



GROUNDWATER MONITORING REPORT OCTOBER 2014

KARCH BLUE DD 30-3J FLOW LINE COGCC REMEDIATION #8110

LT Environmental, Inc. (LTE), under the direction of Noble Energy, Inc. (Noble), conducted groundwater monitoring activities at the Karch Blue DD 30-3J Flow Line (Site). The Site is located along the east side of County Road 57 approximately 3.0 miles north-northwest of Interstate 76 in Weld County, Colorado. The legal site description is the east half of the southwest quarter of Section 30, Township 3 North, Range 63 West, 6th Principal Meridian. The Site Location Map is included as Figure 1. The Site is divided into two distinct areas referred to as the North Excavation and the South Excavation. The Site Map depicting both North and South excavations is provided as Figure 2.

LTE, under the direction of Noble, advanced a total of 23 soil borings on August 23 and September 25 and 26, 2013. Soil borings MW01 through MW11 (located in the North Excavation) and MW01 through MW12 (located in the South Excavation) were completed as temporary groundwater monitoring wells. Per the Colorado Oil and Gas Conservation Commission document number 2142108, LTE, under the direction of Noble, has discontinued groundwater monitoring in the North Excavation.

On October 22, 2014, under the direction of Noble, LTE personnel conducted groundwater monitoring activities in 12 monitoring wells (MW01 through MW12) in the South Excavation. Prior to purging, depth to groundwater was measured and recorded for calculating well-specific target purge volumes and relative groundwater elevations. Depth to groundwater ranged from 4.50 feet below top of casing (btoc) in monitoring well MW02 to 5.60 feet btoc in monitoring well MW10. During the October 2014 monitoring event, groundwater in the South Excavation was calculated to flow northeast with an average hydraulic gradient of 0.003 feet per foot. Relative groundwater elevations are presented on Figure 3 and summarized in Table 1. Following purging, groundwater samples were collected, placed on ice, then submitted with a complete 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 that monitoring well MW04 exceeded the WQCC Reg 41 standard for benzene at a concentration of 39.8 $\mu\text{g/L}$. All other analytical results were in compliance with applicable WQCC Reg 41 standards. Groundwater analytical results are presented on Figure 4 and summarized in Table 1. The laboratory analytical report is attached.

LTE, under the direction of Noble, will continue to conduct quarterly groundwater monitoring in the South Excavation with the goal of obtaining four consecutive quarters with analytical results in compliance with applicable WQCC Reg 41 standards. The next quarterly groundwater monitoring event is scheduled for January 2015.

