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North America Division

Remediation #3459

August 16, 2011

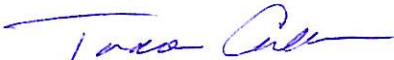
Mr. Robert Chesson
Department Of Natural Resources
Oil & Gas Conservation Commission
1120 Lincoln St., Suite 801
Denver CO 80203-2136

RE: Quarterly Groundwater Monitoring Report
Frick 18-2, 8
API 05-123-17647
Sec. 18, T4N, R64W
Weld County, Colorado

Dear Mr. Chesson:

Please find attached the Quarterly Groundwater Monitoring Report for the Frick 18-2 & 8. Noble Energy Inc. would like to claim business confidentiality protection for the information submitted in this letter, the supporting materials attached and all previous and subsequent correspondence related to this matter. Please contact the Noble Energy Environmental Department at (970) 785-5000 if you have any questions or require additional information.

Sincerely,


Todd Cullum
Environmental Specialist

Attachments



July 29, 2011

Remediation #3459

Mr. Todd Cullum
Environmental Specialist
Noble Energy, Inc.
804 Grand Avenue
Platteville, Colorado 80651

**RE: Third Quarter 2011 Remediation and Monitoring Report
Frick 18-2 & 8 Tank Battery Site
Weld County, Colorado**

Dear Mr. Cox:

LT Environmental, Inc. (LTE), under the direction of Noble Energy, Inc. (Noble), conducted corrective actions at the Frick 18-2 & 8 tank battery site (Site) located approximately 0.5 miles north of the intersection of Weld County Road (WCR) 44 and WCR 51 in Weld County, Colorado (Figure 1). The remediation program for the Site involved two distinct phases. Phase I of the remediation program involved the design, installation, and operation and maintenance (O&M) of an air sparging/soil vapor extraction (AS/SVE) system. Phase I was successful in mitigating the majority of subsurface hydrocarbon impact. Following completion of Phase I, Noble initiated Phase II, which included an enhanced attenuation remedial technology.

Noble continues to conduct groundwater monitoring at the Site to evaluate the effectiveness of the remediation program in mitigating groundwater impact. This correspondence is the Third Quarter 2011 Remediation and Monitoring Report and summarizes activities conducted at the Site from May through July 2011. Activities conducted during this reporting period included quarterly groundwater performance monitoring.

Phase I Remediation System Description

The AS/SVE system operated intermittently from August 8, 2008, to February 18, 2010. The AS system introduced ambient air into the subsurface water column to initiate dissolved hydrocarbon volatilization and to promote aerobic microbial decomposition of petroleum constituents. The SVE system volatilized petroleum constituents adsorbed onto soil particles and removed petroleum vapors released from the groundwater by the AS process. AS and SVE wells connected to equipment for the AS/SVE system housed in a remediation equipment trailer. The *Remediation System Installation and Startup, and Pre-System Groundwater Sampling Results* report, dated September 11, 2008, provided additional details of the Phase I remediation program, which is illustrated on Figure 2.

Due to attainment of cleanup goals and mitigation of hydrocarbon impact, the AS/SVE system was decommissioned on February 16 and 18, 2011. The AS and SVE wells and aboveground piping were removed and disposed of with Northern Colorado Disposal. Remediation wells

were closed in accordance with the Colorado Division of Water Resources, Well Abandonment Procedures.

Phase II Remediation System Description

Phase II of the remediation program included the application of a groundwater amendment to subsurface areas of the Site that continued to exhibit low-level dissolved hydrocarbon impact. Phase II was designed to both increase the attenuation rate of the plume and decrease the mass flux of hydrocarbons from the source to downgradient areas. The amendment consisted of BOS200[®] Trap & Treat carbon slurry (BOS200[®]), which is a mixture of granular activated carbon (GAC), petroleum consuming microbes, gypsum, and nutrients. The GAC initially adsorbs hydrocarbons in the soil and groundwater and immobilizes the impact. Following adsorption, contaminants are co-located with the bacteria, electron acceptors, and nutrients in the carbon matrix and are consumed by the bacteria via petroleum oxidation/sulfate reduction biologically mediated reactions. As a result, the remaining hydrocarbon impact is reduced; thereby achieving cleanup goals.

Implementation of Phase II of the remediation program occurred from June 28 through July 2, 2010. Application of the groundwater amendment occurred at two distinct areas: the area near MW01, MW02, and SB02R and the area near MW10R (Figure 1). Installation of the groundwater amendment involved removing overburden to expose the alluvial aquifer, placing the amendment in the saturated soil, and mixing the amendment with native material. The final dimensions of the first treatment area (MW01, MW02, and SB02R) were approximately 25 feet by 25 feet by 10 feet below ground surface (bgs). The final dimensions of the second treatment area (SB10R) were approximately 10 feet by 12 feet by 6 feet bgs.

On November 22, 2010, Phase II of the remediation program was extended. Application of the groundwater amendment continued at two areas. The first area began just south of MW01R, continued south to the MW02R location, and east to the fence, as depicted on Figure 1. The approximate area of treatment was approximately 20 feet by 15 feet by 13 feet bgs. The second treatment area was located at SB10R(2) and was approximately 20 feet by 20 feet by 12 feet bgs, as depicted on Figure 1. Approximately 160 cubic yards of impacted soil was removed from the treatment areas for disposal at Buffalo Ridge Landfill. Three hundred pounds of BOS200[®] was applied before backfilling with clean structural fill from Varra Aggregates. During excavation activities, monitoring wells MW01R, SB02R(2), and SB10R(2) were destroyed and abandoned.

Groundwater Monitoring Procedures

On July 5, 2011, six groundwater monitoring wells were sampled to determine the current plume extent. Prior to sampling, depth to groundwater in each monitoring well was measured and recorded to calculate appropriate purge volumes (Table 1). All groundwater monitoring wells were purged of three well casing volumes. Groundwater samples were then collected from the well points by advancing disposable 3/16-inch diameter polyethylene tubing below the water table inside 1-inch diameter polyvinyl chloride (PVC) casing. A peristaltic pump transported

groundwater to the surface for collection in 40-milliliter unpreserved vials, which were then placed on ice and delivered under chain-of-custody (COC) protocol to Origins Laboratory in Denver, Colorado. All samples were analyzed for benzene, toluene, ethylbenzene, and total xylenes (BTEX) by United States Environmental Protection Agency Method 8260C.

Hydrogeology

During the July 2011 monitoring event, the depth to static groundwater ranged from 2.28 feet below top of casing (btoc) in SB09 to 5.75 feet btoc in MW02R (Table 1). The groundwater flow direction was to the east with an average hydraulic gradient of approximately 0.018 feet per foot.

