AP - 46

STAGE 1 & 2 WORKPLANS

DATE: 5-6-08

Hansen, Edward J., EMNRD

From: Hack Conder [hconder@riceswd.com]
Sent: Thursday, April 23, 2009 5:52 PM
To: Hansen, Edward J., EMNRD
Cc: 'Katie Jones'
Subject: FW: Amended Stage 2 Abatement Plan AP-46

Ed,

I would like to make an amendment to the Stage 2 abatement plan for AP-46 dated 5-6-08 on Page 13, 2nd paragraph. Red is deleted words and blue is added words. If you have any questions or concerns please contact me.

Installation of a groundwater recovery system is contingent on successful application with the New Mexico Office of the State Engineer and landowner agreement in accordance with NMSA 1978 Article 72-12-3(B). It will likely be necessary to install a 4 inch diameter recovery well near MW-1 completed to the base of the aquifer (about 60 ft bgs). The conceptual design and specifications of the groundwater recovery system include a submersible or positive displacement pump capable of discharging at a minimum rate of 1 gpm. Due to the remoteness of the site the necessary power supply for the system will likely be provided by a solar powered battery. Flow rate, total volume, and chloride content of the recovered groundwater will be measured prior to discharge into the EME SWD system being utilized in pipeline maintenance operations. When treating water at site the treated water will be utilized for re-vegetation on site and supply a stock tank for the lease holder of land. The waste water from the R/O treating system will be utilized for pipe line maintenance.

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: Wednesday, December 17, 2008 4:09 PM
To: Hansen, Edward J., EMNRD
Cc: 'Katie Jones'
Subject: Amended Stage 2 Abatement Plan AP-46

Ed,

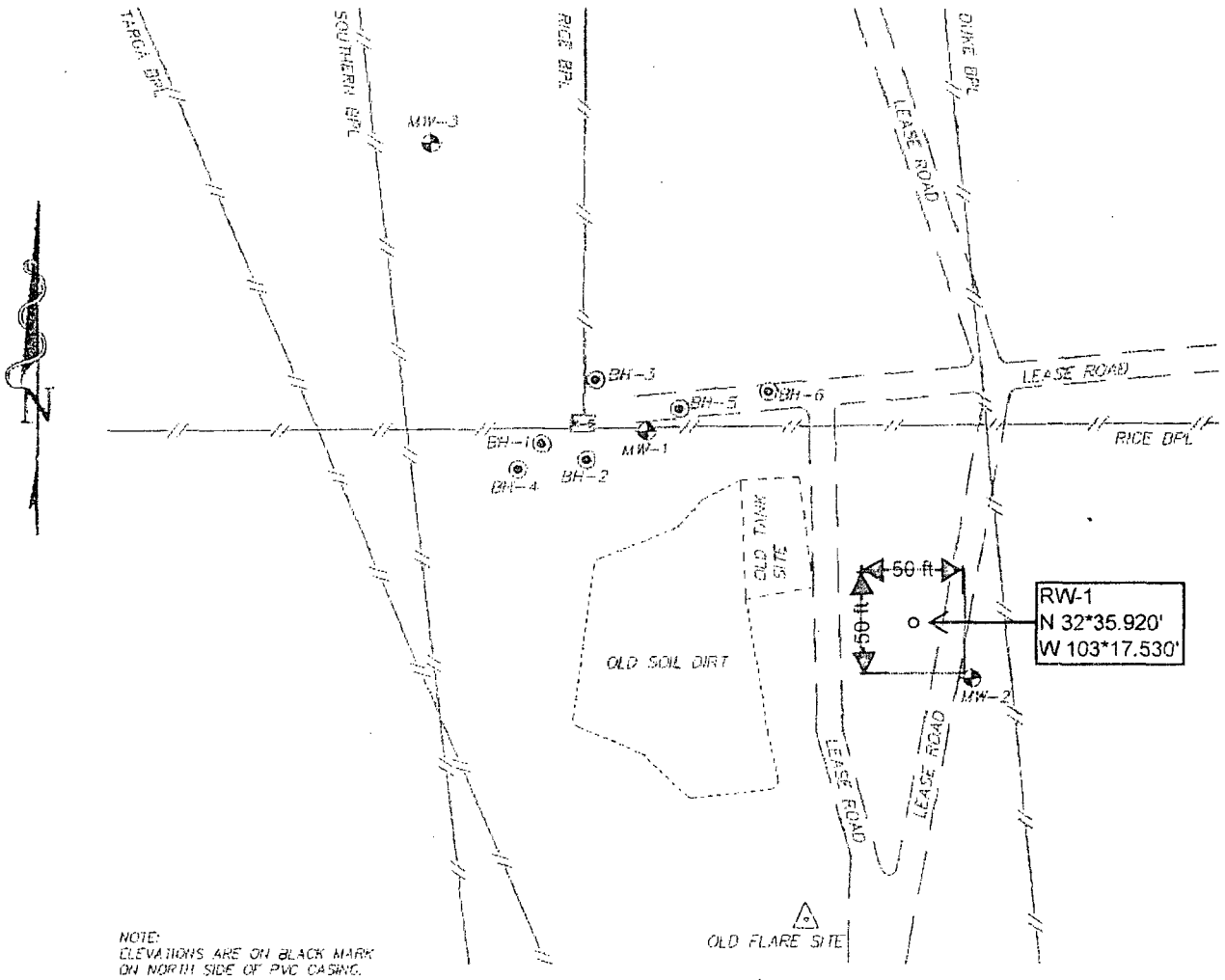
I would like to make an amendment to the Stage 2 abatement plan for AP-46 dated 5-6-08 on Page 13, 2nd paragraph. Red is deleted words and blue is added words. If you have any questions or concerns please contact me.

Installation of a groundwater recovery system is contingent on successful application with the New Mexico Office of the State Engineer and landowner agreement in accordance with NMSA 1978 Article 72-12-3(B). It will likely be necessary to install a 4 inch diameter recovery well near MW-1 completed to the base of the aquifer (about 60 ft bgs). The conceptual design and specifications of the groundwater recovery system include a submersible or positive displacement pump capable of discharging at a minimum rate of 1 gpm. Due to the remoteness of the site the necessary power supply for the system will likely be provided by a solar powered battery. Flow rate, total volume, and chloride content of the recovered groundwater will be measured prior to discharge into the EME SWD system being utilized in pipeline maintenance operations.

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

SECTION 6, TOWNSHIP 20 SOUTH, RANGE 37 EAST, N.M.P.M.,

LEA COUNTY, NEW MEXICO.



NOTE:
ELEVATIONS ARE ON BLACK MARK ON NORTH SIDE OF PVC CASING.

NEW MEXICO STATE PLANE COORDINATES (NAD83)

WELL	NORTHING	EASTING	LATITUDE	LONGITUDE	ELEV. PVC	ELEV. CAND
MW-1	583208.827	861720.848	N 32°35'56.3"	W 103°17'34.8"	3562.36'	3559.30'
MW-2	583067.199	861312.133	N 32°35'54.9"	W 103°17'57.2"	3539.30'	3556.17'
MW-3	583374.437	861594.910	N 32°35'58.0"	W 103°17'36.2"	3563.16'	3561.01'
BH-1	583201.925	861659.412	N 32°35'56.2"	W 103°17'35.5"		3557.52'
BH-2	583192.810	861655.758	N 32°35'56.1"	W 103°17'35.7"		3557.62'
BH-3	583238.716	861690.793	N 32°35'56.6"	W 103°17'35.1"		3558.12'
BH-4	583187.182	861646.006	N 32°35'56.1"	W 103°17'35.7"		3557.32'
BH-5	583221.544	861740.821	N 32°35'56.4"	W 103°17'34.6"		3559.50'
BH-6	583231.122	861792.904	N 32°35'56.5"	W 103°17'33.9"		3560.11'

100 0 100 200 FEET

SCALE: 1" = 100'

I HEREBY CERTIFY THAT THIS PLAT WAS PREPARED FROM FIELD NOTES OF AN ACTUAL SURVEY AND MEETS OR EXCEEDS ALL REQUIREMENTS FOR LAND SURVEYS AS SPECIFIED FOR THIS STATE.

GARY L. JONES N.M. P.S. No. 7977
TEXAS R.P.L.S. No. 5074

REGISTERED PROFESSIONAL LAND SURVEYOR

BASIN SURVEYS P.O. BOX [illegible] HOBBS, NEW MEXICO

RICE OPERATING COMPANY

REF: MONITOR WELLS FOR THE EME K-6 SITE

MONITOR WELLS LOCATED IN

SECTION 6, TOWNSHIP 20 SOUTH, RANGE 37 EAST,

N.M.P.M., LEA COUNTY, NEW MEXICO.

W.O. Number: 6992	Drawn By: J. M. SMALL		
Date: 08-10-2006	Disk: JMS 6992MW	Survey Date: 05-09-2006	Sheet 1 of 1 Sheets

May 6, 2008

STAGE 2 ABATEMENT PLAN

EME JCT. K-6 SITE (AP-46)

T20S, R37E, SECTION 6, UNIT LETTER K
LEA COUNTY, NEW MEXICO

Prepared for:

RICE OPERATING COMPANY
ROC
SINCE 1955

122 West Taylor
Hobbs, New Mexico 88240

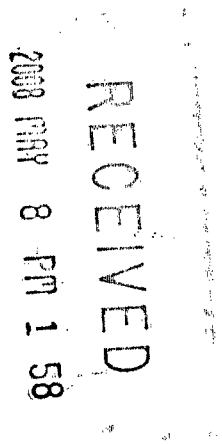
Prepared by:

TRIDENT ENVIRONMENTAL

P. O. Box 7624
Midland, Texas 79708

Gil Van Deventer

From: "Gil Van Deventer" <gilbertvandeventer@suddenlink.net>
To: "Hansen, Edward J., EMNRD" <edwardj.hansen@state.nm.us>
Cc: "Marvin Burrows" <mburrows@riceswd.com>; "Kristin Pope" <kpope@riceswd.com>
Sent: Tuesday, May 06, 2008 12:21 AM
Attach: K-6_S2AP_xmit_ltr_Pub_Not.pdf; K-6_S2AP.pdf
Subject: Stage 2 Abatement Plan for the EME Jct K-6 Site (AP-46)



Subject: Stage 2 Abatement Plan

Site Name: EME Jct K-6 Site (AP-46)

Site Location: T20S - R37E - Section 6, Unit Letter K

Site Agent: RICE Operating Company

Hello Edward:

Trident Environmental is pleased to submit the attached *Stage 2 Abatement Plan* (AP-46) 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 2084). 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 or Marvin Burrows at Rice Operating Company (505-393-9174).

Thanks -Gil

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

CERTIFIED MAIL
RETURN RECIEPT NO. 7099 3400 0017 1737 2084

TRIDENT ENVIRONMENTAL

May 6, 2008

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
2008 MAY 8 PM 1 58

RE: Stage 2 Abatement Plan
EME Jct. K-6 Site (AP-46)
T20S-R37E-Section 6, Unit Letter K
Lea County, New Mexico

Dear Mr. Hansen

On behalf of Rice Operating Company (ROC), enclosed is the Stage 2 Abatement Plan for the above-referenced site. The Stage 2 Abatement Plan herein proposes corrective actions in Section 7.0, in accordance with NMOCD recommendations in your email dated February 13, 2008.

After approved by the Division, ROC will give written notice of the Stage 2 Abatement Plan to the following persons:

(a) surface owners of record within one (1) mile of the perimeter of the site,

(b) the Lea County commissioners,

(c) those persons, as identified by the Director, who have requested notification;

(d) the New Mexico Trustee for Natural Resources, and any other local, state or federal governmental agency affected, as identified by the Director.

Upon your review, ROC will issue the approved public notice for publication in the Albuquerque Journal and the Hobbs News Sun pursuant to OCD Rule 19.G.(2). A copy of these publications and notice to owners and all interested parties will be provided.

ROC also requests immediate suspension of BTEX analysis since there is no evidence of hydrocarbon impact to the vadose zone and since January 2002 all groundwater analyses have indicated concentrations below the WQCC standards for each constituent of BTEX.

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

Sincerely,

Gilbert Van Deventer, REM, PG
Trident Environmental

cc: JSC, KFP, MB, NMOCD (District 1 Hobbs)

DRAFT

NOTICE OF PUBLICATION

State of New Mexico
Energy, Minerals and Natural Resources Department
Oil Conservation Division

Notice is hereby given that pursuant to New Mexico Oil Conservation Division Regulations, the following Stage 2 Abatement Plan Proposal has been submitted to the Director of the Oil Conservation Division, 1220 S. St. Francis Dr., Santa Fe, New Mexico 87505, Telephone (505) 476-3440:

> Rice Operating Company, Scott Curtis, General Manager, Telephone (505) 393-9174, 122 West Taylor, Hobbs, New Mexico 88240, has submitted a Stage 2 Abatement Plan Proposal (AP-46) for the EME Jct K-6 site, located in Section 6, Township 20 south, Range 37 east, Lea County, New Mexico, approximately 4 miles west-southwest of Monument, New Mexico. Rice Operating Company operates a saltwater disposal pipeline at the site. Soil impacts and groundwater samples at the site exhibit elevated chloride concentrations. The Stage 2 Abatement Plan proposes the following corrective actions: (1) the surrounding area will be re-seeded with a mixture of native grasses and plants that will re-vegetate the area at a natural rate, (2) continue quarterly groundwater sampling at each of the four monitoring wells, (3) a groundwater recovery system will be installed to remove an estimated chloride mass of 3,326 kilograms, and (4) at the completion of corrective actions, a final report with a request for closure will be submitted.

Any interested person may obtain further information from the Oil Conservation Division and may submit written comments to the Director of the Oil Conservation Division at the address given above. The Stage 2 Abatement Plan may be viewed at the above address or at the Oil Conservation Division District Office, 1625 N. French Drive, Hobbs, New Mexico 88240, Telephone (505) 393-6161 between 8:00 a.m. and 4:00 p.m., Monday through Friday. Prior to ruling on any proposed Stage 2 Abatement Plan, the Director of the Oil Conservation Division shall allow at least thirty (30) days after the date of publication of this notice during which written requests for a public hearing that includes reasons why a hearing should be held and written comments may be submitted to him.

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1.0 EXECUTIVE SUMMARY

The K-6 junction box (Jct. K-6) site is part of the Eunice Monument Eumont (EME) Salt Water Disposal (SWD) system which is operated by Rice Operating Company (ROC). The site is located in township 20 south, range 37 east, section 6, unit letter K approximately 4 miles west-southwest of Monument, NM as shown on the attached topographic map (Figure 1) and aerial photographic map (Figure 2).

Identification of soil and ground water impacts occurred during line replacement being performed as part of the approved Junction Box Upgrade Program. In January 2002, the subsurface soils at the Jct. K-6 site were investigated by trenching with a backhoe and field-tested for chloride and hydrocarbon levels and a monitoring well (MW-1) was installed within a few feet of the former junction box. On July 18 and 19, 2006, two additional monitoring wells (MW-2 and MW-3) and seven soil borings were installed in accordance with the Stage 1 Abatement Plan. A site map showing soil sample results for the on site borings at the Jct. K-6 site is depicted in Figure 3.

This Stage 2 Abatement Plan includes the findings from recent investigation activities in accordance with the NMOCD-approved Stage 1 Abatement Plan. In addition, corrective actions are proposed in Section 7.0.

Review of previous investigations and the results of the Stage 1 investigation uphold our conclusion that operation of the K-6 junction box has not caused, contributed to, or could contribute to the degradation of groundwater quality. Chloride concentrations in the vadose zone of all borings and trenches were less than 1,000 ppm and averaged 351 ppm which is representative of background levels.

Each monitoring well indicates chloride and total dissolved solids (TDS) concentrations above Water Quality Control Commission (WQCC) standards, however after six consecutive quarterly sampling events it is clear that the upgradient monitoring well (MW-3) has chloride and TDS concentrations consistent with those observed near the junction box (MW-1) and downgradient well MW-2, which indicates regional impact from an upgradient source(s) north and/or northwest to the site.

Evidence from potential upgradient offsite sources, onsite groundwater monitoring, and vadose zone characterization support the conclusion that conditions at the site do not meet the criteria that would mandate corrective action under NMOCD Rule 116 or Rule 19.

At the request of the NMOCD via email communication on February 13, 2008 (Appendix D) a groundwater recovery system will be installed to remove an estimated chloride mass of 3,326 kilograms (kg) presumably introduced into the groundwater from the junction box. In addition, ROC will continue quarterly groundwater sampling at each of the four monitoring wells.

The surrounding area is supportive of vegetation and will be re-seeded with a mixture of native grasses and plants that will re-vegetate the area at a natural rate. ROC will monitor the site for continued healthy growth of native vegetation and add amendments if necessary.

At the completion of corrective actions as described herein, a final report will be submitted.

