1R - 425-24

APPROVALS

YEAR(S):

2012

Hansen, Edward J., EMNRD

From: Hansen, Edward J., EMNRD
Sent: Monday, July 30, 2012 3:26 PM
To: Hack Conder (hconder@riceswd.com)
Cc: Leking, Geoffrey R, EMNRD; Laura Pena (lpena@riceswd.com); Scott Curtis (scurtis@riceswd.com)
Subject: Remediation Plan (1R425-24) Termination - ROC Vacuum Jct M-29 Site

RE: Update Report and Termination Request
for the Rice Operating Company's
Vacuum Jct M-29 Site
Unit Letter M, Section 29, T17S, R35E, NMPM, Lea County, New Mexico
Remediation Plan (1R425-24) Termination

Dear Mr. Conder:

The New Mexico Oil Conservation Division (OCD) has received Rice Operating Company's report and request to close the above-referenced site, dated July 2, 2012 (received July 3, 2012). The report is acceptable to the OCD.

The above-referenced report, submitted in accordance with 19.15.29 NMAC (Rule 29; formally, Rule 116), indicates that Rice Operating Company has met the requirements of 19.15.29 NMAC; therefore, the OCD approves the report and hereby notifies you that the remediation plan (1R425-24) is terminated in accordance with 19.15.29 NMAC.

Please be advised that OCD approval of this report does not relieve the owner/operator of responsibility should operations pose a threat to ground water, surface water, human health or the environment. In addition, OCD approval does not relieve the owner/operator of responsibility for compliance with any OCD, federal, state, or local laws and/or regulations.

If you have any questions regarding this matter, please contact me at 505-476-3489.

Edward J. Hansen
Hydrologist
Environmental Bureau

RICE *Operating Company*
122 West Taylor • Hobbs, New Mexico 88240
Phone: (575) 393-9174 • Fax: (575) 397-1471

CERTIFIED MAIL
RETURN RECEIPT NO. 7007 2560 0000 4569 8630

July 2, 2012

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: Update Report and Termination Request
Rice Operating Company – BD SWD System
Vacuum Jct. M-29 (1R425-24): UL/M sec. 29 T17S R35E

Mr. Hansen:

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

Background and Previous Work
The site is located approximately 1.1 miles east of Buckeye, New Mexico at UL/M, Sec. 29, T17S, R35E as shown on the Site Location Map (Figure 1). Groundwater at this site is located approximately 90 +/- feet below ground surface (bgs).

In 2005, ROC initiated work on the former EME M-29 junction box. The site was delineated using a backhoe to form an 8 ft x 3 ft x 12 ft deep excavation and soil samples were screened at regular intervals for both hydrocarbons and chlorides. The 12 ft sample was sent to a commercial laboratory for analysis of chloride and TPH, resulting in a chloride concentration of 2,530 mg/kg and concentrations of gasoline range organics (GRO) and diesel range organics (DRO) below detectable limits. The excavated soil was returned to the excavation to ground surface and contoured to the surrounding area.

On December 13th, 2005, one soil bore was advanced through the former junction box site to a depth of 30 ft bgs. Soil samples were field tested at regular intervals to a depth of 30 ft bgs for chlorides and screened in the field with a photo-ionization detector for hydrocarbons. A

representative sample from the bore was taken to a commercial laboratory for confirmation of chloride and hydrocarbon field numbers. Laboratory tests resulted in a chloride concentration of 14.5 mg/kg at 30 ft bgs and concentrations of GRO and DRO below detectable limits.

A junction box closure report (Appendix A) was submitted to NMOCD with all the 2005 junction box closures and disclosures.

Further Evaluation

On March 6th, 2012, NMOCD requested ROC provide additional demonstration that groundwater will not be impacted beyond WQCC standards. The MultiMed model was used to determine if residual soil chlorides pose an on-going threat to groundwater quality. Data inputs and model outputs are included in Appendix B. With no subsurface liner, the model output concludes that the peak concentration of chlorides in the groundwater contributed by the vadose zone soils would be approximately 54.97 mg/kg at 221 years. Since the estimated increase in chloride concentrations in groundwater from residual chloride migration is below the WQCC standard of 250 mg/L and vegetation has rebounded at the site (Figure 2), no further action is warranted for the vadose zone at this site.

Recommendations

Site investigation demonstrates that residual chloride and hydrocarbons in the vadose zone will not with reasonable probability contaminate groundwater in excess of NMOCD standards. This site meets the requirements of the NMOCD-approved Revised Junction Box Upgrade Work Plan (July 16, 2003). As such, ROC request termination of the regulatory file, or similar closure status.

Please contact me at (575)393-9174 if you have any questions or wish to discuss this site. Thank you for your time and consideration.

Sincerely,
RICE Operating Company

Hack Conder
Environmental Manager

Figure 1 – Site Location Map
Figure 2 – Recent Photo-documentation of Site
Appendix A – Junction Box Closure Report
Appendix B – MultiMed Output File, Graph

