



GROUNDWATER MONITORING REPORT NOVEMBER 2010

COLLINS 14-20 TANK BATTERY

On September 30, 2010, LT Environmental, Inc. (LTE) conducted groundwater sampling on behalf of Noble Energy, Inc. (Noble), at the Collins 14-20 Tank Battery (Site). Historical assessment, remediation, and groundwater monitoring results have been described in preceding reports. The September 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, which ranged from 16.26 feet below top of casing (btoc) in SB14-R to 19.83 feet btoc in SB08, was used to calculate well-specific purge volumes. Following purging, samples were collected and submitted following strict chain of custody protocol to Origins Laboratory, Inc. (Origins) of Denver, Colorado for analysis of benzene, toluene, ethylbenzene, and total xylenes (BTEX) by United States Environmental Protection Agency Method 8260B.

Analytical results indicate BTEX concentrations are in compliance with Colorado Department of Public Health and Environment Water Quality Control Commission Regulation 41.

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
COLLINS 14-20 TANK BATTERY
ADAMS COUNTY, COLORADO
NOBLE ENERGY, INC.**

MONITORING		DEPTH TO	BENZENE	TOLUENE	ETHYLBENZENE	TOTAL
WELL	DATE	WATER (feet btoc)	(ug/L)	(ug/L)	(ug/L)	XYLENES (ug/L)
SB08	10/29/2008	22.56	<1.0	<1.0	<1.0	<3.0
	2/17/2009	22.49	<1.0	<1.0	<1.0	<3.0
	2/27/2009	22.71	<1.0	<1.0	<1.0	<3.0
	7/1/2009	22.63	<1.0	<1.0	<1.0	<3.0
	9/21/2009	21.03	<1.0	<1.0	<1.0	<3.0
	12/8/2009	19.52	<1.0	<1.0	<1.0	<3.0
	3/3/2010	20.84	<1.0	<1.0	<1.0	<3.0
	4/14/2010	20.95	<1.0	<1.0	<1.0	<1.0
	6/18/2010	-	<1.0	<1.0	<1.0	<1.0
	9/30/2010	19.83	<1.0	<1.0	<1.0	<3.0
SB09	11/5/2008	19.65	<1.0	<1.0	<1.0	<3.0
	2/17/2009	21.95	<1.0	<1.0	<1.0	<3.0
	2/27/2009	22.04	<1.0	<1.0	<1.0	<3.0
	7/1/2009	22.11	<1.0	<1.0	<1.0	<3.0
	9/21/2009	20.05	<1.0	<1.0	<1.0	<3.0
	12/8/2009	19.89	<1.0	<1.0	<1.0	<3.0
	3/3/2010	19.27	<1.0	<1.0	<1.0	<3.0
	4/14/2010	20.55	<1.0	<1.0	<1.0	<1.0
	6/18/2010	-	<1.0	<1.0	<1.0	<1.0
	9/30/2010	19.41	<1.0	<1.0	<1.0	<3.0
SB11	2/17/2009	20.70	<1.0	<1.0	<1.0	<3.0
	2/27/2009	21.07	<1.0	<1.0	<1.0	<3.0
	7/1/2009	20.98	1.36	<1.0	<1.0	<3.0
	9/21/2009	19.70	<1.0	<1.0	<1.0	<3.0
	12/8/2009	18.79	<1.0	<1.0	<1.0	<3.0
	3/3/2010	19.11	<1.0	<1.0	<1.0	<3.0
	4/14/2010	19.35	<1.0	<1.0	<1.0	<1.0
	6/18/2010	-	<1.0	<1.0	<1.0	<1.0
	9/30/2010	18.26	<1.0	<1.0	<1.0	<3.0
SB12	2/17/2009	20.45	<1.0	<1.0	1.32	<3.0
	2/27/2009	20.78	<1.0	<1.0	<1.0	<3.0
	7/1/2009	20.70	<1.0	<1.0	<1.0	<3.0
	9/21/2009	19.85	<1.0	<1.0	<1.0	<3.0
	12/8/2009	18.59	<1.0	<1.0	<1.0	<3.0
	3/3/2010	18.94	<1.0	<1.0	<1.0	<3.0
	4/14/2010	19.10	<1.0	<1.0	<1.0	<1.0
	6/18/2010	-	<1.0	<1.0	<1.0	<1.0
	9/30/2010	17.95	<1.0	<1.0	<1.0	<3.0
SB13	2/27/2009	21.27	2.18	16.3	182	1,037
	7/1/2009	21.31	14.2	66.4	218	1,517
	9/21/2009	19.34	1.92	7.67	<1.0	521
	12/8/2009	19.18	<1.0	15.0	37.8	384.0
	3/3/2010	19.46	<1.0	12.7	86.1	700
	4/14/2010	19.65	<1.0	11.9	37.0	280
	6/18/2010	-	<1.0	<1.0	<1.0	5
	9/30/2010	18.52	<1.0	<1.0	<1.0	20.54
SB14 SB14-R	2/27/2009	19.71	17.9	486	240	2,335
	7/1/2009	20.77	2.5	<1.0	4.59	74.8
	9/21/2009	19.68	<1.0	<1.0	1.46	3.18
	12/8/2009	18.61	14.3	388	298	3,107
	3/3/2010	18.88	14.5	149	247	2,540
	4/14/2010	19.55	<1.0	<1.0	<1.0	<1.0
	6/18/2010	-	<1.0	<1.0	<1.0	<1.0
	9/30/2010	16.26	<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 concentration exceeds CDPHE WQCC Reg 41

