1R - 428-73

REPORTS

DATE:

12-2-11

L. Peter Galusky, Jr. Ph.D., P.G.
Texerra
627 Forest View Way, Monument, Colorado 80132
Tel: 719-339-6791 E-mail: lpg@texerra.com

December 2nd, 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 and Termination Request**
Rice Operating Company – Hobbs SWD System
Hobbs G-9 Vent. T-19-S, R-38-E, Sec 9, UL G
NMOCD Case Number 1R428-73

Sent via E-mail and U.S. Mail Certified Return Receipt No. 7011 0110 0000 6561 8821

Mr. Hansen:

Rice Operating Company (ROC) has completed the work specified in the Corrective Action Plan (CAP) of May 16th, 2011 and the CAP Addendum of August 4th, 2011, approved by OCD on August 4th, 2011. Please thus find attached a Corrective Action Plan Report and Termination Request.

ROC is the service provider (agent) for the Hobbs 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.

Thank you for your consideration.

Sincerely

L. Peter Galusky, Jr. Ph.D., P.G.

Attachment: Corrective Action Plan Report and Termination Request
Copy: Rice Operating Company

Corrective Action Plan Report and Termination Request
Rice Operating Company
Hobbs G-9 Vent
NMOCD Case Number 1R428-73

Project Location

The Hobbs G-9 Vent is part of an abandoned oil field salt water disposal (SWD) system formerly operated by Rice Operating Company (ROC). The former junction box is located southwest of the city of Hobbs, New Mexico at T-19-S, R-38-E, Section 9, in Unit G (Figure 1). The depth to groundwater is estimated to be approximately 50 ft bgs.

Summary of Soil Investigations

ROC analyzed soils from an initial 16-foot deep excavation on December 2, 2002, and identified chloride and hydrocarbon-impacted soil. They submitted an Investigation Characterization Plan (ICP), dated February 19, 2009 to further delineate the extent of soil impacts. The ICP was approved by OCD on April 22, 2009. ROC installed and sampled three 12-foot deep backhoe trenches on May 5, 2009. Hicks Consultants supervised a deep soil-sampling program to further delineate the extent and magnitude of soil impacts. On July 9, 2009, a single 25-foot deep soil boring (SB-1) was drilled just southwest of the original vent location.

Chloride Results

The ROC trench assessments showed that only the initial source area excavation, conducted in 2002, encountered chloride concentrations above 250 mg/kg. These levels were observed from 12 to 16 feet below the surface (260 and 275 mg/kg respectively). The highest chloride concentration encountered in the 2009 trenches (173 mg/kg) was encountered at six feet below the surface at the trench located five feet east of the original vent.

SB-1 was installed to delineate the depth of chloride-impacted soil. Chloride concentrations similar to the original excavation were encountered at 10 to 12 feet below the surface, decreasing to 128 mg/kg at the total depth of the boring. SB-1 was terminated based on the analysis of chloride by field techniques, which are generally higher in concentration than the analyses performed in the laboratory. The 20-foot sample from SB-1 was anomalous in that the field chloride analysis (245 mg/kg) was lower than the laboratory measurement (336 mg/kg).

The maximum chloride concentration observed in this area (336 mg/kg) at 20 ft is slightly above the NMOCD guideline target level of 250 mg/kg; however, the soil at 25 ft shows chloride levels below 250 mg/kg.

Hydrocarbon Results

Field screening of hydrocarbon vapors in the soil from the trenches identified concentrations greater than 1,000 ppm in each of the May 2009 excavations (2,948 ppm maximum). Laboratory analysis of BTEX from these samples indicates maximum concentrations of benzene (1.97 mg/kg), toluene (2.01 mg/kg), ethylbenzene (16.7 mg/kg), and total xylenes (22.2 mg/kg) at 8 to 12 feet below the surface. In addition, the samples contained gas and diesel range organics, which are essentially non-soluble with respect to leaching.

SB-1 was installed to delineate the vertical extent of hydrocarbon-impacted soil within the source area. Field screening of hydrocarbon vapors were measured from split spoon samples initially but drill cutting samples were used at 20 and 25 feet below the surface because the soil was too hard to recover material with a split spoon sampler. The highest vapor reading was encountered at 15 feet below the surface (2,899 ppm). Laboratory analysis from this sample indicates concentrations of benzene (1.26 mg/kg), toluene (1.01 mg/kg), ethylbenzene (8.50 mg/kg), and total xylenes (11.8 mg/kg). Hydrocarbon concentrations decreased with depth to below the laboratory detection limit at 25 feet below the surface.