FIGURES

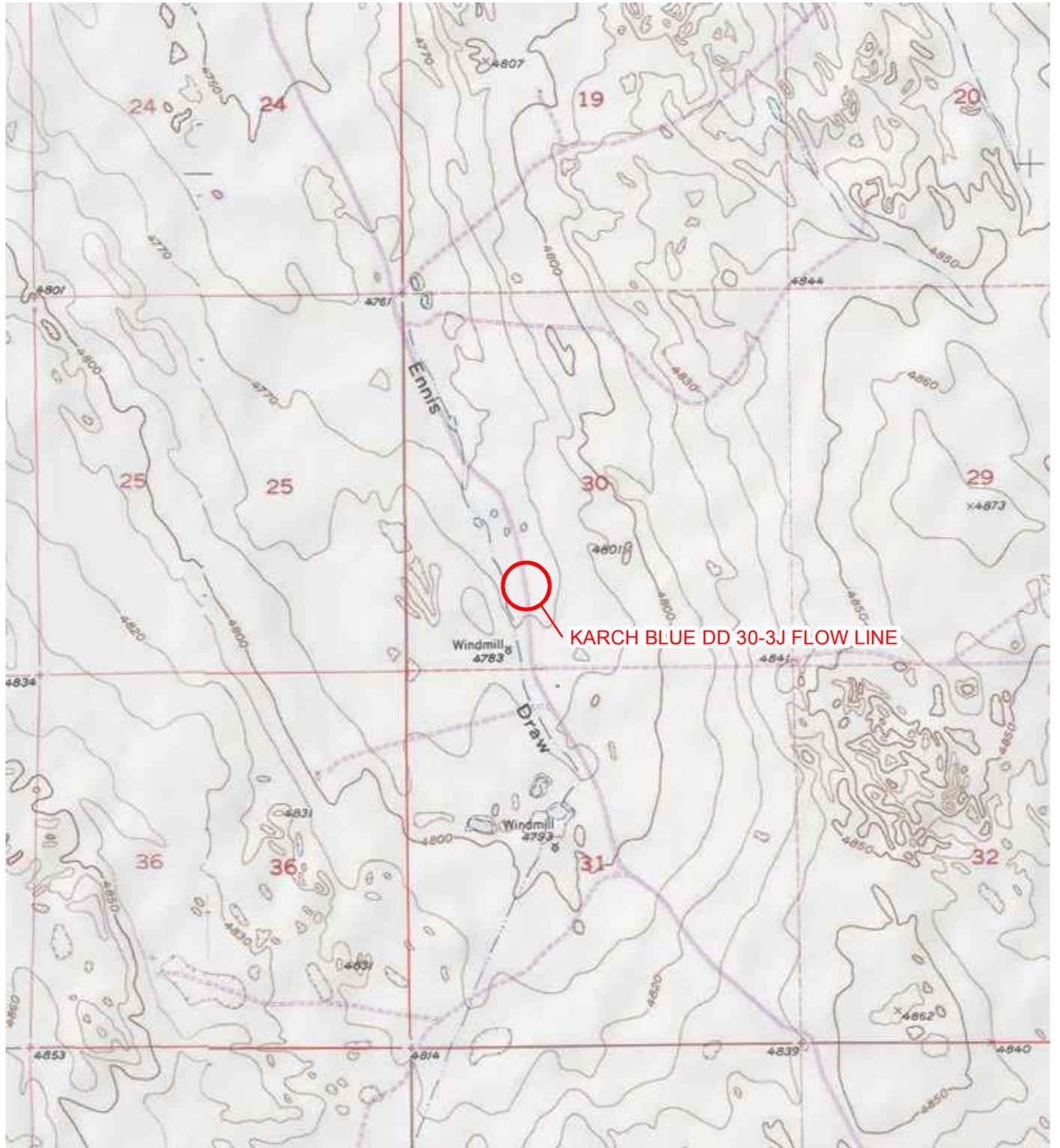


IMAGE COURTESY OF ESRI/USGS

LEGEND

 SITE LOCATION

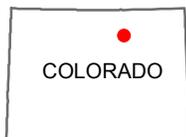
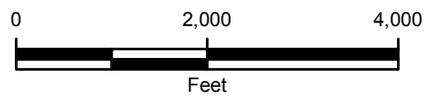


FIGURE 1
SITE LOCATION MAP
KARCH BLUE DD 30-3J FLOW LINE
WELD COUNTY, COLORADO

NOBLE ENERGY, INC.





IMAGE COURTESY OF ESRI

LEGEND

 SITE LOCATION

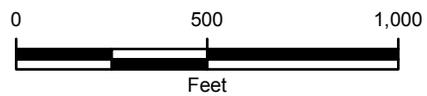


FIGURE 2
SITE MAP
KARCH BLUE DD 30-3J FLOW LINE
WELD COUNTY, COLORADO

NOBLE ENERGY, INC.





LEGEND

- MONITORING WELL
- CALCULATED GROUNDWATER FLOW DIRECTION
- RELATIVE GROUNDWATER ELEVATION CONTOUR
CONTOUR INTERVAL = 0.10 FEET
GRADIENT = 0.003 FEET/FOOT
- UNDERGROUND UTILITIES
- EXCAVATION EXTENT

*MONITORING WELL MW10 WAS NOT USED TO GENERATE RELATIVE GROUNDWATER ELEVATION CONTOURS FOR THIS SAMPLING EVENT.

