

AE Order Number Banner

Report Description

This report shows an AE Order Number in Barcode format for purposes of scanning. The Barcode format is Code 39.



App Number: pTO1424554698

1RP - 2940
CONOCOPHILLIPS COMPANY

<u>District I</u> 1625 N. French Dr., Hobbs, NM 88240 District II 811 S. First St., Artesia, NM 88210 District III 1000 Rio Brazos Road, Aztec, NM 87410 District IV

State of New Mexico Energy Minerals and Natural Resources

Form C-141 Revised August 8, 2011

Oil Conservation Division 1220 South St. Francis Dr. Submit 1 Copy to appropriate District Office in accordance with 19.15.29 NMAC.

Attached

1220 S. St. Fra	ncis Dr., San	ta Fe, NM 8750	15	Sa	ınta F	e, NM 875	505		
			Rel	ease Notific	catio	n and Co	orrective A	ction	
						OPERA'	ГOR	X Initi	al Report
Name of C	ompany Co	onocoPhillip	s Compai	ny		Contact Jes	se A. Sosa	-	
				dland, TX 7970	5-5		No. (505)391-3	126	
Facility Na	me Warrei	unit Well	#13			Facility Typ	e Injection we	u	
Surface Ov	unas ND 40	CD		Mineral C	luman	DIM		ADING	0.3002507881
Surface Ov	Allei MMO	CD		Willicial	WIICI	DLIVI	£	Alline	. 3002307881
				LOCA	OIT	N OF RE	LEASE		
Unit Letter	Section	Township	Range	Feet from the	North	/South Line	Feet from the	East/West Line	County
Q	34	20S	38E	660	Sout	h	1980	East	Lea
			La	titude N 32 31.	4394	Longitud	le W 103. 08.03	580_	
				NAT	URE	OF REL	EASE		
Type of Rele	ease Produ	ced Water			-		Release 441	Volume I	Recovered 21
		steel injecti	on line					ce 7/4/13 19 a3 0 and	Hour of Discovery 7/7 9am
Was Immedi	iate Notice			🖂		If YES, To			
		X	Yes L	No Not Re	equired	Geoffrey	Leking		
By Whom?							lour July 8, 201		
Was a Water	rcourse Rea		Yes 🛚] No		If YES, Vo	olume Impacting	the Watercourse.	
If a Waterco	urse was In	npacted, Descri	ribe Fully.	•					
Describe Car	use of Prob	lem and Reme	dial Actio	n Taken.*					
MSO was r injection he	notified of eader and	an Injection well.	line leaki	ng 300 yards we	est of V	WU well #13	Employee isol	ated 2 inch steel	ine (25+ years) at the WU
Describe Are	ea Affected	and Cleanup	Action Tal	cen.*					
					. Spill orther is don	volume is ap assessment is e.	proximately 44 needed for mo	1 BPW. Two affere accurate spill v	ccted areas are 64' wide X volumes. NMOCD was
regulations a public health should their or the enviro	all operators or the envi operations land	are required to fronment. The have failed to	to report and acceptant adequately OCD accep	nd/or file certain re ce of a C-141 report investigate and re	elease r ort by the emedia	notifications and ne NMOCD mate contaminati	nd perform correct arked as "Final R on that pose a thr	tive actions for rele eport" does not reli eat to ground water	uant to NMOCD rules and eases which may endanger eve the operator of liability , surface water, human health ompliance with any other
Signature:	Jus	W.	~			Approved by	OIL CON	SERVATION	DIVISION
Printed Nam	e:Jesse A.	Sosa				. ipproved by	Difficilial 5	peolalist.	
Title: HSE	R Lead					Approval Dat	e:	Expiration l	Date:
E-mail Addr	ess: Jesse.A	A.Sosa@cone	ocophillip	s.com		Conditions of	Approval:		Americal III

Date: 07/18/2013

Phone: (505)391-3126

^{*} Attach Additional Sheets If Necessary

Rice Environmental Consulting & Safety

P.O. Box 2948, Hobbs, NM 88241 Phone 575.393.2967

August 14th, 2013

Geoffrey Leking

New Mexico Energy, Minerals, & Natural Resources Oil Conservation Division, Environmental Bureau – District 1 1625 N. French Dr. Hobbs, NM 88240-9273

RE: Corrective Action Plan (CAP)
Conoco-Phillips – Warren Unit Well #13 Injection Line Release
UL/N sec. 34 T20S R38E
API No. 3002507881

Mr. Leking:

Conoco-Phillips has retained Rice Environmental Consulting and Safety (RECS) to address potential environmental concerns at the site referenced above.

An accidental discharge of produced water occurred from an injection line located 300 yards west of the Warren Unit #13 well on July 4th, 2013. A total of 441 barrels of produced water was released into the pasture. A vacuum truck was called to the site and recovered 21 barrels of produced water. NMOCD was notified of the release on July 8th, 2013, and an initial C-141 was submitted by Conoco-Phillips to NMOCD on July 18th, 2013 (Appendix A). The site is located in UL/N sec. 34 T20S R38E, in Lea County, New Mexico. Soil bore installation at the site determined that the depth to groundwater is approximately located at 71 ft bgs.

RECS personnel were on site beginning on July 12th, 2013 to initiate work on the release. The release and surrounding area were mapped and photos were taken of the release area. On July 17th, 2013, RECS received verbal permission from NMOCD to conduct verticals at the site. Eight verticals were installed at the site to determine the extent of the release (Figure 1). As the verticals were installed, field samples were taken every foot and field tested for chlorides and hydrocarbons. Representative samples were taken to a commercial laboratory for analysis. Verticals 1-3, located inside the release area, showed elevated laboratory chloride levels at all depths in the three verticals. Gasoline Range Organics (GRO) and Diesel Range Organics (DRO) readings returned results of non-detect throughout all depths in the three verticals. Verticals 4-8, located outside the release area, showed laboratory chloride levels below 250 mg/kg throughout the five verticals and at all depths. GRO and DRO readings returned results of non-detect throughout the five verticals and at all depths (Appendix B).

To further delineate the site, soil bores were installed at the site on July 26th and on August 6th and 7th, 2013. A total of 20 soil bores were installed at the site (Figure 2 and 3). Between the July and August soil bore installations events, a caliche road was installed across the area to serve as a base for the soil bore rig. As the soil bores were

advanced, samples were taken at regular intervals and field tested for chlorides and hydrocarbons. Representative samples were taken to a commercial laboratory for analysis (Appendix C). Based on the soil bore data, as the release moves downward through the vadose zone, it hits a semi-permeable layer at 20-25 ft bgs, where the release moves horizontally over this layer. The outer soil bores delineate the edges of the release.

SB-20 was installed at the site on July 26th, 2013 to determine the depth to groundwater at the site. The bore was installed to a depth of 82 ft bgs and then left open for over 48 hours to allow groundwater to accumulate. The bore was gauged on July 29th, 2013 and depth to groundwater was determined to be at approximately 71 ft bgs. NMOCD was notified of potential groundwater impact at the site on July 26th, 2013.

Photo documentation of these activities can be found in Appendix D.

Corrective Action Plan

RECS recommends that Conoco-Phillips excavate an area of 140 ft x 170 ft to a depth of approximately 4-5 ft bgs. A 20-mil reinforced poly liner will be installed and properly seated throughout the base of the excavation (Figure 2). The liner will provide a barrier that will inhibit the downward migration of residual constituents to groundwater. Approximately 2,000 yards of soil from the release area will be disposed of at a NMOCD approved facility. The remaining excavated soil will be evaluated for use as backfill and any soils requiring disposal will be properly disposed of at a NMOCD approved facility. Soils placed above the liner will have a laboratory chloride reading no greater than 500 mg/kg and a field PID reading below 100 ppm. The site will be backfilled with the remaining excavated soil and then clean soil will be imported to the site to replace the soil disposed of at a NMOCD approved facility. The excavation will be brought up to surface level with the imported soil and the site will be contoured to the surrounding location. The disturbed area will then be seeded with a blend of native vegetation. Vegetation provides an infiltration barrier for the site, since plants capture water through their roots thereby reducing the amount of water traveling through the vadose zone to groundwater.

It is evident from the soil bore data that the release may have affected groundwater beneath the site. Therefore, RECS recommends that Conoco-Phillips install a source monitor well at the site (Figure 2). The monitor well will be installed once the excavation for liner installation is completed. The monitor well will be sampled quarterly for chlorides and TDS. Additional monitor wells may need to be installed to fully delineate groundwater. Once the monitor well(s) have been sampled and the data analyzed, Conoco-Phillips will submit a report to NMOCD detailing the groundwater data and either proposing a groundwater remedy or requesting site closure.

RECS appreciates the opportunity to work with you on this project. Please call Hack Conder at (575) 393-2967 or me if you have any questions or wish to discuss the site.

Sincerely,

Lara Weinheimer

Project Scientist

RECS

(575) 441-0431

Attachments:

Figure 1 – Vertical Data

Figure 2 – SB 1-3 Installation Data and Proposed MW Location

Figure 3 – SB- 4-19 Installation Data and Proposed MW Location

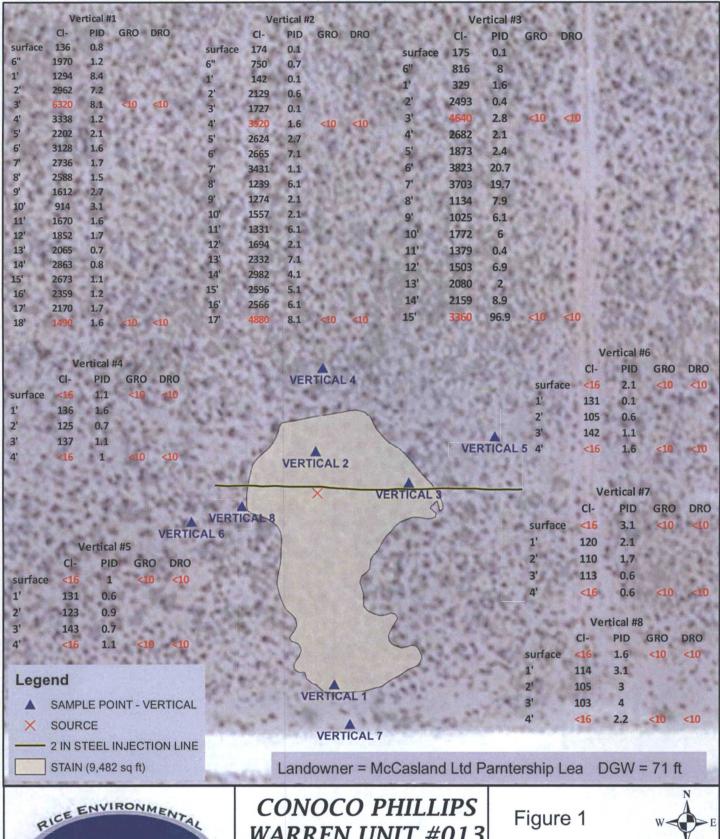
Appendix A – Initial C-141

Appendix B – Vertical Installation Laboratory Analyses

Appendix C – Soil Bore Installation Documentation

Appendix D – Photo Documentation

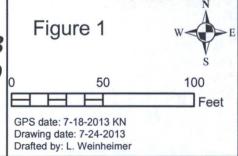
Vertical Data

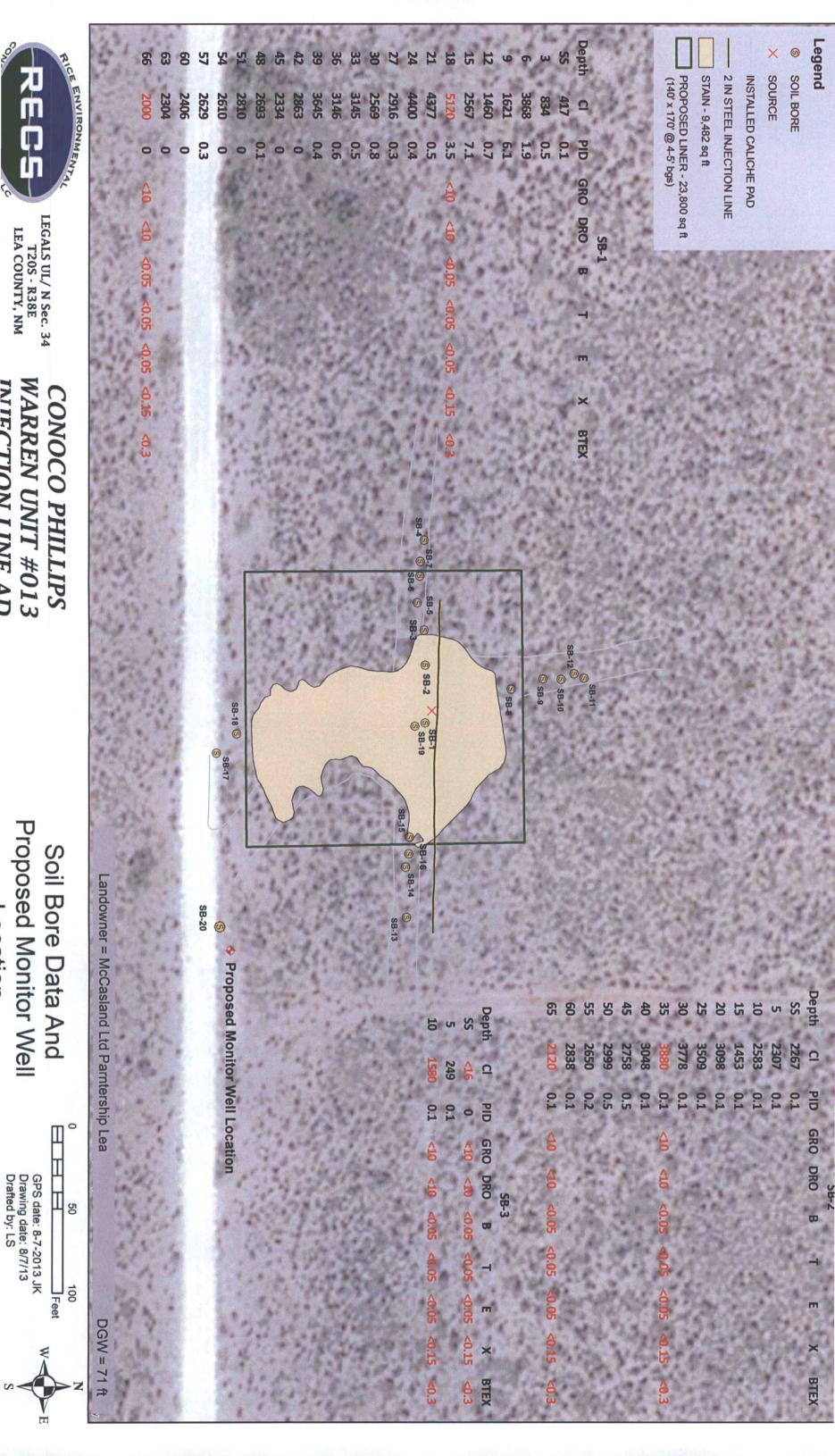


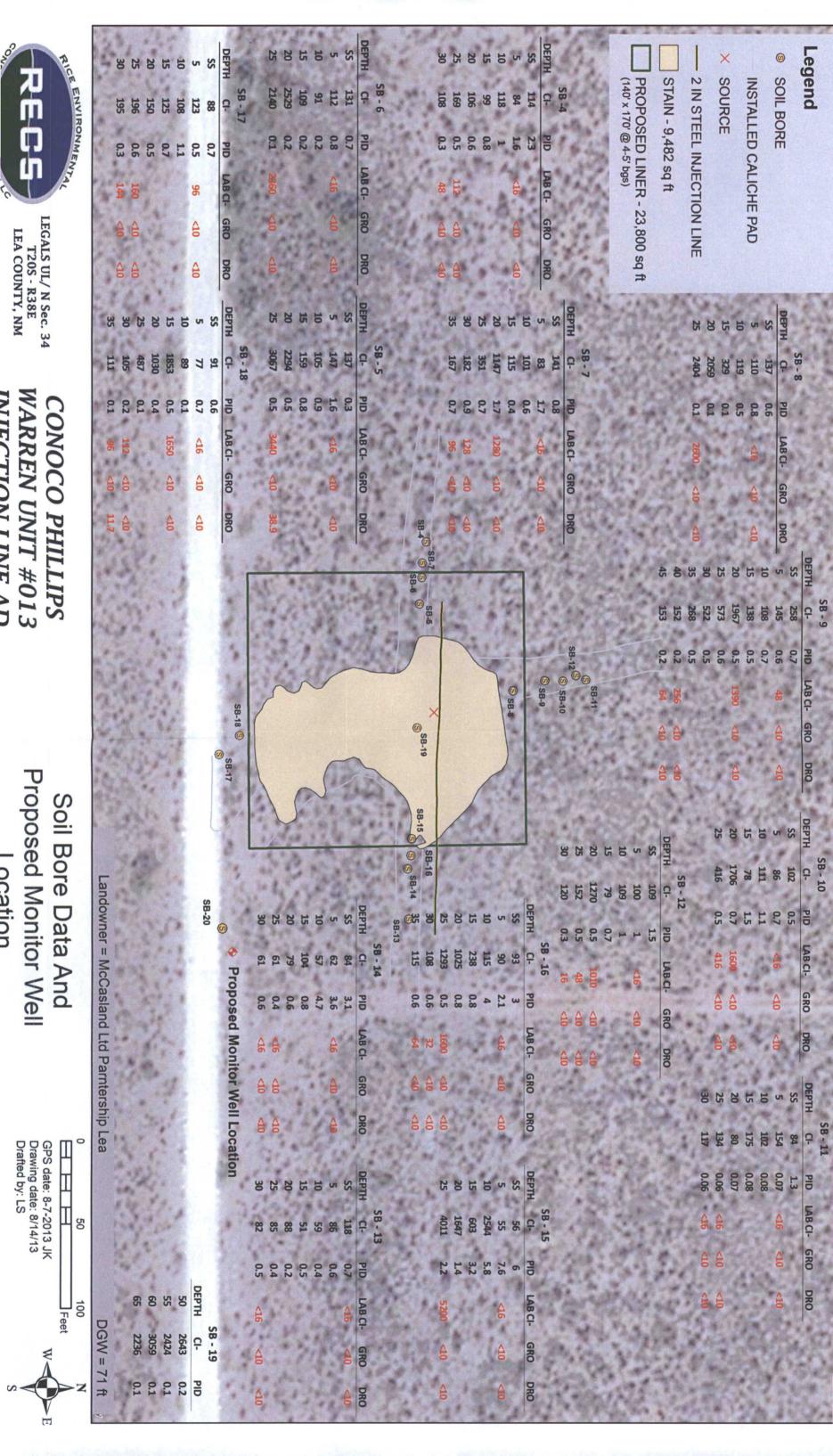


WARREN UNIT #013 INJECTION LINE AD

LEGALS UL/ N Sec. 34 T20S - R38E LEA COUNTY, NM









July 24, 2013

HACK CONDER

RICE ENVIRONMENTAL CONSULTING & SAFETY LLC

419 W. CAIN

HOBBS, NM 88240

RE: WARREN UNIT #13 AD

Enclosed are the results of analyses for samples received by the laboratory on 07/19/13 8:25.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-11-3. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab accred certif.html.

Cardinal Laboratories is accreditated through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2

Haloacetic Acids (HAA-5)

Method EPA 524.2

Total Trihalomethanes (TTHM)

Method EPA 524.4

Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

Celeg D. Keine

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Celey D. Keene

Lab Director/Quality Manager



RICE ENVIRONMENTAL CONSULTING & SAFETY HACK CONDER 419 W. CAIN HOBBS NM, 88240

Fax To: (575) 397-1471

Received:

07/19/2013

Sampling Date:

07/18/2013

Reported:

07/24/2013

Sampling Type:

Soil

Project Name:

WARREN UNIT #13 AD

Sampling Condition:

Cool & Intact

Project Number:

NONE GIVEN

Sample Received By:

Jodi Henson

Project Location:

NOT GIVEN

Sample ID: VERTICAL 1 @ 3' (H301698-01)

Chloride, SM4500CI-B	mg	/kg	Analyze	ed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	6320	16.0	07/23/2013	ND	432	108	400	0.00	
TPH 8015M	mg	/kg	Analyze	ed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	07/22/2013	ND	184	91.8	200	1.99	
DRO >C10-C28	<10.0	10.0	07/22/2013	ND	193	96.6	200	3.15	
Surrogate: 1-Chlorooctane	90.5	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	110	% 63.6-15	4						

Sample ID: VERTICAL 1 @ 18' (H301698-02)

Chloride, SM4500CI-B	mg	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1490	16.0	07/23/2013	ND	432	108	400	0.00	
TPH 8015M	mg	/kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	07/22/2013	ND	184	91.8	200	1.99	
DRO >C10-C28	<10.0	10.0	07/22/2013	ND	193	96.6	200	3.15	
Surrogate: 1-Chlorooctane	86.5	% 65.2-14	0						/
Surrogate: 1-Chlorooctadecane	108	% 63.6-15	4						

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keine



RICE ENVIRONMENTAL CONSULTING & SAFETY HACK CONDER 419 W. CAIN HOBBS NM, 88240

Fax To:

(575) 397-1471

Received:

07/19/2013

Sampling Date:

07/18/2013

Reported:

07/24/2013

Sampling Type:

Soil

Project Name:

WARREN UNIT #13 AD

Sampling Condition:

Cool & Intact

Project Number:

Sample Received By:

Jodi Henson

Project Location:

NONE GIVEN

NOT GIVEN

Sample ID: VERTICAL 2 @ 4' (H301698-03)

Chloride, SM4500CI-B	mg,	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	3920	16.0	07/23/2013	ND	432	108	400	0.00	
TPH 8015M	mg/	/kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	07/22/2013	ND	184	91.8	200	1.99	
DRO >C10-C28	<10.0	10.0	07/22/2013	ND	193	96.6	200	3.15	
Surrogate: 1-Chlorooctane	81.7	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	97.0	% 63.6-15	4						

Sample ID: VERTICAL 2 @ 17' (H301698-04)

Chloride, SM4500Cl-B	mg/	kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	4880	16.0	07/23/2013	ND	432	108	400	0.00	
TPH 8015M	mg/	kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	07/22/2013	ND	184	91.8	200	1.99	
DRO >C10-C28	<10.0	10.0	07/22/2013	ND	193	96.6	200	3.15	
Surrogate: 1-Chlorooctane	86.0	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	103 9	% 63.6-15	4						

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*=Accredited Analyte

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Celey D. Keine

Celey D. Keene, Lab Director/Quality Manager



RICE ENVIRONMENTAL CONSULTING & SAFETY HACK CONDER 419 W. CAIN HOBBS NM, 88240

Fax To:

(575) 397-1471

Received:

07/19/2013

Sampling Date:

07/18/2013

Reported:

07/24/2013

Sampling Type:

Soil

Project Name:

WARREN UNIT #13 AD

Sampling Condition:

Cool & Intact

Project Number:

NONE GIVEN

Sample Received By:

Jodi Henson

Project Location:

NOT GIVEN

Sample ID: VERTICAL 3 @ 3' (H301698-05)

Chloride, SM4500CI-B	mg	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	4640	16.0	07/23/2013	ND	432	108	400	0.00	
TPH 8015M	mg	/kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	07/22/2013	ND	184	91.8	200	1.99	
DRO >C10-C28	<10.0	10.0	07/22/2013	ND	193	96.6	200	3.15	
Surrogate: 1-Chlorooctane	89.6	% 65.2-14	0						***************************************
Surrogate: 1-Chlorooctadecane	110	% 63.6-15	4						

Sample ID: VERTICAL 3 @ 15' (H301698-06)

Chloride, SM4500CI-B	mg	/kg	Analyze	d By: AP				~	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	3360	16.0	07/23/2013	ND	432	108	400	0.00	
TPH 8015M	mg	/kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	07/22/2013	ND	184	91.8	200	1.99	
DRO >C10-C28	<10.0	10.0	07/22/2013	ND	193	96.6	200	3.15	
Surrogate: 1-Chlorooctane	78.2	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	96.6	% 63.6-15	4						

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Celey D. Keene



RICE ENVIRONMENTAL CONSULTING & SAFETY HACK CONDER 419 W. CAIN HOBBS NM, 88240

Fax To:

(575) 397-1471

Received: Reported: 07/19/2013

07/24/2013

WARREN UNIT #13 AD

Project Name: Project Number:

NONE GIVEN

Project Location:

NOT GIVEN

Sampling Date:

07/18/2013

Sampling Type:

Soil

Sampling Condition:

Cool & Intact

Sample Received By:

Jodi Henson

Sample ID: VERTICAL 4 @ SURFACE (H301698-07)

Chloride, SM4500Cl-B	mg	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0	16.0	07/23/2013	ND	432	108	400	0.00	
TPH 8015M	mg	/kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	07/22/2013	ND	184	91.8	200	1.99	
DRO >C10-C28	<10.0	10.0	07/22/2013	ND	193	96.6	200	3.15	
Surrogate: 1-Chlorooctane	90.7	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	109	% 63.6-15	4						

Sample ID: VERTICAL 4 @ 4' (H301698-08)

Chloride, SM4500Cl-B	mg/	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0	16.0	07/23/2013	ND	432	108	400	0.00	
ГРН 8015М	mg/	/kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	07/22/2013	ND	184	91.8	200	1.99	
DRO >C10-C28	<10.0	10.0	07/22/2013	ND	193	96.6	200	3.15	
Surrogate: 1-Chlorooctane	87.0	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	102	% 63.6-15	4						

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Celey D. Keine



RICE ENVIRONMENTAL CONSULTING & SAFETY HACK CONDER 419 W. CAIN HOBBS NM, 88240

Fax To:

(575) 397-1471

Received:

07/19/2013

Sampling Date:

07/18/2013

Reported:

07/24/2013

Sampling Type:

Soil

Project Name:

WARREN UNIT #13 AD

Cool & Intact

Sampling Condition: Sample Received By:

Jodi Henson

Project Number: Project Location: NONE GIVEN

NOT GIVEN

Sample ID: VERTICAL 5 @ SURFACE (H301698-09)

Chloride, SM4500Cl-B	mg	/kg	Analyze	ed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0	16.0	07/23/2013	ND	432	108	400	0.00	
TPH 8015M	mg	/kg	Analyze	ed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	07/22/2013	ND	183	91.5	200	4.00	
DRO >C10-C28	<10.0	10.0	07/22/2013	ND	190	95.2	200	9.00	
Surrogate: 1-Chlorooctane	93.6	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	110	% 63.6-15	4						

Sample ID: VERTICAL 5 @ 4' (H301698-10)

Chloride, SM4500Cl-B	mg	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0	16.0	07/23/2013	ND	432	108	400	0.00	
TPH 8015M	mg	/kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	07/23/2013	ND	183	91.5	200	4.00	
DRO >C10-C28	<10.0	10.0	07/23/2013	ND	190	95.2	200	9.00	
Surrogate: 1-Chlorooctane	71.6	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	85.0	% 63.6-15	4						

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keine



RICE ENVIRONMENTAL CONSULTING & SAFETY HACK CONDER 419 W. CAIN HOBBS NM, 88240

Fax To:

(575) 397-1471

Received:

07/19/2013

Sampling Date:

07/18/2013

Reported:

07/24/2013

Sampling Type:

Soil

Project Name:

WARREN UNIT #13 AD

Sampling Condition: Sample Received By:

Cool & Intact Jodi Henson

Project Number:

NONE GIVEN

Project Location:

NOT GIVEN

Sample ID: VERTICAL 6 @ SURFACE (H301698-11)

Chloride, SM4500CI-B	mg,	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0	16.0	07/23/2013	ND	432	108	400	0.00	
TPH 8015M	mg,	/kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	07/23/2013	ND	183	91.5	200	4.00	
DRO >C10-C28	<10.0	10.0	07/23/2013	ND	190	95.2	200	9.00	
Surrogate: 1-Chlorooctane	91.1	% 65.2-14	0						

Surrogate: 1-Chlorooctadecane

109%

63.6-154

Sample ID: VERTICAL 6 @ 4' (H301698-12)

Chloride, SM4500Cl-B	mg	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0	16.0	07/23/2013	ND	432	108	400	0.00	
TPH 8015M	mg	/kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	07/22/2013	ND	183	91.5	200	4.00	
DRO >C10-C28	<10.0	10.0	07/22/2013	ND	190	95.2	200	9.00	
Surrogate: 1-Chlorooctane	88.2	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	108	% 63.6-15	4						

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*=Accredited Analyte

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Celey D. Keine

Celey D. Keene, Lab Director/Quality Manager



RICE ENVIRONMENTAL CONSULTING & SAFETY HACK CONDER 419 W. CAIN HOBBS NM, 88240

Fax To: (575) 397-1471

Received:

07/19/2013

Sampling Date:

07/18/2013

Reported:

07/24/2013

Sampling Type:

Soil

Project Name:

Sampling Condition:

Cool & Intact

Project Number:

WARREN UNIT #13 AD NONE GIVEN

Sample Received By:

Jodi Henson

Project Location:

NOT GIVEN

Sample ID: VERTICAL 7 @ SURFACE (H301698-13)

Chloride, SM4500Cl-B	mg	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0	16.0	07/23/2013	ND	416	104	400	0.00	
TPH 8015M	mg	/kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	07/22/2013	ND	183	91.5	200	4.00	
DRO >C10-C28	<10.0	10.0	07/22/2013	ND	190	95.2	200	9.00	
Surrogate: 1-Chlorooctane	71.1	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	88.0	% 63.6-15	4						

Sample ID: VERTICAL 7 @ 4' (H301698-14)

Chloride, SM4500Cl-B	mg,	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0	16.0	07/23/2013	ND	416	104	400	0.00	
TPH 8015M	mg/	/kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	07/22/2013	ND	183	91.5	200	4.00	
DRO >C10-C28	<10.0	10.0	07/22/2013	ND	190	95.2	200	9.00	
Surrogate: 1-Chlorooctane	101	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	122	% 63.6-15	4						

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*=Accredited Analyte

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Celey D. Keine



RICE ENVIRONMENTAL CONSULTING & SAFETY HACK CONDER 419 W. CAIN HOBBS NM, 88240

Fax To:

(575) 397-1471

Received: Reported: 07/19/2013

07/24/2013

Project Name:

WARREN UNIT #13 AD

Project Number:

NONE GIVEN

Project Location:

NOT GIVEN

Sampling Date:

07/18/2013

Sampling Type:

Soil

Sampling Condition: Sample Received By: Cool & Intact

Jodi Henson

Sample ID: VERTICAL 8 @ SURFACE (H301698-15)

Chloride, SM4500CI-B	mg	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0	16.0	07/23/2013	ND	416	104	400	0.00	
TPH 8015M	mg	/kg	Analyze	ed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	07/23/2013	ND	183	91.5	200	4.00	
DRO >C10-C28	<10.0	10.0	07/23/2013	ND	190	95.2	200	9.00	
Surrogate: 1-Chlorooctane	85.9	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	101	% 63.6-15	4						

Sample ID: VERTICAL 8 @ 4' (H301698-16)

Chloride, SM4500Cl-B	mg	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0	16.0	07/23/2013	ND	416	104	400	0.00	
TPH 8015M	mg	/kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	07/22/2013	ND	183	91.5	200	4.00	
DRO >C10-C28	<10.0	10.0	07/22/2013	ND	190	95.2	200	9.00	
Surrogate: 1-Chlorooctane	65.2	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	72.8	% 63.6-15	4						

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Celey D. Keine



Notes and Definitions

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

** Samples not received at proper temperature of 6°C or below.

*** Insufficient time to reach temperature.

Chloride by SM4500Cl-B does not require samples be received at or below 6°C

Samples reported on an as received basis (wet) unless otherwise noted on report

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

ARDINAL LABORATORIES

101 East Marland, Hobbs, NM 88240 2111 Beechwood, Abilene, TX 79603 (505) 393-2326 FAX (505) 393-2476 (325) 673-7001 FAX (325)673-7020

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Delivered By: (Circle One)	11	y: Date:	Tight Tight	y:	sors arising out of or related to the performance of services	LEASE NOTE: Liability and Damages. Cardinal's fability and clerit's exclusive remedy for an adyses. All dains including those for neglectures of other cause exclusives remedy and anyons. All dains including those for neglectures are consenuated damages; including w	150 1	Vertical 50 Surface	Vegina 40 4,	Vertical 4@ Surface	Vertical 3@ 15'	Vertical 3 @ 3'	L	Vortical 20 41	Vertical 10 18	Verticall® 3'	Sample I.D.		Kyle Norman	Project Location: Warren Unit #13 AD		Pri	Fa	S	W. Cain	Project Manager: Hack Conder	* RECS
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Sampler - UPS - Bus - Other:

[†] Cardinal cannot accept verbal changes. Please fax written changes to 505-393-2076

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CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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Time: Fax Result: email results Knorman@rice-ecs.com □ Yes

Kjones@riceswd.com; jkamplain@rice-ecs.com

hconder@rice-ecs.com; Lweinheimer@rice-ecs.com

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

15年

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

Logger:

Jake Kamplain & Kyle

Norman

Driller:

White Drilling

Drilling Method:

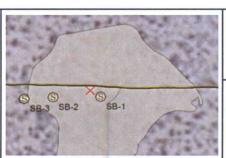
Air rotary

Start Date:

7/26/2013

End Date:

7/26/2013





Location: UL/N sec. 34 T20S R38E

Conoco Phillips Warren Well ID:

Unit #13 Injection Line

SB-1

Comments: SB-1 is located 7 ft southeast of the source of the release. Samples were taken from split spoon.

DRAFTED BY: L. Weinheimer

Lat: 32°31'26.923"N

County: Lea

	TD = 66		LIED B.	GW = 71 ft	Long: 103 % 13	
Depth (feet)	Chloride field tests	LAB	PID	Description	Lithology	Well Construction
				Brown Sand		
SS	417		0.1			
				Tan/Gray Sand		
3 ft	834		0.5			
				Black/Gray Sand With Some Caliche		
6 ft	3868		1.9			
				Gray Sand		
9 ft	1621		6.1			
12 ft	1460		0.7			
				Gray Sand With Some Caliche		
15 ft	2567		7.1			
	2007		7			
		CI-				
18 ft	4919	5120	3.5 GRO	Moist Brown Sand		
B <0.	05 T <0.05 E	<0.05	<10			
X	<0.15 BTEX <0	.3	DRO <10			
21 ft	4377		0.5			

			0.0		2610	11 43
			0.0		2810	11 13
		emoS dyiW bans Sand With Some Sandstones	1.0		5693	11 84
			0.0		5334	11 24
		Caliche With Some Sandstone	0.0		2863	11 24
			4.0		3645	39 14
			9.0		3146	36 ft
seal		ehoist Red Sand With Some Caliche	3.0		3145	33 ft
ejinotned			8.0		5269	30 #
			6.0		5162	# 72
					3700	17 20
		bns2 nwor8 taioM	4.0		0077	11 42
Well Construction	Lithology	Description	alq	BAJ	Chloride field tests	Depth (feet)

			DRO <10	5.	.0> X3T8 81:0>	X
			GRO <10	50.05	3 30.0> T 30).0> 8
			0.0	5000 Cl-	8161	11 99
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		emoS ritiW bas and TaloM enotebns2				
			0.0		2406	11 09
			€.0		5629	11 73
						14.00
Well Construction	Lithology	Description	ПЧ	8AJ	Chloride steat bleif	Depth (feet)

Logger:

Jake Kamplain & Kyle

Norman

Driller:

White Drilling

Drilling Method:

Air rotary

Start Date:

7/26/2013

End Date:

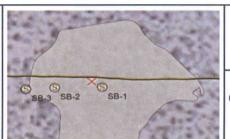
35 ft

3829

3880

0.1

7/26/2013





Conoco Phillips Warren Well ID:

Location: UL/N sec. 34 T20S R38E

Unit #13 Injection Line

SB-2

Comments: SB-2 is located 24 ft WSW of the source of the

release. Samples were taken from split spoon.

DRAFTED BY: L. Weinheimer

TD = 65 ft

GW = 71 ft

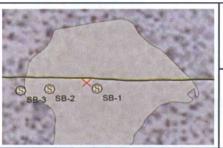
Lat: 32°31'26.934"N

County: Lea State: NM

Long: 103°8'13.393"W Depth Chloride Lithology **Well Construction** LAB PID Description (feet) field tests SS 2267 0.1 Tan Sand 5 ft 2307 0.1 10 ft 2583 0.1 Tan Sand With Some Caliche 15 ft 1453 0.1 Tan/Gray Sand 20 ft 3098 0.1 Brown Sand With Some Sandstone 25 ft 3509 0.1 30 ft 3778 0.1 Red Sand With Some Sandstone bentonite seal CI-

Depth (feet)	Chloride field tests	LAB	PID	Description	Lithology	Well Construction
B -0	.05 T <0.05 E	-0.05	GRO <10			
			DRO			
X	<0.15 BTEX <0	.3	<10			
40 ft	3048		0.1			
45 ft	2758		0.5			
	× 1					
50 ft	2999		0.5			
			0.0			
				Red Sand With Some Sandstone		
55 ft	2650		0.2			
60 ft	2838		0.1			
	2000		011			
		CI-				
65 ft	2254	2120	0.1			
B <0	05 T <0.05 E	< 0.05	GRO <10			
D 40.	00 1 X0.00 E	20.00	DRO			
X	<0.15 BTEX <0	.3	<10			

Jake Kamplain & Kyle Logger: Norman White Drilling Driller: **Drilling Method:** Air rotary Start Date: 7/26/2013 End Date: 7/26/2013





Conoco Phillips Warren Well ID: Unit #13 Injection Line

SB-3

Comments: SB-3 is located 42 ft WSW of the source of the

release. Samples were taken from split spoon.

DRAFTED BY: L. Weinheimer

TD = 10 ft

GW = 71 ft

Location: UL/N sec. 34 T20S R38E

Lat: 32°31'26.931"N Long: 103 %'13 598"W

County: Lea State: NM

	ID = 10	II		GW = /1 ft	Long: 103°8'13.	598"W State: NM
Depth (feet)	Chloride field tests	LAB	PID	Description	Lithology	Well Construction
SS	232	CI- <16	0	Tan Sand		
B <0.	05 T <0.05 E	<0.05	GRO <10			
X	<0.15 BTEX <0	.3	DRO <10			bentonite
5 ft	249		0.1			seal
10 ft	1694	CI- 1580	0.1	Tan Sand With Some Caliche		
B <0.	05 T <0.05 E	<0.05	GRO <10			
Х	<0.15 BTEX <0	.3	DRO <10			J

Kyle Norman Logger: White Drilling Driller: SB-4 SB-6 Conoco Phillips Warren Well ID: **Drilling Method:** Air rotary 6 6 SB-7 SB-5 Unit #13 Injection Line Start Date: 8/6/2013 SB-4 End Date: 8/6/2013 Comments: SB-4 is location 86 ft west of the source of the release Location: UL/N sec. 34 T210S R38E All samples were from cuttings. Lat: 32°31'26.931"N **DRAFTED BY: L. Weinheimer** County: Lea TD = 30 ftGW = 71 ftLong: 103°8'14.125"W State: NM Depth Chloride LAB PID **Well Construction** Description Lithology (feet) field tests SS 114 2.3 **Brown Sand** CI-<16 1.6 5 ft 84 GRO <10 DRO <10 10 ft 118 1.0 Tan Sand bentonite 15 ft 99 0.8 seal 20 ft 106 0.6 CI-Tan/Brown Sand 25 ft 169 0.5 112 **GRO** <10 DRO <10 CI-0.3 30 ft 108 48

> GRO <10 DRO <10

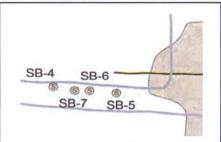
Logger: Kyle Norman

Driller: White Drilling

Drilling Method: Air rotary

Start Date: 8/6/2013

End Date: 8/6/2013





Conoco Phillips Warren Well ID: Unit #13 Injection Line

SB-5

Comments: SB-5 is location 55 ft west of the source of the release

All samples were from cuttings.

DRAFTED BY: L. Weinheimer

TD = 25 ft

GW = 71 ft

Location: UL/N sec. 34 T210S R38E

Lat: 32°31'26.893"N Long: 103°8'13.755"W

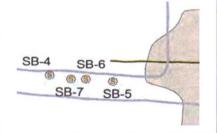
County: Lea State: NM

	10 = 23			GVV = 711t	1-0	ilg. 100 0 1	Otato. I VIVI		
Depth (feet)	Chloride field tests	LAB	PID	Description		Lithology	Well	Construction	
								1	
				Red/Brown Sand					
				ned/brown Sand					
SS	137		0.3						
				Brown Sand					
		CI-		Diomi Gand					
5 ft	147	<16	1.6						
		GRO <10							
		DRO		Tan Sand					
		<10		Tan Sand					
10 ft	105		0.9						
					1			bentonite	
				Moist Tan Sand				seal	
				Wolst Fall Galla				11	
15 ft	159		0.8						
				Moist Red/Brown Sand					
20 ft	2294		0.5			BANGS SERVICE STREET			
								11	
		CI-							
25 ft	3067	3440	0.5	Moist Tan Sand					
		GRO <10							
		DRO							
		38.9)	

Logger: Kyle Norman Driller: White Drilling **Drilling Method:** Air rotary

Start Date:

End Date:





Conoco Phillips Warren Well ID: Unit #13 Injection Line

Location: UL/N sec. 34 T210S R38E

SB-6

Comments: SB-6 is location 68 ft west of the source of the release

8/6/2013

8/6/2013

All samples were from cuttings. DRAFTED BY: L. Weinheimer

Lat: 32°31'26.914"N

County: Lea

	TD = 25	ft		GW = 71 ft		ng: 103°8'1	State: NM	
Depth (feet)			I I AR I DIII I I I I I I I I I I I I I I I I			Lithology	Well	Construction
SS	131		0.7	Brown Sand				
		01						
5 ft	112	CI- <16	0.8					
		GRO <10						
		DRO <10		Tan Sand				
10 ft	91		0.2					
								bentonite
				Moist Tan Sand				Seal
15 ft	109		0.2		-			
				Moist Red/Brown Sand				
20 ft	2529		0.2					
25 ft	2140	CI- 2360	0.1	Moist Tan Sand				
		GRO <10						
		DRO <10						

Logger: Kyle Norman Driller: White Drilling SB-4 SB-6 Conoco Phillips Warren Well ID: **Drilling Method:** Air rotary 6 5 SB-7 Unit #13 Injection Line SB-5 Start Date: 8/6/2013 SB-7 End Date: 8/6/2013 Location: UL/N sec. 34 T210S R38E Comments: SB-7 is location 75 ft west of the source of the release

Lat: 32°31'26.914"N

County: Lea

All samples were from cuttings.

DRO

<10 CI-

96 GRO <10 DRO <10 0.7

35 ft

167

DRAFTED BY: L. Weinheimer

TD = 35 ft				GW = 71 ft		ng: 103°8'14.	002"W	State: NM	
Depth (feet)	Chloride field tests	LAB	PID	Description		Lithology	Well C	onstruction	
SS	141		0.8	Brown Sand					
5 ft	83	CI- <16 GRO	1.7						
		<10 DRO <10							
10 ft	101		0.6	Tan Sand					
15 ft	115		0.4						
00 %	1117	CI-	4.7	Moist Brown/Tan Sand				bentonite	
20 ft	1147	1280 GRO <10 DRO	1.7	Brown/Tan Sand					
25 ft	351	<10	0.7	Brown/Tan Sand	-				
20 #	100	Cl-	0.9						
30 ft	182	128 GRO <10	0.9						

Red/Brown Sand

SB-12 6 SB-11 Logger: Kyle Norman SB-10 S ® \$B-9 Driller: White Drilling SB-8 ® Conoco Phillips Warren Well ID: **Drilling Method:** Air rotary Unit #13 Injection Line Start Date: 8/6/2013 SB-8 End Date: 8/6/2013 Comments: SB-8 is location 48 ft NW of the source of the release Location: UL/N sec. 34 T210S R38E All samples were from cuttings. Lat: 32°31'27.451"N DRAFTED BY: L. Weinheimer County: Lea TD = 25 ftGW = 71 ftLong: 103°8'13.25"W State: NM Depth Chloride Lithology **Well Construction** LAB PID Description (feet) field tests SS 137 0.6 Brown Sand CI-8.0 5 ft 110 <16 **GRO** <10 DRO Tan Sand <10 0.5 10 ft 119 bentonite seal Moist Tan Sand 15 ft 329 0.1 20 ft 2059 0.1 Moist Red/Brown Sand CI-25 ft 2404 2600 0.1 GRO

> <10 DRO <10

SB-12 SB-11 Logger: Kyle Norman SB-10 [®] SB-9 Driller: White Drilling SB-8 ® Conoco Phillips Warren Well ID: **Drilling Method:** Air rotary Unit #13 Injection Line Start Date: 8/6/2013 SB-9 End Date: 8/6/2013 Comments: SB-9 is location 69 ft NW of the source of the release Location: UL/N sec. 34 T210S R38E All samples were from cuttings. Lat: 32 °31'27.639"N DRAFTED BY: L. Weinheimer County: Lea State: NM TD = 45 ftGW = 71 ftLong: 103°8'13.315"W Depth Chloride LAB PID Description Lithology Well Construction field tests (feet) SS 258 0.7 **Brown Sand** CI-0.6 5 ft 145 48 GRO <10 DRO Tan Sand <10 10 ft 108 0.7 15 ft 138 0.5 Tan/Brown Sand CI-20 ft 1390 0.5 1967 GRO bentonite <10 DRO seal Tan Sand <10 25 ft 573 0.6 30 ft 522 0.5 **Brown Sand**

0.5

35 ft

268

Depth (feet)	Chloride field tests	LAB	PID	Description	Lithology	Well Construction
40 ft	152	CI- 256	0.2			
		GRO <10 Tan Sand With Some Sandstone <10				
			Tan Sand With Some Sandstone			
45 ft	153	CI- 64	0.2			
		GRO <10				
		DRO <10				

Logger:

Kyle Norman

Driller:

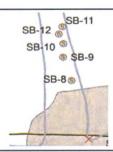
White Drilling

Drilling Method:

Air rotary

Start Date:

8/6/2013 8/6/2013





Conoco Phillips Warren Well ID: Unit #13 Injection Line

Location: UL/N sec. 34 T210S R38E

SB-10

End Date:

Comments: SB-10 is location 79 ft NW of the source of the release All samples were from cuttings.

