1R - 426-281

# REPORTS

# DATE:

3-20-13

Rice Environmental Consulting & Safety
P.O. Box 5630 Hobbs, NM 88241
Phone 575.393.4411 Fax 575.393.0293

CERTIFIED MAIL
RETURN RECEIPT NO. 7008 1140 0001 3073 0667



**March 20th, 2013**

**Mr. Edward Hansen**
New Mexico Energy, Minerals, & Natural Resources
Oil Conservation Division, Environmental Bureau
1220 S. St. Francis Drive
Santa Fe, New Mexico 87505

RE: **Initial CAP Report and Soil Closure Request**
**Rice Operating Company – BD SWD System**
**BD G-23 EOL (1R426-281): UL/G sec. 23 T22S R37E**
**(formerly BD B-23 EOL)**

Mr. Hansen:

RICE Operating Company (ROC) has retained Rice Environmental Consulting and Safety (RECS) to address potential environmental concerns at the above-referenced site in the BD Salt Water Disposal (SWD) system. The site was previously referred to as the BD B-23 EOL. However, GIS mapping shows the site to be located within unit letter G. To reflect the geographical location of the site, the name has been changed to the BD G-23 EOL. All correspondences will reference BD G-23 EOL.

ROC is the service provider (agent) for the BD SWD System and has no ownership of any portion of the pipeline, well, or facility. The system is owned by a consortium of oil producers, System Parties, who provide all operating capital on a percentage ownership/usage basis.

**Background and Previous Work**

The site is located approximately 4 miles southeast of Eunice, New Mexico at UL/G sec. 23 T22S R37E as shown on the Site Location Map (Figure 1). Groundwater at this site is located at a depth of approximately 59 +/- feet.

In 2010, ROC initiated work on the former BD G-23 EOL junction box. The former junction box was located on an active battery pad and contained a boot. The site was delineated using a backhoe to form a 25 ft x 10 ft x 12 ft deep excavation and soil samples were screened at regular intervals for both hydrocarbons and chlorides. From the excavation, the four-wall composite, the bottom composite and the backfill were taken to a commercial laboratory for analysis. Laboratory tests of the four-wall composite showed a chloride reading of 3,320 mg/kg, and gasoline range organics (GRO) and diesel range organics (DRO) readings of non-detect. The bottom composite showed a chloride

laboratory reading of 9,520 mg/kg and GRO and DRO readings of non-detect. The soil was blended on site and a sample taken to a commercial laboratory for analysis. Laboratory analysis of the blended backfill showed a chloride reading of 4,560 mg/kg and GRO and DRO readings of non-detect. The blended backfill was returned to the excavation to 5 ft below ground surface (bgs). At 5-4 ft bgs, a 1 foot clay layer was installed and a clay compaction test was performed on March 1st, 2010. The remaining backfill was exported to a NMOCD approved facility for disposal and the excavation was backfilled with clean, imported soil to ground surface.

The area was contoured to the surrounding landscape, seeded, and an identification plate was placed on the surface of the site to mark its location for future environmental considerations. NMOCD was notified of potential groundwater impact on August 4th, 2010, and a junction box disclosure report was submitted to NMOCD with all the 2010 junction box closures and disclosures.

As part of the Investigation and Characterization Plan approved by NMOCD on May 19th, 2011, six soil bores (SB-1 through SB-6) were advanced through the former junction box site on May 23rd, 2011 and June 6th, 2011. RECS personnel field tested the soil for chlorides and screened in the field with a photo-ionization detector (PID). Representative samples from the bores were taken to a commercial laboratory for confirmation of chloride and hydrocarbon field numbers. All the soil bores had laboratory chloride values that decreased with depth. SB-1 had chloride results that decreased from 8,200 mg/kg at 15 ft bgs to 160 mg/kg at 55 ft bgs; SB-2 had values of 1,420 mg/kg at 20 ft bgs, 112 mg/kg at 30 ft bgs and 304 mg/kg at 40 ft bgs; SB-3 had values of 5,300 mg/kg at the surface, 1,760 mg/kg at 5 ft bgs and 336 mg/kg at 55 ft bgs; SB-4 has values of 12,800 mg/kg at 15 ft bgs and 4,000 mg/kg at 55 ft bgs; SB-5 had values of 10,200 mg/kg at 20 ft bgs and 544 mg/kg at 50 ft bgs; and SB-6 had values of 2,560 mg/kg at 15 ft bgs and 192 mg/kg at 30 ft bgs. GRO readings were non-detect in all soil bores. DRO readings were also non-detect at all depths in all soil bores except for SB-2 at 30 ft bgs where the DRO reading was 26.9 mg/kg. This sample was analyzed for BTEX and returned results of 0.113 mg/kg for benzene, 0.132 mg/kg for toluene, 0.119 mg/kg for ethyl-benzene and 0.499 mg/kg for xylene.

Based on the initial delineation results, RECS submitted an ICP Report with the following recommendation to NMOCD on July 15th, 2011 which was approved on September 20th, 2011: ROC would delineate groundwater quality surrounding the former junction box through the installation of a near source monitoring well.

On January 31st, 2012, RECS personnel were on site to install a near-source monitor well (MW-1). Samples were only taken for lithology as the well was being advanced. The well has been sampled quarterly since its installation (Figure 2). During the last sampling event on January 8th, 2013, MW-1 had 0.87 feet of product in the well so a sample could not be collected.

