AP - 58

STAGE 1 & 2 WORKPLANS

Amended

DATE: 4-24-08

Hansen, Edward J., EMNRD

From: Hack Conder [hconder@riceswd.com]
Sent: Tuesday, February 03, 2009 6:36 PM
To: Hansen, Edward J., EMNRD
Cc: 'Marvin Burrows'; 'Katie Jones'
Subject: AP ~~48~~ 58 Addendum Section 7.2

Ed,

I am requesting an addendum to the Stage one and two abatement plan for AP ~~48~~ 58 Santa Rita Release Site. There are two correction In section 7.2 I would like to make the first is on page 13, paragraph three and page fifteen, paragraph five these paragraph should read as follows.

Page Thirteen, Paragraph Three:

If the characterization program shows that groundwater at this site exceeds 3,000 mg/L TDS, this plan proposes a 3-month source removal and test pumping program. The purpose of this pumping program is to determine if groundwater may be restored within a short time and to assist in the evaluation of groundwater abatement alternatives. Water from the recovery well will be stored on site for use in pipeline maintenance operations.

Page Fifteen , Paragraph Five:

If a pump-and-use groundwater restoration program is not feasible, the evaluation of alternative abatement options will be sought in conjunction with a groundwater monitoring program requiring NMOCD approval.

If you have any qeustions or concerns please contact me.

Thanks
Hack Conder.
Environmental Manager
Rice Operating Company
575-393-9174
Fax 575-397-1471

Hansen, Edward J., EMNRD

From: Hack Conder [hconder@riceswd.com]
Sent: Tuesday, January 20, 2009 5:36 PM
To: Hansen, Edward J., EMNRD
Subject: FW: BD Santa Rita EOL Release Site (AP-58) - modification to Amended Stage 2 Abatement Plan
Attachments: SREOL ASAP_Modified 7-1_maps.pdf

Here is the information on AP 58 let me know what you think.

Thanks

Hack Conder
Environmental Manager
Rice Operating Company
575-393-9174
Fax 575-397-1471

From: Gil Van Deventer [mailto:gilbertvandeventer@suddenlink.net]
Sent: Friday, September 26, 2008 2:06 PM
To: Hansen, Edward J., EMNRD
Cc: Chris Williams; Marvin Burrows; Haskell Conder
Subject: BD Santa Rita EOL Release Site (AP-58) - modification to Amended Stage 2 Abatement Plan

Hello Edward

Below is the modification to section 7.1 (*Corrective Action to the Vadose Zone*) of the *Amended Stage 2 Abatement Plan* (section 7.0) for the BD Santa Rita EOL Release Site (AP-58). This modified section is based on verbal agreements made by and between Rice Operating Company (ROC) and the landowner. A Soil Sample Map (Figure 1) and Excavation and Backfill Plan (Figure 2) are attached as well.

7.0 AMENDED STAGE 2 ABATEMENT PLAN

7.1 Corrective Action to the Vadose Zone

Remediation of the vadose zone will be conducted by excavation, backfilling, and installation of a clay layer in the vicinity of the actual leak as further delineated (chloride field testing) during recent backhoe sampling between July 29, 2008 and August 5, 2008. Results of the recent sampling activities and those conducted during the installation of the monitoring wells are shown on the attached site map (Figure 1). The excavation will extend 40 ft wide by 20 ft long. The excavation will proceed to an expected depth of 30 feet below ground surface (ft bgs) and a maximum depth of 40 ft bgs dependent on confirmation of declining chloride concentrations with depth. A 20 ft wide by 30 ft long access ramp will also be utilized for access by heavy equipment. The excavation will be backfilled with imported soil up to a depth of 12 ft bgs followed by a one-ft thick clay layer which will be laid to a grade that will direct any infiltrated precipitation away from the spill area. Additional imported soil will then be used to backfill over the clay layer to a depth of 2 ft bgs. The ramped area will be backfilled with blended soil such that chloride concentrations are less than 500 mg/kg. A final 2-ft thick layer of imported topsoil will be placed above the final backfill layer such that a slight mound is constructed to direct excess precipitation from the spill area. Native grass seed will be broadcast for re-vegetation, and the site will be monitored for plant growth. The goal will be to re-vegetate the site to approximately 70% of the ground cover as observed in adjacent areas not affected by the release. Figure 2 depicts a cross-section (vertical profile) and plan view of the excavation and backfill plan.

No modifications to section 7.2 (Corrective Action to the Groundwater) are anticipated with the exception of the necessary removal of monitoring well MW-1 during the course of excavation. The well will be plugged and abandoned in accordance with NMOSE requirements. Replacement of MW-1 is not necessary because chloride and TDS levels in MW-1 have

steadily declined and stabilized to near background concentrations. Furthermore, monitoring well MW-3 now serves as the most impacted monitoring point and is nearest to the center of chloride mass in groundwater.

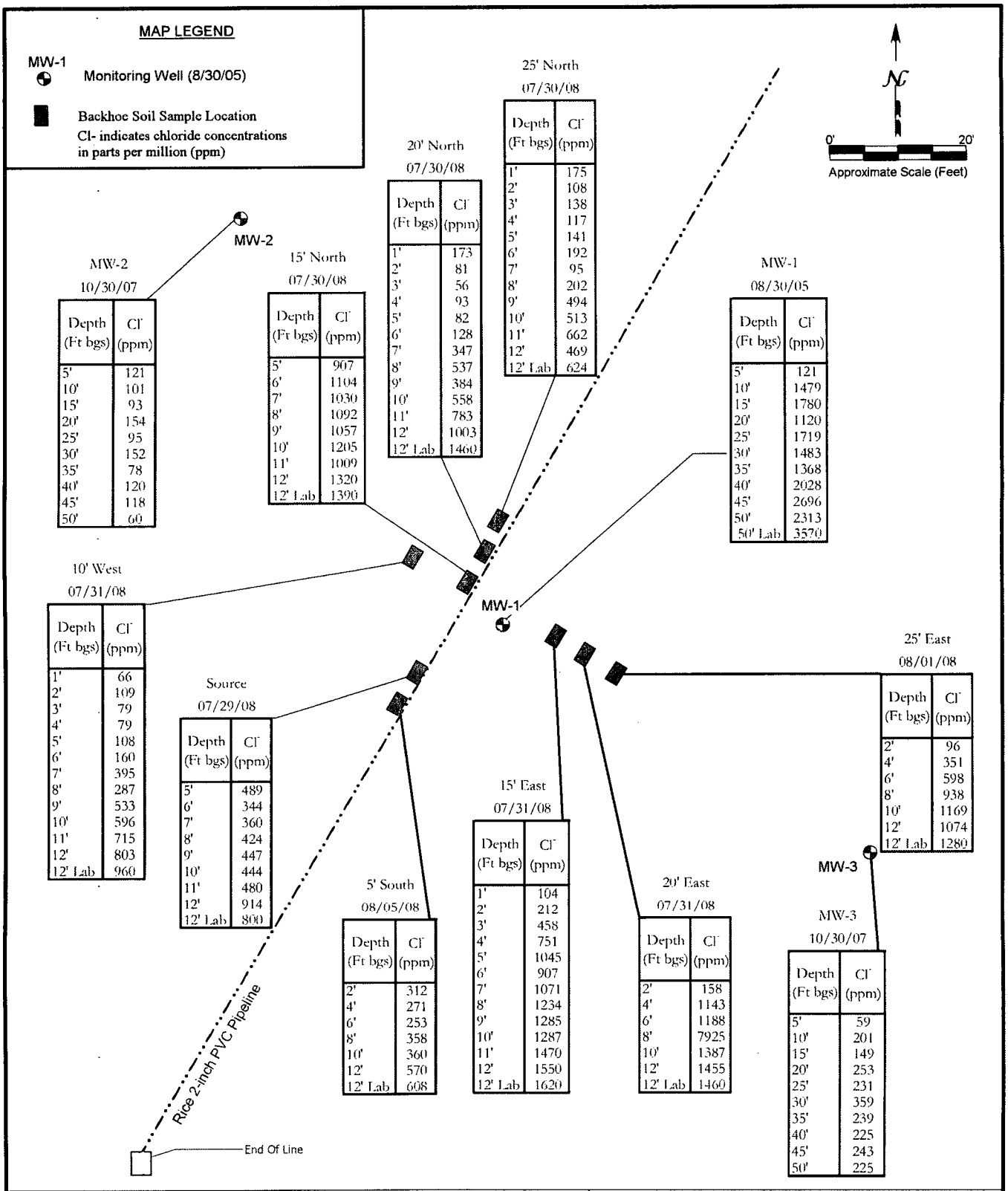
The entire section of the ROC 2-inch SWD pipeline (PVC and A/C) has been replaced with 4-inch poly line.

If you have any questions regarding this modification please call Hack Conder at 505-393-9174.

Thank you,
Gil

cc: Hack Conder (ROC), Marvin Burrows (ROC), Chris Williams (NMOCD - District 1)

Gilbert J. Van Deventer, PG, REM
Trident Environmental
P. O. Box 7624, Midland TX 79708
Work/Mobile: 432-638-8740
Fax: 413-403-9968
Home: 432-682-0727



TRIDENT ENVIRONMENTAL

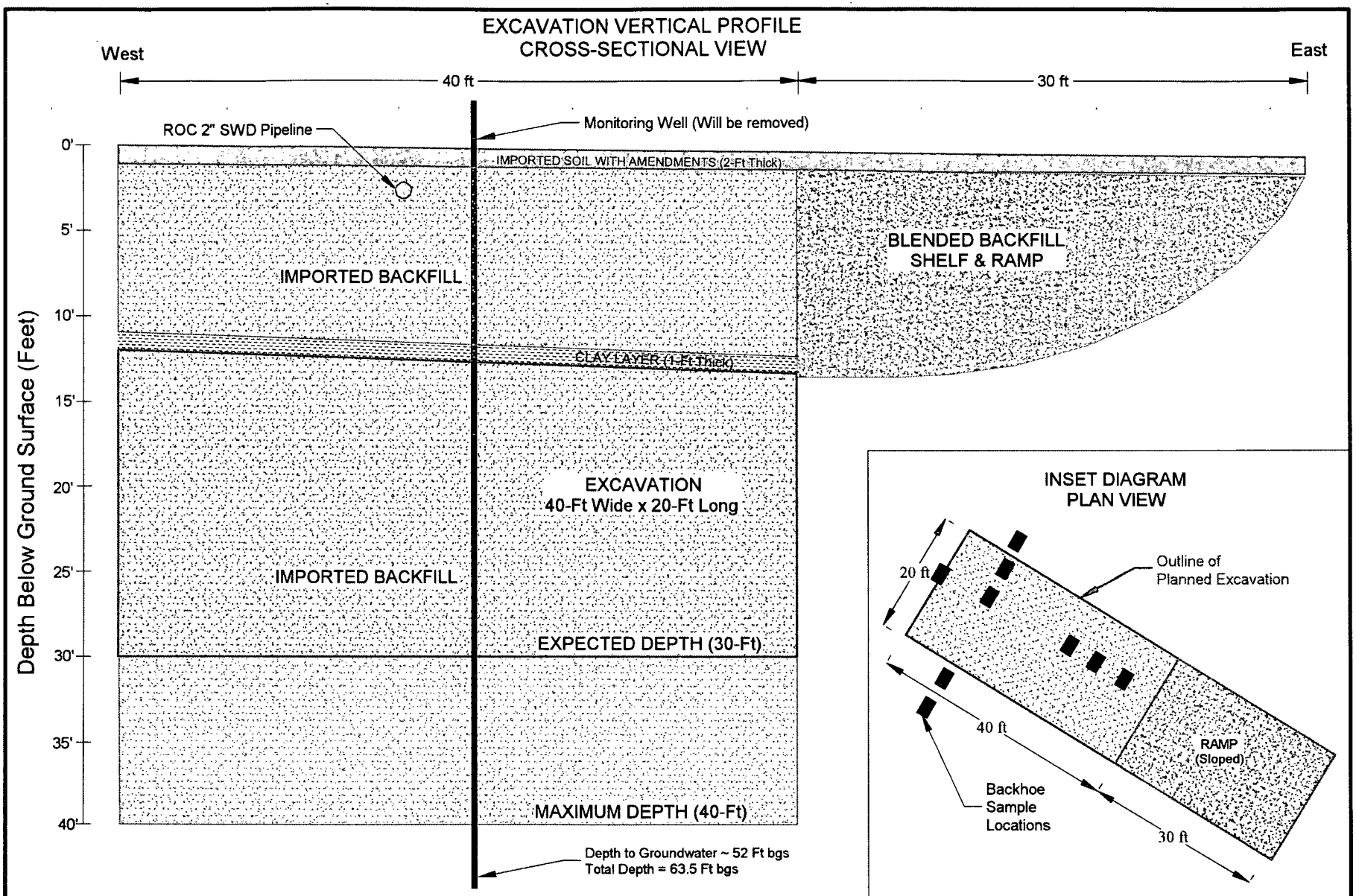
BD Santa Rita EOL Release Site

T22S - R37E - Section 27, Unit A

RICE Operating Company

FIGURE 1

SOIL SAMPLING RESULTS (July 29 - August 5, 2008)



TRIDENT ENVIRONMENTAL

BD Santa Rita EOL Release Site
T22S - R37E - Section 27, Unit A
RICE *Operating Company*

FIGURE 2

EXCAVATION AND BACKFILL PLAN

Gil Van Deventer

From: "Gil Van Deventer" <gilbertvandeventer@suddenlink.net>
To: "Hansen, Edward J., EMNRD" <edwardj.hansen@state.nm.us>
Cc: "Kristin Pope" <kpope@riceswd.com>
Sent: Thursday, April 24, 2008 3:10 PM
Attach: Amended Stage12AP_xmit_ltr_SREOL_final.pdf; SREOL_Amended_S12AP.pdf
Subject: Amended Stage 1 & 2 Abatement Plan for the BD Santa Rita EOL Release Site (AP-58)

Subject: Amended Stage 1 & 2 Abatement Plan

Site Name: BD Santa Rita EOL Release Site (AP-58)

Site Location: T22S - R37E - Section 27, Unit Letter A

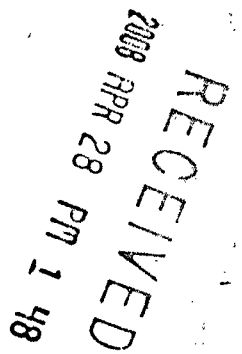
Site Agent: RICE Operating Company

Hello Edward:

Trident Environmental is pleased to submit the attached *Amended Stage 1 & 2 Abatement Plan* (AP-58) for the above-referenced site. One complete hard copy and one copy on compact disk is also being sent today via USPS Certified Mail (# 7099 3400 0017 1737 2060). A copy will be hand delivered to the NMOCD District 1 office in Hobbs next week.

