1R - 427-162

WORKPLANS

Date:
9-10-10

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

CERTIFIED MAIL
RETURN RECIEPT NO. 7009 1680 0001 6619 6255

September 10th, 2010

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: **INVESTIGATION & CHARACTERIZATION PLAN**
Rice Operating Company – EME SWD System
EME Jct. G-18 (1R427-162): UL/G sec. 18 T19S 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 EME Salt Water Disposal (SWD) system. ROC is the service provider (agent) for the EME 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. Environmental projects of this nature require System Party AFE approval prior to work commencing at the site. In general, project funding is not forthcoming until NMOCD approves the work plan. Therefore, your timely review of this submission is greatly appreciated.

For all such environmental projects, ROC will choose the path forward that:

- Protects public health,
- Provides the greatest net environmental benefit,
- Complies with NMOCD Rules, and
- Is supported by good science.

Each site shall generally have three submissions:

1. This Investigation and Characterization Plan (ICP) is proposed for gathering data and site characterization and assessment.

2. Upon evaluating the data and results from the ICP, a recommended remedy will be submitted in a Corrective Action Plan (CAP) if warranted.
3. Finally, after implementing the remedy, a Termination Request with final documentation will be submitted.

Background and Previous Work

The site is located approximately 3 miles north-west of Monument, New Mexico at UL/G sec. 18 T19S R37E as shown on the Site Location Map (Figure 1). NM OSE records indicate that groundwater will likely be encountered at a depth of approximately 52 +/- feet.

In 2004, ROC initiated work on the former EME G-18 junction box. 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 20 x 18 x 12 feet bgs where composite samples were collected for laboratory verification. Laboratory tests of the site showed gasoline range organics (GRO) readings of 392 mg/kg in the 4-wall composite, 939 mg/kg in the bottom composite, and 302 mg/kg in the remediated backfill. Diesel range organics (DRO) ranged from 2690 mg/kg in the 4-wall composite, 6520 mg/kg in the bottom composite, and 4570 mg/kg in the remediated backfill. Chlorides at the site ranged from 126 mg/kg on the 4-wall composite, 617 mg/kg for the bottom composite at 12 ft bgs, and 298 for the remediated backfill. BTEX was present in the 4-wall composite, the bottom composite, and remediated backfill (see table in Appendix A). At 6 feet bgs, a clay layer was installed to inhibit further chloride migration and a compaction test was performed on April 16, 2004. The soils were blended on site and then backfilled into the excavation. 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. A new junction box was not required at the site.

On 6/2/2004, a soil bore was drilled at the site to determine the vertical extent of the contamination. Two attempts were made to drill the soil bore; however, the bore could not be advanced past 20 feet due to a hard rock stratum. The 20 feet sample was taken for laboratory verification of the field numbers. The chloride laboratory reading was 896 mg/kg, GRO was negligible, and DRO was 266 mg/kg. BTEX readings at 20 ft were negligible as well.

NMOCD was notified of potential groundwater impact on September 14, 2004 and a junction box disclosure report (Appendix A) was submitted to NMOCD with all the 2004 junction box closures and disclosures.

ROC proposes additional investigative work at the site to determine if there is potential for groundwater degradation from residual chlorides and/or hydrocarbons at the site.

Proposed Work Elements

1. Conduct vertical and lateral delineation of residual soil hydrocarbons and chlorides (see Appendix B for Quality Procedures).
    a. Vertical sampling will be conducted until either one of the following criteria is met in the field.
        i. Three samples in which the chloride concentration decreases and the third sample has a chloride concentration of ≤ 250 ppm.

ii. Three samples in which PID readings decrease and the third sample has a PID reading of ≤ 100 ppm.
iii. The sampling reaches the capillary fringe.

2. If warranted, install a monitor well to provide direct measurement of the potential groundwater impact at the site. (All monitor wells will be installed by EPA, NMOCD, and industry standards.)
3. Evaluate the risk of groundwater impact based on the information obtained.

If the evaluation of the site shows no threat to groundwater from residual chlorides and/or hydrocarbons, then only a vadose zone remedy will be undertaken. However, if groundwater shows impact from residual chlorides and/or hydrocarbons, a CAP will be developed to address these concerns.

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

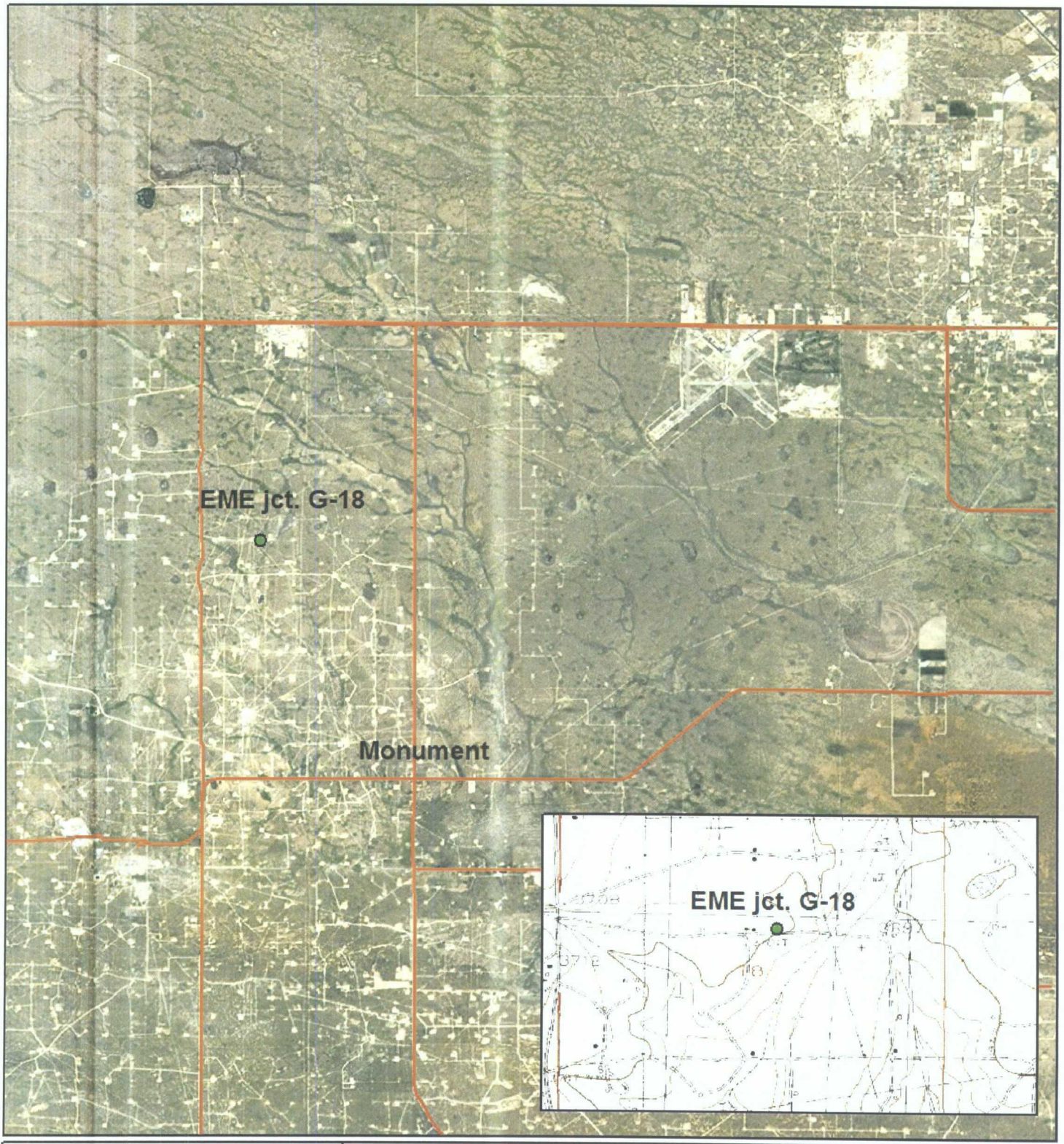
Attachments:

Figures – Site location map
Appendix A – Junction Box Disclosure Report
Appendix B – Quality Procedures

Figures

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

Site Location



RICE ENVIRONMENTAL RECS CONSULTING & SAFETY, LLC

EME jct. G-18

Legals: UL/G sec. 11
T19S R37E
NMOCD Case #: 1R427-162

FIGURE 1

N
W E
S

0 3,050 6,100 12,200
Feet

Drawing date: 7-13-10
Drafted by: L. Weinheimer

Appendix A

Junction Box Disclosure Report

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

RICE OPERATING COMPANY
JUNCTION BOX DISCLOSURE REPORT

BOX LOCATION

SWD SYSTEM	JUNCTION	UNIT	SECTION	TOWNSHIP	RANGE	COUNTY	BOX DIMENSIONS - FEET		
							Length	Width	Depth
EME	G-18	G	18	19S	37E	Lea	no box-eliminated		

LAND TYPE: BLM ____ STATE X FEE LANDOWNER ____ OTHER ____

Depth to Groundwater 52 feet NMOCD SITE ASSESSMENT RANKING SCORE: 10

Date Started 2/16/2004 Date Completed 6/2/2004 OCD Witness No

Soil Excavated 160 cubic yards Excavation Length 18 Width 20 Depth 12 feet

Soil Disposed 0 cubic yards Offsite Facility n/a Location n/a

FINAL ANALYTICAL RESULTS: Sample Date 2/25/2004, 2/26/2004, 6/2/2004 Sample Depth 12, 20 ft

Procure 5-point composite sample of bottom and 4-point composite sample of excavation sidewalls. TPH, BTEX, and chloride laboratory test results completed by using an approved lab and testing procedures pursuant to NMOCD guidelines.

Sample Location	Benzene mg/kg	Toluene mg/kg	Ethyl Benzene mg/kg	Total Xylenes mg/kg	GRO mg/kg	DRO mg/kg	Chloride mg/kg
4-WALL COMP.	See enclosed laboratory analytical report and BTEX Study tables				392	2690	126
BOTTOM COMP.					939	6520	617
REMED. BACKFILL	<0.025	0.0721	0.0687	0.3926	302	4570	298
SOIL BORE @ 20 ft	<0.005	<0.005	<0.005	<0.0015	<10.0	266	896

General Description of Remedial Action: This former junction box site was delineated using a backhoe while PID screenings and field chloride tests were conducted at regular intervals. Although chloride concentrations declined laterally within the 20 x 18 x 12-ft-deep excavation, the vertical extent was not established at the highest concentration area directly below the junction. PID readings were generally elevated throughout the excavation and NMOCD TPH guidelines were not met. The excavated soils were blended/remediated on site and backfilled into the hole to 6 ft BGS. At 6 ft, a 1-ft-thick compacted clay barrier was installed. The remaining remediated soils were backfilled on top of the clay and contoured to the surrounding surface. On 6/2/2004, a soil bore was initiated to delineate the depth of impact. The bore was aborted at 20 ft BGS after two unsuccessful attempts were made to penetrate solid rock stratum. Samples collected from the bore did not meet NMOCD TPH guidelines. A conclusive chloride trend was not identified (see graph). Both bores were plugged with bentonite clay at the bottom and top. An identification plate has been placed at the surface of this site to mark the presence of clay and for future remediation considerations. This junction has been eliminated.

ADDITIONAL EVALUATION IS *LOW* PRIORITY

CHLORIDE FIELD TESTS

LOCATION	DEPTH (ft)	ppm
vertical	6	1400
at junction	7	1752
	8	1074
	9	1229
	10	1544
	11	1276
	12	1579
soil bore	15	451
	20	896
bottom comp.	12	601
4-wall comp.	1-12	240
remed. backfill	n/a	414

enclosures: chloride graph, photos, lab results, BTEX study, clay test, bore logs, diagram

I HEREBY CERTIFY THAT THE INFORMATION ABOVE IS TRUE AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF.