A Further Investigation Report and Corrective Action Plan for Soils was submitted to NMOCD on March 16th, 2012 and approved on March 20th, 2012. In the plan, ROC

proposed to excavate the site to dimensions of 29 ft x 36 ft and properly seat a 20-mil reinforced poly liner at approximately 4 ft bgs. The liner would cover the existing clay layer at approximately 5-4 ft bgs measuring 25 ft x 10 ft. The soils placed above the liner would have a laboratory chloride reading no greater than 500 mg/kg and a field PID measurement below 100 ppm. Excavated soils would be evaluated for use as backfill and any soils requiring disposal would be properly disposed of at a NMOCD approved facility. The excavation would be capped with caliche since the site is located on an active battery lease pad and seeding of the site would not be necessary.

**CAP Report for Soils**

RECS began the excavation for liner installation on January 16th, 2013. The site was excavated to 29 ft x 36 ft to a depth of 4.5 ft bgs, uncovering the existing clay layer (Figure 2). A 20-mil reinforced poly liner was installed and properly seated at the base of the excavation. Clean, imported blow sand was used to backfill the site to 3 ft bgs and the final 3 ft was backfilled with clean, imported caliche. This site is located on a lease pad and seeding was not required. A sample of the imported blow sand and imported caliche was field tested for hydrocarbons. The blow sand returned a result of 5.6 ppm and the caliche returned a result of 4.3 ppm. A sample of the imported blow sand and imported caliche was then taken to a commercial laboratory for analysis of chlorides and returned a result of 32 mg/kg for the blow sand and 112 mg/kg for the caliche. A total of 236 yards of contaminated soil was exported to a NMOCD approved facility. A total of 60 yards of blow sand and 156 yards of caliche was imported to the site to serve a backfill material. All documentation for these activities can be found in Appendix A.

**Monitor Well Installation**

On February 12th, 2013, RECS personnel were on site to install MW-2, an up-gradient monitor well (Figure 3). Samples were taken for analysis of background soil concentrations as the well was installed and field tested for chlorides and hydrocarbons. Representative samples were taken to a commercial laboratory for analysis. The 15 ft sample returned a chloride result of 1,580 mg/kg and the 50 ft sample returned a chloride result of non-detect. In both samples, GRO and DRO were non-detect (Appendix B).

RECS recommends that ROC sample the up-gradient well (MW-2) in conjunction with the near-source well (MW-1) to determine background groundwater concentrations. Soil data collected from SB-1 through SB-6 resulted in low concentrations of TPH, suggesting the product observed in MW-1 was contributed from a non-ROC up-gradient source. Once this data has been analyzed, ROC will either submit a Corrective Action Plan for Groundwater or a Termination Request.

ROC acknowledges they have met the soil requirements as approved by the NMOCD in the Corrective Action Plan (CAP), and the newly installed 20-mil reinforced liner will prohibit the migration of any residual chlorides. As such, ROC requests 'Soil Closure' for this site.

RECS appreciates the opportunity to work with you on this project. Please call Hack Conder at (575) 393-9174 or me if you have any questions or wish to discuss the site.

Sincerely,

Lara Weinheimer
Project Scientist
RECS
(575) 441-0431

Attachments:

Figure 1 – Site Location Map
Figure 2 – MW-1 Sampling Data and NMOCD Approved Liner
Figure 3 – Soil Bore and MW installation
Appendix A – Liner Installation Documentation
Appendix B – MW-2 Installation Documentation

