

1R - 427-170

**GENERAL
CORRESPONDENCE**

YEAR(S):

2007



CERTIFIED MAIL
RETURN RECEIPT NO. 7099 3400 0017 1737 2138

December 27, 2007

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

RECEIVED
DEC 31 2007
Environmental Bureau
Oil Conservation Division

RE: INVESTIGATION & CHARACTERIZATION PLAN
EME Jct. J-1 Site
T20S-R36E-Section 1, Unit Letter J
1R-427-170

Mr. Hansen:

RICE Operating Company (ROC) has retained Trident Environmental to address potential environmental concerns at the above-referenced site. ROC is the service provider (agent) for the Blinebry-Drinkard (BD) 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 AFE approval and work begins as funds are received. In general, project funding is not forthcoming until NMOCD approves the work plan. Therefore, your timely review of this submission is requested.

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

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

Each site shall have three submissions or a combination of:

1. This Investigation and Characterization Plan (ICP) is a proposal for data gathering and site characterization and assessment.
2. Upon evaluating the data and results from this ICP, a recommended remedy will be submitted in a Corrective Action Plan (CAP).
3. Finally, after implementing the remedy, a closure report with final documentation will be submitted.



BACKGROUND

The Jct. J-1 site is located at township 20 south, range 36 east, section 1, unit letter J approximately three miles southwest of Monument, New Mexico as shown on the attached Site Topographic Map (Figure 1). The site is situated on state land with grazing rights allotted to James R. Byrd. Land in the site area is primarily utilized for natural oil and gas production and pasture land for cattle grazing.

Groundwater in the site area occurs within the High Plains aquifer under water table (unconfined) conditions (Hart and McAda, 1985) at a depth of approximately 30-35 feet bgs. The saturated portion of the aquifer is estimated to be 10-15 ft thick (Nicholson and Clebsch, 1961).

PREVIOUS WORK

In March 2004, ROC initiated the removal of the J-1 junction box as part of the Junction Box Upgrade Program. The J-1 junction box was permanently removed and 3-inch polyethylene line was installed inside the existing 8-inch A/C pipeline to maintain the operation of the saltwater disposal system.

Initial soil sampling activities at the former junction box location were conducted between August 16 and 19, 2004 by trenching with a backhoe. During the course of excavating an area 30 feet wide by 30 feet long to a depth of 12 feet below ground surface (bgs), soil samples were collected at regular intervals directly beneath the former junction box, at a point 5 feet north of the junction box, and at 15 feet from the junction box in each of four directions as shown in Figure 2. On August 23, 2004, composite soil samples were recovered from the floor and walls of the excavation, and from blended soil to be used for backfill, for laboratory analysis. All soil samples were tested for chloride content using field-adapted Method 9253 (QP-03) and headspace readings were recorded using a Mini-RAE Model 76 photoionization detector (PID). There was no indication of hydrocarbon impact to the vadose zone in any of the samples as all PID readings were 0.1 ppm, and total petroleum hydrocarbons (TPH) concentrations were well below NMOCD guidelines for samples submitted to the laboratory for analysis by Method 8015M. Although the highest chloride concentration measured only 1,208 parts per million (ppm), chloride levels did not conclusively decline vertically or horizontally throughout the 30 x 30 x 12-ft-deep excavation.

Following characterization activities, the excavated soil was blended on site and backfilled to a depth of 6 feet bgs. A 1-foot thick compacted clay layer was installed to prevent potential downward migration of any residual constituents of concern and the remaining blended soils were placed above the clay. An identification plate was placed on the surface to mark the location of the former junction box and the disturbed surface was seeded with a blend of native vegetation on October 4, 2004.

Notice of potential groundwater impact was sent to the NMOCD October 15, 2004. A Junction Box Disclosure Report (attached) documenting the procedures described above was submitted to the OCD with all the 2004 annual junction box reports.

RECOMMENDATION FOR FURTHER ACTIONS

The replacement of the junction box has minimized the threat of additional impact from the vadose zone, however further investigation and characterization of the site is necessary to delineate the vadose zone below twelve feet and evaluate the potential for groundwater impact. The additional assessment is also necessary to assist ROC in selecting the appropriate soil and/or groundwater remedy.

Task 1 Evaluate Concentrations of Constituents of Concern in the Vadose Zone

Subsurface soil samples for characterization of the lateral and vertical extent of chloride-impacted soil will be collected at a maximum of 5-foot intervals using a drilling rig in accordance with the procedures explained in QP-02, QP-03, and QP-07 (attached). Soil samples will be field-tested for chloride content using the titration method. A concentration of 1,000 ppm chloride will be used to delineate the extent of impact to the vadose zone. Preliminary sampling results indicate no hydrocarbon impact to the vadose zone, however if further sampling activities exhibit evidence of hydrocarbon-impact, samples will also be collected for headspace analysis using an organic vapor meter (OVM), which will be calibrated to assume a benzene response factor. Select samples with OVM headspace readings above 100 ppm, if present, will also be analyzed for benzene, toluene, ethylbenzene, and xylenes (BTEX) using EPA Method 8021B.

Task 2 Evaluate Concentrations of Constituents of Concern in the Groundwater

If we detect evidence of groundwater impact, one monitoring well will be placed in the area with the greatest potential for groundwater impact, in accordance with EPA and industry standards and developed by bailing with a rig or hand bailer, or pumping with a submersible pump to remove fine-grained sediment disturbed during drilling and to ensure collection of representative samples. If data suggest ground water impairment, two quarters of ground water monitoring will be conducted to confirm any initial result. If groundwater impact is confirmed, additional monitoring wells may be installed to determine the local groundwater gradient direction and lateral extent of groundwater impact. Groundwater samples will be collected in accordance with procedures explained in QP-04 and QP-05 (attached), and analyzed for BTEX, major ions, and total dissolved solids (TDS).

