



Remediation #4460

GROUNDWATER MONITORING REPORT JANUARY 2011

UPRC 9, 9K, 10K TANK BATTERY

On December 7, 2010 LT Environmental, Inc. (LTE) conducted groundwater sampling on behalf of Noble Energy, Inc. (Noble), at the UPRC 9, 9K, 10K Tank Battery (Site). The December 2010 sampling event constitutes the third 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.

Depth to groundwater ranged from 6.15 feet below top of casing (btoc) in MW02R to 6.69 feet btoc in MW03, and was used to calculate well-specific purge volumes. Following purging, 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 WQCC Reg. 41. The next quarterly groundwater sampling event is scheduled for March 2011.

TABLE

TABLE 1

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

MONITORING		DEPTH TO				TOTAL
WELL	DATE	WATER	BENZENE	TOLUENE	ETHYLBENZENE	XYLENES
		(feet btoc)	(ug/L)	(ug/L)	(ug/L)	(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
	12/7/2010	6.36	<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
	12/7/2010	6.15	<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
	12/7/2010	6.69	<1.0	<1.0	<1.0	<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

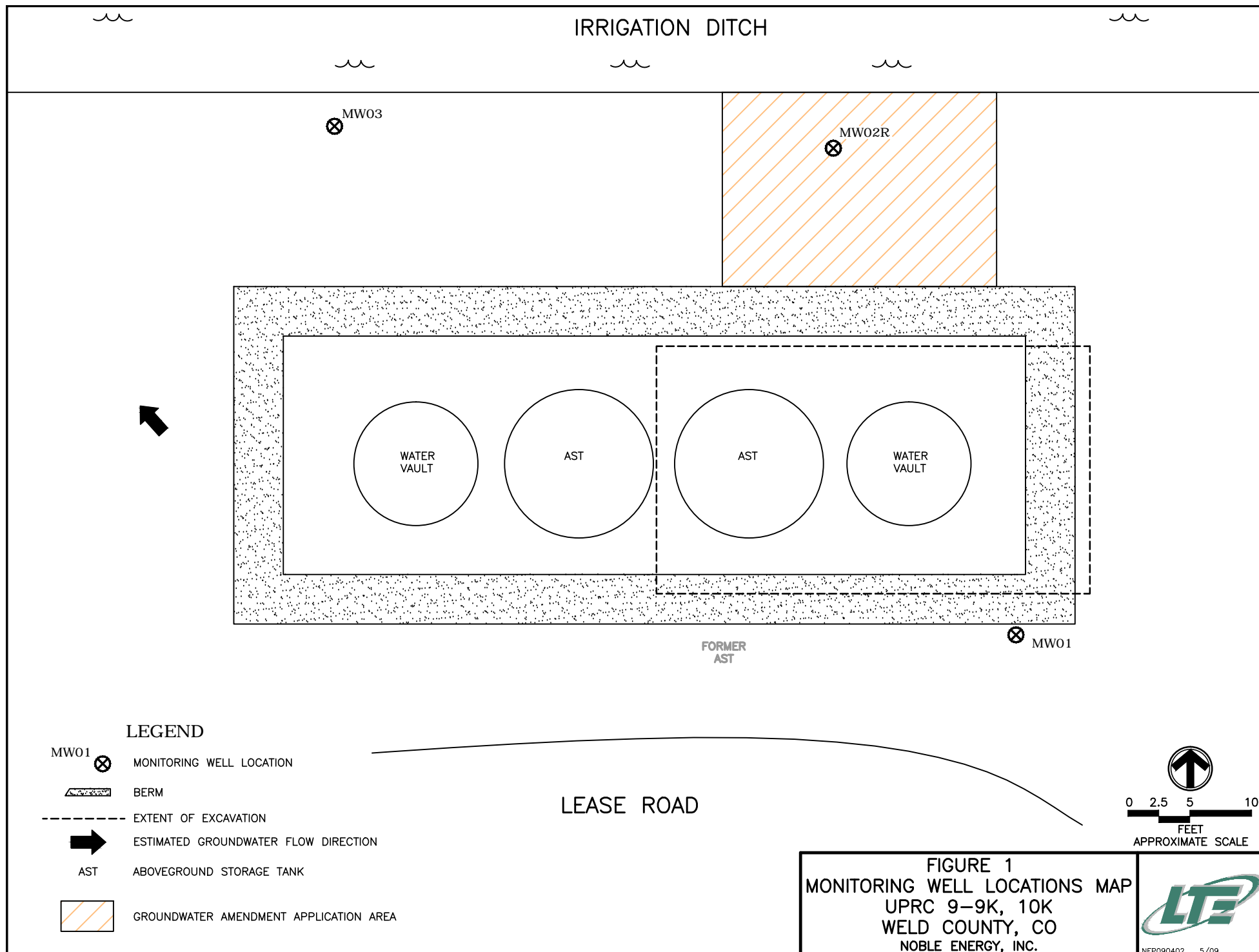
BOLD - indicates result exceeds the regulatory standard.

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
ANALYTICAL REPORT



December 09, 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. December 7, 2010 4:10 pm. This project is associated with Origins project number X012039-01 .

