

804 Grand Ave.  
Platteville, CO 80651



Tel: 970.785.5000  
After Hours: 303.939.8585  
Fax: 970.785.5099  
www.nobleenergyinc.com

North America Division

Remediation #4581

March 21, 2011

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

RE: Groundwater Monitoring Results  
Phillips L30-6JI  
API 05-123-22154  
Sec. 30, T3N R66W  
Weld County, Colorado

Dear Mr. Chesson:

Please find attached the Quarterly Groundwater Report for the Phillips L30-6JI. 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 (970) 785-5000 if you have any questions or require additional information.

Sincerely,

A handwritten signature in black ink, appearing to read 'mjsoda' followed by a stylized flourish.

Mike Cox  
Environmental Coordinator

A handwritten signature in blue ink, appearing to read 'Todd Cullum'.

Todd Cullum  
Environmental Specialist

Attachments



Remediation #4581

## **GROUNDWATER MONITORING REPORT MARCH 2011**

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### **PHILLIPS L30-6JI**

On February 17, 2011, LT Environmental, Inc. (LTE) conducted groundwater sampling at the direction of Noble Energy, Inc. (Noble), at the Phillips L30-6JI Tank Battery (Site). This sampling event constitutes the seventh post-remediation monitoring event at the Site. Site history, remediation activities, and groundwater monitoring results have been described in preceding reports.

Monitoring wells SB06, SB08, SB10, SB12, and SB13 were installed on May 21, 2009, and monitoring wells SB18 and SB19 were installed on May 26, 2009. Monitoring well SB06 was destroyed prior to the November 20, 2009, monitoring event and was reinstalled January 15, 2010, as SB06R. SB10 was destroyed prior to the February 17, 2011 monitoring event. Well locations, surface features, and current benzene concentrations are presented in Figure 1. Groundwater level measurements collected are summarized in Table 1.

Depth to groundwater ranged from 2.35 feet below top of casing (btoc) in SB19 to 3.89 feet btoc in SB12 and 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 8260B.

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

Noble 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 monitoring event is scheduled for May 2011.

**FIGURE**

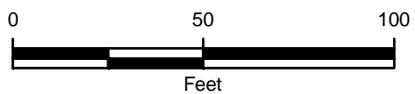


SAMPLE ID  
 B - BENZENE IN MICROGRAMS PER LITER  
 < - LESS THAN THE METHOD DETECTION LIMIT

IMAGE COURTESY OF GOOGLE EARTH, 2009

**LEGEND**

- PRODUCTION WELLHEAD
- ⊗ MONITORING WELL
- CURRENT INFRASTRUCTURE
- BERM
- PERMEABLE REACTIVE BARRIER (PRB)
- EXCAVATION EXTENT



**FIGURE 1**  
 BENZENE CONCENTRATION IN GROUNDWATER  
 PHILLIPS L30-6JI TANK BATTERY  
 SEC 30 T3N R66W  
 WELD COUNTY, COLORADO  
 NOBLE ENERGY, INC.



