



GROUNDWATER MONITORING REPORT JANUARY 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). Site history and remediation activities were described in previous reports. The Site is located approximately 3.0 miles north of Interstate 76 along County Road 57 in Weld, Colorado. The legal description of the site 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 monitoring wells to allow for groundwater sampling.

Groundwater samples from monitoring wells MW01 through MW12 in the South Excavation and MW01 through MW11 in the North Excavation were collected on January 30 and 31, 2014, respectively. Prior to purging each monitoring well, depth to groundwater was measured and recorded for calculating well-specific target purge volumes and relative groundwater elevations. During the January 2014 monitoring event, depth to groundwater at the North Excavation ranged from 4.56 feet below top of casing (btoc) in MW01 to 5.69 feet btoc in MW10. Depth to groundwater at the South Excavation ranged from 4.62 feet btoc in MW02 to 5.40 feet btoc in MW05. Groundwater in the North Excavation was calculated to flow north-northwest with an average hydraulic gradient of 0.005 feet per foot. Groundwater in the South Excavation was calculated to flow north-northwest with an average hydraulic gradient of 0.003 feet per foot. The relative groundwater elevations for the North Excavation and the South Excavation are presented on Figures 3 and 4, respectively.

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 for the North Excavation indicate BTEX concentrations are in compliance with applicable WQCC Reg 41 standards. Laboratory groundwater analytical results for the South Excavation indicate that monitoring well MW04 exceeded WQCC Reg 41 for benzene at a concentration of 101 $\mu\text{g/L}$. All other analytes at monitoring well MW04 as well as all other laboratory groundwater analytical results from the South Excavation are in compliance with applicable WQCC Reg 41 standards. Groundwater analytical results for the North Excavation and South Excavation are presented on Figures 5 and 6 and summarized in Tables 1 and 2, respectively. The laboratory analytical reports are included as the attachment.

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 April 2014.

FIGURES

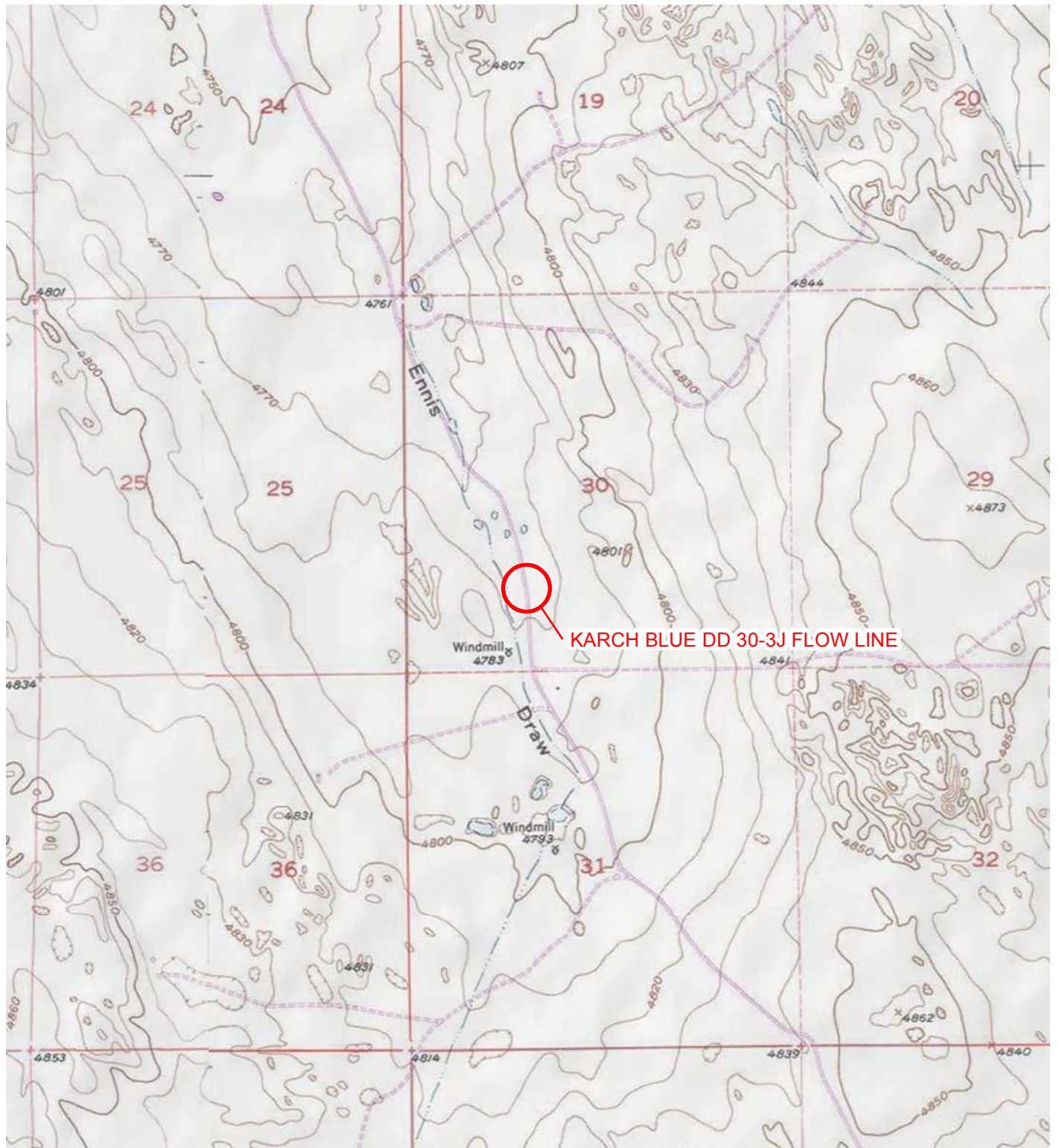


IMAGE COURTESY OF ESRI/USGS

LEGEND

 SITE LOCATION

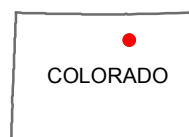
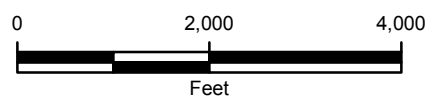


FIGURE 1
SITE LOCATION MAP
KARCH BLUE DD 30-3J FLOW LINE
NESW SEC 30 T3N-R63W
WELD COUNTY, COLORADO
NOBLE ENERGY, INC.





