



GROUNDWATER MONITORING REPORT JANUARY 2015

STATE 16-1614 FLOW LINE COGCC REMEDIATION #8264

LT Environmental, Inc. (LTE), under the direction of Noble Energy, Inc. (Noble), conducted groundwater monitoring activities at the State 16-1614 Flow Line (Site). The Site is located on the north side of County Road 44 approximately 0.35 miles west of County Road 55 in Weld County, Colorado. The legal site description is the southwest quarter of the southeast quarter of Section 16, Township 4 North, Range 64 West, 6th Principal Meridian. The Site Location Map is provided as Figure 1. The site history and remediation activities were described in preceding reports.

On January 22, 2014, five soil borings (SB01 through SB05) were advanced and completed as temporary monitoring wells. On February 19 and April 21, 2014, seven monitoring wells (SB06 through SB12) were installed to delineate the potential extent of dissolved-phase petroleum hydrocarbon impact at the Site. On September 16, 2014, monitoring well SB13 was installed to establish a point of compliance monitoring well southwest of the previously excavated area.

On January 21, 2015, under the direction of Noble, LTE personnel conducted groundwater monitoring activities in 13 monitoring wells (SB01 through SB13). Prior to purging, depth to groundwater was measured and recorded for calculating well-specific target purge volumes and groundwater elevations. Depth to groundwater ranged from 5.95 feet below top of casing (btoc) in monitoring well SB02 to 8.25 feet btoc in monitoring well SB13. Groundwater was calculated to flow north with an average hydraulic gradient of 0.012 feet per foot. Groundwater elevations are provided on Figure 2 and summarized in Table 1. Following purging, groundwater samples were collected, placed on ice, then submitted with a completed chain of custody form to Origins Laboratory, Inc. of Denver, Colorado, for analysis of benzene, toluene, ethylbenzene, and total xylenes (BTEX) by United States Environmental Protection Agency Method 8260C.

The Colorado Department of Public Health and Environment-Water Quality Control Commission has established Regulation 41-The Basic Standards for Ground Water (WQCC Reg 41) for BTEX at 5.0 micrograms per liter ($\mu\text{g/L}$), 560 $\mu\text{g/L}$, 700 $\mu\text{g/L}$, and 1,400 $\mu\text{g/L}$, respectively. Laboratory groundwater analytical results indicated monitoring well SB02 exceeded the WQCC Reg 41 standard for benzene at a concentration of 248 $\mu\text{g/L}$. All remaining analytical results were in compliance with applicable WQCC Reg 41 standards. Groundwater analytical results are presented on Figure 3 and summarized in Table 1. The laboratory groundwater analytical report is attached.

The excavation confirmation soil samples, in conjunction with the laboratory analytical results of soil samples collected from the monitoring well installations, indicated that all impacted soil has been removed. Laboratory groundwater analytical results indicated monitoring well SB02 exceeded the WQCC Reg 41 standard for benzene at a concentration of 248 $\mu\text{g/L}$. Groundwater remediation efforts will be described in future correspondence. LTE, under the direction of Noble,

will continue to conduct quarterly groundwater monitoring with the goal of obtaining four consecutive quarters with laboratory analytical results in compliance with applicable WQCC Reg 41 standards. The next quarterly groundwater monitoring event is scheduled for April 2015.

