1R - 428-65

REPORTS

DATE:

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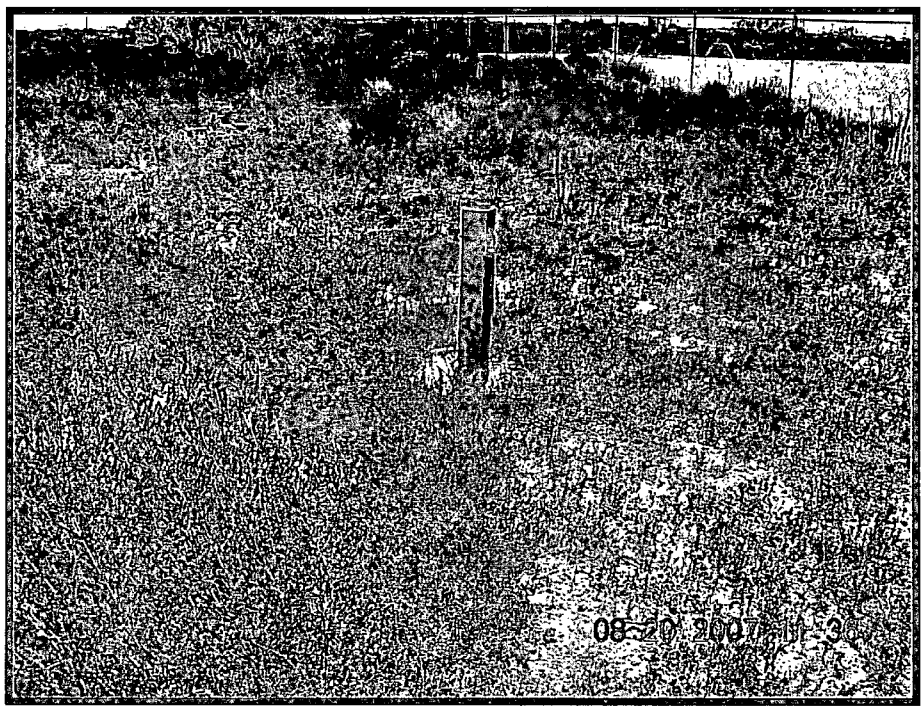

E-32-1, NMOCD Case #1R0428-65

Rice Operating Company Closure Report

R.T. Hicks Consultants, Ltd.
901 Rio Grande Blvd. NW, Suite F-142
Albuquerque, NM 87104

R. T. HICKS CONSULTANTS, LTD.

901 Rio Grande Blvd NW ▲ Suite F-142 ▲ Albuquerque, NM 87104 ▲ 505.266.5004 ▲ Fax: 505.266-0745

December 4, 2007

Mr. Ed Hansen
New Mexico Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

RE: NMOCD Case # 1R0428-65, E-32-1 Junction Box
Hobbs SWD System Abandonment
Closure Report

Dear Mr. Hansen:

This letter and Appendices are the final Closure Report for the E-32-1 Junction Box. The NMOCD approved Corrective Action Plan (Section 7.0, page 9) included creating an infiltration barrier by re-vegetation of the ground surface at the E-32-1 site as well as two additional sampling events showing chloride levels below the standard without an increasing trend. Appendix A includes the junction box closure form. Appendix B provides a photograph of the re-vegetation at the site and ground water sample data confirming these conditions were met. Appendix C includes copies of previous submissions and the NMOCD approval email.

We respectfully request NMOCD approve site closure in writing. Thank you for your attention to this matter.

Sincerely,
R.T. Hicks Consultants, Ltd.

Katie Lee

Katie Lee
Staff Scientist

Copy: Rice Operating Company
Hobbs NMOCD Office

Appendix A

RICE OPERATING COMPANY

JUNCTION BOX CLOSURE REPORT

BOX LOCATION

SWD SYSTEM	JUNCTION	UNIT	SECTION	TOWNSHIP	RANGE	COUNTY	BOX DIMENSIONS - FEET		
							Length	Width	Depth
Hobbs	jct. E-32-1 (#1R0428-65)	E	32	18S	38E	Lea	no box--System abandoned		

LAND TYPE: BLM _____ STATE _____ FEE LANDOWNER Occidental Petroleum (Oxy) OTHER _____

Depth to Groundwater 43 feet NMOCD SITE ASSESSMENT RANKING SCORE: 20

Date Started 5/4/2006 Date Completed 8/20/2007 NMOCD Witness no

Soil Excavated 0 cubic yards Excavation Length n/a Width n/a Depth n/a feet

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

General Description of Remedial Action:

This junction box site was delineated using a soil boring according to the Investigation and Characterization Plan submitted by R.T. Hicks Consultants. One monitoring well was installed at the site on 5/4/2006. A Corrective Action Plan (CAP) was verbally approved by NMOCD on 7/18/2007 and confirmed via email on 8/8/2007. A site visit on 8/20/2007 revealed that healthy vegetation surrounds the site; additional seed was added. The enclosed Hicks report (December 2007) documents the fulfillment of the approved CAP and requests closure of this site. The monitoring well will remain for possible future use for other sites in the Hobbs abandonment investigation.

enclosures as stated

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

REPORT ASSEMBLED BY Kristin Farris Pope SIGNATURE Kristin Farris Pope

DATE 11/28/2007 TITLE Project Scientist

Appendix B

Appendix B – Photograph Documenting Re-Vegetation at E-32-1

ENVIRONMENTAL LAB OF

12600 West I-20 East - Odessa, Texas 79765

A Xenco Laboratories Company

Analytical Report

Prepared for:

Kristin Farris-Pope

Rice Operating Co.

122 W. Taylor

Hobbs, NM 88240

Project: Hobbs Jct. E-32-1

Project Number: None Given

Location: T18S-R38E-Sec. 32E Lea Co., NM

Lab Order Number: 7B22012

Report Date: 03/08/07

Rice Operating Co.	Project: Hobbs Jct. E-32-1	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Monitor Well #1	7B22012-01	Water	02/22/07 10:10	02-22-2007 15:12

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

Rice Operating Co.	Project: Hobbs Jct. E-32-I	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

Organics by GC

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Monitor Well #1 (7B22012-01) Water									
Carbon Ranges C6-C12	ND	3.00	mg/L	0.1	EB72214	02/22/07	02/25/07	EPA 8015M	
Carbon Ranges C12-C28	ND	3.00	"	"	"	"	"	"	
Carbon Ranges C28-C35	ND	3.00	"	"	"	"	"	"	
Total Hydrocarbons	ND	3.00	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		*112 %*		*70-130*		"	"	"	
Surrogate: 1-Chlorooctadecane		*115 %*		*70-130*		"	"	"	

Rice Operating Co.	Project: Hobbs Jct. E-32-1	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

General Chemistry Parameters by EPA / Standard Methods

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Monitor Well #1 (7B22012-01) Water									
Total Alkalinity	**256**	2.00	mg/L	1	EB72805	02/28/07	02/28/07	EPA 310.1M	
Chloride	**119**	5.00	"	10	EB72801	02/28/07	02/28/07	EPA 300.0	
Total Dissolved Solids	**494**	10.0	"	1	EB72702	02/23/07	02/27/07	EPA 160.1	
Sulfate	**93.2**	5.00	"	10	EB72801	02/28/07	02/28/07	EPA 300.0	

Rice Operating Co.	Project: Hobbs Jct. E-32-1	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

Total Metals by EPA / Standard Methods

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Monitor Well #1 (7B22012-01) Water									
Calcium	**86.0**	4.05	mg/L	50	EB72310	02/23/07	02/23/07	EPA 6010B	
Magnesium	**21.4**	0.360	"	10	"	"	"	"	
Potassium	**2.43**	0.600	"	"	"	"	"	"	
Sodium	**46.9**	0.430	"	"	"	"	"	"	

Rice Operating Co.	Project: Hobbs Jct. E-32-1	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM. 88240	Project Manager: Kristin Farris-Pope	

Volatile Organic Compounds by EPA Method 8260B

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Monitor Well #1 (7B22012-01) Water									
Benzene	ND	0.00100	mg/L	1	EB72704	02/27/07	02/27/07	EPA 8260B	
Toluene	ND	0.00100	"	"	"	"	"	"	
Ethylbenzene	ND	0.00100	"	"	"	"	"	"	
Xylene (p/m)	ND	0.00100	"	"	"	"	"	"	
Xylene (o)	ND	0.00100	"	"	"	"	"	"	
Naphthalene	ND	0.00100	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*109 %*		*68-129*		"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*88.0 %*		*72-132*		"	"	"	
Surrogate: Toluene-d8		*90.2 %*		*74-118*		"	"	"	
Surrogate: 4-Bromofluorobenzene		*85.8 %*		*65-140*		"	"	"	

Rice Operating Co.	Project: Hobbs Jct. E-32-1	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

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 EB72214 - Solvent Extraction (GC)										
Blank (EB72214-BLK1)				Prepared: 02/22/07 Analyzed: 02/26/07						
Carbon Ranges C6-C12	ND	3.00	mg/L							
Carbon Ranges C12-C28	ND	3.00	"							
Carbon Ranges C28-C35	ND	3.00	"							
Total Hydrocarbons	ND	3.00	"							
Surrogate: 1-Chlorooctane	*52.2*		"	*50.0*		*104*	*70-130*			
Surrogate: 1-Chlorooctadecane	*63.5*		"	*50.0*		*127*	*70-130*			
LCS (EB72214-BS1)				Prepared: 02/22/07 Analyzed: 02/26/07						
Carbon Ranges C6-C12	56.0	30.0	mg/L	50.0		112	75-125			
Carbon Ranges C12-C28	42.3	30.0	"	50.0		84.6	75-125			
Carbon Ranges C28-C35	ND	30.0	"	0.00			75-125			
Total Hydrocarbons	98.3	30.0	"	100		98.3	75-125			
Surrogate: 1-Chlorooctane	*54.4*		"	*50.0*		*109*	*70-130*			
Surrogate: 1-Chlorooctadecane	*55.3*		"	*50.0*		*111*	*70-130*			
Calibration Check (EB72214-CCV1)				Prepared: 02/22/07 Analyzed: 02/26/07						
Carbon Ranges C6-C12	21.7		mg/L	25.0		86.8	80-120			
Carbon Ranges C12-C28	21.6		"	25.0		86.4	80-120			
Carbon Ranges C28-C35	0.00		"	0.00			80-120			
Total Hydrocarbons	43.3		"	50.0		86.6	80-120			
Surrogate: 1-Chlorooctane	*60.9*		"	*50.0*		*122*	*70-130*			
Surrogate: 1-Chlorooctadecane	*61.2*		"	*50.0*		*122*	*70-130*			
Matrix Spike (EB72214-MS1)	**Source: 7B22008-20**			Prepared: 02/22/07 Analyzed: 02/25/07						
Carbon Ranges C6-C12	60.0	30.0	mg/L	50.0	ND	120	75-125			
Carbon Ranges C12-C28	48.9	30.0	"	50.0	ND	97.8	75-125			
Carbon Ranges C28-C35	ND	30.0	"	0.00	ND		75-125			
Total Hydrocarbons	109	30.0	"	100	ND	109	75-125			
Surrogate: 1-Chlorooctane	*59.6*		"	*50.0*		*119*	*70-130*			
Surrogate: 1-Chlorooctadecane	*55.7*		"	*50.0*		*111*	*70-130*			

Rice Operating Co.	Project: Hobbs Jct. E-32-1	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

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 EB72214 - Solvent Extraction (GC)										
Matrix Spike Dup (EB72214-MSD1)	**Source: 7B22008-20**			Prepared: 02/22/07 Analyzed: 02/25/07						
Carbon Ranges C6-C12	59.5	30.0	mg/L	50.0	ND	119	75-125	0.837	20	
Carbon Ranges C12-C28	49.1	30.0	"	50.0	ND	98.2	75-125	0.408	20	
Carbon Ranges C28-C35	ND	30.0	"	0.00	ND		75-125		20	
Total Hydrocarbons	109	30.0	"	100	ND	109	75-125	0.00	20	
Surrogate: 1-Chlorooctane	*60.4*		"	*50.0*		*121*	*70-130*			
Surrogate: 1-Chlorooctadecane	*54.9*		"	*50.0*		*110*	*70-130*			

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

Project: Hobbs Jct. E-32-1
Project Number: None Given
Project Manager: Kristin Farris-Pope

Fax: (505) 397-1471

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 EB72702 - General Preparation (WetChem)										
Blank (EB72702-BLK1)				Prepared: 02/23/07 Analyzed: 02/24/07						
Total Dissolved Solids	ND	10.0	mg/L							
Duplicate (EB72702-DUP1)	**Source: 7B22009-01**			Prepared: 02/23/07 Analyzed: 02/24/07						
Total Dissolved Solids	364	10.0	mg/L		356			2.22	20	
Duplicate (EB72702-DUP2)	**Source: 7B22012-01**			Prepared: 02/23/07 Analyzed: 02/27/07						
Total Dissolved Solids	518	10.0	mg/L		494			4.74	20	
Batch EB72801 - General Preparation (WetChem)										
Blank (EB72801-BLK1)				Prepared & Analyzed: 02/28/07						
Sulfate	ND	0.500	mg/L							
Chloride	ND	0.500	"							
LCS (EB72801-BS1)				Prepared & Analyzed: 02/28/07						
Chloride	10.2	0.500	mg/L	10.0		102	80-120			
Sulfate	10.6	0.500	"	10.0		106	80-120			
Calibration Check (EB72801-CCV1)				Prepared & Analyzed: 02/28/07						
Sulfate	11.1		mg/L	10.0		111	80-120			
Chloride	10.4		"	10.0		104	80-120			
Duplicate (EB72801-DUP1)	**Source: 7B22009-01**			Prepared & Analyzed: 02/28/07						
Sulfate	64.9	5.00	mg/L		64.3			0.929	20	
Chloride	21.6	5.00	"		22.2			2.74	20	
Duplicate (EB72801-DUP2)	**Source: 7B22012-01**			Prepared & Analyzed: 02/28/07						
Chloride	117	5.00	mg/L		119			1.69	20	
Sulfate	92.3	5.00	"		93.2			0.970	20	

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Rice Operating Co.	Project: Hobbs Jct. E-32-1	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

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 EB72801 - General Preparation (WetChem)										
Matrix Spike (EB72801-MS1)	**Source: 7B22009-01**			Prepared & Analyzed: 02/28/07						
Chloride	134	5.00	mg/L	100	22.2	112	80-120			
Sulfate	172	5.00	"	100	64.3	108	80-120			
Matrix Spike (EB72801-MS2)	**Source: 7B22012-01**			Prepared & Analyzed: 02/28/07						
Chloride	231	5.00	mg/L	100	119	112	80-120			
Sulfate	204	5.00	"	100	93.2	111	80-120			
Batch EB72805 - General Preparation (WetChem)										
Blank (EB72805-BLK1)				Prepared & Analyzed: 02/28/07						
Total Alkalinity	ND	2.00	mg/L							
Carbonate Alkalinity	ND	0.100	"							
Bicarbonate Alkalinity	ND	2.00	"							
Hydroxide Alkalinity	ND	0.100	"							
LCS (EB72805-BS1)				Prepared & Analyzed: 02/28/07						
Bicarbonate Alkalinity	172	2.00	mg/L	200		86.0	85-115			
Duplicate (EB72805-DUP1)	**Source: 7B22004-01**			Prepared & Analyzed: 02/28/07						
Total Alkalinity	240	2.00	mg/L		240			0.00	20	
Carbonate Alkalinity	0.00	0.100	"		0.00				20	
Bicarbonate Alkalinity	240	2.00	"		240			0.00	20	
Hydroxide Alkalinity	0.00	0.100	"		0.00				20	
Reference (EB72805-SRM1)				Prepared & Analyzed: 02/28/07						
Total Alkalinity	246		mg/L	250		98.4	90-110			

Rice Operating Co.	Project: Hobbs Jct. E-32-1	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

Total Metals 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 EB72310 - 6010B/No Digestion										
Blank (EB72310-BLK1)				Prepared & Analyzed: 02/23/07						
Calcium	ND	0.0810	mg/L							
Magnesium	ND	0.0360	"							
Potassium	ND	0.0600	"							
Sodium	ND	0.0430	"							
Calibration Check (EB72310-CCV1)				Prepared & Analyzed: 02/23/07						
Calcium	1.93		mg/L	2.00		96.5	85-115			
Magnesium	1.88		"	2.00		94.0	85-115			
Potassium	1.82		"	2.00		91.0	85-115			
Sodium	1.75		"	2.00		87.5	85-115			
Duplicate (EB72310-DUP1)	**Source: 7B22004-01**			Prepared & Analyzed: 02/23/07						
Calcium	84.4	4.05	mg/L		84.2			0.237	20	
Magnesium	142	1.80	"		147			3.46	20	
Potassium	22.3	0.600	"		22.8			2.22	20	
Sodium	200	2.15	"		206			2.96	20	
Batch EC70707 - 6010B/No Digestion										
Blank (EC70707-BLK1)				Prepared & Analyzed: 03/07/07						
Calcium	ND	0.0810	mg/L							
Magnesium	ND	0.0360	"							
Potassium	ND	0.0600	"							
Sodium	ND	0.0430	"							
LCS (EC70707-BS1)				Prepared & Analyzed: 03/07/07						
Calcium	1.00		mg/L	1.00		100	85-115			
Magnesium	1.04		"	1.00		104	85-115			
Potassium	9.88		"	10.0		98.8	85-115			
Sodium	9.92		"	11.0		90.2	85-115			

Rice Operating Co.	Project: Hobbs Jct. E-32-1	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

Total Metals 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 EC70707 - 6010B/No Digestion										
LCS Dup (EC70707-BSD1)				Prepared & Analyzed: 03/07/07						
Calcium	1.01		mg/L	1.00		101	85-115	0.995	20	
Magnesium	1.05		"	1.00		105	85-115	0.957	20	
Potassium	9.97		"	10.0		99.7	85-115	0.907	20	
Sodium	10.0		"	11.0		90.9	85-115	0.803	20	
Matrix Spike (EC70707-MS1)		**Source: 7C01014-01RE1**		Prepared & Analyzed: 03/07/07						
Calcium	118		mg/L	2.00	116	100	75-125			
Magnesium	50.7		"	2.00	47.1	180	75-125			M1
Potassium	42.8		"	20.0	14.3	142	75-125			M1
Sodium	317		"	22.0	235	373	75-125			M1
Matrix Spike Dup (EC70707-MSD1)		**Source: 7C01014-01RE1**		Prepared & Analyzed: 03/07/07						
Calcium	123		mg/L	2.00	116	350	75-125	4.15	20	M1
Magnesium	51.9		"	2.00	47.1	240	75-125	2.34	20	M1
Potassium	42.9		"	20.0	14.3	143	75-125	0.233	20	M1
Sodium	322		"	22.0	235	395	75-125	1.56	20	M1

Rice Operating Co.	Project: Hobbs Jct. E-32-1	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EB72704 - EPA 5030C (GCMS)										
Blank (EB72704-BLK1)				Prepared & Analyzed: 02/27/07						
Benzene	ND	0.00100	mg/L							
Toluene	ND	0.00100	"							
Ethylbenzene	ND	0.00100	"							
Xylene (p/m)	ND	0.00100	"							
Xylene (o)	ND	0.00100	"							
Naphthalene	ND	0.00100	"							
Surrogate: Dibromofluoromethane	*46.4*		*ug/l*	*50.0*		*92.8*	*68-129*			
Surrogate: 1,2-Dichloroethane-d4	*36.6*		*"*	*50.0*		*73.2*	*72-132*			
Surrogate: Toluene-d8	*44.6*		*"*	*50.0*		*89.2*	*74-118*			
Surrogate: 4-Bromofluorobenzene	*48.3*		*"*	*50.0*		*96.6*	*65-140*			
LCS (EB72704-BS1)				Prepared & Analyzed: 02/27/07						
Benzene	0.0286	0.00100	mg/L	0.0250		114	70-130			
Toluene	0.0260	0.00100	"	0.0250		104	70-130			
Ethylbenzene	0.0250	0.00100	"	0.0250		100	70-130			
Xylene (p/m)	0.0495	0.00100	"	0.0500		99.0	70-130			
Xylene (o)	0.0259	0.00100	"	0.0250		104	70-130			
Naphthalene	0.0204	0.00100	"	0.0250		81.6	70-130			
Surrogate: Dibromofluoromethane	*50.1*		*ug/l*	*50.0*		*100*	*68-129*			
Surrogate: 1,2-Dichloroethane-d4	*43.1*		*"*	*50.0*		*86.2*	*72-132*			
Surrogate: Toluene-d8	*47.6*		*"*	*50.0*		*95.2*	*74-118*			
Surrogate: 4-Bromofluorobenzene	*51.9*		*"*	*50.0*		*104*	*65-140*			
Calibration Check (EB72704-CCV1)				Prepared & Analyzed: 02/27/07						
Toluene	46.4		ug/l	50.0		92.8	70-130			
Ethylbenzene	45.3		"	50.0		90.6	70-130			
Surrogate: Dibromofluoromethane	*50.6*		*"*	*50.0*		*101*	*68-129*			
Surrogate: 1,2-Dichloroethane-d4	*38.5*		*"*	*50.0*		*77.0*	*72-132*			
Surrogate: Toluene-d8	*43.7*		*"*	*50.0*		*87.4*	*74-118*			
Surrogate: 4-Bromofluorobenzene	*48.9*		*"*	*50.0*		*97.8*	*65-140*			

Rice Operating Co.	Project: Hobbs Jct. E-32-1	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EB72704 - EPA 5030C (GCMS)										
Matrix Spike (EB72704-MS1)	**Source: 7B22012-01**			Prepared: 02/27/07 Analyzed: 02/28/07						
Benzene	0.0215	0.00100	mg/L	0.0250	ND	86.0	70-130			
Toluene	0.0233	0.00100	"	0.0250	ND	93.2	70-130			
Ethylbenzene	0.0260	0.00100	"	0.0250	ND	104	70-130			
Xylene (p/m)	0.0502	0.00100	"	0.0500	ND	100	70-130			
Xylene (o)	0.0250	0.00100	"	0.0250	ND	100	70-130			
Naphthalene	0.0187	0.00100	"	0.0250	ND	74.8	70-130			
Surrogate: Dibromofluoromethane	*51.1*		*ug/l*	*50.0*		*102*	*68-129*			
Surrogate: 1,2-Dichloroethane-d4	*41.8*		*"*	*50.0*		*83.6*	*72-132*			
Surrogate: Toluene-d8	*42.1*		*"*	*50.0*		*84.2*	*74-118*			
Surrogate: 4-Bromofluorobenzene	*46.9*		*"*	*50.0*		*93.8*	*65-140*			
Matrix Spike Dup (EB72704-MSD1)	**Source: 7B22012-01**			Prepared: 02/27/07 Analyzed: 02/28/07						
Benzene	0.0180	0.00100	mg/L	0.0250	ND	72.0	70-130	17.7	20	
Toluene	0.0182	0.00100	"	0.0250	ND	72.8	70-130	24.6	20	R
Ethylbenzene	0.0245	0.00100	"	0.0250	ND	98.0	70-130	5.94	20	
Xylene (p/m)	0.0484	0.00100	"	0.0500	ND	96.8	70-130	3.65	20	
Xylene (o)	0.0263	0.00100	"	0.0250	ND	105	70-130	5.07	20	
Naphthalene	0.0231	0.00100	"	0.0250	ND	92.4	70-130	21.1	20	R
Surrogate: Dibromofluoromethane	*53.5*		*ug/l*	*50.0*		*107*	*68-129*			
Surrogate: 1,2-Dichloroethane-d4	*40.3*		*"*	*50.0*		*80.6*	*72-132*			
Surrogate: Toluene-d8	*35.7*		*"*	*50.0*		*71.4*	*74-118*			*S-04*
Surrogate: 4-Bromofluorobenzene	*40.5*		*"*	*50.0*		*81.0*	*65-140*			

Rice Operating Co.	Project: Hobbs Jct. E-32-1	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

Notes and Definitions

S-04	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
R	The RPD exceeded the method control limit. The individual analyte QA/QC recoveries, however, were within acceptance limits.
M1	The MS and/or MSD were above the acceptance limits due to sample matrix interference. See Blank Spike (LCS).
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: _____ Date: 3/8/2007

Brent Barron, Laboratory Director/Corp. Technical Director
Celey D. Keene, Org. Tech Director
Raland K. Tuttle, Laboratory Consultant

James Mathis, QA/QC Officer
Jeanne Mc Murrey, Inorg. Tech Director

Environmental Lab of Texas

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

12600 West I-20 East
Odessa, Texas 79765

Phone: 432-563-1800
Fax: 432-563-1713

Project Manager: Kristin Farris Pope kpope@riceswd.com

Company Name: RICE Operating Company

Company Address: 122 W. Taylor Street

City/State/Zip: Hobbs, New Mexico 88240

Telephone No: (505) 393-9174 Fax No: (505) 397-1471

Sampler Signature: Rozanne Johnson (505)631-9310 e-mail: rozanne@valornet.com

Project Name: Hobbs Junction E-32-1

Project #:

Project Loc: T18S R38E Sec32 E ~ Lea County New Mexico

PO #:

Report Format: [X] Standard [ ] TRRP [ ] NPDES

(lab use only)

ORDER #: 17B2202

LAB # (lab use only)	FIELD CODE	Beginning Depth	Ending Depth	Date Sampled	Time Sampled	Field Filtered	Total # of Containers	Preservation & # of Containers: Ice	HNO_3	HCl (2) 40 ml glass vials	H_2SO_4	NaOH	$Na_2S_2O_3$	None (1) 1 Liter HDPE	Other (Specify)	Matrix: DW=Drinking Water SL=Sludge	GW=Groundwater S=Soil/Solid	NP=Non-Potable Specify Other	Analyze For: TCLP: TPH: 418.1 8015M 8015B	TPH: TX 1005 TX 1006	Cations (Ca, Mg, Na, K)	Anions (Cl, SO4, Alkalinity)	SAR / ESP / CEC	Metals: As Ag Ba Cd Cr Pb Hg Se	TOTAL: Volatiles (BTEX-N 8260)	Semivolatiles	BTEX 8021B/5030 or BTEX 8260	RCI	N.O.R.M.	Total Dissolved Solids			RUSH TAT (Pre-Schedule) 24, 48, 72 hrs	Standard TAT
	Monitor Well #1			2/22/2007	10:10		3	X		2				1		GW					X	X			X					X				X

Special Instructions:

Please email to : kpope@riceswd.com, jpurvis@riceswd.com, mfranks@riceswd.com, matt@riceswd.com, rozanne@valornet.com

Relinquished by:	Date	Time	Received by:	Date	Time
Rozanne Johnson	2-22-07	1512			
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by ELOT:	Date	Time
				02-22-07	1512

Laboratory Comments:

Sample Containers Intact?	Y	N
VOCs Free of Headspace?	Y	N
Labels on container(s)	Y	N
Custody seals on container(s)	Y	N
Custody seals on cooler(s)	Y	N
Sample Hand Delivered by Sample/Client Rep.?	Y	N

by Courier? UPS DHL FedEx Lone Star

Temperature Upon Receipt: 15 °C

Environmental Lab of Texas

Variance/ Corrective Action Report- Sample Log-In

Client: Rice Dp.

