

TABLE 1
GROUNDWATER ANALYTICAL RESULTS
KARCH BLUE DD 30-3J FLOW LINE - SOUTH
COGCC REMEDIATION #8110
WELD COUNTY, COLORADO
NOBLE ENERGY, INC.

Monitoring Well	Date	Depth to Water (feet btoc)	Relative Groundwater Elevation (feet)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
MW01	10/15/2013	4.30	90.54	1.08	1.21	43.8	60.9
	1/30/2014	4.95	89.89	<1.0	<1.0	9.22	<1.0
	4/30/2014	3.90	90.94	<1.0	<1.0	6.4	<1.0
	7/25/2014	4.18	90.66	<1.0	<1.0	<1.0	<1.0
	10/22/2014	4.75	90.09	<1.0	<1.0	1.1	<1.0
	1/30/2015	4.65	90.19	<1.0	<1.0	2.4	<1.0
	4/13/2015	3.82	91.02	<1.0	<1.0	1.2	<1.0
	7/29/2015	3.63	91.21	<1.0	<1.0	<1.0	<1.0
	10/26/2015	3.50	91.34	<1.0	<1.0	1.2	<1.0
	1/25/2016	2.81	92.03	<1.0	<1.0	<1.0	<1.0
	4/29/2016	1.28	93.56	<1.0	<1.0	<1.0	<1.0
	8/25/2016	3.42	91.42	<1.00	<1.00	<1.00	<1.00
	10/27/2016	3.10	91.74	<1.00	<1.00	<1.00	<1.00
	1/27/2017	2.61	92.23	<1.00	<1.00	<1.00	<1.00
	4/28/2017	2.50	92.34	<1.00	<1.00	<1.00	<1.00
MW02	10/15/2013	4.05	90.55	<1.0	<1.0	<1.0	<1.0
	1/30/2014	4.62	89.98	<1.0	<1.0	<1.0	<1.0
	4/30/2014	3.65	90.95	<1.0	<1.0	<1.0	<1.0
	7/25/2014	3.96	90.64	<1.0	<1.0	<1.0	<1.0
	10/22/2014	4.50	90.10	<1.0	<1.0	<1.0	<1.0
	1/30/2015	4.32	90.28	<1.0	<1.0	<1.0	<1.0
	4/13/2015	3.52	91.08	<1.0	<1.0	<1.0	<1.0
	7/29/2015	--	--	Removed from monitoring program			
MW03	10/15/2013	4.45	90.49	<1.0	<1.0	<1.0	<1.0
	1/30/2014	5.00	89.94	<1.0	<1.0	<1.0	<1.0
	4/30/2014	4.02	90.92	<1.0	<1.0	<1.0	<1.0
	7/25/2014	4.32	90.62	<1.0	<1.0	<1.0	<1.0
	10/22/2014	4.90	90.04	<1.0	<1.0	<1.0	<1.0
	1/30/2015	4.66	90.28	<1.0	<1.0	<1.0	<1.0
	4/13/2015	3.89	91.05	<1.0	<1.0	<1.0	<1.0
	7/29/2015	--	--	Removed from monitoring program			

