



## **SUMP PULL SAMPLING REPORT AUGUST 2013**

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### **ROADIFER 12-13B TANK BATTERY**

On July 24, 2013, LT Environmental (LTE), under the direction on Noble Energy, Inc. (Noble), in accordance with Colorado Oil and Gas Conservation Commission (COGCC) Rule 905 b(4), conducted sump pull sampling activities at the Roadifer 12-13B Tank Battery (Site). The sump is being replaced as part of typical equipment maintenance activities. A site location map is included as Figure 1.

LTE personnel were on site to field screen soil, collect a confirmation soil sample from the sump sidewall, and collect a groundwater sample from the base of the sump pit. One soil sample was collected from the sidewall at 4 feet below ground surface (bgs) (Figure 2). Groundwater was encountered at approximately 4.5 feet bgs, and therefore no base sample was collected. The sump sidewalls were field screened with a photo-ionization detector (PID). The PID readings ranged from 3.2 parts per million (ppm) in SS01@2' to 61.7 ppm in SS02@4'. The soil sample was submitted under proper chain of custody protocol to Summit Scientific (Summit) of Golden, Colorado, for analysis of benzene, toluene, ethylbenzene, and total xylenes (BTEX), naphthalene, and total petroleum hydrocarbons (TPH) as gasoline range organics by United States Environmental Protection Agency (EPA) Method 8260B, TPH as diesel range organics by EPA Method 8015, electrical conductivity (EC) by Standard Method 2510B, pH by EPA Method 9045, and sodium adsorption ratio (SAR) by calculation.

A grab groundwater sample (PH01) was collected from the base of the sump pit. The sample was submitted to Summit for analysis of BTEX by EPA Method 8260B.

The COGCC cleanup standards for BTEX in soil are 0.17 milligrams per kilogram (mg/kg), 85 mg/kg, 100 mg/kg, and 175 mg/kg, respectively. The COGCC cleanup standards for naphthalene and TPH in soil are 23 mg/kg and 500 mg/kg, respectively. The COGCC standards for EC, pH, and SAR are 4 millimhos per centimeter, 6 to 9 standard units, and 12, respectively. Soil analytical results indicate that the confirmation sidewall sample was compliant with COGCC standards. The soil analytical results are summarized in Table 2, and the laboratory analytical report is attached.

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 5.0 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. Groundwater analytical results, summarized in Table 1, indicate the sample was in compliance with WQCC Reg 41. The laboratory analytical report is attached.

Assessment work conducted at the Site and presented in this report indicates compliance with State standards. The tank battery remains on site, and the facility is still active. Upon site closure, reclamation will be conducted in order to achieve a final reclamation status for the site. No further actions are currently planned for the site.