2.0 CHRONOLOGY OF EVENTS

- The upgrade of Jct. K-6 was initiated in January 2002, and resulted in the replacement of the existing vent junction box with a lined watertight plastic junction box and replacement of the 10-inch diameter transite pipeline with 6-inch diameter PVC pipeline;
- The subsurface soils at the Jct. K-6 site were investigated as part of the approved Junction Box Upgrade Program on January 22, 2002, by trenching with a backhoe and field-tested for chloride and hydrocarbon levels. This investigation indicated chloride and hydrocarbon impact to the vadose zone;
- A monitoring well (MW-1) was installed within a few feet of the former vent junction box on January 23, 2002, and has been sampled and analyzed for major ions (including chloride), total dissolved solids (TDS), and benzene, toluene, ethylbenzene, and xylenes (BTEX), on a quarterly basis since that date;
- On February 4, 2002, ROC submitted notification of ground water impact to the NMOCD;
- An Investigation & Characterization Plan was prepared by Trident Environmental and submitted to the NMOCD on March 11, 2005;
- On May 5, 2005, Mr. Daniel Sanchez of the NMOCD requested that ROC submit an abatement plan to the NMOCD pursuant to Rule 19;
- A Stage 1 Abatement Plan was prepared by R. T. Hicks Consultants Ltd. and submitted to the NMOCD on October 17, 2005,
- On November 18, 2005, the NMOCD approved the Stage 1 Abatement Plan as administratively complete and assigned it case number AP-46;
- ROC submitted proof of public notifications to the NMOCD on January 13, 2006;
- On May 30, 2006, the NMOCD gave verbal approval of the Stage 1 Abatement Plan Proposal;
- The BLM approved an amendment to the right-of-way (ROW) agreement (NM-057346) to increase the total acreage to 17.33 acres to allow the installation of additional monitoring wells and soil borings;
- Stage 1 Abatement Plan activities were performed on July 18 and 19, 2006. Two additional monitoring wells (MW-2 and MW-3) and seven soil borings (B-1 through B-7) were installed at the Jct. K-6 site. Soil and groundwater samples were collected for analysis of the constituents of concern. Site activity was witnessed by Stephen Smith of Boone Archaeological Services in accordance with BLM conditions for the ROW amendment;
- A Stage 1 Final Investigation Report and Corrective Action Plan was prepared by Trident Environmental and submitted to the NMOCD on March 7, 2007.
- On February 13, 2008, the NMOCD requested submission of a Stage 2 Abatement Plan to include an estimate of chloride mass in groundwater and a plan for the removal of that chloride mass from the groundwater.

3.0 BACKGROUND

3.1 Site Location and Land Use

The EME Jct. K-6 site is located on Bureau of Land Management (BLM) Land in township 20 south, range 37 east, section 6, unit letter K approximately 4 miles west-southwest of Monument, NM as shown on the attached Site Location Map (Figure 1). ROC has had a right-of-way agreement with the BLM (NM-057346) since June 18, 1964. The junction box at this site is used to direct produced water from oil and gas leases to the M-5 SWD, approximately ¾ mile east, where it is injected into a non-oil producing formation. ROC is the service provider (agent) for the EME 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.

Land in the site area is primarily utilized for crude oil production and cattle grazing. Several oil and gas production facilities are located within and around the Jct. K-6 site.

3.2 Summary of Previous Work and Investigations

The upgrade of the EME K-6 vent junction box was initiated in January 2002, which included the replacement of the existing vent junction box with a lined watertight plastic junction box and replacement of the 10-inch diameter transite pipeline with 6-inch diameter PVC pipeline. In addition, 36 cubic yards of impacted soils were transported to an OCD-approved disposal facility.

A monitoring well (MW-1) was installed within a few feet of the former vent junction box on January 23, 2002, and has been sampled and analyzed for BTEX, major ions, and total dissolved solids (TDS) on a quarterly basis since that date.

On July 18 and 19, 2006, two additional monitoring wells (MW-2 and MW-3) and seven soil borings (B-1 through B-7) were installed at the Jct. K-6 site. Soil and groundwater samples were collected for analysis of the constituents of concern. Site activity was witnessed by Stephen Smith of Boone Archaeological Services in accordance with BLM conditions for the ROW amendment.

A Stage 1 Final Investigation Report and Corrective Action Plan was prepared by Trident Environmental and submitted to the NMOCD on March 7, 2007. The Stage 1 Final Investigation Report included the findings from recent investigation activities in accordance with the NMOCD-approved Stage 1 Abatement Plan and corrective actions were proposed.

4.0 GEOLOGY AND HYDROGEOLOGY

4.1 Regional and Local Geology

The site is underlain by Quaternary colluvium deposits composed of sand, silt, and gravel deposited by slopewash, and talus which were re-deposited from the underlying Ogallala Formation. These deposits are often calichified (indurated with cemented calcium carbonate) with caliche layers from 1 to 20 feet thick. The thickness of the colluvium deposits and Ogallala Formation at the site is estimated at 75 feet; however it 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 therefore limit the amount of recharge to the underlying Dockum Group.

The first few feet from ground surface are dominated by fine to medium-grained dune sand. Based on the descriptions provided in lithologic logs the subsurface soils are composed of caliche, sand, sandstone stringers, and some clay. More detailed descriptions of the subsurface lithology are provided in the soil boring and monitoring well logs (Appendix A).

4.2 Regional and Local Hydrogeology

Potable ground water used in southern Lea County is derived primarily from the Ogallala Formation and the Quaternary alluvium. Water from the Ogallala and alluvium aquifers in southern Lea County is used for irrigation, stock, domestic, industrial, and public supply purposes. Water well records from the Office of the State Engineer (NMOSE) and the United States Geological Survey (USGS) websites were reviewed to determine if there are any active water supply wells in use for domestic, irrigation, livestock, municipal, or industrial purposes in the Jct. K-6 area. As a result of this review and several field reconnaissance efforts there currently are no known potential water supply receptors within ½ mile of the Jct. K-6 site. However, one abandoned water well (NMSEO File No. L-3810) which is out of service (no submersible pump or windmill) is being used as a groundwater monitoring point for Chevron's J. R. Phillips No. 2 Tank Battery Site (NMOCD File No. 1R0255).

Recent data from the three monitoring wells at Jct. K-6 shows that the water table slopes towards the southeast at a magnitude of approximately 0.0024 ft/ft. The groundwater gradient at Jct. K-6 is consistent with those of several other groundwater monitoring sites in the Monument area and the regional gradient as cited in published reports (Nicholsen and Clebsch, 1961). A groundwater gradient map for the southwest portion of Monument is depicted in Figure 4. This more regionalized gradient map is based on measurements obtained during the third quarter of 2006 from several groundwater monitoring sites that are under the direction of ROC, Plains Petroleum, and Targa Midstream Services. The most recent groundwater gradient at the Jct. K-6 site is shown in Figure 5. Depth to ground water beneath the site area is approximately 34 feet bgs. There is no surface water body located within a mile of the site.

5.0 VADOSE ZONE CHARACTERISTICS

Results of previous soil and groundwater investigations were thoroughly described in the Stage 1 Abatement Plan. Based on those findings and in accordance with the Stage 1 Abatement Plan, seven additional soil borings (B-1 through B-7) were installed on July 18 and 19, 2006, to further delineate the horizontal and vertical extent to the vadose zone. Each boring was advanced to a depth of 30 feet bgs and samples were collected at 5-foot intervals. Soil samples were analyzed in the field for chlorides using field-adapted Method 9253 (QP-03). In addition, headspace readings were obtained using a calibrated Thermal Instruments Model 580B Organic Vapor Meter (OVM) in accordance with procedures described in QP-07. Select samples with OVM readings exceeding 100 ppm were analyzed for BTEX and total petroleum hydrocarbons (TPH) at a laboratory. Results of the soil sampling activities are shown on Figure 3 and summarized in Table 1. Photo documentation of field activities is included in Appendix B. Laboratory analytical reports and chain of custody documentation are included in Appendix C.

Chloride concentrations at all borings were less than 1,000 ppm and averaged 351 ppm which is representative of background levels. Duplicates of soil samples (the two highest field tested concentrations for the borings) were submitted to the lab for confirmation of field testing activities. Each duplicate sample resulted in a lab chloride concentration less than that measured in the field as shown in Table 1. This suggests that the field measured chloride values may be conservatively higher than actual concentrations. It has been concluded that the chloride load in all vadose zone samples taken at the Jct K-6 site indicate levels much too low to suggest that any release from the junction box contributed to the chloride concentrations observed in the groundwater at the Jct. K-6 site. Therefore, there is no need to employ HYDRUS-1D or ground water mixing model to evaluate the potential of chlorides to impair ground water quality at the site.

OVM readings within the vadose zone in all borings were minimal, with the exception of borings B-5 and B-7. However, BTEX concentrations in the intervals with the greatest OVM readings in these two borings indicate levels well below the OCD recommended guidelines for benzene (10 mg/kg) and BTEX (50 mg/kg). Therefore, there is no need to employ a ground water fate and transport model such as VLEACH to evaluate the potential of regulated hydrocarbon constituents (benzene and BTEX) to impair ground water quality at the site since no threat exists from the junction box.

6.0 GROUNDWATER QUALITY

6.1 Monitoring Program

Monitoring well (MW-1) has been sampled on a quarterly basis for major ions, TDS, and BTEX, since January 2002. On July 18 and 19, 2006, two additional monitoring wells (MW-2 and MW-3) were installed at the Jct. K-6 site to evaluate upgradient (northwest) and downgradient (southeast) groundwater quality conditions. A summary of historical analytical results and ground water elevations for monitoring wells MW-1, MW-2, and MW-3 is shown in Table 2. A map of the most current groundwater quality conditions for the Jct. K-6 site is depicted in Figure 6. 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.

6.2 Hydrocarbons in Ground Water

BTEX concentrations in monitoring wells MW-1, MW-2, and MW-3 have been below the WQCC standards for each constituent and for every sampling event taken place.

6.3 Other Constituents of Concern

- Chloride concentrations in monitoring wells MW-1 (12,400 mg/L), MW-2 (13,400 mg/L), and MW-3 (11,600 mg/L) exceed the WQCC standard of 250 mg/L.
- The TDS concentrations in monitoring wells MW-1 (23,684 mg/L), MW-2 (25,069 mg/L), and MW-3 (21,914 mg/L) exceed the WQCC standard of 1,000 mg/L.

Each monitoring well indicates chloride and TDS concentrations above WQCC standards, however after six consecutive quarterly sampling events it is clear that the upgradient monitoring well (MW-3) has chloride and TDS concentrations consistent with those observed near the junction box (MW-1) and downgradient well MW-2, which indicates regional impact from an upgradient source(s) north and/or northwest to the site.

7.0 PROPOSED CORRECTIVE ACTIONS

7.1 Corrective Action to the Vadose Zone

Chloride concentrations in the vadose zone of all borings and trenches were less than 1,000 ppm and averaged 351 ppm which is representative of background levels. It is also important to note that during the initial investigation in January 2002, field chloride tests in monitoring well MW-1, which is located adjacent to the junction box, did not exceed 450 ppm (capillary fringe). Soil samples collected at the capillary fringe of monitoring wells MW-2 and MW-3 indicated chloride concentrations slightly above 1,000 mg/kg; however these slightly elevated levels are due to the transfer of chlorides from the groundwater to the capillary fringe and not from the vadose zone above. It has been concluded that the chloride load in all vadose zone samples taken at the Jct K-6 site indicate levels much too low to suggest that any release from the junction box contributed to the chloride concentrations observed in the groundwater at the Jct. K-6 site. Therefore, there is no need to employ HYDRUS-1D or ground water mixing model to evaluate the potential of chlorides to impair ground water quality at the site.

OVM readings within the vadose zone in all borings were minimal, with the exception of borings B-5 and B-7. However, BTEX concentrations in the intervals with the greatest OVM readings in these two borings indicate levels well below the OCD recommended guidelines for benzene (10 mg/kg) and BTEX (50 mg/kg). Therefore, there is no need to employ a ground water fate and transport model such as VLEACH to evaluate the potential of regulated hydrocarbon constituents (benzene and BTEX) to impair ground water quality at the site since no threat exists from the junction box.

The surrounding area is supportive of vegetation and will be re-seeded with a mixture of native grasses and plants that will re-vegetate the area at a natural rate. ROC will monitor the site for continued healthy growth of native vegetation and add amendments if necessary.

7.2 Corrective Action to the Groundwater

Water well records from the NMOSE and the USGS websites were reviewed to determine if there are any active water supply wells in use for domestic, irrigation, livestock, municipal, or industrial purposes in the Jct. K-6 area. As a result of this review and several field reconnaissance efforts there currently are no known potential water supply receptors within ½ mile of the Jct. K-6 site.

The new construction of a watertight junction box and removal of 36 cubic yards of impacted soils by ROC at the EME Jct. K-6 site has effectively mitigated any potential threat of chlorides, TDS, benzene, or BTEX from the junction box area.

It appears that the cause for the chloride and TDS impacted groundwater at the Jct. K-6 site is from an upgradient offsite source. Groundwater in this area of Monument, New Mexico, has been reported as regionally impacted with chlorides and unusable as early as 1952 (Nicholson and Clebsch, Groundwater Report 6). A portion of this reference is reproduced in Figure 7. The

exact source of groundwater impact at the Jct. K-6 site is unknown because of the numerous potential facilities, past and present, located upgradient as partially listed in section 3.1 of this Stage 2 Abatement Plan. Chloride and TDS concentrations at the monitoring wells are above WQCC standards however they are below background concentrations as established by samples from an upgradient site (production battery) which has indicated chloride and TDS concentrations as high as 23,300 mg/L and 26,750 mg/L, respectively.

Numerous groundwater investigation sites have been identified near the site area. These sites have shown a potential as source for chlorides and TDS as observed at the Jct. K-6 site. Sites of concern include:

- The J. R. Phillips No. 2 Tank Battery site (NMOCD Case No. 1R0255) operated by Chevron is located less than ½ mile NNW of Jct. K-6 (Figures 2 and 5). Groundwater conditions are being monitored by Chevron on an annual frequency. Average chloride and TDS concentrations at the 8 monitoring wells are about 10,000 mg/L and 19,000 mg/L, respectively.
- The Monument Gas Plant operated by Targa Midstream Services, L.P. (Targa) is located approximately 1 mile northwest of the Jct. K-6 site (Figures 2 and 5). According to the Ground Water Discharge Plan (GW-025) this facility has two brine ponds and a network of 18 groundwater monitoring wells associated with it.
- An abandoned hydrochloric acid manufacturing plant (DLD Resources, formerly Climax Chemical Company) is located about 1 ½ miles northwest of the Jct. K-6 site. There are several groundwater monitoring wells associated with this facility however no active regulatory directives towards further investigation and remediation of this facility are known to be in progress.
- The former drilling pits associated with two plugged and abandoned oil wells (Britt A #002 and Britt A #003) located north of Jct. K-6.
- A former tank battery (Britt A) and land farmed area of hydrocarbon-impacted soil is located immediately adjacent to the south and southeast of Jct. K-6. Three 210-barrel tanks were removed from this former facility in early 2005, however the area with hydrocarbon-impacted soil is still present.
- Several contiguous pits covering an approximate area of 40,000 sq. ft. located less than 200 ft. southwest of Jct. K-6 and adjacent to the west side of the former tank battery are evident in the Lea County Soil Survey (based on 1955 and 1966 aerial photography). The former presence of these pits is also evident in recent aerial photographs as shown in the attached photo documentation in the appendices and Figure 2.

It has become clear that the upgradient monitoring well (MW-3) has chlorides and TDS concentrations consistent with those observed near the junction box (MW-1) and downgradient well MW-2, which indicates regional impact from an upgradient source(s) north and/or northwest to the site.

One or more of the offsite sources listed above may be the cause, or other potential release sites that have yet to be assessed including the former tank battery and pits adjacent to the south side of the Jct. K-6 site.

However, at the request of the NMOCD via email communication on February 13, 2008 (Appendix D) a groundwater recovery system will be installed to pump and dispose of chloride-impacted groundwater into the EME Salt Water Disposal system. It is being assumed the observed chloride concentrations in monitoring well MW-1 (adjacent to the junction box) are, in part, the result of a release of chlorides to the groundwater table. With that assumption in mind, the following estimate of chloride mass was calculated based on simple mass balance equations which are explained as follows:

First, the size of the impacted area is conservatively assumed to be 30-ft by 30-ft based on a combination of the soil delineation data and the maximum size used at other ROC junction box sites in the Monument area. This area is then multiplied by a factor of 10 (estimated horizontal dispersivity factor). This total area is then multiplied by the thickness of the aquifer (25-ft) and its porosity (0.25) resulting in a total saturated pore space volume.

Second, the ambient chloride concentration at the site as reflected by upgradient monitoring well MW-3 (11,600 mg/L on 12/11/07) was subtracted from the concentration observed at onsite monitoring well MW-1 (13,400 mg/L on 12/11/07) which results in a net difference in chloride concentration of 1,800 mg/L. This net difference between the two concentrations above *conservatively* reflects the net impact to groundwater from the release and is more conservative than taking the difference of averages over the same periods of record. That concentration multiplied by the total saturated pore space volume (1.848E+06 liters) results in an estimated chloride mass of 3,326 kg. These calculations are shown in the following table in the same order as described above.

Estimate of chloride mass:

Parameter Type	Value	Parameter Validation (description of equations used)
Release area	900 ft^2	Area of Concern (physical measurement of junction box excavation)
Longitudinal Dispersivity	10	Professional estimate for factoring the plume length
Aquifer Thickness	29 ft	Known lithology of monitoring well MW-4.
Porosity	0.25	Professional estimate for water saturated pore volume
Volume of impacted ground water below former excavation.	65,250 ft^3	Simple multiplication of each parameter listed above
Volume of Impacted Groundwater below former excavation.	1.848E+06 L	Unit conversion of previous value to liters.
Chloride concentration	1,800 mg/L	Difference between concentrations in P6-1 and P6-2 (November 8, 2007))
Total chloride mass	**3,326 kg**	Simple multiplication of two parameters listed above

A groundwater recovery system employed at the Jct. K-6 site extracting water with chloride concentrations consistent with those in MW-1 (~12,000 mg/L) could extract 65.4 kg per day by (continuously) pumping at a rate of 1 gallon per minute (gpm). At that rate it would take approximately 51 days and the equivalent of 1,743 barrels (bbls) to remove 3,326 kg of chloride mass.

Installation of a groundwater recovery system is contingent on successful application with the New Mexico Office of the State Engineer and landowner agreement in accordance with NMSA 1978 Article 72-12-3(B). It will likely be necessary to install a 4-inch diameter recovery well near MW-1 completed to the base of the aquifer (about 60-ft bgs). The conceptual design and specifications of the groundwater recovery system include a submersible or positive displacement pump capable of discharging at a minimum rate of 1 gpm. Due to the remoteness of the site the necessary power supply for the system will likely be provided by a solar powered battery. Flow rate, total volume, and chloride content of the recovered groundwater will be measured prior to discharge into the EME SWD system.

