

GROUNDWATER MONITORING REPORT OCTOBER 2009

RICE #1

On August 24, 2009, LT Environmental, Inc. (LTE) conducted groundwater sampling on behalf of Noble Energy, Inc. (Noble) at the Rice #1 Tank Battery (Site). This sampling event constitutes the forth post-remediation monitoring event at the Site. Site history, remediation activities, and groundwater monitoring results have been described in preceding reports.

Groundwater level measurements were collected from the monitoring wells and are summarized in Table 1. Monitoring wells (MW01, MW02, and MW03) were installed surrounding the tank battery excavation on October 29, 2008. A Site Map is presented on Figure 1.

Depth to groundwater, which ranged from 7.10 feet below top of casing (btoc) in MW03 to 9.35 feet btoc in MW01, was used to calculate well-specific purge volumes. Following purging, groundwater samples were collected and preserved on ice. Samples were then submitted under strict chain of custody protocol 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.

Groundwater analytical results indicate BTEX concentrations at monitoring wells MW01, MW02, and MW03 were in compliance with the Colorado Department of Public Health and Environment Water Quality Control Commission Regulation 41 (WQCC Reg 41). Analytical results are summarized in Table 1. The laboratory analytical report is attached as an Appendix.

This groundwater sampling event constitutes the fourth consecutive quarterly groundwater sampling event which has reported groundwater analytical results in compliance with WQCC Reg 41. As soil and groundwater have been remediated to achieve cleanup goals, LTE on behalf of Noble, requests that the Colorado Oil and Gas Conservation Commission grant a No Further Action condition for the Site.

TABLE

TABLE 1

**GROUNDWATER ANALYTICAL DATA
RICE #1 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)	XYLENES (ug/L)
MW01	11/5/2008	11.48	<1.0	<1.0	2.96	8.92
	2/6/2009	13.55	<1.0	<1.0	3.59	4.58
	5/13/2009	12.28	<1.0	<1.0	<1.0	<3.0
	8/24/2009	9.35	<1.0	<1.0	<1.0	<3.0
MW02	11/5/2008	12.03	<1.0	<1.0	5.79	52.27
	2/6/2009	13.95	<1.0	<1.0	12.6	16.1
	5/13/2009	13.38	<1.0	<1.0	8.81	12.7
	8/24/2009	9.24	<1.0	<1.0	<1.0	<3.0
MW03	11/5/2008			Well Dry		
	2/6/2009	14.05	4.06	1.74	1.63	15.12
	5/13/2009	14.98	1.81	<1.0	<1.0	2.89
	8/24/2009	7.1	<1.0	<1.0	<1.0	4.22
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 method detection limit

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

Commission Regulation 41 covering Basic Standards for Groundwater

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

FIGURE

COUNTY ROAD 13

FORMER AST

MW01

MW02

M

SEPARATOR


MW03

LEGEND

MW01  MONITORING WELL LOCATION

 METER HOUSE

 BERM

 EXTENT OF EXCAVATION

 ESTIMATED GROUNDWATER FLOW DIRECTION

AST ABOVEGROUND STORAGE TANK

SOURCE:
GOOGLEMAP.COM

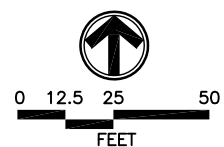


FIGURE 1
SITE MAP
RICE #1 TANK BATTERY
WELD COUNTY, COLORADO
NOBLE ENERGY, INC.



NEP083401 10/08

APPENDIX
ANALYTICAL REPORT



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303.433.1322 Phone 303.265.9645 Fax

October 09, 2009

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

Brian Dodek
Project Number: NEP0834
Project: Noble – Rice 1

Attached are the analytical results for Noble – Rice 1 received by Origins Laboratory, Inc. 8/24/2009 2:00:00PM. Please let us know if you have any questions, or if we can help with anything at all.

Noelle E Doyle
Laboratory Manager

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. This laboratory report is intended solely for the above addressee and it is only to be used and or reproduced in its entirety.

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Project Number: NEP0834
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CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Sampled	Date Received
MW01	X908078-01	Water	8/24/2009 10:10:00AM	08/24/2009 14:00
MW02	X908078-02	Water	8/24/2009 10:15:00AM	08/24/2009 14:00
MW03	X908078-03	Water	8/24/2009 10:20:00AM	08/24/2009 14:00

Origins Laboratory, Inc.

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LT Environmental, Inc.
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Brian Dodek
Project Number: NEP0834
Project: Noble - Rice 1

390801X



originslaboratory.com

Client: LT Env.
Address: 4600 West 60th Avenue
Telephone Number: 303.433.1322
E-Mail Address: info@originslab.com
Project Manager: Brian Dodek
Project Name: Rice 1
Project Number: NEP0834
Samples Collected by: M. Harrison

Sample ID - Description	Date Sampled	Time Sampled	Number of Containers	Preservative				Matrix			Analysis	Sample Instructions
				Unpreserved	HCl	HNO ₃	Other -	Groundwater	Soil	Air - Summa Canister #		
MW01	8/24/09	1010	2	X				X			X BTEX	1
MW02		1015										2
MW03		1020										3
												4
												5
												6
												7
												8
												9
												10
Relinquished by: <u>[Signature]</u>	Date: <u>8/24/09</u>	Time: <u>1400</u>	Received by: <u>[Signature]</u>	Date: <u>8/24/09</u>	Time: <u>1400</u>	Temperature Upon Receipt: <u>1400</u>	Turn Around Time: <u>24-hr</u>	Standard: <u>1400</u>				

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MW01
X908078-01 (Water)

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Notes
		Limit							

Origins Laboratory, Inc.