IMAGE COURTESY OF ESRI

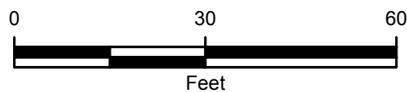
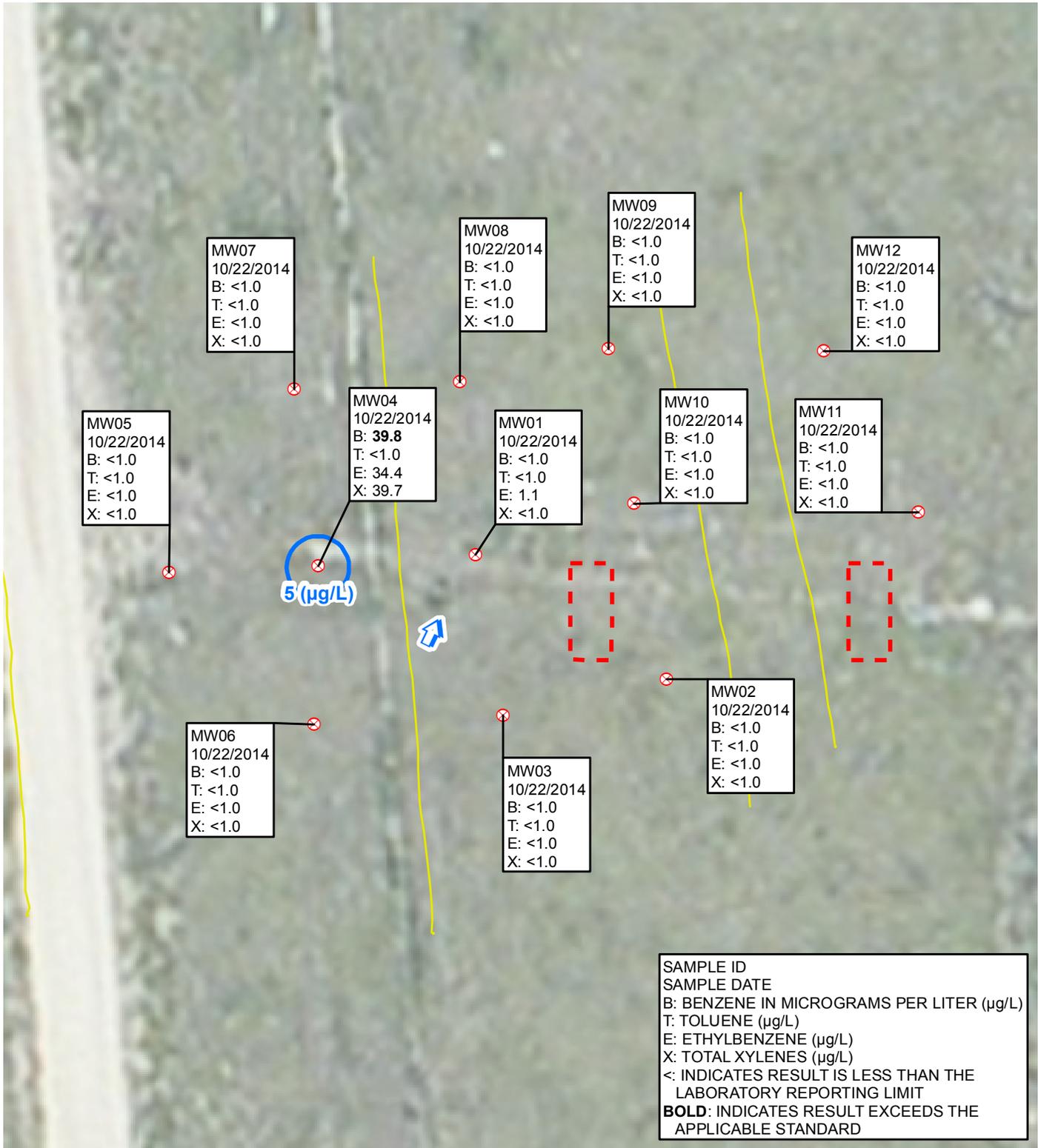


FIGURE 3
RELATIVE GROUNDWATER ELEVATION MAP - SOUTH
KARCH BLUE DD 30-3J FLOW LINE
OCTOBER 22, 2014
WELD COUNTY, COLORADO
NOBLE ENERGY, INC.





SAMPLE ID
 SAMPLE DATE
 B: BENZENE IN MICROGRAMS PER LITER (µg/L)
 T: TOLUENE (µg/L)
 E: ETHYLBENZENE (µg/L)
 X: TOTAL XYLENES (µg/L)
 <: INDICATES RESULT IS LESS THAN THE LABORATORY REPORTING LIMIT
BOLD: INDICATES RESULT EXCEEDS THE APPLICABLE STANDARD

IMAGE COURTESY OF ESRI

LEGEND

- MONITORING WELL
- CALCULATED GROUNDWATER FLOW DIRECTION
- UNDERGROUND UTILITIES
- BENZENE ISOCONCENTRATION CONTOUR
- EXCAVATION EXTENT

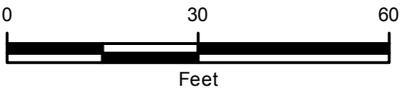


FIGURE 4
 GROUNDWATER ANALYTICAL RESULTS - SOUTH
 KARCH BLUE DD 30-3J FLOW LINE
 WELD COUNTY, COLORADO



NOBLE ENERGY, INC.