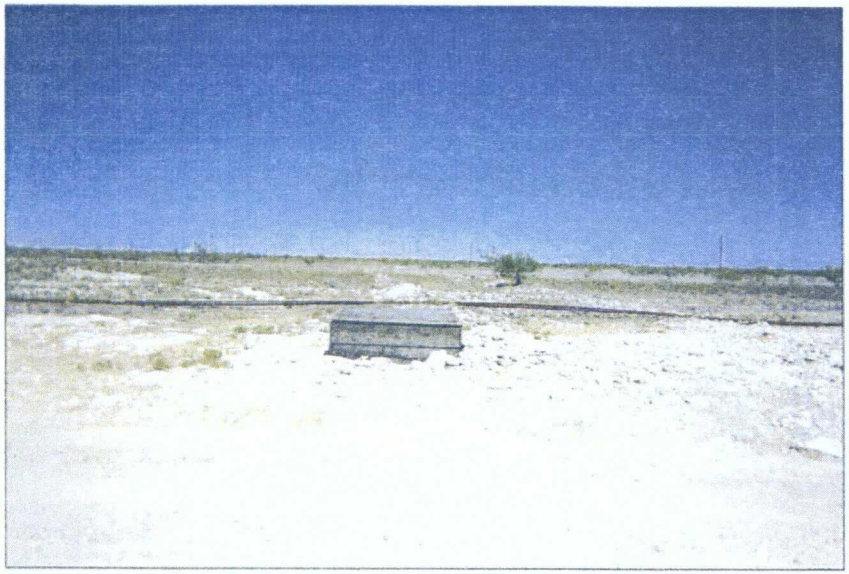
SITE SUPERVISOR Roy Rascon SIGNATURE Roy R. Rascon 9-17-04 COMPANY RICE Operating Company

REPORT ASSEMBLED BY Kristin Farris Pope SIGNATURE Kristin Farris Pope

DATE 9/13/2004 TITLE Project Scientist

This site is a "DISCLOSURE." It will be placed on a prioritized list of similar sites for further consideration.

EME jct. G-18



undisturbed box (looking north) 10/21/2003

after NORM decontamination; box removed (looking north) 10/28/2003

delineation & excavation (looking south) 2/17/2004

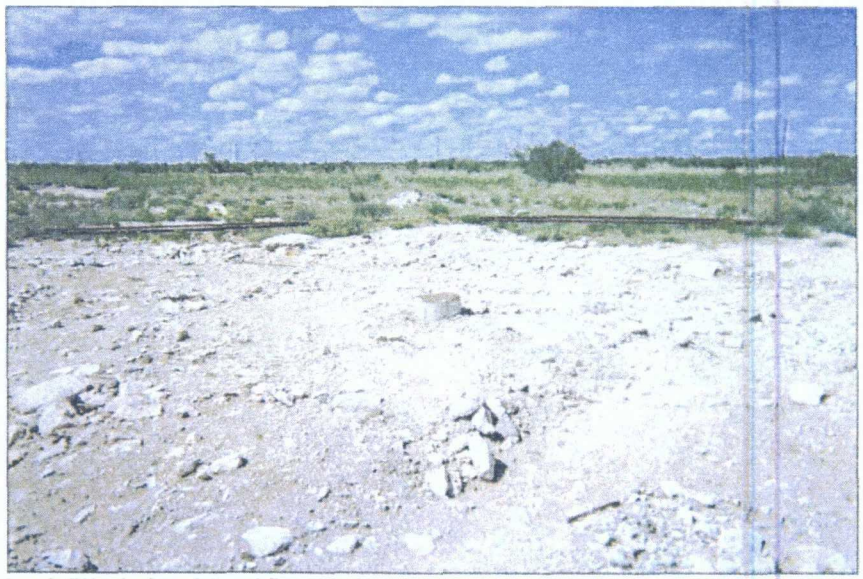
final 20 x 18 x 12-ft-deep excavation (looking south) 2/23/2004

EME jct. G-18

backfilled to 6 ft BGS 4/16/2004

testing compacted clay liner 4/16/2004

soil bore 6/2/2004

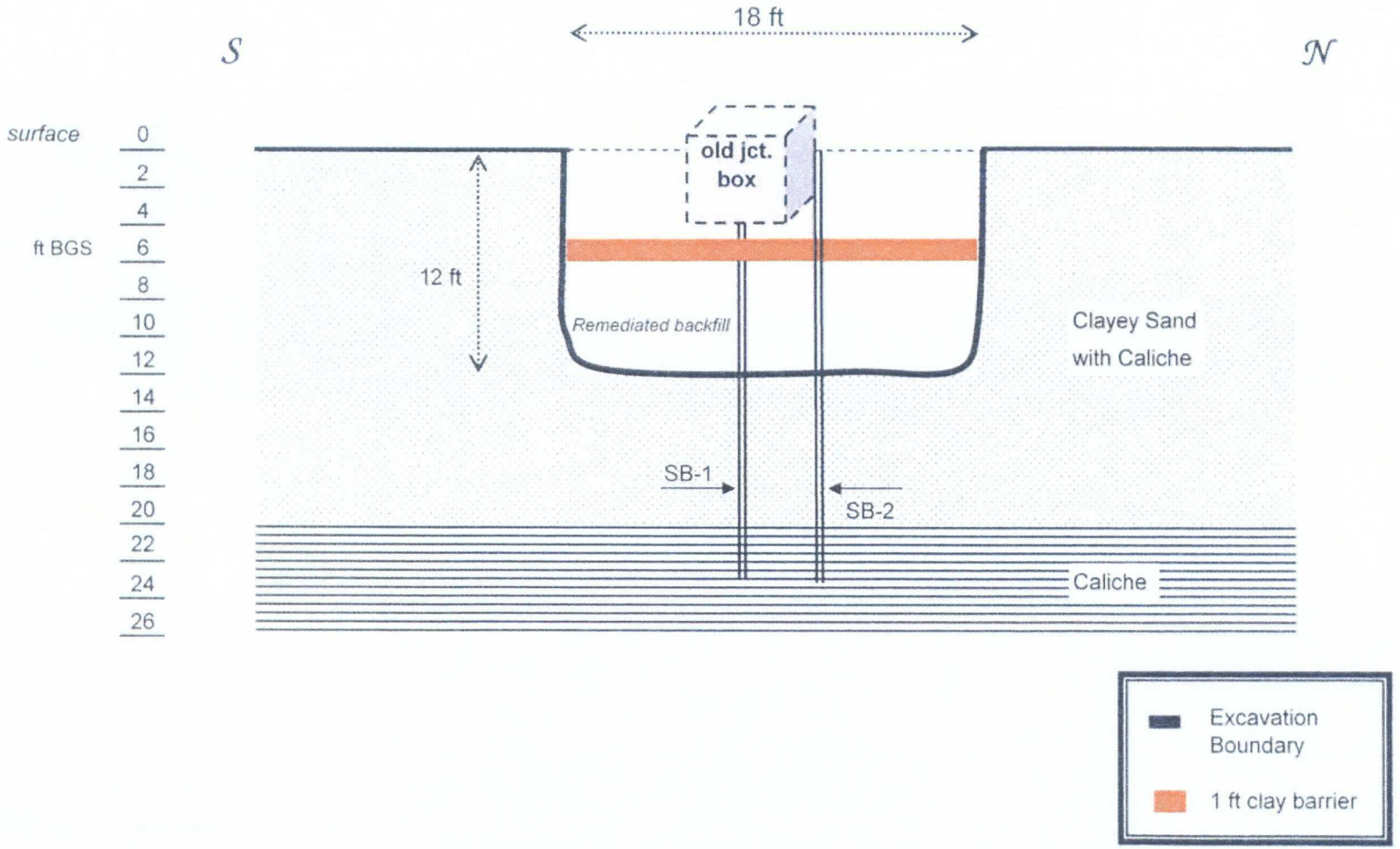


backfilled site; identification plate at former junction site 8/13/2004

EME jct. G-18

20 x 18 x 12 ft

Excavation Cross-Section



EME jct. G-18

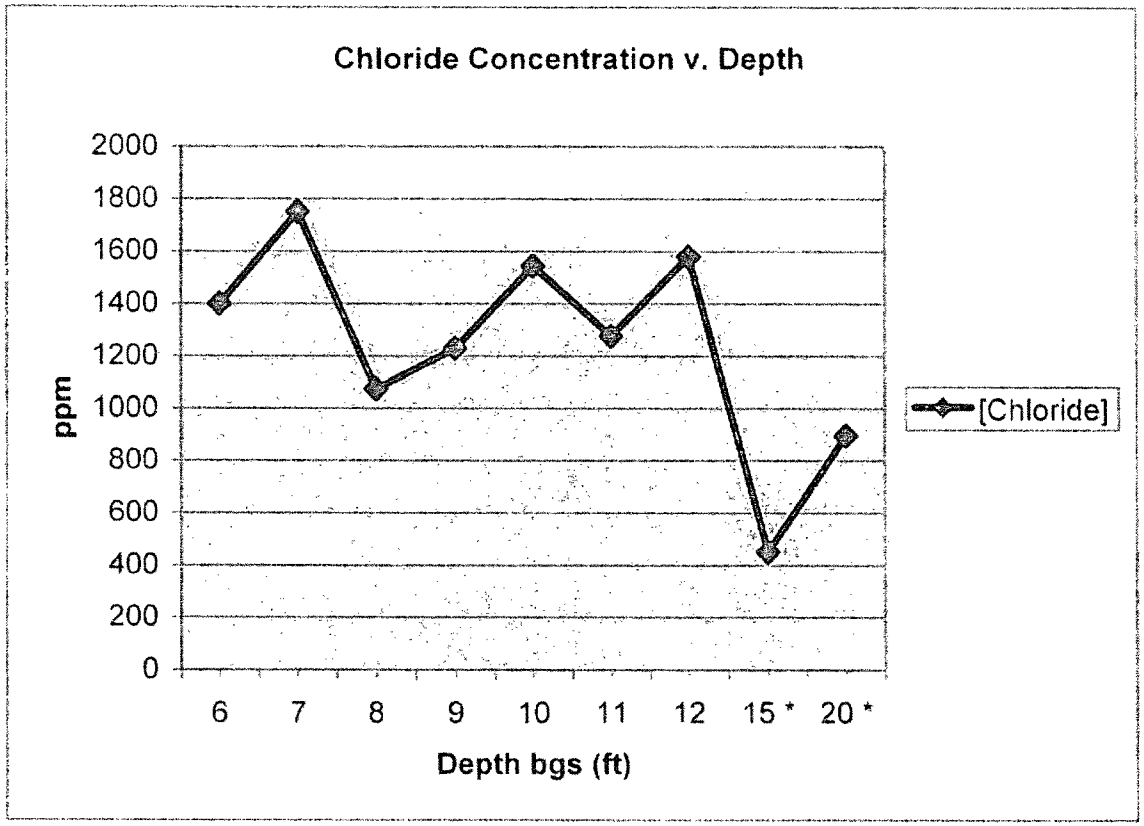
T20S, R36E

Vertical Delineation at Source

Depth bgs (ft)	[Cl⁻] ppm
6	1400
7	1752
8	1074
9	1229
10	1544
11	1276
12	1579
15 *	451
20 *	896

* Soil bore samples;
20 ft shows lab analysis

Groundwater = 52 ft



2004 BTEX Study

Revised Junction Box Upgrade Plan (2003)

System: EME
Site: jct. G-18
Date: 2/26/2004
Sampler: Gary Stark (ETGI Hobbs)
Laboratory: Environmental Lab of Texas

Location	Component	PID reading (ppm)	FIELD COMPOSITE (mg/kg) Benzene	Toluene	Ethyl Benzene	Total Xylenes
bottom composite at 12 ft BGS	1	1340.0	3.65	4.15	0.626	2.645
	2	128.0				
	3	1271.0				
	4	15.3				
	5	873.0				

LAB COMPOSITE (mg/kg) Benzene	Toluene	Ethyl Benzene	Total Xylenes
1.3	2.74	0.438	2.078

Location	Component	PID reading (ppm)	FIELD COMPOSITE (mg/kg) Benzene	Toluene	Ethyl Benzene	Total Xylenes
4-wall composite		340.0	0.044	0.281	0.265	1.621

LAB COMPOSITE (mg/kg) Benzene	Toluene	Ethyl Benzene	Total Xylenes
0.0246	0.191	0.224	1.307

Field PID tests <100 ppm are considered final for BTEX. If PID is >100 ppm, the components of the BTEX composite sample will be collected individually and will be composited under laboratory conditions to prevent excessive volatilization. A 15-box, 30-s

At junction. Samples collected at 15 ft. + 20 ft.