# Figures

**RICE Environmental Consulting and Safety (RECS)**
P.O. Box 5630 Hobbs, NM 88241
Phone 575.393.4411 Fax 575.393.0293

# Site Map


RICE ENVIRONMENTAL CONSULTING & SAFETY, LLC

RECS

## *BD G-23 EOL*

**LEGALS: UL/G sec. 23**
**T22S R37E**

**NMOCD Case # : 1R426-281**

Figure 1

N
W E
S

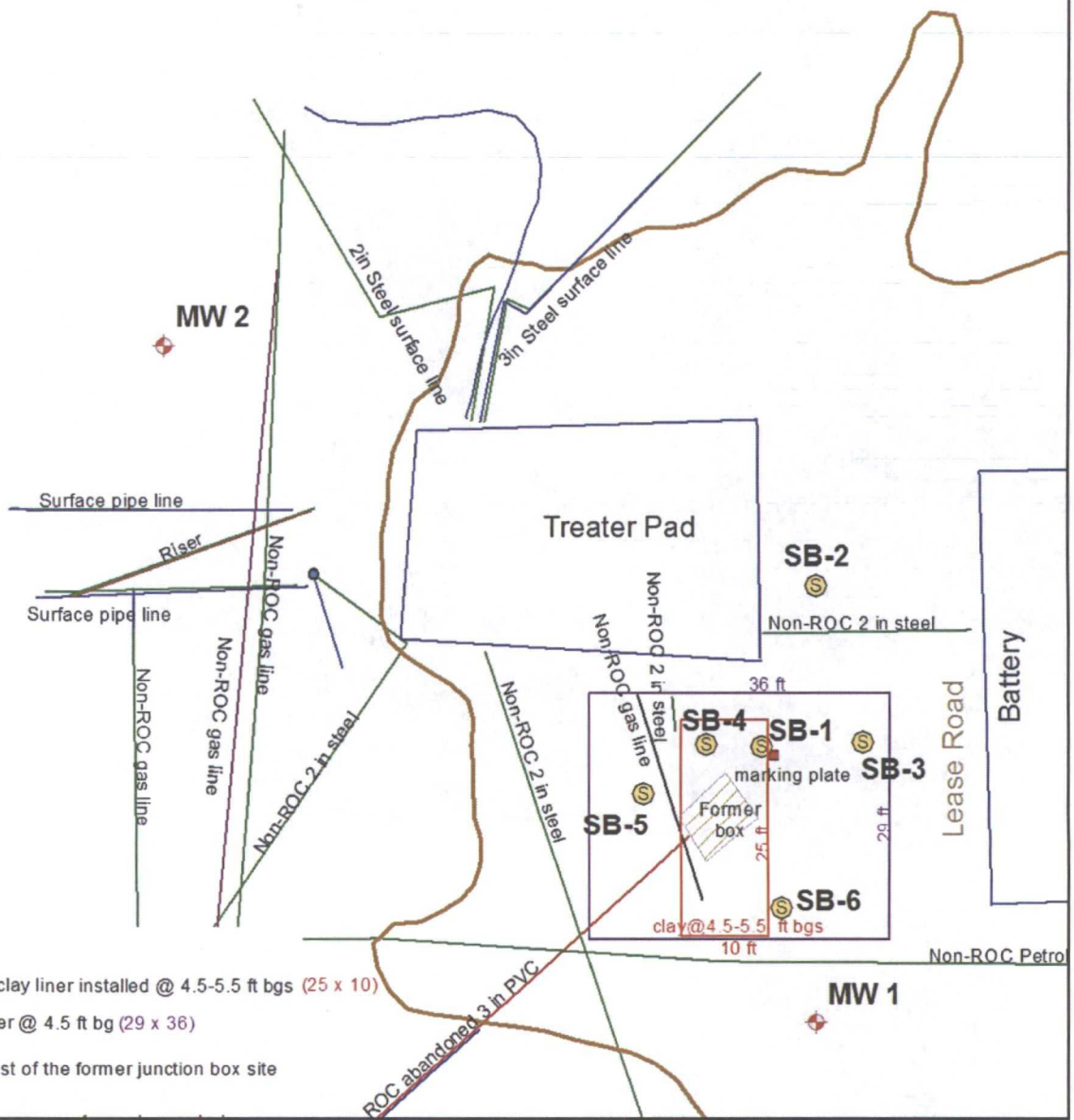
0 0.5 1
Miles

Drawing date: 5.2.11
Drafted by: L. Weinheimer

# MW-1 Sampling Data and NMOCD Approved Liner

| MW | Depth to Water | Total Depth | Sample Date | Cl | TDS | Benzene | Toluene | Ethyl Benzene | Total Xylenes | Sulfate |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 60.84 | 107.83 | 2/20/2012 | 860 | 1970 | <0.001 | <0.001 | <0.001 | <0.003 | 90.5 |
| 1 | 60.89 | 107.83 | 4/19/2012 | 1080 | 1980 | <0.001 | <0.001 | <0.001 | <0.003 | 58.6 |
| 1 | 60.92 | 107.83 | 7/16/2012 | 1040 | 2280 | <0.001 | <0.001 | <0.001 | <0.003 | 47.8 |
| 1 | 61.02 | 107.83 | 10/5/2012 | 970 | 1880 | <0.001 | <0.001 | <0.001 | <0.003 | 46.2 |
| 1 | 60.92 | 107.83 | 1/8/2013 | XXX | XXX | XXX | XXX | XXX | XXX | XXX |

XXX: MW-1 not sampled due to product in well.




Approximate location of clay liner installed @ 4.5-5.5 ft bgs (25 x 10)

Approved 20-mil poly liner @ 4.5 ft bg (29 x 36)

The marking plat is 10 ft northeast of the former junction box site

DGW: 59 ft

RICE ENVIRONMENTAL RECS CONSULTING & SAFETY, LLC

## *BD G-23 EOL*

**LEGALS: UL/G sec. 23**
**T22S R37E**

**NMOCD Case # : 1R426-281**

Figure 2

N W E S

0 5 10 20 Feet

Drawing date: 3/6/13
Drawn by: L. Weinheimer

# Soil bore and MW installation

SB-1

| Depth | Cl- | PID | LAB Cl- | GRO | DRO |
|---|---|---|---|---|---|
| 15 | 6687 | 23.7 | 8200 | <10 | <10 |
| 20 | 2839 | 9.3 | | | |
| 25 | 2181 | 3.6 | | | |
| 30 | 1749 | 1.7 | | | |
| 35 | 2294 | 0 | | | |
| 40 | 1055 | 0 | | | |
| 45 | 752 | 0 | | | |
| 50 | 570 | 0 | | | |
| 55 | 289 | 4.4 | 160 | <10 | <10 |

SB-2

| Depth | Cl- | PID | LAB Cl- | GRO | DRO | B | T | E | X |
|---|---|---|---|---|---|---|---|---|---|
| SS | 201 | 0 | | | | | | | |
| 5 | 201 | 0 | | | | | | | |
| 10 | 323 | 0 | | | | | | | |
| 15 | 918 | 0 | | | | | | | |
| 20 | 1132 | 0.7 | 1420 | <10 | <10 | | | | |
| 25 | 424 | 12 | | | | | | | |
| 30 | 193 | 213 | 112 | <10 | 26.9 | 0.113 | 0.132 | 0.119 | 0.499 |
| 35 | 168 | 24.9 | | | | | | | |
| 40 | 183 | 1.4 | 304 | <10 | <10 | | | | |