## FIGURES



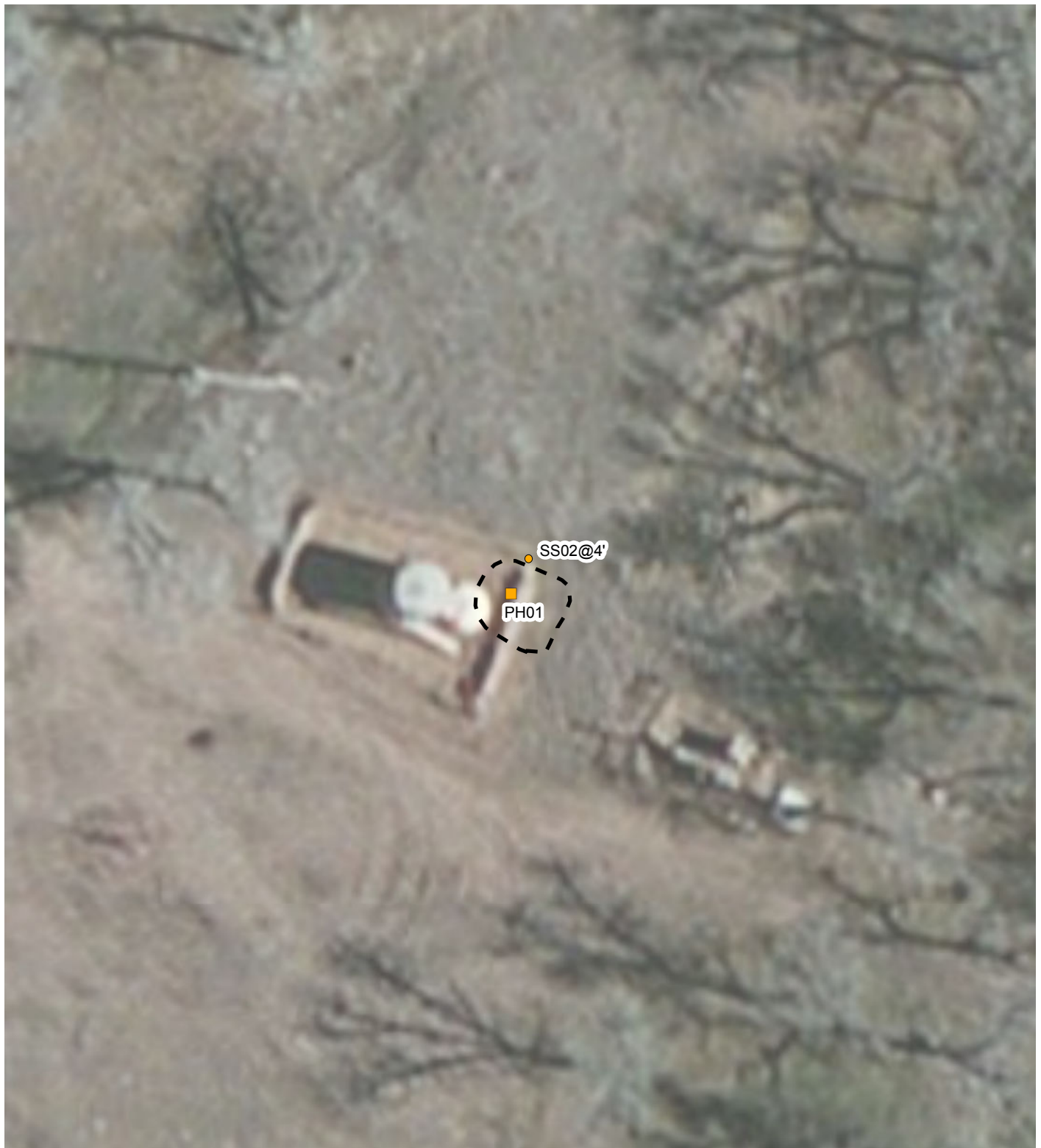


IMAGE COURTESY OF ESRI/BING MAPS

# LEGEND

- SOIL SAMPLE
- POT HOLE SAMPLE
- OLD SUMP EXTENT

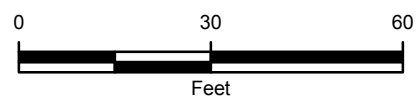


FIGURE 2  
SITE MAP  
ROADIFER 12-23B  
WELD COUNTY, COLORADO

NOBLE ENERGY, INC



## **TABLES**

**TABLE 1**

**GROUNDWATER ANALYTICAL RESULTS  
ROADIFER 12-13B SUMP PULL  
WELD COUNTY, COLORADO  
NOBLE ENERGY, INC.**

| <b>Sample ID</b>         | <b>Date Sampled</b> | <b>Benzene<br/>(µg/L)</b> | <b>Toluene<br/>(µg/L)</b> | <b>Ethylbenzene<br/>(µg/L)</b> | <b>Total Xylenes<br/>(µg/L)</b> |
|--------------------------|---------------------|---------------------------|---------------------------|--------------------------------|---------------------------------|
| PH01                     | 7/24/2013           | <1.0                      | <1.0                      | <1.0                           | <1.0                            |
| <b>CDPHE WQCC Reg 41</b> |                     | <b>5.0</b>                | <b>560</b>                | <b>700</b>                     | <b>1,400</b>                    |

