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Groundwater Monitoring Report - Third Quarter 2017 Nelson C-1

October 31, 2017

Prepared By:

Talon/LPE
1811 East Mulberry Street
Fort Collins, CO 80524

Prepared For:

Whiting Petroleum Corporation

Table of Contents

1	Introduction	1
2	Objective	1
3	Regulatory Framework.....	1
4	Site Characteristics	1
5	Well Skimmer Pump Installation	2
6	Groundwater Monitoring.....	2
7	Product Removal and Gauging.....	4
8	Conclusions & Recommendations	4

Attachment 1 - Figures

Attachment 2 - Tables

Attachment 3 - Analytical Report

1 Introduction

Talon/LPE (Talon) was contracted by Whiting Petroleum Corporation (Whiting) to conduct groundwater monitoring activities at the Nelson C1 site (Site) in Weld County, Colorado. The site is located at the northwest quarter of the southeast quarter of Section 18, Township 10 North, Range 58 West, 6th Principal Meridian at 40°50'10.72"N and 103°54'17.73"W (Attachment 1). The site is identified by the State of Colorado Oil and Gas Conservation Commission (COGCC) as Spill/Release Point Facility ID 441208. The Site Plan is shown on Figure 1, and the general site location is shown on Figure 6.

2 Objective

The primary objective of this document is to report on Site activities completed during Third Quarter 2017 which included groundwater monitoring, product removal, and installation of a pump system.

3 Regulatory Framework

The COGCC has regulatory jurisdiction over oil and natural gas industry operations in the State of Colorado. Section 900 of the COGCC Rules is for Exploration and Production Waste Management. More specifically, Section 910 details the Concentrations and Sampling for Soil and Groundwater rules. The regulatory limits for specific analytes in groundwater are detailed in Table 910-1 and are summarized below.

Compound	COGCC Table 910-1 Groundwater Concentrations
Benzene	0.005 mg/L
Toluene	1.0 mg/L
Ethylbenzene	0.7 mg/L
Xylenes (total)	10 mg/L

4 Site Characteristics

4.1 Geography

The site is located in the Pawnee Grasslands in Weld County, which is the northeastern part of Colorado. The Grasslands are part of the Colorado Eastern Plains and are relatively flat with the exception of the Pawnee Creek which drains into the South Platte River.

4.2 Geologic Summary

Surficial geology surrounding the area consists of Tertiary age fluvial deposits of the lower Ogallala Formation. More specifically, these deposits are Miocene in age and are composed of gray to brown and semi-consolidated, ashy sands and silt beds with volcanic ash beds. Deposited material hardened into sandstone and siltstone which are grouped into three formations: White River, Arikaree, and Ogallala.

4.3 Groundwater

According to the Colorado Division of Water Resources Website, there are no water wells within 1,000-foot radius of the Site.

Depth to groundwater levels, as measured on September 14, 2017, in the 22 groundwater monitoring wells range from 26.04 to 39.63 feet below top of casing (Table 4), which are above-ground by approximately three (3) feet (ft). Several wells had measurable amounts of phase-separated hydrocarbons (PSH) during this monitoring event.

5 Well Skimmer Pump Installation

On August 29, 2017, Talon personnel installed a skimmer pump system at the site. The system includes:

- Five (5) SPG4 Skimmer pumps with Genie 24-inch product pump (pump) installed in monitoring wells MW-3, MW-5, MW-7, MW-17, and MW-20. The pumps are used for the removal of Light Non-Aqueous Phase Liquid (LNAPL) from monitoring wells,
- Three (3) filter/regulators; controlling air pressure for the SPG4 pumps,
- One (1) tank-full-shut-off-control box (TFSO) with a high-level shut off; used to control air pressure distribution to the pumps,
- Three (3) QED C100M Solar Powered Controllers (controllers); used to set pump refill and discharge cycle times,
- 1200-gallon capacity polyethylene (poly tank) vertical storage tank within a 10-foot wide x 10-foot long x 2-foot high, plastic lined earthen dike structure; used for storing recovered LNAPL from monitoring wells, and
- 600-psi capacity air storage tank; used for delivering air pressure to the pumps

MW-17 and MW-20 have controllers placed on the ground surface, adjacent to each monitoring well. There is one controller that operates the pumps in MW-3, MW-5, and MW-7. Air pressure is conveyed throughout the system via 3/8-inch nylon tubing for pressurizing the pumps and discharging LNAPL into the storage tank. The storage tank will have LNAPL removed on an as-needed basis. There is a high-level float installed on the storage tank that will turn off power immediately to the entire system causing all pumps to stop if LNAPL or water reaches the level of the float. Currently the controllers are set to run on a three-minute refill and one minute discharge sequence. The pumps are currently set to operate on a one-hour-on/four-hour-off cycle. The duration and refill/discharge cycles may be adjusted depending on general system operation and LNAPL levels in the monitoring wells. Whiting or Talon/LPE personnel will be onsite every two (2) days to perform a system check or any needed maintenance.

6 Groundwater Monitoring

6.1 Groundwater Sampling

The 22 monitoring wells, with the exception of the wells with skimmer pumps, were gauged for depth to water and depth to PSH on September 14, 2017 (Table 4). Wells with less than 0.1 feet of PSH were purged of three (3) well casing volumes, or until the wells became dry. On September 15, 2017, Talon personnel collected groundwater samples from these wells. Monitoring wells MW-3, MW-5, MW-7, MW-17, and MW-20 were not sampled due to the presence skimmer pumps. Monitoring wells MW-6, and MW-21 were not sampled due to the presence of PSH greater than 0.1 feet. MW-4 was inadvertently not sampled on September 15,

so Talon sampled this well on October 3. Figure 5 shows groundwater elevation contours and the hydraulic gradient based on wells with no measurable PSH or skimmer pumps. Monitoring well MW-8 is the highest groundwater elevation for the site, and the hydraulic gradient flows radially outward from that well. The gradient has been calculated to be approximately 0.017 ft/foot to the northeast between monitoring wells MW-8 and MW-11 and approximately 0.020 ft/foot to the north between monitoring wells MW-8 and MW-10.

The collected groundwater samples were submitted to Summit Scientific in Golden, Colorado (Summit) for analysis of benzene, toluene, ethylbenzene, and total xylenes (BTEX) via method SW8260. Purge water generated during development and sampling was placed in poly containers within secondary containment pending off-site disposal.

Table 1 in Attachment 2 summarizes the well completion and survey information. Groundwater analytical results are summarized in Table 2 and shown on Figure 2.

Groundwater laboratory analytical results for benzene ranged from below laboratory detection limits to 13 mg/L (MW-1 and MW-16). Benzene concentrations increased from Second Quarter 2017 to Third Quarter 2017 in monitoring wells MW-1, MW-2, MW-8, MW-18, and MW-19. Benzene concentrations decreased in monitoring wells MW-4, MW-14, MW-15, and MW-16. Benzene concentrations remained unchanged in monitoring wells MW-9, MW-10, MW-11, MW-12, and MW-13. Figure 3 shows the isoconcentration contours of dissolved-phase benzene analytical results.

Analytical results for toluene ranged from below laboratory detection limits to 16 mg/L (MW-2). Toluene concentrations increased from Second Quarter 2017 to Third Quarter 2017 in monitoring wells MW-2, MW-15, and MW-19. Toluene concentrations decreased in monitoring wells MW-1, MW-4, MW-8, MW-14, MW-16, and MW-18. Toluene concentrations remained unchanged in monitoring wells MW-9, MW-10, MW-11, MW-12, and MW-13.

Analytical results for ethylbenzene ranged from below laboratory detection limits to 0.84 mg/L (MW-22). Ethylbenzene concentrations increased from Second Quarter 2017 to Third Quarter 2017 in monitoring well MW-2. Ethylbenzene concentrations decreased in monitoring wells MW-1, MW-4, MW-8, MW-14, MW-15, MW-16, and MW-18 and remained unchanged in monitoring wells MW-9, MW-10, MW-11, MW-12, MW-13 and MW-19.

Analytical results for total xylenes ranged from below laboratory detection limits to 11 mg/L (MW-22), which is above COGCC Table 910-1 Concentration levels. All remaining analytical results for total xylenes were below COGCC Table 910-1 concentration levels during this monitoring event. Total xylenes concentrations increased in monitoring wells MW-2, MW-15, and MW-19. Total xylenes concentrations decreased in monitoring wells MW-1, MW-4, MW-8, MW-14, MW-16, and MW-18, and remained unchanged in MW-9, MW-10, MW-11, MW-12, and MW-13.

A copy of the laboratory reports and chain of custody documentation is included in Attachment 3.

7 Product Removal and Gauging

Talon gauging data from September 14, 2017, reveals the presence of PSH in monitoring wells MW-1, MW-2, MW-6, MW-21, and MW-22 ranging from 0.02 ft to 1.51 ft (Table 3). Figure 4 shows contours of PSH thickness.

Product recovery is performed twice per week via hand-bailing on monitoring wells containing measurable levels of free product until the well skimmer pumps were installed. Since the skimmer pumps were installed, product recovery efforts via hand-bailing continue on monitoring wells MW-6 and MW-21 only. All waste produced by hand-bailing is stored on site in poly containers within secondary containment pending offsite disposal. Table 4 summarizes PSH removal and recovery on a monthly basis. To date, over 390 gallons of free product have been recovered from the site.

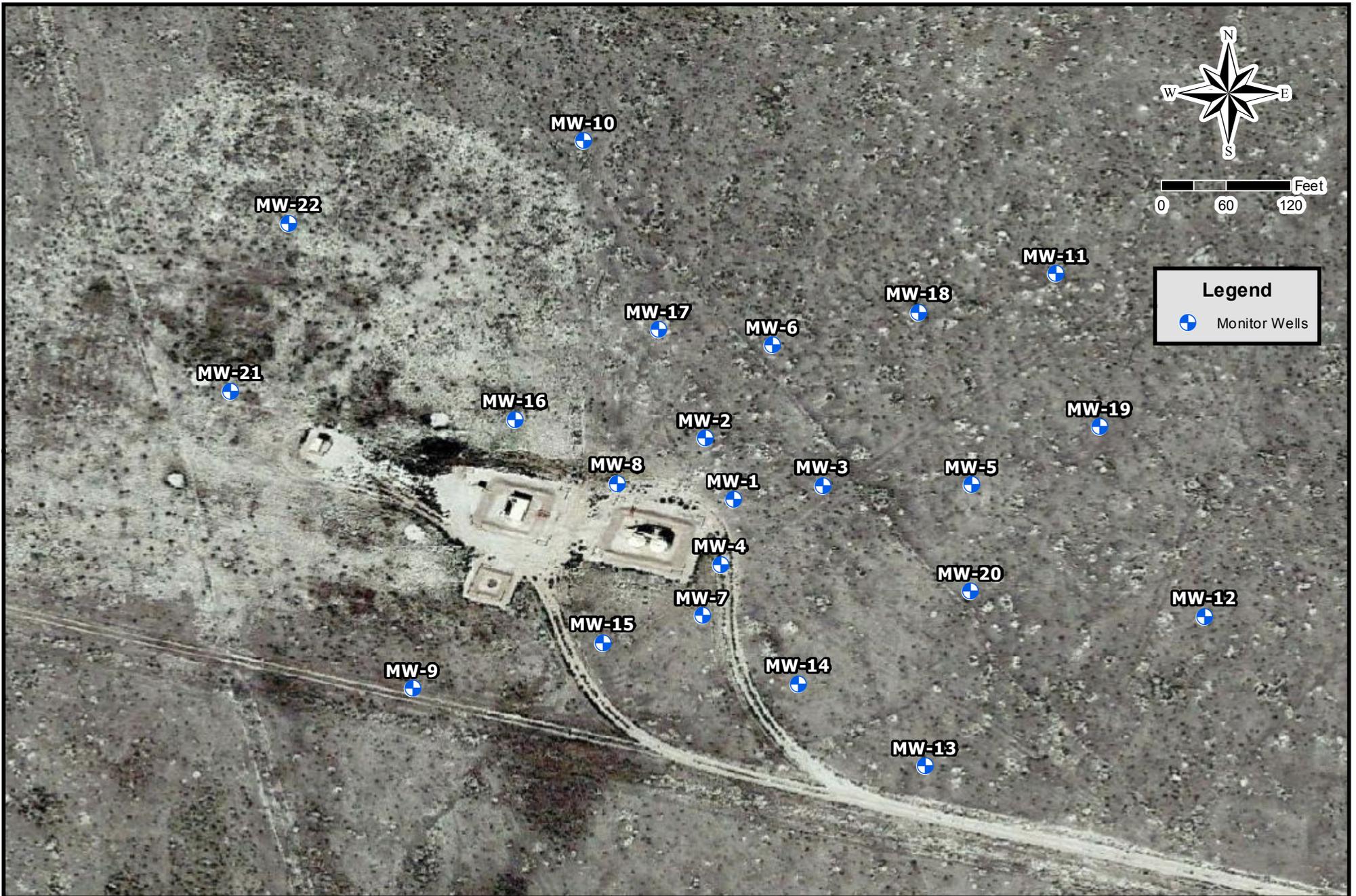
Hand-bailing activities were suspended for two weeks prior to groundwater sampling activities to allow the fluid levels in each well to reach static equilibrium. Following the groundwater sampling event, hand-bailing efforts resumed. Product recovery on the monitoring wells with skimmer pumps has been continuous.

