1R - 425-67

WORKPLANS

Date:
10-26-10

Hansen, Edward J., EMNRD

From: Katie Jones [kjones@riceswd.com]
Sent: Wednesday, December 22, 2010 3:42 PM
To: Hansen, Edward J., EMNRD
Cc: Hack Conder; lpg@texerra.com
Subject: Vacuum F-34 boot (1R425-67) Notification of GW Impact Addendum
Attachments: Vacuum F-34 boot proposed double liner.jpg; Vacuum F-34 soil bore information.jpg

Mr. Hansen:

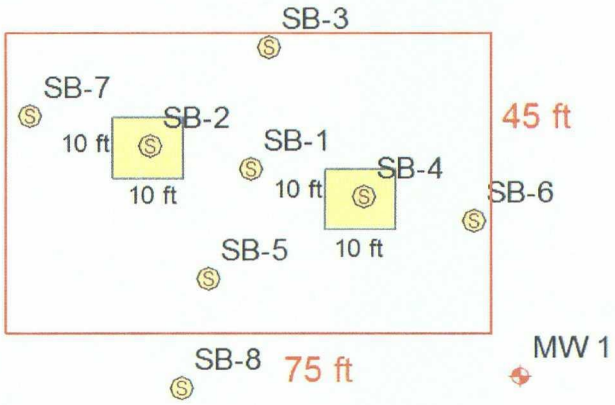
The following is an Addendum to the Vacuum F-34 boot (1R425-67) Notification of GW Impact submitted to the NMOCD on October 26, 2010. Page 1, paragraph 2; red lettering will be deleted from the paragraph and blue lettering should be added to the paragraph. Attached is a map of the proposed liner dimensions and the previously proposed liner dimensions along with the soil data. If you need any other information, please let me or Hack Conder know.

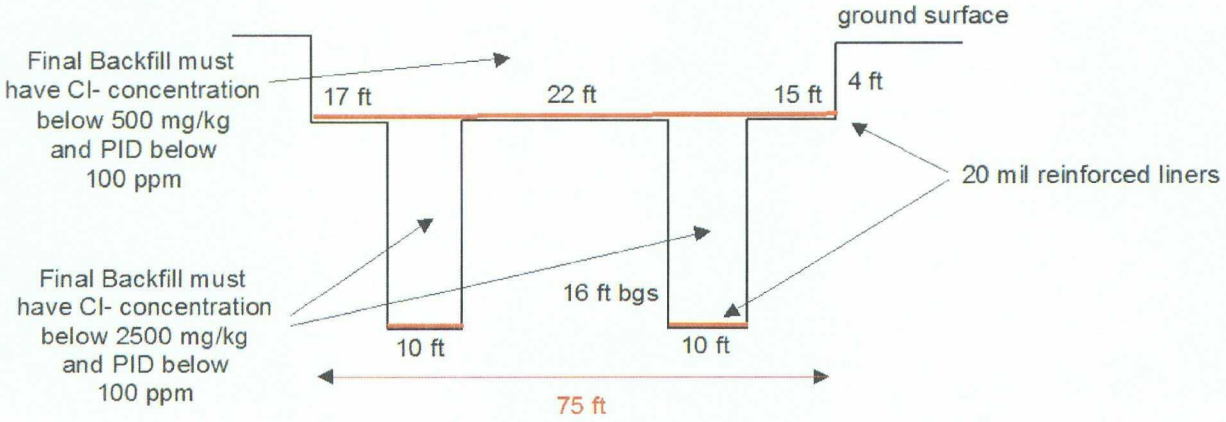
"ROC will install additional monitor wells to further delineate groundwater quality. Since the results of our initial field work indicated the need for this, we also plan to install a ~~75x41~~ 10x10 ft synthetic liner at ~~4-5~~ 10 ft below ground surface centered around SB-2 and SB-4 (as shown in the attached figure). Soil with a chloride concentration of no more than ~~500~~2,500 mg/kg and a PID field screening of less than 100 ppm will be used to backfill over these liners. A second, 75x45 ft synthetic liner will be installed approximately 4 ft below ground surface. Soil with a chloride concentration of no more than 500 mg/kg and a PID field screening of less than 100 ppm will be used to backfill over this liner. The site will then be seeded with an appropriate mix of native vegetation. A synthetic liner installed below the root zone will inhibit downward migration of water, slowing the movement of chloride through the vadose zone. Upon completion of this work, ROC will compile groundwater and soil bore analysis data and prepare and submit an ICP report. A Corrective Action Plan will also be submitted if our findings warrant this."