Groundwater Analytical Results

Six groundwater samples were collected and analyzed for BTEX during the July 2011 monitoring event (MW02R, SB03, SB07, SB09, SB15, and SB16). The Colorado Department of Public Health and Environment (CDPHE) - Water Quality Control Commission (WQCC) Regulation 41 (Reg 41) - The Basic Standards for Ground Water established standards for BTEX compounds at 5.0 micrograms per liter (ug/L), 560 ug/L, 700 ug/L, and 1,400 ug/L, respectively. Groundwater analytical results indicate BTEX compounds were not detected above the WQCC Reg 41 standards in the six groundwater samples collected. Groundwater analytical results for the July 2011 monitoring event are summarized in Table 2 and illustrated on Figure 3. The laboratory analytical reports, laboratory quality assurance/quality control data, and COC documentation are provided as Attachment 1.

Summary and Conclusions

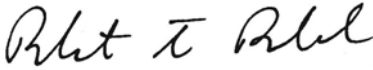
Since implementation of the remediation program, BTEX concentrations in all monitoring wells have successfully decreased into compliance with the WQCC Reg 41. Performance monitoring data indicates that cleanup objectives were attained, representing successful remediation of the pre-remediation (August 2008) plume extent.

Noble will continue to conduct static groundwater monitoring at the Site with the goal of obtaining four consecutive quarters of groundwater results in compliance with WQCC Reg 41 and site closure status is received from the Colorado Oil and Gas Conservation Commission. At this time, three consecutive quarters of groundwater results in compliance have been achieved. The next groundwater monitoring event will be conducted in October 2011.

LTE appreciates the opportunity to provide environmental services to Noble. Please call us at 303-433-9788 if you have any questions or comments regarding this report.

Sincerely,

LT ENVIRONMENTAL, INC.



Rob Rebel, P.E.
Project Manager



Steve Kahn, P.E.
Senior Engineer

Attachments (6)

Figure 1: Site Map

Figure 2: AS/SVE System Layout

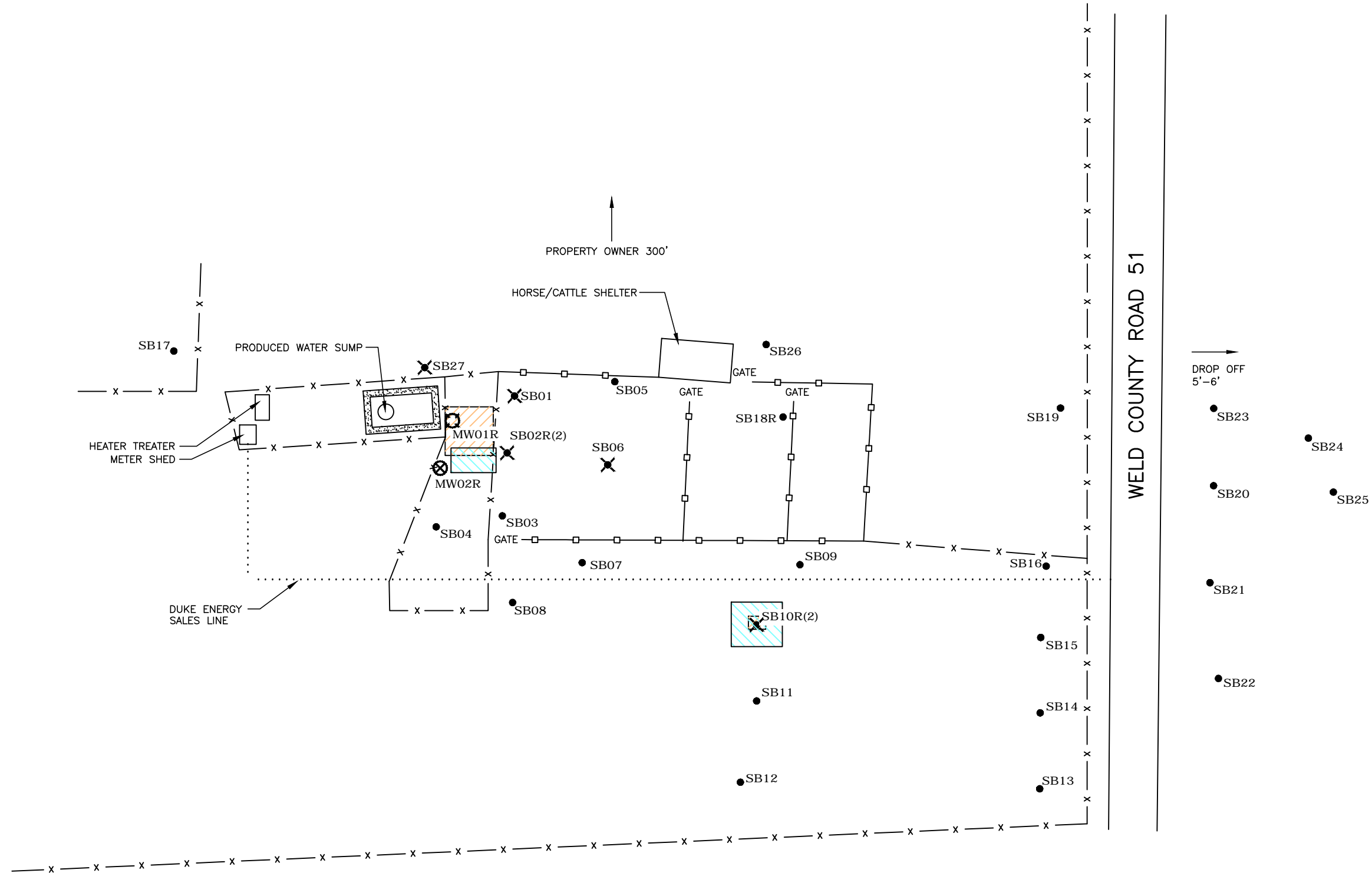
Figure 3: Groundwater Analytical Results – July 5, 2011

Table 1: Groundwater Elevation Summary










Table 2: Groundwater Analytical Results – Volatile Organic Compounds

Attachment: Laboratory Analytical Report

FIGURES



LEGEND

- | | | | |
|---|---|---|-----------------------------------|
|  | MONITORING WELL |  | TREATMENT AREA (6/28/10 - 7/2/10) |
|  | DESTROYED MONITORING WELL |  | TREATMENT AREA (11/22/10) |
|  | SOIL BORING/TEMPORARY MONITORING WELL |  | BERM |
|  | DESTROYED SOIL BORING/TEMPORARY MONITORING WELL | | |
|  | METAL PIPE FENCE | | |
|  | BARBED WIRE FENCE | | |

