

RAINS FOOD
Moses Lake, WA
MONITORING WELL REPORT

19 June 2019

prepared by
Soiltest Farm Consultants, Inc.
2925 Driggs Drive
Moses Lake, WA 98837

INTRODUCTION

The Rains Food Store and gasoline Station is located on the south frontage road approximately ½ mile west of Moses Lake, Washington, adjacent to exit 174 of Interstate 90. A fuel leak was discovered some years ago in an underground storage tank (UST) at the site. After removal of the tanks and contaminated soil, four monitor wells were installed (MW-A, MW-B, MW-C and MW-D, see Figure 1). The groundwater gradient is generally from NE to SW or from MW-D towards MW-B. Washington State Department of Ecology (DOE) required annual monitoring of these wells until the fall of 2009. At that time, it was determined that three of the four were clean and no longer in need of monitoring. One well, MW-C, still contained traces of some petroleum hydrocarbons in the August 2011 monitoring. Ecology determined that MWC should be monitored until it was clear of petroleum hydrocarbons. Ecology determined in early 2019 that monitoring of wells A, B, C and D should be conducted again to verify that all sites continue to be free of pollutants.

SAMPLING & FIELD ANALYSES

The monitor well sampling was conducted on 29 May 2019. The weather was warm and dry. Water samples were obtained using a GeoTech peristaltic pump. The water level was approximately 7 feet below the top of the well casing at sampling for all wells. The irrigation district lowers the water level in Moses Lake at the end of the irrigation season, which causes the water level to drop near or below the bottom of the well.

The wellheads were secured with bolts, but not locked. There was no evidence of tampering or damage at the time of sampling. Portable field instruments were used to measure temperature, pH, electrical conductivity and dissolved oxygen (DO). Four, 500 mL brown glass bottles were filled and submitted to Edge Analytical for petroleum hydrocarbon analyses. The recharge rate of the wells was such that drawdown was minimal during the sampling event.

LABORATORY ANALYSIS

Both laboratories used for the analyses are certified by the Washington State Department of Ecology. The sampling, field-testing, pH and EC were performed by Soiltest Farm Consultants, Inc. of Moses Lake, Washington (C157). The results are summarized in Table 1C, with all available historical data. Edge Analytical of Burlington, Washington (C1251) performed the total petroleum hydrocarbon analyses (NWTPH-Gx/BTEX). The historical and current hydrocarbon data is presented in Table 2C. Copies of the current laboratory reports can be found in the Appendix.

DISCUSSION OF RESULTS

Field tests of DO, pH and temperature were typical of recent measurements and suggested high quality water. The electrical conductivity (EC), dropped significantly from previous sampling events. The water clarity was excellent.

Hydrocarbons were non-detectable (ND) for wells A and B. Detectable levels in wells C and D were well below the WAC cleanup thresholds for those compounds.

LIMITATIONS

The historical data prior to 2006 contained in this report was obtained from a report prepared by DWR Consultants and provided by the client, Dick Aldrich of Westlake Country Store. No warranty or responsibility is expressed for the historical data. The data from 2006 and later were obtained using methods and procedures accepted by the Washington State Department of Ecology. To the best of our ability and knowledge, the results obtained reflect the conditions of the groundwater body at the dates observed.