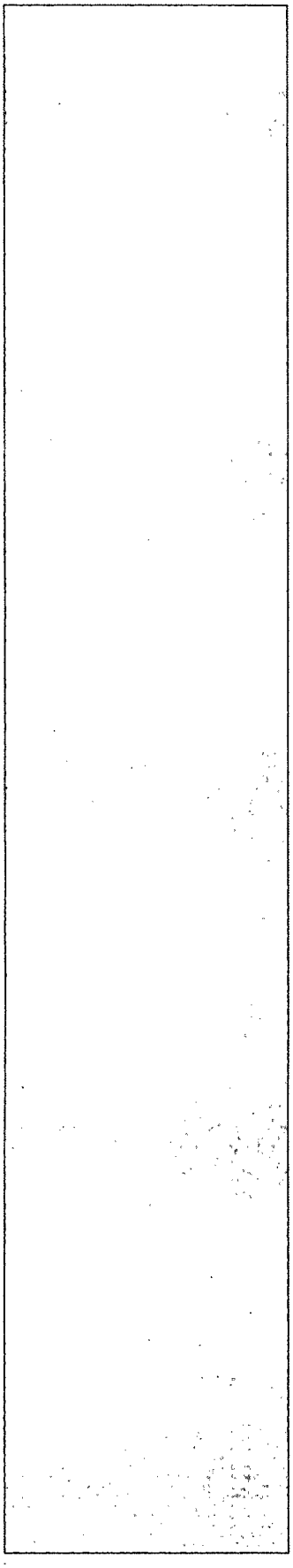
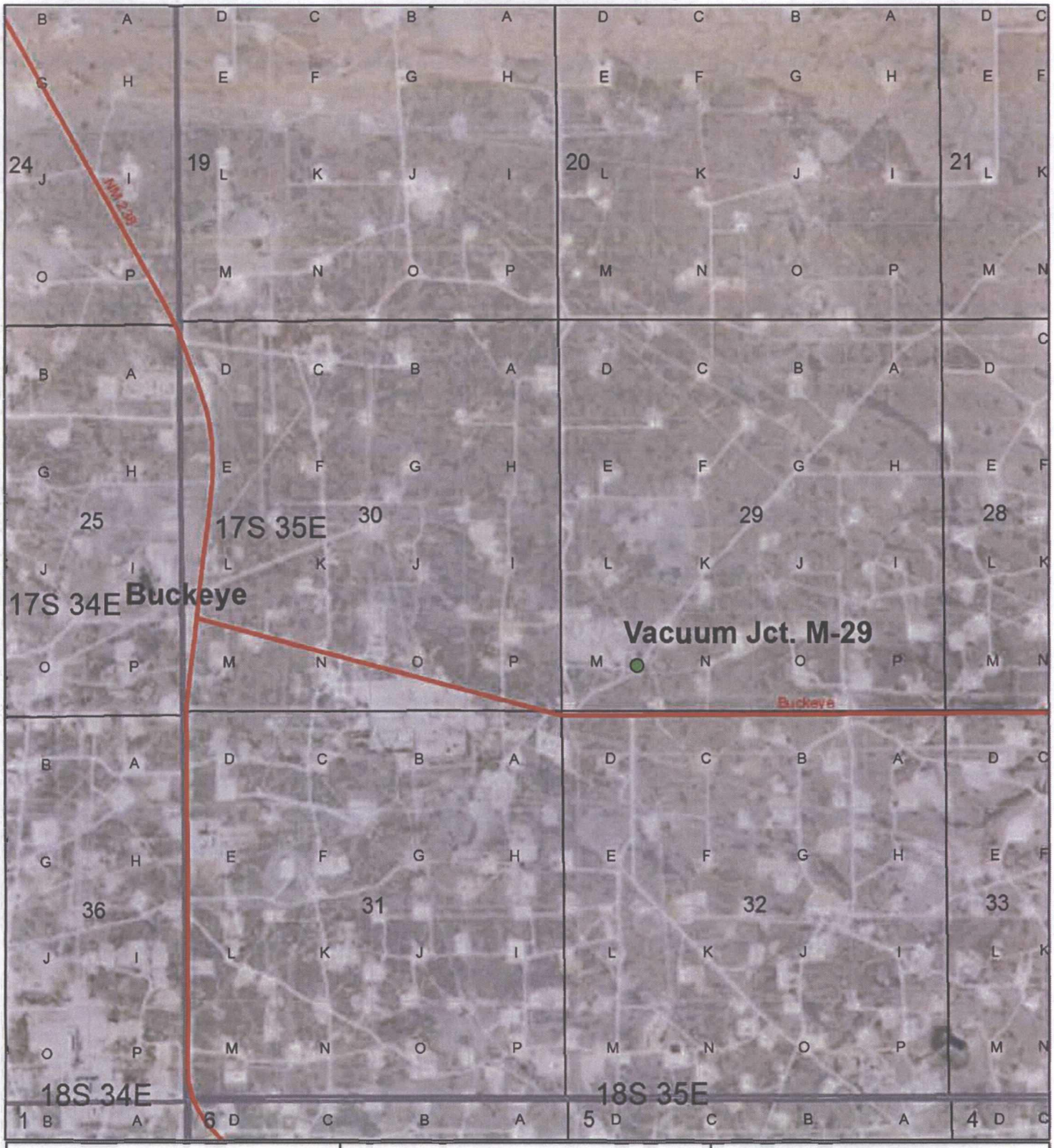


Figure 1
Site Location Map

Site Location Map



RICE ENVIRONMENTAL RECS CONSULTING & SAFETY, LLC

Vacuum Jct. M-29

Case #: 1R425-24

Legals: UL/M sec. 29
T-17-S R-35-E
LEA COUNTY, NM

N
W E
S

0 0.25 0.5
Miles

Drawing date: 6-8-12
Drafted by: L. Weinheimer

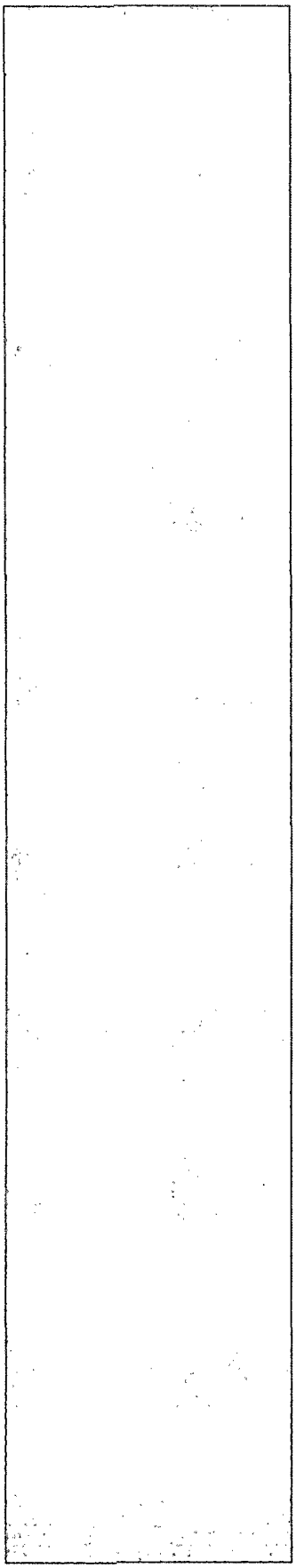


Figure 2
Recent
Photo-documentation
of Site

Vacuum Jct. M-29 (1R425-24)
Unit M, Section 29, T17S, R35E

Facing south 6/15/2012

Facing west 6/15/2012

Appendix A
Junction Box Closure Report

RICE OPERATING COMPANY
JUNCTION BOX FINAL REPORT

BOX LOCATION

SWD SYSTEM	JUNCTION	UNIT	SECTION	TOWNSHIP	RANGE	COUNTY	BOX DIMENSIONS - FEET		
							Length	Width	Depth
Vacuum	jct. M-29	M	29	17S	35E	Lea	System Abandonment--no box		

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

Depth to Groundwater 90 feet NMOCD SITE ASSESSMENT RANKING SCORE: 10

Date Started 9/7/2005 Date Completed 12/13/2005 NMOCD Witness no

Soil Excavated 11 cubic yards Excavation Length 8 Width 3 Depth 12 feet

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

FINAL ANALYTICAL RESULTS:

Sample Date 9/7/2005, 12/13/2005 **Sample Depth** 12, 25-30 ft

TPH and chloride laboratory test results completed by using an approved laboratory and testing procedures pursuant to NMOCD guidelines.