IMAGE COURTESY OF ESRI

LEGEND

 SITE LOCATION

0 500 1,000
Feet



FIGURE 2
SITE MAP
KARCH BLUE DD 30-3J FLOW LINE
NESW SEC 30 T3N-R63W
WELD COUNTY, COLORADO
NOBLE ENERGY, INC.





IMAGE COURTESY OF ESRI

LEGEND

- ⊗ MONITORING WELL
- ↑ CALCULATED GROUNDWATER FLOW DIRECTION
- RELATIVE GROUNDWATER ELEVATION CONTOUR
- CONTOUR INTERVAL = 0.25 FEET
- GRADIENT = 0.005 FEET/FOOT
- UNDERGROUND UTILITIES
- - - EXCAVATION EXTENT

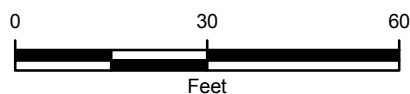


FIGURE 3
RELATIVE GROUNDWATER ELEVATION MAP - NORTH
KARCH BLUE DD 30-3J FLOW LINE
JANUARY 31, 2014
WELD COUNTY, COLORADO
NOBLE ENERGY, INC.



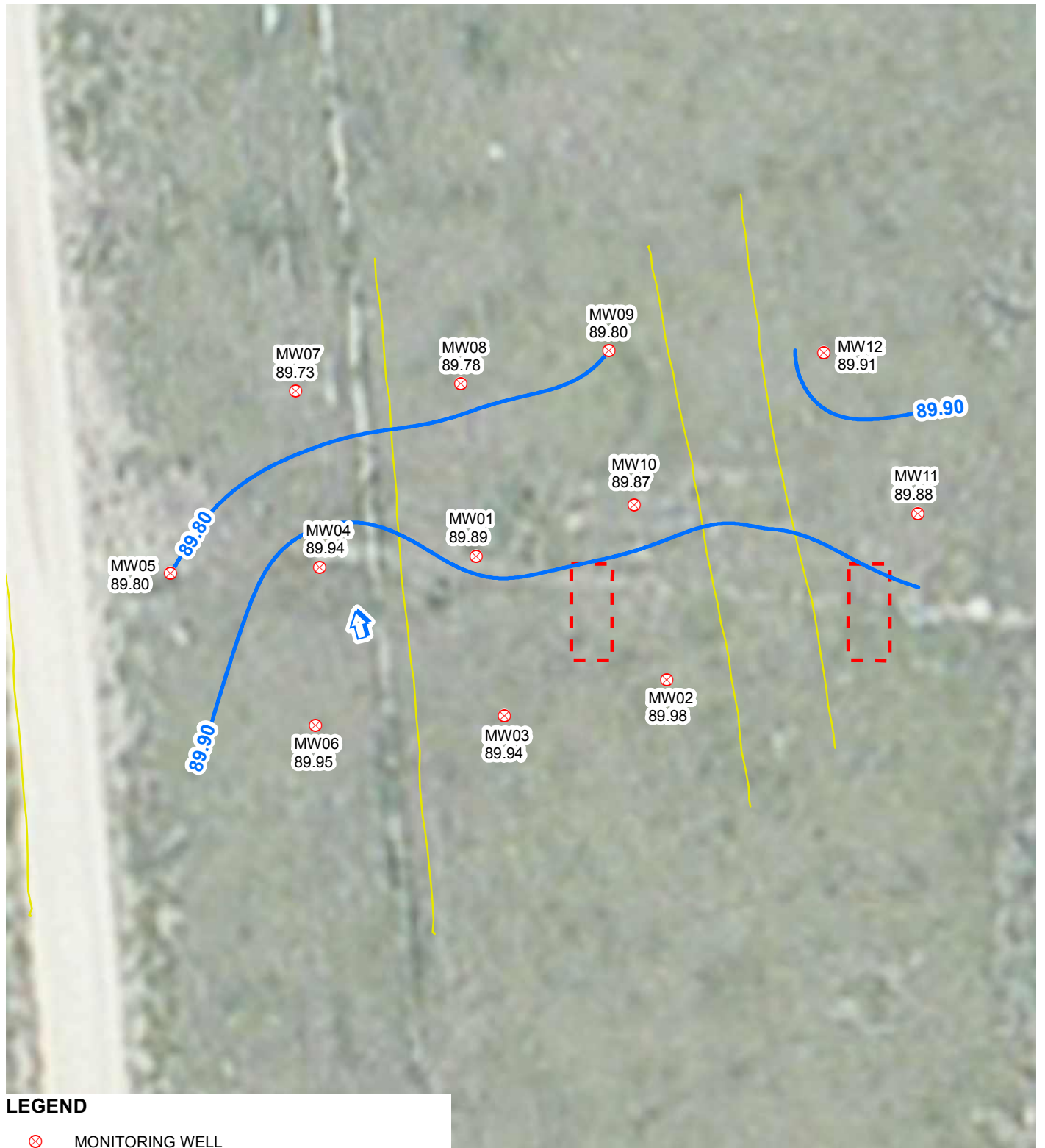


IMAGE COURTESY OF ESRI

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

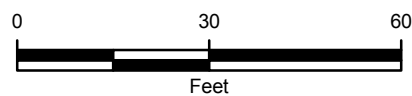


FIGURE 4
RELATIVE GROUNDWATER ELEVATION MAP - SOUTH
KARCH BLUE DD 30-3J FLOW LINE
JANUARY 30, 2014
WELD COUNTY, COLORADO
NOBLE ENERGY, INC.



