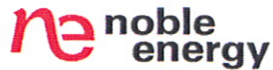


1625 Broadway  
Suite 2200  
Denver, CO 80202  
  
Tel: 303.228.4000  
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www.nobleenergyinc.com



North America Division

August 14, 2012

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

RE: Quarterly Groundwater Monitoring Report  
Loloff 35-6  
API 05-123-17428  
Spill Tracking #2223317  
SENW Sec. 35, T5N, R66W  
Weld County, Colorado

Dear Mr. Axelson:

Please find attached quarterly groundwater monitoring report for the Loloff 35-6. 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 and Regulatory Supervisor

Attachments



## **GROUNDWATER MONITORING REPORT JUNE 2012**

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### **LOLOFF 35-6 TANK BATTERY COGCC TRACKING #2224507 & REMEDIATION #7039**

On June 14, 2012, LT Environmental, Inc. (LTE), under the direction of Noble Energy, Inc. (Noble), conducted groundwater monitoring at the Loloff 35-6 Tank Battery (Site). The site history was described in preceding reports. The June 2012 groundwater monitoring event constitutes the first post-remediation groundwater monitoring event.

Soil borings SB01 through SB10 were completed as temporary groundwater monitoring wells on March 27, 2012. A site map is presented as Figure 1. Groundwater level measurements were collected and are summarized in Table 1.

Remediation activities were conducted on May 22 and 23, 2012, and included 16 injection locations, as shown on Figure 1. Injections occurred between 5 feet and 8 feet below ground surface (bgs) with a total of 2,700 pounds of amendment injected into the impacted soil and groundwater. The amendment consisted of BOS200<sup>®</sup> Trap & Treat carbon slurry (BOS200<sup>®</sup>), which is a mixture of granular activated carbon (GAC), petroleum consuming microbes, gypsum, and nutrients. The GAC initially adsorbs hydrocarbons in the soil and groundwater and immobilizes the impact. Following adsorption, contaminants are co-located with the bacteria, electron acceptors, and nutrients in the carbon matrix and are consumed by the bacteria via petroleum oxidation/sulfate reduction. As a result, the remaining hydrocarbon impact is reduced; thereby achieving cleanup goals.

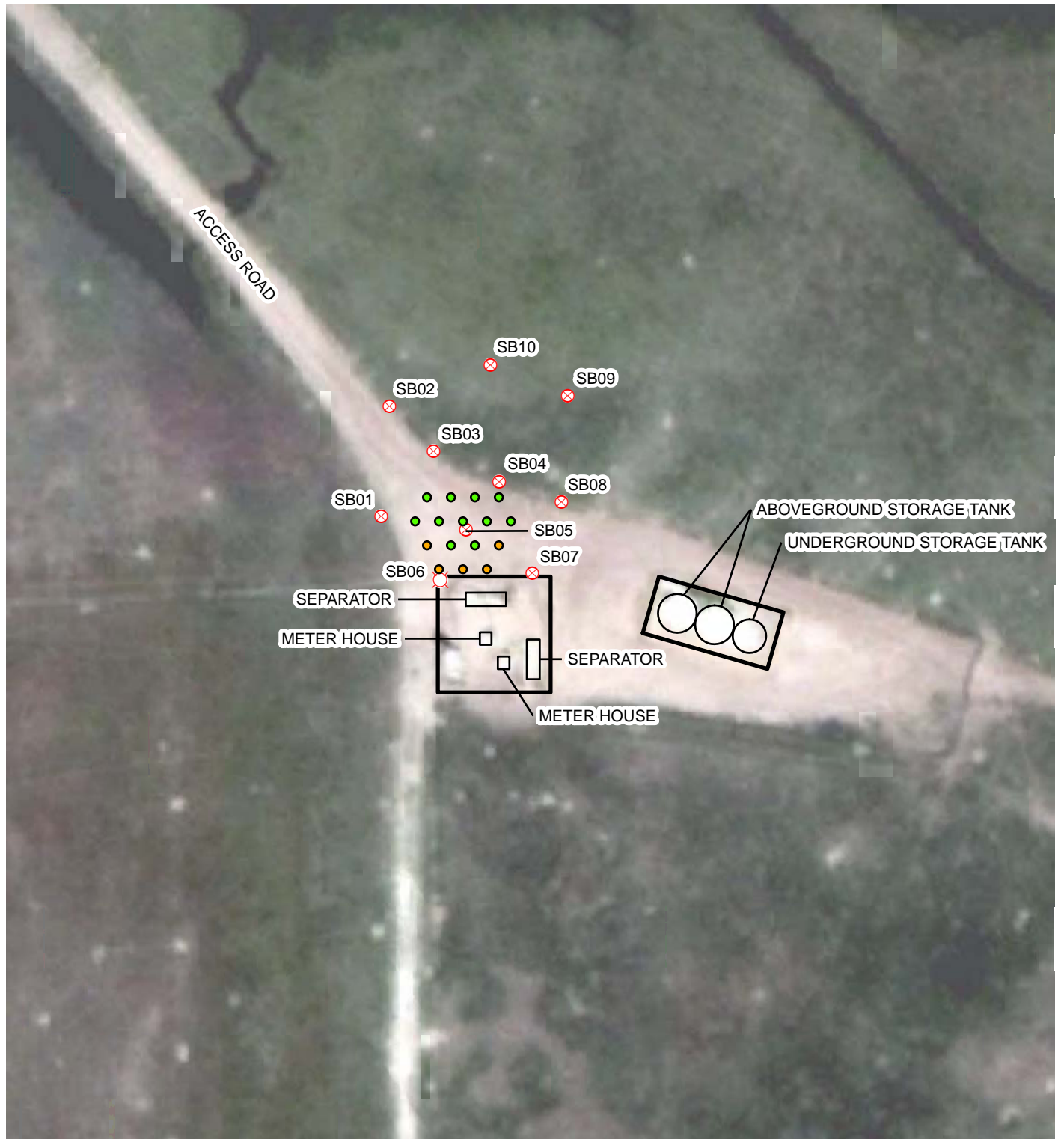
In order to document the remediation performance, groundwater monitoring was conducted on June 14, 2012. During the June 2012 monitoring event, depth to groundwater, which ranged from 5.48 feet below top of casing (btoc) in monitoring well SB05 to 7.95 feet btoc in monitoring well SB07, was used to calculate well-specific purge volumes. Following purging, samples were collected and then submitted to eAnalytics Laboratory of Loveland, Colorado, for analysis of benzene, toluene, ethylbenzene, and total xylenes (BTEX) by United States Environmental Protection Agency Method 8260C.