TABLES

TABLE 1

**GROUNDWATER ANALYTICAL RESULTS
KARCH BLUE DD 30-3J FLOW LINE - SOUTH
WELD COUNTY, COLORADO
NOBLE ENERGY, INC.**

Monitoring Well	Date	Depth to Water (feet btoc)	Relative Groundwater Elevation (feet)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
MW01	10/15/2013	4.30	90.54	1.08	1.21	43.8	60.9
	1/30/2014	4.95	89.89	<1.0	<1.0	9.22	<1.0
	4/30/2014	3.90	90.94	<1.0	<1.0	6.4	<1.0
	7/25/2014	4.18	90.66	<1.0	<1.0	<1.0	<1.0
	10/22/2014	4.75	90.09	<1.0	<1.0	1.1	<1.0
MW02	10/15/2013	4.05	90.55	<1.0	<1.0	<1.0	<1.0
	1/30/2014	4.62	89.98	<1.0	<1.0	<1.0	<1.0
	4/30/2014	3.65	90.95	<1.0	<1.0	<1.0	<1.0
	7/25/2014	3.96	90.64	<1.0	<1.0	<1.0	<1.0
	10/22/2014	4.50	90.10	<1.0	<1.0	<1.0	<1.0
MW03	10/15/2013	4.45	90.49	<1.0	<1.0	<1.0	<1.0
	1/30/2014	5.00	89.94	<1.0	<1.0	<1.0	<1.0
	4/30/2014	4.02	90.92	<1.0	<1.0	<1.0	<1.0
	7/25/2014	4.32	90.62	<1.0	<1.0	<1.0	<1.0
	10/22/2014	4.90	90.04	<1.0	<1.0	<1.0	<1.0
MW04	10/15/2013	4.56	90.50	177	1.53	159	240
	1/30/2014	5.12	89.94	101	<1.0	81.2	44.7
	4/30/2014	4.18	90.88	102	<1.0	64.6	108
	7/25/2014	4.51	90.55	48.9	<1.0	78.0	67.8
	10/22/2014	4.97	90.09	39.8	<1.0	34.4	39.7
MW05	10/15/2013	4.83	90.37	<1.0	<1.0	<1.0	<1.0
	1/30/2014	5.40	89.80	<1.0	<1.0	<1.0	<1.0
	4/30/2014	4.43	90.77	<1.0	<1.0	<1.0	<1.0
	7/25/2014	4.79	90.41	<1.0	<1.0	<1.0	<1.0
	10/22/2014	5.15	90.05	<1.0	<1.0	<1.0	<1.0
MW06	10/15/2013	4.91	90.30	<1.0	1.02	<1.0	<1.0
	1/30/2014	5.26	89.95	<1.0	<1.0	<1.0	<1.0
	4/30/2014	4.45	90.76	<1.0	<1.0	<1.0	<1.0
	7/25/2014	4.78	90.43	<1.0	<1.0	<1.0	<1.0
	10/22/2014	4.95	90.26	<1.0	<1.0	<1.0	<1.0
MW07	10/15/2013	5.02	90.06	<1.0	<1.0	<1.0	<1.0
	1/30/2014	5.35	89.73	<1.0	<1.0	<1.0	<1.0
	4/30/2014	4.61	90.47	2.6	<1.0	2.0	<1.0
	7/25/2014	4.67	90.41	<1.0	<1.0	<1.0	<1.0
	10/22/2014	5.15	89.93	<1.0	<1.0	<1.0	<1.0

TABLE 1 (Continued)

**GROUNDWATER ANALYTICAL RESULTS
KARCH BLUE DD 30-3J FLOW LINE - SOUTH
WELD COUNTY, COLORADO
NOBLE ENERGY, INC.**

Monitoring Well	Date	Depth to Water (feet btoc)	Relative Groundwater Elevation (feet)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
MW08	10/15/2013	4.66	90.32	<1.0	<1.0	<1.0	<1.0
	1/30/2014	5.20	89.78	<1.0	<1.0	<1.0	<1.0
	4/30/2014	4.25	90.73	<1.0	<1.0	<1.0	<1.0
	7/25/2014	4.66	90.32	<1.0	<1.0	<1.0	<1.0
	10/22/2014	4.91	90.07	<1.0	<1.0	<1.0	<1.0
MW09	10/15/2013	4.29	90.33	<1.0	<1.0	<1.0	<1.0
	1/30/2014	4.85	89.77	<1.0	<1.0	<1.0	<1.0
	4/30/2014	3.90	90.72	<1.0	<1.0	<1.0	<1.0
	7/25/2014	4.39	90.23	<1.0	<1.0	<1.0	<1.0
	10/22/2014	4.65	89.97	<1.0	<1.0	<1.0	<1.0
MW10	10/15/2013	4.30	90.32	<1.0	<1.0	<1.0	<1.0
	1/30/2014	4.75	89.87	<1.0	<1.0	<1.0	<1.0
	4/30/2014	3.85	90.77	<1.0	<1.0	<1.0	<1.0
	7/25/2014	4.23	90.39	<1.0	<1.0	<1.0	<1.0
	10/22/2014	5.60	89.02	<1.0	<1.0	<1.0	<1.0
MW11	10/15/2013	4.57	90.26	<1.0	<1.0	<1.0	<1.0
	1/30/2014	4.95	89.88	<1.0	<1.0	<1.0	<1.0
	4/30/2014	4.15	90.68	<1.0	<1.0	<1.0	<1.0
	7/25/2014	4.51	90.32	<1.0	<1.0	<1.0	<1.0
	10/22/2014	4.91	89.92	<1.0	<1.0	<1.0	<1.0
MW12	10/15/2013	4.60	90.46	<1.0	<1.0	<1.0	<1.0
	1/30/2014	5.15	89.91	<1.0	<1.0	<1.0	<1.0
	4/30/2014	4.20	90.86	<1.0	<1.0	<1.0	<1.0
	7/25/2014	4.72	90.34	<1.0	<1.0	<1.0	<1.0
	10/22/2014	5.07	89.99	<1.0	<1.0	<1.0	<1.0
CDPHE WQCC Reg 41				5.0	560	700	1,400