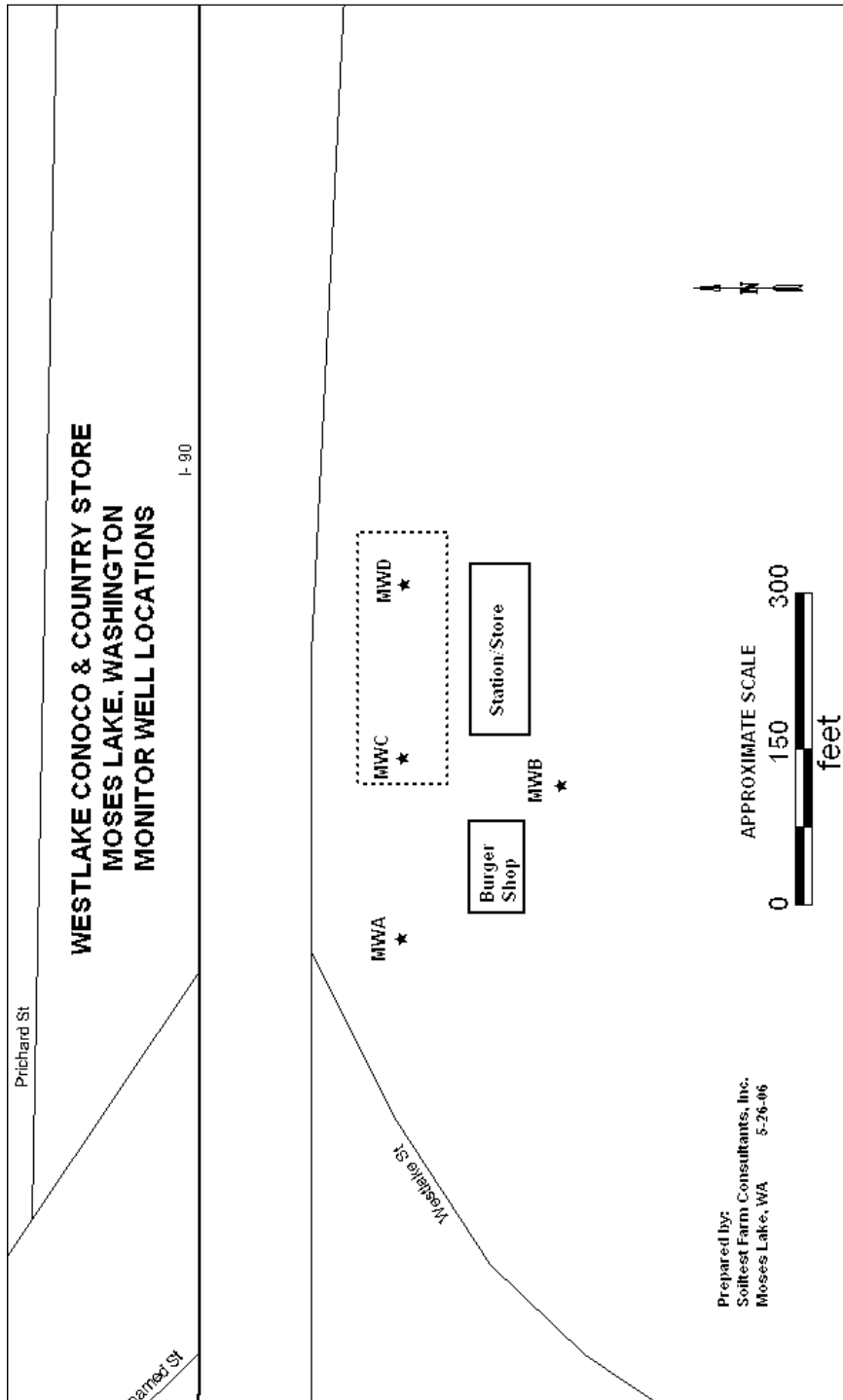
FIGURE 1: LOCATION MAP

TABLE 2A: TPH TEST RESULT SUMMARY MONITOR WELL A

SAMPLE DATE	GASOLINE (ppm, mg/L)	BENZENE (ppb, ug/L)	TOLUENE (ppb, ug/L)	ETHYL-BENZENE (ppb, ug/L)	TOTAL XYLENES (ppb, ug/L)
17-Jun-93	<0.3	<1.0	<1.0	<1.0	<1.0
11-Jun-94	ND	ND	ND	ND	NT
27-Dec-94	<0.2	NT	NT	NT	NT
28-Jun-95	ND	ND	ND	ND	ND
23-Jul-97	1.7	28	250	45	263
28-Jul-98	ND	ND	1.4	ND	5.4
23-Mar-99	ND	ND	ND	ND	ND
28-Mar-00	ND	ND	ND	ND	ND
18-Apr-01	ND	ND	ND	ND	ND
10-Jun-02	ND	ND	ND	ND	ND
29-Apr-03	ND	ND	ND	ND	ND
12-May-04	ND	ND	ND	ND	ND
10-May-05	0.18	ND	ND	ND	ND
26-May-06	ND	ND	ND	ND	ND
27-Aug-07	ND	ND	ND	ND	ND
14-May-08	ND	ND	ND	ND	ND
21-Jul-09	ND	ND	ND	ND	ND
29-May-19	ND	ND	ND	ND	ND

