



GROUNDWATER MONITORING REPORT APRIL 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 County, 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 groundwater monitoring wells.

Groundwater samples from monitoring wells MW01 through MW11 in the North Excavation were collected on April 29 and May 30, 2014. Groundwater samples from monitoring wells MW01 through MW12 in the South Excavation were collected on April 30, 2014. Prior to purging, depth to groundwater was measured and recorded for calculating well-specific target purge volumes and relative groundwater elevations. During the monitoring event, depth to groundwater at the North Excavation ranged from 3.60 feet below top of casing (btoc) in monitoring well MW01 to 4.80 feet btoc in monitoring well MW08. Depth to groundwater at the South Excavation ranged from 3.65 feet btoc in monitoring well MW02 to 4.61 feet btoc in monitoring well MW07. 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 0.010 feet per foot. The relative groundwater elevations for the North Excavation and the South Excavation are presented on Figures 3 and 4, respectively. 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 for the North Excavation indicated BTEX concentrations are in compliance with applicable WQCC Reg 41 standards. Laboratory groundwater analytical results for the South Excavation indicated that monitoring well MW04 exceeded WQCC Reg 41 for benzene at a concentration of 102 $\mu\text{g/L}$. All other analytes from groundwater collected at the MW04 location 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 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 July 2014.

FIGURES

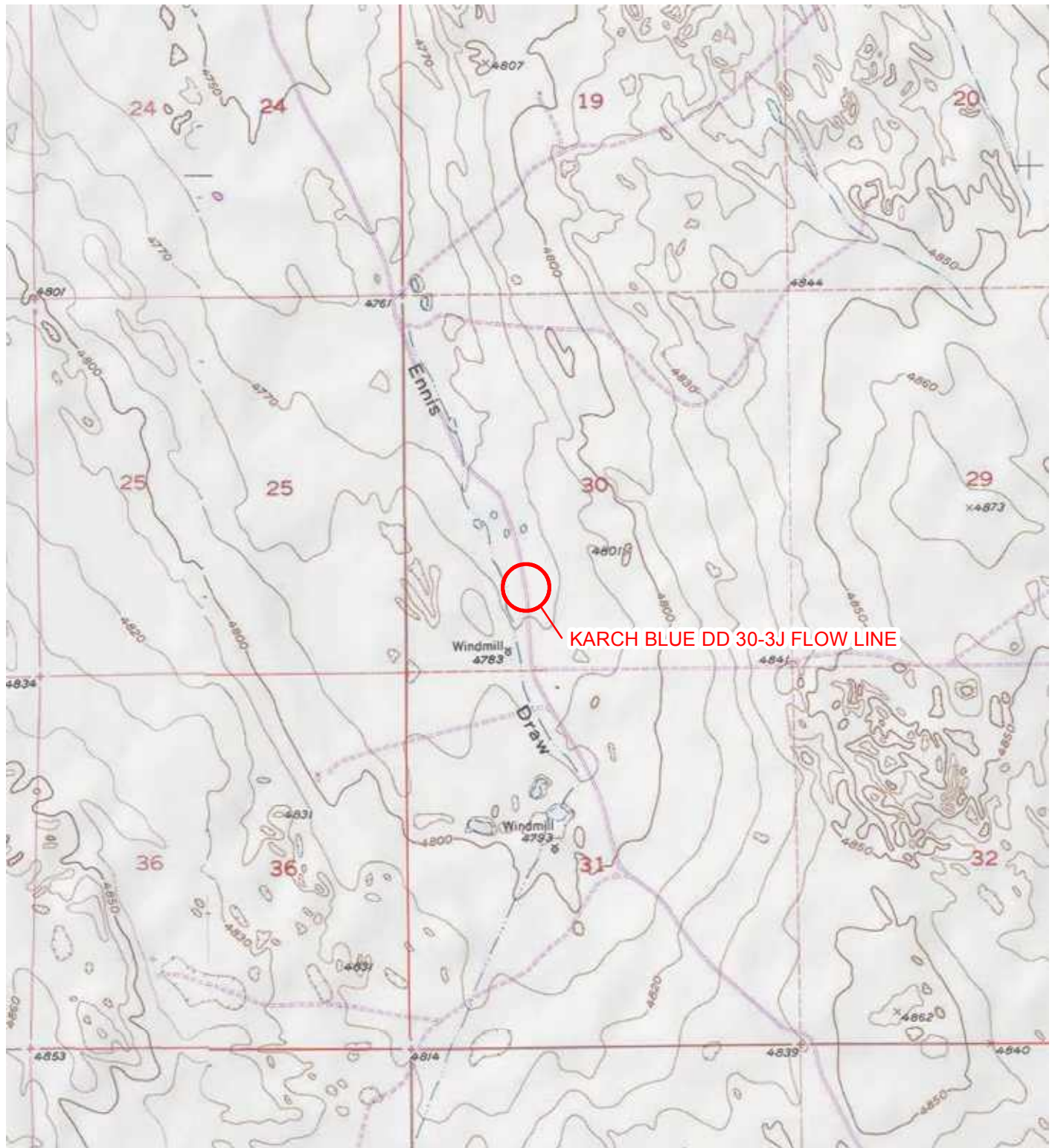


IMAGE COURTESY OF ESRI/USGS

LEGEND

○ SITE LOCATION

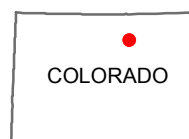
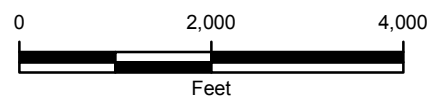


FIGURE 1
SITE LOCATION MAP
KARCH BLUE DD 30-3J FLOW LINE
WELD COUNTY, COLORADO

NOBLE ENERGY, INC.