8 Conclusions & Recommendations

During the Third Quarter 2017, Talon collected groundwater samples from 14 of the 22 monitoring wells at the Site. Groundwater laboratory analytical results for benzene ranged from below laboratory detection limits to 13 mg/L (MW-1 and MW-16). Analytical results for toluene ranged from below laboratory detection limits to 16 mg/L (MW-2). Analytical results for ethylbenzene ranged from below laboratory detection limits to 0.84 mg/L (MW-22). Analytical results for total xylenes ranged from below laboratory detection limits to 11 mg/L (MW-22), which is above COGCC Table 910-1 Concentration levels. All remaining analytical results for total xylenes were below COGCC Table 910-1 concentration levels during this monitoring event.

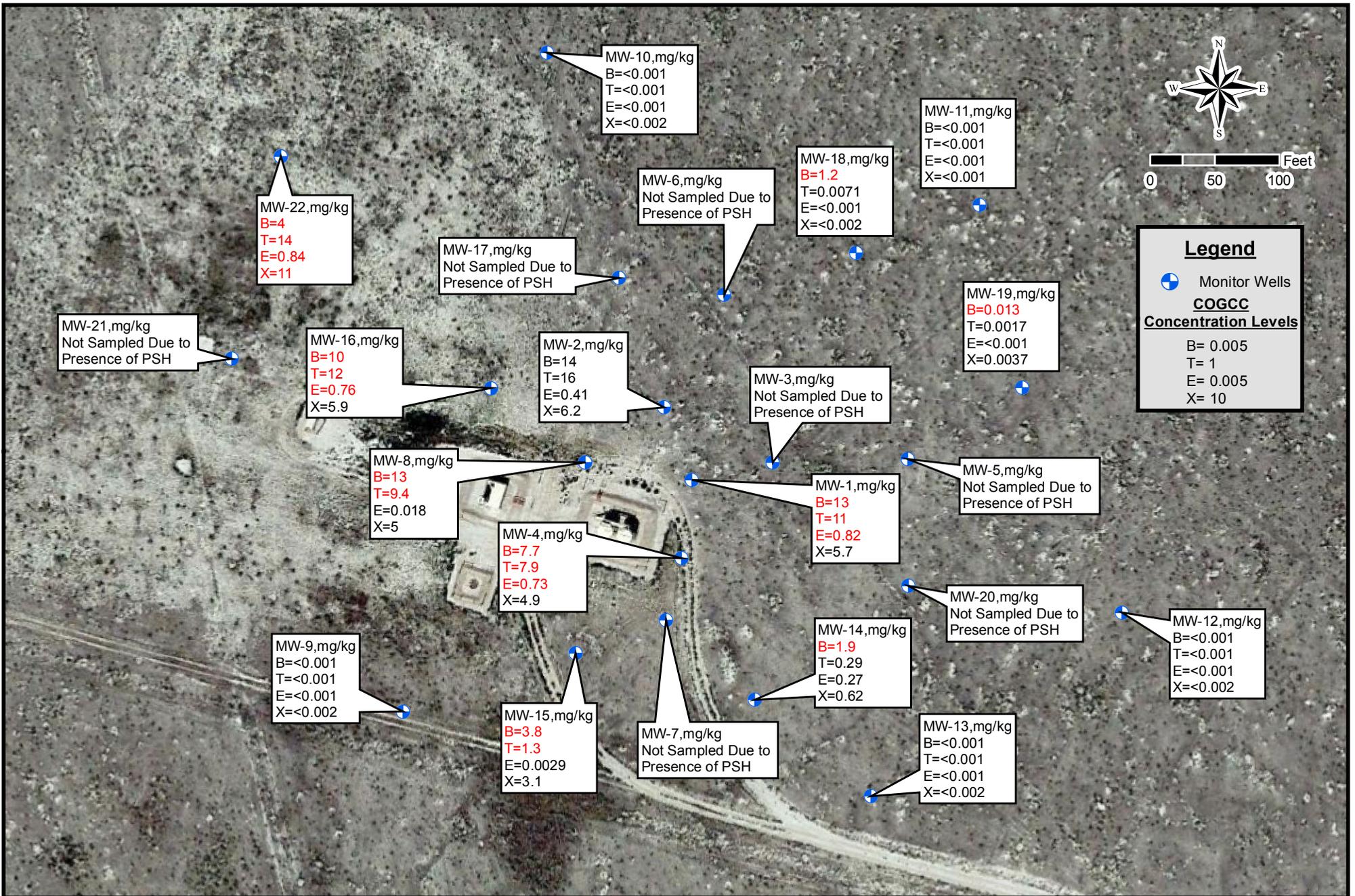
Talon will continue quarterly monitoring and product recovery at the Site along with pump maintenance on a regular basis. The next groundwater sampling event is anticipated to occur in December 2017.

Attachment 1
Figures



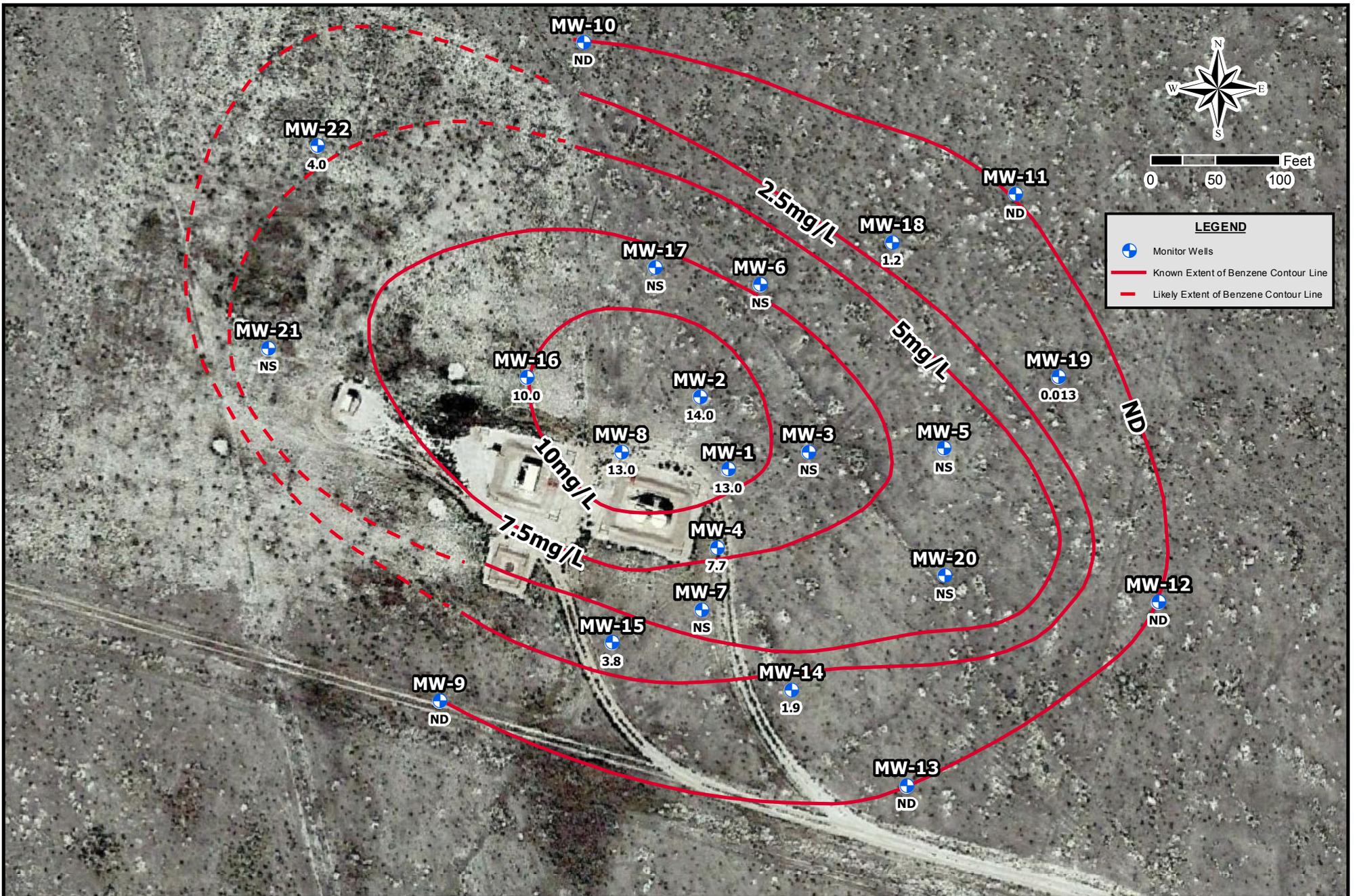
Drafted: 8/15/2017
1 in = 120 ft
Drafted By: IJM

Whiting Oil and Gas Corporation
Nelson C-1
Weld County, Colorado
Figure 1- Site Map



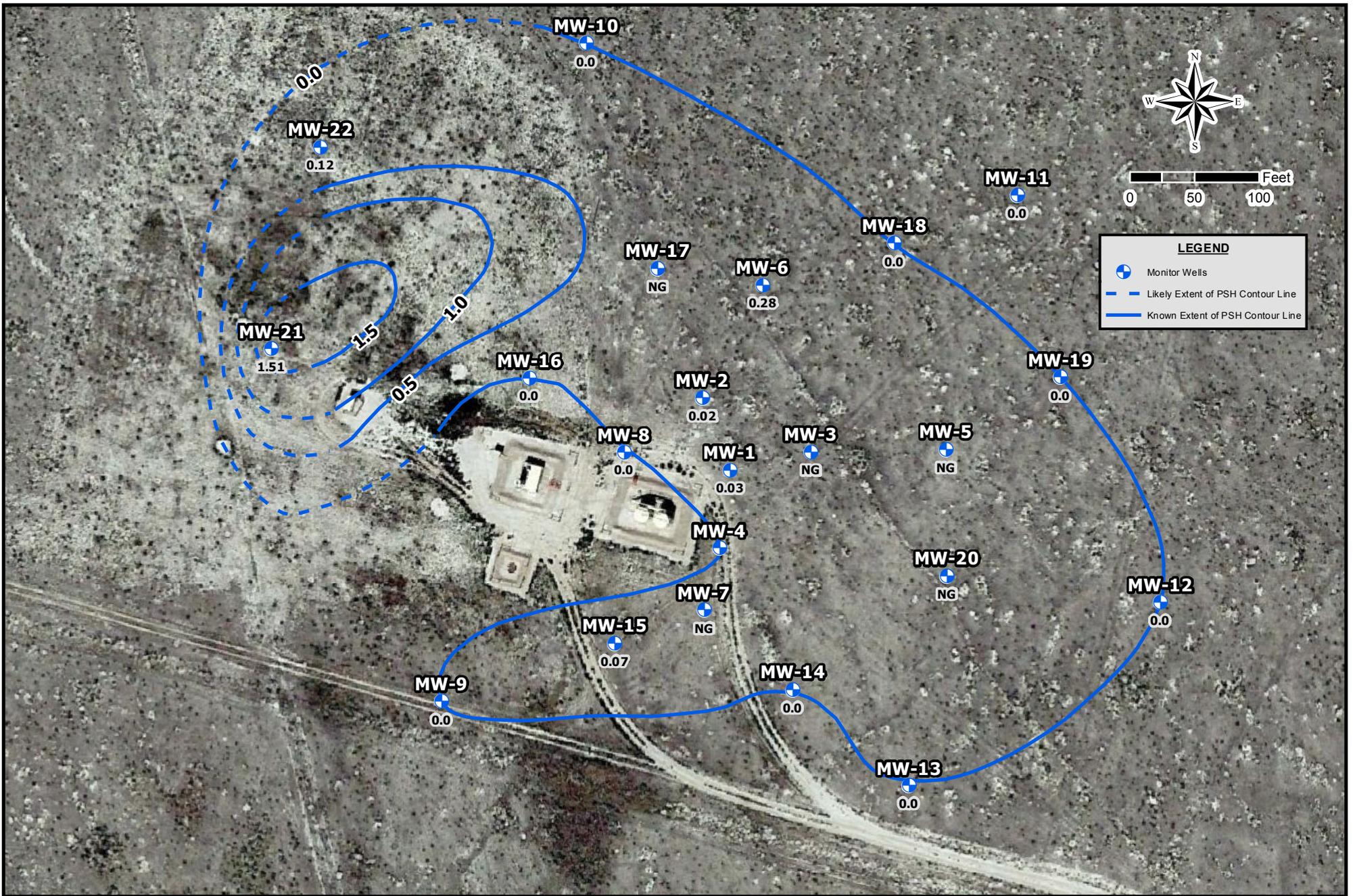
Drafted: 10/31/2017
 1 in = 100 ft
 Drafted By: IJM

Whiting Oil and Gas Corporation
 Nelson C-1
 Weld County, Colorado
 Figure 2 - GW Concentration Map (09/15/2017)