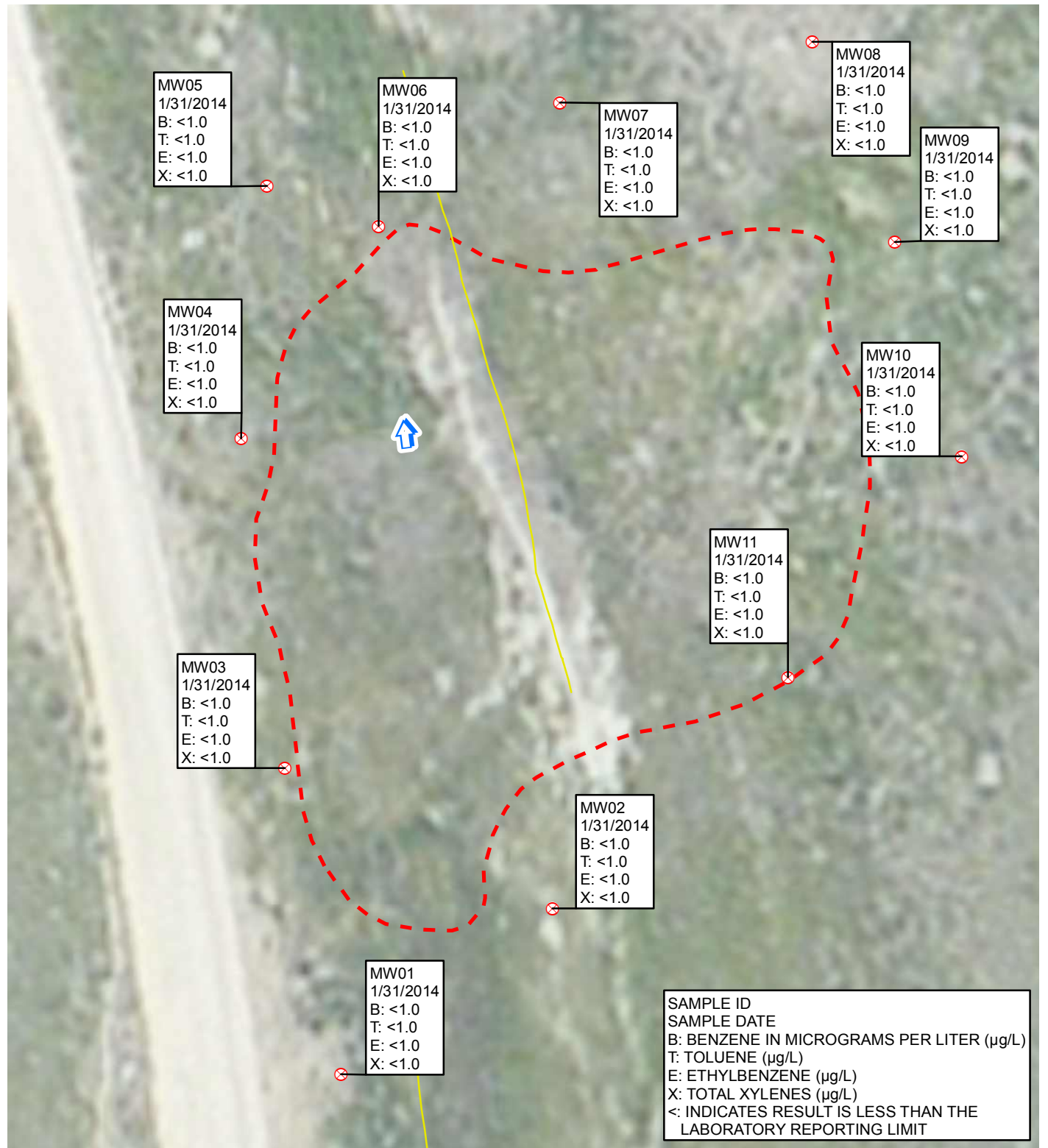


IMAGE COURTESY OF ESRI

LEGEND

- MONITORING WELL
- CALCULATED GROUNDWATER FLOW DIRECTION
- UNDERGROUND UTILITIES
- EXCAVATION EXTENT

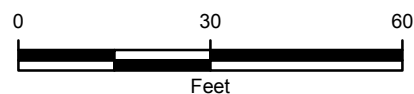
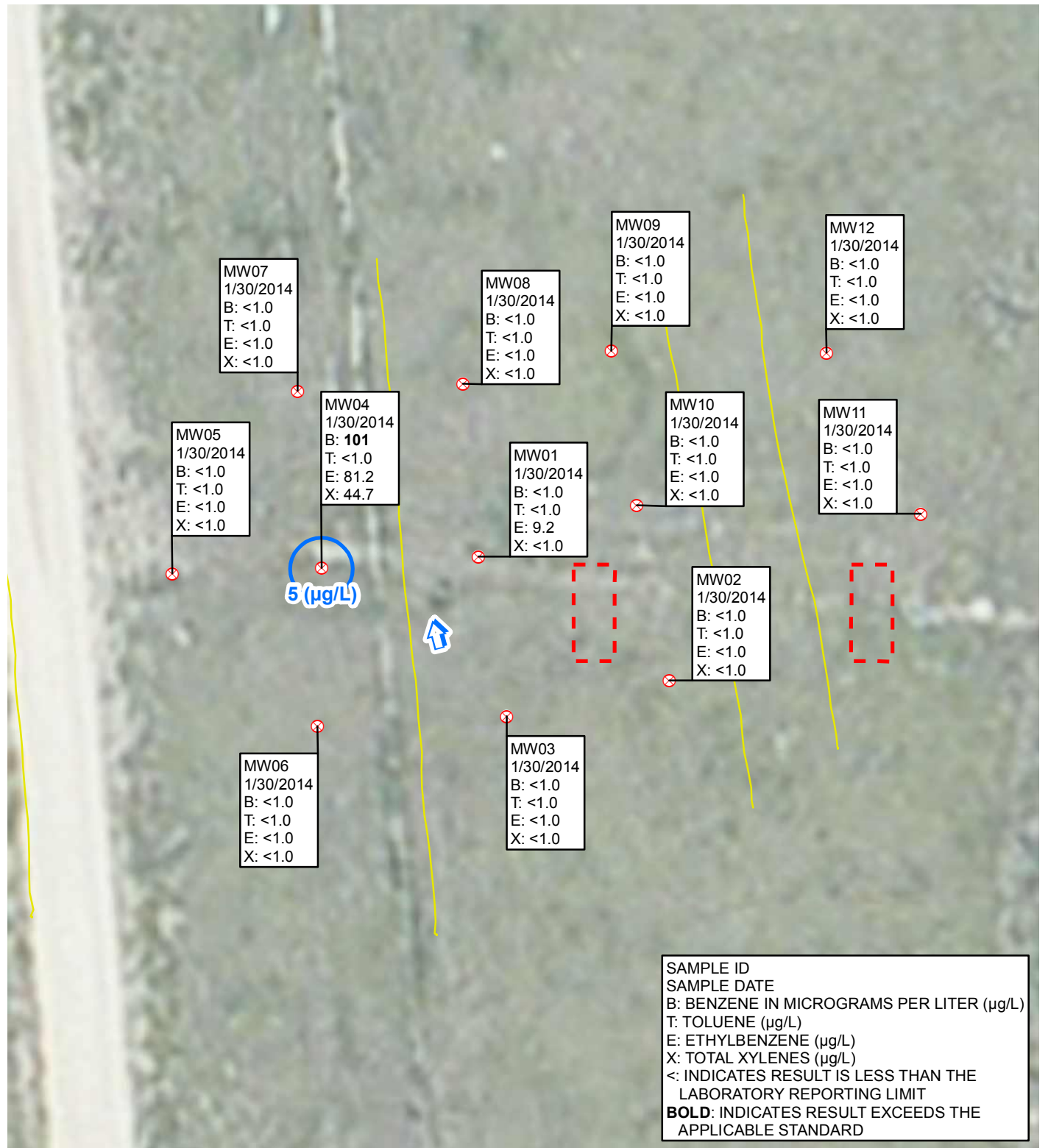


