REPORT

FIRST BIANNUAL GROUNDWATER MONITORING REPORT (FORM 1216)

February 12, 2014 Event

Lovington 66
PSTB Facility #1489
503 S. Main Street
Lovington, New Mexico

Submitted To: NMED-PSTB
2905 Rodeo Park Drive East, Building 1
Santa Fe, NM 87505

On Behalf of: Jack Walstad Oil Company
c/o Robert Murrell
2317 Tuttington Circle
Oklahoma City, OK 73170

Submitted By: Golder Associates Inc.
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1 Copy – Jack Walstad Oil Company
2 Copies – Golder Associates Inc.

February 28, 2014

130-2645

Golder Associates

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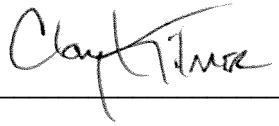
Form 1216
First Biannual Groundwater Monitoring Report

Site:	Lovington 66
Responsible Party:	Jack Walstad Oil Company Inc., Robert C. Murrell
Responsible Party Mailing Address:	2317 Tuttington Circle Oklahoma City, OK 73170
Facility ID:	1489
Release ID:	1182
Site Address:	424 S. Main St., Lovington, NM
Author/Consulting Company:	Golder Associates Inc.
Date of Report:	February 28, 2014
Date of Confirmation of Release:	December 5, 1991

STATEMENT OF FAMILIARITY

I, the undersigned, am personally familiar with the information submitted in this report and the attached documents and attest that it is complete and true to the best of my knowledge.

Signature:  Date: February 28, 2014

Name: Clay Kilmer
Affiliation: Golder Associates Inc.
Title: Project Manager

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1.0 INTRODUCTION

On behalf of Jack Walstad Oil Company, Golder Associates Inc. (Golder) has completed the first biannual groundwater monitoring event at the former Lovington 66 site. The monitoring event was completed in accordance with the *Work Plan for Semi-Annual Monitoring and Quarterly Free Product Recovery, Lovington 66 Site (LUST ID1182), Lovington, New Mexico* dated October 24, 2013. This work plan satisfies the requirements stated in the New Mexico Administrative Code, Title 20, Chapter 5, Section 12 and the New Mexico Environment Department (NMED) Petroleum Storage Tank Bureau (PSTB) Guidelines for Corrective Action (GCA). The work plan was approved by the NMED PSTB on November 13, 2013 under work plan identification number (WPID #) 16915. This is the first deliverable under WPID #16915, and is identified as deliverable ID 16915-1.

The former Lovington 66 Site is located at 424 South Main Street, Lovington, New Mexico (**Figure 1**). This site is bounded by Highway 83/Avenue D on the south, and Main Street on the east. Avenue C is north of the site, and west of the site is commercial property. Southeast of the site is an Allsup's convenience store and self-service gasoline station (Allsup's #109), which is also a leaking underground storage tank site. A self-service gasoline station is located south of the site. The original Lovington 66 building has been demolished, and presently a McDonald's restaurant is located on the property. The former Lovington 66 was located on the southern portion of the property that now is the parking lot for McDonald's. The Lovington 66 dissolved phase plume has migrated southeast across the intersection of Main and Avenue D and is commingled with the Allsup's #109 site dissolved phase plume.

On January 21, 2014 fluid levels were measured in 17 Lovington 66 monitoring wells (W-1, W-2, W-3, W-5, W-7, W-8, W-9, W-11, W-12, W-13, W-14, W-15, W-16, W-18, W-19, W-20, and W-21), and in 1 well on the Allsup's #109 site (MW-1). Groundwater samples were collected from 9 Lovington 66 monitoring wells (W-5, W-8, W-9, W-11, W-14, W-16, W-19, W-20, and W-21) and analyzed for volatile organic compounds (VOCs), including benzene, toluene, ethylbenzene, and xylenes (BTEX), ethylene dichloride (EDC), methyl tertiary butyl ether (MTBE), and total naphthalenes by Environmental Protection Agency (EPA) Method 8260. In addition, pH, specific conductance, dissolved oxygen (DO), and temperature were measured in the field. The following sections provide a detailed summary of the results of the first biannual monitoring event.

2.0 ACTIVITIES PERFORMED DURING THIS PERIOD

This section provides a brief description of previous corrective action activities conducted at the site, and monitoring activities performed during this monitoring period.

2.1 Brief Description of Remediation System and Date Installed

A remediation system has not been installed at this site. Previous corrective action activities that have occurred at the site include the following:

- July 1991 – AEI Tank, Inc. (AEI) conducted a site assessment that included seven soil borings advanced within the underground storage tank (UST) backfill or UST perimeter, and five borings in or near product pipe trenches. Hydrocarbon contamination was observed.
- November 1991 – AEI removed five USTs that contained diesel, unleaded fuels, and used oil, as well as the associated product piping and fuel dispensers. Hydrocarbon contamination was observed in the location of the dispensers and the location of the diesel tank. It was determined that a release likely occurred from overfilling the USTs and from the dispensers and product lines (a large section of product piping had been replaced).
- November and December 1991 – AEI excavated approximately 600 cubic yards of contaminated soil from product line trenches, dispenser islands and tank excavations.
- December 1991 – AEI attempted to delineate the vertical extent of contamination by installing one soil boring. The location of this soil boring was never documented. During the drilling of the boring auger refusal was encountered at 40 feet below ground surface (bgs).
- February 1992 – AEI installed one groundwater monitoring well. Groundwater sample results indicated that groundwater contamination was present above New Mexico Water Quality Control Commission (NMWQCC) standards.
- March 1992 – AEI installed two additional monitor wells to determine the extent of dissolved phase hydrocarbon contamination. Both wells had dissolved phase hydrocarbon concentrations well above NMWQCC standards.
- June 1992 – Billings & Associates, Inc (BAI) completed an Interim Hydrogeologic Investigation Report (On-site). During this investigation six soil borings (B-4 through B-9) were advanced at the site to a depth of 40 feet bgs. Heated headspace measurements above action levels were present in all borings except B-8. Non-Aqueous Phase Liquid (NAPL) was present in the three monitor wells installed by AEI. Three additional monitor wells W-4, W-5, and W-6 were installed. The three new wells exceeded NMWQCC standards.
- September 1993 – BAI completed a 2nd Interim Hydrogeologic Investigation Report. During this investigation free product recovery efforts commenced using BAI's Product Recovery Filter system. In addition six new monitor wells (W-7 through W-12) and vertical extent well V-1, were installed.
- June 1993 – BAI submitted the 3rd Interim Hydrogeologic Investigation Report. Five wells (W-13 through W-17) were installed to delineate the dissolved phase plume. NAPL was present in vertical extent well V-1, which Billings attributed to leaking well casing.
- August 2006 – Golder sampled the Lovington 66 wells as part of an investigation conducted at the Allsup's #109 site located downgradient from the Lovington 66 site.

- November 2007 – Golder completed a Continued Secondary Investigation in which three downgradient wells (W-19, W-20, and W-21) were installed and a NAPL bail down test was completed on wells W-2 and W-3. The downgradient extent of contamination was delineated.
- August 2008 – Golder completed four quarters of groundwater monitoring at the Lovington 66 site.
- February 2009 – Golder completed the first biannual monitoring event and associated quarterly product recovery from wells W-1, W-2, W-3, and V-1. The site data for the First Biannual Groundwater Monitoring Report was completed in January, 2009.
- August 2009 – Golder completed the second biannual monitoring event and associated quarterly product recovery from wells W-1, W-2 and W-3. The site data for the second Biannual Groundwater Monitoring Report was completed in July, 2009.

2.2 Description of Activities Performed to Keep System Operating Properly

No active remediation activities have been completed at the site.

2.3 Monitoring Activities Performed

2.3.1 NAPL Gauging, Recovery and Disposal

NAPL remains in three of the Lovington 66 monitor wells (W-1, W-2, and W-3) and was also present in well V-1 up until this well was decommissioned in September 2008. Golder subcontracted CMB Environmental (CMB) to gauge NAPL and to hand bail NAPL from wells W-1, W-2 and W-3 on a quarterly basis as part of the semi-annual monitoring and quarterly free product recovery project scope. The first quarterly NAPL bailing event was conducted as part of the first biannual groundwater monitoring event. **Table 1** contains a summary of the NAPL thicknesses measured in each well before and after bailing during the bailing events conducted in 2008 and 2009, as well as the current event conducted February 12, 2014. A total of approximately 17.5 gallons of NAPL was recovered from the wells during the combined 2008 and 2009 events. Approximately 28 gallons of NAPL were recovered from wells W-1, W-2 and W-3 during the NAPL recovery event conducted on February 12, 2014. The NAPL and highly contaminated groundwater that were recovered during NAPL bailing at the site on February 12, 2014 were transported to the Gandy Marley disposal facility in Roswell; a copy of the documentation of disposal is included in **Appendix A.**

Cumulative water level and NAPL thickness data for the monitoring wells in the Lovington 66 site network, as well as the Allsup's No. 109 site network are included in **Table 2**. Hydrographs showing water levels and NAPL thickness trends in selected wells are included in **Appendix B**.

2.3.2 Groundwater Gauging and Sampling Activities

The first biannual groundwater monitoring event under WPID # 16915-1 was conducted on January 21, 2014. Prior to collecting groundwater samples, fluid levels in all existing Lovington 66 wells (except W-10), and in the Allsup's #109 well MW-1 were measured with an electronic water level meter or

interface probe. Well W-10 is located in the middle of Main Street and it was determined that it was unsafe to measure fluid levels in this well. Due to major pavement rework at the Allsup's #109 site, wells MW-2 and MW-3 on that site could not be measured. Well MW-2 was determined to have been destroyed; MW-3 was found to be intact, but the vault's bolts had been occluded with new concrete and the well could not be entered.

Table 2 provides a summary of the groundwater level and NAPL measurements collected from the monitoring wells. A potentiometric surface map was prepared using the collected data and is included in **Figure 2**. Hydrographs for selected site monitor wells are provided in **Appendix B**.

Nine Lovington 66 monitoring wells (W-5, W-8, W-9, W-11, W-14, W-16, W-19, W-20, and W-21) were purged and sampled with disposable polyethylene bailers following the measurement of fluid levels in the wells. The wells were sampled from least to most contaminated where possible to minimize cross-contamination. All equipment was decontaminated between wells with an Alconox™ solution to prevent cross-contamination. Purge water was ground discharged in accordance with Section 1.7.2 of the GCA. Sampling was accomplished by carefully pouring groundwater from new disposable bailers into the sample containers.

Golder's contractor, CMB collected groundwater samples from site wells using bailers. CMB measured field parameters of produced water during purging and prior to sampling. The multiparameter meter was calibrated and/or checked against standards in accordance with manufacturer's specifications prior to use. Specific conductance, DO, pH, and temperature were recorded on monitoring well sampling field forms. Monitoring well sampling field forms are provided in **Appendix C**.

Sample containers, preservatives, analytical methods, and holding times employed for this project are specified in **Table 3**. Samples for VOC analysis were collected such that no headspace air existed in the sample vial. All samples were preserved in accordance with method requirements, then immediately cooled to 4 °C with ice and delivered under chain-of-custody to Hall Environmental Analysis Laboratory in Albuquerque, New Mexico. The analytical laboratory report is provided in **Appendix D**.

2.3.3 Groundwater Sampling Results

The laboratory analytical results for the first biannual monitoring event are summarized in **Table 4**. The following are observations from this data:

- The dissolved phase hydrocarbon concentrations were at or above NMWQCC standards in five of the nine monitor wells sampled.
- The highest benzene concentration observed was 28,000 µg/L in monitor well W-14. Wells W-8 and W-14 had BTEX, EDC and total naphthalene concentrations above standard.

- Well W-9 had benzene, ethyl-benzene, total naphthalene, and EDC concentrations above standards.
- Well W-11 had an EDC concentration above standard.
- Well W-19 had EDC at a concentration above standard.
- Wells W-5, W-16, W-20 and W-21 had non detected concentrations, or concentrations below NMWQCC standards for all compounds analyzed.

2.4 System Performance and Effectiveness

No system has been installed at the site.

2.5 Statement Verifying Containment of Release

The Lovington 66 dissolved phase plume has migrated southeast across the intersection of Avenue D and Main Street to Avenue E southeast of the site. The NAPL plume appears to have migrated beneath the intersection of Avenue D and Main Street with dissolved phase concentrations observed in well W-14 near NAPL levels. The downgradient extent of the dissolved phase plume appears to be upgradient of wells W-20 and W-21. Cumulative dissolved VOC data from downgradient wells W-9 and W-19 indicate that the dissolved phase plume is mobile to the southeast.

3.0 SUMMARY AND CONCLUSIONS

This section summarizes the results of the first biannual monitoring event and includes a brief discussion of water level and contaminant concentration trends at the Lovington 66 site. Additionally, recommendations for future site activities are provided in this section.

3.1 Discussion of any Trends or Changes Noted in Analytical Results or Site Conditions

Depth to shallow groundwater at the site is approximately 58 feet. Groundwater and NAPL level measurements made during the January 21, 2014 site visit, as well as cumulative groundwater gauging data for the period of record at the site, are included in **Table 2**. These measurements were used to prepare hydrographs and NAPL thickness histories for selected wells which are included in **Appendix B** and shown in **Figures 2 and 3**. The hydrographs indicate that groundwater levels rose as much as 3 feet between summer 1992 when wells were initially installed and approximately the end of 2007. Since early 2008, groundwater levels have declined more than 3.5 feet at the site.

Water level elevation measurements collected during the January 21, 2014 site visit were used to prepare the water table gradient map included in **Figure 2**. The overall direction of groundwater flow is southeasterly and the hydraulic gradient is approximately 0.0043 foot per foot. This is consistent with earlier assessments of groundwater gradient magnitude and direction at the site.

NAPL has consistently been detected in wells W-1, W-2 and W-3 throughout the period of record; NAPL has not been detected in any other Walstad site wells, or in any of the Allsup's site wells. NAPL thicknesses measured in wells W-1, W-2 and W-3 have varied from less than one inch in July 2009 to as much as 7.00 feet measured during the January 21, 2014 site visit. The NAPL thicknesses shown on the hydrographs in **Appendix B**, as well as in **Figures 2 and 3** correlate to the water level fluctuations noted at the site. Low water levels are correlated with greatest NAPL thickness; high water levels correlate to thin NAPL accumulation.

The distribution of dissolved phase organic contaminants determined from analytical data from samples collected on January 21, 2014 expressed as total BTEX is shown on the map in **Figure 4**. Dissolved concentration historical trends are shown in the plots included in **Appendix E**, as well as in plots for select wells shown in **Figure 4**. The dissolved phase benzene concentrations in wells W-8 and W-14 were approximately 2-4 orders of magnitude greater than the NMWQCC standard of 10 μg/L. Dissolved fuel concentrations are generally increasing within the downgradient plume in the areas of wells W-14, W-9 and W-19.

A significant spike in the concentration of benzene was detected in samples collected from side-gradient well W-16 between August 2006 and January 2009. A similarly-timed spike in MTBE concentration was

noted in samples collected from side-gradient well W-11. These spikes may be associated with mobilization of adsorbed contaminants occurring during the period when groundwater levels rose and peaked during approximately the same time frame.

3.2 Ongoing Assessment of Remediation System

No active remediation system has been installed at the site.

3.3 Recommendations

Based on the results of the first biannual groundwater monitoring event, we conclude that the adsorbed, separate and dissolved phase fuel mass in place at the site has not changed significantly since the site was placed into regulatory enforcement in 1991. Separate phase fuel appears to be relatively stable; however, dissolved phase contaminants are mobile downgradient to the southeast and toward a new municipal well that was installed in 2011 and is located approximately 2,800 feet downgradient of the site. We recommend that the site be considered for investigation of feasibility for implementation of active remediation. We also recommend that biannual groundwater monitoring and quarterly NAPL recovery (via hand bailing) continue at the site.

TABLES

Table 1: Summary of NAPL Recovery
Lovington 66, Lovington, New Mexico

Monitor Well	Date Recovered	Prior to Bailing			Post Bailing			Total NAPL Recovered[1]
		Depth To NAPL (feet)	Depth to Water (feet)	NAPL Thickness (feet)	Depth to NAPL (feet)	Depth to Water (feet)	NAPL Thickness (feet)	
W-1	3-Sep-08	54.69	58.52	3.83	-	57.22	0.00	6.00
	27-Jan-09	54.69	58.22	3.53	-	56.25	0.00	6.00
	12-May-09	54.85	57.78	2.93	-	56.62	0.00	1.90
	10-Jul-09	55.33	56.99	1.66	-	56.69	0.00	1.08
	12-Feb-14	57.30	60.08	2.78	-	57.88	0.00	8.50
W-2	3-Sep-08	54.50	54.94	0.44	-	55.52	0.00	0.25
	27-Jan-09	54.48	54.81	0.33	-	55.55	0.00	0.25
	12-May-09	54.50	54.83	0.33	-	55.64	0.00	0.21
	10-Jul-09	54.68	54.96	0.28	-	55.50	0.00	0.18
	12-Feb-14	56.25	63.26	7.01	-	58.60	0.00	9.75
W-3	3-Sep-08	54.60	54.81	0.21	-	55.57	0.00	0.25
	27-Jan-09	54.56	54.69	0.13	-	55.52	0.00	0.25
	12-May-09	54.58	54.68	0.10	-	55.54	0.00	0.07
	10-Jul-09	54.78	54.85	0.07	-	55.64	0.00	0.05
	12-Feb-14	56.36	63.03	6.67	-	58.05	0.00	9.75
V-1	3-Sep-08	53.92	58.45	4.53	-	55.20	0.00	1.00
Cumulative Total NAPL Recovered at the Site[1]								**45.48**

Notes:

Data by Clayton M. Barnhill

NAPL - Non Aqueous Phase Liquid

[1] Measured in gallons - quantity is estimated.

All NAPL recovered is temporarily stored in a 55 gallon drum on-site.

First Semiannual Monitoring Event Data

Golder Associates

Table 2: Summary of Fluid Gauging Data
Lovington 66, Lovington, New Mexico

Monitor Well	Date Measured	Northing[1]	Easting[1]	Casing Elevation[2]	Depth to Product[3]	Product Thickness[4]	Depth to Water[3]	Groundwater Elevation[2]
Allsup's # 109								
MW-1	6-Aug-2005	708392.73	843467.49	3909.74			55.07	3854.67
	8-Aug-2006						54.36	3855.38
	7-Nov-2007						53.93	3855.81
	12-May-2008						54.36	3855.38
	7-Aug-2008						54.86	3854.88
	28-Jan-2009						54.91	3854.83
	10-Jul-2009						55.12	3854.62
	12-Feb-2014						58.47	3851.27
MW-2	6-Aug-2005	708398.53	843584.18	3910.05			55.74	3854.31
	8-Aug-2006						55.04	3855.01
	7-Nov-2007						54.58	3855.47
	12-May-2008						55.05	3855.00
	7-Aug-2008						55.54	3854.51
	28-Jan-2009						55.56	3854.49
	10-Jul-2009						55.79	3854.26
	12-Feb-2014	Well Destroyed -- covered by new cement (parking lot)						
MW-3	6-Aug-2005	708484.61	843518.13	3910.14			55.33	3854.81
	8-Aug-2006						54.65	3855.49
	7-Nov-2007						54.22	3855.92
	13-May-2008						54.76	3855.38
	7-Aug-2008						55.15	3854.99
	28-Jan-2009						55.16	3854.98
	10-Jul-2009						55.42	3854.72
	12-Feb-2014	Bolts on vault are cemented in place						
Walstad 66								
V-1	29-Aug-1992	708614.74	843348.54	99.37			56.68	42.69
	25-May-1993						56.74	42.63
	8-Aug-2006			3910.67	53.32	4.59	57.91	3852.76
	7-Nov-2007				53.01	4.58	57.59	3853.08
	13-Feb-2008				53.01	4.57	57.58	3853.09
	13-May-2008				53.41	4.57	57.98	3852.69
	7-Aug-2008				53.75	4.55	58.30	3852.37
		Well Plugged & Abandoned						
W-1	12-Feb-1992	708649.18	843347.81	3911.33	0.125" of NAPL Present			
	8-Jun-1992				>30" of NAPL Present			
	24-Jun-1992				>30" of NAPL Present			
	24-May-1993				NAPL Present			
	28-Aug-1993				NAPL Present			
	8-Aug-2006				54.23	3.15	57.38	3856.31
	7-Nov-2007				53.91	3.11	57.02	3856.64
	13-Feb-2008				53.89	3.16	57.05	3856.65
	13-May-2008				54.25	3.37	57.62	3856.24
	7-Aug-2008				54.96	3.31	58.27	3855.54
	28-Jan-2009				55.39	0.31	55.70	3855.86
	10-Jul-2009				55.69	0.09	55.78	3855.62
	21-Jan-2014				57.30	2.78	60.08	3853.34

Table 2: Summary of Fluid Gauging Data
Lovington 66, Lovington, New Mexico

Monitor Well	Date Measured	Northing[1]	Easting[1]	Casing Elevation[2]	Depth to Product[3]	Product Thickness[4]	Depth to Water[3]	Groundwater Elevation[2]
W-2	13-Mar-1992	708625.02	843381.13	3910.19	0.125" of NAPL Present			
	8-Jun-1992				>30" of NAPL Present			
	24-Jun-1992				>30" of NAPL Present			
	28-Aug-1992				NAPL Present			
	24-May-1993				NAPL Present			
	8-Aug-2006				53.21	5.34	58.55	3855.65
	7-Nov-2007				52.88	3.32	56.20	3856.48
	13-Feb-2008				53.57	0.31	53.88	3856.54
	13-May-2008				53.98	0.38	54.36	3856.12
	7-Aug-2008				54.34	0.44	54.78	3855.74
	28-Jan-2009				54.44	0.03	54.47	3855.74
	10-Jul-2009				54.69	0.11	54.8	3855.47
	21-Jan-2014				56.23	7.00	63.23	3852.21
W-3	13-Mar-1992	708597.90	843348.60	3910.29	0.125" of NAPL Present			
	8-Jun-1992				>30" of NAPL Present			
	24-Jun-1992				>30" of NAPL Present			
	28-Aug-1992				NAPL Present			
	24-May-1993				NAPL Present			
	8-Aug-2006				53.30	3.20	56.50	3856.19
	7-Nov-2007				53.01	3.03	56.04	3856.52
	13-Feb-2008				53.65	0.13	53.78	3856.61
	13-May-2008				54.44	0.21	54.65	3855.80
	7-Aug-2008				54.08	0.18	54.26	3856.17
	28-Jan-2009				54.50	0.06	54.56	3855.78
	10-Jul-2009				54.75	0.02	54.77	3855.54
	21-Jan-2014				56.36	6.66	63.02	3852.27
W-4	24-Jun-1992			99.62			57.04	42.58
	28-Aug-1992						56.69	42.93
	25-May-1993						56.48	43.14
	8-Aug-2006	Well Destroyed						
W-5	24-Jun-1992	708759.72	843252.39	100.41			57.59	3854.12
	28-Aug-1992						57.24	3854.47
	26-May-1993						57.02	3854.69
	8-Aug-2006			3911.71			54.88	3856.83
	7-Nov-2007						54.61	3857.10
	13-Feb-2008						54.63	3857.08
	12-May-2008						54.87	3856.84
	7-Aug-2008						55.36	3856.35
	28-Jan-2009						55.36	3856.35
	9-Jul-2009						55.54	3856.17
	21-Jan-2014						58.51	3853.20
W-6	24-Jun-1992			99.48			56.97	42.51
	28-Aug-1992						56.64	42.84
	26-May-1993						56.49	42.99
	8-Aug-2006	Well Destroyed						
W-7	28-Aug-1992	708911.67	843120.56	100.07			56.29	3854.59
	25-May-1993						55.96	3854.92
	8-Aug-2006			3911.35			53.74	3857.14
	7-Nov-2007						53.48	3857.40
	12-Feb-2008	708910.73	843120.52	3910.88			53.33	3857.55
	12-May-2008						53.55	3857.33
	6-Aug-2008						53.97	3856.91
	28-Jan-2009						54.11	3856.77
	9-Jul-2009						54.23	3856.65
	21-Jan-2014						57.05	3853.83
W-8	28-Aug-1992	708389.76	843640.62	98.69			57.24	3852.68
	25-May-1993						57.20	3852.72
	8-Aug-2006			3909.92			55.11	3854.81
	7-Nov-2007						54.65	3855.27
	13-Feb-2008						54.79	3855.13
	12-May-2008						55.14	3854.78
	7-Aug-2008						55.64	3854.28
	28-Jan-2009						55.67	3854.25
	9-Jul-2009						55.82	3854.10
	21-Jan-2014						59.33	3850.59

Table 2: Summary of Fluid Gauging Data
Lovington 66, Lovington, New Mexico

Monitor Well	Date Measured	Northing[1]	Easting[1]	Casing Elevation[2]	Depth to Product[3]	Product Thickness[4]	Depth to Water[3]	Groundwater Elevation[2]
W-9	28-Aug-1992	708267.18	843790.26	97.47			56.76	3851.96
	25-May-1993						56.74	3851.98
	8-Aug-2006			3908.72			54.66	3854.06
	7-Nov-2007						54.12	3854.60
	13-Feb-2008						54.31	3854.41
	12-May-2008						54.68	3854.04
	7-Aug-2008						55.18	3853.54
	28-Jan-2009						55.19	3853.53
	9-Jul-2009						55.35	3853.37
	21-Jan-2014						59.01	3849.71
W-10	28-Aug-1992	708254.54	843452.92	97.85			56.18	41.67
	26-May-1993						55.80	42.05
	8-Aug-2006			3908.89			53.79	3855.10
	13-Feb-2008	Unable to gauge well due to traffic constraints						
	12-May-2008	Unable to gauge well due to traffic constraints						
	7-Aug-2008	Unable to gauge well due to traffic constraints						
	28-Jan-2009	Unable to gauge well due to traffic constraints						
	9-Jul-2009	Unable to gauge well due to traffic constraints						
	21-Jan-2014	No access to well, well vault broken						
W-11	28-Aug-1992	708600.95	843650.96	98.66			56.82	3853.14
	26-May-1993						56.85	3853.11
	8-Aug-2006			3909.96			54.70	3855.26
	7-Nov-2007						54.26	3855.70
	13-Feb-2008						54.41	3855.55
	12-May-2008						54.71	3855.25
	6-Aug-2008						55.14	3854.82
	28-Jan-2009						55.26	3854.70
	9-Jul-2009						55.46	3854.50
	21-Jan-2014						58.80	3851.16
W-12	29-Aug-1992	708435.38	843045.85	99.34			56.28	3854.31
	26-May-1993						55.96	3854.63
	8-Aug-2006			3910.59			53.55	3857.04
	7-Nov-2007						53.72	3856.87
	12-Feb-2008						53.29	3857.30
	12-May-2008						54.05	3856.54
	6-Aug-2008						54.50	3856.09
	28-Jan-2009						54.09	3856.50
	9-Jul-2009						54.23	3856.36
	21-Jan-2014						57.81	3852.78
W-13	29-Aug-1992	708915.13	843525.37	99.07			56.36	3854.00
	26-May-1993						56.25	3854.11
	8-Aug-2006			3910.36			54.01	3856.35
	7-Nov-2007						53.70	3856.66
	12-Feb-2008						53.80	3856.56
	12-May-2008						54.08	3856.28
	6-Aug-2008						54.50	3855.86
	28-Jan-2009						54.66	3855.70
	9-Jul-2009						54.74	3855.62
	21-Jan-2014						57.87	3852.49
W-14	26-May-1993	708504.99	843463.76	98.54			56.26	3853.47
	8-Aug-2006			3909.73			54.15	3855.58
	7-Nov-2007						53.72	3856.01
	13-Feb-2008						53.80	3855.93
	13-May-2008						54.24	3855.49
	7-Aug-2008						54.65	3855.08
	28-Jan-2009						54.67	3855.06
	10-Jul-2009						54.90	3854.83
	21-Jan-2014						58.15	3851.58
W-15	26-May-1993	708195.85	843053.51	98.49			55.40	3854.00
	8-Aug-2006						53.41	3855.99
	7-Nov-2007			3909.71			53.11	3856.29
	12-Feb-2008	708221.99	843030.65	3909.40			53.02	3856.38
	12-May-2008						53.27	3856.13
	6-Aug-2008						53.71	3855.69
	28-Jan-2009						53.82	3855.58
	9-Jul-2009						53.91	3855.49
	21-Jan-2014						57.09	3852.31

Table 2: Summary of Fluid Gauging Data
Lovington 66, Lovington, New Mexico

Monitor Well	Date Measured	Northing[1]	Easting[1]	Casing Elevation[2]	Depth to Product[3]	Product Thickness[4]	Depth to Water[3]	Groundwater Elevation[2]
W-16	26-May-1993	708153.28	843364.45	97.44			55.52	3853.15
	8-Aug-2006			3908.67			53.49	3855.18
	7-Nov-2007						53.06	3855.61
	13-Feb-2008						53.20	3855.47
	12-May-2008						53.52	3855.15
	7-Aug-2008						54.03	3854.64
	28-Jan-2009						53.52	3855.15
	9-Jul-2009						54.23	3854.44
	21-Jan-2014						57.61	3851.06
W-17	26-May-1993			96.94			56.86	40.08
	8-Aug-2006	Well Destroyed						
W-18	26-May-1993	708698.11	843818.96	98.26			56.79	3852.59
	8-Aug-2006						54.60	3854.78
	7-Nov-2007			3909.50			54.19	3855.19
	12-Feb-2008	708697.21	843818.98	3909.38			54.13	3854.54
	12-May-2008						54.65	3854.02
	6-Aug-2008						54.90	3853.77
	28-Jan-2009						55.04	3853.63
	9-Jul-2009						55.14	3853.53
	21-Jan-2014						58.60	3850.07
W-19	7-Nov-2007	708148.94	843934.18	3908.36			54.23	3854.13
	13-Feb-2008						54.51	3853.85
	12-May-2008						54.88	3853.48
	6-Aug-2008						55.31	3853.05
	28-Jan-2009						55.36	3853.00
	9-Jul-2009						55.48	3852.88
	21-Jan-2014						59.27	3849.09
W-20	7-Nov-2007	707780.85	844187.25	3907.45			54.29	3853.16
	13-Feb-2008						54.69	3852.76
	12-May-2008						55.09	3852.36
	6-Aug-2008						55.53	3851.92
	28-Jan-2009						55.54	3851.91
	9-Jul-2009						55.60	3851.85
	21-Jan-2014						59.80	3847.65
W-21	7-Nov-2007	707988.79	843841.61	3908.49			54.19	3854.30
	13-Feb-2008						54.45	3854.04
	12-May-2008						54.81	3853.68
	6-Aug-2008						55.23	3853.26
	28-Jan-2009						55.32	3853.17
	9-Jul-2009						55.39	3853.10
	21-Jan-2014						59.22	3849.27