DRAFTED BY: L. Weinheimer

TD = 25 ft

GW = 71 ft

Lat: 32°31'27.746"N

County: Lea

Long: 103°8'13.304"W State: NM

	TD = 25	11		GW = 71 ft Long: 103 % 13.304 W				State: NM
Depth (feet)	Chloride field tests	LAB	PID	Description		Lithology	Well C	onstruction
)
				Brown Sand				
SS	102		0.5		-			
5 ft	86	CI- <16	0.7					
511	00	GRO	0.7					
		<10						
		DRO <10		Brown/Tan Sand				
10 ft	111		1.1					
1011	111		1.1					bentonite
								seal
								Joan
15 ft	78		1.5					
				Tan/Red Sand				
		CI-						
20 ft	1706	1600 GRO	0.7		-			
		<10						
		DRO <10						
		CI-		Brown/Tan Sand				
25 ft	416	416	0.5	brown/Tan Sand				
		GRO <10						
		DRO						
		<10						/

Logger: Kyle Norma

Driller: White Drillin

Drilling Method: Air rotary

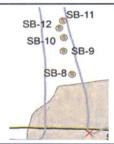
Start Date: 8/6/2013

End Date: 8/6/2013

White Drilling

Air rotary

8/6/2013





Conoco Phillips Warren Well ID:
Unit #13 Injection Line
SB-11

Location: UL/N sec. 34 T210S R38E

Lat: 32°31'27.886"N

County: Lea State: NM

Comments:	CD 44	in lanation	00 4	N I I A /	af tha		of the			
Commenis.	- B- I I	is location	9/11	IVIVV	or me	SOURCE	OI INE	release		
Committee .	00 11	io location	02 11		OI LIIO	500100	OI LIIO	Cicasc		
All samples were from cuttings.										
		All Salliple	CO VVC		UIII CU	Illinus.				

DRAFTED BY: L. Weinheimer

D = 30 ft GW = 71

TD = 30 ft				GW = 71 ft	Lo	ng: 103°8′13	State: NM	
Depth (feet)	Chloride field tests	LAB	PID	Description		Lithology	Well	Construction
				Brown Sand				
SS	84		1.3					
		CI-						
5 ft	154	<16	0.7					
		GRO <10		l k				
		DRO <10		Tan Sand				
10 ft	102		0.8					
15 ft	175		0.8					bentonite
								seal
20 ft	80		0.7					
25 ft	134	CI- <16	0.6	Red/Brown Sand				
	,	GRO <10						
		DRO <10						
20.4	117	CI-	0.6					
30 ft	117	<16 GRO	0.6					
		<10 DRO						
-		<10						1

Logger: Kyle Norman

Driller: White Drilling

Drilling Method: Air rotary

Start Date: 8/6/2013

End Date: 8/6/2013



Conoco Phillips Warren Well ID: Unit #13 Injection Line

Location: UL/N sec. 34 T210S R38E

SB-12

Comments: SB-12 is location 86 ft NW of the source of the release All samples were from cuttings.

DRAFTED BY: L. Weinheimer

Lat: 32 °31'27.821"N

County: Lea State: NM

TD = 30 ft

GW = 71 ft

Long: 103°8'13.347"W State

	TD = 30	ft		GW = 71 ft	Long: 103 % '13.347"W				State: NM
Depth (feet)	Chloride field tests	LAB	PID	Description		Lithology	W	ell C	onstruction
				Brown Sand					
SS	109		1.5			C0000000000000000000000000000000000000			
				1 10° 0					
		CI-							
5 ft	100	<16 GRO	1						
		<10 DRO		Tan Sand					
		<10		ran Sand					
10 ft	109		1						
15 64	79		0.7						bentonite
15 ft	79		0.7		1				Seal
20 ft	1270	CI- 1010	0.5						
		GRO <10							
		DRO <10							-
25 ft	152	CI- 48	0.5	Red/Brown Sand					
		GRO <10							
		DRO <10							
30 ft	120	CI- 16	0.3						
		GRO <10							
6.1		DRO <10							J

Logger: Kyle Norman Driller: White Drilling SB-19 SB-15 6 6 6 **Drilling Method:** Air rotary Conoco Phillips Warren Well ID: ® SB-13 Unit #13 Injection Line Start Date: 8/7/2013 SB-13 End Date: 8/7/2013 Comments: SB-13 is located 105 ft east of the release point. All Location: UL/N sec. 34 T20S R38E the samples were from cuttings. DRAFTED BY: L. Weinheimer Lat: 32°31'26.829"N County: Lea TD = 30 ftGW = 71 ftLong: 103 %'11.909"W State: NM Depth Chloride Lithology PID **Well Construction** LAB Description field tests (feet) Brown Sand CI-0.7 SS 118 <16 GRO <10 DRO Tan/Brown Sand <10 5 ft 86 0.6 10 ft 59 0.4 Tan Sand bentonite seal 0.5 15 ft 51 Moist Tan Sand 0.2 20 ft 88 25 ft 85 0.4 Tan Sand 30 ft 82 <16 0.5 GRO

> <10 DRO <10

Logger: Kyle Norman

Driller: White Drilling

Drilling Method: Air rotary

Start Date: 8/7/2013 End Date: 8/7/2013





Conoco Phillips Warren Well ID: Unit #13 Injection Line

SB-14

Comments: SB-14 is located 79 ft east of the release point. All the samples were from cuttings.

DRAFTED BY: L. Weinheimer

TD _ 20 ft

GW - 71 ft

Location: UL/N sec. 34 T20S R38E

Lat: 32°31'26.829"N Lang. 102 90112 205"\M County: Lea State: NM

Depth Chloride (feet) field tests LAB PID	Description Brown Sand	Lithology	Well C	onstruction
	Brown Sand	The state of the s		
	Brown Sand			
SS 84 3.1				
35 04 0.1				
	Tan/Brown Sand			
CI-	rany brown cana			
5 ft 62 <16 3.6 GRO				
<10 DRO				
<10	Tan Sand			
10 ft 57 4.7				
	Moist Tan Sand			bentonite
15 ft 104 0.8				seal
20.44				
20 ft 79 0.6				
CI-				
25 ft 61 <16 0.4	Moist Red/Brown Sand			
GRO <10				
DRO <10				
Cl-				
30 ft 61 <16 0.6 GRO				
<10				
DRO <10				

Logger: Kyle Norman

White Drilling

Drilling Method:

Air rotary

Start Date:

End Date:

Driller:

8/7/2013

8/7/2013





Conoco Phillips Warren Well ID: Unit #13 Injection Line

SB-15

Comments: SB-15 is located 64 ft east of the release point. All

the samples were from cuttings. DRAFTED BY: L. Weinheimer

Location: UL/N sec. 34 T20S R38E

Lat: 32°31'26.849"N

County: Lea

	TD = 25	ft		GW = 71 ft	Lo	ng: 103°8'12.3	383"W State: NM		
Depth (feet)	Chloride field tests	LAB	PID	Description		Lithology	Well	Construction	
				Brown Sand					
SS	56		6.0						
		CI-		Moist Brown Sand					
5 ft	55	<16	7.6			2000 St. 10 CONT. CO.			
		GRO <10							
		DRO <10							
10 ft	2544		5.8	Moist Tan Sand					
				most ran sand				bentonite	
								seal	
15 ft	603		3.2						
20 ft	1647		1.4						
				Moist Red/Brown Sand					
				most riod/brown dand					
25 ft	4011	CI- 5200	2.2						
		GRO <10							
		DRO <10						V	

Logger: Kyle Norman

Driller: White Drilling

Drilling Method: Air rotary

 Start Date:
 8/7/2013

 End Date:
 8/7/2013





Conoco Phillips Warren Well ID: Unit #13 Injection Line

SB-16

Comments: SB-16 is located 72 ft east of the release point. All

the samples were from cuttings.

DRAFTED BY: L. Weinheimer

TD = 35 ft

GW = 71 ft

Location: UL/N sec. 34 T20S R38E

Lat: 32°31'26.849"N

County: Lea State: NM

	TD = 35	IT		GW = 71 ft	Loi	ng: 103°8'12.284"W State: NM		
Depth (feet)	Chloride field tests	LAB	PID	Description		Lithology	Well Construction	
SS	93		3.0	Brown Sand				
		CI-						
5 ft	90	<16 GRO <10	2.1					
		DRO <10		Tan Sand				
10 ft	115		4.0					
15 ft	238		0.8	Moist Tan Sand			bentonite	
20 ft	1025		0.8				seal	
25 ft	1293	CI- 1600 GRO <10	0.5	Moist Red/Brown Sand				
		DRO <10						
30 ft	108	32 GRO <10	0.6					
		DRO <10						
35 ft	115	64 GRO <10	0.6	Red/Brown Sand				
		DRO <10						

SB-19 Logger: Kyle Norman Driller: White Drilling Conoco Phillips Warren Well ID: **Drilling Method:** Air rotary Unit #13 Injection Line Start Date: 8/7/2013 SB-18 SB-17 End Date: 8/7/2013

Comments: SB-17 is located 131 ft south of the release point. All the samples were from cuttings.

DRAFTED BY: L. Weinheimer

Location: UL/N sec. 34 T20S R38E

Lat: 32 °31'25.7"N

County: Lea State: NM

SB-17

	TD = 30		12001	GW = 71 ft	Long: 103 %'12.873"W State: NM			
Depth (feet)	Chloride field tests	LAB	PID	Description	Lithology	Well Construction		
SS	88		0.7	Tan Sand				
5 ft	123	CI- 96	0.5					
		GRO <10						
		DRO <10						
10 ft	108		1.1	Moist Tan Sand				
						bentonite		
15 ft	125		0.7			seal		
				Moist Red/Brown Sand				
20 ft	150		0.5					
25 ft	196	CI- 160	0.6					
		GRO <10						
		DRO		Red/Brown Sand				
		<10 CI-						
30 ft	195	144	0.3					
		GRO						
		<10 DRO						
		<10						

Logger:

Kyle Norman

Driller:

White Drilling

Drilling Method:

Air rotary

Start Date: End Date:

8/7/2013 8/7/2013





Conoco Phillips Warren Well ID: Unit #13 Injection Line

SB-18

Comments: SB-18 is located 118 ft south of the release point. All the samples were from cuttings.

DRAFTED BY: L. Weinheimer

Location: UL/N sec. 34 T20S R38E

Lat: 32°31'25.822"N

County: Lea

	TD = 35	ft		GW = 71 ft	Long: 103°8'12.985"W State: NM				State: NM
Depth (feet)	Chloride field tests	LAB	PID	Description		Lithology		Well C	onstruction
				Brown Sand					
SS	91		0.6						
E 44	77	CI- <16	0.7						
5 ft	//	GRO	0.7	Tan Sand					
		<10 DRO							
10 ft	90	<10	0.1						
1011	89		0.1		1				
				Moist Red/Brown Sand					
15 ft	1853	. CI- 1650	0.5						
		GRO <10							bentonite
		DRO <10		Moist Tan/Brown Sand					seal
20 ft	1030		0.4						
0.7.6	107		0.1						
25 ft	487		0.1	Tan/Brown Sand					
30 ft	105	Cl- 112	0.2						
		GRO <10			1				
1 - 1-		DRO <10							
35 ft	111	Cl- 96	0.1	Tan Sand					- 3
33 IL	111	GRO <10	0.1						
		DRO 11.7							
		11.7							

SB-19 Kyle Norman Logger: Driller: White Drilling **Drilling Method:** Conoco Phillips Warren Well ID: Air rotary Unit #13 Injection Line Start Date: 8/7/2013 SB-17 End Date: 8/7/2013 Comments: SB-19 is located 12 ft southeast of the release point. Location: UL/N sec. 34 T20S R38E All the samples were from cuttings. DRAFTED BY: L. Weinheimer Lat: 32°31'26.885"N County: Lea

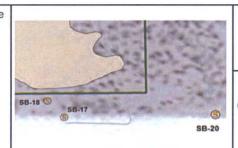
SB-19

	TD = 65		TED DI	GW = 71 ft	ng: 103°8'1				
Depth (feet)	Chloride field tests	LAB	PID	Description	Lithology		Well Co	onstruction	
50 ft	2643		0.2						
55 ft	2424		0.1	Red/Brown Sand With Sandstone				bentonite seal	
60 ft	3059		0.1			The second second			
65 ft	2236		0.1			W. 10			

Jake Kamplain & Kyle Logger: Norman White Drilling Driller:

Drilling Method: Air rotary

Start Date: 7/26/2013 End Date: 7/26/2013





Conoco Phillips Warren Unit #13 Injection Line

Well ID:

SB-20

Comments: SB-20 is located 166 ft southwest of the source of the release. Samples were taken from split spoon.

DRAFTED BY: L. Weinheimer

Location: UL/N sec. 34 T20S R38E

Lat: 32°31'25.713"N

County: Lea State: NM

	TD = 82			GW = 71 ft	ng: 103°8'1		State: NM
Depth (feet)	Chloride field tests	LAB	PID	Description	Lithology	Well	Construction
SS							
5 ft							
10 ft							
15 ft				NO SAMPLES TAKEN AS SB WAS			
20 ft				INSTALLED			
25 ft							
30 ft							
35 ft							

Depth (feet)	Chloride field tests	LAB	PID	Description	Lithology	Well Construction
40 ft						plugged in total with bentonite
45 ft						Dentonite
50 ft						
55 ft						
60 ft				NO SAMPLES TAKEN AS THE SB WAS INSTALLED		
65 ft						
70 ft						
75 ft						
80 ft						
82 ft						



August 05, 2013

HACK CONDER

RICE ENVIRONMENTAL CONSULTING & SAFETY LLC

419 W. CAIN

HOBBS, NM 88240

RE: WARREN UNIT #13 AD

Enclosed are the results of analyses for samples received by the laboratory on 07/30/13 8:10.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-11-3. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab accred certif.html.