NOTES:

btoc - below top of casing

µg/L - micrograms per liter

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

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

BOLD indicates result exceeds the applicable standard

CDPHE WQCC Reg 41 - Colorado Department of Public Health and Environment-Water Quality Control Commission

Regulation 41-The Basic Standards for Ground Water

ATTACHMENT
LABORATORY ANALYTICAL REPORT

October 28, 2014

LT Environmental, Inc.

Chris Roy

4600 West 60th Avenue

Arvada CO 80003

**Project Name - Noble - Karch Blue DD 30-3J
(South)**

Project Number - 008313054

Attached are your analytical results for Noble - Karch Blue DD 30-3J (South) received by Origins Laboratory, Inc. October 23, 2014. This project is associated with Origins project number X410258-01.

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



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

Chris Roy
Project Number: 008313054
Project: Noble - Karch Blue DD 30-3J (South)

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW01	X410258-01	Water	October 22, 2014 11:00	10/23/2014 10:45
MW02	X410258-02	Water	October 22, 2014 11:10	10/23/2014 10:45
MW03	X410258-03	Water	October 22, 2014 10:50	10/23/2014 10:45
MW05	X410258-04	Water	October 22, 2014 12:20	10/23/2014 10:45
MW06	X410258-05	Water	October 22, 2014 10:40	10/23/2014 10:45
MW07	X410258-06	Water	October 22, 2014 12:00	10/23/2014 10:45
MW08	X410258-07	Water	October 22, 2014 11:50	10/23/2014 10:45
MW09	X410258-08	Water	October 22, 2014 11:40	10/23/2014 10:45
MW10	X410258-09	Water	October 22, 2014 11:30	10/23/2014 10:45
MW11	X410258-10	Water	October 22, 2014 11:10	10/23/2014 10:45

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

Chris Roy
Project Number: 008313054
Project: Noble - Karch Blue DD 30-3J (South)

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW12	X410258-11	Water	October 22, 2014 11:20	10/23/2014 10:45
MW04	X410258-12	Water	October 22, 2014 12:10	10/23/2014 10:45

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.

Jen Pellegrini For Noelle Doyle Mathis, President

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

Chris Roy
 Project Number: 008313054
 Project: Noble - Karch Blue DD 30-3J (South)

www.originslaboratory.com

X410258

page 2 of 2

ORIGINS
 LABORATORY, INC

Client: LT Environmental Project Manager/Send Report To: Noble Team
 Address: _____ Email Address: _____
 Project Name/Number: Karch Blue DD 30-3J (South)
 Telephone Number: _____ Samples Collected By: K. Rabida

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

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative				Matrix			Analyst/Method	Sample Instructions		
				Unpreserved	HCl	HNO ₃	Other	Groundwater	Soil	Air Summa Canister #			Other	
MW17	10/22/14	11:20	3	X				X				BTEX	1	Turnaround Time: <input type="checkbox"/> Same Day <input type="checkbox"/> 24 Hr <input type="checkbox"/> 48 Hr <input checked="" type="checkbox"/> 72 Hr Standard <input checked="" type="checkbox"/> 5.2
MW04	10/22/14	12:10	3	X				X				BTEX	2	
													3	
													4	
													5	
													6	
													7	
													8	
													9	
													10	
Relinquished By: <u>[Signature]</u>	Date: 10/23/14	Time: 10:45												
Relinquished By: <u>[Signature]</u>	Date: 10/23/14	Time: 10:45												

Comments: _____ Date Results Needed: _____

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

Chris Roy
 Project Number: 008313054
 Project: Noble - Karch Blue DD 30-3J (South)