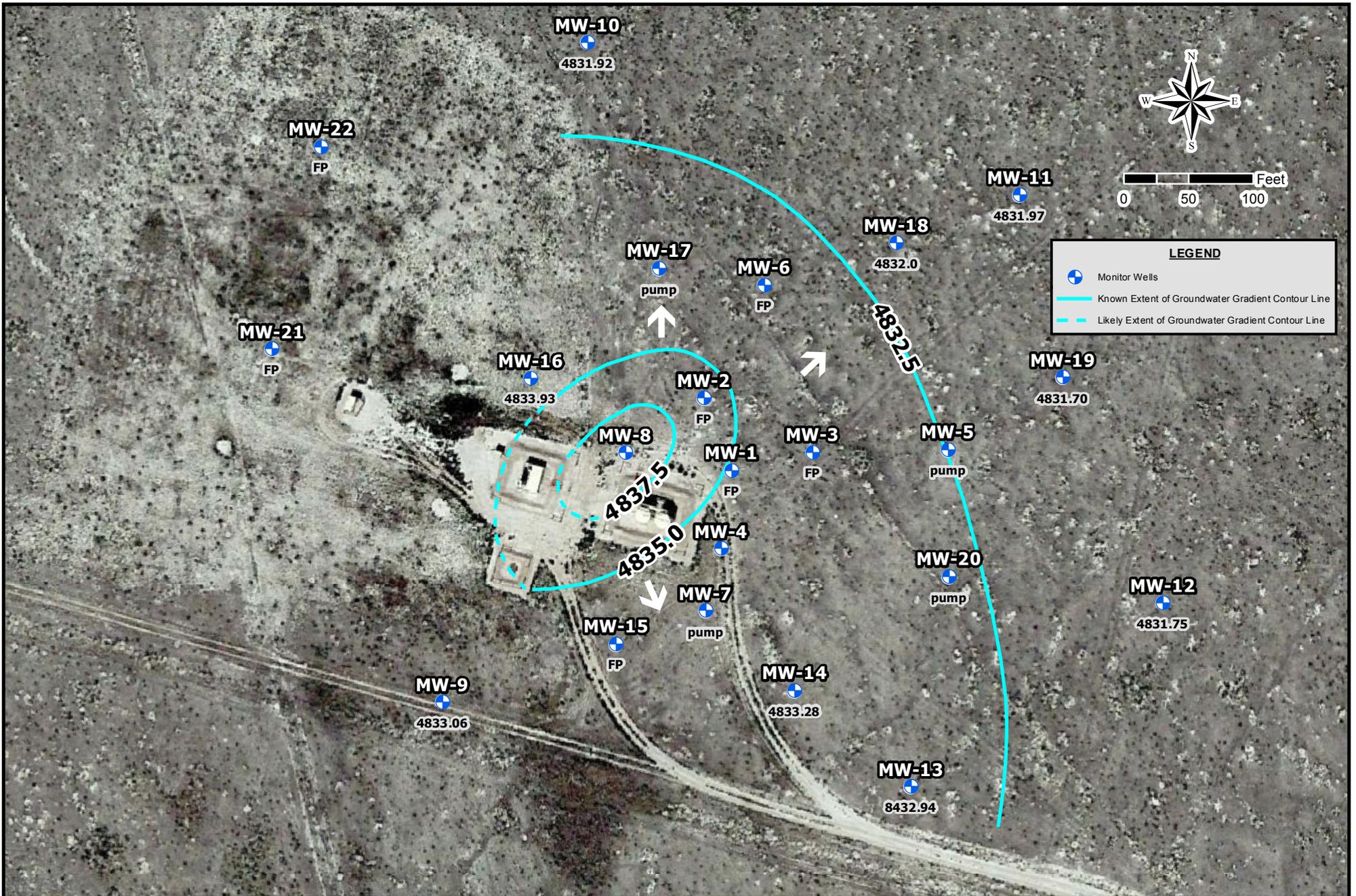
Drafted: 10/16/2017
 1 in = 100 ft
 Drafted By: IJM

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 Figure 3 - Benzene Isoconcentration Map (09/15/2017)



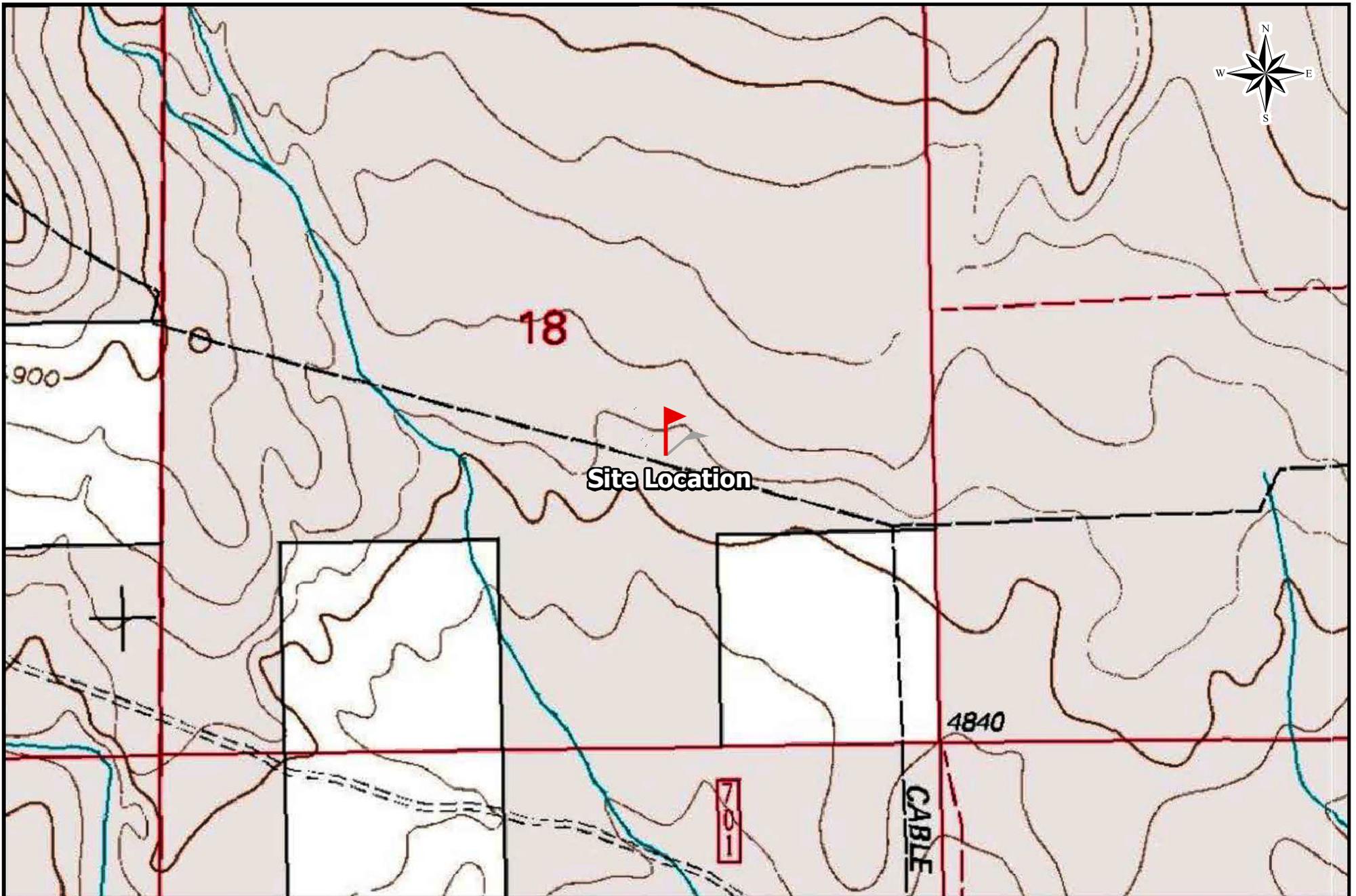
Drafted: 9/29/2017
 1 in = 100 ft
 Drafted By: IJM

Whiting Oil and Gas Corporation
 Nelson C-1
 Weld County, Colorado
 Figure 4 - PSH Isoconcentration Map (09/14/2017)



Drafted: 9/29/2017
 1 in = 100 ft
 Drafted By: IJM

Whiting Oil and Gas Corporation
 Nelson C-1
 Weld County, Colorado
 Figure 5 - Groundwater Gradient Map (09/14/2017)



Drafted: 10/2/2017
Map Scale: 1:10,000
Drafted By: IJM

Whiting Oil and Gas Corporation
Nelson C-1
Weld County, Colorado
Figure 6 - Topographic Map (09/14/2017)

**Attachment 2
Tables**



Table 1 - Well Information

**Whiting Oil and Gas Corporation
Nelson C-1
Weld County, Colorado**

Well ID	Latitude	Longitude	Ground Surface Elevation (ft amsl)	TOC Elevation (ft amsl)	Screen Interval (ft bgs)	Total Depth (ft)
MW-1	40.836400	-103.904672	4861.9	4865.0	19.8-39.8	40.38
MW-2	40.836550	-103.904761	4862.2	4865.6	19-39	39.50
MW-3	40.836453	-103.904461	4863.2	4866.6	19.5-39.5	40.00
MW-4	40.836239	-103.904742	4860.6	4863.7	19.5-39.5	40.00
MW-5	40.836419	-103.904069	4865.0	4868.0	20-40	40.00
MW-6	40.836722	-103.904467	4863.8	4867.1	20-45	45.00
MW-7	40.836089	-103.904822	4859.3	4862.6	20-40	40.00
MW-8	40.836469	-103.904956	4860.9	4864.3	20-40	40.00
MW-9	40.835925	-103.905525	4857.9	4860.9	17-32	35.00
MW-10	40.837317	-103.905089	4864.5	4867.7	19-39	39.00
MW-11	40.836978	-103.903889	4868.6	4871.6	19-44	44.00
MW-12	40.836108	-103.903511	4867.0	4870.1	18-38	38.00
MW-13	40.835728	-103.904222	4861.5	4864.4	20-40	40.00
MW-14	40.835936	-103.904542	4860.4	4863.7	20-40	40.00
MW-15	40.836042	-103.905064	4858.6	4861.4	19-34	34.00
MW-16	40.836608	-103.905264	4860.1	4863.4	19-39	39.00
MW-17	40.836836	-103.904900	4862.8	4866.0	19-44	44.00
MW-18	40.836881	-103.904236	4865.8	4868.6	19-44	44.00
MW-19	40.836589	-103.903778	4867.3	4870.2	19-39	39.00
MW-20	40.836172	-103.904103	4864.1	4867.0	19-39	39.00
MW-21	40.836680	-103.905987	4861.2	4864.0	20-40	40.15
MW-22	40.837107	-103.905838	4863.9	4866.9	20-40	39.68

TOC - Top of Casing
ft bgs - Feet Below Ground Surface
ft amsl - Feet Above Mean Sea Level



Table 2 - Groundwater Analytical Data

Whiting Oil and Gas Corporation
Nelson C-1
Weld County, Colorado

Sample ID	Lab ID	Date	Concentration (mg/L)			
			Benzene	Toluene	Ethyl-Benzene	Xylenes
COGCC Table 910-1 Concentration Levels			0.005	1	0.7	10
MW-1	1511065-2	11/04/15	17	18	1	5.4
	1602138-01	02/17/16	15	13	0.99	5.5
	1606205-01	06/21/16	17	16	1.1	6.4
	1609096-01	09/16/16	19	16	1.1	6.5
	1612127-01	12/16/16	28	38	2.5	12
	1703157-01	03/17/17	12	10	0.95	5.9
	1706184-01	06/16/17	11	12	0.97	6.2
	1709144-11	09/15/17	13	11	0.82	5.7
MW-1 (Duplicate)	1706184-15	06/16/17	11	11	0.93	5.7
MW-2	1511065-3	11/04/15	18	20	0.96	5
	1602138-02	02/17/16	16	14	1.4	8.2
	1606205-02	06/21/16	18	16	1	6.1
	1609096-02	09/16/16	26	25	1.2	7.1
	1612127-02	12/16/16	16	16	1.1	6.8
	NS	03/17/17	Not Sampled Due to Presence of PSH			
	1706184-02	06/16/17	13	15	1	6.1
	1709144-10	09/15/17	14	16	0.41	6.2
MW-3	NS	11/04/15	Not Sampled Due to Presence of PSH			
	NS	02/17/16	Not Sampled Due to Presence of PSH			
	NS	06/21/16	Not Sampled Due to Presence of PSH			
	NS	09/16/16	Not Sampled Due to Presence of PSH			
	NS	12/16/16	Not Sampled Due to Presence of PSH			
	NS	03/17/17	Not Sampled Due to Presence of PSH			
	NS	06/16/17	Not Sampled Due to Presence of PSH			
MW-4	1511065-1	11/04/15	16	20	0.94	4.8
	1602138-03	02/17/16	13	15	0.91	5.5
	1606205-03	06/21/16	12	16	0.99	6
	1609096-03	09/16/16	12	18	0.99	6.7
	1612127-03	12/16/16	14	19	1.1	7.2
	1703157-02	03/17/17	9.5	9.5	0.73	4.5
	1706184-03	06/16/17	11	13	0.82	5.8
	1710041-01	10/03/17	7.7	7.9	0.73	4.9
MW-5	NS	02/17/16	Not Sampled Due to Presence of PSH			
	NS	06/21/16	Not Sampled Due to Presence of PSH			
	NS	09/16/16	Not Sampled Due to Presence of PSH			
	NS	12/16/16	Not Sampled Due to Presence of PSH			
	NS	03/17/17	Not Sampled Due to Presence of PSH			
	NS	06/16/17	Not Sampled Due to Presence of PSH			
MW-6	NS	09/15/17	Not Sampled Due to Presence of PSH			
	NS	02/17/16	Not Sampled Due to Presence of PSH			
	NS	06/21/16	Not Sampled Due to Presence of PSH			
	NS	09/16/16	Not Sampled Due to Presence of PSH			
	NS	12/16/16	Not Sampled Due to Presence of PSH			
	NS	03/17/17	Not Sampled Due to Presence of PSH			
MW-7	NS	06/16/17	Not Sampled Due to Presence of PSH			
	NS	09/15/17	Not Sampled Due to Presence of PSH			
	NS	02/17/16	Not Sampled Due to Presence of PSH			
	NS	06/21/16	Not Sampled Due to Presence of PSH			
	NS	09/16/16	Not Sampled Due to Presence of PSH			
	NS	12/16/16	Not Sampled Due to Presence of PSH			
MW-7	NS	03/17/17	Not Sampled Due to Presence of PSH			
	NS	06/16/17	Not Sampled Due to Presence of PSH			
	NS	09/15/17	Not Sampled Due to Presence of PSH			
	NS	02/17/16	Not Sampled Due to Presence of PSH			
	NS	06/21/16	Not Sampled Due to Presence of PSH			