7.3 Closure and Proposed Schedule of Activities

ROC will continue quarterly groundwater sampling at each of the four monitoring wells and vegetation will be monitored for growth and amendments added if necessary.

Upon approval of the Amended Stage 2 Abatement Plan, ROC will schedule the site to be re-seeded and procure a drilling rig to install the recovery well. The ground water remedy at the Jct. K-6 site will then be implemented using the same system after its completion at the EME Jct. D-1 site (AP-67). The system at the EME Jct. D-1 site is expected to be in operation less than 30 days after startup.

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

1.0 EXECUTIVE SUMMARY

The K-6 junction box (Jct. K-6) site is part of the Eunice Monument Eumont (EME) Salt Water Disposal (SWD) system which is operated by Rice Operating Company (ROC). The site is located in township 20 south, range 37 east, section 6, unit letter K approximately 4 miles west-southwest of Monument, NM as shown on the attached topographic map (Figure 1) and aerial photographic map (Figure 2).

Identification of soil and ground water impacts occurred during line replacement being performed as part of the approved Junction Box Upgrade Program. In January 2002, the subsurface soils at the Jct. K-6 site were investigated by trenching with a backhoe and field-tested for chloride and hydrocarbon levels and a monitoring well (MW-1) was installed within a few feet of the former junction box. On July 18 and 19, 2006, two additional monitoring wells (MW-2 and MW-3) and seven soil borings were installed in accordance with the Stage 1 Abatement Plan. A site map showing soil sample results for the on site borings at the Jct. K-6 site is depicted in Figure 3.

This Stage 2 Abatement Plan includes the findings from recent investigation activities in accordance with the NMOCD-approved Stage 1 Abatement Plan. In addition, corrective actions are proposed in Section 7.0.

Review of previous investigations and the results of the Stage 1 investigation uphold our conclusion that operation of the K-6 junction box has not caused, contributed to, or could contribute to the degradation of groundwater quality. Chloride concentrations in the vadose zone of all borings and trenches were less than 1,000 ppm and averaged 351 ppm which is representative of background levels.

Each monitoring well indicates chloride and total dissolved solids (TDS) concentrations above Water Quality Control Commission (WQCC) standards, however after six consecutive quarterly sampling events it is clear that the upgradient monitoring well (MW-3) has chloride and TDS concentrations consistent with those observed near the junction box (MW-1) and downgradient well MW-2, which indicates regional impact from an upgradient source(s) north and/or northwest to the site.

Evidence from potential upgradient offsite sources, onsite groundwater monitoring, and vadose zone characterization support the conclusion that conditions at the site do not meet the criteria that would mandate corrective action under NMOCD Rule 116 or Rule 19.

At the request of the NMOCD via email communication on February 13, 2008 (Appendix D) a groundwater recovery system will be installed to remove an estimated chloride mass of 3,326 kilograms (kg) presumably introduced into the groundwater from the junction box. In addition, ROC will continue quarterly groundwater sampling at each of the four monitoring wells.

The surrounding area is supportive of vegetation and will be re-seeded with a mixture of native grasses and plants that will re-vegetate the area at a natural rate. ROC will monitor the site for continued healthy growth of native vegetation and add amendments if necessary.

At the completion of corrective actions as described herein, a final report will be submitted.

2.0 CHRONOLOGY OF EVENTS

- The upgrade of Jct. K-6 was initiated in January 2002, and resulted in the replacement of the existing vent junction box with a lined watertight plastic junction box and replacement of the 10-inch diameter transite pipeline with 6-inch diameter PVC pipeline;
- The subsurface soils at the Jct. K-6 site were investigated as part of the approved Junction Box Upgrade Program on January 22, 2002, by trenching with a backhoe and field-tested for chloride and hydrocarbon levels. This investigation indicated chloride and hydrocarbon impact to the vadose zone;
- A monitoring well (MW-1) was installed within a few feet of the former vent junction box on January 23, 2002, and has been sampled and analyzed for major ions (including chloride), total dissolved solids (TDS), and benzene, toluene, ethylbenzene, and xylenes (BTEX), on a quarterly basis since that date;
- On February 4, 2002, ROC submitted notification of ground water impact to the NMOCD;
- An Investigation & Characterization Plan was prepared by Trident Environmental and submitted to the NMOCD on March 11, 2005;
- On May 5, 2005, Mr. Daniel Sanchez of the NMOCD requested that ROC submit an abatement plan to the NMOCD pursuant to Rule 19;
- A Stage 1 Abatement Plan was prepared by R. T. Hicks Consultants Ltd. and submitted to the NMOCD on October 17, 2005,
- On November 18, 2005, the NMOCD approved the Stage 1 Abatement Plan as administratively complete and assigned it case number AP-46;
- ROC submitted proof of public notifications to the NMOCD on January 13, 2006;
- On May 30, 2006, the NMOCD gave verbal approval of the Stage 1 Abatement Plan Proposal;
- The BLM approved an amendment to the right-of-way (ROW) agreement (NM-057346) to increase the total acreage to 17.33 acres to allow the installation of additional monitoring wells and soil borings;
- Stage 1 Abatement Plan activities were performed on July 18 and 19, 2006. Two additional monitoring wells (MW-2 and MW-3) and seven soil borings (B-1 through B-7) were installed at the Jct. K-6 site. Soil and groundwater samples were collected for analysis of the constituents of concern. Site activity was witnessed by Stephen Smith of Boone Archaeological Services in accordance with BLM conditions for the ROW amendment;
- A Stage 1 Final Investigation Report and Corrective Action Plan was prepared by Trident Environmental and submitted to the NMOCD on March 7, 2007.
- On February 13, 2008, the NMOCD requested submission of a Stage 2 Abatement Plan to include an estimate of chloride mass in groundwater and a plan for the removal of that chloride mass from the groundwater.

3.0 BACKGROUND

3.1 Site Location and Land Use

The EME Jct. K-6 site is located on Bureau of Land Management (BLM) Land in township 20 south, range 37 east, section 6, unit letter K approximately 4 miles west-southwest of Monument, NM as shown on the attached Site Location Map (Figure 1). ROC has had a right-of-way agreement with the BLM (NM-057346) since June 18, 1964. The junction box at this site is used to direct produced water from oil and gas leases to the M-5 SWD, approximately ¾ mile east, where it is injected into a non-oil producing formation. ROC is the service provider (agent) for the EME 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.

Land in the site area is primarily utilized for crude oil production and cattle grazing. Several oil and gas production facilities are located within and around the Jct. K-6 site.

3.2 Summary of Previous Work and Investigations

The upgrade of the EME K-6 vent junction box was initiated in January 2002, which included the replacement of the existing vent junction box with a lined watertight plastic junction box and replacement of the 10-inch diameter transite pipeline with 6-inch diameter PVC pipeline. In addition, 36 cubic yards of impacted soils were transported to an OCD-approved disposal facility.

A monitoring well (MW-1) was installed within a few feet of the former vent junction box on January 23, 2002, and has been sampled and analyzed for BTEX, major ions, and total dissolved solids (TDS) on a quarterly basis since that date.

On July 18 and 19, 2006, two additional monitoring wells (MW-2 and MW-3) and seven soil borings (B-1 through B-7) were installed at the Jct. K-6 site. Soil and groundwater samples were collected for analysis of the constituents of concern. Site activity was witnessed by Stephen Smith of Boone Archaeological Services in accordance with BLM conditions for the ROW amendment.

A Stage 1 Final Investigation Report and Corrective Action Plan was prepared by Trident Environmental and submitted to the NMOCD on March 7, 2007. The Stage 1 Final Investigation Report included the findings from recent investigation activities in accordance with the NMOCD-approved Stage 1 Abatement Plan and corrective actions were proposed.

4.0 GEOLOGY AND HYDROGEOLOGY

4.1 Regional and Local Geology

The site is underlain by Quaternary colluvium deposits composed of sand, silt, and gravel deposited by slopewash, and talus which were re-deposited from the underlying Ogallala Formation. These deposits are often calichified (indurated with cemented calcium carbonate) with caliche layers from 1 to 20 feet thick. The thickness of the colluvium deposits and Ogallala Formation at the site is estimated at 75 feet; however it 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 therefore limit the amount of recharge to the underlying Dockum Group.

The first few feet from ground surface are dominated by fine to medium-grained dune sand. Based on the descriptions provided in lithologic logs the subsurface soils are composed of caliche, sand, sandstone stringers, and some clay. More detailed descriptions of the subsurface lithology are provided in the soil boring and monitoring well logs (Appendix A).

4.2 Regional and Local Hydrogeology

Potable ground water used in southern Lea County is derived primarily from the Ogallala Formation and the Quaternary alluvium. Water from the Ogallala and alluvium aquifers in southern Lea County is used for irrigation, stock, domestic, industrial, and public supply purposes. Water well records from the Office of the State Engineer (NMOSE) and the United States Geological Survey (USGS) websites were reviewed to determine if there are any active water supply wells in use for domestic, irrigation, livestock, municipal, or industrial purposes in the Jct. K-6 area. As a result of this review and several field reconnaissance efforts there currently are no known potential water supply receptors within ½ mile of the Jct. K-6 site. However, one abandoned water well (NMSEO File No. L-3810) which is out of service (no submersible pump or windmill) is being used as a groundwater monitoring point for Chevron's J. R. Phillips No. 2 Tank Battery Site (NMOCD File No. 1R0255).

Recent data from the three monitoring wells at Jct. K-6 shows that the water table slopes towards the southeast at a magnitude of approximately 0.0024 ft/ft. The groundwater gradient at Jct. K-6 is consistent with those of several other groundwater monitoring sites in the Monument area and the regional gradient as cited in published reports (Nicholsen and Clebsch, 1961). A groundwater gradient map for the southwest portion of Monument is depicted in Figure 4. This more regionalized gradient map is based on measurements obtained during the third quarter of 2006 from several groundwater monitoring sites that are under the direction of ROC, Plains Petroleum, and Targa Midstream Services. The most recent groundwater gradient at the Jct. K-6 site is shown in Figure 5. Depth to ground water beneath the site area is approximately 34 feet bgs. There is no surface water body located within a mile of the site.

5.0 VADOSE ZONE CHARACTERISTICS

Results of previous soil and groundwater investigations were thoroughly described in the Stage 1 Abatement Plan. Based on those findings and in accordance with the Stage 1 Abatement Plan, seven additional soil borings (B-1 through B-7) were installed on July 18 and 19, 2006, to further delineate the horizontal and vertical extent to the vadose zone. Each boring was advanced to a depth of 30 feet bgs and samples were collected at 5-foot intervals. Soil samples were analyzed in the field for chlorides using field-adapted Method 9253 (QP-03). In addition, headspace readings were obtained using a calibrated Thermal Instruments Model 580B Organic Vapor Meter (OVM) in accordance with procedures described in QP-07. Select samples with OVM readings exceeding 100 ppm were analyzed for BTEX and total petroleum hydrocarbons (TPH) at a laboratory. Results of the soil sampling activities are shown on Figure 3 and summarized in Table 1. Photo documentation of field activities is included in Appendix B. Laboratory analytical reports and chain of custody documentation are included in Appendix C.

Chloride concentrations at all borings were less than 1,000 ppm and averaged 351 ppm which is representative of background levels. Duplicates of soil samples (the two highest field tested concentrations for the borings) were submitted to the lab for confirmation of field testing activities. Each duplicate sample resulted in a lab chloride concentration less than that measured in the field as shown in Table 1. This suggests that the field measured chloride values may be conservatively higher than actual concentrations. It has been concluded that the chloride load in all vadose zone samples taken at the Jct K-6 site indicate levels much too low to suggest that any release from the junction box contributed to the chloride concentrations observed in the groundwater at the Jct. K-6 site. Therefore, there is no need to employ HYDRUS-1D or ground water mixing model to evaluate the potential of chlorides to impair ground water quality at the site.

OVM readings within the vadose zone in all borings were minimal, with the exception of borings B-5 and B-7. However, BTEX concentrations in the intervals with the greatest OVM readings in these two borings indicate levels well below the OCD recommended guidelines for benzene (10 mg/kg) and BTEX (50 mg/kg). Therefore, there is no need to employ a ground water fate and transport model such as VLEACH to evaluate the potential of regulated hydrocarbon constituents (benzene and BTEX) to impair ground water quality at the site since no threat exists from the junction box.

6.0 GROUNDWATER QUALITY

6.1 Monitoring Program

Monitoring well (MW-1) has been sampled on a quarterly basis for major ions, TDS, and BTEX, since January 2002. On July 18 and 19, 2006, two additional monitoring wells (MW-2 and MW-3) were installed at the Jct. K-6 site to evaluate upgradient (northwest) and downgradient (southeast) groundwater quality conditions. A summary of historical analytical results and ground water elevations for monitoring wells MW-1, MW-2, and MW-3 is shown in Table 2. A map of the most current groundwater quality conditions for the Jct. K-6 site is depicted in Figure 6. 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.

6.2 Hydrocarbons in Ground Water

BTEX concentrations in monitoring wells MW-1, MW-2, and MW-3 have been below the WQCC standards for each constituent and for every sampling event taken place.

6.3 Other Constituents of Concern

- Chloride concentrations in monitoring wells MW-1 (12,400 mg/L), MW-2 (13,400 mg/L), and MW-3 (11,600 mg/L) exceed the WQCC standard of 250 mg/L.
- The TDS concentrations in monitoring wells MW-1 (23,684 mg/L), MW-2 (25,069 mg/L), and MW-3 (21,914 mg/L) exceed the WQCC standard of 1,000 mg/L.

Each monitoring well indicates chloride and TDS concentrations above WQCC standards, however after six consecutive quarterly sampling events it is clear that the upgradient monitoring well (MW-3) has chloride and TDS concentrations consistent with those observed near the junction box (MW-1) and downgradient well MW-2, which indicates regional impact from an upgradient source(s) north and/or northwest to the site.

7.0 PROPOSED CORRECTIVE ACTIONS

7.1 Corrective Action to the Vadose Zone

Chloride concentrations in the vadose zone of all borings and trenches were less than 1,000 ppm and averaged 351 ppm which is representative of background levels. It is also important to note that during the initial investigation in January 2002, field chloride tests in monitoring well MW-1, which is located adjacent to the junction box, did not exceed 450 ppm (capillary fringe). Soil samples collected at the capillary fringe of monitoring wells MW-2 and MW-3 indicated chloride concentrations slightly above 1,000 mg/kg; however these slightly elevated levels are due to the transfer of chlorides from the groundwater to the capillary fringe and not from the vadose zone above. It has been concluded that the chloride load in all vadose zone samples taken at the Jct K-6 site indicate levels much too low to suggest that any release from the junction box contributed to the chloride concentrations observed in the groundwater at the Jct. K-6 site. Therefore, there is no need to employ HYDRUS-1D or ground water mixing model to evaluate the potential of chlorides to impair ground water quality at the site.

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The surrounding area is supportive of vegetation and will be re-seeded with a mixture of native grasses and plants that will re-vegetate the area at a natural rate. ROC will monitor the site for continued healthy growth of native vegetation and add amendments if necessary.

7.2 Corrective Action to the Groundwater

Water well records from the NMOSE and the USGS websites were reviewed to determine if there are any active water supply wells in use for domestic, irrigation, livestock, municipal, or industrial purposes in the Jct. K-6 area. As a result of this review and several field reconnaissance efforts there currently are no known potential water supply receptors within ½ mile of the Jct. K-6 site.

The new construction of a watertight junction box and removal of 36 cubic yards of impacted soils by ROC at the EME Jct. K-6 site has effectively mitigated any potential threat of chlorides, TDS, benzene, or BTEX from the junction box area.

It appears that the cause for the chloride and TDS impacted groundwater at the Jct. K-6 site is from an upgradient offsite source. Groundwater in this area of Monument, New Mexico, has been reported as regionally impacted with chlorides and unusable as early as 1952 (Nicholson and Clebsch, Groundwater Report 6). A portion of this reference is reproduced in Figure 7. The

exact source of groundwater impact at the Jct. K-6 site is unknown because of the numerous potential facilities, past and present, located upgradient as partially listed in section 3.1 of this Stage 2 Abatement Plan. Chloride and TDS concentrations at the monitoring wells are above WQCC standards however they are below background concentrations as established by samples from an upgradient site (production battery) which has indicated chloride and TDS concentrations as high as 23,300 mg/L and 26,750 mg/L, respectively.

Numerous groundwater investigation sites have been identified near the site area. These sites have shown a potential as source for chlorides and TDS as observed at the Jct. K-6 site. Sites of concern include:

- The J. R. Phillips No. 2 Tank Battery site (NMOCD Case No. 1R0255) operated by Chevron is located less than ½ mile NNW of Jct. K-6 (Figures 2 and 5). Groundwater conditions are being monitored by Chevron on an annual frequency. Average chloride and TDS concentrations at the 8 monitoring wells are about 10,000 mg/L and 19,000 mg/L, respectively.
- The Monument Gas Plant operated by Targa Midstream Services, L.P. (Targa) is located approximately 1 mile northwest of the Jct. K-6 site (Figures 2 and 5). According to the Ground Water Discharge Plan (GW-025) this facility has two brine ponds and a network of 18 groundwater monitoring wells associated with it.
- An abandoned hydrochloric acid manufacturing plant (DLD Resources, formerly Climax Chemical Company) is located about 1 ½ miles northwest of the Jct. K-6 site. There are several groundwater monitoring wells associated with this facility however no active regulatory directives towards further investigation and remediation of this facility are known to be in progress.
- The former drilling pits associated with two plugged and abandoned oil wells (Britt A #002 and Britt A #003) located north of Jct. K-6.
- A former tank battery (Britt A) and land farmed area of hydrocarbon-impacted soil is located immediately adjacent to the south and southeast of Jct. K-6. Three 210-barrel tanks were removed from this former facility in early 2005, however the area with hydrocarbon-impacted soil is still present.
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One or more of the offsite sources listed above may be the cause, or other potential release sites that have yet to be assessed including the former tank battery and pits adjacent to the south side of the Jct. K-6 site.