Note:
[1] Horizontal control to NM State Plane Coordinates Central NAD83 Grid Coordinates (in feet)
[2] Vertical Control to NAVD88 Datum in feet above mean sea level
[3] Measured in feet below the top of casing at survey point on north side of well
[4] Measured in feet

Table 3: Summary of Sample Analytical and Quality Control Requirements
Lovington 66, Lovington, New Mexico

Target Analytes	Matrix	Analytical Method	Sample Container	Preservative	Holding Time
VOCs	Water	EPA 8260	3 x 40- mL glass vials	Mercuric Chloride; Cool to 4°C	14 days

Notes:
EPA = U.S. Environmental Protection Agency

Table 4: Summary of Groundwater Sample Results
Volatile Organic Compounds
Lovington 66, Lovington, New Mexico

Monitor Well	Date Sampled	Benzene	Toluene	Ethyl-benzene	Xylenes	MTBE	EDB	EDC	Total Naphthalenes
W-2	13-Mar-92	29,878	28,953	3,874	13,109	5,921	NA	NA	NA
W-3	13-Mar-92	10,493	8,961	1,253	5,320	5,150	NA	NA	NA
W-4	24-Jun-92	200	53	21	40	<5.0	NA	NA	NA
	28-Aug-92	1,400	430	95	300	<2.5	NA	NA	NA
	25-May-93	2,500	980	310	470	<63	NA	NA	NA
W-5	24-Jun-92	470	250	41	290	<10	NA	NA	NA
	28-Aug-92	850	400	58	450	3.3	NA	NA	NA
	9-Aug-06	2.0	<1.0	3.7	<3.0	22	<1.0	<1.0	<2.0
	7-Nov-07	45	8.5	29	15	170	<1.0	<1.0	4.9
	13-Feb-08	26	1.1	24	<1.5	140	<1.0	<1.0	4.5
	12-May-08	16	<1.0	7.6	<1.5	65	<1.0	<1.0	<2.0
	7-Aug-08	5.2	<1.0	3.7	<1.5	39	<1.0	<1.0	<2.0
	28-Jan-09	<1.0	<1.0	<1.0	<1.5	18	<1.0	<1.0	<2.0
	9-Jul-09	<1.0	<1.0	<1.0	<1.5	21	<1.0	<1.0	<2.0
	21-Jan-14	8.5	1.0	2.7	2.5	3.8	<1.0	<1.0	<2.0
W-6	24-Jun-92	1,400	1,200	48	500	<25	NA	NA	NA
	28-Aug-92	3,000	2,700	93	860	<2.5	NA	NA	NA
W-7	28-Aug-92	<0.5	<0.5	<0.5	<0.5	<2.5	NA	NA	NA
	25-May-93	<0.5	<0.5	<0.5	<0.5	<2.5	NA	NA	NA
	8-Aug-06	<1.0	<1.0	<1.0	<3.0	<1.5	<1.0	<1.0	<2.0
	7-Nov-07	<1.0	<1.0	<1.0	<1.5	<1.0	<1.0	<1.0	<2.0
W-8	28-Aug-92	8,000	9,500	690	5,200	<2.5	NA	NA	NA
	25-May-93	12,000	8,300	1,500	8,800	<250	NA	NA	NA
	4-Aug-05	27,000	35,000	3,800	18,000	3,700	1,100	4,300	622
	9-Aug-06	21,000	29,000	2,600	13,000	6,300	<500	3,700	1,100
	7-Nov-07	20,000	27,000	3,200	15,000	5,900	440	4,100	770
	13-Feb-08	27,000	39,000	4,800	16,000	8,600	670	4,000	1,350
	12-May-08	19,000	22,000	1,800	8,000	4,900	250	2,100	400
	7-Aug-08	20,000	24,000	2,400	11,000	8,600	270	2,900	670
	28-Jan-09	19,000	26,000	2,500	11,000	9,800	290	3,000	570
	9-Jul-09	18,000	26,000	2,400	11,000	13,000	230	2,300	500
	21-Jan-14	14,000	8,800	2,300	7,900	25,000	<100	610	610
W-9	28-Aug-92	130	8.2	16	140	<2.5	NA	NA	NA
	25-May-93	100	6.3	2.5	170	<5.0	NA	NA	NA
	4-Aug-05	4,300	180	850	830	<1.0	<0.01	320	28.5
	9-Aug-06	6,700	560	1,200	1,400	<150	<100	650	250
	7-Nov-07	6,500	120	620	450	<10	<10	360	51
	13-Feb-08	7,500	130	910	590	<10	<10	450	129
	12-May-08	3,000	63	800	360	<10	<10	480	228
	7-Aug-08	5,100	<100	830	300	<100	<100	520	<200
	28-Jan-09	4,800	<10	370	380	<10	<10	580	120
	9-Jul-09	6,400	<5	1,100	460	<5	<5	570	139
	21-Jan-14	7,500	<10	1,200	250	100	<10	910	180
W-10*	28-Aug-92	1,100	11.0	120	440	<2.5	NA	NA	NA
	4-Aug-05	940	2.6	930	140	2,400	0.11	48	27.1
	9-Aug-06	420	<1.0	31	<3.0	22	<1.0	12	121

Table 4: Summary of Groundwater Sample Results
Volatile Organic Compounds
Lovington 66, Lovington, New Mexico

Monitor Well	Date Sampled	Benzene	Toluene	Ethyl-benzene	Xylenes	MTBE	EDB	EDC	Total Naphthalenes
W-11	28-Aug-92	770	13	13	280	<2.5	NA	NA	NA
	9-Aug-06	5.0	<1.0	62	44	88	<1.0	33	<2.0
	7-Nov-07	18	<1.0	38	13	540	<1.0	35	<2.0
	13-Feb-08	3.2	<1.0	41	5.1	540	<1.0	37	<2.0
	12-May-08	3.0	<1.0	31	3.7	740	<1.0	36	<2.0
	6-Aug-08	3.2	<1.0	28	2.5	610	<1.0	38	<2.0
	28-Jan-09	<1.0	<1.0	40	5.7	160	<1.0	44	<2.0
	9-Jul-09	<1.0	<1.0	34	7.2	160	<1.0	44	<2.0
	21-Jan-14	5.4	<1.0	25	1.8	44	<1.0	51	<2.0
W-12	29-Aug-92	87	6.1	2.6	180	<2.5	NA	NA	NA
	8-Aug-06	<1.0	<1.0	<1.0	<3.0	<1.5	<1.0	<1.0	<2.0
W-13	29-Aug-92	<0.5	<0.5	<0.5	<0.5	<2.5	NA	NA	NA
	8-Aug-06	<1.0	<1.0	<1.0	<3.0	<1.5	<1.0	<1.0	<2.0
W-14	26-May-93	6,600	4,300	1,200	4,000	<125	NA	NA	NA
	5-Aug-05	27,000	26,000	4,900	9,500	7,600	3.3	120	413
	9-Aug-06	25,000	23,000	4,000	9,500	4,700	<500	<500	1,200
	13-Feb-08	30,000	23,000	4,900	13,000	4,400	<50	210	1,270
	13-May-08	14,000	6,500	2,800	6,300	2,400	<10	170	1,001
	7-Aug-08	26,000	20,000	4,400	11,000	3,700	<100	160	840
	28-Jan-09	24,000	19,000	2,200	8,700	3,200	<100	150	640
	10-Jul-09	26,000	24,000	4,000	11,000	2,600	<50	160	590
	21-Jan-14	28,000	27,000	4,000	12,000	1,700	<100	120	730
W-15	26-May-93	<0.5	<0.5	<0.5	<0.5	<2.5	NA	NA	NA
	8-Aug-06	<1.0	<1.0	<1.0	<3.0	<1.5	<1.0	<1.0	<2.0
W-16	26-May-93	52	<0.5	7.9	15	<2.5	NA	NA	NA
	8-Aug-06	1.3	14	2.9	<3	<1.5	<1.0	<1.0	<2.0
	7-Nov-07	640	<1.0	22	12	55	<1.0	23	363
	13-Feb-08	630	<1.0	12	8.6	47	<1.0	17	342
	12-May-08	690	<1.0	12	3.6	60	<1.0	21	327
	7-Aug-08	790	<1.0	5.4	<1.5	59	<1.0	17	352
	28-Jan-09	170	<1.0	<1.0	<1.5	39	<1.0	13	120
	9-Jul-09	35	<1.0	1.3	<1.5	11	<1.0	3.8	14.5
	21-Jan-14	<1.0	<1.0	<1.0	<1.5	4.3	<1.0	<1.0	<2.0
W-17	26-May-93	<0.5	<0.5	<0.5	<0.5	<2.5	NA	NA	NA
W-18	26-May-93	1.6	1.8	<0.5	2.0	<2.5	NA	NA	NA
	8-Aug-06	<1.0	<1.0	<1.0	<3.0	<1.5	<1.0	<1.0	<2.0
W-19	8-Nov-07	4.3	<1.0	<1.0	<1.5	<1.5	<1.0	23	<2.0
	13-Feb-08	2.4	<1.0	<1.0	<1.5	<1.5	<1.0	10	<2.0
	12-May-08	1.6	<1.0	<1.0	<1.5	<1.0	<1.0	9.2	<2.0
	6-Aug-08	2.4	<1.0	<1.0	<1.5	<1.0	<1.0	19	<2.0
	28-Jan-09	3.8	<1.0	<1.0	<1.5	<1.0	<1.0	37	<2.0
	9-Jul-09	3.4	<1.0	<1.0	<1.5	<1.0	<1.0	37	<2.0
	21-Jan-14	4.9	<1.0	<1.0	<1.5	<1.0	<1.0	59	<2.0

Table 4: Summary of Groundwater Sample Results
Volatile Organic Compounds
Lovington 66, Lovington, New Mexico

Monitor Well	Date Sampled	Benzene	Toluene	Ethyl-benzene	Xylenes	MTBE	EDB	EDC	Total Naphthalenes
W-20	8-Nov-07	<1.0	<1.0	<1.0	<1.5	<1.0	<1.0	<1.0	<2.0
	13-Feb-08	<1.0	<1.0	<1.0	<1.5	<1.0	<1.0	<1.0	<2.0
	12-May-08	<1.0	<1.0	<1.0	<1.5	<1.0	<1.0	<1.0	<2.0
	6-Aug-08	<1.0	<1.0	<1.0	<1.5	<1.0	<1.0	<1.0	<2.0
	28-Jan-09	<1.0	<1.0	<1.0	<1.5	<1.0	<1.0	<1.0	<2.0
	9-Jul-09	<1.0	<1.0	<1.0	<1.5	<1.0	<1.0	<1.0	<2.0
	21-Jan-14	<1.0	<1.0	<1.0	<1.5	<1.0	<1.0	<1.0	<2.0
W-21	8-Nov-07	<1.0	<1.0	<1.0	<1.5	<1.0	<1.0	<1.0	<2.0
	12-Feb-08	<1.0	<1.0	<1.0	<1.5	<1.0	<1.0	<1.0	<2.0
	12-May-08	<1.0	<1.0	<1.0	<1.5	<1.0	<1.0	<1.0	<2.0
	6-Aug-08	<1.0	<1.0	<1.0	<1.5	<1.0	<1.0	<1.0	<2.0
	28-Jan-09	<1.0	<1.0	<1.0	<1.5	<1.0	<1.0	<1.0	<2.0
	9-Jul-09	<1.0	<1.0	<1.0	<1.5	<1.0	<1.0	<1.0	<2.0
	21-Jan-14	<1.0	<1.0	<1.0	<1.5	<1.0	<1.0	<1.0	<2.0
V-1	29-Aug-92	250	680	240	810	<2.5	NA	NA	NA
	25-May-93	5,000	14,000	3,000	10,000	600	NA	NA	NA

Notes:

All concentrations in micrograms per liter (parts per billion)

MTBE = Methyl tertiary butyl ether

EDB = Ethylene dibromide

EDC = Ethylene dichloride

NA = Not Analyzed

First Semiannual Monitoring Event Data

FIGURES

LEGEND

W-1	LOCATION OF WALSTAD MONITORING WELL
SB-1/MW-1	ALLSUPS SOIL BORING/MONITORING WELL LOCATION
SB-4	ALLSUPS SOIL BORING

0 60 120 180
SCALE FEET

REV	DATE	REVISION DESCRIPTION	DES	CADD	CHK	RVW

PROJECT

WALSTADD 66
LOVINGTON, NEW MEXICO

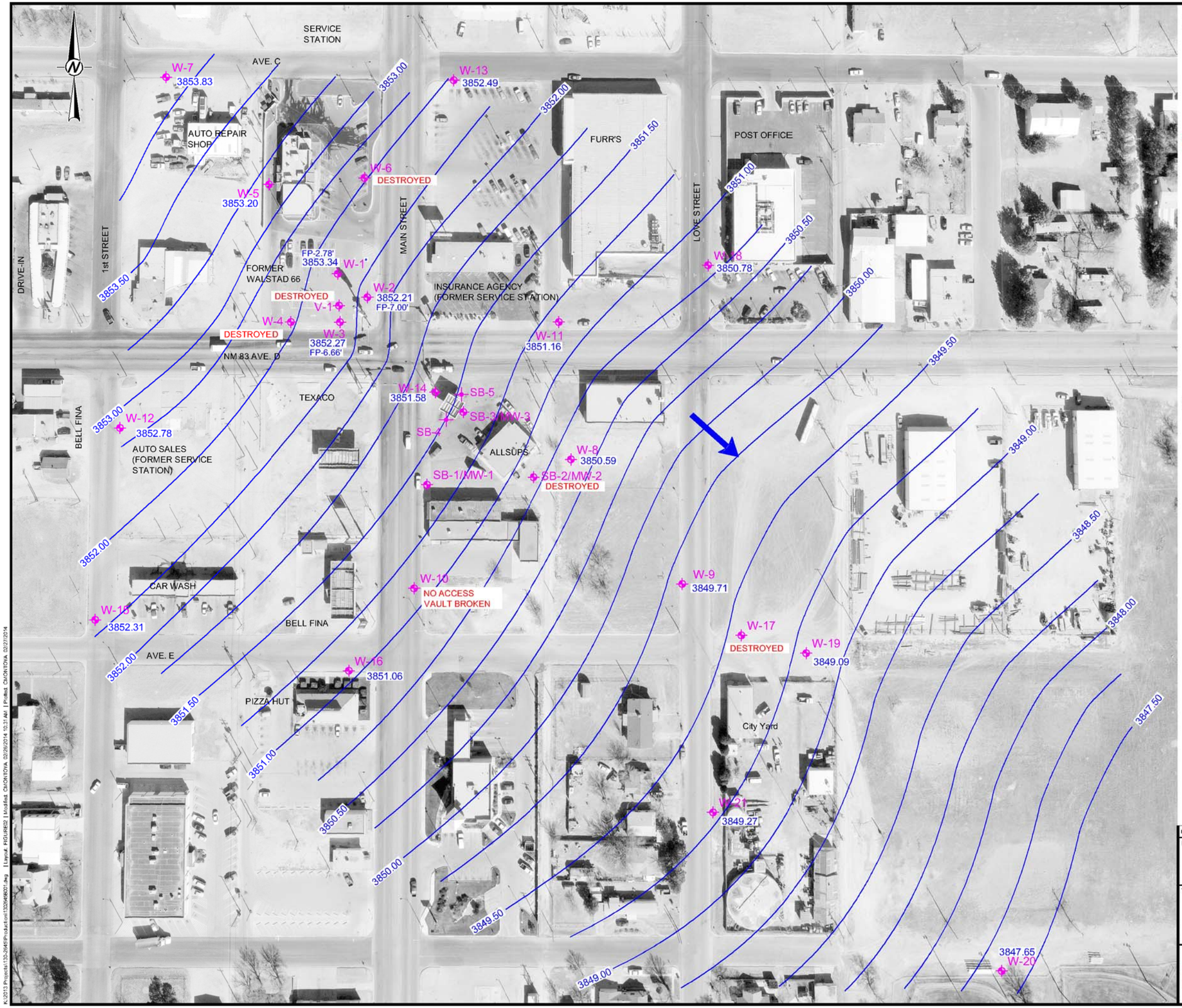
TITLE

SITE MAP

Golder Associates

PROJECT No.		130-2645	FILE No.	1302645B001
DESIGN	CK	02/20/2014	SCALE	AS SHOWN
CADD	CM	02/24/2014	DRAWING	
CHECK	CK	02/24/2014	**FIGURE 1**	
REVIEW	CK	02/24/2014		

K:\2013 Projects\130-2645\Production\1302645B001.dwg | Layout: FIGURE01 | Modified: CMONTOYA 02/26/2014 8:34 AM | Plotted: CMONTOYA 02/26/2014



LEGEND

W-1 3853.34	LOCATION OF WALSTAD MONITORING WELL SHOWING DESIGNATION AND WATER LEVEL ELEVATION, IN FEET ABOVE MEAN SEA LEVEL 1/21/2014
SB-1/MW-1	ALLSUPS SOIL BORING/ MONITORING WELL LOCATION WITH GROUNDWATER ELEVATION (FEET ABOVE MEAN SEA LEVEL)
SB-4	ALLSUPS SOIL BORING
3851.00	ISOPLETH ON LINE OF PROJECTED EQUAL SHOLLOW GROUNDWATER ELEVATION FROM DATA COLLECTED ON 1/21/2017
	GROUNDWATER FLOW DIRECTION

NOTES

* DATA NOT USED FOR CONTOURING

0 60 120 180
SCALE FEET

REV	DATE	REVISION DESCRIPTION	DES	CADD	CHK	RVW

PROJECT

WALSTADD 66
LOVINGTON, NEW MEXICO

TITLE

WATER TABLE MAP JANUARY 2014

Golder Associates

PROJECT No.		130-2645	FILE No.	1302645B001
DESIGN	CK	02/20/2014	SCALE	AS SHOWN
CADD	CM	02/24/2014	DRAWING	
CHECK	CK	02/24/2014		**FIGURE 2**
REVIEW	CK	02/24/2014		

K:\2013 Projects\130-2645\Production\1302645B001.dwg [Layout: FIGURE2] Modified: CMONTOYA 02/26/2014 10:31 AM | Plotted: CMONTOYA 02/27/2014

SERVICE STATION

AVE. C

W-7

AUTO REPAIR SHOP

W-13

FURR'S

POST OFFICE

W-6
DESTROYED

W-5
0.0

MAIN STREET

LOVE STREET

W-18

DRIVE-IN

FORMER WALSTAD 66

2.78
W-1

W-2
7.00

DESTROYED

V-1

W-4

W-3
6.66

6
4
2
0

DESTROYED

NM 83 AVE. D

INSURANCE AGENCY (FORMER SERVICE STATION)

W-11

TEXACO

W-14
0.0

SB-5

SB-3/MW-3

SB-4

ALLSUPS

W-8

SB-1/MW-1

SB-2/MW-2
DESTROYED

BELL FINA

W-12

AUTO SALES (FORMER SERVICE STATION)

CAR WASH

W-15

BELL FINA

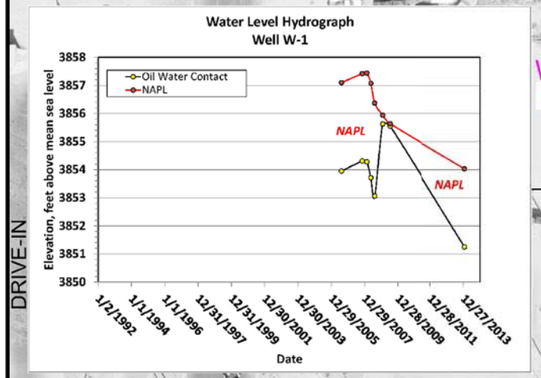
W-10
NO ACCESS
VAULT BROKEN

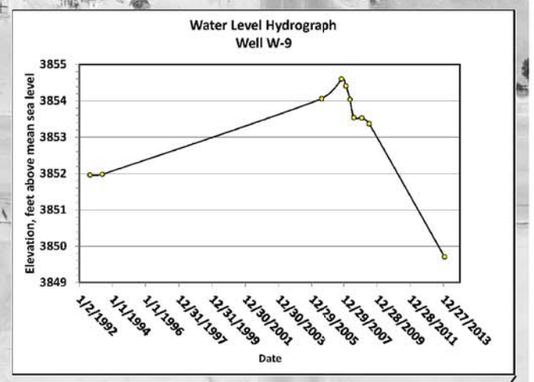
W-9

W-17
DESTROYED

AVE. E

W-16





LEGEND

W-1
2.78
LOCATION OF WALSTAD MONITORING WELL SHOWING DESIGNATION AND APPARENT NAPL THICKNESS IN FEET MEASURED 1/21/2014

SB-1/MW-1
ALLSUPS SOIL BORING/MONITORING WELL LOCATION SHOWING DESIGNATION AND STATUS

SB-4
ALLSUPS SOIL BORING

6
ISOPLETH ON LINE OF PROJECTED EQUAL NAPL THICKNESS IN FEET FROM DATA COLLECTED ON 1/21/2014

0 40 80 120
SCALE FEET

REV	DATE	REVISION DESCRIPTION	DES	CADD	CHK	RVW

PROJECT
WALSTADD 66
LOVINGTON, NEW MEXICO

TITLE
APPARENT NAPL THICKNESS MAP JANUARY 2014

Golder Associates

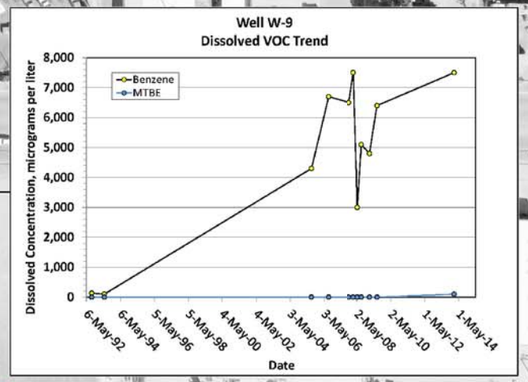
PROJECT No.		130-2645	FILE No.	1302645B001
DESIGN	CK	02/20/2014	SCALE	AS SHOWN
CADD	CM	02/24/2014	DRAWING	
CHECK	CK	02/24/2014	**FIGURE 3**	
REVIEW	CK	02/24/2014		

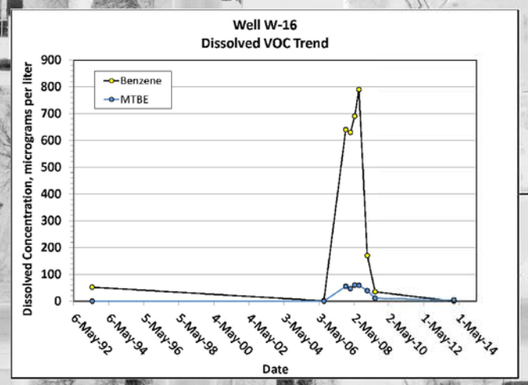
K:\2013 Projects\130-2645\Production\1302645B001.dwg | Layout: FIGURE3 | Modified: CMONTOYA 02/26/2014 10:31 AM | Plotted: CMONTOYA 02/27/2014

SERVICE STATION
AVE. C
AUTO REPAIR SHOP
FURR'S
POST OFFICE
LOVE STREET
MAIN STREET
1st STREET
DRIVE-IN
FORMER WALSTAD 66
INSURANCE AGENCY (FORMER SERVICE STATION)
NM 83 AVE. D
TEXACO
BELL FINA
AUTO SALES (FORMER SERVICE STATION)
ALLSUPS
CAR WASH
AVE. E
PIZZA HUT
City Yard

W-7
W-13
W-6 DESTROYED
W-5 14.7
W-1 FP
W-2 FP
W-18
W-11 32.2
W-4 DESTROYED
W-3 FP 100,000
W-14 71,000
SB-5
SB-3/MW-3
SB-4
W-12
W-8 33,000
SB-1/MW-1
SB-2/MW-2 DESTROYED
W-10 NO ACCESS VAULT BROKEN
W-9 8,950
W-15
W-17 DESTROYED
W-19 4.9
W-16 <1.0
W-21 <1.0
W-20 <1.0

1 µg/L
10 µg/L
100 µg/L
1,000 µg/L
10,000 µg/L





LEGEND

W-8 33,000 — LOCATION OF WALSTAD MONITORING WELL SHOWING DESIGNATION AND TOTAL BTEX CONCENTRATION IN MICROGRAMS PER LITER IN GROUNDWATER SAMPLE COLLECTED 1/21/2014

SB-1/MW-1 — ALLSUPS SOIL BORING/MONITORING WELL LOCATION SHOWING DESIGNATION

SB-4 — ALLSUPS SOIL BORING

—10 µg/L— ISOPLETH ON LINE OF PROJECTED EQUAL TOTAL BTEX CONCENTRATION IN GROUNDWATER IN MICROGRAMS PER LITER FROM SAMPLE DATA COLLECTED 1/21/2014

0 60 120 180
SCALE FEET

REV	DATE	REVISION DESCRIPTION	DES	CADD	CHK	RVW

PROJECT
WALSTADD 66
LOVINGTON, NEW MEXICO

TITLE
DISSOLVED VOC'S IN GROUNDWATER JANUARY 2014

Golder Associates

PROJECT No.		130-2645	FILE No.		1302645B001
DESIGN	CK	02/20/2014	SCALE		AS SHOWN
CADD	CM	02/24/2014	DRAWING		
CHECK	CK	02/24/2014	**FIGURE 4**		
REVIEW	CK	02/24/2014			

APPENDIX A
NAPL DISPOSAL MANIFEST

N.M.E.D. – DP-1041	**Gandy Marley, Inc.** P.O. BOX 1658 • ROSWELL, NM 88202	**LOAD INSPECTION FORM** № 15669

Date of Receipt: 04/29/14   Time of Receipt 12:05 AM / PM (PM circled)   Cell Placement: UST-6

Quantity 15 / 55 Gallon   T/CY: ______   Description: ______

Name/Address of Generator: ______

Origin of Materials (if different) ______

Transporter Name: ______   SCC ID No. ______

Name of Laboratory Performing Sample Analysis ______

TCLP (EPA Method 1311) ______ BTEX ✓ MTBE ✓ TPH ______ Non-Hazardous ✓ Exempt ______

Verification of No Free Liquids ______   Paint Filter Liquids Test Performed ______

Verification of Property Completed Manifest ______   Generator Manifest Number ______

As a condition to Gandy Marley, Inc.'s acceptance of the materials shipped as represented on this Load Inspection Form, Generator represents and warrants that the waste material shipped herewith is exempt from the Resource Conservation and Recovery Act of 1976, as amended from time to time, 40 U.S.C. Section 6901, et seq., The New Mexico Health and Safety Code, section 361.001, et seq., and regulations related thereto, OR has been characterized as non-hazardous material by virtue of appropriate laboratory analysis done in accordance with EPA-approved testing methods.

Further, as a condition to Gandy Marley, Inc.'s acceptance of the materials shipped as represented on this Load Inspection Form, Transporter represents and warrants that only the material delivered by Generator to Transporter is now delivered by Transporter to Gandy Marley, Inc.'s facility for disposal.

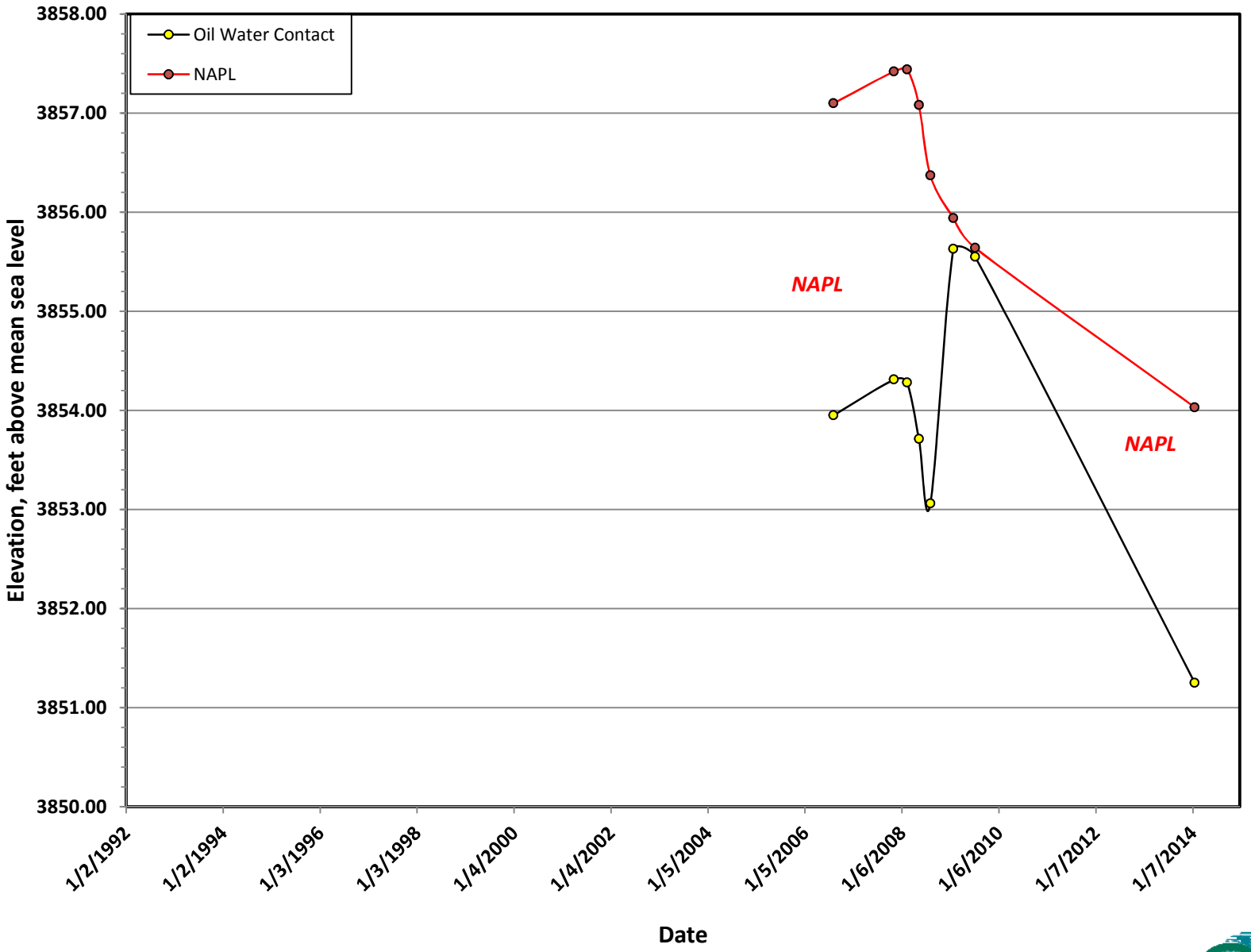
THIS WILL CERTIFY that the above Transporter loaded the material as represented on this Load Inspection Form at the above described location, and that it was tendered by the above described Generator. THIS WILL CERTIFY that no additional materials were added to this load, and that the material was delivered without incident.