Thank you.

Katie Jones
Environmental Project Coordinator
RICE *Operating Company*

Excavation Map





RICE ENVIRONMENTAL CONSULTING & SAFETY, LLC

Vacuum F-34 boot

Legals: UL/F sec. 34
T17S R35E
NMOCD Case #: 1R425-67

N
W E
S

Not to Scale

Drawing date:11-12-10
Drafted by: L. Weinheimer

Soil Bore Information

SB-3

Depth	Cl-	PID	LAB Cl-	GRO	DRO	B	T	E	X
5	206	15.6							
10	172	392.6	96	93.4	1050	<0.05	0.282	4.4	5.49
15	170	153.7							
20	175	268.5							
25	234	7.2							
30	204	6.9							
35	265	3.0							
40	228	2.4							
45	204	2.2	32	<10	<10				

SB-1

Depth	Cl-	LAB Cl-	GRO	DRO
15	515			
20	362			
25	529			
30	883			
35	1433			
40	2406			
45	2473			
50	3443			
55	4379			
60	4571	4560	<10	<10
65	1515			
70	390	320	<10	<10

SB-7

Depth	Cl-	LAB Cl-	GRO	DRO
5	879			
10	1366	1300	<10	<10
15	849			
20	363			
25	209	112	<10	<10

SB-2

Depth	Cl-	LAB Cl-	GRO	DRO
5	1932			
10	6636			
15	8743	10200	<10	<10
20	2381			
25	5126			
30	3724			
35	3430			
40	3049			
45	2932			
50	3711			
55	3257			
60	2438			
65	1114			
70	299	272	<10	<10

SB-6

Depth	Cl-	LAB Cl-	GRO	DRO
5	1037			
10	2036	1960	<10	<10
15	1763			
20	568			
25	531			
30	330			
35	257			
40	181	128	<10	<10

SB-5

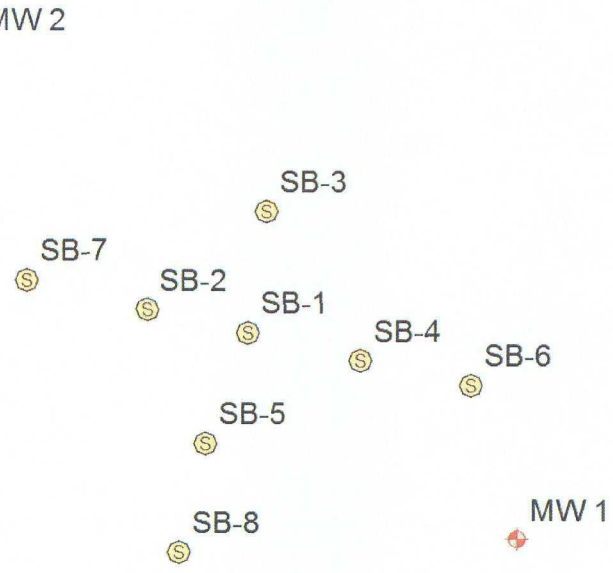
Depth	Cl-	LAB Cl-	GRO	DRO
5	322			
10	479			
15	598			
20	391			
25	1357	1300	<10	<10
30	1192			
35	1064			
40	1039			
45	1200			
50	1212			
55	1240			
60	1232			
65	1226	1150	<10	<10