However, at the request of the NMOCD via email communication on February 13, 2008 (Appendix D) a groundwater recovery system will be installed to pump and dispose of chloride-impacted groundwater into the EME Salt Water Disposal system. It is being assumed the observed chloride concentrations in monitoring well MW-1 (adjacent to the junction box) are, in part, the result of a release of chlorides to the groundwater table. With that assumption in mind, the following estimate of chloride mass was calculated based on simple mass balance equations which are explained as follows:

First, the size of the impacted area is conservatively assumed to be 30-ft by 30-ft based on a combination of the soil delineation data and the maximum size used at other ROC junction box sites in the Monument area. This area is then multiplied by a factor of 10 (estimated horizontal dispersivity factor). This total area is then multiplied by the thickness of the aquifer (25-ft) and its porosity (0.25) resulting in a total saturated pore space volume.

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Volume of impacted ground water below former excavation.	65,250 ft^3	Simple multiplication of each parameter listed above
Volume of Impacted Groundwater below former excavation.	1.848E+06 L	Unit conversion of previous value to liters.
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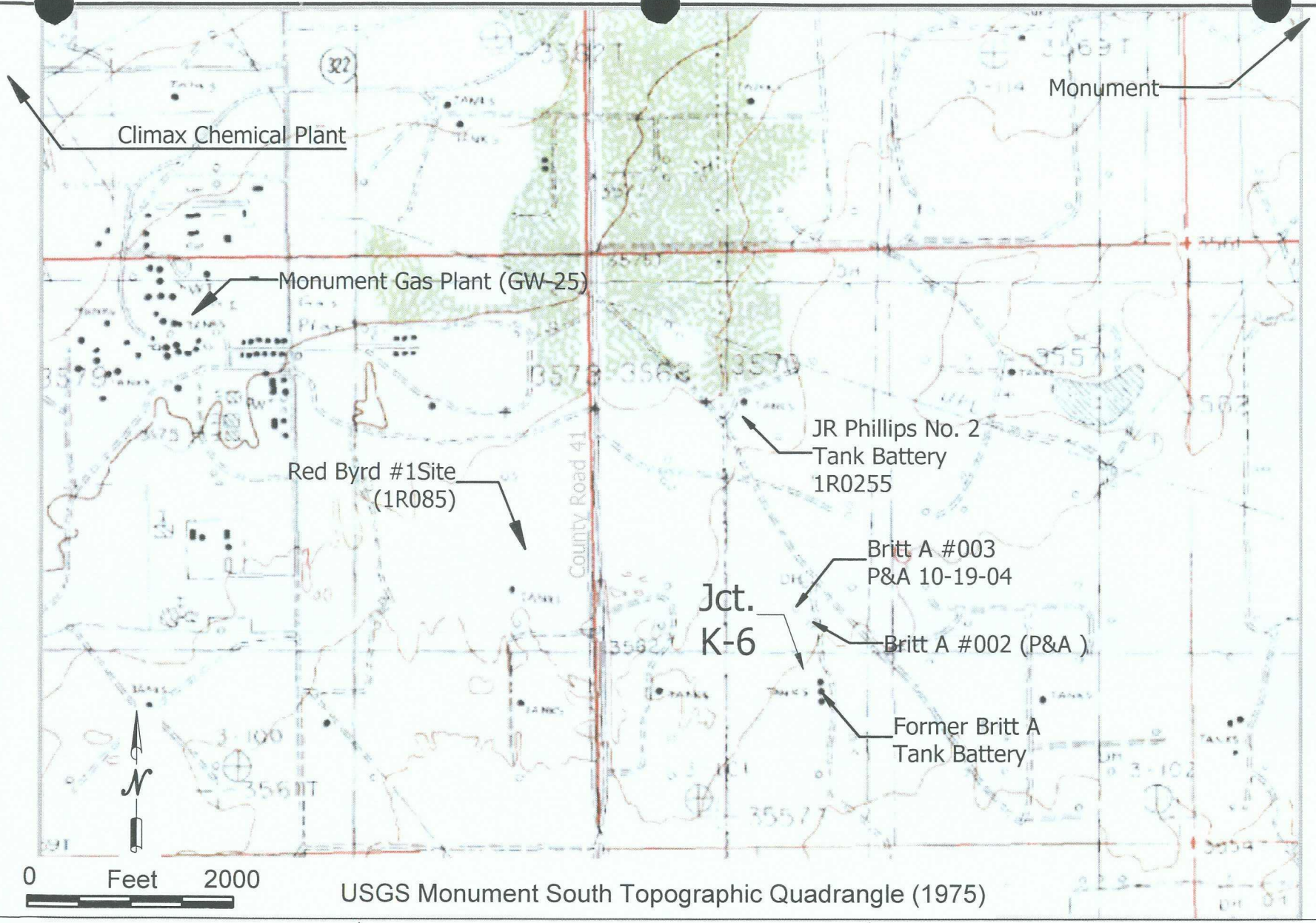
At the completion of corrective actions as described herein, a final report will be submitted to the NMOCD with a request for closure of the Rule 19 regulatory file associated with this site.

FIGURES



TRIDENT ENVIRONMENTAL

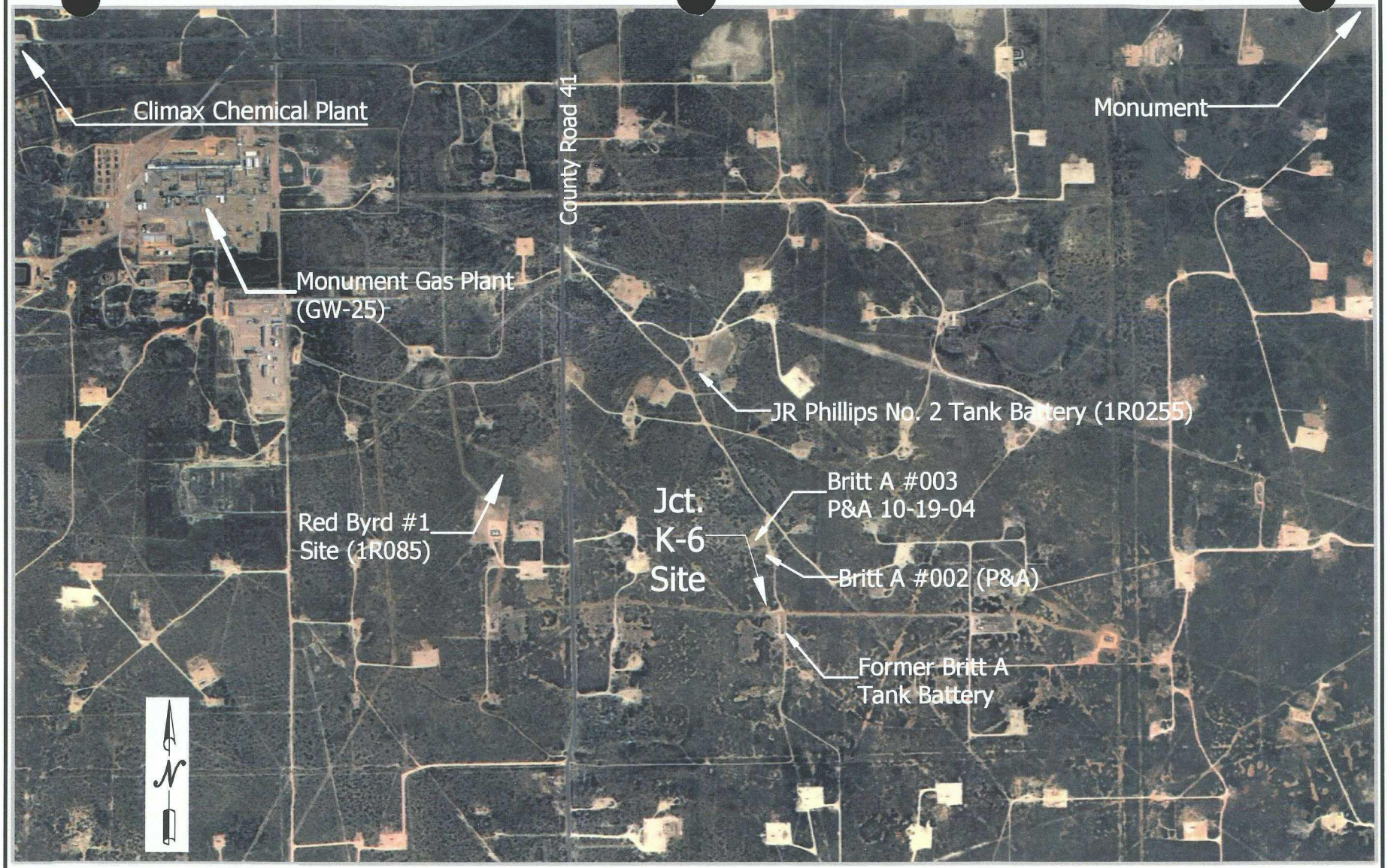
EME Jct K-6 Site (AP-46)

T20S - R37E - Section 6 - Unit K

RICE *Operating Company*

FIGURE 1

SITE LOCATION MAP



TRIDENT ENVIRONMENTAL

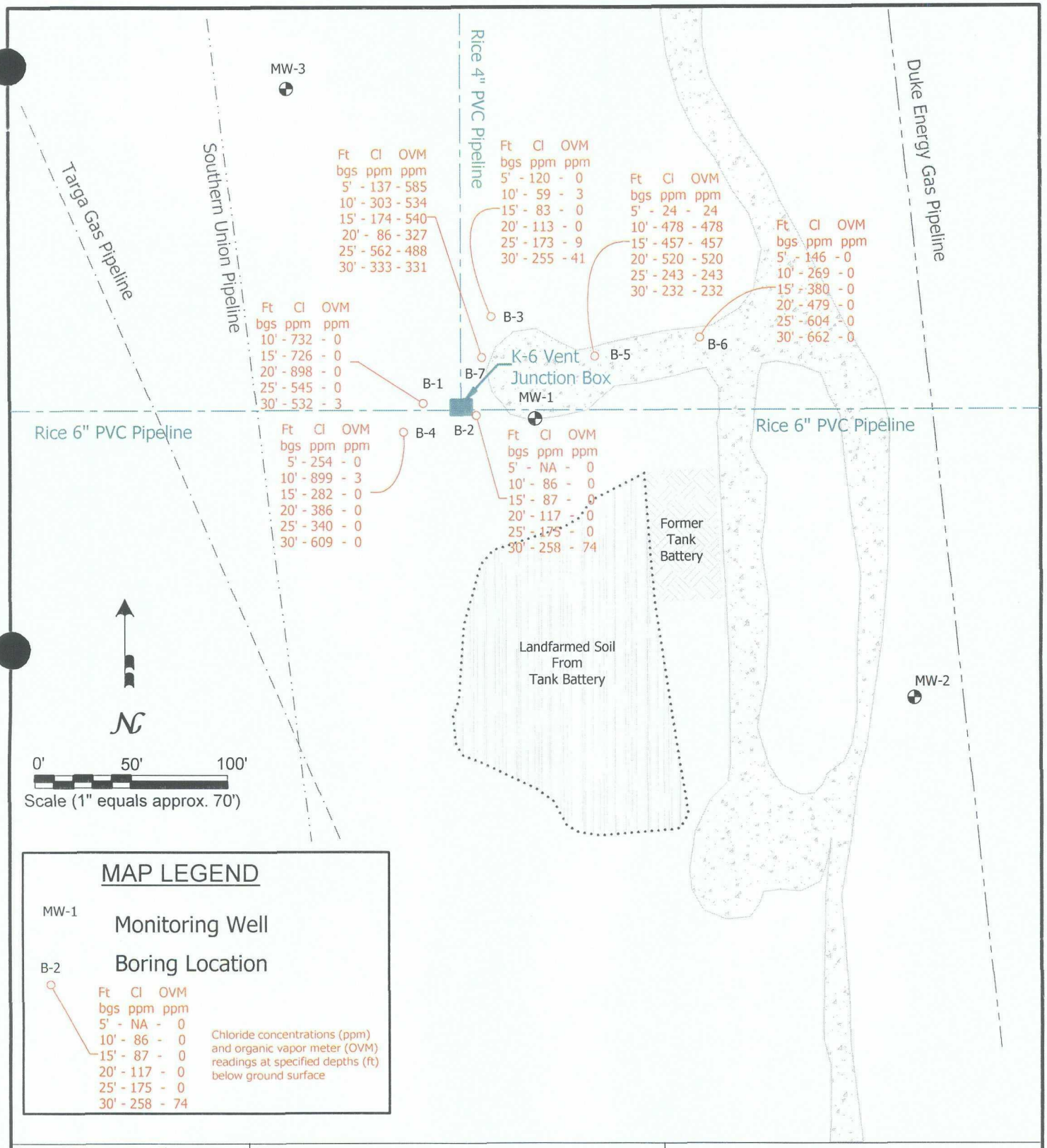
EME Jct K-6 Site (AP-46)

T20S - R37E - Section 6 - Unit K

RICE *Operating Company*

FIGURE 2

AERIAL PHOTO (2005)



TRIDENT ENVIRONMENTAL

EME Jct. K-6 Site (AP-46)