FIGURES

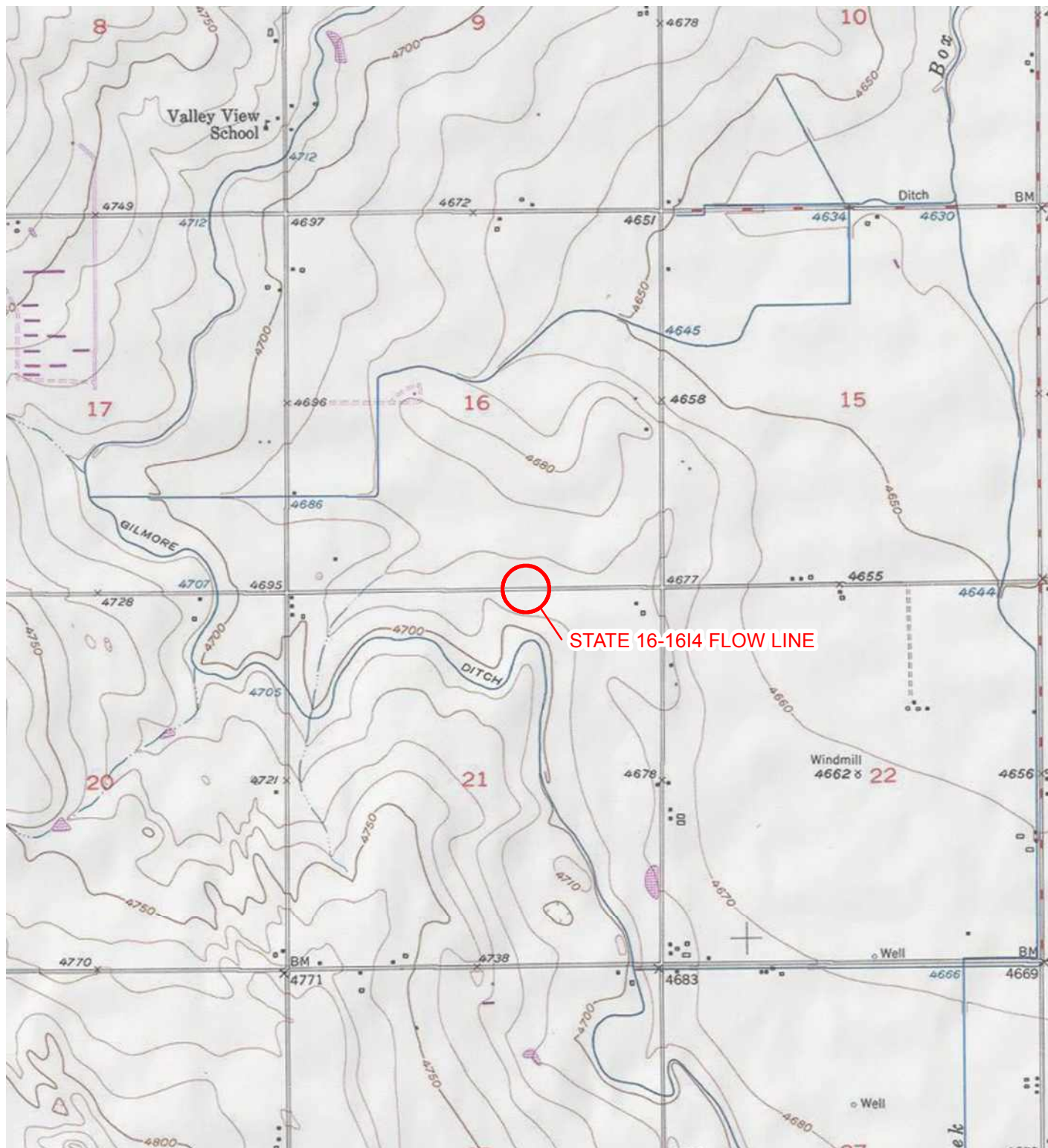


IMAGE COURTESY OF ESRI/USGS

LEGEND

○ SITE LOCATION

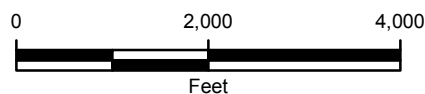
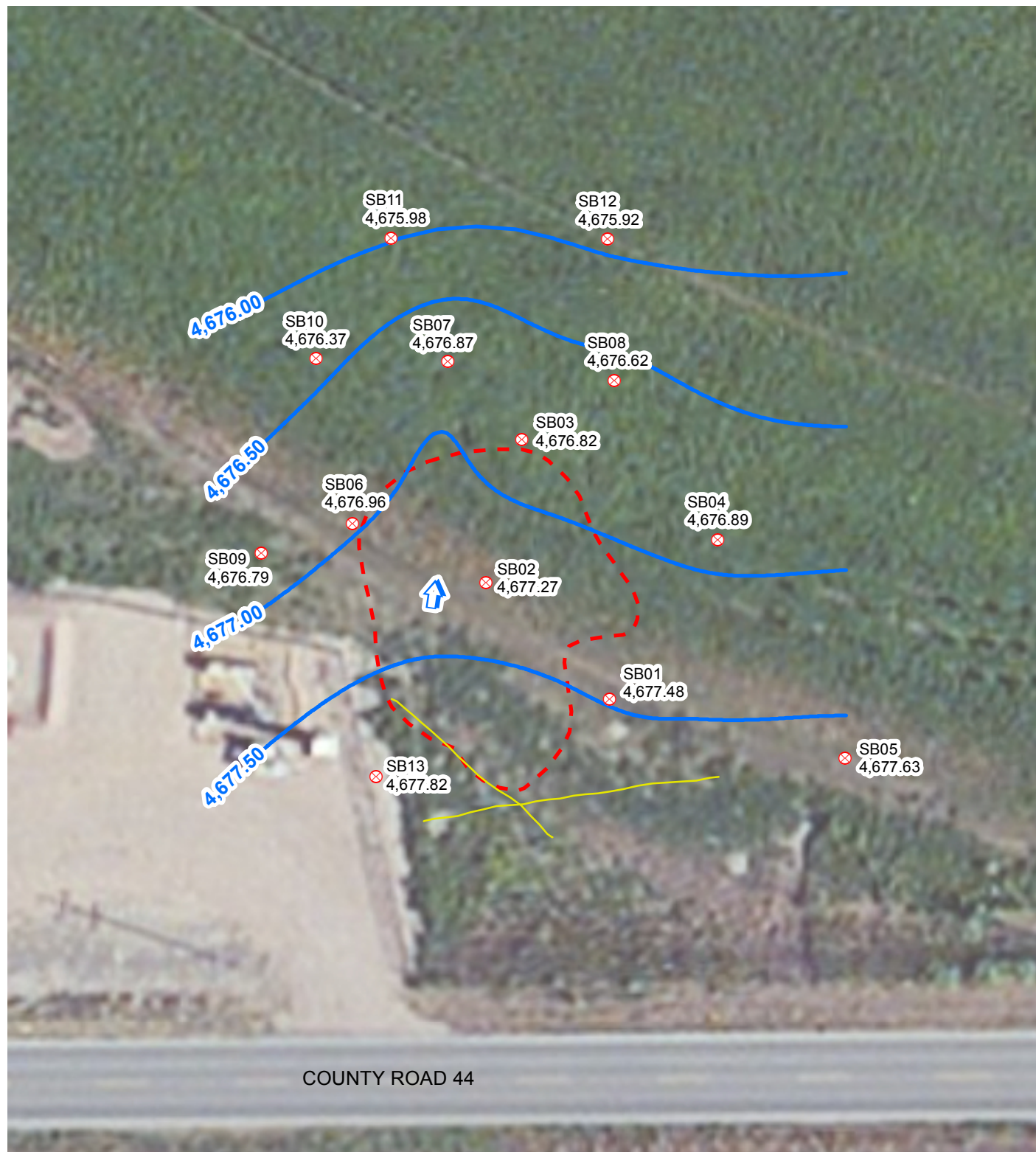


