA 8021B	2-9-16	2-9-16	
Gasoline	**200**	100	NWTPH-Gx	2-9-16	2-9-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*102*	*71-111*				
Client ID:	**KMW5-GW-020216**					
Laboratory ID:	02-026-08					
Benzene	**ND**	1.0	EPA 8021B	2-9-16	2-9-16	
Toluene	**ND**	1.0	EPA 8021B	2-9-16	2-9-16	
Ethyl Benzene	**ND**	1.0	EPA 8021B	2-9-16	2-9-16	
m,p-Xylene	**ND**	1.0	EPA 8021B	2-9-16	2-9-16	
o-Xylene	**ND**	1.0	EPA 8021B	2-9-16	2-9-16	
Gasoline	**ND**	100	NWTPH-Gx	2-9-16	2-9-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*100*	*71-111*				
Client ID:	**TRIP BLANKS**					
Laboratory ID:	02-026-09					
Benzene	**ND**	1.0	EPA 8021B	2-9-16	2-9-16	
Toluene	**ND**	1.0	EPA 8021B	2-9-16	2-9-16	
Ethyl Benzene	**ND**	1.0	EPA 8021B	2-9-16	2-9-16	
m,p-Xylene	**ND**	1.0	EPA 8021B	2-9-16	2-9-16	
o-Xylene	**ND**	1.0	EPA 8021B	2-9-16	2-9-16	
Gasoline	**ND**	100	NWTPH-Gx	2-9-16	2-9-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*101*	*71-111*				

Date of Report: February 10, 2016
Samples Submitted: February 3, 2016
Laboratory Reference: 1602-026
Project: 0818.02.01

NWTPH-Gx/BTEX

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**YMW1-GW-020216**					
Laboratory ID:	02-026-10					
Benzene	**2200**	100	EPA 8021B	2-9-16	2-9-16	
Toluene	**3900**	100	EPA 8021B	2-9-16	2-9-16	
Ethyl Benzene	**840**	100	EPA 8021B	2-9-16	2-9-16	
m,p-Xylene	**2400**	100	EPA 8021B	2-9-16	2-9-16	
o-Xylene	**950**	100	EPA 8021B	2-9-16	2-9-16	
Gasoline	**29000**	10000	NWTPH-Gx	2-9-16	2-9-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*101*	*71-111*				
Client ID:	**MW9-GW-020216**					
Laboratory ID:	02-026-11					
Benzene	**1800**	100	EPA 8021B	2-9-16	2-9-16	
Toluene	**1500**	100	EPA 8021B	2-9-16	2-9-16	
Ethyl Benzene	**850**	100	EPA 8021B	2-9-16	2-9-16	
m,p-Xylene	**1700**	100	EPA 8021B	2-9-16	2-9-16	
o-Xylene	**970**	100	EPA 8021B	2-9-16	2-9-16	
Gasoline	**19000**	10000	NWTPH-Gx	2-9-16	2-9-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*101*	*71-111*				
Client ID:	**KMW7-GW-020316**					
Laboratory ID:	02-026-12					
Benzene	**47**	1.0	EPA 8021B	2-9-16	2-9-16	
Toluene	**ND**	1.0	EPA 8021B	2-9-16	2-9-16	
Ethyl Benzene	**41**	1.0	EPA 8021B	2-9-16	2-9-16	
m,p-Xylene	**2.1**	1.0	EPA 8021B	2-9-16	2-9-16	
o-Xylene	**ND**	1.0	EPA 8021B	2-9-16	2-9-16	
Gasoline	**610**	100	NWTPH-Gx	2-9-16	2-9-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*104*	*71-111*				

Date of Report: February 10, 2016
Samples Submitted: February 3, 2016
Laboratory Reference: 1602-026
Project: 0818.02.01