SB-8

Depth	Cl-	LAB Cl-	GRO	DRO
5	232	16	<10	125
10	201			
15	208			
20	141	80	<10	<10

SB-4

Depth	Cl-	LAB Cl-	GRO	DRO
5	3882			
10	3977			
15	6178	6800	<10	<10
20	5067			
25	3863			
30	3785			
35	3551			
40	3292			
45	3009			
50	4230			
55	3462			
60	3298			
65	3420	3440	<10	65.2



RICE ENVIRONMENTAL CONSULTING & SAFETY, LLC — RECS

Vacuum F-34 boot

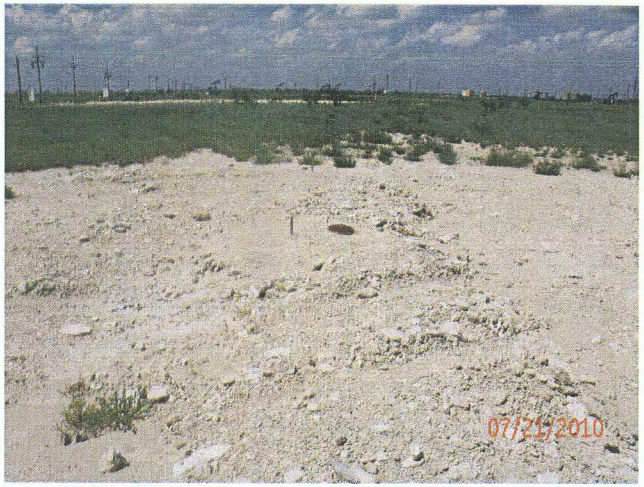
Legals: UL/F sec. 34
T17S R35E
NMOCD Case #: 1R425-67

N W E S

0 12.5 25 50 Feet

Drawing date:9-24-10
Drafted by: L. Weinheimer

Vacuum F-34 boot (1R425-67)



Facing North

Facing South

Facing East

Facing West

Vacuum F-34 boot (1R425-67)

Facing West

Hansen, Edward J., EMNRD

From: Katie Jones [kjones@riceswd.com]
Sent: Wednesday, November 03, 2010 8:14 AM
To: Hansen, Edward J., EMNRD
Cc: Hack Conder; lpg@texerra.com
Subject: Vacuum F-34 boot (1R425-67) Proposed Liner
Attachments: Vacuum F-34 soil bore information.jpg

Mr. Hansen,

Hack asked that I submit this proposed liner for the Vacuum F-34 boot (1R425-67) site, in response to your conversation earlier this week. If you have any questions or require any further information, please contact Hack at (575)631-6432 or myself at (575)393-9174.

Thank you.

Katie Jones
Environmental Project Coordinator
RICE *Operating Company*

Soil Bore Information and Proposed Infiltration Barrier

SB-1

Depth	Cl-	LAB Cl-	GRO	DRO
15	515			
20	362			
25	529			
30	883			
35	1433			
40	2406			
45	2473			
50	3443			
55	4379			
60	4571	4560	<10	<10
65	1515			
70	390	320	<10	<10

SB-2

Depth	Cl-	LAB Cl-	GRO	DRO
5	1932			
10	6636			
15	8743	10200	<10	<10
20	2381			
25	5126			
30	3724			
35	3430			
40	3049			
45	2932			
50	3711			
55	3257			
60	2438			
65	1114			
70	299	272	<10	<10