Cardinal Laboratories is accreditated through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2

Haloacetic Acids (HAA-5)

Method EPA 524.2

Total Trihalomethanes (TTHM)

Method EPA 524.4

Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

Celey D. Keene

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Celey D. Keene

Lab Director/Quality Manager



RICE ENVIRONMENTAL CONSULTING & SAFETY HACK CONDER 419 W. CAIN HOBBS NM, 88240

Fax To: (575) 397-1471

Received:

07/30/2013

Sampling Date:

07/26/2013

Reported:

Sampling Type:

08/05/2013

Sampling Condition:

Soil Cool & Intact

Project Name:

WARREN UNIT #13 AD

Sample Received By:

Jodi Henson

Project Number: Project Location: NONE GIVEN NOT GIVEN

Sample ID: SB #1 @ 18' (H301784-01)

BTEX 8021B	mg/	kg	Analyze	d By: DW					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	08/01/2013	ND	2.04	102	2.00	2.20	
Toluene*	<0.050	0.050	08/01/2013	ND	2.05	102	2.00	1.43	
Ethylbenzene*	<0.050	0.050	08/01/2013	ND	2.15	108	2.00	0.897	
Total Xylenes*	<0.150	0.150	08/01/2013	ND	6.63	110	6.00	1.41	
Total BTEX	<0.300	0.300	08/01/2013	ND					
Surrogate: 4-Bromofluorobenzene (PIL	104 9	% 89.4-12	6						
Chloride, SM4500Cl-B	mg/	kg	Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	5120	16.0	07/30/2013	ND	400	100	400	3.92	
TPH 8015M	mg/	kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	07/31/2013	ND	185	92.3	200	2.16	
DRO >C10-C28	<10.0	10.0	07/31/2013	ND	199	99.3	200	3.94	

Surrogate: 1-Chlorooctane 78.1% 65.2-140 106% 63.6-154 Surrogate: 1-Chlorooctadecane

Cardinal Laboratories *=Accredited Analyte

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Celey D. Keene



RICE ENVIRONMENTAL CONSULTING & SAFETY HACK CONDER 419 W. CAIN HOBBS NM, 88240

Fax To:

(575) 397-1471

Received:

07/30/2013

Sampling Date:

07/26/2013

Reported:

08/05/2013

Sampling Type:

Soil

Project Name:

WARREN UNIT #13 AD

Sampling Condition:

Cool & Intact

Project Number:

NONE GIVEN

Sample Received By:

Jodi Henson

Project Location:

NOT GIVEN

Sample ID: SB #1 @ 66' (H301784-02)

BTEX 8021B	mg/	kg	Analyze	ed By: DW					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	08/01/2013	ND	2.04	102	2.00	2.20	
Toluene*	< 0.050	0.050	08/01/2013	ND	2.05	102	2.00	1.43	
Ethylbenzene*	< 0.050	0.050	08/01/2013	ND	2.15	108	2.00	0.897	
Total Xylenes*	<0.150	0.150	08/01/2013	ND	6.63	110	6.00	1.41	
Total BTEX	<0.300	0.300	08/01/2013	ND					
Surrogate: 4-Bromofluorobenzene (PIL	104 %	6 89.4-12	6						
Chloride, SM4500CI-B	mg/	kg	Analyze	ed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	2000	16.0	07/30/2013	ND	400	100	400	3.92	
TPH 8015M	mg/	kg	Analyze	ed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	07/31/2013	ND	185	92.3	200	2.16	
DRO >C10-C28	<10.0	10.0	07/31/2013	ND	199	99.3	200	3.94	
Surrogate: 1-Chlorooctane	88.1 9	65.2-14	0					*****	***************************************
Surrogate: 1-Chlorooctadecane	115 %	63.6-15	4						

Cardinal Laboratories

*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



RICE ENVIRONMENTAL CONSULTING & SAFETY HACK CONDER 419 W. CAIN HOBBS NM, 88240

Fax To: (575) 397-1471

Received:

07/30/2013

Sampling Date:

07/26/2013

Reported:

08/05/2013

Sampling Type:

Soil

Project Name:

WARREN UNIT #13 AD

Sampling Condition:

Cool & Intact

Project Number:

NONE GIVEN

Sample Received By:

Jodi Henson

Project Location:

NOT GIVEN

Sample ID: SB #2 @ 35' (H301784-03)

BTEX 8021B	mg/	/kg	Analyze	d By: DW					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	08/01/2013	ND	2.04	102	2.00	2.20	
Toluene*	<0.050	0.050	08/01/2013	ND	2.05	102	2.00	1.43	
Ethylbenzene*	<0.050	0.050	08/01/2013	ND	2.15	108	2.00	0.897	
Total Xylenes*	<0.150	0.150	08/01/2013	ND	6.63	110	6.00	1.41	
Total BTEX	< 0.300	0.300	08/01/2013	ND					

Surrogate: 4-Bromofluorobenzene (PIL

104%

89.4-126

Surrogale: 4-Bromojiuorobenzene (FIL	104	70 09.4-12	0						
Chloride, SM4500CI-B	mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	3880	16.0	07/30/2013	ND	400	100	400	3.92	
TPH 8015M	mg	/kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	07/31/2013	ND	185	92.3	200	2.16	

Surrogate: 1-Chlorooctane

80.9 %

65.2-140

Surrogate: 1-Chlorooctadecane

102 %

63.6-154

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Celey D. Keine



RICE ENVIRONMENTAL CONSULTING & SAFETY HACK CONDER 419 W. CAIN HOBBS NM, 88240

Fax To: (575) 397-1471

Received:

07/30/2013

Sampling Date:

07/26/2013

Reported:

08/05/2013

Sampling Type:

Soil

Project Name:

WARREN UNIT #13 AD

Sampling Condition:

Cool & Intact

Project Number:

NONE GIVEN

Sample Received By:

Jodi Henson

Project Location:

NOT GIVEN

Sample ID: SB #2 @ 65' (H301784-04)

BTEX 8021B	mg/	kg	Analyze	ed By: DW					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifie
Benzene*	<0.050	0.050	08/01/2013	ND	2.04	102	2.00	2.20	
Toluene*	< 0.050	0.050	08/01/2013	ND	2.05	102	2.00	1.43	
Ethylbenzene*	< 0.050	0.050	08/01/2013	ND	2.15	108	2.00	0.897	
Total Xylenes*	<0.150	0.150	08/01/2013	ND	6.63	110	6.00	1.41	
Total BTEX	<0.300	0.300	08/01/2013	ND					
Surrogate: 4-Bromofluorobenzene (PIL	104 %	6 89.4-12	6						
Chloride, SM4500CI-B	mg/	kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	2120	16.0	07/30/2013	ND	400	100	400	3.92	
TPH 8015M	mg/	kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	07/31/2013	ND	185	92.3	200	2.16	
DRO >C10-C28	<10.0	10.0	07/31/2013	ND	199	99.3	200	3.94	
Surrogate: 1-Chlorooctane	78.5 %	65.2-14	0						
Surrogate: 1-Chlorooctadecane	102 %	63.6-15	4						

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RICE ENVIRONMENTAL CONSULTING & SAFETY HACK CONDER 419 W. CAIN HOBBS NM, 88240

(575) 397-1471 Fax To:

Received:

07/30/2013

Sampling Date:

07/26/2013

Reported:

Sampling Type:

08/05/2013

Soil

Project Name:

WARREN UNIT #13 AD

Sampling Condition:

Cool & Intact

Project Number:

NONE GIVEN

Sample Received By:

Jodi Henson

Project Location:

NOT GIVEN

Sample ID: SB #3 @ SURFACE (H301784-05)

BTEX 8021B	mg/	kg	Analyze	d By: DW					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	08/01/2013	ND	2.04	102	2.00	2.20	
Toluene*	< 0.050	0.050	08/01/2013	ND	2.05	102	2.00	1.43	
Ethylbenzene*	<0.050	0.050	08/01/2013	ND	2.15	108	2.00	0.897	
Total Xylenes*	<0.150	0.150	08/01/2013	ND	6.63	110	6.00	1.41	
Total BTEX	<0.300	0.300	08/01/2013	ND					
Surrogate: 4-Bromofluorobenzene (PIL	105 %	6 89.4-12	6						
Chloride, SM4500Cl-B	mg/	kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0	16.0	07/30/2013	ND	400	100	400	3.92	
TPH 8015M	mg/	kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	07/31/2013	ND	185	92.3	200	2.16	
DRO >C10-C28	<10.0	10.0	07/31/2013	ND	199	99.3	200	3.94	
Surrogate: 1-Chlorooctane	90.4	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	1149	63.6-15	4						

Cardinal Laboratories

*=Accredited Analyte

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RICE ENVIRONMENTAL CONSULTING & SAFETY HACK CONDER 419 W. CAIN HOBBS NM, 88240

Fax To: (575) 397-1471

Received:

07/30/2013

Sampling Date:

07/26/2013

Reported:

Sampling Type:

Soil

08/05/2013

Sampling Condition:

Cool & Intact

Project Name: Project Number: WARREN UNIT #13 AD NONE GIVEN

Sample Received By:

Jodi Henson

Project Location:

NOT GIVEN

Sample ID: SB #3 @ 10' (H301784-06)

BTEX 8021B	mg/	kg	Analyze	d By: DW					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	08/01/2013	ND	2.04	102	2.00	2.20	
Toluene*	<0.050	0.050	08/01/2013	ND	2.05	102	2.00	1.43	
Ethylbenzene*	< 0.050	0.050	08/01/2013	ND	2.15	108	2.00	0.897	
Total Xylenes*	<0.150	0.150	08/01/2013	ND	6.63	110	6.00	1.41	
Total BTEX	<0.300	0.300	08/01/2013	ND					
Surrogate: 4-Bromofluorobenzene (PIL	105 %	6 89.4-12	6						
Chloride, SM4500CI-B	mg/	kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1580	16.0	07/30/2013	ND	400	100	400	3.92	
TPH 8015M	mg/	kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	07/31/2013	ND	185	92.3	200	2.16	
DRO >C10-C28	<10.0	10.0	07/31/2013	ND	199	99.3	200	3.94	
Surrogate: 1-Chlorooctane	83.9 9	65.2-14	0						
Surrogate: 1-Chlorooctadecane	107 %	63.6-15	4						

Cardinal Laboratories

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Notes and Definitions

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

** Samples not received at proper temperature of 6°C or below.

*** Insufficient time to reach temperature.

- Chloride by SM4500Cl-B does not require samples be received at or below 6°C

Samples reported on an as received basis (wet) unless otherwise noted on report

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CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

ARDINAL LABORATORIES

101 East Marland, Hobbs, NM 88240 2111 Beechwood, Abilene, TX 79603 (505) 393-2326 FAX (505) 393-2476 (325) 673-7001 FAX (325)673-7020

Relinquished By:	hadar	Tubase Note: Laborry and primages, can malyses, All daims including those for neglienvice. In no event shall Cardinal be liable filliates or successors arising out of or relational transfer and the cardinal shall be considered to the cardinal shall be considered to the cardinal shall be cardinal sha		7		√ SB#3	4 SB#2@65	-	Name and Address of the Owner, where	1 SB # 1 @ 18	Lab I.D.	FOR LAB USE ONLY	Sampler Name: Kyle Norman	oject Location: War	roject Name:	Project #:	hone #:	city: Hobbs	Address: 419 W. Cain	Project Manager: Hack Conder	Company Name: RECS
Delivered By: (Circle One)	1:2 mg:/	igence and any offer cause whatso for indertal dama for indertal or consequental dama ed to the performance of services in	Cardinal's Edditor and displayments in some		@ 10'	SB # 3 @ Surface	@ 65'	@ 35'	@ 66'	@ 18'	Sample I.D.	,	orman	Project Location: Warren Unit #13 Injection Line AD		Project Owner:	Fax #:	State: NM	in	k Conder	SS
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KED BY:	7	ort, snam be intraced to the amount selved by Cardinal within 30 day of use, or loss of profits incurred seed upon any of the above state			7/26/13	7/26/13	7/26/13	7/26/13	7/26/13	7/26/13	DATE	П			Zip:						
2 Z Z 9	REI	a emount paid by the client for the 30 days after completion of the a incurred by dirent, its subsidiaries we stated reasons or otherwise.			-							SAMPLING									
email results Knorman@rice-ecs.com Kjones@riceswd.com; jkamplain@rice-ecs.com hconder@rice-ecs.com: Lweinheimer@rice-ecs	Fax Result:	by the client for the applicant, its subsidiaries sons or otherwise.			01-30	12:45	11:30	11:15	10:45	10:00	TIME										
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email results Knorman@rice-ecs.com Kjones@riceswd.com; jkamplain@rice-ecs.com hconder@rice-ecs.com; Lweinheimer@rice-ecs.com						1	1			- 1				-							T
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August 13, 2013

HACK CONDER

RICE ENVIRONMENTAL CONSULTING & SAFETY LLC

419 W. CAIN

HOBBS, NM 88240

RE: WARREN UNIT #13 INJECTION LINE AD

Enclosed are the results of analyses for samples received by the laboratory on 08/08/13 10:40.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-11-3. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/ga/lab accred certif.html.

Cardinal Laboratories is accreditated through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2

Haloacetic Acids (HAA-5)

Method EPA 524.2

Total Trihalomethanes (TTHM)

Method EPA 524.4

Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

Celey D. Keine

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Celey D. Keene

Lab Director/Quality Manager



RICE ENVIRONMENTAL CONSULTING & SAFETY HACK CONDER 419 W. CAIN

HOBBS NM, 88240

Fax To:

(575) 397-1471

Received:

08/08/2013

Sampling Date:

08/06/2013

Reported:

Sampling Type:

Soil

Project Name:

08/13/2013

Sampling Condition:

Cool & Intact

Project Number:

WARREN UNIT #13 INJECTION LINE AD

Sample Received By:

Jodi Henson

Project Location:

NONE GIVEN NOT GIVEN

117%

63.6-154

Sample ID: SB-4 @ 5' (H301856-01)

		 	 D		n

Chloride, SM4500Cl-B	mg	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0	16.0	08/12/2013	ND	432	108	400	3.77	
TPH 8015M	mg	/kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/10/2013	ND	181	90.4	200	2.80	
DRO >C10-C28	<10.0	10.0	08/10/2013	ND	193	96.3	200	3.04	
Surrogate: 1-Chlorooctane	97.6				193	70.5	200	5.01	

117% 63.6-154 Surrogate: 1-Chlorooctadecane

Sample ID: SB-4 @ 25' (H301856-02)

Chloride, SM4500Cl-B	mg	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	112	16.0	08/12/2013	ND	432	108	400	3.77	
TPH 8015M	mg	/kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/10/2013	ND	181	90.4	200	2.80	
DRO >C10-C28	<10.0	10.0	08/10/2013	ND	193	96.3	200	3.04	
Surrogate: 1-Chlorooctane	97.3	% 65.2-14	0					water.	