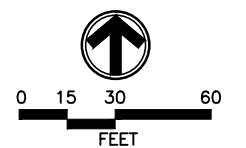
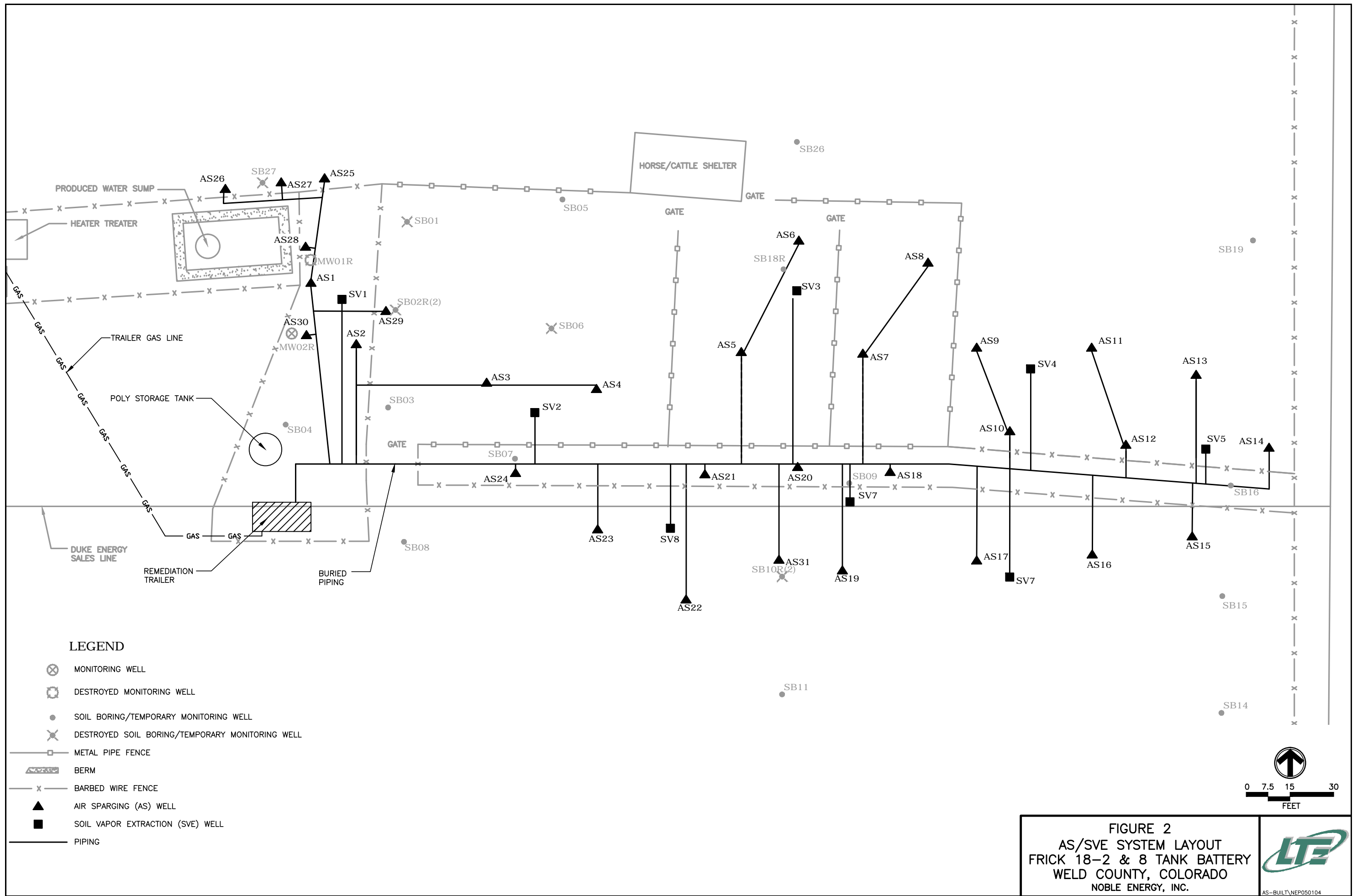


FIGURE 1
SITE MAP
FRICK 18-2 & 8 TANK BATTERY
WELD COUNTY, COLORADO
NOBLE ENERGY, INC.





TABLES

TABLE 1
GROUNDWATER ELEVATION SUMMARY

FRICK 18-2 & 8 TANK BATTERY
WELD COUNTY, COLORADO
NOBLE ENERGY, INC.

Well ID	Date	Total Depth (ft)	Depth to Water (ft)	TOC Elevation (ft)	Groundwater Elevation (relative ft)
MW01	10/11/05	17.78	8.80	96.33	87.53
	01/20/06	17.78	8.23	96.33	88.10
	03/28/07	17.78	7.63	96.33	88.70
	08/05/08	17.78	6.27	96.33	90.06
	11/14/08	17.78	4.32	96.33	92.01
	11/24/08	17.78	3.49	96.33	92.84
	02/24/09	17.78	3.31	96.33	93.02
	05/26/09	17.78	0.70	96.33	95.63
	08/31/09	17.78	3.75	96.33	92.58
	12/29/09	17.78	2.22	96.33	94.11
	03/11/10	17.78	1.43	96.33	94.90
MW01R	07/28/10	10.03	5.46	NM	NM
	11/22/10	Destroyed			
MW02	10/11/05	18.39	9.68	96.83	87.15
	01/20/06	18.39	8.78	96.83	88.05
	03/28/07	18.39	7.95	96.83	88.88
	08/05/08	18.39	6.51	96.83	90.32
	11/24/08	18.39	3.78	96.83	93.05
	02/24/09	18.39	3.31	96.83	93.52
	05/26/09	18.34	1.00	96.83	95.83
	08/31/09	18.34	4.10	96.83	92.73
	12/29/09	18.34	1.84	96.83	94.99
	03/11/10	18.34	1.50	96.83	95.33
MW02R	07/28/10	12.04	5.87	NM	NM
	01/19/11	12.04	6.25	NM	NM
	04/05/11	12.04	6.09	NM	NM
	07/05/11	12.04	5.75	NM	NM
SB01	10/11/05	14.98	8.72	95.82	87.10
SB02	10/11/05	12.68	9.24	96.06	86.82
	01/20/06	12.68	8.35	96.06	87.71
	03/28/07	12.68	7.62	96.06	88.44
SB02R	02/24/09	12.72	3.15	NM	NM
	05/26/09	12.72	0.75	NM	NM
	08/31/09	12.72	4.06	NM	NM
	12/29/09	12.72	0.00	NM	NM
	03/11/10	12.72	1.37	NM	NM
SB02R(2)	07/28/10	10.14	5.20	NM	NM
	11/22/10	Destroyed			
SB03	10/11/05	15.01	9.50	96.06	86.56
	01/20/06	15.01	8.45	96.06	87.61
	03/28/07	15.01	7.64	96.06	88.42
	08/05/08	15.01	6.34	96.06	89.72
	11/24/08	15.01	3.44	96.06	92.62
	02/24/09	15.01	3.05	96.06	93.01
	05/26/09	15.01	0.85	96.06	95.21
	08/31/09	15.01	3.58	96.06	92.48
	12/29/09	15.01	1.90	96.06	94.16
	03/11/10	15.01	1.15	96.06	94.91
	07/28/10	14.89	3.40	96.06	92.66
	01/19/11	14.89	3.71	96.06	92.35
	04/05/11	14.89	3.51	96.06	92.55
	07/05/11	14.89	3.32	96.06	92.74
SB04	10/11/05	12.86	10.04	97.26	87.22
SB05	10/11/05	12.09	8.18	94.48	86.30
SB06	10/11/05	12.27	8.56	94.71	86.15
	01/20/06	12.27	7.60	94.71	87.11
	03/28/07	12.27	6.94	94.71	87.77

TABLE 1 (CONTINUED)
GROUNDWATER ELEVATION SUMMARY

FRICK 18-2 & 8 TANK BATTERY
WELD COUNTY, COLORADO
NOBLE ENERGY, INC.