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MW04	10/15/2013	4.56	90.50	177	1.53	159	240
	1/30/2014	5.12	89.94	101	<1.0	81.2	44.7
	4/30/2014	4.18	90.88	102	<1.0	64.6	108
	7/25/2014	4.51	90.55	48.9	<1.0	78.0	67.8
	10/22/2014	4.97	90.09	39.8	<1.0	34.4	39.7
	1/30/2015	4.85	90.21	44.5	<1.0	20.4	41.1
	4/13/2015	4.04	91.02	54.6	<1.0	35.3	44.3
	7/29/2015	3.87	91.19	33.3	<1.0	47.7	5.0
	10/26/2015	3.80	91.26	6.6	<1.0	7.9	<1.0
	1/25/2016	3.05	92.01	25.7	<1.0	33.6	2.2
	4/29/2016	1.52	93.54	24.6	<1.0	58.5	11.8
	8/25/2016	3.67	91.39	31.0	<1.00	35.3	11.1
	10/27/2016	3.38	91.68	15.8	<1.00	30.3	5.08
	1/27/2017	2.92	92.14	25.0	<1.00	37.3	8.61
	4/28/2017	2.70	92.36	36.1	<1.00	45.6	13.2
MW05	10/15/2013	4.83	90.37	<1.0	<1.0	<1.0	<1.0
	1/30/2014	5.40	89.80	<1.0	<1.0	<1.0	<1.0
	4/30/2014	4.43	90.77	<1.0	<1.0	<1.0	<1.0
	7/25/2014	4.79	90.41	<1.0	<1.0	<1.0	<1.0
	10/22/2014	5.15	90.05	<1.0	<1.0	<1.0	<1.0
	1/30/2015	5.05	90.15	<1.0	<1.0	<1.0	<1.0
	4/13/2015	4.31	90.89	<1.0	<1.0	<1.0	<1.0
	7/29/2015	4.13	91.07	<1.0	<1.0	<1.0	<1.0
	10/26/2015	4.01	91.19	<1.0	<1.0	<1.0	<1.0
	1/25/2016	3.28	91.92	<1.0	<1.0	<1.0	<1.0
	4/29/2016	1.82	93.38	<1.0	<1.0	<1.0	<1.0
	8/25/2016	3.90	91.30	<1.00	<1.00	<1.00	<1.00
	10/27/2016	3.60	91.60	<1.00	<1.00	<1.00	<1.00
	1/27/2017	3.20	92.00	<1.00	<1.00	<1.00	<1.00
	4/28/2017	2.95	92.25	<1.00	<1.00	<1.00	<1.00
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

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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)
MW06	7/25/2014	4.78	90.43	<1.0	<1.0	<1.0	<1.0
	10/22/2014	4.95	90.26	<1.0	<1.0	<1.0	<1.0
	1/30/2015	5.97	89.24	<1.0	<1.0	<1.0	<1.0
	4/13/2015	4.35	90.86	<1.0	<1.0	<1.0	<1.0
	7/29/2015	4.18	91.03	<1.0	<1.0	<1.0	<1.0
	10/26/2015	4.04	91.17	<1.0	<1.0	<1.0	<1.0
	1/25/2016	3.30	91.91	<1.0	<1.0	<1.0	<1.0
	4/29/2016	1.78	93.43	<1.0	<1.0	<1.0	<1.0
	8/25/2016	3.92	91.29	<1.00	<1.00	<1.00	<1.00
	10/27/2016	3.63	91.58	<1.00	<1.00	<1.00	<1.00
	1/27/2017	3.25	91.96	<1.00	<1.00	<1.00	<1.00
	4/28/2017	2.95	92.26	<1.00	<1.00	<1.00	<1.00
MW07	10/15/2013	5.02	90.06	<1.0	<1.0	<1.0	<1.0
	1/30/2014	5.35	89.73	<1.0	<1.0	<1.0	<1.0
	4/30/2014	4.61	90.47	2.6	<1.0	2.0	<1.0
	7/25/2014	4.67	90.41	<1.0	<1.0	<1.0	<1.0
	10/22/2014	5.15	89.93	<1.0	<1.0	<1.0	<1.0
	1/30/2015	5.00	90.08	<1.0	<1.0	<1.0	<1.0
	4/13/2015	4.49	90.59	<1.0	<1.0	<1.0	<1.0
	7/29/2015	4.30	90.78	<1.0	<1.0	<1.0	<1.0
	10/26/2015	4.22	90.86	<1.0	<1.0	<1.0	<1.0
	1/25/2016	3.47	91.61	<1.0	<1.0	<1.0	<1.0
	4/29/2016	1.97	93.11	29.3	<1.0	1.4	<1.0
	8/25/2016	4.10	90.98	<1.00	<1.00	<1.00	<1.00
	10/27/2016	3.82	91.26	<1.00	<1.00	<1.00	<1.00
	1/27/2017	3.40	91.68	<1.00	<1.00	<1.00	<1.00
	4/28/2017	3.17	91.91	<1.00	<1.00	<1.00	<1.00
MW08	10/15/2013	4.66	90.32	<1.0	<1.0	<1.0	<1.0
	1/30/2014	5.20	89.78	<1.0	<1.0	<1.0	<1.0
	4/30/2014	4.25	90.73	<1.0	<1.0	<1.0	<1.0
	7/25/2014	4.66	90.32	<1.0	<1.0	<1.0	<1.0
	10/22/2014	4.91	90.07	<1.0	<1.0	<1.0	<1.0
	1/30/2015	4.87	90.11	<1.0	<1.0	<1.0	<1.0