Cardinal Laboratories

Surrogate: 1-Chlorooctadecane

*=Accredited Analyte

any other cause whatsoever shall be deemed walved unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

Celey D. Keine



RICE ENVIRONMENTAL CONSULTING & SAFETY HACK CONDER 419 W. CAIN HOBBS NM, 88240

Fax To: (575) 397-1471

Received:

08/08/2013

Sampling Date:

08/06/2013

Reported:

Sampling Type:

08/13/2013

Soil

Project Name:

WARREN UNIT #13 INJECTION LINE AD

Sampling Condition:

Cool & Intact

Project Number:

NONE GIVEN

117%

63.6-154

Sample Received By:

Jodi Henson

Project Location:

NOT GIVEN

Sample ID: SB-4 @ 30' (H301856-03)

Chloride, SM4500CI-B	mg	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	48.0	16.0	08/12/2013	ND	432	108	400	3.77	
TPH 8015M	mg	/kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/10/2013	ND	181	90.4	200	2.80	
DRO >C10-C28	<10.0	10.0	08/10/2013	ND	193	96.3	200	3.04	
Surrogate: 1-Chlorooctane	97.3	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	116	% 63.6-15	4						

Sample ID: SB-5 @ 5' (H301856-04)

Chloride, SM4500CI-B	mg	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0	16.0	08/12/2013	ND	432	108	400	3.77	
TPH 8015M	mg	/kg	Analyze	d By: MS					12/14/11
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/10/2013	ND	181	90.4	200	2.80	
DRO >C10-C28	<10.0	10.0	08/10/2013	ND	193	96.3	200	3.04	

Cardinal Laboratories

Surrogate: 1-Chlorooctadecane

*=Accredited Analyte

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HACK CONDER

HACK CONDER

419 W. CAIN

Fax To: (575) 397-1471

Sampling Date: 08/06/2013
Sampling Condition: Cool & Intact
Sample Received By: Jodi Henson

NONE CINEN MARKEN ONIL #13 INJECLION FINE AD 08/13/5013 08/08/5013

Project Name: NONE GIVEN Project Number: NONE GIVEN

Sample ID: SB-5 @ 25' (H301856-05)

Reported:

Received:

Ioride, SM4500CI-B	/бш	бя	əzyısna	4A : Ya b					
ətylenA	Result	Reporting Limit	Analyzed	Method Blank	SB	% Весолегу	Jy suls Value QC	RPD	Qualifier
loride	3440	16.0	08/15/5013	ND	432	108	400	3.77	
Н 8015М	/ɓw	бү,	əzylsnA	d By: MS					
ətylenA	Result	Reporting Limit	bəsylenA	Method Blank	SB	% Кесолегу	JQ sulsV sunT	RPD	Qualifier
O C9-C10	0.01>	10.01	08/10/2013	ND	181	₽.06	200	2,80	
10 >C10-C58	6.85	10.0	08/10/2013	ΔN	193	£'96	200	÷0.ε	
товаге: 1-Сhlоrooctane	0.76	07-1-7:59 %							
rrogate: 1-Chlorooctadecane	811	21-9.89 %	,						

Sample ID: SB-6 @ 5' (H301856-06)

Aloride, SM4500CI-B	y/ճա	бэ	Analyze	4 sys AP					
Anyled	Result	Reporting Limit	Analyzed	Method Blank	SB	% Весолегу	⊃y euls∨ eur⊤	RPD	Qualifier
əbinolr	0.81>	16.0	08/12/2013	dN	435	108	00₺	3.77	
WST08 Ho	y/6w	бх	əxylsnA	SM : WS					
etylenA	Result	Reporting Limit	bəzylenA	Method Blank	SB	% Весолегу	JQ SulsV SurT	RPD	Qualifier
80 C6-C10	0.01>	10.0	08/10/2013	ИD	181	₽.06	200	2.80	
KO >C10-C28	0.01>	10.0	08/10/5013	ND	193	£.86	200	₹0.8	
ичодаге: 1-Сhlочоостапе	 % 101	0+1-2:59 9							
urrogate: 1-Chlorooctade	% 811	<i>t</i> 51-9.E9							

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Sampling Type:

Soil

Project Name:

08/13/2013

Sampling Condition:

Cool & Intact

Project Number:

WARREN UNIT #13 INJECTION LINE AD

Sample Received By:

Jodi Henson

NONE GIVEN

Project Location:

NOT GIVEN

Sample ID: SB-6 @ 25' (H301856-07)

Chloride, SM4500CI-B	mg	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	2360	16.0	08/12/2013	ND	432	108	400	3.77	
TPH 8015M	mg	/kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/10/2013	ND	181	90.4	200	2.80	
DRO >C10-C28	<10.0	10.0	08/10/2013	ND	193	96.3	200	3.04	
Surrogate: 1-Chlorooctane	98.0	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	115	% 63.6-15	4						

Sample ID: SB-7 @ 5' (H301856-08)

Chloride, SM4500Cl-B	mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0	16.0	08/12/2013	ND	432	108	400	3.77	
TPH 8015M	mg	/kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/10/2013	ND	181	90.4	200	2.80	
DRO >C10-C28	<10.0	10.0	08/10/2013	ND	193	96.3	200	3.04	
Surrogate: 1-Chlorooctane	94.0	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	114	% 63.6-15	4						

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NONE GIVEN

Sample Received By:

Jodi Henson

Project Location:

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Sample ID: SB-7 @ 20' (H301856-09)

Chloride, SM4500CI-B	mg	/kg	Analyze	ed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1280	16.0	08/12/2013	ND	432	108	400	3.77	
TPH 8015M	mg	/kg	Analyze	ed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/10/2013	ND	181	90.4	200	2.80	
DRO >C10-C28	<10.0	10.0	08/10/2013	ND	193	96.3	200	3.04	
Surrogate: 1-Chlorooctane	94.0	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	114	% 63.6-15	4						

Sample ID: SB-7 @ 30' (H301856-10)

Chloride, SM4500Cl-B	mg	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	128	16.0	08/12/2013	ND	432	108	400	3.77	
TPH 8015M	mg	/kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/10/2013	ND	181	90.4	200	2.80	
DRO >C10-C28	<10.0	10.0	08/10/2013	ND	193	96.3	200	3.04	
Surrogate: 1-Chlorooctane	97.2	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	116	% 63.6-15	4						

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Jodi Henson

Project Location:

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Sample ID: SB-7 @ 35' (H301856-11)

Chloride, SM4500CI-B	mg	/kg	Analyze	ed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	96.0	16.0	08/12/2013	ND	432	108	400	3.77	
TPH 8015M	mg	/kg	Analyze	ed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/10/2013	ND	181	90.4	200	2.80	
DRO >C10-C28	<10.0	10.0	08/10/2013	ND	193	96.3	200	3.04	
Surrogate: 1-Chlorooctane	94.7	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	114	% 63.6-15	4						

Sample ID: SB-8 @ 5' (H301856-12)

Chloride, SM4500CI-B	mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0	16.0	08/12/2013	ND	432	108	400	3.77	
TPH 8015M	mg/	/kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/10/2013	ND	181	90.4	200	2.80	
DRO >C10-C28	<10.0	10.0	08/10/2013	ND	193	96.3	200	3.04	
Surrogate: 1-Chlorooctane	99.0	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	118 9	% 63.6-15	4						

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Sampling Condition: Sample Received By:

Jodi Henson

Project Location:

Analyte

Analyte

NOT GIVEN

Result

Result

<10.0

<10.0

Sample ID: SB-8 @ 25' (H301856-13)

Chloride, SM4500Cl-B

Reporting Limit

Reporting Limit

10.0

10.0

Analyzed By: AP

Analyzed

Analyzed

08/10/2013

08/10/2013

Method Blank

ND

Method Blank

ND

ND

BS

% Recovery

True Value QC

RPD

RPD

2.80

3.04

Chloride **TPH 8015M**

2600 mg/kg 16.0 08/12/2013 Analyzed By: MS

432

BS

181

193

108

% Recovery

90.4

96.3

400

True Value QC

200

200

3.77

Qualifier

Qualifier

GRO C6-C10 DRO >C10-C28

Surrogate: 1-Chlorooctane

99.6%

65.2-140

Surrogate: 1-Chlorooctadecane

117%

120 %

63.6-154

63.6-154

Sample ID: SB-9 @ 5' (H301856-14)

Chloride, SM4500CI-B	mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	48.0	16.0	08/12/2013	ND	432	108	400	3.77	
TPH 8015M	mg	/kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/10/2013	ND	181	90.4	200	2.80	
DRO >C10-C28	<10.0	10.0	08/10/2013	ND	193	96.3	200	3.04	
Surrogate: 1-Chlorooctane	101	% 65.2-14	0						

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Surrogate: 1-Chlorooctadecane

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NONE GIVEN

Sample Received By:

Jodi Henson

Project Location:

NOT GIVEN

Sample ID: SB-9 @ 20' (H301856-15)

Chloride, SM4500Cl-B	mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1390	16.0	08/12/2013	ND	432	108	400	3.77	
TPH 8015M	mg	/kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/11/2013	ND	185	92.6	200	3.63	
DRO >C10-C28	<10.0	10.0	08/11/2013	ND	194	96.8	200	4.57	

65.2-140 Surrogate: 1-Chlorooctane 88.4 %

Surrogate: 1-Chlorooctadecane

63.6-154

107%

Sample ID: SB-9 @ 40' (H301856-16)

Chloride, SM4500Cl-B	mg	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	256	16.0	08/12/2013	ND	432	108	400	3.77	
TPH 8015M	mg	/kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/11/2013	ND	185	92.6	200	3.63	
DRO >C10-C28	<10.0	10.0	08/11/2013	ND	194	96.8	200	4.57	
Surrogate: 1-Chlorooctane	86.1	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	109	% 63.6-15	4						

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Sampling Type:

Soil

Project Name:

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Sampling Condition:

Cool & Intact

Project Number:

NONE GIVEN

Sample Received By:

Jodi Henson

Project Location:

NOT GIVEN

Sample ID: SB-9 @ 45' (H301856-17)

Chloride, SM4500CI-B	mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	64.0	16.0	08/12/2013	ND	432	108	400	3.77	
TPH 8015M	mg	/kg	Analyze	d By: MS	or.				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/11/2013	ND	185	92.6	200	3.63	
DRO >C10-C28	<10.0	10.0	08/11/2013	ND	194	96.8	200	4.57	

Surrogate: 1-Chlorooctane

87.9%

65.2-140

Surrogate: 1-Chlorooctadecane

104%

63.6-154

Sample ID: SB-10 @ 5' (H301856-18)

Chloride, SM4500Cl-B	mg	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0	16.0	08/12/2013	ND	400	100	400	3.92	
TPH 8015M	mg	/kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/11/2013	ND	185	92.6	200	3.63	
DRO >C10-C28	<10.0	10.0	08/11/2013	ND	194	96.8	200	4.57	
Surrogate: 1-Chlorooctane	83.7	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	102	% 63.6-15	4						

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Sampling Condition:

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Project Number:

NONE GIVEN

Sample Received By:

Jodi Henson

Project Location:

NOT GIVEN

Sample ID: SB-10 @ 20' (H301856-19)

Chloride, SM4500CI-B	mg	mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1600	16.0	08/12/2013	ND	400	100	400	3.92	
TPH 8015M	mg	/kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/11/2013	ND	185	92.6	200	3.63	
DRO >C10-C28	<10.0	10.0	08/11/2013	ND	194	96.8	200	4.57	

Surrogate: 1-Chlorooctane

89.7%

65.2-140

Surrogate: 1-Chlorooctadecane

106 %

63.6-154

Sample ID: SB-10 @ 25' (H301856-20)

Chloride, SM4500Cl-B	mg	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	416	16.0	08/12/2013	ND	400	100	400	3.92	
TPH 8015M	mg	/kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/11/2013	ND	185	92.6	200	3.63	
DRO >C10-C28	<10.0	10.0	08/11/2013	ND	194	96.8	200	4.57	
Surrogate: 1-Chlorooctane	90.3	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	107	% 63.6-15	4						

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Sampling Condition: Sample Received By:

Jodi Henson

Project Number: Project Location: NONE GIVEN

98.7%

63.6-154

NOT GIVEN

Sample ID: SB-11 @ 5' (H301856-21)

Chloride, SM4500CI-B	mg/kg		Analyze	Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0	16.0	08/12/2013	ND	400	100	400	3.92	
TPH 8015M	mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/11/2013	ND	185	92.6	200	3.63	
DRO >C10-C28	<10.0	10.0	08/11/2013	ND	194	96.8	200	4.57	
Surrogate: 1-Chlorooctane	84.0	% 65.2-14	0						

Sample ID: SB-11 @ 25' (H301856-22)

Surrogate: 1-Chlorooctadecane

Chloride, SM4500CI-B	mg	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0	16.0	08/12/2013	ND	400	100	400	3.92	
TPH 8015M	mg	/kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/11/2013	ND	185	92.6	200	3.63	
DRO >C10-C28	<10.0	10.0	08/11/2013	ND	194	96.8	200	4.57	
Surrogate: 1-Chlorooctane	91.3	% 65.2-14	0					****	
Surrogate: 1-Chlorooctadecane	103	% 63.6-15	4						

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08/13/2013

Sampling Type:

Soil

Project Name:

WARREN UNIT #13 INJECTION LINE AD

Sampling Condition:

Cool & Intact

Project Number:

NONE GIVEN

Sample Received By:

Jodi Henson

Project Location:

NOT GIVEN

Sample ID: SB-11 @ 30' (H301856-23)

Chloride, SM4500CI-B	mg	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0	16.0	08/12/2013	ND	400	100	400	3.92	
TPH 8015M	mg	/kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/11/2013	ND	185	92.6	200	3.63	
DRO >C10-C28	<10.0	10.0	08/11/2013	ND	194	96.8	200	4.57	
Surrogate: 1-Chlorooctane	88.3	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	103	% 63.6-15	4						

Sample ID: SB-12 @ 5' (H301856-24)

Chloride, SM4500CI-B	mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0	16.0	08/12/2013	ND	400	100	400	3.92	
TPH 8015M	mg	/kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/11/2013	ND	185	92.6	200	3.63	
DRO >C10-C28	<10.0	10.0	08/11/2013	ND	194	96.8	200	4.57	
Surrogate: 1-Chlorooctane	86.4	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	100	% 63.6-15	4						

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(575) 397-1471 Fax To:

Received:

08/08/2013

Sampling Date:

08/06/2013

Reported:

08/13/2013

Sampling Type:

Soil

Project Name:

Sampling Condition:

Cool & Intact

Project Number:

WARREN UNIT #13 INJECTION LINE AD NONE GIVEN

Sample Received By:

Jodi Henson

Project Location:

NOT GIVEN

Sample ID: SB-12 @ 20' (H301856-25)

Chloride, SM4500CI-B	mg	/kg
Analyte	Result	Re

Analy	zed	By:	AP

ND

Method Blank

ND

ND

Analyzed

08/12/2013

08/11/2013

08/11/2013

Method Blank BS % Recovery True Value QC RPD Qualifier

100

% Recovery

92.6

96.8

Chloride

TPH 8015M mg/kg Analyzed By: MS Reporting Limit Analyte Result Analyzed

1010

<10.0

<10.0

BS

400

185

194

3.92

RPD

3.63

4.57

400

True Value QC

200

200

Qualifier

GRO C6-C10 DRO >C10-C28

Surrogate: 1-Chlorooctane 91.6%

65.2-140

Reporting Limit

16.0

10.0

10.0

Surrogate: 1-Chlorooctadecane

106 %

107%

63.6-154

63.6-154

Sample ID: SB-12 @ 25' (H301856-26)