SB-3

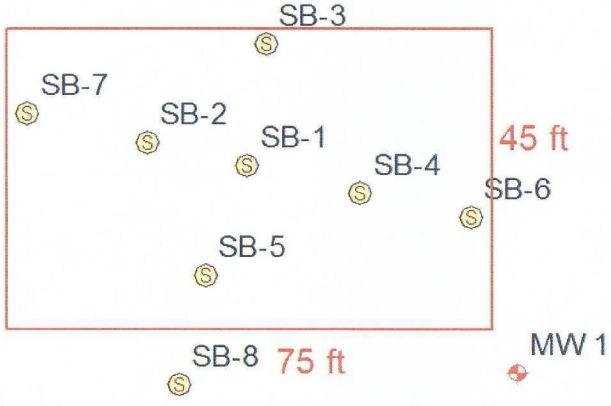
Depth	Cl-	PID	LAB Cl-	GRO	DRO	B	T	E	X
5	206	15.6							
10	172	392.6	96	93.4	1050	<0.05	0.282	4.4	5.49
15	170	153.7							
20	175	268.5							
25	234	7.2							
30	204	6.9							
35	265	3.0							
40	228	2.4							
45	204	2.2	32	<10	<10				

SB-4

Depth	Cl-	LAB Cl-	GRO	DRO
5	3882			
10	3977			
15	6178	6800	<10	<10
20	5067			
25	3863			
30	3785			
35	3551			
40	3292			
45	3009			
50	4230			
55	3462			
60	3298			
65	3420	3440	<10	<10

SB-5

Depth	Cl-	LAB Cl-	GRO	DRO
5	322			
10	479			
15	598			
20	391			
25	1357	1300	<10	<10
30	1192			
35	1064			
40	1039			
45	1200			
50	1212			
55	1240			
60	1232			
65	1226	1150	<10	<10



SB-6

Depth	Cl-	LAB Cl-	GRO	DRO
5	1037			
10	2036	1960	<10	<10
15	1763			
20	568			
25	531			
30	330			
35	257			
40	181	128	<10	<10

SB-7

Depth	Cl-	LAB Cl-	GRO	DRO
5	879			
10	1365	1300	<10	<10
15	849			
20	363			
25	209	112	<10	<10

SB-8

Depth	Cl-	LAB Cl-	GRO	DRO
5	232	16	<10	125
10	201			
15	208			
20	141	80	<10	<10

RICE ENVIRONMENTAL CONSULTING & SAFETY, LLC

RECS

Vacuum F-34 boot

Legals: UL/F sec. 34
T17S R35E
NMOCD Case #: 1R425-67

N
W E
S

0 12.5 25 50
Feet

Drawing date:9-24-10
Drafted by: L. Weinheimer

L. Peter Galusky, Jr. Ph.D., P.G.
Texerra
75 Wuthering Hts Drive Colorado Springs, CO 80921
Tel: 917-339-6791 E-mail: lpg@texerra.com

October 26th, 2010

Mr. Edward Hansen
New Mexico Energy, Minerals, & Natural Resources
Oil Conservation Division, Environmental Bureau
1220 S. St. Francis Drive
Santa Fe, New Mexico 87505

Re: **Notification of Groundwater Impact**
Rice Operating Company – Vacuum SWD System
Vacuum F-34 Boot UL F, Sect 34, Township 17S, Range 35E
NMOCD Case Number 1R425-67

Sent via E-mail and U.S. Mail Certified Return Receipt No. 7006 0100 0001 2438 4033

Mr. Hansen:

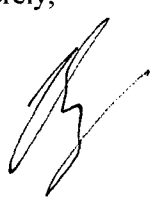
Soil and groundwater samples were taken as prescribed in the Investigation and Characterization Plan (ICP) for Rice Operating Company's Vacuum F-34 Boot project (Figure 1). Soil samples taken at and near the former boot location indicated substantially elevated soil chloride levels at depth (Figure 2). Groundwater samples taken from a near-source down-gradient monitor well tested 940 ppm and 1,040 ppm Cl- on May 28th and July 27th, respectively , whereas dissolved hydrocarbons (as BTEX) were not detected in either sampling event (Table 1 and Appendices).