FIGURE 5
 GROUNDWATER ANALYTICAL RESULTS - NORTH
 KARCH BLUE DD 30-3J FLOW LINE
 WELD COUNTY, COLORADO

NOBLE ENERGY, INC.





LEGEND

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

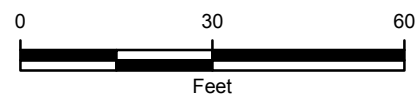


FIGURE 6
 GROUNDWATER ANALYTICAL RESULTS - SOUTH
 KARCH BLUE DD 30-3J FLOW LINE
 WELD COUNTY, COLORADO

NOBLE ENERGY, INC.



TABLES

TABLE 1

**GROUNDWATER ANALYTICAL RESULTS
KARCH BLUE 30-3J FLOWLINE - NORTH
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	4.10	90.84	<1.0	<1.0	<1.0	<1.0
	1/31/2014	4.56	90.38	<1.0	<1.0	<1.0	<1.0
MW02	10/15/2013	4.45	90.58	<1.0	<1.0	<1.0	<1.0
	1/31/2014	4.70	90.33	<1.0	<1.0	<1.0	<1.0
MW03	10/15/2013	4.45	90.49	<1.0	<1.0	<1.0	<1.0
	1/31/2014	4.85	90.09	<1.0	<1.0	<1.0	<1.0
MW04	10/15/2013	4.37	90.17	<1.0	<1.0	<1.0	<1.0
	1/31/2014	4.80	89.74	<1.0	<1.0	<1.0	<1.0
MW05	10/15/2013	5.00	89.90	<1.0	<1.0	<1.0	<1.0
	1/31/2014	5.40	89.50	<1.0	<1.0	<1.0	<1.0
MW06	10/15/2013	5.06	89.90	<1.0	<1.0	<1.0	<1.0
	1/31/2014	5.44	89.52	<1.0	<1.0	<1.0	<1.0
MW07	10/15/2013	5.15	89.81	<1.0	<1.0	<1.0	<1.0
	1/31/2014	5.50	89.46	<1.0	<1.0	<1.0	<1.0
MW08	10/15/2013	4.85	90.19	<1.0	<1.0	<1.0	<1.0
	1/31/2014	5.55	89.49	<1.0	<1.0	<1.0	<1.0
MW09	10/15/2013	5.00	90.20	<1.0	<1.0	<1.0	<1.0
	1/31/2014	5.55	89.65	<1.0	<1.0	<1.0	<1.0
MW10	10/15/2013	5.15	90.32	<1.0	<1.0	<1.0	<1.0
	1/31/2014	5.69	89.78	<1.0	<1.0	<1.0	<1.0
MW11	10/15/2013	4.76	90.50	<1.0	<1.0	<1.0	<1.0
	1/31/2014	5.29	89.97	<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

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

Regulation 41-The Basic Standards for Ground Water

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

TABLE 2

**GROUNDWATER ANALYTICAL RESULTS
KARCH BLUE 30-3J FLOWLINE - 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
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
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
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
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
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
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
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
MW09	10/15/2013	4.29	90.36	<1.0	<1.0	<1.0	<1.0
	1/30/2014	4.85	89.80	<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
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
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
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

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

Regulation 41-The Basic Standards for Ground Water

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

BOLD indicates result exceeds the applicable standard

ATTACHMENT
LABORATORY ANALYTICAL REPORTS



February 03, 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. January 30, 2014. This project is associated with Origins project number X401317-01.

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

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
MW02	X401317-01	Water	January 30, 2014 14:30	01/30/2014 17:00
MW03	X401317-02	Water	January 30, 2014 14:35	01/30/2014 17:00
MW05	X401317-03	Water	January 30, 2014 14:40	01/30/2014 17:00
MW06	X401317-04	Water	January 30, 2014 14:45	01/30/2014 17:00
MW07	X401317-05	Water	January 30, 2014 14:50	01/30/2014 17:00
MW08	X401317-06	Water	January 30, 2014 14:55	01/30/2014 17:00
MW09	X401317-07	Water	January 30, 2014 15:00	01/30/2014 17:00
MW10	X401317-08	Water	January 30, 2014 15:05	01/30/2014 17:00
MW12	X401317-09	Water	January 30, 2014 15:15	01/30/2014 17:00
MW11	X401317-10	Water	January 30, 2014 15:10	01/30/2014 17:00
MW01	X401317-11	Water	January 30, 2014 15:20	01/30/2014 17:00
MW04	X401317-12	Water	January 30, 2014 15:25	01/30/2014 17:00

Origins Laboratory, Inc.