Chloride, SM4500CI-B	mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	48.0	16.0	08/12/2013	ND	400	100	400	3.92	
TPH 8015M	mg	/kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/11/2013	ND	185	92.6	200	3.63	
DRO >C10-C28	<10.0	10.0	08/11/2013	ND	194	96.8	200	4.57	

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Surrogate: 1-Chlorooctadecane

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08/08/2013

Sampling Date:

08/06/2013

Reported:

08/13/2013

Sampling Type:

Soil

Project Name:

WARREN UNIT #13 INJECTION LINE AD

Sampling Condition:

Cool & Intact

Project Number:

NONE GIVEN

Sample Received By:

Jodi Henson

Project Location:

NOT GIVEN

Sample ID: SB-12 @ 30' (H301856-27)

Chloride, SM4500CI-B Analyte	mg/kg		Analyzed By: AP						
	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	16.0	16.0	08/12/2013	ND	400	100	400	3.92	
TPH 8015M	mg	/kg	Analyze	ed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/11/2013	ND	185	92.6	200	3.63	
DRO >C10-C28	<10.0	10.0	08/11/2013	ND	194	96.8	200	4.57	
Surrogate: 1-Chlorooctane	87.4	% 65.2-14	0						
Surrogate: 1-Chloroctadecane	103	% 63 6-15	4						

Sample ID: SB-13 @ SURFACE (H301856-28)

Chloride, SM4500Cl-B	mg	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0	16.0	08/12/2013	ND .	400	100	400	3.92	
TPH 8015M	mg	/kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/11/2013	ND	185	92.6	200	3.63	
DRO >C10-C28	<10.0	10.0	08/11/2013	ND	194	96.8	200	4.57	
Surrogate: 1-Chlorooctane	87.4	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	103	% 63.6-15	4						

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Received:

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Sampling Date:

08/07/2013

Reported:

Sampling Type:

Soil

Project Name:

08/13/2013

Sampling Condition:

Cool & Intact

Project Number:

NONE GIVEN

Project Location:

NOT GIVEN

Sample Received By:

Jodi Henson

Sample ID: SB-13 @ 30' (H301856-29)

Chloride, SM4500CI-B Analyte	mg/kg		Analyze	Analyzed By: AP					
	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0	16.0	08/12/2013	ND	400	100	400	3.92	
TPH 8015M	mg	/kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/11/2013	ND	185	92.6	200	3.63	
DRO >C10-C28	<10.0	10.0	08/11/2013	ND	194	96.8	200	4.57	
Surrogate: 1-Chlorooctane	91.8	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	108	% 63.6-15	4						

Sample ID: SB-14 @ 5' (H301856-30)

Chloride, SM4500Cl-B	mg	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0	16.0	08/12/2013	ND	400	100	400	3.92	
TPH 8015M	mg	/kg	Analyze	d By: MS					1 12
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/11/2013	ND	185	92.6	200	3.63	
DRO >C10-C28	<10.0	10.0	08/11/2013	ND	194	96.8	200	4.57	
Surrogate: 1-Chlorooctane	83.2	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	99.6	% 63.6-15	4						

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Received:

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Sampling Date:

08/07/2013

Reported:

08/13/2013

Sampling Type:

Soil

Project Name:

WARREN UNIT #13 INJECTION LINE AD

Sampling Condition:

Cool & Intact

Project Number: Project Location: NONE GIVEN **NOT GIVEN**

Sample Received By:

Jodi Henson

Sample ID: SB-14 @ 25' (H301856-31)

Chloride, SM4500CI-B	mg/kg		Analyze	Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0	16.0	08/12/2013	ND	400	100	400	3.92	
TPH 8015M	mg	/kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/11/2013	ND	185	92.6	200	3.63	
DRO >C10-C28	<10.0	10.0	08/11/2013	ND	194	96.8	200	4.57	
Surrogate: 1-Chlorooctane	90.9	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	105	% 63.6-15	4						

Sample ID: SB-14 @ 30' (H301856-32)

Chloride, SM4500CI-B Analyte	mg/kg		Analyzed By: AP						
	Result	Reporting Limit	Analyzed	Method Blank	BS 9	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0	16.0	08/12/2013	ND	400	100	400	3.92	
TPH 8015M	mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/11/2013	ND	185	92.6	200	3.63	
DRO >C10-C28	<10.0	10.0	08/11/2013	ND	194	96.8	200	4.57	
Surrogate: 1-Chlorooctane	88.1	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	107	% 63.6-15	4						

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Sampling Date:

08/07/2013

Reported:

08/13/2013

Sampling Type:

Soil

Project Name:

WARREN UNIT #13 INJECTION LINE AD

Sampling Condition:

Cool & Intact

Project Number:

NONE GIVEN

Sample Received By:

Jodi Henson

Project Location:

NOT GIVEN

Sample ID: SB-15 @ 5' (H301856-33)

Chloride, SM4500CI-B Analyte	mg/kg		Analyzed By: AP						
	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0	16.0	08/12/2013	ND	400	100	400	3.92	
TPH 8015M	mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/11/2013	ND	185	92.6	200	3.63	
DRO >C10-C28	<10.0	10.0	08/11/2013	ND	194	96.8	200	4.57	
Surrogate: 1-Chlorooctane	92.5	% 65.2-14	10						
Surrogate: 1-Chlorooctadecane	106	% 63.6-15	4						

Sample ID: SB-15 @ 25' (H301856-34)

Chloride, SM4500CI-B	mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	5200	16.0	08/12/2013	ND	400	100	400	3.92	
TPH 8015M	mg/kg		Analyzed By: MS						1 1
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/11/2013	ND	185	92.6	200	3.63	
DRO >C10-C28	<10.0	10.0	08/11/2013	ND	194	96.8	200	4.57	
Surrogate: 1-Chlorooctane	88.2	% 65.2-14	0						7
Surrogate: 1-Chlorooctadecane	109	% 63.6-15	4						

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Received:

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Reported:

Sampling Type:

08/13/2013

Soil

Project Name:

WARREN UNIT #13 INJECTION LINE AD

Sampling Condition: Sample Received By:

Cool & Intact Jodi Henson

Project Number: Project Location: NONE GIVEN **NOT GIVEN**

Sample ID: SB-16 @ 5' (H301856-35)

Chloride, SM4500CI-B	mg	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0	16.0	08/12/2013	ND	400	100	400	3.92	
TPH 8015M	mg	/kg	Analyze	d By: DW					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/12/2013	ND	189	94.7	200	1.66	
DRO >C10-C28	<10.0	10.0	08/12/2013	ND	205	103	200	4.93	

Surrogate: 1-Chlorooctane

90.3 %

65.2-140

Surrogate: 1-Chlorooctadecane

110%

63.6-154

Sample ID: SB-16 @ 25' (H301856-36)

Chloride, SM4500CI-B	mg	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1600	16.0	08/12/2013	ND	416	104	400	3.92	
TPH 8015M	mg	/kg	Analyze	d By: DW					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/12/2013	ND	189	94.7	200	1.66	
DRO >C10-C28	<10.0	10.0	08/12/2013	ND	205	103	200	4.93	
Surrogate: 1-Chlorooctane	92.9	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	113	% 63.6-15	4						

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Celey D. Keine

Celey D. Keene, Lab Director/Quality Manager



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Received:

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Sampling Date:

08/07/2013

Reported:

08/13/2013

Sampling Type:

Soil

Project Name:

Sampling Condition:

Cool & Intact

WARREN UNIT #13 INJECTION LINE AD

Sample Received By:

Jodi Henson

Project Number: Project Location: NONE GIVEN

NOT GIVEN

Sample ID: SB-16 @ 30' (H301856-37)

Chloride, SM4500CI-B	mg	/kg	Analyze	d By: AP			4		
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	32.0	16.0	08/12/2013	ND	416	104	400	3.92	
TPH 8015M	mg	/kg	Analyze	d By: DW					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/12/2013	ND	189	94.7	200	1.66	
DRO >C10-C28	<10.0	10.0	08/12/2013	ND	205	103	200	4.93	

Surrogate: 1-Chlorooctane

89.7%

65.2-140

Surrogate: 1-Chlorooctadecane

109%

63.6-154

Sample ID: SB-16 @ 35' (H301856-38)

Chloride, SM4500Cl-B	mg/	kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	64.0	16.0	08/12/2013	ND	416	104	400	3.92	
TPH 8015M	mg/	kg	Analyze	d By: DW					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/12/2013	ND	189	94.7	200	1.66	
DRO >C10-C28	<10.0	10.0	08/12/2013	ND	205	103	200	4.93	
Surrogate: 1-Chlorooctane	92.7 9	65.2-14	0						
Surrogate: 1-Chlorooctadecane	111 %	63.6-15	4						

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Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager



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Fax To:

(575) 397-1471

Received:

08/08/2013

Sampling Date:

08/07/2013

Reported:

08/13/2013

Sampling Type:

Soil

Project Name:

WARREN UNIT #13 INJECTION LINE AD

Sampling Condition:

Cool & Intact

Project Number:

NONE GIVEN

Sample Received By:

Jodi Henson

Project Location:

NOT GIVEN

107%

63.6-154

Sample ID: SB-17 @ 5' (H301856-39)

Chloride, SM4500CI-B		mg	/kg	Analyze	d By: AP					
Analyte		Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	-	96.0	16.0	08/12/2013	ND	416	104	400	3.92	
TPH 8015M		mg	/kg	Analyze	d By: DW					
Analyte		Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10		<10.0	10.0	08/12/2013	ND	189	94.7	200	1.66	
DRO >C10-C28		<10.0	10.0	08/12/2013	ND	205	103	200	4.93	

Sample ID: SB-17 @ 25' (H301856-40)

Surrogate: 1-Chlorooctadecane

Chloride, SM4500CI-B	mg	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	160	16.0	08/12/2013	ND	416	104	400	3.92	
TPH 8015M	mg	/kg	Analyze	d By: DW					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/12/2013	ND	189	94.7	200	1.66	
DRO >C10-C28	<10.0	10.0	08/12/2013	ND	205	103	200	4.93	
Surrogate: 1-Chlorooctane	90.1	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	111	% 63.6-15	4						

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Celey D. Keine



RICE ENVIRONMENTAL CONSULTING & SAFETY HACK CONDER 419 W. CAIN HOBBS NM, 88240

Fax To: (575) 397-1471

Received:

08/08/2013

Sampling Date:

08/07/2013

Reported:

Sampling Type:

Soil

08/13/2013

Sampling Condition:

Cool & Intact

Project Name:

WARREN UNIT #13 INJECTION LINE AD NONE GIVEN

Sample Received By:

Jodi Henson

Project Number:

Project Location: **NOT GIVEN**

Sample ID: SB-17 @ 30' (H301856-41)

Chloride, SM4500CI-B	mg	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	144	16.0	08/12/2013	ND	416	104	400	3.92	
TPH 8015M	mg	/kg	Analyze	d By: DW					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/12/2013	ND	189	94.7	200	1.66	
DRO >C10-C28	<10.0	10.0	08/12/2013	ND	205	103	200	4.93	

Surrogate: 1-Chlorooctane 89.6% 65.2-140 Surrogate: 1-Chlorooctadecane 107% 63.6-154

Sample ID: SB-18 @ 5' (H301856-42)

Chloride, SM4500Cl-B	mg	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0	16.0	08/12/2013	ND	416	104	400	3.92	
TPH 8015M	mg	/kg	Analyze	d By: DW					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/12/2013	ND	189	94.7	200	1.66	
DRO >C10-C28	<10.0	10.0	08/12/2013	ND	205	103	200	4.93	
Surrogate: 1-Chlorooctane	91.0	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	107	% 63.6-15	4						

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Celey D. Keine



RICE ENVIRONMENTAL CONSULTING & SAFETY HACK CONDER 419 W. CAIN HOBBS NM, 88240

Fax To:

(575) 397-1471

Received:

08/08/2013

Sampling Date:

08/07/2013

Reported:

08/13/2013

Sampling Type:

Soil

Project Name:

WARREN UNIT #13 INJECTION LINE AD

Sampling Condition:

Cool & Intact

Project Number:

NONE GIVEN

Sample Received By:

Jodi Henson

Project Location:

NONE GIVEN

NOT GIVEN

Sample ID: SB-18 @ 15' (H301856-43)

Chloride, SM4500CI-B	mg	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1650	16.0	08/12/2013	ND	416	104	400	3.92	
TPH 8015M	mg	/kg	Analyze	d By: DW	1				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/12/2013	ND	189	94.7	200	1.66	
DRO >C10-C28	<10.0	10.0	08/12/2013	ND	205	103	200	4.93	
Surrogate: 1-Chlorooctane	89.2	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	111	% 63.6-15	4						

Sample ID: SB-18 @ 30' (H301856-44)

Chloride, SM4500CI-B	mg	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	112	16.0	08/12/2013	ND	416	104	400	3.92	
TPH 8015M	mg	/kg	Analyze	d By: DW					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/12/2013	ND	189	94.7	200	1.66	
DRO >C10-C28	<10.0	10.0	08/12/2013	ND	205	103	200	4.93	
Surrogate: 1-Chlorooctane	91.2	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	111	% 63.6-15	4						

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Celey D. Keene



RICE ENVIRONMENTAL CONSULTING & SAFETY HACK CONDER 419 W. CAIN HOBBS NM, 88240

Fax To:

(575) 397-1471

Received:

08/08/2013

Sampling Date:

08/07/2013

Reported:

08/13/2013

Sampling Type:

Soil

Project Name:

WARREN UNIT #13 INJECTION LINE AD

Sampling Condition:

Cool & Intact

Project Number:

NONE GIVEN

Sample Received By:

Jodi Henson

Project Location:

NOT GIVEN

Sample ID: SB-18 @ 35' (H301856-45)

Chloride, SM4500CI-B	mg	/kg	Analyze	d By: AP			7		
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	96.0	16.0	08/12/2013	ND	416	104	400	3.92	
TPH 8015M	mg,	/kg	Analyze	d By: DW					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/12/2013	ND	189	94.7	200	1.66	
DRO >C10-C28	11.7	10.0	08/12/2013	ND	205	103	200	4.93	
Surrogate: 1-Chlorooctane	103	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	126	% 63.6-15	4						