Atkins Engineering Associates, Inc. 2904 W. 2nd St., Roswell, NM 88202-3156	LOG OF BORING Test Hole #1 (Page 1 of 1)

Rice Operating Co. 122 W. Taylor Hobbs, NM 88240	Date	: 06-02-04	Site Location	: EME G-18
	Drill Start	: 1000	Auger Type	: Hollow Stem
	Drill End	: 1030	Logged By	: Mon Bates
Contact:	Boring Location:	:		
Job: RICEOPR.DRL.04				

Depth in Feet	GRAPHIC	USCS	Samples	DESCRIPTION	Lab No.	Well: TH-1
0				Clayey Sand w/ Caliche, Loose, Tan, Dry		Hydrated Bentonite
5						
10		SC				Drill Cuttings Backfill
15						
20				Caliche, Hard, White, Dry		Hydrated Bentonite
				Total Depth 22'		
25						

06-15-2004 C:\MTECH\BRICE\Bld.log

3 ft North of jct. No samples

Atkins Engineering Associates, Inc. 2904 W. 2nd St., Roswell, NM 88202-3156	LOG OF BORING Test Hole #2 (Page 1 of 1)
Rice Operating Co. 122 W. Taylor Hobbs, NM 88240	Date: 06-02-04 Drill Start: 1030 Drill End: 1100 Boring Location:
Contact:	Site Location: EME G-18 Auger Type: Hollow Stem Logged By: Mort Bates
Job: RICEOPR.DRL.04	

Depth in Feet	GRAPHIC	USCS	Samples	DESCRIPTION	Lab No.	Well: TH-2
0				Clayey Sand w/ Caliche, Loose, Tan, Dry		Hydrated Bentonite
5						
10		SC				Drill Cuttings Backfill
15						
20				Caliche, Hard, White, Dry		Hydrated Bentonite
				Total Depth 23'		
25						

06-15-2004 C:\UTECH\46\RICE\bh2a.bor

Lab Bottom

ENVIRONMENTAL LAB OF

12600 West I-20 East - Odessa, Texas 79765

Analytical Report

Prepared for:

Kristin Farris

Rice Operating Co.

122 W. Taylor

Hobbs, NM 88240

Project: No Project

Project Number: EME Jct G-18

Location: None Given

Lab Order Number: 4C01012

Report Date: 03/03/04

Rice Operating Co.	Project: No Project	Fax: (505) 397-1471
122 W. Taylor	Project Number: EME Jct G-18	Reported:
Hobbs NM, 88240	Project Manager: Kristin Farris	03/03/04 13:01

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Lab 4 Wall Comp.	4C01012-01	Soil	02/26/04 09:00	02/28/04 08:30

12600 West I-20 East - Odessa, Texas 79705 - (432) 563-1800 - Fax (432) 563-1713

Rice Operating Co.	Project: No Project	Fax: (505) 397-1471
122 W. Taylor	Project Number: EME Jet G-18	Reported:
Hobbs NM, 88240	Project Manager: Kristin Farris	03/03/04 13:01

Organics by GC

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Lab 4 Wall Comp. (4C01012-01)									
Benzene	J [0.0246]	0.0250	mg/kg dry	25	EC40210	03/01/04	03/02/04	EPA 8021B	J
Toluene	**0.191**	0.0250	"	"	"	"	"	"	
Ethylbenzene	**0.224**	0.0250	"	"	"	"	"	"	
Xylene (p/m)	**1.01**	0.0250	"	"	"	"	"	"	
Xylene (o)	**0.297**	0.0250	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*106 %*	*80-120*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*98.7 %*	*80-120*		"	"	"	"	
Gasoline Range Organics C6-C12	**392**	10.0	mg/kg dry	1	EC40101	03/01/04	03/01/04	EPA 8015M	
Diesel Range Organics >C12-C35	**2690**	10.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	**3080**	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		*106 %*	*70-130*		"	"	"	"	
Surrogate: 1-Chlorooctadecane		*108 %*	*70-130*		"	"	"	"	

Quality Assurance Review

12600 West I-20 East - Odessa, Texas 79765 - (432) 563-1800 - Fax (432) 563-1713

Rice Operating Co.	Project: No Project	Fax: (505) 397-1471
122 W. Taylor	Project Number: EME Jet G-18	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris	03/03/04 13:01

General Chemistry Parameters by EPA / Standard Methods

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Lab 4 Wall Comp. (4C01012-01)									
Chloride	126	20.0	mg/kg Wet	2	EC40308	03/02/04	03/02/04	SW 846 9253	
% Solids	92.0		%	1	EC40202	03/02/04	03/02/04	% calculation	

Quality Assurance Review

12600 West I-20 East - Odessa, Texas 79765 - (432) 563-1800 - Fax (432) 563-1713

Rice Operating Co.	Project: No Project	Fax: (505) 397-1471
122 W. Taylor	Project Number: EME Jct G-18	Reported:
Hobbs NM, 88240	Project Manager: Kristin Farris	03/03/04 13:01

Organics by GC - Quality Control
Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EC40101 - Solvent Extraction (GC)										
Blank (EC40101-BLK1)			Prepared & Analyzed: 03/01/04							
Gasoline Range Organics C6-C12	ND	10.0	mg/kg wet							
Diesel Range Organics >C12-C35	ND	10.0	"							
Total Hydrocarbon C6-C35	ND	10.0	"							
Surrogate: 1-Chlorooctane	*41.0*		*mg/kg*	*50.0*		*82.0*	*70-130*			
Surrogate: 1-Chlorooctadecane	*42.3*		*"*	*50.0*		*84.6*	*70-130*			
LCS (EC40101-BS1)			Prepared & Analyzed: 03/01/04							
Gasoline Range Organics C6-C12	460	10.0	mg/kg wet	500		92.0	75-125			
Diesel Range Organics >C12-C35	462	10.0	"	500		92.4	75-125			
Total Hydrocarbon C6-C35	922	10.0	"	1000		92.2	75-125			
Surrogate: 1-Chlorooctane	*40.7*		*mg/kg*	*50.0*		*81.4*	*70-130*			
Surrogate: 1-Chlorooctadecane	*36.8*		*"*	*50.0*		*73.6*	*70-130*			
LCS Dup (EC40101-BSD1)			Prepared & Analyzed: 03/01/04							
Gasoline Range Organics C6-C12	438	10.0	mg/kg wet	500		87.6	75-125	4.90	20	
Diesel Range Organics >C12-C35	513	10.0	"	500		103	75-125	10.5	20	
Total Hydrocarbon C6-C35	951	10.0	"	1000		95.1	75-125	3.10	20	
Surrogate: 1-Chlorooctane	*44.9*		*mg/kg*	*50.0*		*89.8*	*70-130*			
Surrogate: 1-Chlorooctadecane	*36.3*		*"*	*50.0*		*72.6*	*70-130*			
Calibration Check (EC40101-CCV1)			Prepared & Analyzed: 03/01/04							
Gasoline Range Organics C6-C12	468		mg/kg	500		93.6	80-120			
Diesel Range Organics >C12-C35	502		"	500		100	80-120			
Total Hydrocarbon C6-C35	970		"	1000		97.0	80-120			
Surrogate: 1-Chlorooctane	*53.8*		*"*	*50.0*		*108*	*70-130*			
Surrogate: 1-Chlorooctadecane	*50.0*		*"*	*50.0*		*100*	*70-130*			

Quality Assurance Review

12600 West I-20 East - Odessa, Texas 79765 - (432) 563-1800 - Fax (432) 563-1713

Organics by GC - Quality Control
Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EC40210 - EPA 5030C (GC)										
Blank (EC40210-BLK1)			Prepared & Analyzed: 03/01/04							
Benzene	ND	0.0250	mg/kg wet							
Toluene	ND	0.0250	"							
Ethylbenzene	ND	0.0250	"							
Xylene (p/m)	ND	0.0250	"							
Xylene (o)	ND	0.0250	"							
Surrogate: a,a,a-Trifluorotoluene	*83.7*		*ug/kg*	*100*		*83.7*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*93.2*		*"*	*100*		*93.2*	*80-120*			
LCS (EC40210-BS1)			Prepared & Analyzed: 03/01/04							
Benzene	81.8		ug/kg	100		81.8	80-120			
Toluene	87.8		"	100		87.8	80-120			
Ethylbenzene	90.6		"	100		90.6	80-120			
Xylene (p/m)	178		"	200		89.0	80-120			
Xylene (o)	91.3		"	100		91.3	80-120			
Surrogate: a,a,a-Trifluorotoluene	*90.0*		*"*	*100*		*90.0*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*99.4*		*"*	*100*		*99.4*	*80-120*			
LCS Dup (EC40210-BSD1)			Prepared: 03/01/04 Analyzed: 03/02/04							
Benzene	98.3		ug/kg	100		98.3	80-120	18.3	20	
Toluene	96.8		"	100		96.8	80-120	9.75	20	
Ethylbenzene	94.5		"	100		94.5	80-120	4.21	20	
Xylene (p/m)	186		"	200		93.0	80-120	4.40	20	
Xylene (o)	95.5		"	100		95.5	80-120	4.50	20	
Surrogate: a,a,a-Trifluorotoluene	*94.7*		*"*	*100*		*94.7*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*111*		*"*	*100*		*111*	*80-120*			
Calibration Check (EC40210-CCV1)			Prepared: 03/01/04 Analyzed: 03/02/04							
Benzene	98.0		ug/kg	100		98.0	80-120			
Toluene	92.7		"	100		92.7	80-120			
Ethylbenzene	90.8		"	100		90.8	80-120			
Xylene (p/m)	179		"	200		89.5	80-120			
Xylene (o)	94.5		"	100		94.5	80-120			
Surrogate: a,a,a-Trifluorotoluene	*90.9*		*"*	*100*		*90.9*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*108*		*"*	*100*		*108*	*80-120*			

Quality Assurance Review

12600 West I-20 East - Odessa, Texas 79765 - (432) 563-1800 - Fax (432) 563-1713

Rice Operating Co.	Project: No Project	Fax: (505) 397-1471
122 W. Taylor	Project Number: EME Jct G-18	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris	03/03/04 13:01

General Chemistry Parameters by EPA / Standard Methods - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EC40202 - % Solids										
Blank (EC40202-BLK1)				Prepared & Analyzed: 03/02/04						
% Solids	100		%							
Duplicate (EC40202-DUP1)		Source: 4C01011-01		Prepared & Analyzed: 03/02/04						
% Solids	88.0		%		86.0			2.30	20	
Batch EC40308 - Water Extraction										
Blank (EC40308-BLK1)				Prepared & Analyzed: 03/02/04						
Chloride	ND	20.0	mg/kg Wet							
Calibration Check (EC40308-CCV1)				Prepared & Analyzed: 03/02/04						
Chloride	4940		mg/kg	5000		98.8	80-120			
Matrix Spike (EC40308-MS1)		Source: 4C01011-01		Prepared & Analyzed: 03/02/04						
Chloride	1120	20.0	mg/kg Wet	500	617	101	80-120			
Matrix Spike Dup (EC40308-MSD1)		Source: 4C01011-01		Prepared & Analyzed: 03/02/04						
Chloride	1130	20.0	mg/kg Wet	500	617	103	80-120	0.889	20	

Environmental Lab of Texas

The results in this report apply to the samples analyzed in accordance with the samples received in the laboratory. This analytical report must be reproduced in its entirety, with written approval of Environmental Lab of Texas.

Quality Assurance Review

12600 West I-20 East - Odessa, Texas 79765 - (432) 563-1800 - Fax (432) 563-1713

Notes and Definitions

J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag).
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

Roland K. Tuttle

Quality Assurance Review

12600 West I-20 East - Odessa, Texas 79765 - (432) 563-1800 - Fax (432) 563-1713

Environmental Lab of Texas, Inc.