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MW08	4/13/2015	4.13	90.85	<1.0	<1.0	<1.0	<1.0
	7/29/2015	3.96	91.02	<1.0	<1.0	<1.0	<1.0
	10/26/2015	3.88	91.10	<1.0	<1.0	<1.0	<1.0
	1/25/2016	3.15	91.83	<1.0	<1.0	<1.0	<1.0
	4/29/2016	1.62	93.36	<1.0	<1.0	<1.0	<1.0
	8/25/2016	3.70	91.28	<1.00	<1.00	<1.00	<1.00
	10/27/2016	3.55	91.43	<1.00	<1.00	<1.00	<1.00
	1/27/2017	3.05	91.93	<1.00	<1.00	<1.00	<1.00
	4/28/2017	2.80	92.18	<1.00	<1.00	<1.00	<1.00
MW09	10/15/2013	4.29	90.33	<1.0	<1.0	<1.0	<1.0
	1/30/2014	4.85	89.77	<1.0	<1.0	<1.0	<1.0
	4/30/2014	3.90	90.72	<1.0	<1.0	<1.0	<1.0
	7/25/2014	4.39	90.23	<1.0	<1.0	<1.0	<1.0
	10/22/2014	4.65	89.97	<1.0	<1.0	<1.0	<1.0
	1/30/2015	4.50	90.12	<1.0	<1.0	<1.0	<1.0
	4/13/2015	3.76	90.86	<1.0	<1.0	<1.0	<1.0
	7/29/2015	--	--	Removed from monitoring program			
MW10	10/15/2013	4.30	90.32	<1.0	<1.0	<1.0	<1.0
	1/30/2014	4.75	89.87	<1.0	<1.0	<1.0	<1.0
	4/30/2014	3.85	90.77	<1.0	<1.0	<1.0	<1.0
	7/25/2014	4.23	90.39	<1.0	<1.0	<1.0	<1.0
	10/22/2014	5.60	89.02	<1.0	<1.0	<1.0	<1.0
	1/30/2015	4.45	90.17	<1.0	<1.0	<1.0	<1.0
	4/13/2015	3.78	90.84	<1.0	<1.0	<1.0	<1.0
	7/29/2015	--	--	Removed from monitoring program			
MW11	10/15/2013	4.57	90.26	<1.0	<1.0	<1.0	<1.0
	1/30/2014	4.95	89.88	<1.0	<1.0	<1.0	<1.0
	4/30/2014	4.15	90.68	<1.0	<1.0	<1.0	<1.0
	7/25/2014	4.51	90.32	<1.0	<1.0	<1.0	<1.0
	10/22/2014	4.91	89.92	<1.0	<1.0	<1.0	<1.0
	1/30/2015	4.65	90.18	<1.0	<1.0	<1.0	<1.0

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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	4/13/2015	4.02	90.81	<1.0	<1.0	<1.0	<1.0
	7/29/2015	--	--	Removed from monitoring program			
MW12	10/15/2013	4.60	90.46	<1.0	<1.0	<1.0	<1.0
	1/30/2014	5.15	89.91	<1.0	<1.0	<1.0	<1.0
	4/30/2014	4.20	90.86	<1.0	<1.0	<1.0	<1.0
	7/25/2014	4.72	90.34	<1.0	<1.0	<1.0	<1.0
	10/22/2014	5.07	89.99	<1.0	<1.0	<1.0	<1.0
	1/30/2015	4.92	90.14	<1.0	<1.0	<1.0	<1.0
	4/13/2015	4.11	90.95	<1.0	<1.0	<1.0	<1.0
	7/29/2015	--	--	Removed from monitoring program			
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