Sample Location	PID .ppm	GRO mg/kg	DRO mg/kg	Chloride mg/kg
GRAB @ 12 ft BGS	0.0	<10.0	<10.0	2530
SOIL BORE 25-30 ft	0.1	<10.0	<10.0	14.5

CHLORIDE FIELD TESTS

LOCATION	DEPTH (ft)	ppm
delineation trench at junction	2	299
	3	144
	4	134
	5	309
	6	618
	7	373
	8	783
	9	941
	10	352
	11	1367
	12	1812
Soil Bore	15	1059
	25	152
	30	135

General Description of Remedial Action:

This junction box was addressed as part of the Vacuum SWD System Abandonment. A delineation trench was made at the junction using a backhoe while soil samples were collected at regular intervals to 12 ft BGS. Chloride field tests were conducted on these samples and exhibited concentrations that did not relent with depth. PID screenings were all 0.0 ppm and there were no physical indications of hydrocarbon. A soil bore was conducted at the same location on 12/13/2005 to further delineate chloride concentrations. Samples were collected to 30 ft BGS where chloride concentrations exhibited a conclusive trend of decline, indicative of non-saturated historical vadose conditions. Samples at 20-30 feet were clean. The bore hole was plugged to the surface with bentonite.

The disturbed surface area was seeded with a blend of native vegetation and is expected to return to productive capacity at a normal rate. Since the Vacuum SWD System is no longer in service, a new junction box is not required.

enclosures: chloride graph, photos, lab results, PID field screenings, soil bore log

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 K. Rascon COMPANY RICE Operating Company

REPORT ASSEMBLED BY Kristin Farris Pope SIGNATURE Kristin Farris Pope

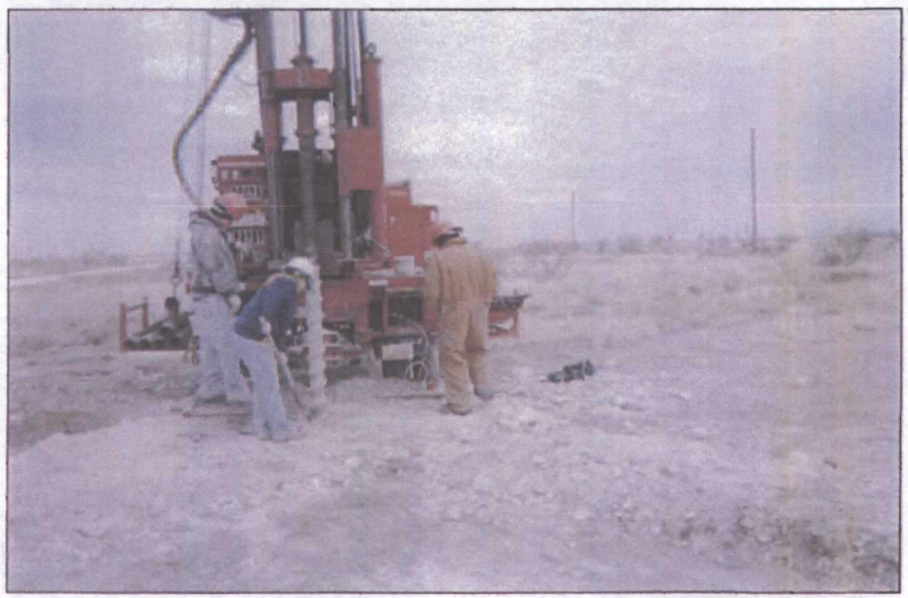
DATE 1/13/2006 TITLE Project Scientist

Vacuum jct. M-29

beginning junction box delineation & excavation 9/7/2005

delineation trench 11/23/2005

identification plate marking former jct. location 11/23/2005



delineation soil bore 12/13/2005

ENVIRONMENTAL LAB OF

12600 West I-20 East - Odessa, Texas 79765

Analytical Report

Prepared for:

Roy Rascon
Rice Operating Co.
122 W. Taylor
Hobbs, NM 88240

Project: Vacuum Jct. M-29
Project Number: None Given
Location: None Given

Lab Order Number: 5I09004

Report Date: 09/15/05

Rice Operating Co.	Project: Vacuum Jct: M-29	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	Reported:
Hobbs NM, 88240	Project Manager: Roy Rascon	09/15/05 15:51

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Vert.@ 12' Grab	5I09004-01	Soil	09/07/05 13:10	09/09/05 07:30

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

Rice Operating Co.	Project: Vacuum Jct. M-29	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	**Reported:**
Hobbs NM, 88240	Project Manager: Roy Rascon	09/15/05 15:51

Organics by GC
Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Vert.@ 12' Grab (5I09004-01) Soil									
Gasoline Range Organics C6-C12	ND	10.0	mg/kg dry	1	EI50912	09/09/05	09/11/05	EPA 8015M	
Diesel Range Organics >C12-C35	ND	10.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	ND	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		*89.0 %*	*70-130*		"	"	"	"	
Surrogate: 1-Chlorooctadecane		*84.4 %*	*70-130*		"	"	"	"	

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

Rice Operating Co.	Project: Vacuum Jct. M-29	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	Reported:
Hobbs NM, 88240	Project Manager: Roy Rascon	09/15/05 15:51

General Chemistry Parameters by EPA / Standard Methods
Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Vert.@ 12' Grab (5109004-01) Soil									
Chloride	**2530**	50.0	mg/kg	100	EI51507	09/14/05	09/14/05	EPA 300.0	
% Moisture	**15.5**	0.1	%	1	EI51214	09/09/05	09/13/05	% calculation	

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

Rice Operating Co.	Project: Vacuum Jct. M-29	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	Reported:
Hobbs NM, 88240	Project Manager: Roy Rascon	09/15/05 15:51