**Notes:**

µg/L - micrograms per liter

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

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

CDPHE WQCC Reg 41 - Colorado Department of Public Health and Environmental-Water  
Quality Control Commission Regulation 41 covering The Basic Standards for Ground Water

**TABLE 2**  
**SOIL ANALYTICAL RESULTS**  
**ROADIFER 12-13B SUMP PULL**  
**WELD COUNTY, COLORADO**  
**NOBLE ENERGY, INC.**

| Sample ID                         | Date Sampled | Benzene<br>(mg/kg) | Toluene<br>(mg/kg) | Ethylbenzene<br>(mg/kg) | Total Xylenes<br>(mg/kg) | GRO<br>(mg/kg) | DRO<br>(mg/kg) | TPH<br>(mg/kg) | Naphthalene<br>(mg/kg) | EC<br>(mmhos/cm) | pH            | SAR       |
|-----------------------------------|--------------|--------------------|--------------------|-------------------------|--------------------------|----------------|----------------|----------------|------------------------|------------------|---------------|-----------|
| SS02@4'                           | 7/24/2013    | <0.0050            | <0.0050            | <0.0050                 | <0.010                   | 21             | <50            | <50.50         | 21                     | 0.237            | 7.93          | 0.940     |
| <b>COGCC Table 910-1 Standard</b> |              | <b>0.17</b>        | <b>85</b>          | <b>100</b>              | <b>175</b>               | <b>--</b>      | <b>--</b>      | <b>500</b>     | <b>23</b>              | <b>4</b>         | <b>6 to 9</b> | <b>12</b> |

**Notes:**

mg/kg - milligrams per kilogram

mmhos/cm - millimhos per centimeter

NA - not analyzed

EC - electrical conductivity

SAR - sodium adsorption ratio

GRO - gasoline range organics

DRO - diesel range organics

TPH - total petroleum hydrocarbons

TPH is the sum of GRO and DRO

COGCC - Colorado Oil and Gas Conservation Commission

-- - not applicable

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

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

DRO analyzed by EPA Modified Method 8015



**ATTACHMENT**

**LABORATORY ANALYTICAL REPORT**

# Summit Scientific

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741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

August 27, 2013

Rob Rebel

LT Environmental, Inc.

4600 West 60th Avenue

Arvada, CO 80003

RE: NEP - Roadifer 12-13B

Enclosed are the results of analyses for samples received by Summit Scientific on 07/24/13 17:00. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to be 'Ben Shrewsbury', with a long, sweeping horizontal line extending to the right.

Ben Shrewsbury For Joseph J Egry IV  
Laboratory Director





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

Project: NEP - Roadifer 12-13B

Project Number: 0083  
Project Manager: Rob Rebel

Reported:  
08/27/13 11:58

**SS02@4'**  
**R307206-02 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: 07/24/13 00:00

| Analyte       | Result | Reporting Limit | Units | Dilution | Batch   | Prepared | Analyzed | Method | Notes |
|---------------|--------|-----------------|-------|----------|---------|----------|----------|--------|-------|
| C10-C28 (DRO) | ND     | 50              | mg/kg | 1        | 3072419 | 07/24/13 | 07/25/13 | 8015M  |       |

Date Sampled: 07/24/13 00:00

| Analyte                | Result | Reporting Limit | Units  | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|------------------------|--------|-----------------|--------|----------|-------|----------|----------|--------|-------|
| Surrogate: o-Terphenyl |        | 79.7 %          | 30-150 |          | "     | "        | "        | "      |       |

