

1R - 426-124

REPORTS

DATE:

8-1-11

Rice Environmental Consulting & Safety

P.O. Box 5630 Hobbs, NM 88241
Phone 575.393.4411 Fax 575.393.0293

RECEIVED OCD

2011 AUG -8 A 10: 15

CERTIFIED MAIL

RETURN RECIEPT NO. 7007 2560 0003 0323 9193

August 1st, 2011

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: Corrective Action Plan Report on the Vadose Zone Remediation
Rice Operating Company – BD SWD System
BD jct. P-30 (1R426-124): UL/P sec. 30 T21S R37E**

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. 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/usage basis.

Background and Previous Work

The site is located approximately 2 miles west-northwest of Eunice, New Mexico at UL/P, Sec. 30, T21S, R37E as shown on the Site Location Map (Figure 1).

In 2006, ROC initiated work on the former BD P-30 junction box prior to it being replaced by a new, watertight junction box at the site. The site was delineated using a backhoe and soil samples were screened at regular intervals for both hydrocarbons and chlorides. The excavation reached dimensions of 30 x 30 x 12 feet bgs. Following the characterization of the soil, the excavated soil was blended and returned to the excavation up to a depth of 6 ft bgs. A 1 foot thick compacted clay layer was installed to prevent potential downward migration of any residual contaminants and the remaining soil was placed above the clay. The area was contoured to the surrounding landscape and an identification plate was placed on the surface of the site to mark its location for future environmental considerations.

Using an air rotary drilling rig, five soil borings were completed on June 4th, 2008, to delineate vadose zone conditions. On June 16th, 2009, one monitoring well (MW-1) was installed using an air rotary drilling rig to assess groundwater conditions. Soil samples were collected at five-foot

intervals for the soil borings and at ten-foot intervals for the monitoring well and field titrated to analyze for chloride content. Representative samples from the bore were taken to a commercial laboratory for confirmation of chloride and hydrocarbon field numbers. Groundwater was encountered at approximately 95 feet below ground surface.

On December 21st, 2010, ROC submitted a Corrective Action Plan (CAP) to NMOCD and on January 31st, 2011, ROC submitted an Addendum to the CAP to NMOCD. The submissions were approved by NMOCD on February 1st, 2011. In the CAP and Addendum, ROC recommended a vadose zone remedy that incorporated the installation of a 20-mil reinforced poly liner at the site measuring 110' x 103' properly seated at a depth of approximately 4 ft bgs. Figure 2 depicts the approved liner and the area to be excavated. Soil with chloride concentrations no greater than 500 mg/kg and a PID reading below 100 ppm would be used to backfill over the liner. Any soil requiring disposal would be properly disposed of at a NMOCD approved facility. Soil amendments would be added to the site as needed and then the area would be seeded with native vegetative mix. Vegetation above the liner will also provide a natural infiltration barrier for the site since plants capture water through their roots thereby reducing the volume of water moving through the vadose zone to groundwater.

The CAP also proposed to use the groundwater recovery system at a nearby site (BD O-23 vent) which utilizes a solar-powered submersible pump, for limited chloride mass removal to compensate for any potential downward migration of residual chlorides into the groundwater. Based on monitor well sampling data analysis, a chloride mass of 599 kg will need to be removed from the BD O-23 vent site. Removed groundwater will be utilized for pipeline and well maintenance. ROC will continue quarterly groundwater sampling at the monitoring well at the BD jct. P-30 site until the groundwater recovery program is completed.

Vadose Zone Restoration

On July 1st, 2011, ROC began the NMOCD approved CAP excavation at the BD jct. P-30 site. The site was excavated to 104 ft x 111 ft x 4.5 ft deep. The excavated soil was field tested for chlorides and hydrocarbons using a PID meter and soils that did not meet the requirement for backfill were taken to a NMOCD facility for disposal. A total of 936 yard of soil was taken to Sundance Facility for disposal. The remaining soil was blended on site and an eight point composite sample was taken and field tested for hydrocarbons using a PID meter. Field testing showed a PID reading of 22.5 ppm (Appendix A). The soil was then taken to a commercial laboratory for analysis on July 22nd, 2011. Laboratory chloride readings returned 480 mg/kg (Appendix B).