IMAGE COURTESY OF ESRI

LEGEND

 SITE LOCATION

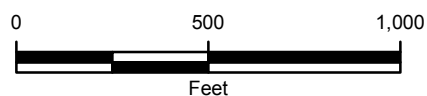
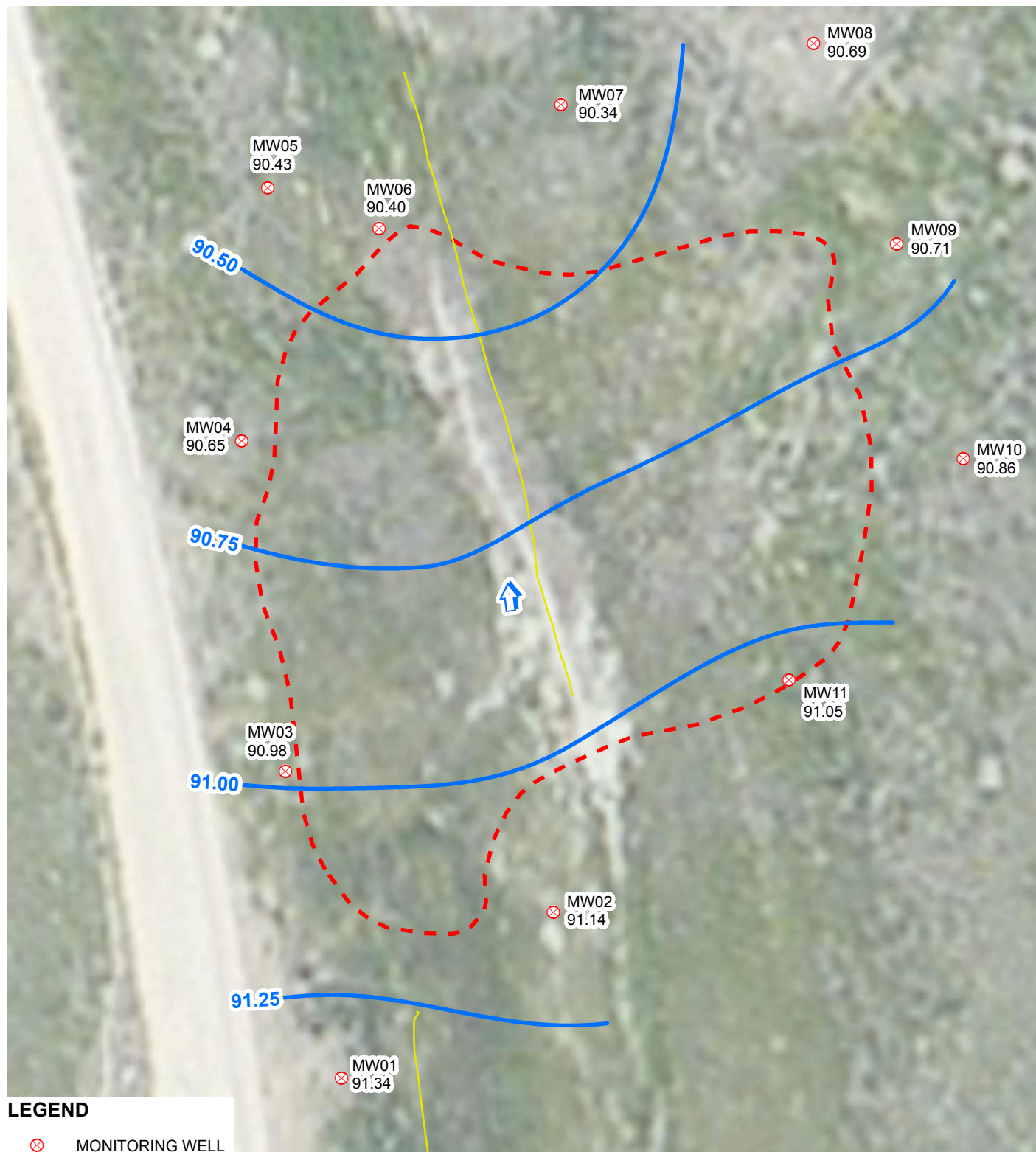


FIGURE 2
SITE MAP
KARCH BLUE DD 30-3J FLOW LINE
WELD COUNTY, COLORADO

NOBLE ENERGY, INC.





LEGEND

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

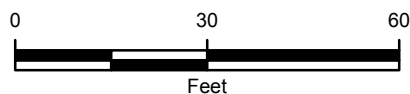


IMAGE COURTESY OF ESRI

FIGURE 3
RELATIVE GROUNDWATER ELEVATION MAP - NORTH
KARCH BLUE DD 30-3J FLOW LINE
APRIL 29, 2014
WELD COUNTY, COLORADO
NOBLE ENERGY, INC.



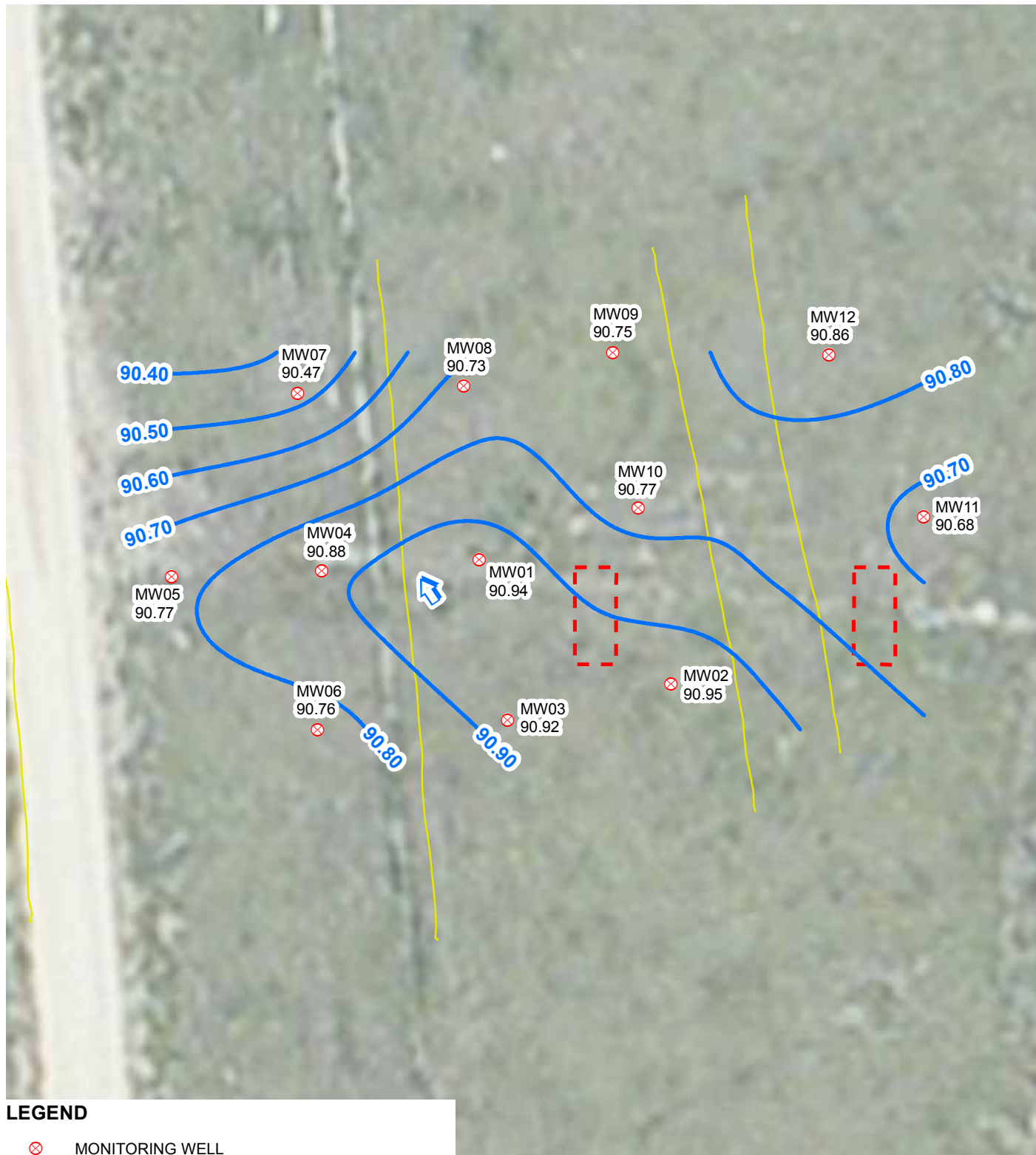


IMAGE COURTESY OF ESRI

LEGEND

- MONITORING WELL
- CALCULATED GROUNDWATER FLOW DIRECTION
- RELATIVE GROUNDWATER ELEVATION CONTOUR
- CONTOUR INTERVAL = 0.10 FEET
- GRADIENT = 0.010 FEET/FOOT
- UNDERGROUND UTILITIES
- EXCAVATION EXTENT

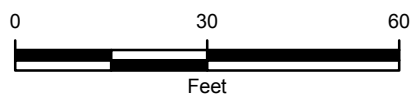


FIGURE 4
RELATIVE GROUNDWATER ELEVATION MAP - SOUTH
KARCH BLUE DD 30-3J FLOW LINE
APRIL 30, 2014
WELD COUNTY, COLORADO
NOBLE ENERGY, INC.



