



## GROUNDWATER MONITORING REPORT NOVEMBER 2013

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### KARCH BLUE D 24-11 FLOW LINE COGCC TRACKING #2232915

LT Environmental, Inc. (LTE), under the direction of Noble Energy, Inc. (Noble), conducted groundwater monitoring activities at the Karch Blue D 24-11 flow line (Site). Site history, including completion of soil borings SB01 through SB12 as temporary groundwater monitoring wells on May 21, 2013, was described in preceding reports. A Site Location Map is included as Figure 1.

Groundwater monitoring was conducted on November 18, 2013, in nine monitoring wells (SB01 through SB03, SB05 through SB08, SB10, and SB12). During the November 2013 monitoring event, depth to groundwater, which ranged from 7.73 feet below top of casing (btoc) in monitoring well SB02 to 9.25 feet btoc in monitoring well SB05, was used to calculate well-specific purge volumes and relative groundwater elevations. Using the relative groundwater elevations, groundwater was calculated to flow north with an average hydraulic gradient of 0.008 feet per foot. Relative groundwater elevations are presented on Figure 2 and summarized in Table 1. Following purging, samples were collected, placed on ice, and 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 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.

Groundwater laboratory analytical results indicate monitoring well SB01 exceeded WQCC Reg 41 for benzene at a concentration of 54.4  $\mu\text{g/L}$ . All other monitoring wells are in compliance with applicable WQCC Reg 41 standards. Groundwater laboratory analytical results are depicted on Figure 3 and summarized in Table 1. The laboratory analytical report is attached.

LTE, under the direction of Noble, will continue to conduct quarterly groundwater monitoring 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 February 2014.

## **FIGURES**

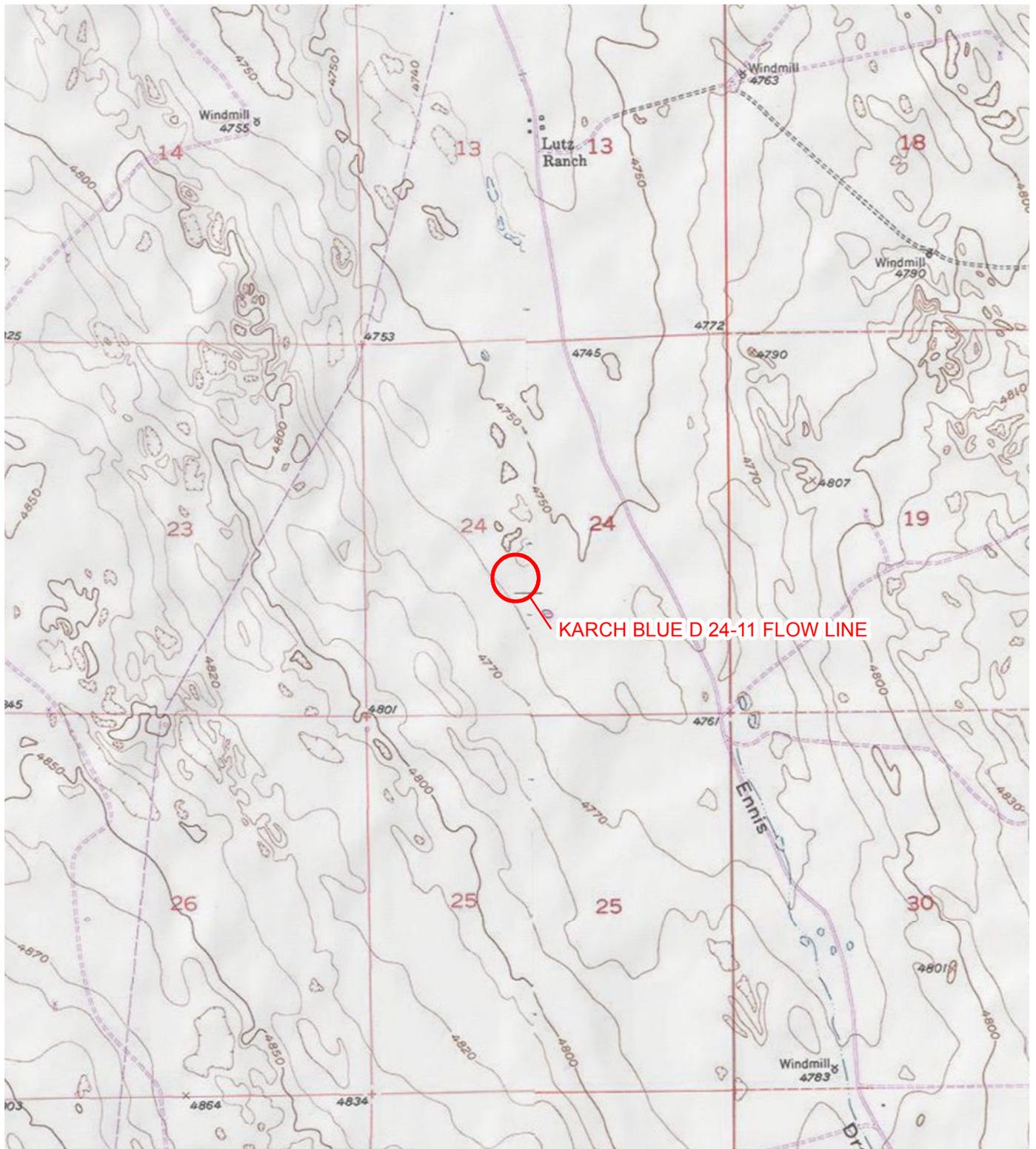
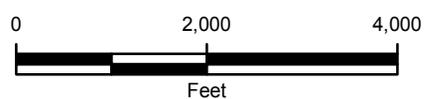