If you have any questions, please contact me at 432-638-8740, or Kristin Pope at ROC, 505-393-9174.

Sincerely,
Gilbert J. Van Deventer, PG, REM
Trident Environmental
Work/Mobile: 432-638-8740
Fax: 413-403-9968



TRIDENT ENVIRONMENTAL

CERTIFIED MAIL
RETURN RECIEPT NO. 7099 3400 0017 1737 2060

April 24, 2008

RECEIVED
APR 28 2008
Environmental Bureau
Oil Conservation Division

Mr. Edward Hansen
New Mexico Energy, Minerals, & Natural Resources
Oil Conservation Division, Environmental Bureau
1220 S. St. Francis Drive
Santa Fe, New Mexico 87504

RE: Amended Stage 1 and 2 Abatement Plan (AP-58)
BD Santa Rita EOL Release Site
T22S-R37E-Section 27, Unit Letter A

Dear Mr. Hansen

On behalf of Rice Operating Company (ROC), enclosed is the Amended Stage 1 and 2 Abatement Plan in response to your February 13, 2008 email recommendations.

ROC has issued the NMOCD-approved public notice and will send copies of proof that the appropriate individuals and entities were notified soon in a separate submission.

ROC also requests immediate suspension of benzene, toluene, ethylbenzene, and xylenes (BTEX) analysis since there is no evidence of hydrocarbon impact and since September 2005 all groundwater analyses have indicated concentrations below the WQCC standards and the method detection limit of 0.001 mg/L for each constituent of BTEX.

If you have any questions please call me at 432-638-8740 or Kristin Farris Pope at 505-393-9174.

Sincerely,

Gilbert Van Deventer, P.G., R.E.M.
Trident Environmental

cc: Kristin Pope, Rice Operating Company
Scott Curtis, Rice Operating Company
Chris Williams, NMOCD District 1 (Hobbs)

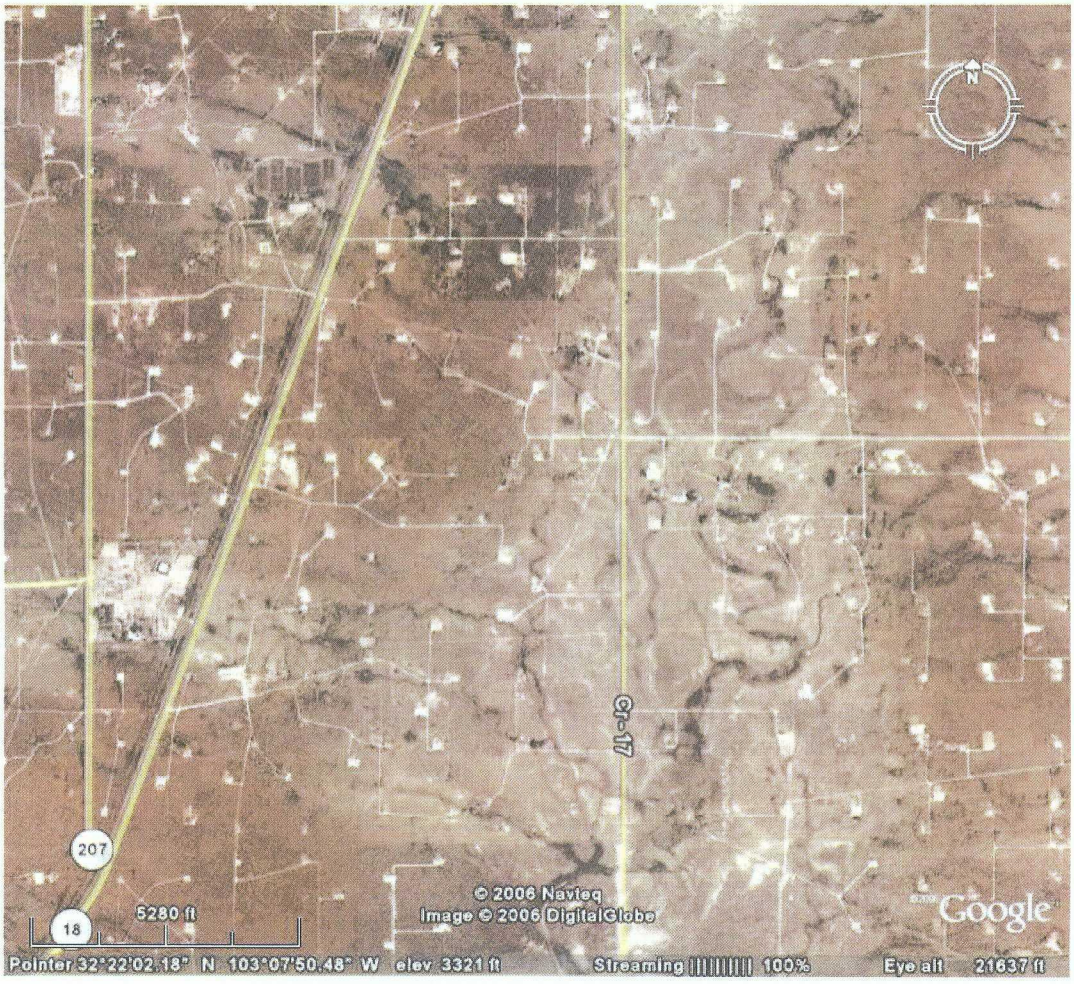
RECEIVED
APR 28 2008
Environmental Bureau
Oil Conservation Division

April 24, 2008

AMENDED STAGE 1 & 2 ABATEMENT PLAN (AP-58)

BD SANTA RITA EOL RELEASE SITE

T22S, R37E, SECTION 27, UNIT LETTER A
LEA COUNTY, NEW MEXICO



Prepared by:

TRIDENT ENVIRONMENTAL

P. O. Box 7624
Midland, Texas 79708

Prepared for:

RICE OPERATING COMPANY
ROC
SINCE 1955

122 West Taylor
Hobbs, New Mexico 88240

TABLE OF CONTENTS

TABLES

FIGURES

APPENDICES

1.0 EXECUTIVE SUMMARY

The Santa Rita EOL Release site is operated by Rice Operating Company (ROC) and is located in Township 22 South, Range 37 East, Section 27, unit letter A approximately 4.5 miles southeast of Eunice, NM. This Amended Stage 1 and 2 Abatement Plan (AP-58) incorporates the preliminary findings from previous investigations with additional assessment activities.

The discovery of a brine water release from a 2-inch PVC compression coupling occurred on November 22, 2003. Initial characterization of soil impacts were conducted at the site on November 26, 2003 using a backhoe. Vadose zone samples taken from trenches indicated a maximum chloride concentration of 3,284 mg/kg at a depth of 5-feet bgs directly adjacent to the release point. On January 6, 2004, ROC disclosed this site to OCD as potential groundwater impact and the site was placed on a prioritized list of similar sites. After landowner access was granted, soil samples were collected at 16 locations to depths of 3 to 4 feet below ground surface (bgs) with a hand auger to determine the horizontal extent of the impacted soils on August 9, 2005. On August 30, 2005, a drilling rig was mobilized approximately 5-feet east of the release point for vertical delineation of the vadose zone. Based on a field-tested chloride concentration of 2,313 ppm at 50 feet bgs immediately above the water table, impact to groundwater was suspected; therefore the soil boring was completed as a monitoring well (MW-1). The depth to ground water at the site is approximately 51 feet bgs. Since September 2, 2005, the monitoring well has been sampled quarterly for analysis of major ions and benzene, toluene, ethylbenzene, and xylenes (BTEX). On October 30, 2007 two monitoring wells were installed to delineate upgradient and downgradient conditions. Monitoring well MW-2 was installed approximately 70 feet northwest of the release point and MW-3 was installed approximately 60 feet east-southeast of the release point.

A maximum chloride concentration of 7,450 milligrams per liter (mg/L) was recorded at MW-1 on January 23, 2006, however levels have steadily declined to 408 mg/L through the most recent sampling event on April 7, 2008. The most recent chloride concentrations in monitoring wells MW-2 and MW-3 were 1,080 mg/L and 100 mg/L, respectively. BTEX concentrations in groundwater have been below the method detection limit of 0.001 mg/L during each sampling event.

ROC proposes the creation of an infiltration barrier by installing a minimum 1-foot thick clay layer which will be selectively placed over chloride-impacted soils that exceed a field tested chloride concentration of 1,000 mg/kg. The clay layer will be laid to a grade that will direct any infiltrated precipitation away from the spill area. The backfill cover over the clay layer will contain at least 4 feet of clean soil with a concentration of less than 500 mg/kg chloride to encourage native plant growth. No soils used for cover material will be blended if the chloride concentration is greater than 500 mg/kg. ROC will monitor the site for continued healthy growth of native vegetation and add amendments if necessary.

ROC plans to install one monitoring well (MW-4) about 65 feet south-southeast of monitoring well MW-3 for downgradient delineation. Installation of a second 4-in diameter monitoring well (MW-3d) is proposed adjacent to MW-3 with a total depth reaching the base of the aquifer (estimated at 90 ft bgs) for evaluation of groundwater recovery options.

ROC will continue quarterly groundwater sampling at each of the four monitoring wells. At the completion of corrective actions as described herein, a final report will be submitted with a request for final closure.

When implementing any proposed remedy or investigative work, ROC will confirm that there is a reasonable relationship between the benefits created by the proposed remedy or assessment and the economic and social costs.

ROC is the service provider (agent) for the Blinebry-Drinkard (BD) saltwater disposal (SWD) System and has no ownership of any portion of the pipeline, well, or facility. The System is owned by a consortium of oil producers, System Partners, who provide all operating capital on a percentage ownership/usage basis. Environmental projects of this magnitude require System Partner Authorization for Expenditure (AFE) approval and work begins as funds are received. In general, project funding is not forthcoming until OCD approves the work plan.

2.0 CHRONOLOGY OF EVENTS

November 22, 2003	Release of approximately 50 barrels (bbls) discovered as a result of the failure of a compression fitting on the 2-inch PVC line. Approximately 40 bbls was recovered. The fitting was replaced and a new 10-ft joint of PVC was installed.
November 26, 2003	Initial subsurface soil sampling activities were conducted with a backhoe at six locations. Soil samples were field tested for chloride and hydrocarbon levels. This investigation indicated chloride impact to the vadose zone.
December 1, 2003	ROC submitted initial C-141 form to NMOCD.
December 19, 2003	Confirmation samples taken at 12 feet bgs directly beneath the source and at 12 feet bgs at a point 5 feet east of the source were submitted to Cardinal Laboratories in Hobbs. The analysis indicated chloride concentrations of 2,495 mg/kg and 2,623 mg/kg, respectively.
January 6, 2004	ROC disclosed this site to OCD as potential groundwater impact and the site was placed on a prioritized list of similar sites.
August 9, 2005	Soil samples were collected at 16 locations to depths of 3 to 4 feet bgs with a hand auger to determine the horizontal extent of the impacted soils.
August 30, 2005	On August 30, 2005, a drilling rig was mobilized approximately 5-feet east of the release point for vertical delineation of the vadose zone. Based on a field-tested chloride concentration of 2,313 ppm at 50 feet bgs immediately above the water table, impact to groundwater was suspected; therefore the soil boring was completed as a monitoring well (MW-1).
October 3, 2005	ROC notified the OCD office in Santa Fe that ground water impact was confirmed based on laboratory results of ground water samples analyzed from the on site monitoring well.
August 28, 2006	ROC submitted an Investigation and Characterization Plan to the NMOCD
September 28, 2006	NMOCD requested submission of a Stage 1 and 2 Abatement Plan.
December 7, 2006	ROC submitted a Stage 1 and 2 Abatement Plan to the NMOCD.
February 13, 2008	NMOCD administratively approved the Stage 1 and 2 Abatement Plan with recommended amendments.

3.0 BACKGROUND

3.1 Site Location and Land Use

The Santa Rita EOL Release site and release is located on land owner by Irwin Boyd in Township 22 South, Range 37 East, Section 27, unit letter A approximately 4.5 miles southeast of Eunice, NM as shown on the Site Location Map (Figure 1). Produced water gathered by the BD SWD System in the site area is sent to the H-35 SWD well, which is located approximately 1.6 miles southeast of the Santa Rita EOL Release site. Land in the site area is primarily utilized for crude oil, gas production, gas processing, and cattle ranching. Figure 2 is a recent aerial photograph showing the land use.