TABLE 2B: TPH TEST RESULT SUMMARY MONITOR WELL B

SAMPLE DATE	GASOLINE (ppm, mg/L)	BENZENE (ppb, ug/L)	TOLUENE (ppb, ug/L)	ETHYL-BENZENE (ppb, ug/L)	TOTAL XYLENES (ppb, ug/L)
17-Jun-93	<0.3	<1.0	<1.0	<1.0	<1.0
17-Sep-93	NT	NT	NT	NT	NT
11-Jun-94	ND	ND	ND	ND	ND
27-Dec-94	<0.2	NT	NT	NT	NT
28-Jun-95	ND	ND	ND	ND	ND
20-Jan-97	ND	ND	ND	ND	ND
23-Jul-97	1.9	43	390	56	350
28-Jul-98	ND	ND	ND	ND	ND
23-Mar-99	ND	ND	ND	ND	ND
28-Mar-00	ND	ND	ND	ND	ND
18-Apr-01	ND	ND	ND	ND	ND
10-Jun-02	ND	ND	ND	ND	ND
29-Apr-03	ND	ND	ND	ND	ND
12-May-04	ND	ND	ND	ND	ND
10-May-05	ND	ND	ND	ND	ND
26-May-06	ND	ND	ND	ND	ND
27-Aug-07	ND	ND	ND	ND	ND
14-May-08	ND	ND	ND	ND	ND
21-Jul-09	ND	ND	ND	ND	ND
29-May-19	ND	ND	ND	ND	ND

TABLE 2C: TPH TEST RESULT SUMMARY MONITOR WELL C

SAMPLE DATE	GASOLINE (ppm, mg/L)	BENZENE (ppb, ug/L)	TOLUENE (ppb, ug/L)	ETHYL-BENZENE (ppb, ug/L)	TOTAL XYLENES (ppb, ug/L)
24-Apr-91	31.3	1,150	5,390	369	3,700
12-Sep-91	7.0	360	740	330	3,090
29-Jun-92	NT	270	14	13	56
17-Sep-93	NT	NT	NT	NT	NT
11-Jun-94	ND	12	2.3	6.9	30.7
28-Dec-94	2.1	14	11	50	198
28-Jun-95	0.62	2.5	8.3	31	100
20-Jan-97	1.2	9.4	1.3	29	104
23-Jul-97	4.7	120	390 ^E	110	470 ^E
28-Jul-98	0.11	ND	ND	2.5	2.7
23-Mar-99	14	3.8	260	490	2,600
28-Mar-00	0.63	ND	ND	ND	93.5
18-Apr-01	3.1	ND	3.8	100	440
10-Jun-02	8.1	2.0	13.0	250	870
29-Apr-03	18.0	ND	82	650	2,660
12-May-04	7.2	1.4	8.1	320	1,250
10-May-05	3.1	ND	6.6	350	1,200
26-May-06	2.6	ND	ND	130	390
27-Aug-07	ND	ND	ND	1.2	1.2
14-May-08	3.37	ND	2.8	115	378
21-Jul-09	0.333	ND	ND	8.0	17
9-Dec-09	0.102	0.5	0.9	2.4	2.6
18-Mar-10	2.164	ND	0.0007	0.081	0.243
19-May-10	4.36	ND	0.002	0.142	0.415
9-Sep-10	ND	ND	ND	0.400	0.060
15-Aug-11	ND	ND	ND	0.800	ND
3-May-18	0.446	ND	ND	36.3	54.9
22-Jan-19	ND	ND	ND	ND	ND
29-May-19	0.181	ND	3	12.8	27.9
MTCA	1	5	1,000	700	1,000
PQL	0.1	0.4	0.4	0.4	0.8

Notes: MTCA WAC clean up levels for contaminants in water
 NT Not Tested
 < less than laboratory quantification limit or not detected
 ND Not Detected
 PQL Practical Quantitation Limit
 E value Exceeds the quantification range of the instrument, value is estimated

