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www.nobleenergyinc.com



North America Division

March 21, 2012

Mr. John Axelson
Department Of Natural Resources
Oil & Gas Conservation Commission
1120 Lincoln St., Suite 801
Denver CO 80203-2136

RE: Ground water Monitoring Report
Lorenz F22-1, 2
API 05-123-15139
Remediation #5465
Sec. 22, T5N R65W
Weld County, Colorado

Dear Mr. Axelson:

Please find attached the Ground Water Monitoring Report for the Lorenz F22-1,2. Noble Energy Inc. would like to claim business confidentiality protection for the information submitted in this letter, the supporting materials attached and all previous and subsequent correspondence related to this matter. Please contact the Noble Energy Environmental Department at (303) 228-4158 if you have any questions or require additional information.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Ryan Bruner'.

Ryan Bruner
Environmental Coordinator

Attachments



GROUNDWATER MONITORING REPORT FEBRUARY 2012

LORENZ F 22-1 TANK BATTERY COGCC TRACKING #2522902 & REMEDIATION #5465

LT Environmental, Inc. (LTE), under the direction of Noble Energy, Inc. (Noble), conducted groundwater monitoring at the Lorenz F 22-1 Tank Battery (Site) on February 9, 2012. This monitoring event constitutes the fourth post-remediation monitoring event at this Site. Site history, remediation activities, well installation, and historical performance monitoring results have been described in preceding reports.

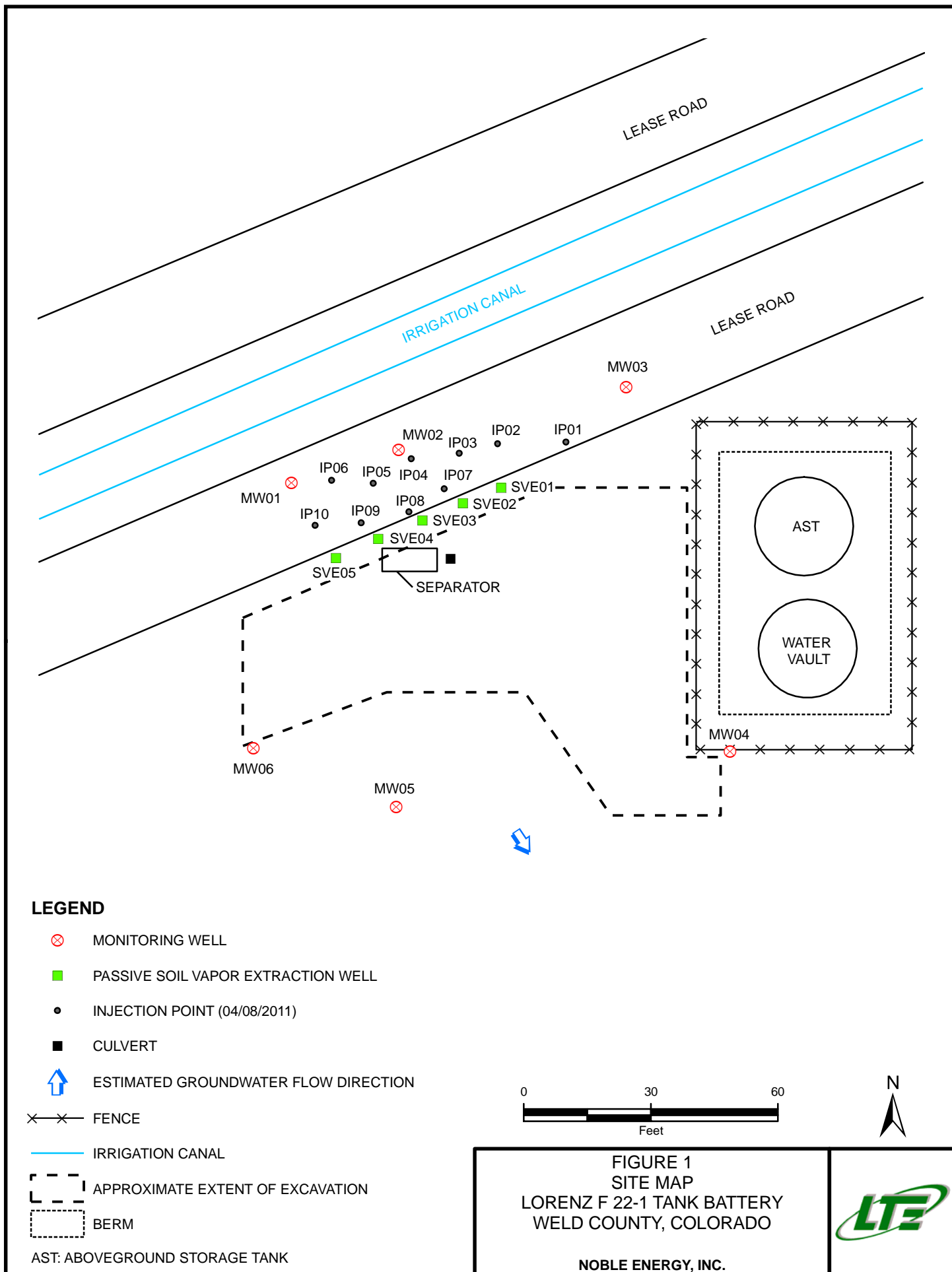
Monitoring wells (MW01 through MW06) were installed at the Site on April 22, 2011. The Site Map is presented as Figure 1. Groundwater level measurements were collected from the monitoring wells and are summarized in Table 1.