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

Noelle 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

page 1 of 2

ORIGINS
LABORATORY, INC

Client: LT Environmental, Inc.
Address: 4600 W 60th Ave, Arvada, CO 80003
Telephone Number: 303.433.9788
Email Address: CROY@LTENV.COM

Project Manager: Chris Roy
Project Name: Karch Blue DD 30-3J (South)
Project Number: 008313054
Samples Collected By: Jayson 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		
MW02	1-30-14	1430	3	X					X			BTEX	Lab. Ref
MW03		1435	1										
MW05		1440	1										
MW06		1445	1										
MW07		1450	1										
MW08		1455	1										
MW09		1500	1										
MW10		1505	1										
MW12		1510	1										
MW11		1515	1										
Relinquished By:	Date:	Time:		Received By:	Date:	Time:		Relinquished By:	Date:	Time:			
	1/30/14	1700			1/30/14	1700							

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

Date Results Needed

Origins Laboratory, Inc.

Noelle Doyle Mathis

Noelle Doyle Mathis, 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.

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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: X401317

Client: LTE

Client Project ID: 008313054

Checklist Completed by: WJ

Shipped Via: P/U

(UPS, FedEx, Hand Delivered, Pick-up, etc.)

Date/time completed: 1/31/14 1104

Airbill #: _____

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

Cooler Number/Temperature: 12.7 °C / _____ °C / _____ °C / _____ °C

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 ⁽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)

07-03-14 1516
Date/Time Reviewed

Origins Laboratory, Inc.



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

Noelle 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)

MW02

1/30/2014 2:30:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc. X401317-01 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4A31007	01/31/2014	01/31/2014
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"
Surrogate: 1,2-Dichloroethane-d4	100 %	84-121			"	"	"
Surrogate: Toluene-d8	100 %	85-115			"	"	"
Surrogate: 4-Bromofluorobenzene	98.4 %	84-114			"	"	"

Origins Laboratory, Inc.



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

Noelle 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)

MW03

1/30/2014 2:35:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc. X401317-02 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4A31007	01/31/2014	01/31/2014
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	101 %	84-121			"	"	"
Surrogate: Toluene-d8	100 %	85-115			"	"	"
Surrogate: 4-Bromofluorobenzene	98.3 %	84-114			"	"	"

Origins Laboratory, Inc.



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

Noelle 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)

MW05

1/30/2014 2:40:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc. X401317-03 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4A31007	01/31/2014	01/31/2014
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"
Surrogate: 1,2-Dichloroethane-d4	99.4 %	84-121			"	"	"
Surrogate: Toluene-d8	100 %	85-115			"	"	"
Surrogate: 4-Bromofluorobenzene	97.1 %	84-114			"	"	"

Origins Laboratory, Inc.



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

Noelle 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)

MW06

1/30/2014 2:45:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc. X401317-04 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4A31007	01/31/2014	01/31/2014	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	102 %	84-121			"	"	"	
Surrogate: Toluene-d8	100 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	97.7 %	84-114			"	"	"	

Origins Laboratory, Inc.



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

Noelle 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)

MW07

1/30/2014 2:50:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X401317-05 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4A31007	01/31/2014	01/31/2014
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	101 %	84-121			"	"	"
Surrogate: Toluene-d8	101 %	85-115			"	"	"
Surrogate: 4-Bromofluorobenzene	98.6 %	84-114			"	"	"

Origins Laboratory, Inc.



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

Noelle 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)

MW08

1/30/2014 2:55:00PM

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Notes
		Limit							

Origins Laboratory, Inc.
X401317-06 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4A31007	01/31/2014	01/31/2014
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	102 %	84-121	"	"	"
Surrogate: Toluene-d8	101 %	85-115	"	"	"
Surrogate: 4-Bromofluorobenzene	97.4 %	84-114	"	"	"

Origins Laboratory, Inc.



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

Noelle 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)

MW09

1/30/2014 3:00:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc. X401317-07 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4A31007	01/31/2014	01/31/2014
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"
Surrogate: 1,2-Dichloroethane-d4	100 %	84-121			"	"	"
Surrogate: Toluene-d8	101 %	85-115			"	"	"
Surrogate: 4-Bromofluorobenzene	95.8 %	84-114			"	"	"

Origins Laboratory, Inc.



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

Noelle 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)

MW10

1/30/2014 3:05:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc. X401317-08 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4A31007	01/31/2014	01/31/2014
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"
Surrogate: 1,2-Dichloroethane-d4	101 %	84-121			"	"	"
Surrogate: Toluene-d8	101 %	85-115			"	"	"
Surrogate: 4-Bromofluorobenzene	97.5 %	84-114			"	"	"

Origins Laboratory, Inc.



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

Noelle 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)

MW12

1/30/2014 3:15:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc. X401317-09 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4A31007	01/31/2014	01/31/2014
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"
Surrogate: 1,2-Dichloroethane-d4	101 %	84-121			"	"	"
Surrogate: Toluene-d8	102 %	85-115			"	"	"
Surrogate: 4-Bromofluorobenzene	97.3 %	84-114			"	"	"

Origins Laboratory, Inc.



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

Noelle 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)

MW11

1/30/2014 3:10:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc. X401317-10 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4A31007	01/31/2014	01/31/2014
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"
Surrogate: 1,2-Dichloroethane-d4	103 %	84-121			"	"	"
Surrogate: Toluene-d8	102 %	85-115			"	"	"
Surrogate: 4-Bromofluorobenzene	96.1 %	84-114			"	"	"

Origins Laboratory, Inc.



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

Noelle 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)

MW01

1/30/2014 3:20:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc. X401317-11 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4A31007	01/31/2014	01/31/2014
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	9.22	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	88.0 %	84-121			"	"	"
Surrogate: Toluene-d8	99.3 %	85-115			"	"	"
Surrogate: 4-Bromofluorobenzene	94.4 %	84-114			"	"	"

Origins Laboratory, Inc.