The Colorado Department of Public Health and Environment-Water Quality Control Commission has established Regulation 41-The Basic Standards for Ground Water (WQCC Reg 41) for BTEX at 5 micrograms per liter ( $\mu\text{g/L}$ ), 560  $\mu\text{g/L}$ , 700  $\mu\text{g/L}$ , and 1,400  $\mu\text{g/L}$ , respectively.

During the June 2012 monitoring event, groundwater analytical results indicate all groundwater samples are in compliance with WQCC Reg 41. This data indicates that remediation efforts were successful, and groundwater at the site is now in compliance with cleanup goals. Groundwater analytical results are presented in Figure 2 and summarized in Table 1. The laboratory analytical report is attached.

Future groundwater monitoring will include the source monitoring well (SB05), two downgradient wells (SB03 and SB04), and one upgradient well (SB07). Monitoring well SB06 was destroyed and monitoring wells SB01, SB02, SB08, SB09 and SB10 were not sampled, as the groundwater extent is defined without them, and these locations have never exhibited hydrocarbon impact. LTE, under the direction of Noble, will continue to conduct quarterly groundwater monitoring of four monitoring wells (SB03, SB04, SB05, and SB07) with the goal of obtaining four quarters with analytical results in compliance with WQCC Reg 41. The next groundwater monitoring event is scheduled for September 2012.

## FIGURES



# LEGEND

- 50 POUND SHOT BOS-200® INJECTION
- 100 POUND SHOT BOS-200® INJECTION
- ⊗ MONITORING WELL
- ⊗ DESTROYED MONITORING WELL
- BERM
- CURRENT INFRASTRUCTURE

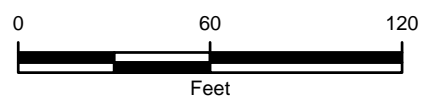


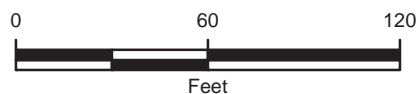
FIGURE 1  
SITE MAP  
LOLOFF 35-6 TANK BATTERY  
WELD COUNTY, COLORADO

NOBLE ENERGY, INC.