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 EI50912 - Solvent Extraction (GC)										
Blank (EI50912-BLK1)				Prepared: 09/09/05 Analyzed: 09/11/05						
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	*50.7*		*mg/kg*	*50.0*		*101*	*70-130*			
Surrogate: 1-Chlorooctadecane	*46.8*		*"*	*50.0*		*93.6*	*70-130*			
LCS (EI50912-BS1)				Prepared: 09/09/05 Analyzed: 09/11/05						
Gasoline Range Organics C6-C12	398	10.0	mg/kg wet	500		79.6	75-125			
Diesel Range Organics >C12-C35	379	10.0	"	500		75.8	75-125			
Total Hydrocarbon C6-C35	777	10.0	"	1000		77.7	75-125			
Surrogate: 1-Chlorooctane	*48.3*		*mg/kg*	*50.0*		*96.6*	*70-130*			
Surrogate: 1-Chlorooctadecane	*48.3*		*"*	*50.0*		*96.6*	*70-130*			
Calibration Check (EI50912-CCV1)				Prepared: 09/09/05 Analyzed: 09/12/05						
Gasoline Range Organics C6-C12	425		mg/kg	500		85.0	80-120			
Diesel Range Organics >C12-C35	412		"	500		82.4	80-120			
Total Hydrocarbon C6-C35	837		"	1000		83.7	80-120			
Surrogate: 1-Chlorooctane	*51.0*		*"*	*50.0*		*102*	*0-200*			
Surrogate: 1-Chlorooctadecane	*61.1*		*"*	*50.0*		*122*	*0-200*			
Matrix Spike (EI50912-MS1)	**Source: 5I09001-01**			Prepared: 09/09/05 Analyzed: 09/11/05						
Gasoline Range Organics C6-C12	403	10.0	mg/kg dry	533	ND	75.6	75-125			
Diesel Range Organics >C12-C35	406	10.0	"	533	ND	76.2	75-125			
Total Hydrocarbon C6-C35	809	10.0	"	1070	ND	75.6	75-125			
Surrogate: 1-Chlorooctane	*43.1*		*mg/kg*	*50.0*		*86.2*	*70-130*			
Surrogate: 1-Chlorooctadecane	*40.0*		*"*	*50.0*		*80.0*	*70-130*			
Matrix Spike Dup (EI50912-MSD1)	**Source: 5I09001-01**			Prepared: 09/09/05 Analyzed: 09/11/05						
Gasoline Range Organics C6-C12	403	10.0	mg/kg dry	533	ND	75.6	75-125	0.00	20	
Diesel Range Organics >C12-C35	402	10.0	"	533	ND	75.4	75-125	0.990	20	
Total Hydrocarbon C6-C35	805	10.0	"	1070	ND	75.2	75-125	0.496	20	
Surrogate: 1-Chlorooctane	*44.9*		*mg/kg*	*50.0*		*89.8*	*70-130*			
Surrogate: 1-Chlorooctadecane	*44.4*		*"*	*50.0*		*88.8*	*70-130*			

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

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 EI51214 - General Preparation (Prep)										
Blank (EI51214-BLK1)				Prepared: 09/09/05 Analyzed: 09/13/05						
% Solids	100		%							
Duplicate (EI51214-DUP1)		Source: 5I08021-02		Prepared: 09/09/05 Analyzed: 09/13/05						
% Solids	95.3		%		95.5			0.210	20	
Duplicate (EI51214-DUP2)		Source: 5I09013-05		Prepared: 09/09/05 Analyzed: 09/13/05						
% Solids	99.2		%		99.0			0.202	20	
Duplicate (EI51214-DUP3)		Source: 5I09010-03		Prepared: 09/09/05 Analyzed: 09/13/05						
% Solids	90.9		%		90.2			0.773	20	
Batch EI51507 - Water Extraction										
Blank (EI51507-BLK1)				Prepared & Analyzed: 09/14/05						
Chloride	ND	0.500	mg/kg							
LCS (EI51507-BS1)				Prepared & Analyzed: 09/14/05						
Chloride	8.62		mg/L	10.0		86.2	80-120			
Calibration Check (EI51507-CCV1)				Prepared & Analyzed: 09/14/05						
Chloride	9.06		mg/L	10.0		90.6	80-120			
Duplicate (EI51507-DUP1)		Source: 5I09001-01		Prepared & Analyzed: 09/14/05						
Chloride	801	10.0	mg/kg		796			0.626	20	

Rice Operating Co.	Project: Vacuum Jct. M-29	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	Reported:
Hobbs NM, 88240	Project Manager: Roy Rascon	09/15/05 15:51

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
LCS	Laboratory Control Spike
MS	Matrix Spike
Dup	Duplicate

Report Approved By: Raland K. Tuttle Date: 9-18-05

Raland K. Tuttle, Lab Manager
Celey D. Keene, Lab Director, Org. Tech Director
Peggy Allen, QA Officer
Jeanne Mc Murrey, Inorg. Tech Director
LaTasha Cornish, Chemist
Sandra Sanchez, Lab Tech.

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: Ray Rascon
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: Ray R. Rascon

Project Name: VAC JCT M-29
Project #:
Project Loc:
PO #:

LAB # (lab use only)	FIELD CODE	Date Sampled	Time Sampled	No. of Containers	Preservative: Ice	Preservative: HNO_3	Preservative: HCl	Preservative: NaOH	Preservative: H_2SO_4	Preservative: None	Preservative: Other (Specify)	Matrix: Water	Matrix: Sludge	Matrix: Soil	Matrix: Other (specify)	Analyze For: TCLP: TDS (CL) SAR / EC	Analyze For: TOTAL: TPH 418.1	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)
-01	Vert. @ 12' Grab	9-7-05	1310	1	1									✓		✓			✓					

Special Instructions:

Sample Containers Intact? (Y) N
Temperature Upon Receipt: 0.5 °C
Laboratory Comments: 4oz glass on ice w/labels + seals
Seal on cooler

Relinquished by:	Date	Time	Received by:	Date	Time
Ray R. Rascon	9-7-05	1652		9/8	15:00
Relinquished by:	Date	Time	Received by ELOT: Drop Box	Date	Time
	9/9	7:00	Diane Mcmurray	9-9-5	0730

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

Client: Rice Op.

Date/Time: 9/9/05 7:30

Order #: 5I09004

Initials: CK

Sample Receipt Checklist

Temperature of container/cooler?	Yes	No	0.5 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	
Container labels legible and intact?	Yes	No	
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:

RICE OPERATING COMPANY

122 WEST TAYLOR
HOBBS, NEW MEXICO 88240
PHONE: (505) 393-9174 FAX: (505) 397-1471

VOC FIELD TEST REPORT FORM

MINI RAE PLUS CLASSIC PHOTOIONIZATION GAS DETECTOR

MODEL NO: PGM 761S
CALIBRATION GAS
GAS COMPOSITION: ISOBUTYLENE
AIR
LOT NO: 04-2747
EXP. DATE: 2-1-06
METER READING
ACCURACY: 100.0