Table 2 - Groundwater Analytical Data

Whiting Oil and Gas Corporation
Nelson C-1
Weld County, Colorado

Sample ID	Lab ID	Date	Concentration (mg/L)			
			Benzene	Toluene	Ethyl-Benzene	Xylenes
COGCC Table 910-1 Concentration Levels			0.005	1	0.7	10
MW-8	1602138-04	02/17/16	12	13	1	5.3
	1606205-04	06/21/16	17	17	1.1	6.4
	1609096-04	09/16/16	20	20	0.85	7.1
	1612127-04	12/16/16	17	17	0.82	6.1
	1703157-03	03/17/17	13	14	0.89	6.6
	1706184-04	06/16/17	9.6	14	0.97	6.2
	1709144-09	09/15/17	13	9.4	0.018	5
MW-9	1603161-01	03/22/16	<0.001	0.0016	<0.001	0.0039
	1606205-05	06/21/16	<0.001	<0.001	<0.001	<0.001
	1609096-05	09/16/16	<0.001	<0.001	<0.001	<0.001
	1612127-05	12/16/16	<0.001	<0.001	<0.001	<0.001
	1703157-04	03/17/17	<0.001	<0.001	<0.001	<0.001
	1706184-05	06/16/17	<0.001	<0.001	<0.001	<0.001
	1709144-08	09/15/17	<0.001	<0.001	<0.001	<0.002
MW-10	NS	03/22/16	Dry - No Sample Collected			
	1606205-06	06/21/16	<0.001	<0.001	<0.001	<0.001
	1609096-06	09/16/16	<0.001	<0.001	<0.001	<0.001
	1612127-06	12/16/16	<0.001	<0.001	<0.001	<0.001
	1703157-05	03/17/17	<0.001	<0.001	<0.001	<0.001
	1706184-06	06/16/17	<0.001	<0.001	<0.001	<0.001
	1709144-07	09/15/17	<0.001	<0.001	<0.001	<0.002
MW-11	1603161-02	03/22/16	0.0016	0.0011	<0.001	<0.001
	1606205-07	06/21/16	<0.001	<0.001	<0.001	<0.001
	1609096-07	09/16/16	0.0078	0.0049	<0.001	<0.001
	1612127-07	12/16/16	0.0023	0.002	<0.001	<0.001
	1703157-06	03/17/17	0.0027	0.0037	<0.001	0.005
	1706184-07	06/16/17	<0.001	<0.001	<0.001	<0.001
	1709144-06	09/15/17	<0.001	<0.001	<0.001	<0.002
MW-12	NS	03/22/16	Dry - No Sample Collected			
	1606205-08	06/21/16	<0.001	<0.001	<0.001	<0.001
	1609096-08	09/16/16	<0.001	<0.001	<0.001	<0.001
	1612127-08	12/16/16	<0.001	<0.001	<0.001	<0.001
	1703157-07	03/17/17	<0.001	<0.001	<0.001	<0.001
	1706184-08	06/16/17	<0.001	<0.001	<0.001	<0.001
	1709144-05	09/15/17	<0.001	<0.001	<0.001	<0.002
MW-13	1603161-03	03/22/16	<0.001	0.0013	<0.001	<0.001
	1606205-09	06/21/16	<0.001	<0.001	<0.001	<0.001
	1609096-09	09/16/16	<0.001	<0.001	<0.001	<0.001
	1612127-09	12/16/16	<0.001	<0.001	<0.001	<0.001
	1703157-08	03/17/17	<0.001	<0.001	<0.001	<0.001
	1706184-09	06/16/17	<0.001	<0.001	<0.001	<0.001
	1709144-04	09/15/17	<0.001	<0.001	<0.001	<0.002
MW-14	1603161-04	03/22/16	2.5	2.3	0.48	1.3
	1606205-10	06/21/16	2.4	2.2	0.39	1.3
	1609096-10	09/16/16	3.4	2.2	0.44	1.5
	1612127-10	12/16/16	12	5.4	0.64	4
	1703157-09	03/17/17	2.5	1.1	0.44	1.4
	1706184-10	06/16/17	2.1	0.7	0.28	0.89
	1709144-03	09/15/17	1.9	0.29	0.27	0.62



Table 2 - Groundwater Analytical Data

Whiting Oil and Gas Corporation
Nelson C-1
Weld County, Colorado

Sample ID	Lab ID	Date	Concentration (mg/L)			
			Benzene	Toluene	Ethyl-Benzene	Xylenes
COGCC Table 910-1 Concentration Levels			0.005	1	0.7	10
MW-15	1603161-05	03/22/16	4.3	6.4	0.42	3.5
	1606205-11	06/21/16	6.5	5.2	0.59	3.6
	1609096-11	09/16/16	6	3.2	0.63	3.6
	1612127-11	12/16/16	17	18	1.1	6.4
	1703157-10	03/17/17	3.8	1	0.35	1.8
	1706184-11	06/16/17	4.4	1.1	0.52	2.8
	1709144-02	09/15/17	3.8	1.3	0.0029	3.1
MW-16	1603161-06	03/22/16	14	16	0.68	6.1
	1606205-12	06/21/16	16	16	1.1	6.7
	1609096-12	09/16/16	18	18	1.3	7.3
	1612127-12	12/16/16	18	20	1.2	7.2
	1703157-11	03/17/17	12	13	1.1	6.4
	1706184-12	06/16/17	11	13	1.5	8.4
	1709144-01	09/15/17	10	12	0.76	5.9
MW-16 (Duplicate)	1703157-14	03/17/17	12	13	1.1	6.2
MW-17	NS	03/22/16	Not Sampled Due to Presence of PSH			
	NS	06/21/16	Not Sampled Due to Presence of PSH			
	NS	09/16/16	Not Sampled Due to Presence of PSH			
	NS	12/16/16	Not Sampled Due to Presence of PSH			
	NS	03/17/17	Not Sampled Due to Presence of PSH			
	NS	06/16/17	Not Sampled Due to Presence of PSH			
	NS	09/15/17	Not Sampled Due to Presence of PSH			
MW-18	1603161-07	03/22/16	0.084	0.047	0.0026	0.0074
	1606205-13	06/21/16	0.23	0.14	0.0039	0.04
	1609096-13	09/16/16	0.34	0.097	0.0034	0.04
	1612127-13	12/16/16	0.45	0.11	0.0089	0.047
	1703157-12	03/17/17	1.2	0.98	0.034	0.32
	1706184-13	06/16/17	0.47	0.33	0.015	0.2
	1709144-14	09/15/17	1.2	0.0071	<0.001	<0.002
MW-19	NS	03/22/16	Dry - No Sample Collected			
	1606205-14	06/21/16	0.0011	<0.001	<0.001	<0.001
	1609096-14	09/16/16	0.0051	0.0011	<0.001	<0.001
	1612127-14	12/16/16	<0.001	<0.001	<0.001	<0.001
	1703157-13	03/17/17	0.0021	<0.001	<0.001	<0.001
	1706184-14	06/16/17	0.002	0.0011	<0.001	<0.001
	1709144-13	09/15/17	0.013	0.0017	<0.001	0.0037
MW-20	NS	03/22/16	Not Sampled Due to Presence of PSH			
	NS	06/21/16	Not Sampled Due to Presence of PSH			
	NS	09/16/16	Not Sampled Due to Presence of PSH			
	NS	12/16/16	Not Sampled Due to Presence of PSH			
	NS	03/17/17	Not Sampled Due to Presence of PSH			
	NS	06/16/17	Not Sampled Due to Presence of PSH			
	NS	09/15/17	Not Sampled Due to Presence of PSH			
MW-21	NS	09/15/17	Not Sampled Due to Presence of PSH			
MW-22	1709144-12	09/15/17	4	14	0.84	11

mg/L -milligrams per liter

< - Analytical result is less than the reporting limit

COGCC - Colorado Oil and Gas Conservation Commission

NS - Not Sampled

PSH - Phase-Separated Hydrocarbons



Table 3 - Gauging Data

Whiting Oil and Gas Corporation
Nelson C-1
Weld County, Colorado

Well ID	Top of Casing Elevation (ft amsl)	Total Depth of Well (ft)	Date Gauged	Depth to Product (ft btoc)	DTW (ft btoc)	Product Thickness (ft)	Potentiometric Surface Elevation (ft)
MW-1	4865.00	40.38	11/4/2015	NA	36.49	0.00	4828.51
			12/3/2015	NA	30.88	0.00	4834.12
			12/8/2015	30.62	30.63	0.01	4834.38
			12/22/2015	NA	31.46	0.00	4833.54
			12/30/2015	NA	32.03	0.00	4832.97
			1/13/2016	NA	38.05	0.00	4826.95
			1/21/2016	NA	31.08	0.00	4833.92
			1/27/2016	31.10	31.13	0.03	4833.89
			2/8/2016	31.24	31.29	0.05	4833.75
			2/15/2016	30.90	30.92	0.02	4834.10
			2/16/2016	30.96	30.99	0.03	4834.03
			2/17/2016	NA	32.27	0.00	4832.73
			2/19/2016	NA	31.04	0.00	4833.96
			2/24/2016	NA	31.19	0.00	4833.81
			2/29/2016	NA	30.95	0.00	4834.05
			3/8/2016	NA	32.67	0.00	4832.33
			3/15/2016	NA	32.95	0.00	4832.05
			3/22/2016	NA	33.02	0.00	4831.98
			3/29/2016	NA	33.04	0.00	4831.96
			4/5/2016	NA	33.22	0.00	4831.78
			4/19/2016	NA	31.70	0.00	4833.30
			4/26/2016	NA	32.78	0.00	4832.22
			5/5/2016	NA	31.41	0.00	4833.59
			6/6/2016	31.35	31.36	0.01	4833.65
			6/20/2016	31.38	31.42	0.04	4833.61
			8/11/2016	NA	30.88	0.00	4834.12
9/15/2016	NA	30.82	0.00	4834.18			
12/15/2016	30.98	30.99	0.01	4834.02			
3/16/2017	31.45	31.49	0.04	4833.54			
6/15/2017	31.91	31.95	0.04	4833.08			
9/14/2017	30.75	30.78	0.03	4834.24			
MW-2	4865.6	39.50	11/4/2015	31.15	31.20	0.05	4834.44
			12/3/2015	31.60	31.62	0.02	4834.00
			12/8/2015	31.50	31.52	0.02	4834.10
			12/22/2015	NA	31.29	0.00	4834.31
			12/30/2015	31.93	31.94	0.01	4833.67
			1/13/2016	NA	31.55	0.00	4834.05
			1/21/2016	NA	31.71	0.00	4833.89
			1/27/2016	NA	31.72	0.00	4833.88
			2/8/2016	31.90	31.92	0.02	4833.70
			2/15/2016	31.53	31.58	0.05	4834.06
			2/16/2016	31.63	31.66	0.03	4833.96
			2/17/2016	32.31	32.35	0.04	4833.28
			2/19/2016	31.68	31.73	0.05	4833.91
			2/24/2016	NA	31.80	0.00	4833.80
			2/29/2016	31.56	31.63	0.07	4834.03
			3/8/2016	NA	32.25	0.00	4833.35
			3/15/2016	NA	32.37	0.00	4833.23
			3/22/2016	NA	32.21	0.00	4833.39
			3/29/2016	NA	32.21	0.00	4833.39
			4/5/2016	NA	32.42	0.00	4833.18
			4/19/2016	32.25	32.27	0.02	4833.35
			4/26/2016	NA	32.36	0.00	4833.24
			5/5/2016	NA	32.12	0.00	4833.48
			6/6/2016	32.10	32.14	0.04	4833.49
			6/20/2016	32.15	32.17	0.02	4833.45
			8/11/2016	NA	31.43	0.00	4834.17
9/15/2016	31.20	31.27	0.07	4834.39			
12/15/2016	38.31	38.50	0.49	4827.49			
3/16/2017	31.45	31.49	0.04	4834.14			
6/15/2017	32.15	32.20	0.05	4833.44			
9/14/2017	30.78	30.80	0.02	4834.82			