Transporter: ______ (Print Name)   ______ (Signature)

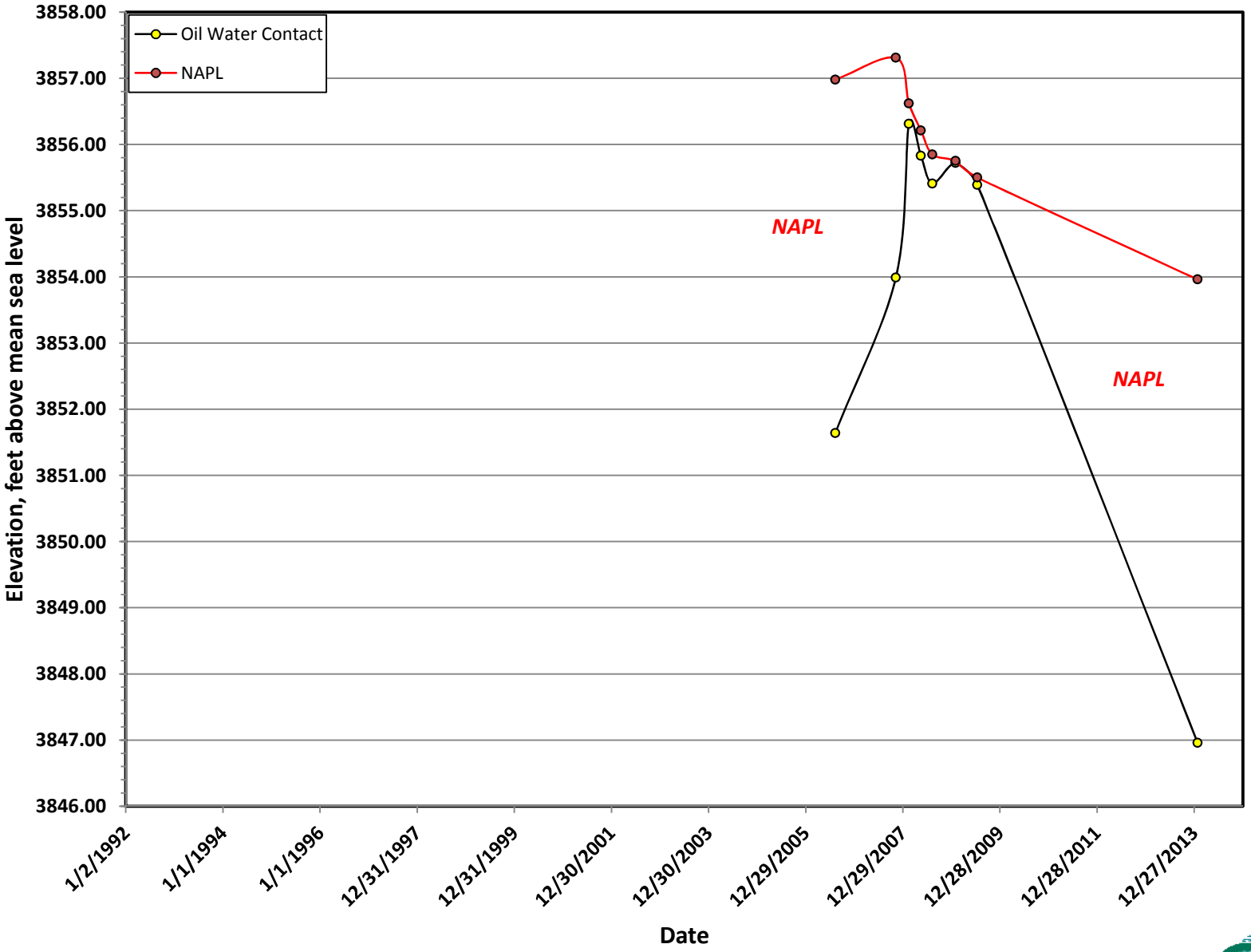
GMI Employee: J Tolton (Print Name)   J Tolton (Signature)

APPENDIX B
HYDROGRAPHS

Water Level Hydrograph
Well W-1



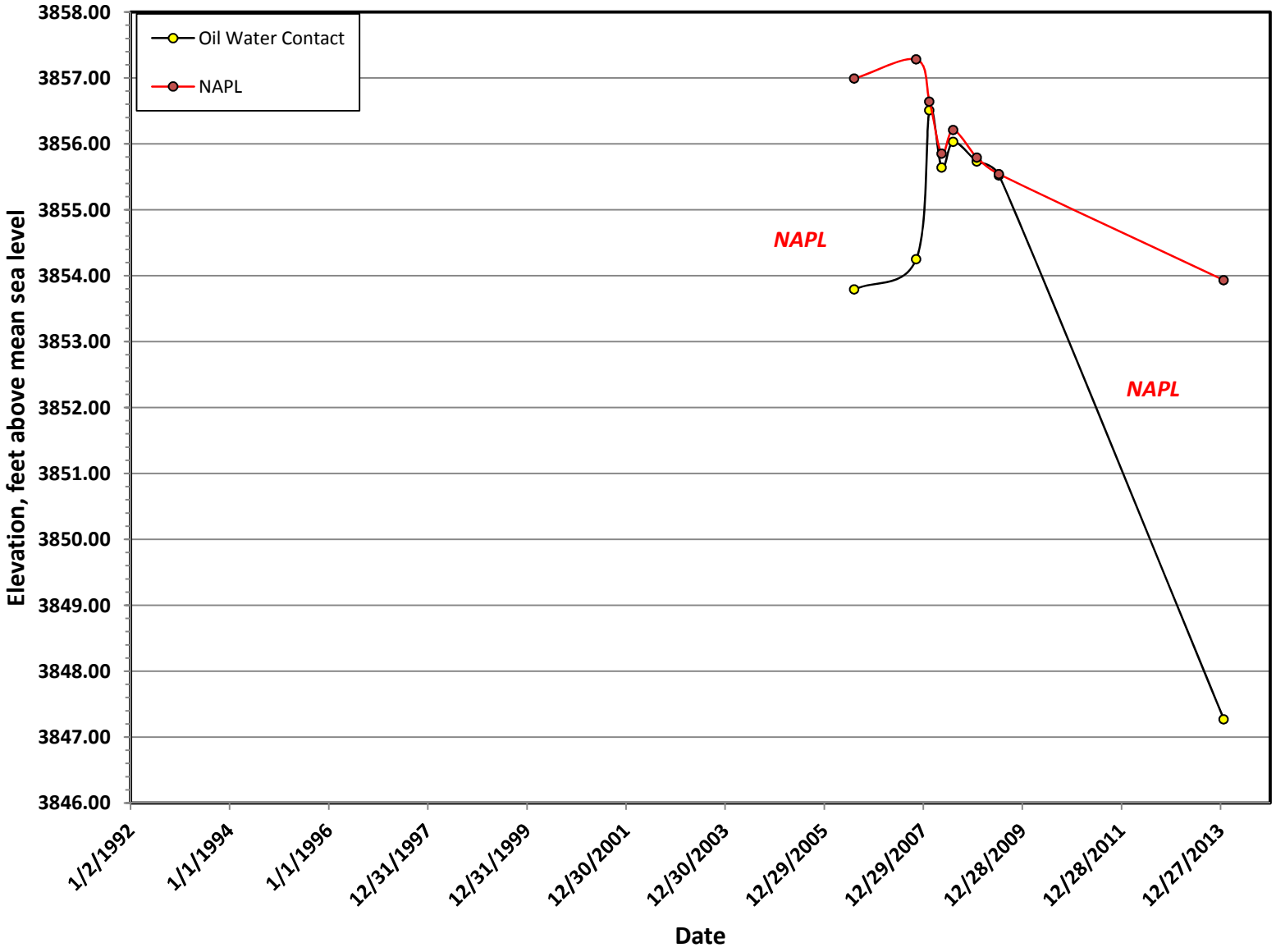
Water Level Hydrograph
Well W-2



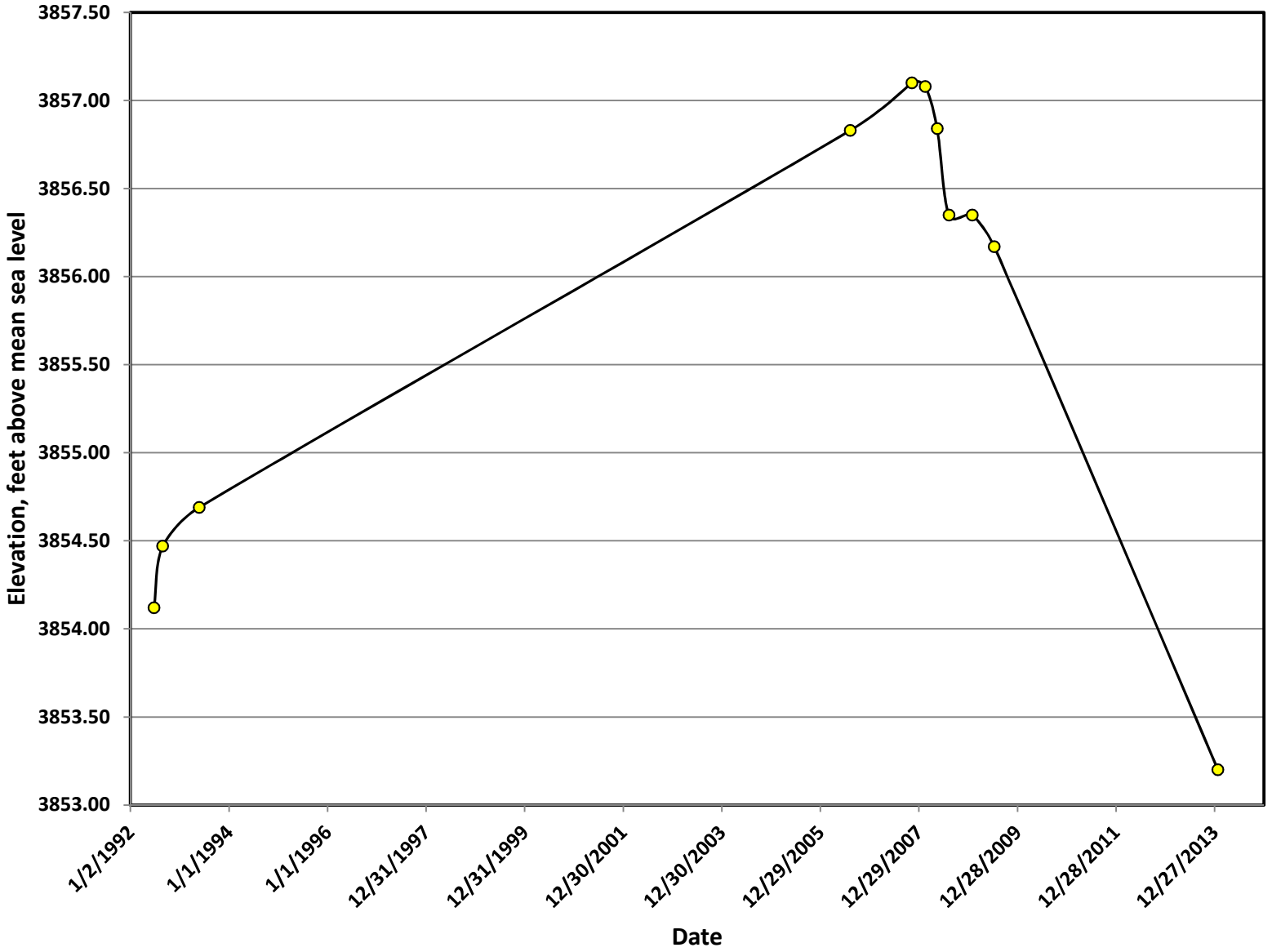
Golder Associates

Appendix B

Water Level Hydrograph
Well W-3

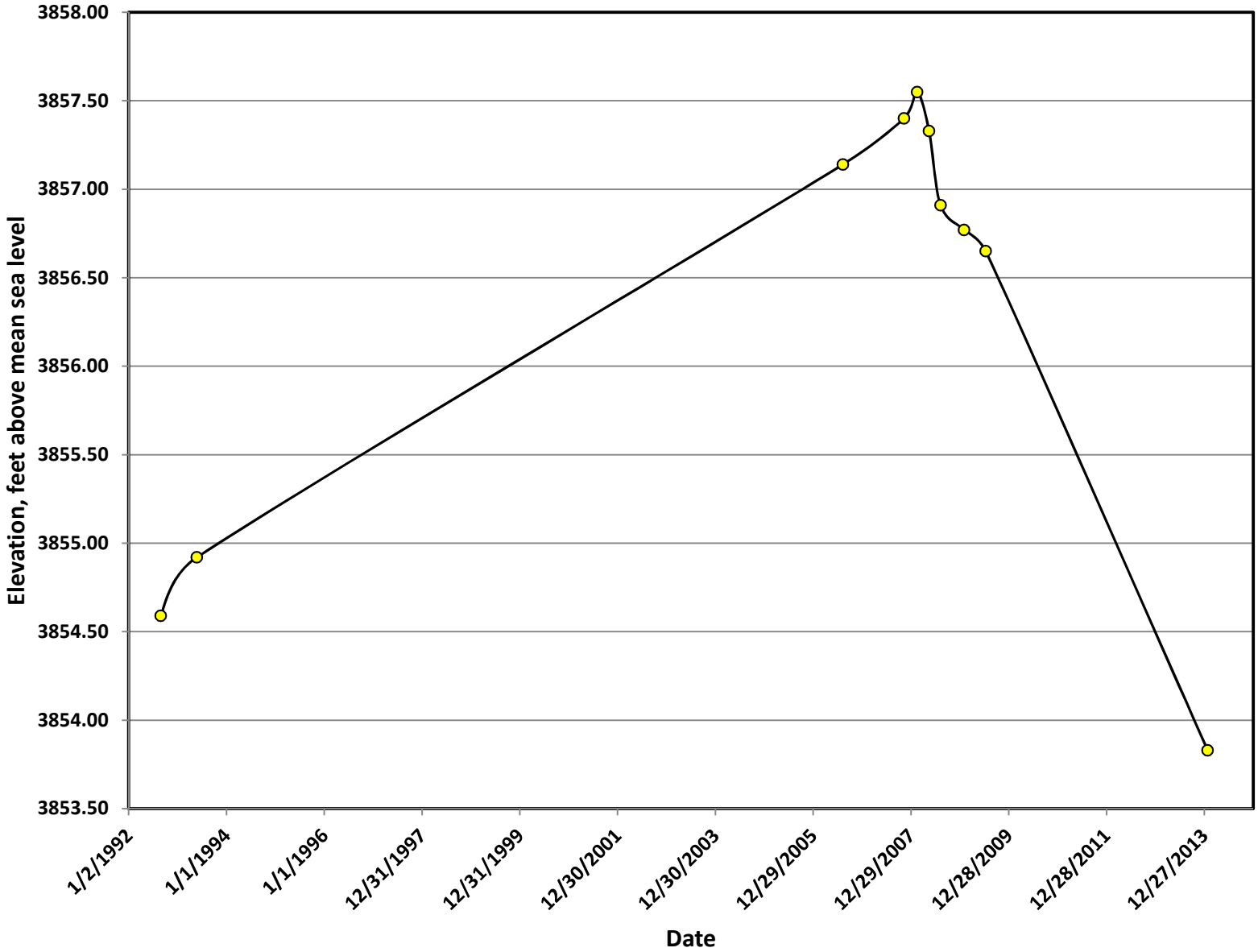


Water Level Hydrograph
Well W-5

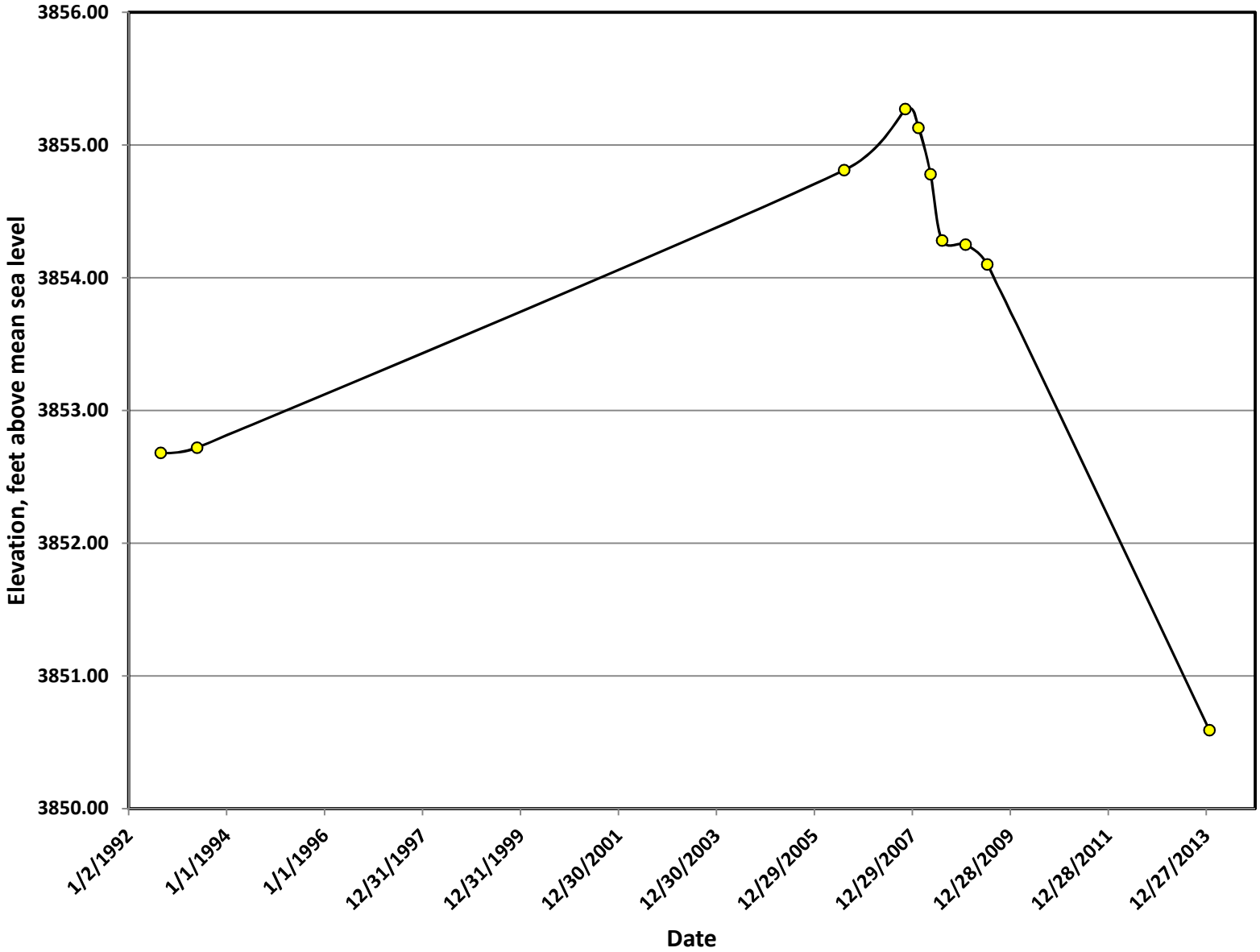


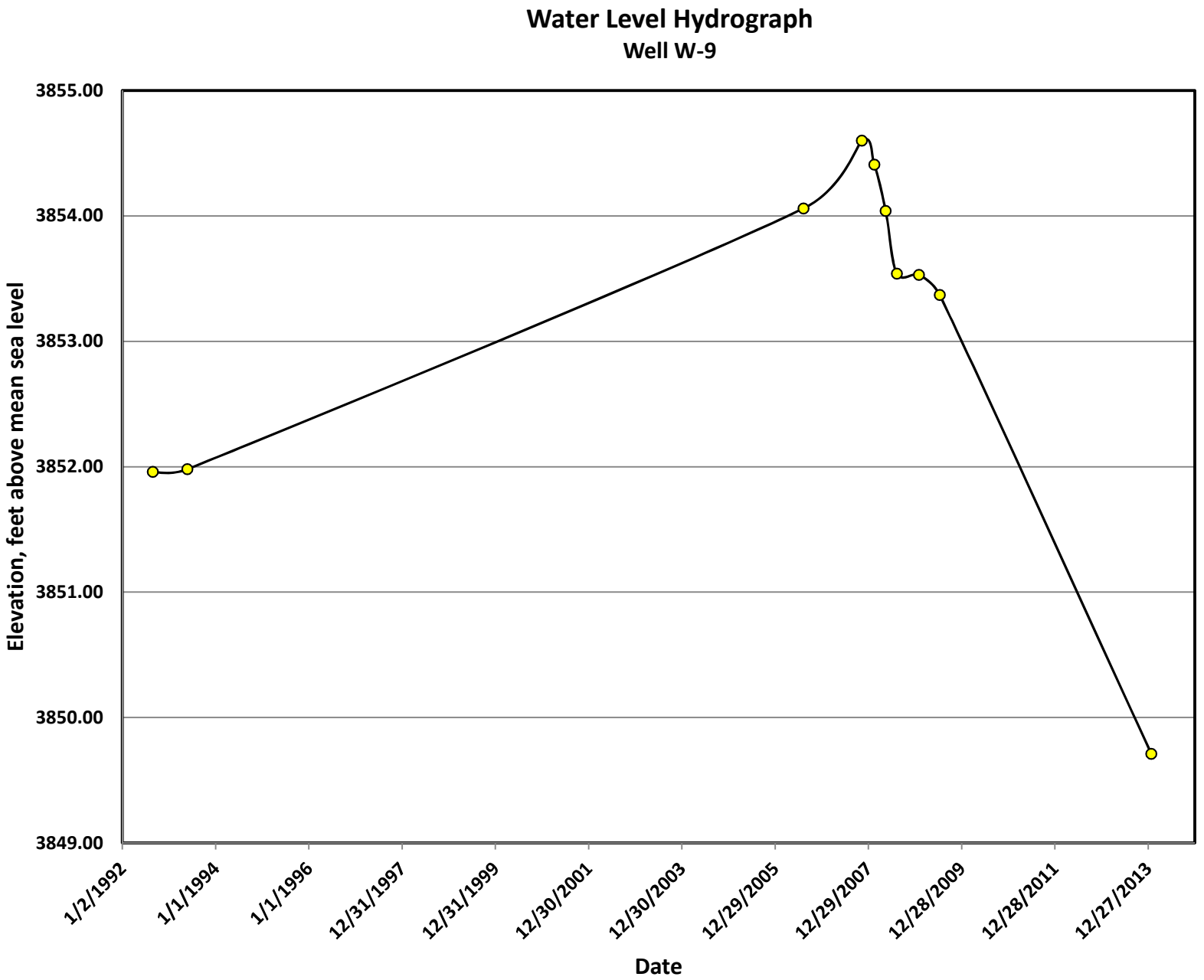
Golder Associates

Water Level Hydrograph
Well W-7



Water Level Hydrograph
Well W-8




Water Level Hydrograph
Well W-9
Elevation, feet above mean sea level
3855.00
3854.00
3853.00
3852.00
3851.00
3850.00
3849.00
1/2/1992
1/1/1994
1/1/1996
12/31/1997
12/31/1999
12/30/2001
12/30/2003
12/29/2005
12/29/2007
12/28/2009
12/28/2011
12/27/2013
Date

APPENDIX C
FIELD FORMS

CMB ENVIRONMENTAL & GEOLOGICAL SERVICES, INC. - WELL DATA FORM

Type Well	Type of Data	Well No.
☒ MW ☐ Production ☐ Other _____	☐ Development ☒ Sampling ☐ Pump Test ☐ Other _____	W-5 Sheet 1 of 1 Sheets

1. Project	2. Project Location	3. Date
GW Monitoring 2014	Golder Wolfstad Oil Co. Lovington	01/21/14
4. Technician		
CM Barnhill, PG	Lovington, NM	
7. Method Pumping Surging Air Lift (Bailing) Other	**8. Manufacturer's Designation of Rig** DSR-2001	**9. Location of Well (Site, Description)** W-5

Water Levels

Initial	Final	Final + 24 Hours
Date: 01/21/14 Time: 15:35	Date: 01/21/14 Time: 15:53	Date: Time:
10. Total Depth of Well (from TOC) 64.72'	15. Total Depth of Well (from TOC)	20. Total Depth of Well (from TOC)
11. Water Level (from TOC) 58.51'	16. Water Level (from TOC) 58.96	21. Water Level (from TOC)

12. Water Column Height	Nom Dia	x = gal/ft Sch 40	Sch 80	17. 3 Well Volumes	22. Size and Type of Pump or (Bailer)
6.21'				2.98 Gallons	
13. Well Diameter	(2")	0.16	0.1534	18. 5 Well Volumes	1.8" Disposable Bailer, Tie, Twine
2" SCH 40 PVC MW	4"	0.65	0.5972	4.96 Gallons	
14. Well Volume (gal) (s) w.e. height) 0.996al	6"	1.47	1.3540	19. Purge Volume 3 Gallons	
	8"	2.61	2.3720		

Final Field Analysis

23. Total Amount of Water Removed	24. Was Well Pumped Dry?	25. Was water added to well?	26. Was the Groundwater Sampled (Yes) No
3 Gallons	Yes (No)	(No) Yes If yes, source:	If yes, what was the sample number & Date: Sampling Personnel? W-5, 01/21/14 CM Barnhill @ 1555 x 40mL VOA's (HCl) 1550

27. Final Parameters

Time	Temp C	Conductivity (us/cm)	pH	NTUs	WL	Removed	Flow Rate	Photo Roll #, Observations
15:48	18.71	2110	6.78	Clear H2O	58.96	3 Gallons	0.25	Clear H2O Strong odor

IF PETROLEUM IS IN THE WELL, DO NOT TAKE pH AND CONDUCTIVITY PARAMETERS

28. Physical Appearance and Remarks: Clear H2O -- Strong hydrocarbon odor.

29. Purgewater disposal method: ON Ground Surface.

Sampling / Development Parameters

Time	Temp C	Conductivity (us/cm)	pH	NTUs	WL (from TOC)	Volume (gallons)	Dissolved Oxygen	Flow Rate (gpm)	pHmv/ORP
15:41	17.40	2136	7.05	Clear Strong odor	58.51	Initial parameters	3.1	0.25	-11.9/-20.3
15:44	18.15	2160	6.82	Clear H2O Strong odor	—	1	1.7	0.25	-1.1/-25.6
15:46	18.27	2191	6.77	Clear H2O Strong odor	—	2	1.74	0.25	-0.3/-30.0
15:48	18.71	2110	6.78	Clear H2O Strong odor	58.96	3	1.36	0.25	-1.0/-33.3

(1) Note volume and physical character of sediments removed.
NTU = Nephelometric turbidity units
WL = Water Level from Top of PVC Casing

Checked By: Clinton M Barnhill PG — Date: 01/21/14

CMB ENVIRONMENTAL & GEOLOGICAL SERVICES, INC. - WELL DATA FORM

Type Well	Type of Data	Well No.
☑ MW ☐ Production ☐ Other _____	☐ Development ☑ Sampling ☐ Pump Test ☐ Other _____	Well No. W-8 Sheet 1 of 1 Sheets

1. Project	2. Project Location	3. Date
GW Monitoring 2014	Golder Wolstad Oil Co. Lovington, NM	01/21/14
4. Technician		
CM Barnhill, PG	Lovington, NM	
7. Method Pumping Surging Air Lift (Bailing) Other	**8. Manufacturer's Designation of Rig**	**9. Location of Well (Site, Description)**
	DSR-2001	W-8

Water Levels

Initial	Final	Final + 24 Hours
Date: 01/21/14 Time: 16:12	Date: 01/21/14 Time: 1532	Date: Time:
10. Total Depth of Well (from TOC) 65.20'	15. Total Depth of Well (from TOC)	20. Total Depth of Well (from TOC)
11. Water Level (from TOC) 59.33'	16. Water Level (from TOC) 59.63	21. Water Level (from TOC)

12. Water Column Height	Nom Dia	x = gal/ft Sch 40	Sch 80	17. 3 Well Volumes	22. Size and Type of Pump or (Bailer)
5.87'				2.817 Gallons	
13. Well Diameter 2" SCH 40 PVC MW	(2")	0.16	0.1534	18. 5 Well Volumes	1.8" Disposable Bailer, Tip, Twine
	4"	0.65	0.5972	4.69 Gallons	
	6"	1.47	1.3540		
14. Well Volume (gal) (s) w.e. height) 0.93	8"	2.61	2.3720	19. Purge Volume 3 Gallons	

Final Field Analysis

23. Total Amount of Water Removed	24. Was Well Pumped Dry?	25. Was water added to well?	26. Was the Groundwater Sampled (Yes) No
3 Gallons	Yes (No)	(No) Yes If yes, source:	If yes, what was the sample number & Date: Sampling Personnel? W-8, 01/21/14 CM Barnhill @ 1630 3x40mL VOAs / 1 H2O

27. Final Parameters

Time	Temp C	Conductivity	pH	NTUs	WL	Removed	Flow Rate	Observations	Photo Roll #,
16:28	18.78	1569	6.72	grey/black strong odor	59.63	3 Gallons	0.25	small black specs in H2O	

IF PETROLEUM IS IN THE WELL, DO NOT TAKE pH AND CONDUCTIVITY PARAMETERS

28. Physical Appearance and Remarks: Clear H2O w/ Very Strong hydrocarbon odor

29. Purgewater disposal method: ON GROUND Surface

Sample - yellowish H2O / strong odor

Sampling / Development Parameters

Time	Temp C	Conductivity	pH	NTUs	WL (from TOC)	Volume (gallons)	Dissolved Oxygen	Flow Rate (gpm)	pHmv/ORP
16:15	17.09	1539	6.77	clear H2O V. strong odor	59.33'	Initial purge	2.1	0.25	-.6 / -202.8
16:20	18.56	1573	6.75	Bio Foul odor	—	1	2.1	0.25	0.4 / -234.
16:24	18.85	1541	6.72	Bio Foul grey black	—	2	1.5	0.25	1.5 / -261.
16:28	18.78	1569	6.72	Bio Foul grey/black	59.63	3	2.0	0.25	2.1 / -268.