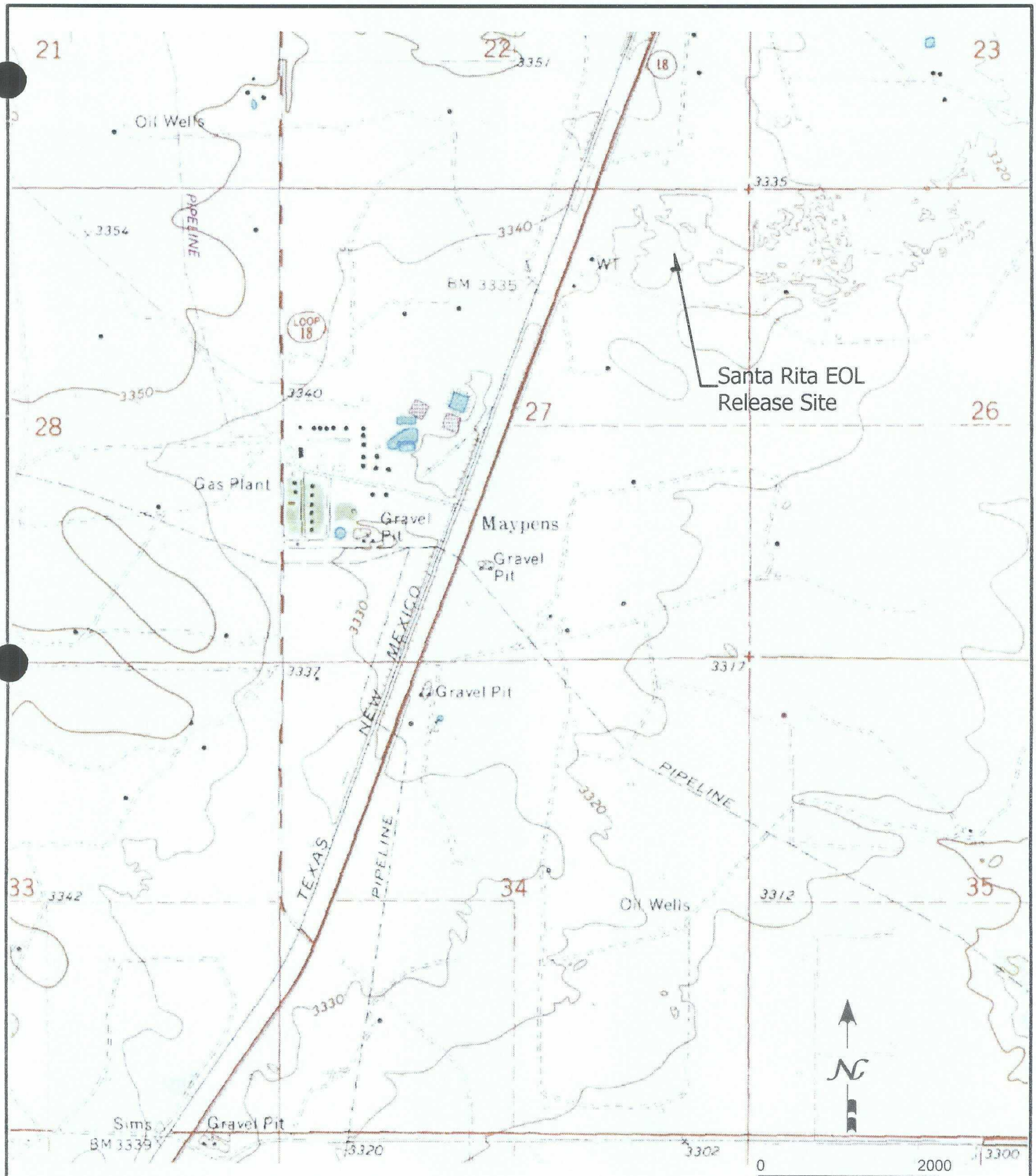
3.2 Nature of Release and Summary of Previous Work

The BD Santa Rita EOL (end-of-line) site experienced an accidental discharge on November 22, 2003 due to the separation of a compression coupling on a 2-inch PVC pipeline. This discharge occurred on the pipeline 82 ft north of the BD Santa Rita EOL junction box. A C-141 form (initial) was submitted to the NMOCD Hobbs District 1 office on December 1, 2003. Soil samples were collected for chloride delineation on November 26 and December 19, 2003 using a backhoe. ROC concluded that further characterization was warranted. On January 16, 2004, ROC disclosed this site to OCD as a potential for groundwater impact and the site was placed on a prioritized list of similar sites.

On August 30, 2005, a drilling rig was mobilized approximately 5-feet east of the release point for vertical delineation of the vadose zone. Based on a field-tested chloride concentration of 2,313 ppm at 50 feet bgs immediately above the water table, impact to groundwater was suspected; therefore the soil boring was completed as a monitoring well (MW-1). The depth to ground water at the site is approximately 51 feet bgs. The investigations indicated chloride impact to the vadose zone and groundwater, however no indication of hydrocarbon impact was evident based on field screening with a photoionization detector (all readings were less than 0.1 ppm). Soil sample results are depicted in Figure 3.

Monitoring well (MW-1) has been sampled and analyzed for BTEX, major ions, and TDS on a quarterly basis since September 2, 2005. On October 3, 2005, ROC notified the OCD office in Santa Fe that ground water impact was confirmed based on laboratory results of ground water samples analyzed from MW-1. On October 30, 2007 two additional monitoring wells were installed to delineate upgradient and downgradient conditions. Monitoring well MW-2 was installed approximately 70 feet northwest of the release point and MW-3 was installed approximately 60 feet east-southeast of the release point.

The constituents of concern include chloride and TDS. No constituents of BTEX have been detected (less than the laboratory detection limit of 0.001 mg/L). Photographs of the site are included in Appendix A.



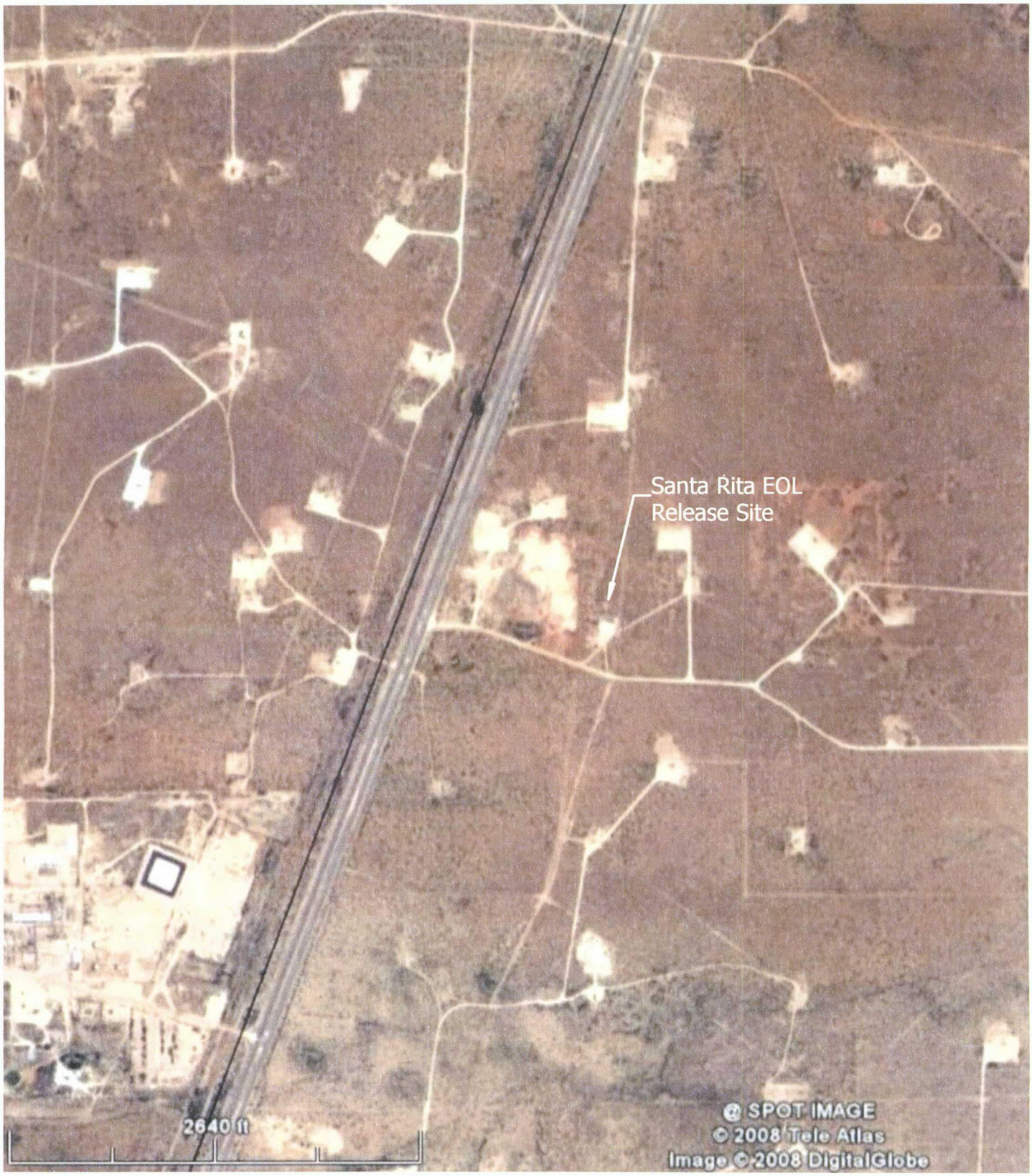
Rattlesnake Canyon (NM) Quadrangle (1977)

TRIDENT ENVIRONMENTAL

BD Santa Rita EOL Release Site
T22S - R37E - Section 27, Unit A
RICE Operating Company

FIGURE 1

Site Location Map



TRIDENT ENVIRONMENTAL

BD Santa Rita EOL Release Site
T22S - R37E - Section 27, Unit A
RICE Operating Company

FIGURE 2

Aerial Photo Map

4.0 GEOLOGY AND HYDROGEOLOGY

4.1 Regional and Local Geology

According to published information (Nicholson and Clebsch, 1961, Barnes, 1976, and Anderson, Jones, and Green, 1997) the site is underlain by Quaternary Colluvial Deposits composed of sand, silt, and gravel deposited by slopewash, and talus from the Tertiary Ogallala Formation. These colluvial deposits are often calichified (indurated with cemented calcium carbonate) with caliche layers from 1 to 20 feet thick. The thickness of the colluvial deposits and Ogallala Formation varies locally as a result of significant paleo-topography at the top of the underlying Triassic Dockum Group. Since Cretaceous Age rocks in the region have been removed by pre-Tertiary erosion, the colluvial deposits and Ogallala Formation rest unconformably on the Triassic Dockum Group. The uppermost unit of the Dockum Group is the Chinle Formation, which primarily consists of micaceous red clay and shale but also contains thin interbeds of fine-grained sandstone and siltstone. The red clays and shale of the Chinle Formation act as an aquitard beneath the water bearing colluvial deposits and Ogallala Formation.

The base of the Ogallala Formation and the top of the red-bed surface, occurs at approximately 90 feet below ground surface at the Santa Rita EOL site, which is consistent to the reported depths at the nearby South Eunice Gas Plant.

Based on the lithologic log description for the monitoring wells on site (Appendix B) the subsurface soils are composed of light-brown sandy loam (0-2 ft), light-brown silty clayey sand (2-6 ft), sandy caliche (6-25 ft), calcareous fine sand with intermittent hard streaks (25-35 ft), silty fine sand (35-45 ft), and fine sand (45-61 ft).

4.2 Regional and Local Hydrogeology

Potable ground water used in southern Lea County is derived primarily from the Ogallala Formation (including the colluvial deposits) and the Quaternary alluvium. Lower yields have also been provided by water bearing zones within the Triassic Dockum Group in a few scattered areas within southern Lea County. No potable water is known to be derived below the Triassic Dockum Group. Water from the Ogallala and alluvium aquifers in southern Lea County is used for irrigation, stock, domestic, industrial, and public supply purposes. Depth to ground water beneath the site area is approximately 51-feet below ground surface; therefore the saturated thickness of the aquifer is estimated at about 40 feet.

Nicholsen and Clebsch (1961) found that the regional gradient of the Ogallala and interconnected colluvial aquifer in the site area generally flows toward the southeast and the hydraulic gradient varies from approximately 0.001 to 0.01 feet/feet. Chevron's Eunice South Gas Plant (GW-3), which has 55 monitoring wells and 8 recovery wells due to chloride and hydrocarbon impacts to groundwater, is located approximately one-half mile southwest of the

Santa Rita EOL site. Recent groundwater data from the gas plant indicates ground water flows towards the south and southeast at 0.0016 ft/ft.

Values for hydraulic conductivity are estimated to be between 2 to 200-feet per day for the Ogallala aquifer near the site area based on various published information (Office of the State Engineer, Musharrafieh and Chudnoff, 1999; Hart & McAda, 1985; and Myers, 1969). According to the 2006 annual groundwater monitoring report for Chevron's Eunice South Gas Plant the average hydraulic conductivity is 16.89 ft/day and average groundwater velocity is 0.095 ft/day (35 ft/year).

Recharge to the Ogallala aquifer occurs primarily by infiltration of precipitation at a slow rate (typically one quarter to one half inch of water per year) due to the characteristically arid climate of southern Lea County (Nicholson and Clebsch, 1961).

There are no water wells or natural surface water bodies located within 1,000 feet of the site.

5.0 VADOSE ZONE CHARACTERISTICS

ROC conducted initial upper vadose zone delineation field activities on November 26 and December 19, 2003. Investigation activities were conducted with a backhoe by trenching to 12-feet below ground surface (bgs) at 6 locations immediately adjacent to the source of the leak and in areas where pooling was observed (Figure 3). Soil samples were analyzed in the field for chlorides using field-adapted Method 9253 (QP-03). Field chlorides ranged from a concentration of 1128 parts per million (ppm) at sample point TP-2 located 50 feet northwest of the release point and 2 feet deep to 5,530 ppm at the surface of sample point TP-1 located 45 feet northeast of the release point (Figure 3).

On August 9, 2005, soil samples were collected by ROC with a hand auger at 16 locations within a 25-foot grid spacing that encompassed the area where the spill had encroached. The hand augured borings did not go further than 4 feet below ground surface due to encountering a hard caliche layer. Soil samples were analyzed in the field for chlorides using field-adapted Method 9253 (QP-03). Field chlorides ranged from a concentration of 41 ppm at sample point SP-3 located about 55 feet east of the release point and 3 feet deep to 851 ppm at the surface of sample point SP-5 located 85 feet east of the release point along the lease road (Figure 3).

On August 30, 2005, a drilling rig was mobilized approximately 5-feet east of the release point for vertical delineation of the vadose zone. Based on a field-tested chloride concentration of 2,313 ppm at 50 feet bgs immediately above the water table, impact to groundwater was suspected; therefore the soil boring was completed as a monitoring well. The monitoring well (MW-1) was completed to a depth of 61-feet bgs and depth to groundwater was determined to be approximately 51 feet bgs. A duplicate of the sample collected at 45 feet bgs was submitted to the laboratory, which indicated a chloride concentration of 3,570 mg/kg.

On October 30, 2007 two additional monitoring wells were installed to delineate upgradient and downgradient conditions. Monitoring well MW-2 was installed approximately 70 feet northwest of the release point and MW-3 was installed approximately 60 feet east-southeast of the release point. Chloride concentrations in the soil boring samples for MW-2 and MW-3 ranged from 59 mg/kg to 359 mg/kg with an average of 168 mg/kg.

More detailed descriptions of the lithology, field chloride tests, and well construction are shown on the boring logs in Appendix B.