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

Noelle 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)

MW04

1/30/2014 3:25:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc. X401317-12 (Water)

BTEX by EPA 8260C

Benzene	101	1.0	ug/L	1	4A31007	01/31/2014	01/31/2014
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	81.2	1.0	"	"	"	"	"
Xylenes, total	44.7	1.0	"	"	"	"	"
Surrogate: 1,2-Dichloroethane-d4	101 %	84-121			"	"	"
Surrogate: Toluene-d8	101 %	85-115			"	"	"
Surrogate: 4-Bromofluorobenzene	96.7 %	84-114			"	"	"

Origins Laboratory, Inc.



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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)

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 4A31007 - EPA 5030B (Water)

Blank (4A31007-BLK1)

Prepared: 01/31/2014 Analyzed: 01/31/2014

Benzene	ND	1.0	ug/L							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes, total	ND	1.0	"							
Surrogate: 1,2-Dichloroethane-d4	62		"	62.5	99.4		84-121			
Surrogate: Toluene-d8	63		"	62.5	100		85-115			
Surrogate: 4-Bromofluorobenzene	62		"	62.5	99.1		84-114			

Origins Laboratory, Inc.



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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)

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 4A31007 - EPA 5030B (Water)										
LCS (4A31007-BS1)					Prepared: 01/31/2014 Analyzed: 01/31/2014					
Benzene	45.5	1.0	ug/L	50.0		91.1	74-130			
Toluene	46.3	1.0	"	50.0		92.6	76-128			
Ethylbenzene	47.0	1.0	"	50.0		94.0	78-130			
m,p-Xylene	90.0	2.0	"	100		90.0	75-134			
o-Xylene	46.4	1.0	"	50.0		92.7	76-129			
Surrogate: 1,2-Dichloroethane-d4	58		"	62.5		93.4	84-121			
Surrogate: Toluene-d8	64		"	62.5		102	85-115			
Surrogate: 4-Bromofluorobenzene	61		"	62.5		98.3	84-114			

Origins Laboratory, Inc.



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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)

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 4A31007 - EPA 5030B (Water)

Matrix Spike (4A31007-MS1)		Source: X401306-07			Prepared: 01/31/2014 Analyzed: 01/31/2014					
Benzene	55.7	1.0	ug/L	50.0	ND	111	74-130			
Toluene	55.6	1.0	"	50.0	ND	111	73-131			
Ethylbenzene	57.1	1.0	"	50.0	ND	114	76-132			
m,p-Xylene	108	2.0	"	100	ND	108	69-139			
o-Xylene	55.9	1.0	"	50.0	ND	112	74-131			
Surrogate: 1,2-Dichloroethane-d4	57		"	62.5		90.8	84-121			
Surrogate: Toluene-d8	62		"	62.5		99.8	85-115			
Surrogate: 4-Bromofluorobenzene	61		"	62.5		97.4	84-114			

Origins Laboratory, Inc.



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

Noelle 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)

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 4A31007 - EPA 5030B (Water)										
Matrix Spike Dup (4A31007-MSD1)			Source: X401306-07		Prepared: 01/31/2014 Analyzed: 01/31/2014					
Benzene	47.1	1.0	ug/L	50.0	ND	94.3	74-130	16.7	20	
Toluene	46.9	1.0	"	50.0	ND	93.9	73-131	16.9	20	
Ethylbenzene	47.9	1.0	"	50.0	ND	95.9	76-132	17.5	20	
m,p-Xylene	91.6	2.0	"	100	ND	91.6	69-139	16.7	20	
o-Xylene	47.0	1.0	"	50.0	ND	94.0	74-131	17.3	20	
Surrogate: 1,2-Dichloroethane-d4	59		"	62.5		93.8	84-121			
Surrogate: Toluene-d8	63		"	62.5		101	85-115			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		99.1	84-114			

Origins Laboratory, Inc.



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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)

Notes and Definitions

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

Origins Laboratory, Inc.



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

Noelle Doyle Mathis, President



February 05, 2014

LT Environmental, Inc.

Chris Roy

4600 West 60th Avenue

Arvada

CO 80003

Project Name - Noble - Karch Blue 30-3J 14 North Project Number - 008313054

Attached are your analytical results for Noble - Karch Blue 30-3J 14 North received by Origins Laboratory, Inc. January 31, 2014. This project is associated with Origins project number X402002-01.

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

Chris Roy
Project Number: 008313054
Project: Noble - Karch Blue 30-3J 14 North

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW01	X402002-01	Water	January 31, 2014 11:10	01/31/2014 16:20
MW02	X402002-02	Water	January 31, 2014 11:15	01/31/2014 16:20
MW03	X402002-03	Water	January 31, 2014 11:20	01/31/2014 16:20
MW04	X402002-04	Water	January 31, 2014 11:30	01/31/2014 16:20
MW05	X402002-05	Water	January 31, 2014 11:35	01/31/2014 16:20
MW06	X402002-06	Water	January 31, 2014 11:40	01/31/2014 16:20
MW07	X402002-07	Water	January 31, 2014 11:50	01/31/2014 16:20
MW08	X402002-08	Water	January 31, 2014 12:00	01/31/2014 16:20
MW09	X402002-09	Water	January 31, 2014 12:05	01/31/2014 16:20
MW10	X402002-10	Water	January 31, 2014 12:10	01/31/2014 16:20
MW11	X402002-11	Water	January 31, 2014 12:20	01/31/2014 16:20

Origins Laboratory, Inc.



Noelle Doyle Mathis, 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: 008313054
Project: Noble - Karch Blue 30-3J 14 North

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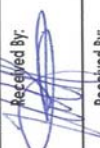

page 1 of 2

X402002

ORIGINS
LABORATORY, INC

Client: LT Environmental, Inc.
Address: 4600 W 60th Ave, Arvada, CO 80003
Telephone Number: 303.433.9788
Email Address: CROY@LTENV.COM

Project Manager: Chris Roy
Project Name: Karch Blue 30-3J 14 North
Project Number: 008313054
Samples Collected By: Kristen 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			
MW01	1-31-14	1110	3	X									X ₆	Lab filter
MW02		1115												
MW03		1120												
MW04		1130												
MW05		1135												
MW06		1140												
MW07		1150												
MW08		1200												
MW09		1205												
MW10		1210												
Relinquished By: 	Date: 1/31/14		Time: 	Received By: 		Date: 1/31/14	Time: 10:20	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"/>						
Relinquished By: 	Date:		Time:	Received By:		Date:	Time:							

Date Results Needed

Origins Laboratory, Inc.