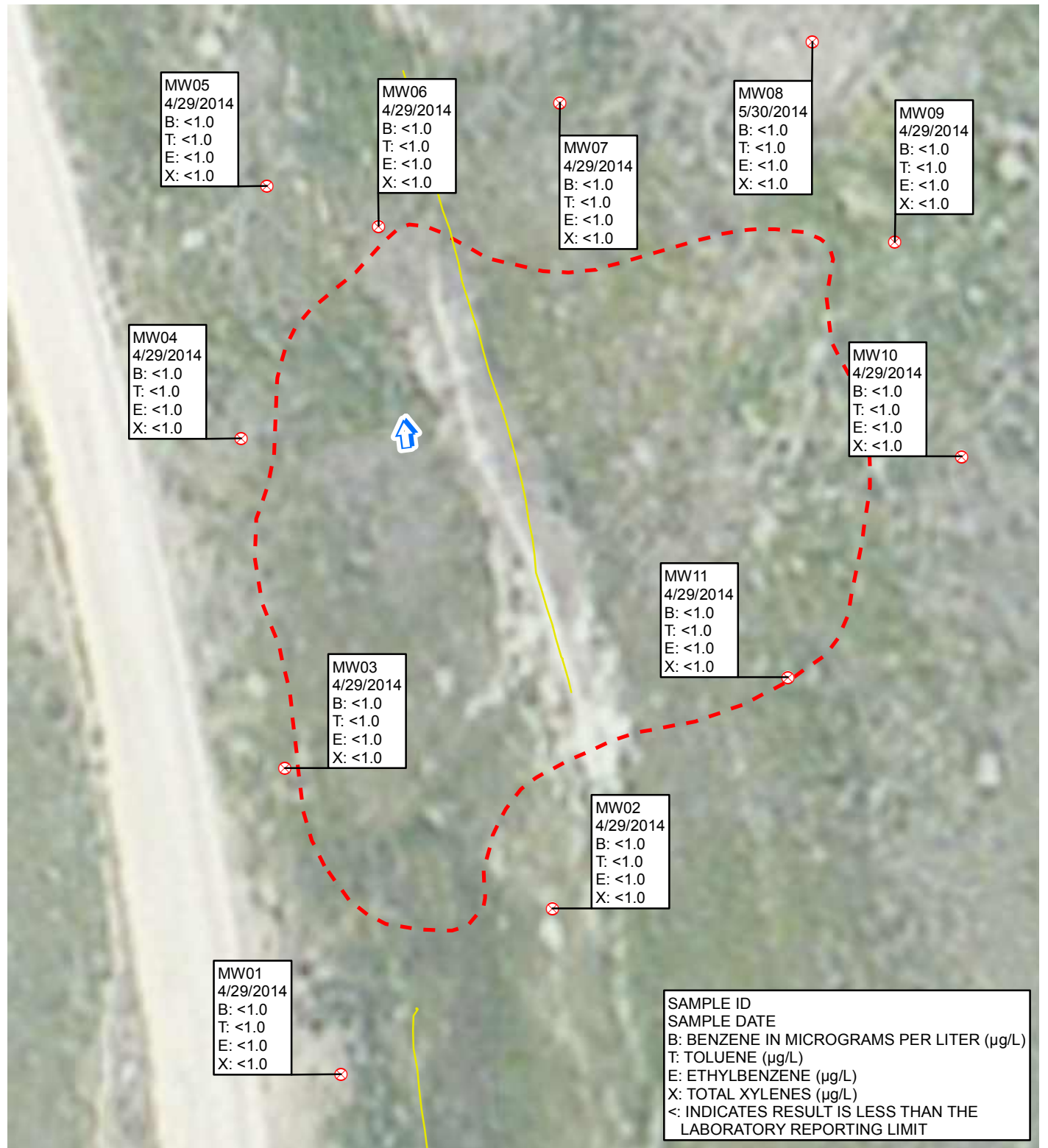


IMAGE COURTESY OF ESRI

LEGEND

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

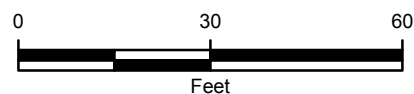


FIGURE 5
 GROUNDWATER ANALYTICAL RESULTS - NORTH
 KARCH BLUE DD 30-3J FLOW LINE
 WELD COUNTY, COLORADO

NOBLE ENERGY, INC.



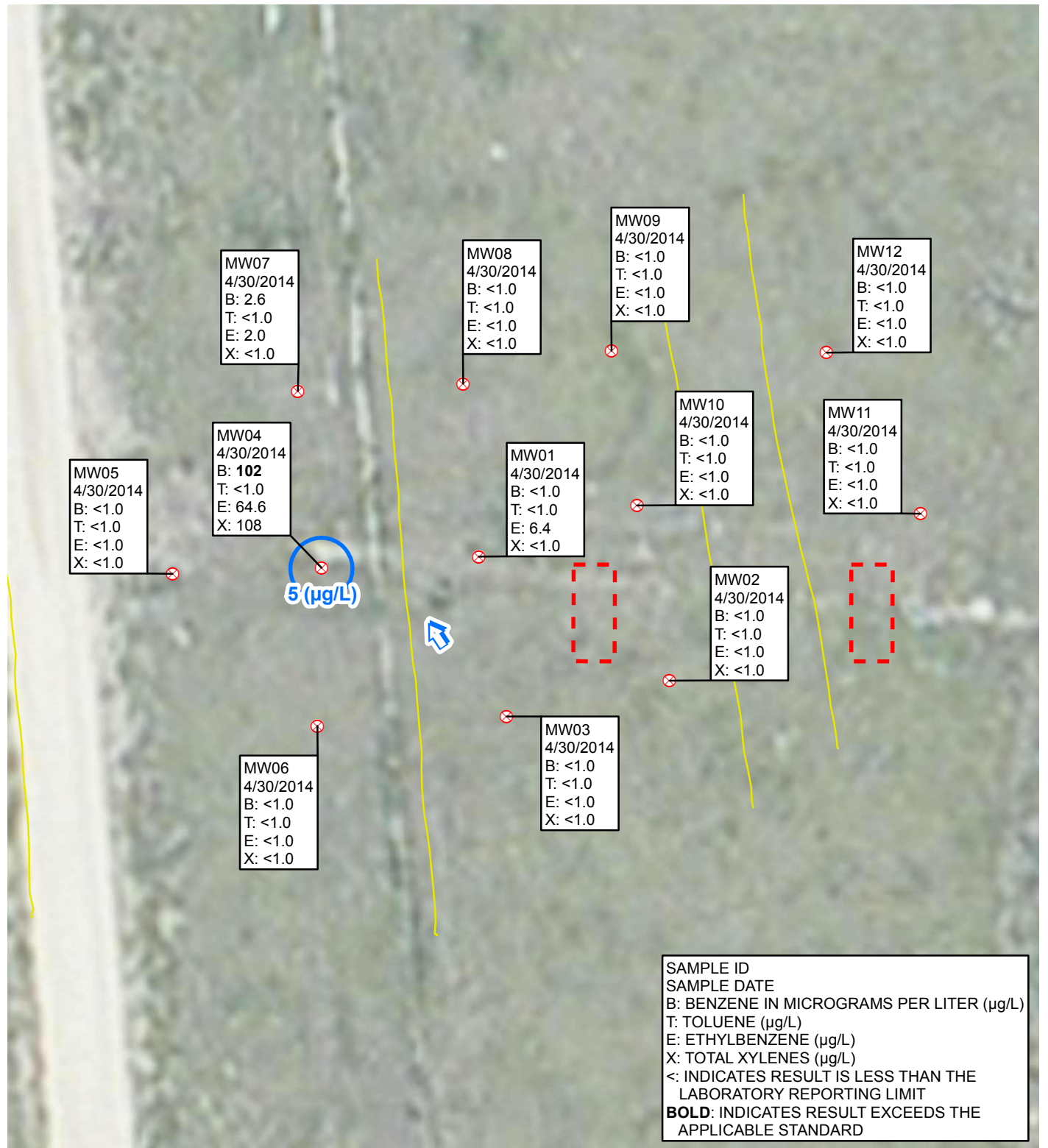


FIGURE 6
GROUNDWATER ANALYTICAL RESULTS - SOUTH
KARCH BLUE DD 30-3J FLOW LINE
WELD COUNTY, COLORADO

NOBLE ENERGY, INC.