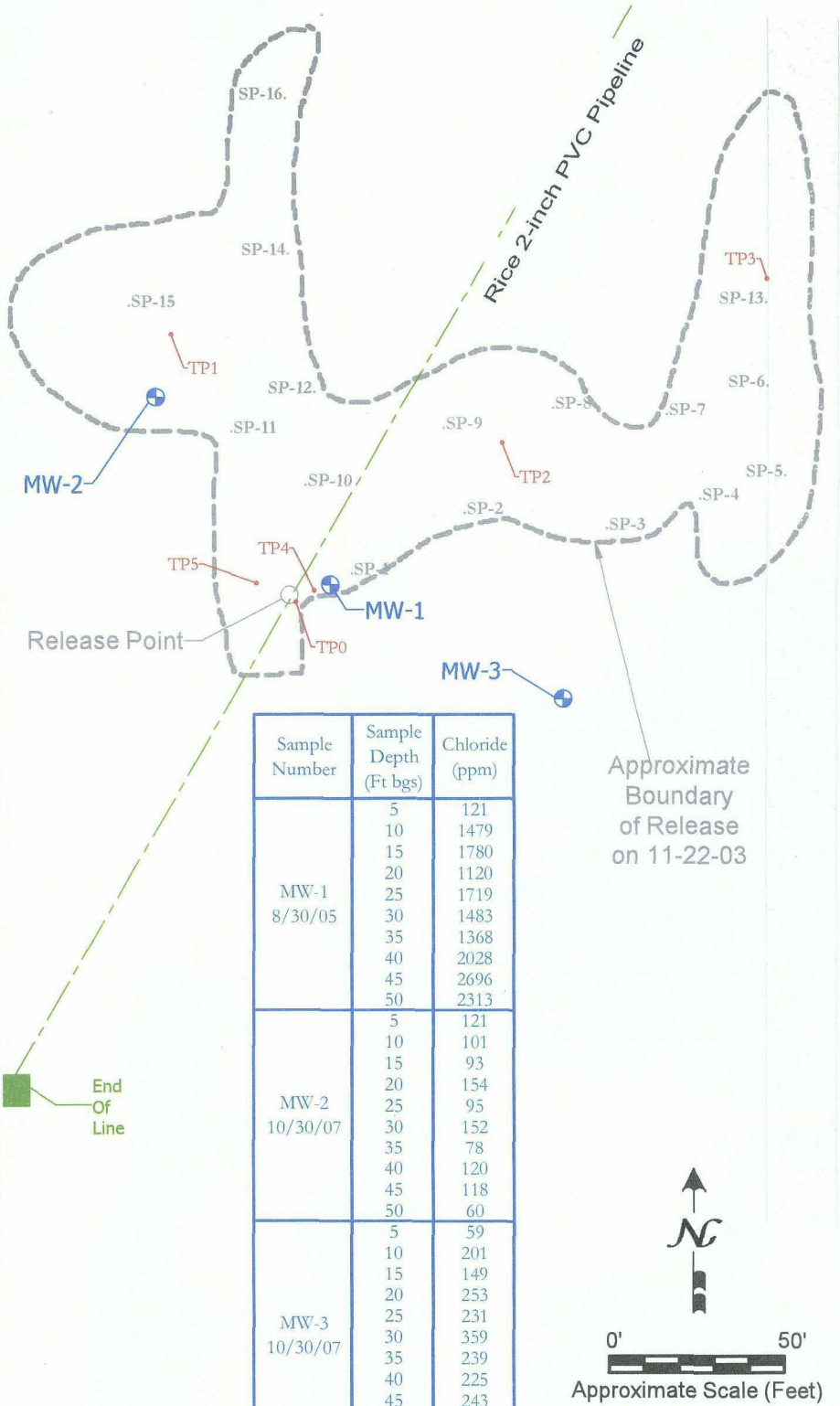
Copies of the laboratory analytical reports and chain of custody forms are included in Appendix C.

MAP LEGEND

MW-1 Monitoring Well (8/30/05 & 10/30/07)

SP-16. Soil Sample Location (8/9/05)

TP1 Soil Sample Location (11/22/03)



Sample Number	Sample Depth (Ft bgs)	Chloride (ppm)
Sample Date: 8/9/2005		
SP-1	0	66
	1	76
	2	93
	3	108
	4	78
SP-2	0	45
	1	126
	2	92
	3	47
	4	75
SP-3	0	69
	1	64
	2	67
	3	41
	4	77
SP-4	0	97
	1	64
	2	106
	3	77
	4	65
SP-5	0	851
	1	49
	2	58
	3	129
	4	89
SP-6	0	123
	1	49
	2	55
	3	54
	4	76
SP-7	0	101
	1	159
	2	127
	3	101
	4	90
SP-8	0	114
	1	44
	2	116
	3	119
	4	67
SP-9	0	117
	1	140
	2	90
	3	90
	4	167
SP-10	0	131
	1	105
	2	95
	3	76
	4	50

Sample Number	Sample Depth (Ft bgs)	Chloride (ppm)
SP-11	0	83
	1	50
	2	74
	3	104
	4	170
SP-12	0	72
	1	73
	2	80
	3	48
	4	97
SP-13	0	75
	1	66
	2	60
	3	60
SP-14	0	50
	1	68
	2	79
	3	107
SP-15	0	131
	1	117
	2	50
	3	58
SP-16	0	66
	1	76
	2	90
	3	89

Sample Number	Sample Depth (Ft bgs)	Chloride (ppm)
Sample Date: 11/26/2003		
TP0	5	2343
	6	2761
	12	2495
TP1	0	5530
	1	3482
	2	3157
TP2	0	2346
	1	1834
	2	1128
TP3	0	3136
	1	2657
	2	1778
TP4	5	3284
	6	2681
	8	2992
	10	2908
	12	2816
TP5	6	3130
	7	2793
	10	2684
	12	2764

Sample Number	Sample Depth (Ft bgs)	Chloride (ppm)
MW-1 8/30/05	5	121
	10	1479
	15	1780
	20	1120
	25	1719
	30	1483
	35	1368
	40	2028
	45	2696
	50	2313
MW-2 10/30/07	5	121
	10	101
	15	93
	20	154
	25	95
	30	152
	35	78
	40	120
	45	118
	50	60
MW-3 10/30/07	5	59
	10	201
	15	149
	20	253
	25	231
	30	359
	35	239
	40	225
	45	243
	50	225
	55	256

TRIDENT ENVIRONMENTAL

BD Santa Rita EOL Release Site

T22S - R37E - Section 27, Unit A

RICE *Operating Company*

FIGURE 3

Soil Sampling Results

6.0 GROUND WATER QUALITY

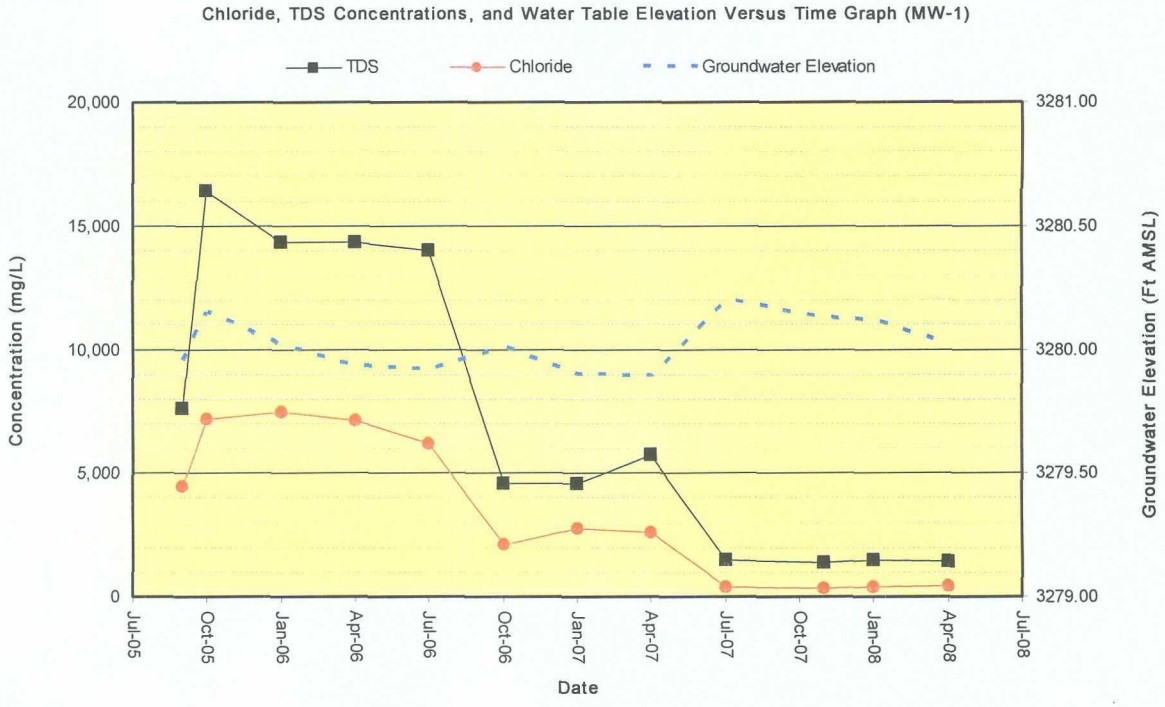
6.1 Groundwater Monitoring Program

A summary of historical analytical results and ground water depths for each monitoring well is listed in Table 1. Analytical results for monitoring well MW-1 are also depicted graphically below. A copy of the laboratory analytical report and chain of custody form for the most recent ground water sampling event is included in Appendix C.

Table 1: Summary of Ground Water Monitoring Results

Monitoring Well	Sample Date	Depth to Groundwater (feet BTOC)	Groundwater Elevation * (feet AMSL)	Chloride (mg/L)	TDS (mg/L)	Benzene (mg/L)	Toluene (mg/L)	Ethyl-benzene (mg/L)	Xylene (mg/L)
MW-1	09/02/05	54.04	3279.96	**4,480**	**7,600**	<0.001	<0.001	<0.001	<0.001
	10/24/05	53.85	3280.15	**7,170**	**16,400**	<0.001	<0.001	<0.001	<0.001
	01/23/06	53.98	3280.02	**7,450**	**14,300**	<0.001	<0.001	<0.001	<0.001
	04/24/06	54.07	3279.93	**7,100**	**14,300**	<0.001	<0.001	<0.001	<0.001
	07/19/06	54.08	3279.92	**6,180**	**14,000**	<0.001	<0.001	<0.001	<0.001
	10/11/06	53.99	3280.01	**2,100**	**4,560**	<0.001	<0.001	<0.001	<0.001
	01/25/07	54.10	3279.90	**2,740**	**4,560**	<0.001	<0.001	<0.001	<0.001
	04/04/07	54.11	3279.89	**2,610**	**5,720**	<0.001	<0.001	<0.001	<0.001
	07/09/07	53.80	3280.20	**363**	**1,470**	<0.001	<0.001	<0.001	<0.001
	11/12/07	53.87	3280.13	**356**	**1,398**	<0.001	<0.001	<0.001	<0.001
	01/15/08	53.88	3280.12	**408**	**1,499**	<0.001	<0.001	<0.001	<0.003
	04/07/07	53.98	3280.02	**420**	**1,460**	<0.001	<0.001	<0.001	<0.003
MW-2	11/12/07	54.55	3280.18	160	930	<0.001	<0.001	<0.001	<0.003
	01/15/08	54.57	3280.16	128	**1,001**	<0.001	<0.001	<0.001	<0.003
	04/07/08	54.65	3280.08	100	982	<0.001	<0.001	<0.001	<0.003
MW-3	11/12/07	53.70	3279.96	**1,210**	**2,596**	<0.001	<0.001	<0.001	<0.003
	01/15/08	53.69	3279.97	**1,010**	**2,398**	<0.001	<0.001	<0.001	<0.003
	04/07/08	53.73	3279.93	**1,080**	**2,620**	<0.001	<0.001	<0.001	<0.003
WQCC Standards				250	1,000	0.01	0.75	0.75	0.62

* *Groundwater Elevations based on temporary survey conducted on April 23, 2008 (subject to revision by registered surveyor).*



6.2 Hydrocarbons in Ground Water

All BTEX concentrations in the on site monitoring wells have been below the laboratory detection limit of 0.001 mg/L during each sampling event.

6.3 Other Constituents of Concern

MW-1: Although monitoring well MW-1 exceeds the WQCC standard of 250 mg/L for chloride concentration (420 mg/L) during the most recent sampling event in April 2008, levels have rapidly decreased by a factor of 18 since January 2006. The TDS concentration in monitoring well MW-1 (1,460 mg/L) exceeds the WQCC standard of 1,000 mg/L, but has decreased by a factor of 10 since October 2005.

MW-2: Chloride (100 mg/L) and TDS (982 mg/L) concentrations are below WQCC standards.

MW-3: Chloride (1,080mg/L) and TDS (2,620 mg/L) concentrations are above WQCC standards.

7.0 AMENDED STAGE 2 ABATEMENT PLAN

7.1 Corrective Action to the Vadose Zone

Soil sampling results during the installation of monitoring wells MW-2 and MW-3 indicate the maximum upgradient and downgradient extent of chloride impacted soil, therefore additional soil borings are not necessary. However, soil samples will be collected during the excavation activities described later in this section. A chloride concentration of 250 ppm will be used to delineate the lateral extent of impact to the vadose zone.