12600 West I-20 East
Odessa, Texas 79763
Phone: 915-563-1800
Fax: 915-563-1713

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: KRISTIN FARRIS
Company Name: RICE OPER. Co.
Company Address: 221 W. TAYLOR
City/State/Zip: Hobbs, N.M. 88240
Telephone No: 505-393-9174 Fax No: 505-397-1471
Sampler Signature: Gary Stark

Project Name:
Project #: EME JCT G-18
Project Loc:
PO #:

HC01012

LAB # (lab use only)	FIELD CODE	Date Sampled	Time Sampled	No. of Containers	Preservative: Ice	HNO3	HCl	NaOH	H2SO4	None	Other (Specify)	Matrix: Water	Sludge	Soil	Other (specify)	Analyze For: TCLP: TDS/ICL/SAR/ESC	TPH 418.1	TPH TX 1005/1005	TPH 8015M GRO/DRO	TCLP: Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	TOTAL: BTEX 8021B/5030	RUSH TAT (Pre-Schedule)	Standard TAT
	10' EAST SP#1	2-26-01	900																						
	10' EAST SP#2		908																						
	10' EAST SP#3		912																						
	10' EAST SP#4		917																						
	10' EAST SP#5		920																						
	8' South SP#1		942																						
	8' South SP#2		946																						
	8' South SP#3		950																						
	8' South SP#4		954																						
	8' South SP#5		958																						

Special Instructions: Composite 10' EAST SP#1-5, Composite 8' South SP#1-5, Composite 10' South SP#1-5 & Composite WEST SP#1-5 Composite Into 1 SAMPLE RUN BTEX, TPH 8015M, Cl-, LABEL This AS LAB & WATT Comp. Contact Ray If Any ?

Sample Containers Intact? Y / N
Temperature Upon Receipt:
Laboratory Comments:
Ice @ 4°C

Relinquished by:	Date	Time	Received by:	Date	Time
Gary Stark	2-27	8:30			
Relinquished by:	Date	Time	Received by ELOT:	Date	Time
[signature]	2/28/01	8:20a	[signature]	2-28-01	0830

AUG 07 01 10:22a

P.2

Environmental Lab of Texas, Inc.

12600 West I-20 East
Odessa, Texas 79763
Phone: 915-563-1800
Fax: 915-563-1713

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: KRISTIN FARRIS
Company Name: RICE OPER CO.
Company Address: 221 W. TAYLOR
City/State/Zip: Hobbs, N.M. 88240
Telephone No: 505-393-9174 Fax No: 505-397-1471
Sampler Signature:

Project Name:
Project #: EME JCT G-18
Project Loc:
PO #: 985

LAB # (lab use only): 4C01012

FIELD CODE	Date Sampled	Time Sampled	No. of Containers	Preservative: Ice	HNO3	HCl	NaOH	H2SO4	None	Other (Specify)	Matrix: Water	Sludge	Soil	Other (specify)	Analyze For: TDS (Cl) SAR / EC	TCLP TOTAL: TPH 418.1	TPH TX1005/1006	TPH 8015M GRO/DRO	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEX 8021B/5030	RUSH TAT (Pre-Schedule)	Standard TAT
10' North SP #1	2-26-04	1002											X		X									
10' North SP #2		1006																						
10' North SP #3		1010																						
10' North SP #4		1013																						
10' North SP #5		1018																						
West SP #1		921																						
West SP #2		926																						
West SP #3		931																						
West SP #4		934																						
West SP #5		939																						

Special Instructions:
-01 Lab 4 Wall Comp

Sample Containers Intact? X Y N
Temperature Upon Receipt:

Laboratory Comments:
Rec 4°C

Relinquished by:	Date	Time	Received by:	Date	Time
	2-27-04	8:30			
Relinquished by:	Date	Time	Received by ELOT:	Date	Time
	2/28/04	8:20		2-28-04	0820

Environmental Lab of Texas
Variance / Corrective Action Report – Sample Log-In

Client: OES, Inc.

Date/Time: 02-28-04 @ 0830

Order #: 4C01012

Initials: JMM

Sample Receipt Checklist

Temperature of container/cooler?	(Yes)	No	4 C
Shipping container/cooler in good condition?	(Yes)	No	
Custody Seals intact on shipping container/cooler?	Yes	No	(Not present)
Custody Seals intact on sample bottles?	Yes	No	Not present
Chain of custody present?	(Yes)	No	
Sample Instructions complete on Chain of Custody?	(Yes)	No	
Chain of Custody signed when relinquished and received?	(Yes)	No	
Chain of custody agrees with sample label(s)	Yes	No	NO LABELS
Container labels legible and intact?	Yes	No	NO LABELS
Sample Matrix and properties same as on chain of custody?	(Yes)	No	
Samples in proper container/bottle?	(Yes)	No	
Samples properly preserved?	(Yes)	No	
Sample bottles intact?	(Yes)	No	
Preservations documented on Chain of Custody?	(Yes)	No	
Containers documented on Chain of Custody?	(Yes)	No	
Sufficient sample amount for indicated test?	(Yes)	No	
All samples received within sufficient hold time?	(Yes)	No	
VOC samples have zero headspace?	(Yes)	No	Not Applicable

Other observations:

_____

_____

_____

Variance Documentation:

Contact Person: _____ Date/Time: _____ Contacted by: _____

Regarding:

_____

_____

_____

Corrective Action Taken:

_____

_____

_____

_____

_____

_____

_____

_____

ENVIRONMENTAL LAB OF

12600 West I-20 East - Odessa, Texas 79765

Bottom Comp.

Field Wall Comp.

Analytical Report

Prepared for:

Kristin Farris

Rice Operating Co.

122 W. Taylor

Hobbs, NM 88240

Project: No Project

Project Number: EME Jct G-18

Location: None Given

Lab Order Number: 4C01011

Report Date: 03/03/04

Rice Operating Co.	Project: No Project	Fax: (505) 397-1471
122 W. Taylor	Project Number: EME Jct G-18	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris	03/03/04 15:00

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Btm. SP 1-5 @ 12' Comp.	4C01011-01	Soil	02/26/04 10:30	02/28/04 08:30
Btm. Comp. Field @ 12'	4C01011-02	Soil	02/26/04 10:30	02/28/04 08:30
4 Wall Comp. Field	4C01011-03	Soil	02/26/04 10:50	02/28/04 08:30

12600 West I-20 East - Odessa, Texas 79705 - (432) 563-1800 - Fax (432) 563-1713

Rice Operating Co.	Project: No Project	Fax: (505) 397-1471
122 W. Taylor	Project Number: EME Jct G-18	Reported:
Hobbs NM, 88240	Project Manager: Kristin Farris	03/03/04 13:00

Organics by GC

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Bttm. SP 1-5 @ 12' Comp. (4C01011-01)									
Benzene	1.30	0.0250	mg/kg dry	25	EC40210	03/01/04	03/01/04	EPA 8021B	
Toluene	2.74	0.0250	"	"	"	"	"	"	
Ethylbenzene	0.438	0.0250	"	"	"	"	"	"	
Xylene (p/m)	1.81	0.0250	"	"	"	"	"	"	
Xylene (o)	0.268	0.0250	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*392 %*	*80-120*		"	"	"	"	*S-04*
Surrogate: 4-Bromofluorobenzene		*96.1 %*	*80-120*		"	"	"	"	
Gasoline Range Organics C6-C12	939	10.0	mg/kg dry	1	EC40101	03/01/04	03/01/04	EPA 8015M	
Diesel Range Organics >C12-C35	6520	10.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	7460	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		*116 %*	*70-130*		"	"	"	"	
Surrogate: 1-Chlorooctadecane		*108 %*	*70-130*		"	"	"	"	
Bttm. Comp. Field @ 12' (4C01011-02)									
Benzene	3.65	0.0250	mg/kg dry	25	EC40210	03/01/04	03/01/04	EPA 8021B	
Toluene	4.15	0.0250	"	"	"	"	"	"	
Ethylbenzene	0.626	0.0250	"	"	"	"	"	"	
Xylene (p/m)	2.25	0.0250	"	"	"	"	"	"	
Xylene (o)	0.395	0.0250	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*415 %*	*80-120*		"	"	"	"	*S-04*
Surrogate: 4-Bromofluorobenzene		*103 %*	*80-120*		"	"	"	"	
Gasoline Range Organics C6-C12	954	10.0	mg/kg dry	1	EC40101	03/01/04	03/01/04	EPA 8015M	
Diesel Range Organics >C12-C35	7060	10.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	8010	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		*114 %*	*70-130*		"	"	"	"	
Surrogate: 1-Chlorooctadecane		*108 %*	*70-130*		"	"	"	"	
4 Wall Comp. Field (4C01011-03)									
Benzene	0.0440	0.0250	mg/kg dry	25	EC40210	03/01/04	03/02/04	EPA 8021B	
Toluene	0.281	0.0250	"	"	"	"	"	"	
Ethylbenzene	0.265	0.0250	"	"	"	"	"	"	
Xylene (p/m)	1.29	0.0250	"	"	"	"	"	"	
Xylene (o)	0.331	0.0250	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*121 %*	*80-120*		"	"	"	"	*S-04*
Surrogate: 4-Bromofluorobenzene		*97.8 %*	*80-120*		"	"	"	"	
Gasoline Range Organics C6-C12	458	10.0	mg/kg dry	1	EC40101	03/01/04	03/01/04	EPA 8015M	
Diesel Range Organics >C12-C35	3100	10.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	3560	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		*108 %*	*70-130*		"	"	"	"	
Surrogate: 1-Chlorooctadecane		*112 %*	*70-130*		"	"	"	"	

Rab 3/4 10

Quality Assurance Review

12600 West I-20 East - Odessa, Texas 79765 - (432) 563-1800 - Fax (432) 563-1713

Rice Operating Co.	Project: No Project	Fax: (505) 397-1471
122 W. Taylor	Project Number: EME Jct G-18	Reported:
Hobbs NM, 88240	Project Manager: Krisun Farris	03/03/04 13:00

General Chemistry Parameters by EPA / Standard Methods

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Bttm. SP 1-5 @ 12' Comp. (4C01011-01)									
Chloride	617	20.0	mg/kg Wet	2	EC40308	03/02/04	03/02/04	SW 846 9253	
% Solids	86.0		%	1	EC40202	03/02/04	03/02/04	% calculation	
Bttm. Comp. Field @ 12' (4C01011-02)									
Chloride	553	20.0	mg/kg Wet	2	EC40308	03/02/04	03/02/04	SW 846 9253	
% Solids	85.0		%	1	EC40202	03/02/04	03/02/04	% calculation	
4 Wall Comp. Field (4C01011-03)									
Chloride	149	20.0	mg/kg Wet	2	EC40308	03/02/04	03/02/04	SW 846 9253	
% Solids	91.0		%	1	EC40202	03/02/04	03/02/04	% calculation	