Corrective Action Plan and Addendum

A Corrective Action Plan (CAP) was submitted on May 16, 2011 and requested surface restoration to limit infiltration of precipitation and the subsequent migration of constituents of concern to ground water. The CAP also included VLEACH vadose zone model to determine if the benzene and xylenes identified during the site assessment would cause the underlying groundwater to exceed the regulatory standard. The simulation results indicate, for benzene, 300 years will be required for leaching to move the highest concentrations in the soil to the ground water depth. Conversely, 600 years will be required to move the highest xylenes concentrations in the soil to the ground water depth. During this time neither the benzene nor xylenes mass input to the ground water will be sufficient to cause the water concentrations below the site to exceed the New Mexico water quality standards.

On July 19, 2011, NMOCD requested additional infiltration controls. ROC submitted to OCD an Addendum to the Corrective Action Plan which consisted of the installation of a 36-foot by 31-foot, 20-mil, reinforced poly liner at a depth of approximately 4 foot below ground surface (Figure 2) followed seeding of the backfilled site. These measures were intended to effectively prevent the downward migration of residual soil contaminants and to restore the natural surface ecological system. NMOCD approved the CAP Addendum on August 4, 2011.

Completion of Corrective Measures

Beginning on November 16, 2011, ROC excavated soils from the affected area to a depth of 5 ft bgs across an area of 36 * 31 ft. A six inch layer of clean blow sand was placed in the bottom of the excavation and a 36 * 31 ft, 20 mil reinforced plastic liner was installed and properly seated. Six inches of clean blow sand were then carefully placed above the liner as padding. Additional blow sand was blended with remaining excavated soil for use as backfill. A composite, eight-point sample indicated a chloride concentration of 32 mg/kg and a PID reading of 64.3 ppm for this blended backfill, which was backfilled into the excavation up to approximately 6 inches of the ground surface. Clean blow sand was used to fill the remainder and this was graded to natural surface topography. 250 lbs of BioNhance was mixed into the upper backfilled material along with a blend of 5 lbs winter wheat and 8 lbs blue grama (custom mix). A total of 96 cubic yards of excavated soil material was hauled and disposed at Sundance

Services. A total of 112 cubic yards of clean blow sand was used as liner padding and for blending and backfilling with native soil material.

Photographs of this work are given in Figure 3 and a laboratory report of the analysis of the composite backfill sample, PID analysis of the blended backfill, and a Revegetation Form are given in the Appendix.

Justification and Request for Remediation Termination

The most heavily impacted soil material from this location was removed and disposed at an off-site, NMOCD approved facility and thus no longer poses a threat to groundwater quality from this location. Further, the installation of a synthetic, subsurface liner in combination with surface restoration will effectively preclude downward residual migration of residual soil chlorides and hydrocarbons into groundwater.

As the Hobbs SWD system, and the G-9 Vent, are no longer operational we thus submit that this site no longer poses a threat to groundwater quality or to natural surface ecological restoration. We therefore respectfully request that OCD grant remediation termination or similar regulatory closure status to this project.