The information gathered from tasks 1 and 2 will be evaluated and utilized to design a soil and/or ground water remedy if needed. The remedy that offers the greatest environmental benefit while causing the least environmental impairment will be selected. Such recommendations and findings will be presented to NMOCD in a subsequent Corrective Action Plan (CAP). When evaluating 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.

We appreciate the opportunity to work with you on this project. Please feel free to call me at 432-638-8740 or Kristin Pope at 505-393-9174, if you have any questions.

Sincerely,



Gilbert J. Van Deventer, REM, PG
Trident Environmental - Project Manager

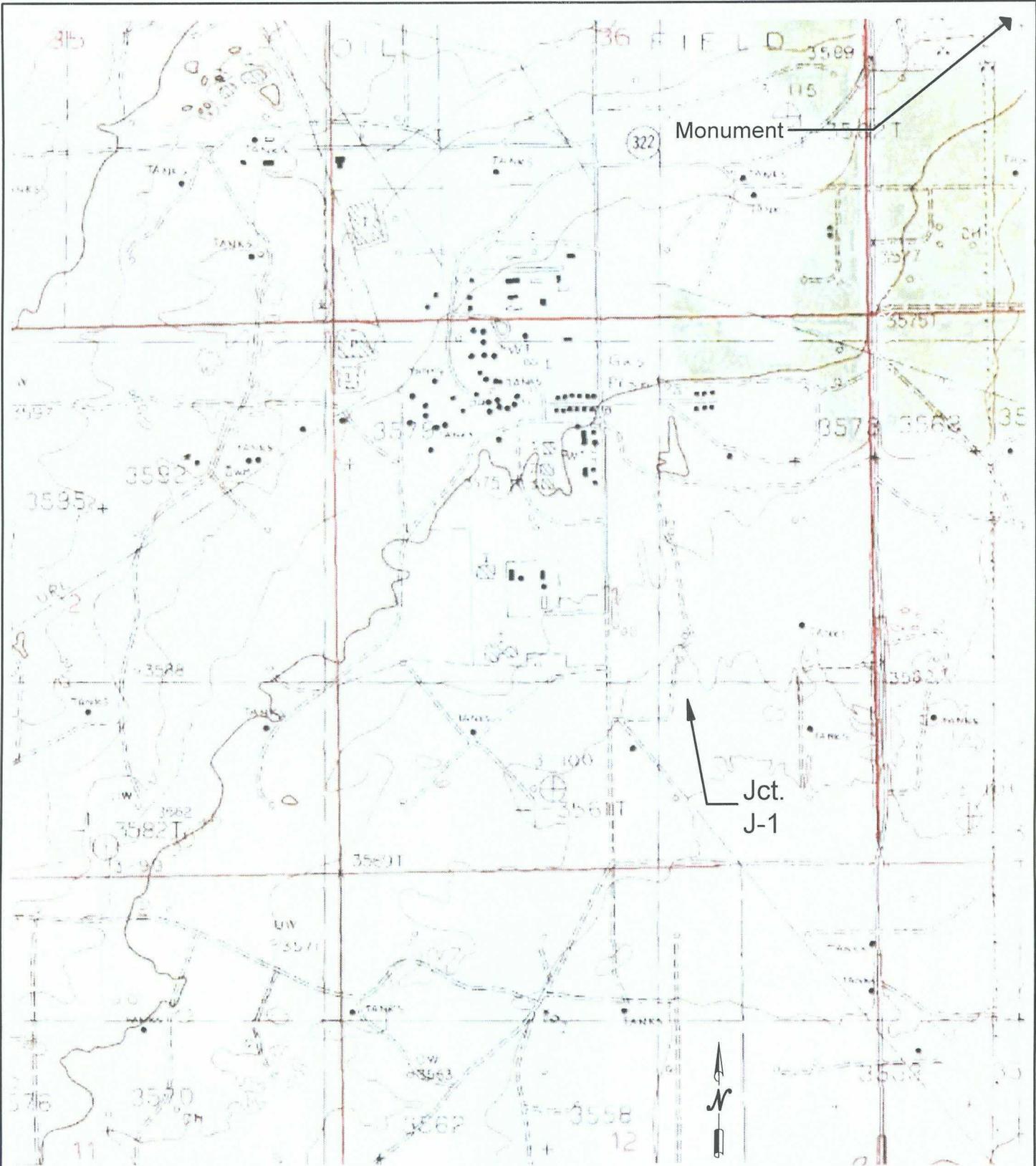
cc: CDH, JSC, KFP, file

enclosures: site location and sampling maps, disclosure report, photos, and sampling procedures