IMAGE COURTESY OF ESRI/BING MAPS

**LEGEND**

 SITE LOCATION



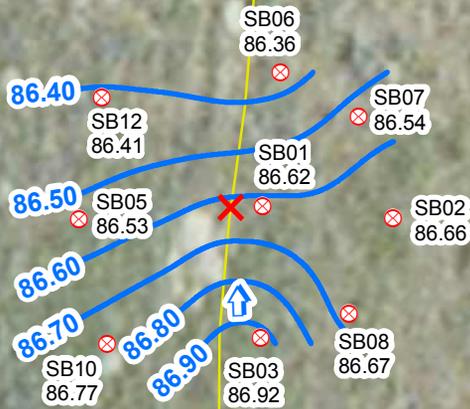
**FIGURE 1**  
**SITE LOCATION MAP**  
**KARCH BLUE D 24-11 FLOW LINE**  
**WELD COUNTY, COLORADO**

**NOBLE ENERGY, INC.**



RANGELAND

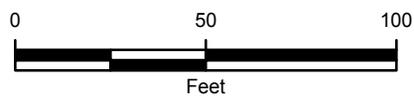
RANGELAND



**LEGEND**

-  RELEASE
-  MONITORING WELL
-  ESTIMATED GROUNDWATER FLOW DIRECTION
-  FLOW LINE
-  RELATIVE GROUNDWATER ELEVATION CONTOUR  
CONTOUR INTERVAL = 0.10 FEET  
GRADIENT = 0.008 FEET/FOOT