NWTPH-Gx/BTEX

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW10-GW-020316**					
Laboratory ID:	02-026-13					
Benzene	**ND**	1.0	EPA 8021B	2-9-16	2-9-16	
Toluene	**ND**	1.0	EPA 8021B	2-9-16	2-9-16	
Ethyl Benzene	**ND**	1.0	EPA 8021B	2-9-16	2-9-16	
m,p-Xylene	**ND**	1.0	EPA 8021B	2-9-16	2-9-16	
o-Xylene	**ND**	1.0	EPA 8021B	2-9-16	2-9-16	
Gasoline	**ND**	100	NWTPH-Gx	2-9-16	2-9-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*101*	*71-111*				
Client ID:	**MWG2-GW-020316**					
Laboratory ID:	02-026-14					
Benzene	**ND**	1.0	EPA 8021B	2-9-16	2-9-16	
Toluene	**ND**	1.0	EPA 8021B	2-9-16	2-9-16	
Ethyl Benzene	**ND**	1.0	EPA 8021B	2-9-16	2-9-16	
m,p-Xylene	**ND**	1.0	EPA 8021B	2-9-16	2-9-16	
o-Xylene	**ND**	1.0	EPA 8021B	2-9-16	2-9-16	
Gasoline	**ND**	100	NWTPH-Gx	2-9-16	2-9-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*101*	*71-111*				

Date of Report: February 10, 2016
Samples Submitted: February 3, 2016
Laboratory Reference: 1602-026
Project: 0818.02.01

NWTPH-Gx/BTEX
METHOD BLANK QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0209W1					
Benzene	**ND**	1.0	EPA 8021B	2-9-16	2-9-16	
Toluene	**ND**	1.0	EPA 8021B	2-9-16	2-9-16	
Ethyl Benzene	**ND**	1.0	EPA 8021B	2-9-16	2-9-16	
m,p-Xylene	**ND**	1.0	EPA 8021B	2-9-16	2-9-16	
o-Xylene	**ND**	1.0	EPA 8021B	2-9-16	2-9-16	
Gasoline	**ND**	100	NWTPH-Gx	2-9-16	2-9-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*102*	*71-111*				
Laboratory ID:	MB0209W2					
Benzene	**ND**	1.0	EPA 8021B	2-9-16	2-9-16	
Toluene	**ND**	1.0	EPA 8021B	2-9-16	2-9-16	
Ethyl Benzene	**ND**	1.0	EPA 8021B	2-9-16	2-9-16	
m,p-Xylene	**ND**	1.0	EPA 8021B	2-9-16	2-9-16	
o-Xylene	**ND**	1.0	EPA 8021B	2-9-16	2-9-16	
Gasoline	**ND**	100	NWTPH-Gx	2-9-16	2-9-16	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*100*	*71-111*				

Date of Report: February 10, 2016
Samples Submitted: February 3, 2016
Laboratory Reference: 1602-026
Project: 0818.02.01

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	02-026-05										
	ORIG	DUP									
Benzene	**2.98**	**2.91**	NA	NA		NA		NA	2	30	
Toluene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Ethyl Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
m,p-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
o-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Gasoline	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Surrogate:											
Fluorobenzene						*102*	*101*	*71-111*			
Laboratory ID:	02-051-01										
	ORIG	DUP									
Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Toluene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Ethyl Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
m,p-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
o-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Gasoline	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Surrogate:											
Fluorobenzene						*100*	*101*	*71-111*			
MATRIX SPIKES											
Laboratory ID:	02-026-05										
	MS	MSD	MS	MSD		MS	MSD				
Benzene	**57.3**	**58.6**	50.0	50.0	2.98	**109**	**111**	83-123	2	15	
Toluene	**54.2**	**55.0**	50.0	50.0	ND	**108**	**110**	83-124	1	16	
Ethyl Benzene	**56.6**	**57.1**	50.0	50.0	ND	**113**	**114**	82-123	1	15	
m,p-Xylene	**56.2**	**56.5**	50.0	50.0	ND	**112**	**113**	81-125	1	17	
o-Xylene	**56.2**	**56.4**	50.0	50.0	ND	**112**	**113**	82-123	0	15	
Surrogate:											
Fluorobenzene						*104*	*108*	*71-111*			
SPIKE BLANKS											
Laboratory ID:	SB0209W1										
	SB		SB			SB					
Benzene	**51.3**		50.0			**103**		83-119		13	
Toluene	**52.2**		50.0			**104**		83-120		13	
Ethyl Benzene	**51.7**		50.0			**103**		82-120		12	
m,p-Xylene	**51.6**		50.0			**103**		80-122		13	
o-Xylene	**51.7**		50.0			**103**		80-120		10	
Surrogate:											
Fluorobenzene						*103*		*71-111*			