SERIAL NO: 104412

100 PPM
BALANCE
FILL DATE: 2-1-05
ACCURACY: +/- 2%

SYSTEM	JUNCTION	UNIT	SECTION	TOWNSHIP	RANGE
VAC	M-29	M	29	17S	35E

VERTICAL @ SOURCE ONLY

SAMPLE	PID RESULT	SAMPLE	PID RESULT
2	0.0		
3	0.0		
4			
5			
6			
7			
8			
9			
10			
11			
12	0.0		

COPY

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

Ray R. Rascon
Signature

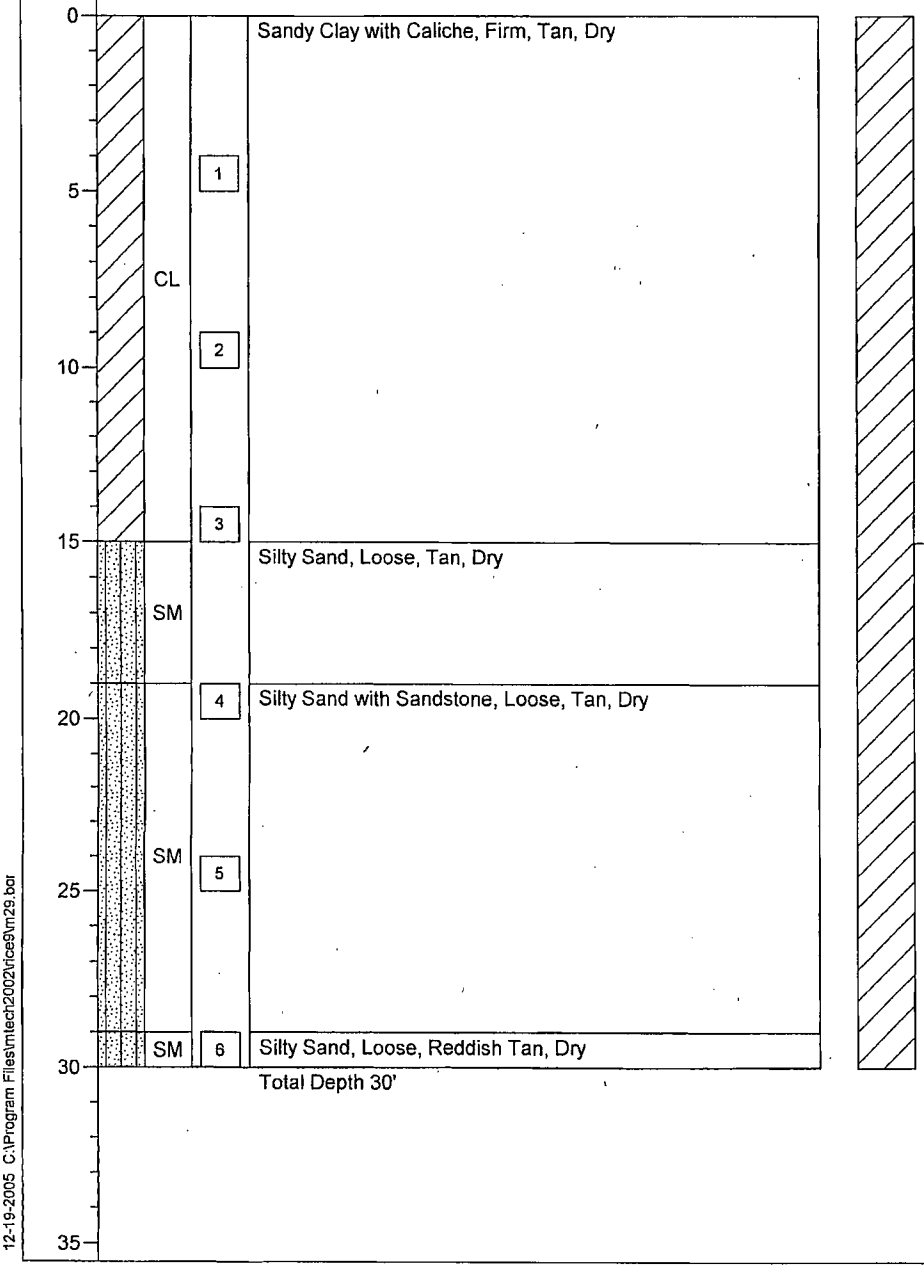
9-7-05
Date

ATKINS ENGINEERING ASSOCIATES, INC.
Professional Engineering / Land Surveying
Water Resources / Environmental Science

Log of Boring Soil Bore 1 at JCT M-29

Rice Operating Company
122 W. Taylor
Hobbs, New Mexico 88240
Contact: Roy Rascon
Job#: RICOPCO.DRL.05

Date	: 12-13-05	Auger Type	: Hollow Stem
Drill Start	: 1100	Logged By	: Mort Bates
Drill End	: 1345		
Boring Location	: Junction Box Site		
Site Location	: JCT M-29, Buckeye, NM		



12-19-2005 C:\Program Files\mtech2002\rice9\vn29.bor

ENVIRONMENTAL LAB OF

12600 West I-20 East - Odessa, Texas 79765

COPY

Analytical Report

Prepared for:

Roy Rascon

Rice Operating Co.

122 W. Taylor

Hobbs, NM 88240

Project: Vacuum Jct. M-29

Project Number: None Given

Location: None Given

Lab Order Number: 5L15006

Report Date: 12/23/05

Rice Operating Co.	Project: Vacuum Jct. M-29	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	**Reported:**
Hobbs NM, 88240	Project Manager: Roy Rascon	12/23/05 16:29

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
25 to 30'	5L15006-01	Soil	12/14/05 00:00	12/15/05 08:00

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

Rice Operating Co.	Project: Vacuum Jct. M-29	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	**Reported:**
Hobbs NM, 88240	Project Manager: Roy Rascon	12/23/05 16:29

Organics by GC

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
25 to 30' (5L15006-01) Soil									
Gasoline Range Organics C6-C12	ND	10.0	mg/kg dry	1	EL51508	12/15/05	12/18/05	EPA 8015M	
Diesel Range Organics >C12-C35	ND	10.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	ND	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		*83.6 %*	*70-130*		"	"	"	"	
Surrogate: 1-Chlorooctadecane		*77.6 %*	*70-130*		"	"	"	"	

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Rice Operating Co.	Project: Vacuum Jct. M-29	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	**Reported:**
Hobbs NM, 88240	Project Manager: Roy Rascon	12/23/05 16:29

General Chemistry Parameters by EPA / Standard Methods

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
25 to 30' (5L15006-01) Soil									
Chloride	**14.5**	5.00	mg/kg	10	EL52102	12/20/05	12/21/05	EPA 300.0	
% Moisture	**5.4**	0.1	%	1	EL51609	12/15/05	12/16/05	% calculation	

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Rice Operating Co.	Project: Vacuum Jct. M-29	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	**Reported:**
Hobbs NM, 88240	Project Manager: Roy Rascon	12/23/05 16:29