Date/ Time: 2/22/07 15:12

Lab ID # : 7B22012

Initials: DK

Sample Receipt Checklist

					Client Initials
#1	Temperature of container/ cooler?	Yes	No	1.5 °C	
#2	Shipping container in good condition?	Yes	No		
#3	Custody Seals intact on shipping container/ cooler?	Yes	No	Not Present	
#4	Custody Seals intact on sample bottles/ container?	Yes	No	Not Present	
#5	Chain of Custody present?	Yes	No		
#6	Sample instructions complete of Chain of Custody?	Yes	No		
#7	Chain of Custody signed when relinquished/ received?	Yes	No		
#8	Chain of Custody agrees with sample label(s)?	Yes	No	ID written on Cont./ Lid	
#9	Container label(s) legible and intact?	Yes	No	Not Applicable	
#10	Sample matrix/ properties agree with Chain of Custody?	Yes	No		
#11	Containers supplied by ELOT?	Yes	No		
#12	Samples in proper container/ bottle?	Yes	No	See Below	
#13	Samples properly preserved?	Yes	No	See Below	
#14	Sample bottles intact?	Yes	No		
#15	Preservations documented on Chain of Custody?	Yes	No		
#16	Containers documented on Chain of Custody?	Yes	No		
#17	Sufficient sample amount for indicated test(s)?	Yes	No	See Below	
#18	All samples received within sufficient hold time?	Yes	No	See Below	
#19	Subcontract of sample(s)?	Yes	No	Not Applicable	
#20	VOC samples have zero headspace?	Yes	No	Not Applicable	

Variance Documentation

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

Regarding: _____

Corrective Action Taken: _____

Check all that Apply:

- ☐ See attached e-mail/ fax
- ☐ Client understands and would like to proceed with analysis
- ☐ Cooling process had begun shortly after sampling event

ENVIRONMENTAL LAB OF

12600 West I-20 East - Odessa, Texas 79765

A Xenco Laboratories Company

Analytical Report

Prepared for:

Kristin Farris-Pope

Rice Operating Co.

122 W. Taylor

Hobbs, NM 88240

Project: Hobbs Jct. E-32-1

Project Number: None Given

Location: T18S R38E Sec32 E ~ Lea County New Mexico

Lab Order Number: 7D26010

Report Date: 05/07/07

Rice Operating Co.	Project: Hobbs Jct. E-32-1	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Monitor Well # 1	7D26010-01	Water	04/25/07 09:45	04-26-2007 16:25

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

Rice Operating Co.	Project: Hobbs Jct. E-32-1	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

General Chemistry Parameters by EPA / Standard Methods

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Monitor Well # 1 (7D26010-01) Water									
Total Alkalinity	**242**	2.00	mg/L	1	ED73002	04/30/07	04/30/07	EPA 310.1M	
Chloride	**94.3**	5.00	"	10	EE70307	05/03/07	05/03/07	EPA 300.0	
Total Dissolved Solids	**528**	10.0	"	1	EE70209	04/27/07	05/02/07	EPA 160.1	
Sulfate	**75.5**	5.00	"	10	EE70307	05/03/07	05/03/07	EPA 300.0	

Rice Operating Co.	Project: Hobbs Jct. E-32-1	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

Total Metals by EPA / Standard Methods

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Monitor Well # 1 (7D26010-01) Water									
Calcium	**111**	4.05	mg/L	50	ED72704	04/27/07	04/27/07	EPA 6010B	
Magnesium	**24.2**	0.360	"	10	"	"	"	"	
Potassium	**2.65**	0.600	"	"	"	"	"	"	
Sodium	**62.0**	2.15	"	50	"	"	"	"	

Rice Operating Co.	Project: Hobbs Jct. E-32-1	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

Volatile Organic Compounds by EPA Method 8260B

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Monitor Well # 1 (7D26010-01) Water									
Benzene	ND	0.00100	mg/L	1	ED73009	04/30/07	04/30/07	EPA 8260B	
Toluene	ND	0.00100	"	"	"	"	"	"	
Ethylbenzene	ND	0.00100	"	"	"	"	"	"	
Xylene (p/m)	ND	0.00100	"	"	"	"	"	"	
Xylene (o)	ND	0.00100	"	"	"	"	"	"	
Naphthalene	ND	0.00100	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*103 %*		*68-129*	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*84.4 %*		*72-132*	"	"	"	"	
Surrogate: Toluene-d8		*97.8 %*		*74-118*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*93.2 %*		*65-140*	"	"	"	"	

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

Project: Hobbs Jct. E-32-1
Project Number: None Given
Project Manager: Kristin Farris-Pope

Fax: (505) 397-1471

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 ED73002 - General Preparation (WetChem)										
Blank (ED73002-BLK1)				Prepared & Analyzed: 04/30/07						
Total Alkalinity	ND	2.00	mg/L							
LCS (ED73002-BS1)				Prepared & Analyzed: 04/30/07						
Total Alkalinity	0.00	2.00	mg/L				85-115			
Bicarbonate Alkalinity	180	2.00	"	200		90.0	85-115			
Duplicate (ED73002-DUP1)	**Source: 7D26006-01**			Prepared & Analyzed: 04/30/07						
Total Alkalinity	214	2.00	mg/L		218			1.85	20	
Bicarbonate Alkalinity	0.00	2.00	"		0.00				20	
Reference (ED73002-SRM1)				Prepared & Analyzed: 04/30/07						
Total Alkalinity	256		mg/L	250		102	90-110			
Batch EE70209 - General Preparation (WetChem)										
Blank (EE70209-BLK1)				Prepared: 04/27/07 Analyzed: 05/02/07						
Total Dissolved Solids	ND	10.0	mg/L							
Duplicate (EE70209-DUP1)	**Source: 7D26007-01**			Prepared: 04/27/07 Analyzed: 05/02/07						
Total Dissolved Solids	1500	10.0	mg/L		1470			2.02	20	
Duplicate (EE70209-DUP2)	**Source: 7D26009-01**			Prepared: 04/27/07 Analyzed: 05/02/07						
Total Dissolved Solids	712	10.0	mg/L		684			4.01	20	
Batch EE70307 - General Preparation (WetChem)										
Blank (EE70307-BLK1)				Prepared & Analyzed: 05/03/07						
Sulfate	ND	0.500	mg/L							
Chloride	ND	0.500	"							

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

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

Project: Hobbs Jct. E-32-1
Project Number: None Given
Project Manager: Kristin Farris-Pope

Fax: (505) 397-1471

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 EE70307 - General Preparation (WetChem)										
LCS (EE70307-BS1)				Prepared & Analyzed: 05/03/07						
Chloride	9.62	0.500	mg/L	10.0		96.2	80-120			
Sulfate	10.0	0.500	"	10.0		100	80-120			
Calibration Check (EE70307-CCV1)				Prepared & Analyzed: 05/03/07						
Chloride	8.93		mg/L	10.0		89.3	80-120			
Sulfate	11.6		"	10.0		116	80-120			
Duplicate (EE70307-DUP1)	**Source: 7D26006-01**			Prepared & Analyzed: 05/03/07						
Sulfate	342	12.5	mg/L		339			0.881	20	
Chloride	941	50.0	"		917			2.58	20	
Duplicate (EE70307-DUP2)	**Source: 7D26010-01**			Prepared & Analyzed: 05/03/07						
Chloride	93.1	5.00	mg/L		94.3			1.28	20	
Sulfate	74.1	5.00	"		75.5			1.87	20	
Matrix Spike (EE70307-MS1)	**Source: 7D26006-01**			Prepared & Analyzed: 05/03/07						
Sulfate	728	12.5	mg/L	250	339	156	80-120			M1
Matrix Spike (EE70307-MS2)	**Source: 7D26010-01**			Prepared & Analyzed: 05/03/07						
Chloride	278	5.00	mg/L	100	94.3	184	80-120			M1
Sulfate	204	5.00	"	100	75.5	128	80-120			M1
Matrix Spike (EE70307-MS3)	**Source: 7D26006-01**			Prepared & Analyzed: 05/03/07						
Chloride	1800	50.0	mg/L	1000	917	88.3	80-120			

Rice Operating Co.	Project: Hobbs Jct. E-32-1	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

Total Metals 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 ED72704 - 6010B/No Digestion										
Blank (ED72704-BLK1)				Prepared & Analyzed: 04/27/07						
Calcium	ND	0.0810	mg/L							
Magnesium	ND	0.0360	"							
Potassium	ND	0.0600	"							
Sodium	ND	0.0430	"							
Calibration Check (ED72704-CCV1)				Prepared & Analyzed: 04/27/07						
Calcium	2.13		mg/L	2.00		106	85-115			
Magnesium	2.15		"	2.00		108	85-115			
Potassium	2.14		"	2.00		107	85-115			
Sodium	1.98		"	2.00		99.0	85-115			
Duplicate (ED72704-DUP1)	**Source: 7D23010-01**			Prepared & Analyzed: 04/27/07						
Calcium	44.1	0.810	mg/L		42.4			3.93	20	
Magnesium	43.0	0.360	"		42.4			1.41	20	
Potassium	22.7	0.600	"		22.1			2.68	20	
Sodium	41.9	0.430	"		40.8			2.66	20	

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

Project: Hobbs Jct. E-32-1
Project Number: None Given
Project Manager: Kristin Farris-Pope

Fax: (505) 397-1471

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch ED73009 - EPA 5030C (GCMS)										
Blank (ED73009-BLK1)				Prepared & Analyzed: 04/30/07						
Benzene	ND	0.00100	mg/L							
Toluene	ND	0.00100	"							
Ethylbenzene	ND	0.00100	"							
Xylene (p/m)	ND	0.00100	"							
Xylene (o)	ND	0.00100	"							
Naphthalene	ND	0.00100	"							
Surrogate: Dibromofluoromethane	*50.3*		*ug/l*	*50.0*		*101*	*68-129*			
Surrogate: 1,2-Dichloroethane-d4	*42.3*		*"*	*50.0*		*84.6*	*72-132*			
Surrogate: Toluene-d8	*48.2*		*"*	*50.0*		*96.4*	*74-118*			
Surrogate: 4-Bromofluorobenzene	*47.4*		*"*	*50.0*		*94.8*	*65-140*			
LCS (ED73009-BS1)				Prepared & Analyzed: 04/30/07						
Benzene	0.0249	0.00100	mg/L	0.0250		99.6	70-130			
Toluene	0.0265	0.00100	"	0.0250		106	70-130			
Ethylbenzene	0.0282	0.00100	"	0.0250		113	70-130			
Xylene (p/m)	0.0570	0.00100	"	0.0500		114	70-130			
Xylene (o)	0.0289	0.00100	"	0.0250		116	70-130			
Naphthalene	0.0190	0.00100	"	0.0250		76.0	70-130			
Surrogate: Dibromofluoromethane	*48.3*		*ug/l*	*50.0*		*96.6*	*68-129*			
Surrogate: 1,2-Dichloroethane-d4	*43.7*		*"*	*50.0*		*87.4*	*72-132*			
Surrogate: Toluene-d8	*48.1*		*"*	*50.0*		*96.2*	*74-118*			
Surrogate: 4-Bromofluorobenzene	*44.1*		*"*	*50.0*		*88.2*	*65-140*			
Calibration Check (ED73009-CCV1)				Prepared & Analyzed: 04/30/07						
Toluene	48.2		ug/l	50.0		96.4	70-130			
Ethylbenzene	49.8		"	50.0		99.6	70-130			
Surrogate: Dibromofluoromethane	*47.3*		*"*	*50.0*		*94.6*	*68-129*			
Surrogate: 1,2-Dichloroethane-d4	*39.4*		*"*	*50.0*		*78.8*	*72-132*			
Surrogate: Toluene-d8	*46.5*		*"*	*50.0*		*93.0*	*74-118*			
Surrogate: 4-Bromofluorobenzene	*42.9*		*"*	*50.0*		*85.8*	*65-140*			

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch ED73009 - EPA 5030C (GCMS)										
Matrix Spike (ED73009-MS1)	**Source: 7D26010-01**			Prepared & Analyzed: 04/30/07						
Benzene	0.0247	0.00100	mg/L	0.0250	ND	98.8	70-130			
Toluene	0.0260	0.00100	"	0.0250	ND	104	70-130			
Ethylbenzene	0.0256	0.00100	"	0.0250	ND	102	70-130			
Xylene (p/m)	0.0514	0.00100	"	0.0500	ND	103	70-130			
Xylene (o)	0.0262	0.00100	"	0.0250	ND	105	70-130			
Naphthalene	0.0148	0.00100	"	0.0250	ND	59.2	70-130			M8
Surrogate: Dibromofluoromethane	*48.6*		*ug/l*	*50.0*		*97.2*	*68-129*			
Surrogate: 1,2-Dichloroethane-d4	*42.8*		*"*	*50.0*		*85.6*	*72-132*			
Surrogate: Toluene-d8	*47.8*		*"*	*50.0*		*95.6*	*74-118*			
Surrogate: 4-Bromofluorobenzene	*43.0*		*"*	*50.0*		*86.0*	*65-140*			
Matrix Spike Dup (ED73009-MSD1)	**Source: 7D26010-01**			Prepared & Analyzed: 04/30/07						
Benzene	0.0250	0.00100	mg/L	0.0250	ND	100	70-130	1.21	20	
Toluene	0.0264	0.00100	"	0.0250	ND	106	70-130	1.90	20	
Ethylbenzene	0.0262	0.00100	"	0.0250	ND	105	70-130	2.90	20	
Xylene (p/m)	0.0528	0.00100	"	0.0500	ND	106	70-130	2.87	20	
Xylene (o)	0.0270	0.00100	"	0.0250	ND	108	70-130	2.82	20	
Naphthalene	0.0169	0.00100	"	0.0250	ND	67.6	70-130	13.2	20	M8
Surrogate: Dibromofluoromethane	*50.1*		*ug/l*	*50.0*		*100*	*68-129*			
Surrogate: 1,2-Dichloroethane-d4	*42.9*		*"*	*50.0*		*85.8*	*72-132*			
Surrogate: Toluene-d8	*48.5*		*"*	*50.0*		*97.0*	*74-118*			
Surrogate: 4-Bromofluorobenzene	*43.9*		*"*	*50.0*		*87.8*	*65-140*			

Rice Operating Co.	Project: Hobbs Jct. E-32-1	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

Notes and Definitions

M8	The MS and/or MSD were below the acceptance limits. See Blank Spike (LCS).
M1	The MS and/or MSD were above the acceptance limits due to sample matrix interference. See Blank Spike (LCS).
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: _____ Date: 5/7/2007

Brent Barron, Laboratory Director/Corp. Technical Director
Celey D. Keene, Org. Tech Director
Raland K. Tuttle, Laboratory Consultant

James Mathis, QA/QC Officer
Jeanne Mc Murrey, Inorg. Tech Director

Environmental Lab of Texas

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

12600 West I-20 East
Odessa, Texas 79765
Phone: 432-563-1800
Fax: 432-563-1713

Project Manager: Kristin Farris Pope kpope@riceswd.com
Project Name: Hobbs Junction E-32-1
Company Name: RICE Operating Company
Project #:
Company Address: 122 W. Taylor Street
Project Loc: T18S R38E Sec32 E ~ Lea County New Mexico
City/State/Zip: Hobbs, New Mexico 88240
PO #:
Telephone No: (505) 393-9174 Fax No: (505) 397-1471
Report Format: [X] Standard [ ] TRRP [ ] NPDES
Sampler Signature: Rozanne Johnson (505)631-9310 e-mail: rozanne@valornet.com

(lab use only)
ORDER #: 7D26010

LAB # (lab use only)	FIELD CODE	Beginning Depth	Ending Depth	Date Sampled	Time Sampled	Filtered	Total # of Containers	Preservative & # of Containers: Ice	HNO_3	HCl (2) 40 ml glass vials	H_2SO_4	NaOH	$Na_2S_2O_3$	None (1) 1 Liter HDPE	Other (Specify)	Matrix: Groundwater / Wastewater / Soil/Sediment / Sludge / Other (Specify)	Analyze For: TCLP TOTAL: TPH: 418.1 8015M 8015B	TPH: TX 1005 TX 1006	Cations (Ca, Mg, Na, K)	Anions (Cl, SO4, Alkalinity)	SAR / ESP / CEC	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles - BTEX-N 8260	Semivolatiles	cBTEX 8021B/5030 or BTEX 8260	RCI	N.O.R.M.	Total Dissolved Solids			RUSH TAT (Pre-Schedule) 24, 48, 72 hrs	Standard TAT
01	Monitor Well #1			4/25/2007	9:45		3	X		2				1		GW			X	X			X					X				X

Special Instructions:
Please email to : kpope@riceswd.com matt@riceswd.com rozanne@valornet.com
jpurvis@riceswd.com

Relinquished by	Date	Time	Received by	Date	Time
Rozanne Johnson	4/26/07	12:40	James Johnson	4-26-07	12:41
Relinquished by: James Johnson	4-26-07	4:25	Received by	Date	Time
Relinquished by:	Date	Time	Received by ELOT: Andrea Fr	4-26-07	4:45

Laboratory Comments:

Sample Containers Intact?	Y	N
VOCs Free of Headspace?	Y	N
Labels on container(s)	Y	N
Custody seals on container(s)	Y	N
Custody seals on cooler(s)	Y	N
Sample Hand Delivered	Y	N
by Sampler/Client Rep. ?	Y	N

by Courier? UPS DHL FedEx Lone Star

Temperature Upon Receipt: 1.0 °C

Environmental Lab of Texas

Variance/ Corrective Action Report- Sample Log-In

Client: Rice

Date/ Time: 4-26-07 4:25

Lab ID #: 1076010

Initials: CL

Sample Receipt Checklist

					Client Initials
#1	Temperature of container/ cooler?	(Yes)	No	7.0 °C	
#2	Shipping container in good condition?	(Yes)	No		
#3	Custody Seals intact on shipping container/ cooler?	(Yes)	No	Not Present	
#4	Custody Seals intact on sample bottles/ container?	(Yes)	No	Not Present	
#5	Chain of Custody present?	(Yes)	No		
#6	Sample instructions complete of Chain of Custody?	(Yes)	No		
#7	Chain of Custody signed when relinquished/ received?	(Yes)	No		
#8	Chain of Custody agrees with sample label(s)?	(Yes)	No	ID written on Cont./ Lid	
#9	Container label(s) legible and intact?	(Yes)	No	Not Applicable	
#10	Sample matrix/ properties agree with Chain of Custody?	(Yes)	No		
#11	Containers supplied by ELOT?	(Yes)	No		
#12	Samples in proper container/ bottle?	(Yes)	No	See Below	
#13	Samples properly preserved?	(Yes)	No	See Below	
#14	Sample bottles intact?	(Yes)	No		
#15	Preservations documented on Chain of Custody?	(Yes)	No		
#16	Containers documented on Chain of Custody?	(Yes)	No		
#17	Sufficient sample amount for indicated test(s)?	(Yes)	No	See Below	
#18	All samples received within sufficient hold time?	(Yes)	No	See Below	
#19	Subcontract of sample(s)?	Yes	No	(Not Applicable)	
#20	VOC samples have zero headspace?	(Yes)	No	Not Applicable	

Variance Documentation

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

Regarding: _____

Corrective Action Taken: _____

Check all that Apply:

- ☐ See attached e-mail/ fax
- ☐ Client understands and would like to proceed with analysis
- ☐ Cooling process had begun shortly after sampling event

Analytical Report 287157

for

Rice Operating Co.

Project Manager: Kristin Pope

Hobbs Junction E-32-1

13-AUG-07

12600 West I-20 East Odessa, Texas 79765

A Xenco Laboratories Company

NELAC certification numbers:
Houston, TX E871002 - Miami, FL E86678 - Tampa, FL E86675

Houston - Dallas - San Antonio - Austin - Tampa - Miami - Latin America

13-AUG-07

Project Manager: **Kristin Pope**
Rice Operating Co.
122 West Taylor
Hobbs, NM 88240

Reference: XENCO Report No: **287157**
Hobbs Junction E-32-1
Project Address: T18S R38E Sec32 E ~ Lea County New Mexico

Kristin Pope:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number 287157. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. Estimation of data uncertainty for this report is found in the quality control section of this report unless otherwise noted. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 287157 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

Brent Barron
Odessa Laboratory Director

Certificate of Analysis Summary 287157

Rice Operating Co., Hobbs, NM

Project Name: Hobbs Junction E-32-1

Project Id:

Contact: Kristin Pope

Project Location: T18S R38E Sec32 E ~ Lea County New M

Date Received in Lab Aug-02-07 12:50 pm

Report Date: 13-AUG-07

Project Manager: Brent Barron, II

Analysis Requested					
	Lab Id:	287157-001			
	Field Id:	Monitor Well # 1			
	Depth:				
	Matrix:	WATER			
	Sampled:	Jul-30-07 07:55			
Alkalinity by EPA 310.1	***Extracted:***				
	Analyzed:	Aug-07-07 13:00			
	Units/RL:	mg/L	RL		
Alkalinity, Total (as CaCO3)		290	4.00		
Inorganic Anions by EPA 300	***Extracted:***				
	Analyzed:	Aug-07-07 11:48			
	Units/RL:	mg/L	RL		
Chloride		87.5	5.00		
Sulfate		69.3	5.00		
Metals per ICP by SW846 6010B	***Extracted:***				
	Analyzed:	Aug-03-07 14:39			
	Units/RL:	mg/L	RL		
Calcium		132	0.100		
Magnesium		25.8	0.010		
Potassium		3.38	0.500		
Sodium		43.9	0.500		
Residue, Filterable (TDS) by EPA 160.1	***Extracted:***				
	Analyzed:	Aug-06-07 16:20			
	Units/RL:	mg/L	RL		
Total dissolved solids		672	5.00		
VOAs by SW-846 8260B	***Extracted:***	Aug-04-07 17:00			
	Analyzed:	Aug-05-07 19:56			
	Units/RL:	ug/L	RL		
Benzene		ND	1.00		
Ethylbenzene		ND	1.00		
Naphthalene		ND	1.00		
Toluene		ND	1.00		
o-Xylene		ND	1.00		
m,p-Xylenes		ND	1.00		

Brent Barron
Odessa Laboratory Director

Flagging Criteria

X In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to effect the recovery of the spike concentration. This condition could also effect the relative percent difference in the MS/MSD.

B A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.

D The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.

E The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.

F RPD exceeded lab control limits.

J The target analyte was positively identified below the MQL and above the SQL.

U Analyte was not detected.

L The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.

H The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.

K Sample analyzed outside of recommended hold time.

Form 2 - Surrogate Recoveries

Project Name: Hobbs Junction E-32-1

Work Order #: 287157 **Project ID:**

Lab Batch #: 701795 **Sample:** 286528-001 S / MS **Batch:** 1 **Matrix:** Water

Units: mg/L

VOAs by SW-846 8260B Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.0436	0.0500	87	86-115	
Dibromofluoromethane	0.0480	0.0500	96	86-118	
1,2-Dichloroethane-D4	0.0409	0.0500	82	80-120	
Toluene-D8	0.0468	0.0500	94	88-110	

Lab Batch #: 701795 **Sample:** 286528-001 SD / MSD **Batch:** 1 **Matrix:** Water

Units: mg/L

VOAs by SW-846 8260B Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.0423	0.0500	85	86-115	*
Dibromofluoromethane	0.0501	0.0500	100	86-118	
1,2-Dichloroethane-D4	0.0412	0.0500	82	80-120	
Toluene-D8	0.0481	0.0500	96	88-110	

Lab Batch #: 701795 **Sample:** 287157-001 / SMP **Batch:** 1 **Matrix:** Water

Units: ug/L

VOAs by SW-846 8260B Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	45.98	50.00	92	86-115	
Dibromofluoromethane	53.79	50.00	108	86-118	
1,2-Dichloroethane-D4	41.05	50.00	82	80-120	
Toluene-D8	47.37	50.00	95	88-110	

Lab Batch #: 701795 **Sample:** 497846-1-BKS / BKS **Batch:** 1 **Matrix:** Water

Units: ug/L

VOAs by SW-846 8260B Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	43.28	50.00	87	86-115	
Dibromofluoromethane	45.30	50.00	91	86-118	
1,2-Dichloroethane-D4	37.94	50.00	76	80-120	*
Toluene-D8	46.36	50.00	93	88-110	

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

All results are based on MDL and validated for QC purposes.

Form 2 - Surrogate Recoveries

Project Name: Hobbs Junction E-32-1

Work Order #: 287157 **Project ID:**

Lab Batch #: 701795 **Sample:** 497846-1-BLK / BLK **Batch:** 1 **Matrix:** Water

Units: ug/L

VOAs by SW-846 8260B Analytes	SURROGATE RECOVERY STUDY Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	47.54	50.00	95	86-115	
Dibromofluoromethane	48.11	50.00	96	86-118	
1,2-Dichloroethane-D4	38.00	50.00	76	80-120	*
Toluene-D8	46.20	50.00	92	88-110	

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

All results are based on MDL and validated for QC purposes.