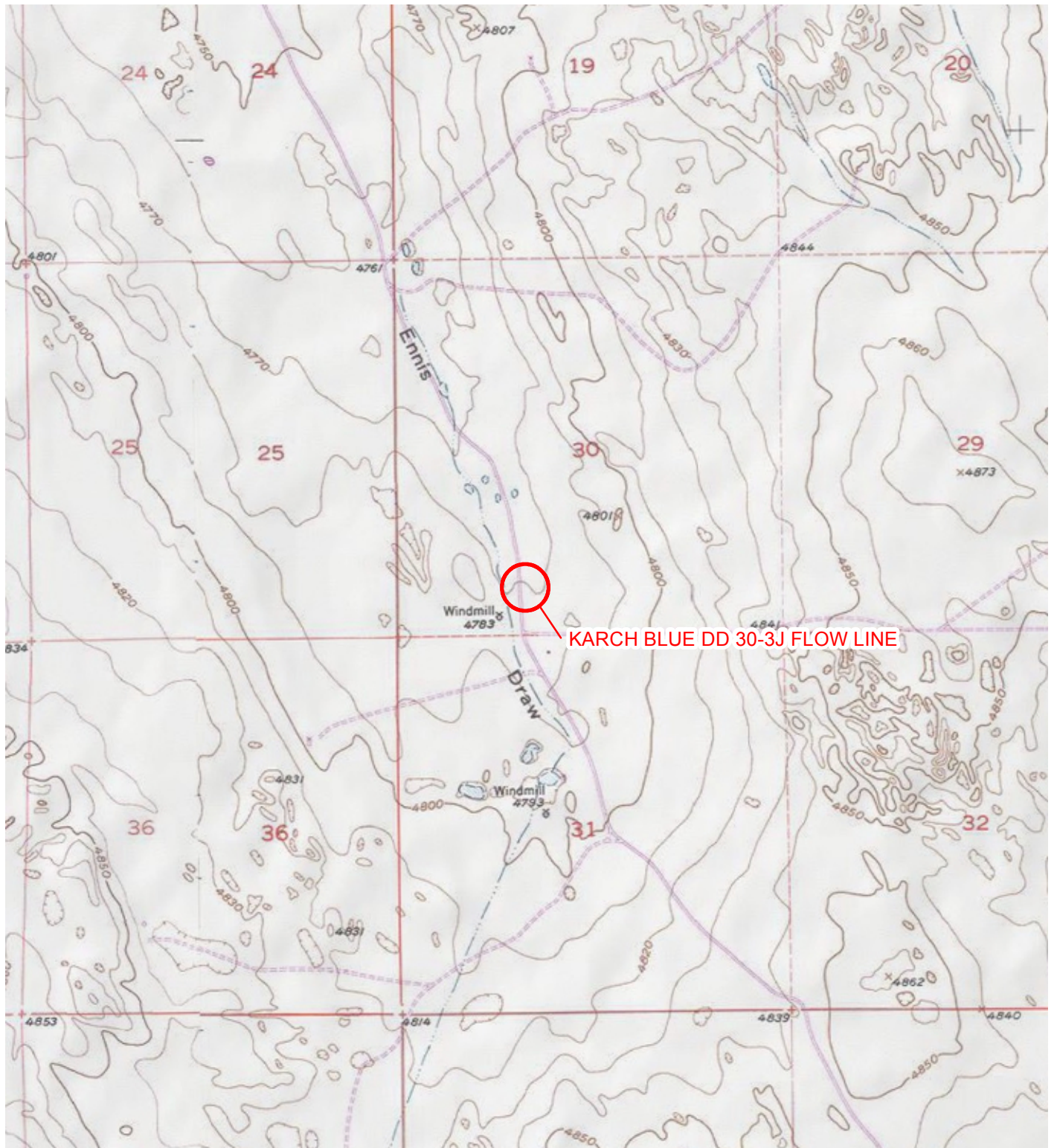


IMAGE COURTESY OF ESRI/USGS

LEGEND

 SITE LOCATION

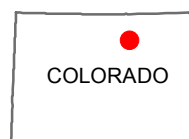
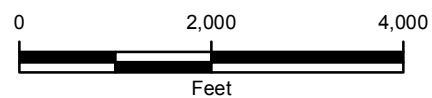


FIGURE 1
SITE LOCATION MAP
KARCH BLUE DD 30-3J FLOW LINE
E 1/2 SW 1/4 SEC 30-T3N-R63W
WELD COUNTY, COLORADO
NOBLE ENERGY, INC.





LEGEND

- ⊗ MONITORING WELL
- ⊗ MONITORING WELL REMOVED FROM MONITORING PROGRAM
- ↑ CALCULATED GROUNDWATER FLOW DIRECTION

*MONITORING WELL MW06 WAS NOT USED TO GENERATE RELATIVE GROUNDWATER ELEVATION CONTOURS FOR THIS SAMPLING EVENT.