Site Location Map

And

Site Map of Soil Sampling Results

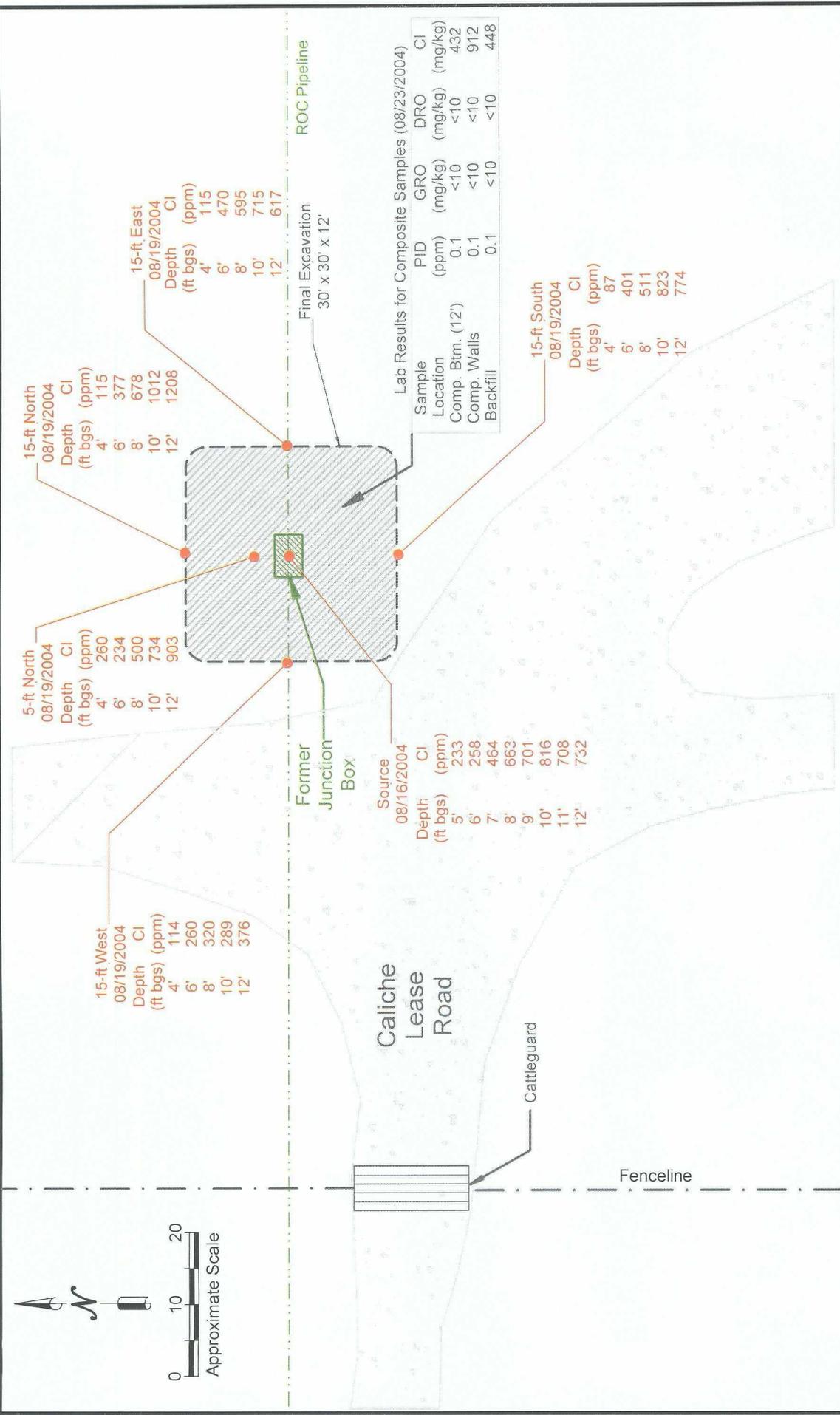


USGS Monument South (NM)
Topographic Quadrangle (1975)



EME Jct. J-1 Site
T20S - R37E - Section 6 - Unit L
RICE *Operating Company*

FIGURE 1
SITE
TOPOGRAPHIC MAP



15-ft West
08/19/2004

Depth (ft bgs)	Cl (ppm)
4'	114
6'	260
8'	320
10'	289
12'	376

5-ft North
08/19/2004

Depth (ft bgs)	Cl (ppm)
4'	260
6'	234
8'	500
10'	734
12'	903

15-ft North
08/19/2004

Depth (ft bgs)	Cl (ppm)
4'	115
6'	377
8'	678
10'	1012
12'	1208

15-ft East
08/19/2004

Depth (ft bgs)	Cl (ppm)
4'	115
6'	470
8'	595
10'	715
12'	617

Source
08/16/2004

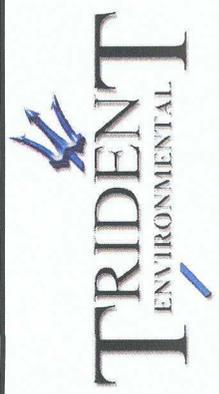
Depth (ft bgs)	Cl (ppm)
5'	233
6'	258
7'	464
8'	663
9'	701
10'	816
11'	708
12'	732

Lab Results for Composite Samples (08/23/2004)

Sample Location	PID (ppm)	GRO (mg/kg)	DRO (mg/kg)	Cl (mg/kg)
Comp. Btm. (12')	0.1	<10	<10	432
Comp. Walls	0.1	<10	<10	912
Backfill	0.1	<10	<10	448

15-ft South
08/19/2004

Depth (ft bgs)	Cl (ppm)
4'	87
6'	401
8'	511
10'	823
12'	774



EME Jct. J-1 Site
T210S - R376E - Section 1, Unit J
RICE Operating Company

FIGURE 2
EXCAVATION SOIL
SAMPLING RESULTS

Junction Box Disclosure Report

RICE OPERATING COMPANY
JUNCTION BOX DISCLOSURE* REPORT

BOX LOCATION

SWD SYSTEM	JUNCTION	UNIT	SECTION	TOWNSHIP	RANGE	COUNTY	BOX DIMENSIONS - FEET		
							Length	Width	Depth
EME	J-1	J	1	20S	36E	Lea	no box--eliminated		