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 EL51508 - Solvent Extraction (GC)										
Blank (EL51508-BLK1)				Prepared: 12/15/05 Analyzed: 12/18/05						
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	*56.1*		*mg/kg*	*50.0*		*112*	*70-130*			
Surrogate: 1-Chlorooctadecane	*60.0*		"	*50.0*		*120*	*70-130*			
LCS (EL51508-BS1)				Prepared: 12/15/05 Analyzed: 12/18/05						
Gasoline Range Organics C6-C12	450	10.0	mg/kg wet	500		90.0	75-125			
Diesel Range Organics >C12-C35	461	10.0	"	500		92.2	75-125			
Total Hydrocarbon C6-C35	911	10.0	"	1000		91.1	75-125			
Surrogate: 1-Chlorooctane	*56.0*		*mg/kg*	*50.0*		*112*	*70-130*			
Surrogate: 1-Chlorooctadecane	*57.6*		"	*50.0*		*115*	*70-130*			
Calibration Check (EL51508-CCV1)				Prepared: 12/15/05 Analyzed: 12/19/05						
Gasoline Range Organics C6-C12	435		mg/kg	500		87.0	80-120			
Diesel Range Organics >C12-C35	476		"	500		95.2	80-120			
Total Hydrocarbon C6-C35	911		"	1000		91.1	80-120			
Surrogate: 1-Chlorooctane	*57.7*		*"*	*50.0*		*115*	*70-130*			
Surrogate: 1-Chlorooctadecane	*62.4*		"	*50.0*		*125*	*70-130*			
Matrix Spike (EL51508-MS1)	**Source: 5L15006-01**			Prepared: 12/15/05 Analyzed: 12/18/05						
Gasoline Range Organics C6-C12	496	10.0	mg/kg dry	529	ND	93.8	75-125			
Diesel Range Organics >C12-C35	410	10.0	"	529	ND	77.5	75-125			
Total Hydrocarbon C6-C35	906	10.0	"	1060	ND	85.5	75-125			
Surrogate: 1-Chlorooctane	*53.8*		*mg/kg*	*50.0*		*108*	*70-130*			
Surrogate: 1-Chlorooctadecane	*45.5*		"	*50.0*		*91.0*	*70-130*			
Matrix Spike Dup (EL51508-MSD1)	**Source: 5L15006-01**			Prepared: 12/15/05 Analyzed: 12/18/05						
Gasoline Range Organics C6-C12	484	10.0	mg/kg dry	529	ND	91.5	75-125	2.45	20	
Diesel Range Organics >C12-C35	400	10.0	"	529	ND	75.6	75-125	2.47	20	
Total Hydrocarbon C6-C35	884	10.0	"	1060	ND	83.4	75-125	2.46	20	
Surrogate: 1-Chlorooctane	*52.2*		*mg/kg*	*50.0*		*104*	*70-130*			
Surrogate: 1-Chlorooctadecane	*43.6*		"	*50.0*		*87.2*	*70-130*			

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Rice Operating Co.	Project: Vacuum Jct. M-29	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	**Reported:**
Hobbs NM, 88240	Project Manager: Roy Rascon	12/23/05 16:29

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 EL51609 - General Preparation (Prep)										
Blank (EL51609-BLK1)				Prepared: 12/15/05 Analyzed: 12/16/05						
% Solids	100		%							
Duplicate (EL51609-DUP1)	**Source: 5L14008-01**			Prepared: 12/15/05 Analyzed: 12/16/05						
% Solids	94.3		%		95.6			1.37	20	
Duplicate (EL51609-DUP2)	**Source: 5L15001-09**			Prepared: 12/15/05 Analyzed: 12/16/05						
% Solids	90.7		%		91.0			0.330	20	
Duplicate (EL51609-DUP3)	**Source: 5L15014-01**			Prepared: 12/15/05 Analyzed: 12/16/05						
% Solids	98.0		%		98.5			0.509	20	
Batch EL52102 - Water Extraction										
Blank (EL52102-BLK1)				Prepared: 12/20/05 Analyzed: 12/21/05						
Chloride	ND	0.500	mg/kg							
LCS (EL52102-BS1)				Prepared: 12/20/05 Analyzed: 12/21/05						
Chloride	8.33		mg/L	10.0		83.3	80-120			
Calibration Check (EL52102-CCV1)				Prepared: 12/20/05 Analyzed: 12/21/05						
Chloride	8.46		mg/L	10.0		84.6	80-120			
Duplicate (EL52102-DUP1)	**Source: 5L15002-01**			Prepared: 12/20/05 Analyzed: 12/21/05						
Chloride	94.9	5.00	mg/kg		92.0			3.10	20	

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Rice Operating Co.	Project: Vacuum Jct. M-29	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	**Reported:**
Hobbs NM, 88240	Project Manager: Roy Rascon	12/23/05 16:29

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
LCS	Laboratory Control Spike.
MS	Matrix Spike
Dup	Duplicate

Report Approved By: Raland K Tuttle Date: 12/23/2005

Raland K. Tuttle, Lab Manager
Celey D. Keene, Lab Director, Org. Tech Director
Peggy Allen, QA Officer
Jeanne Mc Murrey, Inorg. Tech Director
LaTasha Cornish, Chemist
Sandra Sanchez, Lab Tech.

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: Roy Rascon
Company Name: Rice Operating CO.
Company Address: 122 W Taylor
City/State/Zip: Hobbs N.M 88240
Telephone No: _____ Fax No: _____
Sampler Signature: [signature]

Project Name: VAC JCT M 29
Project #: _____
Project Loc: _____
PO #: _____

LAB # (lab use only)	FIELD CODE	Date Sampled	Time Sampled	No. of Containers	Preservative: Ice	HNO_3	HCl	NaOH	H_2SO_4	None	Other (Specify)	Matrix: Water	Sludge	Soil	Other (specify):	Analyze For: TCLP: TOTAL: TDS (CL) SAR / EC	TPH 418.1	TPH TX 1005/1005	TPH 8015M GRO/DRO	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEX 8021B/5030	RUSH TAT (Pre-Schedule)
	25 to 20'	12/14/05		1										✓		✓			✓					

Special Instructions:
~~ET~~

Relinquished by:	Date	Time	Received by:	Date	Time
[signature]	12/14/05	5:00	[signature]	12/14	18:00
Relinquished by:	Date	Time	Received by ELOT:	Date	Time
[signature]	12/15	8:00	[illegible]	12/15/05	9:00

Sample Containers Intact?
Temperature Upon Receipt:
Laboratory Comments:

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

Client: RICE OP.