Well ID	Date	Total Depth (ft)	Depth to Water (ft)	TOC Elevation (ft)	Groundwater Elevation (relative ft)
SB07	10/11/05	12.30	8.86	94.98	86.12
	01/20/06	12.30	7.85	94.98	87.13
	03/28/07	12.30	7.18	94.98	87.80
	02/24/09	12.30	2.63	94.98	92.35
	05/26/09	12.30	0.55	94.98	94.43
	08/31/09	12.30	3.07	94.98	91.91
	12/29/09	12.30	1.50	94.98	93.48
	03/11/10	12.30	0.73	94.98	94.25
	07/28/10	11.78	3.01	NM	NM
	01/19/11	11.78	3.27	NM	NM
	04/05/11	11.78	3.31	NM	NM
	07/05/11	11.78	3.03	NM	NM
SB08	01/20/06	12.18	7.79	NM	NM
SB09	05/28/09	15.04	0.10	NM	NM
	08/31/09	15.04	2.78	NM	NM
	12/29/09	15.04	1.20	NM	NM
	03/11/10	15.04	0.40	NM	NM
	07/28/10	14.81	2.96	NM	NM
	01/19/11	14.81	3.02	NM	NM
	04/05/11	14.81	2.96	NM	NM
SB10R	07/05/11	14.81	2.28	NM	NM
	05/28/09	13.68	0.30	NM	NM
	08/31/09	13.68	1.63	NM	NM
	12/29/09	13.68	0.82	NM	NM
SB10R(2)	03/17/10	13.68	0.10	NM	NM
	07/28/10	10.13	2.96	NM	NM
	11/22/10	Destroyed			
SB11	10/11/05	11.95	7.80	92.87	85.07
	01/20/06	11.95	6.66	92.87	86.21
	03/28/07	11.95	6.06	92.87	86.81
	08/05/08	11.95	4.75	92.87	88.12
	11/24/08	11.95	1.89	92.87	90.98
SB12	10/11/05	11.68	8.23	93.04	84.81
	01/20/06	11.68	6.86	93.04	86.18
	03/28/07	11.68	6.13	93.04	86.91
SB13	10/11/05	11.79	10.23	92.27	82.04
	01/20/06	11.79	9.35	92.27	82.92
	03/28/07	11.79	8.59	92.27	83.86
SB14	10/11/05	12.11	9.95	92.63	82.68
	01/20/06	12.11	9.01	92.63	83.62
	03/28/07	12.11	8.83	92.63	83.80
	08/05/08	12.11	6.07	92.63	86.56
SB15	10/11/05	12.01	10.05	92.80	82.75
	01/20/06	12.01	9.11	92.80	83.69
	03/28/07	12.01	8.95	92.80	83.85
	08/05/08	12.01	7.51	92.80	85.29
	11/24/08	12.01	5.29	92.80	87.51
	02/24/09	12.01	4.41	92.80	88.39
	05/26/09	12.01	0.90	92.80	91.90
	08/31/09	12.01	4.50	92.80	88.30
	12/29/09	12.01	3.08	92.80	89.72
	03/11/10	12.01	1.66	92.80	91.14
	07/28/10	8.81	4.69	92.80	88.11
	01/19/11	8.81	5.01	92.80	87.79
	04/05/11	8.81	4.56	92.80	88.24
	07/05/11	8.81	4.56	92.80	88.24

TABLE 1 (CONTINUED)
GROUNDWATER ELEVATION SUMMARY

FRICK 18-2 & 8 TANK BATTERY
WELD COUNTY, COLORADO
NOBLE ENERGY, INC.

Well ID	Date	Total Depth (ft)	Depth to Water (ft)	TOC Elevation (ft)	Groundwater Elevation (relative ft)
SB16	10/11/05	12.06	9.27	92.21	82.94
	01/20/06	12.06	8.38	92.21	83.83
	03/28/07	12.06	8.26	92.21	83.95
	08/05/08	12.06	6.96	92.21	85.25
	11/14/08	12.06	5.62	92.21	86.59
	11/24/08	12.06	4.81	92.21	87.40
	02/24/09	12.06	3.92	92.21	88.29
	08/31/09	12.06	4.00	92.21	88.21
	12/29/09	12.06	2.49	92.21	89.72
	03/17/10	12.06	2.30	92.21	89.91
	07/28/10	12.04	4.24	92.21	87.97
	01/19/11	12.04	4.37	92.21	87.84
	04/05/11	12.04	3.90	92.21	88.31
	07/05/11	12.04	4.00	92.21	88.21
SB17	10/11/05	14.56	11.02	101.25	90.23
SB18	10/11/05	12.00	8.66	93.63	84.97
	01/20/06	12.00	7.72	93.63	85.91
SB18R	02/24/09	12.86	3.22	NM	NM
	05/28/09	12.86	0.74	NM	NM
SB19	10/11/05	12.08	9.23	92.37	83.14
	01/20/06	12.08	8.39	92.37	83.98
	03/28/07	12.08	8.27	92.37	84.10
SB20	10/11/05	13.27	11.54	93.31	81.77
	01/20/06	13.27	8.65	93.31	84.66
	03/28/07	13.27	10.37	93.31	82.94
	08/05/08	13.27	9.38	93.31	83.93
	11/24/08	13.27	7.18	93.31	86.13
	02/24/09	13.30	6.26	93.31	87.05
SB21	05/26/09	13.30	3.00	93.31	90.31
	10/11/05	13.90	9.91	91.36	81.45
	01/20/06	13.90	7.89	91.36	83.47
	03/28/07	13.90	9.60	91.36	81.76
SB22	11/24/08	13.90	5.13	91.36	86.23
	10/11/05	13.93	9.31	90.57	81.26
SB23	10/11/05	13.70	8.40	89.98	81.58
	01/20/06	13.70	7.15	89.98	82.83
	03/28/07	13.70	8.88	89.98	81.10
	11/24/08	13.70	4.19	89.98	85.79
SB24	10/11/05	13.69	8.00	88.90	80.90
	01/20/06	13.69	6.65	88.90	82.25
	03/28/07	13.69	8.58	88.90	80.32
	11/24/08	13.69	3.72	88.90	85.18

TABLE 1 (CONTINUED)
GROUNDWATER ELEVATION SUMMARY

FRICK 18-2 & 8 TANK BATTERY
WELD COUNTY, COLORADO
NOBLE ENERGY, INC.