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

Depth to Groundwater 40 feet NMOC D SITE ASSESSMENT RANKING SCORE: 20

Date Started 8/16/04 Date Completed 9/6/04 NMOC D Witness No

Soil Excavated 400 cubic yards Excavation Length 30 Width 30 Depth 12 feet

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

FINAL ANALYTICAL RESULTS: Sample Date 8/23/04 Sample Depth 12

Procure 5-point composite sample of bottom and 4-point composite sample of excavation sidewalls. TPH and chloride laboratory test results completed by using an approved lab and testing procedures pursuant to NMOC D guidelines.

CHLORIDE FIELD TESTS

Sample Location	PID ppm	GRO mg/kg	DRO mg/kg	Chloride mg/kg
4-WALL COMP.	0.1	<10.0	<10.0	432
BOTTOM COMP.	0.1	<10.0	<10.0	912
REMED. BACKFILL	0.1	<10.0	<10.0	448

LOCATION	DEPTH (ft)	ppm
vertical at junction	5	233
	6	258
	7	464
	8	663
	9	701
	10	816
	11	708
15 ft North of junction	12	732
	4	115
	6	377
	8	678
background	10	1012
	12	1208
background	n/a	60
4-wall comp.	n/a	311
bottom comp.	12	738
remed. backfill	n/a	415

General Description of Remedial Action: This junction box has been eliminated and slip-lined with new poly pipeline. The box lumber was removed and the site was delineated using a backhoe while PID screenings and chloride field tests were conducted at regular intervals. Chloride concentrations did not conclusively decline vertically or horizontally throughout the 30 x 30 x 12-ft-deep excavation. No physical indications of hydrocarbon impact were observed, all PID readings were 0.1 ppm, and TPH concentrations were well below NMOC D guidelines. The excavated soil was blended on site and backfilled to 6 ft BGS. At 6 ft, a 1-ft-thick compacted clay barrier was installed to inhibit further downward migration of chloride. The remaining soils were backfilled on top of the clay. The disturbed surface was seeded with a blend of native vegetation on 10/4/2004 and will be monitored for growth. An identification plate has been placed on the surface for future considerations.

ADDITIONAL EVALUATION IS HIGH PRIORITY

enclosures: chloride graphs, photos, lab results, PID field screenings, clay test, diagram

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

SITE SUPERVISOR Joe Gatts SIGNATURE *Joe Gatts* COMPANY RICE Operating Company

REPORT ASSEMBLED BY Kristin Farris Pope SIGNATURE *Kristin Farris Pope*

DATE 10/15/2004 TITLE Project Scientist

* This site is a "DISCLOSURE." It will be placed on a prioritized list of similar sites for further consideration.