GROUNDWATER SAMPLES COLLECTED 02/17/2011

## **TABLE**

**TABLE 1**

**GROUNDWATER ANALYTICAL DATA  
 PHILLIPS L30-6JI TANK BATTERY  
 WELD COUNTY, COLORADO  
 NOBLE ENERGY, INC.**

MONITORING		DEPTH TO WATER	BENZENE	TOLUENE	ETHYLBENZENE	TOTAL XYLENES
WELL	DATE	(feet btoc)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
SB06	5/29/2009	3.53	<1.00	9.71	20.5	30.81
	8/4/2009	2.03	<b>33.7</b>	<1.00	33.4	231.6
	11/20/2009	----- Destroyed -----				
SB06R	2/18/2010	3.78	<1.00	<1.00	<1.00	<3.00
	5/19/2010	3.43	<1.00	<1.00	<1.00	<1.00
	8/4/2010	2.60	<1.00	<1.00	<1.00	<1.00
	11/4/2010	3.16	<1.00	<1.00	<1.00	<1.00
	2/17/2011	3.73	<1.00	<1.00	<1.00	<3.00
SB10	5/29/2009	2.77	<1.00	<1.00	<1.00	<3.00
	8/4/2009	2.37	2.35	<1.00	9.88	89.5
	11/20/2009	2.79	<1.00	<1.00	<1.00	<3.00
	2/18/2010	3.22	<1.00	<1.00	<1.00	<3.00
	5/19/2010	2.82	<1.00	<1.00	<1.00	<1.00
	8/4/2010	2.09	<1.00	<1.00	<1.00	<1.00
	11/4/2010	2.59	<1.00	<1.00	<1.00	<1.00
	2/17/2011	----- Destroyed -----				
SB12	5/29/2009	3.46	<b>103</b>	281	69.2	861
	8/4/2009	2.75	<b>130</b>	31.4	15.3	174.6
	11/20/2009	3.47	3.71	62.3	12.8	115.4
	2/18/2010	3.93	3.29	<1.00	37.4	279.0
	5/19/2010	3.49	1.87	2.20	57.6	442
	8/4/2010	2.72	3.79	7.90	8.57	64
	11/4/2010	3.27	2.71	231.00	49.2	589
	2/17/2011	3.89	<1.00	<1.00	<1.00	6.35
SB13	5/29/2009	3.1	<1.00	<1.00	<1.00	<3.00
	8/4/2009	2.39	<1.00	<1.00	<1.00	<3.00
	11/20/2009	3.11	<1.00	<1.00	<1.00	<3.00
	2/18/2010	3.60	<1.00	<1.00	<1.00	<3.00
	5/19/2010	3.19	<1.00	<1.00	<1.00	<1.00
	8/4/2010	2.35	<1.00	<1.00	<1.00	<1.00
	11/4/2010	2.91	<1.00	<1.00	<1.00	<1.00
2/17/2011	3.56	<1.00	<1.00	<1.00	<3.00	

**TABLE 1**

**GROUNDWATER ANALYTICAL DATA  
 PHILLIPS L30-6JI TANK BATTERY  
 WELD COUNTY, COLORADO  
 NOBLE ENERGY, INC.**

MONITORING		DEPTH TO WATER	BENZENE	TOLUENE	ETHYLBENZENE	TOTAL XYLENES
WELL	DATE	(feet btoc)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
SB18	5/29/2009	3.06	2.52	<1.00	<1.00	<3.00
	8/4/2009	2.4	<1.00	<1.00	<1.00	<3.00
	11/20/2009	3.10	<1.00	<1.00	<1.00	<3.00
	2/18/2010	3.55	<1.00	<1.00	<1.00	<3.00
	5/19/2010	3.14	<1.00	<1.00	<1.00	<1.00
	8/4/2010	2.34	<1.00	<1.00	<1.00	<1.00
	11/4/2010	2.91	<1.00	<1.00	<1.00	<1.00
	2/17/2011	3.49	<1.00	<1.00	<1.00	<3.00
SB19	5/29/2009	2.97	<b>17.1</b>	<1.00	<1.00	<3.00
	8/4/2009	2.34	<1.00	<1.00	<1.00	<3.00
	11/20/2009	2.02	<1.00	<1.00	<1.00	<3.00
	2/18/2010	2.51	<b>58.5</b>	<1.00	18.68	<3.00
	5/19/2010	2.06	<b>54.8</b>	<1.00	<1.00	67.1
	8/4/2010	1.23	<1.00	<1.00	<1.00	<1.00
	11/4/2010	1.80	<1.00	<1.00	<1.00	<1.00
	2/17/2011	2.35	<1.00	<1.00	<1.00	<3.00
<b>CDPHE WQCC Reg 41</b>			<b>5.0</b>	<b>560</b>	<b>700</b>	<b>1,400</b>

**NOTES:**

btoc - below top of casing

µg/L - micrograms per liter

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

**Bold** - indicates concentration exceeds the CDPHE WQCC Reg 41 standard

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 total xylenes analyzed by EPA Method 8260B

**APPENDIX**

**LABORATORY ANALYTICAL REPORT**



February 22, 2011

LT Environmental, Inc.

Rob Rebel

4600 West 60th Avenue

Arvada CO 80003

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**Project Name - Noble - Phillips L30-6JI**

**Project Number NEP0909.03**

Attached are you analytical results for Noble - Phillips L30-6JI received by Origins Laboratory, Inc. February 17, 2011. This project is associated with Origins project number X102072-01.