Date of Report: February 10, 2016
Samples Submitted: February 3, 2016
Laboratory Reference: 1602-026
Project: 0818.02.01

NWTPH-Gx
CONTINUING CALIBRATION SUMMARY

Lab ID	True Value (ppm)	Calc. Value	Percent Difference	Control Limits
CCVH0209G-1	5.00	5.50	-10	+/- 20%
CCVH0209G-2	5.00	5.27	-5	+/- 20%

Date of Report: February 10, 2016
Samples Submitted: February 3, 2016
Laboratory Reference: 1602-026
Project: 0818.02.01

BTEX by
EPA 8021B
CONTINUING CALIBRATION SUMMARY

Analyte	Lab ID	True Value (ppm)	Calc. Value	Percent Difference	Control Limits
Benzene	CCVH0209B-1	50.0	52.1	-4	+/- 15%
Toluene	CCVH0209B-1	50.0	53.3	-7	+/- 15%
Ethyl Benzene	CCVH0209B-1	50.0	52.1	-4	+/- 15%
m,p-Xylene	CCVH0209B-1	50.0	52.6	-5	+/- 15%
o-Xylene	CCVH0209B-1	50.0	52.2	-4	+/- 15%
Benzene	CCVH0209B-2	50.0	50.7	-1	+/- 15%
Toluene	CCVH0209B-2	50.0	51.6	-3	+/- 15%
Ethyl Benzene	CCVH0209B-2	50.0	50.6	-1	+/- 15%
m,p-Xylene	CCVH0209B-2	50.0	50.4	-1	+/- 15%
o-Xylene	CCVH0209B-2	50.0	50.7	-1	+/- 15%
Benzene	CCVH0209B-3	50.0	50.7	-1	+/- 15%
Toluene	CCVH0209B-3	50.0	51.5	-3	+/- 15%
Ethyl Benzene	CCVH0209B-3	50.0	50.9	-2	+/- 15%
m,p-Xylene	CCVH0209B-3	50.0	51.6	-3	+/- 15%
o-Xylene	CCVH0209B-3	50.0	51.2	-2	+/- 15%
Benzene	CCVD0209B-1	50.0	54.0	-8	+/- 15%
Toluene	CCVD0209B-1	50.0	53.2	-6	+/- 15%
Ethyl Benzene	CCVD0209B-1	50.0	55.5	-11	+/- 15%
m,p-Xylene	CCVD0209B-1	50.0	56.2	-12	+/- 15%
o-Xylene	CCVD0209B-1	50.0	55.7	-11	+/- 15%
Benzene	CCVD0209B-2	50.0	53.0	-6	+/- 15%
Toluene	CCVD0209B-2	50.0	52.0	-4	+/- 15%
Ethyl Benzene	CCVD0209B-2	50.0	54.4	-9	+/- 15%
m,p-Xylene	CCVD0209B-2	50.0	54.6	-9	+/- 15%
o-Xylene	CCVD0209B-2	50.0	54.3	-9	+/- 15%

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

Chain of Custody

OnSite Environmental Inc.
Analytical Laboratory Testing Services
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Company: Maul Foster Alongi
Project Number: 0818.02-01
Project Name: Tiger Oil
Project Manager: Yen-Vy Van
Sampled by: Carolyn Wise

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days) (TPH analysis 5 Days)
☐ _____ (other)

Laboratory Number: 02-026

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx	Volatiles 8260C	Halogenated Volatiles 8260C	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A	% Moisture
1	YMW2-GW-020116	2/1/16	1430	W	3		X															
2	DUP-GW-020116	2/1/16	1430	W	3		X															
3	YMW3-GW-020116	2/1/16	1550	W	3		X															
4	KMW6-GW-020116	2/1/16	1730	W	3		X															
5	KMW14-GW020216	2/2/16	930	W	3		X															
6	KMW15-GW-020216	2/2/16	1120	W	3		X															
7	KMW16-GW-020216	2/2/16	1250	W	3		X															
8	KMW5-GW-020216	2/2/16	1440	W	3		X															
9	TRIP BLANKS	–	–	W	4		X															
10	YMW1-GW-020216	2/2/16	1610	W	3		X															

	Signature	Company	Date	Time
Relinquished	Carolyn Wise	MFA	2/3/16	1415
Received		CORE	2/3/16	1415
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