Table 3 - Gauging Data

Whiting Oil and Gas Corporation
Nelson C-1
Weld County, Colorado

Well ID	Top of Casing Elevation (ft amsl)	Total Depth of Well (ft)	Date Gauged	Depth to Product (ft btoc)	DTW (ft btoc)	Product Thickness (ft)	Potentiometric Surface Elevation (ft)
MW-3	4866.6	40.00	11/4/2015	35.61	36.52	0.91	4830.81
			12/3/2015	34.74	35.89	1.15	4831.63
			12/8/2015	34.77	35.62	0.85	4831.66
			12/22/2015	34.44	35.36	0.92	4831.98
			12/30/2015	35.07	35.93	0.86	4831.36
			1/13/2016	37.32	37.82	0.50	4829.18
			1/21/2016	33.70	34.78	1.08	4832.69
			1/27/2016	33.62	35.13	1.51	4832.68
			2/8/2016	33.47	35.88	2.41	4832.66
			2/15/2016	32.95	36.07	3.12	4833.04
			2/16/2016	32.98	36.16	3.18	4833.00
			2/17/2016	35.38	36.50	1.12	4831.00
			2/19/2016	33.80	35.09	1.29	4832.55
			2/24/2016	33.58	35.29	1.71	4832.68
			2/29/2016	33.46	35.37	1.91	4832.77
			3/8/2016	33.68	34.69	1.01	4832.72
			3/15/2016	33.65	33.70	0.05	4832.94
			3/22/2016	34.55	35.55	1.00	4831.85
			3/29/2016	34.48	35.38	0.90	4831.94
			4/5/2016	34.95	35.05	0.10	4831.63
			4/19/2016	34.01	34.71	0.70	4832.45
			4/26/2016	34.45	35.04	0.59	4832.03
			5/5/2016	35.37	36.11	0.74	4831.08
			6/6/2016	33.91	34.82	0.91	4832.51
			6/20/2016	33.75	35.32	1.57	4832.54
			8/11/2016	33.90	34.60	0.70	4832.56
			9/15/2016	33.71	34.41	0.70	4832.75
			12/15/2016	33.79	34.30	0.51	4832.71
3/16/2017	34.87	35.72	0.85	4831.56			
6/16/2017	33.90	34.70	0.80	4832.54			
9/14/2017	NG	NG	NG	NG	NG	NG	
MW-4	4863.7	40.00	11/4/2015	NA	35.69	0.00	4828.01
			12/3/2015	NA	37.50	0.00	4826.20
			12/8/2015	NA	35.78	0.00	4827.92
			12/22/2015	NA	34.55	0.00	4829.15
			12/30/2015	NA	35.60	0.00	4828.10
			1/13/2016	NA	38.05	0.00	4825.65
			1/21/2016	NA	34.28	0.00	4829.42
			1/27/2016	NA	30.36	0.00	4833.34
			2/8/2016	NA	29.24	0.00	4834.46
			2/15/2016	NA	29.03	0.00	4834.67
			2/16/2016	NA	29.02	0.00	4834.68
			2/17/2016	NA	36.60	0.00	4827.10
			2/19/2016	NA	33.94	0.00	4829.76
			2/24/2016	NA	29.81	0.00	4833.89
			2/29/2016	NA	29.51	0.00	4834.19
			3/8/2016	NA	33.15	0.00	4830.55
			3/15/2016	NA	35.27	0.00	4828.43
			3/22/2016	NA	35.13	0.00	4828.57
			3/29/2016	NA	35.02	0.00	4828.68
			4/5/2016	NA	35.94	0.00	4827.76
			4/19/2016	NA	33.14	0.00	4830.56
			4/26/2016	NA	29.88	0.00	4833.82
			5/5/2016	NA	29.36	0.00	4834.34
			6/6/2016	NA	29.35	0.00	4834.35
			6/20/2016	NA	29.31	0.00	4834.39
			8/11/2016	NA	29.00	0.00	4834.70
			9/15/2016	NA	29.03	0.00	4834.67
			12/15/2016	NA	29.48	0.00	4834.22
3/16/2017	NA	29.89	0.00	4833.81			
6/15/2017	NA	31.90	0.00	4831.80			
9/14/2017	NA	29.75	0.00	4833.95			



Table 3 - Gauging Data

Whiting Oil and Gas Corporation
Nelson C-1
Weld County, Colorado

Well ID	Top of Casing Elevation (ft amsl)	Total Depth of Well (ft)	Date Gauged	Depth to Product (ft btoc)	DTW (ft btoc)	Product Thickness (ft)	Potentiometric Surface Elevation (ft)
MW-5	4868.0	40.00	2/15/2016	40.31	40.41	0.10	4827.67
			2/16/2016	39.95	40.09	0.14	4828.02
			2/17/2016	Dry	Dry	0.00	
			2/19/2016	39.78	40.07	0.29	4828.16
			2/24/2016	38.60	39.19	0.59	4829.28
			2/29/2016	37.66	38.56	0.90	4830.16
			3/8/2016	36.66	37.95	1.29	4831.09
			3/15/2016	36.20	36.35	0.15	4831.77
			3/22/2016	35.95	37.80	1.85	4831.69
			3/29/2016	35.78	36.51	0.73	4832.08
			4/5/2016	NA	35.74	0.00	4832.26
			4/19/2016	35.65	38.30	2.65	4831.83
			4/26/2016	35.48	38.30	2.82	4831.97
			5/5/2016	35.52	35.53	0.01	4832.48
			6/6/2016	39.08	39.85	0.77	4828.77
			6/20/2016	37.22	38.46	1.24	4830.54
			8/11/2016	39.08	39.65	0.57	4828.81
			9/15/2016	37.18	38.37	1.19	4830.59
			12/15/2016	37.05	38.22	1.17	4830.72
			3/16/2017	37.10	38.22	1.12	4830.68
6/15/2017	36.86	37.90	1.04	4830.94			
9/14/2017	NG	NG	NG	NG			
MW-6	4867.1	45.00	2/15/2016	35.32	36.60	1.28	4831.53
			2/16/2016	35.33	36.91	1.58	4831.46
			2/17/2016	35.95	36.14	0.19	4831.11
			2/19/2016	35.55	36.50	0.95	4831.36
			2/24/2016	35.30	37.55	2.25	4831.36
			2/29/2016	34.76	38.19	3.43	4831.67
			3/8/2016	34.44	39.14	4.70	4831.74
			3/15/2016	34.28	38.44	4.16	4832.00
			3/22/2016	33.92	39.90	5.98	4832.01
			3/29/2016	33.88	40.03	6.15	4832.01
			4/5/2016	34.02	39.58	5.56	4831.99
			4/19/2016	34.11	40.91	6.80	4831.66
			4/26/2016	33.80	38.87	5.07	4832.31
			5/5/2016	34.01	40.78	6.77	4831.76
			6/6/2016	33.94	40.80	6.86	4831.82
			6/20/2016	34.72	39.50	4.78	4831.44
			8/11/2016	35.53	36.32	0.79	4831.42
			9/15/2016	35.17	36.99	1.82	4831.57
			12/15/2016	35.11	36.27	1.16	4831.76
			3/16/2017	35.19	36.20	1.01	4831.71
6/15/2017	35.25	36.20	0.95	4831.66			
9/14/2017	34.81	35.09	0.28	4832.24			
MW-7	4862.6	40.00	2/15/2016	31.86	34.29	2.43	4830.26
			2/16/2016	30.00	33.03	3.03	4832.01
			2/17/2016	35.38	36.50	1.12	4827.00
			2/19/2016	30.26	32.22	1.96	4831.96
			2/24/2016	28.01	30.35	2.34	4834.13
			2/29/2016	27.75	29.91	2.16	4834.43
			3/8/2016	27.55	29.73	2.18	4834.62
			3/15/2016	27.61	29.90	2.29	4834.54
			3/22/2016	27.58	29.93	2.35	4834.56
			3/29/2016	27.55	29.95	2.40	4834.58
			4/5/2016	27.75	30.28	2.53	4834.35
			4/19/2016	27.89	27.91	0.02	4834.71
			4/26/2016	27.44	30.06	2.62	4834.65
			5/5/2016	27.81	29.09	1.28	4834.54
			6/6/2016	28.62	30.50	1.88	4833.61
			6/20/2016	28.10	29.61	1.51	4834.20
			8/11/2016	28.68	29.30	0.62	4833.80
			9/15/2016	28.38	29.27	0.89	4834.05
			12/15/2016	28.67	29.32	0.65	4833.80
			3/16/2017	28.96	29.66	0.70	4833.50
6/15/2017	29.21	29.89	0.68	4833.26			
9/14/2017	NG	NG	NG	NG			



Table 3 - Gauging Data

Whiting Oil and Gas Corporation
Nelson C-1
Weld County, Colorado

Well ID	Top of Casing Elevation (ft amsl)	Total Depth of Well (ft)	Date Gauged	Depth to Product (ft btoc)	DTW (ft btoc)	Product Thickness (ft)	Potentiometric Surface Elevation (ft)
MW-8	4864.3	40.00	2/15/2016	NA	35.85	0.00	4828.45
			2/16/2016	NA	34.10	0.00	4830.20
			2/17/2016	NA	35.09	0.00	4829.21
			2/19/2016	NA	32.57	0.00	4831.73
			2/24/2016	NA	28.81	0.00	4835.49
			2/29/2016	NA	27.45	0.00	4836.85
			3/8/2016	NA	27.14	0.00	4837.16
			3/15/2016	NA	27.25	0.00	4837.05
			3/22/2016	NA	33.80	0.00	4830.50
			3/29/2016	NA	27.38	0.00	4836.92
			4/5/2016	27.70	27.73	0.03	4836.59
			4/19/2016	28.04	28.06	0.02	4836.26
			4/26/2016	27.72	27.75	0.03	4836.57
			5/5/2016	28.28	28.30	0.02	4836.02
			6/6/2016	28.46	28.52	0.06	4835.83
			6/20/2016	NA	27.83	0.00	4836.47
			8/11/2016	NA	26.28	0.00	4838.02
			9/15/2016	26.35	26.36	0.01	4837.95
			12/15/2016	NA	27.45	0.00	4836.85
			3/16/2017	28.06	28.07	0.01	4836.24
6/15/2017	NA	27.15	0.00	4837.15			
9/14/2017	NA	26.04	0.00	4838.26			
MW-9	4860.9	35.00	3/15/2016	NA	33.45	0.00	4827.45
			3/21/2016	NA	31.84	0.00	4829.06
			3/22/2016	NA	33.80	0.00	4827.10
			3/29/2016	NA	31.85	0.00	4829.05
			4/5/2016	NA	29.98	0.00	4830.92
			4/19/2016	NA	27.48	0.00	4833.42
			4/26/2016	NA	26.80	0.00	4834.10
			5/5/2016	NA	26.61	0.00	4834.29
			6/6/2016	NA	26.50	0.00	4834.40
			6/20/2016	NA	26.40	0.00	4834.50
			8/11/2016	NA	26.52	0.00	4834.38
			9/15/2016	NA	26.75	0.00	4834.15
			12/15/2016	NA	27.09	0.00	4833.81
			3/16/2017	NA	27.44	0.00	4833.46
			6/15/2017	NA	27.72	0.00	4833.18
			9/14/2017	NA	27.84	0.00	4833.06
			MW-10	4867.7	39	3/15/2016	NA
3/21/2016	NA	Dry				0.00	
3/22/2016	NA	Dry				0.00	
3/29/2016	NA	Dry				0.00	
4/5/2016	NA	39.12				0.00	4828.58
4/19/2016	NA	38.19				0.00	4829.51
4/26/2016	NA	37.78				0.00	4829.92
5/5/2016	NA	37.58				0.00	4830.12
6/6/2016	NA	37.35				0.00	4830.35
6/20/2016	NA	37.32				0.00	4830.38
8/11/2016	NA	37.20				0.00	4830.50
9/15/2016	NA	37.13				0.00	4830.57
12/15/2016	NA	36.89				0.00	4830.81
3/16/2017	NA	36.75				0.00	4830.95
6/15/2017	NA	36.41				0.00	4831.29
9/14/2017	NA	35.78	0.00	4831.92			