EME jct. J-1

unit 'J', Sec. 1, T20S, R36E



undisturbed junction box

12/30/2003



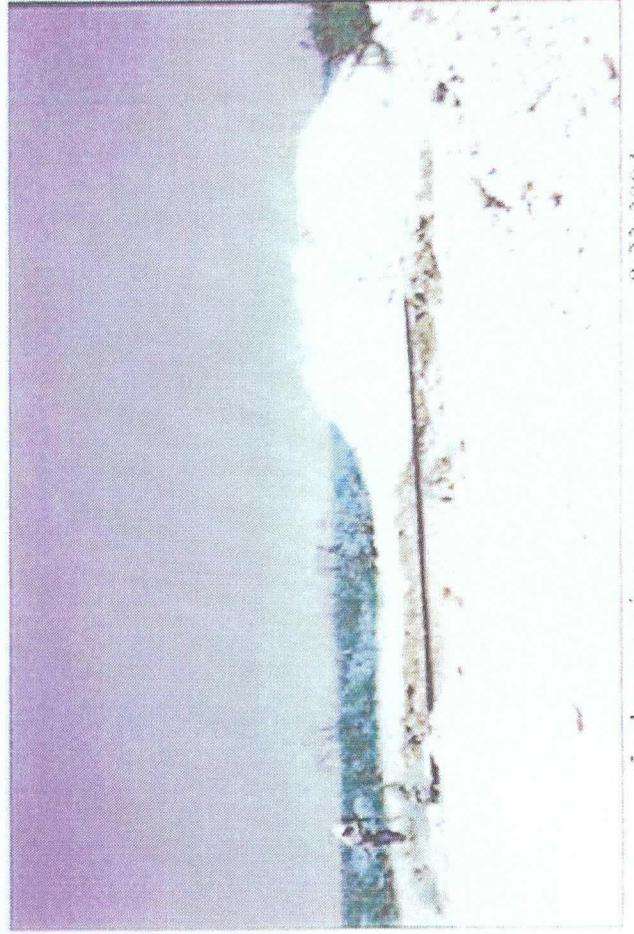
box lumber removed

7/28/2004



beginning excavation

8/16/2004



final excavation

8/23/2004



testing clay

9/2/2004



compacted clay at 6 ft BGS

9/2/2004



seeding disturbed surface: ID plate in foreground

10/1/2001



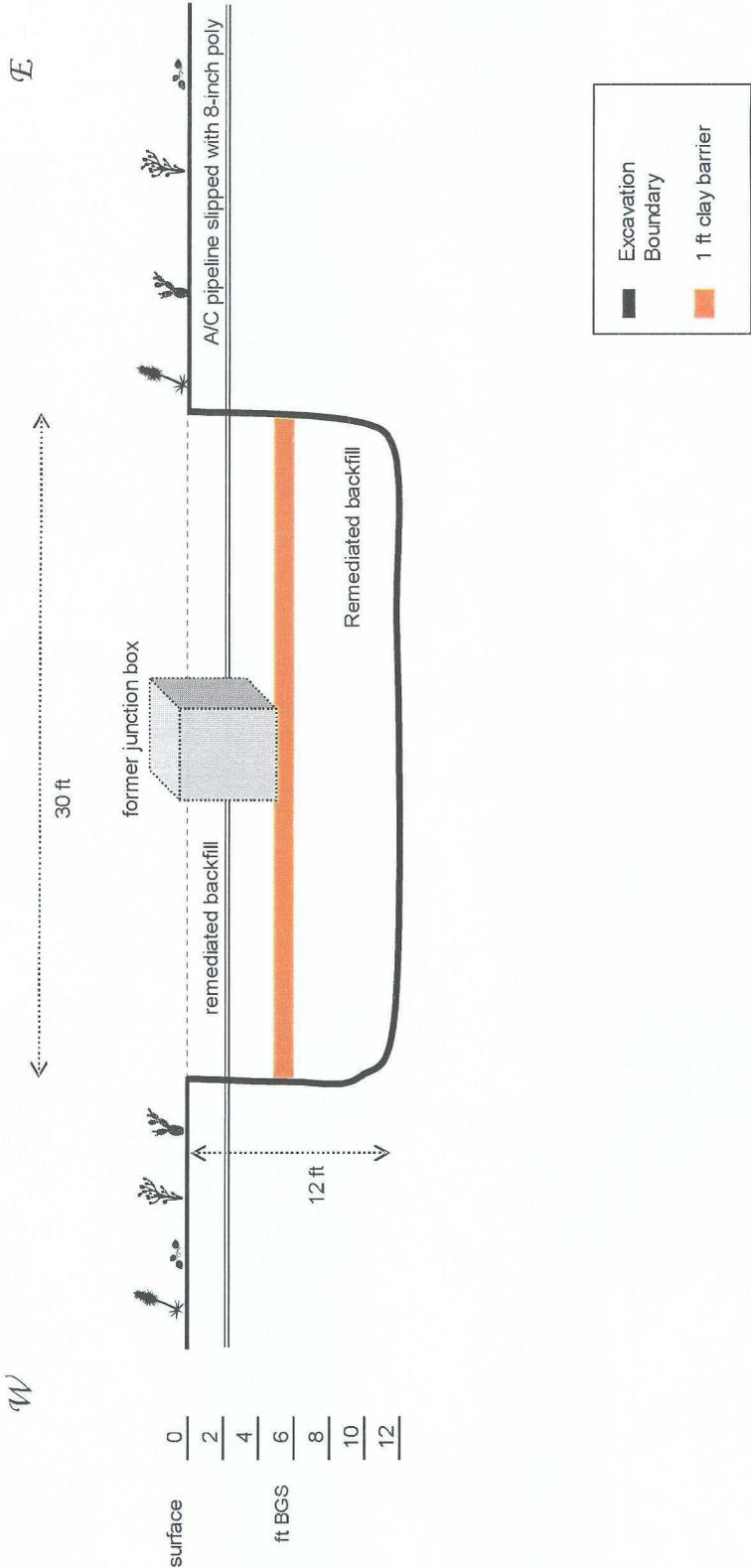
tilling seed into soil

10/1/2004

EME jct. J-1

30 x 30 x 12 ft

Excavation Cross-Section



CHLORIDE CONCENTRATION CURVE

RICE Operating Company

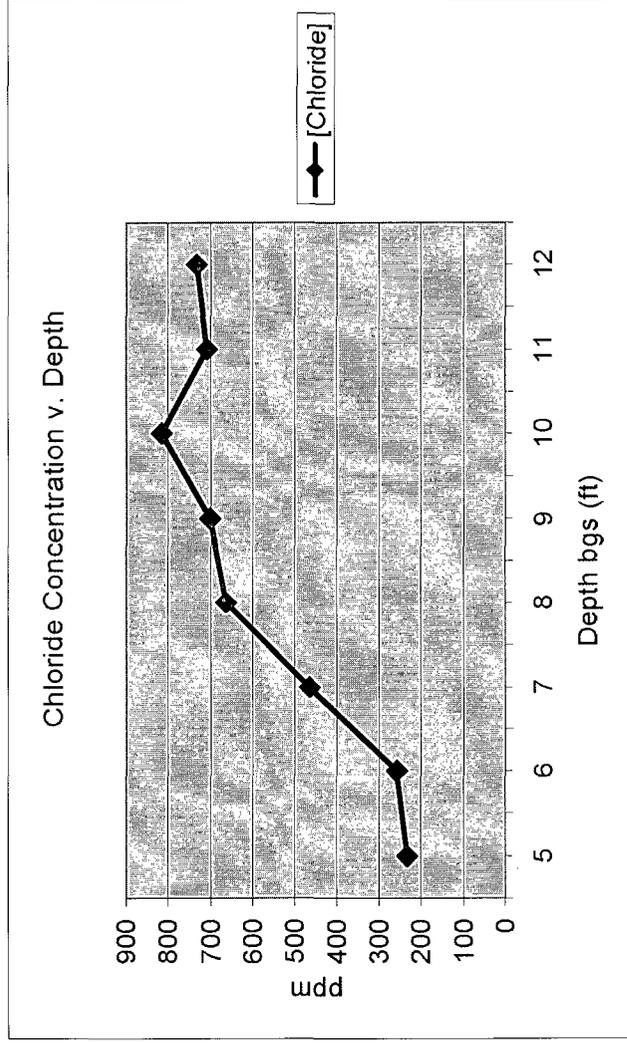
EME jct. J-1

T20S, R36E

Vertical Delineation at Source

Depth bgs (ft)	[Cl] ppm
5	233
6	258
7	464
8	663
9	701
10	816
11	708
12	732

Groundwater = 40 ft



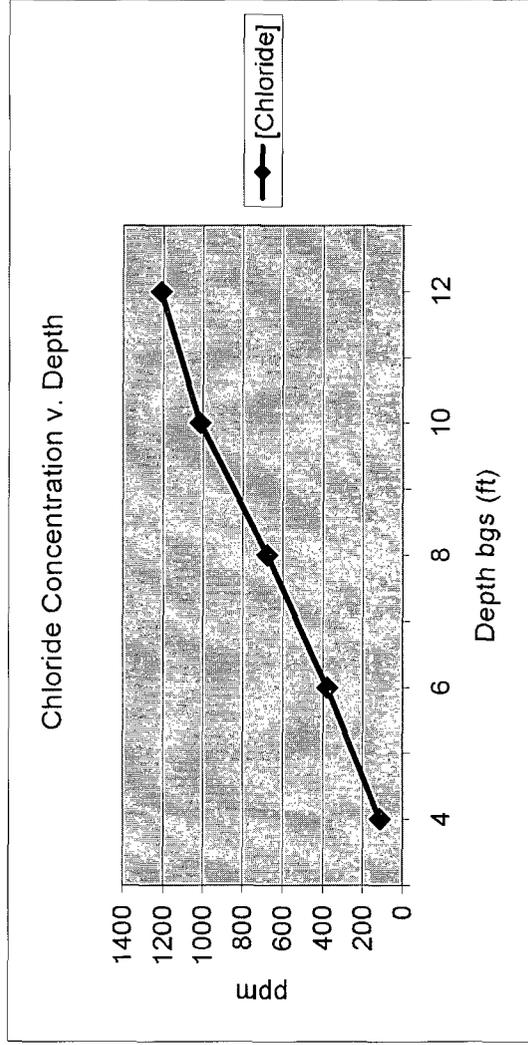
EME jct. J-1

T20S, R36E

15 ft. North of junction

Depth bgs (ft)	[Cl ⁻] ppm
4	115
6	377
8	678
10	1012
12	1208

Groundwater = 40 ft



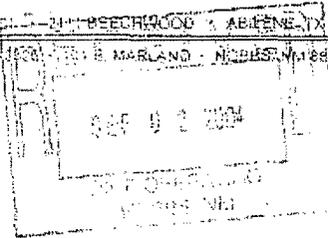


ARDINAL LABORATORIES

PHONE (318) 673-7001 2411 BEECHWOOD ARLING, TX 76010

PHONE (808) 888-1800 1001 W. MARLAND HOBBS, NM 88240

ANALYTICAL RESULTS FOR
RICE OPERATING
ATTN: ROY RASCOM
122 W. TAYLOR
HOBBS, NM 88240
FAX TO:

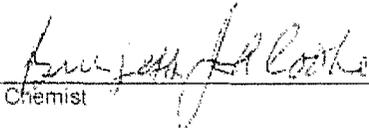


Receiving Date: 08/26/04
Reporting Date: 09/30/04
Project Number: NOT GIVEN
Project Name: EME J-1