IMAGE COURTESY OF ESRI

— RELATIVE GROUNDWATER ELEVATION CONTOUR

CONTOUR INTERVAL = 0.10 FEET

GRADIENT = 0.012 FEET/FOOT

— UNDERGROUND UTILITIES

- - - EXCAVATION EXTENT

GROUNDWATER ELEVATIONS WERE MEASURED
APRIL 28, 2017

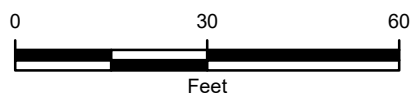


FIGURE 2
RELATIVE GROUNDWATER ELEVATION MAP - SOUTH
KARCH BLUE DD 30-3J FLOW LINE
E 1/2 SW 1/4 SEC 30-T3N-R63W
WELD COUNTY, COLORADO
NOBLE ENERGY, INC.



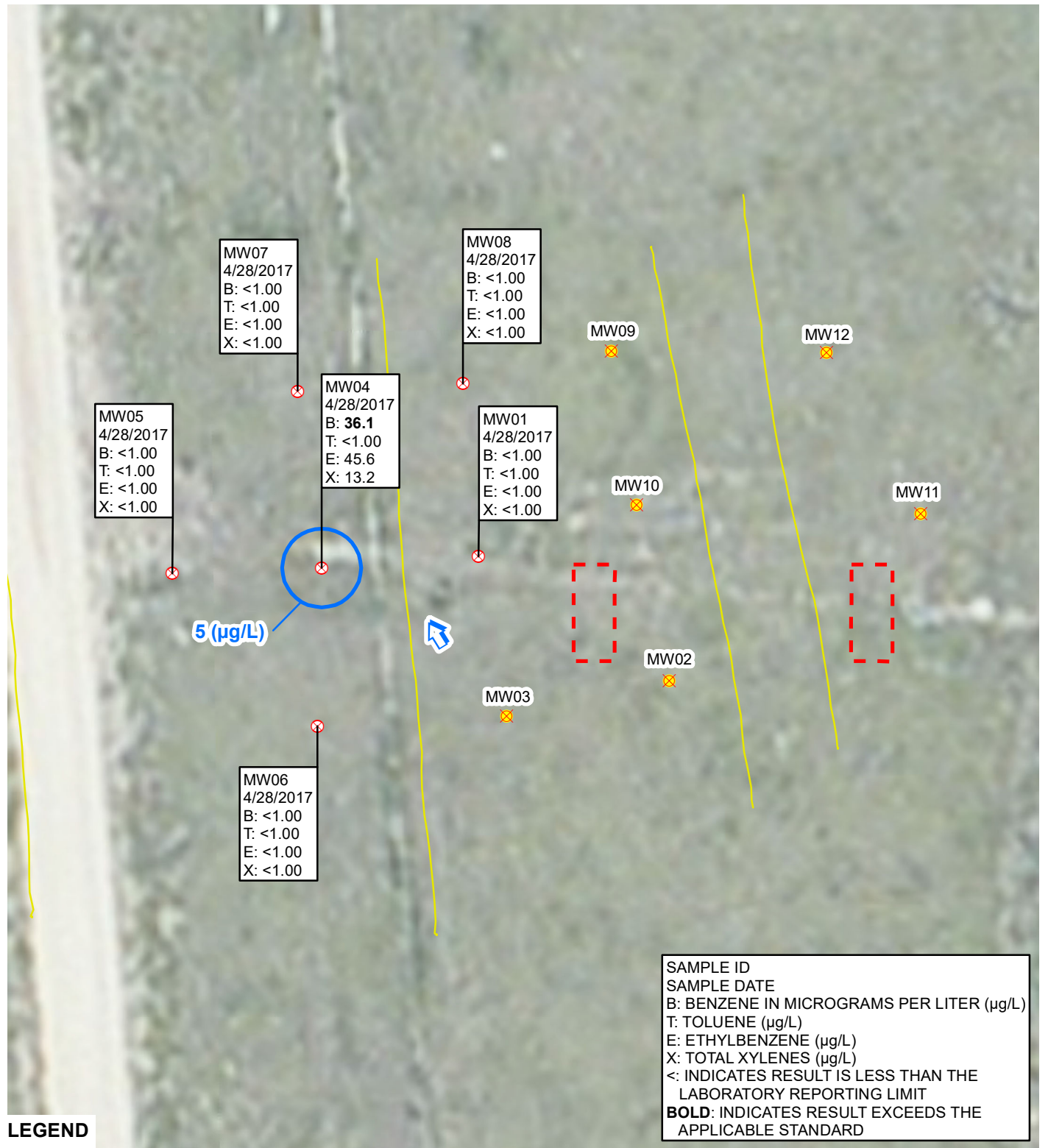


FIGURE 3
GROUNDWATER ANALYTICAL RESULTS - SOUTH
KARCH BLUE DD 30-3J FLOW LINE
E 1/2 SW 1/4 SEC 30-T3N-R63W
WELD COUNTY, COLORADO
NOBLE ENERGY, INC.