Well ID	Date	Total Depth (ft)	Depth to Water (ft)	TOC Elevation (ft)	Groundwater Elevation (relative ft)
SB25	10/11/05	13.77	7.90	88.48	80.58
	11/24/08	13.77	3.58	88.48	84.90
SB26	10/11/05	11.94	8.91	93.85	84.94
SB27	02/24/09	13.35	3.81	NM	NM
	05/26/09	13.35	1.53	NM	NM
	08/31/09	13.35	4.88	NM	NM
	01/07/10	13.35	3.20	NM	NM
	03/11/10	13.35	1.76	NM	NM

Notes:

ft - feet

NM - Not measured

TOC - top of casing

All depths measured from the north side of the top of the casing

TABLE 2
GROUNDWATER ANALYTICAL RESULTS - VOLATILE ORGANIC COMPOUNDS

FRICK 18-2 & 8 TANK BATTERY
WELD COUNTY, COLORADO
NOBLE ENERGY, INC

Sample ID	Sample Date	Volatile Organic Compounds (µg/L)			
		Benzene	Toluene	Ethylbenzene	Total Xylenes
MW01	10/11/05	1,200	4.2	150	562
	01/20/06	1,700	<20	39	337
	03/28/07	1,200	<20.0	27	260
	08/05/08	7,770	111	97.6	812.2
	11/14/08	9,450	129	272	2,858
	11/24/08	9,210	56.8	50.1	2,573
	02/24/09	6,130	23.9	65.7	571.7
	05/26/09	9,680	56.1	633	1,027
	08/31/09	7,000	2.53	163	763.84
	12/29/09	919	<1.0	5.64	35.26
	03/11/10	3,820	11.3	150	459.8
MW01R	07/28/10	114	25.8	43.5	241
	11/22/10	Destroyed			
MW02	10/11/05	390	<1.0	15	285
	01/20/06	<1.0	<1.0	<1.0	<3.0
	03/28/07	1.5	<2.0	<2.0	7.2
	08/05/08	53.8	<1.0	66.7	381.7
	11/24/08	2.15	<1.0	<1.0	8.1
	02/24/09	88.5	<1.0	100	655.6
	05/26/09	65	<1.0	171	1,736.7
	08/31/09	6.81	<1.0	<1.0	2.72
	12/29/09	1.28	<1.0	1.62	14.6
	03/11/10	7.78	<1.0	28.3	203
MW02R	07/28/10	2.38	1.99	130	207
	01/19/11	3.03	1.56	112	514
	04/05/11	<1.00	<1.00	51.8	222
	07/05/11	1.2	<1.0	24.3	98.3
SB01	06/16/05	< 1.0	< 1.0	< 1.0	<3.0
SB02	06/16/05	48	39.8	508	7,160
	10/11/05	3.6	<1.0	170	7,078
	01/20/06	<1.0	<1.0	190	586
	03/28/07	1.2	<2.0	49	38
	08/05/08	Destroyed			
SB02R	02/24/09	30.4	1.91	48.9	266.54
	05/26/09	32.1	<1.0	6.7	48.5
	08/31/09	183	<1.0	383	3,055
	12/29/09	2.23	<1.0	<1.0	24.41
	03/11/10	97.6	<1.0	58.5	87.6
SB02R(2)	07/28/10	5.17	<1.0	44.8	122
	11/22/10	Destroyed			
SB03	06/16/05	630	892	182	2,070
	10/11/05	4,800	280	280	2,150
	01/20/06	2,400	38	170	960
	03/28/07	350	<20.0	230	1,300
	08/05/08	< 1.0	< 1.0	< 1.0	3.41
	11/24/08	<1.0	<1.0	<1.0	<3.0
	02/24/09	<1.0	<1.0	26.6	178
	05/26/09	<1.0	<1.0	16.9	86.4
	08/31/09	<1.0	<1.0	8.75	9.01
	12/29/09	<1.0	<1.0	13.2	52
	03/11/10	<1.0	<1.0	34.3	110
	07/28/10	<1.0	<1.0	8.06	21.7
	01/19/11	2.32	1.53	33.7	60.9
	04/05/11	<1.00	<1.00	5.54	12.2
	07/05/11	<1.0	<1.0	3.3	8.7
SB04	06/16/05	4.8	31.7	46.0	62.6
SB05	06/16/05	< 1.0	2.9	3.5	41.8
SB06	06/16/05	9.1	80.3	106	881
	10/11/05	2.9	<1.0	47	221
	01/20/06	<1.0	<1.0	16	61.5
	03/28/07	<1.0	<2.0	<2.0	<6.0
SB07	06/16/05	7,120	3,090	433	4,610
	10/11/05	6,400	200	510	1,000
	01/20/06	3,300	1.2	230	1,698
	03/28/07	2,100	<100.0	210	1,800
	02/24/09	<1.0	<1.0	10.4	76.7
	05/26/09	<1.0	<1.0	<1.0	5.12
	08/31/09	<1.0	<1.0	9.48	63.8
	12/29/09	<1.0	<1.0	56.2	462.08
	03/11/10	<1.0	<1.0	135	517.82
	07/28/10	1.86	2.99	79.2	381
	01/19/11	2.13	1.02	33.1	194
	04/05/11	<1.00	<1.00	10.4	52.9
	07/05/11	1.2	<1.0	39.1	114