Project Location: NOT GIVEN

Sampling Date: 08/23/04
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: GP
Analyzed By: BC/AH

LAB NUMBER	SAMPLE ID	GRO	DRO	CI*
		(C ₆ -C ₁₀) (mg/Kg)	(>C ₁₀ -C ₂₈) (mg/Kg)	
ANALYSIS DATE		08/28/04	08/28/04	08/27/04
H9080-1	BOTTOM COMP @ 12' BGS	<10.0	<10.0	312
H9080-2	4 WALL COMP.	<10.0	<10.0	432
H9080-3	REMD. BACKFILL	<10.0	<10.0	448
Quality Control		791	780	1010
True Value QC		900	800	1000
% Recovery		88.9	97.5	101
Relative Percent Difference		1.0	1.8	8.8

METHODS: TPH GRO & DRO: EPA SW-846 8015 N; CI: Std. Methods 4500-CI/B
*Analyses performed on 1:4 w/v aqueous extracts.


Chemist


Date

H9080.XLS

PLEASE NOTE: Liability and Damages. Cardinal's liability and duty of care are limited to any claim arising directly from the analytical services provided by Cardinal. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within three (3) days of the report's release. It is noted that Cardinal is liable for negligent or consequential damages, including a third party's liability, but not for any other damages, including those of a third party or any other party. All claims of damages are subject to the performance of services provided by Cardinal. Cardinal disclaims any liability for any damages or claims of any kind arising out of the use of the above stated analytical services.