Depth to groundwater, which ranged from 4.36 feet below top of casing (btoc) in MW05 to 6.40 feet btoc in MW02, was used to calculate well-specific purge volumes. Following purging, groundwater samples were collected and then 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 8260C.

Groundwater analytical results, presented in Table 1, indicate BTEX concentrations are in compliance with Colorado Department of Public Health and Environment-Water Quality Control Commission Regulation 41 – Basic Standards for Ground Water (WQCC Reg 41). The laboratory analytical report is included in the Appendix.

This monitoring event constitutes the third post-remediation monitoring event in compliance with WQCC Reg 41 standards. LTE, under direction of Noble, will continue to conduct quarterly groundwater monitoring events with the goal of obtaining four consecutive quarters with analytical results in compliance with WQCC Reg 41. The next quarterly groundwater monitoring event is scheduled for May 2012.

FIGURE



TABLE

TABLE 1

**GROUNDWATER ANALYTICAL DATA
LORENZ F 22-1 TANK BATTERY
WELD COUNTY, COLORADO
NOBLE ENERGY, INC.**

Well ID	Date	Depth to Water (feet btoc)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
MW01	4/26/2011	6.25	<1.0	<1.0	<1.0	<3.0
	7/12/2011	4.69	<1.0	<1.0	<1.0	<3.0
	11/9/2011	5.51	<1.0	<1.0	<1.0	<3.0
	2/9/2012	5.98	<1.0	<1.0	<1.0	<1.0
MW02	4/26/2011	6.69	44.3	<1.0	7.4	52.4
	7/12/2011	5.33	<1.0	<1.0	<1.0	<3.0
	11/9/2011	5.96	<1.0	<1.0	<1.0	<3.0
	2/9/2012	6.40	<1.0	<1.0	<1.0	<1.0
MW03	4/26/2011	5.81	<1.0	<1.0	<1.0	<3.0
	7/12/2011	4.20	<1.0	<1.0	<1.0	<3.0
	11/9/2011	5.05	<1.0	<1.0	<1.0	<3.0
	2/9/2012	5.51	<1.0	<1.0	<1.0	<1.0
MW04	4/26/2011	5.13	<1.0	<1.0	<1.0	<3.0
	7/12/2011	3.52	<1.0	<1.0	<1.0	<3.0
	11/9/2011	4.42	<1.0	<1.0	<1.0	<3.0
	2/9/2012	4.95	<1.0	<1.0	<1.0	<1.0
MW05	4/26/2011	5.00	<1.0	<1.0	<1.0	<3.0
	7/12/2011	2.90	<1.0	<1.0	<1.0	<3.0
	11/9/2011	3.76	<1.0	<1.0	<1.0	<3.0
	2/9/2012	4.36	<1.0	<1.0	<1.0	<1.0
MW06	4/26/2011	4.59	<1.0	<1.0	1.7	8.6
	7/12/2011	3.03	<1.0	<1.0	<1.0	<3.0
	11/9/2011	3.86	<1.0	<1.0	<1.0	<3.0
	2/9/2012	4.40	<1.0	<1.0	<1.0	<1.0
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

BOLD - indicates result exceeds the applicable standard

Benzene, toluene, ethylbenzene, and total xylenes analyzed by EPA Method 8260C

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

Control Commission Regulation 41 covering Basic Standards for Ground Water

ATTACHMENT
LABORATORY ANALYTICAL REPORT



February 13, 2012

LT Environmental, Inc.