TABLES

TABLE 1

GROUNDWATER ANALYTICAL RESULTS
KARCH BLUE DD 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
	4/29/2014	3.60	91.34	<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
	4/29/2014	3.89	91.14	<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
	4/29/2014	3.96	90.98	<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
	4/29/2014	3.89	90.65	<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
	4/29/2014	4.47	90.43	<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
	4/29/2014	4.56	90.40	<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
	4/29/2014	4.62	90.34	<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
	4/29/2014	4.35	90.69	No Sample - Filled with silt			<1.0
	5/30/2014	4.80	90.24	<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
	4/29/2014	4.49	90.71	<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
	4/29/2014	4.61	90.86	<1.0	<1.0	<1.0	<1.0

TABLE 1 (Continued)

**GROUNDWATER ANALYTICAL RESULTS
KARCH BLUE DD 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)
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
	4/29/2014	4.21	91.05	<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

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

Regulation 41-The Basic Standards for Ground Water

TABLE 2

**GROUNDWATER ANALYTICAL RESULTS
KARCH BLUE DD 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
	4/30/2014	3.90	90.94	<1.0	<1.0	6.4	<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
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
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
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
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
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
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
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
	4/30/2014	3.90	90.75	<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

TABLE 2 (Continued)

**GROUNDWATER ANALYTICAL RESULTS
KARCH BLUE DD 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)
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
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
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 REPORTS



May 01, 2014

LT Environmental, Inc.

Charles Greeson

4600 West 60th Avenue

Arvada

CO 80003

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

Project Number - 008313054

Attached are your analytical results for Noble - Karch Blue DD 30-3J (North) received by Origins Laboratory, Inc. April 29, 2014. This project is associated with Origins project number X404284-01.

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

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

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

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

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

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



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

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

Charles Greeson
Project Number: 008313054
Project: Noble - Karch Blue DD 30-3J (North)

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW01	X404284-01	Water	April 29, 2014 12:20	04/29/2014 15:05
MW02	X404284-02	Water	April 29, 2014 12:25	04/29/2014 15:05
MW03	X404284-03	Water	April 29, 2014 12:30	04/29/2014 15:05
MW04	X404284-04	Water	April 29, 2014 12:35	04/29/2014 15:05
MW05	X404284-05	Water	April 29, 2014 12:40	04/29/2014 15:05
MW06	X404284-06	Water	April 29, 2014 12:50	04/29/2014 15:05
MW07	X404284-07	Water	April 29, 2014 12:55	04/29/2014 15:05
MW09	X404284-08	Water	April 29, 2014 13:05	04/29/2014 15:05
MW10	X404284-09	Water	April 29, 2014 13:10	04/29/2014 15:05
MW11	X404284-10	Water	April 29, 2014 13:15	04/29/2014 15:05

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

Charles Greeson
Project Number: 008313054
Project: Noble - Karch Blue DD 30-3J (North)

www.originslaboratory.com

page 1 of 1

ORIGINS LABORATORY, INC

Client: LTE

Address: 4600 W. 60th Ave.

Arvada CO

Telephone Number: 303-433-9788

Project Manager/Send Report To: Charles Greeson

Email Address: C.greeson@ltenv.com

Project Name/Number: #008313054

Karch Blue DD 30-3J (North)

Samples Collected By: Ryan Kutzler

Fax: 303.265.9645 | Phone: 303.433.1322 | Denver, CO 80211

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative	Matrix	Analysis/Method	Sample Instructions
MW01	4/29/14	1220	3	Unpreserved	Soil	BTEX	1
MW02		1225	3	Unpreserved	Soil		2
MW03		1230	3	Unpreserved	Soil		3
MW04		1235	3	Unpreserved	Soil		4
MW05		1240	3	Unpreserved	Soil		5
MW06		1250	3	Unpreserved	Soil		6
MW07		1255	3	Unpreserved	Soil		7
MW09		1305	3	Unpreserved	Soil		8
MW10		1310	3	Unpreserved	Soil		9
MW11		1315	3	Unpreserved	Soil		10
Relinquished By: <u>[Signature]</u>	Date: <u>4/29/14</u>	Time: <u>15:15</u>	Received By: <u>[Signature]</u>	Date: <u>4/29/14</u>	Time: <u>1505</u>	Turnaround Time: Same Day <input type="checkbox"/> 24 Hr <input type="checkbox"/> 48 Hr <input type="checkbox"/> Standard <input checked="" type="checkbox"/>	
Relinquished By: <u>[Signature]</u>	Date: <u>4/29/14</u>	Time: <u>15:15</u>	Received By: <u>[Signature]</u>	Date: <u>4/29/14</u>	Time: <u>1505</u>		

Date Recult Standard

Comments:

Origins Laboratory, Inc.

[Signature]

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

Charles Greeson
Project Number: 008313054
Project: Noble - Karch Blue DD 30-3J (North)

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: X404284

Client: LTE

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

Checklist Completed by: Jesse Smith

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

Date/time completed: 4/29/14 1511

Airbill #: N/A

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

Cooler Number/Temperature: 11.0 °C 11.0 °C 11.0 °C 11.0 °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 ⁽¹⁾ ?		X		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 ⁽¹⁾ ?	X			
Was adequate sample volume provided ⁽¹⁾ ?	X			
Are short holding time analytes or samples with HTs due within 48 hours present ⁽¹⁾ ?		X		
Is a chain-of-custody (COC) present and filled out completely ⁽¹⁾ ?	X			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	X			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	X			
Is the COC properly relinquished by the client with date and time recorded ⁽¹⁾ ?	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 ⁽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)		X		Samples will be analyzed within 7 Days of Collection
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.

[Signature]
Reviewed by (Project Manager)

4/30/14 11:39
Date/Time Reviewed

Origins Laboratory, Inc.

[Signature]

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

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

Charles Greeson
Project Number: 008313054
Project: Noble - Karch Blue DD 30-3J (North)

MW01

4/29/2014 12:20:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X404284-01 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4D29006	04/29/2014	04/30/2014
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	106 %	87.3-113	"	"	"
Surrogate: Toluene-d8	103 %	90.9-108	"	"	"
Surrogate: 4-Bromofluorobenzene	93.8 %	88.6-111	"	"	"

Origins Laboratory, Inc.



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Noelle Doyle Mathis, President

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

Charles Greeson
Project Number: 008313054
Project: Noble - Karch Blue DD 30-3J (North)

MW02

4/29/2014 12:25:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X404284-02 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4D29006	04/29/2014	04/30/2014
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	102 %	90.9-108	"	"	"
Surrogate: 4-Bromofluorobenzene	95.4 %	88.6-111	"	"	"

Origins Laboratory, Inc.