FIGURE 1
SITE LOCATION MAP
STATE 16-1614 FLOW LINE
WELD COUNTY, COLORADO

NOBLE ENERGY, INC.





LEGEND

- ⊗ MONITORING WELL
- ↑ CALCULATED GROUNDWATER FLOW DIRECTION
- FLOW LINE
- EXCAVATION EXTENT
- GROUNDWATER ELEVATION CONTOUR
CONTOUR INTERVAL = 0.50 FEET
GRADIENT = 0.012 FEET/FOOT

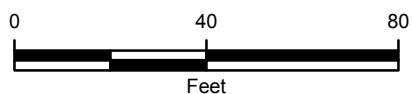


IMAGE COURTESY OF ESRI



FIGURE 2
GROUNDWATER ELEVATION MAP
STATE 16-1614 FLOW LINE
JANUARY 21, 2015
WELD COUNTY, COLORADO
NOBLE ENERGY, INC.



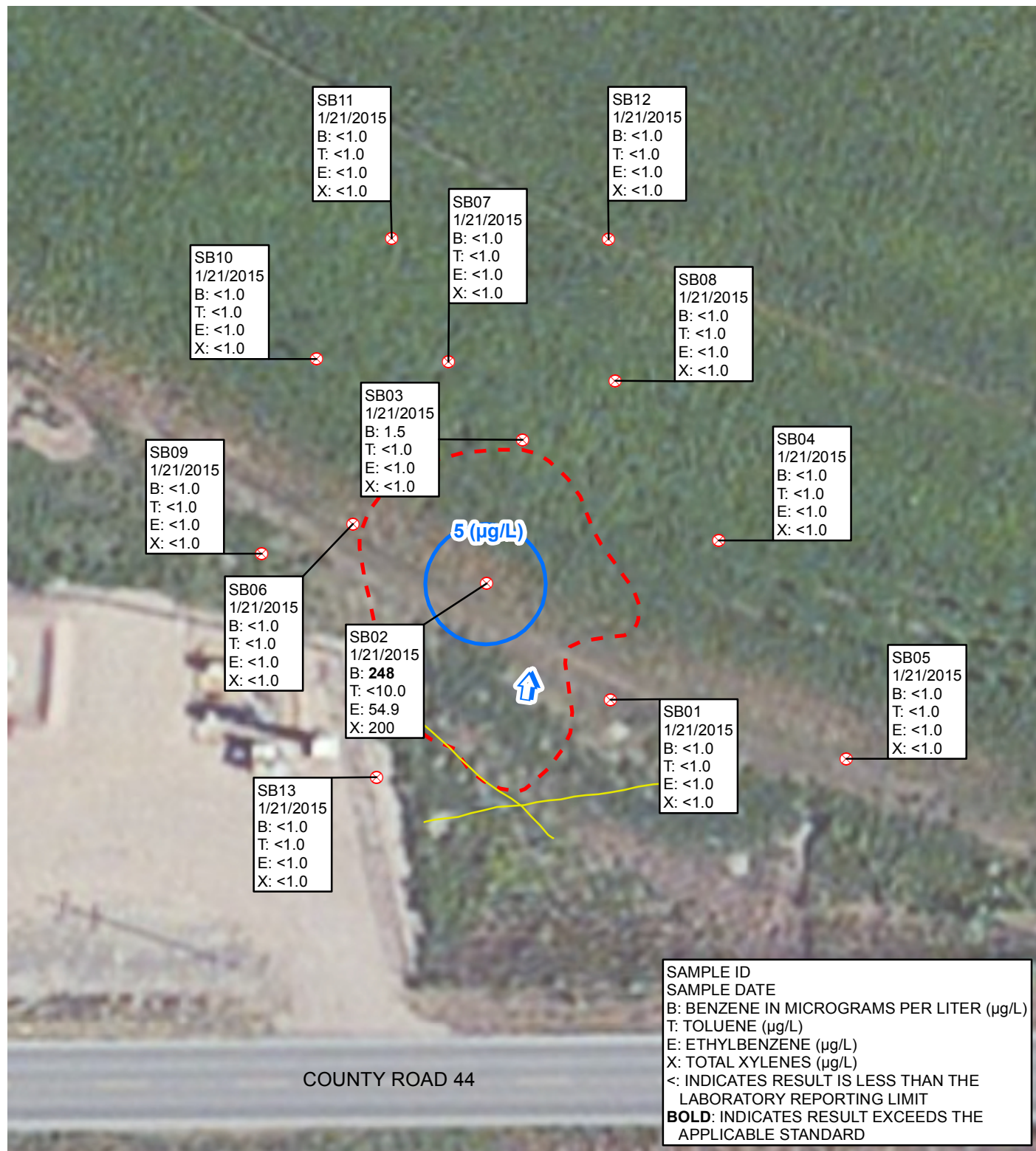


IMAGE COURTESY OF ESRI

TABLES

TABLE 1

GROUNDWATER ANALYTICAL RESULTS
STATE 16-16I4 FLOW LINE
WELD COUNTY, COLORADO
NOBLE ENERGY, INC.

Monitoring Well	Date	Depth to Water (feet btoc)	Groundwater Elevation * (feet AMSL)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
SB01	1/29/2014	6.05	4,677.58	<4.0	<4.0	<4.0	<4.0
	4/24/2014	6.23	4,677.40	<1.0	<1.0	<1.0	<1.0
	7/21/2014	5.75	4,677.88	<1.0	<1.0	<1.0	<1.0
	10/16/2014	6.10	4,677.53	<1.0	<1.0	<1.0	<1.0
	1/21/2015	6.15	4,677.48	<1.0	<1.0	<1.0	<1.0
SB02	1/29/2014	5.75	4,677.47	109	172	14.6	155
	4/24/2014	5.85	4,677.37	444	6.7	43.1	352
	7/21/2014	5.80	4,677.42	500	<4.0	76.0	230
	10/16/2014	6.00	4,677.22	580	13.9	89.2	265
	1/21/2015	5.95	4,677.27	248	<10.0	54.9	200