Steve Kahn

4600 West 60th Avenue

Arvada CO 80003

Project Name - Noble - Lorenz F22-1

Project Number - NEP1047.01

Attached are you analytical results for Noble - Lorenz F22-1 received by Origins Laboratory, Inc. February 09, 2012. This project is associated with Origins project number X202033-01.

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



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

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

Steve Kahn
Project Number: NEP1047.01
Project: Noble - Lorenz F22-1

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-1	X202033-01	Water	February 9, 2012 13:00	02/09/2012 16:10
MW-2	X202033-02	Water	February 9, 2012 13:20	02/09/2012 16:10
MW-3	X202033-03	Water	February 9, 2012 13:40	02/09/2012 16:10
MW-4	X202033-04	Water	February 9, 2012 13:50	02/09/2012 16:10
MW-5	X202033-05	Water	February 9, 2012 14:00	02/09/2012 16:10
MW-6	X202033-06	Water	February 9, 2012 14:20	02/09/2012 16:10

Origins Laboratory, Inc.



Noelle E Doyle, President

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

Steve Kahn
Project Number: NEP1047.01
Project: Noble - Lorenz F22-1

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: X200033

Client: LTE

Client Project ID: Lorenz F22-1

Checklist Completed by: Jeff Smith

Shipped Via: H/D
(UPS, FedEx, Hand Delivered, Pick-up, etc.)

Date/time completed: 2/9/12 16:12

Airbill #: NA

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

Cooler Number/Temperature: 1 / 2.1 °C ☐ / ☐ °C ☐ / ☐ °C (Describe)

Thermometer ID: 7001

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 type="checkbox"/>	<input checked="" 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)

02-13-12 1300
Date/Time Reviewed

Origins Laboratory, Inc.

Noelle E Doyle, President

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

Steve Kahn

Project Number: NEP1047.01

Project: Noble - Lorenz F22-1

MW-1

2/9/2012 1:00:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.

X202033-01 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	2B10007	02/10/2012	02/10/2012
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4
 Surrogate: Toluene-d8
 Surrogate: 4-Bromofluorobenzene

120 %
 99.7 %
 111 %

70-130
 70-130
 70-130

"
 "
 "

Origins Laboratory, Inc.



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Noelle E Doyle, President

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

Steve Kahn
Project Number: NEP1047.01
Project: Noble - Lorenz F22-1

MW-2

2/9/2012 1:20:00PM

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Notes
		Limit							

Origins Laboratory, Inc.
X202033-02 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	2B10007	02/10/2012	02/10/2012
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4
Surrogate: Toluene-d8
Surrogate: 4-Bromofluorobenzene

119 %
99.1 %
112 %

70-130
70-130
70-130

"
"
"

Origins Laboratory, Inc.



Noelle E Doyle, President

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

Steve Kahn
Project Number: NEP1047.01
Project: Noble - Lorenz F22-1

MW-3

2/9/2012 1:40:00PM

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Notes
		Limit							

Origins Laboratory, Inc.
X202033-03 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	2B10007	02/10/2012	02/10/2012
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	121 %	70-130			"	"	"
Surrogate: Toluene-d8	99.4 %	70-130			"	"	"
Surrogate: 4-Bromofluorobenzene	112 %	70-130			"	"	"

Origins Laboratory, Inc.



Noelle E Doyle, President

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

Steve Kahn
Project Number: NEP1047.01
Project: Noble - Lorenz F22-1

MW-4
2/9/2012 1:50:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X202033-04 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	2B10007	02/10/2012	02/10/2012
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	121 %	70-130			"	"	"
Surrogate: Toluene-d8	99.7 %	70-130			"	"	"
Surrogate: 4-Bromofluorobenzene	110 %	70-130			"	"	"

Origins Laboratory, Inc.



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Noelle E Doyle, President

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

Steve Kahn
Project Number: NEP1047.01
Project: Noble - Lorenz F22-1

MW-5
2/9/2012 2:00:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X202033-05 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	2B10007	02/10/2012	02/10/2012
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	121 %	70-130			"	"	"
Surrogate: Toluene-d8	99.6 %	70-130			"	"	"
Surrogate: 4-Bromofluorobenzene	113 %	70-130			"	"	"

Origins Laboratory, Inc.