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

CARDINAL 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 _____

BILL TO		ANALYSIS REQUEST															
Company Name: <u>Cardinal Laboratories, Inc.</u> Project Manager: <u>Ray Reynolds</u> Address: <u>177 W Taylor</u> State: <u>NM</u> Zip: <u>88240</u> City: <u>Abilene</u> Phone #: <u>371 7174</u> Fax #: _____ Project #: Project Name: <u>EMF J-1</u> Project Location: Sampler Name:		P.O. #: Company: Attn: Address: City: State: Zip: Phone #: Fax #: Project #: Project Name: Project Location: Sampler Name:		MATRIX <input type="checkbox"/> AIR <input type="checkbox"/> SOIL <input type="checkbox"/> WASTEWATER <input type="checkbox"/> GROUNDWATER <input type="checkbox"/> CONTAINERS <input type="checkbox"/> IRRIGATOR/COMP		PRESERV <input type="checkbox"/> NONE <input type="checkbox"/> ICE/COOL <input type="checkbox"/> ALCOHOL <input type="checkbox"/> OTHER		DATE <u>8/28/01</u> <u>8/28/01</u> <u>8/28/01</u>		TIME <u>1:00</u> <u>1:15</u> <u>1:30</u>		Lab I.D. <u>Sample I.D.</u> <u>177 Taylor</u> <u>Abilene, NM</u> <u>88240</u>		TFA 8015 2 2 2		MONITORING <input type="checkbox"/> YES <input type="checkbox"/> NO ADULT PHOSPHORUS <input type="checkbox"/> YES <input type="checkbox"/> NO	
Date: _____ Time: _____ Date: <u>8/28/01</u> Time: <u>1:00</u> Date: <u>8/28/01</u> Time: <u>1:15</u>		Received By: _____ Received By: (Lab Staff) _____		Date: _____ Time: _____ Date: <u>8/28/01</u> Time: <u>1:00</u>		Checked By: _____ Checked By: (Initials) _____		Sample Condition Cool <input type="checkbox"/> Yes <input type="checkbox"/> No Intact <input type="checkbox"/> Yes <input type="checkbox"/> No		Delivered By: (Circle One) <input checked="" type="checkbox"/> Driver <input type="checkbox"/> UPS <input type="checkbox"/> Bus <input type="checkbox"/> Other		Remarks: _____ Remarks: _____					

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

RICE OPERATING COMPANY
 122 WEST TAYLOR
 HOBBS, NEW MEXICO 88240
 PHONE: (505) 395-9174 FAX: (505) 397-1471
VOC FIELD TEST REPORT FORM
 MINI RAE PLUS CLASSIC PHOTOIONIZATION GAS DETECTOR

MODEL NO: PGM 161S
 CALIBRATION GAS
 GAS COMPOSITION: ISOBUTYLENE
 AIR
 LOT NO: 82-22-30
 EXP. DATE: 11/20/04
 METER READING
 ACCURACY: 100.1

SERIAL NO: 104490
 100 PPM
 BALANCE
 FILL DATE: 5/20/04
 ACCURACY: 1.0 - 2.0

SYSTEM	JUNCTION	UNIT	SECTION	TOWNSHIP	RANGE
EME	J-1	J	1	20	16

SAMPLE	PID RESULT	SAMPLE	PID RESULT
15' N. WALL	0.1		
15' S. WALL	0.1		
15' E. WALL	0.1		
15' W. WALL	0.1		
12' Bath Comp	0.1		
4' WALL Comp	0.1		
DEMO BACKFILL	0.1		

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

Joe Smith
 SIGNATURE

8/25/04
 Date



LABORATORY TEST REPORT
PETTIGREW & ASSOCIATES, P.A.
1110 N. GRINES
HOBBBS, NM 88240
(505) 392-8827



DEBRA P. BRINE, P.E., S.E.
WILLIAM M. HICKS III, P.E., P.F.F.

To: Rice Operating
Attn: Carolyn Haynes
122 W. Taylor
Hobbs, NM 88240
Project: *EHE*
JCT J-147E

Material: Red Clay
Test Method: ASTM: D 2922

Date of Test: August 24, 2004

Depth: 2" Below Bottom of Pipe

Test No.	Location	Dry Density % Maximum	% Moisture	Depth
SG-1	Pit - 20' W & 10' N. of SE Corner	104.4	16.7	

Control Density: 106.2
ASTM: D 698

Optimum Moisture: 17.3

Required Compaction: 95%

Lab No.: 0410114-10115

Copies To: Rice

PETTIGREW & ASSOCIATES

BY:

RICE Operating Company
Quality Procedures

QP-02: Procedure for Obtaining Soil Samples for Transportation to a Lab

QP-03: Sampling and Testing Protocol for Chloride Titration

QP-04: Development of Cased Water-Monitoring Wells

QP-05: Procedure for Obtaining Water Samples (Cased Wells)

QP-07: Sampling and Testing Protocol for VOC in Soil

Rice Operating Company

Quality Procedure

Procedure for Obtaining

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

Sampling and Testing Protocol
Chloride Titration Using .282 Normal
Silver Nitrate Solution

1.0 Purpose

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

2.0 Scope

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

3.0 Sample Collection and Preparation

- 3.1 Collect at least 80 grams of soil from the sample collection point. Take care to insure that the sample is representative of the general background to include visible concentrations of hydrocarbons and soil types. If necessary, prepare a composite sample for soils obtained at several points in the sample area. Take care to insure that no loose vegetation, rocks or liquids are included in the sample(s).
- 3.2 The soil sample(s) shall be immediately inserted into a one-quart or larger polyethylene freezer bag. Care should be taken to insure that no cross-contamination occurs between the soil sample and the collection tools or sample processing equipment.
- 3.3 The sealed sample bag should be massaged to break up any clods.