SB03	1/29/2014	5.45	4,677.72	262	<4.0	<4.0	9.4
	4/24/2014	6.18	4,676.99	53.7	<2.0	<2.0	<2.0
	7/21/2014	6.00	4,677.17	194	<1.0	5.7	<1.0
	10/16/2014	6.25	4,676.92	35.3	<1.0	<1.0	<1.0
	1/21/2015	6.35	4,676.82	1.5	<1.0	<1.0	<1.0
SB04	1/29/2014	6.06	4,677.19	<4.0	<4.0	<4.0	<4.0
	4/24/2014	6.00	4,677.25	<1.0	<1.0	<1.0	<1.0
	7/28/2014	5.91	4,677.34	<1.0	<1.0	<1.0	<1.0
	10/16/2014	6.33	4,676.92	<1.0	<1.0	<1.0	<1.0
	1/21/2015	6.36	4,676.89	<1.0	<1.0	<1.0	<1.0
SB05	1/29/2014	5.68	4,677.91	<4.0	<4.0	<4.0	<4.0
	4/24/2014	5.92	4,677.67	<1.0	<1.0	<1.0	<1.0
	7/28/2014	5.66	4,677.93	<1.0	<1.0	<1.0	<1.0
	10/16/2014	5.96	4,677.63	<1.0	<1.0	<1.0	<1.0
	1/21/2015	5.96	4,677.63	<1.0	<1.0	<1.0	<1.0
SB06	3/19/2014	5.19	4,678.08	33.6	<4.0	<4.0	<4.0
	4/24/2014	6.21	4,677.06	180	<1.0	<1.0	6.4
	7/21/2014	5.92	4,677.35	159	<1.0	6.8	<1.0
	10/16/2014	6.30	4,676.97	<1.0	<1.0	<1.0	<1.0
	1/21/2015	6.31	4,676.96	<1.0	<1.0	<1.0	<1.0
SB07	3/19/2014	5.20	4,677.90	245	<4.0	41.8	<4.0
	4/24/2014	6.40	4,676.70	228	<2.0	62.7	409
	7/28/2014	6.00	4,677.10	1.5	<1.0	36.6	<1.0
	10/16/2014	6.48	4,676.62	1.4	<1.0	<1.0	<1.0
	1/21/2015	6.23	4,676.87	<1.0	<1.0	<1.0	<1.0

TABLE 1 (Continued)

GROUNDWATER ANALYTICAL RESULTS
STATE 16-1614 FLOW LINE
WELD COUNTY, COLORADO
NOBLE ENERGY, INC.