Blank Spike Recovery

Project Name: Hobbs Junction E-32-1

Work Order #: 287157 **Project ID:**

Lab Batch #: 701789 **Sample:** 701789-1-BKS **Matrix:** Water
Date Analyzed: 08/07/2007 **Date Prepared:** 08/07/2007 **Analyst:** WRU
Reporting Units: mg/L **Batch #:** 1

BLANK /BLANK SPIKE RECOVERY STUDY

Alkalinity by EPA 310.1 Analytes	Blank Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Control Limits %R	Flags
Alkalinity, Total (as CaCO3)	ND	200	194	97	80-120	

Lab Batch #: 701864 **Sample:** 701864-1-BKS **Matrix:** Water
Date Analyzed: 08/07/2007 **Date Prepared:** 08/07/2007 **Analyst:** IRO
Reporting Units: mg/L **Batch #:** 1

BLANK /BLANK SPIKE RECOVERY STUDY

Inorganic Anions by EPA 300 Analytes	Blank Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Control Limits %R	Flags
Chloride	ND	10.0	9.03	90	90-110	
Sulfate	ND	10.0	9.63	96	90-110	

Lab Batch #: 701571 **Sample:** 701571-1-BKS **Matrix:** Water
Date Analyzed: 08/03/2007 **Date Prepared:** 08/03/2007 **Analyst:** LATCOR
Reporting Units: mg/L **Batch #:** 1

BLANK /BLANK SPIKE RECOVERY STUDY

Metals per ICP by SW846 6010B Analytes	Blank Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Control Limits %R	Flags
Calcium	ND	2.00	1.83	92	75-125	
Magnesium	ND	2.00	2.08	104	75-125	
Potassium	ND	2.00	2.28	114	75-125	
Sodium	ND	2.00	1.94	97	75-125	

Lab Batch #: 701795 **Sample:** 497846-1-BKS **Matrix:** Water
Date Analyzed: 08/05/2007 **Date Prepared:** 08/04/2007 **Analyst:** CELKEE
Reporting Units: ug/L **Batch #:** 1

BLANK /BLANK SPIKE RECOVERY STUDY

VOAs by SW-846 8260B Analytes	Blank Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Control Limits %R	Flags
Benzene	ND	25.0	24.0	96	66-142	
Ethylbenzene	ND	25.0	26.4	106	75-125	
Toluene	ND	25.0	24.3	97	59-139	
o-Xylene	ND	25.0	26.7	107	75-125	
m,p-Xylenes	ND	50.0	53.2	106	75-125	

Blank Spike Recovery [D] = 100*[C]/[B]
All results are based on MDL and validated for QC purposes.

Form 3 - MS Recoveries

Project Name: Hobbs Junction E-32-1

Work Order #: 287157
Lab Batch #: 701864
Date Analyzed: 08/07/2007
QC- Sample ID: 287159-003 S
Reporting Units: mg/L

Date Prepared: 08/07/2007
Batch #: 1

Project ID:
Analyst: IRO
Matrix: Water

Inorganic Anions by EPA 300	MATRIX / MATRIX SPIKE RECOVERY STUDY					
Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
Chloride	548	250	862	126	90-110	X

Matrix Spike Percent Recovery [D] = 100*(C-A)/B
Relative Percent Difference [E] = 200*(C-A)/(C+B)
All Results are based on MDL and Validated for QC Purposes

Form 3 - MS / MSD Recoveries

Project Name: Hobbs Junction E-32-1

Work Order # 287157 **Project ID:**

Lab Batch ID: 701795 **QC- Sample ID:** 286528-001 S **Batch #:** 1 **Matrix:** Water

Date Analyzed: 08/05/2007 **Date Prepared:** 08/04/2007 **Analyst:** CELKEE

Reporting Units: mg/L

VOAs by SW-846 8260B Analytes	MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY										
	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	ND	0.025	0.024	96	0.025	0.025	100	4	66-142	21	
Ethylbenzene	ND	0.025	0.027	108	0.025	0.026	104	4	75-125	20	
Toluene	ND	0.025	0.025	100	0.025	0.026	104	4	59-139	21	
o-Xylene	ND	0.025	0.027	108	0.025	0.027	108	0	75-125	20	
m,p-Xylenes	ND	0.050	0.053	106	0.050	0.052	104	2	75-125	20	

Matrix Spike Percent Recovery [D] = 100*(C-A)/B
Relative Percent Difference RPD = 200*(D-G)/(D+G)

Matrix Spike Duplicate Percent Recovery [G] = 100*(F-A)/E

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not ApplicableN = See Narrative, EQL = Estimated Quantitation Limit

Sample Duplicate Recovery

Project Name: Hobbs Junction E-32-1

Work Order #: 287157

Lab Batch #: 701789 **Project ID:**
Date Analyzed: 08/07/2007 **Date Prepared:** 08/07/2007 **Analyst:** WRU
QC- Sample ID: 287122-001 D **Batch #:** 1 **Matrix:** Water
Reporting Units: mg/L

Alkalinity by EPA 310.1	SAMPLE / SAMPLE DUPLICATE RECOVERY				
Analyte	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Alkalinity, Total (as CaCO3)	216	216	0	20	

Lab Batch #: 701571
Date Analyzed: 08/03/2007 **Date Prepared:** 08/03/2007 **Analyst:** LATCOR
QC- Sample ID: 287179-001 D **Batch #:** 1 **Matrix:** Water
Reporting Units: mg/L

Metals per ICP by SW846 6010B	SAMPLE / SAMPLE DUPLICATE RECOVERY				
Analyte	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Calcium	301	285	5	25	
Magnesium	120	134	11	25	
Potassium	20.1	15.8	24	25	
Sodium	284	265	7	25	

Lab Batch #: 701790
Date Analyzed: 08/06/2007 **Date Prepared:** 08/06/2007 **Analyst:** IRO
QC- Sample ID: 287122-001 D **Batch #:** 1 **Matrix:** Water
Reporting Units: mg/L

Residue, Filterable (TDS) by EPA 160.1	SAMPLE / SAMPLE DUPLICATE RECOVERY				
Analyte	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Total dissolved solids	754	784	4	30	

Lab Batch #: 701790
Date Analyzed: 08/06/2007 **Date Prepared:** 08/06/2007 **Analyst:** IRO
QC- Sample ID: 287348-002 D **Batch #:** 1 **Matrix:** Water
Reporting Units: mg/L

Residue, Filterable (TDS) by EPA 160.1	SAMPLE / SAMPLE DUPLICATE RECOVERY				
Analyte	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Total dissolved solids	6250	6290	1	30	

Spike Relative Difference RPD 200 * | (B-A)/(B+A) |
All Results are based on MDL and validated for QC purposes.

Environmental Lab of Texas

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

12600 West I-20 East
Odessa, Texas 79765
Phone: 432-563-1800
Fax: 432-563-1713

Project Manager: Kristin Farris Pope kpope@riceswd.com
Company Name: RICE Operating Company
Company Address: 122 W. Taylor Street
City/State/Zip: Hobbs, New Mexico 88240
Telephone No: (505) 393-9174 Fax No: (505) 397-1471
Sampler Signature: Rozanne Johnson (505)631-9310 e-mail: rozanne@valornet.com

Project Name: Hobbs Junction E-32-1
Project #:
Project Loc: T18S R38E Sec32 E ~ Lea County New Mexico
PO #:
Report Format: [X] Standard [ ] TRRP [ ] NPDES

(lab use only)
ORDER #: 287157

LAB # (lab use only)	FIELD CODE	Beginning Depth	Ending Depth	Date Sampled	Time Sampled	Field Filtered	Total # of Containers	Preservation & # of Containers: Ice	HNO3	HCl (2) 40 ml glass vials	H2SO4	NaOH	Na2S2O3	None (1) 1 Liter HDPE	Other (Specify)	Matrix: Drinking Water SL=Sludge	GW=Groundwater S=Soil/Solid	NP=Non-Potable Specify Other	Analyze For: TCLP	TOTAL	8015B	TPH: 418.1 8015M	TPH: TX 1005 TX 1006	Cations (Ca, Mg, Na, K)	Anions (Cl, SO4 Alkalinity)	SAR / ESP / CEC	Metals As Ag Ba Cd Cr Pb Hg Se	Volatiles tdTEX N 8260	Semivolatiles	BTEX 8021B/5030 or BTEX 1020	RCI	N.O.R.M.	Total Dissolved Solids	RUSH TAT (Pre-Schedule) 24, 48, 72 hrs	Standard TAT
01	Monitor Well #1			7/30/2007	7:55		3	X		2				1		GW				X				X	X			X					X		X

Special Instructions:
Please email to : kpope@riceswd.com rozanne@valornet.com

Relinquished by:	Date	Time	Received by:	Date	Time
Rozanne Johnson	8/2/07	9:15	Raelyn Gardner	8/2/07	9:16
Relinquished by: Raelyn Gardner	8/2/07	12:50	Received by:	Date	Time
Relinquished by:	Date	Time	Received by ELOT: Andrea Lam	8-2-07	12:50

Laboratory Comments:

Sample Containers Intact?	N	N
VOCs Free of Headspace?	N	N
Labels on container(s)	N	N
Custody seals on container(s)	N	N
Custody seals on cooler(s)	N	N
Sample Hand Delivered	N	N

by Sampler/Client Rep ? by Courier? UPS DHL FedEx Lone Star

Temperature Upon Receipt 1.5 °C

Environmental Lab of Texas

Variance/ Corrective Action Report- Sample Log-In

Client: Rice

Date/ Time: 8.2.07 12:50

Lab ID #: 281157

Initials: GL

Sample Receipt Checklist

					Client Initials
#1	Temperature of container/ cooler?	Yes	No	1.5 °C	
#2	Shipping container in good condition?	Yes	No		
#3	Custody Seals intact on shipping container/ cooler?	Yes	No	Not Present	
#4	Custody Seals intact on sample bottles/ container?	Yes	No	Not Present	
#5	Chain of Custody present?	Yes	No		
#6	Sample instructions complete of Chain of Custody?	Yes	No		
#7	Chain of Custody signed when relinquished/ received?	Yes	No		
#8	Chain of Custody agrees with sample label(s)?	Yes	No	ID written on Cont./ Lid	
#9	Container label(s) legible and intact?	Yes	No	Not Applicable	
#10	Sample matrix/ properties agree with Chain of Custody?	Yes	No		
#11	Containers supplied by ELOT?	Yes	No		
#12	Samples in proper container/ bottle?	Yes	No	See Below	
#13	Samples properly preserved?	Yes	No	See Below	
#14	Sample bottles intact?	Yes	No		
#15	Preservations documented on Chain of Custody?	Yes	No		
#16	Containers documented on Chain of Custody?	Yes	No		
#17	Sufficient sample amount for indicated test(s)?	Yes	No	See Below	
#18	All samples received within sufficient hold time?	Yes	No	See Below	
#19	Subcontract of sample(s)?	Yes	No	Not Applicable	
#20	VOC samples have zero headspace?	Yes	No	Not Applicable	

Variance Documentation

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

Regarding: _____

Corrective Action Taken: _____

Check all that Apply

- ☐ See attached e-mail/ fax
- ☐ Client understands and would like to proceed with analysis
- ☐ Cooling process had begun shortly after sampling event

Appendix C

Katie Lee

From: Kristin Pope [kpope@riceswd.com]
Sent: Wednesday, October 31, 2007 3:30 PM
To: Katie Lee
Subject: Fw: Summary of July 18 meeting

----- Original Message -----
From: Hansen, Edward J., EMNRD
To: Kristin Pope
Cc: Carolyn Haynes ; Scott Curtis ; Sanchez, Daniel J., EMNRD ; Price, Wayne, EMNRD
Sent: Wednesday, August 08, 2007 11:26 AM
Subject: RE: Summary of July 18 meeting

Kristin,
Your summary appears to be accurate and complete.
Attached is the summary that you sent with comments from me [OCD case #s and formal (email) approval dates].
I'll be sending more formal (via email) approvals for the closures and some of the CAPs soon.
Also, I will review and comment on the other CAPs and the APs a.s.a.p.

Thanks for the summary.
Let me know if you have any questions regarding my comments.

Edward J. Hansen
Hydrologist
Environmental Bureau
505-476-3489

From: Kristin Pope [mailto:kpope@riceswd.com]
Sent: Wednesday, August 08, 2007 10:34 AM
To: Sanchez, Daniel J., EMNRD; Price, Wayne, EMNRD; Hansen, Edward J., EMNRD
Cc: Carolyn Haynes; Scott Curtis
Subject: Summary of July 18 meeting

Gentlemen,

Please review the attached summary of our July 18 meeting. Please let me know if anything needs to be changed. OCD and ROC have already moved forward with several of the projects listed but I would like written confirmation for our files. Thanks again for your time.

Kristin Farris Pope
Project Scientist
RICE Operating Company
Hobbs, New Mexico
(505) 393-9174

OCD/ROC MEETING SUMMARY July 18, 2007

CLOSURES

1. Abatement Completion Report for BD Zachary Hinton EOL submitted by R.T. Hicks Consultants on 3/15/2007. AP-50

2. Abatement Completion Report for EME Marathon Barber (jct. E-5) submitted by R.T. Hicks Consultants on 5/16/2007. 1R0427-91 *Approved soil work completed Dec. 2006*

3. Closure Report for Hobbs I-29 EOL boot submitted by R.T. Hicks Consultants on 5/23/2007. Approved soil work completed in 2006. 1R428-42

4. Closure Request for BD jct. N-29 submitted by R.T. Hicks Consultants on 2/10/2007. #1R0426-37

APPROVALS

1. Stage 1&2 Abatement Plan for Vacuum F/G-35 SWD submitted by R.T. Hicks Consultants; proof of public notice submitted Feb. 2006; AP-59
   Vadose zone remedy complete; reclaiming surface; groundwater treatment ongoing at F-35; evaluating treatment potential at G-35

2. INVESTIGATION & CHARACTERIZATION PLANS (ICP)
   NMOCD Approved (1 – 14) via email August 6, 2007

   1. Hobbs O-5 Historical Release by Hicks on 4/11/2007 #1R428-69
   2. EME State 'H' EOL by P. Galusky on 5/1/2007 #1R427-15
   3. Justis E-1 vent by Highlander on 11/29/2006. #1R0432-06
   4. Vacuum State 'P' EOL by Galusky on 4/20/07 #1R425-26
   5. Vacuum jct. F-31-1 by Hicks on 4/17/07. #1R425-27
   6. BD P-26-1 vent by Trident on 2/12/2007. #1R0426-106
   7. BD jct. P-26-2 by Trident on 2/12/2007. #1R0426-107
   8. Hobbs jct. E-4, M-4 vent, & N-4 vent (1 plan) by Hicks on 4/17/07 #1R428-71, #1R428-76, #1R428-68, respectively
   9. EME L-6 boot by Trident on 12/1/2006. #1R0427-09
   10. EME B-8 leak by Trident on 12/1/2006. #1R0480
   11. EME jct. F-18 by Arcadis on 7/6/2007 #1R427-16
   12. BD jct. F-25-1 by Arcadis on 7/12/2007 #1R426-10
   13. EME L-15-1 vent by Galusky on 7/16/2007 #1R427-173
   14. EME State 'Q' EOL boot by Galusky on 7/16/2007 #1R427-174

3. Corrective Action Plan (CAP) for Hobbs E-15 SWD submitted on 11/28/2006 by Arcadis G&M. *Approved with clay or GCL condition* #1R428-40
   NMOCD Approved with conditions via email July 27, 2007

4. CAP for Hobbs F-29-1b boot submitted by R.T. Hicks Consultants on 4/2/2007. #1R428-45

5. CAP for Hobbs O-29 vent submitted by R.T. Hicks Consultants on 4/2/2007. #1R428-43

6. CAP for Hobbs I-29 vent submitted by R.T. Hicks Consultants on 4/13/2007. #1R428-41

7. CAP for Hobbs jct. E-33-1 submitted by R.T. Hicks Consultants on 1/2/2007. #1R428-67

8. CAP for Hobbs B-32 boot submitted by R.T. Hicks Consultants on 1/22/2007. #1R428-57

9. CAP for Hobbs jct. E-32-1 submitted by R.T. Hicks Consultants on 1/22/2007. #1R428-65

10. CAP for Hobbs F-33 vent submitted by R.T. Hicks Consultants on 1/22/2007. #1R428-58

11. CAP for EME A-2 leak submitted by Highlander on 5/23/2007. # 1R0427-62 *condition: install clay at 4 ft instead of 3 ft as proposed*

12. CAP for jct. A-2-1 submitted by Highlander on 5/23/2007. # 1R0427-177 *condition: install clay at 4 ft instead of 3 ft as proposed*

13. CAP for EME I-1 off-site encroachment submitted by Trident on 2/27/07. #1R0464

Rule 19 ABATEMENT PLANS
OCD granted approval to install monitoring wells as proposed while reviewing plans for administrative completeness:

1. Stage 1 & 2 Abatement Plan for Hobbs F-29 SWD submitted on 10/27/2006 by R.T. Hicks Consultants. *Public notice ready to submit upon approval.* AP-64

2. Stage 1 Abatement Plan for EME C-16(1) leak submitted on 5/25/2007 by L. Peter Galusky; #1R0476 *Public notice ready to submit upon approval.*

3. Stage 1 Abatement Plan for EME C-16(2) leak submitted on 5/25/2007 by L. Peter Galusky; #1R0477 *Public notice ready to submit upon approval.*

4. Stage 1&2 Abatement Plan for BD Santa Rita release site submitted on 12/11/2006 by Trident. AP-58 *want to drill more MWs*

5. Stage 1&2 Abatement Plan for EME jct. M-16-1 submitted on 1/29/2007 by Arcadis G&M. AP-42

6. Stage 1&2 Abatement Plan for EME jct. A-20 submitted on 1/29/2007 by Arcadis G&M. AP-43

7. Stage 1 Abatement Plan for BD H-35 pit submitted by Arcadis G&M on 3/23/2007. #1R0216

8. Stage 1 & 2 Abatement Plan for Justis jct. L-1 boot submitted by Highlander on 1/17/07. AP-48

OCD WILL REVIEW

1. Stage 1 Final Report & Closure Request for EME jct. K-33-1 submitted by Whole Earth on 12/28/2006. AP-60
OCD requests confirmation of regional gradient/impact

2. CAP for EME M-5 SWD submitted by Hicks on 9/10/2004. #1R424

3. Rule 19 Release and CAP for soil for BD jct. F-17 submitted by Highlander on 8/30/06. *Additional information requested by OCD was submitted on 12/29/06 and presented at meeting on 2/21/2007.* AP-47

4. Request for Release from Rule 19 for EME H-13 release submitted on 8/30/2006 by Highlander Environmental. AP-44
Additional information requested by OCD was submitted on 12/29/06 and presented at meeting on 2/21/2007. Showed current site photos.

5. Final Investigation Report & CAP for EME jct. K-6 submitted by Trident on 3/7/2007. AP-46.

OTHER

1. CAP for BD K-4 leak submitted by Highlander on 4/23/2007. #1R0459
APPROVAL to begin pumping from MW-1 as proposed;
OCD will evaluate CAP (soil work)

2. CAP for BD O-17-1 vent submitted by Highlander on 5/11/2007. #1R426-12
No groundwater impact; soil work only
ROC WILL REVISE AND RE-SUBMIT FOR CLARIFICATION

3. GEOSYNTHETIC CLAY LINER (GCL) option for Junction Box Upgrade Program
Modification request required; can be emailed.
NMOCD Approved with conditions via email July 27, 2007

January 16, 2007

Corrective Action Plan for E-32-1 Junction Box Site

Hobbs Salt Water Disposal System

NMOCD CASE #: 1R0428-66

R.T. Hicks Consultants, LTD

901 Rio Grande Blvd. NW, Suite F-142, Albuquerque, NM 87104

January 15, 2007

Corrective Action Plan for E-32-1 Junction Box Site

Hobbs Salt Water Disposal System

NMOCD CASE #: 1R0428-66

R.T. Hicks Consultants, LTD

901 Rio Grande Blvd. NW, Suite F-142, Albuquerque, NM 87104

January 15, 2007

Corrective Action Plan for E-32-1 Junction Box Site

Hobbs Salt Water Disposal System

NMOCD CASE #: 1R0428-66

R.T. Hicks Consultants, LTD

901 Rio Grande Blvd. NW, Suite F-142, Albuquerque, NM 87104

Table of Contents

List of Figures, Tables & Plates

1.0 EXECUTIVE SUMMARY

This Corrective Action Plan presents the results of the characterization activities performed by R.T. Hicks Consultants (Hicks Consultants) and Rice Operating Company (ROC) at the E-32-1 site located in the Hobbs Salt Water Disposal System (SWD). Hydrocarbon constituents are not present in the vadose zone. HYDRUS-1D simulation modeling predicts that the placement of a vegetative cap over the site mitigates any threat to fresh water posed by chloride in the vadose zone. After re-vegetation of the site and two additional quarterly ground water monitoring events, ROC will submit a final closure report.

Data Summary

1. Hicks Consultants and ROC conducted field activities at the E-32-1 Junction Box site in May 2004. This involved general reconnaissance as well as supervision of borehole sampling of the vadose zone from ground surface to ground water.
2. Chloride concentration data from vadose zone samples show that the chloride center of mass resides from near ground surface to 10 feet below ground surface. The maximum chloride concentration is at 10 feet bgs (3,180 mg/kg - laboratory) and the chloride concentration at 5 feet bgs is 1,200 mg/kg (field analysis).
3. Chloride concentrations below the center of mass ranged from 689 mg/kg (field result for 16 feet bgs) to 414 mg/kg (field result at 35 feet bgs).
4. Neither field PID analyses nor observed characteristics of samples (e.g. odor, color) suggest that hydrocarbons are present in the vadose zone. All field PID analyses were 2 ppm. Because of this finding, samples were not submitted to the laboratory for analysis for hydrocarbons.
5. The chloride concentrations in the vadose zone exceeded the delineation limit established by the Investigation Characterization Plan (ICP). Therefore a monitoring well was installed in the soil boring.
6. Three ground water sampling events provided additional data for this Corrective Action Plan.
7. Although the initial ground water sampling event showed that TDS and chloride exceeded WQCC Standards (1,350 and 393 mg/L respectively), this result could not be replicated. The two subse-

quent quarterly monitoring events show that ground water is below WQCC Standards. The most recent sampling result from this well (9/19/06) was 189 mg/L chloride and 740 mg/L TDS.

Conclusions

1. Initial samples from monitoring wells often return anomalous results due to construction issues such as the transport of up-hole constituents to the ground water table. The fact that two consecutive sampling events show results that are 50% of the original finding allows us to conclude that the first analysis is anomalous and is not representative of ground water quality beneath the site.
2. HYDRUS-1D simulations predict that subsurface chloride mass will migrate downward over decades, disperse in the soil column and enter ground water at a very slow rate and that ground water will not exceed WQCC standards.

Recommendations

1. Restore and re-vegetate the ground surface at the E-32-1 Junction Box Site.
2. Continue ground water monitoring for two additional quarters.
3. Upon documentation of surface restoration and verification that ground water quality remains below WQCC Standards and does not show an increasing concentration trend over time, ROC will submit a closure report for the E-32-1 Junction Box site.

The selected remedy is the creation of an infiltration barrier through surface restoration and re-vegetation of the site. This remedy is protective of ground water quality, human health and the environment.

2.0 BACKGROUND

The Hobbs Salt Water Disposal System (SWD), which managed produced water from the late 1950s to the present, is now closed. Future releases from the system infrastructure are not possible. Closure of facilities like the E-32-1 Junction Box within Hobbs SWD, followed the August 6, 2004 NMOCD-approved junction box investigation plan. This plan calls for delineation of any impact from these sites during the closure process and states:

> *If 12 feet vertical delineation at the source reveals Target Concentrations for TPH or BTEX will not meet NMOCD guidelines or TPH and BTEX will meet guidelines but there is not a significant decline vs. depth in chloride concentration, the site-impact is judged to be outside the scope of this work plan and will become a risk-based corrective action (RBCA) project-site.*

The E-32-1 Junction Box site met these criteria. With the abandonment of the system in 2002, Rice Operating Company (ROC) excavated and removed the E-32-1 Junction Box and the uppermost four feet of the vadose zone. At the time of investigation, the excavation was filled with a mixture of silty loam with some caliche.

2.1 Location

Plate 1 is an aerial photograph of the site when it was active, taken between 1996 and 1998, with the location of the boring and nearby roads noted.

The site is within unit letter E, Section 32, Township 18S Range 38E. To access the site from the intersection of West County Road and Sanger proceed south on West County Road ½ mile and turn left onto the unpaved lease road. Continue east about 100 feet and turn left again off the road. Proceed approximately 200 feet north and then 50 feet east to the site which is situated along the north side of a fenced gas well location.

2.2 Characterization Activities

In May 2006, Hicks Consultants, ROC, and Atkins Drilling mobilized to conduct a series of exploratory drillings at five sites within the Hobbs SWD System. The investigation and characterization used the same protocols as described in the NMOCD-approved work plan for the Section 29 sites and was consistent with the NMOCD-approved ICP submitted for the site (see Appendix A). In order to permit comparison of the results from the boring with the ambient chloride concentrations in the vadose zone, collection of

samples from a background soil boring was a critical element of the ICP. Appendix B shows the results of field chloride measurements from the background soil boring, located in Section 32, Unit A.

At the E-32-1 site, one soil boring was advanced immediately adjacent to the former junction box on May 4, 2006. In the field, ROC evaluated samples from each depth for chloride and used the heated headspace method to measure total organic vapors by PID. Two samples were submitted to the laboratory from depths showing the highest field chloride measurements (9-10 feet bgs) and from (39-40 feet bgs). The boring was completed as a monitoring well due to chloride field tests indicating levels above the threshold specified in the ICP (250 mg/kg). The total depth of the boring is 62 feet bgs and the depth to water is about 43 feet.

3.0 CHARACTERISTICS OF THE VADOSE ZONE

The upper 4 feet of the 43 foot thick vadose zone at the site is composed of a silty loam that is underlain by 16 feet of caliche and sand. Below these two layers, a fine-grained sand silt composes the vadose zone profile. The lithologic log of the boring/monitoring well is included in Appendix B.

ROC staff performed field chloride measurements and PID measurements every five feet starting at 6 feet bgs. The peak chloride concentration of 2,196 mg/kg, is at 10 feet bgs (Figure 1). Laboratory analyses confirm the results of the field tests (3,180 mg/kg at 9-10 feet bgs and 284 mg/kg at 39-40 feet bgs. Below this center of mass, chloride concentrations declined to 299 mg/kg at 41 feet bgs. Background chloride concentrations in the area, as determined from the background boring located in Section 32, Unit A (Appendix B), are approximately 80 mg/kg.

Neither hydrocarbon odors nor PID measurements above 2 ppm were detected in the boring (Appendix B). Therefore, no laboratory analyses for petroleum hydrocarbons were necessary.