May 05, 2017

LT Environmental, Inc.

Charles Greeson

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. April 28, 2017. This project is associated with Origins project number Y705009-01.

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 (South)

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW01	Y705009-01	Water	April 28, 2017 12:35	04/28/2017 15:57
MW05	Y705009-02	Water	April 28, 2017 13:30	04/28/2017 15:57
MW06	Y705009-03	Water	April 28, 2017 13:17	04/28/2017 15:57
MW07	Y705009-04	Water	April 28, 2017 13:05	04/28/2017 15:57
MW08	Y705009-05	Water	April 28, 2017 12:50	04/28/2017 15:57
MW04	Y705009-06	Water	April 28, 2017 13:44	04/28/2017 15:57

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 (South)

www.originslaboratory.com

page 1 of 1

705009



ORIGINS
LABORATORY, INC

Client: LT Environmental, Inc.
Address: 4600 West 60th Ave, Arvada, CO

Project Manager: Charles Greeson
Project Name: Karch Blue DD 30-3J (South)
Project Number: 008313054
Samples Collected By: Gloria Thompson

Telephone Number: 303-433-9788
Email Address: Noble Remediation Team

Invoice: Jacob Evans

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	4/26/17	1235	3	X					X				BTEX	1
MW05	4/26/17	1330	3	X					X					2
MW06	4/26/17	1317	3	X					X					3
MW07	4/26/17	1305	3	X					X					4
MW08	4/28/17	1250	3	X					X					5
MW09	4/28/17	1344	3	X					X					6
														7
														8
														9
														10
Relinquished By: 	Date: 4/26/17	Time: 1557	Received By: 	Date: 4-28-17	Time: 1557	Turnaround Time: Same Day <input type="checkbox"/> 24 Hr <input type="checkbox"/> 48 Hr <input type="checkbox"/> 72 Hr <input checked="" type="checkbox"/> Standard <input type="checkbox"/>								
Relinquished By:	Date:	Time:	Received By:	Date:	Time:									

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 (South)

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

Sample Receipt Checklist

Origins Work Order: 1705609 Client: LTE
Client Project ID: Noble - Karch Blue

Checklist Completed by: Dan Lu Shipped Via: HD
Date/time completed: 5-1-17 1459 (UPS, FedEx, Hand Delivered, Pick-up, etc.)
Airbill #: N/A

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

Cooler Number/Temperature: 1 / 5.4 °C °C °C (Describe) °C

Thermometer ID: T003

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

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

Reviewed by (Project Manager) Dan Lu Date/Time Reviewed 5-1-17 1459

Origins Laboratory, Inc.

Jen Pellegrini

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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 (South)

MW01

4/28/2017 12:35:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y705009-01 (Water)

BTEX by EPA 8260C

Benzene	ND	1.00	ug/L	1	B7E0203	05/02/2017	05/03/2017	U
Toluene	ND	1.00	"	"	"	"	"	U
Ethylbenzene	ND	1.00	"	"	"	"	"	U
Xylenes, total	ND	1.00	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	108 %	84-121	"	"	"
Surrogate: Toluene-d8	99.6 %	85-115	"	"	"
Surrogate: 4-Bromofluorobenzene	97.0 %	84-114	"	"	"

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 (South)

MW05

4/28/2017 1:30:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc. Y705009-02 (Water)

BTEX by EPA 8260C

Benzene	ND	1.00	ug/L	1	B7E0203	05/02/2017	05/03/2017	U
Toluene	ND	1.00	"	"	"	"	"	U
Ethylbenzene	ND	1.00	"	"	"	"	"	U
Xylenes, total	ND	1.00	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	106 %	84-121	"	"	"
Surrogate: Toluene-d8	99.3 %	85-115	"	"	"
Surrogate: 4-Bromofluorobenzene	96.3 %	84-114	"	"	"

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 (South)

MW06

4/28/2017 1:17:00PM

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Notes
		Limit							

Origins Laboratory, Inc.
Y705009-03 (Water)