Environmental Lab of Texas

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Quality Assurance Review

12600 West I-20 East - Odessa, Texas 79705 - (432) 563-1800 - Fax (432) 563-1713

Organics by GC - Quality Control
Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EC40101 - Solvent Extraction (GC)										
Blank (EC40101-BLK1)				Prepared & Analyzed: 03/01/04						
Gasoline Range Organics C6-C12	ND	10.0	mg/kg wet							
Diesel Range Organics >C12-C35	ND	10.0	"							
Total Hydrocarbon C6-C35	ND	10.0	"							
Surrogate: 1-Chlorooctane	*41.0*		*mg/kg*	*50.0*		*82.0*	*70-130*			
Surrogate: 1-Chlorooctadecane	*42.3*		"	*50.0*		*84.6*	*70-130*			
LCS (EC40101-BS1)				Prepared & Analyzed: 03/01/04						
Gasoline Range Organics C6-C12	460	10.0	mg/kg wet	500		92.0	75-125			
Diesel Range Organics >C12-C35	462	10.0	"	500		92.4	75-125			
Total Hydrocarbon C6-C35	922	10.0	"	1000		92.2	75-125			
Surrogate: 1-Chlorooctane	*40.7*		*mg/kg*	*50.0*		*81.4*	*70-130*			
Surrogate: 1-Chlorooctadecane	*36.8*		"	*50.0*		*73.6*	*70-130*			
LCS Dup (EC40101-BSD1)				Prepared & Analyzed: 03/01/04						
Gasoline Range Organics C6-C12	438	10.0	mg/kg wet	500		87.6	75-125	4.90	20	
Diesel Range Organics >C12-C35	513	10.0	"	500		103	75-125	10.5	20	
Total Hydrocarbon C6-C35	951	10.0	"	1000		95.1	75-125	3.10	20	
Surrogate: 1-Chlorooctane	*44.9*		*mg/kg*	*50.0*		*89.8*	*70-130*			
Surrogate: 1-Chlorooctadecane	*36.3*		"	*50.0*		*72.6*	*70-130*			
Calibration Check (EC40101-CCV1)				Prepared & Analyzed: 03/01/04						
Gasoline Range Organics C6-C12	468		mg/kg	500		93.6	80-120			
Diesel Range Organics >C12-C35	502		"	500		100	80-120			
Total Hydrocarbon C6-C35	970		"	1000		97.0	80-120			
Surrogate: 1-Chlorooctane	*53.8*		"	*50.0*		*108*	*70-130*			
Surrogate: 1-Chlorooctadecane	*50.0*		"	*50.0*		*100*	*70-130*			

Rice Operating Co.	Project: No Project	Fax: (505) 397-1471
122 W. Taylor	Project Number: EME Jet G-18	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris	03/03/04 13:00

Organics by GC - Quality Control
Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EC40210 - EPA 5030C (GC)										
Blank (EC40210-BLK1)				Prepared & Analyzed: 03/01/04						
Benzene	ND	0.0250	mg/kg wet							
Toluene	ND	0.0250	"							
Ethylbenzene	ND	0.0250	"							
Xylene (p/m)	ND	0.0250	"							
Xylene (o)	ND	0.0250	"							
Surrogate: a,a,a-Trifluorotoluene	*83.7*		*ug/kg*	*100*		*83.7*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*93.2*		"	*100*		*93.2*	*80-120*			
LCS (EC40210-BS1)				Prepared & Analyzed: 03/01/04						
Benzene	81.8		ug/kg	100		81.8	80-120			
Toluene	87.8		"	100		87.8	80-120			
Ethylbenzene	90.6		"	100		90.6	80-120			
Xylene (p/m)	178		"	200		89.0	80-120			
Xylene (o)	91.3		"	100		91.3	80-120			
Surrogate: a,a,a-Trifluorotoluene	*90.0*		"	*100*		*90.0*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*99.4*		"	*100*		*99.4*	*80-120*			
LCS Dup (EC40210-BSD1)				Prepared: 03/01/04 Analyzed: 03/02/04						
Benzene	98.3		ug/kg	100		98.3	80-120	18.3	20	
Toluene	96.8		"	100		96.8	80-120	9.75	20	
Ethylbenzene	94.5		"	100		94.5	80-120	4.21	20	
Xylene (p/m)	186		"	200		93.0	80-120	4.40	20	
Xylene (o)	95.5		"	100		95.5	80-120	4.50	20	
Surrogate: a,a,a-Trifluorotoluene	*94.7*		"	*100*		*94.7*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*111*		"	*100*		*111*	*80-120*			
Calibration Check (EC40210-CCV1)				Prepared: 03/01/04 Analyzed: 03/02/04						
Benzene	98.0		ug/kg	100		98.0	80-120			
Toluene	92.7		"	100		92.7	80-120			
Ethylbenzene	90.8		"	100		90.8	80-120			
Xylene (p/m)	179		"	200		89.5	80-120			
Xylene (o)	94.5		"	100		94.5	80-120			
Surrogate: a,a,a-Trifluorotoluene	*90.9*		"	*100*		*90.9*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*108*		"	*100*		*108*	*80-120*			

Roland K Tuttle
Quality Assurance Review

12600 West I-20 East - Odessa, Texas 79705 - (432) 563-1800 - Fax (432) 563-1713

Rice Operating Co.	Project: No Project	Fax: (505) 397-1471
122 W. Taylor	Project Number: EME Jct G-18	Reported:
Hobbs NM, 88240	Project Manager: Kristin Farris	03/03/04 13:00

General Chemistry Parameters by EPA / Standard Methods - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EC40202 - % Solids										
Blank (EC40202-BLK1)				Prepared & Analyzed: 03/02/04						
% Solids	100		%							
Duplicate (EC40202-DUP1)		Source: 4C01011-01		Prepared & Analyzed: 03/02/04						
% Solids	88.0		%		86.0			2.30	20	
Batch EC40308 - Water Extraction										
Blank (EC40308-BLK1)				Prepared & Analyzed: 03/02/04						
Chloride	ND	20.0	mg/kg Wet							
Calibration Check (EC40308-CCV1)				Prepared & Analyzed: 03/02/04						
Chloride	4940		mg/kg	5000		98.8	80-120			
Matrix Spike (EC40308-MS1)		Source: 4C01011-01		Prepared & Analyzed: 03/02/04						
Chloride	1120	20.0	mg/kg Wet	500	617	101	80-120			
Matrix Spike Dup (EC40308-MSD1)		Source: 4C01011-01		Prepared & Analyzed: 03/02/04						
Chloride	1130	20.0	mg/kg Wet	500	617	103	80-120	0.889	20	

Environmental Lab of Texas

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Roland K Tuttle

Quality Assurance Review

12600 West I-20 East - Odessa, Texas 79705 - (432) 563-1800 - Fax (432) 563-1713

Notes and Definitions

S-04	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

Quality Assurance Review

12600 West I-20 East - Odessa, Texas 79765 - (432) 563-1800 - Fax (432) 563-1713

Environmental Lab of Texas, Inc.

12600 West I-20 East
Odessa, Texas 79763
Phone: 915-563-1800
Fax: 915-563-1713

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: KRISTIN FARRIS
Company Name: RICE OPER. CO.
Company Address: 221 W. TAYLOR
City/State/Zip: Hobbs, N.M. 88240
Telephone No: 505-393-9174 Fax No: 505-397-1471
Sampler Signature:

Project Name:
Project #: EME JCT G-18
Project Loc:
PO #:

4C01011

LAB # (lab use only)	FIELD CODE	Date Sampled	Time Sampled	No. of Containers	Preservative: Ice	HNO3	HCl	NaOH	H2SO4	None	Other (Specify)	Matrix: Water	Sludge	Soil	Other (specify)	Analyze For: TCLP: TOS (CL) SAR / EC	TPH 418.1	TOTAL: TPH TX 1005/1006	TPH 8015M GRO/DRO	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEX 8021B/5030	RUSH TAT (Pre-Schedule)	Standard TAT
-01 (Composite)	BTM SP #1 @ 12'	2-26-04	1030	1	✓									✓											
	BTM SP #2 @ 12'		1036	1	✓									✓											
	BTM SP #3 @ 12'		1041	1	✓									✓		✓			✓				✓		
	BTM SP #4 @ 12'		1044	1	✓									✓											
	BTM SP #5 @ 12'		1047	1	✓									✓											
-02	BTTM Comp. Field @ 12'		1030	1	✓									✓		✓			✓				✓		
-03	4 WALL Comp. Field		1050	1	✓									✓		✓			✓				✓		

Special Instructions: Composite Samples BTTM SP #1-5, Into 1 Sample ~~of #6 EAST SP#~~ ~~5 + 8 EASTSIDE South SP#1-5~~ RRR Run BTEX, CL, TPH 8015M

Sample Containers Intact? Y
Temperature Upon Receipt:
Laboratory Comments: Ice used

Relinquished by:	Date	Time	Received by:	Date	Time
Gary Stark	2-27-04	8:30			
Relinquished by:	Date	Time	Received by ELOT:	Date	Time
[signature]	2/28/04	8:20	[signature]	2-28-04	0830

AUG 07 01 10:22a

P-2

Environmental Lab of Texas
Variance / Corrective Action Report – Sample Log-In

Client: Rice Operating Co.

Date/Time: 02-28-04 @ 0830

Order #: 4C010 11

Initials: JMM

Sample Receipt Checklist

Temperature of container/cooler?	(Yes)	No	4 C
Shipping container/cooler in good condition?	(Yes)	No	
Custody Seals intact on shipping container/cooler?	Yes	No	(Not present)
Custody Seals intact on sample bottles?	Yes	No	(Not present)
Chain of custody present?	(Yes)	No	
Sample Instructions complete on Chain of Custody?	(Yes)	No	
Chain of Custody signed when relinquished and received?	(Yes)	No	
Chain of custody agrees with sample label(s)	Yes	No	NO LABELS
Container labels legible and intact?	Yes	No	NO LABELS
Sample Matrix and properties same as on chain of custody?	(Yes)	No	
Samples in proper container/bottle?	(Yes)	No	
Samples properly preserved?	(Yes)	No	
Sample bottles intact?	(Yes)	No	
Preservations documented on Chain of Custody?	(Yes)	No	
Containers documented on Chain of Custody?	(Yes)	No	
Sufficient sample amount for indicated test?	(Yes)	No	
All samples received within sufficient hold time?	(Yes)	No	
VOC samples have zero headspace?	(Yes)	No	Not Applicable

Other observations:

_____

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Variance Documentation:

Contact Person: -_____ Date/Time: _____ Contacted by: _____

Regarding:

_____

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Corrective Action Taken:

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Backfill

ENVIRONMENTAL LAB OF

12600 West I-20 East - Odessa, Texas 79765

Analytical Report

Prepared for:

Kristin Farris

Rice Operating Co.

122 W. Taylor

Hobbs, NM 88240

Project: Jct G-18

Project Number: None Given

Location: EME

Lab Order Number: 4B26005

Report Date: 02/27/04

Rice Operating Co.	Project: Jet G-18	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris	02/27/04 14:13

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Remed. Backfill	4B26005-01	Soil	02/25/04 14:11	02/26/04 10:25

12600 West I-20 East - Odessa, Texas 79705 - (432) 563-1800 - Fax (432) 563-1713

Rice Operating Co.	Project: Jet G-18	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	Reported:
Hobbs NM, 88240	Project Manager: Kristin Farris	02/27/04 14:13

Organics by GC

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Remed. Backfill (4B26005-01)									
Benzene	ND	0.0250	mg/kg dry	25	EB42609	02/26/04	02/26/04	EPA 8021B	
Toluene	0.0721	0.0250	"	"	"	"	"	"	
Ethylbenzene	0.0687	0.0250	"	"	"	"	"	"	
Xylene (p/m)	0.299	0.0250	"	"	"	"	"	"	
Xylene (o)	0.0936	0.0250	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*87.2 %*	*80-120*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*90.4 %*	*80-120*		"	"	"	"	
Gasoline Range Organics C6-C12	302	10.0	mg/kg dry	1	EB42606	02/26/04	02/27/04	EPA 8015M	
Diesel Range Organics >C12-C35	4570	10.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	4870	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		*104 %*	*70-130*		"	"	"	"	
Surrogate: 1-Chlorooctadecane		*108 %*	*70-130*		"	"	"	"	

Environmental Lab of Texas

The results in this report apply to the samples analyzed in accordance with the samples received in the laboratory. This analytical report must be reproduced in its entirety, with written approval of Environmental Lab of Texas.