TABLE 2
GROUNDWATER ANALYTICAL RESULTS - VOLATILE ORGANIC COMPOUNDS

FRICK 18-2 & 8 TANK BATTERY
WELD COUNTY, COLORADO
NOBLE ENERGY, INC

Sample ID	Sample Date	Volatile Organic Compounds (µg/L)			
		Benzene	Toluene	Ethylbenzene	Total Xylenes
SB08	06/16/05	69.0	80.4	15.5	175
	01/20/06	<1.0	<1.0	<1.0	<3.0
	03/28/07	<1.0	<2.0	<2.0	<6.0
SB09	06/16/05	11.1	7.1	2.4	27.8
	01/20/06	1,800	<1.0	130	1,016
	03/28/07	68	<2.0	25	200
	02/24/09	59	<1.0	<1.0	<3.0
	05/28/09	<1.0	<1.0	<1.0	<3.0
	08/31/09	<1.0	<1.0	<1.0	<3.0
	12/29/09	<1.0	<1.0	<1.0	<3.0
	03/11/10	<1.0	<1.0	<1.0	<3.0
	07/28/10	<1.0	<1.0	<1.0	<1.0
	01/19/11	<1.00	<1.00	<1.00	<1.00
	04/05/11	<1.00	<1.00	<1.00	<3.00
SB10	06/16/05	3,260	1,180	211	2,910
	10/11/05	1,900	450	230	2,030
	01/20/06	1,900	150	170	1,350
	03/28/07	1,600	<20.0	190	1,756
	08/05/08	40.6	<1.0	33.0	68.1
SB10R	11/24/08	Destroyed			
	02/24/09	213	<1.0	124	662
	05/28/09	47.6	<1.0	23	102
	08/31/09	17.3	<1.0	2.68	5.36
	12/29/09	12.1	<1.0	57.7	392
SB10R(2)	03/17/10	8.86	<1.0	76.3	299
	07/28/10	20.1	1.05	173	215
	11/22/10	Destroyed			
SB11	06/17/05	17.6	57.4	185	590
	10/14/05	1.8	<1.0	92	240
	01/20/06	<1.0	<1.0	15	34
	03/28/07	<1.0	<2.0	7.9	12
	08/05/08	<1.0	<1.0	<1.0	<3.0
	11/24/08	<1.0	<1.0	<1.0	<3.0
SB12	06/17/05	15.1	28.7	10.2	103
	10/11/05	1.1	<1.0	<1.0	2.1
	01/20/06	<1.0	<1.0	<1.0	<3.0
	03/28/07	<1.0	<2.0	<2.0	<6.0
SB13	06/17/05	9.2	17.3	6.1	65.4
	10/11/05	2.4	<1.0	<1.0	4.6
	01/20/06	<1.0	<1.0	<1.0	<3.0
	03/28/07	<1.0	<2.0	<2.0	<6.0
SB14	06/17/05	7.5	15.4	7.0	66.3
	10/11/05	17	<1.0	54	150
	01/20/06	1.0	<1.0	5.3	5.6
	03/28/07	<1.0	<2.0	<2.0	<6.0
	08/05/08	<1.0	<1.0	<1.0	<3.0
SB15	06/17/05	21.4	19.0	35.0	812
	10/11/05	14	<1.0	15	110
	01/20/06	<1.0	<1.0	5.4	<3.0
	03/28/07	2.9	<2.0	61.0	101.7
	08/05/08	<1.0	<1.0	<1.0	<3.0
	11/24/08	<1.0	<1.0	<1.0	<3.0
	02/24/09	<1.0	<1.0	2.15	2.73
	05/26/09	<1.0	<1.0	<1.0	<3.0
	08/31/09	<1.0	<1.0	<1.0	<3.0
	12/29/09	<1.0	<1.0	<1.0	<3.0
	03/11/10	<1.0	<1.0	<1.0	<3.0
	07/28/10	<1.0	<1.0	<1.0	<1.0
	01/19/11	2.00	<1.00	<1.00	2.07
	04/05/11	<1.00	<1.00	<1.00	<3.00
	07/05/11	<1.0	<1.0	<1.0	<3.0

TABLE 2
GROUNDWATER ANALYTICAL RESULTS - VOLATILE ORGANIC COMPOUNDS

FRICK 18-2 & 8 TANK BATTERY
WELD COUNTY, COLORADO
NOBLE ENERGY, INC

Sample ID	Sample Date	Volatile Organic Compounds (µg/L)			
		Benzene	Toluene	Ethylbenzene	Total Xylenes
SB16	06/17/05	7,630	8,210	463	6,770
	10/11/05	5,400	4,600	470	5,280
	01/20/06	4,300	4,300	290	3,530
	03/28/07	2,600	4,400	400	5,860
	08/05/08	933	86.7	395	3,831
	11/14/08	<1.0	<1.0	3.31	4.75
	11/24/08	727	45.9	562	6,906
	02/24/09	196	13.4	453	5,093
	08/31/09	4.1	<1.0	111	694
	12/29/09	<1.0	<1.0	55.3	391
	03/17/10	<1.0	<1.0	2.33	14.9
	07/28/10	<1.0	1.27	93.7	168
	01/19/11	2.30	1.40	145	994
	04/05/11	<1.00	<1.00	13.6	95.5
	07/05/11	<1.0	<1.0	41.0	223
SB17	06/27/05	< 1.0	< 1.0	< 1.0	< 3.0
SB18	06/17/05	1,060	190	6.2	870
	10/11/05	1,000	18	290	2,778
	01/20/06	41	50	35	700
	03/28/07	Destroyed			
SB18R	02/24/09	<1.0	<1.0	103	428.05
	05/28/09	<1.0	<1.0	8.16	27.6
SB19	06/17/05	29.9	51.3	9.6	109
	10/11/05	<1.0	<1.0	<1.0	<3.0
	01/20/06	<1.0	<1.0	<1.0	<3.0
	03/28/07	<1.0	<2.0	<2.0	<6.0
SB20	07/18/05	5,640	< 10	321	4,780
	10/11/05	2,800	2.0	260	2,500
	01/20/06	<50	<50	<1.0	2.8
	03/28/07	140	<2.0	21	130
	08/05/08	25.3	<1.0	28.9	200.46
	11/24/08	2.74	<1.0	<1.0	7.98
	02/24/09	1.12	<1.0	4.26	20.0
	05/26/09	<1.0	<1.0	<1.0	<3.0
SB21	07/18/05	209	< 1.0	1.9	22.3
	10/11/05	11	< 1.0	<1.0	<3.0
	01/20/06	<1.0	<1.0	<1.0	<3.0
	03/28/07	<1.0	<2.0	<2.0	<6.0
	11/24/08	<1.0	<1.0	11.8	49.5
SB22	07/18/05	< 1.0	< 1.0	< 1.0	3.2
SB23	07/18/05	13.2	< 1.0	1.5	22.8
	10/11/05	<1.0	< 1.0	<1.0	<3.0
	01/20/06	1.0	<1.0	<1.0	<3.0
	03/28/07	<1.0	<2.0	<2.0	<6.0
	11/24/08	<1.0	<1.0	<1.0	<3.0
SB24	07/18/05	21.0	< 1.0	2.7	38.9
	10/11/05	<1.0	<1.0	<1.0	<3.0
	01/20/06	<1.0	< 1.0	<1.0	<3.0
	03/28/07	<1.0	<2.0	<2.0	<6.0
	11/24/08	<1.0	<1.0	<1.0	<3.0
SB25	07/18/05	< 1.0	< 1.0	< 1.0	7
	11/24/08	<1.0	<1.0	<1.0	<3.0
SB26	07/18/05	1.8	4.7	51.4	648

TABLE 2
GROUNDWATER ANALYTICAL RESULTS - VOLATILE ORGANIC COMPOUNDS

FRICK 18-2 & 8 TANK BATTERY
WELD COUNTY, COLORADO
NOBLE ENERGY, INC

Sample ID	Sample Date	Volatile Organic Compounds (µg/L)			
		Benzene	Toluene	Ethylbenzene	Total Xylenes
SB27	02/24/09	24.7	494	91.9	1,077
	05/26/09	11.1	188	<1.0	421.9
	08/31/09	90.5	300	18.6	348.4
	01/07/10	3.64	144	17.3	311.3
	03/11/10	2.44	12.0	11.4	92.7
Water Well	06/17/05	< 1.0	< 1.0	< 1.0	< 3.0
	10/11/05	< 1.0	< 1.0	< 1.0	< 3.0
	01/20/06	< 1.0	< 1.0	< 1.0	< 3.0
	03/28/07	<1.0	<2.0	<2.0	<6.0
CDPHE-WQCC Regulation 41 Groundwater Standards		5.0	560	700	1,400

Notes:

ug/L - micrograms per liter

CDPHE-WQCC - Colorado Department of Public Health and Environment Water Quality Control Commission

< indicates analytical result is less than the laboratory detection limit

Bold indicates concentration exceeds CDPHE-WQCC Regulation 41 Groundwater Standards

Analysis by Environmental Protection Agency Method 8260B (2/24/09 through 1/19/11) and 8260C (4/5/11).