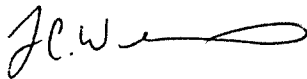
On July 25th, 2011, a 20-mil reinforced poly liner was installed at the bottom of the excavation at 4.5 ft bgs. Since the site contained primarily sandy/silty soils without appreciable rock, it was not necessary to pad either the top or bottom of the liner. The blended soil and imported soil were used to backfill the excavation to ground surface. A total of 936 yards of imported, clean soil was used to bring the excavation up to ground surface. An 8 point composite sample of the imported soil was field tested for hydrocarbons using a PID. Field testing showed a PID reading of 18.4 ppm (Appendix A). The samples was prepared and taken to a commercial laboratory for analysis. The imported soil returned with a laboratory chloride reading of non-detect (Appendix

C). The area was contoured to the surrounding landscape and compost and peat moss were added to the soil to promote vegetative growth. On July 30th, 2011, the site was seeded with 35 lbs of native vegetative mix and the site is expected to return to normal vegetative capacity (Appendix D). Silt net fencing was installed around the excavation to help keep the seed in place. Photo documentation of these activities will be found in Appendix E.

The corrective actions on the vadose zone are complete. Once the corrective actions on the groundwater are complete, a final CAP Report will be submitted to the NMOCD with a termination request of the regulatory file and plugging of the monitoring well using cement grout with 1% to 3% bentonite.

ROC 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,

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

Lara Weinheimer
Project Scientist
RECS
(575) 441-0431

Attachments:

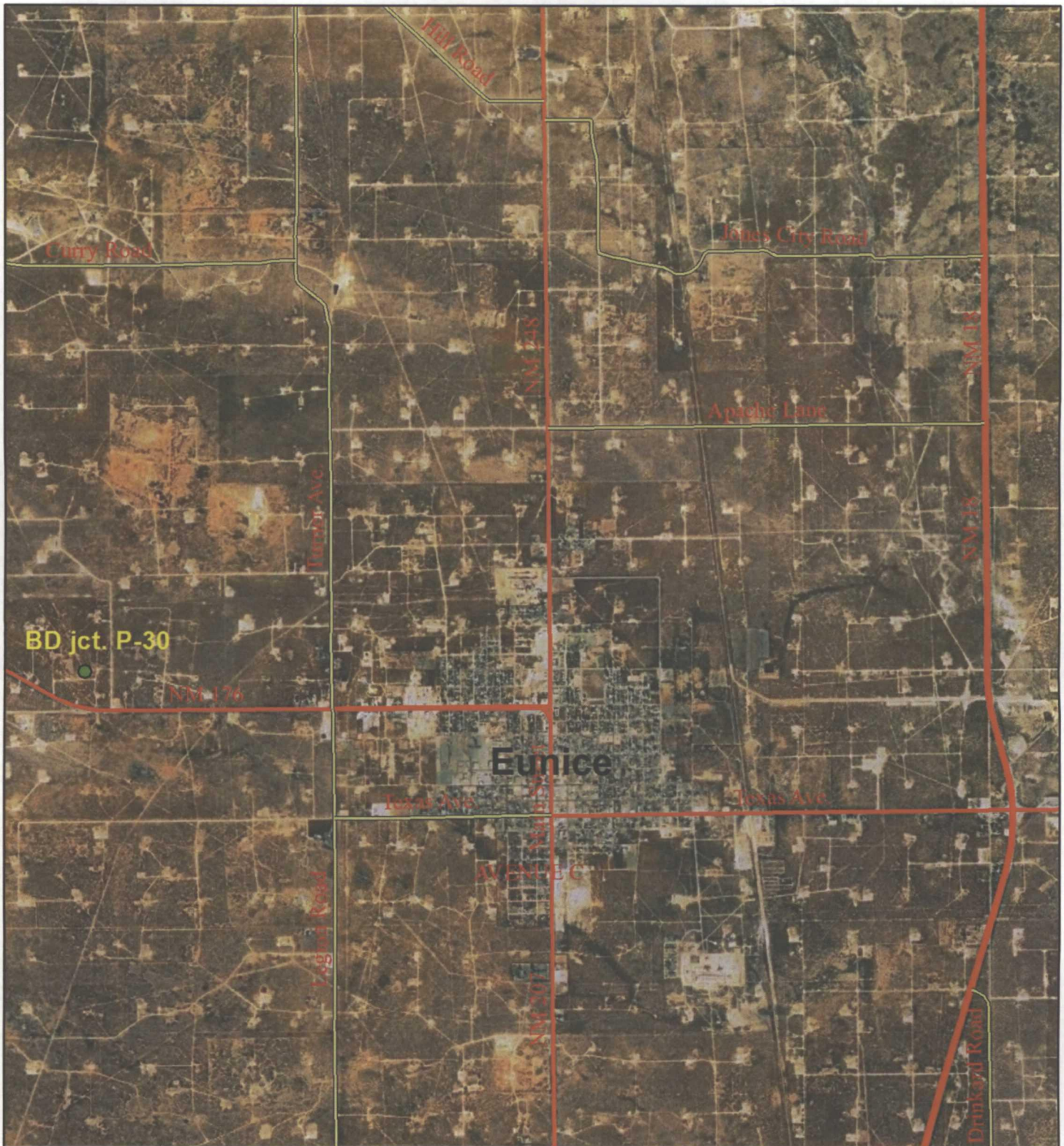
- Figure 1 – Site Location Map
- Figure 2 – Approved Liner Installation Plat
- Appendix A – PID sheets
- Appendix B – Blended Backfill Laboratory Confirmation
- Appendix C – Imported Soil Laboratory Confirmation
- Appendix D – RECS Re-vegetation Form
- Appendix E – Excavation Photo Documentation