SB-3

| Depth | Cl- | PID | LAB Cl- | GRO | DRO |
|---|---|---|---|---|---|
| SS | 3459 | 1.3 | 5300 | <10 | <10 |
| 5 | 1625 | 0 | 1760 | <10 | <10 |
| 10 | 1153 | 0 | | | |
| 15 | 613 | 0 | | | |
| 20 | 336 | 0 | | | |
| 25 | 305 | 0 | | | |
| 30 | 315 | 0 | | | |
| 35 | 339 | 0 | | | |
| 40 | 457 | 0 | | | |
| 45 | 427 | 0 | | | |
| 50 | 437 | 0 | | | |
| 55 | 352 | 0 | 336 | <10 | <10 |

SB-4

| Depth | Cl- | PID | LAB Cl- | GRO | DRO |
|---|---|---|---|---|---|
| SS | 168 | 2.7 | | | |
| 5 | 450 | 3.1 | | | |
| 10 | 3574 | 4.4 | | | |
| 15 | 8488 | 1.1 | 12800 | <10 | <10 |
| 20 | 2850 | 1 | | | |
| 25 | 5998 | 1 | | | |
| 30 | 2812 | 1 | | | |
| 35 | 4232 | 1.1 | | | |
| 40 | 3429 | 1.1 | | | |
| 45 | 2455 | 1 | | | |
| 50 | 1268 | 0.2 | | | |
| 55 | 2613 | 0 | 4000 | <10 | <10 |

SB-5

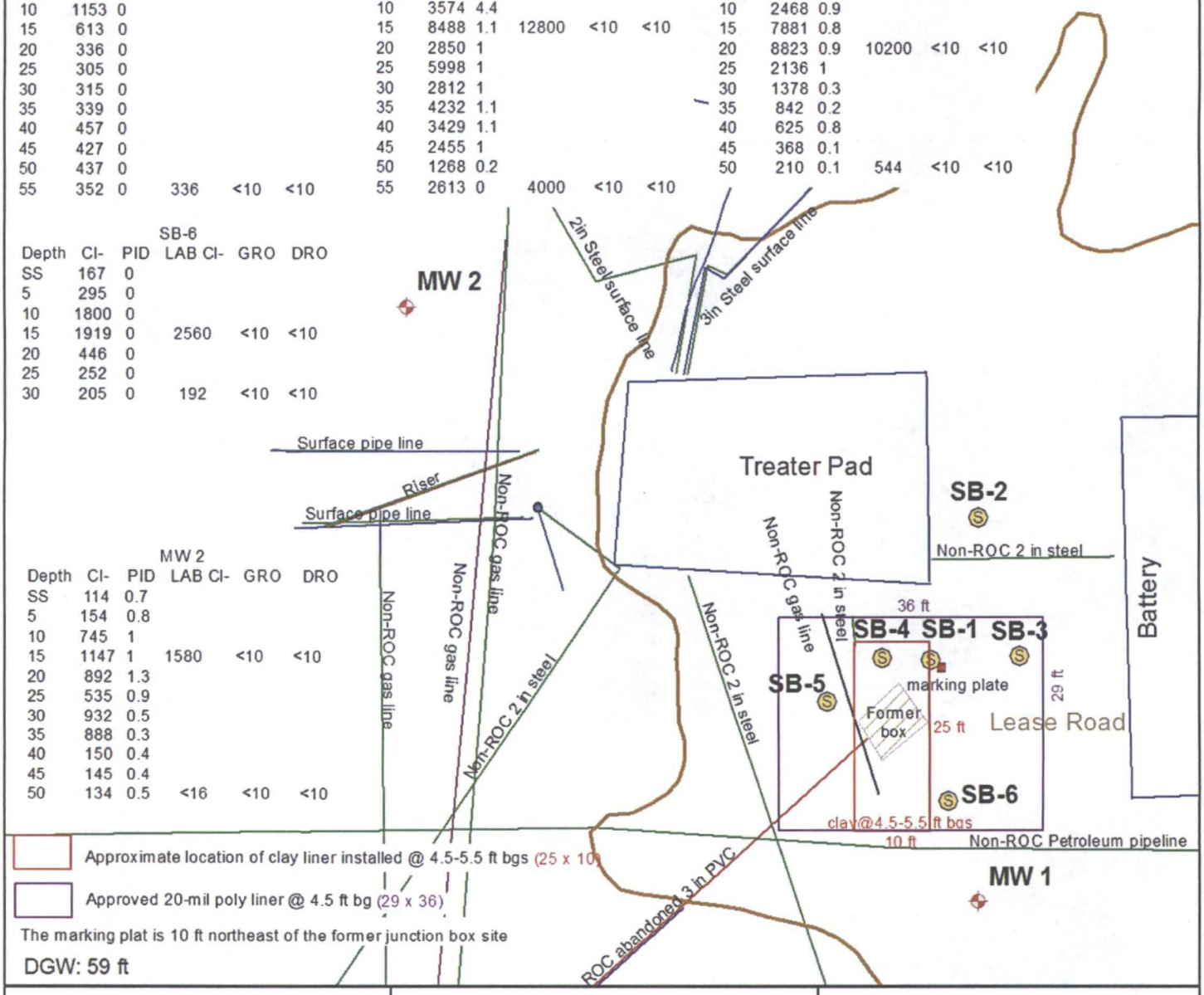
| Depth | Cl- | PID | LAB Cl- | GRO | DRO |
|---|---|---|---|---|---|
| SS | 141 | 0.1 | | | |
| 5 | 773 | 0.8 | | | |
| 10 | 2468 | 0.9 | | | |
| 15 | 7881 | 0.8 | | | |
| 20 | 8823 | 0.9 | 10200 | <10 | <10 |
| 25 | 2136 | 1 | | | |
| 30 | 1378 | 0.3 | | | |
| 35 | 842 | 0.2 | | | |
| 40 | 625 | 0.8 | | | |
| 45 | 368 | 0.1 | | | |
| 50 | 210 | 0.1 | 544 | <10 | <10 |