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: 07/24/13 00:00

| Analyte                     | Result | Reporting Limit | Units | Dilution | Batch   | Prepared | Analyzed | Method    | Notes |
|-----------------------------|--------|-----------------|-------|----------|---------|----------|----------|-----------|-------|
| Naphthalene                 | ND     | 0.0050          | mg/kg | 1        | 3072418 | 07/24/13 | 07/24/13 | EPA 8260B |       |
| Benzene                     | ND     | 0.0050          | "     | "        | "       | "        | "        | "         |       |
| Toluene                     | ND     | 0.0050          | "     | "        | "       | "        | "        | "         |       |
| Ethylbenzene                | ND     | 0.0050          | "     | "        | "       | "        | "        | "         |       |
| Xylenes (total)             | ND     | 0.010           | "     | "        | "       | "        | "        | "         |       |
| Gasoline Range Hydrocarbons | 21     | 0.50            | "     | "        | "       | "        | "        | "         |       |

Date Sampled: 07/24/13 00:00

| Analyte                          | Result | Reporting Limit | Units  | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|----------------------------------|--------|-----------------|--------|----------|-------|----------|----------|--------|-------|
| Surrogate: 1,2-Dichloroethane-d4 |        | 104 %           | 23-173 |          | "     | "        | "        | "      |       |
| Surrogate: Toluene-d8            |        | 98.2 %          | 20-170 |          | "     | "        | "        | "      |       |
| Surrogate: 4-Bromofluorobenzene  |        | 104 %           | 21-167 |          | "     | "        | "        | "      |       |

**Soluble Nutrients by EPA 6020/Mod. USDA60 6(2, 3A) - Dry Weight Basis**

Date Sampled: 07/24/13 00:00

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---------|--------|-----------------|-------|----------|-------|----------|----------|--------|-------|
|---------|--------|-----------------|-------|----------|-------|----------|----------|--------|-------|

Summit Scientific

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

Project: NEP - Roadifer 12-13B

Project Number: 0083  
Project Manager: Rob Rebel

Reported:  
08/27/13 11:58

**SS02@4'**  
**R307206-02 (Soil)**

**Summit Scientific**

**Soluble Nutrients by EPA 6020/Mod. USDA60 6(2, 3A) - Dry Weight Basis**

| Analyte   | Result | Units          | Dilution | Batch   | Prepared | Analyzed | Method                        | Notes |
|-----------|--------|----------------|----------|---------|----------|----------|-------------------------------|-------|
| Calcium   | 125    | 11.9 mg/kg dry | 1        | 3072501 | 07/25/13 | 07/25/13 | EPA 6020/Mod. USDA60 6(2, 3A) |       |
| Magnesium | 113    | 5.97           | "        | "       | "        | "        | "                             |       |
| Sodium    | 60.5   | 5.97           | "        | "       | "        | "        | "                             |       |

Date Sampled: 07/24/13 00:00

| Analyte                 | Result | Reporting Limit | Units | Dilution | Batch   | Prepared | Analyzed | Method | Notes |
|-------------------------|--------|-----------------|-------|----------|---------|----------|----------|--------|-------|
| Sodium Adsorption Ratio | 0.940  |                 | units | "        | 3072510 | 07/25/13 | 07/25/13 | "      |       |

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: 07/24/13 00:00

| Analyte                   | Result | Reporting Limit | Units    | Dilution | Batch   | Prepared | Analyzed | Method   | Notes |
|---------------------------|--------|-----------------|----------|----------|---------|----------|----------|----------|-------|
| Specific Conductance (EC) | 0.237  | 0.00100         | mmhos/cm | 1        | 3072420 | 07/24/13 | 07/24/13 | SM 2510B |       |

Date Sampled: 07/24/13 00:00

| Analyte | Result | Reporting Limit | Units    | Dilution | Batch   | Prepared | Analyzed | Method   | Notes |
|---------|--------|-----------------|----------|----------|---------|----------|----------|----------|-------|
| pH      | 7.93   | 0.100           | pH Units | "        | 3072421 | "        | 07/24/13 | EPA 9045 |       |