Date/Time: 12/15/05 8:00

Order #: 5L1500(0

Initials: CK

Sample Receipt Checklist

Temperature of container/cooler?	Yes	No	1.5 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	
Container labels legible and intact?	Yes	No	
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:

Appendix B
MultiMed Output File, Graph

U. S. ENVIRONMENTAL PROTECTION AGENCY

EXPOSURE ASSESSMENT

MULTIMEDIA MODEL

MULTIMED (Version 1.50, 2005)

1

Run options

Vacuum Jct. M-29

Chemical simulated is Chloride

Option Chosen Saturated and unsaturated zone models
Run was DETERMIN
Infiltration Specified By User: 3.048E-02 m/yr
Run was transient
Well Times: Entered Explicitly
Reject runs if Y coordinate outside plume
Reject runs if Z coordinate outside plume
Gaussian source used in saturated zone model

1

1

UNSATURATED ZONE FLOW MODEL PARAMETERS
(input parameter description and value)

NP	- Total number of nodal points	240
NMAT	- Number of different porous materials	1
KPROP	- Van Genuchten or Brooks and Corey	1
IMSHGN	- Spatial discretization option	1
NVFLAYR	- Number of layers in flow model	1

OPTIONS CHOSEN

Van Genuchten functional coefficients
User defined coordinate system

1

Layer information

LAYER NO.	LAYER THICKNESS	MATERIAL PROPERTY
1	27.00	1

DATA FOR MATERIAL 1

VADOSE ZONE MATERIAL VARIABLES

VARIABLE NAME	UNITS	DISTRIBUTION	PARAMETERS MEAN	PARAMETERS STD DEV	LIMITS MIN	LIMITS MAX
Saturated hydraulic conductivity	cm/hr	CONSTANT	3.60	-999.	-999.	-999.
Unsaturated zone porosity	--	CONSTANT	0.250	-999.	-999.	-999.
Air entry pressure head	m	CONSTANT	0.700	-999.	-999.	-999.
Depth of the unsaturated zone	m	CONSTANT	27.0	0.000	0.000	0.000

DATA FOR MATERIAL 1

VADOSE ZONE FUNCTION VARIABLES

VARIABLE NAME	UNITS	DISTRIBUTION	PARAMETERS MEAN	PARAMETERS STD DEV	LIMITS MIN	LIMITS MAX
Residual water content	--	CONSTANT	0.116	-999.	-999.	-999.
Brook and Corey exponent,EN	--	CONSTANT	-999.	-999.	-999.	-999.
ALFA coefficient	1/cm	CONSTANT	0.500E-02	-999.	-999.	-999.
Van Genuchten exponent, ENN	--	CONSTANT	1.09	-999.	-999.	-999.

1

UNSATURATED ZONE TRANSPORT MODEL PARAMETERS

NLAY	- Number of different layers used		1
NTSTPS	- Number of time values concentration calc		40
DUMMY	- Not presently used		1
ISOL	- Type of scheme used in unsaturated zone		2
N	- Stehfest terms or number of increments		18
NTEL	- Points in Lagrangian interpolation		3
NGPTS	- Number of Gauss points		104
NIT	- Convolution integral segments		2
IBOUND	- Type of boundary condition		3
ITSGEN	- Time values generated or input		1
TMAX	- Max simulation time	--	0.0
WTFUN	- Weighting factor	--	1.2

OPTIONS CHOSEN

Convolution integral approach
Exponentially decaying continuous source
Computer generated times for computing concentrations

1

DATA FOR LAYER 1

VADOSE TRANSPORT VARIABLES

VARIABLE NAME	UNITS	DISTRIBUTION	PARAMETERS		LIMITS	
			MEAN	STD DEV	MIN	MAX
Thickness of layer	m	CONSTANT	27.0	-999.	-999.	-999.
Longitudinal dispersivity of layer	m	DERIVED	-999.	-999.	-999.	-999.
Percent organic matter	--	CONSTANT	0.000	-999.	-999.	-999.
Bulk density of soil for layer	g/cc	CONSTANT	1.99	-999.	-999.	-999.
Biological decay coefficient	1/yr	CONSTANT	0.000	-999.	-999.	-999.

1

CHEMICAL SPECIFIC VARIABLES

VARIABLE NAME	UNITS	DISTRIBUTION	PARAMETERS		LIMITS	
			MEAN	STD DEV	MIN	MAX
Solid phase decay coefficient	1/yr	CONSTANT	0.000	-999.	-999.	-999.
Dissolved phase decay coefficient	1/yr	CONSTANT	0.000	-999.	-999.	-999.
Overall chemical decay coefficient	1/yr	CONSTANT	0.000	-999.	-999.	-999.
Acid catalyzed hydrolysis rate	l/M-yr	CONSTANT	0.000	-999.	-999.	-999.
Neutral hydrolysis rate constant	1/yr	CONSTANT	0.000	-999.	-999.	-999.
Base catalyzed hydrolysis rate	l/M-yr	CONSTANT	0.000	-999.	-999.	-999.
Reference temperature	C	CONSTANT	25.0	-999.	-999.	-999.
Normalized distribution coefficient	ml/g	CONSTANT	0.000	-999.	-999.	-999.
Distribution coefficient	--	DERIVED	-999.	-999.	-999.	-999.
Biodegradation coefficient (sat. zone)	1/yr	CONSTANT	0.000	-999.	-999.	-999.
Air diffusion coefficient	cm2/s	CONSTANT	-999.	-999.	-999.	-999.
Reference temperature for air diffusion	C	CONSTANT	-999.	-999.	-999.	-999.
Molecular weight	g/M	CONSTANT	-999.	-999.	-999.	-999.
Mole fraction of solute	--	CONSTANT	-999.	-999.	-999.	-999.
Vapor pressure of solute	mm Hg	CONSTANT	-999.	-999.	-999.	-999.
Henry`s law constant	atm-m^3/M	CONSTANT	-999.	-999.	-999.	-999.
Overall 1st order decay sat. zone	1/yr	DERIVED	0.000	0.000	0.000	1.00
Not currently used		CONSTANT	0.000	0.000	0.000	0.000
Not currently used		CONSTANT	0.000	0.000	0.000	0.000

1

SOURCE SPECIFIC VARIABLES

VARIABLE NAME	UNITS	DISTRIBUTION	PARAMETERS		LIMITS	
			MEAN	STD DEV	MIN	MAX
Infiltration rate	m/yr	CONSTANT	0.305E-01	-999.	-999.	-999.
Area of waste disposal unit	m^2	DERIVED	83.6	-999.	-999.	-999.
Duration of pulse	yr	DERIVED	50.0	-999.	-999.	-999.
Spread of contaminant source	m	DERIVED	-999.	-999.	-999.	-999.
Recharge rate	m/yr	CONSTANT	0.000	-999.	-999.	-999.
Source decay constant	1/yr	CONSTANT	0.250E-01	0.000	0.000	0.000
Initial concentration at landfill	mg/l	CONSTANT	605.	-999.	-999.	-999.
Length scale of facility	m	CONSTANT	3.00	-999.	-999.	-999.
Width scale of facility	m	CONSTANT	1.00	-999.	-999.	-999.
Near field dilution		DERIVED	1.00	0.000	0.000	1.00