Chromatograms with final report ☐

Data Package: Standard ☒ Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☒ _____

Chain of Custody

OnSite Environmental Inc.
Analytical Laboratory Testing Services
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Company: Maul Foster Alongi
Project Number: 0818.02.01
Project Name: Tiger Oil
Project Manager: Yen-Vy Van
Sampled by: Carolyn Wise

Turnaround Request (in working days)

(Check One)

- ☐ Same Day
- ☐ 1 Day
- ☐ 2 Days
- ☐ 3 Days
- ☒ Standard (7 Days) (TPH analysis 5 Days)
- ☐ _____ (other)

Laboratory Number: 02-026

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx	Volatiles 8260C	Halogenated Volatiles 8260C	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A	% Moisture
11	MW9-GW-020216	2/2/16	1710	W	3		X															
12	KMW7-GW-020316	2/3/16	1130	W	3		X															
13	MW10-GW-020316	2/3/16	1010	W	3		X															
14	MW62-GW-020316	2/3/16	930	W	3		X															

	Signature	Company	Date	Time
Relinquished	Carolyn Wise	MFA	2/3/16	1415
Received		COSE	2/3/16	1415
Relinquished				
Received				
Relinquished				
Received				

Comments/Special Instructions

Reviewed/Date

Reviewed/Date

Chromatograms with final report ☐

Data Package: Standard ☒ Level III ☐ Level IV ☐

Electronic Data Deliverables (EDDs) ☒ _____

Sample/Cooler Receipt and Acceptance Checklist

Client: MFA

Client Project Name/Number: 0818.02.01

OnSite Project Number: 02-026

Initiated by: MV

Date Initiated: 2/3/16

1.0 Cooler Verification

1.1 Were there custody seals on the outside of the cooler?	**Yes**	No	(N/A)	1 2 3 4
1.2 Were the custody seals intact?	**Yes**	No	(N/A)	1 2 3 4
1.3 Were the custody seals signed and dated by last custodian?	**Yes**	No	(N/A)	1 2 3 4
1.4 Were the samples delivered on ice or blue ice?	(Yes)	No		1 2 3 4
1.5 Were samples received between 0-6 degrees Celsius?	(Yes)	No	Temperature: 4	
1.6 Have shipping bills (if any) been attached to the back of this form?	**Yes**	(N/A)		
1.7 How were the samples delivered?	(Client)	**Courier**	**UPS/FedEx**	**OSE Pickup** **Other**

2.0 Chain of Custody Verification

2.1 Was a Chain of Custody submitted with the samples?	(Yes)	No	1 2 3 4
2.2 Was the COC legible and written in permanent ink?	(Yes)	No	1 2 3 4
2.3 Have samples been relinquished and accepted by each custodian?	(Yes)	No	1 2 3 4
2.4 Did the sample labels (ID, date, time, preservative) agree with COC?	(Yes)	No	1 2 3 4
2.5 Were all of the samples listed on the COC submitted?	(Yes)	No	1 2 3 4
2.6 Were any of the samples submitted omitted from the COC?	Yes	(No)	1 2 3 4

3.0 Sample Verification

3.1 Were any sample containers broken or compromised?	Yes	(No)		1 2 3 4
3.2 Were any sample labels missing or illegible?	Yes	(No)		1 2 3 4
3.3 Have the correct containers been used for each analysis requested?	(Yes)	No		1 2 3 4
3.4 Have the samples been correctly preserved?	(Yes)	No	**N/A**	1 2 3 4
3.5 Are volatiles samples free from headspace and bubbles greater than 6mm?	(Yes)	No	**N/A**	1 2 3 4
3.6 Is there sufficient sample submitted to perform requested analyses?	(Yes)	No		1 2 3 4
3.7 Have any holding times already expired or will expire in 24 hours?	Yes	(No)		1 2 3 4
3.8 Was method 5035A used?	**Yes**	No	(N/A)	1 2 3 4
3.9 If 5035A was used, which sampling option was used (#1, 2, or 3).	**#**		(N/A)	1 2 3 4

Explain any discrepancies:

1 - Discuss issue in Case Narrative

2 - Process Sample As-is

3 - Client contacted to discuss problem

4 - Sample cannot be analyzed or client does not wish to proceed

ATTACHMENT C

DATA VALIDATION MEMORANDUM

DATA QUALITY ASSURANCE/QUALITY CONTROL REVIEW

PROJECT NO. 0818.02.01 | MARCH 22, 2016 | FORMER TIGER OIL SITE

Maul Foster & Alongi, Inc. (MFA) conducted an independent review of the quality of analytical results for groundwater monitoring samples collected at the Tiger Oil property at West Nob Hill Boulevard and 24th Avenue in Yakima, Washington. The samples were collected February 1 through 3, 2016.