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: XM10258 Client: LTE
 Client Project ID: Karch Blue DD 30-3J (South)
 Checklist Completed by: Jesse Smith Shipped Via: H/D
 Date/time completed: 10/23/14 (UPS, FedEx, Hand Delivered, Pick-up, etc.)
 Airbill #: N/A
 Matrix(s) Received: (Check all that apply): Soil/Solid Water Other: _____
 Cooler Number/Temperature: 1 / 5.2 °C _____ / _____ °C _____ / _____ °C (Describe)
 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"/>			
Is there ice present (document if blue ice is used)	<input checked="" type="checkbox"/>			
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)		<input checked="" 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 checked="" type="checkbox"/>		
Were all samples received intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Are short holding time analytes or samples with HTs 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 (> ¼ inch bubble) present? If yes, contact client and note in narrative.		<input checked="" 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 checked="" 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) [Signature] Date/Time Reviewed 10-23-14

Origins Laboratory, Inc.

Jesse 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

Chris Roy
 Project Number: 008313054
 Project: Noble - Karch Blue DD 30-3J (South)

MW01
10/22/2014 11:00:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
---------	--------	-----------------	-------	----------	-------	----------	----------	-------

Origins Laboratory, Inc.
X410258-01 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4J24012	10/24/2014	10/26/2014	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	1.1	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	103 %	87.3-113			"	"	"	
Surrogate: Toluene-d8	100 %	90.9-108			"	"	"	
Surrogate: 4-Bromofluorobenzene	99.9 %	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

Chris Roy
 Project Number: 008313054
 Project: Noble - Karch Blue DD 30-3J (South)

MW02
10/22/2014 11:10:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
---------	--------	-----------------	-------	----------	-------	----------	----------	-------

Origins Laboratory, Inc.
X410258-02 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4J24012	10/24/2014	10/26/2014	
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	98.8 %	90.9-108			"	"	"	
Surrogate: 4-Bromofluorobenzene	101 %	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

Chris Roy
 Project Number: 008313054
 Project: Noble - Karch Blue DD 30-3J (South)

MW03
10/22/2014 10:50:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
---------	--------	-----------------	-------	----------	-------	----------	----------	-------

Origins Laboratory, Inc.
X410258-03 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4J24012	10/24/2014	10/26/2014	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	104 %	87.3-113			"	"	"	
Surrogate: Toluene-d8	100 %	90.9-108			"	"	"	
Surrogate: 4-Bromofluorobenzene	99.7 %	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

Chris Roy
 Project Number: 008313054
 Project: Noble - Karch Blue DD 30-3J (South)

MW05
10/22/2014 12:20:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
---------	--------	-----------------	-------	----------	-------	----------	----------	-------

Origins Laboratory, Inc.
X410258-04 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4J24012	10/24/2014	10/26/2014	
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	100 %	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

Chris Roy
 Project Number: 008313054
 Project: Noble - Karch Blue DD 30-3J (South)

MW06
10/22/2014 10:40:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
---------	--------	-----------------	-------	----------	-------	----------	----------	-------

Origins Laboratory, Inc.
X410258-05 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4J24012	10/24/2014	10/26/2014	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	102 %	87.3-113			"	"	"	
Surrogate: Toluene-d8	99.7 %	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

Chris Roy
 Project Number: 008313054
 Project: Noble - Karch Blue DD 30-3J (South)

MW07
10/22/2014 12:00:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
---------	--------	-----------------	-------	----------	-------	----------	----------	-------

Origins Laboratory, Inc.
X410258-06 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4J24012	10/24/2014	10/26/2014	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	104 %	87.3-113			"	"	"	
Surrogate: Toluene-d8	100 %	90.9-108			"	"	"	
Surrogate: 4-Bromofluorobenzene	99.4 %	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

Chris Roy
 Project Number: 008313054
 Project: Noble - Karch Blue DD 30-3J (South)

MW08
10/22/2014 11:50:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
---------	--------	-----------------	-------	----------	-------	----------	----------	-------

Origins Laboratory, Inc.
X410258-07 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4J24012	10/24/2014	10/26/2014	
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	98.9 %	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

Chris Roy
 Project Number: 008313054
 Project: Noble - Karch Blue DD 30-3J (South)

MW09
10/22/2014 11:40:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
---------	--------	-----------------	-------	----------	-------	----------	----------	-------

Origins Laboratory, Inc.
X410258-08 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4J24012	10/24/2014	10/26/2014	
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	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

Chris Roy
 Project Number: 008313054
 Project: Noble - Karch Blue DD 30-3J (South)