Figures

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

Site Map

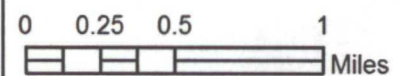


BD jct. P-30

NMOCD Case #: 1R426-124

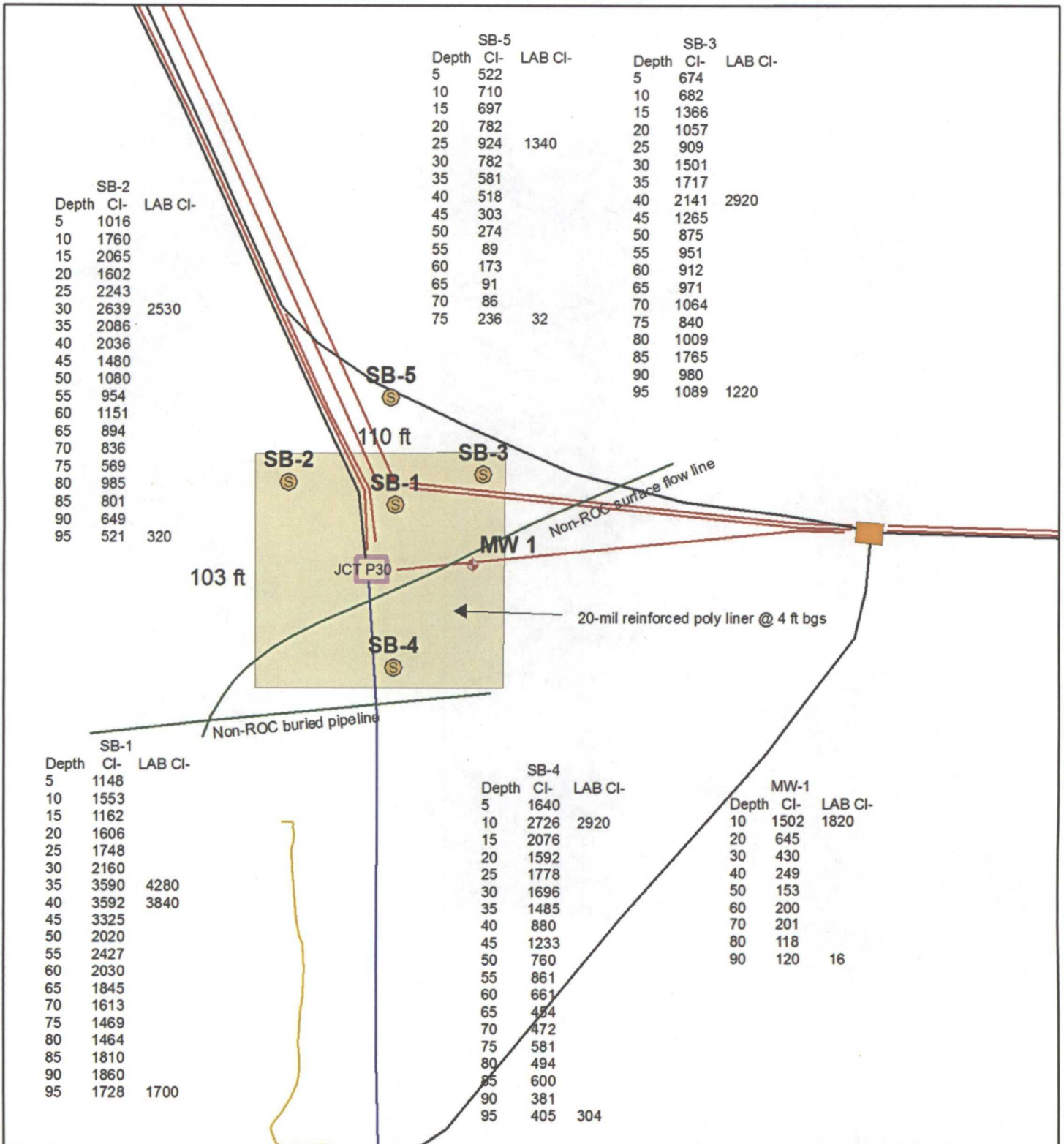
**Legals: UL/P sec. 30
T21S R37E**

Figure 1



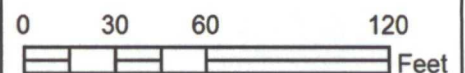
Drawing date: 7-13-11
Drafted by: L. Weinheimer

NMOCD Approved Liner



BD jct. P-30
Legals: UL/P sec. 30
T21S R37E
Case #: 1R426-124

Figure 2



Drawing date: 8-1-11
 Drafted by: L. Weinheimer



Appendix A

PID sheets

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 | X |
| NO. | |

| | |
|-----------------|-----------------------|
| MODEL: PGM 7300 | SERIAL NO: 590-000508 |
| MODEL: PGM 7300 | SERIAL NO: 590-000504 |
| MODEL: PGM 7320 | SERIAL NO: 592-903318 |
| MODEL: PGM 7300 | SERIAL NO: 590-000183 |

GAS COMPOSITION: ISOBUTYLENE: 100PPM / AIR: BALANCE

LOT NO: 930360

EXPIRATION DATE: 5/24/2013

METER READING ACCURACY: 100.0 PPM

ACCURACY: $\pm 2\%$

COMPANY

Řešení

| SITE | UNIT | SECTION | TOWN SHIP | RANGE |
|-------------|------|---------|-----------|-------|
| BD P-30 Jct | P | 30 | 21 | 37 |

[illegible]

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

SIGNATURES

DATE: 7/22/2011

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:

| |
|---|
| |
| X |
| |
| |

MODEL: PGM 7300
MODEL: PGM 7300
MODEL: PGM 7320
MODEL: PGM 7300

SERIAL NO: 590-000508
SERIAL NO: 590-000504
SERIAL NO: 592-903318
SERIAL NO: 590-000183

GAS COMPOSITION: ISOBUTYLENE 100PPM / AIR BALANCE

| | |
|-----------------------------------|----------------------------|
| LOT NO.: 930360 | EXPIRATION DATE: 5/24/2013 |
| METER READING ACCURACY: 100.0 PPM | |

ACCURACY: +/- 2%

| COMPANY |
|---------|
| Rice |

| SITE | UNIT | SECTION | TOWN SHIP | RANGE |
|-------------|------|---------|-----------|-------|
| BD P-30 Jet | P | 30 | 21 | 37 |

| SAMPLE ID | PID | SAMPLE ID | PID |
|-----------------------------------|------|-----------|-----|
| Imported Top Soil 8 pt. composite | 18.4 | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

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

SIGNATURE:



DATE: 7/27/2011



Appendix B

Blended Backfill Laboratory Confirmation

RICE Environmental Consulting and Safety (RECS)

P.O. Box 5630 Hobbs, NM 88241

Phone 575.393.4411 Fax 575.393.0293

July 22, 2011

Hack Conder

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: BD P-30 JCT

Enclosed are the results of analyses for samples received by the laboratory on 07/22/11 12:03.