Quality Assurance Review

12600 West I-20 East - Odessa, Texas 79705 - (432) 563-1800 - Fax (432) 563-1713

Rice Operating Co.	Project: Jct G-18	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	Reported:
Hobbs NM, 88240	Project Manager: Kristin Farris	02/27/04 14:13

General Chemistry Parameters by EPA / Standard Methods

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Remed. Backfill (4B26005-01)									
Chloride	298	20.0	mg/kg Wet	2	EB42612	02/26/04	02/26/04	SW 846 9253	
% Solids	89.0		%	1	EB42702	02/27/04	02/27/04	% calculation	

Quality Assurance Review

12600 West I-20 East - Odessa, Texas 79705 - (432) 563-1800 - Fax (432) 563-1713

Rice Operating Co.	Project: Jet G-18	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	Reported:
Hobbs NM, 88240	Project Manager: Kristin Farris	02/27/04 14:13

Organics by GC - Quality Control
Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EB42606 - Solvent Extraction (GC)										
Blank (EB42606-BLK1)				Prepared & Analyzed: 02/26/04						
Gasoline Range Organics C6-C12	ND	10.0	mg/kg wet							
Diesel Range Organics >C12-C35	ND	10.0	"							
Total Hydrocarbon C6-C35	ND	10.0	"							
Surrogate: 1-Chlorooctane	*36.3*		*mg/kg*	*50.0*		*72.6*	*70-130*			
Surrogate: 1-Chlorooctadecane	*36.2*		"	*50.0*		*72.4*	*70-130*			
LCS (EB42606-BS1)				Prepared & Analyzed: 02/26/04						
Gasoline Range Organics C6-C12	390	10.0	mg/kg wet	500		78.0	75-125			
Diesel Range Organics >C12-C35	452	10.0	"	500		90.4	75-125			
Total Hydrocarbon C6-C35	842	10.0	"	1000		84.2	75-125			
Surrogate: 1-Chlorooctane	*37.1*		*mg/kg*	*50.0*		*74.2*	*70-130*			
Surrogate: 1-Chlorooctadecane	*36.4*		"	*50.0*		*72.8*	*70-130*			
Calibration Check (EB42606-CCV1)				Prepared & Analyzed: 02/26/04						
Gasoline Range Organics C6-C12	466		mg/kg	500		93.2	80-120			
Diesel Range Organics >C12-C35	501		"	500		100	80-120			
Total Hydrocarbon C6-C35	967		"	1000		96.7	80-120			
Surrogate: 1-Chlorooctane	*60.3*		"	*50.0*		*121*	*70-130*			
Surrogate: 1-Chlorooctadecane	*57.4*		"	*50.0*		*115*	*70-130*			
Matrix Spike (EB42606-MS1)	Source: 4B26002-02			Prepared: 02/26/04 Analyzed: 02/27/04						
Gasoline Range Organics C6-C12	503	10.0	mg/kg dry	543	ND	92.6	75-125			
Diesel Range Organics >C12-C35	540	10.0	"	543	ND	99.4	75-125			
Total Hydrocarbon C6-C35	1040	10.0	"	1090	ND	95.4	75-125			
Surrogate: 1-Chlorooctane	*56.7*		*mg/kg*	*50.0*		*113*	*70-130*			
Surrogate: 1-Chlorooctadecane	*45.5*		"	*50.0*		*91.0*	*70-130*			
Matrix Spike Dup (EB42606-MSD1)	Source: 4B26002-02			Prepared: 02/26/04 Analyzed: 02/27/04						
Gasoline Range Organics C6-C12	488	10.0	mg/kg dry	543	ND	89.9	75-125	3.03	20	
Diesel Range Organics >C12-C35	545	10.0	"	543	ND	100	75-125	0.922	20	
Total Hydrocarbon C6-C35	1030	10.0	"	1090	ND	94.5	75-125	0.966	20	
Surrogate: 1-Chlorooctane	*56.7*		*mg/kg*	*50.0*		*113*	*70-130*			
Surrogate: 1-Chlorooctadecane	*44.9*		"	*50.0*		*89.8*	*70-130*			

Quality Assurance Review

12600 West I-20 East - Odessa, Texas 79765 - (432) 563-1800 - Fax (432) 563-1713

Rice Operating Co.	Project: Jet G-18	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	Reported:
Hobbs NM, 88240	Project Manager: Kristin Farris	02/27/04 14:13

Organics by GC - Quality Control
Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EB42609 - EPA 5030C (GC)										
Blank (EB42609-BLK1)				Prepared & Analyzed: 02/26/04						
Benzene	ND	0.0250	mg/kg wet							
Toluene	ND	0.0250	"							
Ethylbenzene	ND	0.0250	"							
Xylene (p/m)	ND	0.0250	"							
Xylene (o)	ND	0.0250	"							
Surrogate: a,a,a-Trifluorotoluene	*82.5*		*ug/kg*	*100*		*82.5*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*95.1*		"	*100*		*95.1*	*80-120*			
LCS (EB42609-BS1)				Prepared & Analyzed: 02/26/04						
Benzene	97.1		ug/kg	100		97.1	80-120			
Toluene	92.8		"	100		92.8	80-120			
Ethylbenzene	92.2		"	100		92.2	80-120			
Xylene (p/m)	181		"	200		90.5	80-120			
Xylene (o)	92.9		"	100		92.9	80-120			
Surrogate: a,a,a-Trifluorotoluene	*97.7*		"	*100*		*97.7*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*108*		"	*100*		*108*	*80-120*			
Calibration Check (EB42609-CCV1)				Prepared: 02/26/04 Analyzed: 02/27/04						
Benzene	88.3		ug/kg	100		88.3	80-120			
Toluene	87.1		"	100		87.1	80-120			
Ethylbenzene	86.5		"	100		86.5	80-120			
Xylene (p/m)	170		"	200		85.0	80-120			
Xylene (o)	85.3		"	100		85.3	80-120			
Surrogate: a,a,a-Trifluorotoluene	*97.4*		"	*100*		*97.4*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*92.9*		"	*100*		*92.9*	*80-120*			
Matrix Spike (EB42609-MS1)	Source: 4B26002-02			Prepared & Analyzed: 02/26/04						
Benzene	93.5		ug/kg	100	ND	93.5	80-120			
Toluene	90.9		"	100	ND	90.9	80-120			
Ethylbenzene	91.0		"	100	ND	91.0	80-120			
Xylene (p/m)	180		"	200	ND	90.0	80-120			
Xylene (o)	90.5		"	100	ND	90.5	80-120			
Surrogate: a,a,a-Trifluorotoluene	*95.3*		"	*100*		*95.3*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*99.8*		"	*100*		*99.8*	*80-120*			

Quality Assurance Review

12600 West I-20 East - Odessa, Texas 79705 - (432) 563-1800 - Fax (432) 563-1713

Organics by GC - Quality Control
Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EB42609 - EPA 5030C (GC)										
Matrix Spike Dup (EB42609-MSD1)	Source: 4B26002-02			Prepared & Analyzed: 02/26/04						
Benzene	94.3		ug/kg	100	ND	94.3	80-120	0.852	20	
Toluene	91.2		"	100	ND	91.2	80-120	0.329	20	
Ethylbenzene	91.5		"	100	ND	91.5	80-120	0.548	20	
Xylene (p/m)	180		"	200	ND	90.0	80-120	0.00	20	
Xylene (o)	91.4		"	100	ND	91.4	80-120	0.990	20	
Surrogate: a,a,a-Trifluorotoluene	*96.3*		"	*100*		*96.3*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*104*		"	*100*		*104*	*80-120*			

General Chemistry Parameters by EPA / Standard Methods - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EB42612 - General Preparation (WetChem)										
Blank (EB42612-BLK1)				Prepared & Analyzed: 02/26/04						
Chloride	ND	20.0	mg/kg Wet							
Matrix Spike (EB42612-MS1)		Source: 4B26005-01		Prepared & Analyzed: 02/26/04						
Chloride	723	20.0	mg/kg Wet	500	298	85.0	80-120			
Matrix Spike Dup (EB42612-MSD1)		Source: 4B26005-01		Prepared & Analyzed: 02/26/04						
Chloride	723	20.0	mg/kg Wet	500	298	85.0	80-120	0.00	20	
Batch EB42702 - % Solids										
Blank (EB42702-BLK1)				Prepared & Analyzed: 02/27/04						
% Solids	100		%							
Duplicate (EB42702-DUP1)		Source: 4B26001-01		Prepared & Analyzed: 02/27/04						
% Solids	83.0		%		82.0			1.21	20	

Environmental Lab of Texas

The results in this report apply to the samples analyzed in accordance with the samples received in the laboratory. This analytical report must be reproduced in its entirety, with written approval of Environmental Lab of Texas.

Quality Assurance Review

12600 West I-20 East - Odessa, Texas 79705 - (432) 563-1800 - Fax (432) 563-1713

Rice Operating Co.	Project: Jet G-18	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris	02/27/04 14:13

Notes and Definitions

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

Quality Assurance Review

12600 West I-20 East - Odessa, Texas 79765 - (432) 563-1800 - Fax (432) 563-1713

Environmental Lab of Texas, Inc.

12600 West I-20 East
Odessa, Texas 79763
Phone: 915-563-1800
Fax: 915-563-1713

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: Kristin Farris
Company Name: Rice Operating
Company Address: 122 W. Taylor
City/State/Zip: Hobbs, NM 88240
Telephone No: (505) 393-9174 Fax No: (505) 397-1471
Sampler Signature:

Project Name: JCT G-18
Project #:
Project Loc: EME
PO #: 785

LAB # (lab use only): 462605

FIELD CODE	Date Sampled	Time Sampled	No. of Containers	Preservative: Ice	HNO3	HCl	NaOH	H2SO4	None	Other (Specify)	Matrix: Water	Sludge	Soil	Other (specify)	Analyze For: TCLP: TCLP SAR / ESP	TCLP: TPH 418.1	TOTAL: TPH TX 1005/1005	TOTAL: TPH 8015M GRO/DRO	TOTAL: Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEX 8021B/5030	RUSH TAT (Pre-Scheduled)	Standard TAT
S. WALL Comp	2-25-04	1:48	1	✓									✓		✓			✓						
_01 Remed. Backfill	2-25-04	2:11	1	✓									✓		✓			✓				✓		
4 WALL Comp	2-25-04	2:15	1	✓									✓		✓			✓				✓		

Special Instructions:

Sample Containers Intact? Y N
Temperature Upon Receipt: 1.5°C
Laboratory Comments:

Relinquished by:	Date	Time	Received by:	Date	Time
Kristin Farris	022604	1025			
Relinquished by:	Date	Time	Received by ELOT:	Date	Time
			Jaime McManus	2-26-04	1025

Environmental Lab of Texas
Variance / Corrective Action Report – Sample Log-In

Client: Rice Operating Co.

Date/Time: 02-26-04 @ 1230

Order #: 4826005

Initials: JMM

Sample Receipt Checklist

Temperature of container/cooler?	(Yes)	No	I.S C
Shipping container/cooler in good condition?	(Yes)	No	
Custody Seals intact on shipping container/cooler?	Yes	No	(Not present)
Custody Seals intact on sample bottles?	Yes	No	(Not present)
Chain of custody present?	(Yes)	No	
Sample Instructions complete on Chain of Custody?	(Yes)	No	
Chain of Custody signed when relinquished and received?	(Yes)	No	
Chain of custody agrees with sample label(s)	Yes	No	NO LABEL
Container labels legible and intact?	Yes	No	NO LABEL
Sample Matrix and properties same as on chain of custody?	(Yes)	No	
Samples in proper container/bottle?	(Yes)	No	
Samples properly preserved?	(Yes)	No	
Sample bottles intact?.	(Yes)	No	
Preservations documented on Chain of Custody?	(Yes)	No	
Containers documented on Chain of Custody?	(Yes)	No	
Sufficient sample amount for indicated test?	(Yes)	No	
All samples received within sufficient hold time?	(Yes)	No	
VOC samples have zero headspace?	(Yes)	No	Not Applicable

Other observations:

_____

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_____

Variance Documentation:

Contact Person: - _____ Date/Time: _____ Contacted by: _____

Regarding:

_____

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Corrective Action Taken:

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CARDINAL LABORATORIES

PHONE (325) 673-7001 · 2111 BEECHWOOD · ABILENE, TX 79603
PHONE (505) 393-2326 · 101 E. MARLAND · HOBBS, NM 88240

ANALYTICAL RESULTS FOR
RICE OPERATING CO.
ATTN: KRISTIN FARRIS
122 W. TAYLOR
HOBBS, NM 88240
FAX TO: (505) 397-1471

Receiving Date: 06/03/04
Reporting Date: 06/05/04
Project Number: NOT GIVEN
Project Name: EME JCT. G-18 @ 20'
Project Location: NOT GIVEN