ROC will install additional monitor wells to further delineate groundwater quality. Since the results of our initial field work indicated the need for this, we also plan to install a 75x41 ft synthetic liner at 4-5 ft below ground surface (as shown in Figure 2). Soil with a chloride concentration of no more than 500 mg/kg and a PID field screening of less than 100 ppm will be used to backfill over the liner. The site will then be seeded with an appropriate mix of native vegetation. A synthetic liner installed below the root zone will inhibit downward migration of water, slowing the movement of chloride through the vadose zone. Upon completion of this work, ROC will compile groundwater and soil bore analysis data and prepare and submit an ICP report. A Corrective Action Plan will also be submitted if our findings warrant this.

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

Please call either myself or Hack Conder of Rice Operating Company if you have any questions or wish to discuss this matter. Thank you for your consideration.

Sincerely,



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

Vacuum F-34 Boot

Copy: Rice Operating Company

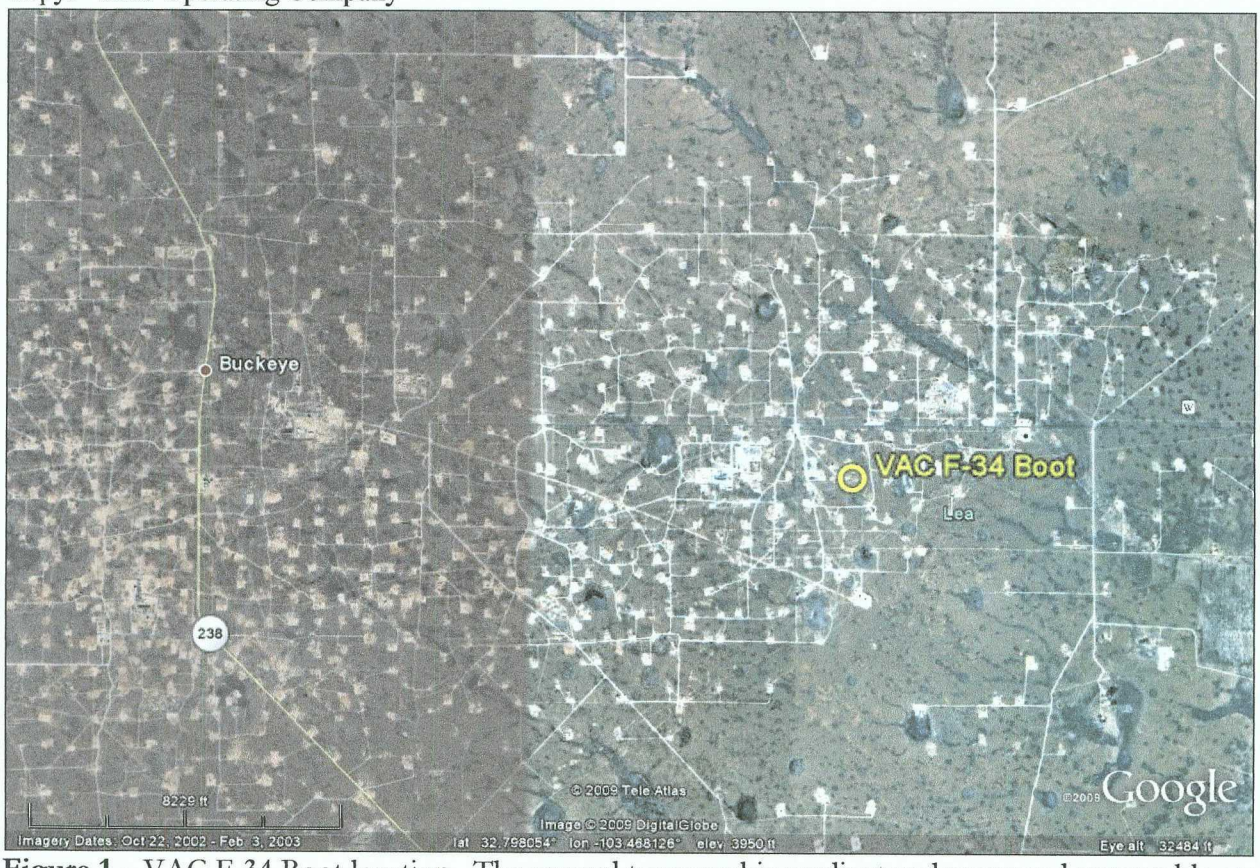


Figure 1 – VAC F-34 Boot location. The general topographic gradient and presumed water table gradient is toward the southeast.