Table 3 - Gauging Data

Whiting Oil and Gas Corporation
Nelson C-1
Weld County, Colorado

Well ID	Top of Casing Elevation (ft amsl)	Total Depth of Well (ft)	Date Gauged	Depth to Product (ft btoc)	DTW (ft btoc)	Product Thickness (ft)	Potentiometric Surface Elevation (ft)
MW-11	4871.6	44.00	3/15/2016	NA	41.07	0.00	4830.53
			3/21/2016	NA	41.10	0.00	4830.50
			3/22/2016	NA	42.22	0.00	4829.38
			3/29/2016	NA	40.98	0.00	4830.62
			4/5/2016	NA	41.06	0.00	4830.54
			4/19/2016	NA	47.15	0.00	4824.45
			4/26/2016	NA	40.83	0.00	4830.77
			5/5/2016	NA	41.06	0.00	4830.54
			6/6/2016	NA	41.00	0.00	4830.60
			6/20/2016	NA	41.08	0.00	4830.52
			8/11/2016	NA	41.83	0.00	4829.77
			9/15/2016	NA	40.81	0.00	4830.79
			12/15/2016	NA	40.59	0.00	4831.01
			3/16/2017	NA	40.39	0.00	4831.21
			6/15/2017	NA	40.17	0.00	4831.43
			9/14/2017	NA	39.63	0.00	4831.97
MW-12	4870.1	38.00	3/15/2016	NA	Dry	0.00	
			3/21/2016	NA	Dry	0.00	
			3/22/2016	NA	Dry	0.00	
			3/29/2016	NA	Dry	0.00	
			4/5/2016	NA	40.09	0.00	4830.01
			4/19/2016	NA	39.46	0.00	4830.64
			4/26/2016	NA	39.28	0.00	4830.82
			5/5/2016	NA	39.16	0.00	4830.94
			6/6/2016	NA	38.94	0.00	4831.16
			6/20/2016	NA	38.91	0.00	4831.19
			8/11/2016	NA	38.83	0.00	4831.27
			9/15/2016	NA	38.78	0.00	4831.32
			12/15/2016	NA	38.67	0.00	4831.43
			3/16/2017	NA	38.61	0.00	4831.49
			6/15/2017	NA	38.45	0.00	4831.65
			9/14/2017	NA	38.35	0.00	4831.75
MW-13	4864.4	40.00	3/15/2016	NA	Dry	0.00	
			3/21/2016	NA	38.86	0.00	4825.54
			3/22/2016	NA	39.35	0.00	4825.05
			3/29/2016	NA	37.37	0.00	4827.03
			4/5/2016	NA	35.84	0.00	4828.56
			4/19/2016	NA	33.26	0.00	4831.14
			4/26/2016	NA	32.39	0.00	4832.01
			5/5/2016	NA	31.71	0.00	4832.69
			6/6/2016	NA	30.83	0.00	4833.57
			6/20/2016	NA	30.76	0.00	4833.64
			8/11/2016	NA	31.00	0.00	4833.40
			9/15/2016	NA	30.77	0.00	4833.63
			12/15/2016	NA	31.06	0.00	4833.34
			3/16/2017	NA	31.15	0.00	4833.25
			6/15/2017	NA	31.30	0.00	4833.10
			9/14/2017	NA	31.46	0.00	4832.94



Table 3 - Gauging Data

Whiting Oil and Gas Corporation
Nelson C-1
Weld County, Colorado

Well ID	Top of Casing Elevation (ft amsl)	Total Depth of Well (ft)	Date Gauged	Depth to Product (ft btoc)	DTW (ft btoc)	Product Thickness (ft)	Potentiometric Surface Elevation (ft)
MW-14	4863.7	40.00	3/15/2016	NA	29.62	0.00	4834.08
			3/21/2016	NA	29.55	0.00	4834.15
			3/22/2016	NA	29.35	0.00	4834.35
			3/29/2016	NA	29.37	0.00	4834.33
			4/5/2016	NA	29.64	0.00	4834.06
			4/19/2016	NA	29.85	0.00	4833.85
			4/26/2016	NA	29.51	0.00	4834.19
			5/5/2016	NA	29.79	0.00	4833.91
			6/6/2016	NA	29.73	0.00	4833.97
			6/20/2016	NA	29.94	0.00	4833.76
			8/11/2016	NA	29.71	0.00	4833.99
			9/15/2016	NA	29.80	0.00	4833.90
			12/15/2016	NA	29.87	0.00	4833.83
			3/16/2017	NA	30.29	0.00	4833.41
			6/15/2017	NA	30.65	0.00	4833.05
			9/14/2017	NA	30.42	0.00	4833.28
			MW-15	4861.4	34.00	3/15/2016	NA
3/21/2016	NA	33.75				0.00	4827.65
3/22/2016	NA	34.15				0.00	4827.25
3/29/2016	NA	31.69				0.00	4829.71
4/5/2016	NA	30.14				0.00	4831.26
4/19/2016	NA	28.50				0.00	4832.90
4/26/2016	NA	27.96				0.00	4833.44
5/5/2016	NA	27.64				0.00	4833.76
6/6/2016	NA	27.12				0.00	4834.28
6/20/2016	NA	27.00				0.00	4834.40
8/11/2016	NA	27.47				0.00	4833.93
9/15/2016	NA	27.19				0.00	4834.21
12/15/2016	NA	27.60				0.00	4833.80
3/16/2017	NA	28.11				0.00	4833.29
6/15/2017	NA	28.59				0.00	4832.81
9/14/2017	28.92	28.99				0.07	4832.47
MW-16	4863.4	39.00				3/15/2016	NA
			3/21/2016	NA	32.67	0.00	4830.73
			3/22/2016	36.31	36.34	0.03	4827.08
			3/29/2016	NA	30.70	0.00	4832.70
			4/5/2016	NA	29.65	0.00	4833.75
			4/19/2016	NA	29.19	0.00	4834.21
			4/26/2016	NA	28.98	0.00	4834.42
			5/5/2016	NA	29.18	0.00	4834.22
			6/6/2016	NA	29.27	0.00	4834.13
			6/20/2016	NA	29.30	0.00	4834.10
			8/11/2016	NA	29.30	0.00	4834.10
			9/15/2016	NA	29.20	0.00	4834.20
			12/15/2016	NA	29.15	0.00	4834.25
			3/16/2017	NA	29.13	0.00	4834.27
6/15/2017	NA	29.53	0.00	4833.87			
9/14/2017	NA	29.47	0.00	4833.93			



Table 3 - Gauging Data

Whiting Oil and Gas Corporation
Nelson C-1
Weld County, Colorado

Well ID	Top of Casing Elevation (ft amsl)	Total Depth of Well (ft)	Date Gauged	Depth to Product (ft btoc)	DTW (ft btoc)	Product Thickness (ft)	Potentiometric Surface Elevation (ft)
MW-17	4866.0	44.00	3/16/2016	NA	Dry	0.00	
			3/21/2016	43.16	NA	0.84	
			3/22/2016	44.45	45.53	1.08	4821.34
			3/29/2016	39.16	43.55	4.39	4825.98
			4/5/2016	36.62	42.32	5.70	4828.26
			4/19/2016	34.22	42.25	8.03	4830.21
			4/26/2016	33.39	42.16	8.77	4830.89
			5/5/2016	33.04	42.05	9.01	4831.19
			6/6/2016	32.71	41.94	9.23	4831.48
			6/20/2016	36.13	43.14	7.01	4828.50
			8/11/2016	44.20	45.25	1.05	4821.59
			9/15/2016	40.19	43.34	3.15	4825.19
			12/15/2016	40.75	43.09	2.34	4824.79
			3/16/2017	38.92	41.12	2.20	4826.65
			6/15/2017	38.00	39.74	1.74	4827.66
			9/14/2017	NG	NG	NG	NG
			MW-18	4868.6	44.00	3/16/2016	NA
3/21/2016	NA	37.72				0.00	4830.88
3/22/2016	NA	38.10				0.00	4830.50
3/29/2016	NA	37.55				0.00	4831.05
4/5/2016	NA	37.74				0.00	4830.86
4/19/2016	NA	37.87				0.00	4830.73
4/26/2016	NA	37.55				0.00	4831.05
5/5/2016	NA	37.79				0.00	4830.81
6/6/2016	NA	37.75				0.00	4830.85
6/20/2016	NA	37.90				0.00	4830.70
8/11/2016	NA	37.63				0.00	4830.97
9/15/2016	NA	37.56				0.00	4831.04
12/15/2016	NA	37.33				0.00	4831.27
3/16/2017	NA	37.29				0.00	4831.31
6/15/2017	NA	37.49				0.00	4831.11
9/14/2017	NA	36.60				0.00	4832.00
MW-19	4870.2	39.00				3/21/2016	NA
			3/22/2016	NA	Dry	0.00	
			3/29/2016	NA	Dry	0.00	
			4/5/2016	NA	Dry	0.00	
			4/19/2016	NA	39.87	0.00	4830.33
			4/26/2016	NA	39.56	0.00	4830.64
			5/5/2016	NA	39.44	0.00	4830.76
			6/6/2016	NA	39.20	0.00	4831.00
			6/20/2016	NA	39.18	0.00	4831.02
			8/11/2016	NA	39.10	0.00	4831.10
			9/15/2016	NA	39.05	0.00	4831.15
			12/15/2016	NA	38.92	0.00	4831.28
			3/16/2017	NA	38.81	0.00	4831.39
			6/15/2017	NA	38.68	0.00	4831.52
9/14/2017	NA	38.50	0.00	4831.70			



Table 3 - Gauging Data

Whiting Oil and Gas Corporation
Nelson C-1
Weld County, Colorado

Well ID	Top of Casing Elevation (ft amsl)	Total Depth of Well (ft)	Date Gauged	Depth to Product (ft btoc)	DTW (ft btoc)	Product Thickness (ft)	Potentiometric Surface Elevation (ft)
MW-20	4867.0	39.00	3/21/2016	33.95	38.85	4.90	4832.09
			3/22/2016	38.35	40.21	1.86	4828.29
			3/29/2016	38.34	39.15	0.81	4828.50
			4/5/2016	33.52	38.88	5.36	4832.43
			4/19/2016	33.67	38.29	4.62	4832.42
			4/26/2016	33.26	38.05	4.79	4832.80
			5/5/2016	33.60	36.30	2.70	4832.87
			6/6/2016	33.85	38.85	5.00	4832.17
			6/20/2016	33.80	38.30	4.50	4832.32
			8/11/2016	35.02	38.32	3.30	4831.33
			9/15/2016	33.89	37.57	3.68	4832.39
			12/15/2016	34.10	35.90	1.80	4832.55
			3/16/2017	34.27	35.91	1.64	4832.41
			6/15/2017	34.27	35.88	1.61	4832.41
9/14/2017	NG	NG	NG	NG			
MW-21	4864.0	40.15	6/29/2017	NA	Dry	0.00	
			9/14/2017	30.78	32.29	1.51	4832.92
MW-22	4866.9	39.68	6/29/2017	35.69	35.88	0.19	4831.17
			9/14/2017	33.97	34.09	0.12	4832.91

NA - Not Applicable
 NG - Not Gauged
 DTW - Depth to Water
 ft btoc - Feet Below Top of Casing
 ft amsl - Feet Above Mean Sea Level



Table 4 - PSH Removal

**Whiting Oil and Gas Corporation
Nelson C-1
Weld County, Colorado**

Well ID	Date Gauged	Estimated PSH Recovered (gallons)	Cumulative PSH Recovered (gallons)
MW-1	Nov-15	0.00	0.00
	Dec-15	0.03	0.03
	Jan-16	0.00	0.03
	Feb-16	0.03	0.06
	Mar-16	0.00	0.06
	Apr-16	0.00	0.06
	May-16	0.00	0.06
	Jun-16	0.04	0.10
	Jul-17	0.03	0.13
MW-2	Dec-15	0.03	0.03
	Jan-16	0.00	0.03
	Feb-16	0.17	0.20
	Mar-16	0.00	0.20
	Apr-16	0.01	0.21
	May-16	0.00	0.21
	Jun-16	0.04	0.25
	Mar-17	0.03	0.28
	May-17	0.08	0.36
	Jun-17	0.01	0.38
	Jul-17	0.00	0.38
	Aug-17	0.00	0.38



Table 4 - PSH Removal

**Whiting Oil and Gas Corporation
Nelson C-1
Weld County, Colorado**

Well ID	Date Gauged	Estimated PSH Recovered (gallons)	Cumulative PSH Recovered (gallons)
MW-3	Dec-15	2.47	2.47
	Jan-16	2.02	4.49
	Feb-16	9.63	14.12
	Mar-16	1.93	16.05
	Apr-16	0.91	16.96
	May-16	0.48	17.44
	Jun-16	2.12	19.56
	Jul-16	4.50	24.06
	Aug-16	2.75	26.81
	Sep-16	2.47	29.29
	Oct-16	3.14	32.43
	Nov-16	2.08	34.51
	Dec-16	2.17	36.67
	Jan-17	1.98	38.65
	Feb-17	1.72	40.37
	Mar-17	1.47	41.84
	Apr-17	1.83	43.67
	May-17	1.49	45.16
Jun-17	1.67	46.83	
Jul-17	1.14	47.96	
Aug-17	1.00	48.96	
MW-4	Dec-15	0.00	0.00
	Jan-16	0.00	0.00
	Feb-16	0.00	0.00
	Mar-16	0.00	0.00
	Apr-16	0.00	0.00
	May-16	0.00	0.00
	Jun-16	0.00	0.00
	Jul-16	0.00	0.00