Noelle Doyle Mathis

Noelle Doyle Mathis, 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: 008313054
Project: Noble - Karch Blue 30-3J 14 North

www.originslaboratory.com

page 2 of 2

X402002

ORIGINS
LABORATORY, INC

Client: LT Environmental, Inc.
Address: 4600 W 60th Ave, Arvada, CO 80003
Telephone Number: 303.433.9788
Email Address: CROY@LTENV.COM

Project Manager: Chris Roy
Project Name: Karch Blue 30-3J 14 North
Project Number: 008313054
Samples Collected By: Jackson Evangelista

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative				Matrix				Analysis	Sample Instructions	
				Unpreserved	HCl	HNO ₃	Other	Groundwater	Soil	Air Summa Continer #	Other			
MW11	1-31-14	1220	3	X									BTEX	Lab file
Refiniquished By: <i>[Signature]</i>	Date: 1/31/14	Time: 1620											Date: 1/31/14	Time: 1620
Refiniquished By: <i>[Signature]</i>	Date:	Time:											Date:	Time:

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

Date Results Needed

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

Origins Laboratory, Inc.

Noelle Doyle Mathis

Noelle Doyle Mathis, 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: 008313054
Project: Noble - Karch Blue 30-3J 14 North

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: X402007

Client: LTE

Client Project ID: 008313054 (Karch Blue 30-3J)

Checklist Completed by: MI

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

Date/time completed: 1/31/14 1645

Airbill #: _____

Matrix(s) Received: (Check all that apply): _____ Soil/Solid X Water _____ Other: _____ (Describe)

Cooler Number/Temperature: _____ / 1.6 °C _____ / _____ °C _____ / _____ °C _____ / _____ °C

Thermometer ID: 7002

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 6°C ⁽¹⁾ ?	<u>X</u>			
Is there ice present (document if blue ice is used)	<u>X</u>			
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)		<u>X</u>		
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)		<u>X</u>		
Were all samples received intact ⁽¹⁾ ?	<u>X</u>			
Was adequate sample volume provided ⁽¹⁾ ?	<u>X</u>			
Are short holding time analytes or samples with HTs due within 48 hours present ⁽¹⁾ ?		<u>X</u>		
Is a chain-of-custody (COC) present and filled out completely ⁽¹⁾ ?	<u>X</u>	<u>X</u>		<u>No Matrix I.D.</u>
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<u>X</u>			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<u>X</u>			
Is the COC properly relinquished by the client with date and time recorded ⁽¹⁾ ?	<u>X</u>			
For volatiles in water – is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative.		<u>X</u>		
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)		<u>X</u>		
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)

2/5/14 10:18
Date/Time Reviewed

Origins Laboratory, Inc.



Noelle Doyle Mathis, 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: 008313054
Project: Noble - Karch Blue 30-3J 14 North

MW01

1/31/2014 11:10:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X402002-01 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4B04006	02/04/2014	02/04/2014
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	104 %	84-121	"	"	"
Surrogate: Toluene-d8	103 %	85-115	"	"	"
Surrogate: 4-Bromofluorobenzene	95.3 %	84-114	"	"	"

Origins Laboratory, Inc.



Noelle Doyle Mathis, President

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

Chris Roy
Project Number: 008313054
Project: Noble - Karch Blue 30-3J 14 North

MW02

1/31/2014 11:15:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X402002-02 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4B04006	02/04/2014	02/04/2014
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4
Surrogate: Toluene-d8
Surrogate: 4-Bromofluorobenzene

104 % 84-121
103 % 85-115
95.1 % 84-114

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Origins Laboratory, Inc.



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Noelle Doyle Mathis, President

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

Chris Roy
Project Number: 008313054
Project: Noble - Karch Blue 30-3J 14 North

MW03

1/31/2014 11:20:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X402002-03 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4B04006	02/04/2014	02/04/2014
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4
Surrogate: Toluene-d8
Surrogate: 4-Bromofluorobenzene

104 % 84-121
100 % 85-115
95.5 % 84-114

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Origins Laboratory, Inc.



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Noelle Doyle Mathis, President

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

Chris Roy
Project Number: 008313054
Project: Noble - Karch Blue 30-3J 14 North

MW04

1/31/2014 11:30:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X402002-04 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4B04006	02/04/2014	02/04/2014
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4
Surrogate: Toluene-d8
Surrogate: 4-Bromofluorobenzene

101 % 84-121
102 % 85-115
96.9 % 84-114

" " "
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" " "

Origins Laboratory, Inc.



Noelle Doyle Mathis, President

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

Chris Roy
Project Number: 008313054
Project: Noble - Karch Blue 30-3J 14 North

MW05

1/31/2014 11:35:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X402002-05 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4B04006	02/04/2014	02/04/2014
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4
Surrogate: Toluene-d8
Surrogate: 4-Bromofluorobenzene

102 % 84-121
100 % 85-115
94.8 % 84-114

" " "
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Origins Laboratory, Inc.



Noelle Doyle Mathis, President

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

Chris Roy
Project Number: 008313054
Project: Noble - Karch Blue 30-3J 14 North

MW06

1/31/2014 11:40:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X402002-06 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4B04006	02/04/2014	02/04/2014
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4
Surrogate: Toluene-d8
Surrogate: 4-Bromofluorobenzene

101 % 84-121
101 % 85-115
98.4 % 84-114

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Origins Laboratory, Inc.



Noelle Doyle Mathis, President

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

Chris Roy
Project Number: 008313054
Project: Noble - Karch Blue 30-3J 14 North

MW07

1/31/2014 11:50:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X402002-07 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4B04006	02/04/2014	02/04/2014
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	103 %	84-121	"	"	"
Surrogate: Toluene-d8	101 %	85-115	"	"	"
Surrogate: 4-Bromofluorobenzene	95.2 %	84-114	"	"	"

Origins Laboratory, Inc.