IMAGE COURTESY OF ESRI/BING MAPS

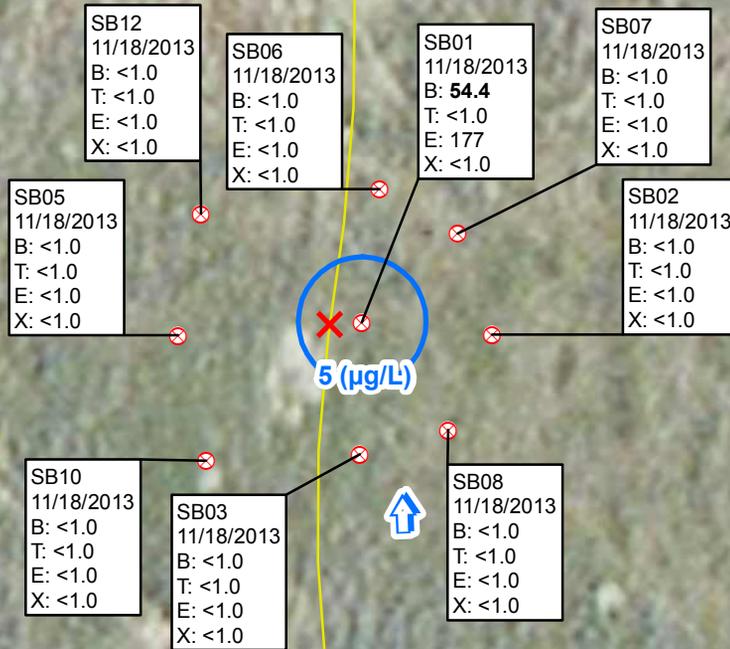


**FIGURE 2**  
RELATIVE GROUNDWATER ELEVATION MAP  
NOVEMBER 18, 2013  
KARCH BLUE D 24-11 FLOW LINE  
WELD COUNTY, COLORADO  
**NOBLE ENERGY, INC.**



RANGELAND

RANGELAND

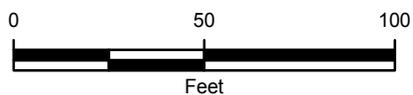


SAMPLE ID  
 SAMPLE DATE  
 B: BENZENE IN MICROGRAMS PER LITER (µg/L)  
 T: TOLUENE (µg/L)  
 E: ETHYLBENZENE (µg/L)  
 X: TOTAL XYLENES (µg/L)  
 <: INDICATES RESULT IS LESS THAN THE LABORATORY REPORTING LIMIT  
**BOLD**: INDICATES RESULT EXCEEDS THE APPLICABLE STANDARD