Table 4 - PSH Removal

**Whiting Oil and Gas Corporation
Nelson C-1
Weld County, Colorado**

Well ID	Date Gauged	Estimated PSH Recovered (gallons)	Cumulative PSH Recovered (gallons)
MW-5	Jun-16	1.50	1.50
	Jul-16	7.00	8.50
	Aug-16	2.41	10.91
	Sep-16	1.55	12.46
	Oct-16	2.49	14.95
	Nov-16	2.42	17.37
	Dec-16	2.67	20.04
	Jan-17	1.86	21.90
	Feb-17	2.20	24.10
	Mar-17	1.08	25.18
	Apr-17	1.96	27.14
	May-17	1.97	29.11
	Jun-17	1.83	30.95
	Jul-17	1.03	31.97
Aug-17	0.94	32.92	
MW-6	Jun-16	6.98	6.98
	Jul-16	10.50	17.48
	Aug-16	4.10	21.58
	Sep-16	2.56	24.14
	Oct-16	4.05	28.19
	Nov-16	3.05	31.24
	Dec-16	2.51	33.75
	Jan-17	1.60	35.36
	Feb-17	2.56	37.91
	Mar-17	1.06	38.97
	Apr-17	1.35	40.32
	May-17	1.08	41.40
	Jun-17	1.44	42.84
	Jul-17	0.64	43.48
Aug-17	0.53	44.01	



Table 4 - PSH Removal

**Whiting Oil and Gas Corporation
Nelson C-1
Weld County, Colorado**

Well ID	Date Gauged	Estimated PSH Recovered (gallons)	Cumulative PSH Recovered (gallons)
MW-7	Jun-16	3.73	3.73
	Jul-16	10.50	14.23
	Aug-16	3.06	17.29
	Sep-16	2.75	20.04
	Oct-16	2.70	22.74
	Nov-16	2.14	24.88
	Dec-16	1.78	26.66
	Jan-17	1.77	28.43
	Feb-17	2.23	30.66
	Mar-17	1.11	31.77
	Apr-17	1.71	33.48
	May-17	1.36	34.84
	Jun-17	1.06	35.90
	Jul-17	0.58	36.48
Aug-17	0.61	37.09	
MW-17	Jun-16	9.03	9.03
	Jul-16	22.00	31.03
	Aug-16	7.68	38.71
	Sep-16	3.86	42.57
	Oct-16	6.60	49.17
	Nov-16	5.13	54.30
	Dec-16	5.03	59.32
	Jan-17	2.91	62.23
	Feb-17	2.84	65.07
	Mar-17	3.06	68.13
	Apr-17	4.11	72.24
	May-17	3.96	76.20
	Jun-17	2.75	78.95
	Jul-17	1.54	80.49
Aug-17	0.78	81.27	



Table 4 - PSH Removal

**Whiting Oil and Gas Corporation
Nelson C-1
Weld County, Colorado**

Well ID	Date Gauged	Estimated PSH Recovered (gallons)	Cumulative PSH Recovered (gallons)
MW-20	Jun-16	7.27	7.27
	Jul-16	36.00	43.27
	Aug-16	27.11	70.38
	Sep-16	12.30	82.68
	Oct-16	13.42	96.10
	Nov-16	8.59	104.69
	Dec-16	6.27	110.97
	Jan-17	5.01	115.97
	Feb-17	3.75	119.72
	Mar-17	2.67	122.39
	Apr-17	5.86	128.25
	May-17	5.89	134.14
	Jun-17	4.83	138.97
	Jul-17	2.92	141.89
Aug-17	3.56	145.45	
MW-22	Jul-17	0.15	0.15
	Aug-17	0.06	0.21
Site Total			390.41

PSH - Phase Separated Hydrocarbons

Attachment 3
Analytical Reports

Summit Scientific

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

September 21, 2017

Jennifer Galles
Talon/LPE
1811 E Mulberry
Ft Collins, CO 80524
RE: Nelson C1

Enclosed are the results of analyses for samples received by Summit Scientific on 09/15/17 15:50. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'Ben Shrewsbury', with a long, sweeping horizontal line extending to the right.

Ben Shrewsbury
Laboratory Manager



Talon/LPE
1811 E Mulberry
Ft Collins CO, 80524

Project: Nelson C1

Project Number: 701530.020.07
Project Manager: Jennifer Galles

Reported:
09/21/17 15:18

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW16	1709144-01	Water	09/15/17 11:00	09/15/17 15:50
MW15	1709144-02	Water	09/15/17 12:20	09/15/17 15:50
MW14	1709144-03	Water	09/15/17 12:43	09/15/17 15:50
MW13	1709144-04	Water	09/15/17 11:35	09/15/17 15:50
MW12	1709144-05	Water	09/15/17 12:50	09/15/17 15:50
MW11	1709144-06	Water	09/15/17 11:30	09/15/17 15:50
MW10	1709144-07	Water	09/15/17 11:24	09/15/17 15:50
MW9	1709144-08	Water	09/15/17 12:27	09/15/17 15:50
MW8	1709144-09	Water	09/15/17 11:14	09/15/17 15:50
MW2	1709144-10	Water	09/15/17 12:03	09/15/17 15:50
MW1	1709144-11	Water	09/15/17 12:11	09/15/17 15:50
MW22	1709144-12	Water	09/15/17 11:42	09/15/17 15:50
MW19	1709144-13	Water	09/15/17 11:53	09/15/17 15:50
MW18	1709144-14	Water	09/15/17 12:35	09/15/17 15:50

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

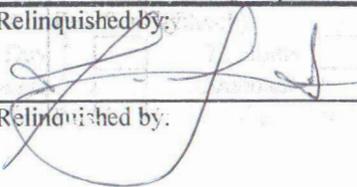
Summit Scientific

1709144.1

741 Corporate Circle Suite I ♦ Golden, Colorado 80401
303-277-9310 ♦ 303-374-5933 Fax

Client: Talon/LPE - Bill to Whiting
Address: 1811 East Mulberry
City/State/Zip: Fort Collins, CO 80524
Phone: 970-818-5330 Fax: _____
Sampler Name: Jason Leverton/Ken Rogowski

Project Manager: Jennifer Galles
E-Mail: jgalles@talonlpe.com
Project Name: Nelson C-1
Project Number: 701530.020.07

Sample Description	Date Sampled	Time Sampled	Number of Containers	Preservative				Matrix				Analyze For:				Special Instructions		
				HCl	HNO ₃	None	Other (Specify)	Groundwater	Soil	Air - Canister Serial #	Other (Specify)	BTEX						
MW 16	9/15/2017	11:00	3	x				x										
MW 15	9/15/2017	12:20	3	x				x										
MW 14	9/15/2017	12:43	3	x				x										
MW 13	9/15/2017	11:35	3	x				x										
MW 12	9/15/2017	12:50	3	x				x										
MW 11	9/15/2017	11:30	3	x				x										
MW 10	9/15/2017	11:24	3	x				x										
MW 9	9/15/2017	12:27	3	x				x										
MW 8	9/15/2017	11:14	3	x				x										
MW 2	9/15/2017	12:03	3	x				x										
Relinquished by: 				Date/Time: <u>9.15.17 15:50</u>				Received by:  <u>9.15.17 15:50</u>				Turn Around Time (Check)						
Relinquished by:				Date/Time:				Received by:				Date/Time:						
Relinquished by:				Date/Time:				Received in Lab by:				Date/Time:						
												Temperature Upon Receipt: <u>17.1</u>						
												Intact: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>						

1709144

Sample Receipt Checklist

S2 Work Order: _____

Client: TALON Client Project ID: NELSON C1

Shipped Via: P.U. Airbill #: _____
(UPS, FedEx, Hand Delivered, Pick-up, etc.)

Matrix (check all that apply): Air Soil/Solid Water Other: _____
(Describe)

Cooler ID				
Temp (°C)	17.1			

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C ⁽¹⁾ ? NOTE: If samples are delivered the same day of sampling, this requirement is met provided that there is evidence that cooling has begun.	<input checked="" type="checkbox"/>			
Were all samples received intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
If custody seals are present, are they intact ⁽¹⁾ ?			<input checked="" type="checkbox"/>	
Are short holding time analytes or samples with HTs due within 48 hours present?			<input checked="" type="checkbox"/>	
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.		<input checked="" type="checkbox"/>		
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ? Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect	<input checked="" type="checkbox"/>			HCL
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ? Record the pH in Comments.			<input checked="" type="checkbox"/>	
If dissolved metals are requested, were samples field filtered?			<input checked="" type="checkbox"/>	

Additional Comments (if any):

⁽¹⁾ If NO, then contact the client before proceeding with analysis and note in case narrative.

Murif.
Custodian Printed Name

MS 9-15-17
Signature or Initials of Custodian

18:00
Date/Time



Talon/LPE
1811 E Mulberry
Ft Collins CO, 80524

Project: Nelson C1
Project Number: 701530.020.07
Project Manager: Jennifer Galles

Reported:
09/21/17 15:18

MW16
1709144-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/15/17 11:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	10000	100	ug/l	100	1709163	09/20/17	09/20/17	EPA 8260B	
Toluene	12000	100	"	"	"	"	"	"	
Ethylbenzene	760	100	"	"	"	"	"	"	
Xylenes (total)	5900	200	"	"	"	"	"	"	

Date Sampled: **09/15/17 11:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		93.7 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		98.6 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		95.2 %	45-146		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Talon/LPE
 1811 E Mulberry
 Ft Collins CO, 80524

Project: Nelson C1
 Project Number: 701530.020.07
 Project Manager: Jennifer Galles

Reported:
 09/21/17 15:18

MW15
1709144-02 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/15/17 12:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	3800	100	ug/l	100	1709163	09/20/17	09/20/17	EPA 8260B	
Toluene	1300	100	"	"	"	"	"	"	
Ethylbenzene	2.9	1.0	"	1	"	"	"	"	
Xylenes (total)	3100	200	"	100	"	"	"	"	

Date Sampled: **09/15/17 12:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		91.3 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		102 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		93.3 %	45-146		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Talon/LPE
 1811 E Mulberry
 Ft Collins CO, 80524

Project: Nelson C1
 Project Number: 701530.020.07
 Project Manager: Jennifer Galles

Reported:
 09/21/17 15:18

MW14
1709144-03 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/15/17 12:43**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	1900	100	ug/l	100	1709163	09/20/17	09/20/17	EPA 8260B	
Toluene	290	100	"	"	"	"	"	"	
Ethylbenzene	270	1.0	"	1	"	"	"	"	
Xylenes (total)	620	200	"	100	"	"	"	"	

Date Sampled: **09/15/17 12:43**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		98.1 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		98.9 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		96.2 %	45-146		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Talon/LPE
1811 E Mulberry
Ft Collins CO, 80524

Project: Nelson C1
Project Number: 701530.020.07
Project Manager: Jennifer Galles

Reported:
09/21/17 15:18

MW13
1709144-04 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/15/17 11:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1709163	09/20/17	09/20/17	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **09/15/17 11:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		91.0 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		96.9 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		92.3 %	45-146		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Talon/LPE
1811 E Mulberry
Ft Collins CO, 80524

Project: Nelson C1
Project Number: 701530.020.07
Project Manager: Jennifer Galles

Reported:
09/21/17 15:18

MW12
1709144-05 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/15/17 12:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1709163	09/20/17	09/20/17	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **09/15/17 12:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		96.3 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		98.0 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		92.6 %	45-146		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Talon/LPE
1811 E Mulberry
Ft Collins CO, 80524

Project: Nelson C1
Project Number: 701530.020.07
Project Manager: Jennifer Galles

Reported:
09/21/17 15:18

MW11
1709144-06 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/15/17 11:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1709163	09/20/17	09/20/17	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **09/15/17 11:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		89.2 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		95.9 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		92.9 %	45-146		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Talon/LPE
 1811 E Mulberry
 Ft Collins CO, 80524

Project: Nelson C1
 Project Number: 701530.020.07
 Project Manager: Jennifer Galles

Reported:
 09/21/17 15:18

MW10
1709144-07 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/15/17 11:24**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1709163	09/20/17	09/20/17	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **09/15/17 11:24**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		92.1 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		96.7 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		92.3 %	45-146		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Talon/LPE
1811 E Mulberry
Ft Collins CO, 80524

Project: Nelson C1
Project Number: 701530.020.07
Project Manager: Jennifer Galles

Reported:
09/21/17 15:18

MW9
1709144-08 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/15/17 12:27**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1709163	09/20/17	09/20/17	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **09/15/17 12:27**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		96.5 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		97.4 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		92.8 %	45-146		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Talon/LPE
 1811 E Mulberry
 Ft Collins CO, 80524

Project: Nelson C1
 Project Number: 701530.020.07
 Project Manager: Jennifer Galles

Reported:
 09/21/17 15:18

MW8
1709144-09 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/15/17 11:14**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	13000	100	ug/l	100	1709163	09/20/17	09/20/17	EPA 8260B	
Toluene	9400	100	"	"	"	"	"	"	
Ethylbenzene	18	1.0	"	1	"	"	"	"	
Xylenes (total)	5000	200	"	100	"	"	"	"	

Date Sampled: **09/15/17 11:14**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		95.3 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		98.6 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		95.0 %	45-146		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Talon/LPE
 1811 E Mulberry
 Ft Collins CO, 80524