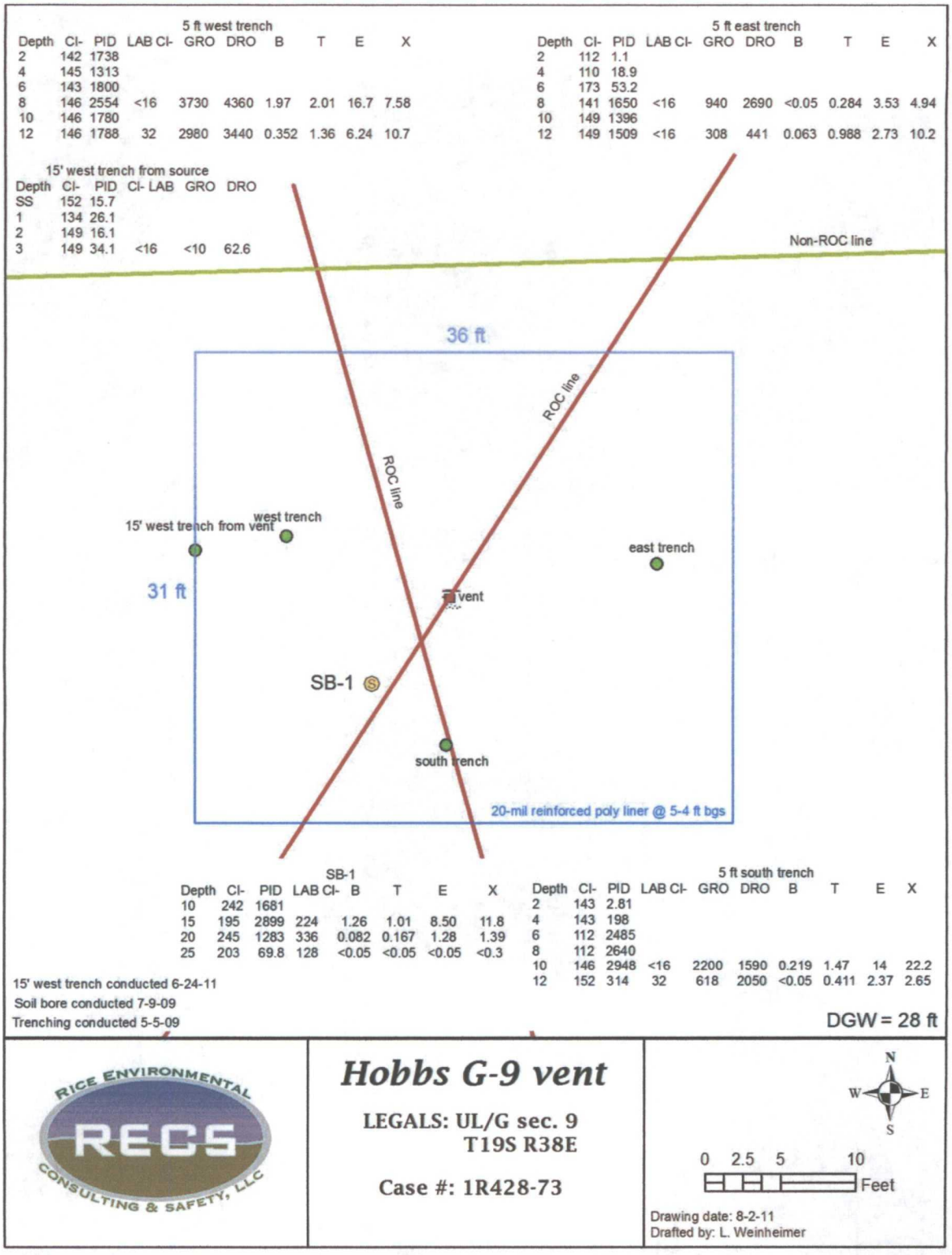


Figure 2 – Hobbs G-9 Vent plan-view dimensions of proposed subsurface synthetic liner.