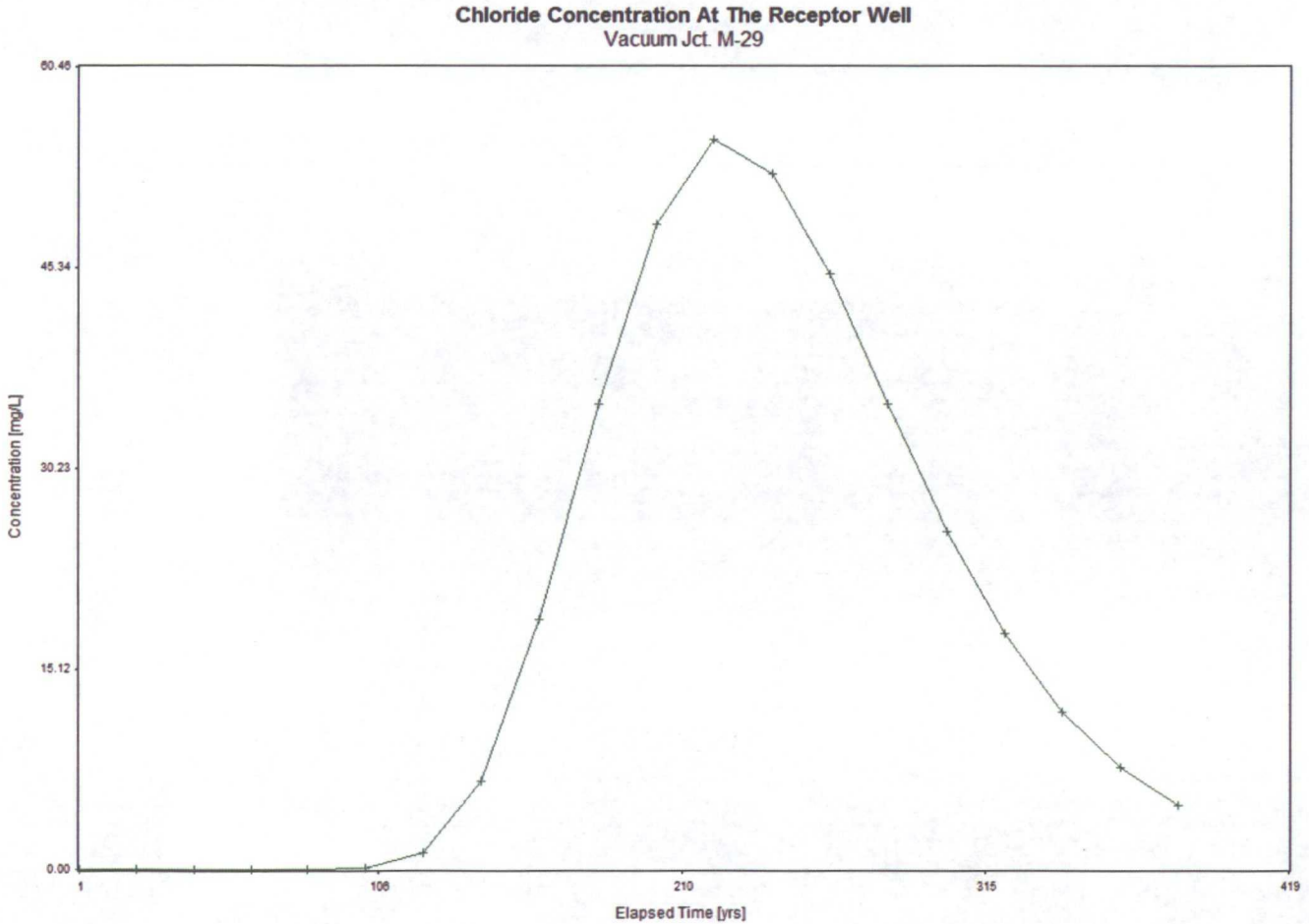
1

AQUIFER SPECIFIC VARIABLES

VARIABLE NAME	UNITS	DISTRIBUTION	PARAMETERS		LIMITS	
			MEAN	STD DEV	MIN	MAX
Particle diameter	cm	CONSTANT	-999.	-999.	-999.	-999.
Aquifer porosity	--	CONSTANT	0.300	-999.	-999.	-999.
Bulk density	g/cc	CONSTANT	1.86	-999.	-999.	-999.
Aquifer thickness	m	CONSTANT	6.10	-999.	-999.	-999.
Source thickness (mixing zone depth)	m	DERIVED	3.00	-999.	-999.	-999.
Conductivity (hydraulic)	m/yr	CONSTANT	315.	-999.	-999.	-999.
Gradient (hydraulic)		CONSTANT	0.400E-02	-999.	-999.	-999.
Groundwater seepage velocity	m/yr	DERIVED	-999.	-999.	-999.	-999.
Retardation coefficient	--	DERIVED	-999.	-999.	-999.	-999.
Longitudinal dispersivity	m	FUNCTION OF X	-999.	-999.	-999.	-999.
Transverse dispersivity	m	FUNCTION OF X	-999.	-999.	-999.	-999.
Vertical dispersivity	m	FUNCTION OF X	-999.	-999.	-999.	-999.
Temperature of aquifer	C	CONSTANT	20.0	-999.	-999.	-999.
pH	--	CONSTANT	7.00	-999.	-999.	-999.
Organic carbon content (fraction)		CONSTANT	0.000	-999.	-999.	-999.
Well distance from site	m	CONSTANT	1.00	-999.	-999.	-999.
Angle off center	degree	CONSTANT	0.000	-999.	-999.	-999.
Well vertical distance	m	CONSTANT	0.000	-999.	-999.	-999.

1

TIME	CONCENTRATION
0.100E+01	0.00000E+00
0.210E+02	0.00000E+00
0.410E+02	0.00000E+00
0.610E+02	0.00000E+00
0.810E+02	0.00000E+00
0.101E+03	0.11698E+00
0.121E+03	0.12454E+01
0.141E+03	0.66950E+01
0.161E+03	0.18849E+02
0.181E+03	0.35005E+02
0.201E+03	0.48532E+02
0.221E+03	0.54965E+02
0.241E+03	0.52381E+02
0.261E+03	0.44831E+02
0.281E+03	0.35003E+02
0.301E+03	0.25550E+02
0.321E+03	0.17763E+02
0.341E+03	0.11891E+02
0.361E+03	0.76720E+01
0.381E+03	0.48949E+01


Chloride Concentration At The Receptor Well
Vacuum Jct. M-29
60.46
45.34
30.23
15.12
0.00
Concentration [mg/L]
1
106
210
315
419
Elapsed Time [yrs]