Sampling Date: 06/02/04
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: AH
Analyzed By: BC

LAB NUMBER	SAMPLE ID	BENZENE (mg/Kg)	TOLUENE (mg/Kg)	ETHYL BENZENE (mg/Kg)	TOTAL XYLENES (mg/Kg)
ANALYSIS DATE		06/04/04	06/04/04	06/04/04	06/04/04
H8783-1	EME JCT. G-18 @ 20'	<0.005	<0.005	<0.005	<0.0015
Quality Control		0.096	0.098	0.092	0.274
True Value QC		0.100	0.100	0.100	0.300
% Recovery		95.5	97.7	92.3	91.2
Relative Percent Difference		2.7	3.7	3.7	3.9

METHOD: EPA SW-846 8260

Chemist

6/5/04
Date

H8783 RLS

CARDINAL LABORATORIES

PHONE (325) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603
PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR
RICE OPERATING CO.
ATTN: KRISTIN FARRIS
122 W. TAYLOR
HOBBS, NM 88240
FAX TO: (505) 397-1471

Receiving Date: 06/03/04
Reporting Date: 06/04/04
Project Number: NOT GIVEN
Project Name: EME JCT. G-18 @ 20'
Project Location: NOT GIVEN

Sampling Date: 06/02/04
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: AH
Analyzed By: BC/AH

LAB NO.	SAMPLE ID	GRO (C_6-C_{10}) (mg/Kg)	DRO (>C_{10}-C_{28}) (mg/Kg)	Cl* (mg/Kg)
ANALYSIS DATE		06/03/04	06/03/04	06/03/04
H8783-1	EME JCT. G-18 @ 20'	<10.0	266	896
Quality Control		790	785	950
True Value QC		800	800	1000
% Recovery		98.8	98.2	95.0
Relative Percent Difference		0.9	7.2	6.0

METHODS: TPH GRO & DRO: EPA SW-846 8015 M; Cl: Std. Methods 4500-Cl B
*Analysis performed on a 1:4 w:v aqueous extract.

Chemist

6/4/04
Date

H8783A.XLS

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

CARDINAL LABORATORIES, INC.
2111 Beechwood, Abilene, TX 79603 (915) 673-7001 Fax (915) 673-7020
101 East Marland, Hobbs, NM 88240 (505) 393-2326 Fax (505) 393-2476

Page ____ of ____

Company Name:	RICE Operating
Project Manager:	Kristin Farris
Address:	122 W. Taylor
City:	Hobbs State: NM Zip: 88240
Phone #:	(505) 393-9174 Fax #: (505) 397-1471
Project #:	Project Owner:
Project Name:	EME #G-18 @ ~~20~~ 20'
Project Location:	
Sampler Name:	K. Farris

BILL TO

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

ANALYSIS REQUEST

FOR LAB USE ONLY Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX: GROUNDWATER	WASTEWATER	SOIL	CRUDE OIL	SLUDGE	OTHER:	PRESERV: ACID/BASE	ICE / COOL	OTHER:	SAMPLING: DATE	TIME	TPH 8015M	Cl	BTEX
H5783-1	~~Jct~~ EME Jct G-18 @ ~~20~~ 20'	G	1			✓					✓		6-2-04	11:15	✓	✓	✓

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.

Terms and Conditions: Interest will be charged on all accounts more than 30 days past due at the rate of 21% per month from the original date of invoice, and all costs of collection, including attorney's fees.

Sampler Relinquished: Kristin Farris	Date:	Received By:	Phone Result: ☐ Yes ☐ No Add'l Phone #:
	Time:		Fax Result: ☐ Yes ☐ No Add'l Fax #:
Relinquished By: Israel Juarez	Date: 6/3/04 Time: 9:50	Received By: (Lab Staff)	REMARKS:
Delivered By: (Circle One) Sampler - UPS - Bus - Other:		Sample Condition Cool: ☐ Yes ☐ No Intact: ☐ Yes ☐ No	CHECKED BY: (Initials)

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

LABORATORY TEST REPORT

PETTIGREW & ASSOCIATES, P.A.
1110 N. GRIMES
HOBBS, NM 88240
(505) 393-9827

DEBRA P. HICKS, P.E./L.S.I.
WILLIAM M. HICKS, III, P.E./P.S.

To:	Rice Operating Attn: Carolyn Haynes 122 W. Taylor Hobbs, NM 88240	Material:	Red Clay
		Test Method:	ASTM: D 2922
Project:	EME- G 18 Junction Box ERR		
Date of Test:	April 16, 2004	Depth:	Finished Subgrade

RECEIVED
MAY 03 2004
RICE OPERATING
HOBBS, NM

Test No.	Location	Dry Density % Maximum	% Moisture	Depth
SG-1	Pit - 6' N. & 5' E. of the SW Corner	95.0	17.3	

Control Density: 109.6
ASTM: D 698

Optimum Moisture: 16.8

Required Compaction: 95%

Lab No.: 04 5683-5684

Copies To: Rice

PETTIGREW & ASSOCIATES

BY: [signature] S.E.T.

Roy R. Rogers 5-2-04

Appendix B
Quality Procedures

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

Rice Environmental Consulting and Safety

Quality Procedures

Table of Contents

Rice Environmental Consulting and Safety

Quality Procedure
Soil Samples for Transportation to a Laboratory

1.0 Purpose

This procedure outlines the methods to be employed when obtaining soil samples to be taken to a laboratory for analysis.

2.0 Scope

This procedure is to be used when collecting soil samples intended for ultimate transfer to a testing laboratory.

3.0 Preliminary

3.1 Obtain sterile sampling containers from the testing laboratory designated to conduct analyses of the soil.

3.2 If collecting TPH, BTEX, RCRA 8 metals, cation /anions or O&G, the sample jar may be a clear 4 oz. container with Teflon lid. If collecting PAH's, use an amber 4 oz. container.

4.0 Chain of Custody

4.1 Prepare a Sample Plan. The plan will list the number, location and designation of each planned sample and the individual tests to be performed on the sample. The sampler will check the list against the available inventory of appropriate sample collection bottles to insure against shortage.

4.2 Transfer the data to the Laboratory Chain of Custody Form. Complete all sections of the form except those that relate to the time of delivery of the samples to the laboratory.

4.3 Pre-label the sample collection jars. Include all requested information except time of collection. (Use a fine point Sharpie to insure that the ink remains on the label.) Affix the labels to the jars.

5.0 Sampling Procedure

5.1 Do not touch the soil with your bare hands. Use new nitrile gloves to help minimize any contamination.

5.2 Go to the sampling point with the sample container. If not analyzing for ions or metals, use a trowel to obtain the soil.

5.3 Pack the soil tightly into the container leaving the top slightly domed. Screw the lid down tightly. Enter the time of collection onto the sample collection jar label.

5.4 Place the sample directly on ice for transport to the laboratory if required.

5.5 Complete the Chain of Custody form to include the collection times for each sample. Deliver all samples to the laboratory.

6.0 Documentation

6.1 The testing laboratory shall provide the following minimum information:

a. Project and sample name.
b. Signed copy of the original Chain of Custody Form including the time the sample was received by the lab.
c. Results of the requested analyses
d. Test Methods employed
e. Quality Control methods and results

Rice Environmental Consulting and Safety

QUALITY PROCEDURE
Chloride Titration Using
0.282 Normal Silver Nitrate Solution

1.0 Purpose

This procedure is to be used to determine the concentration of chloride in soil.

2.0 Scope

This procedure is to be used as the standard field measurement for soil chloride concentrations.

3.0 Sample Collection and Preparation

3.1 Collect at least 80 grams of soil from the sample collection point. Take care to insure that the sample is representative of the general background to include visible concentrations of hydrocarbons and soil types. If necessary, prepare a composite sample for soils obtained at several points in the sample area. Take care to insure that no loose vegetation, rocks or liquids are included in the sample(s).

3.2 The soil sample(s) shall be immediately inserted into a one-quart or larger polyethylene freezer bag. Care should be taken to insure that no cross-contamination occurs between the soil sample and the collection tools or sample processing equipment.

3.3 The sealed sample bag should be massaged to break up any clods.

4.0 Sample Preparation

4.1 Tare a clean glass vial having a minimum 40 ml capacity. Add at least 10 grams of the soil sample and record the weight.

4.2 Add at least 20 grams of reverse osmosis water to the soil sample and shake well.

4.3 Allow the sample to set for a period of 5 minutes or until the separation of soil and water.

5.0 Titration Procedure

5.1 Using a graduated pipette, remove 10 ml extract and dispense into a clean plastic cup.

5.2 Add 2-3 drops potassium chromate (K_2CrO_4) to mixture if necessary.

5.3 Using a 1 ml pipette, carefully add .282 normal silver nitrate (one drop at a time) to the sample while constantly agitating it. Stop adding silver nitrate when the solution begins to change from yellow to red. Be consistent with endpoint recognition.

5.4 Record the ml of silver nitrate used.

6.0 Calculation

To obtain the chloride concentration, insert measured data into the following formula:

$$\frac{.282 \times 35{,}450 \times \text{ml } AgNO_3}{\text{ml water extract}} \times \frac{\text{grams of water in mixture}}{\text{grams of soil in mixture}}$$

Using Step 5.0, determine the chloride concentration of the RO water used to mix with the soil sample. Record this concentration and subtract it from the formula results to find the net chloride in the soil sample.

Record all results on the delineation form.

Rice Environmental Consulting and Safety

Quality Procedure
Development of Cased Water-Monitoring Wells

1.0 Purpose

This procedure outlines the methods to be employed to develop cased monitoring wells.

2.0 Scope

This procedure shall be used for developed, cased water monitoring wells. It is not to be used for standing water samples such as ponds or streams.

3.0 Sample Collection and Preparation

3.1 Prior to development, the static water level and height of the water column within the well casing will be measured with the use of an electric D.C. probe.

3.2 All measurements will be recorded within a field log notebook.

3.3 All equipment used to measure the static water level will be decontaminated after each use by means of Liquinox, a phosphate free laboratory detergent, and water to reduce the possibility of cross-contamination. The volume of water in each well casing will be calculated.

4.0 Purging

4.1 Wells will be purged by using a 2" decontaminated submersible pump or dedicated one liter Teflon bailer. Wells should be purged until the pH and conductivity are stabilized and the turbidity has been reduced to the greatest extent possible.

4.2 If a submersible is used the pump will be decontaminated prior to use by scrubbing the outside surface of tubing and wiring with a Liquinox water mixture, pumping a Liquinox-water mixture through the pump, and a final flush with fresh water.

5.0 Water Disposal

5.1 All purge and decontamination water will be temporarily stored within a portable tank to be later disposed of in an appropriate manner.

6.0 Records

6.1 Rice Environmental Consulting and Safety will record the amount of water removed from the well during development procedures. The purge volume will be reported to the appropriate regulatory authority when filing the closure report.

Rice Environmental Consulting and Safety

Quality Procedure
Sampling of Cased Water-Monitoring Well

1.0 Purpose

This procedure outlines the methods to be employed in obtaining water samples from cased monitoring wells.

2.0 Scope

This procedure shall be used for developed, cased water monitoring wells. It is not to be used for standing water samples such as ponds or streams.

3.0 Preliminary

3.1 Obtain sterile sampling containers from the testing laboratory designated to conduct analyses of the water.

3.2 The following table shall be used to select the appropriate sampling container, preservative method and holding times for the various elements and compounds to be analyzed.