IMAGE COURTESY OF ESRI/BING MAPS

**LEGEND**

- RELEASE
- MONITORING WELL
- ESTIMATED GROUNDWATER FLOW DIRECTION
- FLOW LINE
- BENZENE ISOCONCENTRATION CONTOUR



**FIGURE 3**  
 GROUNDWATER ANALYTICAL RESULTS  
 KARCH BLUE D 24-11 FLOW LINE  
 WELD COUNTY, COLORADO



**NOBLE ENERGY, INC.**

## **TABLE**

TABLE 1

**GROUNDWATER ANALYTICAL RESULTS**  
**KARCH BLUE D 24-11 FLOW LINE**  
**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)
SB01	5/23/2013	7.62	87.32	<b>205</b>	23.3	275	192
	8/27/2013	8.54	86.40	<b>37</b>	<1.0	164	<1.0
	11/18/2013	8.32	86.62	<b>54.4</b>	<1.0	177	<1.0
SB02	5/23/2013	6.98	87.41	<1.0	<1.0	<1.0	<1.0
	8/27/2013	7.96	86.43	<1.0	<1.0	<1.0	<1.0
	11/18/2013	7.73	86.66	<1.0	<1.0	<1.0	<1.0
SB03	5/23/2013	7.15	87.64	<1.0	<1.0	<1.0	<1.0
	8/27/2013	8.15	86.64	<1.0	<1.0	<1.0	<1.0
	11/18/2013	7.87	86.92	<1.0	<1.0	<1.0	<1.0
SB05	5/23/2013	8.43	87.35	<1.0	1.23	<1.0	<1.0
	8/27/2013	9.43	86.35	<1.0	<1.0	<1.0	<1.0
	11/18/2013	9.25	86.53	<1.0	<1.0	<1.0	<1.0
SB06	5/23/2013	7.91	87.07	<1.0	0.960	<1.0	4.43
	8/27/2013	8.84	86.14	<1.0	<1.0	<1.0	<1.0
	11/18/2013	8.62	86.36	<1.0	<1.0	<1.0	<1.0
SB07	5/23/2013	7.33	87.23	<1.0	<1.0	<1.0	2.42
	8/27/2013	8.30	86.26	<1.0	<1.0	<1.0	<1.0
	11/18/2013	8.02	86.54	<1.0	<1.0	<1.0	<1.0
SB08	5/23/2013	7.33	87.41	<1.0	<1.0	<1.0	<1.0
	8/27/2013	8.31	86.43	<1.0	<1.0	<1.0	<1.0
	11/18/2013	8.07	86.67	<1.0	<1.0	<1.0	<1.0
SB10	5/23/2013	7.80	87.57	<1.0	<1.0	<1.0	<1.0
	8/27/2013	8.82	86.55	<1.0	<1.0	<1.0	<1.0
	11/18/2013	8.60	86.77	<1.0	<1.0	<1.0	<1.0
SB12	5/23/2013	8.37	87.24	<1.0	1.24	<1.0	<1.0
	8/27/2013	9.56	86.05	<1.0	<1.0	<1.0	<1.0
	11/18/2013	9.20	86.41	<1.0	<1.0	<1.0	<1.0
<b>CDPHE WQCC Reg 41</b>				<b>5</b>	<b>560</b>	<b>700</b>	<b>1,400</b>

**NOTES:**

btoc - below top of casing

µg/L - micrograms per liter

&lt; - indicates result is less than the stated laboratory method reporting limit

**BOLD** indicates result exceeds the applicable standard

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

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**

November 21, 2013

LT Environmental, Inc.

Chris Roy

4600 West 60th Avenue

Arvada

CO 80003

Project Name - Noble - Karch Blue D 24-11

Project Number - 008313023

Attached are you analytical results for Noble - Karch Blue D 24-11 received by Origins Laboratory, Inc. November 18, 2013. This project is associated with Origins project number X311141-01.

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.



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

Chris Roy  
Project Number: 008313023  
Project: Noble - Karch Blue D 24-11

## CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SB01	X311141-01	Water	November 18, 2013 12:00	11/18/2013 15:20
SB02	X311141-02	Water	November 18, 2013 11:40	11/18/2013 15:20
SB03	X311141-03	Water	November 18, 2013 11:10	11/18/2013 15:20
SB05	X311141-04	Water	November 18, 2013 12:35	11/18/2013 15:20
SB06	X311141-05	Water	November 18, 2013 13:05	11/18/2013 15:20
SB07	X311141-06	Water	November 18, 2013 11:50	11/18/2013 15:20
SB08	X311141-07	Water	November 18, 2013 11:25	11/18/2013 15:20
SB10	X311141-08	Water	November 18, 2013 12:20	11/18/2013 15:20
SB12	X311141-09	Water	November 18, 2013 12:50	11/18/2013 15:20

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

Chris Roy  
 Project Number: 008313023  
 Project: Noble - Karch Blue D 24-11

www.originslaboratory.com

page 1 of 1

X311141



Client: LT Environmental  
 Address: 4600 W. 60th Ave  
 Telephone Number:  
 Email Address: Croy@ltenv.com

Project Manager: Chris Roy  
 Project Name: Karch Blue D 24-11  
 Project Number: 008313023  
 Samples Collected By: B Finn

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			Analysis	Sample Instructions	Turnaround Time: 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"/>		
				Unpreserved	HCl	HNO <sub>3</sub>	Other	Groundwater	Soil	Air Summa #				Other	
SB01	12:00	11/18/2013	3	X				X							
SB02	11:40														
SB03	11:10														
SB05	12:35														
SB06	13:05														
SB07	11:50														
SB08	11:25														
SB10	12:20														
SB12	12:50														
Relinquished By: <i>B. Finn</i>	Date: 11/18/2013	Time: 1520	Date: 11/18/13	Time: 15:20	Received By: <i>[Signature]</i>	Date: 11/18/13	Time: 15:20	Received By: <i>[Signature]</i>	Date: 11/18/13	Time: 15:20	Standard <input checked="" type="checkbox"/>				

Date Results Needed

Origins Laboratory, Inc.