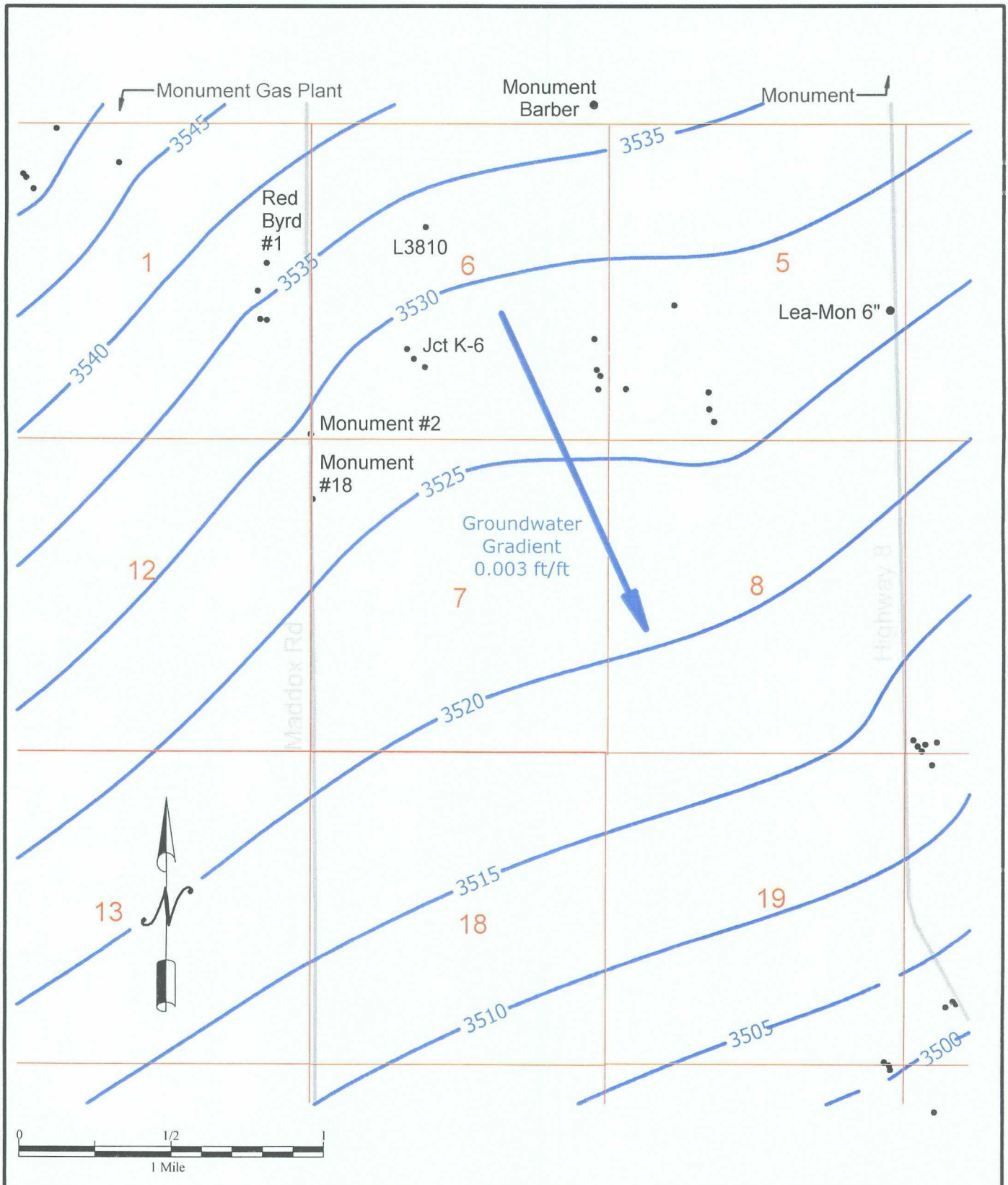
T20S - R37E - Section 6 - Unit K

RICE *Operating Company*

FIGURE 3

SOIL SAMPLE RESULTS

JULY 18 and 19, 2006



TRIDENT ENVIRONMENTAL

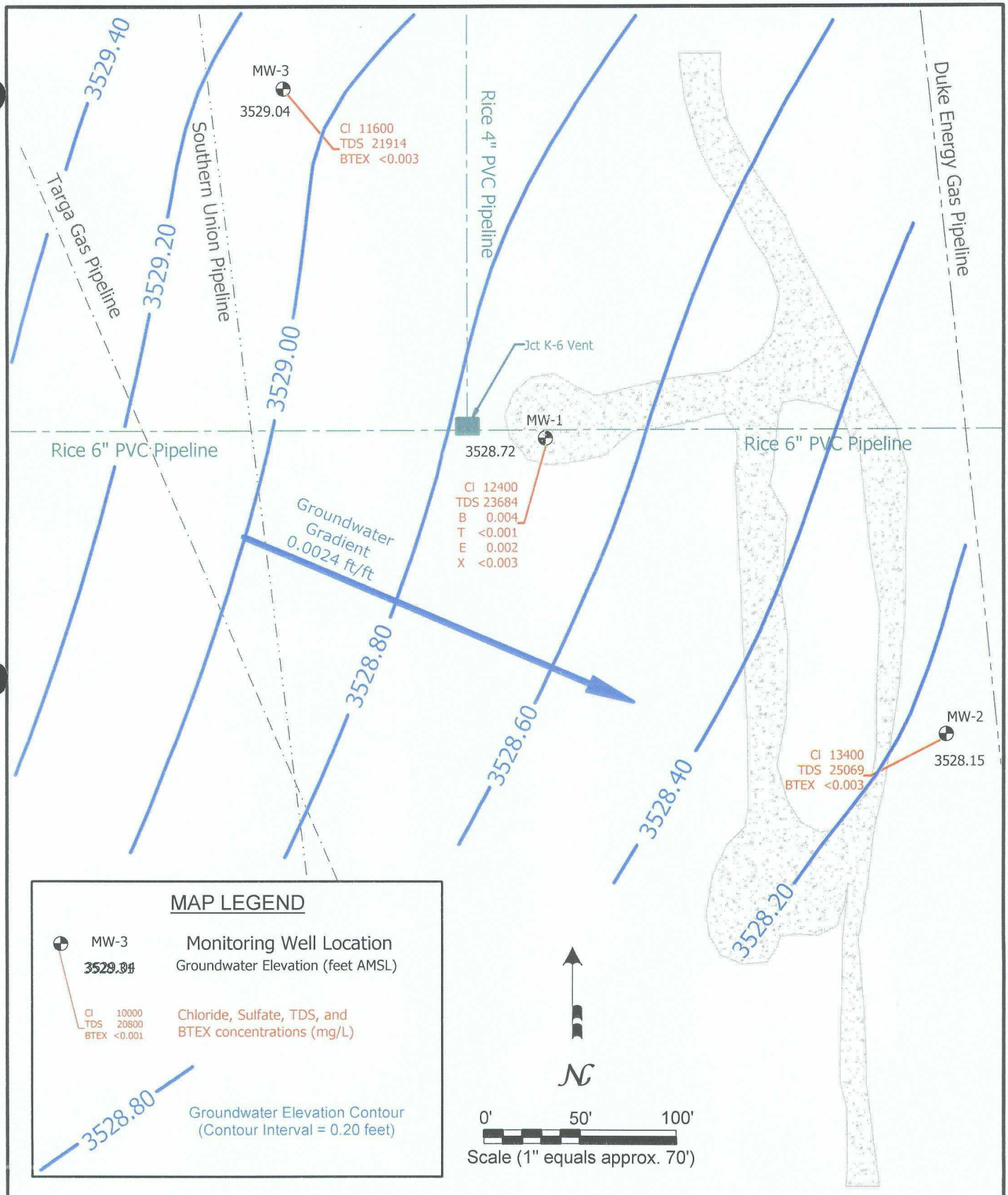
EME Jct. K-6 Site (AP-46)

T20S - R37E - Section 6 - Unit K

RICE *Operating Company*

FIGURE 4

REGIONAL GROUNDWATER GRADIENT MAP



TRIDENT ENVIRONMENTAL

EME Jct. K-6 Vent Site

T20S - R37E - Section 6 - Unit K

RICE *Operating Company*

FIGURE 5

GROUNDWATER GRADIENT AND CHLORIDE, TDS, & BTEX CONCENTRATION MAP
DECEMBER 11, 2007

TABLES

Table 1
Field Testing and Laboratory Analytical Results for Soil Samples

Boring/ Monitoring Well	Depth (ft bgs)	Field Chloride (ppm)	Lab Chloride (mg/kg)	OVM (ppm)	Regulated Hydrocarbons (mg/kg)				
					B	T	E	X	BTEX
B-1	5' - 7'	---	---	0	---	---	---	---	---
	10' - 12'	732	---	0	---	---	---	---	---
	15' - 17'	726	---	0	---	---	---	---	---
	20' - 22'	898	588	0	---	---	---	---	---
	25' - 27'	545	---	0	---	---	---	---	---
	28' - 30'	532	---	3	---	---	---	---	---
B-2	5' - 7'	---	---	0	---	---	---	---	---
	10' - 12'	86	---	0	---	---	---	---	---
	15' - 17'	87	---	0	---	---	---	---	---
	20' - 22'	117	---	0	---	---	---	---	---
	25' - 27'	175	---	0	---	---	---	---	---
	28' - 30'	258	---	74	---	---	---	---	---
B-3	5' - 7'	120	---	0	---	---	---	---	---
	10' - 12'	59	---	3	---	---	---	---	---
	15' - 17'	83	---	0	---	---	---	---	---
	20' - 22'	113	---	0	---	---	---	---	---
	25' - 27'	173	---	9	---	---	---	---	---
	28' - 30'	255	---	41	---	---	---	---	---
B-4	5' - 7'	254	---	0	---	---	---	---	---
	10' - 12'	899	592	3	---	---	---	---	---
	15' - 17'	282	---	0	---	---	---	---	---
	20' - 22'	386	---	0	---	---	---	---	---
	25' - 27'	340	---	0	---	---	---	---	---
	28' - 30'	609	---	0	---	---	---	---	---
B-5	5' - 7'	181	---	24	---	---	---	---	---
	10' - 12'	365	---	478	0.006	0.009	2.16	6.48	8.66
	15' - 17'	168	---	457	---	---	---	---	---
	20' - 22'	165	---	520	0.003	0.009	1.74	5.68	7.42
	25' - 27'	121	---	243	---	---	---	---	---
	28' - 30'	145	---	232	---	---	---	---	---
B-6	5' - 7'	146	---	0	---	---	---	---	---
	10' - 12'	269	---	0	---	---	---	---	---
	15' - 17'	380	---	0	---	---	---	---	---
	20' - 22'	479	---	0	---	---	---	---	---
	25' - 27'	604	---	0	---	---	---	---	---
	28' - 30'	662	---	0	---	---	---	---	---
B-7	5' - 7'	137	---	585	<0.020	<0.020	0.786	2.04	2.83
	10' - 12'	303	---	534	---	---	---	---	---
	15' - 17'	174	---	540	0.179	0.985	2.84	8.56	12.6
	20' - 22'	86	---	327	---	---	---	---	---
	25' - 27'	562	---	488	<0.020	<0.020	0.035	0.074	0.109
	28' - 30'	333	---	331	---	---	---	---	---
MW-2	5' - 7'	60	---	0	---	---	---	---	---
	10' - 12'	56	---	0	---	---	---	---	---
	15' - 17'	115	---	0	---	---	---	---	---
	20' - 22'	143	---	0	---	---	---	---	---
	25' - 27'	431	---	0	---	---	---	---	---
	30' - 31'	1004	---	0	---	---	---	---	---
MW-3	5' - 7'	80	---	0	---	---	---	---	---
	10' - 12'	---	---	0	---	---	---	---	---
	15' - 17'	569	---	0	---	---	---	---	---
	20' - 22'	683	---	0	---	---	---	---	---
	25' - 27'	738	---	0	---	---	---	---	---
	30' - 32'	1014	---	0	---	---	---	---	---
Average Chloride		351							

Table 2

Summary of Groundwater Monitoring Results

Well No.	Sample Date	Depth to Water (ft BTOC)	Groundwater Elevation (ft AMSL)	Chloride (mg/L)	TDS (mg/L)	Benzene (mg/L)	Toluene (mg/L)	Ethyl-benzene (mg/L)	Xylene (mg/L)
MW-1	01/25/02	37.20	3525.16	**12,096**	**23,370**	<0.002	<0.002	0.002	0.006
	05/14/02	37.30	3525.06	**12,000**	**26,700**	0.001	0.003	<0.001	0.004
	08/28/02	37.52	3524.84	**13,796**	**29,180**	<0.002	<0.002	0.003	<0.006
	11/11/02	38.65	3523.71	**12,200**	**26,400**	0.001	0.001	0.001	0.003
	02/27/03	37.78	3524.58	**12,800**	**25,900**	0.001	0.001	0.001	0.003
	05/29/03	37.80	3524.56	**12,400**	**27,000**	0.002	0.001	0.001	0.001
	08/21/03	37.90	3524.46	**12,000**	**26,400**	0.003	<0.001	0.002	0.004
	11/19/03	38.17	3524.19	**11,500**	**26,500**	0.003	0.001	<0.001	0.001
	02/18/04	38.40	3523.96	**11,796**	**26,172**	0.003	<0.002	<0.002	<0.006
	05/27/04	37.60	3524.76	**13,800**	**25,700**	0.001	<0.001	<0.001	0.001
	09/07/04	37.96	3524.40	**11,500**	**24,600**	0.003	<0.001	0.001	0.003
	11/24/04	37.53	3524.83	**10,800**	**23,900**	0.005	0.004	0.005	0.015
	02/09/05	36.54	3525.82	**11,200**	**23,500**	0.003	<0.001	<0.001	0.002
	05/03/05	35.60	3526.76	**11,200**	**25,400**	0.003	0.001	0.002	0.001
	08/11/05	34.44	3527.92	**10,500**	**23,600**	0.004	<0.001	0.004	0.002
	11/28/05	34.89	3527.47	**9,480**	**25,600**	0.002	0.001	0.003	0.002
	02/21/06	34.26	3528.10	**10,400**	**23,700**	0.002	0.003	0.004	0.006
	05/17/06	34.18	3528.18	**11,500**	**22,400**	0.002	0.001	0.002	0.001
	08/22/06	34.44	3527.92	**10,500**	**19,100**	0.003	0.001	0.002	0.001
	11/08/06	34.14	3528.22	**9,520**	**19,100**	0.006	0.029	0.006	0.007
	03/08/07	33.76	3528.60	**10,700**	**19,500**	0.009	0.007	0.007	0.010
	06/05/07	33.54	3528.82	**11,000**	**22,500**	0.006	0.005	0.005	0.007
	08/22/07	33.61	3528.75	**10,697**	**23,804**	<0.002	<0.002	<0.002	<0.006
	12/11/07	33.65	3528.71	**12,400**	**23,684**	0.004	<0.001	0.002	<0.003
MW-2	08/22/06	31.92	3527.38	**11,300**	**22,000**	<0.001	<0.001	<0.001	<0.001
	11/08/06	31.62	3527.68	**10,600**	**22,500**	<0.001	<0.001	<0.001	<0.001
	03/08/07	31.23	3528.07	**11,300**	**21,600**	<0.001	<0.001	<0.001	<0.001
	06/05/07	31.05	3528.25	**12,400**	**24,100**	<0.001	<0.001	<0.001	<0.001
	08/22/07	31.11	3528.19	**11,297**	**25,454**	<0.002	<0.002	<0.002	<0.006
	12/11/07	31.15	3528.15	**13,400**	**25,069**	< 0.001	< 0.001	< 0.001	<0.003
MW-3	08/22/06	34.85	3528.31	**10,700**	**23,000**	<0.001	<0.001	<0.001	<0.001
	11/08/06	34.55	3528.61	**10,200**	**20,700**	<0.001	<0.001	<0.001	<0.001
	03/08/07	34.18	3528.98	**10,000**	**20,800**	<0.001	<0.001	<0.001	<0.001
	06/05/07	33.95	3529.21	**10,400**	**21,800**	<0.001	<0.001	<0.001	<0.001
	08/22/07	34.02	3529.14	**9,797**	**22,420**	<0.002	<0.002	<0.002	<0.006
	12/11/07	34.12	3529.04	**11,600**	**21,914**	< 0.001	< 0.001	< 0.001	<0.003
WQCC Standards				250	1000	0.01	0.75	0.75	0.62

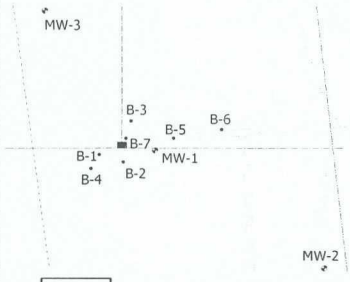
APPENDIX A

LITHOLOGIC LOGS

AND

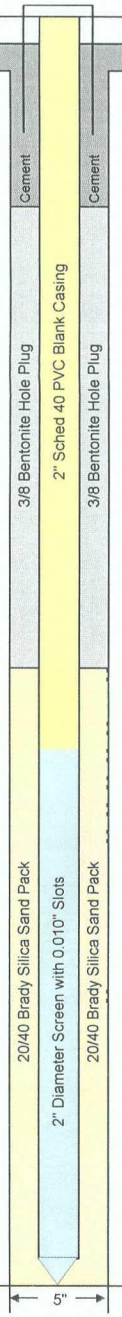
MONITORING WELL CONSTRUCTION DIAGRAMS

LITHOLOGIC LOG AND MONITORING WELL CONSTRUCTION DIAGRAM



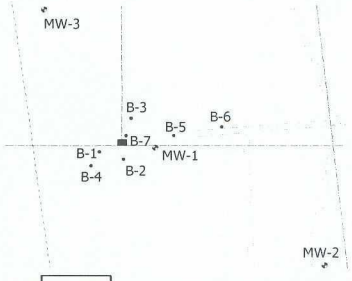
MONITOR WELL NO.: MW-2
SITE ID: EME Jct. K-6
CONTRACTOR: Harrison & Cooper, Inc.
DRILLING METHOD: Air Rotary
START DATE: 07/18/06
COMPLETION DATE: 07/18/06
COMMENTS: Monitoring well located approximately 240 feet southeast of former junction box .

TOTAL DEPTH: 45 Feet
CLIENT: RICE *Operating Company*
COUNTY: Lea
STATE: New Mexico
LOCATION: T20S-R37E-Sec 6-Unit K
FIELD REP.: G. Van Deventer



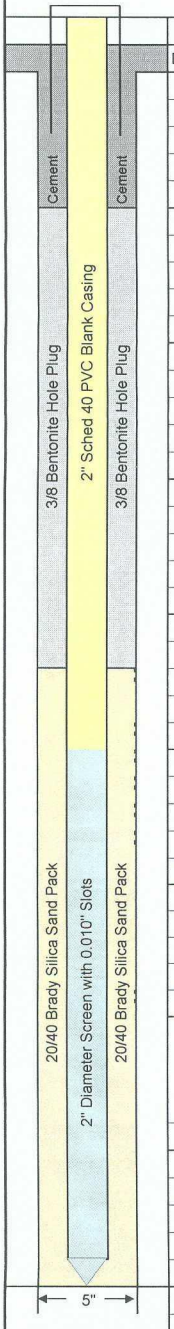
Sample Depth	Sample Time	Sample Type	Chloride (ppm)	PID (ppm)	USCS	LITHOLOGIC DESCRIPTION: LITHOLOGY, COLOR, GRAIN SIZE, SORTING, ROUNDING, CONSOLIDATION, DISTINGUISHING FEATURES
Surface					SW	Grayish-orange (10 YR 7/4) sandy loam, dune sand, fine-grained, well-sorted, subrounded grains, unconsolidated, dry
5						
	0935	Split Spoon	60	0	SM/CAL	Very pale orange (10 YR 8/2) fine-grained sand with some calcium carbonate in matrix, subrounded grains, unconsolidated, dry.
10						
	0940	Split Spoon	56	0		Very pale orange (10 YR 8/2) fine-grained sand with some calcium carbonate in matrix, subrounded grains, unconsolidated, dry.
15						
	0945	Split Spoon	115	0		Very pale orange (10 YR 8/2) fine-grained sand with some calcium carbonate in matrix, subrounded grains, unconsolidated, dry.
20						
	0950	Split Spoon	143	0	SW	Light brown (5YR 6/4) fine sand, subrounded grains, moderately well-sorted, dry.
25						
	0955	Split Spoon	431	0	SW/CAL	Light brown (5YR 6/4) fine-grained sand with some calcium carbonate (10 YR 8/2) in matrix, subrounded grains, dry.
30						
	1000	Split Spoon	1004	0		Light brown (5YR 6/4) fine-grained sand with some calcium carbonate (10 YR 8/2) in matrix, subrounded grains, dry.
35						
40					SW	Light brown (5YR 6/4) fine-grained sand, subrounded grains, dry.
						Light brown (5YR 6/4) fine-grained sand, subrounded grains, dry.
45						Bottom of boring at 45 ft below ground surface.
50						

LITHOLOGIC LOG AND MONITORING WELL CONSTRUCTION DIAGRAM



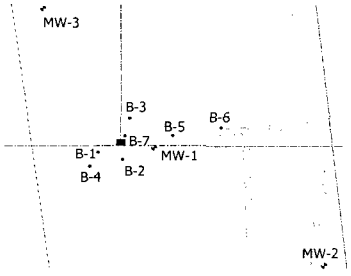
MONITOR WELL NO.: MW-3
SITE ID: EME Jct. K-6
CONTRACTOR: Harrison & Cooper, Inc.
DRILLING METHOD: Air Rotary
START DATE: 07/18/06
COMPLETION DATE: 07/18/06
COMMENTS: Monitoring well located approximately 210 feet northwest of former junction box .