Monitoring Well	Date	Depth to Water (feet btoc)	Groundwater Elevation * (feet AMSL)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
SB08	3/19/2014	5.39	4,677.94	<4.0	<4.0	<4.0	<4.0
	4/24/2014	6.60	4,676.73	<1.0	<1.0	<1.0	<1.0
	7/28/2014	6.21	4,677.12	<1.0	<1.0	<1.0	<1.0
	10/16/2014	6.68	4,676.65	12.3	<1.0	<1.0	<1.0
	1/21/2015	6.71	4,676.62	<1.0	<1.0	<1.0	<1.0
SB09	4/24/2014	6.15	4,677.15	<1.0	<1.0	<1.0	<1.0
	7/21/2014	5.85	4,677.45	<1.0	<1.0	<1.0	<1.0
	10/16/2014	6.48	4,676.82	<1.0	<1.0	<1.0	<1.0
	1/21/2015	6.51	4,676.79	<1.0	<1.0	<1.0	<1.0
SB10	4/24/2014	6.43	4,676.63	<1.0	<1.0	<1.0	<1.0
	7/21/2014	5.94	4,677.12	<1.0	<1.0	<1.0	<1.0
	10/16/2014	6.60	4,676.46	<1.0	<1.0	<1.0	<1.0
	1/21/2015	6.69	4,676.37	<1.0	<1.0	<1.0	<1.0
SB11	4/24/2014	6.61	4,676.27	6.0	<1.0	<1.0	6.0
	7/21/2014	5.96	4,676.92	<1.0	<1.0	<1.0	47.2
	10/16/2014	6.85	4,676.03	<1.0	<1.0	<1.0	7.0
	1/21/2015	6.90	4,675.98	<1.0	<1.0	<1.0	<1.0
SB12	4/24/2014	6.40	4,682.72	<1.0	<1.0	<1.0	<1.0
	7/21/2014	6.02	4,676.32	<1.0	<1.0	<1.0	<1.0
	10/16/2014	6.80	4,676.70	<1.0	<1.0	<1.0	<1.0
	1/21/2015	6.82	4,675.92	<1.0	<1.0	<1.0	<1.0
SB13	10/16/2014	8.18	4,681.09	<1.0	<1.0	<1.0	<1.0
	1/21/2015	8.25	4,681.02	<1.0	<1.0	<1.0	<1.0
CDPHE WQCC Reg 41				5.0	560	700	1,400

NOTES:

AMSL - above mean sea level

btoc - below top of casing

µg/L - micrograms per liter

< - indicates result is less than the stated laboratory reporting limit

NM - not measured

Benzene, toluene, ethylbenzene, and total xylenes analyzed by EPA Method 8260C

BOLD indicates result exceeds the applicable standardCDPHE WQCC Reg 41 - Colorado Department of Public Health and Environment-Water Quality Control Commission
Regulation 41-The Basic Standards for Ground Water

* - groundwater elevations prior to the July 2014 monitoring event were relative to a 100-foot benchmark

ATTACHMENT
LABORATORY ANALYTICAL REPORT



January 26, 2015

LT Environmental, Inc.

Charles Greeson

4600 West 60th Avenue

Arvada

CO 80003

Project Name - Noble - State 16-1614

Project Number - 008313110

Attached are your analytical results for Noble - State 16-1614 received by Origins Laboratory, Inc. January 21, 2015. This project is associated with Origins project number X501215-01.

The analytical results in the following report were analyzed under the guidelines of EPA Methods. These methods are identified as follows; "SW" are defined in SW-846, "EPA" are defined in 40CFR part 136 and "SM" are defined in the most current revision of Standard Methods For the Examination of Water and Wastewater.

The analytical results apply specifically to the samples and analyses specified per the attached Chain of Custody. As such, this report shall not be reproduced except in full, without the written approval of Origin's laboratory.

Unless otherwise noted, the analytical results for all soil samples are reported on a wet weight basis. All analytical analyses were performed under NELAP guidelines unless noted by a data qualifier.

Any holding time exceedances, deviations from the method specifications or deviations from Origins Laboratory's Standard Operating Procedures are outlined in the case narrative.

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



1725 Elk Place, Denver, CO 80211 | Phone: 303.433.1322 | Fax: 303.265.9645

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

Charles Greeson
Project Number: 008313110
Project: Noble - State 16-1614

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SB01	X501215-01	Water	January 21, 2015 12:00	01/21/2015 13:40
SB02	X501215-02	Water	January 21, 2015 13:00	01/21/2015 13:40
SB03	X501215-03	Water	January 21, 2015 12:55	01/21/2015 13:40
SB04	X501215-04	Water	January 21, 2015 12:05	01/21/2015 13:40
SB05	X501215-05	Water	January 21, 2015 12:10	01/21/2015 13:40
SB06	X501215-06	Water	January 21, 2015 12:15	01/21/2015 13:40
SB07	X501215-07	Water	January 21, 2015 12:20	01/21/2015 13:40
SB08	X501215-08	Water	January 21, 2015 12:50	01/21/2015 13:40
SB09	X501215-09	Water	January 21, 2015 12:25	01/21/2015 13:40
SB10	X501215-10	Water	January 21, 2015 12:30	01/21/2015 13:40

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.