Date Sampled: 07/24/13 00:00

| Analyte  | Result | Reporting Limit | Units | Dilution | Batch   | Prepared | Analyzed | Method        | Notes |
|----------|--------|-----------------|-------|----------|---------|----------|----------|---------------|-------|
| % Solids | 83.8   |                 | %     | "        | 3072504 | 07/25/13 | 07/25/13 | % calculation |       |

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

Project: NEP - Roadifer 12-13B

Project Number: 0083  
Project Manager: Rob Rebel

**Reported:**  
08/27/13 11:58

**Extractable Petroleum Hydrocarbons by 8015 - Quality Control**  
**Summit Scientific**

| Analyte | Reporting |       |       | Spike | Source |      | %REC   |     | RPD   |       |
|---------|-----------|-------|-------|-------|--------|------|--------|-----|-------|-------|
|         | Result    | Limit | Units | Level | Result | %REC | Limits | RPD | Limit | Notes |

**Batch 3072419 - EPA 3550A**

**Blank (3072419-BLK1)**

Prepared: 07/24/13 Analyzed: 07/25/13

C10-C28 (DRO) ND 50 mg/kg

**LCS (3072419-BS1)**

Prepared: 07/24/13 Analyzed: 07/25/13

C10-C28 (DRO) 510 50 mg/kg 501 102 73-134

**LCS Dup (3072419-BSD1)**

Prepared: 07/24/13 Analyzed: 07/25/13

C10-C28 (DRO) 491 50 mg/kg 501 98.1 73-134 3.64 11

**Matrix Spike (3072419-MS1)**

**Source: R307201-02**

Prepared: 07/24/13 Analyzed: 07/25/13

C10-C28 (DRO) 506 50 mg/kg 501 ND 101 50-148

**Matrix Spike Dup (3072419-MSD1)**

**Source: R307201-02**

Prepared: 07/24/13 Analyzed: 07/25/13

C10-C28 (DRO) 477 50 mg/kg 501 ND 95.2 50-148 5.93 13

Summit Scientific

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

Project: NEP - Roadifer 12-13B

Project Number: 0083  
Project Manager: Rob Rebel

Reported:  
08/27/13 11:58

**Volatile Organic Compounds by EPA Method 8260B - Quality Control**  
**Summit Scientific**

| Analyte | Reporting |       |       | Spike | Source |      | %REC   |     | RPD   |       |
|---------|-----------|-------|-------|-------|--------|------|--------|-----|-------|-------|
|         | Result    | Limit | Units | Level | Result | %REC | Limits | RPD | Limit | Notes |

**Batch 3072418 - EPA 5030 Soil MS**

**Blank (3072418-BLK1)**

Prepared & Analyzed: 07/24/13

|                                  |        |        |       |        |      |        |  |  |  |  |
|----------------------------------|--------|--------|-------|--------|------|--------|--|--|--|--|
| Naphthalene                      | ND     | 0.0050 | mg/kg |        |      |        |  |  |  |  |
| Benzene                          | ND     | 0.0050 | "     |        |      |        |  |  |  |  |
| Toluene                          | ND     | 0.0050 | "     |        |      |        |  |  |  |  |
| Ethylbenzene                     | ND     | 0.0050 | "     |        |      |        |  |  |  |  |
| Xylenes (total)                  | ND     | 0.010  | "     |        |      |        |  |  |  |  |
| Gasoline Range Hydrocarbons      | ND     | 0.50   | "     |        |      |        |  |  |  |  |
| Surrogate: 1,2-Dichloroethane-d4 | 0.0437 |        | "     | 0.0397 | 110  | 23-173 |  |  |  |  |
| Surrogate: Toluene-d8            | 0.0399 |        | "     | 0.0400 | 99.8 | 20-170 |  |  |  |  |
| Surrogate: 4-Bromofluorobenzene  | 0.0416 |        | "     | 0.0400 | 104  | 21-167 |  |  |  |  |