BTEX by EPA 8260C

Benzene	ND	1.00	ug/L	1	B7E0203	05/02/2017	05/03/2017	U
Toluene	ND	1.00	"	"	"	"	"	U
Ethylbenzene	ND	1.00	"	"	"	"	"	U
Xylenes, total	ND	1.00	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	106 %	84-121	"	"	"
Surrogate: Toluene-d8	101 %	85-115	"	"	"
Surrogate: 4-Bromofluorobenzene	98.4 %	84-114	"	"	"

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 (South)

MW07

4/28/2017 1:05:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y705009-04 (Water)

BTEX by EPA 8260C

Benzene	ND	1.00	ug/L	1	B7E0203	05/02/2017	05/03/2017	U
Toluene	ND	1.00	"	"	"	"	"	U
Ethylbenzene	ND	1.00	"	"	"	"	"	U
Xylenes, total	ND	1.00	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	106 %	84-121	"	"	"
Surrogate: Toluene-d8	98.9 %	85-115	"	"	"
Surrogate: 4-Bromofluorobenzene	98.7 %	84-114	"	"	"

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 (South)

MW08

4/28/2017 12:50:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc. Y705009-05 (Water)

BTEX by EPA 8260C

Benzene	ND	1.00	ug/L	1	B7E0203	05/02/2017	05/03/2017	U
Toluene	ND	1.00	"	"	"	"	"	U
Ethylbenzene	ND	1.00	"	"	"	"	"	U
Xylenes, total	ND	1.00	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	108 %	84-121	"	"	"
Surrogate: Toluene-d8	98.8 %	85-115	"	"	"
Surrogate: 4-Bromofluorobenzene	97.2 %	84-114	"	"	"

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 (South)

MW04

4/28/2017 1:44:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc. Y705009-06 (Water)

BTEX by EPA 8260C

Benzene	36.1	1.00	ug/L	1	B7E0203	05/02/2017	05/03/2017	
Toluene	ND	1.00	"	"	"	"	"	U
Ethylbenzene	45.6	1.00	"	"	"	"	"	
Xylenes, total	13.2	1.00	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	106 %	84-121			"	"	"	
Surrogate: Toluene-d8	100 %	85-115			"	"	"	
Surrogate: 4-Bromofluorobenzene	98.3 %	84-114			"	"	"	

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 (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 B7E0203 - EPA 5030B (Water)										
Blank (B7E0203-BLK1)					Prepared: 05/02/2017 Analyzed: 05/02/2017					
Benzene	ND	1.00	ug/L							U
Toluene	ND	1.00	"							U
Ethylbenzene	ND	1.00	"							U
Xylenes, total	ND	1.00	"							U
Surrogate: 1,2-Dichloroethane-d4	63		"	62.5	102		84-121			
Surrogate: Toluene-d8	64		"	62.5	102		85-115			
Surrogate: 4-Bromofluorobenzene	61		"	62.5	98.0		84-114			

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 (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 B7E0203 - EPA 5030B (Water)

Blank (B7E0203-BLK2)

Prepared: 05/02/2017 Analyzed: 05/02/2017

Benzene	ND	1.00	ug/L							U
Toluene	ND	1.00	"							U
Ethylbenzene	ND	1.00	"							U
Xylenes, total	ND	1.00	"							U
Surrogate: 1,2-Dichloroethane-d4	64		"	62.5	103		84-121			
Surrogate: Toluene-d8	63		"	62.5	101		85-115			
Surrogate: 4-Bromofluorobenzene	61		"	62.5	97.3		84-114			

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 (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 B7E0203 - EPA 5030B (Water)

LCS (B7E0203-BS1)

Prepared: 05/02/2017 Analyzed: 05/02/2017

Benzene	54.2	1.00	ug/L	50.0		108	73.3-129			
Toluene	54.5	1.00	"	50.0		109	76.2-123			
Ethylbenzene	54.4	1.00	"	50.0		109	73.6-130			
m,p-Xylene	108	2.00	"	100		108	76.1-126			
o-Xylene	54.0	1.00	"	50.0		108	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	61		"	62.5		97.5	84-121			
Surrogate: Toluene-d8	63		"	62.5		101	85-115			
Surrogate: 4-Bromofluorobenzene	63		"	62.5		101	84-114			

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 (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 B7E0203 - EPA 5030B (Water)