BTEX by EPA 8260B

Benzene	ND	0.00100	mg/L	1	9H25001	08/25/2009	08/25/2009
Toluene	ND	0.00100	"	"	"	"	"
Ethylbenzene	ND	0.00100	"	"	"	"	"
o-Xylene	ND	0.00100	"	"	"	"	"
m,p-Xylene	ND	0.00200	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	98.4 %	85.7-134			"	"	"
Surrogate: Toluene-d8	99.3 %	81.4-121			"	"	"
Surrogate: 4-Bromofluorobenzene	106 %	74.7-127			"	"	"

Origins Laboratory, Inc.

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MW02

X908078-02 (Water)

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Notes
		Limit							

Origins Laboratory, Inc.

BTEX by EPA 8260B

Benzene	ND	0.00100	mg/L	1	9H25001	08/25/2009	08/25/2009
Toluene	ND	0.00100	"	"	"	"	"
Ethylbenzene	ND	0.00100	"	"	"	"	"
o-Xylene	ND	0.00100	"	"	"	"	"
m,p-Xylene	ND	0.00200	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	98.0 %	85.7-134	"	"	"
Surrogate: Toluene-d8	99.1 %	81.4-121	"	"	"
Surrogate: 4-Bromofluorobenzene	101 %	74.7-127	"	"	"

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MW03

X908078-03 (Water)

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Notes
		Limit							

Origins Laboratory, Inc.

BTEX by EPA 8260B

Benzene	ND	0.00100	mg/L	1	9H25001	08/25/2009	08/25/2009
Toluene	ND	0.00100	"	"	"	"	"
Ethylbenzene	ND	0.00100	"	"	"	"	"
o-Xylene	ND	0.00100	"	"	"	"	"
m,p-Xylene	0.00422	0.00200	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	101 %	85.7-134	"	"	"
Surrogate: Toluene-d8	101 %	81.4-121	"	"	"
Surrogate: 4-Bromofluorobenzene	108 %	74.7-127	"	"	"

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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 9H25001 – EPA 5030B

Blank (9H25001–BLK1)

Prepared: 08/25/2009 Analyzed: 08/25/2009

Benzene	ND	0.001	mg/L							
Toluene	ND	0.001	"							
Ethylbenzene	ND	0.001	"							
o-Xylene	ND	0.001	"							
m,p-Xylene	ND	0.002	"							
Surrogate: 1,2-Dichloroethane-d4	60.7		ug/L	62.5		97.1	85.7-134			
Surrogate: Toluene-d8	65.4		"	62.5		105	81.4-121			
Surrogate: 4-Bromofluorobenzene	60.4		"	62.5		96.7	74.7-127			

LCS (9H25001–BS1)

Prepared: 08/25/2009 Analyzed: 08/25/2009

Benzene	0.06	0.001	mg/L	0.0500		114	74.9-126			
Toluene	0.06	0.001	"	0.0500		121	73.3-128			
Surrogate: 1,2-Dichloroethane-d4	61.8		ug/L	62.5		98.9	85.7-134			
Surrogate: Toluene-d8	63.6		"	62.5		102	81.4-121			
Surrogate: 4-Bromofluorobenzene	61.1		"	62.5		97.8	74.7-127			

Matrix Spike (9H25001–MS1)

Source: X908075–02

Prepared: 08/25/2009 Analyzed: 08/25/2009

Benzene	0.05	0.001	mg/L	0.0500	ND	100	78.1-132			
Toluene	0.06	0.001	"	0.0500	ND	122	71.7-124			
Surrogate: 1,2-Dichloroethane-d4	41.6		ug/L	62.5		66.5	85.7-134			S–GC
Surrogate: Toluene-d8	75.8		"	62.5		121	81.4-121			
Surrogate: 4-Bromofluorobenzene	59.5		"	62.5		95.1	74.7-127			

Matrix Spike Dup (9H25001–MSD1)

Source: X908075–02

Prepared: 08/25/2009 Analyzed: 08/25/2009

Benzene	0.05	0.001	mg/L	0.0500	ND	106	78.1-132	5.75	24.8	
Toluene	0.06	0.001	"	0.0500	ND	130	71.7-124	6.41	25	QM-07
Surrogate: 1,2-Dichloroethane-d4	42.8		ug/L	62.5		68.4	85.7-134			S–GC
Surrogate: Toluene-d8	77.0		"	62.5		123	81.4-121			S–GC
Surrogate: 4-Bromofluorobenzene	58.2		"	62.5		93.1	74.7-127			

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Notes and Definitions

S-GC	Surrogate recovery outside of control limits. The data was accepted based on valid recovery of the remaining surrogate.
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

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