**LCS (3072418-BS1)**

Prepared & Analyzed: 07/24/13

|                                  |        |        |       |        |      |        |  |  |  |  |
|----------------------------------|--------|--------|-------|--------|------|--------|--|--|--|--|
| Naphthalene                      | ND     | 0.0050 | mg/kg |        |      | 66-138 |  |  |  |  |
| Benzene                          | 0.105  | 0.0050 | "     | 0.100  | 105  | 58-130 |  |  |  |  |
| Toluene                          | 0.107  | 0.0050 | "     | 0.100  | 107  | 61-134 |  |  |  |  |
| Ethylbenzene                     | 0.134  | 0.0050 | "     | 0.100  | 134  | 74-139 |  |  |  |  |
| m,p-Xylene                       | 0.251  | 0.010  | "     | 0.200  | 126  | 73-137 |  |  |  |  |
| o-Xylene                         | 0.127  | 0.0050 | "     | 0.100  | 127  | 73-141 |  |  |  |  |
| Surrogate: 1,2-Dichloroethane-d4 | 0.0452 |        | "     | 0.0397 | 114  | 23-173 |  |  |  |  |
| Surrogate: Toluene-d8            | 0.0376 |        | "     | 0.0400 | 94.0 | 20-170 |  |  |  |  |
| Surrogate: 4-Bromofluorobenzene  | 0.0422 |        | "     | 0.0400 | 105  | 21-167 |  |  |  |  |

**LCS Dup (3072418-BSD1)**

Prepared & Analyzed: 07/24/13

|                                  |        |        |       |        |      |        |       |  |    |  |
|----------------------------------|--------|--------|-------|--------|------|--------|-------|--|----|--|
| Naphthalene                      | ND     | 0.0050 | mg/kg |        |      | 66-138 |       |  | 12 |  |
| Benzene                          | 0.102  | 0.0050 | "     | 0.100  | 102  | 58-130 | 2.29  |  | 13 |  |
| Toluene                          | 0.116  | 0.0050 | "     | 0.100  | 116  | 61-134 | 8.16  |  | 16 |  |
| Ethylbenzene                     | 0.131  | 0.0050 | "     | 0.100  | 131  | 74-139 | 2.28  |  | 12 |  |
| m,p-Xylene                       | 0.249  | 0.010  | "     | 0.200  | 125  | 73-137 | 0.887 |  | 14 |  |
| o-Xylene                         | 0.126  | 0.0050 | "     | 0.100  | 126  | 73-141 | 0.998 |  | 12 |  |
| Surrogate: 1,2-Dichloroethane-d4 | 0.0443 |        | "     | 0.0397 | 112  | 23-173 |       |  |    |  |
| Surrogate: Toluene-d8            | 0.0399 |        | "     | 0.0400 | 99.8 | 20-170 |       |  |    |  |
| Surrogate: 4-Bromofluorobenzene  | 0.0419 |        | "     | 0.0400 | 105  | 21-167 |       |  |    |  |

Summit Scientific

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

Project: NEP - Roadifer 12-13B

Project Number: 0083  
Project Manager: Rob Rebel

Reported:  
08/27/13 11:58

**Volatile Organic Compounds by EPA Method 8260B - Quality Control**  
**Summit Scientific**

| Analyte | Reporting |       |       | Spike | Source |      | %REC   |     | RPD   |       |
|---------|-----------|-------|-------|-------|--------|------|--------|-----|-------|-------|
|         | Result    | Limit | Units | Level | Result | %REC | Limits | RPD | Limit | Notes |