Cardinal Laboratories is accredited through Texas NELAP for:

| | |
|--------------------|--|
| Method SW-846 8021 | Benzene, Toluene, Ethyl Benzene, and Total Xylenes |
| Method SW-846 8260 | Benzene, Toluene, Ethyl Benzene, and Total Xylenes |
| Method TX 1005 | Total Petroleum Hydrocarbons |

Certificate number T104704398-08-TX. Accreditation applies to solid and chemical materials and non-potable water matrices.

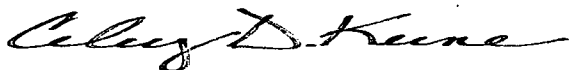
Cardinal Laboratories is accredited through the State of Colorado Department of Public Health and Environment for:

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

Lab Director/Quality Manager

Analytical Results For:

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

Received: 07/22/2011
Reported: 07/22/2011
Project Name: BD P-30 JCT
Project Number: NONE GIVEN
Project Location: NOT GIVEN

Sampling Date: 07/22/2011
Sampling Type: Soil
Sampling Condition: ** (See Notes)
Sample Received By: Jodi Henson

Sample ID: BLENDED 8 PT COMP (H101526-01)

| Chloride, SM4500Cl-B | | mg/kg | Analyzed By: HM | | | | | | |
|----------------------|--------|-----------------|-----------------|--------------|-----|------------|---------------|------|-----------|
| Analyte | Result | Reporting Limit | Analyzed | Method Blank | BS | % Recovery | True Value QC | RPD | Qualifier |
| Chloride | 480 | 16.0 | 07/22/2011 | ND | 416 | 104 | 400 | 3.77 | |

Cardinal Laboratories

*=Accredited Analyte

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 client for 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 thirty (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 the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

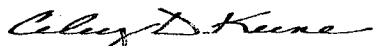
Notes and Definitions

| | |
|-----|--|
| 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 |

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



Appendix C

Imported Soil Laboratory Confirmation

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

July 28, 2011

Hack Conder

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: BD P-30 JCT

Enclosed are the results of analyses for samples received by the laboratory on 07/27/11 16:25.

Cardinal Laboratories is accredited through Texas NELAP for:

| | |
|--------------------|--|
| Method SW-846 8021 | Benzene, Toluene, Ethyl Benzene, and Total Xylenes |
| Method SW-846 8260 | Benzene, Toluene, Ethyl Benzene, and Total Xylenes |
| Method TX 1005 | Total Petroleum Hydrocarbons |

Certificate number T104704398-08-TX. Accreditation applies to solid and chemical materials and non-potable water matrices.

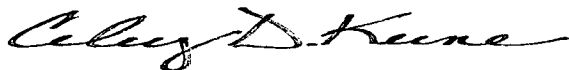
Cardinal Laboratories is accredited through the State of Colorado Department of Public Health and Environment for:

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

Lab Director/Quality Manager

Analytical Results For:

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

Received: 07/27/2011
Reported: 07/28/2011
Project Name: BD P-30 JCT
Project Number: NONE GIVEN
Project Location: NOT GIVEN

Sampling Date: 07/27/2011
Sampling Type: Soil
Sampling Condition: ** (See Notes)
Sample Received By: Jodi Henson

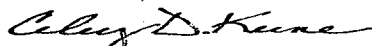
Sample ID: IMPORTED TOPSOIL 8 PT. COMP (H101562-01)**Chloride, SM4500CI-B****mg/kg****Analyzed By: HM**

| Analyte | Result | Reporting Limit | Analyzed | Method Blank | BS | % Recovery | True Value QC | RPD | Qualifier |
|----------|--------|-----------------|------------|--------------|-----|------------|---------------|------|-----------|
| Chloride | <16.0 | 16.0 | 07/28/2011 | ND | 464 | 116 | 400 | 3.51 | |