(1) Note volume and physical character of sediments removed.
NTU = Nephelometric turbidity units
WL = Water Level from Top of PVC Casing

Checked By: [signature] PG — Date: 01/21/14

CMB ENVIRONMENTAL & GEOLOGICAL SERVICES, INC. - WELL DATA FORM

Type Well: ☒ MW ☐ Production ☐ Other _____	Type of Data: ☐ Development ☒ Sampling ☐ Pump Test ☐ Other _____	Well No. W-9, Sheet 1 of 1 Sheets
1. Project: GW Monitoring 2014	2. Project Location: Golden Walstad O.I.C. Lovington 66	3. Date: 01/22/14
4. Technician: CM Barnhill, PG	Lovington, NM	
7. Method: Pumping Surging Air Lift (Bailing) Other	8. Manufacturer's Designation of Rig: DSR-2001	9. Location of Well (Site, Description): W-9

Water Levels

Initial	Final	Final + 24 Hours
Date: 01/22/14 Time: 14:10	Date: 01/22/14 Time: 1430	Date: Time:
10. Total Depth of Well (from TOC): 64.80'	15. Total Depth of Well (from TOC):	20. Total Depth of Well (from TOC):
11. Water Level (from TOC): 59.01'	16. Water Level (from TOC): 59.09	21. Water Level (from TOC):

12. Water Column Height: 5.79'	Nom Dia	x = gal/ft Sch 40	Sch 80	17. 3 Well Volumes: 2.77 Gallons
13. Well Diameter: 2" SCH 40 PVC MW	(2")	(0.16)	0.1534	18. 5 Well Volumes: 4.63 Gallons
14. Well Volume (gal) (s) w.e. height): 0.926 gl.	4"	0.65	0.5972	19. Purge Volume: 3.0 Gallons
	6"	1.47	1.3540	
	8"	2.61	2.3720	

22. Size and Type of Pump or (Bailer): 1.8" Disposable Bailer, Tip, Twine

Final Field Analysis

23. Total Amount of Water Removed	24. Was Well Pumped Dry?	25. Was water added to well?	26. Was the Groundwater Sampled?
3 Gallons	Yes (No)	(No) Yes If yes, source:	(Yes) No If yes, what was the sample number & Date: Sampling Personnel? W-9, 01/22/14 CM Barnhill PG 1425 3x 40mL VOA's/HCl/BTEX

27. Final Parameters

Time	Temp C	Conductivity (ms/cm)	pH	NTUs	WL	Removed	Flow Rate	Photo Roll #, Observations
14:24	18.88	1281	6.76	Yellow Tinge Clear	59.09	3.0 gl	0.25	Yellow Tinge / Sheen Strong odor Hydrocarbon

IF PETROLEUM IS IN THE WELL, DO NOT TAKE pH AND CONDUCTIVITY PARAMETERS

28. Physical Appearance and Remarks: Clear H2O very strong hydrocarbon odor - Yellow Sheen

29. Purgewater disposal method: ON GROUND SURFACE

Sampling / Development Parameters

Time	Temp C	Conductivity (ms/cm)	pH	NTUs	WL (from TOC)	Volume (gallons)	Dissolved Oxygen	Flow Rate (gpm)	1.5 pHmv/ORP
14:13	18.01	1229	6.79	Clear H2O Strong odor	59.01	Initial parameters	1.80	0.25	6.79 / -206.3
14:16	18.69	1251	6.74	Clear H2O Strong odor	—	1	8.0	0.25	1.1 / -239.5
14:20	19.05	1264	6.74	Clear H2O Strong odor	—	2	1.5	0.25	0.8 / -262.3
14:24	18.88	1281	6.76	Clear H2O Strong odor	59.09	3	8.1	0.25	0.1 / -260.5

(1) Note volume and physical character of sediments removed.
NTU = Nephelometric turbidity units
WL = Water Level from Top of PVC Casing

Checked By: Clayton M Barnhill PG — Date: 01/22/14

CMB ENVIRONMENTAL & GEOLOGICAL SERVICES, INC. - WELL DATA FORM

Type Well: ☒ MW ☐ Production ☐ Other _____	Type of Data: ☐ Development ☒ Sampling ☐ Pump Test ☐ Other _____	Well No. W-11, Sheet 1 of 1 Sheets
1. Project: GW Monitoring 2014	2. Project Location: Golder Wolfcamp Oil Co. Lovington 66	3. Date: 01/22/14
4. Technician: CM Barnhill, PG	Lovington, NM	
7. Method: Pumping Surging Air Lift Bailing Other	8. Manufacturer's Designation of Rig: DSR-2001	9. Location of Well (Site, Description): W-11

Water Levels

Initial	Final	Final + 24 Hours
Date: 01/22/14 Time: 15:05	Date: 01/22/14 Time: 15:25	Date: Time:
10. Total Depth of Well (from TOC): 65.05'	15. Total Depth of Well (from TOC):	20. Total Depth of Well (from TOC):
11. Water Level (from TOC): 58.80'	16. Water Level (from TOC): 58.87'	21. Water Level (from TOC):

12. Water Column Height: 6.25'	Nom Dia	x = gal/ft Sch 40	Sch 80	17. 3 Well Volumes: 3.0 Gallons
13. Well Diameter: 2" SCH 40 PVC MW	2"	0.16	0.1534	18. 5 Well Volumes: 5.0 Gallons
14. Well Volume (gal) (s) w.e. height): 1.0 Gal	4"	0.65	0.5972	19. Purge Volume: 3.0 Gallons
	6"	1.47	1.3540	
	8"	2.61	2.3720	

22. Size and Type of Pump or Bailer: 1.8" Disposable Bailer, Tip, Twine

Final Field Analysis

23. Total Amount of Water Removed	24. Was Well Pumped Dry?	25. Was water added to well?	26. Was the Groundwater Sampled?
3 Gallons	Yes (No)	(No) Yes If yes, source:	(Yes) No If yes, what was the sample number & Date: Sampling Personnel? W-11, 01/22/14 CM Barnhill @ 1520 3 x 40mL VOAs HCl

27. Final Parameters

Time	Temp C	Conductivity (us/cm)	pH	NTUs	WL	Removed	Flow Rate	Observations	Photo Roll #,
15:18	19.62	1546	6.67	Clear H2O	58.87	3.0 Gallons	0.25	Slight hydrocarbon odor	826

IF PETROLEUM IS IN THE WELL, DO NOT TAKE pH AND CONDUCTIVITY PARAMETERS

28. Physical Appearance and Remarks: Clear H2O Slight hydrocarbon Odor

29. Purgewater disposal method: ON GROUND Surface

Sampling / Development Parameters

Time	Temp C	Conductivity (us/cm)	pH	NTUs	WL (from TOC)	Volume (gallons)	Dissolved Oxygen	Flow Rate (gpm)	pHmv/ORP
15:05	18.70	1569	6.71	Clear H2O Slight odor	58.80'	Initial parameters	10.2	0.25	2.6/-126.7
15:10	19.76	1598	6.70	Clear H2O Slight odor	—	1	2.8	0.25	3.0/-143.3
15:15	19.61	1574	6.70	Clear H2O Slight odor	—	2	2.7	0.25	2.8/-154.9
15:18	19.62	1546	6.67	Clear H2O Slight odor	58.87'	3	2.0	0.25	4.0/-161.6

(1) Note volume and physical character of sediments removed.
NTU = Nephelometric turbidity units
WL = Water Level from Top of PVC Casing

Checked By: Christian Bartlett PG Date: 01/22/14

CMB ENVIRONMENTAL & GEOLOGICAL SERVICES, INC. - WELL DATA FORM

Type Well	Type of Data	Well No.
☒ MW ☐ Production ☐ Other _____	☐ Development ☒ Sampling ☐ Pump Test ☐ Other _____	Sheet 1 of 1 Sheets W-14

1. Project	2. Project Location	3. Date
GW Monitoring 2014	Golden Walstad 0.16 Lovington 66 Lovington, NM	01/21/14
4. Technician		
CM Barnhill, PG		
7. Method Pumping Surging Air Lift (Bailing) Other	**8. Manufacturer's Designation of Rig**	**9. Location of Well (Site, Description)**
	DSR-200	W-14

Water Levels

Initial	Final	Final + 24 Hours
Date: 01/21/14 Time: 16:40	Date: 01/21/14 Time: 16:55	Date: Time:
10. Total Depth of Well (from TOC) 64.55'	15. Total Depth of Well (from TOC) /	20. Total Depth of Well (from TOC)
11. Water Level (from TOC) 58.15	16. Water Level (from TOC) 58.37	21. Water Level (from TOC)

12. Water Column Height	Nom Dia	x = gal/ft Sch 40	Sch 80	17. 3 Well Volumes	22. Size and Type of Pump or Bailer
6.40'				3.07 Gallons	
13. Well Diameter	(2")	(0.16)	0.1534	18. 5 Well Volumes	1.6" Disposable Bailer, Tip, Twine
2" SCH 40 PVC MW	4"	0.65	0.5972	5.12 Gallons	
	6"	1.47	1.3540		
14. Well Volume (gal) (s) w.e. height) 1.02 Gal	8"	2.61	2.3720	19. Purge Volume 3 Gallons	

Final Field Analysis

23. Total Amount of Water Removed	24. Was Well Pumped Dry?	25. Was water added to well?	26. Was the Groundwater Sampled?
3. Gallons.	Yes (No)	(No) Yes If yes, source:	(Yes) No If yes, what was the sample number & Date: @1652 Sampling Personnel? W-14, 01/21/14 CM Barnhill @ 1652 3x40 ml VOAs + 82

27. Final Parameters

Time	Temp C	Conductivity (ms/cm)	pH	NTUs	WL	Removed	Flow Rate	Photo Roll #, Observations
16:51	19.75	1739	6.63	Gray black H2O	58.37	3	0.25	Gray black Strong odor

IF PETROLEUM IS IN THE WELL, DO NOT TAKE pH AND CONDUCTIVITY PARAMETERS

28. Physical Appearance and Remarks: Clear H2O — Then Gray black Strong odor Yellow H2O @ Sample

29. Purgewater disposal method: On Ground Surface

Sampling / Development Parameters

Time	Temp C	Conductivity (ms/cm)	pH	NTUs	WL (from TOC)	Volume (gallons)	Dissolved Oxygen	Flow Rate (gpm)	pHmv/ORP
16:45	18.89	1729	6.68	Clear H2O V Strong odor	58.15	Initial parameters	1.73	0.25	5.4/-223.4
16:47	19.39	1792	6.59	Clear H2O Strong odor	—	1	1.51	0.25	9.0/-255.8
16:49	19.37	1747	6.62	Clear/Gray Black H2O	—	2	1.23	0.25	6.5/-252.6
16:51	19.75	1739	6.63	Strong odor " " "	58.37	3	1.58	0.25	7.9/-255.0

(1) Note volume and physical character of sediments removed.
NTU = Nephelometric turbidity units
WL = Water Level from Top of PVC Casing

Checked By: Clayton Walstad PG — Date: 01/21/14

CMB ENVIRONMENTAL & GEOLOGICAL SERVICES, INC. - WELL DATA FORM

Type Well: ☒ MW ☐ Production ☐ Other _____	Type of Data: ☐ Development ☒ Sampling ☐ Pump Test ☐ Other _____	Well No. W-16, Sheet 1 of 1 Sheets
1. Project: GW Monitoring 2014	2. Project Location: Gilbert Wolstenholme Lovington 66	3. Date: 01/22/14
4. Technician: CM Barnhill, PE	Lovington, NM	
7. Method: Pumping Surging Air Lift (Bailing) Other	8. Manufacturer's Designation of Rig: DSR-2001	9. Location of Well (Site, Description): W-16

Water Levels

Initial	Final	Final + 24 Hours
Date: 01/22/14 Time: 1435	Date: 01/22/14 Time: 14:58	Date: Time:
10. Total Depth of Well (from TOC): 64.98'	15. Total Depth of Well (from TOC): /	20. Total Depth of Well (from TOC):
11. Water Level (from TOC): 57.61	16. Water Level (from TOC): 57.69	21. Water Level (from TOC):

12. Water Column Height: 7.37'	Nom Dia	x = gal/ft Sch 40	Sch 80	17. 3 Well Volumes: 3.51 Gallons
13. Well Diameter: 2" SCH 40 PVC MW	(2")	(0.16)	0.1534	18. 5 Well Volumes: 5.85 Gallons
14. Well Volume (gal) (s) w.e. height): 1.17 Gal	4"	0.65	0.5972	19. Purge Volume: 3.5 Gallons
	6"	1.47	1.3540	
	8"	2.61	2.3720	

22. Size and Type of Pump or (Bailer): 1.8" Disposable Bailer, Tip, Twine

Final Field Analysis

23. Total Amount of Water Removed	24. Was Well Pumped Dry?	25. Was water added to well?	26. Was the Groundwater Sampled?
3.5 Gallons	Yes (No)	(No) Yes	(Yes) No
		If yes, source:	If yes, what was the sample number & Date:
			Sampling Personnel? CM Barnhill @ 1455 3x40mL VOA's HCl, 926

27. Final Parameters

Time	Temp C	Conductivity (us/cm)	pH	NTUs	WL	Removed	Flow Rate	Photo Roll #, Observations
14:53	19.18	2062	6.66	Clear	57.69	3.5 Gallons	0.25	Clear No Odor

IF PETROLEUM IS IN THE WELL, DO NOT TAKE pH AND CONDUCTIVITY PARAMETERS

28. Physical Appearance and Remarks: Clear H2O – No Hydrocarbon Odor

29. Purgewater disposal method: ON GROUND Surface

Sampling / Development Parameters

Time	Temp C	Conductivity (us/cm)	pH	NTUs	WL (from TOC)	Volume (gallons)	Dissolved Oxygen	Flow Rate (gpm)	pHmv/ORP
14:43	18.69	1959	6.76	Clear H2O No Odor	57.61	Initial parameters	1.1	0.25	0.1/-76.0
14:45	19.12	1984	6.68	Clear H2O No Odor	—	1	3.1	0.25	4.1/-107.7
14:48	19.15	2095	6.68	Clear H2O No Odor	—	2	1.5	0.25	4.2/-107.5
14:53	19.18	2062	6.66	Clear H2O No	57.69	3.5	1.6	0.25	5.0/-101.9

(1) Note volume and physical character of sediments removed.
NTU = Nephelometric turbidity units
WL = Water Level from Top of PVC Casing

Checked By: [signature] PE — Date: 01/22/14

CMB ENVIRONMENTAL & GEOLOGICAL SERVICES, INC. - WELL DATA FORM

Type Well ☒ MW ☐ Production ☐ Other _____	Type of Data ☐ Development ☒ Sampling ☐ Pump Test ☐ Other _____	Well No. W-19 Sheet 1 of 1 Sheets
1. Project GW Monitoring 2014	2. Project Location Golden Wolstad Oil Co. Lovington, NM	3. Date 01/22/14
4. Technician CM Barnhill, PG	Lovington, NM	
7. Method Pumping Surging Air Lift (Bailing) Other	8. Manufacturer's Designation of Rig DSR-2001	9. Location of Well (Site, Description) W-19

Water Levels

Initial	Final	Final + 24 Hours
Date: 01/22/14 Time: 13:45	Date: 01/22/14 Time: 14:03	Date: Time:
10. Total Depth of Well (from TOC) 65.30'	15. Total Depth of Well (from TOC) /	20. Total Depth of Well (from TOC)
11. Water Level (from TOC) 59.27'	16. Water Level (from TOC) 59.32'	21. Water Level (from TOC)

12. Water Column Height 6.03'	Nom Dia / x = gal/ft Sch 40 / Sch 80: 2" 0.16 0.1534 4" 0.65 0.5972 6" 1.47 1.3540 8" 2.61 2.3720	17. 3 Well Volumes 2.89 Gallons	22. Size and Type of Pump or (Bailer) 1.8" Bailer, Tip, Twine
13. Well Diameter 2" SCH 40 PVC MW		18. 5 Well Volumes 4.82 Gallons	
14. Well Volume (gal) (s) w.e. height) 0.9646al		19. Purge Volume 3.0 Gallon	

Final Field Analysis

23. Total Amount of Water Removed 3.0 Gallon	24. Was Well Pumped Dry? Yes (No)	25. Was water added to well? (No) Yes If yes, source:	26. Was the Groundwater Sampled (Yes) No If yes, what was the sample number & Date: Sampling Personnel? W-19, 01/22/14 CM Barnhill @1358 3x40mL VOA's/Hcl

27. Final Parameters

Time	Temp C	Conductivity (mS/cm)	pH	NTUs	WL	Removed	Flow Rate	Observations	Photo Roll #,
13:57	18.59	1243	6.65	Clear H2O	59.32'	3.0 Gal.	0.25	Strong Hydrocarbon odor	826

IF PETROLEUM IS IN THE WELL, DO NOT TAKE pH AND CONDUCTIVITY PARAMETERS

28. Physical Appearance and Remarks: Clear H2O with Strong hydrocarbon odor

29. Purgewater disposal method: ON Ground Surface

Sampling / Development Parameters

Time	Temp C	Conductivity (mS/cm)	pH	NTUs	WL (from TOC)	Volume (gallons)	Dissolved Oxygen	Flow Rate (gpm)	pHmv/ORP
13:48	17.76	1225	6.71	Clear Strong odor	59.27	Initial parameters	3.80	0.25	2.7/-83.1
13:51	18.48	1213	6.69	Clear Strong odor	—	1	1.80	0.25	3.4/-123.8
13:55	18.70	1230	6.67	Clear H2O Strong odor	—	2	2.90	0.25	4.4/-140.8
13:57	18.59	1243	6.65	Clear H2O Strong odor	59.32	3	3.10	0.25	5.4/-141.0

(1) Note volume and physical character of sediments removed
NTU = Nephelometric turbidity units
WL = Water Level from Top of PVC Casing

Checked By: Christopher M. Ball PG — Date: 01/22/14

CMB ENVIRONMENTAL & GEOLOGICAL SERVICES, INC. - WELL DATA FORM

Type Well ☑ MW ☐ Production ☐ Other _____	Type of Data ☐ Development ☑ Sampling ☐ Pump Test ☐ Other _____	Well No. W-20 Sheet 1 of 1 Sheets
1. Project GW Monitoring 2014	2. Project Location Walstad Oil Co. / Golden / Lovington 66	3. Date 01/22/14
4. Technician CM Barnhill, PE	Lovington, NM	
7. Method Pumping Surging Air Lift (Bailing) Other	8. Manufacturer's Designation of Rig DSR-2001	9. Location of Well (Site, Description) W-20

Water Levels

Initial	Final	Final + 24 Hours
Date: 01/22/14 Time: 12:37	Date: 01/22/14 Time: 13:02	Date: Time:
10. Total Depth of Well (from TOC) 65.18'	15. Total Depth of Well (from TOC) /	20. Total Depth of Well (from TOC) /
11. Water Level (from TOC) 59.80'	16. Water Level (from TOC) 59.80	21. Water Level (from TOC) /

12. Water Column Height 5.38'	Nom Dia	x = gal/ft Sch 40	Sch 80	17. 3 Well Volumes 2.58 Gallons
13. Well Diameter 2" SCH 40 PVC MW	(2")	0.16	0.1534	18. 5 Well Volumes 4.30 Gallons
14. Well Volume (gal) (s) w.e. height) 0.866al.	4"	0.65	0.5972	19. Purge Volume 2.75 Gallons
	6"	1.47	1.3540	
	8"	2.61	2.3720	

22. Size and Type of Pump or (Bailer)
1.5" Disposable Bailer, T.P. Twine

Final Field Analysis

23. Total Amount of Water Removed	24. Was Well Pumped Dry?	25. Was water added to well?	26. Was the Groundwater Sampled?
2.75 Gallons	Yes (No)	(No) Yes If yes, source:	(Yes) No If yes, what was the sample number & Date: Sampling Personnel? W-20, 01/22/14 CMBarnhill C1257 3x 40mL VOA's HgCl2 8260

27. Final Parameters

Time	Temp C	Conductivity (ms/cm)	pH	NTUs	WL	Removed	Flow Rate	Photo Roll #, Observations
12:55	16.61	985	7.09	Clear	59.80	2.75	0.25	Clear H2O No Odor

IF PETROLEUM IS IN THE WELL, DO NOT TAKE pH AND CONDUCTIVITY PARAMETERS

28. Physical Appearance and Remarks: Clear H2O / No Odor

29. Purgewater disposal method: ON Ground Surface

Sampling / Development Parameters

Time	Temp C	Conductivity (ms/cm)	pH	NTUs	WL (from TOC)	Volume (gallons)	Dissolved Oxygen	Flow Rate (gpm)	pHmv/ORP
12:45	16.69	976	7.23	Clear No Odor	59.80	Initial parameters	5.90	0.25	7.22 / -23.9
12:50	17.26	936	7.17	Clear No Odor	—	1	6.30	0.25	75.4 / -20.8
12:53	17.39	975	7.12	Clear No Odor	—	2	5.90	0.25	79.3 / -18.7
12:55	16.61	985	7.09	Clear No Odor	59.80	2.75	6.40	0.25	84.6 / -17.1

(1) Note volume and physical character of sediments removed.
NTU = Nephelometric turbidity units
WL = Water Level from Top of PVC Casing

Checked By: Christopher M. Barnhill, PE

Date: 01/22/14

CMB ENVIRONMENTAL & GEOLOGICAL SERVICES, INC. - WELL DATA FORM

Type Well ☑ MW ☐ Production ☐ Other _____	Type of Data ☐ Development ☑ Sampling ☐ Pump Test ☐ Other _____	Well No. W-21 Sheet 1 of 1 Sheets

1. Project GW Monitoring 2014	2. Project Location Golden Wolstad Oil Co. Lovington 66	3. Date 01/22/14
4. Technician CM Barnhill, PE	Lovington, NM	
7. Method Pumping Surging Air Lift (Bailing) Other	8. Manufacturer's Designation of Rig DSR-2001	9. Location of Well (Site, Description) W-21

Water Levels

Initial	Final	Final + 24 Hours
Date: 01/22/14 Time: 13:20	Date: 01/22/14 Time: 13:40	Date: Time:
10. Total Depth of Well (from TOC) 64.77	15. Total Depth of Well (from TOC)	20. Total Depth of Well (from TOC)
11. Water Level (from TOC) 59.22	16. Water Level (from TOC) 59.27	21. Water Level (from TOC)

12. Water Column Height 5.55'	Nom Dia	x = gal/ft Sch 40	Sch 80	17. 3 Well Volumes 2.66 Gallons
13. Well Diameter 2" Sch 40 PVC MW	2"	0.16	0.1534	18. 5 Well Volumes 4.44 Gallons
14. Well Volume (gal) (s) w.e. height) 0.886al	4"	0.65	0.5972	19. Purge Volume 2.75 Gallons
	6"	1.47	1.3540	
	8"	2.61	2.3720	

22. Size and Type of Pump or (Bailer)
1.8" Disposable Bailer, Tip, Twine

Final Field Analysis

23. Total Amount of Water Removed 2.75 Gallons	24. Was Well Pumped Dry? Yes (No)	25. Was water added to well? (No) Yes If yes, source:	26. Was the Groundwater Sampled (Yes) No If yes, what was the sample number & Date: Sampling Personnel? W-21, 01/22/14 CM Barnhill @ 1333 3x40ml VOAs/HCl/Ice

27. Final Parameters

Time	Temp C	Conductivity (mS/cm)	pH	NTUs	WL	Removed	Flow Rate	Photo Roll #, Observations
13:32	18.37	1396	6.87	Clean H2O No Odor	59.27	2.75 gal	0.25	Clean H2O No Odor

IF PETROLEUM IS IN THE WELL, DO NOT TAKE pH AND CONDUCTIVITY PARAMETERS

28. Physical Appearance and Remarks: Clear H2O – No Odor

29. Purgewater disposal method: ON Ground Surface

Sampling / Development Parameters

Time	Temp C	Conductivity (mS/cm)	pH	NTUs	WL (from TOC)	Volume (gallons)	Dissolved Oxygen	Flow Rate (gpm)	pHmv/ORP
13:24	17.35	1.380	6.86	Clear H2O No Odor	59.22	Initial parameters	6.20	0.25	-5.5 / 113.1
13:26	18.38	1405	6.90	Clear H2O No Odor	—	1	6.00	0.25	-6.6 / 105.2
13:30	18.47	1377	6.86	Clear H2O No Odor	—	2	6.20	0.25	-5.1 / 104.7
13:32	18.37	1396	6.87	Clear H2O No Odor	59.27	2.75	6.40	0.25	-5.4 / 103.5

(1) Note volume and physical character of sediments removed.
NTU = Nephelometric turbidity units
WL = Water Level from Top of PVC Casing

Checked By: Clayton Bolle PE — Date: 01/22/14

APPENDIX D
ANALYTICAL LABORATORY REPORTS

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

February 05, 2014

Clay Kilmer

Golder Associates
5200 Pasadena, NE Suite C
Albuquerque, NM 87113
TEL: (505) 821-3043
FAX (505) 821-5273

RE: Walstad Oil Co Lovington 66 OrderNo.: 1401A45

Dear Clay Kilmer:

Hall Environmental Analysis Laboratory received 10 sample(s) on 1/24/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Golder Associates
Client Sample ID: W-20
Project: Walstad Oil Co Lovington 66
Collection Date: 1/21/2014 12:57:00 PM
Lab ID: 1401A45-001
Matrix: AQUEOUS
Received Date: 1/24/2014 9:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **DJF**	
Benzene	ND	1.0		µg/L	1	1/30/2014 6:05:03 AM	R16379
Toluene	ND	1.0		µg/L	1	1/30/2014 6:05:03 AM	R16379
Ethylbenzene	ND	1.0		µg/L	1	1/30/2014 6:05:03 AM	R16379
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	1/30/2014 6:05:03 AM	R16379
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	1/30/2014 6:05:03 AM	R16379
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	1/30/2014 6:05:03 AM	R16379
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	1/30/2014 6:05:03 AM	R16379
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	1/30/2014 6:05:03 AM	R16379
Naphthalene	ND	2.0		µg/L	1	1/30/2014 6:05:03 AM	R16379
1-Methylnaphthalene	ND	4.0		µg/L	1	1/30/2014 6:05:03 AM	R16379
2-Methylnaphthalene	ND	4.0		µg/L	1	1/30/2014 6:05:03 AM	R16379
Acetone	ND	10		µg/L	1	1/30/2014 6:05:03 AM	R16379
Bromobenzene	ND	1.0		µg/L	1	1/30/2014 6:05:03 AM	R16379
Bromodichloromethane	ND	1.0		µg/L	1	1/30/2014 6:05:03 AM	R16379
Bromoform	ND	1.0		µg/L	1	1/30/2014 6:05:03 AM	R16379
Bromomethane	ND	3.0		µg/L	1	1/30/2014 6:05:03 AM	R16379
2-Butanone	ND	10		µg/L	1	1/30/2014 6:05:03 AM	R16379
Carbon disulfide	ND	10		µg/L	1	1/30/2014 6:05:03 AM	R16379
Carbon Tetrachloride	ND	1.0		µg/L	1	1/30/2014 6:05:03 AM	R16379
Chlorobenzene	ND	1.0		µg/L	1	1/30/2014 6:05:03 AM	R16379
Chloroethane	ND	2.0		µg/L	1	1/30/2014 6:05:03 AM	R16379
Chloroform	ND	1.0		µg/L	1	1/30/2014 6:05:03 AM	R16379
Chloromethane	ND	3.0		µg/L	1	1/30/2014 6:05:03 AM	R16379
2-Chlorotoluene	ND	1.0		µg/L	1	1/30/2014 6:05:03 AM	R16379
4-Chlorotoluene	ND	1.0		µg/L	1	1/30/2014 6:05:03 AM	R16379
cis-1,2-DCE	ND	1.0		µg/L	1	1/30/2014 6:05:03 AM	R16379
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	1/30/2014 6:05:03 AM	R16379
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	1/30/2014 6:05:03 AM	R16379
Dibromochloromethane	ND	1.0		µg/L	1	1/30/2014 6:05:03 AM	R16379
Dibromomethane	ND	1.0		µg/L	1	1/30/2014 6:05:03 AM	R16379
1,2-Dichlorobenzene	ND	1.0		µg/L	1	1/30/2014 6:05:03 AM	R16379
1,3-Dichlorobenzene	ND	1.0		µg/L	1	1/30/2014 6:05:03 AM	R16379
1,4-Dichlorobenzene	ND	1.0		µg/L	1	1/30/2014 6:05:03 AM	R16379
Dichlorodifluoromethane	ND	1.0		µg/L	1	1/30/2014 6:05:03 AM	R16379
1,1-Dichloroethane	ND	1.0		µg/L	1	1/30/2014 6:05:03 AM	R16379
1,1-Dichloroethene	ND	1.0		µg/L	1	1/30/2014 6:05:03 AM	R16379
1,2-Dichloropropane	ND	1.0		µg/L	1	1/30/2014 6:05:03 AM	R16379
1,3-Dichloropropane	ND	1.0		µg/L	1	1/30/2014 6:05:03 AM	R16379
2,2-Dichloropropane	ND	2.0		µg/L	1	1/30/2014 6:05:03 AM	R16379