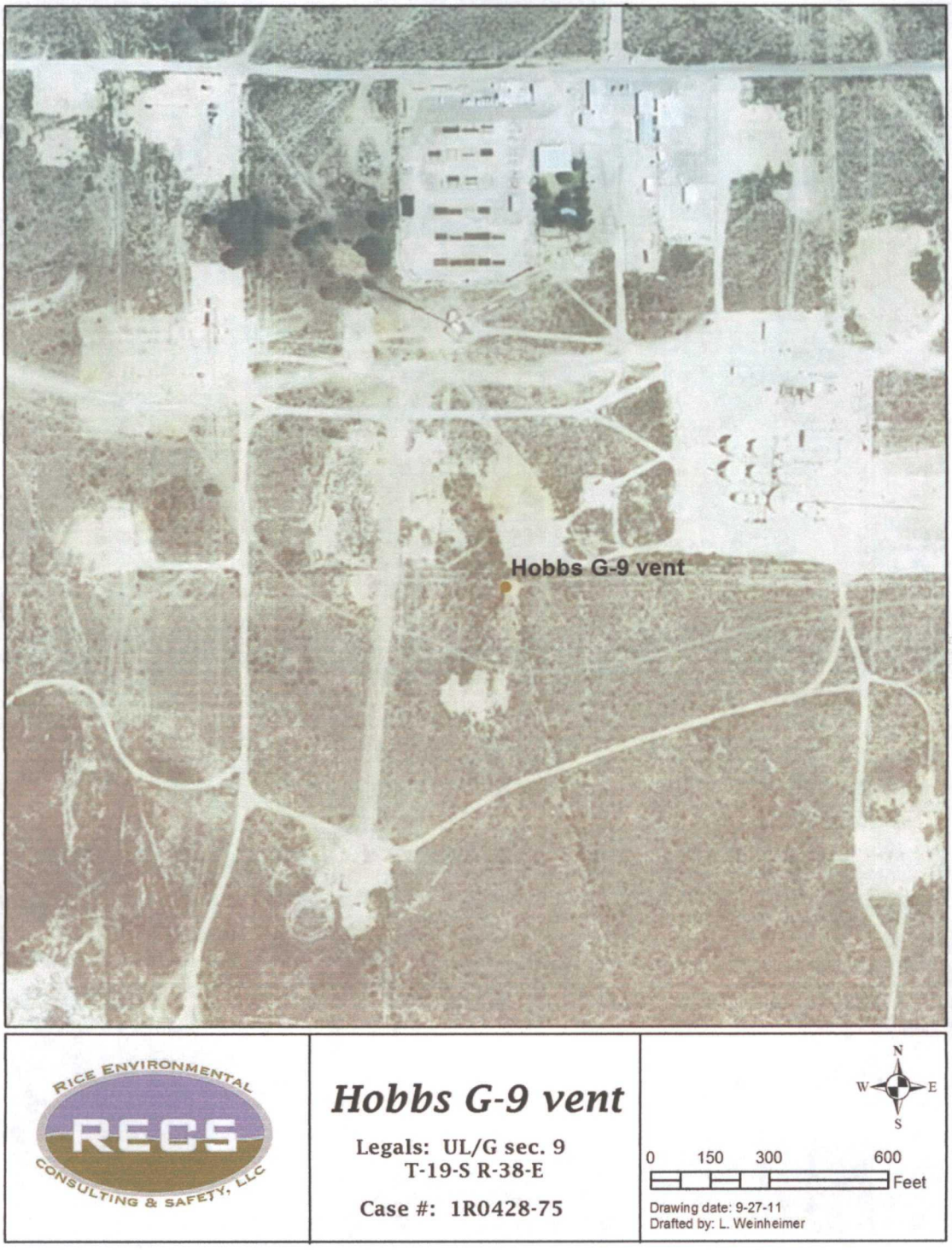


Figure 1 – Hobbs G-9 Vent location.

Figure 3 – Photographs of installation of subsurface, synthetic liner and of surface restoration.

site prior to excavation, facing northwest

excavating the site, facing east

exporting excavated soil, facing east

importing soil, facing east

36x31x5-ft bgs excavation complete, with 6" blow sand pad, facing northeast

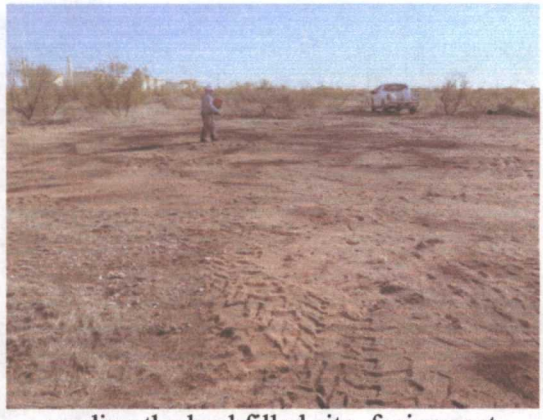
36x31-ft, 20-mil reinforced liner installed, facing northeast

Figure 3 - (continued)

6" blow sand pad above the reinforced liner, facing southwest

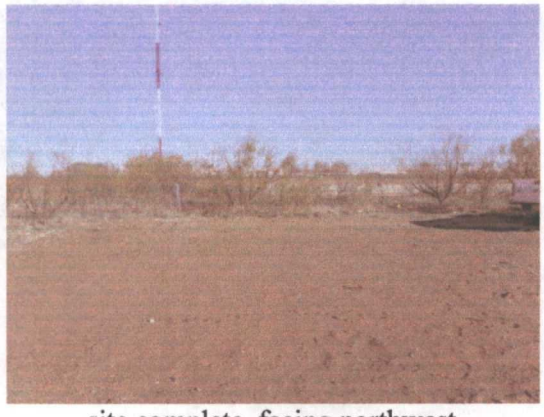
blending excavated soil, facing southeast

adding BioNhance to the backfilled site, facing northwest 11/23/2011



seeding the backfilled site, facing east 11/23/2011

raking in the seed and BioNhance, facing south 11/23/2011



site complete, facing northwest 11/28/2011

APPENDIX

- Laboratory Chloride Analyses of blended backfill
- PID Analysis of blended backfill
- Revegetation Form

CARDINAL Laboratories

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

November 23, 2011

Hack Conder

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: HOBBS G-9 VENT

Enclosed are the results of analyses for samples received by the laboratory on 11/22/11 9:10.