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

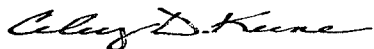
Notes and Definitions

| | |
|-----|--|
| 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 |

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

ARDINAL LABORATORIES

Company Name: Rice

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



Appendix D

RECS Re-vegetation Form

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



PO Box 5630
Hobbs, NM 88241
Phone: (575) 393-4411
Fax: (575) 393-0293

REVEGETATION FORM

1. General Information

| | | | | | | |
|----------------------------|---------------|----------------|-------------|--|----------------------------|------------------------------|
| Site name: BD jct. P-30 | | | | | | |
| U/L P | Section 30 | Township 21 | Range 37 | County Lea | Latitude 32°26'42.093"N | Longitude 103°11'45.409"W |
| Contact Name: Hack Conder | | | | | | |
| Email: HConder@riceswd.com | | | | | | |
| Site size: 29,181' | | | square feet | Map detail of site attached <input type="checkbox"/> | | |
| Additional information: | | | | | | |

2. Soils

**Do not rip caliche subsoils; caliche rocks brought to the surface by ripping shall be removed.*

| | | | | |
|---|--|--|---|-------------------------------------|
| Salvaged from site <input type="checkbox"/> | Bioremediated <input type="checkbox"/> | Imported <input checked="" type="checkbox"/> | Blended <input checked="" type="checkbox"/> | Depth (in): 4 ft |
| Texture: Sandy | Describe soil & subsoil: Sandy topsoil | | | |
| Soil prep methods: Rip <input type="checkbox"/> | Depth (in): | Disc <input type="checkbox"/> | Depth (in): | Rollerpack <input type="checkbox"/> |
| Date completed: 7/30/11 | | | | |

3. Bioremediation

| | | |
|-------------------------------------|------------------------------|---|
| Fertilizer <input type="checkbox"/> | Hay <input type="checkbox"/> | Other <input checked="" type="checkbox"/> |
| Type: | | Describe: Compost 19 bags |
| Lbs/acre: | | Peat moss 10 bags |

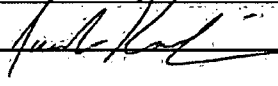
4. Seeding

**Attach seed bag tags to this form. Seed bag tags shall contain the site name and S-T-R.*

| | | | |
|--|---|---|------------------------|
| Custom seed mix <input checked="" type="checkbox"/> | Prescribed mix <input type="checkbox"/> | Seed mix name: RS Warm Season Mix Grass Seed 35lbs | Seeding date: 07/30/11 |
| Broadcast <input checked="" type="checkbox"/> | | | |
| Method: broadcasting seeder | | | |
| Soil conditions during seeding: Dry <input checked="" type="checkbox"/> Damp <input type="checkbox"/> Wet <input type="checkbox"/> | | | |
| Photos attached <input checked="" type="checkbox"/> | Observations: | | |
| Number of photos: | | | |

5. Certification

I hereby certify that the information in this form and attachments is true and complete to the best of my knowledge and belief.

| | | |
|--|---------------------------|--------------|
| Name: Jacob Kamplain | Title: Environmental Tech | Date: 8-1-11 |
| Signature:  | | |



Appendix E

Excavation Photo Documentation

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

BD jct. P-30
Unit P, Section 30, T-21-S, R-37-E



Site prior to excavation, facing north 7/1/11



Excavating site, facing west 7/11/11



Exporting soil to Sundance, facing northwest 7/12/11



Blending spoil pile, facing west 7/12/11



Excavation complete, facing north 7/20/11



Liner installed, facing southwest 7/25/11



Backfilling site, facing north 7/26/11



Unloading topsoil at site, facing west 7/27/11



Spreading soil amendments, facing northwest 7/30/11



Seeding the site, facing south 7/30/11



Disking the site for seed, facing west 7/30/11



Excavation complete, facing northwest 7/31/11