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Noelle Doyle Mathis, President

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

Charles Greeson
Project Number: 008313054
Project: Noble - Karch Blue DD 30-3J (North)

MW03

4/29/2014 12:30:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X404284-03 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4D29006	04/29/2014	04/30/2014
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	103 %	90.9-108	"	"	"
Surrogate: 4-Bromofluorobenzene	96.0 %	88.6-111	"	"	"

Origins Laboratory, Inc.



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Noelle Doyle Mathis, President

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

Charles Greeson
Project Number: 008313054
Project: Noble - Karch Blue DD 30-3J (North)

MW04

4/29/2014 12:35:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X404284-04 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4D29006	04/29/2014	04/30/2014
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 % 87.3-113
103 % 90.9-108
96.1 % 88.6-111

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Origins Laboratory, Inc.



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

Charles Greeson
Project Number: 008313054
Project: Noble - Karch Blue DD 30-3J (North)

MW05

4/29/2014 12:40:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X404284-05 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4D29006	04/29/2014	04/30/2014
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

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

105 % 87.3-113
103 % 90.9-108
94.5 % 88.6-111

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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

Charles Greeson
Project Number: 008313054
Project: Noble - Karch Blue DD 30-3J (North)

MW06

4/29/2014 12:50:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X404284-06 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4D29006	04/29/2014	04/30/2014
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

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

105 % 87.3-113
103 % 90.9-108
94.4 % 88.6-111

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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

Charles Greeson
Project Number: 008313054
Project: Noble - Karch Blue DD 30-3J (North)

MW07

4/29/2014 12:55:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X404284-07 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4D29006	04/29/2014	04/30/2014
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	106 %	87.3-113	"	"	"
Surrogate: Toluene-d8	102 %	90.9-108	"	"	"
Surrogate: 4-Bromofluorobenzene	94.3 %	88.6-111	"	"	"

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Noelle Doyle Mathis, President

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

Charles Greeson
Project Number: 008313054
Project: Noble - Karch Blue DD 30-3J (North)

MW09

4/29/2014 1:05:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X404284-08 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4D29006	04/29/2014	04/30/2014
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	104 %	90.9-108	"	"	"
Surrogate: 4-Bromofluorobenzene	95.6 %	88.6-111	"	"	"

Origins Laboratory, Inc.



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Noelle Doyle Mathis, President

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

Charles Greeson
Project Number: 008313054
Project: Noble - Karch Blue DD 30-3J (North)

MW10
4/29/2014 1:10:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X404284-09 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4D29006	04/29/2014	04/30/2014
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

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

107 % 87.3-113
103 % 90.9-108
95.3 % 88.6-111

" " "
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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

Charles Greeson
Project Number: 008313054
Project: Noble - Karch Blue DD 30-3J (North)

MW11
4/29/2014 1:15:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X404284-10 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4D29006	04/29/2014	04/30/2014
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

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

107 % 87.3-113
103 % 90.9-108
94.9 % 88.6-111

" " "
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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

Charles Greeson
Project Number: 008313054
Project: Noble - Karch Blue DD 30-3J (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 4D29006 - EPA 5030B (Water)

Blank (4D29006-BLK1)

Prepared: 04/29/2014 Analyzed: 04/29/2014

Benzene	ND	1.0	ug/L							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes, total	ND	1.0	"							
Surrogate: 1,2-Dichloroethane-d4	65		"	62.5	104		87.3-113			
Surrogate: Toluene-d8	62		"	62.5	99.5		90.9-108			
Surrogate: 4-Bromofluorobenzene	63		"	62.5	101		88.6-111			

Origins Laboratory, Inc.



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Noelle Doyle Mathis, President

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

Charles Greeson
Project Number: 008313054
Project: Noble - Karch Blue DD 30-3J (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 4D29006 - EPA 5030B (Water)

Blank (4D29006-BLK2)

Prepared: 04/29/2014 Analyzed: 04/29/2014

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		87.3-113			
Surrogate: Toluene-d8	62		"	62.5	99.6		90.9-108			
Surrogate: 4-Bromofluorobenzene	64		"	62.5	103		88.6-111			

Origins Laboratory, Inc.



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Noelle Doyle Mathis, President

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

Charles Greeson
Project Number: 008313054
Project: Noble - Karch Blue DD 30-3J (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 4D29006 - EPA 5030B (Water)

LCS (4D29006-BS1)

Prepared: 04/29/2014 Analyzed: 04/29/2014

Benzene	47.0	1.0	ug/L	50.0	94.0	75-126
Toluene	43.0	1.0	"	50.0	85.9	78.7-126
Ethylbenzene	41.2	1.0	"	50.0	82.5	81-130
m,p-Xylene	84.4	2.0	"	100	84.4	77.2-133
o-Xylene	44.0	1.0	"	50.0	88.0	77.9-126
Surrogate: 1,2-Dichloroethane-d4	61		"	62.5	97.5	87.3-113
Surrogate: Toluene-d8	62		"	62.5	99.6	90.9-108
Surrogate: 4-Bromofluorobenzene	65		"	62.5	104	88.6-111

Origins Laboratory, Inc.



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

Charles Greeson
Project Number: 008313054
Project: Noble - Karch Blue DD 30-3J (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 4D29006 - EPA 5030B (Water)

LCS (4D29006-BS2)

Prepared: 04/29/2014 Analyzed: 04/29/2014

Benzene	51.7	1.0	ug/L	50.0	103	75-126
Toluene	49.2	1.0	"	50.0	98.3	78.7-126
Ethylbenzene	45.4	1.0	"	50.0	90.8	81-130
m,p-Xylene	93.0	2.0	"	100	93.0	77.2-133
o-Xylene	47.4	1.0	"	50.0	94.8	77.9-126
Surrogate: 1,2-Dichloroethane-d4	61		"	62.5	97.1	87.3-113
Surrogate: Toluene-d8	64		"	62.5	102	90.9-108
Surrogate: 4-Bromofluorobenzene	62		"	62.5	99.7	88.6-111

Origins Laboratory, Inc.



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Noelle Doyle Mathis, President

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

Charles Greeson
Project Number: 008313054
Project: Noble - Karch Blue DD 30-3J (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 4D29006 - EPA 5030B (Water)

Matrix Spike (4D29006-MS1)		Source: X404281-05			Prepared: 04/29/2014 Analyzed: 04/29/2014					
Benzene	51.5	1.0	ug/L	50.0	ND	103	74-130			
Toluene	44.3	1.0	"	50.0	ND	88.6	73-131			
Ethylbenzene	45.4	1.0	"	50.0	ND	90.9	76-132			
m,p-Xylene	92.5	2.0	"	100	ND	92.5	69-139			
o-Xylene	46.7	1.0	"	50.0	ND	93.5	74-131			
Surrogate: 1,2-Dichloroethane-d4	61		"	62.5		97.6	87.3-113			
Surrogate: Toluene-d8	58		"	62.5		93.2	90.9-108			
Surrogate: 4-Bromofluorobenzene	64		"	62.5		102	88.6-111			

Origins Laboratory, Inc.