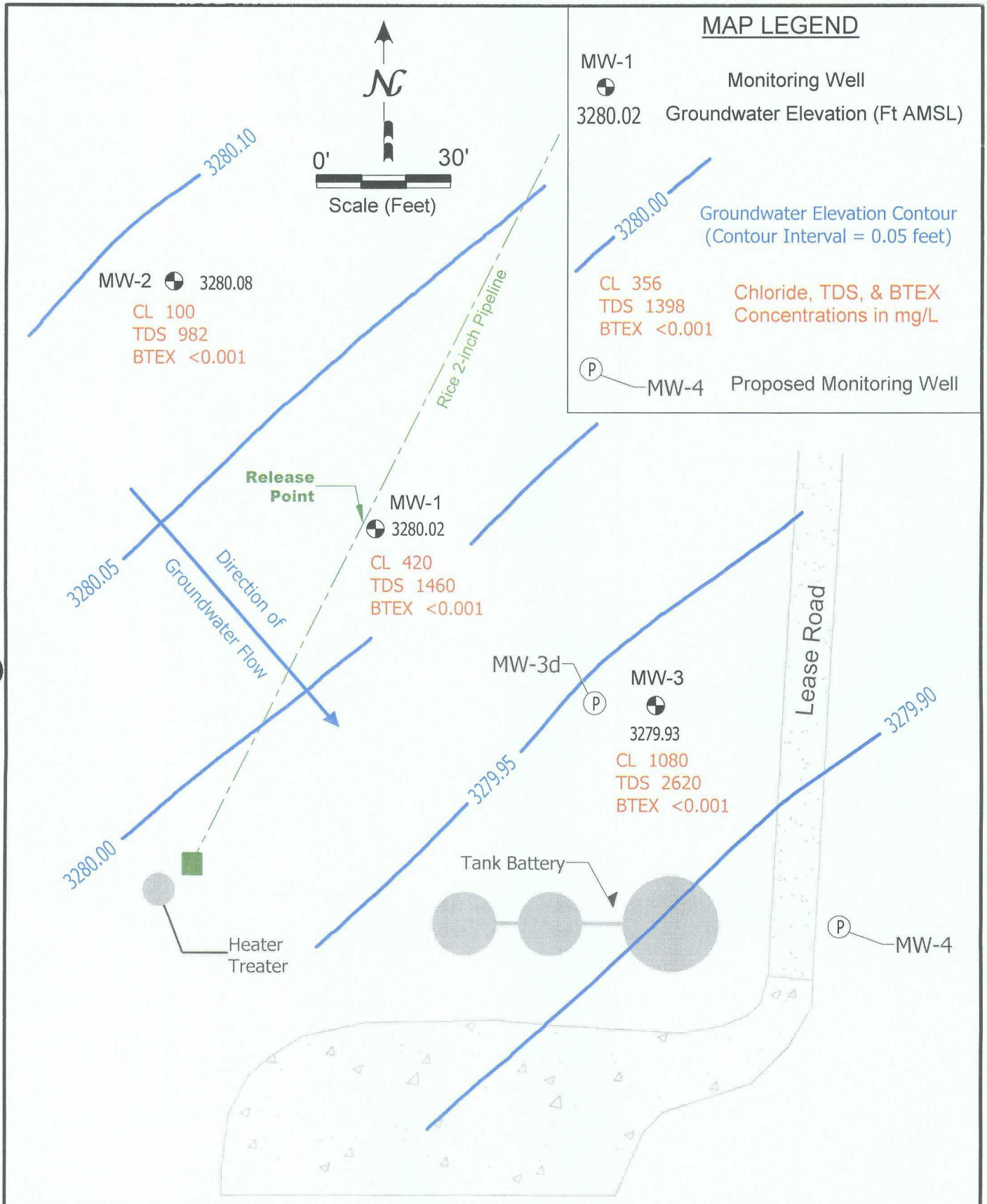
As depicted by the outline of the release in Figure 3, portions of the approximate 11,200 ft^2 area with chloride concentrations greater than 500 mg/kg will be excavated to a depth of 5 feet below ground surface where a minimum1-foot thick clay layer will be selectively placed over chloride-impacted soils that exceed a field tested chloride concentration of 1,000 mg/kg. The clay layer will be laid to a grade that will direct any infiltrated precipitation away from the spill area, and further directed such that one clay barrier area does not direct water towards another. The cover will contain at least 4 feet of clean soil with a concentration of less than 500 mg/kg chloride. No soils used for cover material will be blended if the chloride concentration is greater than 500 mg/kg. The cover soils will be placed above the clay layer such that a slight mound is constructed to direct excess precipitation from the spill area. Native grass seed will be broadcast for re-vegetation, and the site will be monitored for plant growth. The goal will be to re-vegetate the site to approximately 70% of the ground cover as observed in adjacent areas not affected by the release.

7.2 Corrective Action to the Groundwater

Soil boring samples and ground water samples from the monitoring well MW-1 suggest that the release has contributed to chlorides and TDS into ground water. Recent installation of upgradient monitoring well MW-2 and downgradient MW3 added to the characterization of the release from the line leak; however ROC is waiting on survey information to further determine groundwater elevations and gradient direction. ROC proposes to install one monitoring well (MW-4) about 65 feet south-southeast of monitoring well MW-3 as shown in Figure 4 for downgradient delineation. This well will be constructed of 2-in diameter well casing and screen to a depth of 65 ft bgs with a screened interval between 45 ft to 65 ft.

Installation of a second 4-in diameter monitoring well (MW-3d) is proposed adjacent to MW-3 with a total depth reaching the base of the aquifer which is estimated at 90 ft bgs. The lower section of this well will be screened with a minimum of 15-ft of well screen for potential source removal and testing. The wells will be installed and sampled after appropriate development using methods consistent with industry standards (ASTM, EPA).

If the characterization program shows that groundwater at this site exceeds 3,000 mg/L TDS, this plan proposes a 3-month source removal and test pumping program. The purpose of this pumping program is to determine if groundwater may be restored within a short time and to assist in the evaluation of groundwater abatement alternatives. Water from the recovery well will be stored on site for use in pipeline maintenance operations and/or discharged into the BD saltwater disposal system.



TRIDENT ENVIRONMENTAL

BD Santa Rita EOL Release Site

T22S - R37E - Section 27, Unit A

RICE *Operating Company*

FIGURE 4
Groundwater Elevation and
Chloride, TDS, & BTEX
Concentration Map
April 7, 2008

Experience suggests a pumping rate of 2 to10 gallons per minute is possible from a 4-inch diameter well completed at this site. The proposed testing program consists of:

1. Measurement of water levels in the recovery well and monitoring well(s):
   a. On a daily/hourly basis for the first two days of pumping,
   b. On a weekly basis for the first month of pumping, and
   c. On a monthly basis for the next two months.
   d. On a daily/hourly basis after cessation of pumping (after at least 2-days of pumping) to collect recovery data for calculation of hydrologic parameters.
2. Collection of groundwater samples for chloride and TDS analysis on a monthly basis from the recovery well,
3. Measurements of the flow rate and total flow from the recovery well at each site visit,
4. Collection of groundwater samples from all monitor wells before and after the 3-month pumping program.

Our evaluation of alternatives does not support a program that extracts groundwater and creates a waste (e.g. brine) that must be managed. Based on our analysis, the creation of a brine waste and the management of the waste and treatment system results in less benefit to the environment by creating more contamination (i.e. air pollution, dust, energy consumption) than it can cure. If selected as a remedy, installation of a groundwater recovery system would be contingent on successful application with the NMOSE and landowner agreement in accordance with NMSA 1978 Article 72-12-3(B).

A strategy of pump-and-use without treatment provides the best abatement option if a bona fide use presently exists for the groundwater. In the absence of a bona fide use for this groundwater (e.g. pipeline maintenance, gas plant makeup water), a pump-and-use strategy is not the preferred abatement option.

If the groundwater at the site is suitable for mature livestock (i.e. less than 3,000 mg/L TDS, NMSU Guide M-112, 1995), then a pump-and-dispose groundwater restoration strategy results in the loss of a useful commodity and is not consistent with conservation and best management practices for the groundwater resource. A pump-and-dispose strategy may be reasonable where the migration of 3,000 mg/L or greater TDS groundwater threatens a well used for domestic purposes (drinking water), where groundwater should be less than 1,000 mg/L; however that scenario is not applicable to this site.

If a pump-and-use groundwater restoration program is not feasible and pump-and-dispose provides little benefit, the evaluation of alternatives suggests that natural restoration in conjunction with a groundwater monitoring program provides the best abatement option.

7.3 Proposed Schedule of Activities

ROC plans to initiate field activities within 45 days of NMOCD approval of this abatement plan and site access authorization.

ROC will continue quarterly groundwater sampling. Any changes and refinements to the proposed remedies will be submitted to the NMOCD in a subsequent modification based on the findings of the field activities described herein. The remedies will be implemented upon approval by the OCD as proposed by ROC.

At the completion of corrective actions, a final report will be submitted to the NMOCD with a request for closure of the Rule 19 regulatory file associated with this site.

Completion dates for the tasks outlined in this Amended Stage 1 and Stage 2 Abatement Plan will be dependent on site access, contractor availability, weather conditions, and possibly other unforeseen considerations.

8.0 QUALITY ASSURANCE / QUALITY CONTROL

Sampling and analytical procedures shall be performed in accordance with Title 20 NMAC 6.3107.B and Section 103 of the Water Quality Standards for Interstate and Intrastate Streams in New Mexico (20 NMAC 6.1).

Soil samples will be field tested for chlorides (QP-03 and QP-08).

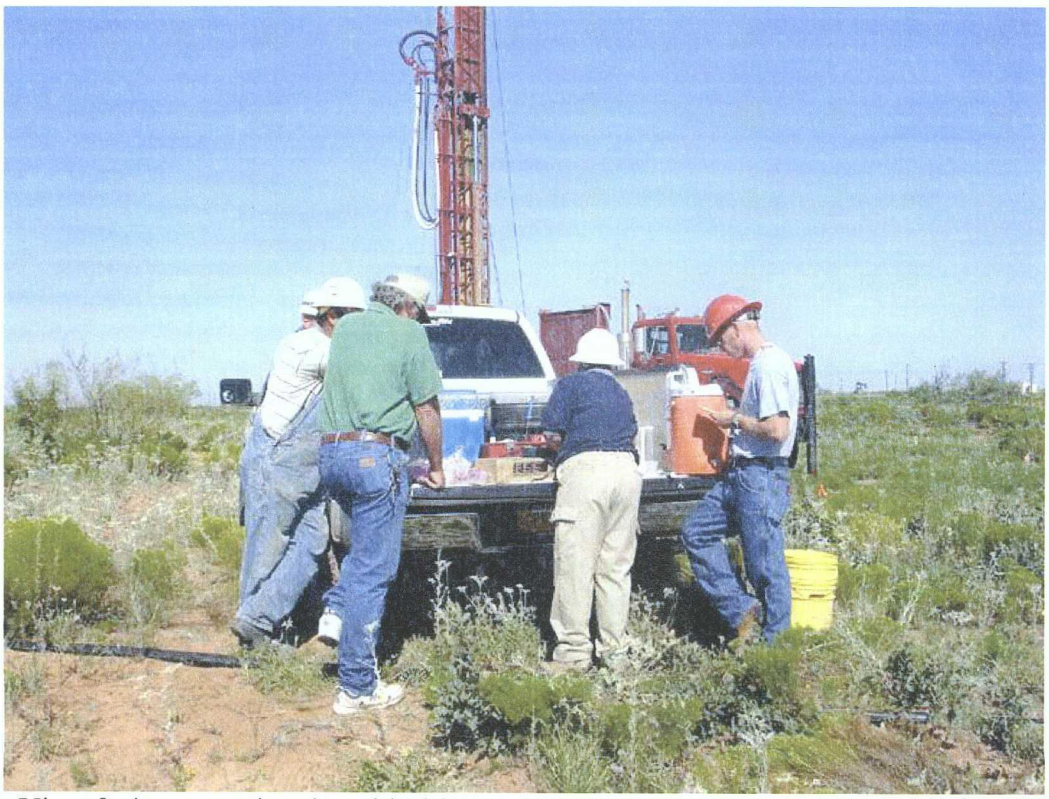
Ground water samples will be collected in accordance with procedures explained in QP-04 and QP-05, and analyzed for BTEX, major ions, and TDS.

Specific quality procedures for collecting and analyzing soil and ground water samples are included in Appendix D.

APPENDIX A

PHOTODOCUMENTATION

View facing southwest showing drilling of monitoring well MW-1 located adjacent to release point at the Santa Rita EOL Site. (08-30-05)



View facing west showing chloride screening activities for soil samples obtained from monitoring well MW-1 at the Santa Rita EOL site (08-30-05)

View facing southeast showing completed monitoring well MW-2 (foreground) and drilling rig at downgradient MW-3 (background)

View facing north showing drilling rig at monitoring well MW-3.

APPENDIX B

LITHOLOGIC LOGS

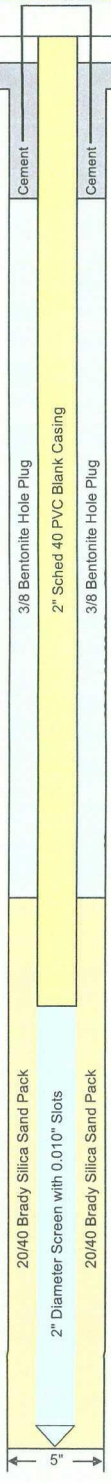
AND

WELL CONSTRUCTION DIAGRAMS

LITHOLOGIC LOG AND MONITORING WELL CONSTRUCTION DIAGRAM

MONITORING WELL NO.: MW-1
SITE NAME: BD Santa Rita EOL Release Site
CONTRACTOR: Eades Drilling
DRILLING METHOD: Air Rotary
START DATE: 08/30/05
COMPLETION DATE: 08/30/05
COMMENTS: Located approximately 82 feet north of Santa Rota EOL junction box.