Noelle E Doyle, President

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

Chris Roy  
 Project Number: 008313023  
 Project: Noble - Karch Blue D 24-11

Origins Laboratory

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

**Sample Receipt Checklist**

Origins Work Order: X31141

Client: LTE

Client Project ID: Karch Blue D 24-11

Checklist Completed by: Jeff Smith

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

Date/time completed: 11/18/13 15:20

Airbill #: NA

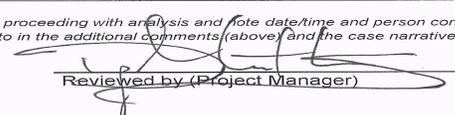
Matrix(s) Received: (Check all that apply):  Soil/Solid  Water  Other: \_\_\_\_\_

Cooler Number/Temperature: 18.3 °C / \_\_\_\_\_ °C / \_\_\_\_\_ °C (Describe)

Thermometer ID: T002

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 6°C <sup>(1)</sup> ?		X		Sampled Same Day
Is there ice present (document if blue ice is used)	X			
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)		X		
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)		X		
Were all samples received intact <sup>(1)</sup> ?	X			
Was adequate sample volume provided <sup>(1)</sup> ?	X			
Are short holding time analytes or samples with HTs due within 48 hours present <sup>(1)</sup> ?		X		
Is a chain-of-custody (COC) present and filled out completely <sup>(1)</sup> ?	X			
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	X			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	X			
Is the COC properly relinquished by the client with date and time recorded <sup>(1)</sup> ?	X			
For volatiles in water – is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative.		X		
Are samples preserved that require preservation and was it checked <sup>(1)</sup> ? (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 <sub>3</sub> , HCL, H <sub>2</sub> SO <sub>4</sub> ) / (pH >10 for samples preserved with NaAsO <sub>2</sub> +NaOH, ZnAc+NaOH)		X		Samples will be analyzed with in 7 Days of collection
Additional Comments (if any):				

<sup>(1)</sup>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)

11-21-13 1416  
 Date/Time Reviewed

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

Chris Roy  
 Project Number: 008313023  
 Project: Noble - Karch Blue D 24-11

**SB01**

**11/18/2013 12:00:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X311141-01 (Water)**

**BTEX by EPA 8260C**

Benzene	0.0544	0.0010	mg/L	1	3K19006	11/19/2013	11/20/2013	
Toluene	ND	0.0010	"	"	"	"	"	
Ethylbenzene	0.177	0.0010	"	"	"	"	"	
Xylenes, total	ND	0.0010	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	98.4 %	84-121			"	"	"	
Surrogate: Toluene-d8	98.0 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	97.1 %	84-114			"	"	"	

Origins Laboratory, Inc.



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 Arvada CO 80003

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 Project Number: 008313023  
 Project: Noble - Karch Blue D 24-11

**SB02**

**11/18/2013 11:40:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X311141-02 (Water)**

**BTEX by EPA 8260C**

Benzene	ND	0.0010	mg/L	1	3K19006	11/19/2013	11/20/2013	
Toluene	ND	0.0010	"	"	"	"	"	
Ethylbenzene	ND	0.0010	"	"	"	"	"	
Xylenes, total	ND	0.0010	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	98.7 %	84-121			"	"	"	
Surrogate: Toluene-d8	97.3 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	98.3 %	84-114			"	"	"	

Origins Laboratory, Inc.



