

GROUNDWATER MONITORING REPORT OCTOBER 2010

UPRC 9, 9K, 10K TANK BATTERY

On September 20, 2010, LT Environmental, Inc. (LTE) conducted groundwater sampling on behalf of Noble Energy, Inc. (Noble), at the UPRC 9, 9K, 10K Tank Battery (Site). Based upon persistent elevated levels of dissolved benzene observed following the fourth quarter 2009 sampling event, a groundwater polishing amendment was applied to saturated soils at the Site. Following the polishing remediation, the September 2010 sampling event was conducted and constitutes the second post remediation performance monitoring event at the Site. Site history, assessment, and prior remediation activities have been described in preceding reports. A Site Map is presented as Figure 1.

During the September 20, 2010 monitoring event, the depth to groundwater ranged from 8.22 feet below top of casing (btoc) in MW02-R to 8.76 feet btoc in MW03, and was used to calculate well-specific purge volumes. Samples were collected and submitted to Origins Laboratory, Inc. of Denver, Colorado for analysis of benzene, toluene, ethylbenzene, and total xylenes (BTEX) by United States Environmental Protection Agency Method 8260B.

Analytical results from the monitoring wells, presented in Table 1 indicate BTEX concentrations are in compliance with Colorado Department of Public Health and Environmental-Water Quality Control Commission Regulation 41 (WQCC Reg 41). The laboratory analytical report is included in the Appendix.

LTE will continue to conduct quarterly groundwater monitoring events with the goal of observing four consecutive quarters of analytical results in compliance with applicable regulatory standards. The next quarterly groundwater sampling event is scheduled for December 2010.

TABLE

TABLE 1

GROUNDWATER ANALYTICAL DATA
UPRC 9, 9k, 10k TANK BATTERY
WELD COUNTY, COLORADO
NOBLE ENERGY, INC.

MONITORING WELL	DATE	DEPTH TO WATER (feet btoc)	BENZENE (ug/L)	TOLUENE (ug/L)	ETHYLBENZENE (ug/L)	TOTAL XYLENES (ug/L)
MW01	4/28/2009	6.12	<1.0	<1.0	<1.0	<3.0
	8/25/2009	2.21	<1.0	<1.0	<1.0	<3.0
	11/19/2009	7.50	<1.0	<1.0	<1.0	<3.0
	2/16/2010	4.89	<1.0	<1.0	<1.0	<3.0
	6/15/2010	5.52	<1.0	<1.0	<1.0	<1.0
	9/20/2010	8.42	<1.0	<1.0	<1.0	<1.0
MW02	4/28/2009	6.52	<1.0	<1.0	<1.0	<3.0
	8/25/2009	2.16	<1.0	<1.0	<1.0	<3.0
	11/19/2009	7.74	29.1	<1.0	<1.0	<3.0
	2/16/2010	5.06	65.2	<1.0	<1.0	<3.0
MW02R	6/15/2010	5.58	40.0	<1.0	<1.0	<1.0
	9/20/2010	8.22	<1.0	<1.0	<1.0	<1.0
MW03	4/28/2009	6.69	2.70	<1.0	108	519.19
	8/25/2009	2.01	<1.0	<1.0	<1.0	<3.0
	11/19/2009	8.03	1.12	<1.0	24.3	23.5
	2/16/2010	5.15	<1.0	<1.0	<1.0	<3.0
	6/15/2010	6.25	<1.0	<1.0	1.9	<1.0
	9/20/2010	8.76	1.40	<1.0	2.87	<1.0
CDPHE WQCC Reg 41			5.0	560	700	1,400

NOTES:

btoc - below top of casing

ug/L - micrograms per liter

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

BOLD - indicates result exceeds the regulatory standard.