Benzene, toluene, ethylbenzene, and total 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

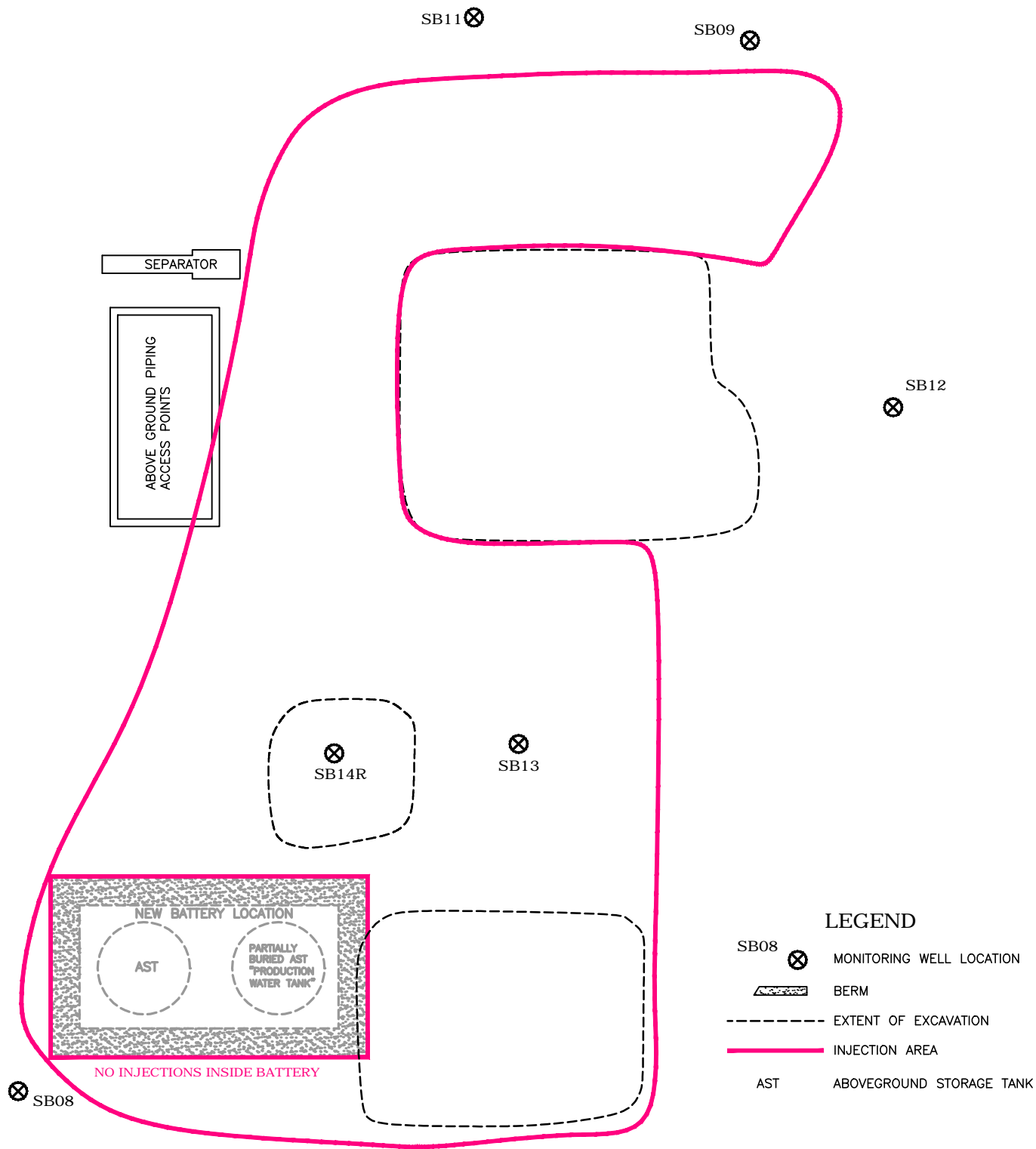


FIGURE 1
 BENZENE IN GROUNDWATER
 COLLINS 14-20 TANK BATTERY
 ADAMS COUNTY, COLORADO
 NOBLE ENERGY, INC.