ATTACHMENT
LABORATORY ANALYTICAL REPORT



July 08, 2011

LT Environmental, Inc.

Rob Rebel

4600 West 60th Avenue

Arvada CO 80003

Project Name - Noble - Frick 18-2&8

Project Number - NEP0505

Attached are you analytical results for Noble - Frick 18-2&8 received by Origins Laboratory, Inc. July 05, 2011. This project is associated with Origins project number X107024-01.

The analytical results in the following report were analyzed under the guidelines of EPA Methods specified in SW-846. The analytical results apply specifically to the samples and analyses specified per the attached Chain of Custody.

Thank you for selecting Origins for your analytical needs. Please contact us with any questions concerning this report, or if we can help with anything at all.

Origins Laboratory, Inc.
303.433.1322
o-squad@oelabinc.com



4640 North Pecos Street | Unit C | Denver, CO 80211 | Phone: 303.433.1322 | Fax: 303.265.9645

LT Environmental, Inc.
4600 West 60th Avenue

Arvada CO 80003

Project Number: NEP0505

Project Name: Noble - Frick 18-2&8

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW02R	X107024-01	Water	July 5, 2011 11:15	07/05/2011 12:30
SB03	X107024-02	Water	July 5, 2011 11:10	07/05/2011 12:30
SB07	X107024-03	Water	July 5, 2011 11:00	07/05/2011 12:30
SB09	X107024-04	Water	July 5, 2011 11:05	07/05/2011 12:30
SB16	X107024-05	Water	July 5, 2011 10:50	07/05/2011 12:30
SB15	X107024-06	Water	July 5, 2011 10:45	07/05/2011 12:30

Origins Laboratory, Inc.



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

Noelle E Doyle, President

LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

Project Number: NEP0505
Project Name: Noble - Frick 18-2&8

Origins Laboratory

F-012207-01
Effective Date: 01/22/07

Sample Receipt Checklist

Origins Work Order: X107024

Client: LTE Client Project ID: Frick 18-2, 8

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

Matrix (Check all that apply): _____ Soil/Solid ☒ Water _____ Other: _____
(Describe)

Cooler ID					
Temp (°C)	<u>NA</u>				

Thermometer ID: NA

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature just above 0°C to ≤ 6°C ⁽¹⁾ ? NOTE: If samples are delivered within 5 hours of sampling, this requirement is waived provided that there is evidence that cooling has begun.			<input checked="" type="checkbox"/>	
Were all samples received intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
If custody seals are present, are they intact ⁽¹⁾ ?			<input checked="" type="checkbox"/>	
Are short holding time analytes or samples with HT's due within 48 hours present ⁽¹⁾ ?		<input checked="" type="checkbox"/>		
Is a chain-of-custody (COC) present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Is the COC properly relinquished by the client with date and time recorded ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.		<input checked="" type="checkbox"/>		
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ? Note the type of preservation in the Comments column (e.g., HCl).			<input checked="" type="checkbox"/>	
Additional Comments (if any):				
⁽¹⁾ If NO, then contact the client before proceeding with analysis and note in the case narrative.				

Scott Smith
Custodian Printed Name

SS Smith
Signature or Initials of Custodian

2/15/11 13:24
Date/Time

Origins Laboratory, Inc.

Noelle E Doyle

Noelle E Doyle, President

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

LT Environmental, Inc.
4600 West 60th Avenue

Arvada CO 80003

Project Number: NEP0505

Project Name: Noble - Frick 18-2&8

MW02R

7/5/2011 11:15:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.

X107024-01 (Water)

BTEX by EPA 8260C

Benzene	1.2	1.0	ug/L	1	1G06011	07/06/2011	07/07/2011
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	24.3	1.0	"	"	"	"	"
Xylenes, total	98.3	3.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	106 %	70-130	"	"	"
Surrogate: Toluene-d8	94.5 %	70-130	"	"	"
Surrogate: 4-Bromofluorobenzene	98.4 %	70-130	"	"	"

Origins Laboratory, Inc.



Noelle E Doyle, President

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

LT Environmental, Inc.
4600 West 60th Avenue

Arvada CO 80003

Project Number: NEP0505

Project Name: Noble - Frick 18-2&8

SB03

7/5/2011 11:10:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X107024-02 (Water)**BTEX by EPA 8260C**

Benzene	ND	1.0	ug/L	1	1G06011	07/06/2011	07/07/2011
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	3.3	1.0	"	"	"	"	"
Xylenes, total	8.7	3.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	107 %	70-130	"	"	"
Surrogate: Toluene-d8	94.6 %	70-130	"	"	"
Surrogate: 4-Bromofluorobenzene	103 %	70-130	"	"	"

Origins Laboratory, Inc.



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

Noelle E Doyle, President

LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO 80003

Project Number: NEP0505
Project Name: Noble - Frick 18-2&8

SB07

7/5/2011 11:00:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X107024-03 (Water)

BTEX by EPA 8260C

Benzene	1.2	1.0	ug/L	1	1G06011	07/06/2011	07/07/2011
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	39.1	1.0	"	"	"	"	"
Xylenes, total	114	3.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	105 %	70-130	"	"	"
Surrogate: Toluene-d8	93.9 %	70-130	"	"	"
Surrogate: 4-Bromofluorobenzene	102 %	70-130	"	"	"

Origins Laboratory, Inc.



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

Noelle E Doyle, President

LT Environmental, Inc.
4600 West 60th Avenue

Arvada CO 80003

Project Number: NEP0505

Project Name: Noble - Frick 18-2&8

SB09

7/5/2011 11:05:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X107024-04 (Water)**BTEX by EPA 8260C**

Benzene	ND	1.0	ug/L	1	1G06011	07/06/2011	07/07/2011
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	3.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	105 %	70-130	"	"	"
Surrogate: Toluene-d8	93.2 %	70-130	"	"	"
Surrogate: 4-Bromofluorobenzene	105 %	70-130	"	"	"

Origins Laboratory, Inc.



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

Noelle E Doyle, President

LT Environmental, Inc.
4600 West 60th Avenue

Arvada CO 80003

Project Number: NEP0505

Project Name: Noble - Frick 18-2&8

SB16

7/5/2011 10:50:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.

X107024-05 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	1G06011	07/06/2011	07/07/2011
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	41.0	1.0	"	"	"	"	"
Xylenes, total	223	3.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	107 %	70-130	"	"	"
Surrogate: Toluene-d8	92.7 %	70-130	"	"	"
Surrogate: 4-Bromofluorobenzene	100 %	70-130	"	"	"

Origins Laboratory, Inc.



Noelle E Doyle, President

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

LT Environmental, Inc.
4600 West 60th Avenue

Arvada CO 80003

Project Number: NEP0505

Project Name: Noble - Frick 18-2&8

SB15

7/5/2011 10:45:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.