TOTAL DEPTH: 61 Feet
CLIENT: RICE Operating Company
COUNTY: Lea
STATE: New Mexico
LOCATION: T22S-R37E-Sec 27 - Unit A
FIELD REP.: Jennifer Johnson

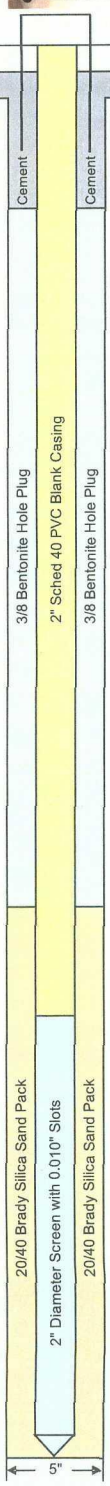


Depth	Time	Sample Type	Chloride (ppm)	PID (ppm)	USCS	LITHOLOGIC DESCRIPTION: LITHOLOGY, COLOR, GRAIN SIZE, SORTING, ROUNDING, CONSOLIDATION, DISTINGUISHING FEATURES
		Surface			SW	Medium-grained sandy loam, light brown.
5		Cuttings	121	1.3	SM/CAL	Very fine- and fine-grained sand, medium orange pink (5YR 8/4) with very pale orange (10YR 8/4) calcium carbonate content in matrix. Sand grains are subrounded and moderately sorted, loose, dry.
		Cuttings	1479	3.3		
10						Very fine- and fine-grained sand, medium orange pink (5YR 8/4) with very pale orange (10YR 8/4) calcium carbonate content in matrix. Sand grains are subrounded and moderately sorted, loose, dry.
		Cuttings	1780	1.2		
15						Very fine- and fine-grained sand, medium orange pink (5YR 8/4) with intermittent, moderately hard streaks of caliche. Sand grains are subrounded and moderately sorted, loose, dry.
		Cuttings	1120	0.5		
20						Same as above. Sample submitted for laboratory analysis with results as follows: Chloride = 44.6 mg/kg
		Cuttings	1719	0.1		
25						Very fine- and fine-grained sand, medium orange pink (5YR 8/4) with intermittent, moderately hard streaks of caliche. Sand grains are subrounded and moderately sorted, loose, dry.
		Cuttings	1483	0.1		
30					SW/SS	Fine-grained sand, light brown (5YR 6/4) with intermittent sandstone streaks.
		Cuttings	1368	0.1		
35						Fine-grained sand, light brown (5YR 6/4) with intermittent sandstone streaks.
		Cuttings	2028	0.1		
40					SW/CAL	Fine-and medium-grained sand, grayish orange (10YR 7/4), slight calcium carbonate content in matrix, moderately well-sorted, subrounded, unconsolidated, slightly moist.
		Cuttings	2696	0.1		
45						▼ Groundwater encountered at approximately 45 feet below ground surface.
		Cuttings	2312	0.1	SW	Fine- and medium-grained sand, moderate (reddish) brown (5YR 4/4), moderately well sorted, subrounded grains, moderatelyb hard.
50						Fine- and medium-grained sand, moderate (reddish) brown (5YR 4/4), moderately well sorted, subrounded grains, moderately hard.
55						Fine- and medium-grained sand, moderate (reddish) brown (5YR 4/4), moderately well sorted, subrounded grains, moderately hard.
60						Fine- and medium-grained sand, moderate (reddish) brown (5YR 4/4), moderately well sorted, subrounded grains, moderately hard.
65						Bottom of boring at 62 ft below ground surface.

LITHOLOGIC LOG AND MONITORING WELL CONSTRUCTION DIAGRAM

MONITORING WELL NO.: MW-2
SITE NAME: BD Santa Rita EOL Release Site
CONTRACTOR: Harrison & Cooper, Inc.
DRILLING METHOD: Air Rotary
START DATE: 10/30/07
COMPLETION DATE: 10/30/07
COMMENTS: Located approximately 70 feet northwest of MW-1. Hydrocarbons are not a constituent of concern therefore, cutting samples were collected and no PID readings taken.

TOTAL DEPTH: 62 Feet
CLIENT: RICE Operating Company
COUNTY: Lea
STATE: New Mexico
LOCATION: T22S-R37E-Sec 27 - Unit A
FIELD REP.: G. Van Deventer



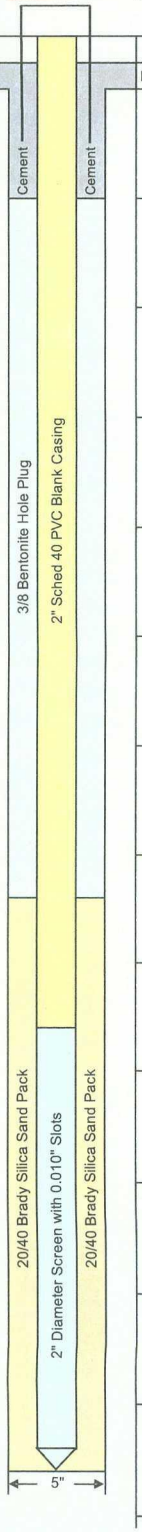
Depth	Sample Time	Sample Type	Chloride (ppm)	PID (ppm)	USCS	LITHOLOGIC DESCRIPTION: LITHOLOGY, COLOR, GRAIN SIZE, SORTING, ROUNDING, CONSOLIDATION, DISTINGUISHING FEATURES
5	0853	Surface			SW	Fine- to medium-grained sand (loamy dune sand), moderate brown (5YR 4/4), moderately well sorted, subrounded grains, dry.
10	0854	Cuttings	121		SM/CAL	Very fine- and fine-grained sand, medium orange pink (5YR 8/4) with very pale orange (10YR 8/4) calcium carbonate content in matrix. Sand grains are subrounded and moderately sorted, loose, dry.
15	0857		101			Very fine- and fine-grained sand, medium orange pink (5YR 8/4) with very pale orange (10YR 8/4) calcium carbonate content in matrix. Sand grains are subrounded and moderately sorted, loose, dry.
20	0858	Cuttings	93			Very fine- and fine-grained sand, medium orange pink (5YR 8/4) with intermittent, moderately hard streaks of caliche. Sand grains are subrounded and moderately sorted, loose, dry.
25	0900	Cuttings	154			Same as above. Sample submitted for laboratory analysis with results as follows: Chloride = 44.6 mg/kg
30	0902	Cuttings	95			Very fine- and fine-grained sand, medium orange pink (5YR 8/4) with intermittent, moderately hard streaks of caliche. Sand grains are subrounded and moderately sorted, loose, dry.
35	0903	Cuttings	152		SW/SS	Fine-grained sand, light brown (5YR 6/4) with intermittent sandstone streaks.
40	0905	Cuttings	78			Fine-grained sand, light brown (5YR 6/4) with intermittent sandstone streaks.
45	0914	Cuttings	120		SW/CAL	Fine-and medium-grained sand, grayish orange (10YR 7/4), slight calcium carbonate content in matrix, moderately well-sorted, subrounded, unconsolidated, slightly moist. ▽ Groundwater encountered at approximately 45 feet below ground surface.
50	0925	Cuttings	118		SW	Fine- and medium-grained sand, moderate (reddish) brown (5YR 4/4), moderately well sorted, subrounded grains, moderatelyb hard.
55	0930	Cuttings	60			Fine- and medium-grained sand, moderate (reddish) brown (5YR 4/4), moderately well sorted, subrounded grains, moderately hard.
60						Fine- and medium-grained sand, moderate (reddish) brown (5YR 4/4), moderately well sorted, subrounded grains, moderately hard.
65						Fine- and medium-grained sand, moderate (reddish) brown (5YR 4/4), moderately well sorted, subrounded grains, moderately hard.
						Bottom of boring at 62 ft below ground surface.

LITHOLOGIC LOG AND MONITORING WELL CONSTRUCTION DIAGRAM

MONITORING WELL NO.: MW-3
SITE NAME: BD Santa Rita EOL Release Site
CONTRACTOR: Harrison & Cooper, Inc.
DRILLING METHOD: Air Rotary
START DATE: 10/30/07
COMPLETION DATE: 10/30/07

TOTAL DEPTH: 63 Feet
CLIENT: RICE Operating Company
COUNTY: Lea
STATE: New Mexico
LOCATION: T22S-R37E-Sec 27 - Unit A
FIELD REP.: G. Van Deventer

COMMENTS: Located approximately 61 feet east-southeast of MW-1. Hydrocarbons are not a constituent of concern therefore, cutting samples were collected and no PID readings taken.



Depth	Time	Sample Type	Chloride (ppm)	PID (ppm)	USCS	LITHOLOGIC DESCRIPTION: LITHOLOGY, COLOR, GRAIN SIZE, SORTING, ROUNDING, CONSOLIDATION, DISTINGUISHING FEATURES
	1108	Surface			SW	Fine- to medium-grained sand (loamy dune sand), moderate brown (5YR 4/4), moderately well sorted, subrounded grains, dry.
5	1109	Cuttings	59		SM/CAL	Very fine- and fine-grained sand, medium orange pink (5YR 8/4) with very pale orange (10YR 8/4) calcium carbonate content in matrix. Sand grains are subrounded and moderately sorted, loose, dry.
10	1110	Cuttings	201			Very fine- and fine-grained sand, medium orange pink (5YR 8/4) with very pale orange (10YR 8/4) calcium carbonate content in matrix. Sand grains are subrounded and moderately sorted, loose, dry.
15	1111	Cuttings	149			Very fine- and fine-grained sand, medium orange pink (5YR 8/4) with intermittent, moderately hard streaks of caliche. Sand grains are subrounded and moderately sorted, loose, dry.
20	1114	Cuttings	253			Same as above.
25	1115	Cuttings	231			Very fine- and fine-grained sand, medium orange pink (5YR 8/4) with intermittent, moderately hard streaks of caliche. Sand grains are subrounded and moderately sorted, loose, dry.
30	1118	Cuttings	359		SW/SS	Fine-grained sand, light brown (5YR 6/4) with intermittent sandstone streaks. Sample submitted for laboratory analysis with results as follows: Chloride = 85.8 mg/kg
35	1119	Cuttings	239			Fine-grained sand, light brown (5YR 6/4) with intermittent sandstone streaks.
40	1125	Cuttings	225			Fine-and medium-grained sand, moderate reddish brown (10YR 4/6), moderately well-sorted, subrounded, unconsolidated.
45						▽ Groundwater encountered at approximately 45 feet below ground surface.
	1135	Cuttings	243			Medium-grained sand, moderate (reddish) brown (5YR 4/4), moderately well sorted, subrounded grains, moderatelyb hard.
50	1138	Cuttings	225		SW	Medium- and coarse-grained sand, moderate (reddish) brown (5YR 4/4), moderately well sorted, subrounded grains, moderately hard.
55	1140	Cuttings	256			Medium- and coarse-grained sand, moderate (reddish) brown (5YR 4/4), moderately well sorted, subrounded grains, moderately hard.
60						Medium- and coarse-grained sand, moderate (reddish) brown (5YR 4/4), moderately well sorted, subrounded grains, moderately hard.
65						Bottom of boring at 63 ft below ground surface.

APPENDIX C

LABORATORY REPORTS

AND

CHAIN OF CUSTODY DOCUMENTATION

CARDINAL LABORATORIES

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

ANALYTICAL RESULTS FOR
RICE OPERATING COMPANY
ATTN: KRISTIN FARRIS-POPE
122 W. TAYLOR STREET
HOBBS, NM 88240
FAX TO: (575) 397-1471

Receiving Date: 04/09/08
Reporting Date: 04/15/08
Project Number: NOT GIVEN
Project Name: BD SANTA RITA LEAK
Project Location: T22S R37E SEC27 A~LEA COUNTY, NM

Sampling Date: 04/07/08
Sample Type: WATER
Sample Condition: COOL & INTACT
Sample Received By: ML
Analyzed By: HM/KS

LAB NUMBER	SAMPLE ID	Na (mg/L)	Ca (mg/L)	Mg (mg/L)	K (mg/L)	Conductivity (u S/cm)	T-Alkalinity ($mgCaCO_3/L$)
ANALYSIS DATE:		04/14/08	04/14/08	04/14/08	04/14/08	04/11/08	04/11/08
H14610-1	MONITOR WELL #1	328	95.8	65.3	11.8	2,310	284
H14610-2	MONITOR WELL #2	175	77.2	55.7	10.4	1,390	248
H14610-3	MONITOR WELL #3	484	206	131	18.0	4,140	220
Quality Control		NR	49.2	53.2	4.63	1,437	NR
True Value QC		NR	50.0	50.0	4.00	1,413	NR
% Recovery		NR	98.5	106	116	102	NR
Relative Percent Difference		NR	< 0.1	6.2	14.6	0.6	NR
METHODS:			SM3500-Ca-D	3500-Mg E	8049	120.1	310.1

LAB NUMBER	SAMPLE ID	Cl^- (mg/L)	SO_4 (mg/L)	CO_3 (mg/L)	HCO_3 (mg/L)	pH (s.u.)	TDS (mg/L)
ANALYSIS DATE:		04/11/08	04/14/08	04/11/08	04/11/08	04/11/08	04/11/08
H14610-1	MONITOR WELL #1	420	346	0	346	7.41	1,460
H14610-2	MONITOR WELL #2	100	411	0	302	7.54	982
H14610-3	MONITOR WELL #3	1,080	373	0	268	7.24	2,620
Quality Control		500	22.7	NR	1000	7.04	NR
True Value QC		500	25.0	NR	1000	7.00	NR
% Recovery		100	90.7	NR	100	100	NR
Relative Percent Difference		< 0.1	11.9	NR	< 0.1	< 0.1	NR
METHODS:		SM4500-Cl-B	375.4	310.1	310.1	150.1	160.1

Kristin Sparlin
Chemist

04/15/08
Date

H14610 RICE

CARDINAL LABORATORIES

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

ANALYTICAL RESULTS FOR
RICE OPERATING CO.
ATTN: KRISTIN FARRIS-POPE
122 W. TAYLOR ST.
HOBBS, NM 88240
FAX TO: (575) 397-1471

Receiving Date: 04/09/08
Reporting Date: 04/14/08
Project Number: NOT GIVEN
Project Name: BD SANTA RITA LEAK
Project Location: T22S R37E SEC27 A ~ LEA CO., NM

Sampling Date: 04/07/08
Sample Type: WATER
Sample Condition: COOL & INTACT
Sample Received By: ML
Analyzed By: AB

LAB NUMBER	SAMPLE ID	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL BENZENE (mg/L)	TOTAL XYLENES (mg/L)
ANALYSIS DATE		04/11/08	04/11/08	04/11/08	04/11/08
H14610-1	MONITOR WELL #1	<0.001	<0.001	<0.001	<0.003
H14610-2	MONITOR WELL #2	<0.001	<0.001	<0.001	<0.003
H14610-3	MONITOR WELL #3	<0.001	<0.001	<0.001	<0.003
Quality Control		0.101	0.097	0.092	0.296
True Value QC		0.100	0.100	0.100	0.300
% Recovery		101	96.6	92.4	98.6
Relative Percent Difference		7.0	6.3	2.7	1.9

METHOD: EPA SW-846 8021B

Chemist

04/15/08
Date

H14610WBRICE

101 East Marland - Hobbs, New Mexico 88240
Tel (575) 393-2326
Fax (575) 393-2476

Cardinal Laboratories, Inc.