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Golder Associates
Client Sample ID: W-20
Project: Walstad Oil Co Lovington 66
Collection Date: 1/21/2014 12:57:00 PM
Lab ID: 1401A45-001
Matrix: AQUEOUS
Received Date: 1/24/2014 9:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **DJF**	
1,1-Dichloropropene	ND	1.0		µg/L	1	1/30/2014 6:05:03 AM	R16379
Hexachlorobutadiene	ND	1.0		µg/L	1	1/30/2014 6:05:03 AM	R16379
2-Hexanone	ND	10		µg/L	1	1/30/2014 6:05:03 AM	R16379
Isopropylbenzene	ND	1.0		µg/L	1	1/30/2014 6:05:03 AM	R16379
4-Isopropyltoluene	ND	1.0		µg/L	1	1/30/2014 6:05:03 AM	R16379
4-Methyl-2-pentanone	ND	10		µg/L	1	1/30/2014 6:05:03 AM	R16379
Methylene Chloride	ND	3.0		µg/L	1	1/30/2014 6:05:03 AM	R16379
n-Butylbenzene	ND	3.0		µg/L	1	1/30/2014 6:05:03 AM	R16379
n-Propylbenzene	ND	1.0		µg/L	1	1/30/2014 6:05:03 AM	R16379
sec-Butylbenzene	ND	1.0		µg/L	1	1/30/2014 6:05:03 AM	R16379
Styrene	ND	1.0		µg/L	1	1/30/2014 6:05:03 AM	R16379
tert-Butylbenzene	ND	1.0		µg/L	1	1/30/2014 6:05:03 AM	R16379
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	1/30/2014 6:05:03 AM	R16379
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	1/30/2014 6:05:03 AM	R16379
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	1/30/2014 6:05:03 AM	R16379
trans-1,2-DCE	ND	1.0		µg/L	1	1/30/2014 6:05:03 AM	R16379
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	1/30/2014 6:05:03 AM	R16379
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	1/30/2014 6:05:03 AM	R16379
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	1/30/2014 6:05:03 AM	R16379
1,1,1-Trichloroethane	ND	1.0		µg/L	1	1/30/2014 6:05:03 AM	R16379
1,1,2-Trichloroethane	ND	1.0		µg/L	1	1/30/2014 6:05:03 AM	R16379
Trichloroethene (TCE)	ND	1.0		µg/L	1	1/30/2014 6:05:03 AM	R16379
Trichlorofluoromethane	ND	1.0		µg/L	1	1/30/2014 6:05:03 AM	R16379
1,2,3-Trichloropropane	ND	2.0		µg/L	1	1/30/2014 6:05:03 AM	R16379
Vinyl chloride	ND	1.0		µg/L	1	1/30/2014 6:05:03 AM	R16379
Xylenes, Total	ND	1.5		µg/L	1	1/30/2014 6:05:03 AM	R16379
Surr: 1,2-Dichloroethane-d4	96.7	70-130		%REC	1	1/30/2014 6:05:03 AM	R16379
Surr: 4-Bromofluorobenzene	92.9	70-130		%REC	1	1/30/2014 6:05:03 AM	R16379
Surr: Dibromofluoromethane	98.5	70-130		%REC	1	1/30/2014 6:05:03 AM	R16379
Surr: Toluene-d8	93.5	70-130		%REC	1	1/30/2014 6:05:03 AM	R16379

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Golder Associates
Client Sample ID: W-21
Project: Walstad Oil Co Lovington 66
Collection Date: 1/21/2014 1:33:00 PM
Lab ID: 1401A45-002
Matrix: AQUEOUS
Received Date: 1/24/2014 9:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **DJF**	
Benzene	ND	1.0		µg/L	1	1/30/2014 12:19:20 PM	R16413
Toluene	ND	1.0		µg/L	1	1/30/2014 12:19:20 PM	R16413
Ethylbenzene	ND	1.0		µg/L	1	1/30/2014 12:19:20 PM	R16413
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	1/30/2014 12:19:20 PM	R16413
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	1/30/2014 12:19:20 PM	R16413
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	1/30/2014 12:19:20 PM	R16413
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	1/30/2014 12:19:20 PM	R16413
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	1/30/2014 12:19:20 PM	R16413
Naphthalene	ND	2.0		µg/L	1	1/30/2014 12:19:20 PM	R16413
1-Methylnaphthalene	ND	4.0		µg/L	1	1/30/2014 12:19:20 PM	R16413
2-Methylnaphthalene	ND	4.0		µg/L	1	1/30/2014 12:19:20 PM	R16413
Acetone	ND	10		µg/L	1	1/30/2014 12:19:20 PM	R16413
Bromobenzene	ND	1.0		µg/L	1	1/30/2014 12:19:20 PM	R16413
Bromodichloromethane	ND	1.0		µg/L	1	1/30/2014 12:19:20 PM	R16413
Bromoform	ND	1.0		µg/L	1	1/30/2014 12:19:20 PM	R16413
Bromomethane	ND	3.0		µg/L	1	1/30/2014 12:19:20 PM	R16413
2-Butanone	ND	10		µg/L	1	1/30/2014 12:19:20 PM	R16413
Carbon disulfide	ND	10		µg/L	1	1/30/2014 12:19:20 PM	R16413
Carbon Tetrachloride	ND	1.0		µg/L	1	1/30/2014 12:19:20 PM	R16413
Chlorobenzene	ND	1.0		µg/L	1	1/30/2014 12:19:20 PM	R16413
Chloroethane	ND	2.0		µg/L	1	1/30/2014 12:19:20 PM	R16413
Chloroform	ND	1.0		µg/L	1	1/30/2014 12:19:20 PM	R16413
Chloromethane	ND	3.0		µg/L	1	1/30/2014 12:19:20 PM	R16413
2-Chlorotoluene	ND	1.0		µg/L	1	1/30/2014 12:19:20 PM	R16413
4-Chlorotoluene	ND	1.0		µg/L	1	1/30/2014 12:19:20 PM	R16413
cis-1,2-DCE	ND	1.0		µg/L	1	1/30/2014 12:19:20 PM	R16413
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	1/30/2014 12:19:20 PM	R16413
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	1/30/2014 12:19:20 PM	R16413
Dibromochloromethane	ND	1.0		µg/L	1	1/30/2014 12:19:20 PM	R16413
Dibromomethane	ND	1.0		µg/L	1	1/30/2014 12:19:20 PM	R16413
1,2-Dichlorobenzene	ND	1.0		µg/L	1	1/30/2014 12:19:20 PM	R16413
1,3-Dichlorobenzene	ND	1.0		µg/L	1	1/30/2014 12:19:20 PM	R16413
1,4-Dichlorobenzene	ND	1.0		µg/L	1	1/30/2014 12:19:20 PM	R16413
Dichlorodifluoromethane	ND	1.0		µg/L	1	1/30/2014 12:19:20 PM	R16413
1,1-Dichloroethane	ND	1.0		µg/L	1	1/30/2014 12:19:20 PM	R16413
1,1-Dichloroethene	ND	1.0		µg/L	1	1/30/2014 12:19:20 PM	R16413
1,2-Dichloropropane	ND	1.0		µg/L	1	1/30/2014 12:19:20 PM	R16413
1,3-Dichloropropane	ND	1.0		µg/L	1	1/30/2014 12:19:20 PM	R16413
2,2-Dichloropropane	ND	2.0		µg/L	1	1/30/2014 12:19:20 PM	R16413

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Golder Associates
Client Sample ID: W-21
Project: Walstad Oil Co Lovington 66
Collection Date: 1/21/2014 1:33:00 PM
Lab ID: 1401A45-002
Matrix: AQUEOUS
Received Date: 1/24/2014 9:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **DJF**	
1,1-Dichloropropene	ND	1.0		µg/L	1	1/30/2014 12:19:20 PM	R16413
Hexachlorobutadiene	ND	1.0		µg/L	1	1/30/2014 12:19:20 PM	R16413
2-Hexanone	ND	10		µg/L	1	1/30/2014 12:19:20 PM	R16413
Isopropylbenzene	ND	1.0		µg/L	1	1/30/2014 12:19:20 PM	R16413
4-Isopropyltoluene	ND	1.0		µg/L	1	1/30/2014 12:19:20 PM	R16413
4-Methyl-2-pentanone	ND	10		µg/L	1	1/30/2014 12:19:20 PM	R16413
Methylene Chloride	ND	3.0		µg/L	1	1/30/2014 12:19:20 PM	R16413
n-Butylbenzene	ND	3.0		µg/L	1	1/30/2014 12:19:20 PM	R16413
n-Propylbenzene	ND	1.0		µg/L	1	1/30/2014 12:19:20 PM	R16413
sec-Butylbenzene	ND	1.0		µg/L	1	1/30/2014 12:19:20 PM	R16413
Styrene	ND	1.0		µg/L	1	1/30/2014 12:19:20 PM	R16413
tert-Butylbenzene	ND	1.0		µg/L	1	1/30/2014 12:19:20 PM	R16413
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	1/30/2014 12:19:20 PM	R16413
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	1/30/2014 12:19:20 PM	R16413
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	1/30/2014 12:19:20 PM	R16413
trans-1,2-DCE	ND	1.0		µg/L	1	1/30/2014 12:19:20 PM	R16413
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	1/30/2014 12:19:20 PM	R16413
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	1/30/2014 12:19:20 PM	R16413
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	1/30/2014 12:19:20 PM	R16413
1,1,1-Trichloroethane	ND	1.0		µg/L	1	1/30/2014 12:19:20 PM	R16413
1,1,2-Trichloroethane	ND	1.0		µg/L	1	1/30/2014 12:19:20 PM	R16413
Trichloroethene (TCE)	ND	1.0		µg/L	1	1/30/2014 12:19:20 PM	R16413
Trichlorofluoromethane	ND	1.0		µg/L	1	1/30/2014 12:19:20 PM	R16413
1,2,3-Trichloropropane	ND	2.0		µg/L	1	1/30/2014 12:19:20 PM	R16413
Vinyl chloride	ND	1.0		µg/L	1	1/30/2014 12:19:20 PM	R16413
Xylenes, Total	ND	1.5		µg/L	1	1/30/2014 12:19:20 PM	R16413
Surr: 1,2-Dichloroethane-d4	97.5	70-130		%REC	1	1/30/2014 12:19:20 PM	R16413
Surr: 4-Bromofluorobenzene	82.3	70-130		%REC	1	1/30/2014 12:19:20 PM	R16413
Surr: Dibromofluoromethane	93.8	70-130		%REC	1	1/30/2014 12:19:20 PM	R16413
Surr: Toluene-d8	99.2	70-130		%REC	1	1/30/2014 12:19:20 PM	R16413

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Golder Associates
Client Sample ID: W-19
Project: Walstad Oil Co Lovington 66
Collection Date: 1/21/2014 1:58:00 PM
Lab ID: 1401A45-003
Matrix: AQUEOUS
Received Date: 1/24/2014 9:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **DJF**	
Benzene	4.9	1.0		µg/L	1	1/30/2014 7:08:37 AM	R16379
Toluene	ND	1.0		µg/L	1	1/30/2014 7:08:37 AM	R16379
Ethylbenzene	ND	1.0		µg/L	1	1/30/2014 7:08:37 AM	R16379
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	1/30/2014 7:08:37 AM	R16379
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	1/30/2014 7:08:37 AM	R16379
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	1/30/2014 7:08:37 AM	R16379
1,2-Dichloroethane (EDC)	59	1.0		µg/L	1	1/30/2014 7:08:37 AM	R16379
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	1/30/2014 7:08:37 AM	R16379
Naphthalene	ND	2.0		µg/L	1	1/30/2014 7:08:37 AM	R16379
1-Methylnaphthalene	ND	4.0		µg/L	1	1/30/2014 7:08:37 AM	R16379
2-Methylnaphthalene	ND	4.0		µg/L	1	1/30/2014 7:08:37 AM	R16379
Acetone	ND	10		µg/L	1	1/30/2014 7:08:37 AM	R16379
Bromobenzene	ND	1.0		µg/L	1	1/30/2014 7:08:37 AM	R16379
Bromodichloromethane	ND	1.0		µg/L	1	1/30/2014 7:08:37 AM	R16379
Bromoform	ND	1.0		µg/L	1	1/30/2014 7:08:37 AM	R16379
Bromomethane	ND	3.0		µg/L	1	1/30/2014 7:08:37 AM	R16379
2-Butanone	ND	10		µg/L	1	1/30/2014 7:08:37 AM	R16379
Carbon disulfide	ND	10		µg/L	1	1/30/2014 7:08:37 AM	R16379
Carbon Tetrachloride	ND	1.0		µg/L	1	1/30/2014 7:08:37 AM	R16379
Chlorobenzene	ND	1.0		µg/L	1	1/30/2014 7:08:37 AM	R16379
Chloroethane	ND	2.0		µg/L	1	1/30/2014 7:08:37 AM	R16379
Chloroform	ND	1.0		µg/L	1	1/30/2014 7:08:37 AM	R16379
Chloromethane	ND	3.0		µg/L	1	1/30/2014 7:08:37 AM	R16379
2-Chlorotoluene	ND	1.0		µg/L	1	1/30/2014 7:08:37 AM	R16379
4-Chlorotoluene	ND	1.0		µg/L	1	1/30/2014 7:08:37 AM	R16379
cis-1,2-DCE	ND	1.0		µg/L	1	1/30/2014 7:08:37 AM	R16379
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	1/30/2014 7:08:37 AM	R16379
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	1/30/2014 7:08:37 AM	R16379
Dibromochloromethane	ND	1.0		µg/L	1	1/30/2014 7:08:37 AM	R16379
Dibromomethane	ND	1.0		µg/L	1	1/30/2014 7:08:37 AM	R16379
1,2-Dichlorobenzene	ND	1.0		µg/L	1	1/30/2014 7:08:37 AM	R16379
1,3-Dichlorobenzene	ND	1.0		µg/L	1	1/30/2014 7:08:37 AM	R16379
1,4-Dichlorobenzene	ND	1.0		µg/L	1	1/30/2014 7:08:37 AM	R16379
Dichlorodifluoromethane	ND	1.0		µg/L	1	1/30/2014 7:08:37 AM	R16379
1,1-Dichloroethane	ND	1.0		µg/L	1	1/30/2014 7:08:37 AM	R16379
1,1-Dichloroethene	ND	1.0		µg/L	1	1/30/2014 7:08:37 AM	R16379
1,2-Dichloropropane	6.1	1.0		µg/L	1	1/30/2014 7:08:37 AM	R16379
1,3-Dichloropropane	ND	1.0		µg/L	1	1/30/2014 7:08:37 AM	R16379
2,2-Dichloropropane	ND	2.0		µg/L	1	1/30/2014 7:08:37 AM	R16379

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Golder Associates
Client Sample ID: W-19
Project: Walstad Oil Co Lovington 66
Collection Date: 1/21/2014 1:58:00 PM
Lab ID: 1401A45-003
Matrix: AQUEOUS
Received Date: 1/24/2014 9:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **DJF**	
1,1-Dichloropropene	ND	1.0		µg/L	1	1/30/2014 7:08:37 AM	R16379
Hexachlorobutadiene	ND	1.0		µg/L	1	1/30/2014 7:08:37 AM	R16379
2-Hexanone	ND	10		µg/L	1	1/30/2014 7:08:37 AM	R16379
Isopropylbenzene	ND	1.0		µg/L	1	1/30/2014 7:08:37 AM	R16379
4-Isopropyltoluene	ND	1.0		µg/L	1	1/30/2014 7:08:37 AM	R16379
4-Methyl-2-pentanone	ND	10		µg/L	1	1/30/2014 7:08:37 AM	R16379
Methylene Chloride	ND	3.0		µg/L	1	1/30/2014 7:08:37 AM	R16379
n-Butylbenzene	ND	3.0		µg/L	1	1/30/2014 7:08:37 AM	R16379
n-Propylbenzene	ND	1.0		µg/L	1	1/30/2014 7:08:37 AM	R16379
sec-Butylbenzene	ND	1.0		µg/L	1	1/30/2014 7:08:37 AM	R16379
Styrene	ND	1.0		µg/L	1	1/30/2014 7:08:37 AM	R16379
tert-Butylbenzene	ND	1.0		µg/L	1	1/30/2014 7:08:37 AM	R16379
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	1/30/2014 7:08:37 AM	R16379
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	1/30/2014 7:08:37 AM	R16379
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	1/30/2014 7:08:37 AM	R16379
trans-1,2-DCE	ND	1.0		µg/L	1	1/30/2014 7:08:37 AM	R16379
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	1/30/2014 7:08:37 AM	R16379
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	1/30/2014 7:08:37 AM	R16379
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	1/30/2014 7:08:37 AM	R16379
1,1,1-Trichloroethane	ND	1.0		µg/L	1	1/30/2014 7:08:37 AM	R16379
1,1,2-Trichloroethane	ND	1.0		µg/L	1	1/30/2014 7:08:37 AM	R16379
Trichloroethene (TCE)	ND	1.0		µg/L	1	1/30/2014 7:08:37 AM	R16379
Trichlorofluoromethane	ND	1.0		µg/L	1	1/30/2014 7:08:37 AM	R16379
1,2,3-Trichloropropane	ND	2.0		µg/L	1	1/30/2014 7:08:37 AM	R16379
Vinyl chloride	ND	1.0		µg/L	1	1/30/2014 7:08:37 AM	R16379
Xylenes, Total	ND	1.5		µg/L	1	1/30/2014 7:08:37 AM	R16379
Surr: 1,2-Dichloroethane-d4	94.0	70-130		%REC	1	1/30/2014 7:08:37 AM	R16379
Surr: 4-Bromofluorobenzene	91.7	70-130		%REC	1	1/30/2014 7:08:37 AM	R16379
Surr: Dibromofluoromethane	95.4	70-130		%REC	1	1/30/2014 7:08:37 AM	R16379
Surr: Toluene-d8	96.7	70-130		%REC	1	1/30/2014 7:08:37 AM	R16379

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Golder Associates
Client Sample ID: W-9
Project: Walstad Oil Co Lovington 66
Collection Date: 1/21/2014 2:25:00 PM
Lab ID: 1401A45-004
Matrix: AQUEOUS
Received Date: 1/24/2014 9:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **DJF**	
Benzene	7500	200		µg/L	200	1/30/2014 12:51:19 PM	R16413
Toluene	ND	10		µg/L	10	1/30/2014 7:40:31 AM	R16379
Ethylbenzene	1200	200		µg/L	200	1/30/2014 12:51:19 PM	R16413
Methyl tert-butyl ether (MTBE)	100	10		µg/L	10	1/30/2014 7:40:31 AM	R16379
1,2,4-Trimethylbenzene	560	10		µg/L	10	1/30/2014 7:40:31 AM	R16379
1,3,5-Trimethylbenzene	230	10		µg/L	10	1/30/2014 7:40:31 AM	R16379
1,2-Dichloroethane (EDC)	910	10		µg/L	10	1/30/2014 7:40:31 AM	R16379
1,2-Dibromoethane (EDB)	ND	10		µg/L	10	1/30/2014 7:40:31 AM	R16379
Naphthalene	180	20		µg/L	10	1/30/2014 7:40:31 AM	R16379
1-Methylnaphthalene	ND	40		µg/L	10	1/30/2014 7:40:31 AM	R16379
2-Methylnaphthalene	ND	40		µg/L	10	1/30/2014 7:40:31 AM	R16379
Acetone	ND	100		µg/L	10	1/30/2014 7:40:31 AM	R16379
Bromobenzene	ND	10		µg/L	10	1/30/2014 7:40:31 AM	R16379
Bromodichloromethane	ND	10		µg/L	10	1/30/2014 7:40:31 AM	R16379
Bromoform	ND	10		µg/L	10	1/30/2014 7:40:31 AM	R16379
Bromomethane	ND	30		µg/L	10	1/30/2014 7:40:31 AM	R16379
2-Butanone	ND	100		µg/L	10	1/30/2014 7:40:31 AM	R16379
Carbon disulfide	ND	100		µg/L	10	1/30/2014 7:40:31 AM	R16379
Carbon Tetrachloride	ND	10		µg/L	10	1/30/2014 7:40:31 AM	R16379
Chlorobenzene	ND	10		µg/L	10	1/30/2014 7:40:31 AM	R16379
Chloroethane	ND	20		µg/L	10	1/30/2014 7:40:31 AM	R16379
Chloroform	ND	10		µg/L	10	1/30/2014 7:40:31 AM	R16379
Chloromethane	ND	30		µg/L	10	1/30/2014 7:40:31 AM	R16379
2-Chlorotoluene	ND	10		µg/L	10	1/30/2014 7:40:31 AM	R16379
4-Chlorotoluene	ND	10		µg/L	10	1/30/2014 7:40:31 AM	R16379
cis-1,2-DCE	ND	10		µg/L	10	1/30/2014 7:40:31 AM	R16379
cis-1,3-Dichloropropene	ND	10		µg/L	10	1/30/2014 7:40:31 AM	R16379
1,2-Dibromo-3-chloropropane	ND	20		µg/L	10	1/30/2014 7:40:31 AM	R16379
Dibromochloromethane	ND	10		µg/L	10	1/30/2014 7:40:31 AM	R16379
Dibromomethane	ND	10		µg/L	10	1/30/2014 7:40:31 AM	R16379
1,2-Dichlorobenzene	ND	10		µg/L	10	1/30/2014 7:40:31 AM	R16379
1,3-Dichlorobenzene	ND	10		µg/L	10	1/30/2014 7:40:31 AM	R16379
1,4-Dichlorobenzene	ND	10		µg/L	10	1/30/2014 7:40:31 AM	R16379
Dichlorodifluoromethane	ND	10		µg/L	10	1/30/2014 7:40:31 AM	R16379
1,1-Dichloroethane	ND	10		µg/L	10	1/30/2014 7:40:31 AM	R16379
1,1-Dichloroethene	ND	10		µg/L	10	1/30/2014 7:40:31 AM	R16379
1,2-Dichloropropane	47	10		µg/L	10	1/30/2014 7:40:31 AM	R16379
1,3-Dichloropropane	ND	10		µg/L	10	1/30/2014 7:40:31 AM	R16379
2,2-Dichloropropane	ND	20		µg/L	10	1/30/2014 7:40:31 AM	R16379

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Golder Associates
Client Sample ID: W-9
Project: Walstad Oil Co Lovington 66
Collection Date: 1/21/2014 2:25:00 PM
Lab ID: 1401A45-004
Matrix: AQUEOUS
Received Date: 1/24/2014 9:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **DJF**	
1,1-Dichloropropene	ND	10		µg/L	10	1/30/2014 7:40:31 AM	R16379
Hexachlorobutadiene	ND	10		µg/L	10	1/30/2014 7:40:31 AM	R16379
2-Hexanone	ND	100		µg/L	10	1/30/2014 7:40:31 AM	R16379
Isopropylbenzene	39	10		µg/L	10	1/30/2014 7:40:31 AM	R16379
4-Isopropyltoluene	ND	10		µg/L	10	1/30/2014 7:40:31 AM	R16379
4-Methyl-2-pentanone	ND	100		µg/L	10	1/30/2014 7:40:31 AM	R16379
Methylene Chloride	ND	30		µg/L	10	1/30/2014 7:40:31 AM	R16379
n-Butylbenzene	ND	30		µg/L	10	1/30/2014 7:40:31 AM	R16379
n-Propylbenzene	150	10		µg/L	10	1/30/2014 7:40:31 AM	R16379
sec-Butylbenzene	ND	10		µg/L	10	1/30/2014 7:40:31 AM	R16379
Styrene	ND	10		µg/L	10	1/30/2014 7:40:31 AM	R16379
tert-Butylbenzene	ND	10		µg/L	10	1/30/2014 7:40:31 AM	R16379
1,1,1,2-Tetrachloroethane	ND	10		µg/L	10	1/30/2014 7:40:31 AM	R16379
1,1,2,2-Tetrachloroethane	ND	20		µg/L	10	1/30/2014 7:40:31 AM	R16379
Tetrachloroethene (PCE)	ND	10		µg/L	10	1/30/2014 7:40:31 AM	R16379
trans-1,2-DCE	ND	10		µg/L	10	1/30/2014 7:40:31 AM	R16379
trans-1,3-Dichloropropene	ND	10		µg/L	10	1/30/2014 7:40:31 AM	R16379
1,2,3-Trichlorobenzene	ND	10		µg/L	10	1/30/2014 7:40:31 AM	R16379
1,2,4-Trichlorobenzene	ND	10		µg/L	10	1/30/2014 7:40:31 AM	R16379
1,1,1-Trichloroethane	ND	10		µg/L	10	1/30/2014 7:40:31 AM	R16379
1,1,2-Trichloroethane	ND	10		µg/L	10	1/30/2014 7:40:31 AM	R16379
Trichloroethene (TCE)	ND	10		µg/L	10	1/30/2014 7:40:31 AM	R16379
Trichlorofluoromethane	ND	10		µg/L	10	1/30/2014 7:40:31 AM	R16379
1,2,3-Trichloropropane	ND	20		µg/L	10	1/30/2014 7:40:31 AM	R16379
Vinyl chloride	ND	10		µg/L	10	1/30/2014 7:40:31 AM	R16379
Xylenes, Total	250	15		µg/L	10	1/30/2014 7:40:31 AM	R16379
Surr: 1,2-Dichloroethane-d4	94.3	70-130		%REC	10	1/30/2014 7:40:31 AM	R16379
Surr: 4-Bromofluorobenzene	91.5	70-130		%REC	10	1/30/2014 7:40:31 AM	R16379
Surr: Dibromofluoromethane	103	70-130		%REC	10	1/30/2014 7:40:31 AM	R16379
Surr: Toluene-d8	94.3	70-130		%REC	10	1/30/2014 7:40:31 AM	R16379

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Golder Associates
Client Sample ID: W-16
Project: Walstad Oil Co Lovington 66
Collection Date: 1/21/2014 2:55:00 PM
Lab ID: 1401A45-005
Matrix: AQUEOUS
Received Date: 1/24/2014 9:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **DJF**	
Benzene	ND	1.0		µg/L	1	1/30/2014 1:23:05 PM	R16413
Toluene	ND	1.0		µg/L	1	1/30/2014 1:23:05 PM	R16413
Ethylbenzene	ND	1.0		µg/L	1	1/30/2014 1:23:05 PM	R16413
Methyl tert-butyl ether (MTBE)	4.3	1.0		µg/L	1	1/30/2014 1:23:05 PM	R16413
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	1/30/2014 1:23:05 PM	R16413
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	1/30/2014 1:23:05 PM	R16413
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	1/30/2014 1:23:05 PM	R16413
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	1/30/2014 1:23:05 PM	R16413
Naphthalene	ND	2.0		µg/L	1	1/30/2014 1:23:05 PM	R16413
1-Methylnaphthalene	ND	4.0		µg/L	1	1/30/2014 1:23:05 PM	R16413
2-Methylnaphthalene	ND	4.0		µg/L	1	1/30/2014 1:23:05 PM	R16413
Acetone	ND	10		µg/L	1	1/30/2014 1:23:05 PM	R16413
Bromobenzene	ND	1.0		µg/L	1	1/30/2014 1:23:05 PM	R16413
Bromodichloromethane	ND	1.0		µg/L	1	1/30/2014 1:23:05 PM	R16413
Bromoform	ND	1.0		µg/L	1	1/30/2014 1:23:05 PM	R16413
Bromomethane	ND	3.0		µg/L	1	1/30/2014 1:23:05 PM	R16413
2-Butanone	ND	10		µg/L	1	1/30/2014 1:23:05 PM	R16413
Carbon disulfide	ND	10		µg/L	1	1/30/2014 1:23:05 PM	R16413
Carbon Tetrachloride	ND	1.0		µg/L	1	1/30/2014 1:23:05 PM	R16413
Chlorobenzene	ND	1.0		µg/L	1	1/30/2014 1:23:05 PM	R16413
Chloroethane	ND	2.0		µg/L	1	1/30/2014 1:23:05 PM	R16413
Chloroform	ND	1.0		µg/L	1	1/30/2014 1:23:05 PM	R16413
Chloromethane	ND	3.0		µg/L	1	1/30/2014 1:23:05 PM	R16413
2-Chlorotoluene	ND	1.0		µg/L	1	1/30/2014 1:23:05 PM	R16413
4-Chlorotoluene	ND	1.0		µg/L	1	1/30/2014 1:23:05 PM	R16413
cis-1,2-DCE	ND	1.0		µg/L	1	1/30/2014 1:23:05 PM	R16413
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	1/30/2014 1:23:05 PM	R16413
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	1/30/2014 1:23:05 PM	R16413
Dibromochloromethane	ND	1.0		µg/L	1	1/30/2014 1:23:05 PM	R16413
Dibromomethane	ND	1.0		µg/L	1	1/30/2014 1:23:05 PM	R16413
1,2-Dichlorobenzene	ND	1.0		µg/L	1	1/30/2014 1:23:05 PM	R16413
1,3-Dichlorobenzene	ND	1.0		µg/L	1	1/30/2014 1:23:05 PM	R16413
1,4-Dichlorobenzene	ND	1.0		µg/L	1	1/30/2014 1:23:05 PM	R16413
Dichlorodifluoromethane	ND	1.0		µg/L	1	1/30/2014 1:23:05 PM	R16413
1,1-Dichloroethane	ND	1.0		µg/L	1	1/30/2014 1:23:05 PM	R16413
1,1-Dichloroethene	ND	1.0		µg/L	1	1/30/2014 1:23:05 PM	R16413
1,2-Dichloropropane	ND	1.0		µg/L	1	1/30/2014 1:23:05 PM	R16413
1,3-Dichloropropane	ND	1.0		µg/L	1	1/30/2014 1:23:05 PM	R16413
2,2-Dichloropropane	ND	2.0		µg/L	1	1/30/2014 1:23:05 PM	R16413