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

Charles Greeson
Project Number: 008313110
Project: Noble - State 16-1614

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SB11	X501215-11	Water	January 21, 2015 12:35	01/21/2015 13:40
SB12	X501215-12	Water	January 21, 2015 12:40	01/21/2015 13:40
SB13	X501215-13	Water	January 21, 2015 12:45	01/21/2015 13:40

Origins Laboratory, Inc.



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

Charles Greeson
Project Number: 008313110
Project: Noble - State 16-1614

www.originslaboratory.com

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page 1 of 2

ORIGINS
LABORATORY, INC

Client: LTE
Address: _____
Telephone Number: _____
Email Address: CGreeson@Lternv.com

Project Manager: Charles Greeson
Project Name: State 16-1614
Project Number: 008313110
Samples Collected By: Jason Evangelista

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative				Matrix			Analysis		Sample Instructions	
				Unpreserved	HCl	HNO ₃	Other	Groundwater	Soil	Air Summa Canister #	Other			
SB01	12/11/15	1200	3	X				X					X BTEX	Lab. After
SB02		1300	1											
SB03		1255	1											
SB04		1205	1											
SB05		1216	1											
SB06		1215	1											
SB07		1220	1											
SB08		1250	1											
SB09		1225	1											
SB10		1230	1											
Relinquished By:	Date:	Time:		Received By:				Date:	Time:	Turnaround Time:				
	12/11/15	1340						12/21/15	1346	Same Day <input type="checkbox"/> 24 Hr <input type="checkbox"/> 48 Hr <input type="checkbox"/> 72 Hr <input type="checkbox"/> Standard <input checked="" type="checkbox"/>				

Date Results Needed

Temp Received: 5.5

Origins Laboratory, Inc.

Jefe Pellegrini

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

Charles Greeson
Project Number: 008313110
Project: Noble - State 16-1614

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ORIGINS
LABORATORY, INC

page 2 of 2

Client: LTE
Address: _____
Telephone Number: _____
Email Address: Cgreeson@ltenu.com

Project Manager: Charles Greeson
Project Name: State 16-1614
Project Number: 008313110
Samples Collected By: SAYSA GARGALISTON

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative				Matrix			Analysis	Sample Instructions	
				Unpreserved	HCl	HNO ₃	Other	Groundwater	Soil	Air Summa Canister #			Other
SB11	1/21/15	1235	3	X				X				X BTEX	Lat. Site 1
SB12	↓	1240	↓	↓				↓				↓	2
SB13	↓	1245	↓	↓				↓				↓	3
													4
													5
													6
													7
													8
													9
													10

Relinquished By: [Signature] Date: 12/1/15 Time: 1340

Relinquished By: [Signature] Date: 1/21/15 Time: 1340

Turnaround Time: Same Day ☐ 24 Hr ☐ 48 Hr ☐ 72 Hr ☒ Standard

Date Results Needed

Temp Received: SS

Origins Laboratory, Inc.

Jefe Pellegrini

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

Charles Greeson
Project Number: 008313110
Project: Noble - State 16-1614

Origins Laboratory

F-012207-01-R1
Effective Date: 01/09/12

Sample Receipt Checklist

Origins Work Order: XS01215

Client: LTE

Client Project ID: State 16-1614

Checklist Completed by: Jeff Smith

Shipped Via: H/D
(UPS, FedEx, Hand Delivered, Pick-up, etc.)

Date/time completed: 1/21/15

Airbill #: NA

Matrix(s) Received: (Check all that apply): Soil/Solid ☒ Water ☐ Other: ☐

Cooler Number/Temperature: 1 / 5.5 °C 1 / °C 1 / °C (Describe) 1 / °C

Thermometer ID: T003

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 6°C ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is there ice present (document if blue ice is used)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Were all samples received intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are short holding time analytes or samples with HTs due within 48 hours present ⁽¹⁾ ?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Is a chain-of-custody (COC) present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client with date and time recorded ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Are samples preserved that require preservation and was it checked ⁽¹⁾ ? (note ID of confirmation instrument used in comments) / (preservation is not confirmed for subcontracted analyses in order to insure sample integrity)/(pH <2 for samples preserved with HNO ₃ , HCL, H ₂ SO ₄) / (pH >10 for samples preserved with NaAsO ₂ +NaOH, ZnAc+NaOH)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Additional Comments (if any):				

⁽¹⁾If NO, then contact the client before proceeding with analysis and note date/time and person contacted as well as the corrective action to in the additional comments (above) and the Case narrative.

Reviewed by (Project Manager)

01-22-15/1605
Date/Time Reviewed

Origins Laboratory, Inc.