SB-6

| Depth | Cl- | PID | LAB Cl- | GRO | DRO |
|---|---|---|---|---|---|
| SS | 167 | 0 | | | |
| 5 | 295 | 0 | | | |
| 10 | 1800 | 0 | | | |
| 15 | 1919 | 0 | 2560 | <10 | <10 |
| 20 | 446 | 0 | | | |
| 25 | 252 | 0 | | | |
| 30 | 205 | 0 | 192 | <10 | <10 |

MW 2

| Depth | Cl- | PID | LAB Cl- | GRO | DRO |
|---|---|---|---|---|---|
| SS | 114 | 0.7 | | | |
| 5 | 154 | 0.8 | | | |
| 10 | 745 | 1 | | | |
| 15 | 1147 | 1 | 1580 | <10 | <10 |
| 20 | 892 | 1.3 | | | |
| 25 | 535 | 0.9 | | | |
| 30 | 932 | 0.5 | | | |
| 35 | 888 | 0.3 | | | |
| 40 | 150 | 0.4 | | | |
| 45 | 145 | 0.4 | | | |
| 50 | 134 | 0.5 | <16 | <10 | <10 |




RICE ENVIRONMENTAL CONSULTING & SAFETY, LLC

## *BD G-23 EOL*

**LEGALS: UL/G sec. 23**
**T22S R37E**

**NMOCD Case # : 1R426-281**

## Figure 3

N W E S

0 5 10 20 Feet

Drawing date: 2/19/13
Drafted by: L.S.

# Appendix A

## Liner Installation Documentation

**RICE Environmental Consulting and Safety (RECS)**
P.O. Box 5630 Hobbs, NM 88241
Phone 575.393.4411 Fax 575.393.0293

# RICE ENVIRONMENTAL CONSULTING & SAFETY

122 West Taylor Hobbs, NM 88240
PHONE: (505) 393-9174 FAX: (505) 397-1471
PID METER CALIBRATION & FIELD REPORT FORM

| CK. MODEL NO. | | | |
|---|---|---|---|
| | | MODEL: PGM 7300 | SERIAL NO: 590-000508 |
| | | MODEL: PGM 7300 | SERIAL NO: 590-000504 |
| | | MODEL: PGM 7320 | SERIAL NO: 592-903318 |
| | x | MODEL: PGM _____ | SERIAL NO: _____ |

GAS COMPOSITION: ISOBUTYLENE 100PPM / AIR: BALANCE

| LOT NO : HAL-245-100-1 | EXPIRATION DATE: 7-15-2015 |
|---|---|
| METER READING ACCURACY: 100 PPM | |

ACCURACY : +/- 2%

| COMPANY |
|---|
| RICE |

| SITE | UNIT | SECTION | TOWN SHIP | RANGE |
|---|---|---|---|---|
| BD G-23 EOL | G | 23 | T22S | R37E |

| SAMPLE ID | PID | SAMPLE ID | PID |
|---|---|---|---|
| IMPORTED BLOWSAND | 5.6 | | |
| IMPORTED CALICHE | 4.3 | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

I verify that I have calibrated the above instrument in accordance to the manufacture operation manual.

SIGNATURE: Robert Rice DATE: 1-21-2013

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

January 22, 2013

Hack Conder

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: BD G-23 EOL

Enclosed are the results of analyses for samples received by the laboratory on 01/18/13 15:20.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-11-3. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab_accred_certif.html.

Cardinal Laboratories is accreditated through the State of Colorado Department of Public Health and Environment for:

| | |
|---|---|
| Method EPA 552.2 | Haloacetic Acids (HAA-5) |
| Method EPA 524.2 | Total Trihalomethanes (TTHM) |
| Method EPA 524.4 | Regulated VOCs (V1, V2, V3) |

Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Celey D. Keene

Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

## *Analytical Results For:*

Rice Operating Company
Hack Conder
112 W. Taylor
Hobbs NM, 88240
Fax To: (575) 397-1471

| | | | |
|---|---|---|---|
| Received: | 01/18/2013 | Sampling Date: | 01/18/2013 |
| Reported: | 01/22/2013 | Sampling Type: | Soil |
| Project Name: | BD G-23 EOL | Sampling Condition: | ** (See Notes) |
| Project Number: | NONE GIVEN | Sample Received By: | Jodi Henson |
| Project Location: | T22S R37E SEC23 G ~ LEA COUNTY, NM | | |

**Sample ID: IMPORTED BLOWSAND (H300149-01)**

**Chloride, SM4500Cl-B** **mg/kg** **Analyzed By: AP**

| Analyte | Result | Reporting Limit | Analyzed | Method Blank | BS | % Recovery | True Value QC | RPD | Qualifier |
|---|---|---|---|---|---|---|---|---|---|
| **Chloride** | **32.0** | 16.0 | 01/22/2013 | ND | 432 | 108 | 400 | 0.00 | |

**Sample ID: IMPORTED CALICHE (H300149-02)**

**Chloride, SM4500Cl-B** **mg/kg** **Analyzed By: AP**

| Analyte | Result | Reporting Limit | Analyzed | Method Blank | BS | % Recovery | True Value QC | RPD | Qualifier |
|---|---|---|---|---|---|---|---|---|---|
| **Chloride** | **112** | 16.0 | 01/22/2013 | ND | 432 | 108 | 400 | 0.00 | |