Soil Bore Information and Proposed Infiltration Barrier

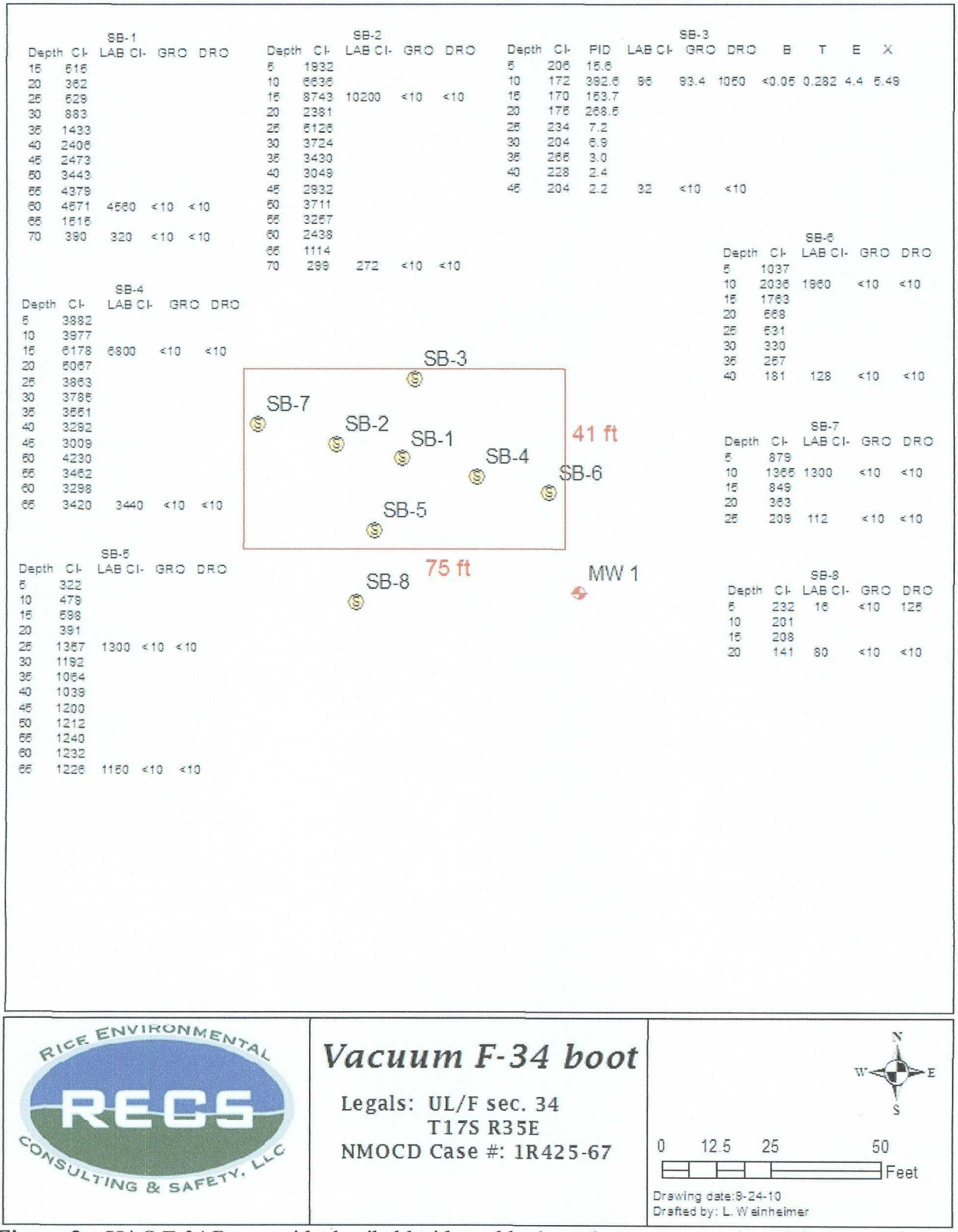


Figure 2 – VAC F-34 Boot residual soil chloride and hydrocarbon concentrations. The approximate sub-surface footprint of the proposed infiltration barrier is outlined in red.

Vacuum F-34 Boot

Table 1 – Groundwater chloride concentrations in a near-source, down-gradient monitor well at VAC F-34 Boot.

Date	Cl- conc. (mg/kg)	TDS (mg/kg)	Sulfate (mg/kg)	Total BTEX (mg/kg)
5/28/10	940	2,030	91.0	ND
7/27/10	1,040	2,130	99.1	ND

Appendix – Laboratory Reports

CARDINAL LABORATORIES

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

ANALYTICAL RESULTS FOR
RICE OPERATING COMPANY
ATTN: HACK CONDER
112 W. TAYLOR
HOBBS, NM 88240

Receiving Date: 04/21/10
Reporting Date: 04/30/10**
Project Number: NOT GIVEN
Project Name: VACUUM F-34 VENT
Project Location: VACUUM F-34 VENT

Sampling Date: 04/19/10 & 04/20/10
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: JH
Analyzed By: AB/HM

LAB NUMBER	SAMPLE ID	GRO (C_6-C_{10}) (mg/kg)	DRO (>C_{10}-C_{28}) (mg/kg)	Cl* (mg/kg)
ANALYSIS DATE		04/22/10	04/22/10	04/21/10
H19714-1	SB-1 @ 60'	<10.0	<10.0	4,560
H19714-2	SB-1 @ 70'	<10.0	<10.0	320
H19714-3	SB-2 @ 15'	<10.0	<10.0	10,200
H19714-4	SB-2 @ 70'	<10.0	<10.0	272
H19714-5	SB-3 @ 10'	93.4	1,050	96
H19714-6	SB-3 @ 45'	<10.0	<10.0	32
H19714-7	SB-4 @ 15'	<10.0	<10.0	6,800