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

Charles Greeson
Project Number: 008313054
Project: Noble - Karch Blue DD 30-3J (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 4D29006 - EPA 5030B (Water)

Matrix Spike (4D29006-MS2)		Source: X404281-08			Prepared: 04/29/2014 Analyzed: 04/29/2014					
Benzene	52.5	1.0	ug/L	50.0	0.8	103	74-130			
Toluene	47.3	1.0	"	50.0	ND	94.6	73-131			
Ethylbenzene	46.5	1.0	"	50.0	ND	93.1	76-132			
m,p-Xylene	94.9	2.0	"	100	ND	94.9	69-139			
o-Xylene	47.7	1.0	"	50.0	ND	95.4	74-131			
Surrogate: 1,2-Dichloroethane-d4	62		"	62.5		99.3	87.3-113			
Surrogate: Toluene-d8	61		"	62.5		98.3	90.9-108			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		99.9	88.6-111			

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

Charles Greeson
Project Number: 008313054
Project: Noble - Karch Blue DD 30-3J (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 4D29006 - EPA 5030B (Water)

Matrix Spike Dup (4D29006-MSD1)		Source: X404281-05			Prepared: 04/29/2014 Analyzed: 04/29/2014					
Benzene	51.2	1.0	ug/L	50.0	ND	102	74-130	0.526	20	
Toluene	47.5	1.0	"	50.0	ND	95.1	73-131	7.06	20	
Ethylbenzene	46.0	1.0	"	50.0	ND	92.1	76-132	1.36	20	
m,p-Xylene	94.3	2.0	"	100	ND	94.3	69-139	1.87	20	
o-Xylene	47.9	1.0	"	50.0	ND	95.7	74-131	2.39	20	
Surrogate: 1,2-Dichloroethane-d4	60		"	62.5		96.7	87.3-113			
Surrogate: Toluene-d8	61		"	62.5		98.3	90.9-108			
Surrogate: 4-Bromofluorobenzene	64		"	62.5		102	88.6-111			

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

Charles Greeson
Project Number: 008313054
Project: Noble - Karch Blue DD 30-3J (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 4D29006 - EPA 5030B (Water)

Matrix Spike Dup (4D29006-MSD2)		Source: X404281-08			Prepared: 04/29/2014 Analyzed: 04/29/2014					
Benzene	52.3	1.0	ug/L	50.0	0.8	103	74-130	0.401	20	
Toluene	48.7	1.0	"	50.0	ND	97.3	73-131	2.81	20	
Ethylbenzene	46.9	1.0	"	50.0	ND	93.8	76-132	0.749	20	
m,p-Xylene	96.0	2.0	"	100	ND	96.0	69-139	1.08	20	
o-Xylene	48.2	1.0	"	50.0	ND	96.4	74-131	1.00	20	
Surrogate: 1,2-Dichloroethane-d4	60		"	62.5		96.3	87.3-113			
Surrogate: Toluene-d8	63		"	62.5		101	90.9-108			
Surrogate: 4-Bromofluorobenzene	64		"	62.5		102	88.6-111			

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

Charles Greeson
Project Number: 008313054
Project: Noble - Karch Blue DD 30-3J (North)

Notes and Definitions

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported at a wet weight basis.

Origins Laboratory, Inc.



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.



May 02, 2014

LT Environmental, Inc.

Charles Greeson

4600 West 60th Avenue

Arvada

CO 80003

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

Project Number - 00831305

Attached are your analytical results for Noble - Karch Blue DD 30-3J (South) received by Origins Laboratory, Inc. April 30, 2014. This project is associated with Origins project number X405004-01.

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

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

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

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

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

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



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

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

Charles Greeson
Project Number: 00831305
Project: Noble - Karch Blue DD 30-3J (South)

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW01	X405004-01	Water	April 30, 2014 12:45	04/30/2014 15:00
MW02	X405004-02	Water	April 30, 2014 12:50	04/30/2014 15:00
MW03	X405004-03	Water	April 30, 2014 12:55	04/30/2014 15:00
MW04	X405004-04	Water	April 30, 2014 13:00	04/30/2014 15:00
MW05	X405004-05	Water	April 30, 2014 13:05	04/30/2014 15:00
MW06	X405004-06	Water	April 30, 2014 13:10	04/30/2014 15:00
MW07	X405004-07	Water	April 30, 2014 13:15	04/30/2014 15:00
MW08	X405004-08	Water	April 30, 2014 13:20	04/30/2014 15:00
MW09	X405004-09	Water	April 30, 2014 13:25	04/30/2014 15:00
MW10	X405004-10	Water	April 30, 2014 13:30	04/30/2014 15:00
MW11	X405004-11	Water	April 30, 2014 13:35	04/30/2014 15:00
MW12	X405004-12	Water	April 30, 2014 13:40	04/30/2014 15:00

Origins Laboratory, Inc.



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Noelle Doyle Mathis, President

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

Charles Greeson
Project Number: 00831305
Project: Noble - Karch Blue DD 30-3J (South)

www.originslaboratory.com page 1 of 2

ORIGINS LABORATORY, INC

Client: LTE Project Manager/Send Report To: C. Greeson @ Henvi.com

Address: 4600 W. 60th Ave. Email Address: Charles Greeson

Arvada CO Project Name/Number: Karch Blue DD 30-3J (South)

Telephone Number: 303-433-9288 Samples Collected By: Reese K. Heger

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative	Matrix	Analysis/Method	Sample Instructions
MW01	4/30/14	1245	3	Unpreserved	Groundwater	X X X	1
MW02	4/30/14	1250	3	Unpreserved	Groundwater	X X X	2
MW03	4/30/14	1255	3	Unpreserved	Groundwater	X X X	3
MW04	4/30/14	1300	3	Unpreserved	Groundwater	X X X	4
MW05	4/30/14	1305	3	Unpreserved	Groundwater	X X X	5
MW06	4/30/14	1310	3	Unpreserved	Groundwater	X X X	6
MW07	4/30/14	1315	3	Unpreserved	Groundwater	X X X	7
MW08	4/30/14	1320	3	Unpreserved	Groundwater	X X X	8
MW09	4/30/14	1325	3	Unpreserved	Groundwater	X X X	9
MW10	4/30/14	1330	3	Unpreserved	Groundwater	X X X	10
Relinquished By: <u>[Signature]</u>	Date: <u>4/30/14</u>	Time: <u>15:00</u>	Received By: <u>[Signature]</u>	Date: <u>4/30/14</u>	Time: <u>1500</u>	Turnaround Time: Same Day <input type="checkbox"/> 24 Hr <input type="checkbox"/> 48 Hr <input type="checkbox"/> 72 Hr <input checked="" type="checkbox"/> Standard	
Relinquished By:	Date:	Time:	Received By:	Date:	Time:		

Origins Laboratory, Inc.

[Signature]

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.

Charles Greeson
Project Number: 00831305
Project: Noble - Karch Blue DD 30-3J (South)

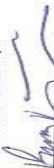

ORIGINS *X4045004*
LABORATORY, INC

Client: *LTI*
 Address: *4600 W. 160th Ave.*
Arvada CO
 Telephone Number: *303-433-9788*

Project Manager/Send Report To: *Charles Green*
 Email Address: *Cgreen@att.net*
 Project Name/Number: *Karch Blue DD 30-33 (South)*
 Samples Collected By: *Ryan Krutzberger*

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X4045004
 page *2* of *2*

FAX: 303.265.9645

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative					Matrix				Analysis/Method		Sample Instructions
				Unpreserved	HCl	HNO ₃	Other	Groundwater	Soil	Air Summa Canister #	Other				
MW11	4/30/14	1335	3	X					X				X	BET	1
MW18	4/30/14	1340	3	X					X				X		2
															3
															4
															5
															6
															7
															8
															9
															10
Relinquished By: 	Date: 4/30/14	Time: 1500													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: 4/30/14	Time: 1500										

Comments:

Origins Laboratory, Inc.