Compound to be Analyzed	Sample Container Size	Sample Container Description	Cap Requirements	Preservative	Maximum Hold Time
BTEX	40 ml	VOA Container	Teflon Lined	HCL	14 days
TPH (8015 Extended)	40 ounces	(2) 40ml VOA vials	Teflon Lined	HCL and Ice	14 days
PAH	1 liter	amber glass	Teflon Lined	Ice	7 days
Cation/Anion	1 liter	HD polyethylene	Any Plastic	None	48 Hrs
Metals	1 liter	HD polyethylene	Any Plastic	Ice/HNO_3	28 Days
TDS	300 ml	clear glass or 250 ml HD polyethylene	Any Plastic	Ice	7 Days
Cl-	500 ml	HD polyethylene	Any Plastic	None	28 Days

4.0 Chain of Custody

4.1 Prepare a Sample Plan. The plan will list the well identification and the individual tests to be performed at that location. The sampler will check the list against the available inventory of appropriate sample collection bottles to insure against shortage.

4.2 Transfer the data to the Laboratory Chain of Custody Form. Complete all sections of the form except those that relate to the time of delivery of the samples to the laboratory.

4.3 Pre-label the sample collection jars. Include all requested information except time of collection. (Use a fine point Sharpie to insure that the ink remains on the label). Affix the labels to the jars.

5.0 Bailing Procedure

5.1 Identify the well from the sites schematics. Place pre-labeled jar(s) next to the well. Remove the plastic cap from the well bore by first lifting the metal lever and then unscrewing the entire assembly.

5.2 Using a dedicated one liter Teflon bailer or submersible pump, purge a minimum of three well volumes. Place the water in storage container for transport to a ROC disposal facility.

5.3 If using a bailer, take care to insure that the bailing device and string does not become cross-contaminated. A clean pair of nitrile gloves should be used when handling either the retrieval string or bailer. The retrieval string should not be allowed to come into contact with the ground.

6.0 Sampling Procedure

6.1 Once the well has been bailed in accordance with 5.2 of this procedure, a sample may be decanted into the appropriate sample collection jar directly from the bailer or submersible pump.

6.2 Note the time of collection on the sample jar with a fine Sharpie.

6.3 Place the sample directly on ice for transport to the laboratory. The preceding table shows the maximum hold times between collection and testing for the various analyses.

6.4 Complete the Chain of Custody form to include the collection times for each sample. Deliver all samples to the laboratory.

7.0 Documentation

7.1 The testing laboratory shall provide the following minimum information:

A. Project and sample name.
B. Signed copy of the original Chain of Custody Form including the time the sample was received by the lab.
C. Results of the requested analyses
D. Test Methods employed
E. Quality Control methods and results

Calculation for Determining the Minimum Bailing Volume for Monitor Wells
Formula V= ($\pi r^2 h$)
2" well [V/231=gal] X 3 = Purge Volume

V=Volume
π=pi
r=inside radius of the well bore
h=maximum height of well bore in water table

Example:

π	r^2	h(in)	V(cu.in)	V(gal)	X 3 Volumes	Actual
3.1416	1	180	565.488	2.448	7.34 gal	>10 gal

Rice Environmental Consulting and Safety

Quality Procedure
Composite Sampling of Excavation Sidewalls and Bottoms For TPH and Chloride Analysis

1.0 Purpose

This procedure outlines the methods to be employed when obtaining final composite soil samples for TPH and Chloride analysis.

2.0 Scope

This procedure is to be used in conjunction with ***Quality Procedure – 02: Soil Samples for Transportation to a Laboratory*** and will be inserted at subparagraph 5.2 of Section 5.0: Sampling Procedure.

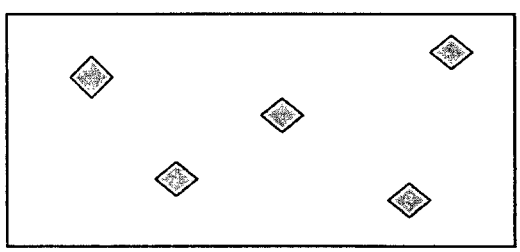
3.0 Sampling Procedure

Follow ***Quality Procedure – 02: Soil Samples for Transportation to a Laboratory*** for all Sections and subparagraphs until subparagraph 5.2 of Section 5.0: Sampling Procedure. Instead of 5.2 instructions, perform the composite sample collection procedure as follows:

3.1 Go to the excavation with a new plastic baggie. If not analyzing for ions or metals, use a trowel to obtain the soil. If the excavation is deeper than 6' BGS, do not enter the pit, but use a backhoe to assist in procurement of the sample. (If a backhoe is used, the backhoe will obtain an amount of soil from each composite point; bring the purchase to the surface staging area where a sample-portion of soil will be extracted from the backhoe purchase. The remainder of the backhoe purchase will be staged on the surface with other staged soils.)

3.2 Sidewall samples

3.2.1 On each sidewall, procure a 5oz sample from each of five distinct points on the sidewall with distinct points resembling the "W" pattern:



3.2.2 Thoroughly blend these five samples in a labeled baggie.
3.2.3 Repeat steps 3.2.1 through 3.2.4 for each remaining sidewall.
3.2.4 From each labeled baggie, procure a 5 oz portion and pour into a baggie labeled "Sidewall Composite". Blend this soil mixture completely.
3.2.5 Obtain proper laboratory sample container for "Sidewall Composite" and continue with subparagraph 5.3 of QP – 01.

3.3 Bottom Sample
3.3.1 From bottom of excavation, procure a 5oz sample from each of five distinct points with distinct points resembling the "W" pattern as illustrated above.
3.3.2 Thoroughly blend these five samples in a clean baggie.
3.2.3 Obtain proper laboratory sample container for "Bottom Composite" and continue with subparagraph 5.3 of QP – 01.

Rice Environmental Consulting and Safety

QUALITY PROCEDURE
Sampling and Testing Protocol for VOC in Soil

1.0 Purpose

This procedure is to be used to determine the concentrations of Volatile Organic Compounds in soils.

2.0 Scope

This procedure is to be used as the standard field measurement for soil VOC concentrations. It is not to be used as a substitute for full spectrographic speciation of organic compounds.

3.0 Procedure

3.1 Sample Collection and Preparation

3.1.1 Collect at least 500 g. of soil from the sample collection point. Take care to insure that the sample is representative of the general background to include visible concentrations of hydrocarbons and soil types. If necessary, prepare a composite sample of soils obtained at several points in the sample area. Take care to insure that no loose vegetation, rocks or liquids are included in the sample(s).

3.1.2 The soil sample(s) shall be immediately inserted into a one-quart or larger polyethylene freezer bag and sealed. When sealed, the bag should contain a nearly equal space between the soil sample and trapped air. Record the sample name and the time that the sample was collected on the Field Analytical Report Form.

3.1.3 The sealed samples shall be allowed to set for a minimum of five minutes at a temperature of between 10-15 Celsius, (59-77^{0}F). The sample temperatures may be adjusted by cooling the sample in ice, or by heating the sample within a generally controlled environment such as the inside of a vehicle. The samples should not be placed directly on heated surfaces or placed in direct heat sources such as lamps or heater vents.

3.1.4 The sealed sample bag should be massaged to break up any clods, and to provide the soil sample with as much exposed surface area as practically possible.

3.2 Sampling Procedure

3.2.1 The instrument to be used in conducting VOC concentration testing shall be a RAE Systems Photoionization device. (Device will be identified on VOC Field Test Report Form.) Prior to use, the instrument shall be zeroed-out in accordance with the appropriate maintenance and calibration procedure outlined in the instrument operation manual. The PID device will be calibrated each day it's used.

3.2.2 Carefully open one end of the collection bag and insert the probe tip into the bag taking care that the probe tip not touch the soil sample or the sidewalls of the bag.

3.2.3 Set the instrument to retain the highest result reading value. Record the reading onto the Field Test Report Form.

3.2.4 **If the instrument provides a reading exceeding 100 ppm, proceed to QP-7. If the reading is 100 ppm or less, NMOCD BTEX guideline has been met and no further testing for BTEX is necessary. File the Field Test Report Form in the project file.**

4.0 Clean-up

After testing, the soil samples shall be returned to the sampling location, and the bags collected for off-site disposal. **IN NO CASE SHALL THE SAME BAG BE USED TWICE. EACH SAMPLE CONTAINER MUST BE DISCARDED AFTER EACH USE.**

Rice Environmental Consulting and Safety

Quality Procedure
Composite Sampling of Excavation Sidewalls and Bottoms For BTEX

1.0 Purpose

This procedure outlines the methods to be employed when obtaining final composite soil samples for BTEX analysis.

2.0 Scope

This procedure is to be used when collecting soil samples intended for ultimate transfer to a testing laboratory for BTEX analysis. This procedure is to be used only when the PID field-test results for OVM exceeds 100 ppm.

3.0 Preliminary

3.1 Obtain sterile, clear, 2 oz. glass containers with Teflon lid from a laboratory supply company or the testing laboratory designated to conduct analyses of the soil.

4.0 Chain of Custody

4.1 Prepare a Sample Plan. The plan will list the number, location and designation of each planned sample and the individual tests to be performed on the sample. The sampler will check the list against the available inventory of appropriate sample collection bottles to insure against shortage.

4.2 Transfer the data to the Laboratory Chain of Custody Form. Complete all sections of the form except those that relate to the time of delivery of the samples to the laboratory.

4.3 Pre-label the sample collection jars. Include all requested information except time of collection. (Use a fine point Sharpie to insure that the ink remains on the label.) Affix the labels to the jars.

5.0 Sampling Procedure

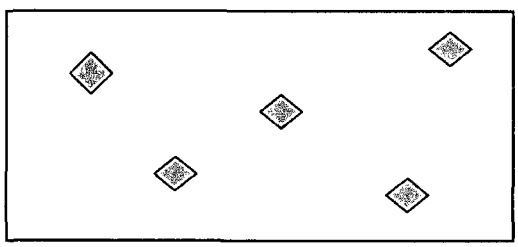
5.1. Do not touch the soil with your bare hands. Use new nitrile gloves to help minimize any cross-contamination.

5.2. If safe and within OSHA regulations, go to the sampling point with the sample container. If not analyzing for ions or metals, use a trowel to

obtain the soil. If the excavation is deeper than 6' BGS, do not enter the pit, but use a backhoe to assist in procurement of the sample. (If a backhoe is used, the backhoe will obtain an amount of soil from each composite point; bring the purchase to the surface staging area where a sample-portion of soil will be extracted from the backhoe purchase. The remainder of the backhoe purchase will be staged on the surface with other staged soils.)

5.3. Sidewall Samples

5.3.1. On each sidewall, procure a 2oz sample from each of five distinct points on the sidewall with distinct points resembling the "W" pattern:



5.4. Pack the soil tightly into the container leaving the top slightly domed. Screw the lid down tightly. Enter the time of collection onto the sample collection jar label. Repeat for each sampling point.

5.5. Place the samples directly on ice for transport to the laboratory if required.

5.6. Complete the Chain of Custody form to include the collection times for each sample. Deliver all samples to the laboratory.

6.0 Documentation

6.1 The testing laboratory shall provide the following minimum information:

a. Project and sample name.
b. Signed copy of the original Chain of Custody Form including the time the sample was received by the lab.
c. Results of the requested analyses
d. Test Methods employed
e. Quality Control methods and results

Rice Environmental Consulting and Safety

Procedure for Plugging & Abandonment of Cased Water Monitoring Wells

1.0 Purpose

This procedure outlines the methods to be employed to plug and abandon cased monitoring wells.

2.0 Scope

This procedure shall be used for developed, cased water monitoring wells located in the State of New Mexico

3.0 Preliminary

3.1 No well may be drilled, modified or plugged without NMOCD approval. Additional approvals may be required if the well is situated in a sensitive area, within municipal jurisdictions or on federal or tribal lands.

4.0 Plugging

4.1 Each bore will be filled with a 1% - 3% bentonite/concrete slurry to three feet bgs. The remaining three feet will be capped with concrete only.

4.2 All wellheads will be removed to below ground surface.

6.0 Records

6.1 The company plugging the well shall prepare a report on their company letter head listing the site name and describing general well construction including total depth of the well, the diameter of casing, material used to plug the well (e.g. bentonite/cement slurry), and date of the plugging operation.

6.2 It is recommended but not required that photographs of the final surface restoration be taken and included within the records.

6.3 Copies of the plugging report shall be submitted to all appropriate agencies and retained by the well operator for a minimum period of ten years.