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



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	X012039-01	Water	12/7/2010 1:40:00PM	12/07/2010 16:10
MW02R	X012039-02	Water	12/7/2010 1:10:00PM	12/07/2010 16:10
MW03	X012039-03	Water	12/7/2010 1:25:00PM	12/07/2010 16:10

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

1012039 page 1 of 1

ORIGINS
LABORATORY, INC

Client: LT Environmental
Address: on file
Telephone Number: on file
Email Address: on file

Project Manager: Rob Reed
Project Name: UPRC 9, 9k, 10k
Project Number: NEP0904
Samples Collected By: LIZ HOWE

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	12-7-10	1340	2	X					X				1
MW02	12-7-10	1310	2	X					X				2
MW03	12-7-10	1325	2	X					X				3
													4
													5
													6
													7
													8
													9
													10

Relinquished By:	Date:	Time:	Received By:	Date:	Time:	Turnaround Time:
by file	12-7-10	1110	[Signature]	12-7-10	1110	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"/>

Dustin Donelle Mendenhall

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

12/7/2010 1:40:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X012039-01 (Water)

BTEX by EPA 8260B

Benzene	ND	1.00	ug/L	1	OL08001	12/08/2010	12/08/2010
Toluene	ND	1.00	"	"	"	"	"
Ethylbenzene	ND	1.00	"	"	"	"	"
Xylenes, total	ND	1.00	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	104 %	73.5-130	"	"	"
Surrogate: Toluene-d8	94.0 %	79.3-113	"	"	"
Surrogate: 4-Bromofluorobenzene	106 %	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

MW02R

12/7/2010 1:10:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X012039-02 (Water)

BTEX by EPA 8260B

Benzene	ND	1.00	ug/L	1	OL08001	12/08/2010	12/08/2010	
Toluene	ND	1.00	"	"	"	"	"	
Ethylbenzene	ND	1.00	"	"	"	"	"	
Xylenes, total	ND	1.00	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	106 %	73.5-130	"	"	"	"	"	
Surrogate: Toluene-d8	92.3 %	79.3-113	"	"	"	"	"	
Surrogate: 4-Bromofluorobenzene	106 %	81.5-117	"	"	"	"	"	

Origins Laboratory, Inc.



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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

MW03

12/7/2010 1:25:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X012039-03 (Water)

BTEX by EPA 8260B

Benzene	ND	1.00	ug/L	1	OL08001	12/08/2010	12/08/2010	
Toluene	ND	1.00	"	"	"	"	"	
Ethylbenzene	ND	1.00	"	"	"	"	"	
Xylenes, total	ND	1.00	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	104 %	73.5-130	"	"	"	"	"	
Surrogate: Toluene-d8	91.1 %	79.3-113	"	"	"	"	"	
Surrogate: 4-Bromofluorobenzene	109 %	81.5-117	"	"	"	"	"	

Origins Laboratory, Inc.



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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 OL08001 - EPA 5030B

Blank (OL08001-BLK1)

Prepared: 12/08/2010 Analyzed: 12/08/2010

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	64.7		"	62.5		103	73.5-130			
Surrogate: Toluene-d8	56.6		"	62.5		90.6	79.3-113			
Surrogate: 4-Bromofluorobenzene	65.5		"	62.5		105	81.5-117			

LCS (OL08001-BSI)

Prepared: 12/08/2010 Analyzed: 12/08/2010

Benzene	56.4	1.00	ug/L	50.0		113	77.3-128			
Toluene	52.0	1.00	"	50.0		104	81.7-118			
Surrogate: 1,2-Dichloroethane-d4	61.9		"	62.5		99.0	73.5-130			
Surrogate: Toluene-d8	56.5		"	62.5		90.4	79.3-113			
Surrogate: 4-Bromofluorobenzene	61.9		"	62.5		99.0	81.5-117			

Matrix Spike (OL08001-MSI)

Source: X012049-01

Prepared: 12/08/2010 Analyzed: 12/08/2010

Benzene	56.8	1.00	ug/L	50.0	ND	114	74.5-132			
Toluene	52.4	1.00	"	50.0	ND	105	74.2-116			
Surrogate: 1,2-Dichloroethane-d4	66.5		"	62.5		106	73.5-130			
Surrogate: Toluene-d8	57.0		"	62.5		91.2	79.3-113			
Surrogate: 4-Bromofluorobenzene	64.1		"	62.5		103	81.5-117			

Matrix Spike Dup (OL08001-MSD1)

Source: X012049-01

Prepared: 12/08/2010 Analyzed: 12/08/2010

Benzene	57.5	1.00	ug/L	50.0	ND	115	74.5-132	1.19	13.1	
Toluene	52.5	1.00	"	50.0	ND	105	74.2-116	0.248	21.2	
Surrogate: 1,2-Dichloroethane-d4	68.6		"	62.5		110	73.5-130			
Surrogate: Toluene-d8	57.7		"	62.5		92.3	79.3-113			
Surrogate: 4-Bromofluorobenzene	65.0		"	62.5		104	81.5-117			

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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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