Cardinal Laboratories *=Accredited Analyte



Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

## Notes and Definitions

| | |
|---|---|
| ND | Analyte NOT DETECTED at or above the reporting limit |
| RPD | Relative Percent Difference |
| ** | Samples not received at proper temperature of 6°C or below. |
| *** | Insufficient time to reach temperature. |
| - | Chloride by SM4500Cl-B does not require samples be received at or below 6°C |
| | Samples reported on an as received basis (wet) unless otherwise noted on report |





Celey D. Keene, Lab Director/Quality Manager

# CARDINAL LABORATORIES

## CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

101 East Marland, Hobbs, NM 88240 2111 Beechwood, Abilene, TX 79603
(505) 393-2326 FAX (505) 393-2476 (325) 673-7001 FAX (325)673-7020

| | | | |
|---|---|---|---|
| Company Name: | Rice Operating Company | BILL TO | |
| Project Manager: | Hack Conder | P.O. #: | |
| Address: | 122 West Taylor | Company: | |
| City: | Hobbs | State: NM Zip: 88240 | Attn: |
| Phone #: | 575-393-9174 | Fax #: 575-397-1471 | Address: |
| Project #: | | Project Owner: | City: |
| Project Name: | | | State: Zip: |
| Project Location: | BD G-23 EOL | | Phone #: |
| Sampler Name: | Robert Egans | | Fax #: |

| FOR LAB USE ONLY Lab I.D. | Sample I.D. | (G)RAB OR (C)OMP. | # CONTAINERS | MATRIX: GROUNDWATER | WASTEWATER | SOIL | OIL | SLUDGE | OTHER : | PRESERV: ACID/BASE: | ICE / COOL | OTHER : | SAMPLING: DATE | TIME | Chlorides | TPH 8015 M | BTEX | Texas TPH | Complete Cations/Anions |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| H38801459 | | | | | | | | | | | | | | | | | | | |
| 1 | EM Ported Blow Sand | G | 1 | | | ✓ | | | | | | | 1-16-13 | 9:00 | ✓ | | | | |
| 2 | EM Ported Caliche | G | 1 | | | ✓ | | | | | | | 1-16-13 | 9:55 | ✓ | | | | |

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising whether based in contract or tort, shall be limited to the amount paid by the client for the analyses. All claims including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.

| | | | |
|---|---|---|---|
| Relinquished By: | Date: 1/16/13 | Received By: | Phone Result: ☐ Yes ☑ No Add'l Phone #: |
| Robert Egans | Time: 3:20 | Jodi Henson | Fax Result: ☐ Yes ☑ No Add'l Fax #: |
| Relinquished By: | Date: | Received By: | REMARKS: email results |
| | Time: | | bbaker@riceswd.com; regans@riceswd.com; Lweinheimer@riceswd.com zconder@riceswd.com |

Delivered By: (Circle One)
Sampler - UPS - Bus - Other: 15°C

Sample Condition: Cool ☐ Yes ☐ No Intact ☑ Yes ☐ No

CHECKED BY: (Initials)

† Cardinal cannot accept verbal changes. Please fax written changes to 505-393-2476

NEED SAMPLES BACK, PLEASE

#26

# BD G-23 EOL

UL/G, Section 23, T22S, R37E

Site prior to excavation, facing northwest 9/18/2012


Excavating site, facing west 1/16/2013


Installing liner @ 5' bgs, facing southwest 1/18/2013


Importing blow sand, facing northwest 1/18/2013

# BD G-23 EOL

UL/G, Section 23, T22S, R37E

Installed a 3' pad of blow sand, facing southwest 1/18/2013

Importing caliche for backfill, facing southwest 1/18/2013

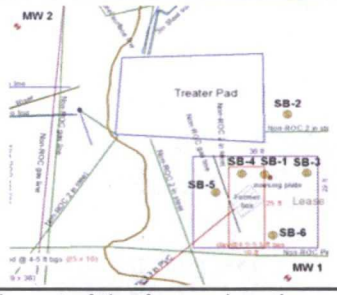
Backfilling site, facing southwest 1/18/2013

Site complete, facing northwest 1/18/2013

# Appendix B

## MW-2 Installation Documentation

**RICE Environmental Consulting and Safety (RECS)**
P.O. Box 5630 Hobbs, NM 88241
Phone 575.393.4411 Fax 575.393.0293

| | | | |
|---|---|---|---|
| **Logger:** | Kyle Norman |  | **Project Name:** BD G-23 EOL<br>**Well ID:** MW-2<br>**Project Consultant:** RECS |
| **Driller:** | Harrison & Cooper, Inc. | | |
| **Drilling Method:** | Air Rotary | | |
| **Start Date:** | 2/12/2013 | | |
| **End Date:** | 2/12/2013 | | |



Comments: MW-2 is located 86 ft northwest of the former junction box site. All samples were from cuttings.