TOTAL DEPTH: 45 Feet
CLIENT: RICE *Operating Company*
COUNTY: Lea
STATE: New Mexico
LOCATION: T20S-R37E-Sec 6-Unit K
FIELD REP.: G. Van Deventer



Sample Depth	Sample Time	Sample Type	Chloride (ppm)	PID (ppm)	USCS	LITHOLOGIC DESCRIPTION: LITHOLOGY, COLOR, GRAIN SIZE, SORTING, ROUNDING, CONSOLIDATION, DISTINGUISHING FEATURES
		Surface				Light brown (5Y 6/4) sandy loam, dune sand, fine-grained, well-sorted, subrounded grains, unconsolidated, dry
5	1110	Cuttings	80	0		
					SW	Light brown (5Y 6/4) sandy loam, dune sand, fine-grained, well-sorted, subrounded grains, unconsolidated, dry
10	1115	Cuttings		0		
						Light brown (5YR 6/4) sandy loam, dune sand, fine-grained, well-sorted, subrounded grains, unconsolidated, dry
15	1120	Cuttings	569	0		
					SM/CAL	Grayish-orange (10 YR 7/4) fine-grained sand with some very pale orange (10YR 8/2) calcium carbonate in matrix, subrounded grains, unconsolidated, dry.
20	1125	Cuttings	683	0		
						Light brown (5Y 6/4) fine sand with <5% calcium carbonate (10 YR 8/2) in matrix, subrounded grains, moderately well-sorted, dry.
25	1135	Cuttings	738	0		
					SW/CAL	Light brown (5Y 6/4) fine sand with <5% calcium carbonate (10 YR 8/2) in matrix, subrounded grains, moderately well-sorted, dry.
						(Calcium carbonate decreasg with depth)
30	1140	Cuttings	1014	0		
						Light brown (5Y 6/4) fine-grained sand with some calcium carbonate in matrix, subrounded grains, dry.
35						
						Light brown (5YR 6/4) fine-grained sand, subrounded grains, dry.
40					SW	
						Light brown (5YR 6/4) fine-grained sand, subrounded grains, dry.
45						Bottom of boring at 45 ft below ground surface.

LITHOLOGIC LOG AND MONITORING WELL CONSTRUCTION DIAGRAM



BOREHOLE NO.: B-1
SITE ID: EME Jct. K-6
CONTRACTOR: Harrison & Cooper, Inc.
DRILLING METHOD: Air Rotary
START DATE: 07/18/06
COMPLETION DATE: 07/18/06
COMMENTS: Boring located 26 feet southwest of junction box.

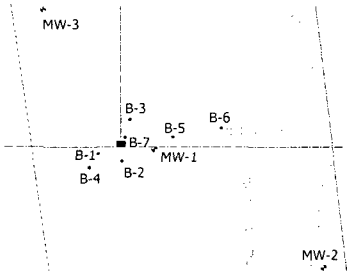
TOTAL DEPTH: 30 Feet
CLIENT: RICE *Operating Company*
COUNTY: Lea
STATE: New Mexico
LOCATION: T20S-R37E-Sec 6-Unit K
FIELD REP.: G. Van Deventer

Depth	Sample Time	Sample Type	Chloride (ppm)	PID (ppm)	USCS	LITHOLOGIC DESCRIPTION: LITHOLOGY, COLOR, GRAIN SIZE, SORTING, ROUNDING, CONSOLIDATION, DISTINGUISHING FEATURES
		Surface			SW	Light brown (5 YR 6/4) sandy loam, dune sand, fine-grained, well-sorted, subrounded grains, unconsolidated, dry
5	1452	Split Spoon		0	SM/CAL	Light brown (5 YR 6/4) fine-grained sand with some very pale orange calcium carbonate (10 YR 8/2) in matrix. Sand grains are moderately well-sorted, subrounded, unconsolidated, dry.
10	1455	Split Spoon	732	0		Light brown (5 YR 6/4) fine-grained sand with some very pale orange calcium carbonate (10 YR 8/2) in matrix. Sand grains are moderately well-sorted, subrounded, unconsolidated, dry.
15	1459	Split Spoon	726	0		Light brown (5 YR 6/4) fine-grained sand with some very pale orange calcium carbonate (10 YR 8/2) in matrix. Sand grains are moderately well-sorted, subrounded, unconsolidated, dry.
20	1502	Split Spoon	898	0		Light brown (5 YR 6/4) fine-grained sand with some very pale orange calcium carbonate (10 YR 8/2) in matrix. Sand grains are moderately well-sorted, subrounded, unconsolidated, dry.
25	1508	Split Spoon	545	0		Light brown (5 YR 6/4) fine-grained sand with some very pale orange calcium carbonate (10 YR 8/2) in matrix. Sand grains are moderately well-sorted, subrounded, unconsolidated, dry.
30	1518	Split Spoon	532	3		Light brown (5 YR 6/4) fine-grained sand with some very pale orange calcium carbonate (10 YR 8/2) in matrix. Sand grains are moderately well-sorted, subrounded, unconsolidated, dry.
35						Bottom of boring at 30 ft below ground surface.
40						
45						
50						

3/8 Bentonite Hole Plug

5"

LITHOLOGIC LOG AND MONITORING WELL CONSTRUCTION DIAGRAM



BOREHOLE NO.: B-2
SITE ID: EME Jct. K-6
CONTRACTOR: Harrison & Cooper, Inc.
DRILLING METHOD: Air Rotary
START DATE: 07/18/06
COMPLETION DATE: 07/18/06
COMMENTS: Boring located 18 feet south of junction box.

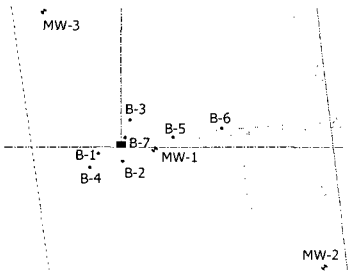
TOTAL DEPTH: 30 Feet
CLIENT: RICE *Operating Company*
COUNTY: Lea
STATE: New Mexico
LOCATION: T20S-R37E-Sec 6-Unit K
FIELD REP.: G. Van Deventer

Depth	Sample Time	Sample Type	Chloride (ppm)	PID (ppm)	USCS	LITHOLOGIC DESCRIPTION: LITHOLOGY, COLOR, GRAIN SIZE, SORTING, ROUNDING, CONSOLIDATION, DISTINGUISHING FEATURES
		Surface			SW	Light brown (5 YR 6/4) sandy loam, dune sand, fine-grained, well-sorted, subrounded grains, unconsolidated, dry
5	1536	Split Spoon		0		Light brown (5 YR 5/6), pale yellowish brown (10 YR 6/2) and dark yellowish brown (10YR 6/6) fine-grained sand, well-sorted, subrounded grains, unconsolidated, dry
10	1538	Cuttings	86	0		Hard caliche layer (too hard for split spoon)
					SM/CAL	Grayish orange (10YR 7/4) fine-grained sand with some very pale orange calcium carbonate (10 YR 8/2) in matrix. Sand grains are moderately well-sorted, subrounded, unconsolidated, dry.
15	1542	Split Spoon	87	0		Grayish orange (10YR 7/4) fine-grained sand with some very pale orange calcium carbonate (10 YR 8/2) in matrix. Sand grains are moderately well-sorted, subrounded, unconsolidated, dry.
20	1544	Split Spoon	117	0		Grayish orange (10YR 7/4) fine-grained sand with some very pale orange calcium carbonate (10 YR 8/2) in matrix. Sand grains are moderately well-sorted, subrounded, unconsolidated, dry.
25	1555	Split Spoon	175	0	SW	Light brown (5 YR 6/4) fine-grained sand, moderately well-sorted, subrounded, unconsolidated, dry.
30	1610	Split Spoon	258	74		Light brown (5 YR 6/4) fine-grained sand, moderately well-sorted, subrounded, unconsolidated, dry.
35						*Bottom of boring at 30 ft below ground surface.*
40						
45						
50						

3/8 Bentonite Hole Plug

5"

LITHOLOGIC LOG AND MONITORING WELL CONSTRUCTION DIAGRAM



BOREHOLE NO.: B-3
SITE ID: EME Jct. K-6
CONTRACTOR: Harrison & Cooper, Inc.
DRILLING METHOD: Air Rotary
START DATE: 07/18/06
COMPLETION DATE: 07/18/06
COMMENTS: Boring located 25 feet north-northeast of junction box.

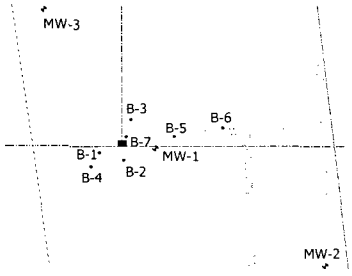
TOTAL DEPTH: 30 Feet
CLIENT: RICE *Operating Company*
COUNTY: Lea
STATE: New Mexico
LOCATION: T20S-R37E-Sec 6-Unit K
FIELD REP.: G. Van Deventer

Depth	Sample Time	Sample Type	Chloride (ppm)	PID (ppm)	USCS	LITHOLOGIC DESCRIPTION: LITHOLOGY, COLOR, GRAIN SIZE, SORTING, ROUNDING, CONSOLIDATION, DISTINGUISHING FEATURES
		Surface			SW	Light brown (5 YR 6/4) *sandy loam, dune sand, fine-grained*, well-sorted, subrounded grains, unconsolidated, dry
5	1630	Split Spoon	120	0	SM/CAL	Pale olive (10Y 6/2) fine-grained sand with some very pale orange calcium carbonate (10 YR 8/2) in matrix. Sand grains are moderately well-sorted, subrounded, unconsolidated, dry.
10	1632	Split Spoon	59	3		Pale olive (10Y 6/2) fine-grained sand with some very pale orange calcium carbonate (10 YR 8/2) in matrix. Sand grains are moderately well-sorted, subrounded, unconsolidated, dry.
15	1635	Split Spoon	83	0		Light brown (5 YR 6/4) fine-grained sand with some very pale orange calcium carbonate (10 YR 8/2) in matrix. Sand grains are moderately well-sorted, subrounded, unconsolidated, dry.
20	1640	Split Spoon	113	0		Light brown (5 YR 6/4) fine-grained sand with some very pale orange calcium carbonate (10 YR 8/2) in matrix. Sand grains are moderately well-sorted, subrounded, unconsolidated, dry.
25	1650	Split Spoon	173	9		Light brown (5 YR 6/4) fine-grained sand with some very pale orange calcium carbonate (10 YR 8/2) in matrix. Sand grains are moderately well-sorted, subrounded, unconsolidated, dry.
30	1655	Cuttings	255	41		Light brown (5 YR 6/4) fine-grained sand with some very pale orange calcium carbonate (10 YR 8/2) in matrix. Sand grains are moderately well-sorted, subrounded, unconsolidated, dry.
35						Bottom of boring at 30 ft below ground surface.
40						
45						
50						

3/8 Bentonite Hole Plug

5"

LITHOLOGIC LOG AND MONITORING WELL CONSTRUCTION DIAGRAM



BOREHOLE NO.: B-4
SITE ID: EME Jct. K-6
CONTRACTOR: Harrison & Cooper, Inc.
DRILLING METHOD: Air Rotary
START DATE: 07/19/06
COMPLETION DATE: 07/19/06
COMMENTS: Boring located 52 feet southwest of junction box.

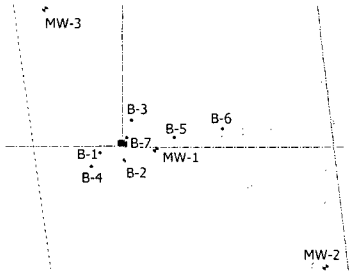
TOTAL DEPTH: 32 Feet
CLIENT: RICE *Operating Company*
COUNTY: Lea
STATE: New Mexico
LOCATION: T20S-R37E-Sec 6-Unit K
FIELD REP.: G. Van Deventer

Depth	Time	Sample Type	Chloride (ppm)	PID (ppm)	USCS	LITHOLOGIC DESCRIPTION: LITHOLOGY, COLOR, GRAIN SIZE, SORTING, ROUNDING, CONSOLIDATION, DISTINGUISHING FEATURES
		Surface			SW	Light brown (5 YR 6/4) sandy loam, dune sand, fine-grained, well-sorted, subrounded grains, unconsolidated, dry
5	0815	Split Spoon	254	0	SM/CAL	Light brown (5 YR 6/4) and pale yellowish brown (10 YR 6/2) fine-grained sand, well-sorted, subrounded grains, unconsolidated, dry
10	0820	Split Spoon	899	3		Grayish orange (10YR 7/4) fine-grained sand with some very pale orange calcium carbonate (10 YR 8/2) in matrix. Sand grains are moderately well-sorted, subrounded, unconsolidated, dry.
15	0825	Split Spoon	282	0		Grayish orange (10YR 7/4) fine-grained sand with some very pale orange calcium carbonate (10 YR 8/2) in matrix. Sand grains are moderately well-sorted, subrounded, unconsolidated, dry.
20	0830	Split Spoon	386	0		Grayish orange (10YR 7/4) fine-grained sand with some very pale orange calcium carbonate (10 YR 8/2) in matrix. Sand grains are moderately well-sorted, subrounded, unconsolidated, dry.
25	0835	Split Spoon	340	0	SM	Grayish orange (10YR 7/4) fine-grained sand with <5% calcium carbonate in matrix. Sand grains are moderately well-sorted, subrounded, unconsolidated, dry.
30	0840	Split Spoon	609	0		Grayish orange (10YR 7/4) fine-grained sand with <5% calcium carbonate in matrix. Sand grains are moderately well-sorted, subrounded, unconsolidated, dry.
35						Bottom of boring at 32 ft below ground surface.
40						
45						
50						

3/8 Bentonite Hole Plug

5"

LITHOLOGIC LOG AND MONITORING WELL CONSTRUCTION DIAGRAM



BOREHOLE NO.: B-5
SITE ID: EME Jct. K-6
CONTRACTOR: Harrison & Cooper, Inc.
DRILLING METHOD: Air Rotary
START DATE: 07/19/06
COMPLETION DATE: 07/19/06
COMMENTS: Boring located 54 feet east of junction box.

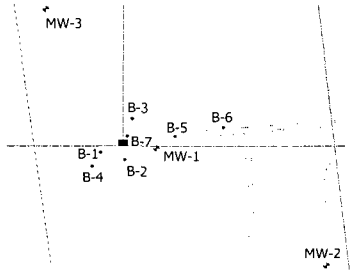
TOTAL DEPTH: 32 Feet
CLIENT: RICE *Operating Company*
COUNTY: Lea
STATE: New Mexico
LOCATION: T20S-R37E-Sec 6-Unit K
FIELD REP.: G. Van Deventer

Depth	Sample Time	Sample Type	Chloride (ppm)	PID (ppm)	USCS	LITHOLOGIC DESCRIPTION: LITHOLOGY, COLOR, GRAIN SIZE, SORTING, ROUNDING, CONSOLIDATION, DISTINGUISHING FEATURES
		Surface			SW	Moderate yellowish brown (10YR 5/4) fine-grained sand.
5	0900	Split Spoon	181	24	SM/CAL	Moderate yellowish brown (10YR 5/4) fine-grained sand.
10	0905	Split Spoon	365	478		Grayish olive (10Y 4/2) fine-grained sand. Strong hydrocarbon odor and dark staining.
15	0910	Split Spoon	168	457		Pale olive (10Y 6/2) fine-grained sand with some very pale orange calcium carbonate in matrix. Strong hydrocarbon odor and moderate staining.
20	0915	Split Spoon	165	520		Dusky yellow (5Y 6/4) fine-grained sand with some very pale orange calcium carbonate in matrix. Strong hydrocarbon odor and moderate staining.
25	0920	Split Spoon	121	243	SW	Moderate yellowish brown (10YR 5/4) fine-grained sand, moderately well-sorted, subrounded, unconsolidated, dry. Moderate hydrocarbon odor.
30	0925	Split Spoon	145	232		Moderate yellowish brown (10YR 5/4) fine-grained sand, moderately well-sorted, subrounded, unconsolidated, dry. Moderate hydrocarbon odor.
35						Bottom of boring at 32 ft below ground surface.
40						
45						
50						

3/8 Bentonite Hole Plug

5"

LITHOLOGIC LOG AND MONITORING WELL CONSTRUCTION DIAGRAM



BOREHOLE NO.: B-6
SITE ID: EME Jct. K-6
CONTRACTOR: Harrison & Cooper, Inc.
DRILLING METHOD: Air Rotary
START DATE: 07/19/06
COMPLETION DATE: 07/19/06
COMMENTS: Boring located 108 feet north-northeast of junction box.