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

LAB Order ID # _____

Company Name: RICE Operating Company	BILL TO Company: RICE Operating Company — PO#
Project Manager: Kristin Farris-Pope, Project Scientist	Address: (Street, City, Zip) 122 W Taylor Street ~ Hobbs, New Mexico 88240
Address: (Street, City, Zip) 122 W Taylor Street ~ Hobbs, New Mexico 88240	Phone#: (575) 393-9174 — Fax#: (575)397-1471
Phone #: (575) 393-9174	Fax #: (575) 397-1471
Project #:	Project Name: BD Santa Rita Leak
Project Location: T22S R37E Sec27 A ~ Lea County New Mexico	Sampler Signature: Rozanne Johnson (575)631-9310 -rozanne@valornet.com

LAB # (LAB USE ONLY)	FIELD CODE	(G)rab or (C)omp	# CONTAINERS	MATRIX: WATER	SOIL	AIR	SLUDGE		PRESERVATIVE METHOD: HCL (2-40ml VOA)	HNO_3	$NaHSO_4$	H_2SO_4	ICE (1-1Liter HDPE)	NONE	SAMPLING: DATE (2008)	TIME	MTBE 8021B/602	BTEX 8021B/602	TPH 418.1/TX1005/TX1005 Extended (C35)	PAH 8270C	Total Metals Ag As Ba Cd Cr Pb Se Hg 6010B/200.7	TCLP Metals Ag As Ba Cd Cr Pb Se Hg	TCLP Volatiles	TCLP Semi Volatiles	TCLP Pesticides	RCI	GC/MS Vol. 8260B/624	GC/MS Semi. Vol. 8270C/625	PCB's 8082/608	Pesticides 8081A/608	BOD, TSS, pH	Moisture Content		Cations (Ca, Mg, Na, K)	Anions (Cl, SO4, CO3, HCO3)	Total Dissolved Solids	Chlorides	Turn Around Time ~ 24 Hours
H14610-1	Monitor Well #1	G	3	X					2				1		4-7	9:45		X																X	X	X		
-2	Monitor Well #2	G	3	X					2				1		4-7	8:55		X																X	X	X		
-3	Monitor Well #3	G	3	X					2				1		4-7	10:40		X																X	X	X		

ANALYSIS REQUEST
(Circle or Specify Method No.)

Relinquished by: Rozanne Johnson	Date: 4-9-2008	Time: 14:45	Received by: Misty LeBeau	Date: 4/9/08 Time: 2:45p
Relinquished by:	Date:	Time:	Received By: (Laboratory Staff)	Date: Time:

Phone Results		Yes		No
Fax Results		Yes		No Additional Fax Number:

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

Sample Condition: Cool — Yes ✓ / No ; Intact — Yes ✓ / No

CHECKED BY: (Initials) MCoB

REMARKS:

Email Results to: kpope@riceswd.com
lweinheimer@riceswd.com
rozanne@valornet.com

ENVIRONMENTAL LAB OF

12600 West I-20 East - Odessa, Texas 79765

Analytical Report

Prepared for:

Kristin Farris-Pope

Rice Operating Co.

122 W. Taylor

Hobbs, NM 88240

Project: BD System Santa Rita EOL Site

Project Number: None Given

Location: BD System Santa Rita EOL Site

Lab Order Number: 5I01023

Report Date: 09/06/05

Rice Operating Co.	Project: BD System Santa Rita EOL Site	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	09/06/05 11:43

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-1 (40'-45')	5101023-01	Soil	08/30/05 11:00	09/01/05 12:47

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

Rice Operating Co.	Project: BD System Santa Rita EOL Site	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	09/06/05 11:43

General Chemistry Parameters by EPA / Standard Methods

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-1 (40'-45') (5I01023-01) Soil									
Chloride	**3570**	50.0	mg/kg	100	EI50206	09/02/05	09/02/05	EPA 300.0	
% Moisture	**21.6**	0.1	%	1	EI50201	09/01/05	09/02/05	% calculation	

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

General Chemistry Parameters by EPA / Standard Methods - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EI50201 - General Preparation (Prep)										
Blank (EI50201-BLK1)				Prepared: 09/01/05 Analyzed: 09/02/05						
% Solids	100		%							
Duplicate (EI50201-DUP1)	**Source: 5H31020-01**			Prepared: 09/01/05 Analyzed: 09/02/05						
% Solids	91.1		%		90.3			0.882	20	
Duplicate (EI50201-DUP2)	**Source: 5I01027-02**			Prepared: 09/01/05 Analyzed: 09/02/05						
% Solids	90.4		%		90.6			0.221	20	
Batch EI50206 - Water Extraction										
Blank (EI50206-BLK1)				Prepared & Analyzed: 09/02/05						
Chloride	ND	0.500	mg/kg							
LCS (EI50206-BS1)				Prepared & Analyzed: 09/02/05						
Chloride	8.55		mg/L	10.0		85.5	80-120			
Calibration Check (EI50206-CCV1)				Prepared & Analyzed: 09/02/05						
Chloride	9.04		mg/L	10.0		90.4	80-120			
Duplicate (EI50206-DUP1)	**Source: 5I01023-01**			Prepared & Analyzed: 09/02/05						
Chloride	3670	50.0	mg/kg		3570			2.76	20	

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

Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
LCS	Laboratory Control Spike
MS	Matrix Spike
Dup	Duplicate

Report Approved By: Raland K Tuttle Date: 9/6/2005

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

Environmental Lab of Texas

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

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: Kristin Farris
Company Name: Rice Operating Company
Company Address: 122 West Taylor
City/State/Zip: Hobbs, New Mexico 88240
Telephone No: 505-393-9174
Fax No: 505-397-1471
Sampler Signature:

Project Name: Rice Operating Company
Project #:
Project Loc: BD System Santa Rita EOL Site
PO #:

LAB # (lab use only)	FIELD CODE	Date Sampled	Time Sampled	No. of Containers	Preservative: Ice	Preservative: HNO_3	Preservative: HCl	Preservative: NaOH	Preservative: H_2SO_4	Preservative: None	Preservative: Other (Specify)	Matrix: Water	Matrix: Sludge	Matrix: Soil	Matrix: Other (specify):	Analyze For: TPH: 418.1 8015M 1005 1006	Cations (Ca, Mg, Na, K)	Anions (Cl, SO_4, CO_3, HCO_3)	SAR / ESP / CEC	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEX 8021B/5030 or BTEX 8260	RCI	N.O.R.M.	Total Dissolved Solids	Chlorides	TCLP:	TOTAL:	RUSH TAT (Pre-Schedule)	Standard TAT
510123					Ice	HNO_3	HCl	NaOH	H_2SO_4	None	Other (Specify)	Water	Sludge	Soil	Other (specify):	TPH: 418.1 8015M 1005 1006	Cations (Ca, Mg, Na, K)	Anions (Cl, SO_4, CO_3, HCO_3)	SAR / ESP / CEC	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEX 8021B/5030 or BTEX 8260	RCI	N.O.R.M.	Total Dissolved Solids	Chlorides				
-01	MW-1 (40' - 45')	8-30-05	1100	1	X									X				X												X

Special Instructions: Email results to gil@rthicksconsult.com and kpriceswd@valornet.com

Sample Containers Intact? (Y) N
Temperature Upon Receipt: Rec 2.0°C
Laboratory Comments: labels w/ custody seals - sample in ice chest

Relinquished by:	Date	Time	Received by:	Date	Time
	9/1/05	12:45			
Relinquished by:	**Date**	**Time**	**Received by ELOT:**	**Date**	**Time**
			Rolanda 145	9-01-05	12:47

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

Client: Rice Operating

Date/Time: 9-01-05

Order #: 5I01023

Initials: CK

Sample Receipt Checklist

Temperature of container/cooler?	(Yes)	No	2.0 C
Shipping container/cooler in good condition?	(Yes)	No	
Custody Seals intact on shipping container/cooler?	(Yes)	No	Not present
Custody Seals intact on sample bottles?	(Yes)	No	Not present
Chain of custody present?	(Yes)	No	
Sample Instructions complete on Chain of Custody?	(Yes)	No	
Chain of Custody signed when relinquished and received?	(Yes)	No	
Chain of custody agrees with sample label(s)	(Yes)	No	
Container labels legible and intact?	(Yes)	No	
Sample Matrix and properties same as on chain of custody?	(Yes)	No	
Samples in proper container/bottle?	(Yes)	No	
Samples properly preserved?	(Yes)	No	
Sample bottles intact?	(Yes)	No	
Preservations documented on Chain of Custody?	(Yes)	No	
Containers documented on Chain of Custody?	(Yes)	No	
Sufficient sample amount for indicated test?	(Yes)	No	
All samples received within sufficient hold time?	(Yes)	No	
VOC samples have zero headspace?	Yes	No	(Not Applicable)

Other observations:

_____

_____

_____

Variance Documentation:

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

Regarding:

_____

_____

_____

Corrective Action Taken:

_____

_____

_____

_____

_____

_____

_____

_____

APPENDIX D

QUALITY PROCEDURES

Rice Operating Company

Quality Procedure
Soil Samples for Transportation to a Laboratory

1.0 Purpose

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

2.0 Scope

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

3.0 Preliminary

3.1 Obtain sterile sampling containers from the testing laboratory designated to conduct analyses of the soil. The shipment should include a Certificate of Compliance from the manufacturer of the collection bottle or vial and a Serial Number for the lot of containers. Retain this Certificate for future documentation purposes.

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

4.0 Chain of Custody

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

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

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

5.0 Sampling Procedure

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

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

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

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

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

6.0 Documentation

6.1 The testing laboratory shall provide the following minimum information:

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

Rice Operating Company

QUALITY PROCEDURE
Chloride Titration Using
0.282 Normal Silver Nitrate Solution

1.0 Purpose

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

2.0 Scope

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

3.0 Sample Collection and Preparation

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

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

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

4.0 Sample Preparation

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

4.2 Add at least 10 grams of reverse osmosis water to the soil sample and shake for 20 seconds.

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

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

5.0 Titration Procedure

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

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

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

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

5.5 Record the ml of silver nitrate used.

6.0 Calculation

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

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

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

Record all results on the delineation form.

Rice Operating Company

Quality Procedure
Development of Cased Water-Monitoring Wells

1.0 Purpose

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

2.0 Scope

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

3.0 Sample Collection and Preparation

3.1 Prior to development, the static water level and height of the water column within the well casing will be measured with the use of an electric D.C. probe or a steel engineer's tape and water sensitive paste.

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

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

4.0 Purging

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

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

5.0 Water Disposal

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

6.0 Records

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

Rice Operating Company

Quality Procedure
Sampling of Cased Water-Monitoring Well
Using One-Liter Bailer

1.0 Purpose

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

2.0 Scope

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

3.0 Preliminary

3.1 Obtain sterile sampling containers from the testing laboratory designated to conduct analyses of the water. The shipment should include a Certificate of Compliance from the manufacturer of the collection bottle or vial and a Serial Number for the lot of containers. Retain this Certificate for future documentation purposes.

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

Compound to be Analyzed	Sample Container Size	Sample Container Description	Cap Requirements	Preservative	Maximum Hold Time
BTEX	40 ml	VOA Container	Teflon Lined	HCl	7 days
TPH	1 liter	clear glass	Teflon Lined	HCl	28 days
PAH	1 liter	amber glass	Teflon Lined	Ice	7 days
Cation/Anion	1 liter	clear glass	Teflon Lined	None	48 Hrs
Metals	1 liter	HD polyethylene	Any Plastic	Ice/HNO_3	28 Days
TDS	300 ml	clear glass	Any Plastic	Ice	7 Days

4.0 Chain of Custody

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

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

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

5.0 Bailing Procedure

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

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

5.3 Take care to insure that the bailing device and string do not become cross-contaminated. A clean pair of rubber gloves should be used when handling either the retrieval string or bailer. The retrieval string should not be allowed to come into contact with the ground.

6.0 Sampling Procedure

6.1 Once the well has been bailed in accordance with 5.2 of this procedure, a sample may be decanted into the appropriate sample collection jar directly from the bailer. The collection jar should be filled to the brim. Once the jar is sealed, turn the jar over to detect any bubbles that may be present. Add additional water to remove all bubbles from the sample container.

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

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

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

7.0 Documentation

7.1 The testing laboratory shall provide the following minimum information:

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

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

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

Example:

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

Rice Operating Company

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

1.0 Purpose

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

2.0 Scope

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

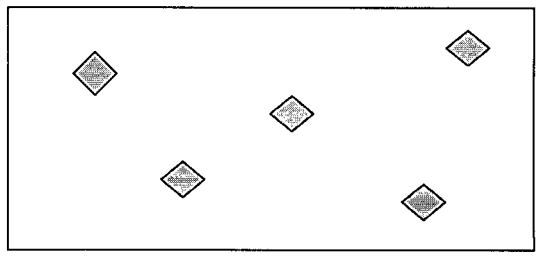
3.0 Sampling Procedure

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

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

3.2 Sidewall samples

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



3.2.2 Thoroughly blend these five samples in the blending bowl.
3.2.3 Pour blended sample into sifter and sift into labeled baggie.
3.2.4 Repeat steps 3.2.1 through 3.2.4 for each remaining sidewall, using a clean blending bowl for each sidewall.
3.2.5 From each labeled baggie, procure a 5 oz portion and pour into a baggie labeled "Sidewall Composite". Blend this soil mixture completely.
3.2.6 Obtain proper laboratory sample container for "Sidewall Composite" and continue with subparagraph 5.3 of QP – 02.

3.3 Bottom Sample
3.3.1 From bottom of excavation, procure a 5oz sample from each of five distinct points with distinct points resembling the "W" pattern as illustrated above.
3.3.2 Thoroughly blend these five samples in a clean blending bowl.
3.2.3 Pour blended sample into sifter and sift into baggie labeled "Bottom Composite".
3.2.6 Obtain proper laboratory sample container for "Bottom Composite" and continue with subparagraph 5.3 of QP – 02.