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

Rob Rebel  
Project Number: NEP0909.03  
Project: Noble - Phillips L30-6JI

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SB06R	X102072-01	Water	February 17, 2011 14:15	02/17/2011 15:15
SB12	X102072-02	Water	February 17, 2011 14:10	02/17/2011 15:15
SB13	X102072-03	Water	February 17, 2011 13:55	02/17/2011 15:15
SB18	X102072-04	Water	February 17, 2011 14:05	02/17/2011 15:15
SB19	X102072-05	Water	February 17, 2011 13:45	02/17/2011 15:15

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, President



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

Rob Rebel  
 Project Number: NEP0909.03  
 Project: Noble - Phillips L30-6JI

SB06R  
 2/17/2011 2:15:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.  
 X102072-01 (Water)

**BTEX by EPA 8260C**

Benzene	ND	1.00	ug/L	1	1B21004	02/21/2011	02/21/2011	
Toluene	ND	1.00	"	"	"	"	"	
Ethylbenzene	ND	1.00	"	"	"	"	"	
Xylenes, total	ND	3.00	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	122 %	70-130			"	"	"	
Surrogate: Toluene-d8	93.2 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	90.1 %	70-130			"	"	"	

Origins Laboratory, Inc.



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Noelle E Doyle, President

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

Rob Rebel  
 Project Number: NEP0909.03  
 Project: Noble - Phillips L30-6JI

SB12

2/17/2011 2:10:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.  
 X102072-02 (Water)

**BTEX by EPA 8260C**

Benzene	ND	1.00	ug/L	1	1B21004	02/21/2011	02/21/2011	
Toluene	ND	1.00	"	"	"	"	"	
Ethylbenzene	ND	1.00	"	"	"	"	"	
Xylenes, total	6.35	3.00	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	99.0 %	70-130			"	"	"	
Surrogate: Toluene-d8	80.7 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	103 %	70-130			"	"	"	

Origins Laboratory, Inc.



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

Rob Rebel  
 Project Number: NEP0909.03  
 Project: Noble - Phillips L30-6JI

SB13

2/17/2011 1:55:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.  
 X102072-03 (Water)

**BTEX by EPA 8260C**

Benzene	ND	1.00	ug/L	1	1B21004	02/21/2011	02/21/2011	
Toluene	ND	1.00	"	"	"	"	"	
Ethylbenzene	ND	1.00	"	"	"	"	"	
Xylenes, total	ND	3.00	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	102 %	70-130			"	"	"	
Surrogate: Toluene-d8	75.1 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	98.0 %	70-130			"	"	"	

Origins Laboratory, Inc.



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 4600 West 60th Avenue  
 Arvada CO 80003

Rob Rebel  
 Project Number: NEP0909.03  
 Project: Noble - Phillips L30-6JI

SB18

2/17/2011 2:05:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.  
 X102072-04 (Water)

**BTEX by EPA 8260C**

Benzene	ND	1.00	ug/L	1	1B21004	02/21/2011	02/21/2011	
Toluene	ND	1.00	"	"	"	"	"	
Ethylbenzene	ND	1.00	"	"	"	"	"	
Xylenes, total	ND	3.00	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	96.6 %	70-130			"	"	"	
Surrogate: Toluene-d8	93.1 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	88.7 %	70-130			"	"	"	

Origins Laboratory, Inc.



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Noelle E Doyle, President

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

Rob Rebel  
 Project Number: NEP0909.03  
 Project: Noble - Phillips L30-6JI

SB19

2/17/2011 1:45:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.  
 X102072-05 (Water)

**BTEX by EPA 8260C**

Benzene	ND	1.00	ug/L	1	1B21004	02/21/2011	02/21/2011	
Toluene	ND	1.00	"	"	"	"	"	
Ethylbenzene	ND	1.00	"	"	"	"	"	
Xylenes, total	ND	3.00	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	96.1 %	70-130			"	"	"	
Surrogate: Toluene-d8	100 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	100 %	70-130			"	"	"	

Origins Laboratory, Inc.