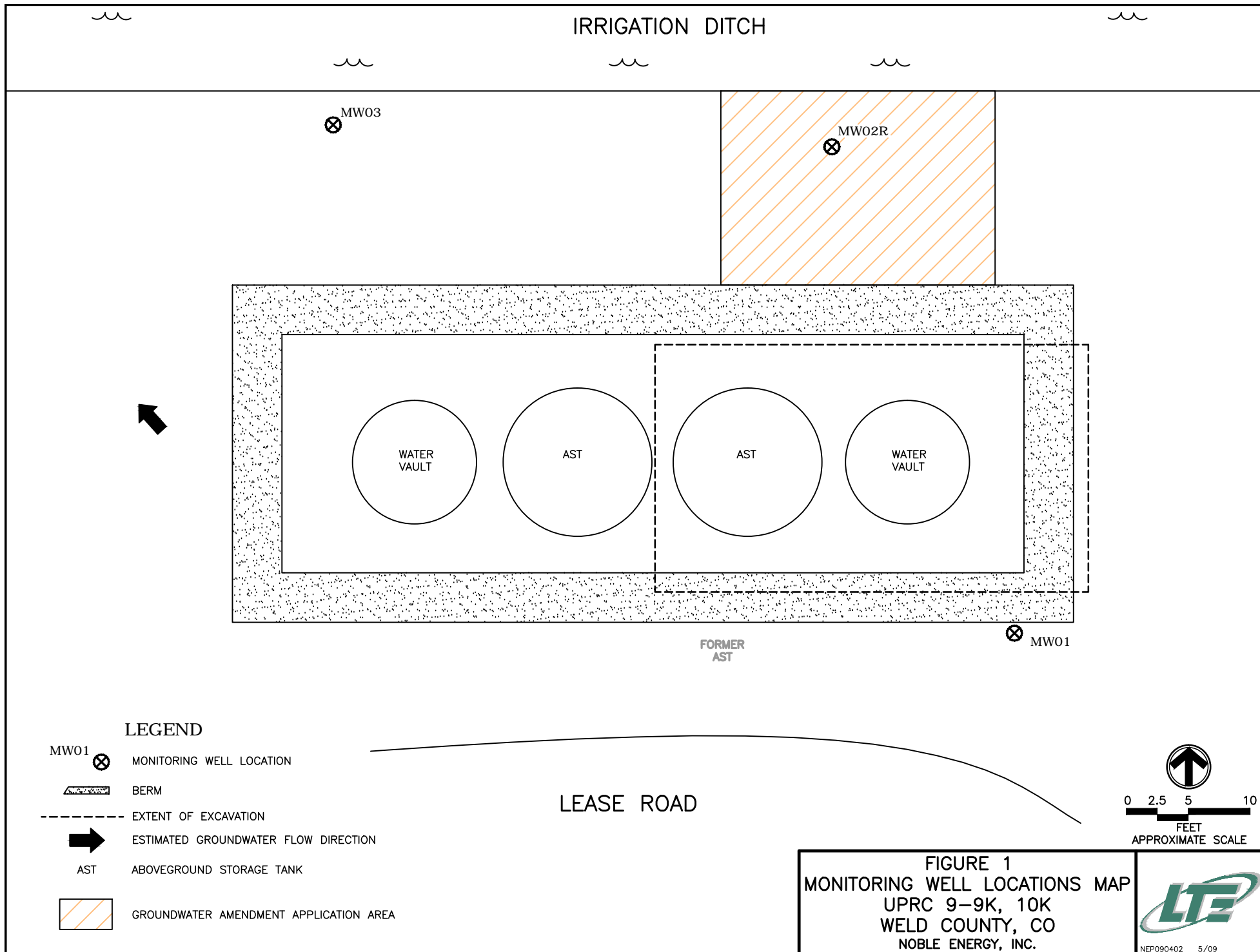
Benzene, toluene, ethylbenzene, and xylenes analyzed by EPA Method 8260B

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

Commission Regulation 41 covering Basic Standards for Groundwater



FIGURE



APPENDIX A
ANALYTICAL REPORTS



09/23/2010

LT Environmental, Inc.

Matthew Harrison

4600 West 60th Avenue

Arvada

CO

80003

Project Name- Noble - UPRC 9, 9k- 10k

Project Number- NEP0904

Attached are your analytical results for Noble - UPRC 9, 9k- 10k received by Origins Laboratory, Inc. September 20, 2010 5:50 pm. This project is associated with Origins project number X009120-01 .

The analytical results in the following report were analyzed under the guidelines of EPA Methods specified in SW-846. The analytical results apply specifically to the samples and analyses specified per the attached Chain of Custody.

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

Page 1 of 8



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

Matthew Harrison
Project Number: NEP0904
Project: Noble - UPRC 9, 9k- 10k

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Sampled	Date Received
MW01	X009120-01	Water	9/20/2010 4:30:00PM	09/20/2010 17:50
MW02R	X009120-02	Water	9/20/2010 4:45:00PM	09/20/2010 17:50
MW03	X009120-03	Water	9/20/2010 4:55:00PM	09/20/2010 17:50

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 E Doyle,

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

Matthew Harrison
Project Number: NEP0904
Project: Noble - UPRC 9, 9k- 10k

www.originslaboratory.com

page 1 of 1

X009120

Project Manager: Matthew Harrison
Project Name: UPRC 9, 9k, 10k
Project Number: NEP0904
Samples Collected By: GC/PS

Client: LT Environmental, Inc.
Address: 4600 W 60th Avenue
Telephone Number: 303 433 9788
Email Address: m.harrison@ltenv.com

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	09/20/10	1630	2 X					X				1	
MW02 R	09/20/10	1645	2 X					X				2	Lab Filter
MW03	09/20/10	1655	2 X					X				3	Lab Filter
												4	
												5	
												6	
												7	
												8	
												9	
												10	

Relinquished By:	Date:	Time:	Received By:	Date:	Time:	Turnaround Time:
<u>g.e.</u>	9/20/10	1750	<u>[Signature]</u>	9/20/10	1750	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"/>

Units Results Standard

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

Origins Laboratory, Inc.

