

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

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2011 AUG -8 A. 10: 15

CERTIFIED MAIL

RETURN RECIEPT NO. 7007 2560 0003 0323 9193

**August 1<sup>st</sup>, 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 4<sup>th</sup>, 2008, to delineate vadose zone conditions. On June 16<sup>th</sup>, 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 21<sup>st</sup>, 2010, ROC submitted a Corrective Action Plan (CAP) to NMOCD and on January 31<sup>st</sup>, 2011, ROC submitted an Addendum to the CAP to NMOCD. The submissions were approved by NMOCD on February 1<sup>st</sup>, 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 1<sup>st</sup>, 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 22<sup>nd</sup>, 2011. Laboratory chloride readings returned 480 mg/kg (Appendix B).

On July 25<sup>th</sup>, 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 30<sup>th</sup>, 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.

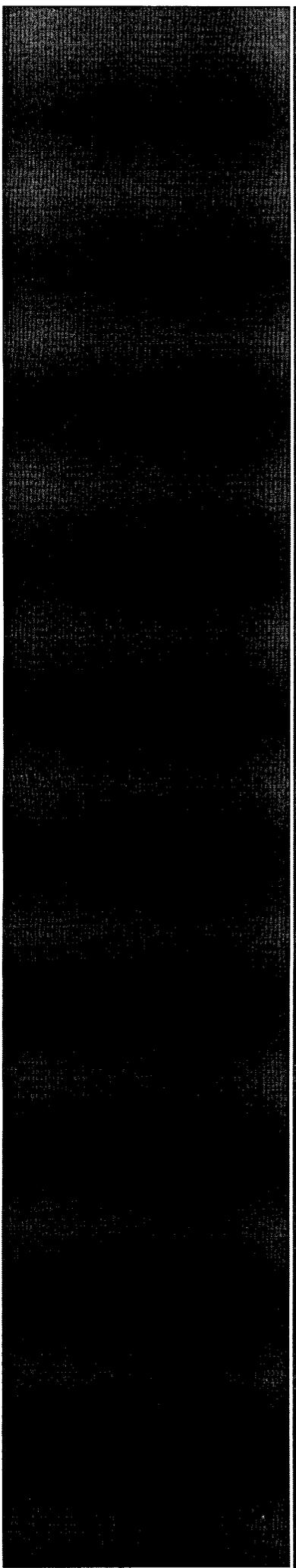
Sincerely,



Lara Weinheimer  
Project Scientist  
RECS  
(575) 441-0431

Attachments:

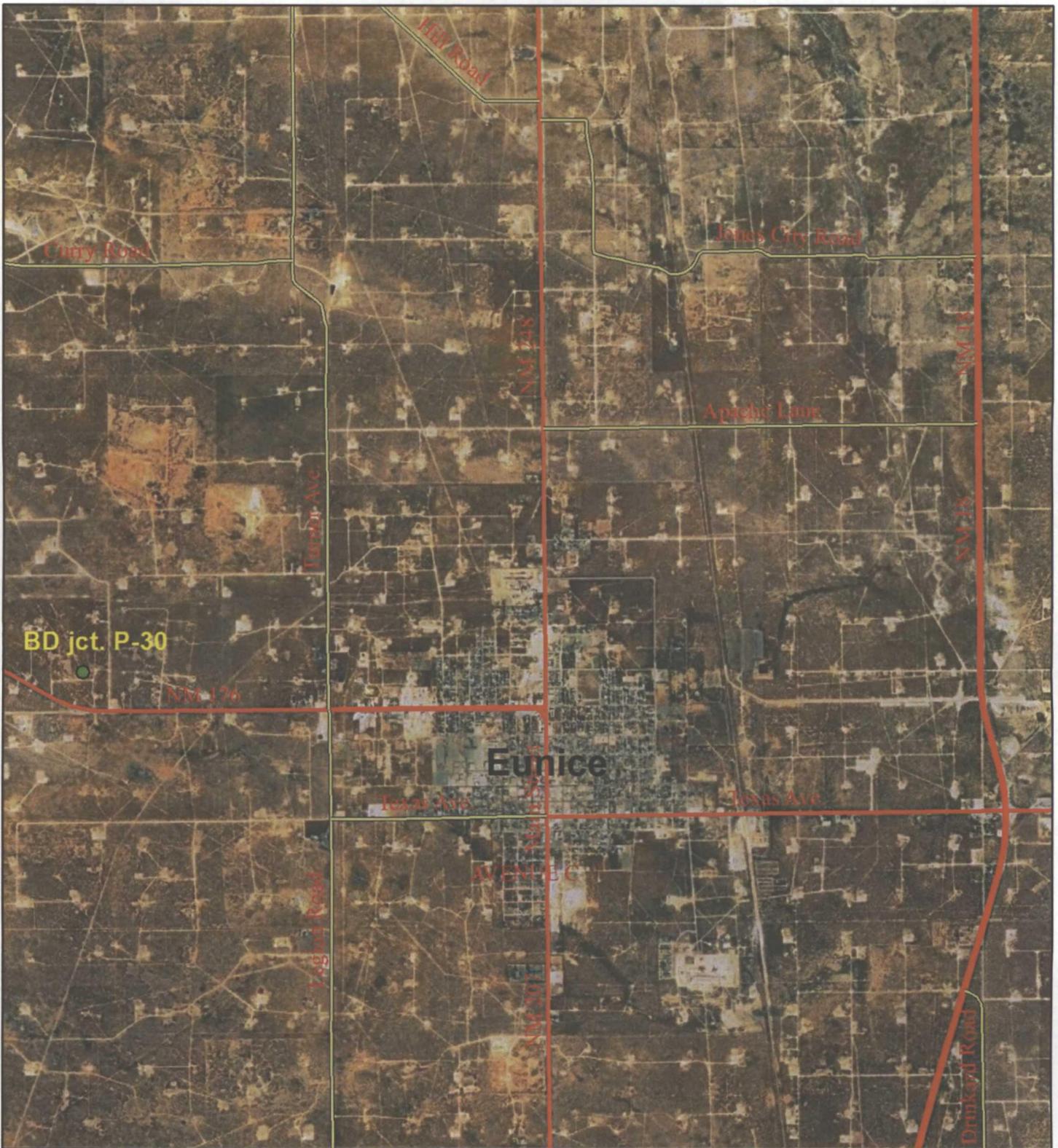
- Figure 1 – Site Location Map
- Figure 2 – Approved Liner Installation Plat
- Appendix A – PID sheets
- Appendix B – Blended Backfill Laboratory Confirmation
- Appendix C – Imported Soil Laboratory Confirmation
- Appendix D – RECS Re-vegetation Form
- Appendix E – Excavation Photo Documentation