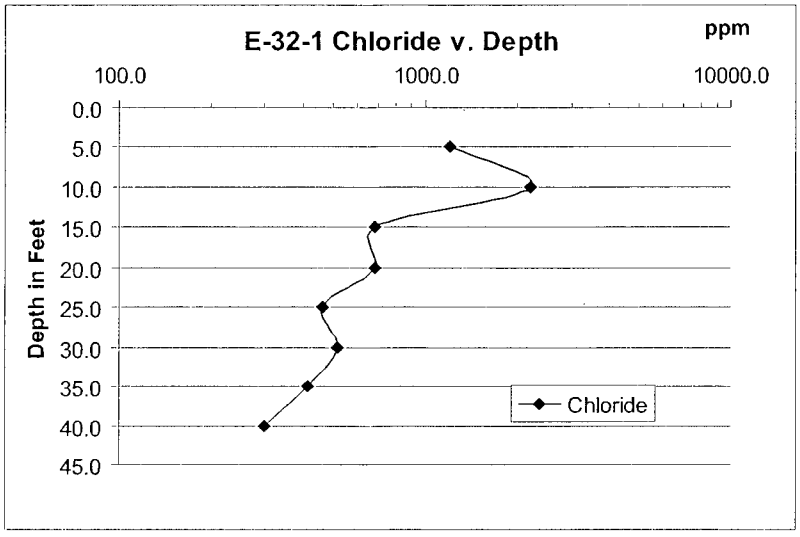


Figure 1: Chloride Concentrations with Depth

4.0 CHARACTERISTICS OF THE SATURATED ZONE

At the E-32-1 Junction Box site, moist soil was observed at 41 feet bgs and depth to water is at 43 feet bgs.

Ground water sampling showed that chloride and TDS concentrations slightly exceeded WQCC standards for the initial ground water sampling event, however all constituents of concern were below WQCC standards for the subsequent sampling events. Field data and lab data are summarized in the table below. Analytical Reports for the site are included in Appendix C.

Date Sampled	Depth to Ground Water (Feet bgs)	Constituents in Ground Water (mg/L)		
		Chloride	TDS	BTEX
5/17/06	45.29	393	1,350	<0.001
8/14/06	45.63	134	682	<0.001
9/19/06	45.63	189	740	<0.001

Table 1: Summary of data for the site

Ground water quality data obtained from recently drilled monitoring wells often show "false positives" due to conditions that can cause downward transportation of up-hole sediments and entrained constituents during drilling. The two most recent sampling events show that ground water quality at this site is within the range of values observed in the general area and are 50% less than the initial sampling. Chloride concentrations in domestic supply wells range from 60 mg/L to more than 300 mg/L. From these data we conclude that the initial sampling event returned anomalous results and the subsequent sampling results are representative of ground water quality.

5.0 EVALUATION OF VERTICAL CHLORIDE FLUX

Data from the boring shows chloride concentrations above background levels throughout the vadose zone. However, the center of chloride mass is at 10 feet bgs, is 30 feet above the water table. Below 10 feet bgs chloride concentrations decline with depth.

The fact that the center of chloride mass resides at 10 feet bgs and concentrations decrease below that depth allow the following conclusions:

1. Operation of the site did not cause saturated flow conditions, and
2. The deep percolation rate beneath the fine-grained uppermost vadose zone (0-9 feet bgs) was not sufficient to evenly distribute the chloride load throughout the vadose zone.

Where the deep percolation rate is relatively high due to releases of produced water, chloride concentrations are generally higher than 1,000 mg/kg throughout the vadose zone and a distinct center of mass is not observed. This is not the case at the E-32-1 junction box site.

Hicks Consultants believes the following release/transport scenario is consistent with the empirical data:

- At the E-32-1 site, periodic releases created sufficient soil moisture to allow chloride transport to a depth of 10 feet, perhaps under saturated or near-saturated flow.
- After the release, evaporation of soil moisture and drying of the upper vadose zone reduced soil moisture and hydraulic conductivity temporarily "stranding" the chloride mass at 10 feet bgs. Unsaturated flow caused downward chloride transport through the entire vadose zone, albeit at a very slow rate/flux.

The fact that ground water is not impaired (i.e. ground water quality does not exceed WQCC standards) by chloride flux from the vadose zone to the aquifer also supports a conclusion that chloride in the vadose zone cannot and will not migrate to ground water and exceed the WQCC Standards because releases are no longer possible and the proposed remedy will limit additional deep percolation.

Nevertheless, Hicks Consultants elected to run a HYDRUS-1D model to provide additional confirmation of our conclusion that the residual chloride mass poses no threat to fresh water. A HYDRUS 1-D model was constructed with site specific data as detailed in Appendix E. The predicted vadose zone solute flux to ground water was used as an input to a simple ground water mixing model. Predicted chloride concentration in a hypothetical monitoring well at the down-gradient edge of the site is shown in Figure 2. The model assumes vegetation within the upper three feet of silt loam at the site and that the initial ground water chloride concentration is 161 mg/L.

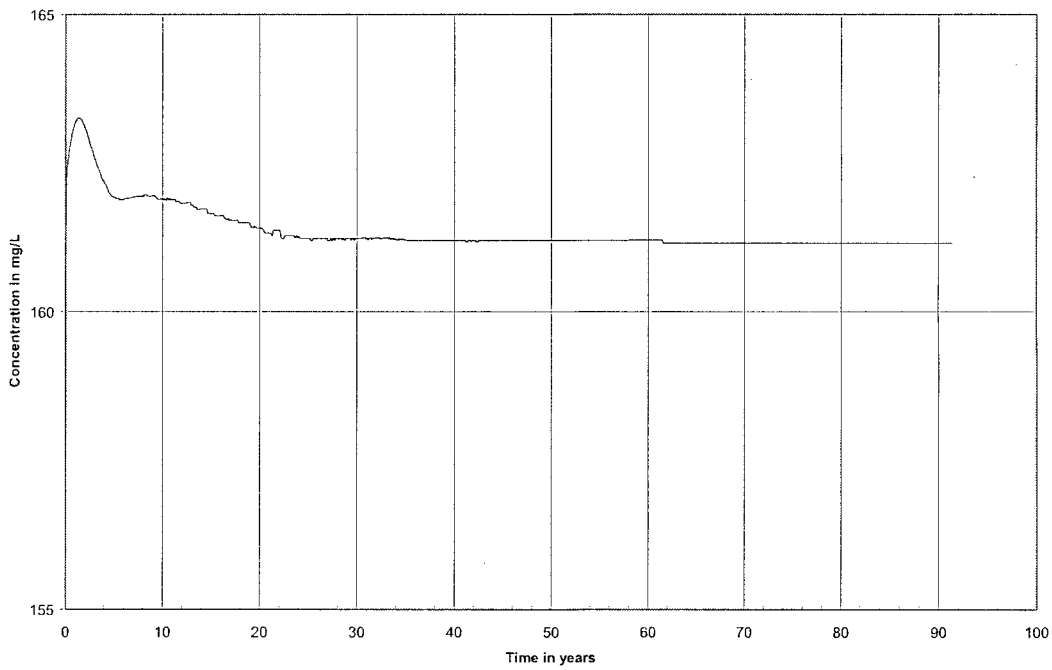


Figure 2: Chloride Concentration in the Aquifer with Vegetation, E-32-1 Site

As can be seen in Figure 2, chloride in the lower vadose zone enters ground water raising chloride concentration to 163 mg/L about two years after re-vegetation of the site. With establishment of vegetation at the site, infiltration is reduced. With "drying" out of the vadose zone soil materials, hydraulic conductivities are reduced. The resultant vadose zone chloride flux to ground water is lowered such that ground water chloride concentration does not rise above 162 mg/L after approximately 20 years (see Appendix D).

7.0 PROPOSED REMEDY

Experience at similar sites and HYDRUS-1D simulations of the conditions similar to those observed at this site support simple re-vegetation of the surface as an effective corrective action.

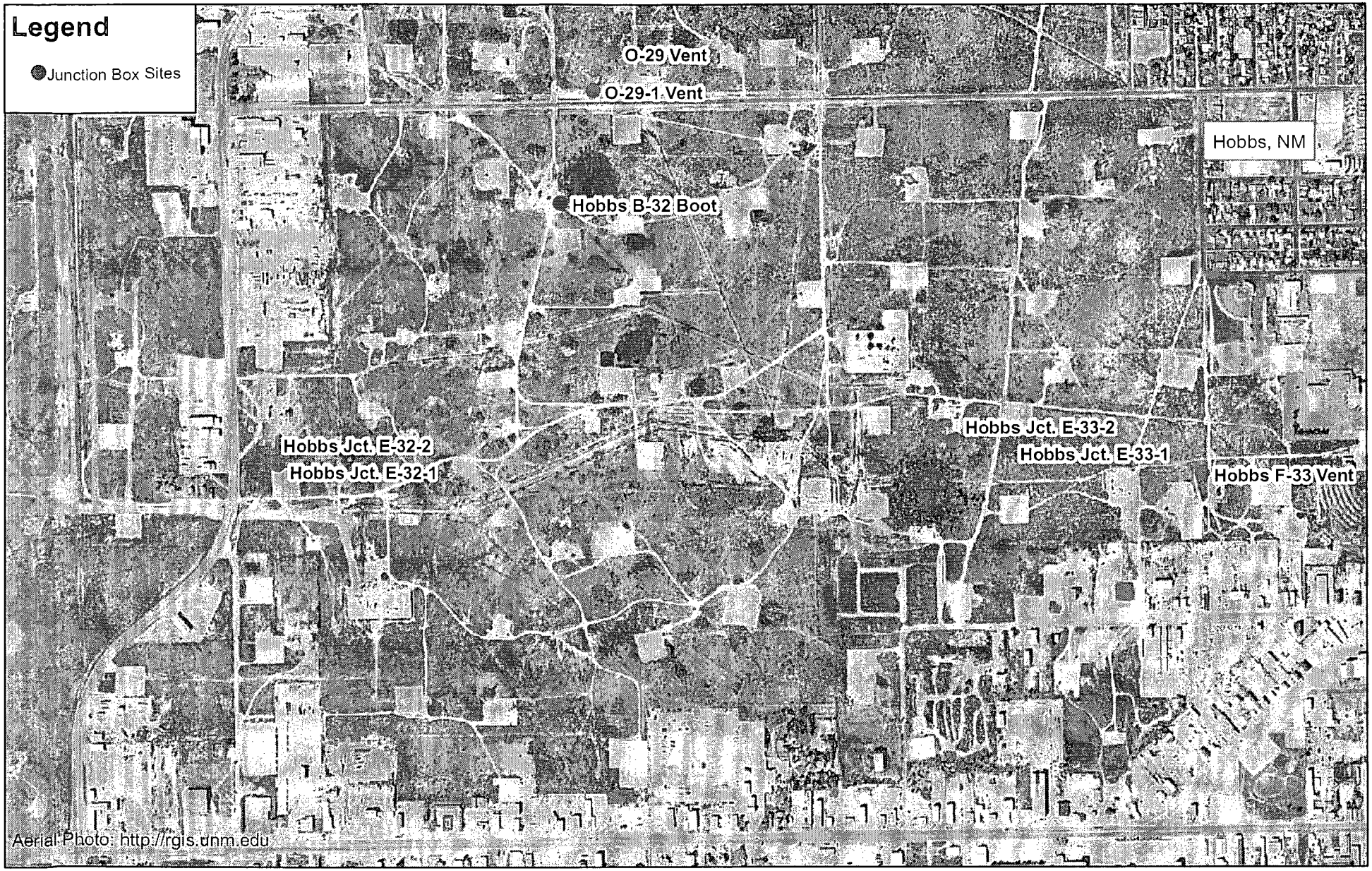
This Corrective Action Plan calls for two additional ground water monitoring events (to be completed in March 2007). If chloride concentrations in ground water remain below WQCC standards and show no increasing concentration trend, ROC will submit evidence of re-vegetation in a final closure report and request closure of the regulatory file.

8.0 CRITERIA FOR CLOSURE

Ground water beneath the site is below WQCC standards for the constituents of concern.

The data and HYDRUS-1D modeling shows that water contaminants in the vadose zone will not, with reasonable probability contaminate ground water or surface water in excess of the WQCC standards through leaching, percolation, or other transport mechanisms, or as the water table elevation fluctuates.

After re-vegetation of the site and two additional quarters of ground water monitoring (until March 2007) that confirm no impairment of ground water, ROC will submit a final closure report and request closure of the regulatory file for the site.



R.T. Hicks Consultants, Ltd
901 Rio Grande Blvd NW Suite F-142
Albuquerque, NM 87104
Ph: 505.266.5004

Junction Box Site Location Map

Plate 1

Rice Operating Company

January 2007

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Appendix A Investigation Characterization Plan

R. T. HICKS CONSULTANTS, LTD.
1909 Brunson Ave ▲ Midland TX 79701 ▲ 432.638.8740 ▲ Fax: 413.403.9968

CERTIFIED MAIL - RETURN RECIEPT NO. 7099 3400 0017 1737 2367

January 20, 2006

Mr. Wayne Price
New Mexico Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

RE: Investigation Characterization Plan: T18S R38E: E-33-1 Junction Box, B-32 Boot, E-32-1 Junction Box, E-32-2 Junction Box, F-33 Vent

Hobbs Salt Water Disposal System

Dear Mr. Price:

On behalf of Rice Operating Company, please accept this submission as our Initial Characterization Plan (ICP) for the five (5) sites referenced above within the Hobbs Salt Water Disposal System (Plate 1).

Rice Operating Company (ROC) is the service provider (operator) for the Hobbs Saltwater Disposal System and has no ownership of any portion of pipeline, well, or facility. A consortium of oil producers who own the Hobbs System (System Partners); provide all operating capital on a percentage ownership/usage basis. Major projects require System Partner authorization for expenditures (AFE) approval and work begins as funds are received. We will implement the work outlined herein after NMOCD approval and subsequent authorization from the System Partners.

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

1. protects public health,
2. provides the greatest net environmental benefit,
3. complies with NMOCD Rules, and
4. is supported by good science.

The last criteria employed when evaluating any proposed remedy or investigative work is confirming that there is a reasonable relationship between the benefits created by the proposed remedy or assessment and the economic and social costs.

Each site shall have three submissions or a combination of:

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

2. Upon evaluation of the data and results from the ICP, a recommended remedy will be submitted in a Corrective Action Plan (CAP).

3. Finally, after implementing the remedy, a closure report with final documentation will be submitted.

Task 1 Evaluate Chloride and BTEXN Concentrations in Soil at Five Sites, Evaluate Ground Water Quality if Necessary

We will follow the same protocol for characterization of the unsaturated zone at the five new ROC sites listed below.

- E-33-1 Junction Box
- B-32 Boot
- E-32-1 Junction Box
- E-32-2 Junction Box
- F-33 Vent

At each of the above-referenced sites, we will locate the sampling borehole as close as practical to the suspected release source. Earlier, we inspected each of the five sites nominated in this ICP and identified the boring location before the sites were backfilled and re-graded. Due to our recent experience with difficulties encountered in the installation of well clusters in this area, we plan to employ hollow-stem auger drilling techniques for sampling.

We will screen each sample in the field for chlorides and volatile organic compounds using the methods described in QP-03 and QP-07 (attached), respectively. Soil lithology and the presence of any observed staining or odor will be recorded. For any site, if we detect evidence of leakage within 15 feet of the water table (e.g. field chloride greater than 250 ppm in soil samples) we will complete the boring as a monitoring well in accordance with NMOCD Guidance. If three soil samples taken at 5-foot intervals test below 250 ppm chloride and below 100 ppm total volatile organic compounds, we will terminate the boring. However, all borings will penetrate at least 30 feet of the vadose zone.

Task 2 Evaluate Chloride and Hydrocarbon Flux from the Vadose Zone to Ground Water

We anticipate that one or all of the five sites selected for borehole investigation will show evidence of seepage from the source to a depth of more than 15-feet. For these sites, excavation and disposal of released material can cause more environmental damage than it cures. For such sites, we propose to employ HYDRUS-1D and a simple ground water mixing model to evaluate the potential of any residual chloride and hydrocarbon mass in the vadose zone to impair ground water quality above WQCC Standards. We have selected these two constituents for simulation modeling because each of these constituents is typically found in produced water and each is specifically regulated by New Mexico ground water regulations (WQCC). We will also employ vadose zone hydrocarbon migration predictive tools commonly employed by NMED in their PST program.

Task 3 Provide Investigative Results and/or Corrective Action Plan

Because the Hobbs SWD System no longer carries produced water, additional releases of produced water to ground water are highly unlikely. If modeling shows that the residual chloride and hydrocarbon mass in the vadose zone poses a no threat to ground water quality, we will prepare a report that makes this demonstration and request site closure.

If simulation experiments suggest that residual constituents pose a threat to ground water quality or if the field program demonstrates impairment, we will expand upon the HYDRUS-1D model predictions described above to develop a remedy for the vadose zone. If necessary, we will simulate:

1. Excavation, disposal and replacement of clean soil to remove the chloride and hydrocarbon mass,
2. Installation of a low permeability barrier to minimize natural infiltration,
3. Surface grading and seeding to eliminate any ponding of precipitation and promote evapotranspiration, thereby minimizing natural infiltration, and
4. A combination of the above potential remedies.

We will select the vadose zone remedy that offers the greatest environmental benefit while causing the least environmental damage. If data suggest that the site has contributed chloride or hydrocarbons to ground water and caused ground water impairment, we will notify NMOCD and work collaboratively to determine the appropriate path forward.

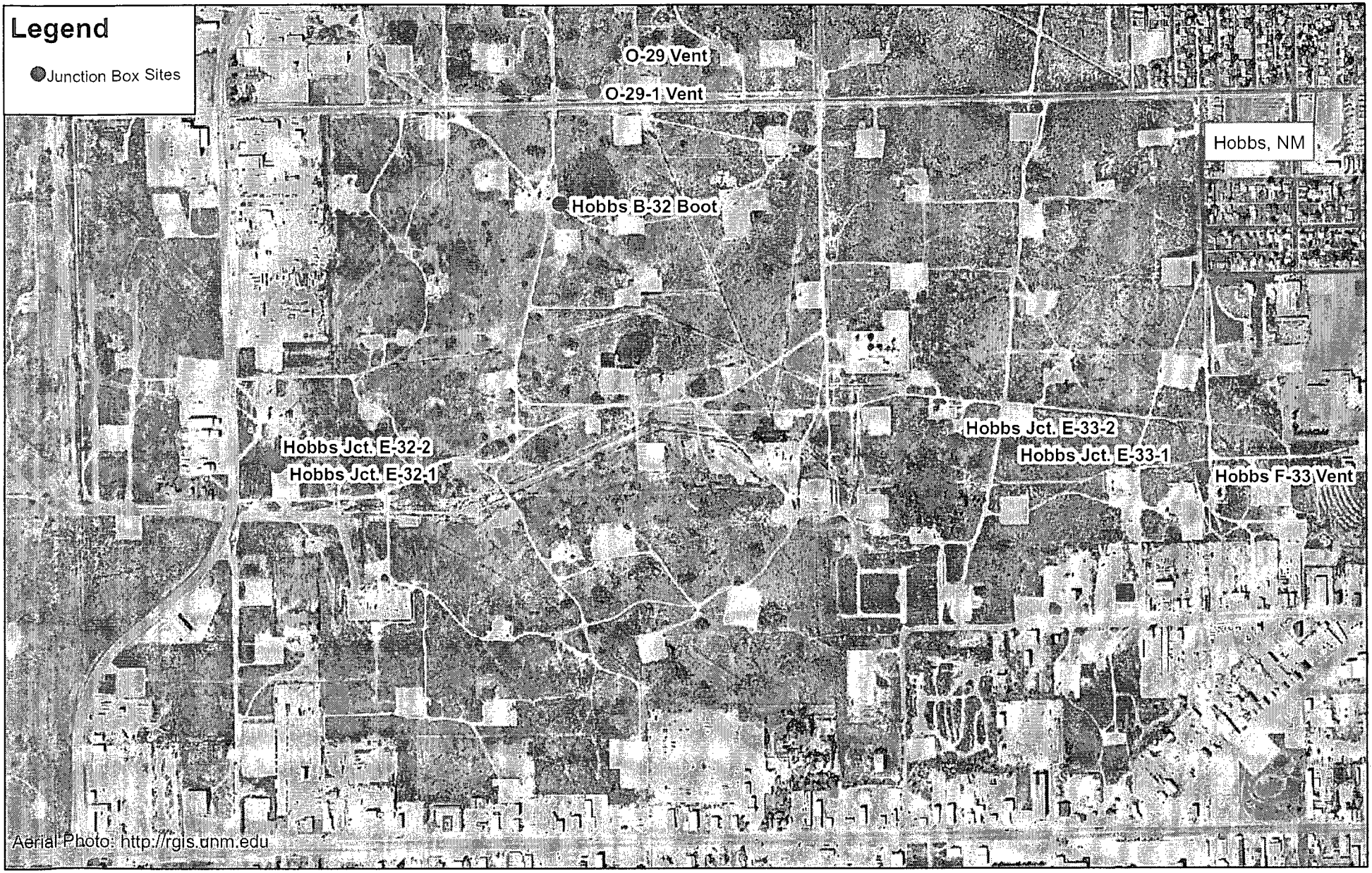
Proposed Schedule

With NMOCD's approval of this work plan, we can perform the field activities at these sites in February or March. In late April or May, we plan to deliver any individual Correction Action Plans to address residual constituents in the vadose zone and any reports requesting site closure. If data suggest ground water impairment we plan to conduct two quarters of ground water monitoring to confirm any initial result then meet with NMOCD to develop an appropriate path forward. Your approval to move forward with this work plan will facilitate approval of expenditures by the System Partners.

Sincerely,
R.T. Hicks Consultants, Ltd.

Gilbert Van Deventer
Project Manager

cc: Chris Williams, NMOCD Hobbs District Office
Carolyn Haynes, Rice Operating Company - Hobbs
Kristin Pope, Rice Operating Company – Hobbs
Randy Hicks, R. T. Hicks Consultants, Ltd. - Albuquerque



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Ph: 505.266.5004

Junction Box Site Location Map	Plate 1
Rice Operating Company	December 2006

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Rice Operating Company

QUALITY PROCEDURE - 03
Sampling and Testing Protocol - Chloride Titration Using .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. Ifnecessary, prepare a composite san1ple 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 large 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 10 grams of reverse osmosis water to the soil sample and shake for 20 seconds.

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

4.4 Carefully pour the free liquid extract from the sample through a paper filter into a clean plastic cup if necessary.

5.0 Titration Procedure

5.1 Using a graduated pipette, remove 10 m1 extract and dispense into a clean plastic cup.

5.2 Add 2-3 drops potassium chromate (K:zcrO4) to mixture.

5.3 If the sample contains any sulfides (hydrogen or iron sulfides are common to oilfield soil samples) add 2-3 drops of hydrogen peroxide (HZO2) to mixture.

5.4 Using a 10 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.

5.5 Record the ml of silver nitrate used.

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

$$\frac{0.282 \times 35{,}450 \times \text{ml } AgNO_3}{\text{ml water extract}} \times \frac{\text{grams of water in mixture}}{\text{grams of soil in mixture}}$$

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 Operating Company

QUALITY PROCEDURE -07
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° 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 an Environmental Instruments 13471 OVM / Datalogger or a similar pro-type instrument. (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 conduct BTEX Speciation in accordance with QP-O2 and QP-O6. If the reading is 100 ppm or less, NMOCD BTEX guideline has been met and no further testing fur BTEX is necessary. File the Field Test Report Form in the project file.

4.0 Clean-up

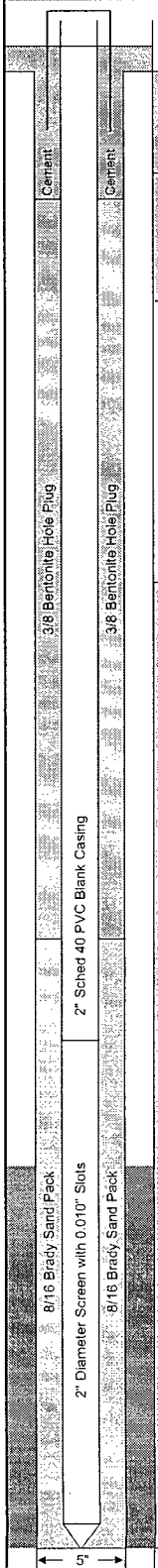
After testing, the soil samples shall be returned to the sampling location, and the bags collected for off-site disposal, IN NO CASE SHALL THE SAME BAG BE USED TWICE. EACH SAMPLE CONTAINER MUST BE DISCARDED AFTER EACH USE.

Appendix B Lithologic Log Field Measurements

LITHOLOGIC LOG AND MONITORING WELL CONSTRUCTION DIAGRAM

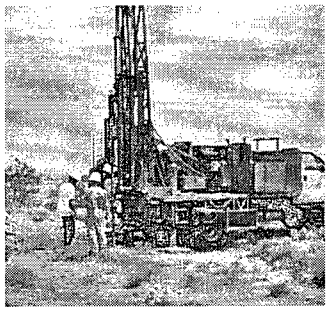
MONITOR WELL NO.: MW-1
SITE ID: Hobbs E-32-1 Junction Box
CONTRACTOR: Atkins Engineering
DRILLING METHOD: Hollow Stem Auger
START DATE: 5/4/2006
COMPLETION DATE: 5/4/2006
COMMENTS: Located immediately adjacent to former junction box location.