Project: Nelson C1
 Project Number: 701530.020.07
 Project Manager: Jennifer Galles

Reported:
 09/21/17 15:18

MW2
1709144-10 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/15/17 12:03**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	14000	100	ug/l	100	1709163	09/20/17	09/20/17	EPA 8260B	
Toluene	16000	100	"	"	"	"	"	"	
Ethylbenzene	410	100	"	"	"	"	"	"	
Xylenes (total)	6200	200	"	"	"	"	"	"	

Date Sampled: **09/15/17 12:03**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		96.6 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		99.3 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		93.6 %	45-146		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Talon/LPE
 1811 E Mulberry
 Ft Collins CO, 80524

Project: Nelson C1
 Project Number: 701530.020.07
 Project Manager: Jennifer Galles

Reported:
 09/21/17 15:18

MW1
1709144-11 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/15/17 12:11**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	13000	100	ug/l	100	1709163	09/20/17	09/20/17	EPA 8260B	
Toluene	11000	100	"	"	"	"	"	"	
Ethylbenzene	820	100	"	"	"	"	"	"	
Xylenes (total)	5700	200	"	"	"	"	"	"	

Date Sampled: **09/15/17 12:11**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		100 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		98.6 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		95.3 %	45-146		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Talon/LPE
 1811 E Mulberry
 Ft Collins CO, 80524

Project: Nelson C1
 Project Number: 701530.020.07
 Project Manager: Jennifer Galles

Reported:
 09/21/17 15:18

MW22
1709144-12 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/15/17 11:42**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	4000	100	ug/l	100	1709163	09/21/17	09/21/17	EPA 8260B	
Toluene	14000	100	"	"	"	"	"	"	
Ethylbenzene	840	100	"	"	"	"	"	"	
Xylenes (total)	11000	200	"	"	"	"	"	"	

Date Sampled: **09/15/17 11:42**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		105 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		100 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		100 %	45-146		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Talon/LPE
1811 E Mulberry
Ft Collins CO, 80524

Project: Nelson C1
Project Number: 701530.020.07
Project Manager: Jennifer Galles

Reported:
09/21/17 15:18

MW19
1709144-13 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/15/17 11:53**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	13	1.0	ug/l	1	1709163	09/21/17	09/21/17	EPA 8260B	
Toluene	1.7	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	3.7	2.0	"	"	"	"	"	"	

Date Sampled: **09/15/17 11:53**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		100 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		97.4 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		94.9 %	45-146		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Talon/LPE
 1811 E Mulberry
 Ft Collins CO, 80524

Project: Nelson C1
 Project Number: 701530.020.07
 Project Manager: Jennifer Galles

Reported:
 09/21/17 15:18

MW18
1709144-14 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/15/17 12:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	120	1.0	ug/l	1	1709163	09/21/17	09/21/17	EPA 8260B	
Toluene	7.1	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **09/15/17 12:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		103 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		100 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		92.8 %	45-146		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Talon/LPE
1811 E Mulberry
Ft Collins CO, 80524

Project: Nelson C1
Project Number: 701530.020.07
Project Manager: Jennifer Galles

Reported:
09/21/17 15:18

Volatile Organic Compounds by EPA Method 8260B - Quality Control
Summit Scientific

Analyte	Reporting			Spike	Source	%REC		RPD		Notes
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	

Batch 1709163 - EPA 5030 Water MS

Blank (1709163-BLK1)

Prepared & Analyzed: 09/20/17

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	2.0	"							
Surrogate: 1,2-Dichloroethane-d4	12.9		"	13.3		96.5	37-154			
Surrogate: Toluene-d8	13.0		"	13.3		97.4	45-149			
Surrogate: 4-Bromofluorobenzene	12.3		"	13.3		92.5	45-146			

LCS (1709163-BS1)

Prepared & Analyzed: 09/20/17

Benzene	28.4	1.0	ug/l	33.3		85.2	51-132			
Toluene	35.3	1.0	"	33.3		106	51-138			
Ethylbenzene	38.8	1.0	"	33.1		117	58-146			
m,p-Xylene	81.1	2.0	"	66.5		122	57-144			
o-Xylene	37.4	1.0	"	32.7		114	53-146			
Surrogate: 1,2-Dichloroethane-d4	13.0		"	13.3		97.8	37-154			
Surrogate: Toluene-d8	12.9		"	13.3		96.6	45-149			
Surrogate: 4-Bromofluorobenzene	12.6		"	13.3		94.1	45-146			

Matrix Spike (1709163-MS1)

Source: 1709144-01

Prepared & Analyzed: 09/20/17

Benzene	46.7	1.0	ug/l	33.3	10500	NR	34-141			
Toluene	74.1	1.0	"	33.3	12000	NR	27-151			
Ethylbenzene	43.1	1.0	"	33.1	760	NR	29-160			
m,p-Xylene	96.5	2.0	"	66.5	4260	NR	20-166			
o-Xylene	44.8	1.0	"	32.7	1630	NR	33-159			
Surrogate: 1,2-Dichloroethane-d4	13.1		"	13.3		98.0	37-154			
Surrogate: Toluene-d8	13.2		"	13.3		98.9	45-149			
Surrogate: 4-Bromofluorobenzene	12.2		"	13.3		91.2	45-146			

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Talon/LPE
 1811 E Mulberry
 Ft Collins CO, 80524

Project: Nelson C1
 Project Number: 701530.020.07
 Project Manager: Jennifer Galles

Reported:
 09/21/17 15:18

Volatile Organic Compounds by EPA Method 8260B - Quality Control
Summit Scientific

Analyte	Reporting			Spike	Source	%REC			RPD	Notes
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	

Batch 1709163 - EPA 5030 Water MS

Matrix Spike Dup (1709163-MSD1)	Source: 1709144-01			Prepared & Analyzed: 09/20/17						
Benzene	42.9	1.0	ug/l	33.3	10500	NR	34-141	8.42	32	
Toluene	66.2	1.0	"	33.3	12000	NR	27-151	11.2	25	
Ethylbenzene	41.4	1.0	"	33.1	760	NR	29-160	4.05	50	
m,p-Xylene	90.4	2.0	"	66.5	4260	NR	20-166	6.55	36	
o-Xylene	42.1	1.0	"	32.7	1630	NR	33-159	6.30	26	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>14.0</i>		<i>"</i>	<i>13.3</i>		<i>105</i>	<i>37-154</i>			
<i>Surrogate: Toluene-d8</i>	<i>12.9</i>		<i>"</i>	<i>13.3</i>		<i>97.1</i>	<i>45-149</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>12.2</i>		<i>"</i>	<i>13.3</i>		<i>91.3</i>	<i>45-146</i>			

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Talon/LPE
1811 E Mulberry
Ft Collins CO, 80524

Project: Nelson C1
Project Number: 701530.020.07
Project Manager: Jennifer Galles

Reported:
09/21/17 15:18

Notes and Definitions

DET Analyte DETECTED
ND Analyte NOT DETECTED at or above the reporting limit
NR Not Reported
dry Sample results reported on a dry weight basis
RPD Relative Percent Difference

Summit Scientific

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

October 11, 2017

Jennifer Galles
Talon/LPE
1811 E Mulberry
Ft Collins, CO 80524
RE: Nelson C1

Enclosed are the results of analyses for samples received by Summit Scientific on 10/04/17 12:42. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Paul Shrewsbury For Ben Shrewsbury
Laboratory Manager



Talon/LPE
1811 E Mulberry
Ft Collins CO, 80524

Project: Nelson C1

Project Number: 701530.020.07
Project Manager: Jennifer Galles

Reported:
10/11/17 10:55

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-4	1710041-01	Water	10/03/17 12:10	10/04/17 12:42

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Sample Receipt Checklist

S2 Work Order: 1710041

Client: TALON Client Project ID: NELSON G-1

Shipped Via: P.U. Airbill #: _____
(UPS, FedEx, Hand Delivered, Pick-up, etc.)

Matrix (check all that apply): Air Soil/Solid Water Other: _____
(Describe)

Cooler ID				
Temp (°C)	5.9			

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature just above 0°C to ≤ 6°C ⁽¹⁾ ? NOTE: If samples are delivered the same day of sampling, this requirement is waived provided that there is evidence that cooling has begun.	X			
Were all samples received intact ⁽¹⁾ ?	X			
Was adequate sample volume provided ⁽¹⁾ ?	X			
If custody seals are present, are they intact ⁽¹⁾ ?			X	
Are short holding time analytes or samples with HTs due within 48 hours present?			X	
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	X			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	X			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	X			
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	X			
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.		X		
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ? Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect	X			HCl
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ? Record the pH in Comments.			X	
If dissolved metals are requested, were samples field filtered?			X	
Additional Comments (if any):				

⁽¹⁾ If NO, then contact the client before proceeding with analysis and note in case narrative.

Murip.
Custodian Printed Name

MP 10-4-17
Signature or Initials of Custodian

15:00
Date/Time



Talon/LPE
 1811 E Mulberry
 Ft Collins CO, 80524

Project: Nelson C1
 Project Number: 701530.020.07
 Project Manager: Jennifer Galles

Reported:
 10/11/17 10:55

MW-4
1710041-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/03/17 12:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	7700	100	ug/l	100	1710049	10/07/17	10/07/17	EPA 8260B	
Toluene	7900	100	"	"	"	"	"	"	
Ethylbenzene	730	10	"	10	"	"	"	"	
Xylenes (total)	4900	20	"	"	"	"	"	"	

Date Sampled: **10/03/17 12:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		97.4 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		98.4 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		99.5 %	45-146		"	"	"	"	

Summit Scientific

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Project: Nelson C1
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Volatile Organic Compounds by EPA Method 8260B - Quality Control
Summit Scientific

Analyte	Reporting			Spike	Source	%REC		RPD		Notes
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	

Batch 1710049 - EPA 5030 Water MS

Blank (1710049-BLK1)

Prepared & Analyzed: 10/06/17

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	2.0	"							
Surrogate: 1,2-Dichloroethane-d4	13.5		"	13.3		102	37-154			
Surrogate: Toluene-d8	13.3		"	13.3		99.9	45-149			
Surrogate: 4-Bromofluorobenzene	12.8		"	13.3		96.3	45-146			

LCS (1710049-BS1)

Prepared & Analyzed: 10/06/17

Benzene	24.0	1.0	ug/l	33.3		72.1	51-132			
Toluene	28.4	1.0	"	33.3		85.4	51-138			
Ethylbenzene	36.0	1.0	"	33.1		109	58-146			
m,p-Xylene	67.9	2.0	"	66.5		102	57-144			
o-Xylene	33.9	1.0	"	32.7		104	53-146			
Surrogate: 1,2-Dichloroethane-d4	14.3		"	13.3		107	37-154			
Surrogate: Toluene-d8	12.7		"	13.3		95.3	45-149			
Surrogate: 4-Bromofluorobenzene	13.1		"	13.3		98.1	45-146			

Matrix Spike (1710049-MS1)

Source: 1710037-01

Prepared & Analyzed: 10/06/17

Benzene	24.1	1.0	ug/l	33.3	ND	72.3	34-141			
Toluene	28.8	1.0	"	33.3	ND	86.3	27-151			
Ethylbenzene	35.7	1.0	"	33.1	ND	108	29-160			
m,p-Xylene	67.0	2.0	"	66.5	ND	101	20-166			
o-Xylene	33.8	1.0	"	32.7	ND	103	33-159			
Surrogate: 1,2-Dichloroethane-d4	14.2		"	13.3		107	37-154			
Surrogate: Toluene-d8	13.0		"	13.3		97.7	45-149			
Surrogate: 4-Bromofluorobenzene	13.0		"	13.3		97.4	45-146			

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1811 E Mulberry
Ft Collins CO, 80524

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Volatile Organic Compounds by EPA Method 8260B - Quality Control
Summit Scientific

Analyte	Reporting		Spike Level	Source Result	%REC		RPD		Notes
	Result	Limit			Units	%REC	Limits	RPD	

Batch 1710049 - EPA 5030 Water MS

Matrix Spike Dup (1710049-MSD1)	Source: 1710037-01			Prepared & Analyzed: 10/06/17					
Benzene	24.3	1.0	ug/l	33.3	ND	72.9	34-141	0.826	32
Toluene	28.8	1.0	"	33.3	ND	86.5	27-151	0.278	25
Ethylbenzene	36.3	1.0	"	33.1	ND	110	29-160	1.56	50
m,p-Xylene	67.8	2.0	"	66.5	ND	102	20-166	1.25	36
o-Xylene	34.4	1.0	"	32.7	ND	105	33-159	1.76	26
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>15.3</i>		<i>"</i>	<i>13.3</i>		<i>115</i>	<i>37-154</i>		
<i>Surrogate: Toluene-d8</i>	<i>12.8</i>		<i>"</i>	<i>13.3</i>		<i>95.8</i>	<i>45-149</i>		
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>13.5</i>		<i>"</i>	<i>13.3</i>		<i>101</i>	<i>45-146</i>		

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Notes and Definitions

DET Analyte DETECTED
ND Analyte NOT DETECTED at or above the reporting limit
NR Not Reported
dry Sample results reported on a dry weight basis
RPD Relative Percent Difference