**Batch 3072418 - EPA 5030 Soil MS**

**Matrix Spike (3072418-MS1)**

**Source: R307201-02**

Prepared & Analyzed: 07/24/13

|                                  |        |        |       |        |      |      |        |  |  |  |
|----------------------------------|--------|--------|-------|--------|------|------|--------|--|--|--|
| Naphthalene                      | ND     | 0.0050 | mg/kg |        | ND   |      | 10-158 |  |  |  |
| Benzene                          | 0.103  | 0.0050 | "     | 0.100  | 0.00 | 103  | 30-131 |  |  |  |
| Toluene                          | 0.103  | 0.0050 | "     | 0.100  | 0.00 | 103  | 30-134 |  |  |  |
| Ethylbenzene                     | 0.132  | 0.0050 | "     | 0.100  | 0.00 | 132  | 22-153 |  |  |  |
| m,p-Xylene                       | 0.248  | 0.010  | "     | 0.200  | 0.00 | 124  | 10-159 |  |  |  |
| o-Xylene                         | 0.125  | 0.0050 | "     | 0.100  | 0.00 | 125  | 31-151 |  |  |  |
| Surrogate: 1,2-Dichloroethane-d4 | 0.0449 |        | "     | 0.0397 |      | 113  | 23-173 |  |  |  |
| Surrogate: Toluene-d8            | 0.0353 |        | "     | 0.0400 |      | 88.4 | 20-170 |  |  |  |
| Surrogate: 4-Bromofluorobenzene  | 0.0424 |        | "     | 0.0400 |      | 106  | 21-167 |  |  |  |

**Matrix Spike Dup (3072418-MSD1)**

**Source: R307201-02**

Prepared: 07/24/13 Analyzed: 07/25/13

|                                  |        |        |       |        |      |      |        |      |    |  |
|----------------------------------|--------|--------|-------|--------|------|------|--------|------|----|--|
| Naphthalene                      | ND     | 0.0050 | mg/kg |        | ND   |      | 10-158 |      | 42 |  |
| Benzene                          | 0.106  | 0.0050 | "     | 0.100  | 0.00 | 106  | 30-131 | 2.21 | 34 |  |
| Toluene                          | 0.114  | 0.0050 | "     | 0.100  | 0.00 | 114  | 30-134 | 10.1 | 30 |  |
| Ethylbenzene                     | 0.128  | 0.0050 | "     | 0.100  | 0.00 | 128  | 22-153 | 2.47 | 24 |  |
| m,p-Xylene                       | 0.242  | 0.010  | "     | 0.200  | 0.00 | 121  | 10-159 | 2.29 | 68 |  |
| o-Xylene                         | 0.123  | 0.0050 | "     | 0.100  | 0.00 | 123  | 31-151 | 1.26 | 38 |  |
| Surrogate: 1,2-Dichloroethane-d4 | 0.0466 |        | "     | 0.0397 |      | 117  | 23-173 |      |    |  |
| Surrogate: Toluene-d8            | 0.0390 |        | "     | 0.0400 |      | 97.5 | 20-170 |      |    |  |
| Surrogate: 4-Bromofluorobenzene  | 0.0418 |        | "     | 0.0400 |      | 104  | 21-167 |      |    |  |

Summit Scientific

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

Project: NEP - Roadifer 12-13B  
Project Number: 0083  
Project Manager: Rob Rebel

Reported:  
08/27/13 11:58

**Soluble Nutrients by EPA 6020/Mod. USDA60 6(2, 3A) - Dry Weight Basis - Quality Control**  
**Summit Scientific**

| Analyte | Reporting |       |       | Spike | Source |      | %REC   |     | RPD   |       |
|---------|-----------|-------|-------|-------|--------|------|--------|-----|-------|-------|
|         | Result    | Limit | Units | Level | Result | %REC | Limits | RPD | Limit | Notes |

**Batch 3072501 - General Preparation**

**Blank (3072501-BLK1)**

Prepared & Analyzed: 07/25/13

|           |    |      |           |
|-----------|----|------|-----------|
| Calcium   | ND | 10.0 | mg/kg wet |
| Magnesium | ND | 5.00 | "         |
| Sodium    | ND | 5.00 | "         |