TOTAL DEPTH: 58 Feet
CLIENT: RICE *Operating Company*
COUNTY: Lea
STATE: New Mexico
LOCATION: T18S-R38E-Sec 32-Unit E
FIELD REP.: G. Van Deventer / M. Franks



USCS	Depth	Time	Sample Type	Blowcounts (blows - in)	Chloride (ppm)	PID (ppm)	LITHOLOGIC DESCRIPTION: LITHOLOGY, COLOR, GRAIN SIZE, SORTING, ROUNDING, CONSOLIDATION, DISTINGUISHING FEATURES
			Surface				Silty loam, moderate yellowish brown (10YR 5/4), dry.
SM							
	5	0850	Split Spoon	22-12"	1204	2	Calcic sand - sandy caliche, very pale orange (10 YR 8/2), moderately hard, dry.
SM/ CAL							
	10	0855	Split Spoon	50 8"	2196	2	Calcic sandstone, very pale orange (10 YR 8/2) and grayish orange (10 YR 7/4), indurated, consolidated with hard quartz sandstone streaks. Sand component is fine-grained, subangular, moderately well sorted, dry.
SS/ CAL	15	0945	Split Spoon	50 - 4"	689	2	
	20	1000	Split Spoon	32 - 12" 42 - 12"	686	2	Light brown (5 YR 5/6) fine sand, slightly moist, subangular, well sorted.
	25	1006	Split Spoon	50 - 5"	465	2	Light brown (5 YR 5/6) fine sand, slightly moist, unconsolidated, subangular, well sorted.
	30	1019	Split Spoon	50 - 6"	518	2	Light brown (5 YR 5/6) fine sand, subangular, well sorted, with intermittent streaks of sandstone.
	35	1031	Split Spoon	50 -10"	414	2	Light brown (5 YR 5/6) fine sand, subangular, well sorted, with intermittent streaks of sandstone.
SW	40	1045	Split Spoon	50 - 11"	299	2	Light brown (5 YR 5/6) fine sand, slightly moist, subangular, well sorted, with intermittent streaks of sandstone.
	▼						Groundwater encountered at approximately 43 ft below ground surface.
	45						Light brown (5 YR 5/6) fine sand, wet-moist, subangular, well sorted, with intermittent streaks of sandstone.
	50						Light brown (5 YR 5/6) fine sand, wet-moist, subangular, well sorted.
	55						Light brown (5 YR 5/6) fine sand, wet-moist, subangular, well sorted.
	60						Bottom of boring at 58 feet below ground surface.

LITHOLOGIC LOG



BORING NO.: A-32
SITE ID: Hobbs SWD System
CONTRACTOR: Atkins Engineering
DRILLING METHOD: Hollow Stem Auger
START DATE: 05/03/06
COMPLETION DATE: 05/03/06

TOTAL DEPTH: 30 Feet
CLIENT: RICE Operating Company
COUNTY: Lea
STATE: New Mexico
LOCATION: T18S-R38E-Sec 32-Unit A
FIELD REP.: G. Van Deventer / M. Franks / J. Hendrickx

COMMENTS: Located in area with no expected impact from oil and gas activities (background conditions).

USCS	Sample			Blowcounts	Chloride	PID	LITHOLOGIC DESCRIPTION:
	Depth	Time	Type	(blows - in)	(ppm)	(ppm)	LITHOLOGY, COLOR, GRAIN SIZE, SORTING, ROUNDING, CONSOLIDATION, DISTINGUISHING FEATURES
SM	1	1421	Split Spoon	50 - 12"	58		Silty loam, pale yellowish brown (10YR 6/2) and caliche (very pale orange (10 YR 8/2), dry.
	2	1426	Split Spoon	100 - 6"	27		
SM/CAL	3	1440	Split Spoon	50 - 12"	58		Fine-grained sandy caliche pale yellowish brown (10YR 6/2), dry.
	4	1443	Split Spoon	50 - 12"	58		Fine-grained sandy caliche pale yellowish brown (10YR 6/2), dry.
	5	1450	Split Spoon	50 - 12"	58		Fine-grained sandy caliche pale yellowish brown (10YR 6/2), dry, very hard, some consolidated sand nodules (cemented)
	6	1500	Split Spoon	30 - 12"	84		
	7	1508	Split Spoon	23 - 12"	179		Calcic fine-grained sand (very pale orange (10 YR 8/2), hard, consolidated with calcium carbonate in matrix. Sand grains are subangular, moderately well sorted, dry.
	8	1512	Split Spoon	38 - 12"	151		
	9	1520	Split Spoon	50 - 9"	340		As above.
	10	1524	Split Spoon	50 - 4"	365		As above.
	11						
	12						
	13	1536	Split Spoon	50 - 9"	295		Calcic fine-grained sand (very pale orange (10 YR 8/2), hard, consolidated with calcium carbonate in matrix. Sand grains are subangular, moderately well sorted, dry.
	14						
	15	1545	Split Spoon	50 - 4"	228		Calcic fine-grained sand (very pale orange (10 YR 8/2), hard, consolidated with calcium carbonate in matrix. Sand grains are subangular, moderately well sorted, dry.
	16						
	17	1555	Split Spoon	50 - 1"	85		Calcic fine-grained sand (very pale orange (10 YR 8/2), hard, consolidated with calcium carbonate in matrix. Sand grains are subangular, moderately well sorted, dry.
CAL/SM	18						
	19						Calcic fine-grained sand (very pale orange (10 YR 8/2), hard, consolidated with calcium carbonate in matrix. Sand grains are subangular, moderately well sorted, dry.
	20						
	21						
	22	1605	Split Spoon	50 - 2"	57		Calcic fine-grained sand (very pale orange (10 YR 8/2), hard, consolidated with calcium carbonate in matrix. Sand grains are subangular, moderately well sorted, dry.
	23	1620	Split Spoon	50 - 2"	89		
	24						
	25						
	26						
	27	1630	Split Spoon	50 - 1"	58		Calcic fine-grained sand (very pale orange (10 YR 8/2), hard, consolidated with calcium carbonate in matrix. Sand grains are subangular, moderately well sorted, dry.
	28						
	29						
	30						
	31						Bottom of boring at 30 feet below ground surface.
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Background Boring

Appendix C Analytical Reports

ENVIRONMENTAL LAB OF

12600 West I-20 East - Odessa, Texas 79765

Analytical Report

Prepared for:

Kristin Farris-Pope

Rice Operating Co.

122 W. Taylor

Hobbs, NM 88240

Project: Hobbs Jct. E-32-1

Project Number: None Given

Location: Lea County

Lab Order Number: 6H18008

Report Date: 08/28/06

Rice Operating Co.	Project: Hobbs Jct. E-32-1	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Monitor Well #1	6H18008-01	Water	08/14/06 09:20	08-18-2006 10:20

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Rice Operating Co.	Project: Hobbs Jct. E-32-1	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM. 88240	Project Manager: Kristin Farris-Pope	

Organics by GC

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Monitor Well #1 (6H18008-01) Water									
Benzene	ND	0.00100	mg/L	1	EH62121	08/21/06	08/21/06	EPA 8021B	
Toluene	ND	0.00100	"	"	"	"	"	"	
Ethylbenzene	ND	0.00100	"	"	"	"	"	"	
Xylene (p/m)	ND	0.00100	"	"	"	"	"	"	
Xylene (o)	ND	0.00100	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*86.8 %*		*80-120*		"	"	"	
Surrogate: 4-Bromofluorobenzene		*82.5 %*		*80-120*		"	"	"	

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Rice Operating Co.	Project: Hobbs Jct. E-32-1	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

General Chemistry Parameters by EPA / Standard Methods

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Monitor Well #1 (6H18008-01) Water									
Total Alkalinity	**250**	2.00	mg/L	1	EH62128	08/21/06	08/21/06	EPA 310.1M	
Chloride	**134**	5.00	"	10	EH62101	08/21/06	08/21/06	EPA 300.0	
Total Dissolved Solids	**682**	10.0	"	1	EH62303	08/18/06	08/22/06	EPA 160.1	
Sulfate	**101**	5.00	"	10	EH62101	08/21/06	08/21/06	EPA 300.0	

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Rice Operating Co.	Project: Hobbs Jct. E-32-I	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

Total Metals by EPA / Standard Methods

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Monitor Well #1 (6H18008-01) Water									
Calcium	**95.0**	0.810	mg/L	10	EH62313	08/23/06	08/23/06	EPA 6010B	
Magnesium	**27.4**	0.360	"	"	"	"	"	"	
Potassium	**3.62**	0.600	"	"	"	"	"	"	
Sodium	**89.2**	0.430	"	"	"	"	"	"	

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Rice Operating Co.	Project: Hobbs Jct. E-32-1	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

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 EH62121 - EPA 5030C (GC)										
Blank (EH62121-BLK1)				Prepared: 08/21/06 Analyzed: 08/22/06						
Benzene	ND	0.00100	mg/L							
Toluene	ND	0.00100	"							
Ethylbenzene	ND	0.00100	"							
Xylene (p/m)	ND	0.00100	"							
Xylene (o)	ND	0.00100	"							
Surrogate: a,a,a-Trifluorotoluene	*40.3*		*ug/l*	*40.0*		*101*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*36.7*		*"*	*40.0*		*91.8*	*80-120*			
LCS (EH62121-BS1)				Prepared & Analyzed: 08/21/06						
Benzene	0.0460	0.00100	mg/L	0.0500		92.0	80-120			
Toluene	0.0503	0.00100	"	0.0500		101	80-120			
Ethylbenzene	0.0463	0.00100	"	0.0500		92.6	80-120			
Xylene (p/m)	0.113	0.00100	"	0.100		113	80-120			
Xylene (o)	0.0565	0.00100	"	0.0500		113	80-120			
Surrogate: a,a,a-Trifluorotoluene	*39.7*		*ug/l*	*40.0*		*99.2*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*45.0*		*"*	*40.0*		*112*	*80-120*			
Calibration Check (EH62121-CCV1)				Prepared: 08/21/06 Analyzed: 08/22/06						
Benzene	48.7		ug/l	50.0		97.4	80-120			
Toluene	52.3		"	50.0		105	80-120			
Ethylbenzene	57.3		"	50.0		115	80-120			
Xylene (p/m)	114		"	100		114	80-120			
Xylene (o)	57.6		"	50.0		115	80-120			
Surrogate: a,a,a-Trifluorotoluene	*44.7*		*"*	*40.0*		*112*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*38.3*		*"*	*40.0*		*95.8*	*80-120*			
Matrix Spike (EH62121-MS1)	**Source: 6H18007-01**			Prepared: 08/21/06 Analyzed: 08/22/06						
Benzene	0.0464	0.00100	mg/L	0.0500	ND	92.8	80-120			
Toluene	0.0550	0.00100	"	0.0500	ND	110	80-120			
Ethylbenzene	0.0554	0.00100	"	0.0500	ND	111	80-120			
Xylene (p/m)	0.117	0.00100	"	0.100	ND	117	80-120			
Xylene (o)	0.0575	0.00100	"	0.0500	ND	115	80-120			
Surrogate: a,a,a-Trifluorotoluene	*41.8*		*ug/l*	*40.0*		*104*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*46.5*		*"*	*40.0*		*116*	*80-120*			

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Rice Operating Co.	Project: Hobbs Jct. E-32-1	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

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 EH62121 - EPA 5030C (GC)										
Matrix Spike Dup (EH62121-MSD1)	**Source: 6H18007-01**			Prepared: 08/21/06 Analyzed: 08/22/06						
Benzene	0.0473	0.00100	mg/L	0.0500	ND	94.6	80-120	1.92	20	
Toluene	0.0535	0.00100	"	0.0500	ND	107	80-120	2.76	20	
Ethylbenzene	0.0549	0.00100	"	0.0500	ND	110	80-120	0.905	20	
Xylene (p/m)	0.120	0.00100	"	0.100	ND	120	80-120	2.53	20	
Xylene (o)	0.0583	0.00100	"	0.0500	ND	117	80-120	1.72	20	
Surrogate: a,a,a-Trifluorotoluene	*42.9*		*ug/l*	*40.0*		*107*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*46.4*		"	*40.0*		*116*	*80-120*			

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

Project: Hobbs Jct. E-32-1
Project Number: None Given
Project Manager: Kristin Farris-Pope

Fax: (505) 397-1471

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 EH62101 - General Preparation (WetChem)										
Blank (EH62101-BLK1)				Prepared & Analyzed: 08/21/06						
Sulfate	ND	0.500	mg/L							
Chloride	ND	0.500	"							
LCS (EH62101-BS1)				Prepared & Analyzed: 08/21/06						
Sulfate	8.51	0.500	mg/L	10.0		85.1	80-120			
Chloride	10.0	0.500	"	10.0		100	80-120			
Calibration Check (EH62101-CCV1)				Prepared & Analyzed: 08/21/06						
Sulfate	8.34		mg/L	10.0		83.4	80-120			
Chloride	10.2		"	10.0		102	80-120			
Duplicate (EH62101-DUP1)	**Source: 6H18007-01**			Prepared & Analyzed: 08/21/06						
Sulfate	76.3	5.00	mg/L		65.9			14.6	20	
Chloride	105	5.00	"		98.9			5.98	20	
Duplicate (EH62101-DUP2)	**Source: 6H18013-04**			Prepared & Analyzed: 08/21/06						
Sulfate	331	5.00	mg/L		336			1.50	20	
Chloride	138	5.00	"		136			1.46	20	
Matrix Spike (EH62101-MS1)	**Source: 6H18007-01**			Prepared & Analyzed: 08/21/06						
Sulfate	172	5.00	mg/L	100	65.9	106	80-120			
Chloride	210	5.00	"	100	98.9	111	80-120			
Matrix Spike (EH62101-MS2)	**Source: 6H18013-04**			Prepared & Analyzed: 08/21/06						
Sulfate	422	5.00	mg/L	100	336	86.0	80-120			
Chloride	224	5.00	"	100	136	88.0	80-120			

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Rice Operating Co.	Project: Hobbs Jct. E-32-1	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

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 EH62128 - General Preparation (WetChem)										
Blank (EH62128-BLK1)				Prepared & Analyzed: 08/21/06						
Total Alkalinity	ND	2.00	mg/L							
LCS (EH62128-BS1)				Prepared & Analyzed: 08/21/06						
Total Alkalinity	178		mg/L	200		89.0	85-115			
Duplicate (EH62128-DUP1)	**Source: 6H18007-01**			Prepared & Analyzed: 08/21/06						
Total Alkalinity	186	2.00	mg/L		186			0.00	20	
Reference (EH62128-SRM1)				Prepared & Analyzed: 08/21/06						
Total Alkalinity	248		mg/L	250		99.2	90-110			
Batch EH62303 - Filtration Preparation										
Blank (EH62303-BLK1)				Prepared: 08/18/06 Analyzed: 08/22/06						
Total Dissolved Solids	ND	10.0	mg/L							
Duplicate (EH62303-DUP1)	**Source: 6H18007-01**			Prepared: 08/18/06 Analyzed: 08/22/06						
Total Dissolved Solids	556	10.0	mg/L		526			5.55	5	R5
Duplicate (EH62303-DUP2)	**Source: 6H18013-04**			Prepared & Analyzed: 08/18/06						
Total Dissolved Solids	808	10.0	mg/L		930			14.0	5	

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Rice Operating Co.	Project: Hobbs Jct. E-32-1	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

Total Metals 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 EH62313 - 6010B/No Digestion										
Blank (EH62313-BLK1)				Prepared & Analyzed: 08/23/06						
Calcium	ND	0.0810	mg/L							
Magnesium	ND	0.0360	"							
Potassium	ND	0.0600	"							
Sodium	ND	0.0430	"							
Calibration Check (EH62313-CCV1)				Prepared & Analyzed: 08/23/06						
Calcium	1.96		mg/L	2.00		98.0	85-115			
Magnesium	2.01		"	2.00		100	85-115			
Potassium	1.76		"	2.00		88.0	85-115			
Sodium	1.96		"	2.00		98.0	85-115			
Duplicate (EH62313-DUP1)	**Source: 6H15005-04**			Prepared & Analyzed: 08/23/06						
Calcium	44.4	0.810	mg/L		45.9			3.32	20	
Magnesium	48.1	0.360	"		49.3			2.46	20	
Potassium	42.9	0.600	"		42.6			0.702	20	
Sodium	44.4	0.430	"		43.5			2.05	20	

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Notes and Definitions

R5	RPD is outside of historic values
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: 8/28/2006

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

12600 West I-20 East
Odessa, Texas 79765
Phone: 432-563-1800
Fax: 432-563-1713

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: Kristin Farris Pope kpope@riceswd.com
Company Name: RICE Operating Company
Company Address: 122 W. Taylor Street
City/State/Zip: Hobbs, New Mexico 88240
Telephone No: (505) 393-9174 Fax No: (505) 397-1471
Sampler Signature: Rozanne Johnson (505) 631-9310
Email: rozanne@valornet.com

Project Name: Hobbs Junction E-32-1
Project #:
Project Loc: Lea County
PO #:

6/14/2006

LAB # (lab use only)	FIELD CODE	Date Sampled	Time Sampled	No. of Containers	Preservative: Ice	HNO3	HCl (2) 40 ml glass vials	NaOH	H2SO4	None (1) 1 Liter HDPE	Other (Specify)	Matrix: Water	Sludge	Soil	Other (specify):	Analyze For: TPH: 418.1 8015M 1005 1006	Cations (Ca, Mg, Na, K)	Anions (Cl, SO4, CO3, HCO3)	SAR / ESP / CEC	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEX 8021B/5030	RCI	N.O.R.M.	Total Dissolved Solids				RUSH TAT (Pre-Schedule)	Standard TAT
																TCLP:															
																TOTAL:							X								
-01	Monitor Well #1	8/14/2006	9:20	3	X		2			1		X					X	X					X			X					X

Special Instructions:
PLEASE Email RESULTS TO: kpope@riceswd.com; mfranks@riceswd.com
rozanne@valornet.com

Sample Containers Intact? Y N
Labels on container? Y N
Custody Seals: Containers / Cooler
Temperature Upon Receipt:

Laboratory Comments: 410

Relinquished by:	Date	Time	Received by:	Date	Time
Rozanne Johnson	8/18/06	5:30	Jamie Johnson	8-18-06	5:31
Relinquished by:	Date	Time	Received by ELOT:	Date	Time
	8/18/06	10:20		8/18/06	10:20

Environmental Lab of Texas

Variance/ Corrective Action Report- Sample Log-In

Client: Rice DP

Date/ Time: 8/18/06 10:20

Lab ID # : 6H1800f

Initials: CK

Sample Receipt Checklist

					Client Initials
#1	Temperature of container/ cooler?	Yes	No	4.0 °C	
#2	Shipping container in good condition?	Yes	No		
#3	Custody Seals intact on shipping container/ cooler?	Yes	No	Not Present	
#4	Custody Seals intact on sample bottles/ container?	Yes	No	Not Present	
#5	Chain of Custody present?	Yes	No		
#6	Sample instructions complete of Chain of Custody?	Yes	No		
#7	Chain of Custody signed when relinquished/ received?	Yes	No		
#8	Chain of Custody agrees with sample label(s)?	Yes	No	ID written on Cont./ Lid	
#9	Container label(s) legible and intact?	Yes	No	Not Applicable	
#10	Sample matrix/ properties agree with Chain of Custody?	Yes	No		
#11	Containers supplied by ELOT?	Yes	No		
#12	Samples in proper container/ bottle?	Yes	No	See Below	
#13	Samples properly preserved?	Yes	No	See Below	
#14	Sample bottles intact?	Yes	No		
#15	Preservations documented on Chain of Custody?	Yes	No		
#16	Containers documented on Chain of Custody?	Yes	No		
#17	Sufficient sample amount for indicated test(s)?	Yes	No	See Below	
#18	All samples received within sufficient hold time?	Yes	No	See Below	
#19	VOC samples have zero headspace?	Yes	No	Not Applicable	

Variance Documentation

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

Regarding: _____

Corrective Action Taken: _____

Check all that Apply:

- ☐ See attached e-mail/ fax
- ☐ Client understands and would like to proceed with analysis
- ☐ Cooling process had begun shortly after sampling event

ENVIRONMENTAL LAB OF

12600 West I-20 East - Odessa, Texas 79765

Analytical Report

Prepared for:

Kristin Farris-Pope

Rice Operating Co.

122 W. Taylor

Hobbs, NM 88240

Project: Hobbs Jct. E-32-1

Project Number: None Given

Location: T18S-R38E-Sec32E, Lea County, NM

Lab Order Number: 6I20006

Report Date: 10/02/06

Rice Operating Co.	Project: Hobbs Jct. E-32-1	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Monitor Well #1	6I20006-01	Water	09/19/06 09:15	09-20-2006 13:22

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Rice Operating Co.	Project: Hobbs Jct. E-32-1	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

Organics by GC

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Monitor Well #1 (6120006-01) Water									
Benzene	ND	0.00100	mg/L	1	EI62012	09/20/06	09/22/06	EPA 8021B	
Toluene	ND	0.00100	"	"	"	"	"	"	
Ethylbenzene	ND	0.00100	"	"	"	"	"	"	
Xylene (p/m)	ND	0.00100	"	"	"	"	"	"	
Xylene (o)	ND	0.00100	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*100 %*	*80-120*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*82.5 %*	*80-120*		"	"	"	"	

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Rice Operating Co.	Project: Hobbs Jct. E-32-1	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

General Chemistry Parameters by EPA / Standard Methods

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Monitor Well #1 (6I20006-01) Water									
Total Alkalinity	**240**	2.00	mg/L	1	EI62707	09/27/06	09/27/06	EPA 310.1M	
Chloride	**189**	5.00	"	10	EI62105	09/22/06	09/25/06	EPA 300.0	
Total Dissolved Solids	**740**	10.0	"	1	EI62118	09/20/06	09/21/06	EPA 160.1	
Sulfate	**151**	5.00	"	10	EI62105	09/22/06	09/25/06	EPA 300.0	

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Rice Operating Co.	Project: Hobbs Jct. E-32-1	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM. 88240	Project Manager: Kristin Farris-Pope	

Total Metals by EPA / Standard Methods

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Monitor Well #1 (6120006-01) Water									
Calcium	**91.9**	0.810	mg/L	10	EI62111	09/21/06	09/21/06	EPA 6010B	
Magnesium	**23.1**	0.360	"	"	"	"	"	"	
Potassium	**3.79**	0.600	"	"	"	"	"	"	
Sodium	**98.2**	0.430	"	"	"	"	"	"	

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

Project: Hobbs Jct. E-32-1
Project Number: None Given
Project Manager: Kristin Farris-Pope

Fax: (505) 397-1471

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 E162012 - EPA 5030C (GC)										
Blank (E162012-BLK1)				Prepared & Analyzed: 09/20/06						
Benzene	ND	0.00100	mg/L							
Toluene	ND	0.00100	"							
Ethylbenzene	ND	0.00100	"							
Xylene (p/m)	ND	0.00100	"							
Xylene (o)	ND	0.00100	"							
Surrogate: a,a,a-Trifluorotoluene	*39.2*		*ug/l*	*40.0*		*98.0*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*32.5*		*"*	*40.0*		*81.2*	*80-120*			
LCS (E162012-BS1)				Prepared: 09/20/06 Analyzed: 09/21/06						
Benzene	0.0589	0.00100	mg/L	0.0500		118	80-120			
Toluene	0.0466	0.00100	"	0.0500		93.2	80-120			
Ethylbenzene	0.0423	0.00100	"	0.0500		84.6	80-120			
Xylene (p/m)	0.0902	0.00100	"	0.100		90.2	80-120			
Xylene (o)	0.0442	0.00100	"	0.0500		88.4	80-120			
Surrogate: a,a,a-Trifluorotoluene	*42.1*		*ug/l*	*40.0*		*105*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*43.2*		*"*	*40.0*		*108*	*80-120*			
Calibration Check (E162012-CCV1)				Prepared & Analyzed: 09/20/06						
Benzene	0.0540		mg/L	0.0500		108	80-120			
Toluene	0.0482		"	0.0500		96.4	80-120			
Ethylbenzene	0.0489		"	0.0500		97.8	80-120			
Xylene (p/m)	0.0966		"	0.100		96.6	80-120			
Xylene (o)	0.0480		"	0.0500		96.0	80-120			
Surrogate: a,a,a-Trifluorotoluene	*40.1*		*ug/l*	*40.0*		*100*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*43.3*		*"*	*40.0*		*108*	*80-120*			
Matrix Spike (E162012-MS1)	**Source: 6118004-03**			Prepared: 09/20/06 Analyzed: 09/21/06						
Benzene	0.0597	0.00100	mg/L	0.0500	ND	119	80-120			
Toluene	0.0492	0.00100	"	0.0500	ND	98.4	80-120			
Ethylbenzene	0.0474	0.00100	"	0.0500	ND	94.8	80-120			
Xylene (p/m)	0.0937	0.00100	"	0.100	ND	93.7	80-120			
Xylene (o)	0.0461	0.00100	"	0.0500	ND	92.2	80-120			
Surrogate: a,a,a-Trifluorotoluene	*45.3*		*ug/l*	*40.0*		*113*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*44.4*		*"*	*40.0*		*111*	*80-120*			

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Rice Operating Co.	Project: Hobbs Jct. E-32-1	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

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 E162012 - EPA 5030C (GC)										
Matrix Spike Dup (E162012-MSD1)		**Source: 6118004-03**		Prepared: 09/20/06 Analyzed: 09/21/06						
Benzene	0.0592	0.00100	mg/L	0.0500	ND	118	80-120	0.844	20	
Toluene	0.0502	0.00100	"	0.0500	ND	100	80-120	1.61	20	
Ethylbenzene	0.0488	0.00100	"	0.0500	ND	97.6	80-120	2.91	20	
Xylene (p/m)	0.0932	0.00100	"	0.100	ND	93.2	80-120	0.535	20	
Xylene (o)	0.0458	0.00100	"	0.0500	ND	91.6	80-120	0.653	20	
Surrogate: a,a,a-Trifluorotoluene	*43.3*		*ug/l*	*40.0*		*108*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*46.0*		*"*	*40.0*		*115*	*80-120*			

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Rice Operating Co.	Project: Hobbs Jct. E-32-1	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

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 EI62105 - General Preparation (WetChem)										
Blank (EI62105-BLK1)				Prepared: 09/22/06 Analyzed: 09/25/06						
Chloride	ND	*0.500*	mg/L							
Sulfate	ND	0.500	"							
LCS (EI62105-BS1)				Prepared: 09/22/06 Analyzed: 09/25/06						
Chloride	11.8	0.500	mg/L	10.0		118	80-120			
Sulfate	11.2	0.500	"	10.0		112	80-120			
Calibration Check (EI62105-CCV1)				Prepared: 09/22/06 Analyzed: 09/25/06						
Chloride	11.7		mg/L	10.0		117	80-120			
Sulfate	11.1		"	10.0		111	80-120			
Duplicate (EI62105-DUP1)	**Source: 6I20004-01**			Prepared: 09/22/06 Analyzed: 09/25/06						
Sulfate	118	5.00	mg/L		119			0.844	20	
Chloride	43.6	5.00	"		45.0			3.16	20	
Matrix Spike (EI62105-MS1)	**Source: 6I20004-01**			Prepared: 09/22/06 Analyzed: 09/25/06						
Chloride	174	5.00	mg/L	100	45.0	129	80-120			M1
Sulfate	236	5.00	"	100	119	117	80-120			
Batch EI62118 - Filtration Preparation										
Blank (EI62118-BLK1)				Prepared: 09/20/06 Analyzed: 09/21/06						
Total Dissolved Solids	ND	10.0	mg/L							
Duplicate (EI62118-DUP1)	**Source: 6I20004-01RE1**			Prepared: 09/20/06 Analyzed: 09/21/06						
Total Dissolved Solids	428	10.0	mg/L		416			2.84	5	

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Rice Operating Co.	Project: Hobbs Jct. E-32-1	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

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 EI62707 - General Preparation (WetChem)										
Blank (EI62707-BLK1)				Prepared & Analyzed: 09/27/06						
Total Alkalinity	ND	2.00	mg/L							
LCS (EI62707-BS1)				Prepared & Analyzed: 09/27/06						
Bicarbonate Alkalinity	192	2.00	mg/L	200		96.0	85-115			
Duplicate (EI62707-DUP1)	**Source: 6I20004-01**			Prepared & Analyzed: 09/27/06						
Total Alkalinity	284	2.00	mg/L		286			0.702	20	
Reference (EI62707-SRM1)				Prepared & Analyzed: 09/27/06						
Total Alkalinity	242		mg/L	250		96.8	90-110			

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Rice Operating Co.	Project: Hobbs Jct. E-32-1	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

Total Metals 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 EI62111 - 6010B/No Digestion										
Blank (EI62111-BLK1)				Prepared & Analyzed: 09/21/06						
Calcium	ND	0.0810	mg/L							
Magnesium	ND	0.0360	"							
Potassium	ND	0.0600	"							
Sodium	ND	0.0430	"							
Calibration Check (EI62111-CCV1)				Prepared & Analyzed: 09/21/06						
Calcium	2.08		mg/L	2.00		104	85-115			
Magnesium	2.15		"	2.00		108	85-115			
Potassium	1.85		"	2.00		92.5	85-115			
Sodium	1.73		"	2.00		86.5	85-115			
Duplicate (EI62111-DUP1)	**Source: 6120004-01**			Prepared & Analyzed: 09/21/06						
Calcium	64.8	0.810	mg/L		67.3			3.79	20	
Magnesium	24.6	0.360	"		25.1			2.01	20	
Potassium	3.22	0.600	"		3.37			4.55	20	
Sodium	67.8	0.430	"		69.6			2.62	20	

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

Rice Operating Co.	Project: Hobbs Jct. E-32-1	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

Notes and Definitions

M1	The MS and/or MSD were above the acceptance limits due to sample matrix interference. See Blank Spike (LCS).
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: 10/2/2006

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.