**L. Weinheimer**

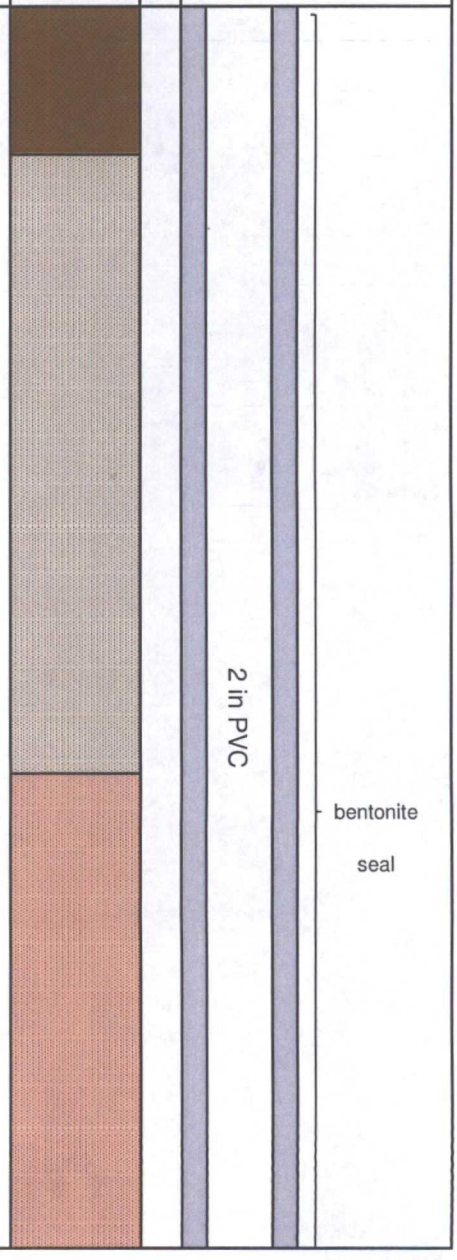
TD = 71 ft GW = 59 ft

**Location:** UL/G sec. 23 T22S R37E

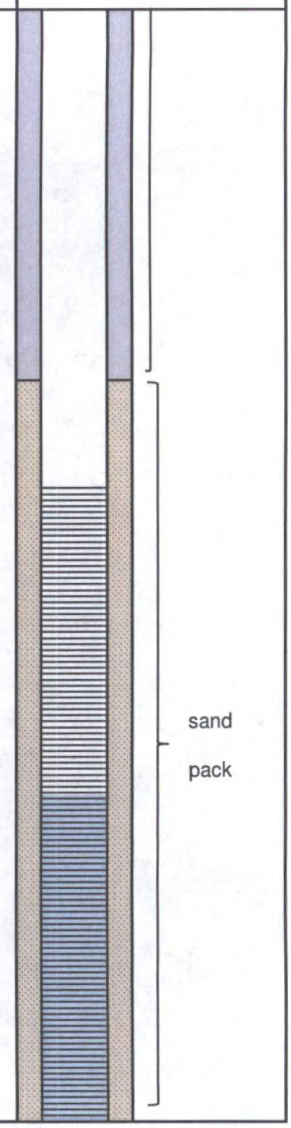
**Lat:** 32°22'52.003"N **Long:** 103°7'48.237"W

**County:**Lea **State:**NM

| Depth (feet) | Chloride field tests | LAB | PID | Description |
|---|---|---|---|---|
| | | | | Brown Sand |
| | | | | |
| SS | 114 | | 0.7 | |
| | | | | Tan Sand With Some Caliche |
| | | | | |
| 5 ft | 154 | | 0.8 | |
| | | | | |
| | | | | |
| 10 ft | 745 | | 1.0 | |
| | | | | |
| | | | | |
| 15 ft | 1147 | Cl- 1580 | 1.0 | |
| | | GRO <10 | | |
| | | DRO <10 | | |
| 20 ft | 892 | | 1.3 | |
| | | | | Red/Tan Sand With Some Caliche |
| | | | | |
| 25 ft | 535 | | 0.9 | |
| | | | | |
| | | | | |
| 30 ft | 932 | | 0.5 | |
| | | | | |
| | | | | |
| 35 ft | 888 | | 0.3 | |



| Depth (feet) | Chloride field tests | LAB | PID | Description | Lithology | Well Construction |
|---|---|---|---|---|---|---|
| | | | | Red/Tan Sand With Some Caliche | | |
| | | | | | | |
| **40 ft** | 150 | | 0.4 | | | |
| | | | | Tan Sand | | |
| | | | | | | |
| **45 ft** | 145 | | 0.4 | | | |
| | | | | | | |
| | | | | | | |
| **50 ft** | 134 | Cl- <16 | 0.5 | | | |
| | | GRO <10 | | NO SAMPLES TAKEN | | |
| | | DRO <10 | | | | |
| **55 ft** | | | | | | |
| | | | | | | |
| | | | | | | |
| **60 ft** | | | | | | |
| | | | | | | |
| | | | | | | |
| **65 ft** | | | | | | |
| | | | | | | |
| | | | | | | |
| **71 ft** | | | | | | |



CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

February 15, 2013

Hack Conder

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: BD G-23 EOL

Enclosed are the results of analyses for samples received by the laboratory on 02/12/13 15:30.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-11-3. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab_accred_certif.html.

Cardinal Laboratories is accreditated through the State of Colorado Department of Public Health and Environment for:

| | |
|---|---|
| Method EPA 552.2 | Haloacetic Acids (HAA-5) |
| Method EPA 524.2 | Total Trihalomethanes (TTHM) |
| Method EPA 524.4 | Regulated VOCs (V1, V2, V3) |

Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Celey D. Keene

Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

## *Analytical Results For:*

Rice Operating Company
Hack Conder
112 W. Taylor
Hobbs NM, 88240
Fax To: (575) 397-1471

| | | | |
|---|---|---|---|
| Received: | 02/12/2013 | Sampling Date: | 02/12/2013 |
| Reported: | 02/15/2013 | Sampling Type: | Soil |
| Project Name: | BD G-23 EOL | Sampling Condition: | Cool & Intact |
| Project Number: | NONE GIVEN | Sample Received By: | Jodi Henson |
| Project Location: | T22S R37E SEC23 G ~ LEA COUNTY, NM | | |