OnSite Environmental, Inc. (OE) performed the analyses. OE report number 1602-026 was reviewed. The analyses performed and samples analyzed are listed below.

Analysis	Reference
BTEX	USEPA 8021B
Gasoline	NWTPH-Gx

NWTPH = Northwest Total Petroleum Hydrocarbons.
USEPA = U.S. Environmental Protection Agency.

Samples Analyzed		
Report 1602-026		
YMW2-GW-020116	KMW15-GW-020216	MW9-GW-020216
DUP-GW-020116	KMW16-GW-020216	KMW7-GW-020316
YMW3-GW-020116	KMW5-GW-020216	MW10-GW-020316
KMW6-GW-020116	TRIP BLANKS	MWG2-GW-020316
KMW14-GW-020216	YMW1-GW-020216	-

DATA QUALIFICATIONS

Analytical results were evaluated according to applicable sections of USEPA procedures (USEPA, 2014) and appropriate laboratory and method-specific guidelines (OE, 2015; USEPA, 1986).

The data are considered acceptable for their intended use, with the appropriate data qualifiers assigned.

HOLDING TIMES, PRESERVATION, AND SAMPLE STORAGE

Holding Times

Extractions and analyses were performed within the recommended holding time criteria.

Preservation and Sample Storage

The samples were preserved and stored appropriately.

BLANKS

Method Blanks

Laboratory method blank analyses were performed at the required frequencies. All laboratory method blanks were non-detect at method reporting limits (MRLs).

Trip Blanks

A trip blank (TRIP BLANKS) was submitted for USEPA 8021B and NWTPH-Gx analyses. The trip blank sample was non-detect for all target analytes.

Equipment Rinsate Blanks

Equipment rinsate blanks were not submitted for analysis.

SURROGATE RECOVERY RESULTS

The samples were spiked with surrogate compounds to evaluate laboratory performance on individual samples. All surrogate results were within percent recovery acceptance limits.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE RESULTS

MS/MSD results are used to evaluate laboratory precision and accuracy. All MS/MSD samples were extracted and analyzed at the required frequency. All MS/MSD results were within acceptance limits for percent recovery and relative percent difference (RPD).

LABORATORY DUPLICATE RESULTS

Duplicate results are used to evaluate laboratory precision. All laboratory duplicate samples were extracted and analyzed at the required frequency. All laboratory duplicate results met RPD acceptance criteria.

LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RESULTS

An LCS/LCSD is spiked with target analytes to provide information on laboratory precision and accuracy. The LCS/LCSD samples were extracted and analyzed at the required frequency. All LCS/LCSD results were within acceptance limits for percent recovery and RPD.

FIELD DUPLICATE RESULTS

Field duplicate samples measure both field and laboratory precision. One field duplicate (YMW2-GW-020116/DUP-GW-020116) was submitted for analysis. MFA uses acceptance criteria of 100 percent RPD for results that are less than five times the MRL, or 50 percent RPD for results that are greater than five times the MRL. Non-detect data are not used in

the evaluation of field duplicate results. All field duplicate results met RPD acceptance criteria.

REPORTING LIMITS

OE used routine reporting limits for non-detect results, except when samples required dilutions because of high analyte concentrations and/or matrix interferences.

DATA PACKAGE

The data packages were reviewed for transcription errors, omissions, and anomalies. None were found.

REFERENCES

OE. 2015. Quality assurance manual. Onsite Environmental Inc. Redmond, Washington. July 24.

USEPA. 1986. Test methods for evaluating solid waste: physical/chemical methods. EPA-530/SW-846 Update V. U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response. September (revision 1, July 2014).

USEPA. 2014. USEPA contract laboratory program, national functional guidelines for Superfund organic methods data review. EPA 540/R-014/002. U.S. Environmental Protection Agency, Office of Superfund Remediation and Technology Innovation. August.