TABLE 2D: TPH TEST RESULT SUMMARY MONITOR WELL D

SAMPLE DATE	GASOLINE (ppm, mg/L)	BENZENE (ppb, ug/L)	TOLUENE (ppb, ug/L)	ETHYL-BENZENE (ppb, ug/L)	TOTAL XYLENES (ppb, ug/L)
11-Jun-94	ND	ND	ND	ND	ND
28-Jun-95	0.33	ND	ND	29	16.8
20-Jan-97	5.7	58	95	171	870
23-Jul-97	3,800	19,000 ^E	43,000 ^E	37,000 ^E	105,000 ^E
28-Jul-98	33	260	1,200	110	4,400
23-Mar-99	6.0	ND	ND	ND	508
28-Mar-00	ND	ND	ND	ND	ND
18-Apr-01	0.38	ND	ND	ND	4.0
10-Jun-02	0.2	ND	ND	ND	ND
29-Apr-03	ND	ND	ND	1.1	4.1
12-May-04	ND	ND	ND	ND	1.4
10-May-05	ND	ND	ND	ND	ND
26-May-06	ND	ND	ND	2.4	7.3
27-Aug-07	ND	ND	ND	ND	ND
14-May-08	ND	ND	ND	0.6	2.2
21-Jul-09	ND	ND	ND	ND	ND
29-May-19	ND	ND	ND	ND	0.5
MTCA	1	5	1,000	700	1,000
METHOD A					

Notes: MTCA WAC clean up levels for contaminants in water
 NT Not Tested
 < less than laboratory quantification limit or not detected
 ND Not Detected
 E value Exceeds the quantification range of the instrument, value is estimated

APPENDIX

LABORATORY REPORTS



Burlington, WA Corporate Laboratory (a)
1620 S Walnut St - Burlington, WA 98223 - 800.755.5295 • 360.757.1400
Bellingham, WA Microbiology (b)
805 Orchard Dr Ste 4 - Bellingham, WA 98225 - 360.715.1212

Portland, OR Microbiology/Chemistry (c)
9150 SW Pioneer Ct Ste W - Wilsonville, OR 97150 - 503.652.7802
Corvallis, OR Microbiology/Chemistry (d)
540 SW Third Street - Corvallis, OR 97331 - 541.753.4948
Bend, OR Microbiology (e)
20332 Empire Blvd Ste 4 - Bend, OR 97701 - 541.839.8425

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Hydrocarbon Data Report

Client Name: Soiltest Farm Consultants, Inc.
2925 Driggs Drive
Moses Lake, WA 98837

Reference Number: **19-19550**
Project: NWTPH-GX
Report Date: 6/13/19
Date Received: 5/30/19
Approved By: pdm
Authorized by:

Patrick Miller
Patrick Miller, MS
QA Officer

Sample Description: MW-A										Sample Date: 5/29/19 10:30	
Lab Number: 38389										Collected By:	
Date Analyzed: 6/7/19										Analyzed By: HY	
Parameter	Result	Flag	DF	Cleanup Level	PQL	MDL	Units	Method	Lab	Batch	Comment

NWTPH-Gx

BENZENE	ND		1	0.005	0.0004	0.00014	mg/L	8260C/5030B	a	GXW_190607	
TOLUENE	ND		1	1.00	0.0004	7.00E-05	mg/L	8260C/5030B	a	GXW_190607	
ETHYLBENZENE	ND		1	0.70	0.0004	9.00E-05	mg/L	8260C/5030B	a	GXW_190607	
TOTAL XYLENES	ND		1	1.00	0.0004		mg/L	8260C/5030B	a	GXW_190607	
GASOLINE (C8 - C12)	ND		1	1	0.10		mg/L	8260C/5030B	a	GXW_190607	

Sample Description: MW-B									Sample Date: 5/29/19 10:15		
Lab Number: 38390									Collected By:		
Date Analyzed: 6/7/19									Analyzed By: HY		
Parameter	Result	Flag	DF	Cleanup Level	PQL	MDL	Units	Method	Lab	Batch	Comment