**LCS (3072501-BS1)**

Prepared & Analyzed: 07/25/13

|           |     |      |           |     |     |        |
|-----------|-----|------|-----------|-----|-----|--------|
| Calcium   | 438 | 10.0 | mg/kg wet | 401 | 109 | 80-120 |
| Magnesium | 228 | 5.00 | "         | 201 | 113 | 80-120 |
| Sodium    | 592 | 5.00 | "         | 502 | 118 | 80-120 |

**Matrix Spike (3072501-MS1)**

Source: R307206-02

Prepared & Analyzed: 07/25/13

|           |     |      |           |     |      |      |        |
|-----------|-----|------|-----------|-----|------|------|--------|
| Calcium   | 592 | 11.9 | mg/kg dry | 465 | 125  | 100  | 75-125 |
| Magnesium | 337 | 5.97 | "         | 233 | 113  | 96.2 | 75-125 |
| Sodium    | 722 | 5.97 | "         | 581 | 60.5 | 114  | 75-125 |

**Matrix Spike Dup (3072501-MSD1)**

Source: R307206-02

Prepared & Analyzed: 07/25/13

|           |     |      |           |     |      |      |        |      |    |
|-----------|-----|------|-----------|-----|------|------|--------|------|----|
| Calcium   | 555 | 11.9 | mg/kg dry | 463 | 125  | 92.9 | 75-125 | 6.46 | 25 |
| Magnesium | 307 | 5.97 | "         | 232 | 113  | 83.7 | 75-125 | 9.31 | 25 |
| Sodium    | 743 | 5.97 | "         | 579 | 60.5 | 118  | 75-125 | 2.75 | 25 |

Summit Scientific

*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

Project: NEP - Roadifer 12-13B

Project Number: 0083  
Project Manager: Rob Rebel

**Reported:**  
08/27/13 11:58

**Physical Parameters by APHA/ASTM/EPA Methods - Quality Control**  
**Summit Scientific**

| Analyte | Reporting |       |       | Spike | Source | %REC |        | RPD |       |       |
|---------|-----------|-------|-------|-------|--------|------|--------|-----|-------|-------|
|         | Result    | Limit | Units | Level | Result | %REC | Limits | RPD | Limit | Notes |

**Batch 3072420 - General Preparation**

**Duplicate (3072420-DUP1)**      **Source: R307206-02**      Prepared & Analyzed: 07/24/13

|                           |       |         |          |       |      |    |
|---------------------------|-------|---------|----------|-------|------|----|
| Specific Conductance (EC) | 0.258 | 0.00100 | mmhos/cm | 0.237 | 8.42 | 20 |
|---------------------------|-------|---------|----------|-------|------|----|

**Batch 3072421 - General Preparation**

**Duplicate (3072421-DUP1)**      **Source: R307206-02**      Prepared & Analyzed: 07/24/13

|    |      |       |          |      |      |    |
|----|------|-------|----------|------|------|----|
| pH | 7.82 | 0.100 | pH Units | 7.93 | 1.40 | 20 |
|----|------|-------|----------|------|------|----|

**Batch 3072504 - General Preparation**

**Duplicate (3072504-DUP1)**      **Source: R307206-02**      Prepared & Analyzed: 07/25/13

|          |      |  |   |      |      |    |
|----------|------|--|---|------|------|----|
| % Solids | 82.1 |  | % | 83.8 | 2.05 | 20 |
|----------|------|--|---|------|------|----|

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*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

Project: NEP - Roadifer 12-13B

Project Number: 0083  
Project Manager: Rob Rebel

**Reported:**  
08/27/13 11:58

### Notes and Definitions

DET Analyte DETECTED  
ND Analyte NOT DETECTED at or above the reporting limit  
NR Not Reported  
dry Sample results reported on a dry weight basis  
RPD Relative Percent Difference

A handwritten signature in black ink, appearing to be 'JMM'.