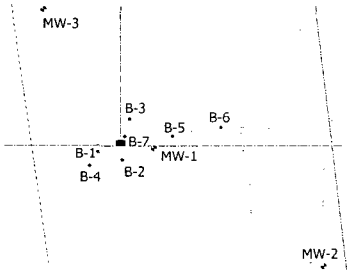
TOTAL DEPTH: 32 Feet
CLIENT: RICE *Operating Company*
COUNTY: Lea
STATE: New Mexico
LOCATION: T20S-R37E-Sec 6-Unit K
FIELD REP.: G. Van Deventer

Sample Depth	Sample Time	Sample Type	Chloride (ppm)	PID (ppm)	USCS	LITHOLOGIC DESCRIPTION: LITHOLOGY, COLOR, GRAIN SIZE, SORTING, ROUNDING, CONSOLIDATION, DISTINGUISHING FEATURES
		Surface			SW	Light brown (5 YR 6/4) sandy loam, dune sand, fine-grained, well-sorted, subrounded grains, unconsolidated, dry
5	0945	Split Spoon	146	0		Grayish orange (10YR 7/4) fine-grained sand, moderately well-sorted, subrounded, unconsolidated, dry.
10	0950	Split Spoon	269	0	SM	Light brown (5Y 6/4) fine-grained sand with some pale yellowish brown (10YR 6/2) calcium carbonate in matrix. Sand grains are moderately well-sorted, subrounded, unconsolidated, dry.
15	0955	Split Spoon	380	0	SM/CAL	Grayish orange (10YR 7/4) fine-grained sand with some very pale orange calcium carbonate (10 YR 8/2) in matrix. Sand grains are moderately well-sorted, subrounded, unconsolidated, dry.
20	1000	Split Spoon	479	0	SW	Light brown (5Y 6/4) and pale yellowish brown (10YR 6/2) fine-grained sand, moderately well-sorted, subrounded, unconsolidated, dry.
25	1005	Split Spoon	604	0	SM	Grayish orange (10YR 7/4) and pale yellowish brown (10 YR 6/2) fine-grained sand with some calcium carbonate in matrix. Sand grains are moderately well-sorted, subrounded, unconsolidated, dry.
30	1010	Split Spoon	662	0		Grayish orange (10YR 7/4) and pale yellowish brown (10 YR 6/2) fine-grained sand with some calcium carbonate in matrix. Sand grains are moderately well-sorted, subrounded, unconsolidated, dry.
35						Bottom of boring at 32 ft below ground surface.
40						
45						
50						

3/8 Bentonite Hole Plug

5"

LITHOLOGIC LOG AND MONITORING WELL CONSTRUCTION DIAGRAM



BOREHOLE NO.: B-7
SITE ID: EME Jct. K-6
CONTRACTOR: Harrison & Cooper, Inc.
DRILLING METHOD: Air Rotary
START DATE: 07/19/06
COMPLETION DATE: 07/19/06
COMMENTS: Boring located adjacent to northeast corner east of junction box.

TOTAL DEPTH: 32 Feet
CLIENT: RICE *Operating Company*
COUNTY: Lea
STATE: New Mexico
LOCATION: T20S-R37E-Sec 6-Unit K
FIELD REP.: G. Van Deventer

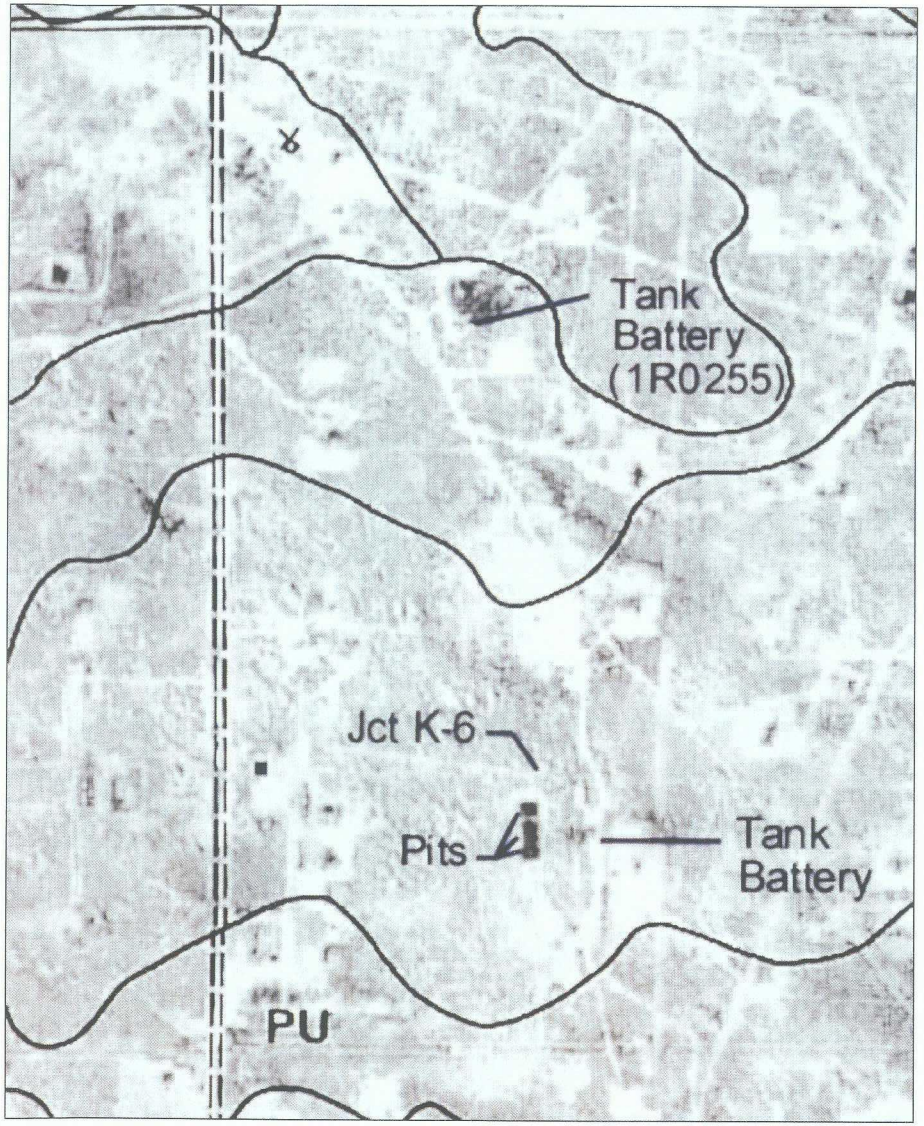
Depth	Time	Sample Type	Chloride (ppm)	PID (ppm)	USCS	LITHOLOGIC DESCRIPTION: LITHOLOGY, COLOR, GRAIN SIZE, SORTING, ROUNDING, CONSOLIDATION, DISTINGUISHING FEATURES
		Surface			SW	Moderate yellowish brown (10YR 5/4) fine-grained sand.
5	1025	Split Spoon	137	585	SM/CAL	Pale olive (10Y 6/2) and dark yellowish orange (10YR 6/2) fine-grained sand with calcium carbonate in matrix. Strong hydrocarbon odor and dark staining.
10	1030	Split Spoon	303	534		Greenish gray (5GY 6/1), medium dark gray, and black fine-grained sand with calcium carbonate in matrix. Strong hydrocarbon odor and dark staining.
15	1035	Split Spoon	174	540		Olive gray (5Y 4/1)and yellowish gray (5Y 8/1) fine-grained sand with some calcium carbonate in matrix. Strong hydrocarbon odor and moderate staining.
20	1040	Split Spoon	86	327		Light olive gray (5Y 6/1) fine-grained sand with some very pale orange calcium carbonate in matrix. Strong hydrocarbon odor and moderate staining.
25	1045	Split Spoon	562	488		Pale olive (10Y 6/2) fine-grained sand with calcium carbonate in matrix, moderately well-sorted, subrounded, unconsolidated, dry. Moderate hydrocarbon odor.
30	1050	Split Spoon	333	331	SW	Pale yellowish brown (10YR 6/2) fine-grained sand, moderately well-sorted, subrounded, unconsolidated, dry. Moderate hydrocarbon odor.
35						Bottom of boring at 32 ft below ground surface.
40						
45						
50						

3/8 Bentonite Hole Plug

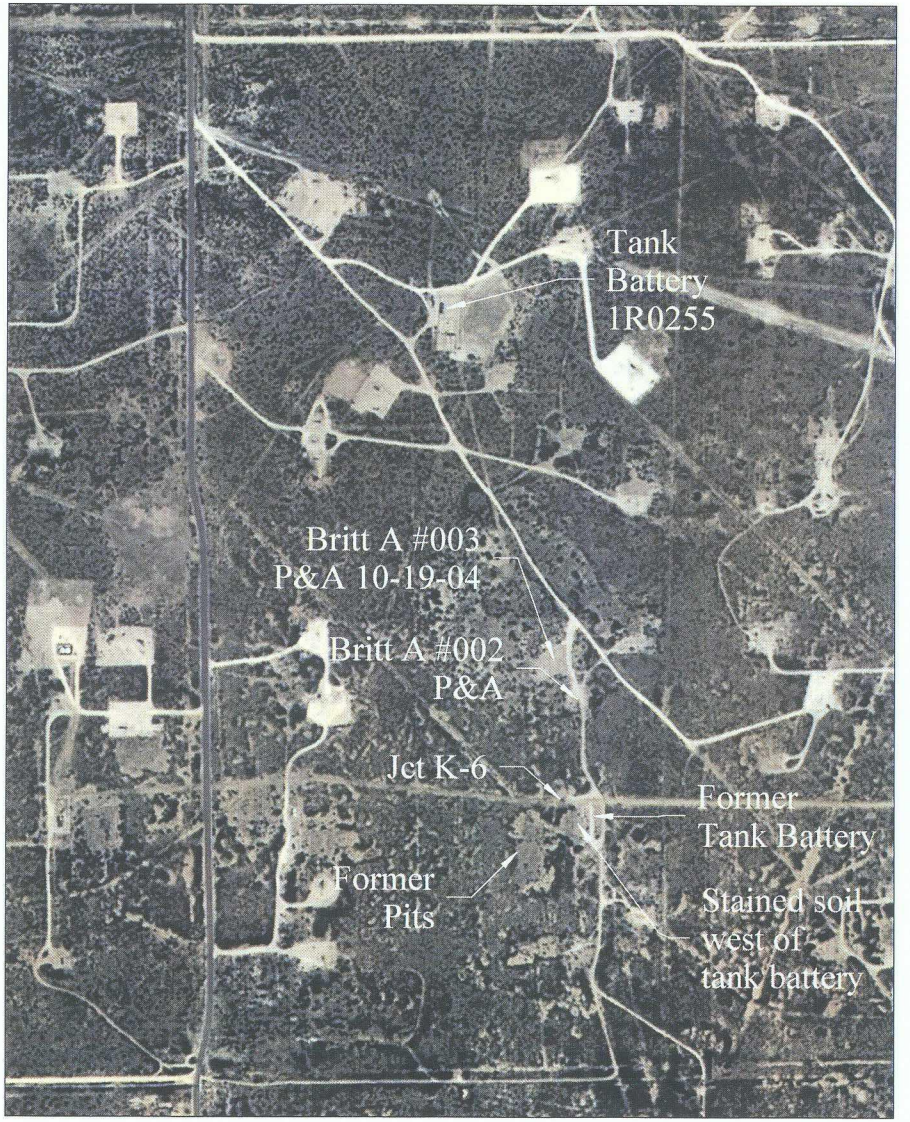
5'

APPENDIX B

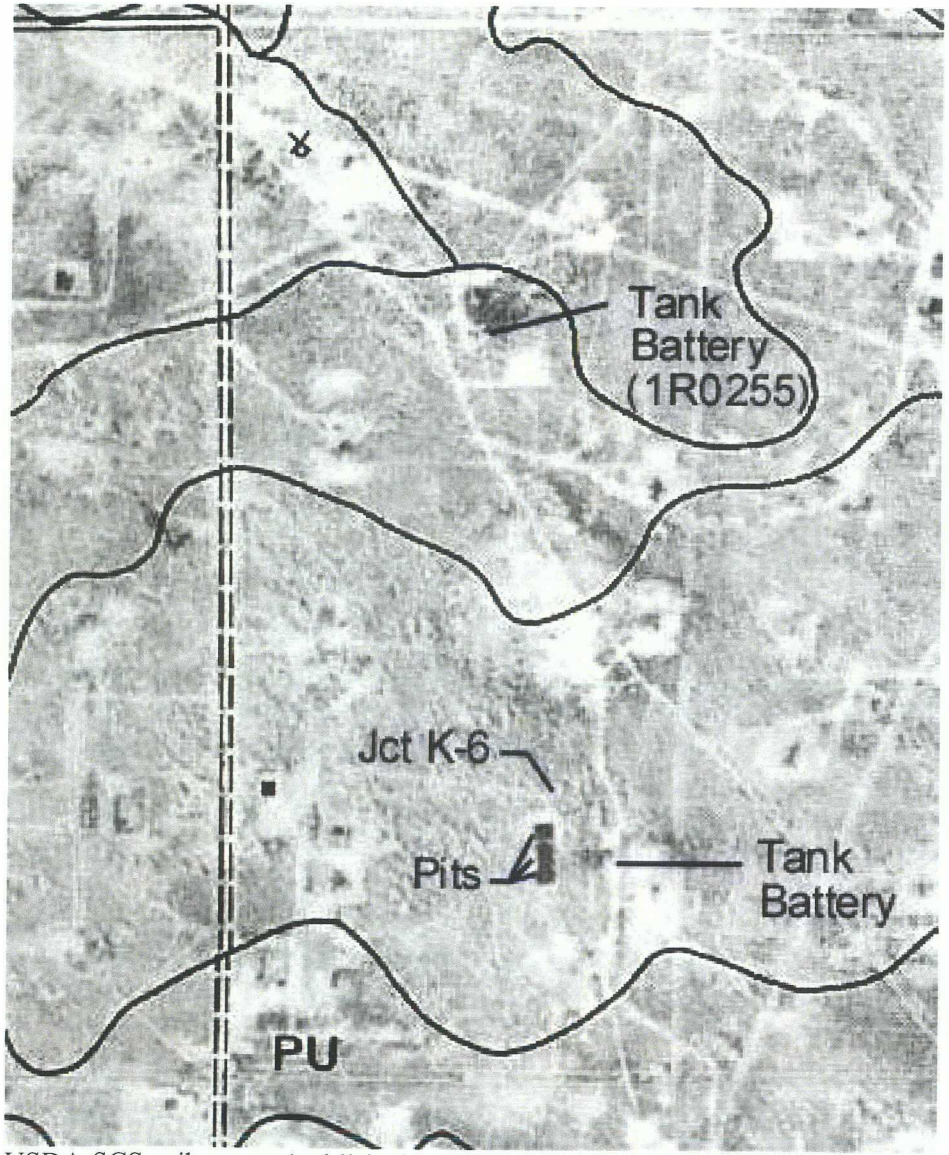
PHOTO DOCUMENTATION



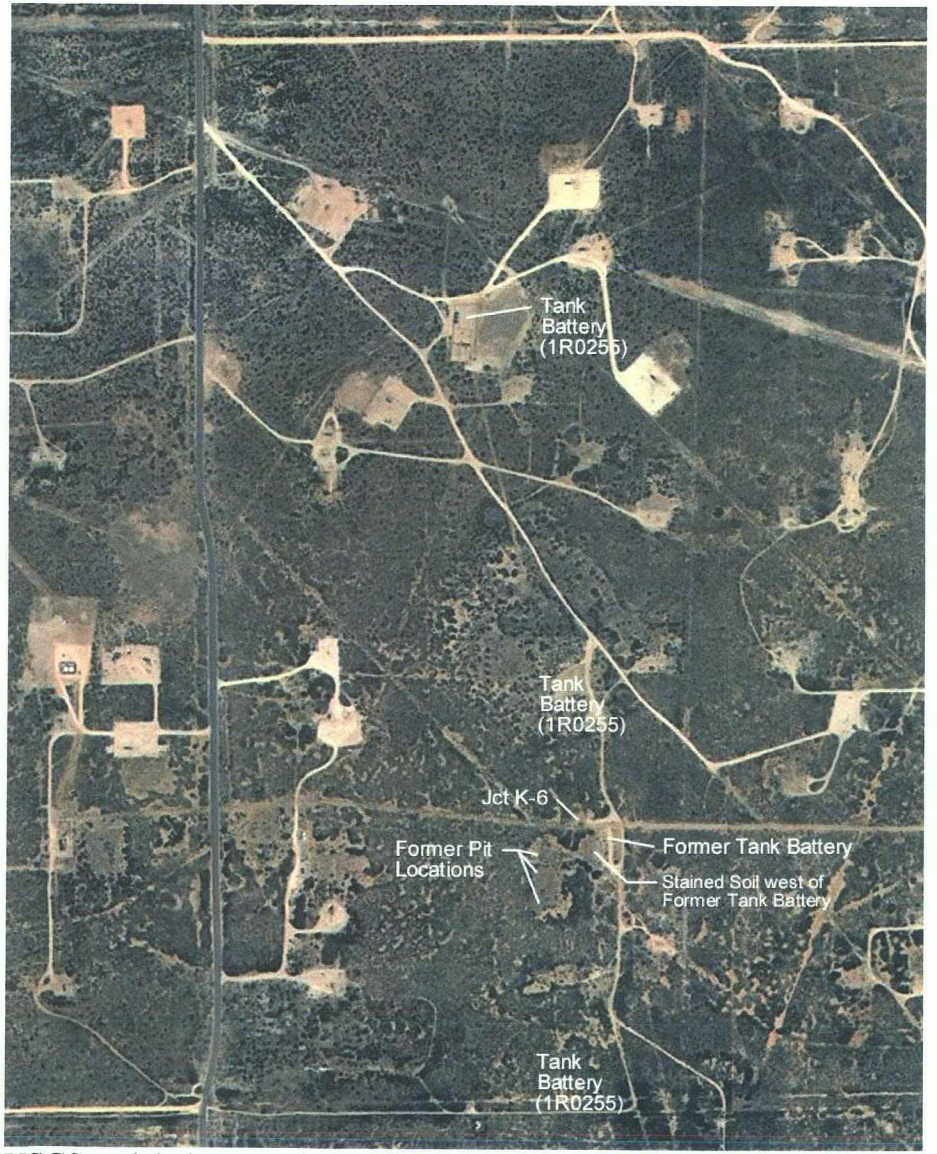
USDA-SCS soil survey (published 1974) showing Jct K-6 site relative to nearby pits, tank batteries, and other oil and gas facilities (photobase from 1955 and 1966 aerial photography).



USGS aerial photograph showing Jct K-6 site relative to nearby pits, tank batteries, and other oil and gas facilities (photo taken July 2005).



USDA-SCS soil survey (published 1974) showing Jct K-6 site relative to nearby pits, tank batteries, and other oil and gas facilities (photobase from 1955 and 1966 aerial photography).



USGS aerial photograph showing Jct K-6 site relative to nearby pits, tank batteries, and other oil and gas facilities (photo taken July 2005).