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Golder Associates
Client Sample ID: W-16
Project: Walstad Oil Co Lovington 66
Collection Date: 1/21/2014 2:55:00 PM
Lab ID: 1401A45-005
Matrix: AQUEOUS
Received Date: 1/24/2014 9:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **DJF**	
1,1-Dichloropropene	ND	1.0		µg/L	1	1/30/2014 1:23:05 PM	R16413
Hexachlorobutadiene	ND	1.0		µg/L	1	1/30/2014 1:23:05 PM	R16413
2-Hexanone	ND	10		µg/L	1	1/30/2014 1:23:05 PM	R16413
Isopropylbenzene	ND	1.0		µg/L	1	1/30/2014 1:23:05 PM	R16413
4-Isopropyltoluene	ND	1.0		µg/L	1	1/30/2014 1:23:05 PM	R16413
4-Methyl-2-pentanone	ND	10		µg/L	1	1/30/2014 1:23:05 PM	R16413
Methylene Chloride	ND	3.0		µg/L	1	1/30/2014 1:23:05 PM	R16413
n-Butylbenzene	ND	3.0		µg/L	1	1/30/2014 1:23:05 PM	R16413
n-Propylbenzene	ND	1.0		µg/L	1	1/30/2014 1:23:05 PM	R16413
sec-Butylbenzene	ND	1.0		µg/L	1	1/30/2014 1:23:05 PM	R16413
Styrene	ND	1.0		µg/L	1	1/30/2014 1:23:05 PM	R16413
tert-Butylbenzene	ND	1.0		µg/L	1	1/30/2014 1:23:05 PM	R16413
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	1/30/2014 1:23:05 PM	R16413
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	1/30/2014 1:23:05 PM	R16413
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	1/30/2014 1:23:05 PM	R16413
trans-1,2-DCE	ND	1.0		µg/L	1	1/30/2014 1:23:05 PM	R16413
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	1/30/2014 1:23:05 PM	R16413
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	1/30/2014 1:23:05 PM	R16413
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	1/30/2014 1:23:05 PM	R16413
1,1,1-Trichloroethane	ND	1.0		µg/L	1	1/30/2014 1:23:05 PM	R16413
1,1,2-Trichloroethane	ND	1.0		µg/L	1	1/30/2014 1:23:05 PM	R16413
Trichloroethene (TCE)	ND	1.0		µg/L	1	1/30/2014 1:23:05 PM	R16413
Trichlorofluoromethane	ND	1.0		µg/L	1	1/30/2014 1:23:05 PM	R16413
1,2,3-Trichloropropane	ND	2.0		µg/L	1	1/30/2014 1:23:05 PM	R16413
Vinyl chloride	ND	1.0		µg/L	1	1/30/2014 1:23:05 PM	R16413
Xylenes, Total	ND	1.5		µg/L	1	1/30/2014 1:23:05 PM	R16413
Surr: 1,2-Dichloroethane-d4	98.9	70-130		%REC	1	1/30/2014 1:23:05 PM	R16413
Surr: 4-Bromofluorobenzene	86.9	70-130		%REC	1	1/30/2014 1:23:05 PM	R16413
Surr: Dibromofluoromethane	95.8	70-130		%REC	1	1/30/2014 1:23:05 PM	R16413
Surr: Toluene-d8	102	70-130		%REC	1	1/30/2014 1:23:05 PM	R16413

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Golder Associates
Client Sample ID: W-11
Project: Walstad Oil Co Lovington 66
Collection Date: 1/21/2014 3:20:00 PM
Lab ID: 1401A45-006
Matrix: AQUEOUS
Received Date: 1/24/2014 9:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **DJF**	
Benzene	5.4	1.0		µg/L	1	1/30/2014 1:55:04 PM	R16413
Toluene	ND	1.0		µg/L	1	1/30/2014 1:55:04 PM	R16413
Ethylbenzene	25	1.0		µg/L	1	1/30/2014 1:55:04 PM	R16413
Methyl tert-butyl ether (MTBE)	44	1.0		µg/L	1	1/30/2014 1:55:04 PM	R16413
1,2,4-Trimethylbenzene	2.0	1.0		µg/L	1	1/30/2014 1:55:04 PM	R16413
1,3,5-Trimethylbenzene	2.0	1.0		µg/L	1	1/30/2014 1:55:04 PM	R16413
1,2-Dichloroethane (EDC)	51	1.0		µg/L	1	1/30/2014 1:55:04 PM	R16413
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	1/30/2014 1:55:04 PM	R16413
Naphthalene	ND	2.0		µg/L	1	1/30/2014 1:55:04 PM	R16413
1-Methylnaphthalene	ND	4.0		µg/L	1	1/30/2014 1:55:04 PM	R16413
2-Methylnaphthalene	ND	4.0		µg/L	1	1/30/2014 1:55:04 PM	R16413
Acetone	ND	10		µg/L	1	1/30/2014 1:55:04 PM	R16413
Bromobenzene	ND	1.0		µg/L	1	1/30/2014 1:55:04 PM	R16413
Bromodichloromethane	ND	1.0		µg/L	1	1/30/2014 1:55:04 PM	R16413
Bromoform	ND	1.0		µg/L	1	1/30/2014 1:55:04 PM	R16413
Bromomethane	ND	3.0		µg/L	1	1/30/2014 1:55:04 PM	R16413
2-Butanone	ND	10		µg/L	1	1/30/2014 1:55:04 PM	R16413
Carbon disulfide	ND	10		µg/L	1	1/30/2014 1:55:04 PM	R16413
Carbon Tetrachloride	ND	1.0		µg/L	1	1/30/2014 1:55:04 PM	R16413
Chlorobenzene	ND	1.0		µg/L	1	1/30/2014 1:55:04 PM	R16413
Chloroethane	ND	2.0		µg/L	1	1/30/2014 1:55:04 PM	R16413
Chloroform	ND	1.0		µg/L	1	1/30/2014 1:55:04 PM	R16413
Chloromethane	ND	3.0		µg/L	1	1/30/2014 1:55:04 PM	R16413
2-Chlorotoluene	ND	1.0		µg/L	1	1/30/2014 1:55:04 PM	R16413
4-Chlorotoluene	ND	1.0		µg/L	1	1/30/2014 1:55:04 PM	R16413
cis-1,2-DCE	ND	1.0		µg/L	1	1/30/2014 1:55:04 PM	R16413
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	1/30/2014 1:55:04 PM	R16413
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	1/30/2014 1:55:04 PM	R16413
Dibromochloromethane	ND	1.0		µg/L	1	1/30/2014 1:55:04 PM	R16413
Dibromomethane	ND	1.0		µg/L	1	1/30/2014 1:55:04 PM	R16413
1,2-Dichlorobenzene	ND	1.0		µg/L	1	1/30/2014 1:55:04 PM	R16413
1,3-Dichlorobenzene	ND	1.0		µg/L	1	1/30/2014 1:55:04 PM	R16413
1,4-Dichlorobenzene	ND	1.0		µg/L	1	1/30/2014 1:55:04 PM	R16413
Dichlorodifluoromethane	ND	1.0		µg/L	1	1/30/2014 1:55:04 PM	R16413
1,1-Dichloroethane	ND	1.0		µg/L	1	1/30/2014 1:55:04 PM	R16413
1,1-Dichloroethene	ND	1.0		µg/L	1	1/30/2014 1:55:04 PM	R16413
1,2-Dichloropropane	ND	1.0		µg/L	1	1/30/2014 1:55:04 PM	R16413
1,3-Dichloropropane	ND	1.0		µg/L	1	1/30/2014 1:55:04 PM	R16413
2,2-Dichloropropane	ND	2.0		µg/L	1	1/30/2014 1:55:04 PM	R16413

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Golder Associates
Client Sample ID: W-11
Project: Walstad Oil Co Lovington 66
Collection Date: 1/21/2014 3:20:00 PM
Lab ID: 1401A45-006
Matrix: AQUEOUS
Received Date: 1/24/2014 9:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **DJF**	
1,1-Dichloropropene	ND	1.0		µg/L	1	1/30/2014 1:55:04 PM	R16413
Hexachlorobutadiene	ND	1.0		µg/L	1	1/30/2014 1:55:04 PM	R16413
2-Hexanone	ND	10		µg/L	1	1/30/2014 1:55:04 PM	R16413
Isopropylbenzene	7.8	1.0		µg/L	1	1/30/2014 1:55:04 PM	R16413
4-Isopropyltoluene	ND	1.0		µg/L	1	1/30/2014 1:55:04 PM	R16413
4-Methyl-2-pentanone	ND	10		µg/L	1	1/30/2014 1:55:04 PM	R16413
Methylene Chloride	ND	3.0		µg/L	1	1/30/2014 1:55:04 PM	R16413
n-Butylbenzene	ND	3.0		µg/L	1	1/30/2014 1:55:04 PM	R16413
n-Propylbenzene	4.8	1.0		µg/L	1	1/30/2014 1:55:04 PM	R16413
sec-Butylbenzene	3.6	1.0		µg/L	1	1/30/2014 1:55:04 PM	R16413
Styrene	ND	1.0		µg/L	1	1/30/2014 1:55:04 PM	R16413
tert-Butylbenzene	ND	1.0		µg/L	1	1/30/2014 1:55:04 PM	R16413
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	1/30/2014 1:55:04 PM	R16413
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	1/30/2014 1:55:04 PM	R16413
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	1/30/2014 1:55:04 PM	R16413
trans-1,2-DCE	ND	1.0		µg/L	1	1/30/2014 1:55:04 PM	R16413
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	1/30/2014 1:55:04 PM	R16413
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	1/30/2014 1:55:04 PM	R16413
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	1/30/2014 1:55:04 PM	R16413
1,1,1-Trichloroethane	ND	1.0		µg/L	1	1/30/2014 1:55:04 PM	R16413
1,1,2-Trichloroethane	ND	1.0		µg/L	1	1/30/2014 1:55:04 PM	R16413
Trichloroethene (TCE)	ND	1.0		µg/L	1	1/30/2014 1:55:04 PM	R16413
Trichlorofluoromethane	ND	1.0		µg/L	1	1/30/2014 1:55:04 PM	R16413
1,2,3-Trichloropropane	ND	2.0		µg/L	1	1/30/2014 1:55:04 PM	R16413
Vinyl chloride	ND	1.0		µg/L	1	1/30/2014 1:55:04 PM	R16413
Xylenes, Total	1.8	1.5		µg/L	1	1/30/2014 1:55:04 PM	R16413
Surr: 1,2-Dichloroethane-d4	100	70-130		%REC	1	1/30/2014 1:55:04 PM	R16413
Surr: 4-Bromofluorobenzene	94.7	70-130		%REC	1	1/30/2014 1:55:04 PM	R16413
Surr: Dibromofluoromethane	101	70-130		%REC	1	1/30/2014 1:55:04 PM	R16413
Surr: Toluene-d8	97.8	70-130		%REC	1	1/30/2014 1:55:04 PM	R16413

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Golder Associates
Client Sample ID: W-5
Project: Walstad Oil Co Lovington 66
Collection Date: 1/21/2014 3:50:00 PM
Lab ID: 1401A45-007
Matrix: AQUEOUS
Received Date: 1/24/2014 9:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **DJF**	
Benzene	8.5	1.0		µg/L	1	1/30/2014 4:02:25 PM	R16413
Toluene	1.0	1.0		µg/L	1	1/30/2014 4:02:25 PM	R16413
Ethylbenzene	2.7	1.0		µg/L	1	1/30/2014 4:02:25 PM	R16413
Methyl tert-butyl ether (MTBE)	3.8	1.0		µg/L	1	1/30/2014 4:02:25 PM	R16413
1,2,4-Trimethylbenzene	1.2	1.0		µg/L	1	1/30/2014 4:02:25 PM	R16413
1,3,5-Trimethylbenzene	1.0	1.0		µg/L	1	1/30/2014 4:02:25 PM	R16413
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	1/30/2014 4:02:25 PM	R16413
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	1/30/2014 4:02:25 PM	R16413
Naphthalene	ND	2.0		µg/L	1	1/30/2014 4:02:25 PM	R16413
1-Methylnaphthalene	ND	4.0		µg/L	1	1/30/2014 4:02:25 PM	R16413
2-Methylnaphthalene	ND	4.0		µg/L	1	1/30/2014 4:02:25 PM	R16413
Acetone	ND	10		µg/L	1	1/30/2014 4:02:25 PM	R16413
Bromobenzene	ND	1.0		µg/L	1	1/30/2014 4:02:25 PM	R16413
Bromodichloromethane	ND	1.0		µg/L	1	1/30/2014 4:02:25 PM	R16413
Bromoform	ND	1.0		µg/L	1	1/30/2014 4:02:25 PM	R16413
Bromomethane	ND	3.0		µg/L	1	1/30/2014 4:02:25 PM	R16413
2-Butanone	ND	10		µg/L	1	1/30/2014 4:02:25 PM	R16413
Carbon disulfide	ND	10		µg/L	1	1/30/2014 4:02:25 PM	R16413
Carbon Tetrachloride	ND	1.0		µg/L	1	1/30/2014 4:02:25 PM	R16413
Chlorobenzene	ND	1.0		µg/L	1	1/30/2014 4:02:25 PM	R16413
Chloroethane	ND	2.0		µg/L	1	1/30/2014 4:02:25 PM	R16413
Chloroform	ND	1.0		µg/L	1	1/30/2014 4:02:25 PM	R16413
Chloromethane	ND	3.0		µg/L	1	1/30/2014 4:02:25 PM	R16413
2-Chlorotoluene	ND	1.0		µg/L	1	1/30/2014 4:02:25 PM	R16413
4-Chlorotoluene	ND	1.0		µg/L	1	1/30/2014 4:02:25 PM	R16413
cis-1,2-DCE	ND	1.0		µg/L	1	1/30/2014 4:02:25 PM	R16413
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	1/30/2014 4:02:25 PM	R16413
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	1/30/2014 4:02:25 PM	R16413
Dibromochloromethane	ND	1.0		µg/L	1	1/30/2014 4:02:25 PM	R16413
Dibromomethane	ND	1.0		µg/L	1	1/30/2014 4:02:25 PM	R16413
1,2-Dichlorobenzene	ND	1.0		µg/L	1	1/30/2014 4:02:25 PM	R16413
1,3-Dichlorobenzene	ND	1.0		µg/L	1	1/30/2014 4:02:25 PM	R16413
1,4-Dichlorobenzene	ND	1.0		µg/L	1	1/30/2014 4:02:25 PM	R16413
Dichlorodifluoromethane	ND	1.0		µg/L	1	1/30/2014 4:02:25 PM	R16413
1,1-Dichloroethane	ND	1.0		µg/L	1	1/30/2014 4:02:25 PM	R16413
1,1-Dichloroethene	ND	1.0		µg/L	1	1/30/2014 4:02:25 PM	R16413
1,2-Dichloropropane	ND	1.0		µg/L	1	1/30/2014 4:02:25 PM	R16413
1,3-Dichloropropane	ND	1.0		µg/L	1	1/30/2014 4:02:25 PM	R16413
2,2-Dichloropropane	ND	2.0		µg/L	1	1/30/2014 4:02:25 PM	R16413

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Golder Associates
Client Sample ID: W-5
Project: Walstad Oil Co Lovington 66
Collection Date: 1/21/2014 3:50:00 PM
Lab ID: 1401A45-007
Matrix: AQUEOUS
Received Date: 1/24/2014 9:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **DJF**	
1,1-Dichloropropene	ND	1.0		µg/L	1	1/30/2014 4:02:25 PM	R16413
Hexachlorobutadiene	ND	1.0		µg/L	1	1/30/2014 4:02:25 PM	R16413
2-Hexanone	ND	10		µg/L	1	1/30/2014 4:02:25 PM	R16413
Isopropylbenzene	ND	1.0		µg/L	1	1/30/2014 4:02:25 PM	R16413
4-Isopropyltoluene	ND	1.0		µg/L	1	1/30/2014 4:02:25 PM	R16413
4-Methyl-2-pentanone	ND	10		µg/L	1	1/30/2014 4:02:25 PM	R16413
Methylene Chloride	ND	3.0		µg/L	1	1/30/2014 4:02:25 PM	R16413
n-Butylbenzene	ND	3.0		µg/L	1	1/30/2014 4:02:25 PM	R16413
n-Propylbenzene	ND	1.0		µg/L	1	1/30/2014 4:02:25 PM	R16413
sec-Butylbenzene	ND	1.0		µg/L	1	1/30/2014 4:02:25 PM	R16413
Styrene	ND	1.0		µg/L	1	1/30/2014 4:02:25 PM	R16413
tert-Butylbenzene	ND	1.0		µg/L	1	1/30/2014 4:02:25 PM	R16413
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	1/30/2014 4:02:25 PM	R16413
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	1/30/2014 4:02:25 PM	R16413
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	1/30/2014 4:02:25 PM	R16413
trans-1,2-DCE	ND	1.0		µg/L	1	1/30/2014 4:02:25 PM	R16413
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	1/30/2014 4:02:25 PM	R16413
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	1/30/2014 4:02:25 PM	R16413
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	1/30/2014 4:02:25 PM	R16413
1,1,1-Trichloroethane	ND	1.0		µg/L	1	1/30/2014 4:02:25 PM	R16413
1,1,2-Trichloroethane	ND	1.0		µg/L	1	1/30/2014 4:02:25 PM	R16413
Trichloroethene (TCE)	ND	1.0		µg/L	1	1/30/2014 4:02:25 PM	R16413
Trichlorofluoromethane	ND	1.0		µg/L	1	1/30/2014 4:02:25 PM	R16413
1,2,3-Trichloropropane	ND	2.0		µg/L	1	1/30/2014 4:02:25 PM	R16413
Vinyl chloride	ND	1.0		µg/L	1	1/30/2014 4:02:25 PM	R16413
Xylenes, Total	2.5	1.5		µg/L	1	1/30/2014 4:02:25 PM	R16413
Surr: 1,2-Dichloroethane-d4	97.6	70-130		%REC	1	1/30/2014 4:02:25 PM	R16413
Surr: 4-Bromofluorobenzene	97.9	70-130		%REC	1	1/30/2014 4:02:25 PM	R16413
Surr: Dibromofluoromethane	93.2	70-130		%REC	1	1/30/2014 4:02:25 PM	R16413
Surr: Toluene-d8	103	70-130		%REC	1	1/30/2014 4:02:25 PM	R16413

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Golder Associates
Client Sample ID: W-8
Project: Walstad Oil Co Lovington 66
Collection Date: 1/21/2014 4:30:00 PM
Lab ID: 1401A45-008
Matrix: AQUEOUS
Received Date: 1/24/2014 9:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **DJF**	
Benzene	14000	1000		µg/L	1E	1/31/2014 12:14:15 PM	R16441
Toluene	8800	100		µg/L	100	1/30/2014 4:34:20 PM	R16413
Ethylbenzene	2300	100		µg/L	100	1/30/2014 4:34:20 PM	R16413
Methyl tert-butyl ether (MTBE)	25000	1000		µg/L	1E	1/31/2014 12:14:15 PM	R16441
1,2,4-Trimethylbenzene	2100	100		µg/L	100	1/30/2014 4:34:20 PM	R16413
1,3,5-Trimethylbenzene	550	100		µg/L	100	1/30/2014 4:34:20 PM	R16413
1,2-Dichloroethane (EDC)	610	100		µg/L	100	1/30/2014 4:34:20 PM	R16413
1,2-Dibromoethane (EDB)	ND	100		µg/L	100	1/30/2014 4:34:20 PM	R16413
Naphthalene	610	200		µg/L	100	1/30/2014 4:34:20 PM	R16413
1-Methylnaphthalene	ND	400		µg/L	100	1/30/2014 4:34:20 PM	R16413
2-Methylnaphthalene	ND	400		µg/L	100	1/30/2014 4:34:20 PM	R16413
Acetone	ND	1000		µg/L	100	1/30/2014 4:34:20 PM	R16413
Bromobenzene	ND	100		µg/L	100	1/30/2014 4:34:20 PM	R16413
Bromodichloromethane	ND	100		µg/L	100	1/30/2014 4:34:20 PM	R16413
Bromoform	ND	100		µg/L	100	1/30/2014 4:34:20 PM	R16413
Bromomethane	ND	300		µg/L	100	1/30/2014 4:34:20 PM	R16413
2-Butanone	ND	1000		µg/L	100	1/30/2014 4:34:20 PM	R16413
Carbon disulfide	ND	1000		µg/L	100	1/30/2014 4:34:20 PM	R16413
Carbon Tetrachloride	ND	100		µg/L	100	1/30/2014 4:34:20 PM	R16413
Chlorobenzene	ND	100		µg/L	100	1/30/2014 4:34:20 PM	R16413
Chloroethane	ND	200		µg/L	100	1/30/2014 4:34:20 PM	R16413
Chloroform	ND	100		µg/L	100	1/30/2014 4:34:20 PM	R16413
Chloromethane	ND	300		µg/L	100	1/30/2014 4:34:20 PM	R16413
2-Chlorotoluene	ND	100		µg/L	100	1/30/2014 4:34:20 PM	R16413
4-Chlorotoluene	ND	100		µg/L	100	1/30/2014 4:34:20 PM	R16413
cis-1,2-DCE	ND	100		µg/L	100	1/30/2014 4:34:20 PM	R16413
cis-1,3-Dichloropropene	ND	100		µg/L	100	1/30/2014 4:34:20 PM	R16413
1,2-Dibromo-3-chloropropane	ND	200		µg/L	100	1/30/2014 4:34:20 PM	R16413
Dibromochloromethane	ND	100		µg/L	100	1/30/2014 4:34:20 PM	R16413
Dibromomethane	ND	100		µg/L	100	1/30/2014 4:34:20 PM	R16413
1,2-Dichlorobenzene	ND	100		µg/L	100	1/30/2014 4:34:20 PM	R16413
1,3-Dichlorobenzene	ND	100		µg/L	100	1/30/2014 4:34:20 PM	R16413
1,4-Dichlorobenzene	ND	100		µg/L	100	1/30/2014 4:34:20 PM	R16413
Dichlorodifluoromethane	ND	100		µg/L	100	1/30/2014 4:34:20 PM	R16413
1,1-Dichloroethane	ND	100		µg/L	100	1/30/2014 4:34:20 PM	R16413
1,1-Dichloroethene	ND	100		µg/L	100	1/30/2014 4:34:20 PM	R16413
1,2-Dichloropropane	ND	100		µg/L	100	1/30/2014 4:34:20 PM	R16413
1,3-Dichloropropane	ND	100		µg/L	100	1/30/2014 4:34:20 PM	R16413
2,2-Dichloropropane	ND	200		µg/L	100	1/30/2014 4:34:20 PM	R16413

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Golder Associates
Client Sample ID: W-8
Project: Walstad Oil Co Lovington 66
Collection Date: 1/21/2014 4:30:00 PM
Lab ID: 1401A45-008
Matrix: AQUEOUS
Received Date: 1/24/2014 9:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **DJF**	
1,1-Dichloropropene	ND	100		µg/L	100	1/30/2014 4:34:20 PM	R16413
Hexachlorobutadiene	ND	100		µg/L	100	1/30/2014 4:34:20 PM	R16413
2-Hexanone	ND	1000		µg/L	100	1/30/2014 4:34:20 PM	R16413
Isopropylbenzene	ND	100		µg/L	100	1/30/2014 4:34:20 PM	R16413
4-Isopropyltoluene	ND	100		µg/L	100	1/30/2014 4:34:20 PM	R16413
4-Methyl-2-pentanone	ND	1000		µg/L	100	1/30/2014 4:34:20 PM	R16413
Methylene Chloride	ND	300		µg/L	100	1/30/2014 4:34:20 PM	R16413
n-Butylbenzene	ND	300		µg/L	100	1/30/2014 4:34:20 PM	R16413
n-Propylbenzene	260	100		µg/L	100	1/30/2014 4:34:20 PM	R16413
sec-Butylbenzene	ND	100		µg/L	100	1/30/2014 4:34:20 PM	R16413
Styrene	ND	100		µg/L	100	1/30/2014 4:34:20 PM	R16413
tert-Butylbenzene	ND	100		µg/L	100	1/30/2014 4:34:20 PM	R16413
1,1,1,2-Tetrachloroethane	ND	100		µg/L	100	1/30/2014 4:34:20 PM	R16413
1,1,2,2-Tetrachloroethane	ND	200		µg/L	100	1/30/2014 4:34:20 PM	R16413
Tetrachloroethene (PCE)	ND	100		µg/L	100	1/30/2014 4:34:20 PM	R16413
trans-1,2-DCE	ND	100		µg/L	100	1/30/2014 4:34:20 PM	R16413
trans-1,3-Dichloropropene	ND	100		µg/L	100	1/30/2014 4:34:20 PM	R16413
1,2,3-Trichlorobenzene	ND	100		µg/L	100	1/30/2014 4:34:20 PM	R16413
1,2,4-Trichlorobenzene	ND	100		µg/L	100	1/30/2014 4:34:20 PM	R16413
1,1,1-Trichloroethane	ND	100		µg/L	100	1/30/2014 4:34:20 PM	R16413
1,1,2-Trichloroethane	ND	100		µg/L	100	1/30/2014 4:34:20 PM	R16413
Trichloroethene (TCE)	ND	100		µg/L	100	1/30/2014 4:34:20 PM	R16413
Trichlorofluoromethane	ND	100		µg/L	100	1/30/2014 4:34:20 PM	R16413
1,2,3-Trichloropropane	ND	200		µg/L	100	1/30/2014 4:34:20 PM	R16413
Vinyl chloride	ND	100		µg/L	100	1/30/2014 4:34:20 PM	R16413
Xylenes, Total	7900	150		µg/L	100	1/30/2014 4:34:20 PM	R16413
Surr: 1,2-Dichloroethane-d4	102	70-130		%REC	100	1/30/2014 4:34:20 PM	R16413
Surr: 4-Bromofluorobenzene	91.3	70-130		%REC	100	1/30/2014 4:34:20 PM	R16413
Surr: Dibromofluoromethane	93.6	70-130		%REC	100	1/30/2014 4:34:20 PM	R16413
Surr: Toluene-d8	98.8	70-130		%REC	100	1/30/2014 4:34:20 PM	R16413

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Golder Associates
Client Sample ID: W-14
Project: Walstad Oil Co Lovington 66
Collection Date: 1/21/2014 4:52:00 PM
Lab ID: 1401A45-009
Matrix: AQUEOUS
Received Date: 1/24/2014 9:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **DJF**	
Benzene	28000	1000		µg/L	1E	1/31/2014 12:46:08 PM	R16441
Toluene	27000	1000		µg/L	1E	1/31/2014 12:46:08 PM	R16441
Ethylbenzene	4000	100		µg/L	100	1/30/2014 5:37:57 PM	R16413
Methyl tert-butyl ether (MTBE)	1700	100		µg/L	100	1/30/2014 5:37:57 PM	R16413
1,2,4-Trimethylbenzene	1800	100		µg/L	100	1/30/2014 5:37:57 PM	R16413
1,3,5-Trimethylbenzene	440	100		µg/L	100	1/30/2014 5:37:57 PM	R16413
1,2-Dichloroethane (EDC)	120	100		µg/L	100	1/30/2014 5:37:57 PM	R16413
1,2-Dibromoethane (EDB)	ND	100		µg/L	100	1/30/2014 5:37:57 PM	R16413
Naphthalene	730	200		µg/L	100	1/30/2014 5:37:57 PM	R16413
1-Methylnaphthalene	ND	400		µg/L	100	1/30/2014 5:37:57 PM	R16413
2-Methylnaphthalene	ND	400		µg/L	100	1/30/2014 5:37:57 PM	R16413
Acetone	ND	1000		µg/L	100	1/30/2014 5:37:57 PM	R16413
Bromobenzene	ND	100		µg/L	100	1/30/2014 5:37:57 PM	R16413
Bromodichloromethane	ND	100		µg/L	100	1/30/2014 5:37:57 PM	R16413
Bromoform	ND	100		µg/L	100	1/30/2014 5:37:57 PM	R16413
Bromomethane	ND	300		µg/L	100	1/30/2014 5:37:57 PM	R16413
2-Butanone	ND	1000		µg/L	100	1/30/2014 5:37:57 PM	R16413
Carbon disulfide	ND	1000		µg/L	100	1/30/2014 5:37:57 PM	R16413
Carbon Tetrachloride	ND	100		µg/L	100	1/30/2014 5:37:57 PM	R16413
Chlorobenzene	ND	100		µg/L	100	1/30/2014 5:37:57 PM	R16413
Chloroethane	ND	200		µg/L	100	1/30/2014 5:37:57 PM	R16413
Chloroform	ND	100		µg/L	100	1/30/2014 5:37:57 PM	R16413
Chloromethane	ND	300		µg/L	100	1/30/2014 5:37:57 PM	R16413
2-Chlorotoluene	ND	100		µg/L	100	1/30/2014 5:37:57 PM	R16413
4-Chlorotoluene	ND	100		µg/L	100	1/30/2014 5:37:57 PM	R16413
cis-1,2-DCE	ND	100		µg/L	100	1/30/2014 5:37:57 PM	R16413
cis-1,3-Dichloropropene	ND	100		µg/L	100	1/30/2014 5:37:57 PM	R16413
1,2-Dibromo-3-chloropropane	ND	200		µg/L	100	1/30/2014 5:37:57 PM	R16413
Dibromochloromethane	ND	100		µg/L	100	1/30/2014 5:37:57 PM	R16413
Dibromomethane	ND	100		µg/L	100	1/30/2014 5:37:57 PM	R16413
1,2-Dichlorobenzene	ND	100		µg/L	100	1/30/2014 5:37:57 PM	R16413
1,3-Dichlorobenzene	ND	100		µg/L	100	1/30/2014 5:37:57 PM	R16413
1,4-Dichlorobenzene	ND	100		µg/L	100	1/30/2014 5:37:57 PM	R16413
Dichlorodifluoromethane	ND	100		µg/L	100	1/30/2014 5:37:57 PM	R16413
1,1-Dichloroethane	ND	100		µg/L	100	1/30/2014 5:37:57 PM	R16413
1,1-Dichloroethene	ND	100		µg/L	100	1/30/2014 5:37:57 PM	R16413
1,2-Dichloropropane	ND	100		µg/L	100	1/30/2014 5:37:57 PM	R16413
1,3-Dichloropropane	ND	100		µg/L	100	1/30/2014 5:37:57 PM	R16413
2,2-Dichloropropane	ND	200		µg/L	100	1/30/2014 5:37:57 PM	R16413