LCS (B7E0203-BS2)

Prepared: 05/02/2017 Analyzed: 05/02/2017

Benzene	43.4	1.00	ug/L	50.0		86.8	73.3-129
Toluene	42.9	1.00	"	50.0		85.7	76.2-123
Ethylbenzene	42.0	1.00	"	50.0		84.0	73.6-130
m,p-Xylene	84.4	2.00	"	100		84.4	76.1-126
o-Xylene	42.5	1.00	"	50.0		85.1	76.6-124
Surrogate: 1,2-Dichloroethane-d4	61		"	62.5		97.8	84-121
Surrogate: Toluene-d8	62		"	62.5		99.4	85-115
Surrogate: 4-Bromofluorobenzene	62		"	62.5		99.8	84-114

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 (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 B7E0203 - EPA 5030B (Water)

Matrix Spike (B7E0203-MS1)		Source: Y704348-04			Prepared: 05/02/2017 Analyzed: 05/02/2017					
Benzene	42.4	1.00	ug/L	50.0	ND	84.8	74-130			
Toluene	42.4	1.00	"	50.0	ND	84.9	73-131			
Ethylbenzene	40.8	1.00	"	50.0	ND	81.6	76-132			
m,p-Xylene	82.8	2.00	"	100	ND	82.8	69-139			
o-Xylene	44.0	1.00	"	50.0	ND	87.9	74-131			
Surrogate: 1,2-Dichloroethane-d4	61		"	62.5		98.2	84-121			
Surrogate: Toluene-d8	63		"	62.5		101	85-115			
Surrogate: 4-Bromofluorobenzene	64		"	62.5		102	84-114			

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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 (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 B7E0203 - EPA 5030B (Water)

Matrix Spike (B7E0203-MS2)		Source: Y704348-05			Prepared: 05/02/2017 Analyzed: 05/02/2017					
Benzene	50.6	1.00	ug/L	50.0	ND	101	74-130			
Toluene	51.4	1.00	"	50.0	ND	103	73-131			
Ethylbenzene	52.0	1.00	"	50.0	0.410	103	76-132			
m,p-Xylene	103	2.00	"	100	ND	103	69-139			
o-Xylene	51.3	1.00	"	50.0	ND	103	74-131			
Surrogate: 1,2-Dichloroethane-d4	59		"	62.5		94.9	84-121			
Surrogate: Toluene-d8	64		"	62.5		103	85-115			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		98.7	84-114			

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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 (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 B7E0203 - EPA 5030B (Water)

Matrix Spike Dup (B7E0203-MSD1)		Source: Y704348-04			Prepared: 05/02/2017 Analyzed: 05/02/2017					
Benzene	47.1	1.00	ug/L	50.0	ND	94.2	74-130	10.5	20	
Toluene	46.8	1.00	"	50.0	ND	93.6	73-131	9.82	20	
Ethylbenzene	45.9	1.00	"	50.0	ND	91.7	76-132	11.7	20	
m,p-Xylene	93.1	2.00	"	100	ND	93.1	69-139	11.6	20	
o-Xylene	48.9	1.00	"	50.0	ND	97.8	74-131	10.6	20	
Surrogate: 1,2-Dichloroethane-d4	59		"	62.5		94.4	84-121			
Surrogate: Toluene-d8	63		"	62.5		101	85-115			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		99.4	84-114			

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 (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 B7E0203 - EPA 5030B (Water)

Matrix Spike Dup (B7E0203-MSD2)		Source: Y704348-05			Prepared: 05/02/2017 Analyzed: 05/02/2017					
Benzene	49.9	1.00	ug/L	50.0	ND	99.8	74-130	1.33	20	
Toluene	49.4	1.00	"	50.0	ND	98.7	73-131	4.07	20	
Ethylbenzene	49.5	1.00	"	50.0	0.410	98.2	76-132	4.87	20	
m,p-Xylene	99.1	2.00	"	100	ND	99.1	69-139	3.86	20	
o-Xylene	50.2	1.00	"	50.0	ND	100	74-131	2.21	20	
Surrogate: 1,2-Dichloroethane-d4	60		"	62.5		95.7	84-121			
Surrogate: Toluene-d8	64		"	62.5		102	85-115			
Surrogate: 4-Bromofluorobenzene	64		"	62.5		102	84-114			

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 (South)

Notes and Definitions

U Sample is Non-Detect.

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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