APPENDIX C

LABORATORY ANALYTICAL REPORTS

AND

CHAIN OF CUSTODY DOCUMENTATION

(Full laboratory report with QA/QC included on compact disk as separate Adobe Reader file in pdf format)

CARDINAL LABORATORIES

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

ANALYTICAL RESULTS FOR
RICE OPERATING COMPANY
ATTN: KRISTIN FARRIS-POPE
122 WEST TAYLOR
HOBBS, NM 88240
FAX TO: (505) 397-1471

Receiving Date: 12/14/07
Reporting Date: 12/17/07
Project Number: NOT GIVEN
Project Name: EME JUNCTION K-6
Project Location: T20S-R37E-SEC6 K ~ LEA CO., NM

Sampling Date: 12/11/07
Sample Type: WATER
Sample Condition: COOL & INTACT
Sample Received By: CK
Analyzed By: AB

LAB NUMBER	SAMPLE ID	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL BENZENE (mg/L)	TOTAL XYLENES (mg/L)
ANALYSIS DATE		12/17/07	12/17/07	12/17/07	12/17/07
H13925-1	MONITOR WELL #1	0.004	<0.001	0.002	<0.003
H13925-2	MONITOR WELL #2	<0.001	<0.001	<0.001	<0.003
H13925-3	MONITOR WELL #3	<0.001	<0.001	<0.001	<0.003
Quality Control		0.105	0.096	0.096	0.302
True Value QC		0.100	0.100	0.100	0.300
% Recovery		105	96	96	101
Relative Percent Difference		1.4	2.8	3.1	3.8

METHOD: EPA SW-846 8021B

Chemist

12/18/07
Date

H13925b Rice

ARDINAL 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: 12/14/07
Reporting Date: 12/20/07
Project Number: NOT GIVEN
Project Name: EME JUNCTION K-6
Project Location: T20S-R37E-SEC6 K~LEA COUNTY, NM

Sampling Date: 12/11/07
Sample Type: WATER
Sample Condition: COOL & INTACT
Sample Received By: CK
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 (mgCaCO3/L)
ANALYSIS DATE:		12/19/07	12/18/07	12/18/07	12/19/07	12/18/07	12/18/07
H13925-1	MONITOR WELL #1	8,474	848	373	24.2	34,300	580
H13925-2	MONITOR WELL #2	9,294	981	383	19.5	35,600	520
H13925-3	MONITOR WELL #3	8,460	715	303	28.4	31,900	520
Quality Control		NR	49.2	54.0	3.19	1,411	NR
True Value QC		NR	50.0	50.0	3.00	1,413	NR
% Recovery		NR	98.5	108	106	99.9	NR
Relative Percent Difference		NR	< 0.1	6.1	10.2	0.7	NR
METHODS:			SM3500-Ca-D	3500-Mg E	8049	120.1	310.1

LAB NUMBER	SAMPLE ID	Cl (mg/L)	SO4 (mg/L)	CO3 (mg/L)	HCO3 (mg/L)	pH (s.u.)	TDS (mg/L)
ANALYSIS DATE:		12/18/07	12/19/07	12/18/07	12/18/07	12/18/07	12/14/07
H13925-1	MONITOR WELL #1	12,400	3,900	0	708	6.88	23,684
H13925-2	MONITOR WELL #2	13,400	4,670	0	634	6.85	25,069
H13925-3	MONITOR WELL #3	11,600	4,420	0	634	6.90	21,914
Quality Control		490	27.8	NR	1000	7.06	NR
True Value QC		500	25.0	NR	1000	7.00	NR
% Recovery		98.0	111	NR	100	101	NR
Relative Percent Difference		2.0	17.4	NR	< 0.1	0.3	NR
METHODS:		SM4500-Cl-B	375.4	310.1	310.1	150.1	160.1

Chemist

12-20-07
Date

H13925 RICE

101 East Marland - Hobbs, New Mexico 88240
Tel (505) 393-2326
Fax (505) 393-2476

Cardinal Laboratories, Inc.

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

LAB Order ID # _____

Company Name:	BILL TO Company:	PO#
RICE Operating Company	RICE Operating Company	
Project Manager:	**Address:** (Street, City, Zip)	
Kristin Farris-Pope, Project Scientist	122 W Taylor Street ~ Hobbs, New Mexico 88240	
Address: (Street, City, Zip)	**Phone#:**	**Fax#:**
122 W Taylor Street ~ Hobbs, New Mexico 88240	(505) 393-9174	(505)397-1471
Phone #:	**Fax #:**	
(505) 393-9174	(505)397-1471	
Project #:	**Project Name:**	
	EME Junction K-6	
Project Location:	**Sampler Signature:**	Rozanne Johnson (505)631-9310
T20S-R37E-Sec6 K ~ Lea County - New Mexico		rozanne@valornet.com

LAB # (LAB USE ONLY)	FIELD CODE	(G)rab or (C)omp	# CONTAINERS	MATRIX					PRESERVATIVE METHOD						SAMPLING		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
				WATER	SOIL	AIR	SLUDGE		HCL (2 40ml VOA)	HNO_3	$NaHSO_4$	H_2SO_4	ICE (1-1Liter HDPE)	NONE	DATE (2007)	TIME																							
H13925- 1	Monitor Well #1	G	3	X					2				1		12-11	12:30		X																X	X	X		
2	Monitor Well #2	G	3	X					2				1		12-11	11:40		X																X	X	X		
3	Monitor Well #3	G	3	X					2				1		12-11	10:45		X																X	X	X		

ANALYSIS REQUEST
(Circle or Specify Method No.)

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Rozanne Johnson	12-14-2007	14:40			
Relinquished by:	Date:	Time:	Received By: (Laboratory Staff)	Date:	Time:
			Chris Rowe	12-14-07	14:40

Delivered By: (Circle One)	Sample Condition				CHECKED BY:
	Cool		Intact		
Sampler - UPS - Bus - Other:	Yes	X	Yes	X	(Initials) CR
	No		No		

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

REMARKS:

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

Summary Report

Kristen Farris-Pope
Rice Operating Company
122 W Taylor Street
Hobbs, NM, 88240

Report Date: August 8, 2006

Work Order: 6072113

Project Location: Sec 6K T205 R37E,Lea County,NM
Project Name: EME K-6 Vent Jet Box
Project Number: EME K-6 Vent Jet Box

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
96007	B-1 (20'-22')	soil	2006-07-18	15:02	2006-07-20
96008	B-4 (10'-12')	soil	2006-07-19	08:20	2006-07-20
96009	B-5 (10'-12')	soil	2006-07-19	09:05	2006-07-20
96010	B-5 (20'-22')	soil	2006-07-19	09:15	2006-07-20
96011	B-7 (5'-7')	soil	2006-07-19	10:25	2006-07-20
96012	B-7 (15'-17')	soil	2006-07-19	10:35	2006-07-20
96013	B-7 (25'-27')	soil	2006-07-19	10:45	2006-07-20

Sample - Field Code	TPH DRO DRO (mg/Kg)	TPH GRO GRO (mg/Kg)
96013 - B-7 (25'-27')	**2370**	**43.0**

Sample: 96007 - B-1 (20'-22')

Param	Flag	Result	Units	RL
Chloride		**588**	mg/Kg	1.00

Sample: 96008 - B-4 (10'-12')

Param	Flag	Result	Units	RL
Chloride		**592**	mg/Kg	1.00

Sample: 96009 - B-5 (10'-12')

Param	Flag	Result	Units	RL
C6-C35, Unfractionated		**16300**	mg/Kg	50.0
C6, Aliphatic		<1000	mg/Kg	50.0
C6-C8, Aliphatic		<1000	mg/Kg	50.0
C8-C10, Aliphatic		<1000	mg/Kg	50.0

continued ...

sample 96009 continued ...

Param	Flag	Result	Units	RL
C10-C12, Aliphatic		<1000	mg/Kg	50.0
C12-C16, Aliphatic		**2090**	mg/Kg	50.0
C16-C21, Aliphatic		**1980**	mg/Kg	50.0
C21-C35, Aliphatic		**2650**	mg/Kg	50.0
C6-C7, Aromatic		<1000	mg/Kg	50.0
C7-C8, Aromatic		<1000	mg/Kg	50.0
C8-C10, Aromatic		<1000	mg/Kg	50.0
C10-C12, Aromatic		<1000	mg/Kg	50.0
C12-C16, Aromatic		<1000	mg/Kg	50.0
C16-C21, Aromatic		<1000	mg/Kg	50.0
C21-C35, Aromatic		**1060**	mg/Kg	50.0
Percent Recovery		**66.7**	%	0.00
Benzene		**64.5**	µg/Kg	10.0
Toluene		**90.2**	µg/Kg	10.0
Ethylbenzene		**2160**	µg/Kg	10.0
m,p-Xylene		**5530**	µg/Kg	10.0
o-Xylene		**949**	µg/Kg	10.0
Naphthalene		**2650**	µg/Kg	50.0

Sample: 96010 - B-5 (20'-22')

Param	Flag	Result	Units	RL
C6-C35, Unfractionated		**5360**	mg/Kg	50.0
C6, Aliphatic		<500	mg/Kg	50.0
C6-C8, Aliphatic		<500	mg/Kg	50.0
C8-C10, Aliphatic		<500	mg/Kg	50.0
C10-C12, Aliphatic		<500	mg/Kg	50.0
C12-C16, Aliphatic		**911**	mg/Kg	50.0
C16-C21, Aliphatic		**756**	mg/Kg	50.0
C21-C35, Aliphatic		**545**	mg/Kg	50.0
C6-C7, Aromatic		<500	mg/Kg	50.0
C7-C8, Aromatic		<500	mg/Kg	50.0
C8-C10, Aromatic		<500	mg/Kg	50.0
C10-C12, Aromatic		<500	mg/Kg	50.0
C12-C16, Aromatic		<500	mg/Kg	50.0
C16-C21, Aromatic		<500	mg/Kg	50.0
C21-C35, Aromatic		<500	mg/Kg	50.0
Percent Recovery		**75.9**	%	0.00
Benzene		**26.1**	µg/Kg	10.0
Toluene		**88.3**	µg/Kg	10.0
Ethylbenzene		**1740**	µg/Kg	10.0
m,p-Xylene		**4700**	µg/Kg	10.0
o-Xylene		**977**	µg/Kg	10.0
Naphthalene		**2460**	µg/Kg	50.0

Sample: 96011 - B-7 (5'-7')

Param	Flag	Result	Units	RL
C6-C35, Unfractionated		**892**	mg/Kg	50.0
C6, Aliphatic		<250	mg/Kg	50.0

continued ...

sample 96011 continued ...

Param	Flag	Result	Units	RL
C6-C8, Aliphatic		<250	mg/Kg	50.0
C8-C10, Aliphatic		<250	mg/Kg	50.0
C10-C12, Aliphatic		<250	mg/Kg	50.0
C12-C16, Aliphatic		<250	mg/Kg	50.0
C16-C21, Aliphatic		<250	mg/Kg	50.0
C21-C35, Aliphatic		<250	mg/Kg	50.0
C6-C7, Aromatic		<250	mg/Kg	50.0
C7-C8, Aromatic		<250	mg/Kg	50.0
C8-C10, Aromatic		<250	mg/Kg	50.0
C10-C12, Aromatic		<250	mg/Kg	50.0
C12-C16, Aromatic		<250	mg/Kg	50.0
C16-C21, Aromatic		<250	mg/Kg	50.0
C21-C35, Aromatic		<250	mg/Kg	50.0
Percent Recovery		**69.0**	%	0.00
Benzene		<20.0	µg/Kg	10.0
Toluene		<20.0	µg/Kg	10.0
Ethylbenzene		**786**	µg/Kg	10.0
m,p-Xylene		**2010**	µg/Kg	10.0
o-Xylene		**26.3**	µg/Kg	10.0
Naphthalene		**996**	µg/Kg	50.0

Sample: 96012 - B-7 (15'-17')

Param	Flag	Result	Units	RL
C6-C35, Unfractionated		**5930**	mg/Kg	50.0
C6, Aliphatic		<500	mg/Kg	50.0
C6-C8, Aliphatic		<500	mg/Kg	50.0
C8-C10, Aliphatic		<500	mg/Kg	50.0
C10-C12, Aliphatic		<500	mg/Kg	50.0
C12-C16, Aliphatic		**969**	mg/Kg	50.0
C16-C21, Aliphatic		**926**	mg/Kg	50.0
C21-C35, Aliphatic		**939**	mg/Kg	50.0
C6-C7, Aromatic		<500	mg/Kg	50.0
C7-C8, Aromatic		<500	mg/Kg	50.0
C8-C10, Aromatic		<500	mg/Kg	50.0
C10-C12, Aromatic		<500	mg/Kg	50.0
C12-C16, Aromatic		<500	mg/Kg	50.0
C16-C21, Aromatic		<500	mg/Kg	50.0
C21-C35, Aromatic		<500	mg/Kg	50.0
Percent Recovery		**69.0**	%	0.00
Benzene		**179**	µg/Kg	10.0
Toluene		**985**	µg/Kg	10.0
Ethylbenzene		**2840**	µg/Kg	10.0
m,p-Xylene		**6620**	µg/Kg	10.0
o-Xylene		**1940**	µg/Kg	10.0
Naphthalene		**2480**	µg/Kg	50.0

Sample: 96013 - B-7 (25'-27')

continued ...

sample 96013 continued ...

Param	Flag	Result	Units	RL

Param	Flag	Result	Units	RL
Benzene		<20.0	µg/Kg	10.0
Toluene		<20.0	µg/Kg	10.0
Ethylbenzene		**35.0**	µg/Kg	10.0
m,p-Xylene		**51.6**	µg/Kg	10.0
o-Xylene		**22.0**	µg/Kg	10.0
Naphthalene		**579**	µg/Kg	50.0

APPENDIX D

NMOCD CORRESPONDENCE

Gil Van Deventer

From: "Hansen, Edward J., EMNRD" <edwardj.hansen@state.nm.us>
"Kristin Pope" <kpope@riceswd.com>
Cc: "Price, Wayne, EMNRD" <wayne.price@state.nm.us>; "Gil Van Deventer" <gilbertvandeventer@suddenlink.net>
Sent: Wednesday, February 13, 2008 12:32 PM
Subject: Corrective Action Plan for AP-46 (Rice EME Jct. K-6 Site)

Dear Ms. Pope:

The NMOCD has reviewed the submitted Stage 1 Final Investigation Report and Corrective Action Plan (AP-46), dated March 7, 2007, for the above referenced site. The NMOCD cannot approve of the Plan at this time. To expedite the approval process, please submit a Stage 2 Abatement Plan to include the following additional items:

1. The Corrective Action to the Groundwater must include an estimation of the chloride mass that has contaminated the groundwater by the release at the Rice EME Jct. K-6 Site and a plan for the removal of that chloride mass from the groundwater. An existing groundwater monitoring well may be used for this purpose. Also, please propose a treatment and / or disposal method for that chloride mass.

Also, please submit a draft Public Notice for the Stage 2 Abatement Plan (AP-46) for review and approval by the NMOCD prior to issuance.

At this time you may proceed with the surface restoration at the Rice EME Jct. K-6 Site. However, if comments indicate that further action is needed at the site, then additional measures may be required.

If you have questions regarding this matter, please contact me at 505-476-3489.

Edward J. Hansen
Hydrologist
Environmental Bureau

P.S.: Please use the referenced OCD case # on future correspondence regarding the site listed above.

Gil Van Deventer

From: "Hansen, Edward J., EMNRD" <edwardj.hansen@state.nm.us>
"Kristin Pope" <kpope@riceswd.com>
Cc: "Marvin Burrows" <mburrows@riceswd.com>; "Gil Van Deventer" <gilbertvandeventer@suddenlink.net>
Sent: Tuesday, April 29, 2008 2:19 PM
Subject: RE: Request for extension

Dear Ms. Pope:

The New Mexico Oil Conservation Division (NMOCD) has reviewed your request for the extension of the submittal date of the amended abatement plans for the below referenced sites. The NMOCD hereby approves the extension for the amended plan submittal date. The amended plans for the three EME sites must be submitted the NMOCD by Monday, June 16, 2008. However, the amended plan for the BD Jct J-26 (AP-75) must be submitted by Tuesday, May 27, 2008.

Please be advised that NMOCD approval of this extension does not relieve the owner/operator of responsibility should operations pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD approval does not relieve the owner/operator of responsibility for compliance with any NMOCD, federal, state, or local laws and/or regulations.

If you have any questions regarding this matter, please contact me at 505-476-3489.

Edward J. Hansen
Hydrologist
Environmental Bureau

From: Gil Van Deventer [mailto:gilbertvandeventer@suddenlink.net]
Sent: Monday, April 28, 2008 1:20 PM
To: Hansen, Edward J., EMNRD
Cc: Marvin Burrows; Kristin Pope
Subject: Request for extension

Subject sites:

- EME P-6 Release (AP-45)
- EME Jct K-6 (AP-46)
- EME Jct. N-5 (AP-66)
- BD Jct J-26 (AP-75)

Hello Edward:

In reference to the subject sites listed above which have amended abatement plans coming due, and on behalf of Rice Operating Company (ROC), I would like to request an extension to June 16, 2008, for the following reasons:

- Ongoing review of draft reports still in progress
- Change of management at ROC (Kristin's departure end of May and Marvin's recent hiring)
- Gil's vacation (May 12-19 for son's wedding)
- Gil's scheduled fieldwork (May 2, 6,7,8, 27-30, and June 2-6)

We will likely submit amended plans one by one before this date in no particular order. Please accept my apologies if this is not convenient for NMOCD and let me know if you accept our request for extension.

Thank you!

Gilbert J. Van Deventer, PG, REM
Trident Environmental
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Work/Mobile: 432-638-8740

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Home: 432-682-0727