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 Project: Noble - Karch Blue D 24-11

**SB03**

**11/18/2013 11:10:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X311141-03 (Water)**

**BTEX by EPA 8260C**

Benzene	ND	0.0010	mg/L	1	3K19006	11/19/2013	11/20/2013	
Toluene	ND	0.0010	"	"	"	"	"	
Ethylbenzene	ND	0.0010	"	"	"	"	"	
Xylenes, total	ND	0.0010	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	98.8 %	84-121			"	"	"	
Surrogate: Toluene-d8	98.2 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	98.9 %	84-114			"	"	"	

Origins Laboratory, Inc.



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Chris Roy  
 Project Number: 008313023  
 Project: Noble - Karch Blue D 24-11

**SB05**

**11/18/2013 12:35:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X311141-04 (Water)**

**BTEX by EPA 8260C**

Benzene	ND	0.0010	mg/L	1	3K19006	11/19/2013	11/20/2013	
Toluene	ND	0.0010	"	"	"	"	"	
Ethylbenzene	ND	0.0010	"	"	"	"	"	
Xylenes, total	ND	0.0010	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	101 %	84-121			"	"	"	
Surrogate: Toluene-d8	97.6 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	97.8 %	84-114			"	"	"	

Origins Laboratory, Inc.



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 4600 West 60th Avenue  
 Arvada CO 80003

Chris Roy  
 Project Number: 008313023  
 Project: Noble - Karch Blue D 24-11

**SB06**

**11/18/2013 1:05:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X311141-05 (Water)**

**BTEX by EPA 8260C**

Benzene	ND	0.0010	mg/L	1	3K19006	11/19/2013	11/20/2013	
Toluene	ND	0.0010	"	"	"	"	"	
Ethylbenzene	ND	0.0010	"	"	"	"	"	
Xylenes, total	ND	0.0010	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	101 %	84-121			"	"	"	
Surrogate: Toluene-d8	96.3 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	98.9 %	84-114			"	"	"	

Origins Laboratory, Inc.



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 4600 West 60th Avenue  
 Arvada CO 80003

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 Project Number: 008313023  
 Project: Noble - Karch Blue D 24-11

**SB07**

**11/18/2013 11:50:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X311141-06 (Water)**

**BTEX by EPA 8260C**

Benzene	ND	0.0010	mg/L	1	3K19006	11/19/2013	11/20/2013	
Toluene	ND	0.0010	"	"	"	"	"	
Ethylbenzene	ND	0.0010	"	"	"	"	"	
Xylenes, total	ND	0.0010	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	99.7 %	84-121			"	"	"	
Surrogate: Toluene-d8	97.4 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	99.5 %	84-114			"	"	"	

Origins Laboratory, Inc.



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

Chris Roy  
 Project Number: 008313023  
 Project: Noble - Karch Blue D 24-11

**SB08**

**11/18/2013 11:25:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X311141-07 (Water)**

**BTEX by EPA 8260C**

Benzene	ND	0.0010	mg/L	1	3K19006	11/19/2013	11/20/2013	
Toluene	ND	0.0010	"	"	"	"	"	
Ethylbenzene	ND	0.0010	"	"	"	"	"	
Xylenes, total	ND	0.0010	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	98.9 %	84-121			"	"	"	
Surrogate: Toluene-d8	97.5 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	98.1 %	84-114			"	"	"	

Origins Laboratory, Inc.



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 4600 West 60th Avenue  
 Arvada CO 80003

Chris Roy  
 Project Number: 008313023  
 Project: Noble - Karch Blue D 24-11

**SB10**

**11/18/2013 12:20:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X311141-08 (Water)**

**BTEX by EPA 8260C**

Benzene	ND	0.0010	mg/L	1	3K19006	11/19/2013	11/20/2013	
Toluene	ND	0.0010	"	"	"	"	"	
Ethylbenzene	ND	0.0010	"	"	"	"	"	
Xylenes, total	ND	0.0010	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	98.4 %	84-121			"	"	"	
Surrogate: Toluene-d8	97.1 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	98.5 %	84-114			"	"	"	