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Noelle E Doyle, President

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

Steve Kahn
Project Number: NEP1047.01
Project: Noble - Lorenz F22-1

MW-6
2/9/2012 2:20:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
X202033-06 (Water)

BTEX by EPA 8260C

Benzene	ND	1.0	ug/L	1	2B10007	02/10/2012	02/10/2012
Toluene	ND	1.0	"	"	"	"	"
Ethylbenzene	ND	1.0	"	"	"	"	"
Xylenes, total	ND	1.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	121 %	70-130			"	"	"
Surrogate: Toluene-d8	99.5 %	70-130			"	"	"
Surrogate: 4-Bromofluorobenzene	110 %	70-130			"	"	"

Origins Laboratory, Inc.



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Noelle E Doyle, President

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

Steve Kahn
Project Number: NEP1047.01
Project: Noble - Lorenz F22-1

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 2B10007 - EPA 5030B (Water)

Blank (2B10007-BLK1)

Prepared: 02/10/2012 Analyzed: 02/10/2012

Benzene	ND	1.0	ug/L							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes, total	ND	1.0	"							
Surrogate: 1,2-Dichloroethane-d4	75		"	62.5	120		70-130			
Surrogate: Toluene-d8	63		"	62.5	100		70-130			
Surrogate: 4-Bromofluorobenzene	70		"	62.5	113		70-130			

Origins Laboratory, Inc.



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Noelle E Doyle, President

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

Steve Kahn
Project Number: NEP1047.01
Project: Noble - Lorenz F22-1

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 2B10007 - EPA 5030B (Water)										
LCS (2B10007-BS1)					Prepared: 02/10/2012 Analyzed: 02/10/2012					
Benzene	119	1.0	ug/L	100	119	70-130				
Toluene	121	1.0	"	100	121	70-130				
Ethylbenzene	120	1.0	"	100	120	70-130				
m,p-Xylene	251	2.0	"	200	125	70-130				
o-Xylene	121	1.0	"	100	121	70-130				
Surrogate: 1,2-Dichloroethane-d4	74		"	62.5	118	70-130				
Surrogate: Toluene-d8	62		"	62.5	99.0	70-130				
Surrogate: 4-Bromofluorobenzene	70		"	62.5	112	70-130				

Origins Laboratory, Inc.



Noelle E Doyle, President

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LT Environmental, Inc.

4600 West 60th Avenue

Arvada CO 80003

Steve Kahn

Project Number: NEP1047.01

Project: Noble - Lorenz F22-1

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 2B10007 - EPA 5030B (Water)

Matrix Spike (2B10007-MS1)		Source: X202029-06			Prepared: 02/10/2012 Analyzed: 02/10/2012					
Benzene	120	1.0	ug/L	100	ND	120	70-130			
Toluene	123	1.0	"	100	ND	123	70-130			
Ethylbenzene	122	1.0	"	100	ND	122	70-130			
m,p-Xylene	255	2.0	"	200	ND	128	70-130			
o-Xylene	123	1.0	"	100	ND	123	70-130			
Surrogate: 1,2-Dichloroethane-d4	74		"	62.5		118	70-130			
Surrogate: Toluene-d8	62		"	62.5		99.0	70-130			
Surrogate: 4-Bromofluorobenzene	69		"	62.5		111	70-130			

Origins Laboratory, Inc.



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Noelle E Doyle, President

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

Steve Kahn
Project Number: NEP1047.01
Project: Noble - Lorenz F22-1

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 2B10007 - EPA 5030B (Water)

Matrix Spike Dup (2B10007-MSD1)		Source: X202029-06			Prepared: 02/10/2012 Analyzed: 02/10/2012					
Benzene	122	1.0	ug/L	100	ND	122	70-130	1.81	20	
Toluene	124	1.0	"	100	ND	124	70-130	0.772	20	
Ethylbenzene	123	1.0	"	100	ND	123	70-130	1.08	20	
m,p-Xylene	256	2.0	"	200	ND	128	70-130	0.508	20	
o-Xylene	123	1.0	"	100	ND	123	70-130	0.0977	20	
Surrogate: 1,2-Dichloroethane-d4	75		"	62.5		120	70-130			
Surrogate: Toluene-d8	62		"	62.5		98.5	70-130			
Surrogate: 4-Bromofluorobenzene	69		"	62.5		111	70-130			

Origins Laboratory, Inc.



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Noelle E Doyle, President

LT Environmental, Inc.

4600 West 60th Avenue

Arvada CO 80003

Steve Kahn

Project Number: NEP1047.01

Project: Noble - Lorenz F22-1

Notes and Definitions

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

Origins Laboratory, Inc.



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Noelle E Doyle, President