H19714-8	SB-4 @ 65' **	<10.0	65.2	3,440
H19714-9	SB-5 @ 25'	<10.0	<10.0	1,300
H19714-10	SB-5 @ 65'	<10.0	<10.0	1,150
Quality Control		537	564	500
True Value QC		500	500	500
% Recovery		107	113	100
Relative Percent Difference		1.8	8.3	< 0.1

METHODS: TPH GRO & DRO: EPA SW-846 8015 M; Cl: Std. Methods 4500-ClˉB
*Analyses performed on 1:4 w:v aqueous extracts.
Reported on wet weight.
**Revised Report.

Chemist

04/30/10
Date

Appendix A-1 - VAC F-34 Boot laboratory confirmation of field-measured residual soil chloride and hydrocarbon concentrations.

Vacuum F-34 Boot

ARDINAL LABORATORIES

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

ANALYTICAL RESULTS FOR
RICE OPERATING COMPANY
ATTN: HACK CONDER
112 WEST TAYLOR
HOBBS, NM 88240
FAX TO: (575) 397-1471

Receiving Date: 06/01/10
Reporting Date: 06/03/10
Project Number: NOT GIVEN
Project Name: VACUUM F-34 VENT
Project Location: T17S-R35E-SEC34 F ~ LEA COUNTY, NM

Sampling Date: 05/28/10
Sample Type: WATER
Sample Condition: COOL & INTACT
Sample Received By: HM
Analyzed By: HM

LAB NO.	SAMPLE ID	Cl^- (mg/L)	SO_4 (mg/L)	TDS (mg/L)
Analysis Date:		06/03/10	06/02/10	06/01/10
H20006-1	MONITOR WELL #1	940	91.0	2,030
Quality Control		500	40.8	NR
True Value QC		500	40.0	NR
% Recovery		100	102	NR
Relative Percent Difference		< 0.1	3.6	6.6
METHOD: Standard Methods, EPA		4500-ClB	375.4	160.1

Not accredited for Chloride, Sulfate and TDS.