Noelle E Doyle

Noelle E Doyle,

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

Matthew Harrison
Project Number: NEP0904
Project: Noble - UPRC 9, 9k- 10k

MW01

9/20/2010 4:30:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X009120-01 (Water)

BTEX by EPA 8260B

Benzene	ND	1.00	ug/L	1	0121003	09/21/2010	09/22/2010
Toluene	ND	1.00	"	"	"	"	"
Ethylbenzene	ND	1.00	"	"	"	"	"
m,p-Xylene	ND	2.00	"	"	"	"	"
o-Xylene	ND	1.00	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	102 %	73.5-130	"	"	"
Surrogate: Toluene-d8	105 %	79.3-113	"	"	"
Surrogate: 4-Bromofluorobenzene	95.8 %	81.5-117	"	"	"

Origins Laboratory, Inc.



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Noelle E Doyle,

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

Matthew Harrison
Project Number: NEP0904
Project: Noble - UPRC 9, 9k- 10k

MW02R

9/20/2010 4:45:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X009120-02 (Water)

BTEX by EPA 8260B

Benzene	ND	1.00	ug/L	1	0121003	09/21/2010	09/22/2010	
Toluene	ND	1.00	"	"	"	"	"	
Ethylbenzene	ND	1.00	"	"	"	"	"	
m,p-Xylene	ND	2.00	"	"	"	"	"	
o-Xylene	ND	1.00	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	101 %	73.5-130			"	"	"	
Surrogate: Toluene-d8	105 %	79.3-113			"	"	"	
Surrogate: 4-Bromofluorobenzene	95.5 %	81.5-117			"	"	"	

Origins Laboratory, Inc.



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Noelle E Doyle,

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

Matthew Harrison
Project Number: NEP0904
Project: Noble - UPRC 9, 9k- 10k

MW03**9/20/2010 4:55:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X009120-03 (Water)

BTEX by EPA 8260B

Benzene	1.40	1.00	ug/L	1	0121003	09/21/2010	09/22/2010	
Toluene	ND	1.00	"	"	"	"	"	
Ethylbenzene	2.87	1.00	"	"	"	"	"	
m,p-Xylene	ND	2.00	"	"	"	"	"	
o-Xylene	ND	1.00	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	102 %	73.5-130			"	"	"	
Surrogate: Toluene-d8	103 %	79.3-113			"	"	"	
Surrogate: 4-Bromofluorobenzene	96.4 %	81.5-117			"	"	"	

Origins Laboratory, Inc.



Noelle E Doyle,

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

Matthew Harrison
Project Number: NEP0904
Project: Noble - UPRC 9, 9k- 10k

Volatile Organic Compounds by EPA Method 8260B - 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 0121003 - EPA 5030B

Blank (0121003-BLK1)

Prepared: 09/21/2010 Analyzed: 09/22/2010

Benzene	ND	1.00	ug/L
Toluene	ND	1.00	"
Ethylbenzene	ND	1.00	"
m,p-Xylene	ND	2.00	"
o-Xylene	ND	1.00	"

Surrogate: 1,2-Dichloroethane-d4	64.5	"	62.5	103	73.5-130
Surrogate: Toluene-d8	65.1	"	62.5	104	79.3-113
Surrogate: 4-Bromofluorobenzene	59.5	"	62.5	95.3	81.5-117

LCS (0121003-BS1)

Prepared: 09/21/2010 Analyzed: 09/22/2010

Benzene	38.9	1.00	ug/L	50.0	77.7	77.3-128
Toluene	46.3	1.00	"	50.0	92.6	81.7-118

Surrogate: 1,2-Dichloroethane-d4	65.2	"	62.5	104	73.5-130
Surrogate: Toluene-d8	65.6	"	62.5	105	79.3-113
Surrogate: 4-Bromofluorobenzene	60.4	"	62.5	96.7	81.5-117

Matrix Spike (0121003-MS1)

Source: X009119-01

Prepared: 09/21/2010 Analyzed: 09/22/2010

Benzene	41.6	1.00	ug/L	50.0	ND	83.2	74.5-132
Toluene	49.2	1.00	"	50.0	ND	98.5	74.2-116

Surrogate: 1,2-Dichloroethane-d4	65.8	"	62.5	105	73.5-130
Surrogate: Toluene-d8	65.4	"	62.5	105	79.3-113
Surrogate: 4-Bromofluorobenzene	60.3	"	62.5	96.4	81.5-117

Matrix Spike Dup (0121003-MSD1)

Source: X009119-01

Prepared: 09/21/2010 Analyzed: 09/22/2010

Benzene	44.6	1.00	ug/L	50.0	ND	89.2	74.5-132	6.98	13.1
Toluene	52.2	1.00	"	50.0	ND	104	74.2-116	5.86	21.2

Surrogate: 1,2-Dichloroethane-d4	66.0	"	62.5	106	73.5-130
Surrogate: Toluene-d8	65.0	"	62.5	104	79.3-113
Surrogate: 4-Bromofluorobenzene	60.7	"	62.5	97.2	81.5-117

Origins Laboratory, Inc.



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4600 West 60th Avenue
Arvada CO 80003

Matthew Harrison
Project Number: NEP0904
Project: Noble - UPRC 9, 9k- 10k

Notes and Definitions

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

Origins Laboratory, Inc.



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