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 Hydorcarbons

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

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 (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,

Hope S. Moreno

Hope Moreno

Inorganic Technical Director

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:	11/22/2011	Sampling Date:	11/22/2011
Reported:	11/23/2011	Sampling Type:	Soil
Project Name:	HOBBS G-9 VENT	Sampling Condition:	** (See Notes)
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: BLENDED BACKFILL (H102534-01)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**32.0**	16.0	11/23/2011	ND	432	108	400	0.00	

Cardinal Laboratories *=Accredited Analyte

Hope S. Moreno

Hope Moreno, Inorganic Technical Director

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

Cardinal Laboratories *=Accredited Analyte

Hope S. Moreno

Hope Moreno, Inorganic Technical Director

CARDINAL Laboratories

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

101 East Marland, Hobbs, NM 88240
(575) 393-2326 FAX (575) 393-2476

Company Name: Rice
Project Manager:
Address:
City: State: Zip:
Phone #: Fax #:
Project #: Project Owner:
Project Name: Hobbs G-9 Vent
Project Location:
Sampler Name: Dylan Yarbrough

BILL TO
P.O. #:
Company:
Attn:
Address:
City:
State: Zip:
Phone #:
Fax #:

ANALYSIS REQUEST: Cl-

Lab I.D. (FOR LAB USE ONLY)	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER:	ACID/BASE:	ICE / COOL	OTHER:	DATE	TIME	Cl-
H102534 1	[illegible] Back Fill	C	1			✓							11/23/10	[illegible]	✓

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: [signature] Date: 11/23/10 Time: 9:10 Received By: Jodi Henson
Relinquished By: Date: Time: Received By:

Delivered By: (Circle One)
Sampler - UPS - Bus - Other: 18°C

Sample Condition: Cool ☒ Yes ☐ No; Intact ☒ Yes ☐ No
CHECKED BY: (Initials) [initials]

Phone Result: ☐ Yes ☐ No Add'l Phone #:
Fax Result: ☐ Yes ☐ No Add'l Fax #:
REMARKS: RUSH!! Email All

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

#26

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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
	x	MODEL: PGM 7320	SERIAL NO: 592-903318
		MODEL: PGM 7300	SERIAL NO: 590-000183

GAS COMPOSITION: ISOBUTYLENE 100PPM / AIR: BALANCE

LOT NO :HAL-248-100-1	EXPIRATION DATE:7/1/2015
METER READING ACCURACY:100	

ACCURACY : +/- 2%

COMPANY
RICE OPERATING

SYSTEM	JUNCTION	UNIT	SECTION	TOWN SHIP	RANGE
HOBBS	G-9 VENT	G	9	19S	38E

SAMPLE ID	PID	SAMPLE ID	PID
BLENDED BACKFILL	64.3		

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

SIGNATURE: DATE: 11/22/2011

RICE ENVIRONMENTAL CONSULTING & SAFETY, LLC

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

REVEGETATION FORM

1. General Information

Site name: Hobbs G-9 Vent						
U/L	Section	Township	Range	County	Latitude	Longitude
G	9	19S	38E	Lea	32°40'41.6" N	103°09'00.1"W
Contact Name: Zach Conder						
Email: zconder@rice-ecs.com						
Site size: 10,449 square feet			Map detail of site attached ☐			
Additional information:						

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

Salvaged from site ☒	Bioremediated ☐	Imported ☒	Blended ☐	Depth (in): 6"-Surface Imported Blow Sand
Texture: Sandy	Describe soil & subsoil: Sandy blow sand/caliche soil mixture			
Soil prep methods:	Rip ☐ Depth(in):	Disc ☐ Depth (in):	Rollerpack ☐	
Date completed: 11/23/11				

3. Bioremediation

Fertilizer ☐	Hay ☐	Other ☒
Type:		Describe: 5 bags (250 lbs.) of BioNhance
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 ☒	Prescribed mix ☐	Seed mix name: 5 lbs. Winter Wheat 6 lbs. of Blue Grama Custom Mix	Seeding date: 11/23/11
Broadcast ☒ Method: push broadcast			
Soil conditions during seeding: Dry ☒ Damp ☐ Wet ☐			
Photos attached ☒ Number of photos:	Observations: Raked in seed.		

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: Dyllan Yarbrough	Title: Environmental Tech	Date: 11/23/11
Signature:		