Chemist

Date

Appendix A-2a - VAC F-34 Boot laboratory analysis of groundwater sample taken on 05/28/10: inorganics.

Vacuum F-34 Boot

CARDINAL LABORATORIES

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

ANALYTICAL RESULTS FOR
RICE OPERATING COMPANY
ATTN: HACK CONDER
112 W. TAYLOR
HOBBS, NM 88240
FAX TO: (575) 397-1471

Receiving Date: 06/01/10
Reporting Date: 06/03/10
Project Number: NOT GIVEN
Project Name: VACUUM F-34 VENT
Project Location: T17S-R35E-SEC34 F~ LEA CO., NM

Sampling Date: 05/28/10
Sample Type: WATER
Sample Condition: COOL & INTACT
Sample Received By: HM
Analyzed By: ZL

LAB NUMBE SAMPLE ID	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL BENZENE (mg/L)	TOTAL XYLENES (mg/L)
ANALYSIS DATE	06/02/10	06/02/10	06/02/10	06/02/10
H20006-1 MONITOR WELL #1	<0.001	<0.001	<0.001	<0.003
Quality Control	0.018	0.018	0.017	0.053
True Value QC	0.020	0.020	0.020	0.060
% Recovery	90.0	90.0	85.0	88.3
Relative Percent Difference	15.5	15.6	16.2	17.5

METHOD: EPA SW-846 8021B

TEXAS NELAP ACCREDITATION T104704398-08-TX FOR BENZENE, TOLUENE, ETHYL BENZENE, AND TOTAL XYLENES.

Chemist

06/04/10
Date

Appendix A-2b - VAC F-34 Boot laboratory analysis of groundwater sample taken on 05/28/10: organics.

Vacuum F-34 Boot

CARDINAL Laboratories

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

Analytical Results For:

Rice Operating Company
Hack Conder
112 W. Taylor
Hobbs NM, 88240
Fax To: (575) 397-1471

Received:	07/30/2010	Sampling Date:	07/27/2010
Reported:	08/10/2010	Sampling Type:	Water
Project Name:	VACUUM F-34 VENT	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Jodi Henson
Project Location:	T17S-R35E-SEC34 F - LEA COUNTY, NM		

Sample ID: MONITOR WELL #1 (H020477-01)

BTEX 8021B — mg/L — Analyzed By: ZL

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.001	0.001	08/02/2010	ND	0.011	114	0.0100	2.27	
Toluene*	<0.001	0.001	08/02/2010	ND	0.011	114	0.0100	1.26	
Ethylbenzene*	<0.001	0.001	08/02/2010	ND	0.011	113	0.0100	1.96	
Total Xylenes*	<0.003	0.003	08/02/2010	ND	0.034	112	0.0300	2.62	
Surrogate: 4-Bromofluorobenzene (PIL	*92.7 %*	*80-120*							

Chloride, SM4500Cl-B — mg/L — Analyzed By: HM

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**1040**	4.00	08/06/2010	ND	112	112	100	3.64	

Sulfate 375.4 — mg/L — Analyzed By: HM

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate	**99.1**	10.0	08/06/2010	ND	39.2	98.0	40.0	0.405	

TDS 160.1 — mg/L — Analyzed By: HM

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS	**2130**	5.00	08/02/2010	ND				6.20	

Cardinal Laboratories — *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

Appendix A-3 - VAC F-34 Boot laboratory analysis of groundwater sample taken on 07/11/10: inorganics and organics.