### Sample ID: MW-2 @ 15' (H300395-01)

**Chloride, SM4500Cl-B** mg/kg Analyzed By: DW

| Analyte | Result | Reporting Limit | Analyzed | Method Blank | BS | % Recovery | True Value QC | RPD | Qualifier |
|---|---|---|---|---|---|---|---|---|---|
| **Chloride** | **1580** | 16.0 | 02/14/2013 | ND | 416 | 104 | 400 | 3.77 | |

**TPH 8015M** mg/kg Analyzed By: MS

| Analyte | Result | Reporting Limit | Analyzed | Method Blank | BS | % Recovery | True Value QC | RPD | Qualifier |
|---|---|---|---|---|---|---|---|---|---|
| GRO C6-C10 | <10.0 | 10.0 | 02/14/2013 | ND | 210 | 105 | 200 | 2.24 | |
| DRO >C10-C28 | <10.0 | 10.0 | 02/14/2013 | ND | 194 | 96.8 | 200 | 5.26 | |

| | | |
|---|---|---|
| *Surrogate: 1-Chlorooctane* | *79.8 %* | *65.2-140* |
| *Surrogate: 1-Chlorooctadecane* | *89.5 %* | *63.6-154* |

### Sample ID: MW-2 @ 50' (H300395-02)

**Chloride, SM4500Cl-B** mg/kg Analyzed By: DW

| Analyte | Result | Reporting Limit | Analyzed | Method Blank | BS | % Recovery | True Value QC | RPD | Qualifier |
|---|---|---|---|---|---|---|---|---|---|
| Chloride | <16.0 | 16.0 | 02/14/2013 | ND | 416 | 104 | 400 | 3.77 | |

**TPH 8015M** mg/kg Analyzed By: MS

| Analyte | Result | Reporting Limit | Analyzed | Method Blank | BS | % Recovery | True Value QC | RPD | Qualifier |
|---|---|---|---|---|---|---|---|---|---|
| GRO C6-C10 | <10.0 | 10.0 | 02/14/2013 | ND | 210 | 105 | 200 | 2.24 | |
| DRO >C10-C28 | <10.0 | 10.0 | 02/14/2013 | ND | 194 | 96.8 | 200 | 5.26 | |

| | | |
|---|---|---|
| *Surrogate: 1-Chlorooctane* | *77.3 %* | *65.2-140* |
| *Surrogate: 1-Chlorooctadecane* | *89.2 %* | *63.6-154* |

Cardinal Laboratories *=Accredited Analyte



Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

## Notes and Definitions

| | |
|---|---|
| ND | Analyte NOT DETECTED at or above the reporting limit |
| RPD | Relative Percent Difference |
| ** | Samples not received at proper temperature of 6°C or below. |
| *** | Insufficient time to reach temperature. |
| - | Chloride by SM4500Cl-B does not require samples be received at or below 6°C |
| | Samples reported on an as received basis (wet) unless otherwise noted on report |





Celey D. Keene, Lab Director/Quality Manager

# CARDINAL LABORATORIES

## CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

101 East Marland, Hobbs, NM 88240 2111 Beechwood, Abilene, TX 79603
(505) 393-2326 FAX (505) 393-2476 (325) 673-7001 FAX (325)673-7020

| | | | |
|---|---|---|---|
| Company Name: Rice | | BILL TO | |
| Project Manager: Hack Conder | | P.O. #: | |
| Address: | | Company: | |
| City: Hobbs | State: NM Zip: 88240 | Attn: | |
| Phone #: | Fax #: | Address: | |
| Project #: | Project Owner: | City: | |
| Project Name: | | State: Zip: | |
| Project Location: BD G-23 EOL | | Phone #: | |
| Sampler Name: Kyle Norman | | Fax #: | |

| FOR LAB USE ONLY | | | | MATRIX | | | | | | PRESERV. | | | SAMPLING | | ANALYSIS REQUEST | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lab I.D. | Sample I.D. | (G)RAB OR (C)OMP. | # CONTAINERS | GROUNDWATER | WASTEWATER | SOIL | OIL | SLUDGE | OTHER : | ACID/BASE: | ICE / COOL | OTHER : | DATE | TIME | Chlorides | TPH 8015 M | BTEX | Texas TPH | Complete Cations/Anions | TDS | | | | | |
| H13003915 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | MW-2 @ 15' | G | 1 | | | ✓ | | | | | ✓ | | 2-12-13 | 8:15 | ✓ | ✓ | | | | | | | | | |
| 2 | MW-2 @ 50' | G | 1 | | | ✓ | | | | | ✓ | | 2-12-13 | 8:30 | ✓ | ✓ | | | | | | | | | |

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising whether based in contract or tort, shall be limited to the amount paid by the client for the analyses. All claims including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.

| | | | |
|---|---|---|---|
| Relinquished By: | Date: 2-12-13 | Received By: | Phone Result: ☐ Yes ☑ No Add'l Phone #: |
| | Time: 3:30 | | Fax Result: ☐ Yes ☑ No Add'l Fax #: |
| Relinquished By: | Date: | Received By: | REMARKS: |
| | Time: | | email results: zconder@rice-ecs.com Knorman@rice-ecs.com; lpena@riceswd.com Kjones@riceswd.com; Bbaker@rice-ecs.com; hconder@rice-ecs.com; Lweinheimer@rice-ecs.com |
| Delivered By: (Circle One) Sampler - UPS - Bus - Other: | | Sample Condition Cool / Intact ☑ Yes ☑ Yes ☐ No ☐ No | CHECKED BY: (Initials) |

† Cardinal cannot accept verbal changes. Please fax written changes to 505-393-2476

#26