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

Chris Roy
Project Number: 008313054
Project: Noble - Karch Blue 30-3J 14 North

MW08

1/31/2014 12:00:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X402002-08 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4B04006	02/04/2014	02/04/2014
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	104 %	84-121	"	"	"
Surrogate: Toluene-d8	101 %	85-115	"	"	"
Surrogate: 4-Bromofluorobenzene	95.7 %	84-114	"	"	"

Origins Laboratory, Inc.



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

Chris Roy
Project Number: 008313054
Project: Noble - Karch Blue 30-3J 14 North

MW09

1/31/2014 12:05:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X402002-09 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4B04006	02/04/2014	02/04/2014
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4
Surrogate: Toluene-d8
Surrogate: 4-Bromofluorobenzene

103 % 84-121
101 % 85-115
96.0 % 84-114

" " "
" " "
" " "

Origins Laboratory, Inc.



Noelle Doyle Mathis, President

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

Chris Roy
Project Number: 008313054
Project: Noble - Karch Blue 30-3J 14 North

MW10
1/31/2014 12:10:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X402002-10 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4B04006	02/04/2014	02/04/2014
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4
Surrogate: Toluene-d8
Surrogate: 4-Bromofluorobenzene

104 % 84-121
101 % 85-115
95.9 % 84-114

" " "
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Origins Laboratory, Inc.



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Noelle Doyle Mathis, President

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

Chris Roy
Project Number: 008313054
Project: Noble - Karch Blue 30-3J 14 North

MW11

1/31/2014 12:20:00PM

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Notes
		Limit							

Origins Laboratory, Inc.
X402002-11 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4B04006	02/04/2014	02/04/2014
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	102 %	84-121	"	"	"
Surrogate: Toluene-d8	101 %	85-115	"	"	"
Surrogate: 4-Bromofluorobenzene	94.9 %	84-114	"	"	"

Origins Laboratory, Inc.



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

Chris Roy
Project Number: 008313054
Project: Noble - Karch Blue 30-3J 14 North

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 4B04006 - EPA 5030B (Water)

Blank (4B04006-BLK1)

Prepared: 02/04/2014 Analyzed: 02/04/2014

Benzene	ND	1.0	ug/L							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes, total	ND	1.0	"							
Surrogate: 1,2-Dichloroethane-d4	64		"	62.5	102		84-121			
Surrogate: Toluene-d8	63		"	62.5	101		85-115			
Surrogate: 4-Bromofluorobenzene	61		"	62.5	97.9		84-114			

Origins Laboratory, Inc.



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Noelle Doyle Mathis, President

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

Chris Roy
Project Number: 008313054
Project: Noble - Karch Blue 30-3J 14 North

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 4B04006 - EPA 5030B (Water)										
LCS (4B04006-BS1)					Prepared: 02/04/2014 Analyzed: 02/04/2014					
Benzene	47.8	1.0	ug/L	50.0		95.6	74-130			
Toluene	47.6	1.0	"	50.0		95.2	76-128			
Ethylbenzene	49.2	1.0	"	50.0		98.4	78-130			
m,p-Xylene	94.1	2.0	"	100		94.1	75-134			
o-Xylene	47.6	1.0	"	50.0		95.3	76-129			
Surrogate: 1,2-Dichloroethane-d4	60		"	62.5		96.7	84-121			
Surrogate: Toluene-d8	64		"	62.5		102	85-115			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		98.7	84-114			

Origins Laboratory, Inc.



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Noelle Doyle Mathis, President

LT Environmental, Inc.

4600 West 60th Avenue

Arvada CO 80003

Chris Roy

Project Number: 008313054

Project: Noble - Karch Blue 30-3J 14 North

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 4B04006 - EPA 5030B (Water)

Matrix Spike (4B04006-MS1)		Source: X402002-01			Prepared: 02/04/2014 Analyzed: 02/04/2014					
Benzene	48.3	1.0	ug/L	50.0	ND	96.6	74-130			
Toluene	49.3	1.0	"	50.0	ND	98.6	73-131			
Ethylbenzene	49.8	1.0	"	50.0	ND	99.7	76-132			
m,p-Xylene	95.5	2.0	"	100	ND	95.5	69-139			
o-Xylene	48.2	1.0	"	50.0	ND	96.4	74-131			
Surrogate: 1,2-Dichloroethane-d4	60		"	62.5		95.8	84-121			
Surrogate: Toluene-d8	64		"	62.5		103	85-115			
Surrogate: 4-Bromofluorobenzene	61		"	62.5		97.5	84-114			

Origins Laboratory, Inc.



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Noelle Doyle Mathis, President

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

Chris Roy
Project Number: 008313054
Project: Noble - Karch Blue 30-3J 14 North

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 4B04006 - EPA 5030B (Water)

Matrix Spike Dup (4B04006-MSD1)		Source: X402002-01			Prepared: 02/04/2014 Analyzed: 02/04/2014					
Benzene	52.9	1.0	ug/L	50.0	ND	106	74-130	9.11	20	
Toluene	52.3	1.0	"	50.0	ND	105	73-131	5.88	20	
Ethylbenzene	54.4	1.0	"	50.0	ND	109	76-132	8.71	20	
m,p-Xylene	103	2.0	"	100	ND	103	69-139	8.02	20	
o-Xylene	52.6	1.0	"	50.0	ND	105	74-131	8.81	20	
Surrogate: 1,2-Dichloroethane-d4	58		"	62.5		92.5	84-121			
Surrogate: Toluene-d8	63		"	62.5		101	85-115			
Surrogate: 4-Bromofluorobenzene	60		"	62.5		95.6	84-114			

Origins Laboratory, Inc.



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LT Environmental, Inc.

4600 West 60th Avenue

Arvada CO 80003

Chris Roy

Project Number: 008313054

Project: Noble - Karch Blue 30-3J 14 North

Notes and Definitions

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

Origins Laboratory, Inc.



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