APPENDIX A
ANALYTICAL REPORTS



10/05/2010

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

Project Name- Noble - Collins 14-20

Project Number- NEP0835.03

Attached are your analytical results for Noble - Collins 14-20 received by Origins Laboratory, Inc. October 1, 2010 12:50 pm. This project is associated with Origins project number X010013-01 .

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

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

Matthew Harrison
Project Number: NEP0835.03
Project: Noble - Collins 14-20

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Sampled	Date Received
SB08	X010013-01	Water	9/30/2010 4:30:00PM	10/01/2010 12:50
SB09	X010013-02	Water	9/30/2010 4:15:00PM	10/01/2010 12:50
SB11	X010013-03	Water	9/30/2010 4:25:00PM	10/01/2010 12:50
SB12	X010013-04	Water	9/30/2010 4:05:00PM	10/01/2010 12:50
SB13	X010013-05	Water	9/30/2010 3:50:00PM	10/01/2010 12:50
SB14R	X010013-06	Water	9/30/2010 3:40:00PM	10/01/2010 12:50

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: NEP0835.03
Project: Noble - Collins 14-20

www.originslaboratory.com

1010013

page 1 of 1

ORIGINS
LABORATORY, INC

Client: LTE
Address:
Telephone Number:
Email Address: mtharrison@ltenv.com

Project Manager: M. Harrison
Project Name: Collins 14-20
Project Number: NEP0835.03
Samples Collected By: DB/AK

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative				Matrix			Analysis	Sample Instructions	
				Unpreserved	HCl	HNO ₃	Other	Groundwater	Soil	Air Summa #			Other
SB08	9/30/10	1630	2	X				X				1	
SB09		1615	1	X				X				2	
SB11		1625	1	X				X				3	
SB12		1605	1	X				X				4	
SB13		1550	1	X				X				5	
SB14R		1540	1	X				X				6	
												7	
												8	
												9	
												10	

Relinquished By: DB Date: 9/30/10 Time: 12:50
Relinquished By: RAH Date: 9/30/10 Time: 12:50

Turnaround Time: Same Day ☐ 24 Hr ☐ 48 Hr ☐ 72 Hr ☒ Standard ☐

Date Results Needed

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: NEP0835.03
Project: Noble - Collins 14-20

SB08

9/30/2010 4:30:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X010013-01 (Water)

BTEX by EPA 8260B

Benzene	ND	1.00	ug/L	1	OJ04001	10/04/2010	10/04/2010	
Toluene	ND	1.00	"	"	"	"	"	
Ethylbenzene	ND	1.00	"	"	"	"	"	
m,p-Xylene	ND	2.00	"	"	"	"	"	
o-Xylene	ND	1.00	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	105 %	73.5-130			"	"	"	
Surrogate: Toluene-d8	104 %	79.3-113			"	"	"	
Surrogate: 4-Bromofluorobenzene	99.7 %	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: NEP0835.03
Project: Noble - Collins 14-20

SB09

9/30/2010 4:15:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X010013-02 (Water)

BTEX by EPA 8260B

Benzene	ND	1.00	ug/L	1	OJ04001	10/04/2010	10/04/2010	
Toluene	ND	1.00	"	"	"	"	"	
Ethylbenzene	ND	1.00	"	"	"	"	"	
m,p-Xylene	ND	2.00	"	"	"	"	"	
o-Xylene	ND	1.00	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	100 %	73.5-130			"	"	"	
Surrogate: Toluene-d8	101 %	79.3-113			"	"	"	
Surrogate: 4-Bromofluorobenzene	94.8 %	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: NEP0835.03
Project: Noble - Collins 14-20

SB11

9/30/2010 4:25:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X010013-03 (Water)

BTEX by EPA 8260B

Benzene	ND	1.00	ug/L	1	OJ04001	10/04/2010	10/04/2010	
Toluene	ND	1.00	"	"	"	"	"	
Ethylbenzene	ND	1.00	"	"	"	"	"	
m,p-Xylene	ND	2.00	"	"	"	"	"	
o-Xylene	ND	1.00	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	104 %	73.5-130			"	"	"	
Surrogate: Toluene-d8	114 %	79.3-113			"	"	"	S-GC
Surrogate: 4-Bromofluorobenzene	92.2 %	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: NEP0835.03
Project: Noble - Collins 14-20