X107024-06 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	1G06011	07/06/2011	07/07/2011
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	3.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	107 %	70-130	"	"	"
Surrogate: Toluene-d8	93.1 %	70-130	"	"	"
Surrogate: 4-Bromofluorobenzene	103 %	70-130	"	"	"

Origins Laboratory, Inc.



Noelle E Doyle, President

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

LT Environmental, Inc.
4600 West 60th Avenue

Arvada CO 80003

Project Number: NEP0505

Project Name: Noble - Frick 18-2&8

Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 1G06011 - EPA 5030B

Blank (1G06011-BLK1)

Prepared: 07/06/2011 Analyzed: 07/08/2011

Benzene	ND	1.0	ug/L							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
m,p-Xylene	ND	2.0	"							
o-Xylene	ND	1.0	"							
Surrogate: 1,2-Dichloroethane-d4	64		"	62.5		102	70-130			
Surrogate: Toluene-d8	62		"	62.5		98.8	70-130			
Surrogate: 4-Bromofluorobenzene	66		"	62.5		106	70-130			

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LT Environmental, Inc.
4600 West 60th Avenue

Arvada CO 80003

Project Number: NEP0505

Project Name: Noble - Frick 18-2&8

Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 1G06011 - EPA 5030B

Blank (1G06011-BLK2)

Prepared: 07/06/2011 Analyzed: 07/07/2011

Benzene	ND	1.0	ug/L							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
m,p-Xylene	ND	2.0	"							
o-Xylene	ND	1.0	"							
Surrogate: 1,2-Dichloroethane-d4	65		"	62.5	104		70-130			
Surrogate: Toluene-d8	63		"	62.5	101		70-130			
Surrogate: 4-Bromofluorobenzene	67		"	62.5	108		70-130			

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Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 1G06011 - EPA 5030B

LCS (1G06011-BS1)

Prepared: 07/06/2011 Analyzed: 07/07/2011

Benzene	62.6	1.0	ug/L	50.0		125	70-130			
Toluene	60.3	1.0	"	50.0		121	70-130			
Ethylbenzene	57.2	1.0	"	50.0		114	70-130			
m,p-Xylene	117	2.0	"	100		117	70-130			
o-Xylene	59.6	1.0	"	50.0		119	70-130			
Surrogate: 1,2-Dichloroethane-d4	65		"	62.5		104	70-130			
Surrogate: Toluene-d8	62		"	62.5		99.7	70-130			
Surrogate: 4-Bromofluorobenzene	68		"	62.5		108	70-130			

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1G06011 - EPA 5030B										
LCS (1G06011-BS2)					Prepared: 07/06/2011 Analyzed: 07/07/2011					
Benzene	55.2	1.0	ug/L	50.0		110	70-130			
Toluene	52.7	1.0	"	50.0		105	70-130			
Ethylbenzene	49.1	1.0	"	50.0		98.3	70-130			
m,p-Xylene	101	2.0	"	100		101	70-130			
o-Xylene	51.0	1.0	"	50.0		102	70-130			
Surrogate: 1,2-Dichloroethane-d4	65		"	62.5		104	70-130			
Surrogate: Toluene-d8	62		"	62.5		99.1	70-130			
Surrogate: 4-Bromofluorobenzene	69		"	62.5		110	70-130			

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Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 1G06011 - EPA 5030B

Matrix Spike (1G06011-MS1)		Source: X106177-02			Prepared: 07/06/2011 Analyzed: 07/07/2011					
Benzene	56.8	1.0	ug/L	50.0	ND	114	70-130			
Toluene	53.9	1.0	"	50.0	ND	108	70-130			
Ethylbenzene	52.1	1.0	"	50.0	ND	104	70-130			
m,p-Xylene	98.0	2.0	"	100	ND	98.0	70-130			
o-Xylene	50.2	1.0	"	50.0	ND	100	70-130			
Surrogate: 1,2-Dichloroethane-d4	64		"	62.5		103	70-130			
Surrogate: Toluene-d8	61		"	62.5		97.6	70-130			
Surrogate: 4-Bromofluorobenzene	67		"	62.5		108	70-130			

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Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 1G06011 - EPA 5030B

Matrix Spike (1G06011-MS2)		Source: X106179-05			Prepared: 07/06/2011 Analyzed: 07/07/2011					
Benzene	51.1	1.0	ug/L	50.0	ND	102	70-130			
Toluene	48.5	1.0	"	50.0	ND	97.0	70-130			
Ethylbenzene	46.3	1.0	"	50.0	ND	92.7	70-130			
m,p-Xylene	92.0	2.0	"	100	ND	92.0	70-130			
o-Xylene	47.4	1.0	"	50.0	ND	94.8	70-130			
Surrogate: 1,2-Dichloroethane-d4	64		"	62.5		103	70-130			
Surrogate: Toluene-d8	62		"	62.5		99.5	70-130			
Surrogate: 4-Bromofluorobenzene	67		"	62.5		107	70-130			

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Project Name: Noble - Frick 18-2&8

Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 1G06011 - EPA 5030B

Matrix Spike Dup (1G06011-MSD1)		Source: X106177-02			Prepared: 07/06/2011 Analyzed: 07/07/2011					
Benzene	31.5	1.0	ug/L	50.0	ND	62.9	70-130	57.4	20	QM-07
Toluene	29.7	1.0	"	50.0	ND	59.4	70-130	58.0	20	QM-07
Ethylbenzene	28.1	1.0	"	50.0	ND	56.2	70-130	59.7	20	QM-07
m,p-Xylene	54.2	2.0	"	100	ND	54.2	70-130	57.6	20	QM-07
o-Xylene	27.8	1.0	"	50.0	ND	55.7	70-130	57.2	20	QM-07
Surrogate: 1,2-Dichloroethane-d4	62		"	62.5		98.5	70-130			
Surrogate: Toluene-d8	62		"	62.5		99.6	70-130			
Surrogate: 4-Bromofluorobenzene	67		"	62.5		107	70-130			

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Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 1G06011 - EPA 5030B

Matrix Spike Dup (1G06011-MSD2)		Source: X106179-05			Prepared: 07/06/2011 Analyzed: 07/07/2011					
Benzene	54.4	1.0	ug/L	50.0	ND	109	70-130	6.20	20	
Toluene	52.2	1.0	"	50.0	ND	104	70-130	7.45	20	
Ethylbenzene	49.6	1.0	"	50.0	ND	99.2	70-130	6.82	20	
m,p-Xylene	98.8	2.0	"	100	ND	98.8	70-130	7.18	20	
o-Xylene	50.5	1.0	"	50.0	ND	101	70-130	6.29	20	
Surrogate: 1,2-Dichloroethane-d4	64		"	62.5		103	70-130			
Surrogate: Toluene-d8	63		"	62.5		101	70-130			
Surrogate: 4-Bromofluorobenzene	67		"	62.5		107	70-130			

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Notes and Definitions

- QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
- J-02 Reported value failed to meet established quality control criteria for the precision accuracy.
- ND Analyte NOT DETECTED at or above the reporting limit
- RPD Relative Percent Difference

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