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Noelle E Doyle, President

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

Chris Roy  
 Project Number: 008313023  
 Project: Noble - Karch Blue D 24-11

**SB12**

**11/18/2013 12:50:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**X311141-09 (Water)**

**BTEX by EPA 8260C**

Benzene	ND	0.0010	mg/L	1	3K19006	11/19/2013	11/20/2013	
Toluene	ND	0.0010	"	"	"	"	"	
Ethylbenzene	ND	0.0010	"	"	"	"	"	
Xylenes, total	ND	0.0010	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	99.4 %	84-121			"	"	"	
Surrogate: Toluene-d8	96.7 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	96.2 %	84-114			"	"	"	

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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 3K19006 - EPA 5030B (Water)**

**Blank (3K19006-BLK1)**

Prepared: 11/19/2013 Analyzed: 11/19/2013

Benzene	ND	0.001	mg/L							
Toluene	ND	0.001	"							
Ethylbenzene	ND	0.001	"							
Xylenes, total	ND	0.001	"							
Surrogate: 1,2-Dichloroethane-d4	62		ug/L	62.5	98.9		84-121			
Surrogate: Toluene-d8	60		"	62.5	96.4		85-115			
Surrogate: 4-Bromofluorobenzene	61		"	62.5	98.3		84-114			

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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 3K19006 - EPA 5030B (Water)**

**LCS (3K19006-BS1)**

Prepared: 11/19/2013 Analyzed: 11/19/2013

Benzene	0.05	0.001	mg/L	0.0500		92.2	74-130			
Toluene	0.04	0.001	"	0.0500		88.3	76-128			
Ethylbenzene	0.05	0.001	"	0.0500		90.3	78-130			
m,p-Xylene	0.09	0.002	"	0.100		91.1	75-134			
o-Xylene	0.05	0.001	"	0.0500		90.8	76-129			
Surrogate: 1,2-Dichloroethane-d4	58		ug/L	62.5		92.7	84-121			
Surrogate: Toluene-d8	61		"	62.5		97.2	85-115			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		99.2	84-114			

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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 3K19006 - EPA 5030B (Water)

Matrix Spike (3K19006-MS1)	Source: X311112-01			Prepared: 11/19/2013 Analyzed: 11/19/2013						
Benzene	0.05	0.001	mg/L	0.0500	ND	91.5	74-130			
Toluene	0.04	0.001	"	0.0500	ND	88.1	73-131			
Ethylbenzene	0.05	0.001	"	0.0500	ND	90.9	76-132			
m,p-Xylene	0.09	0.002	"	0.100	ND	90.7	69-139			
o-Xylene	0.04	0.001	"	0.0500	ND	89.5	74-131			
Surrogate: 1,2-Dichloroethane-d4	58		ug/L	62.5		93.2	84-121			
Surrogate: Toluene-d8	61		"	62.5		97.3	85-115			
Surrogate: 4-Bromofluorobenzene	61		"	62.5		98.0	84-114			

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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 3K19006 - EPA 5030B (Water)

Matrix Spike Dup (3K19006-MSD1)	Source: X311112-01			Prepared: 11/19/2013 Analyzed: 11/19/2013						
Benzene	0.05	0.001	mg/L	0.0500	ND	92.3	74-130	0.892	20	
Toluene	0.05	0.001	"	0.0500	ND	90.3	73-131	2.51	20	
Ethylbenzene	0.05	0.001	"	0.0500	ND	92.1	76-132	1.36	20	
m,p-Xylene	0.09	0.002	"	0.100	ND	92.7	69-139	2.15	20	
o-Xylene	0.05	0.001	"	0.0500	ND	90.6	74-131	1.22	20	
Surrogate: 1,2-Dichloroethane-d4	58		ug/L	62.5		92.7	84-121			
Surrogate: Toluene-d8	62		"	62.5		98.7	85-115			
Surrogate: 4-Bromofluorobenzene	60		"	62.5		96.6	84-114			

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**Notes and Definitions**

ND Analyte NOT DETECTED at or above the reporting limit  
RPD Relative Percent Difference

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