APPENDIX E

C-141 FORM

District I
P.O. Box 1980, Hobbs, NM 88241-1980
District II
811 South First, Artesia, NM 88210
District III
1000 Rio Brazos, Aztec, NM 87410
District IV
2040 South Pacheco, Santa Fe, NM 87505

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
2040 South Pacheco
Santa Fe, NM 87505
OPERATOR'S MONTHLY REPORT

Form C-141
Originated 2/13/97

Submit 2 copies to Appropriate District Office in accordance with Rule 116 on back side of form

Release Notification and Corrective Action
OPERATOR

☒ Initial Report ☐ Final Report

Name	Contact
Rice Operating Company	Joe Gatts
Address 122 West Taylor Hobbs, NM 88240	**Telephone No** 505-393-9174
Facility Name B-D	**Facility Type** SWD Disposal Line

Surface Owner	Mineral Owner	Lease No.
Irvin Boyd		

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South line	Feet from the	East/West Line	County
A	27	22s	37E					LEA

NATURE OF RELEASE

Type of Release	Volume of Release	Volume Recovered
Produced Water	55 bbls	40 bbls
Source of Release Pipeline	**Date and Hour of Occurrence** Unknown	**Date and Hour of Discovery** 11/22/03 11:22 am.
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	**If YES, To Whom?** Buddy Hill and Donna ext. 115 voicemail	
By Whom? John Rampone	**Date and Hour** 11/22/03 2:00 p.m.	
Was a Watercourse Reached? ☐ Yes ☒ No	**If YES, Volume Impacting the Watercourse.**	

If a Watercourse was Impacted, Describe Fully. (Attach Additional Sheets If Necessary)

Describe Cause of Problem and Remedial Action Taken. (Attach Additional Sheets If Necessary)
2" PVC compression coupling came apart. Replaced coupling and 10 ft. joint of PVC.

Describe Area Affected and Cleanup Action Taken. (Attach Additional Sheets If Necessary).
The release consisted of 55 bbls. which affected 11,211 square feet. 40 bbls were recovered. ROC will remediate according to the Generic spill and leak plan or submit RBCA plan to NMOCD for approval.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Signature:	OIL CONSERVATION DIVISION	
Printed Name: Joe Gatts	Approved by District Supervisor:	
Title: Environmental Technician	Approval Date:	Expiration Date:
Date: 12/1/03 Phone: 505-393-9174	Conditions of Approval:	Attached ☐

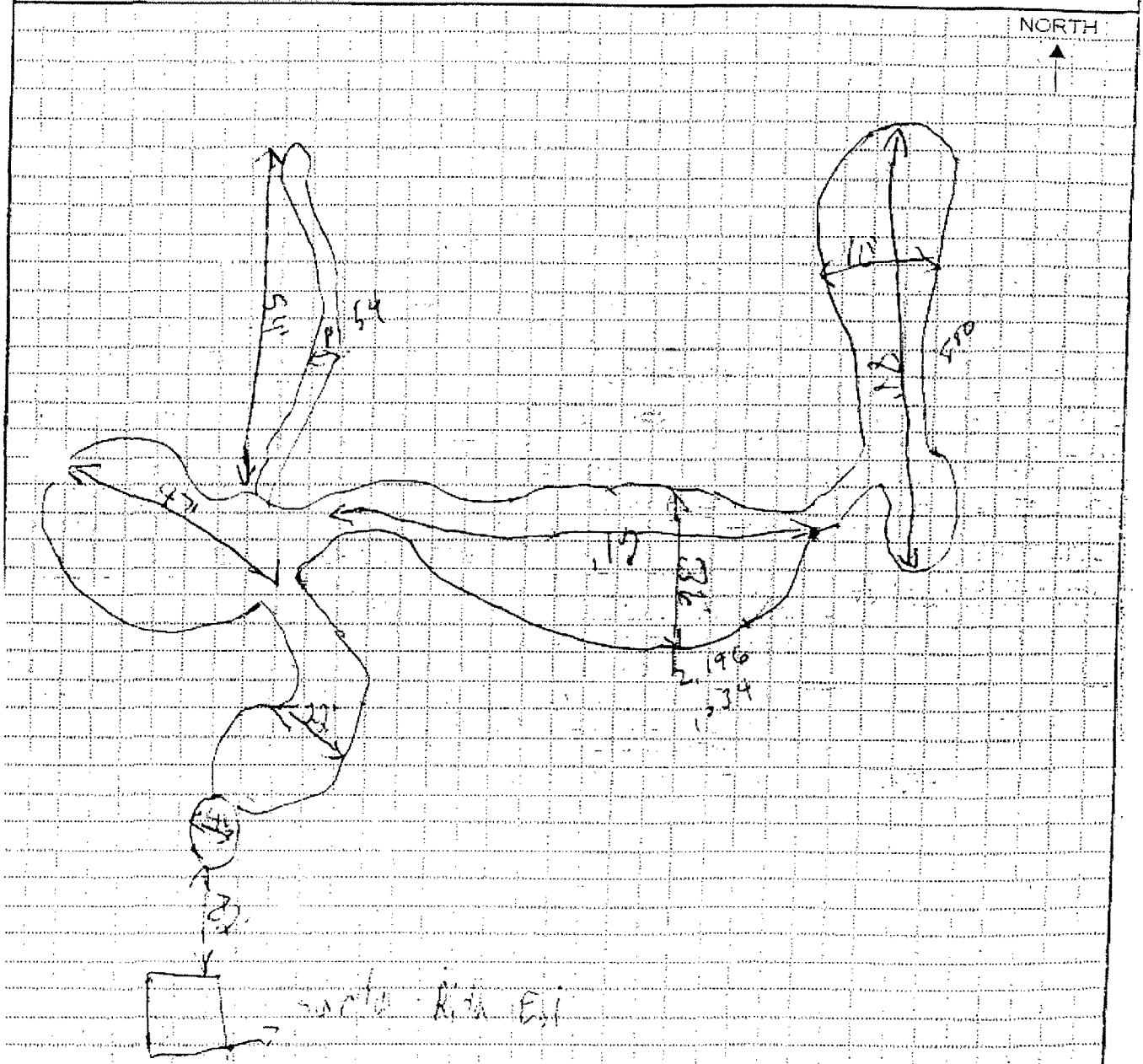
RICE INITIAL SPILL REPORT

THIS THE FIRST SPILL AT THIS LOCATION? yes

DESCRIBE AREA AFFECTED AND ON-SITE ACTION TAKEN

PASTURE ✓ ROADWAY _____ OTHER _____

DRAW SKETCH OF AFFECTED AREA



REPORT PREPARED BY Luis Tedeiro DATE 11-22-23

FIELD TESTS FOR INITIAL DELINEATION

TEST POINT NO. Background

DEPTH	TPH	Cl⁻	Soil	H_2O

TEST POINT NO. Origin of Leak

DEPTH	TPH	Cl⁻	Soil	H_2O
5' [illegible]		2243		
6' [illegible]		2761		
7'		2495		

TEST POINT NO. 1

DEPTH	TPH	Cl⁻	Soil	H_2O
Surface		5530		
1' [illegible]		3482		
2' [illegible]		8157		

TEST POINT NO. 2

DEPTH	TPH	Cl⁻	Soil	H_2O
Surface		2346		
1' [illegible]		1834		
2'		1128		

TEST POINT NO. 3

DEPTH	TPH	Cl⁻	Soil	H_2O
Surface		3186		
1' [illegible]		2657		
2' [illegible]		1778		

TEST POINT NO.

DEPTH	TPH	Cl⁻	Soil	H_2O

Vertical delineation with Hoe

TEST POINT NO. [illegible] Source

DEPTH	TPH	Cl⁻	Soil	H_2O
6' [illegible]		3150		
7' [illegible]		2793		
10' [illegible]		2684		
12' [illegible]		2764		

TEST POINT NO. 5' East of Source

DEPTH	TPH	Cl⁻	Soil	H_2O
5' [illegible]		3284		
6' [illegible]		268[illegible]		
8' [illegible]		2992		
10' [illegible]		2708		
12' [illegible]		2816		

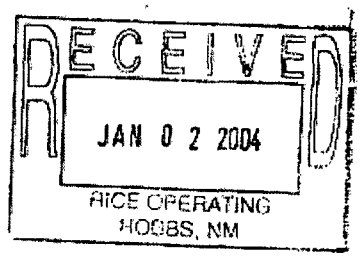
TEST POINT NO.

DEPTH	TPH	Cl⁻	Soil	H_2O

[illegible] arrived at 8:30, and we split samples [illegible] of [illegible]

CARDINAL LABORATORIES

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



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

Receiving Date: 12/23/03
Reporting Date: 12/23/03
Project Number: NOT GIVEN
Project Name: SANTA RITA EOL LEAK SITE
Project Location: BD

Analysis Date: 12/23/03
Sampling Date: 12/19/03
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: AH
Analyzed By: HM

LAB NUMBER	SAMPLE ID	Cl^- (mg/Kg)
H8288-1	12' BGS @ SOURCE	2495
H8288-2	12' BGS @ 5' E OF SOURCE	2623
Quality Control		940
True Value QC		1000
% Recovery		94.0
Relative Percent Difference		7.4

METHOD: Standard Methods	4500-ClB

Note: Analyses performed on 1:4 w:v aqueous extracts.

Chemist

12/23/03
Date

h8288

CHAIN OF CUSTODY AND ANALYSIS REQUEST

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

Page ____ of ____

Company Name:	RICE Operating
Project Manager:	Joe Gatts
Address:	122 W. Taylor
City:	Hobbs State: NM Zip: 88240
Phone #:	(505) 393-9174 Fax #: (505) 397-1471
Project #:	Project Owner:
Project Name:	SANTA RITA Fol Lock s/L
Project Location:	BD
Sampler Name:	

BILL TO

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

ANALYSIS REQUEST

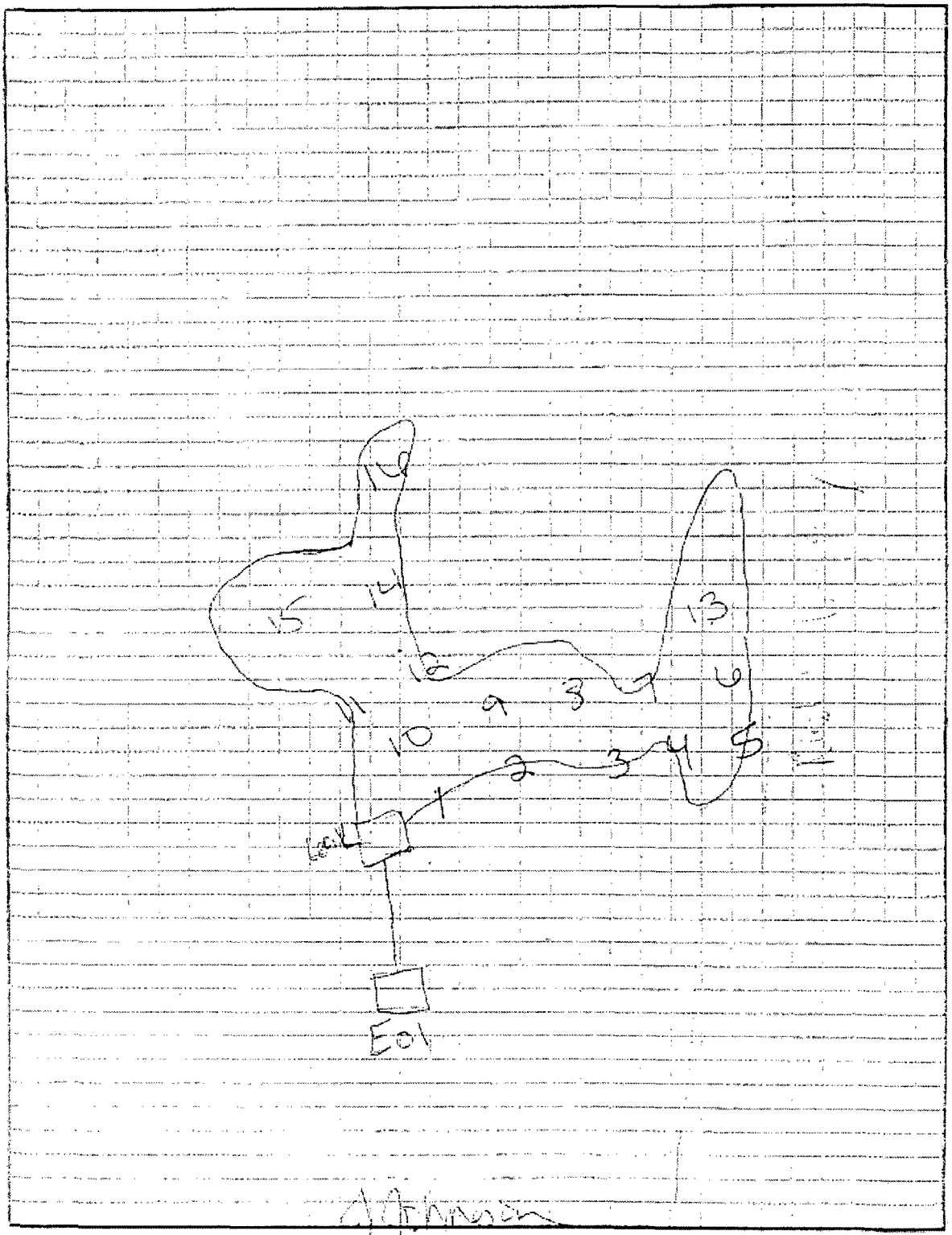
FOR LAB USE ONLY Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX: GROUNDWATER	WASTEWATER	SOIL	CRUDE OIL	SLUDGE	OTHER:	PRESERV: ACID/BASE:	ICE / COOL	OTHER:	SAMPLING: DATE	TIME	Chloride
18298-1	12' bgs at Source	G	1			X					X		12/9/03	10 00	X
-2	12' bgs at 5' East of Source	G	1			X					X		12/9/03	10 30	X

NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising whether based in contract or tort, shall be limited to the amount paid by the client for the ... 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 ... 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, ... or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.

Terms and Conditions: Interest will be charged on all accounts more than 30 days past due at the rate of 24% per annum from the original date of invoice, and all costs of collection, including attorney's fees.

Sampler Relinquished: Joe Gatts	Date: 122303 Time: 1110	Received By:	Phone Result: ☐ Yes ☐ No Add'l Phone #:
Relinquished By:	Date: 12-23-03 Time: 1:19	Received By: (Lab Staff) Hope S. Mann	Fax Result: ☐ Yes ☐ No Add'l Fax #:
Delivered By: (Circle One) Sampler - UPS - Bus - Other:	Sample Condition: Cool: ☑ Yes ☐ No Intact: ☑ Yes ☐ No	CHECKED BY: (Initials)	REMARKS:

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



Sample points
Hand Away
8/9/05