Jeff Pellegrini

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

Charles Greeson
Project Number: 008313110
Project: Noble - State 16-1614

SB01

1/21/2015 12:00:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X501215-01 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	5A23007	01/23/2015	01/23/2015
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	107 %	87.3-113			"	"	"
Surrogate: Toluene-d8	95.4 %	90.9-108			"	"	"
Surrogate: 4-Bromofluorobenzene	100 %	88.6-111			"	"	"

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.

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

Charles Greeson
Project Number: 008313110
Project: Noble - State 16-1614

SB02

1/21/2015 1:00:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc. X501215-02 (Water)

BTEX by EPA 8260C

Benzene	248	10.0	ug/L	10	5A23007	01/23/2015	01/23/2015
Toluene	ND	10.0	"	"	"	"	"
Ethylbenzene	54.9	10.0	"	"	"	"	"
Xylenes, total	200	10.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	105 %	87.3-113			"	"	"
Surrogate: Toluene-d8	101 %	90.9-108			"	"	"
Surrogate: 4-Bromofluorobenzene	97.1 %	88.6-111			"	"	"

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.

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

Charles Greeson
Project Number: 008313110
Project: Noble - State 16-1614

SB03

1/21/2015 12:55:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc. X501215-03 (Water)

BTEX by EPA 8260C

Benzene	1.5	1.0	ug/L	1	5A23007	01/23/2015	01/23/2015
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	107 %	87.3-113			"	"	"
Surrogate: Toluene-d8	97.8 %	90.9-108			"	"	"
Surrogate: 4-Bromofluorobenzene	98.4 %	88.6-111			"	"	"

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.

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

Charles Greeson
Project Number: 008313110
Project: Noble - State 16-1614

SB04

1/21/2015 12:05:00PM

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Notes
		Limit							

Origins Laboratory, Inc.
X501215-04 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	5A23007	01/23/2015	01/23/2015
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	105 %	87.3-113	"	"	"
Surrogate: Toluene-d8	96.2 %	90.9-108	"	"	"
Surrogate: 4-Bromofluorobenzene	95.6 %	88.6-111	"	"	"

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.

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

Charles Greeson
Project Number: 008313110
Project: Noble - State 16-1614

SB05

1/21/2015 12:10:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X501215-05 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	5A23007	01/23/2015	01/23/2015
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	101 %	87.3-113			"	"	"
Surrogate: Toluene-d8	96.5 %	90.9-108			"	"	"
Surrogate: 4-Bromofluorobenzene	98.4 %	88.6-111			"	"	"

Origins Laboratory, Inc.



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

Charles Greeson
Project Number: 008313110
Project: Noble - State 16-1614

SB06

1/21/2015 12:15:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X501215-06 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	5A23007	01/23/2015	01/23/2015
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	103 %	87.3-113			"	"	"
Surrogate: Toluene-d8	97.9 %	90.9-108			"	"	"
Surrogate: 4-Bromofluorobenzene	102 %	88.6-111			"	"	"

Origins Laboratory, Inc.



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

Charles Greeson
Project Number: 008313110
Project: Noble - State 16-1614

SB07

1/21/2015 12:20:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X501215-07 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	5A23007	01/23/2015	01/23/2015
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	105 %	87.3-113			"	"	"
Surrogate: Toluene-d8	97.6 %	90.9-108			"	"	"
Surrogate: 4-Bromofluorobenzene	101 %	88.6-111			"	"	"

Origins Laboratory, Inc.



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

Charles Greeson
Project Number: 008313110
Project: Noble - State 16-1614

SB08

1/21/2015 12:50:00PM

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Notes
		Limit							

Origins Laboratory, Inc.
X501215-08 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	5A23007	01/23/2015	01/23/2015
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	108 %	87.3-113	"	"	"
Surrogate: Toluene-d8	95.8 %	90.9-108	"	"	"
Surrogate: 4-Bromofluorobenzene	96.0 %	88.6-111	"	"	"

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.

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

Charles Greeson
Project Number: 008313110
Project: Noble - State 16-1614

SB09

1/21/2015 12:25:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X501215-09 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	5A23007	01/23/2015	01/23/2015
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	105 %	87.3-113			"	"	"
Surrogate: Toluene-d8	96.5 %	90.9-108			"	"	"
Surrogate: 4-Bromofluorobenzene	102 %	88.6-111			"	"	"

Origins Laboratory, Inc.



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

Charles Greeson
Project Number: 008313110
Project: Noble - State 16-1614

SB10

1/21/2015 12:30:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc. X501215-10 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	5A23007	01/23/2015	01/23/2015
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	107 %	87.3-113			"	"	"
Surrogate: Toluene-d8	94.4 %	90.9-108			"	"	"
Surrogate: 4-Bromofluorobenzene	97.1 %	88.6-111			"	"	"

Origins Laboratory, Inc.



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

Charles Greeson
Project Number: 008313110
Project: Noble - State 16-1614

SB11

1/21/2015 12:35:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X501215-11 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	5A23007	01/23/2015	01/23/2015
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	103 %	87.3-113			"	"	"
Surrogate: Toluene-d8	98.8 %	90.9-108			"	"	"
Surrogate: 4-Bromofluorobenzene	101 %	88.6-111			"	"	"

Origins Laboratory, Inc.