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Celey D. Keene



Notes and Definitions

ND Analyte NOT DETECTED at or above the reporting limit

Relative Percent Difference

** Samples not received at proper temperature of 6°C or below.

*** Insufficient time to reach temperature.

RPD

Chloride by SM4500Cl-B does not require samples be received at or below 6°C

Samples reported on an as received basis (wet) unless otherwise noted on report

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Celey D. Keene

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

ARDINAL LABORATORIES

101 East Marland, Hobbs, NM 88240 2111 Beechwood, Abilene, TX 79603

(505) 393-2326 FAX (505) 393-2476 (325) 673-7001 FAX (325)673-7020

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Project Manager	Project Manager: Hack Conder						6			-	P.O. #:	*					-													d			
Address: 419 W. Cain	W. Cain									-	9	Ipa	Company:								10	13			-								
city: Hobbs		State: NM	Zip: 88240	8	24	Ö	1			_	Attn:										ior	OI											
Phone #: 575-393-2967	93-2967	Fax #:								-	dd	Address:	un .		1						\n	7111							_			-	
Project #:		Project Owner:								0	City:		,				3	M		Н	-	SIF											
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Project Location	Project Location: Warren Unit #13 Injection Line AD	njection Line	B							77	ň	Phone #:	7				ric	30	E	_		_	S				-		-			-	
Sampler Name: Kyle Norman	Kyle Norman									70	Fax #:	*					nlo	1 8	BT	_	_	-	11		-				-				
FOR LAB USE ONLY			P.				3	MATRIX	- ×	-	-	- Ä	PRESERV.	13	SAMPLING		CI	PH		Tex	-	,,,					-					-	
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PLEASE NOTE: Liability an analyses. All claims includin service. In no event shall Coaffiliates or successors arisin	PLEASE NOTE: Liability and Damages. Cardinal's lability and client's exclusive remody for any claim string whether based in contract or lott, shall be limited to the amount paid by the client for the nalyses. All claims including those for negligence and any other cause whatsoever shall be deemed walved unless made in writing and received by Cardinal within 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including without similation, unishess interruptions, loss of use, or loss of profits incurred by client, its subsidiaries are successors arising out of or retained to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.	rifs exclusive remedy for any claim arising whether based in or quae whatsoever shall be deemed walved unless made in writi- quental damages, including without fimilation, businees interrupi of services hercunder by Cardinal, regardless of whether such in	heemed without ardinal,	claim arising whether I med waived unless m thout limitation, busine linal, regardless of whe	ed un ation,	hethe busi	made mess i	in w	iting ption	and n	s of L	d by	Cardi Cardi Sany	nal wi	 shall be limited to the amount paid b wed by Cardinal within 30 days after o fuse, or loss of profits incurred by clie ed upon any of the above staled reaso 	y the client for the ompletion of the nt, its subsidiarie ins or otherwise.	applicab	8															,
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Sampler - UPS - Bus - Other:

2 of 5

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

ARDINAL LABORATORIES

101 East Marland, Hobbs, NM 88240 2111 Beechwood, Abilene, TX 79603 (505) 393-2326 FAX (505) 393-2476 (325) 673-7001 FAX (325)673-7020

Delivered By: Sampler - UPS -		Relinquished By:	hore	Relinquished By:	service. In no event shall of the service in the services of successors arising the services of the services of the services.	PLEASE NOTE: Liability a analyses, All claims include	20	P	18	17	<u>ا</u>	15	14	3	12	=	Lab I.D. H <i>3</i> 01856	FOR LAB USE ONLY	Sampler Name: Kyle Norman	Project Location:	Project Name:	Project #:	Phone #: 575-393-2967	City: Hobbs	Address: 419 W. Cain	Project Manager:	Company Name:
Delivered By: (Circle One)		y:	200	y:	all Cardinal be liable for incidental or con- arising out of or related to the performance	PLEASE NOTE: Liability and Damages. Cardinal's liability and citent's exclusive remedy for any dain arising whether based in contract or bort, shall be limited to the amount paid by the client for the analyses. All claims including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within 30 days after completion of the applicable	SB-10 @ 25'	SB-10 @ 20'	SB-10 @ 5'	SB-9 @ 45'	SB-9 @ 40'	SB-9 @ 20'	SB-9 @ 5'	SB-8 @ 25'	SB-8 @ 5'	SB-7 @ 35'	Sample I.D.		Kyle Norman	n: Warren Unit #13 Injection Line AD			93-2967		W. Cain	" Hack Conder	RECS
	Time:	Date:	O P. O	Date 2-8-13	requental damages, including without limitation of services hereunder by Cardinal, regardless	lient's exclusive remedy for an r cause whatsoever shall be d											.b.			Injection Line		Project Owner:	Fax #:	State: NM			
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ARDINAL

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CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

ARDINAL LABORATORIES

101 East Marland, Hobbs, NM 88240 2111 Beechwood, Abilene, TX 79603 (505) 393-2326 FAX (505) 393-2476 (325) 673-7001 FAX (325)673-7020

Company Name:	RECS						5						1	0.70					1	ANALYSIS	LYS		REQUEST	띪	TS					
Project Manager: Hack Conder	Hack Conder									P.O. #:	*												-			-				
Address: 419 W. Cain	N. Cain								_	S	Company:	ny:	19							IS										
city: Hobbs		State: NM	Zip: 88240	88	240					Attn:	17.									on	-		_			_	, (
Phone #: 575-393-2967		Fax#:								Ado	Address:	(n								۱ni				,						
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Sampler Name: Kyle Norman	Kyle Norman									Fax #:	*					nlo	18	BT	xa	C					,					شنبسرة
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9 5 -	and Damages. Cardinal's liability and citent's exclusive remedy for any claim arising whether based in contract or fort, shall be limited to the amount ding those for negligence and any other cause whatsoever shall be deemed walved unless made in writing and received by Cardinal within 30 days. Cardinal be liable for incidental or consequential damages, including whost limitation of whates interruptions, loss of use, or loss of profits incurred the liable for incidental or consequential damages, including whost limitations of whates in incidental to the loss of profits incurred the liable for incidental or consequential damages, including whost limitations of whates in incidental to the loss of the latest limitation of the latest limita	exclusive remedy for any a whatsoever shall be deen tall damages, including when the company is the company in the company is the company in the company in the company in the company is the company in	y claim emed without	waive limital	d unle	ther I	ade in	in cor writin	and and	t or tort, sha d received b loss of use,	shall ed by use, o	ll be limited to y Cardinal with or loss of prof	med to mai we of pro		ount paid by the client for the sys after completion of the applicable red by client, its subsidiaries	applica	ble		- 1											- 1
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Sampler - UPS - Bus - Other:	- Bus - Other:					100 mm	3/	回	8 T			1	建	als)	Lweinheimer	ein	ner@	rice	@rice-ecs.com	COL	3									
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† Cardinal cannot accept verbal changes. Please fax written changes to 505-3950476

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CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

ARDINAL LABORATORIES

101 East Marland, Hobbs, NM 88240 2111 Beechwood, Abilene, TX 79603
(505) 393-2326 FAX (505) 393-2476 (325) 673-7001 FAX (325)673-7020

Company Name:	RECS						П		SENCORN			1,.	17.6	1.770					П	ANALYSIS	SYT		REQUEST	빔	S	-			
Project Manage	Project Manager: Hack Conder						1	1	+	P.O. #:	*														-				
Address: 419 W. Cain	W. Cain								-	Company:	pa	Ŋ.								S					_				
city: Hobbs		State: NM	Zip: 88240	88	24(_	Attn:										on		-				,			
Phone #: 575-393-2967	393-2967	Fax #:							_	Address:	Sel	99								\ni					-				
Project #:		Project Owner:		31 3					0	City:						3	M		Н	s/A									
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Project Location:	n: Warren Unit #13 Injection Line AD	njection Line	AD						_	Phone #:	ne					ric	301	E	s T	atio	os				_	_			-
Sampler Name: Kyle Norman	Kyle Norman		-						_	Fax #:	*					nlo	3 H	ВТ	ka	Ca	-				-				
FOR LAB USE ONLY			P.				MATRIX	_ 2	-	70	- R	PRESERV	- 5	SAMPLING	G	C	Pŀ		Те	te									
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PLEASE NOTE: Liability a analyses. All claims include service. In no event shall confidence of suppressions and	PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any daim arising whether based in contract or tort, shall be limited to the amount paid by the client for the analyses. All claims including those for negigence and any other cause whatsoever shall be deemed waked unless made in writing and received by Cardinal within 30 days after completion of the applicable earlies. All claims including those for negigence and any other cause whatsoever shall be deemed waked unless made in writing and received by Cardinal within 30 days after completion of the applicable earlies. All cardinals is calculated and control of the shall be controlled or consequential damages, including without immation, business interruptions, loss of use, or loss of profits including without a state of the applicable of the controlled or consequential damages, including without immation, business interruptions, loss of use, or loss of profits the applicable of the controlled or consequential damages, including without immation, business interruptions, loss of use, or loss of profits the applicable and the controlled or consequential damages, including without immation, business interruptions, loss of use, or loss of profits in the calculated and the controlled or consequential damages, including without immation, business and received or loss of profits in the calculated or consequential damages, including water of which the controlled or consequential damages, including water of the controlled or controll	ient's exclusive remedy for any claim arising whether based in on cause whateoever shall be deerned walved unless made in writt equentid damages, including without limitation, business internupl e of eardons hereunder by Cartifinal resardiess of whether such a	ny clain deemed without	waive t limita	ng whe	ether t	whether based in counters made in write on, business interrupters of whether such	n cont writing muptio	and r	s of u	shall b	e limit ardin loss o	broth	t or tort, shall be limited to the amount paid by the cilient for the decelved by Cardinal within 30 days after completion of the a loss of use, or loss of profils incurred by dilent, its subsidiaries is heard unon any of the above stated seasons or of the provides is heard unon any of the above stated seasons or of the provides.	amount paid by the client for the 30 days after completion of the a ncurred by dient, its subsidiaries as chaind spacene or officerates	applica	8												
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CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

ARDINAL LABORATORIES
101 East Marland, Hobbs, NM 88240 2111 Beechwood, Abilene, TX 79603

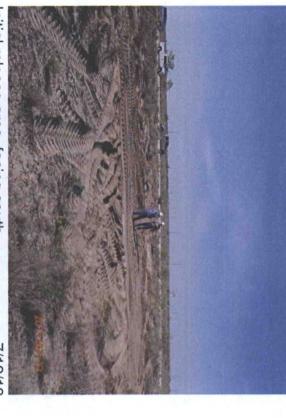
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Company Name:	e: RECS											9					A	ANALYSIS		REQUEST	EST				
Project Manage	Project Manager: Hack Conder							0	P.O. #:					-		_	-	-	_	-	_	L	L	_	
Address: 419 W. Cain	W. Cain							ပိ	Company:	any:							-	SI	-						
city: Hobbs	State: NM	Zip	Zip: 88240	324	0			At	Attn:									10			-				
Phone #: 575-393-2967	.393-2967 Fax#:							A	Address:	99		1			,			u\					-		
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Project Locatio	Project Location: Warren Unit #13 Injection Line AD	AD						ā	Phone #:	#			Ī			3.	_	_	SC						
Sampler Name: Kyle Norman	: Kyle Norman							T	Fax#:				_	-	-	-		-	11		-				
FOR LAB USE ONLY		L		L		MATRIX	XX		PR	PRESERV.	L	SAMPLING	Ī	-	_	-	_	Ð					-		
		C)OMP.		Name and Address of the Owner, where the Owner, which is											1			plet				9			
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39	SB-17 @ 5'		-			>				>	8/7/13		06:30	>	`					_					
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jkamplain@rice-ecs.com; hconder@rice-ecs.com; Lweinheimer@rice-ecs.com Knorman@rice-ecs.com email results: Phone Result: Fax Result: REMARKS: Time: Sampler - UPS - Bus - Other: Delivered By: (Circle One)

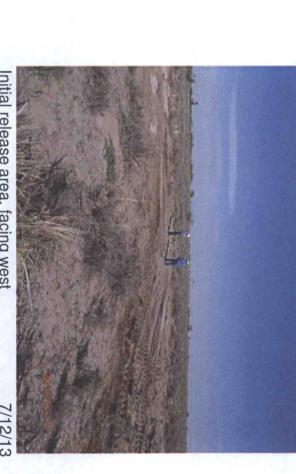
+ Cardinal cannot accept verbal changes. Please fax written changes to 505-393-9476

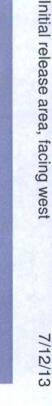
Conoco Phillips Warren Unit #13 Injection Line AD Unit Letter N, Section 34, T20S, R38E

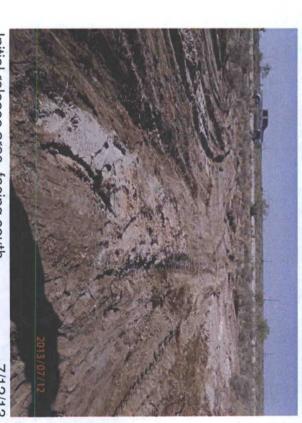


Initial release area, facing south

7/12/13







Initial release area, facing south

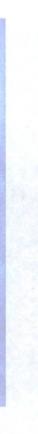
7/12/13

Initial release area, facing northeast

7/12/13



Installing vertical #1, facing west



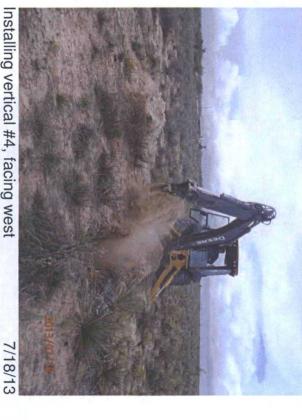


Import caliche to build surface for soil bore installations facing, west 7/18/13

Installing vertical #3, facing west



7/18/13



Installing vertical #4, facing west





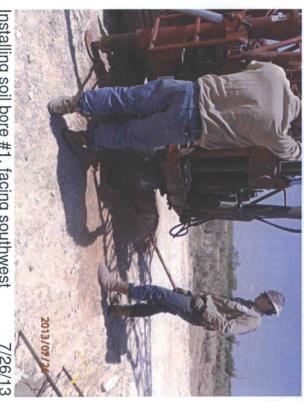
7/18/13

Installing vertical #7, facing south



Installing vertical #5, facing north



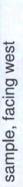


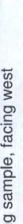
Installing soil bore #1, facing southwest

7/26/13

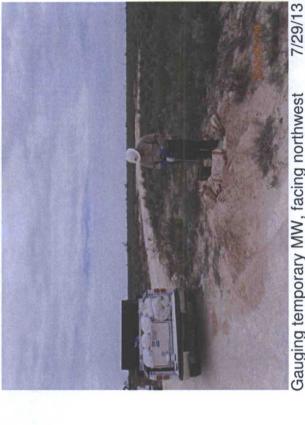


Collecting sample, facing west









Gauging temporary MW, facing northwest

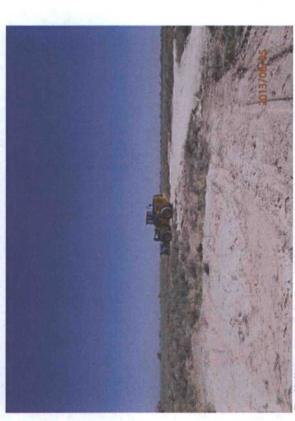
7/26/13

Installing temporary MW, facing east

2013/07/26



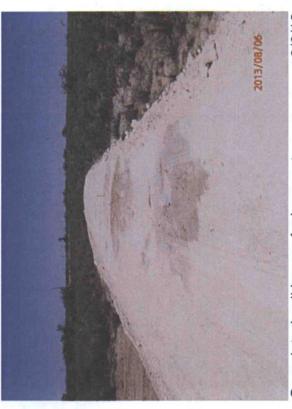
Plugging temporary MW in total with bentonite, facing southwest



Building road for additional soil bore installations, 8/5/13 facing west



7/29/13 Completed temporary MW, facing northwest



Completed soil bores, facing west

8/6/13