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Golder Associates
Client Sample ID: W-14
Project: Walstad Oil Co Lovington 66
Collection Date: 1/21/2014 4:52:00 PM
Lab ID: 1401A45-009
Matrix: AQUEOUS
Received Date: 1/24/2014 9:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **DJF**	
1,1-Dichloropropene	ND	100		µg/L	100	1/30/2014 5:37:57 PM	R16413
Hexachlorobutadiene	ND	100		µg/L	100	1/30/2014 5:37:57 PM	R16413
2-Hexanone	ND	1000		µg/L	100	1/30/2014 5:37:57 PM	R16413
Isopropylbenzene	ND	100		µg/L	100	1/30/2014 5:37:57 PM	R16413
4-Isopropyltoluene	ND	100		µg/L	100	1/30/2014 5:37:57 PM	R16413
4-Methyl-2-pentanone	ND	1000		µg/L	100	1/30/2014 5:37:57 PM	R16413
Methylene Chloride	ND	300		µg/L	100	1/30/2014 5:37:57 PM	R16413
n-Butylbenzene	ND	300		µg/L	100	1/30/2014 5:37:57 PM	R16413
n-Propylbenzene	280	100		µg/L	100	1/30/2014 5:37:57 PM	R16413
sec-Butylbenzene	ND	100		µg/L	100	1/30/2014 5:37:57 PM	R16413
Styrene	ND	100		µg/L	100	1/30/2014 5:37:57 PM	R16413
tert-Butylbenzene	ND	100		µg/L	100	1/30/2014 5:37:57 PM	R16413
1,1,1,2-Tetrachloroethane	ND	100		µg/L	100	1/30/2014 5:37:57 PM	R16413
1,1,2,2-Tetrachloroethane	ND	200		µg/L	100	1/30/2014 5:37:57 PM	R16413
Tetrachloroethene (PCE)	ND	100		µg/L	100	1/30/2014 5:37:57 PM	R16413
trans-1,2-DCE	ND	100		µg/L	100	1/30/2014 5:37:57 PM	R16413
trans-1,3-Dichloropropene	ND	100		µg/L	100	1/30/2014 5:37:57 PM	R16413
1,2,3-Trichlorobenzene	ND	100		µg/L	100	1/30/2014 5:37:57 PM	R16413
1,2,4-Trichlorobenzene	ND	100		µg/L	100	1/30/2014 5:37:57 PM	R16413
1,1,1-Trichloroethane	ND	100		µg/L	100	1/30/2014 5:37:57 PM	R16413
1,1,2-Trichloroethane	ND	100		µg/L	100	1/30/2014 5:37:57 PM	R16413
Trichloroethene (TCE)	ND	100		µg/L	100	1/30/2014 5:37:57 PM	R16413
Trichlorofluoromethane	ND	100		µg/L	100	1/30/2014 5:37:57 PM	R16413
1,2,3-Trichloropropane	ND	200		µg/L	100	1/30/2014 5:37:57 PM	R16413
Vinyl chloride	ND	100		µg/L	100	1/30/2014 5:37:57 PM	R16413
Xylenes, Total	12000	150		µg/L	100	1/30/2014 5:37:57 PM	R16413
Surr: 1,2-Dichloroethane-d4	102	70-130		%REC	100	1/30/2014 5:37:57 PM	R16413
Surr: 4-Bromofluorobenzene	89.6	70-130		%REC	100	1/30/2014 5:37:57 PM	R16413
Surr: Dibromofluoromethane	96.7	70-130		%REC	100	1/30/2014 5:37:57 PM	R16413
Surr: Toluene-d8	103	70-130		%REC	100	1/30/2014 5:37:57 PM	R16413

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Golder Associates
Client Sample ID: Trip Blank
Project: Walstad Oil Co Lovington 66
Collection Date:
Lab ID: 1401A45-010
Matrix: AQUEOUS
Received Date: 1/24/2014 9:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **DJF**	
Benzene	ND	1.0		µg/L	1	1/30/2014 6:41:21 PM	R16413
Toluene	ND	1.0		µg/L	1	1/30/2014 6:41:21 PM	R16413
Ethylbenzene	ND	1.0		µg/L	1	1/30/2014 6:41:21 PM	R16413
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	1/30/2014 6:41:21 PM	R16413
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	1/30/2014 6:41:21 PM	R16413
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	1/30/2014 6:41:21 PM	R16413
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	1/30/2014 6:41:21 PM	R16413
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	1/30/2014 6:41:21 PM	R16413
Naphthalene	ND	2.0		µg/L	1	1/30/2014 6:41:21 PM	R16413
1-Methylnaphthalene	ND	4.0		µg/L	1	1/30/2014 6:41:21 PM	R16413
2-Methylnaphthalene	ND	4.0		µg/L	1	1/30/2014 6:41:21 PM	R16413
Acetone	ND	10		µg/L	1	1/30/2014 6:41:21 PM	R16413
Bromobenzene	ND	1.0		µg/L	1	1/30/2014 6:41:21 PM	R16413
Bromodichloromethane	ND	1.0		µg/L	1	1/30/2014 6:41:21 PM	R16413
Bromoform	ND	1.0		µg/L	1	1/30/2014 6:41:21 PM	R16413
Bromomethane	ND	3.0		µg/L	1	1/30/2014 6:41:21 PM	R16413
2-Butanone	ND	10		µg/L	1	1/30/2014 6:41:21 PM	R16413
Carbon disulfide	ND	10		µg/L	1	1/30/2014 6:41:21 PM	R16413
Carbon Tetrachloride	ND	1.0		µg/L	1	1/30/2014 6:41:21 PM	R16413
Chlorobenzene	ND	1.0		µg/L	1	1/30/2014 6:41:21 PM	R16413
Chloroethane	ND	2.0		µg/L	1	1/30/2014 6:41:21 PM	R16413
Chloroform	ND	1.0		µg/L	1	1/30/2014 6:41:21 PM	R16413
Chloromethane	ND	3.0		µg/L	1	1/30/2014 6:41:21 PM	R16413
2-Chlorotoluene	ND	1.0		µg/L	1	1/30/2014 6:41:21 PM	R16413
4-Chlorotoluene	ND	1.0		µg/L	1	1/30/2014 6:41:21 PM	R16413
cis-1,2-DCE	ND	1.0		µg/L	1	1/30/2014 6:41:21 PM	R16413
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	1/30/2014 6:41:21 PM	R16413
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	1/30/2014 6:41:21 PM	R16413
Dibromochloromethane	ND	1.0		µg/L	1	1/30/2014 6:41:21 PM	R16413
Dibromomethane	ND	1.0		µg/L	1	1/30/2014 6:41:21 PM	R16413
1,2-Dichlorobenzene	ND	1.0		µg/L	1	1/30/2014 6:41:21 PM	R16413
1,3-Dichlorobenzene	ND	1.0		µg/L	1	1/30/2014 6:41:21 PM	R16413
1,4-Dichlorobenzene	ND	1.0		µg/L	1	1/30/2014 6:41:21 PM	R16413
Dichlorodifluoromethane	ND	1.0		µg/L	1	1/30/2014 6:41:21 PM	R16413
1,1-Dichloroethane	ND	1.0		µg/L	1	1/30/2014 6:41:21 PM	R16413
1,1-Dichloroethene	ND	1.0		µg/L	1	1/30/2014 6:41:21 PM	R16413
1,2-Dichloropropane	ND	1.0		µg/L	1	1/30/2014 6:41:21 PM	R16413
1,3-Dichloropropane	ND	1.0		µg/L	1	1/30/2014 6:41:21 PM	R16413
2,2-Dichloropropane	ND	2.0		µg/L	1	1/30/2014 6:41:21 PM	R16413

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Golder Associates
Client Sample ID: Trip Blank
Project: Walstad Oil Co Lovington 66
Collection Date:
Lab ID: 1401A45-010
Matrix: AQUEOUS
Received Date: 1/24/2014 9:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **DJF**	
1,1-Dichloropropene	ND	1.0		µg/L	1	1/30/2014 6:41:21 PM	R16413
Hexachlorobutadiene	ND	1.0		µg/L	1	1/30/2014 6:41:21 PM	R16413
2-Hexanone	ND	10		µg/L	1	1/30/2014 6:41:21 PM	R16413
Isopropylbenzene	ND	1.0		µg/L	1	1/30/2014 6:41:21 PM	R16413
4-Isopropyltoluene	ND	1.0		µg/L	1	1/30/2014 6:41:21 PM	R16413
4-Methyl-2-pentanone	ND	10		µg/L	1	1/30/2014 6:41:21 PM	R16413
Methylene Chloride	ND	3.0		µg/L	1	1/30/2014 6:41:21 PM	R16413
n-Butylbenzene	ND	3.0		µg/L	1	1/30/2014 6:41:21 PM	R16413
n-Propylbenzene	ND	1.0		µg/L	1	1/30/2014 6:41:21 PM	R16413
sec-Butylbenzene	ND	1.0		µg/L	1	1/30/2014 6:41:21 PM	R16413
Styrene	ND	1.0		µg/L	1	1/30/2014 6:41:21 PM	R16413
tert-Butylbenzene	ND	1.0		µg/L	1	1/30/2014 6:41:21 PM	R16413
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	1/30/2014 6:41:21 PM	R16413
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	1/30/2014 6:41:21 PM	R16413
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	1/30/2014 6:41:21 PM	R16413
trans-1,2-DCE	ND	1.0		µg/L	1	1/30/2014 6:41:21 PM	R16413
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	1/30/2014 6:41:21 PM	R16413
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	1/30/2014 6:41:21 PM	R16413
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	1/30/2014 6:41:21 PM	R16413
1,1,1-Trichloroethane	ND	1.0		µg/L	1	1/30/2014 6:41:21 PM	R16413
1,1,2-Trichloroethane	ND	1.0		µg/L	1	1/30/2014 6:41:21 PM	R16413
Trichloroethene (TCE)	ND	1.0		µg/L	1	1/30/2014 6:41:21 PM	R16413
Trichlorofluoromethane	ND	1.0		µg/L	1	1/30/2014 6:41:21 PM	R16413
1,2,3-Trichloropropane	ND	2.0		µg/L	1	1/30/2014 6:41:21 PM	R16413
Vinyl chloride	ND	1.0		µg/L	1	1/30/2014 6:41:21 PM	R16413
Xylenes, Total	ND	1.5		µg/L	1	1/30/2014 6:41:21 PM	R16413
Surr: 1,2-Dichloroethane-d4	104	70-130		%REC	1	1/30/2014 6:41:21 PM	R16413
Surr: 4-Bromofluorobenzene	91.1	70-130		%REC	1	1/30/2014 6:41:21 PM	R16413
Surr: Dibromofluoromethane	97.1	70-130		%REC	1	1/30/2014 6:41:21 PM	R16413
Surr: Toluene-d8	99.2	70-130		%REC	1	1/30/2014 6:41:21 PM	R16413

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401A45**

05-Feb-14

Client: Golder Associates

Project: Walstad Oil Co Lovington 66

Sample ID **5ml rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R16379**	RunNo: **16379**
Prep Date:	Analysis Date: **1/29/2014**	SeqNo: **472420** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
1,2-Dichloroethane (EDC)	ND	1.0								
1,2-Dibromoethane (EDB)	ND	1.0								
Naphthalene	ND	2.0								
1-Methylnaphthalene	ND	4.0								
2-Methylnaphthalene	ND	4.0								
Acetone	ND	10								
Bromobenzene	ND	1.0								
Bromodichloromethane	ND	1.0								
Bromoform	ND	1.0								
Bromomethane	ND	3.0								
2-Butanone	ND	10								
Carbon disulfide	ND	10								
Carbon Tetrachloride	ND	1.0								
Chlorobenzene	ND	1.0								
Chloroethane	ND	2.0								
Chloroform	ND	1.0								
Chloromethane	ND	3.0								
2-Chlorotoluene	ND	1.0								
4-Chlorotoluene	ND	1.0								
cis-1,2-DCE	ND	1.0								
cis-1,3-Dichloropropene	ND	1.0								
1,2-Dibromo-3-chloropropane	ND	2.0								
Dibromochloromethane	ND	1.0								
Dibromomethane	ND	1.0								
1,2-Dichlorobenzene	ND	1.0								
1,3-Dichlorobenzene	ND	1.0								
1,4-Dichlorobenzene	ND	1.0								
Dichlorodifluoromethane	ND	1.0								
1,1-Dichloroethane	ND	1.0								
1,1-Dichloroethene	ND	1.0								
1,2-Dichloropropane	ND	1.0								
1,3-Dichloropropane	ND	1.0								
2,2-Dichloropropane	ND	2.0								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401A45**

05-Feb-14

Client: Golder Associates

Project: Walstad Oil Co Lovington 66

Sample ID **5ml rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R16379**	RunNo: **16379**
Prep Date:	Analysis Date: **1/29/2014**	SeqNo: **472420** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloropropene	ND	1.0								
Hexachlorobutadiene	ND	1.0								
2-Hexanone	ND	10								
Isopropylbenzene	ND	1.0								
4-Isopropyltoluene	ND	1.0								
4-Methyl-2-pentanone	ND	10								
Methylene Chloride	ND	3.0								
n-Butylbenzene	ND	3.0								
n-Propylbenzene	ND	1.0								
sec-Butylbenzene	ND	1.0								
Styrene	ND	1.0								
tert-Butylbenzene	ND	1.0								
1,1,1,2-Tetrachloroethane	ND	1.0								
1,1,2,2-Tetrachloroethane	ND	2.0								
Tetrachloroethene (PCE)	ND	1.0								
trans-1,2-DCE	ND	1.0								
trans-1,3-Dichloropropene	ND	1.0								
1,2,3-Trichlorobenzene	ND	1.0								
1,2,4-Trichlorobenzene	ND	1.0								
1,1,1-Trichloroethane	ND	1.0								
1,1,2-Trichloroethane	ND	1.0								
Trichloroethene (TCE)	ND	1.0								
Trichlorofluoromethane	ND	1.0								
1,2,3-Trichloropropane	ND	2.0								
Vinyl chloride	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	11		10.00		107	70	130			
Surr: 4-Bromofluorobenzene	9.3		10.00		93.4	70	130			
Surr: Dibromofluoromethane	9.6		10.00		95.9	70	130			
Surr: Toluene-d8	9.7		10.00		96.8	70	130			

Sample ID **100nglcs, 200ngaca**	SampType: **LCS**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **LCSW**	Batch ID: **R16379**	RunNo: **16379**
Prep Date:	Analysis Date: **1/29/2014**	SeqNo: **472422** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	21	1.0	20.00	0	103	70	130			
Toluene	19	1.0	20.00	0	96.6	82.2	124			
Chlorobenzene	18	1.0	20.00	0	90.3	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401A45**

05-Feb-14

Client: Golder Associates

Project: Walstad Oil Co Lovington 66

Sample ID **100nglcs, 200ngaca**	SampType: **LCS**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **LCSW**	Batch ID: **R16379**	RunNo: **16379**
Prep Date:	Analysis Date: **1/29/2014**	SeqNo: **472422** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloroethene	24	1.0	20.00	0	119	83.5	155			
Trichloroethene (TCE)	18	1.0	20.00	0	90.4	70	130			
Surr: 1,2-Dichloroethane-d4	9.8		10.00		98.3	70	130			
Surr: 4-Bromofluorobenzene	9.8		10.00		97.7	70	130			
Surr: Dibromofluoromethane	7.6		10.00		76.3	70	130			
Surr: Toluene-d8	9.8		10.00		97.8	70	130			

Sample ID **5ml rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R16413**	RunNo: **16413**
Prep Date:	Analysis Date: **1/30/2014**	SeqNo: **473347** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
1,2-Dichloroethane (EDC)	ND	1.0								
1,2-Dibromoethane (EDB)	ND	1.0								
Naphthalene	ND	2.0								
1-Methylnaphthalene	ND	4.0								
2-Methylnaphthalene	ND	4.0								
Acetone	ND	10								
Bromobenzene	ND	1.0								
Bromodichloromethane	ND	1.0								
Bromoform	ND	1.0								
Bromomethane	ND	3.0								
2-Butanone	ND	10								
Carbon disulfide	ND	10								
Carbon Tetrachloride	ND	1.0								
Chlorobenzene	ND	1.0								
Chloroethane	ND	2.0								
Chloroform	ND	1.0								
Chloromethane	ND	3.0								
2-Chlorotoluene	ND	1.0								
4-Chlorotoluene	ND	1.0								
cis-1,2-DCE	ND	1.0								
cis-1,3-Dichloropropene	ND	1.0								

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401A45**

05-Feb-14

Client: Golder Associates

Project: Walstad Oil Co Lovington 66

Sample ID **5ml rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R16413**	RunNo: **16413**
Prep Date:	Analysis Date: **1/30/2014**	SeqNo: **473347** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromo-3-chloropropane	ND	2.0								
Dibromochloromethane	ND	1.0								
Dibromomethane	ND	1.0								
1,2-Dichlorobenzene	ND	1.0								
1,3-Dichlorobenzene	ND	1.0								
1,4-Dichlorobenzene	ND	1.0								
Dichlorodifluoromethane	ND	1.0								
1,1-Dichloroethane	ND	1.0								
1,1-Dichloroethene	ND	1.0								
1,2-Dichloropropane	ND	1.0								
1,3-Dichloropropane	ND	1.0								
2,2-Dichloropropane	ND	2.0								
1,1-Dichloropropene	ND	1.0								
Hexachlorobutadiene	ND	1.0								
2-Hexanone	ND	10								
Isopropylbenzene	ND	1.0								
4-Isopropyltoluene	ND	1.0								
4-Methyl-2-pentanone	ND	10								
Methylene Chloride	ND	3.0								
n-Butylbenzene	ND	3.0								
n-Propylbenzene	ND	1.0								
sec-Butylbenzene	ND	1.0								
Styrene	ND	1.0								
tert-Butylbenzene	ND	1.0								
1,1,1,2-Tetrachloroethane	ND	1.0								
1,1,2,2-Tetrachloroethane	ND	2.0								
Tetrachloroethene (PCE)	ND	1.0								
trans-1,2-DCE	ND	1.0								
trans-1,3-Dichloropropene	ND	1.0								
1,2,3-Trichlorobenzene	ND	1.0								
1,2,4-Trichlorobenzene	ND	1.0								
1,1,1-Trichloroethane	ND	1.0								
1,1,2-Trichloroethane	ND	1.0								
Trichloroethene (TCE)	ND	1.0								
Trichlorofluoromethane	ND	1.0								
1,2,3-Trichloropropane	ND	2.0								
Vinyl chloride	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	9.8		10.00		97.7	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401A45**

05-Feb-14

Client: Golder Associates

Project: Walstad Oil Co Lovington 66

Sample ID **5ml rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R16413**	RunNo: **16413**
Prep Date:	Analysis Date: **1/30/2014**	SeqNo: **473347** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	8.8		10.00		88.2	70	130			
Surr: Dibromofluoromethane	8.8		10.00		87.8	70	130			
Surr: Toluene-d8	9.4		10.00		93.6	70	130			

Sample ID **100ng lcs**	SampType: **LCS**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **LCSW**	Batch ID: **R16413**	RunNo: **16413**
Prep Date:	Analysis Date: **1/30/2014**	SeqNo: **473350** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	20	1.0	20.00	0	100	70	130			
Toluene	21	1.0	20.00	0	105	82.2	124			
Chlorobenzene	19	1.0	20.00	0	92.6	70	130			
1,1-Dichloroethene	22	1.0	20.00	0	111	83.5	155			
Trichloroethene (TCE)	17	1.0	20.00	0	84.7	70	130			
Surr: 1,2-Dichloroethane-d4	9.2		10.00		91.8	70	130			
Surr: 4-Bromofluorobenzene	8.4		10.00		84.4	70	130			
Surr: Dibromofluoromethane	7.4		10.00		73.9	70	130			
Surr: Toluene-d8	10		10.00		103	70	130			

Sample ID **1401a45-006ams**	SampType: **MS**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **W-11**	Batch ID: **R16413**	RunNo: **16413**
Prep Date:	Analysis Date: **1/30/2014**	SeqNo: **473362** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	30	1.0	20.00	5.444	122	68.6	126			
Toluene	20	1.0	20.00	0	100	72.5	122			
Chlorobenzene	19	1.0	20.00	0	96.1	70	130			
1,1-Dichloroethene	24	1.0	20.00	0	118	79.1	139			
Trichloroethene (TCE)	19	1.0	20.00	0	96.7	70	130			
Surr: 1,2-Dichloroethane-d4	10		10.00		99.8	70	130			
Surr: 4-Bromofluorobenzene	9.4		10.00		94.2	70	130			
Surr: Dibromofluoromethane	8.8		10.00		88.1	70	130			
Surr: Toluene-d8	9.6		10.00		96.4	70	130			

Sample ID **1401a45-006amsd**	SampType: **MSD**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **W-11**	Batch ID: **R16413**	RunNo: **16413**
Prep Date:	Analysis Date: **1/30/2014**	SeqNo: **473363** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	24	1.0	20.00	5.444	95.1	68.6	126	19.7	20	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1401A45**

05-Feb-14

Client: Golder Associates

Project: Walstad Oil Co Lovington 66

Sample ID **1401a45-006amsd**	SampType: **MSD**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **W-11**	Batch ID: **R16413**	RunNo: **16413**
Prep Date:	Analysis Date: **1/30/2014**	SeqNo: **473363** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Toluene	18	1.0	20.00	0	88.8	72.5	122	12.2	20	
Chlorobenzene	16	1.0	20.00	0	80.1	70	130	18.2	20	
1,1-Dichloroethene	20	1.0	20.00	0	99.1	79.1	139	17.3	20	
Trichloroethene (TCE)	16	1.0	20.00	0	82.5	70	130	15.9	20	
Surr: 1,2-Dichloroethane-d4	9.5		10.00		95.1	70	130	0	0	
Surr: 4-Bromofluorobenzene	9.7		10.00		96.7	70	130	0	0	
Surr: Dibromofluoromethane	9.0		10.00		90.3	70	130	0	0	
Surr: Toluene-d8	9.9		10.00		98.7	70	130	0	0	

Sample ID **5ml rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R16441**	RunNo: **16441**
Prep Date:	Analysis Date: **1/31/2014**	SeqNo: **474209** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
Surr: 1,2-Dichloroethane-d4	10		10.00		101	70	130			
Surr: 4-Bromofluorobenzene	8.4		10.00		84.4	70	130			
Surr: Dibromofluoromethane	9.3		10.00		93.4	70	130			
Surr: Toluene-d8	9.3		10.00		93.0	70	130			

Sample ID **100ng lcs**	SampType: **LCS**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **LCSW**	Batch ID: **R16441**	RunNo: **16441**
Prep Date:	Analysis Date: **1/31/2014**	SeqNo: **474213** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	21	1.0	20.00	0	107	70	130			
Toluene	20	1.0	20.00	0	101	82.2	124			
Surr: 1,2-Dichloroethane-d4	10		10.00		100	70	130			
Surr: 4-Bromofluorobenzene	8.8		10.00		88.1	70	130			
Surr: Dibromofluoromethane	8.1		10.00		80.7	70	130			
Surr: Toluene-d8	10		10.00		101	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: Golder Assoc Work Order Number: 1401A45 RcptNo: 1

Received by/date: KM 01/24/14

Logged By: Anne Thorne 1/24/2013 9:50:00 AM Anne Thorne

Completed By: Anne Thorne 1/27/2014 Anne Thorne

Reviewed By: IO 01/28/14

Chain of Custody

1. Custody seals intact on sample bottles? Yes ☐ No ☐ Not Present ☑
2. Is Chain of Custody complete? Yes ☑ No ☐ Not Present ☐
3. How was the sample delivered? UPS

Log In

4. Was an attempt made to cool the samples? Yes ☑ No ☐ NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C Yes ☑ No ☐ NA ☐
6. Sample(s) in proper container(s)? Yes ☑ No ☐
7. Sufficient sample volume for indicated test(s)? Yes ☑ No ☐
8. Are samples (except VOA and ONG) properly preserved? Yes ☑ No ☐
9. Was preservative added to bottles? Yes ☐ No ☑ NA ☐
10. VOA vials have zero headspace? Yes ☑ No ☐ No VOA Vials ☐
11. Were any sample containers received broken? Yes ☐ No ☑
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody) Yes ☑ No ☐
13. Are matrices correctly identified on Chain of Custody? Yes ☑ No ☐
14. Is it clear what analyses were requested? Yes ☑ No ☐
15. Were all holding times able to be met? (If no, notify customer for authorization.) Yes ☑ No ☐

# of preserved bottles checked for pH: _____ (<2 or >12 unless noted)
Adjusted? _____
Checked by: _____

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date _____
By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding: _____
Client Instructions: _____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	2.8	Good	Yes			

Chain-of-Custody Record

Client: Golder Associates, Inc.
ATTN: Clay Kilmer
Mailing Address: 5200 Pasadena Ave. N.E. Ste C
Albuquerque, NM 87113
Phone #: 505. 821. 3043
email or Fax#: 505. 821. 5273
QA/QC Package:
☑ Standard ☐ Level 4 (Full Validation)
Accreditation
☐ NELAP ☐ Other _____
☐ EDD (Type) _____

Turn-Around Time:
☑ Standard ☐ Rush _____
Project Name: Walstad Oil Co. Lovington, NM
Project #: LUST ID 1182
Project Manager: Clay Kilmer
Sampler: CM Barnhill, PG
On Ice: ☑ Yes ☐ No
Sample Temperature: 2.8

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1401445
1/21/14	1257	H_2O	W-20	3x40mL VOA's	$HgCl_2$	-001
1/21/14	1333	H_2O	W-21			-002
1/21/14	1358	H_2O	W-19			-003
1/21/14	1425	H_2O	W-9			-004
1/21/14	1455	H_2O	W-16			-005
1/21/14	1520	H_2O	W-11			-006
1/21/14	1550	H_2O	W-5			-007
1/21/14	1630	H_2O	W-8			-008
1/21/14	1652	H_2O	W-14			-009
			Trip Blank	2x40mL VOA's	$HgCl_2$	-010

Analysis Request

BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)					Air Bubbles (Y or N)
															N

Date	Time	Relinquished by:	Received by:	Date	Time
1/23/14	1300			01/24/14	0950
Date:	Time:	Relinquished by:	Received by:	Date:	Time:

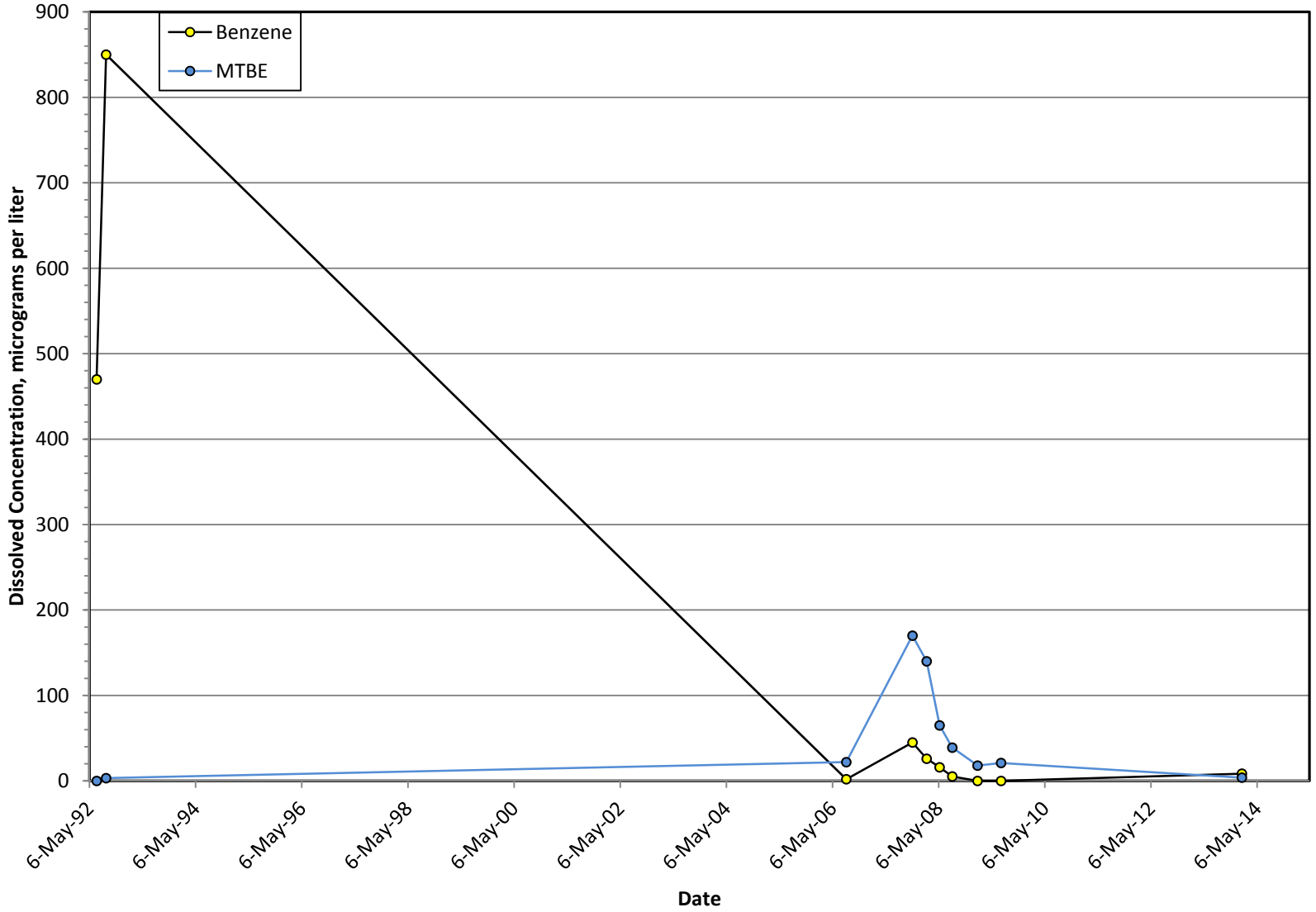
Remarks: Any Questions Please Call Clay Kilmer @ 505. 821. 3043