MW10
10/22/2014 11:30:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
---------	--------	-----------------	-------	----------	-------	----------	----------	-------

Origins Laboratory, Inc.
X410258-09 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4J24012	10/24/2014	10/26/2014	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	102 %	87.3-113			"	"	"	
Surrogate: Toluene-d8	99.5 %	90.9-108			"	"	"	
Surrogate: 4-Bromofluorobenzene	99.4 %	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

Chris Roy
 Project Number: 008313054
 Project: Noble - Karch Blue DD 30-3J (South)

MW11
10/22/2014 11:10:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
---------	--------	-----------------	-------	----------	-------	----------	----------	-------

Origins Laboratory, Inc.
X410258-10 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4J24012	10/24/2014	10/26/2014	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	102 %	87.3-113			"	"	"	
Surrogate: Toluene-d8	99.4 %	90.9-108			"	"	"	
Surrogate: 4-Bromofluorobenzene	99.0 %	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

Chris Roy
 Project Number: 008313054
 Project: Noble - Karch Blue DD 30-3J (South)

MW12
10/22/2014 11:20:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
---------	--------	-----------------	-------	----------	-------	----------	----------	-------

Origins Laboratory, Inc.
X410258-11 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4J24012	10/24/2014	10/26/2014	
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	99.1 %	90.9-108			"	"	"	
Surrogate: 4-Bromofluorobenzene	98.7 %	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

Chris Roy
 Project Number: 008313054
 Project: Noble - Karch Blue DD 30-3J (South)

MW04
10/22/2014 12:10:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
---------	--------	-----------------	-------	----------	-------	----------	----------	-------

Origins Laboratory, Inc.
X410258-12 (Water)

BTEX by EPA 8260C

Benzene	39.8	1.0	ug/L	1	4J24012	10/24/2014	10/26/2014	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	34.4	1.0	"	"	"	"	"	
Xylenes, total	39.7	1.0	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	102 %	87.3-113			"	"	"	
Surrogate: Toluene-d8	99.3 %	90.9-108			"	"	"	
Surrogate: 4-Bromofluorobenzene	99.4 %	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

Chris Roy
 Project Number: 008313054
 Project: Noble - Karch Blue DD 30-3J (South)

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
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

Batch 4J24012 - EPA 5030B (Water)

Blank (4J24012-BLK1)

Prepared: 10/24/2014 Analyzed: 10/24/2014

Benzene	ND	1.0	ug/L							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes, total	ND	1.0	"							
Surrogate: 1,2-Dichloroethane-d4	54		"	62.5	86.2		87.3-113			S-GC
Surrogate: Toluene-d8	66		"	62.5	105		90.9-108			
Surrogate: 4-Bromofluorobenzene	63		"	62.5	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

Chris Roy
 Project Number: 008313054
 Project: Noble - Karch Blue DD 30-3J (South)

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
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

Batch 4J24012 - EPA 5030B (Water)

Blank (4J24012-BLK2)

Prepared: 10/24/2014 Analyzed: 10/27/2014

Benzene	ND	1.0	ug/L							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes, total	ND	1.0	"							
Surrogate: 1,2-Dichloroethane-d4	70		"	62.5	112		87.3-113			
Surrogate: Toluene-d8	64		"	62.5	102		90.9-108			
Surrogate: 4-Bromofluorobenzene	61		"	62.5	97.9		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

Chris Roy
 Project Number: 008313054
 Project: Noble - Karch Blue DD 30-3J (South)

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
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

Batch 4J24012 - EPA 5030B (Water)

LCS (4J24012-BS1)

Prepared: 10/24/2014 Analyzed: 10/24/2014

Benzene	55.2	1.0	ug/L	50.0		110	75-126			
Toluene	55.2	1.0	"	50.0		110	78.7-126			
Ethylbenzene	55.4	1.0	"	50.0		111	81-130			
m,p-Xylene	111	2.0	"	100		111	77.2-133			
o-Xylene	55.6	1.0	"	50.0		111	77.9-126			
Surrogate: 1,2-Dichloroethane-d4	61		"	62.5		97.0	87.3-113			
Surrogate: Toluene-d8	62		"	62.5		99.8	90.9-108			
Surrogate: 4-Bromofluorobenzene	61		"	62.5		97.7	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

Chris Roy
 Project Number: 008313054
 Project: Noble - Karch Blue DD 30-3J (South)

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
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

Batch 4J24012 - EPA 5030B (Water)

LCS (4J24012-BS2)