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

Environmental Lab of Texas

12600 West I-20 East
Odessa, Texas 79765
Phone: 432-563-1800
Fax: 432-563-1713

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: Kristin Farris Pope kpope@riceswd.com
Company Name: RICE Operating Company
Company Address: 122 W. Taylor Street
City/State/Zip: Hobbs, New Mexico 88240
Telephone No: (505) 393-9174 Fax No: (505) 397-1471
Sampler Signature: Rozanne Johnson (505) 631-9310
Email: rozanne@valornet.com

Project Name: Hobbs Junction E-32-1
Project Number:
Project Loc: T18S-R38E-Sec32E, Lea County NM
PO Number:

LAB # (lab use only) 61200 6	FIELD CODE	Date Sampled	Time Sampled	No. of Containers	Preservative: Ice	Preservative: HNO_3	Preservative: HCl (40 ml glass vials)	Preservative: NaOH	Preservative: H_2SO_4	Preservative: Plastic (1 Liter HDPE)	Preservative: Other (Specify)	Matrix: Water	Matrix: Sludge	Matrix: Soil	Matrix: Other (specify)	Analyze For: TCLP:	Analyze For: TOTAL:	Cations (Ca, Mg, Na, K)	Anions (Cl, SO4, CO3, HCO3)	SAR / ESP / CEC	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEX 8021B/5030	PAH	N.O.R.M.	Total Dissolved Solids			RUSH TAT (Pre-Schedule)	Standard TAT
1	Monitor Well #1	9/19/2006	9:15	3	X		2			1		X					X	X	X					X			X				X

Special Instructions:

PLEASE Email RESULTS TO: kpope@riceswd.com; mfranks@riceswd.com
rozanne@valornet.com

Sample Containers Intact? (Y) N
Labels on container? (Y) N
Custody Seals: Containers Cooler
Temperature Upon Receipt: 2.0 C
Laboratory Comments:

Relinquished by: Rozanne Johnson	Date 9-20-06	Time	Received by:	Date	Time
Relinquished By:	Date	Time	Received by ELOT:	Date 09-20-06	Time 1322

Environmental Lab of Texas

Variance/ Corrective Action Report- Sample Log-In

Client: RDC OP.

Date/ Time: 9/20/06

Lab ID # : 610-20006

Initials: CK

Sample Receipt Checklist

					Client Initials
#1	Temperature of container/ cooler?	Yes	No	2.0 °C	
#2	Shipping container in good condition?	~~Yes~~	No		
#3	Custody Seals intact on shipping container/ cooler?	~~Yes~~	No	Not Present	
#4	Custody Seals intact on sample bottles/ container?	~~Yes~~	No	Not Present	
#5	Chain of Custody present?	~~Yes~~	No		
#6	Sample instructions complete of Chain of Custody?	~~Yes~~	No		
#7	Chain of Custody signed when relinquished/ received?	~~Yes~~	No		
#8	Chain of Custody agrees with sample label(s)?	~~Yes~~	No	ID written on Cont./ Lid	
#9	Container label(s) legible and intact?	~~Yes~~	No	Not Applicable	
#10	Sample matrix/ properties agree with Chain of Custody?	~~Yes~~	No		
#11	Containers supplied by ELOT?	~~Yes~~	No		
#12	Samples in proper container/ bottle?	~~Yes~~	No	See Below	
#13	Samples properly preserved?	~~Yes~~	No	See Below	
#14	Sample bottles intact?	~~Yes~~	No		
#15	Preservations documented on Chain of Custody?	~~Yes~~	No		
#16	Containers documented on Chain of Custody?	~~Yes~~	No		
#17	Sufficient sample amount for indicated test(s)?	~~Yes~~	No	See Below	
#18	All samples received within sufficient hold time?	~~Yes~~	No	See Below	
#19	VOC samples have zero headspace?	~~Yes~~	No	Not Applicable	

Variance Documentation

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

Regarding: _____

Corrective Action Taken: _____

Check all that Apply:

- ☐ See attached e-mail/ fax
- ☐ Client understands and would like to proceed with analysis
- ☐ Cooling process had begun shortly after sampling event

ENVIRONMENTAL LAB OF

12600 West I-20 East - Odessa, Texas 79765

Analytical Report

Prepared for:

Kristin Farris-Pope

Rice Operating Co.

122 W. Taylor

Hobbs, NM 88240

Project: Hobbs Jct. E-32-1

Project Number: None Given

Location: T18S, R38E, Sec.32 E- Lea County, NM

Lab Order Number: 6K03010

Report Date: 11/22/06

Rice Operating Co.	Project: Hobbs Jct. E-32-1	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Monitor Well #1	6K03010-01	Water	10/31/06 10:40	11-03-2006 11:45

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

Rice Operating Co.	Project: Hobbs Jct. E-32-1	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

General Chemistry Parameters by EPA / Standard Methods

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Monitor Well #1 (6K03010-01) Water									
Total Alkalinity	**270**	2.00	mg/L	1	EK60711	11/07/06	11/07/06	EPA 310.1M	
Chloride	**197**	5.00	"	10	EK60602	11/06/06	11/06/06	EPA 300.0	
Total Dissolved Solids	**746**	10.0	"	1	EK60209	11/03/06	11/06/06	EPA 160.1	
Sulfate	**120**	5.00	"	10	EK60602	11/06/06	11/06/06	EPA 300.0	

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Rice Operating Co.	Project: Hobbs Jct. E-32-1	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

Total Metals by EPA / Standard Methods

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Monitor Well #1 (6K03010-01) Water									
Calcium	**133**	4.05	mg/L	50	EK60712	11/07/06	11/07/06	EPA 6010B	
Magnesium	**26.6**	0.360	"	10	"	"	"	"	
Potassium	**3.45**	0.600	"	"	"	"	"	"	
Sodium	**105**	2.15	"	50	"	"	"	"	

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Rice Operating Co.	Project: Hobbs Jct. E-32-1	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

Volatile Organic Compounds by EPA Method 8260B

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Monitor Well #1 (6K03010-01) Water									
Benzene	ND	1.00	ug/l	1	EK61308	11/13/06	11/14/06	EPA 8260B	
Toluene	ND	1.00	"	"	"	"	"	"	
Ethylbenzene	ND	1.00	"	"	"	"	"	"	
Xylene (p/m)	ND	1.00	"	"	"	"	"	"	
Xylene (o)	ND	1.00	"	"	"	"	"	"	
Naphthalene	ND	1.00	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*102 %*		*68-129*	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*87.2 %*		*72-132*	"	"	"	"	
Surrogate: Toluene-d8		*91.2 %*		*74-118*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*89.6 %*		*65-140*	"	"	"	"	

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

Project: Hobbs Jct. E-32-1
Project Number: None Given
Project Manager: Kristin Farris-Pope

Fax: (505) 397-1471

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 EK60209 - Filtration Preparation										
Blank (EK60209-BLK1)				Prepared: 11/02/06 Analyzed: 11/03/06						
Total Dissolved Solids	ND	10.0	mg/L							
Duplicate (EK60209-DUP1)		Source: 6K01015-01		Prepared: 11/02/06 Analyzed: 11/03/06						
Total Dissolved Solids	696	10.0	mg/L		702			0.858	5	
Duplicate (EK60209-DUP2)		Source: 6K03008-04		Prepared: 11/03/06 Analyzed: 11/06/06						
Total Dissolved Solids	500	10.0	mg/L		492			1.61	5	
Batch EK60602 - General Preparation (WetChem)										
Blank (EK60602-BLK1)				Prepared & Analyzed: 11/06/06						
Chloride	ND	0.500	mg/L							
Sulfate	ND	0.500	"							
LCS (EK60602-BS1)				Prepared & Analyzed: 11/06/06						
Sulfate	9.30	0.500	mg/L	10.0		93.0	80-120			
Chloride	10.2	0.500	"	10.0		102	80-120			
Calibration Check (EK60602-CCV1)				Prepared & Analyzed: 11/06/06						
Sulfate	10.9		mg/L	10.0		109	80-120			
Chloride	10.0		"	10.0		100	80-120			
Duplicate (EK60602-DUP1)		Source: 6K03002-01		Prepared & Analyzed: 11/06/06						
Chloride	45.8	5.00	mg/L		45.4			0.877	20	
Sulfate	508	5.00	"		511			0.589	20	
Duplicate (EK60602-DUP2)		Source: 6K03008-04		Prepared & Analyzed: 11/06/06						
Chloride	44.5	5.00	mg/L		44.2			0.676	20	
Sulfate	116	5.00	"		115			0.866	20	

Rice Operating Co.	Project: Hobbs Jct. E-32-1	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

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 EK60602 - General Preparation (WetChem)										
Matrix Spike (EK60602-MS1)	**Source: 6K03002-01**			Prepared & Analyzed: 11/06/06						
Sulfate	613	5.00	mg/L	100	511	102	80-120			
Chloride	148	5.00	"	100	45.4	103	80-120			
Matrix Spike (EK60602-MS2)	**Source: 6K03008-04**			Prepared & Analyzed: 11/06/06						
Chloride	150	5.00	mg/L	100	44.2	106	80-120			
Sulfate	214	5.00	"	100	115	99.0	80-120			
Batch EK60711 - General Preparation (WetChem)										
Blank (EK60711-BLK1)				Prepared & Analyzed: 11/07/06						
Total Alkalinity	ND	2.00	mg/L							
LCS (EK60711-BS1)				Prepared & Analyzed: 11/07/06						
Total Alkalinity	202	2.00	mg/L	200		101	85-115			
Duplicate (EK60711-DUP1)	**Source: 6K03008-01**			Prepared & Analyzed: 11/07/06						
Total Alkalinity	236	2.00	mg/L		240			1.68	20	
Reference (EK60711-SRM1)				Prepared & Analyzed: 11/07/06						
Total Alkalinity	254		mg/L	250		102	90-110			

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Rice Operating Co.	Project: Hobbs Jct. E-32-1	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

Total Metals 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 EK60712 - 6010B/No Digestion										
Blank (EK60712-BLK1)				Prepared & Analyzed: 11/07/06						
Calcium	ND	0.0810	mg/L							
Magnesium	ND	0.0360	"							
Potassium	ND	0.0600	"							
Sodium	ND	0.0430	"							
Calibration Check (EK60712-CCV1)				Prepared & Analyzed: 11/07/06						
Calcium	2.26		mg/L	2.00		113	85-115			
Magnesium	2.12		"	2.00		106	85-115			
Potassium	1.73		"	2.00		86.5	85-115			
Sodium	2.13		"	2.00		106	85-115			
Duplicate (EK60712-DUP1)	**Source: 6K03002-01**			Prepared & Analyzed: 11/07/06						
Calcium	84.4	0.810	mg/L		83.8			0.713	20	
Magnesium	40.5	0.360	"		38.9			4.03	20	
Potassium	7.74	0.600	"		8.13			4.91	20	
Sodium	110	2.15	"		117			6.17	20	

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Volatile Organic Compounds by EPA Method 8260B - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EK61308 - EPA 5030C (GCMS)										
Blank (EK61308-BLK1)				Prepared: 11/13/06 Analyzed: 11/14/06						
Benzene	ND	1.00	ug/l							
Toluene	ND	1.00	"							
Ethylbenzene	ND	1.00	"							
Xylene (p/m)	ND	1.00	"							
Xylene (o)	ND	1.00	"							
Naphthalene	ND	1.00	"							
Surrogate: Dibromofluoromethane	*48.7*		"	*50.0*		*97.4*	*68-129*			
Surrogate: 1,2-Dichloroethane-d4	*42.2*		"	*50.0*		*84.4*	*72-132*			
Surrogate: Toluene-d8	*45.6*		"	*50.0*		*91.2*	*74-118*			
Surrogate: 4-Bromofluorobenzene	*44.2*		"	*50.0*		*88.4*	*65-140*			
LCS (EK61308-BS1)				Prepared: 11/13/06 Analyzed: 11/15/06						
Benzene	24.0	1.00	ug/l	25.0		96.0	70-130			
Toluene	24.6	1.00	"	25.0		98.4	70-130			
Ethylbenzene	27.1	1.00	"	25.0		108	70-130			
Xylene (p/m)	52.0	1.00	"	50.0		104	70-130			
Xylene (o)	27.1	1.00	"	25.0		108	70-130			
Naphthalene	27.3	1.00	"	25.0		109	70-130			
Surrogate: Dibromofluoromethane	*48.6*		"	*50.0*		*97.2*	*68-129*			
Surrogate: 1,2-Dichloroethane-d4	*44.0*		"	*50.0*		*88.0*	*72-132*			
Surrogate: Toluene-d8	*45.1*		"	*50.0*		*90.2*	*74-118*			
Surrogate: 4-Bromofluorobenzene	*50.2*		"	*50.0*		*100*	*65-140*			
Calibration Check (EK61308-CCV1)				Prepared: 11/13/06 Analyzed: 11/15/06						
Toluene	52.0		ug/l	50.0		104	70-130			
Ethylbenzene	54.9		"	50.0		110	70-130			
Surrogate: Dibromofluoromethane	*50.6*		"	*50.0*		*101*	*68-129*			
Surrogate: 1,2-Dichloroethane-d4	*48.9*		"	*50.0*		*97.8*	*72-132*			
Surrogate: Toluene-d8	*47.2*		"	*50.0*		*94.4*	*74-118*			
Surrogate: 4-Bromofluorobenzene	*44.4*		"	*50.0*		*88.8*	*65-140*			

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Rice Operating Co.	Project: Hobbs Jct. E-32-1	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EK61308 - EPA 5030C (GCMS)										
Matrix Spike (EK61308-MS1)	**Source: 6K09001-01**			Prepared: 11/13/06 Analyzed: 11/16/06						
Benzene	23.0	1.00	ug/l	25.0	ND	92.0	70-130			
Toluene	24.7	1.00	"	25.0	ND	98.8	70-130			
Ethylbenzene	27.0	1.00	"	25.0	ND	108	70-130			
Xylene (p/m)	53.3	1.00	"	50.0	ND	107	70-130			
Xylene (o)	27.0	1.00	"	25.0	ND	108	70-130			
Naphthalene	24.5	1.00	"	25.0	ND	98.0	70-130			
Surrogate: Dibromofluoromethane	*49.5*		"	*50.0*		*99.0*	*68-129*			
Surrogate: 1,2-Dichloroethane-d4	*48.1*		"	*50.0*		*96.2*	*72-132*			
Surrogate: Toluene-d8	*47.3*		"	*50.0*		*94.6*	*74-118*			
Surrogate: 4-Bromofluorobenzene	*48.2*		"	*50.0*		*96.4*	*65-140*			
Matrix Spike Dup (EK61308-MSD1)	**Source: 6K09001-01**			Prepared: 11/13/06 Analyzed: 11/15/06						
Benzene	23.2	1.00	ug/l	25.0	ND	92.8	70-130	0.866	20	
Toluene	23.6	1.00	"	25.0	ND	94.4	70-130	4.55	20	
Ethylbenzene	24.6	1.00	"	25.0	ND	98.4	70-130	9.30	20	
Xylene (p/m)	47.6	1.00	"	50.0	ND	95.2	70-130	11.3	20	
Xylene (o)	24.8	1.00	"	25.0	ND	99.2	70-130	8.49	20	
Naphthalene	26.0	1.00	"	25.0	ND	104	70-130	5.94	20	
Surrogate: Dibromofluoromethane	*52.7*		"	*50.0*		*105*	*68-129*			
Surrogate: 1,2-Dichloroethane-d4	*54.4*		"	*50.0*		*109*	*72-132*			
Surrogate: Toluene-d8	*44.8*		"	*50.0*		*89.6*	*74-118*			
Surrogate: 4-Bromofluorobenzene	*47.1*		"	*50.0*		*94.2*	*65-140*			

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Rice Operating Co.	Project: Hobbs Jct. E-32-1	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

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: 11/22/2006

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.

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Environmental Lab of Texas

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

12600 West I-20 East
Odessa, Texas 79765

Phone: 432-563-1800
Fax: 432-563-1713

Project Manager: Kristin Farris Pope kpope@riceswd.com

Company Name: RICE Operating Company

Company Address: 122 W. Taylor Street

City/State/Zip: Hobbs, New Mexico 88240

Telephone No: (505) 393-9174 Fax No: (505) 397-1471

Sampler Signature: Rozanne Johnson (505)631-9310 e-mail: rozanne@valornet.com

Project Name: Hobbs Junction E-32-1

Project #:

Project Loc: T18S R38E Sec32 E ~ Lea County New Mexico

PO #:

Report Format: [X] Standard [ ] TRRP [ ] NPDES

(lab use only)
ORDER #: 6K0300

LAB # (lab use only)	FIELD CODE	Beginning Depth	Ending Depth	Date Sampled	Time Sampled	Field Filtered	Total # of Containers	Preservation & # of Containers: Ice	HNO_3	HCl (2) 40 ml glass vials	H_2SO_4	NaOH	$Na_2S_2O_3$	None (1) 1 Liter HDPE	Other (Specify)	Matrix: DW=Drinking Water SL=Sludge GW = Groundwater S=Soil/Solid NP=Non-Potable Specify Other	Analyze For: TCLP:	TOTAL:	TPH: 418.1 8015M 8015D	TPH: TX 1005 TX 1006	Cations (Ca, Mg, Na, K)	Anions (Cl, SO4, Alkalinity)	SAR / ESP / CEC	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles (BTEX-N 8260)	Semivolatiles	BTEX 80210/5030 or BTEX 8260	RCI	N.O.R.M.	Total Dissolved Solids			RUSH TAT (Pre-Schedule) 24, 48, 72 hrs	Standard TAT
1	Monitor Well #1			10/31/2006	10:40		3	X		2				1		GW					X	X			X					X				X

Special Instructions:

Laboratory Comments:

Sample Containers Intact?	Y	N
VOCs Free of Headspace?	Y	N
Labels on container(s)	Y	N
Custody seals on container(s)	Y	N
Custody seals on cooler(s)	Y	N
Sample Hand Delivered by Sampler/Client Rep. ?	Y	N
by Courier? UPS DHL FedEx Lone Star		
Temperature Upon Receipt: 8.5 °C		

Relinquished by:	Date	Time	Received by:	Date	Time
Rozanne Johnson	11-3-06	6:02	James Johnson	11-3-06	6:03
Relinquished by: James Johnson	11-3-06	11:45	Received by:	Date	Time
Relinquished by:	Date	Time	Received by ELOT:	Date	Time
				11/2/06	11:45

Environmental Lab of Texas

Variance/ Corrective Action Report- Sample Log-In

Client: RICE OP.

Date/ Time: 11/3/06 11:45

Lab ID # : 6K0310

Initials: LK

Sample Receipt Checklist

					Client Initials
#1	Temperature of container/ cooler?	Yes	No	0.5 °C	
#2	Shipping container in good condition?	Yes	No		
#3	Custody Seals intact on shipping container/ cooler?	Yes	No	Not Present	
#4	Custody Seals intact on sample bottles/ container?	Yes	No	Not Present	
#5	Chain of Custody present?	Yes	No		
#6	Sample instructions complete of Chain of Custody?	Yes	No		
#7	Chain of Custody signed when relinquished/ received?	Yes	No		
#8	Chain of Custody agrees with sample label(s)?	Yes	No	ID written on Cont./ Lid	
#9	Container label(s) legible and intact?	Yes	No	Not Applicable	
#10	Sample matrix/ properties agree with Chain of Custody?	Yes	No		
#11	Containers supplied by ELOT?	Yes	No		
#12	Samples in proper container/ bottle?	Yes	No	See Below	
#13	Samples properly preserved?	Yes	No	See Below	
#14	Sample bottles intact?	Yes	No		
#15	Preservations documented on Chain of Custody?	Yes	No		
#16	Containers documented on Chain of Custody?	Yes	No		
#17	Sufficient sample amount for indicated test(s)?	Yes	No	See Below	
#18	All samples received within sufficient hold time?	Yes	No	See Below	
#19	VOC samples have zero headspace?	Yes	No	Not Applicable	

Variance Documentation

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

Regarding: _____

Corrective Action Taken: _____

Check all that Apply:

- ☐ See attached e-mail/ fax
- ☐ Client understands and would like to proceed with analysis
- ☐ Cooling process had begun shortly after sampling event

ENVIRONMENTAL LAB OF

12600 West I-20 East - Odessa, Texas 79765

Analytical Report

Prepared for:

Kristin Farris-Pope

Rice Operating Co.