4.0 Sample Preparation

- 4.1 Tare a clean glass vial having a minimum 40 ml capacity. Add at least 10 grams of the soil sample and record the weight.
- 4.2 Add at least 10 grams of reverse osmosis water to the soil sample and shake for 20 seconds.
- 4.3 Allow the sample to set for a period of 5 minutes or until the separation of soil and water.
- 4.4 Carefully pour the free liquid extract from the sample through a paper filter into a clean plastic cup if necessary.

5.0 Titration Procedure

- 5.1 Using a graduated pipette, remove 10 ml extract and dispense into a clean plastic cup.
- 5.2 Add 2-3 drops potassium chromate (K_2CrO_4) to mixture.
- 5.3 If the sample contains any sulfides (hydrogen or iron sulfides are common to oilfield soil samples) add 2-3 drops of hydrogen peroxide (H_2O_2) to mixture.
- 5.4 Using a 1 ml pipette, carefully add .282 normal silver nitrate (one drop at a time) to the sample while constantly agitating it. Stop adding silver nitrate when the solution begins to change from yellow to red. Be consistent with endpoint recognition.
- 5.5 Record the ml of silver nitrate used.

6.0 Calculation

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

$$\frac{.282 \times 35.450 \times \text{ml AgNO}_3}{\text{ml water extract}} \times \frac{\text{grams of water in mixture}}{\text{grams of soil in mixture}}$$

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

Record all results on the delineation form.

Rice Operating Company

Quality Procedure
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

**Procedure for Obtaining Water Samples (Cased Wells)
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

$$\text{Formula } V = (\pi r^2 h)$$

$$2'' \text{ well } [V/2.31 = \text{gal}] \times 3 = \text{Purge Volume}$$

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 Sampling and Testing Protocol for VOC in Soil

1.0 Purpose

This procedure is to be used to determine the concentrations of Volatile Organic Compounds in soils.

2.0 Scope

This procedure is to be used as the standard field measurement for soil VOC concentrations. It is not to be used as a substitute for full spectrographic speciation of organic compounds.

3.0 Procedure

3.1 Sample Collection and Preparation

3.1.1 Collect at least 500 g. of soil from the sample collection point. Take care to insure that the sample is representative of the general background to include visible concentrations of hydrocarbons and soil types. If necessary, prepare a composite sample of soils obtained at several points in the sample area. Take care to insure that no loose vegetation, rocks or liquids are included in the sample(s).

3.1.2 The soil sample(s) shall be immediately inserted into a one-quart or larger polyethylene freezer bag and sealed. When sealed, the bag should contain a nearly equal space between the soil sample and trapped air. Record the sample name and the time that the sample was collected on the Field Analytical Report Form.

3.1.3 The sealed samples shall be allowed to set for a minimum of five minutes at a temperature of between 10-15 Celsius, (59-77⁰ F). The sample temperatures may be adjusted by cooling the sample in ice, or by heating the sample within a generally controlled environment such as the inside of a vehicle. The samples should not be placed directly on heated surfaces or placed in direct heat sources such as lamps or heater vents.

3.1.4 The sealed sample bag should be massaged to break up any clods, and to provide the soil sample with as much exposed surface area as practically possible.

3.2 Sampling Procedure

3.2.1 The instrument to be used in conducting VOC concentration testing shall be an Environmental Instruments 13471 OVM / Datalogger or a similar PID-type instrument. (Device will be identified on VOC Field Test Report Form.) Prior to use, the instrument shall be zeroed-out in accordance with the appropriate maintenance and calibration procedure outlined in the instrument operation manual. The PID device will be calibrated each day it's used.

3.2.2 Carefully open one end of the collection bag and insert the probe tip into the bag taking care that the probe tip not touch the soil sample or the sidewalls of the bag.

3.2.3 Set the instrument to retain the highest result reading value. Record the reading onto the Field Test Report Form.

3.2.4 If the instrument provides a reading exceeding 100 ppm, proceed to conduct BTEX Speciation in accordance with QP-02 and QP-06. **If the reading is 100 ppm or less, NMOCD BTEX guideline has been met and no further testing for BTEX is necessary. File the Field Test Report Form in the project file.**

4.0 Clean-up

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

Gil Van Deventer

From: "Gil Van Deventer" <gilbertvandeventer@suddenlink.net>
To: "Hansen, Edward J., EMNRD" <edwardj.hansen@state.nm.us>
"Scott Curtis" <scurtis@riceswd.com>; "Wayne Price" <wayne.price@state.nm.us>; "Kristin Pope" <kpope@riceswd.com>
Sent: Thursday, December 27, 2007 10:57 AM
Attach: J-1 ICP_sans_Discl-Rpt_QP.pdf
Subject: Investigation & Characterization Plan - EME Jct. J-1 Site

Attention: Edward Hansen, New Mexico Oil Conservation Division - Environmental Bureau

Subject: Investigation & Characterization Plan

Site Name: EME Jct. J-1 Site

Site Location: T20S-R36E-Section 1, Unit Letter J

Site Agent: RICE Operating Company

Hello Edward:

Trident Environmental is pleased to submit the attached abbreviated version of the *Investigation & Characterization Plan* (ICP) for the above-referenced site. One complete hard copy and one copy on compact disk is being sent via USPS Certified Mail (# 7099 3400 0017 1737 2138) today.

Thank you for your consideration of this ICP. 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
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