# Figures

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

# Site Map

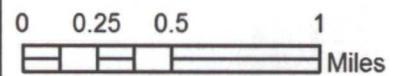


## *BD jct. P-30*

NMOCD Case #: 1R426-124

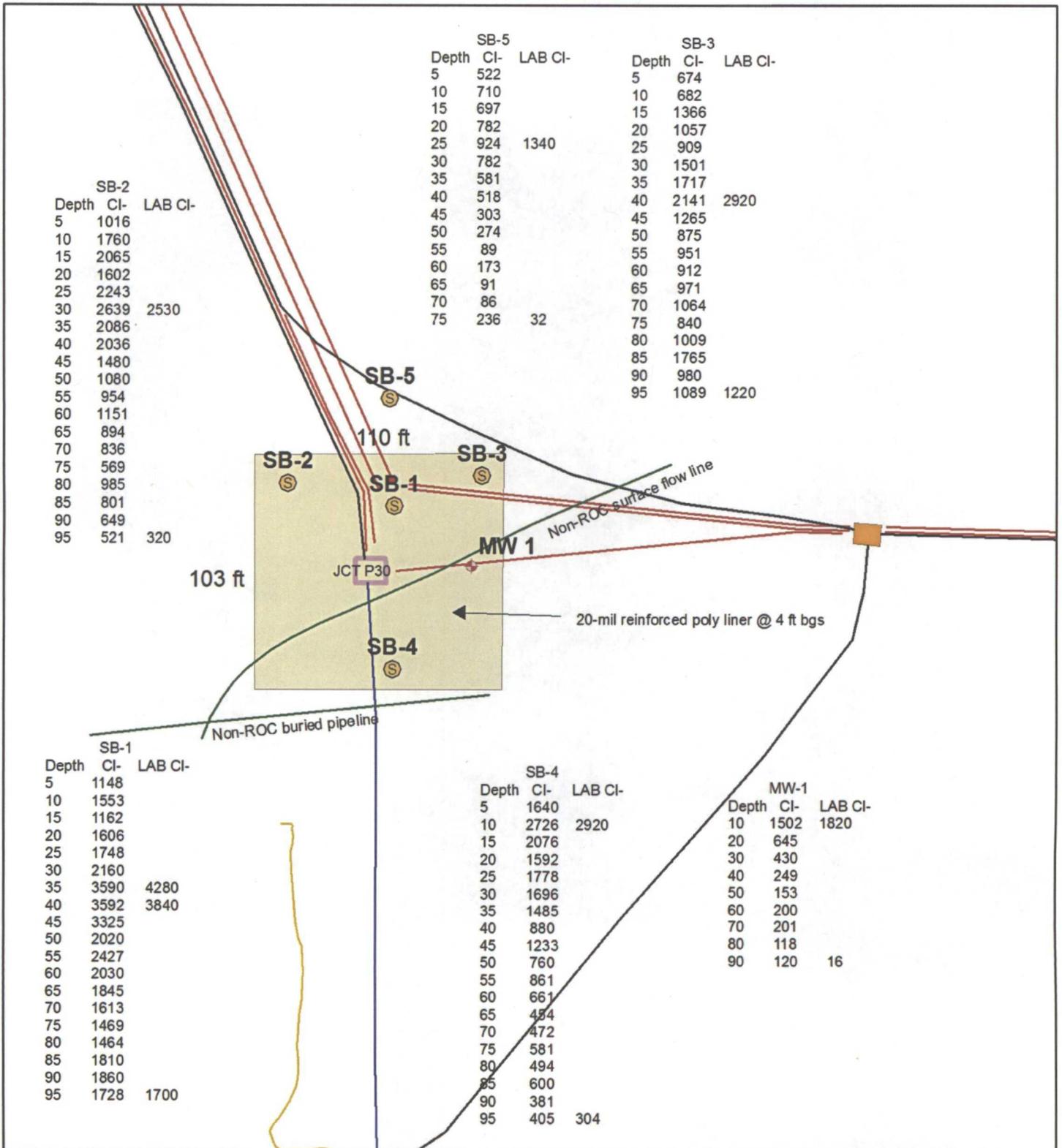
Legals: UL/P sec. 30  
T21S R37E

### Figure 1



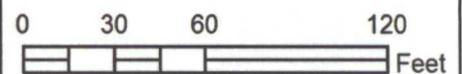
Drawing date: 7-13-11  
Drafted by: L. Weinheimer