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

Rob Rebel  
 Project Number: NEP0909.03  
 Project: Noble - Phillips L30-6JI

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 1B21004 - EPA 5030B

Blank (1B21004-BLK1)

Prepared: 02/21/2011 Analyzed: 02/21/2011

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	"							
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>64.6</i>		<i>"</i>	<i>62.5</i>		<i>103</i>	<i>70-130</i>			
<i>Surrogate: Toluene-d8</i>	<i>58.5</i>		<i>"</i>	<i>62.5</i>		<i>93.7</i>	<i>70-130</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>56.4</i>		<i>"</i>	<i>62.5</i>		<i>90.3</i>	<i>70-130</i>			

Origins Laboratory, Inc.



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 4600 West 60th Avenue  
 Arvada CO 80003

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 Project Number: NEP0909.03  
 Project: Noble - Phillips L30-6JI

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 1B21004 - EPA 5030B

LCS (1B21004-BS1)

Prepared: 02/21/2011 Analyzed: 02/21/2011

Benzene	43.2	1.00	ug/L	50.0		86.5	70-130			
Toluene	45.1	1.00	"	50.0		90.2	70-130			
Ethylbenzene	48.4	1.00	"	50.0		96.7	70-130			
m,p-Xylene	96.4	2.00	"	100		96.4	70-130			
o-Xylene	45.2	1.00	"	50.0		90.3	70-130			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>53.0</i>		<i>"</i>	<i>62.5</i>		<i>84.9</i>	<i>70-130</i>			
<i>Surrogate: Toluene-d8</i>	<i>59.1</i>		<i>"</i>	<i>62.5</i>		<i>94.6</i>	<i>70-130</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>66.4</i>		<i>"</i>	<i>62.5</i>		<i>106</i>	<i>70-130</i>			

Origins Laboratory, Inc.



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 4600 West 60th Avenue  
 Arvada CO 80003

Rob Rebel  
 Project Number: NEP0909.03  
 Project: Noble - Phillips L30-6JI

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 1B21004 - EPA 5030B

Matrix Spike (1B21004-MS1)	Source: X102082-02			Prepared: 02/21/2011 Analyzed: 02/21/2011						
Benzene	57.5	1.00	ug/L	50.0	0.73	114	70-130			
Toluene	43.3	1.00	"	50.0	ND	86.7	70-130			
Ethylbenzene	52.5	1.00	"	50.0	ND	105	70-130			
m,p-Xylene	114	2.00	"	100	ND	114	70-130			
o-Xylene	53.3	1.00	"	50.0	ND	107	70-130			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>57.3</i>		<i>"</i>	<i>62.5</i>		<i>91.7</i>	<i>70-130</i>			
<i>Surrogate: Toluene-d8</i>	<i>57.7</i>		<i>"</i>	<i>62.5</i>		<i>92.3</i>	<i>70-130</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>67.8</i>		<i>"</i>	<i>62.5</i>		<i>109</i>	<i>70-130</i>			

Origins Laboratory, Inc.



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 Arvada CO 80003

Rob Rebel  
 Project Number: NEP0909.03  
 Project: Noble - Phillips L30-6JI

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 1B21004 - EPA 5030B

Matrix Spike Dup (1B21004-MSD1)	Source: X102082-02			Prepared: 02/21/2011 Analyzed: 02/21/2011						
Benzene	64.6	1.00	ug/L	50.0	0.73	128	70-130	11.6	20	
Toluene	44.1	1.00	"	50.0	ND	88.2	70-130	1.78	20	
Ethylbenzene	53.8	1.00	"	50.0	ND	108	70-130	2.35	20	
m,p-Xylene	105	2.00	"	100	ND	105	70-130	8.78	20	
o-Xylene	48.0	1.00	"	50.0	ND	96.1	70-130	10.4	20	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>61.3</i>		<i>"</i>	<i>62.5</i>		<i>98.0</i>	<i>70-130</i>			
<i>Surrogate: Toluene-d8</i>	<i>52.9</i>		<i>"</i>	<i>62.5</i>		<i>84.6</i>	<i>70-130</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>68.0</i>		<i>"</i>	<i>62.5</i>		<i>109</i>	<i>70-130</i>			

Origins Laboratory, Inc.



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Noelle E Doyle, President

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

Rob Rebel  
Project Number: NEP0909.03  
Project: Noble - Phillips L30-6Jl

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**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