IMAGE COURTESY OF GOOGLE EARTH, 07/07/2011



**FIGURE 2**  
**GROUNDWATER ANALYTICAL RESULTS**  
**LOLOFF 35-6 TANK BATTERY**  
**WELD COUNTY, COLORADO**

**NOBLE ENERGY, INC.**



## TABLE



TABLE 1

**GROUNDWATER ANALYTICAL RESULTS  
LOLOFF 35-6 TANK BATTERY  
WELD COUNTY, COLORADO  
NOBLE ENERGY, INC.**

| Monitoring Well          | Date      | Depth to Water (feet btoc)     | Benzene (µg/L) | Toluene (µg/L) | Ethylbenzene (µg/L) | Total Xylenes (µg/L) |
|--------------------------|-----------|--------------------------------|----------------|----------------|---------------------|----------------------|
| SB01                     | 3/28/2012 | 8.26                           | <1.0           | <1.0           | <1.0                | <1.0                 |
|                          | 6/14/2012 | Not Sampled Per COGCC Approval |                |                |                     |                      |
| SB02                     | 3/28/2012 | 7.69                           | <1.0           | <1.0           | <1.0                | <1.0                 |
|                          | 6/14/2012 | Not Sampled Per COGCC Approval |                |                |                     |                      |
| SB03                     | 3/28/2012 | 8.41                           | <1.0           | <1.0           | <1.0                | <1.0                 |
|                          | 6/14/2012 | 7.79                           | <1             | <1             | <1                  | <1                   |
| SB04                     | 3/28/2012 | 7.83                           | 2.07           | 1.78           | <1.0                | 12.8                 |
|                          | 6/14/2012 | 7.35                           | <1             | <1             | <1                  | <1                   |
| SB05                     | 3/28/2012 | 6.35                           | <b>2,530</b>   | <b>3,910</b>   | 166                 | <b>1,840</b>         |
|                          | 6/14/2012 | 5.48                           | <1             | <1             | <1                  | <1                   |
| SB06                     | 3/28/2012 | 8.24                           | <1.0           | <1.0           | <1.0                | <1.0                 |
|                          | 6/14/2012 | Not Sampled: Destroyed         |                |                |                     |                      |
| SB07                     | 3/28/2012 | 8.60                           | <1.0           | <1.0           | <1.0                | <1.0                 |
|                          | 6/14/2012 | 7.95                           | <1             | <1             | <1                  | <1                   |
| SB08                     | 3/28/2012 | 7.66                           | <1.0           | <1.0           | <1.0                | <1.0                 |
|                          | 6/14/2012 | Not Sampled Per COGCC Approval |                |                |                     |                      |
| SB09                     | 3/28/2012 | 6.39                           | <1.0           | <1.0           | <1.0                | <1.0                 |
|                          | 6/14/2012 | Not Sampled Per COGCC Approval |                |                |                     |                      |
| SB10                     | 3/28/2012 | 6.34                           | <1.0           | <1.0           | <1.0                | <1.0                 |
|                          | 6/14/2012 | Not Sampled Per COGCC Approval |                |                |                     |                      |
| <b>CDPHE WQCC Reg 41</b> |           |                                | <b>5</b>       | <b>560</b>     | <b>700</b>          | <b>1,400</b>         |

**NOTES:**

btoc - below top of casing

µg/L - micrograms per liter

&lt; - indicates result is less than the stated laboratory method 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 The Basic Standards for Ground Water



**ATTACHMENT**

**LABORATORY ANALYTICAL REPORT**

# Certificate of Analysis



June 18, 2012

Client: LT Environmental  
4600 West 60th Avenue  
Arvada, Colorado 80003

Project: Loloff 35-6

Lab ID: 061401

Date Received: 06/14/12

Number of Samples Received: 4

Sample Condition: Samples arrived intact and in appropriate sample containers

Sample Temperature: Within acceptable range of 2-6° C, or as specified in EPA Method

| Analysis | EPA Method | Lab ID on COC |
|----------|------------|---------------|
| BTEX     | 8260C      | 1 - 4         |

All quality control analyses associated with the requested analyses were satisfactorily passed before the samples were run. If you have any questions please give us a call, we are happy to help.

Thank you for allowing eAnalytics Laboratory to provide laboratory services for you, we truly appreciate your business.

Sincerely,

A handwritten signature in black ink, appearing to read "Chris Dieken".

Christopher Dieken  
Quality Assurance Manager  
eAnalytics Laboratory  
(970) 667-6975  
info@eAnalyticsLab.com







# Certificate of Analysis

Quality Control  
Analysis



June 18, 2012

Client: LT Environmental  
4600 West 60th Avenue  
Arvada, Colorado 80003

Project: Loloff 35-6

Lab ID: 061401

Matrix: WATER  
Batch ID: EA 06-16-12

EPA Method: 8260C BTEX

| Sample Name               | Benzene | Ethyl -<br>Benzene | Toluene | Total<br>Xylenes | Date<br>Analyzed | Lab ID      |
|---------------------------|---------|--------------------|---------|------------------|------------------|-------------|
| Laboratory Control Sample | 89      | 96                 | 96      | 100              | 06/16/12         | L 06-16-12  |
| (Acceptable 70-130%)      | % Rec   | % Rec              | % Rec   | % Rec            |                  |             |
| Calibration Verification  | 96      | 91                 | 97      | 103              | 06/16/12         | C 06-16-12  |
| (Acceptable 70-130%)      | % Rec   | % Rec              | % Rec   | % Rec            |                  |             |
| Reagent Blank             | < 1     | < 1                | < 1     | < 1              | 06/16/12         | RB 06-16-12 |
|                           | ug/L    | ug/L               | ug/L    | ug/L             |                  |             |
|                           |         |                    |         |                  |                  |             |
|                           |         |                    |         |                  |                  |             |
|                           |         |                    |         |                  |                  |             |

A handwritten signature in black ink that reads "Todd Rhea".

Laboratory Manager - eAnalytics Laboratory