# NMOCD Approved Liner

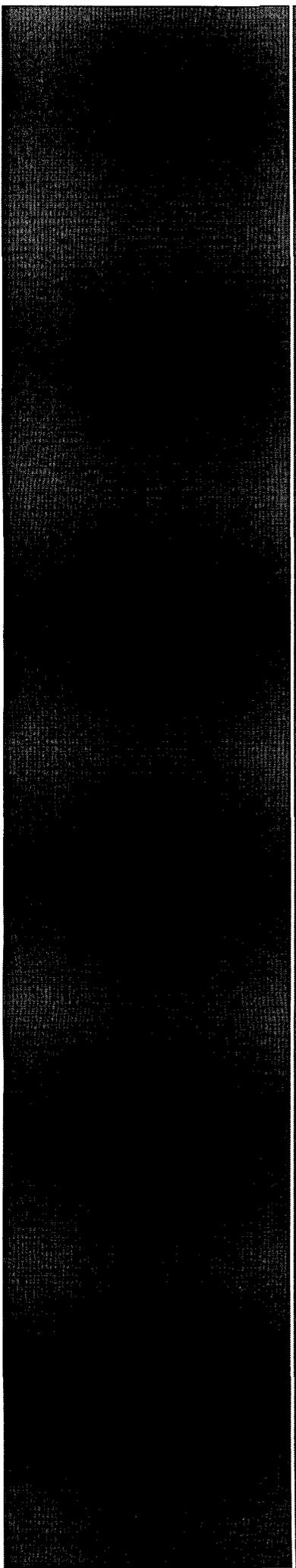


**BD jct. P-30**  
 Legals: UL/P sec. 30  
 T21S R37E  
 Case #: 1R426-124

**Figure 2**



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



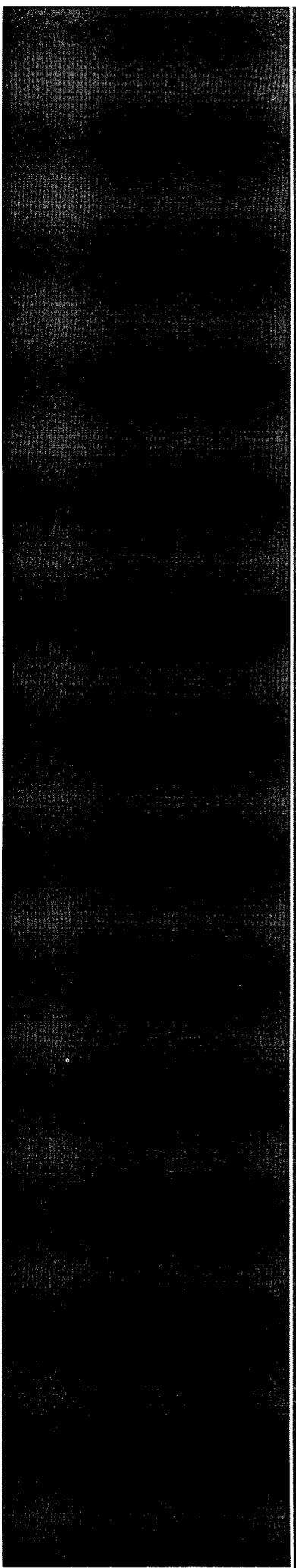
# Appendix A

PID sheets

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







# 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

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Celey D. Keene, Lab Director/Quality Manager

**Notes and Definitions**

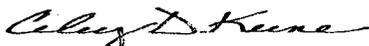
- ND Analyte NOT DETECTED at or above the reporting limit
- RPD Relative Percent Difference
- \*\* Samples not received at proper temperature of 6°C or below.
- \*\*\* Insufficient time to reach temperature.
- Chloride by SM4500Cl-B does not require samples be received at or below 6°C  
Samples reported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

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Cardinal Laboratories

\*=Accredited Analyte

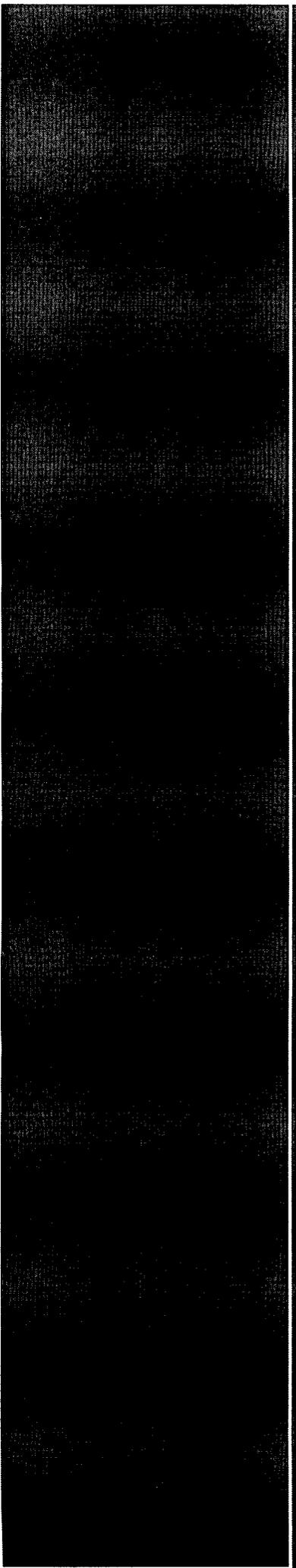
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Celey D. Keene, Lab Director/Quality Manager