Prepared: 10/24/2014 Analyzed: 10/27/2014

Benzene	47.2	1.0	ug/L	50.0		94.4	75-126			
Toluene	47.7	1.0	"	50.0		95.4	78.7-126			
Ethylbenzene	49.1	1.0	"	50.0		98.3	81-130			
m,p-Xylene	98.4	2.0	"	100		98.4	77.2-133			
o-Xylene	49.3	1.0	"	50.0		98.7	77.9-126			
Surrogate: 1,2-Dichloroethane-d4	65		"	62.5		104	87.3-113			
Surrogate: Toluene-d8	64		"	62.5		103	90.9-108			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		98.5	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

Chris Roy
 Project Number: 008313054
 Project: Noble - Karch Blue DD 30-3J (South)

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
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

Batch 4J24012 - EPA 5030B (Water)

Matrix Spike (4J24012-MS1)	Source: X410250-01			Prepared: 10/24/2014 Analyzed: 10/24/2014						
Benzene	57.5	1.0	ug/L	50.0	ND	115	74-130			
Toluene	59.0	1.0	"	50.0	ND	118	73-131			
Ethylbenzene	60.2	1.0	"	50.0	ND	120	76-132			
m,p-Xylene	119	2.0	"	100	ND	119	69-139			
o-Xylene	57.7	1.0	"	50.0	ND	115	74-131			
Surrogate: 1,2-Dichloroethane-d4	60		"	62.5		95.5	87.3-113			
Surrogate: Toluene-d8	63		"	62.5		101	90.9-108			
Surrogate: 4-Bromofluorobenzene	63		"	62.5		101	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

Chris Roy
 Project Number: 008313054
 Project: Noble - Karch Blue DD 30-3J (South)

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
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

Batch 4J24012 - EPA 5030B (Water)

Matrix Spike (4J24012-MS2)	Source: X410258-02			Prepared: 10/24/2014 Analyzed: 10/27/2014						
Benzene	59.8	1.0	ug/L	50.0	ND	120	74-130			
Toluene	60.8	1.0	"	50.0	ND	122	73-131			
Ethylbenzene	63.4	1.0	"	50.0	ND	127	76-132			
m,p-Xylene	128	2.0	"	100	ND	128	69-139			
o-Xylene	64.4	1.0	"	50.0	ND	129	74-131			
Surrogate: 1,2-Dichloroethane-d4	62		"	62.5		99.6	87.3-113			
Surrogate: Toluene-d8	63		"	62.5		102	90.9-108			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		99.0	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

Chris Roy
 Project Number: 008313054
 Project: Noble - Karch Blue DD 30-3J (South)

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
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

Batch 4J24012 - EPA 5030B (Water)

Matrix Spike Dup (4J24012-MSD1)	Source: X410250-01			Prepared: 10/24/2014 Analyzed: 10/24/2014						
Benzene	53.9	1.0	ug/L	50.0	ND	108	74-130	6.51	20	
Toluene	54.7	1.0	"	50.0	ND	109	73-131	7.44	20	
Ethylbenzene	56.1	1.0	"	50.0	ND	112	76-132	7.19	20	
m,p-Xylene	112	2.0	"	100	ND	112	69-139	6.23	20	
o-Xylene	54.2	1.0	"	50.0	ND	108	74-131	6.27	20	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	60		"	62.5		96.3	87.3-113			
<i>Surrogate: Toluene-d8</i>	63		"	62.5		101	90.9-108			
<i>Surrogate: 4-Bromofluorobenzene</i>	63		"	62.5		101	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

Chris Roy
 Project Number: 008313054
 Project: Noble - Karch Blue DD 30-3J (South)

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
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

Batch 4J24012 - EPA 5030B (Water)

Matrix Spike Dup (4J24012-MSD2)	Source: X410258-02			Prepared: 10/24/2014 Analyzed: 10/27/2014						
Benzene	60.2	1.0	ug/L	50.0	ND	120	74-130	0.666	20	
Toluene	61.7	1.0	"	50.0	ND	123	73-131	1.40	20	
Ethylbenzene	61.7	1.0	"	50.0	ND	123	76-132	2.76	20	
m,p-Xylene	123	2.0	"	100	ND	123	69-139	3.50	20	
o-Xylene	62.9	1.0	"	50.0	ND	126	74-131	2.22	20	
Surrogate: 1,2-Dichloroethane-d4	63		"	62.5		101	87.3-113			
Surrogate: Toluene-d8	64		"	62.5		102	90.9-108			
Surrogate: 4-Bromofluorobenzene	61		"	62.5		96.9	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

Chris Roy
Project Number: 008313054
Project: Noble - Karch Blue DD 30-3J (South)

Notes and Definitions

S-GC Surrogate recovery outside of control limits. The data was accepted based on valid recovery of the remaining surrogate.

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.



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.