[Handwritten signature]

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

Charles Greeson
Project Number: 00831305
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: X405009

Client: LTE

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

Checklist Completed by: Jeff Smith

Shipped Via: H/D

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

Date/time completed: 5/1/14 8:42

Airbill #: 224

Matrix(s) Received: (Check all that apply):

Soil/Solid

☒ Water

Other:

Cooler Number/Temperature: 119 °C

1 °C

1 °C

(Describe)

1 °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"/>		Samples will be analyzed within 7 Days of collection
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)

05-02-14 1203
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.

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

Charles Greeson
Project Number: 00831305
Project: Noble - Karch Blue DD 30-3J (South)

MW01

4/30/2014 12:45:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X405004-01 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4E01008	05/01/2014	05/01/2014
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	6.4	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	105 %	87.3-113	"	"	"
Surrogate: Toluene-d8	104 %	90.9-108	"	"	"
Surrogate: 4-Bromofluorobenzene	95.9 %	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.

Noelle Doyle Mathis, President

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

Charles Greeson
Project Number: 00831305
Project: Noble - Karch Blue DD 30-3J (South)

MW02

4/30/2014 12:50:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X405004-02 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4E01008	05/01/2014	05/01/2014
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	103 %	90.9-108	"	"	"
Surrogate: 4-Bromofluorobenzene	94.8 %	88.6-111	"	"	"

Origins Laboratory, Inc.



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Noelle Doyle Mathis, President

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

Charles Greeson
Project Number: 00831305
Project: Noble - Karch Blue DD 30-3J (South)

MW03

4/30/2014 12:55:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X405004-03 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4E01008	05/01/2014	05/01/2014
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	103 %	90.9-108	"	"	"
Surrogate: 4-Bromofluorobenzene	94.4 %	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.

Noelle Doyle Mathis, President

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

Charles Greeson
Project Number: 00831305
Project: Noble - Karch Blue DD 30-3J (South)

MW04

4/30/2014 1:00:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X405004-04 (Water)

BTEX by EPA 8260C

Benzene	102	1.0	ug/L	1	4E01008	05/01/2014	05/01/2014
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	64.6	1.0	"	"	"	"	"
Xylenes, total	108	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	106 %	87.3-113			"	"	"
Surrogate: Toluene-d8	102 %	90.9-108			"	"	"
Surrogate: 4-Bromofluorobenzene	95.8 %	88.6-111			"	"	"

Origins Laboratory, Inc.



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

Charles Greeson
Project Number: 00831305
Project: Noble - Karch Blue DD 30-3J (South)

MW05

4/30/2014 1:05:00PM

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Notes
		Limit							

Origins Laboratory, Inc.
X405004-05 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4E01008	05/01/2014	05/01/2014
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	102 %	90.9-108	"	"	"
Surrogate: 4-Bromofluorobenzene	95.2 %	88.6-111	"	"	"

Origins Laboratory, Inc.



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

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

Charles Greeson
Project Number: 00831305
Project: Noble - Karch Blue DD 30-3J (South)

MW06

4/30/2014 1:10:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X405004-06 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4E01008	05/01/2014	05/01/2014
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	103 %	90.9-108	"	"	"
Surrogate: 4-Bromofluorobenzene	94.9 %	88.6-111	"	"	"

Origins Laboratory, Inc.



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Noelle Doyle Mathis, President

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

Charles Greeson
Project Number: 00831305
Project: Noble - Karch Blue DD 30-3J (South)

MW07

4/30/2014 1:15:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X405004-07 (Water)

BTEX by EPA 8260C

Benzene	2.6	1.0	ug/L	1	4E01008	05/01/2014	05/01/2014	
Toluene	ND	1.0	"	"	"	"	"	
Ethylbenzene	2.0	1.0	"	"	"	"	"	
Xylenes, total	ND	1.0	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	104 %	87.3-113			"	"	"	
Surrogate: Toluene-d8	102 %	90.9-108			"	"	"	
Surrogate: 4-Bromofluorobenzene	94.4 %	88.6-111			"	"	"	

Origins Laboratory, Inc.



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Noelle Doyle Mathis, President

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

Charles Greeson
Project Number: 00831305
Project: Noble - Karch Blue DD 30-3J (South)

MW08
4/30/2014 1:20:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X405004-08 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4E01008	05/01/2014	05/01/2014
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

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

105 % 87.3-113
103 % 90.9-108
96.1 % 88.6-111

" " "
" " "
" " "

Origins Laboratory, Inc.



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Noelle Doyle Mathis, President

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

Charles Greeson
Project Number: 00831305
Project: Noble - Karch Blue DD 30-3J (South)

MW09

4/30/2014 1:25:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X405004-09 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4E01008	05/01/2014	05/01/2014
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 % 87.3-113
102 % 90.9-108
96.4 % 88.6-111

" " "
" " "
" " "

Origins Laboratory, Inc.



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Noelle Doyle Mathis, President

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

Charles Greeson
Project Number: 00831305
Project: Noble - Karch Blue DD 30-3J (South)

MW10
4/30/2014 1:30:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X405004-10 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4E01008	05/01/2014	05/01/2014
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	103 %	90.9-108	"	"	"
Surrogate: 4-Bromofluorobenzene	93.8 %	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.

Noelle Doyle Mathis, President

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

Charles Greeson
Project Number: 00831305
Project: Noble - Karch Blue DD 30-3J (South)

MW11
4/30/2014 1:35:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X405004-11 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4E01008	05/01/2014	05/01/2014
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	103 %	90.9-108	"	"	"
Surrogate: 4-Bromofluorobenzene	95.0 %	88.6-111	"	"	"

Origins Laboratory, Inc.



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

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

Charles Greeson
Project Number: 00831305
Project: Noble - Karch Blue DD 30-3J (South)

MW12

4/30/2014 1:40:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X405004-12 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4E01008	05/01/2014	05/01/2014
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	103 %	90.9-108	"	"	"
Surrogate: 4-Bromofluorobenzene	95.2 %	88.6-111	"	"	"

Origins Laboratory, Inc.



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

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

Charles Greeson
Project Number: 00831305
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 4E01008 - EPA 5030B (Water)

Blank (4E01008-BLK1)

Prepared: 05/01/2014 Analyzed: 05/01/2014

Benzene	ND	1.0	ug/L							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes, total	ND	1.0	"							
Surrogate: 1,2-Dichloroethane-d4	65		"	62.5	104		87.3-113			
Surrogate: Toluene-d8	63		"	62.5	101		90.9-108			
Surrogate: 4-Bromofluorobenzene	59		"	62.5	95.0		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.

Noelle Doyle Mathis, President

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

Charles Greeson
Project Number: 00831305
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 4E01008 - EPA 5030B (Water)

LCS (4E01008-BS1)

Prepared: 05/01/2014 Analyzed: 05/01/2014

Benzene	57.4	1.0	ug/L	50.0	115	75-126
Toluene	56.7	1.0	"	50.0	113	78.7-126
Ethylbenzene	53.8	1.0	"	50.0	108	81-130
m,p-Xylene	108	2.0	"	100	108	77.2-133
o-Xylene	52.8	1.0	"	50.0	106	77.9-126
Surrogate: 1,2-Dichloroethane-d4	61		"	62.5	97.4	87.3-113
Surrogate: Toluene-d8	64		"	62.5	103	90.9-108
Surrogate: 4-Bromofluorobenzene	60		"	62.5	95.5	88.6-111

Origins Laboratory, Inc.