# 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

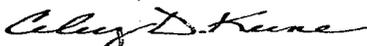
**Sample ID: IMPORTED TOPSOIL 8 PT. COMP (H101562-01)**

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**

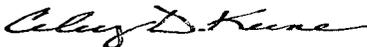
- ND Analyte NOT DETECTED at or above the reporting limit
- RPD Relative Percent Difference
- \*\* Samples not received at proper temperature of 6°C or below.
- \*\*\* Insufficient time to reach temperature.
- Chloride by SM4500Cl-B does not require samples be received at or below 6°C  
Samples reported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

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\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

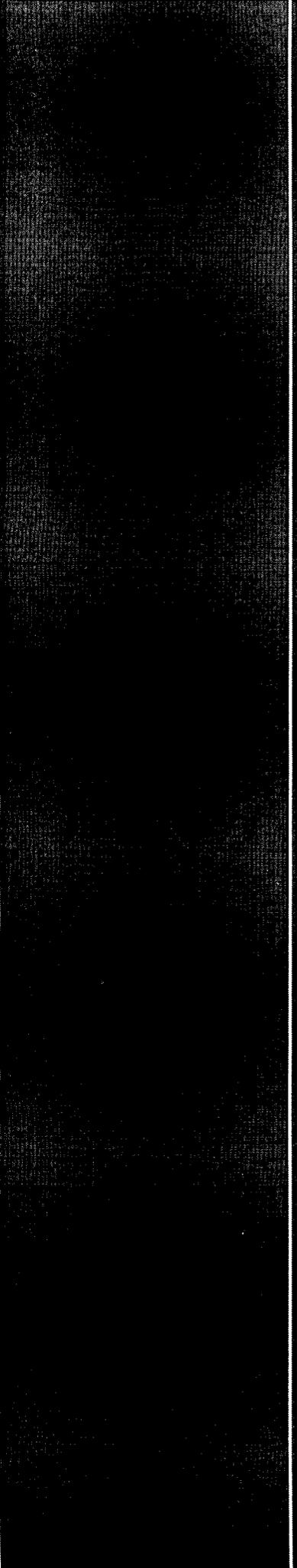


**CHAIN-OF-CUSTODY AND ANALYSIS REQUEST**

**CARDINAL LABORATORIES**

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: <u>Rice</u>		<b>BILLETTO</b>		ANALYSIS REQUEST											
Project Manager: <u>Hack Conder</u>		P.O. #:		Chlorides		TPH 8015 M		BTEX		Texas TPH		Complete Cations/Anions		TDS	
Address:		Company:		PRESERV.		SAMPLING		DATE		TIME					
City:		State: NM Zip:		MATRIX		CONTAINERS		(G)RAB OR (C)OMP.		# CONTAINERS		GROUNDWATER		WASTEWATER	
Phone #:		Fax #:		WASTEWATER		SLUDGE		OTHER:		ACID/BASE:		ICE / COOL		OTHER:	
Project #:		Project Owner:		SOIL		OIL		SLUDGE		OTHER:					
Project Name:		Project Name:		GROUNWATER		WASTEWATER		SOIL		OIL					
Project Location: <u>BD P-30 Jct</u>		Project Name: <u>Kyle Norman</u>		# CONTAINERS		GROUNWATER		WASTEWATER		SOIL					
Sampler Name: <u>Kyle Norman</u>		Project Name:		GROUNWATER		WASTEWATER		SOIL		OIL					
FOR LAB USE ONLY		Sample I.D.:		GROUNWATER		WASTEWATER		SOIL		OIL					
Lab I.D.:		Sample I.D.:		GROUNWATER		WASTEWATER		SOIL		OIL					
<u>H101562</u>		<u>Imported Top Soil Opt. Composite</u>		<u>1</u>		<u>1</u>		<u>1</u>		<u>1</u>		<u>1</u>		<u>1</u>	
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# 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	Section	Township	Range	County	Latitude	Longitude
P	30	21	37	Lea	32°26'42.093"N	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 Peat moss 10 bags
Lbs/acre:		

### 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 7/1/11



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