122 W. Taylor

Hobbs, NM 88240

Project: Hobbs Jct. E-32-1

Project Number: None Given

Location: Lea County

Lab Order Number: 6E18018

Report Date: 05/25/06

Rice Operating Co.	Project: Hobbs Jct. E-32-1	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	05/25/06 16:22

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Monitor Well #1	6E18018-01	Water	05/17/06 13:15	05/18/06 12:00

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Rice Operating Co.	Project: Hobbs Jct. E-32-1	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	05/25/06 16:22

Organics by GC

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Monitor Well #1 (6E18018-01) Water									
Benzene	ND	0.00100	mg/L	1	EE62101	05/21/06	05/22/06	EPA 8021B	
Toluene	ND	0.00100	"	"	"	"	"	"	
Ethylbenzene	ND	0.00100	"	"	"	"	"	"	
Xylene (p/m)	ND	0.00100	"	"	"	"	"	"	
Xylene (o)	ND	0.00100	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*114 %*		*80-120*		"	"	"	
Surrogate: 4-Bromofluorobenzene		*83.2 %*		*80-120*		"	"	"	

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Rice Operating Co.	Project: Hobbs Jct. E-32-1	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	05/25/06 16:22

General Chemistry Parameters by EPA / Standard Methods

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Monitor Well #1 (6E18018-01) Water									
Total Alkalinity	**250**	2.00	mg/L	1	EE62220	05/22/06	05/22/06	EPA 310.1M	
Chloride	**393**	10.0	"	20	EE62205	05/22/06	05/22/06	EPA 300.0	
Total Dissolved Solids	**1350**	5.00	"	1	EE61919	05/18/06	05/18/06	EPA 160.1	
Sulfate	**161**	10.0	"	20	EE62205	05/22/06	05/22/06	EPA 300.0	

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Rice Operating Co.	Project: Hobbs Jct. E-32-1	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	05/25/06 16:22

Total Metals by EPA / Standard Methods

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Monitor Well #1 (6E18018-01) Water									
Calcium	**192**	0.500	mg/L	50	EE61926	05/19/06	05/19/06	EPA 6010B	
Magnesium	**44.2**	0.0100	"	10	"	"	"	"	
Potassium	**5.38**	0.500	"	"	"	"	"	"	
Sodium	**135**	0.500	"	50	"	"	"	"	

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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 EE62101 - EPA 5030C (GC)										
Blank (EE62101-BLK1)				Prepared & Analyzed: 05/21/06						
Benzene	ND	0.00100	mg/L							
Toluene	ND	0.00100	"							
Ethylbenzene	ND	0.00100	"							
Xylene (p/m)	ND	0.00100	"							
Xylene (o)	ND	0.00100	"							
Surrogate: a,a,a-Trifluorotoluene	*42.9*		*ug/l*	*40.0*		*107*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*32.2*		*"*	*40.0*		*80.5*	*80-120*			
LCS (EE62101-BS1)				Prepared & Analyzed: 05/21/06						
Benzene	0.0415	0.00100	mg/L	0.0500		83.0	80-120			
Toluene	0.0421	0.00100	"	0.0500		84.2	80-120			
Ethylbenzene	0.0463	0.00100	"	0.0500		92.6	80-120			
Xylene (p/m)	0.102	0.00100	"	0.100		102	80-120			
Xylene (o)	0.0504	0.00100	"	0.0500		101	80-120			
Surrogate: a,a,a-Trifluorotoluene	*42.7*		*ug/l*	*40.0*		*107*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*36.2*		*"*	*40.0*		*90.5*	*80-120*			
Calibration Check (EE62101-CCV1)				Prepared & Analyzed: 05/21/06						
Benzene	44.3		ug/l	50.0		88.6	80-120			
Toluene	44.3		"	50.0		88.6	80-120			
Ethylbenzene	55.3		"	50.0		111	80-120			
Xylene (p/m)	99.1		"	100		99.1	80-120			
Xylene (o)	49.1		"	50.0		98.2	80-120			
Surrogate: a,a,a-Trifluorotoluene	*44.6*		*"*	*40.0*		*112*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*34.8*		*"*	*40.0*		*87.0*	*80-120*			
Matrix Spike (EE62101-MS1)	**Source: 6E17005-01**			Prepared: 05/21/06 Analyzed: 05/22/06						
Benzene	0.0444	0.00100	mg/L	0.0500	ND	88.8	80-120			
Toluene	0.0454	0.00100	"	0.0500	ND	90.8	80-120			
Ethylbenzene	0.0488	0.00100	"	0.0500	ND	97.6	80-120			
Xylene (p/m)	0.108	0.00100	"	0.100	ND	108	80-120			
Xylene (o)	0.0531	0.00100	"	0.0500	ND	106	80-120			
Surrogate: a,a,a-Trifluorotoluene	*45.5*		*ug/l*	*40.0*		*114*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*36.9*		*"*	*40.0*		*92.2*	*80-120*			

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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 EE62101 - EPA 5030C (GC)										
Matrix Spike Dup (EE62101-MSD1)	**Source: 6E17005-01**			Prepared: 05/21/06 Analyzed: 05/22/06						
Benzene	0.0439	0.00100	mg/L	0.0500	ND	87.8	80-120	1.13	20	
Toluene	0.0447	0.00100	"	0.0500	ND	89.4	80-120	1.55	20	
Ethylbenzene	0.0481	0.00100	"	0.0500	ND	96.2	80-120	1.44	20	
Xylene (p/m)	0.107	0.00100	"	0.100	ND	107	80-120	0.930	20	
Xylene (o)	0.0521	0.00100	"	0.0500	ND	104	80-120	1.90	20	
Surrogate: a,a,a-Trifluorotoluene	*46.4*		*ug/l*	*40.0*		*116*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*33.4*		*"*	*40.0*		*83.5*	*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 EE61919 - Filtration Preparation										
Blank (EE61919-BLK1)				Prepared & Analyzed: 05/18/06						
Total Dissolved Solids	ND	5.00	mg/L							
Duplicate (EE61919-DUP1)	**Source: 6E18012-01**			Prepared & Analyzed: 05/18/06						
Total Dissolved Solids	1420	5.00	mg/L		1470			3.46	5	
Batch EE62205 - General Preparation (WetChem)										
Blank (EE62205-BLK1)				Prepared & Analyzed: 05/22/06						
Sulfate	ND	0.500	mg/L							
Chloride	ND	0.500	"							
LCS (EE62205-BS1)				Prepared & Analyzed: 05/22/06						
Sulfate	8.20		mg/L	10.0		82.0	80-120			
Chloride	10.1		"	10.0		101	80-120			
Calibration Check (EE62205-CCV1)				Prepared & Analyzed: 05/22/06						
Chloride	10.1		mg/L	10.0		101	80-120			
Sulfate	9.63		"	10.0		96.3	80-120			
Duplicate (EE62205-DUP1)	**Source: 6E18012-01**			Prepared & Analyzed: 05/22/06						
Sulfate	307	10.0	mg/L		304			0.982	20	
Chloride	343	10.0	"		344			0.291	20	
Duplicate (EE62205-DUP2)	**Source: 6E18015-01**			Prepared & Analyzed: 05/22/06						
Chloride	415	10.0	mg/L		412			0.726	20	
Sulfate	50.3	10.0	"		50.6			0.595	20	

Rice Operating Co.	Project: Hobbs Jct. E-32-1	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	05/25/06 16:22

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 EE62205 - General Preparation (WetChem)										
Matrix Spike (EE62205-MS1)	**Source: 6E18012-01**			Prepared & Analyzed: 05/22/06						
Chloride	565	10.0	mg/L	200	344	110	80-120			
Sulfate	465	10.0	"	200	304	80.5	80-120			
Matrix Spike (EE62205-MS2)	**Source: 6E18015-01**			Prepared & Analyzed: 05/22/06						
Chloride	654	10.0	mg/L	200	412	121	80-120			S-07
Sulfate	200	10.0	"	200	50.6	74.7	80-120			S-07
Batch EE62220 - General Preparation (WetChem)										
Blank (EE62220-BLK1)				Prepared & Analyzed: 05/22/06						
Total Alkalinity	ND	2.00	mg/L							
LCS (EE62220-BS1)				Prepared & Analyzed: 05/22/06						
Bicarbonate Alkalinity	214	2.00	mg/L	200		107	85-115			
Duplicate (EE62220-DUP1)	**Source: 6E18012-01**			Prepared & Analyzed: 05/22/06						
Total Alkalinity	279	2.00	mg/L		280			0.358	20	
Reference (EE62220-SRM1)				Prepared & Analyzed: 05/22/06						
Total Alkalinity	96.0		mg/L	100		96.0	90-110			

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Total Metals 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 EE61926 - 6010B/No Digestion										
Blank (EE61926-BLK1)				Prepared & Analyzed: 05/19/06						
Calcium	ND	0.0100	mg/L							
Magnesium	ND	0.00100	"							
Potassium	ND	0.0500	"							
Sodium	ND	0.0100	"							
Calibration Check (EE61926-CCV1)				Prepared & Analyzed: 05/19/06						
Calcium	2.30		mg/L	2.00		115	85-115			
Magnesium	2.21		"	2.00		110	85-115			
Potassium	1.80		"	2.00		90.0	85-115			
Sodium	1.81		"	2.00		90.5	85-115			
Duplicate (EE61926-DUP1)	**Source: 6E18012-01**			Prepared & Analyzed: 05/19/06						
Calcium	111	0.500	mg/L		111			0.00	20	
Magnesium	58.3	0.0100	"		56.5			3.14	20	
Potassium	12.2	0.500	"		12.9			5.58	20	
Sodium	266	0.500	"		271			1.86	20	

Rice Operating Co.	Project: Hobbs Jct. E-32-1	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	05/25/06 16:22

Notes and Definitions

S-07	Recovery outside Laboratory historical or method prescribed limits.
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: 5/25/2006

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

12600 West I-20 East
Odessa, Texas 79765

Phone: 432-563-1800
Fax: 432-563-1713

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: Kristin Farris Pope kpope@riceswd.com

Company Name RICE Operating Company

Company Address: 122 W. Taylor Street

City/State/Zip: Hobbs, New Mexico 88240

Telephone No: (505) 393-9174 Fax No: (505) 397-1471

Sampler Signature: Rozanne Johnson (505) 631-9310

Email: rozanne@valornet.com

Project Name: Hobbs Jct. E-32-1

Project #:

Project Loc: Lea County

PO #:

Analyze For: TCLP: / TOTAL: (X marked under TOTAL for BTEX 8021B/5030)

LAB # (lab use only)	FIELD CODE	Date Sampled	Time Sampled	No. of Containers	Preservative: Ice	HNO_3	HCl (2) 40 ml glass vials	NaOH	H_2SO_4	None (1) 1 Liter HDPE	Other (Specify)	Matrix: Water	Sludge	Soil	Other (specify):	TPH: 418.1 8015M 1005 1006	Cations (Ca, Mg, Na, K)	Anions (Cl, SO4, CO3, HCO3)	SAR / ESP / CEC	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEX 8021B/5030	RCI	N.O.R.M.	Total Dissolved Solids				RUSH TAT (Pre-Schedule)	Standard TAT
6E18018 -01	Monitor Well #1	5/17/2006	13:15	3	X		2			1		X					X	X					X			X					X

Special Instructions:

PLEASE Email RESULTS TO: kpope@riceswd.com & mfranks@riceswd.com

Sample Containers Intact? (Y) N
Labels on container? (Y) N
Custody Seals: Containers / Cooler
Temperature Upon Receipt: 1.0°C not frozen

Laboratory Comments:

Relinquished by:	Date	Time	Received by:	Date	Time
Rozanne Johnson	5/18/06	6:02	Jamie Johnson	5/18/06	6:03
Relinquished by: Jamie Johnson	5/18/06	12:00	Received by ELOT: Roland	5-18-06	1200

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

ient: Rice Operating Co.

ate/Time: 05-18-06 @ 1200

der #: 6E18018

itials: JMM

Sample Receipt Checklist

mperature of container/cooler?	(Yes)	No	1.0 C
ipping container/cooler in good condition?	(Yes)	No	
stody Seals intact on shipping container/cooler?	(Yes)	No	Not present
stody Seals intact on sample bottles?	(Yes)	No	Not present
ain of custody present?	(Yes)	No	
mple Instructions complete on Chain of Custody?	(Yes)	No	
ain of Custody signed when relinquished and received?	(Yes)	No	
ain of custody agrees with sample label(s)	(Yes)	No	
ntainer labels legible and intact?	(Yes)	No	
mple Matrix and properties same as on chain of custody?	(Yes)	No	
mples in proper container/bottle?	(Yes)	No	
mples properly preserved?	(Yes)	No	
mple bottles intact?	(Yes)	No	
servations documented on Chain of Custody?	(Yes)	No	
ntainers documented on Chain of Custody?	(Yes)	No	
fficient sample amount for indicated test?	(Yes)	No	
samples received within sufficient hold time?	(Yes)	No	
C samples have zero headspace?	(Yes)	No	Not Applicable

ther observations:

Variance Documentation:

ontact Person: - Date/Time: Contacted by:

egarding:

orrective Action Taken:

ENVIRONMENTAL LAB OF

12600 West I-20 East - Odessa, Texas 79765

Analytical Report

Prepared for:

Kristin Farris-Pope

Rice Operating Co.

122 W. Taylor

Hobbs, NM 88240

Project: Hobbs Jct. E-32-1

Project Number: None Given

Location: T18S-R38E-Sec.32E, Lea County, NM

Lab Order Number: 6J10004

Report Date: 10/23/06

Rice Operating Co.	Project: Hobbs Jct. E-32-1	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Monitor Well #1	6J10004-01	Water	10/05/06 15:05	10-09-2006 17:20

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Rice Operating Co.	Project: Hobbs Jct. E-32-1	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

Volatile Organic Compounds by EPA Method 8260B

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Monitor Well #1 (6J10004-01) Water									
Benzene	ND	1.00	ug/l	1	EJ61913	10/18/06	10/18/06	EPA 8260B	
Toluene	ND	1.00	"	"	"	"	"	"	
Ethylbenzene	ND	1.00	"	"	"	"	"	"	
Xylene (p/m)	ND	1.00	"	"	"	"	"	"	
Xylene (o)	ND	1.00	"	"	"	"	"	"	
Naphthalene	ND	1.00	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*101 %*		*68-129*	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*90.2 %*		*72-132*	"	"	"	"	
Surrogate: Toluene-d8		*89.6 %*		*74-118*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*80.8 %*		*65-140*	"	"	"	"	

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Rice Operating Co.	Project: Hobbs Jct. E-32-I	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EJ61913 - EPA 5030C (GCMS)										
Blank (EJ61913-BLK1)				Prepared & Analyzed: 10/18/06						
Benzene	ND	1.00	ug/l							
Toluene	ND	1.00	"							
Ethylbenzene	ND	1.00	"							
Xylene (p/m)	ND	1.00	"							
Xylene (o)	ND	1.00	"							
Naphthalene	ND	1.00	"							
Surrogate: Dibromofluoromethane	*47.2*		"	*50.0*		*94.4*	*68-129*			
Surrogate: 1,2-Dichloroethane-d4	*42.8*		"	*50.0*		*85.6*	*72-132*			
Surrogate: Toluene-d8	*40.3*		"	*50.0*		*80.6*	*74-118*			
Surrogate: 4-Bromofluorobenzene	*37.0*		"	*50.0*		*74.0*	*65-140*			
LCS (EJ61913-BS1)				Prepared & Analyzed: 10/18/06						
Benzene	20.2	1.00	ug/l	25.0		80.8	70-130			
Toluene	22.1	1.00	"	25.0		88.4	70-130			
Ethylbenzene	22.7	1.00	"	25.0		90.8	70-130			
Xylene (p/m)	42.0	1.00	"	50.0		84.0	70-130			
Xylene (o)	23.0	1.00	"	25.0		92.0	70-130			
Naphthalene	24.2	1.00	"	25.0		96.8	70-130			
Surrogate: Dibromofluoromethane	*49.6*		"	*50.0*		*99.2*	*68-129*			
Surrogate: 1,2-Dichloroethane-d4	*51.5*		"	*50.0*		*103*	*72-132*			
Surrogate: Toluene-d8	*43.6*		"	*50.0*		*87.2*	*74-118*			
Surrogate: 4-Bromofluorobenzene	*40.2*		"	*50.0*		*80.4*	*65-140*			
Calibration Check (EJ61913-CCV1)				Prepared & Analyzed: 10/18/06						
Toluene	41.3		ug/l	50.0		82.6	70-130			
Ethylbenzene	41.1		"	50.0		82.2	70-130			
Surrogate: Dibromofluoromethane	*46.9*		"	*50.0*		*93.8*	*68-129*			
Surrogate: 1,2-Dichloroethane-d4	*44.9*		"	*50.0*		*89.8*	*72-132*			
Surrogate: Toluene-d8	*44.2*		"	*50.0*		*88.4*	*74-118*			
Surrogate: 4-Bromofluorobenzene	*38.7*		"	*50.0*		*77.4*	*65-140*			

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Rice Operating Co.	Project: Hobbs Jct. E-32-1	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EJ61913 - EPA 5030C (GCMS)										
Matrix Spike (EJ61913-MS1)	**Source: 6J10005-01**			Prepared & Analyzed: 10/18/06						
Benzene	23.6	1.00	ug/l	25.0	3.66	79.8	70-130			
Toluene	22.8	1.00	"	25.0	ND	91.2	70-130			
Ethylbenzene	26.0	1.00	"	25.0	2.22	95.1	70-130			
Xylene (p/m)	45.4	1.00	"	50.0	1.88	87.0	70-130			
Xylene (o)	24.6	1.00	"	25.0	ND	98.4	70-130			
Naphthalene	28.7	1.00	"	25.0	1.33	109	70-130			
Surrogate: Dibromofluoromethane	*51.6*		"	*50.0*		*103*	*68-129*			
Surrogate: 1,2-Dichloroethane-d4	*48.0*		"	*50.0*		*96.0*	*72-132*			
Surrogate: Toluene-d8	*44.6*		"	*50.0*		*89.2*	*74-118*			
Surrogate: 4-Bromofluorobenzene	*40.2*		"	*50.0*		*80.4*	*65-140*			
Matrix Spike Dup (EJ61913-MSD1)	**Source: 6J10005-01**			Prepared & Analyzed: 10/18/06						
Benzene	23.3	1.00	ug/l	25.0	3.66	78.6	70-130	1.28	20	
Toluene	22.6	1.00	"	25.0	ND	90.4	70-130	0.881	20	
Ethylbenzene	25.7	1.00	"	25.0	2.22	93.9	70-130	1.16	20	
Xylene (p/m)	44.8	1.00	"	50.0	1.88	85.8	70-130	1.33	20	
Xylene (o)	23.9	1.00	"	25.0	ND	95.6	70-130	2.89	20	
Naphthalene	30.2	1.00	"	25.0	1.33	115	70-130	5.09	20	
Surrogate: Dibromofluoromethane	*49.0*		"	*50.0*		*98.0*	*68-129*			
Surrogate: 1,2-Dichloroethane-d4	*46.4*		"	*50.0*		*92.8*	*72-132*			
Surrogate: Toluene-d8	*44.0*		"	*50.0*		*88.0*	*74-118*			
Surrogate: 4-Bromofluorobenzene	*39.8*		"	*50.0*		*79.6*	*65-140*			

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Rice Operating Co.	Project: Hobbs Jct. E-32-1	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

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: 10/23/2006

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.

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

Environmental Lab of Texas

12600 West I-20 East
Odessa, Texas 79765
Phone: 432-563-1800
Fax: 432-563-1713

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: Kristin Farris Pope kpope@riceswd.com
Project Name: Hobbs Junction E-32-1
Company Name: RICE Operating Company
Project Number:
Company Address: 122 W. Taylor Street
Project Loc: T18S-R38E-Sec32E, Lea County NM
City/State/Zip: Hobbs, New Mexico 88240
PO Number:
Telephone No: (505) 393-9174
Fax No: (505) 397-1471
Sampler Signature: Rozanne Johnson (505) 631-9310
Email: rozanne@valornet.com

LAB # (lab use only)	FIELD CODE	Date Sampled	Time Sampled	No. of Containers	Preservative: Ice	Preservative: HNO_3	Preservative: HCl (2) 40 ml glass vials	Preservative: NaOH	Preservative: H_2SO_4	Preservative: None (1) 1 Liter HDPE	Preservative: Other (Specify)	Matrix: Water	Matrix: Sludge	Matrix: Soil	Matrix: Other (specify)	Analyze For: TPH: 418.1 8015M 1005 1005	Cations (Ca, Mg, Na, K)	Anions (Cl, SO4, CO3, HCO3)	SAR / ESP / CEC	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEX 8021B/5030	PCI	N.O.R.M.	Total Dissolved Solids	BTEX-N 8260	Volatiles 8260	RUSH TAT (Pre-Schedule)	Standard TAT
01	Monitor Well #1	10/5/2006	15:05	2	X		2					X															X			X

TCLP:
TOTAL:

Special Instructions:

PLEASE Email RESULTS TO: kpope@riceswd.com; mfranks@riceswd.com
rozanne@valornet.com

Sample Containers Intact? Y N
Labels on container? Y N
Custody Seals: Containers / Cooler
Temperature Upon Receipt:

Laboratory Comments:

Relinquished by:	Date	Time	Received by:	Date	Time
Rozanne Johnson	10/9/06	12:45		10/9/06	12:46
Relinquished by:	Date	Time	Received by ELOT:	Date	Time
	10/9/06	17:20		10.09.06	1720

3.5 C

Environmental Lab of Texas

Variance/ Corrective Action Report- Sample Log-In

Client: Rice Op.

Date/ Time: 10/9/06 17:20

Lab ID #: 610004

Initials: BK

Sample Receipt Checklist

					Client Initials
1	Temperature of container/ cooler?	Yes	No	3.5 °C	
2	Shipping container in good condition?	Yes	No		
3	Custody Seals intact on shipping container/ cooler?	Yes	No	Not Present	
4	Custody Seals intact on sample bottles/ container?	Yes	No	Not Present	
5	Chain of Custody present?	Yes	No		
6	Sample instructions complete of Chain of Custody?	Yes	No		
7	Chain of Custody signed when relinquished/ received?	Yes	No		
8	Chain of Custody agrees with sample label(s)?	Yes	No	ID written on Cont./ Lid	
9	Container label(s) legible and intact?	Yes	No	Not Applicable	
10	Sample matrix/ properties agree with Chain of Custody?	Yes	No		
11	Containers supplied by ELOT?	Yes	No		
12	Samples in proper container/ bottle?	Yes	No	See Below	
13	Samples properly preserved?	Yes	No	See Below	
14	Sample bottles intact?	Yes	No		
15	Preservations documented on Chain of Custody?	Yes	No		
16	Containers documented on Chain of Custody?	Yes	No		
17	Sufficient sample amount for indicated test(s)?	Yes	No	See Below	
18	All samples received within sufficient hold time?	Yes	No	See Below	
19	VOC samples have zero headspace?	Yes	No	Not Applicable	

Variance Documentation

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

Regarding: _____

Corrective Action Taken: _____

Check all that Apply:

- ☐ See attached e-mail/ fax
- ☐ Client understands and would like to proceed with analysis
- ☐ Cooling process had begun shortly after sampling event

Appendix D Model Explanation

R. T. HICKS CONSULTANTS, LTD.
901 Rio Grande Blvd NW ▲ Suite F-142 ▲ Albuquerque, NM 87104 ▲ 505.266.5004 ▲ Fax: 505.266-0745

To model the effect of the vadose zone remedy's impact on ground water at the E-32-1 site, output from HYDRUS-1D is used as input to a ground water mixing model.

HYDRUS-1D numerically solves the Richard's equation for water flow and the Fickian-based advection-dispersion equation for heat and solute transportation. The HYDRUS-1D flow equation includes a sink term (a term used to specify water leaving the system) to account for transpiration by plants. The solute transport equation considers advective, dispersive transport in the liquid phase, diffusion in the gaseous phase, nonlinear and non-equilibrium sorption, linear equilibrium reactions between the liquid and gaseous phases, zero-order production, and first-order degradation.

The ground water mixing model uses the chloride flux from the vadose zone to ground water provided by HYDRUS-1D and instantaneously mixes this chloride and water with the ground water flux of chloride plus water that enters the mixing cell beneath the subject site. We refer the reader to API Publication 4734, Modeling Study of Produced Water Release Scenarios (Hendrickx and others, 2005) for a general description of the techniques employed for this simulation experiment.

A description of the model input parameters are listed below.

HYDRUS 1-D INPUTS:

Soil Profile - Information for the soil profile (or vadose zone thickness and texture) is based upon the boring log obtained from installation of the monitoring well at the E-32-1 site. Depth to water measurements from the monitoring well provided a vadose zone thickness of 45 feet at the site.

Dispersion lengths - Conservative dispersion lengths were employed. Standard practice calls for employing a dispersion length that is 10% of the model length. Based upon experience with similar soils in this area, dispersion lengths of 6% of the model length were used. This choice is conservative of ground water quality.

Climate - Weather data used in the predictive modeling was from the Pearl Weather Station (46 years of data), approximately 13.25 miles southwest of the E-32-1 site.

HYDRUS-1D can also employ a uniform yearly infiltration rate that will obviously smooth the temporal variations. Because the atmospheric data are of high quality and nearby to the site, we have elected to allow HYDRUS-1D to predict the deep percolation rate and the resultant variable flux to ground water. This choice results in higher peak chloride concentrations in ground water due to temporally variable high fluxes from the vadose zone. As such, this choice is conservative and will not under-predict impairment to ground water quality.

Soil Moisture - Because soils are relatively dry in this climate and vadose zone hydraulic conductivity varies with moisture content, it is important that simulation experiments of different remedial strategies begin with an initial "steady state" soil moisture content. The calculation of soil moisture content begins with using professional judgment as an initial input and then running sufficient years of weather data through the model to establish a "steady state" moisture content.

Because only minimal changes in the HYDRUS-1D soil moisture content profile occurred after year 35 of the initial condition calculation, 46 years was considered more than sufficient to establish the initial moisture condition. All simulations of chloride movement used soil profiles hydrated in this manner.

Initial Chloride Profile – Field chloride soil concentrations (mg/kg) at depth were obtained from the samples collected from the monitoring well boring.

Integration of the chloride contained within the profile yielded a chloride load of 18.2 kg/m^2. The averaged soil concentration values (mg/kg) were linearly interpolated to correspond to the HYDRUS 1-D soil profile nodes. Using the volumetric moisture content from the HYDRUS 1-D initial condition and a default dry bulk soil density of 1390 kg/m^3, soil water moisture concentrations (mg/L) were calculated for the HYDRUS 1-D soil profile nodes. These chloride concentrations were installed in the HYDRUS-1D model.

As described in API Publication 4734, the ground water mixing model takes the background chloride concentration in ground water multiplied by the ground water flux to calculate the total mass of ground water chloride entering the ground water mixing cell, which lies below the area of interest. The chloride and water flux from HYDRUS-1D is added to the ground water chloride mass and flux to create a final chloride concentration in ground water at an imaginary monitoring well located at the down gradient edge of the mixing cell (the edge of the release site).

MIXING MODEL INPUTS:

Influence Distance - The influence distance is defined as the maximal length of the release area parallel to groundwater flow direction. As this direction is not exactly known, a maximum diameter of 20 feet for the site was used.

Background Chloride Concentration – From monitoring well data from the site, a value of 161 mg/L chloride for ground water was used at this location.

Hydraulic Conductivity - R.T. Hicks Consultants believes that the hydraulic conductivity of the saturated zone at the release site is similar to that observed for the Ogallala Aquifer throughout the general area. McAda (1984) simulated water level declines using a two-dimensional digital model and employed hydraulic conductivity values of 51-75 feet/day (1.9 E-4 to 2.8 E-4 m/s) in the area. More recently, Musharrafieh and Chudnoff (1999) employed values for hydraulic conductivity within this area of interest between 81 and 100 ft/day, for their simulation. According to Freeze and Cherry (1979), these values correspond to clean sand, which agrees with nearby lithologic descriptions of the saturated zone. For the E-32-1 site, the saturated hydraulic conductivity of the uppermost saturated zone is assumed as 75 feet/day.

Groundwater Gradient - From USGS well data (1996), ground water flows southeast in the area under a hydraulic gradient of approximately 0.0036 ft/ft. The resulting ground water flux is 8.2 cm/day.

Aquifer Thickness - A restricted aquifer thickness of 10 feet was employed in the mixing model as a conservative measure although aquifer thickness penetrated by the monitoring well is approximately 15 feet.

For all variables for which field data did not exist, assumptions conservative of ground water quality were made. A summary of the input parameters and a description of the source information used in the HYDRUS-1D model for this application are provided in Table 1 below.

Table 1: Modeling Inputs for the E-32-1 Site

Input Parameter	Source
Vadose Zone Thickness - 45 feet	From Monitoring Well on the Site
Vadose Zone Texture	Boring Log and professional judgment
Dispersion Length - 6% of model length	Professional judgment
Climate	Pearl, N.M. Weather Station Data
Soil Moisture	HYDRUS-1D initial condition simulation
Initial soil chloride concentration profile	From E-32-1 monitoring well boring samples
Length of release parallel to ground water flow - 20 feet	Maximum Dimension of Site
Background Chloride in Ground Water - 161 ppm	Regional and Site Data
Ground Water Flux - 8.2 cm/day	From regional data
Aquifer Thickness - 10-feet	Conservative value

Vegetation was allowed at the site within the upper 3.0 feet of silt loam.

Model of the E-32-1 Site with Revegetation of the Site

The proposed remedy of the E-32-1 site was modeled with a site specific HYDRUS-1D model. The model was begun with a 45 foot thick soil profile constructed and hydrated as discussed above. The initial chloride profile was also installed as described above.