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

Charles Greeson
Project Number: 008313110
Project: Noble - State 16-1614

SB12

1/21/2015 12:40:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X501215-12 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	5A23007	01/23/2015	01/23/2015
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	109 %	87.3-113			"	"	"
Surrogate: Toluene-d8	97.0 %	90.9-108			"	"	"
Surrogate: 4-Bromofluorobenzene	98.6 %	88.6-111			"	"	"

Origins Laboratory, Inc.



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

Charles Greeson
Project Number: 008313110
Project: Noble - State 16-1614

SB13

1/21/2015 12:45:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X501215-13 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	5A23007	01/23/2015	01/23/2015
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	110 %	87.3-113			"	"	"
Surrogate: Toluene-d8	98.3 %	90.9-108			"	"	"
Surrogate: 4-Bromofluorobenzene	99.6 %	88.6-111			"	"	"

Origins Laboratory, Inc.



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

Charles Greeson
Project Number: 008313110
Project: Noble - State 16-1614

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 5A23007 - EPA 5030B (Water)

Blank (5A23007-BLK1)

Prepared: 01/23/2015 Analyzed: 01/23/2015

Benzene	ND	1.0	ug/L							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes, total	ND	1.0	"							
Surrogate: 1,2-Dichloroethane-d4	68		"	62.5	109		87.3-113			
Surrogate: Toluene-d8	61		"	62.5	97.5		90.9-108			
Surrogate: 4-Bromofluorobenzene	62		"	62.5	99.7		88.6-111			

Origins Laboratory, Inc.



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

Charles Greeson
Project Number: 008313110
Project: Noble - State 16-1614

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 5A23007 - EPA 5030B (Water)

LCS (5A23007-BS1)

Prepared: 01/23/2015 Analyzed: 01/23/2015

Benzene	48.0	1.0	ug/L	50.0		96.0	75-126			
Toluene	43.8	1.0	"	50.0		87.6	78.7-126			
Ethylbenzene	43.7	1.0	"	50.0		87.4	80-130			
m,p-Xylene	84.4	2.0	"	100		84.4	77.2-133			
o-Xylene	44.0	1.0	"	50.0		87.9	77.9-126			
Surrogate: 1,2-Dichloroethane-d4	68		"	62.5		109	87.3-113			
Surrogate: Toluene-d8	59		"	62.5		95.1	90.9-108			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		99.1	88.6-111			

Origins Laboratory, Inc.



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

Charles Greeson
Project Number: 008313110
Project: Noble - State 16-1614

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 5A23007 - EPA 5030B (Water)

Matrix Spike (5A23007-MS1)		Source: X501215-01			Prepared: 01/23/2015 Analyzed: 01/23/2015					
Benzene	50.0	1.0	ug/L	50.0	0.1	99.8	74-130			
Toluene	48.0	1.0	"	50.0	0.09	95.7	73-131			
Ethylbenzene	48.9	1.0	"	50.0	ND	97.8	76-132			
m,p-Xylene	94.4	2.0	"	100	ND	94.4	69-139			
o-Xylene	47.9	1.0	"	50.0	ND	95.8	74-131			
Surrogate: 1,2-Dichloroethane-d4	66		"	62.5		106	87.3-113			
Surrogate: Toluene-d8	62		"	62.5		98.5	90.9-108			
Surrogate: 4-Bromofluorobenzene	65		"	62.5		104	88.6-111			

Origins Laboratory, Inc.



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

Charles Greeson
Project Number: 008313110
Project: Noble - State 16-1614

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 5A23007 - EPA 5030B (Water)

Matrix Spike Dup (5A23007-MSD1)		Source: X501215-01			Prepared: 01/23/2015 Analyzed: 01/23/2015					
Benzene	49.3	1.0	ug/L	50.0	0.1	98.4	74-130	1.47	20	
Toluene	48.5	1.0	"	50.0	0.09	96.9	73-131	1.16	20	
Ethylbenzene	48.6	1.0	"	50.0	ND	97.2	76-132	0.615	20	
m,p-Xylene	97.2	2.0	"	100	ND	97.2	69-139	2.92	20	
o-Xylene	47.2	1.0	"	50.0	ND	94.4	74-131	1.45	20	
Surrogate: 1,2-Dichloroethane-d4	65		"	62.5		104	87.3-113			
Surrogate: Toluene-d8	60		"	62.5		96.4	90.9-108			
Surrogate: 4-Bromofluorobenzene	65		"	62.5		104	88.6-111			

Origins Laboratory, Inc.



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LT Environmental, Inc.

4600 West 60th Avenue

Arvada CO 80003

Charles Greeson

Project Number: 008313110

Project: Noble - State 16-1614

Notes and Definitions

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported at a wet weight basis.

Origins Laboratory, Inc.



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Jen Pellegrini For Noelle Doyle Mathis, President