NWTPH-Gx

BENZENE	ND		1	0.005	0.0004	0.00014	mg/L	8260C/5030B	a	GXW_190607	
TOLUENE	ND		1	1.00	0.0004	7.00E-05	mg/L	8260C/5030B	a	GXW_190607	
ETHYLBENZENE	ND		1	0.70	0.0004	9.00E-05	mg/L	8260C/5030B	a	GXW_190607	
TOTAL XYLENES	ND		1	1.00	0.0004		mg/L	8260C/5030B	a	GXW_190607	
GASOLINE (C8 - C12)	ND		1	1	0.10		mg/L	8260C/5030B	a	GXW_190607	

Sample Description: MW-C									Sample Date: 5/29/19 10:40		
Lab Number: 38391									Collected By:		
Date Analyzed: 6/7/19									Analyzed By: HY		
Parameter	Result	Flag	DF	Cleanup Level	PQL	MDL	Units	Method	Lab	Batch	Comment

NWTPH-Gx

Notation:

ND - A result of "ND" indicates that the compound was not detected above the Lab's Method Reporting Limit - MRL.
PQL - Practical Quantitation Limit is the lowest level that can be achieved within specified limits of precision and accuracy during routine laboratory operating conditions.
D.F. - Dilution Factor.
Cleanup Level - The regulatory limit for Method A Cleanup Levels (MTCA, Chapter 173-340 WAC) contaminants in the specified matrix. Amended Feb. 12, 2001.
The Cleanup level for Gasoline Range Organics (GRO) is 100 mg/Kg for gas mixtures without benzene and when the total ethylbenzene, toluene and xylenes are less than 1% of the gasoline concentration. The Cleanup level for GRO is 30 mg/Kg for all other mixtures.

If you have any questions concerning this report contact us at the above phone number.
Form: gHCID.rpt



Page 2 of 2
 Reference Number: **19-19550**
 Report Date: 6/13/19

Hydrocarbon Data Report

BENZENE	ND	1	0.005	0.0004	0.00014	mg/L	8260C/5030B	a	QXWV_190607
TOLUENE	0.0030	1	1.00	0.0004	7.00E-05	mg/L	8260C/5030B	a	QXWV_190607
ETHYLBENZENE	0.0128	1	0.70	0.0004	9.00E-05	mg/L	8260C/5030B	a	QXWV_190607
TOTAL XYLENES	0.0279	1	1.00	0.0004		mg/L	8260C/5030B	a	QXWV_190607
GASOLINE (C8 - C12)	0.181	1	1	0.10		mg/L	8260C/5030B	a	QXWV_190607

Sample Description: MW-D
 Lab Number: 38392
 Date Analyzed: 6/7/19

Sample Date: 5/29/19 11:45
 Collected By:
 Analyzed By: HY

Parameter	Result	Flag	DF	Cleanup Level	PQL	MDL	Units	Method	Lab	Batch	Comment
NWTPH-Gx											
BENZENE	ND		1	0.005	0.0004	0.00014	mg/L	8260C/5030B	a	QXWV_190607	
TOLUENE	ND		1	1.00	0.0004	7.00E-05	mg/L	8260C/5030B	a	QXWV_190607	
ETHYLBENZENE	ND		1	0.70	0.0004	9.00E-05	mg/L	8260C/5030B	a	QXWV_190607	
TOTAL XYLENES	0.0005		1	1.00	0.0004		mg/L	8260C/5030B	a	QXWV_190607	
GASOLINE (C8 - C12)	ND		1	1	0.10		mg/L	8260C/5030B	a	QXWV_190607	

Notation:

ND - A result of "ND" indicates that the compound was not detected above the Lab's Method Reporting Limit - MRL.

PQL - Practical Quantitation Limit is the lowest level that can be achieved within specified limits of precision and accuracy during routine laboratory operating conditions.

D.F. - Dilution Factor

Cleanup Level - The regulatory limit for Method A Cleanup Levels (MTCA, Chapter 173-340 WAC) contaminants in the specified matrix. Amended Feb 12, 2008

The Cleanup level for Gasoline Range Organics (GRO) is 100 mg/Kg for gas mixtures without benzene and when the total ethylbenzene, toluene and xylenes are less than 1% of the gasoline concentration. The Cleanup level for GRO is 50 mg/Kg for all other mixtures.