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Noelle Doyle Mathis, President

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

Charles Greeson
Project Number: 00831305
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 4E01008 - EPA 5030B (Water)

Matrix Spike (4E01008-MS1)		Source: X405004-01			Prepared: 05/01/2014 Analyzed: 05/01/2014					
Benzene	65.5	1.0	ug/L	50.0	ND	131	74-130			QM-07
Toluene	65.7	1.0	"	50.0	ND	131	73-131			
Ethylbenzene	69.4	1.0	"	50.0	6.4	126	76-132			
m,p-Xylene	126	2.0	"	100	ND	126	69-139			
o-Xylene	60.1	1.0	"	50.0	ND	120	74-131			
Surrogate: 1,2-Dichloroethane-d4	60		"	62.5		95.3	87.3-113			
Surrogate: Toluene-d8	64		"	62.5		102	90.9-108			
Surrogate: 4-Bromofluorobenzene	60		"	62.5		95.7	88.6-111			

Origins Laboratory, Inc.



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

Charles Greeson
Project Number: 00831305
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 4E01008 - EPA 5030B (Water)

Matrix Spike Dup (4E01008-MSD1)		Source: X405004-01			Prepared: 05/01/2014 Analyzed: 05/01/2014					
Benzene	65.0	1.0	ug/L	50.0	ND	130	74-130	0.843	20	
Toluene	63.5	1.0	"	50.0	ND	127	73-131	3.33	20	
Ethylbenzene	65.3	1.0	"	50.0	6.4	118	76-132	6.10	20	
m,p-Xylene	119	2.0	"	100	ND	119	69-139	5.63	20	
o-Xylene	57.8	1.0	"	50.0	ND	116	74-131	3.90	20	
Surrogate: 1,2-Dichloroethane-d4	60		"	62.5		96.7	87.3-113			
Surrogate: Toluene-d8	65		"	62.5		104	90.9-108			
Surrogate: 4-Bromofluorobenzene	60		"	62.5		95.5	88.6-111			

Origins Laboratory, Inc.



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

Charles Greeson
Project Number: 00831305
Project: Noble - Karch Blue DD 30-3J (South)

Notes and Definitions

QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.

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.

Noelle Doyle Mathis, President



June 04, 2014

LT Environmental, Inc.

Charles Greeson

4600 West 60th Avenue

Arvada

CO 80003

Project Name - Noble - Karch Blue DD 30-3J

Project Number - 008313054

Attached are your analytical results for Noble - Karch Blue DD 30-3J received by Origins Laboratory, Inc. May 30, 2014. This project is associated with Origins project number X406007-01.

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

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

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

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

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

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



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

LT Environmental, Inc.

4600 West 60th Avenue

Arvada CO 80003

Charles Greeson

Project Number: 008313054

Project: Noble - Karch Blue DD 30-3J

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW08	X406007-01	Water	May 30, 2014 10:45	05/30/2014 17:15

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

Charles Greeson
Project Number: 008313054
Project: Noble - Karch Blue DD 30-3J

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: X406007

Client: LTE

Client Project ID: Karch Blue DD 30-3J

Checklist Completed by: Jose Smith

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

Date/time completed: 6/2/14 9:32

Airbill #: NA

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

Cooler Number/Temperature: 13.0 °C 1 °C 1 °C (Describe) °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"/>		<u>Sampled Some Dry</u>
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"/>		<u>Samples will be analyzed within 7 Days of Collection</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)

06-03-14 1531
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.

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

Charles Greeson
Project Number: 008313054
Project: Noble - Karch Blue DD 30-3J

MW08

5/30/2014 10:45:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X406007-01 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	4F02006	06/02/2014	06/03/2014
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	98.0 %	87.3-113	"	"	"
Surrogate: Toluene-d8	105 %	90.9-108	"	"	"
Surrogate: 4-Bromofluorobenzene	96.4 %	88.6-111	"	"	"

Origins Laboratory, Inc.



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Noelle Doyle Mathis, President

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

Charles Greeson
Project Number: 008313054
Project: Noble - Karch Blue DD 30-3J

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 4F02006 - EPA 5030B (Water)

Blank (4F02006-BLK1)

Prepared: 06/02/2014 Analyzed: 06/02/2014

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	99.2		87.3-113			
Surrogate: Toluene-d8	64		"	62.5	103		90.9-108			
Surrogate: 4-Bromofluorobenzene	62		"	62.5	98.9		88.6-111			

Origins Laboratory, Inc.



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Noelle Doyle Mathis, President

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

Charles Greeson
Project Number: 008313054
Project: Noble - Karch Blue DD 30-3J

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 4F02006 - EPA 5030B (Water)

LCS (4F02006-BS1)

Prepared: 06/02/2014 Analyzed: 06/02/2014

Benzene	50.4	1.0	ug/L	50.0	101	75-126
Toluene	52.3	1.0	"	50.0	105	78.7-126
Ethylbenzene	52.9	1.0	"	50.0	106	81-130
m,p-Xylene	106	2.0	"	100	106	77.2-133
o-Xylene	52.4	1.0	"	50.0	105	77.9-126
Surrogate: 1,2-Dichloroethane-d4	57		"	62.5	91.4	87.3-113
Surrogate: Toluene-d8	65		"	62.5	104	90.9-108
Surrogate: 4-Bromofluorobenzene	62		"	62.5	99.6	88.6-111

Origins Laboratory, Inc.



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

Charles Greeson
Project Number: 008313054
Project: Noble - Karch Blue DD 30-3J

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 4F02006 - EPA 5030B (Water)

Matrix Spike (4F02006-MS1)		Source: X406002-01			Prepared: 06/02/2014 Analyzed: 06/02/2014					
Benzene	47.4	1.0	ug/L	50.0	ND	94.9	74-130			
Toluene	48.7	1.0	"	50.0	ND	97.3	73-131			
Ethylbenzene	50.2	1.0	"	50.0	ND	100	76-132			
m,p-Xylene	99.4	2.0	"	100	ND	99.4	69-139			
o-Xylene	50.3	1.0	"	50.0	ND	101	74-131			
Surrogate: 1,2-Dichloroethane-d4	57		"	62.5		90.4	87.3-113			
Surrogate: Toluene-d8	65		"	62.5		105	90.9-108			
Surrogate: 4-Bromofluorobenzene	61		"	62.5		98.0	88.6-111			

Origins Laboratory, Inc.



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Noelle Doyle Mathis, President

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

Charles Greeson
Project Number: 008313054
Project: Noble - Karch Blue DD 30-3J

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 4F02006 - EPA 5030B (Water)										
Matrix Spike Dup (4F02006-MSD1)		Source: X406002-01			Prepared: 06/02/2014 Analyzed: 06/02/2014					
Benzene	48.4	1.0	ug/L	50.0	ND	96.8	74-130	1.98	20	
Toluene	49.8	1.0	"	50.0	ND	99.6	73-131	2.28	20	
Ethylbenzene	51.0	1.0	"	50.0	ND	102	76-132	1.44	20	
m,p-Xylene	101	2.0	"	100	ND	101	69-139	1.90	20	
o-Xylene	51.9	1.0	"	50.0	ND	104	74-131	3.21	20	
Surrogate: 1,2-Dichloroethane-d4	57		"	62.5		91.2	87.3-113			
Surrogate: Toluene-d8	65		"	62.5		104	90.9-108			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		98.6	88.6-111			

Origins Laboratory, Inc.



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Noelle Doyle Mathis, President

LT Environmental, Inc.

4600 West 60th Avenue

Arvada CO 80003

Charles Greeson

Project Number: 008313054

Project: Noble - Karch Blue DD 30-3J

Notes and Definitions

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported at a wet weight basis.

Origins Laboratory, Inc.



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