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

APPENDIX E
CONCENTRATION TREND PLOTS

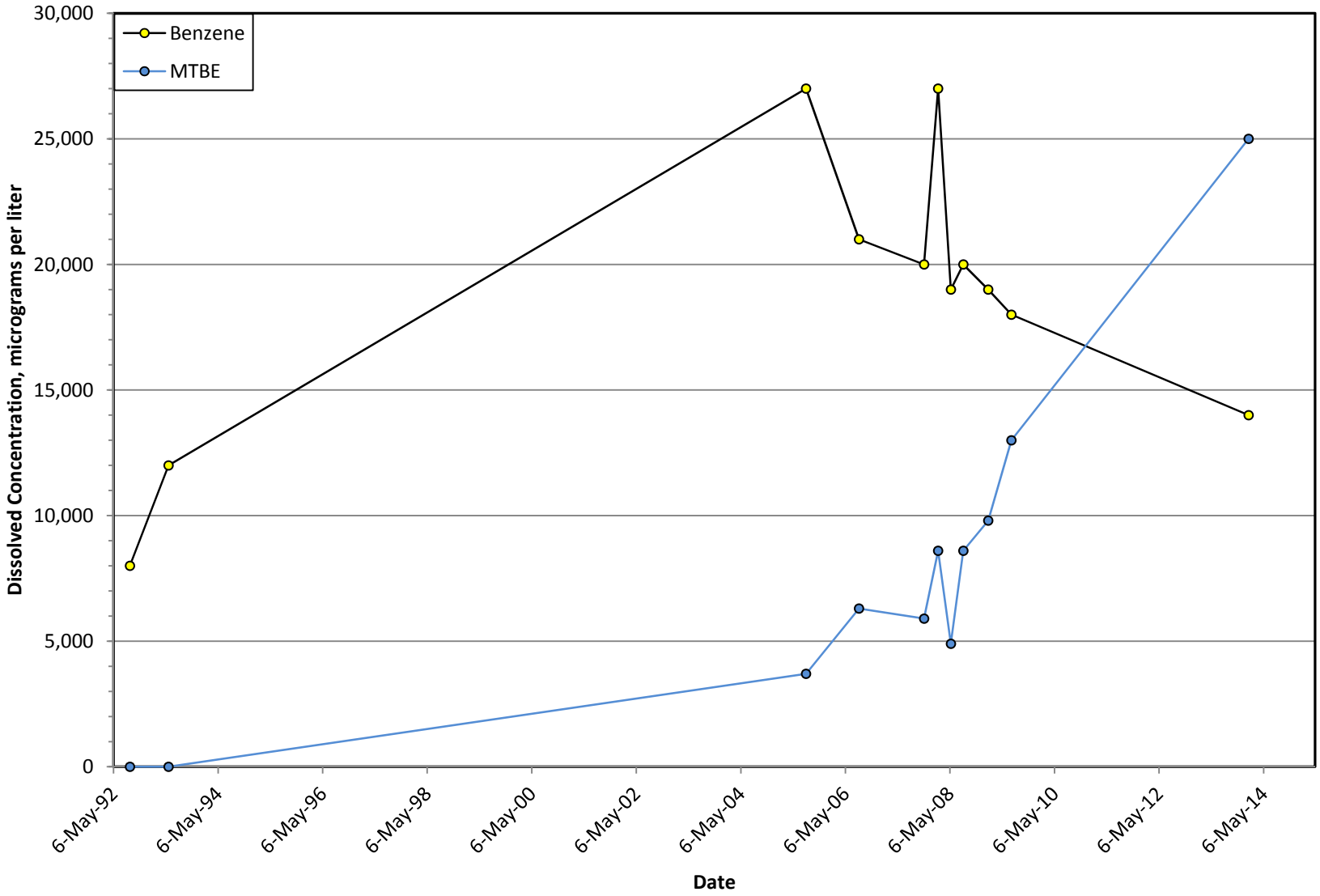
Well W-5

Dissolved VOC Trend



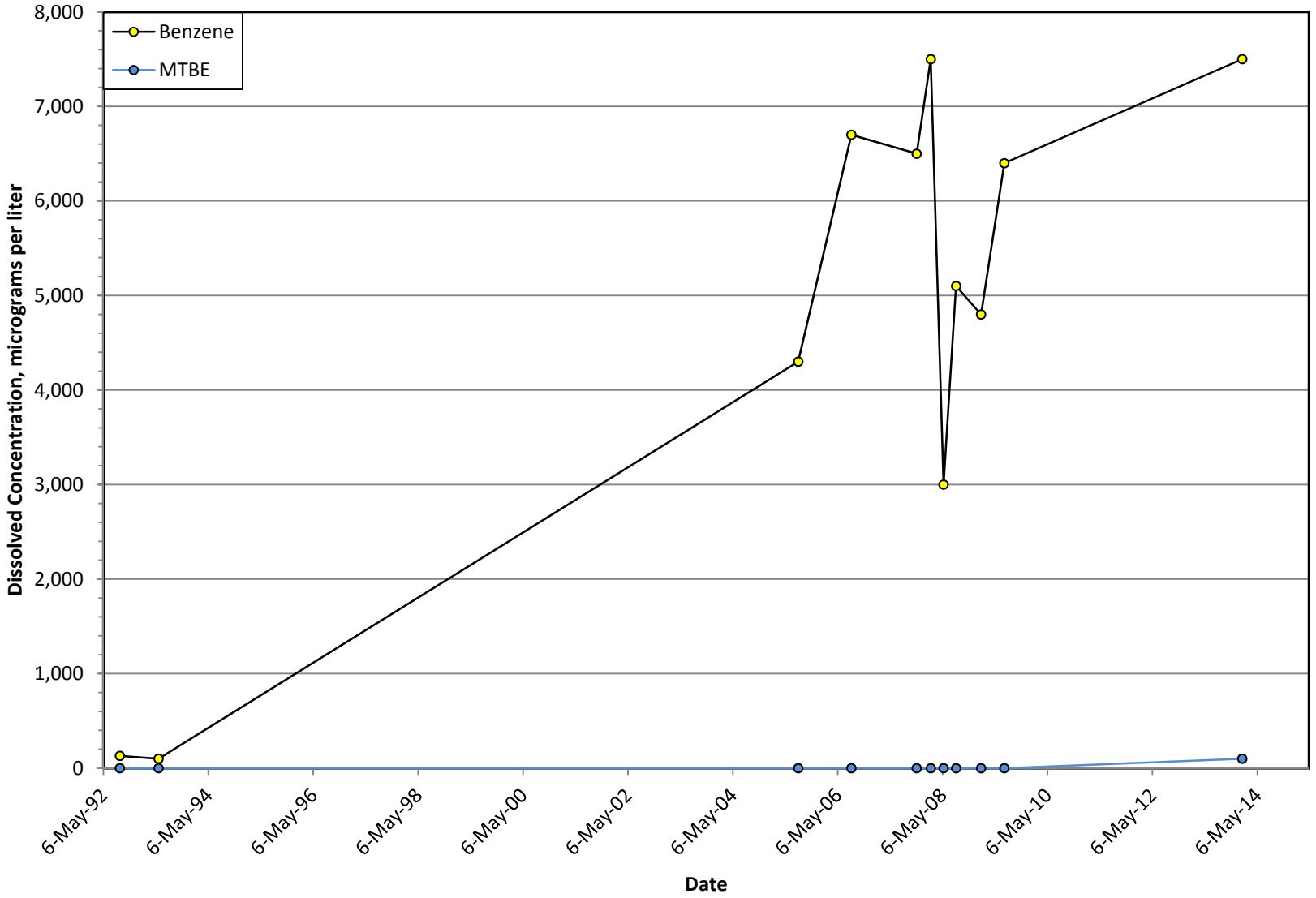
Well W-8

Dissolved VOC Trend

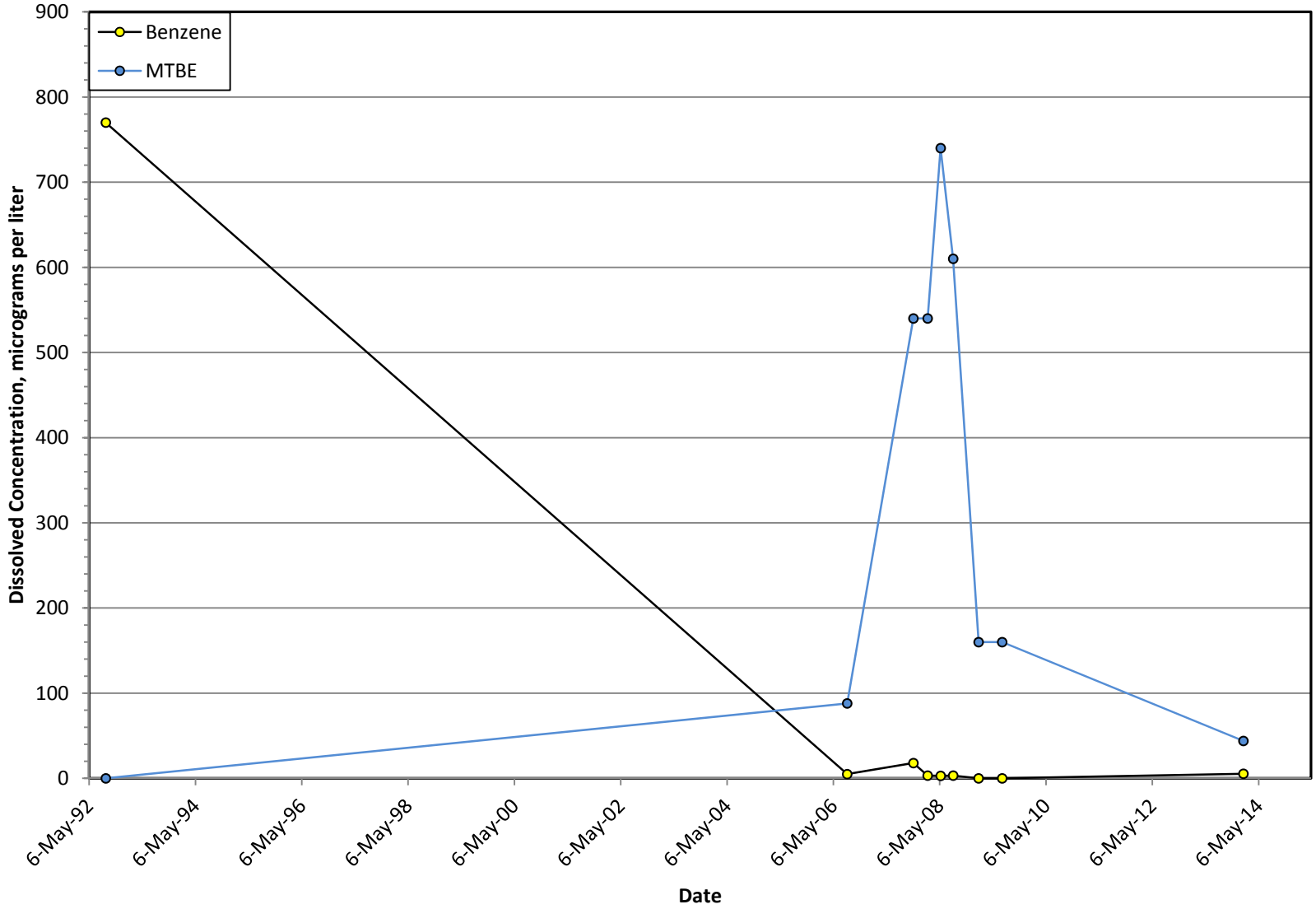


Well W-9

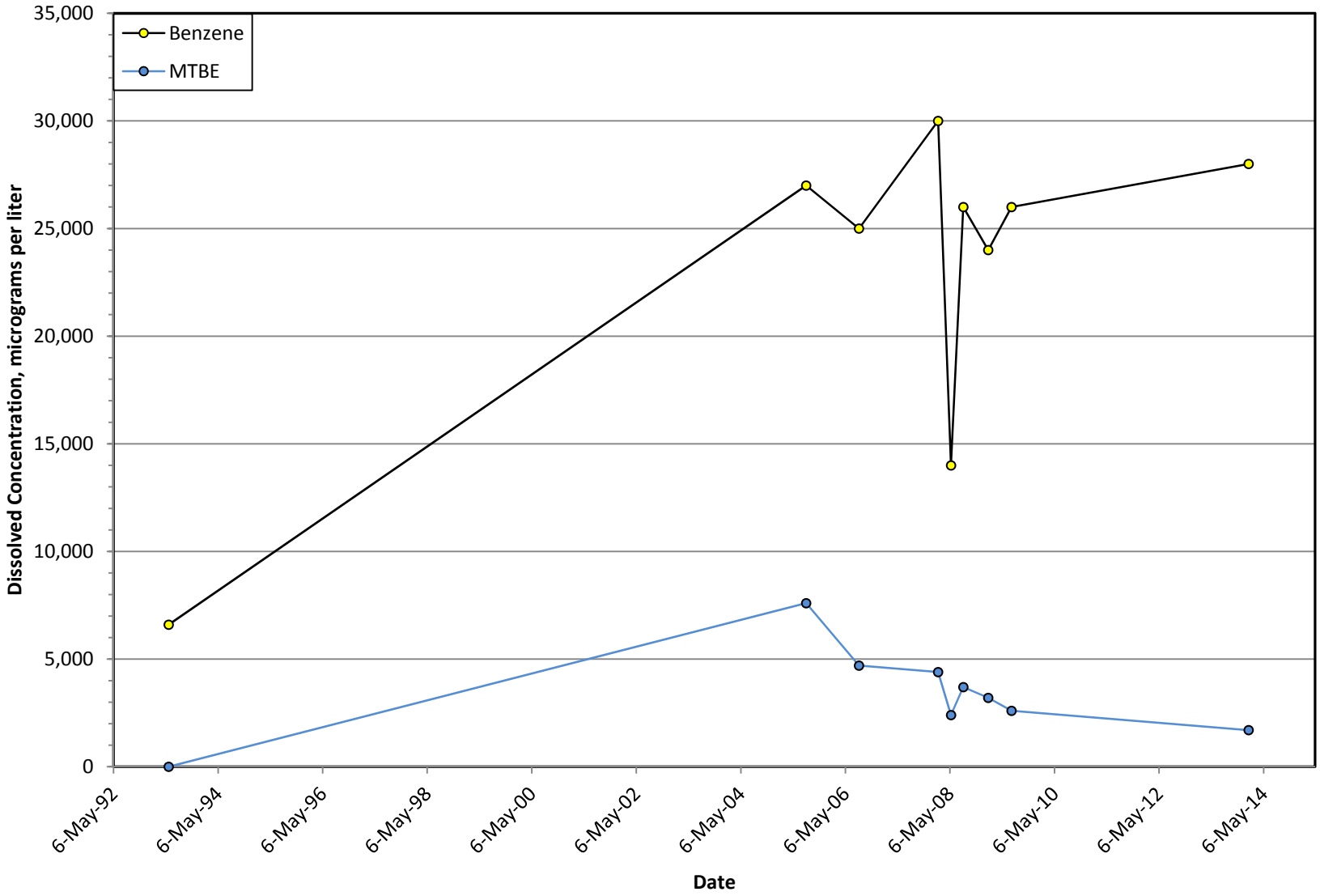
Dissolved VOC Trend



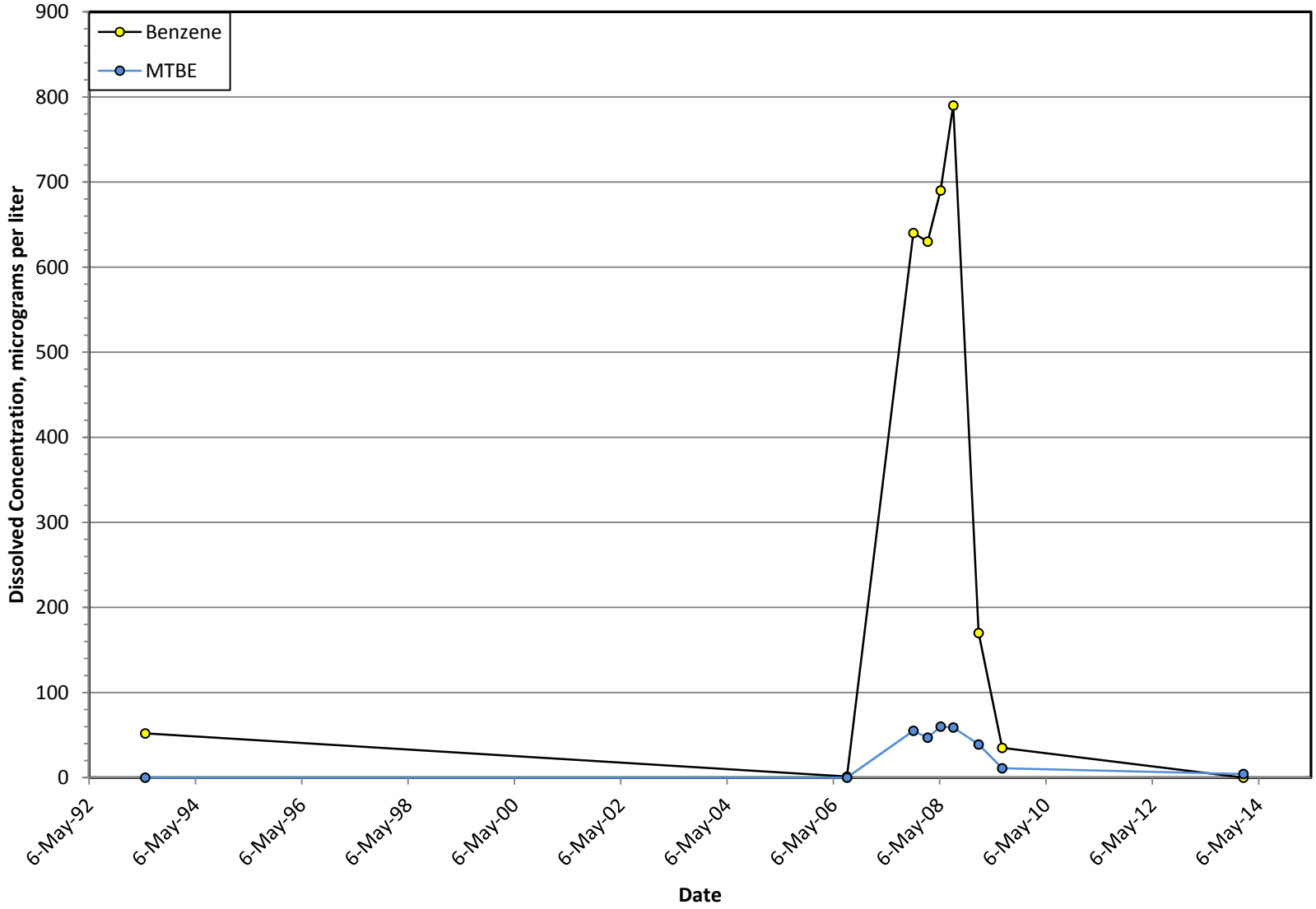
Well W-11
Dissolved VOC Trend



Well W-14
Dissolved VOC Trend

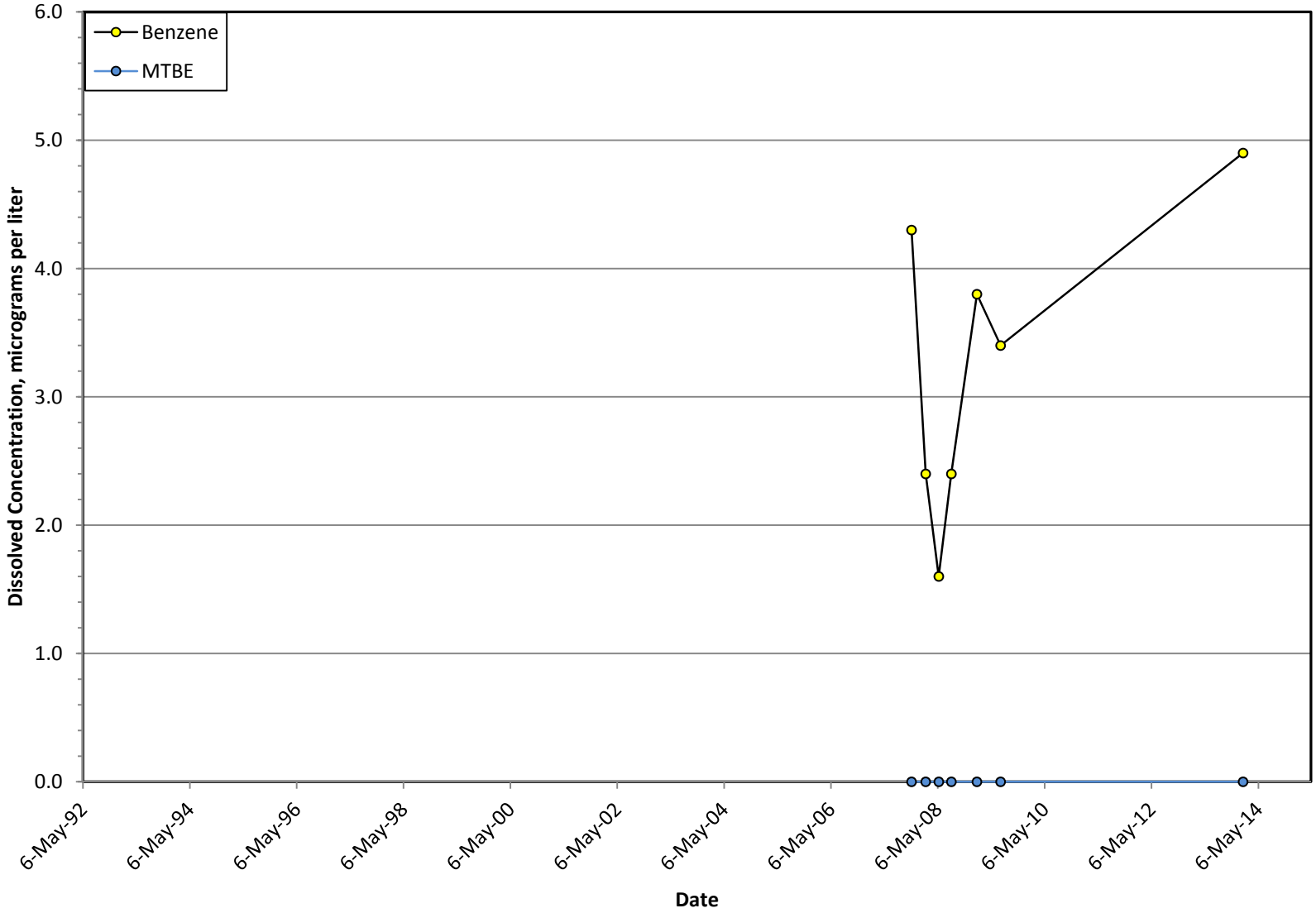


Well W-16
Dissolved VOC Trend



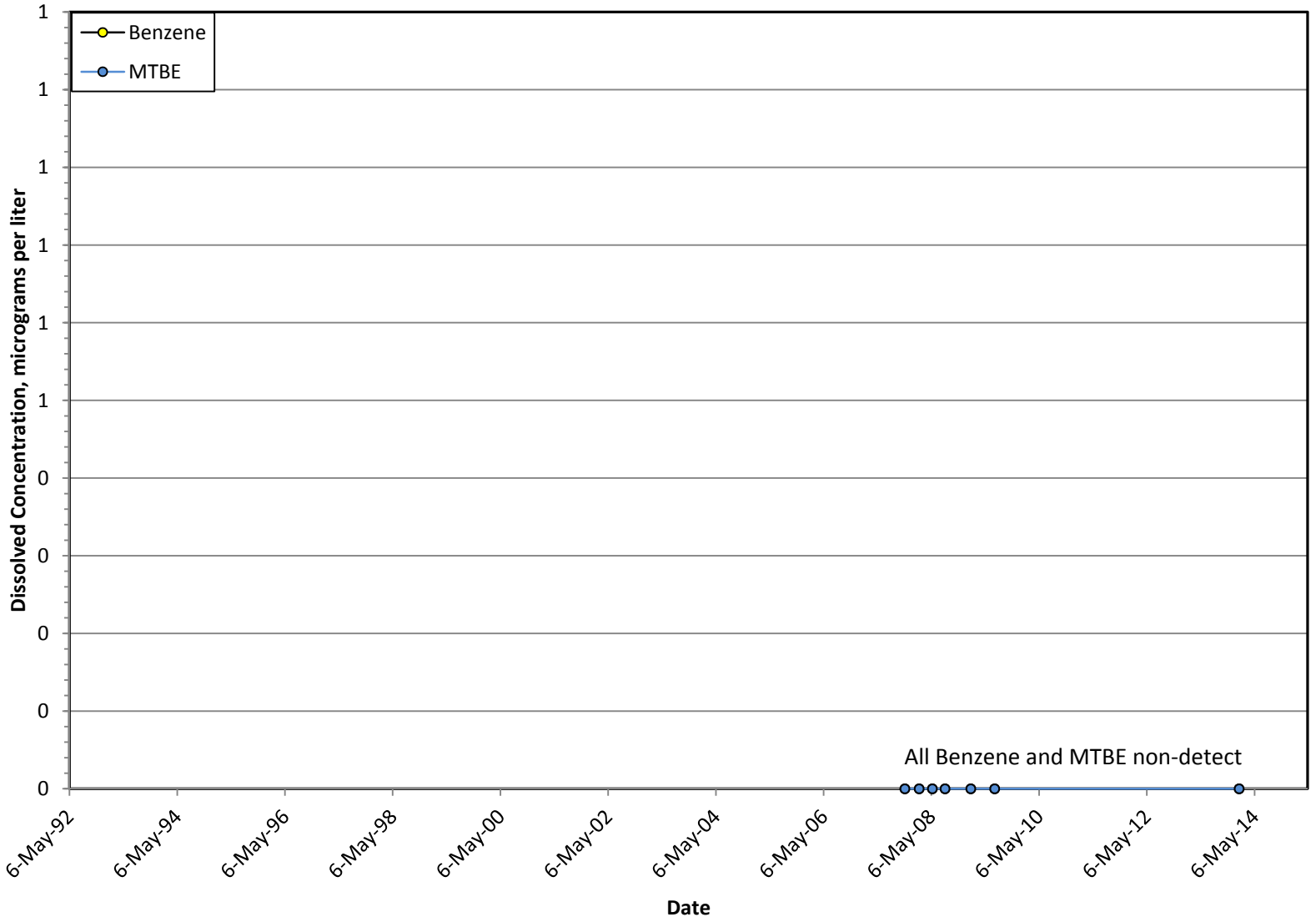
Well W-19

Dissolved VOC Trend



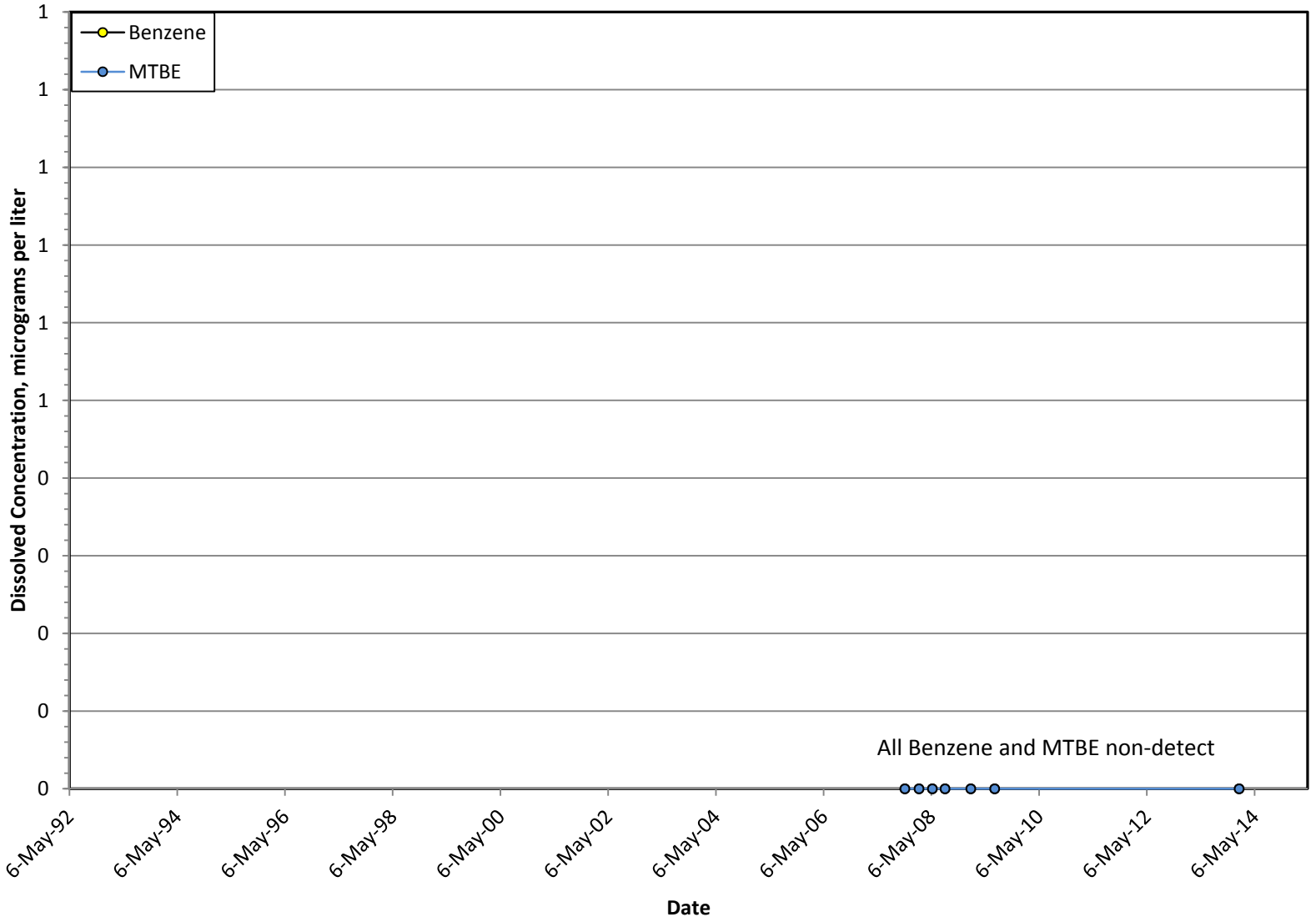
Well W-20

Dissolved VOC Trend



Well W-21

Dissolved VOC Trend



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Golder Associates

Engineering Earth's Development, Preserving Earth's Integrity