SB12

9/30/2010 4:05:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X010013-04 (Water)

BTEX by EPA 8260B

Benzene	ND	1.00	ug/L	1	OJ04001	10/04/2010	10/04/2010	
Toluene	ND	1.00	"	"	"	"	"	
Ethylbenzene	ND	1.00	"	"	"	"	"	
m,p-Xylene	ND	2.00	"	"	"	"	"	
o-Xylene	ND	1.00	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	103 %	73.5-130			"	"	"	
Surrogate: Toluene-d8	102 %	79.3-113			"	"	"	
Surrogate: 4-Bromofluorobenzene	96.6 %	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: NEP0835.03
Project: Noble - Collins 14-20

SB13

9/30/2010 3:50:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X010013-05 (Water)

BTEX by EPA 8260B

Benzene	ND	1.00	ug/L	1	OJ04001	10/04/2010	10/04/2010	
Toluene	ND	1.00	"	"	"	"	"	
Ethylbenzene	ND	1.00	"	"	"	"	"	
m,p-Xylene	13.8	2.00	"	"	"	"	"	
o-Xylene	6.74	1.00	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	101 %	73.5-130			"	"	"	
Surrogate: Toluene-d8	97.2 %	79.3-113			"	"	"	
Surrogate: 4-Bromofluorobenzene	96.0 %	81.5-117			"	"	"	

Origins Laboratory, Inc.



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

Matthew Harrison
Project Number: NEP0835.03
Project: Noble - Collins 14-20

SB14R**9/30/2010 3:40:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X010013-06 (Water)

BTEX by EPA 8260B

Benzene	ND	1.00	ug/L	1	OJ04001	10/04/2010	10/05/2010	
Toluene	ND	1.00	"	"	"	"	"	
Ethylbenzene	ND	1.00	"	"	"	"	"	
m,p-Xylene	ND	2.00	"	"	"	"	"	
o-Xylene	ND	1.00	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	110 %	73.5-130			"	"	"	
Surrogate: Toluene-d8	103 %	79.3-113			"	"	"	
Surrogate: 4-Bromofluorobenzene	95.0 %	81.5-117			"	"	"	

Origins Laboratory, Inc.



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

Matthew Harrison
Project Number: NEP0835.03
Project: Noble - Collins 14-20

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
Batch OJ04001 - EPA 5030B										
Blank (OJ04001-BLK1)					Prepared: 10/04/2010 Analyzed: 10/04/2010					
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	63.5		"	62.5		102	73.5-130			
Surrogate: Toluene-d8	66.9		"	62.5		107	79.3-113			
Surrogate: 4-Bromofluorobenzene	58.9		"	62.5		94.3	81.5-117			
LCS (OJ04001-BS1)					Prepared: 10/04/2010 Analyzed: 10/04/2010					
Benzene	41.2	1.00	ug/L	50.0		82.4	77.3-128			
Toluene	46.9	1.00	"	50.0		93.9	81.7-118			
Surrogate: 1,2-Dichloroethane-d4	62.3		"	62.5		99.7	73.5-130			
Surrogate: Toluene-d8	66.0		"	62.5		106	79.3-113			
Surrogate: 4-Bromofluorobenzene	57.6		"	62.5		92.1	81.5-117			
Matrix Spike (OJ04001-MS1)					Source: X009180-03	Prepared: 10/04/2010 Analyzed: 10/04/2010				
Benzene	49.5	1.00	ug/L	50.0	ND	99.0	74.5-132			
Toluene	51.2	1.00	"	50.0	ND	102	74.2-116			
Surrogate: 1,2-Dichloroethane-d4	64.3		"	62.5		103	73.5-130			
Surrogate: Toluene-d8	63.5		"	62.5		102	79.3-113			
Surrogate: 4-Bromofluorobenzene	59.6		"	62.5		95.3	81.5-117			
Matrix Spike Dup (OJ04001-MSD1)					Source: X009180-03	Prepared: 10/04/2010 Analyzed: 10/04/2010				
Benzene	46.2	1.00	ug/L	50.0	ND	92.3	74.5-132	6.96	13.1	
Toluene	53.2	1.00	"	50.0	ND	106	74.2-116	3.89	21.2	
Surrogate: 1,2-Dichloroethane-d4	64.6		"	62.5		103	73.5-130			
Surrogate: Toluene-d8	63.9		"	62.5		102	79.3-113			
Surrogate: 4-Bromofluorobenzene	60.1		"	62.5		96.2	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: NEP0835.03
Project: Noble - Collins 14-20

Notes and Definitions

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

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

Origins Laboratory, Inc.



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