The remedy modeled featured vegetation acting as an evapotranspiration (ET) barrier in 3.0 feet of silt loam above eight inches of sand to reduce upwards wicking of chloride. With vegetation established, vadose zone flux to ground water declines. The resultant chloride concentration in ground water peaks about two years after installation of the ET barrier at less than 165 mg/L and declines there after (see Figure 1).

Figure 1: Chloride Concentration in the Aquifer with Vegetation, E-32-1 Site

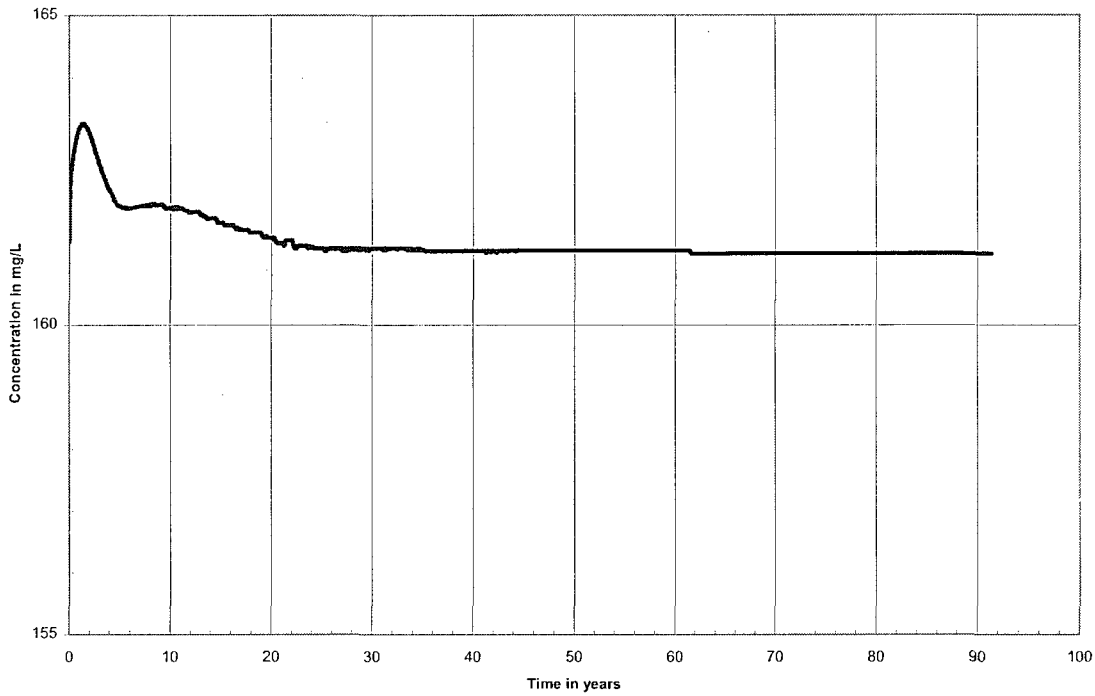


Figure 2 is a graph of predicted soil water chloride concentration profiles at times in the future with the remedy installed. Between year 0 and year 92, peak chloride concentration moves about 1.0 foot downwards, a migration rate of 0.011 feet per year. This rate implies that peak chloride concentration will enter ground water about 2700 years from now.

Rather than run the model for the large time necessary for the peak chloride concentration to enter ground water, an upper bound was calculated for chloride concentration in the aquifer through time.

This bound is calculated by identifying maximum chloride concentration in the vadose zone and a maximum vadose zone water flux in time. These values are entered as constants through time in the limit calculation and represent a maximum chloride flux from the vadose zone. This flux is used in the calculation as a steady state condition. Then, the limit calculation of the chloride concentration in ground water as time approaches infinity is a simple algebraic evaluation.

Figure 2: Chloride Profiles at Time, E-32-1 Site

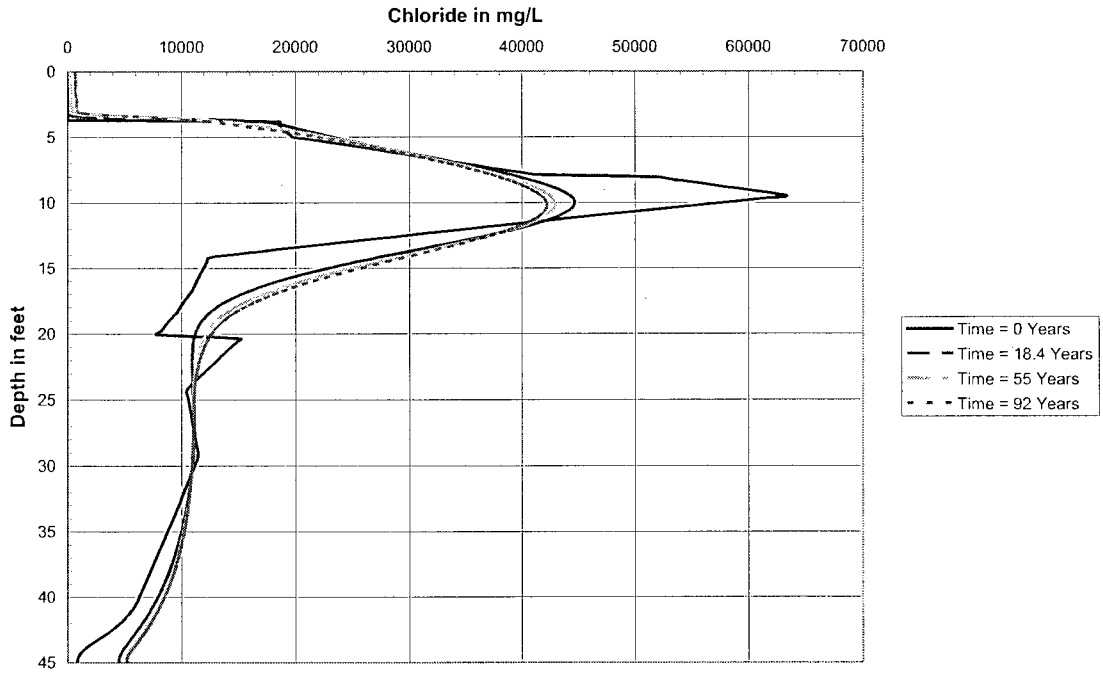
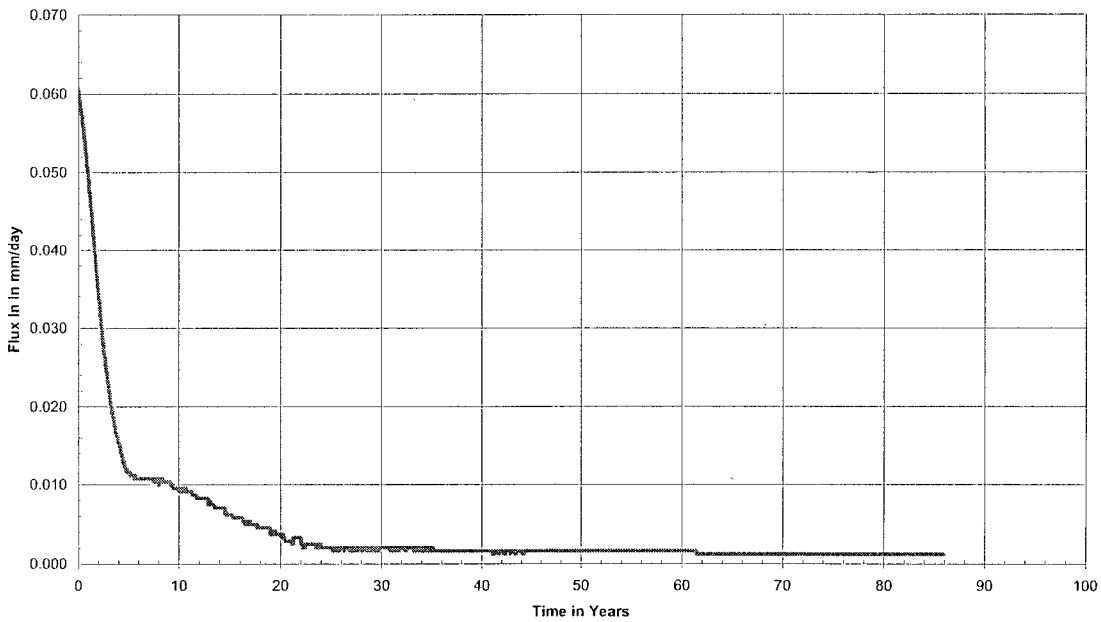


Figure 3: Vadose Zone Water Flux into the Aquifer, Vegetation, E-32-1 Site



The maximum chloride concentration value is42,300 mg/L in the vadose zone at 10.5 feet bgs (Time = 92 Years, Figure 2). Examination of the HYDRUS 1-d output

files reveals no vadose zone water flux to ground water exceeding 0.00166 mm/day after year 42. Neither of these values will be equaled or exceeded in the future. Due to dispersion, peak vadose zone chloride concentration will decrease. As can be seen in Figure 3, with vegetation at the site, predicted vadose zone water flux will be less than or equal to this maximum value after year 50.

The calculation demonstrates that although peak chloride concentration has not yet migrated to the ground water interface, predicted chloride concentration in the aquifer is bounded by 166 mg/L through all time after year 92.

R. T. HICKS CONSULTANTS, LTD.

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December 21, 2006

Wayne Price
Environmental Bureau Chief
New Mexico Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

RE: **E-32-1 Junction Box Site (NMOCD CASE #: 1R0428-65)**
Request to Reconsider Regulation under Rule 19

Dear Wayne:

On behalf of Rice Operating Company (ROC), R.T. Hicks Consultants, Ltd. is submitting this request to exclude the above-referenced site from regulation under Rule 19 (see NMOCD letter to ROC dated December 8, 2006. Reproduced below is a portion of the Corrective Action Plan prepared for this site that supports this request.

> Ground water sampling showed that chloride and TDS concentrations slightly exceeded WQCC standards for the initial groundwater sampling event, however all constituents of concern were below WQCC standards for the subsequent sampling events. Depth to ground water and laboratory data are summarized in the table below.

Date Sampled	Depth to Groundwater (Feet bgs)	Concentrations in mg/L		
		Chloride	TDS	BTEX
5/17/06	45.29	393	1,350	<0.001
8/14/06	45.63	134	682	<0.001
9/19/06	45.63	189	740	<0.001

> Ground water quality data obtained from recently drilled monitoring wells often show "false positives" due to conditions that can cause downward transportation of up-hole sediments and entrained constituents during drilling. Conversely, when drilling requires the introduction of fresh water for borehole stabilization, the laboratory can return "false negative" results for the initial sampling. At this site, fresh water was not introduced into the boring. The ground water sampling data strongly suggest that the initial sampling event did not provide representative ground water samples. The most recent two sampling events show that ground water quality at this site is less than WQCC Standards.

For you reference, the boring log and well completion diagram is attached to this letter. The last two quarterly ground water analyses show concentrations that are 50% less than the initial result. These findings allow us to conclude that the initial

sampling of this well produced a "false positive" analysis. Therefore, we suggest that regulation of this site under Rule 19 may not be appropriate.

In addition to re-vegetation of the ground surface, the Corrective Action Plan for this site provides the following:

> This corrective action plan calls for two additional ground water monitoring events. If chloride concentrations in ground water remain below WQCC standards and show no increasing concentration trend that suggests WQCC standards will be exceeded, ROC will submit evidence of re-vegetation in a final closure report and request closure of the regulatory file.
>
> The monitoring well at this site will remain available for sampling and collection of other field data to support future investigations of other Hobbs SWD sites. When the well is of no value for characterization of other Hobbs SWD sites it will be plugged and abandoned.

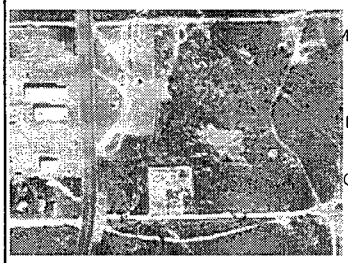
If NMOCD agrees to this request, we will submit the final CAP to NMOCD on or before January 15, 2007 on behalf of ROC. Please contact Kristin Pope of ROC if you have any questions concerning this submission.

Sincerely,
R.T Hicks Consultants, Ltd.

Randall T. Hicks
Principal

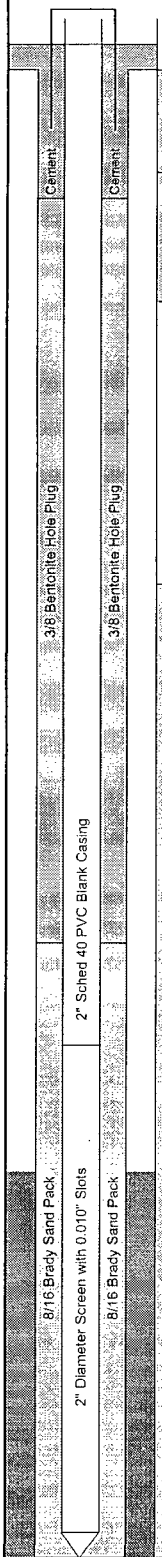
Copy: Kristin Pope, ROC
NMOCD Hobbs
Ed Hanson, NMOCD Santa Fe

LITHOLOGIC LOG AND MONITORING WELL CONSTRUCTION DIAGRAM



MONITOR WELL NO.: MW-1
SITE ID: Hobbs E-32-1 Junction Box
CONTRACTOR: Atkins Engineering
DRILLING METHOD: Hollow Stem Auger
START DATE: 5/4/2006
COMPLETION DATE: 5/4/2006
COMMENTS: Located immediately adjacent to former junction box location.

TOTAL DEPTH: 58 Feet
CLIENT: RICE *Operating Company*
COUNTY: Lea
STATE: New Mexico
LOCATION: T18S-R38E-Sec 32-Unit E
FIELD REP.: G. Van Deventer / M. Franks



USCS	Depth	Time	Sample Type	Blowcounts (blows - in)	Chloride (ppm)	PID (ppm)	LITHOLOGIC DESCRIPTION: LITHOLOGY, COLOR, GRAIN SIZE, SORTING, ROUNDING, CONSOLIDATION, DISTINGUISHING FEATURES
SM			Surface				Silty loam, moderate yellowish brown (10YR 5/4), dry.
SM/ CAL	5	0850	Split Spoon	22-12"	1204	2	Calcic sand - sandy caliche, very pale orange (10 YR 8/2), moderately hard, dry.
SS/ CAL	10	0855	Split Spoon	50.8"	2196	2	Calcic sandstone, very pale orange (10 YR 8/2) and grayish orange (10 YR 7/4), indurated, consolidated with hard quartz sandstone streaks. Sand component is fine-grained, subangular, moderately well sorted, dry.
	15	0945	Split Spoon	50 - 4"	689	2	
	20	1000	Split Spoon	32 - 12" 42 - 12"	686	2	Light brown (5 YR 5/6) fine sand, slightly moist, subangular, well sorted.
	25	1006	Split Spoon	50 - 5"	465	2	Light brown (5 YR 5/6) fine sand, slightly moist, unconsolidated, subangular, well sorted.
	30	1019	Split Spoon	50 - 6"	518	2	Light brown (5 YR 5/6) fine sand, subangular, well sorted, with intermittent streaks of sandstone.
	35	1031	Split Spoon	50 - 10"	414	2	Light brown (5 YR 5/6) fine sand, subangular, well sorted, with intermittent streaks of sandstone.
SW	40	1045	Split Spoon	50 - 11"	299	2	Light brown (5 YR 5/6) fine sand, slightly moist, subangular, well sorted, with intermittent streaks of sandstone.
	▼						Groundwater encountered at approximately 43 ft below ground surface.
	45						Light brown (5 YR 5/6) fine sand, wet-moist, subangular, well sorted, with intermittent streaks of sandstone.
	50						Light brown (5 YR 5/6) fine sand, wet-moist, subangular, well sorted.
	55						Light brown (5 YR 5/6) fine sand, wet-moist, subangular, well sorted.
	60						Bottom of boring at 58 feet below ground surface.

R. T. HICKS CONSULTANTS, LTD.
1909 Brunson Ave ▲ Midland TX 79701 ▲ 432.638.8740 ▲ Fax: 413.403.9968

CERTIFIED MAIL - RETURN RECIEPT NO. 7099 3400 0017 1737 2367

January 20, 2006

Mr. Wayne Price
New Mexico Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

RE: Investigation Characterization Plan: T18S R38E: E-33-1 Junction Box, B-32 Boot, E-32-1 Junction Box, E-32-2 Junction Box, F-33 Vent

Hobbs Salt Water Disposal System

Dear Mr. Price:

On behalf of Rice Operating Company, please accept this submission as our Initial Characterization Plan (ICP) for the five (5) sites referenced above within the Hobbs Salt Water Disposal System (Plate 1).

Rice Operating Company (ROC) is the service provider (operator) for the Hobbs Saltwater Disposal System and has no ownership of any portion of pipeline, well, or facility. A consortium of oil producers who own the Hobbs System (System Partners); provide all operating capital on a percentage ownership/usage basis. Major projects require System Partner authorization for expenditures (AFE) approval and work begins as funds are received. We will implement the work outlined herein after NMOCD approval and subsequent authorization from the System Partners.

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

1. protects public health,
2. provides the greatest net environmental benefit,
3. complies with NMOCD Rules, and
4. is supported by good science.

The last criteria employed when evaluating any proposed remedy or investigative work is confirming that there is a reasonable relationship between the benefits created by the proposed remedy or assessment and the economic and social costs.

Each site shall have three submissions or a combination of:

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

2. Upon evaluation of the data and results from the ICP, a recommended remedy will be submitted in a Corrective Action Plan (CAP).

3. Finally, after implementing the remedy, a closure report with final documentation will be submitted.

Task 1 Evaluate Chloride and BTEXN Concentrations in Soil at Five Sites, Evaluate Ground Water Quality if Necessary

We will follow the same protocol for characterization of the unsaturated zone at the five new ROC sites listed below.

- E-33-1 Junction Box
- B-32 Boot
- E-32-1 Junction Box
- E-32-2 Junction Box
- F-33 Vent

At each of the above-referenced sites, we will locate the sampling borehole as close as practical to the suspected release source. Earlier, we inspected each of the five sites nominated in this ICP and identified the boring location before the sites were backfilled and re-graded. Due to our recent experience with difficulties encountered in the installation of well clusters in this area, we plan to employ hollow-stem auger drilling techniques for sampling.

We will screen each sample in the field for chlorides and volatile organic compounds using the methods described in QP-03 and QP-07 (attached), respectively. Soil lithology and the presence of any observed staining or odor will be recorded. For any site, if we detect evidence of leakage within 15 feet of the water table (e.g. field chloride greater than 250 ppm in soil samples) we will complete the boring as a monitoring well in accordance with NMOCD Guidance. If three soil samples taken at 5-foot intervals test below 250 ppm chloride and below 100 ppm total volatile organic compounds, we will terminate the boring. However, all borings will penetrate at least 30 feet of the vadose zone.

Task 2 Evaluate Chloride and Hydrocarbon Flux from the Vadose Zone to Ground Water

We anticipate that one or all of the five sites selected for borehole investigation will show evidence of seepage from the source to a depth of more than 15-feet. For these sites, excavation and disposal of released material can cause more environmental damage than it cures. For such sites, we propose to employ HYDRUS-1D and a simple ground water mixing model to evaluate the potential of any residual chloride and hydrocarbon mass in the vadose zone to impair ground water quality above WQCC Standards. We have selected these two constituents for simulation modeling because each of these constituents is typically found in produced water and each is specifically regulated by New Mexico ground water regulations (WQCC). We will also employ vadose zone hydrocarbon migration predictive tools commonly employed by NMED in their PST program.

Task 3 Provide Investigative Results and/or Corrective Action Plan

Because the Hobbs SWD System no longer carries produced water, additional releases of produced water to ground water are highly unlikely. If modeling shows that the residual chloride and hydrocarbon mass in the vadose zone poses a no threat to ground water quality, we will prepare a report that makes this demonstration and request site closure.

If simulation experiments suggest that residual constituents pose a threat to ground water quality or if the field program demonstrates impairment, we will expand upon the HYDRUS-1D model predictions described above to develop a remedy for the vadose zone. If necessary, we will simulate:

1. Excavation, disposal and replacement of clean soil to remove the chloride and hydrocarbon mass,
2. Installation of a low permeability barrier to minimize natural infiltration,
3. Surface grading and seeding to eliminate any ponding of precipitation and promote evapotranspiration, thereby minimizing natural infiltration, and
4. A combination of the above potential remedies.

We will select the vadose zone remedy that offers the greatest environmental benefit while causing the least environmental damage. If data suggest that the site has contributed chloride or hydrocarbons to ground water and caused ground water impairment, we will notify NMOCD and work collaboratively to determine the appropriate path forward.

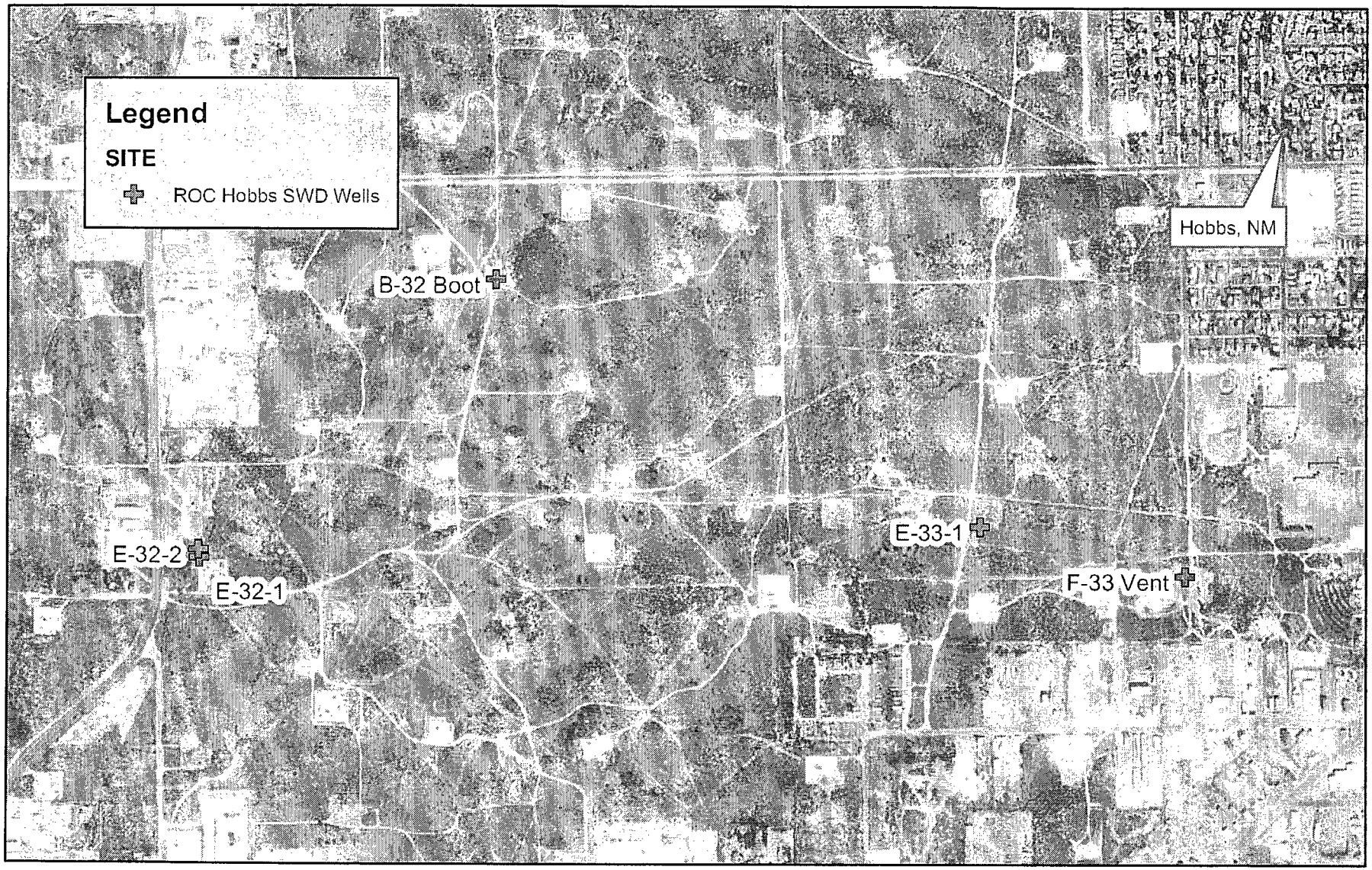
Proposed Schedule

With NMOCD's approval of this work plan, we can perform the field activities at these sites in February or March. In late April or May, we plan to deliver any individual Correction Action Plans to address residual constituents in the vadose zone and any reports requesting site closure. If data suggest ground water impairment we plan to conduct two quarters of ground water monitoring to confirm any initial result then meet with NMOCD to develop an appropriate path forward. Your approval to move forward with this work plan will facilitate approval of expenditures by the System Partners.

Sincerely,
R.T. Hicks Consultants, Ltd.

Gilbert Van Deventer
Project Manager

cc: Chris Williams, NMOCD Hobbs District Office
Carolyn Haynes, Rice Operating Company - Hobbs
Kristin Pope, Rice Operating Company – Hobbs
Randy Hicks, R. T. Hicks Consultants, Ltd. - Albuquerque



Source Map: USGS 7.5' Quad; Hobbs West

0 1,000 2,000 4,000 Feet

R.T. Hicks Consultants, Ltd
901 Rio Grande Blvd NW Suite F-142
Albuquerque, NM 87104
Ph: 505.266.5004

Site Location Map	Plate 1
Rice Operating Company: Investigation Characterization Plan	July 07, 2005

N

Rice Operating Company

QUALITY PROCEDURE

Sampling and Testing Protocol Chloride Titration Using .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 10 grams of reverse osmosis water to the soil sample and shake for 20 seconds.

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

4.4 Carefully pour the free liquid extract from the sample through a paper filter into a clean plastic cup if necessary.

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.

5.3 If the sample contains any sulfides (hydrogen or iron sulfides are common to oilfield soil samples) add 2-3 drops of hydrogen peroxide (H_2O_2) to mixture.

5.4 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.

5.5 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 Operating Company

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 an Environmental Instruments 13471 OVM / Datalogger or a similar PID-type instrument. (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 conduct BTEX Speciation in accordance with **QP-02 and QP-06. 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.**