



ENVIRONMENTAL PLUS, INC.

Micro-Blaze

Micro-Blaze Out™

STATE APPROVED LAND FARM AND ENVIRONMENTAL SERVICES

January 20, 2006

Mr. Paul Sheeley, Environmental Engineer  
New Mexico Oil Conservation Division  
1625 North French  
Hobbs, New Mexico 88240

Re: Status Report and Delineation Proposal  
Apache Corporation NEDU 809, (Ref. #240011)  
UL- H of Section 22, T21S, R37E  
Latitude 32° 28' 0.9"N and Longitude 103° 8' 40.1"W  
Landowner: C.A. Bettis

Dear Mr. Sheeley:

On October 21, 2005, Environmental Plus, Inc. (EPI) was retained by Apache Corporation (Apache) to document, mitigate and remediate the injection water release that occurred at the above referenced location (reference C-141).

#### MITIGATION

After the line was shut-in and repaired, initial mitigation activities commenced with the disposal of approximately 480 barrels of saline produced water (i.e., 3,200 to 3,700 mg/L chloride as per Apache) recovered from the surface pooling areas followed by stockpiling of the saturated near surface soil in a 10 mil polyethylene lined and bermed soil storage area. The initial C-141 was submitted to the New Mexico Oil Conservation Division (NMOCD) on October 28, 2005.

#### CURRENT REMEDIATION STATUS

Impacted soils to a depth of 5 to 7-feet below ground surface within the initial spill area perimeter have been excavated and represent an estimated volume of 5,655 yd<sup>3</sup>. From October 24, 2005 to November 1, 2005, 1,736 yd<sup>3</sup> of impacted soil were transported to Sundance for disposal; the remaining estimated volume of 3,919 yd<sup>3</sup> is stockpiled on site and has an average chloride concentration of 828 mg/Kg.

#### DELINEATION SUMMARY

On November 1, 2005, to confirm remediation status, as directed by Apache, soil samples were collected from the floor of the excavation and from the stockpiled soil and submitted to the laboratory for quantification of chloride residuals. Analytical results for the stockpile samples ranged from 720 mg/Kg to 880 mg/Kg and are in excess of the NMOCD chloride remedial goal of 250 mg/Kg. Analytical results for the samples collected from the floor of the excavation ranged from an acceptable 112 mg/Kg in the Southeast Flowpath North sample to 848 mg/Kg in the North Flowpath and Central Flowpath samples (reference Figure 1). Laboratory TPH and BTEX analyses will be performed on selected closure samples to confirm acceptable levels but were not warranted during this sampling event. The analytical results are summarized below and the analytical report and the annotated sample location map are attached. The current excavated interval does not adequately delineate the vertical extent of this release.

incident - n PAC0713149642  
application - p PAC0713149728

RP# 1312

ENVIRONMENTAL PLUS, INC.

Apache Corporation  
NEDU #809 Chloride Delineation

Sample Location	Sample ID (Map#)	Sampling Interval <small>feet below ground surface</small>	Chloride	
			(Laboratory) mg/Kg	(Field) mg/Kg
Southeast Flowpath North	Apache #1 (#1)	5	112	480
Southeast Flowpath South	Apache #2 (#2)	6	800	1,320
Central Flowpath	Apache #3 (#3)	7	848	1,280
Northeast Flowpath	Apache #4 (#4)	6	592	1,260
North Flowpath	Apache #5 (#5)	6	848	1,360
Spoils Pile Southeast Corner	Apache Pile SE Corner (#6)	—	720	1,240
Spoils Pile Northeast Corner	Apache Pile NE Corner (#7)	—	864	1,300
Spoils Pile Southwest Corner	Apache Pile SW Corner (#8)	—	848	1,300
Spoils Pile Northwest Corner	Apache Pile NW Corner (#9)	—	880	1,360
Background	NEDU 809 Background	Surface	na	460

na - not analyzed

### DELINEATION PROPOSAL

To determine the vertical extents of impact, it is proposed to collect soil samples from four strategically located soil borings (reference *Figure 2*) at 5-foot vertical intervals and submitted to an independent laboratory for chloride analysis with selected samples analyzed for TPH and BTEX. Sampling will cease when field analyses for consecutive samples are less than the local background concentration as determined by field analysis. All information will be collected consistent with the EPI Standard Operating Procedures and Quality Assurance Quality Control Plan. This information will be summarized in a delineation report proposing a reasonable remediation strategy and submitted to the NMOCD for approval. The NMOCD will be notified at least 48 hours prior to sample collection.

Should you have any questions or concerns please feel free to contact Iain Olness or myself at (505)394-3481 or Mr. Mike Warren at (505)394-2743. All official communications should be addressed to:

Apache Corporation  
Mike Warren, Area Supervisor  
P.O. Box 1849  
Eunice, New Mexico 88231

Sincerely,



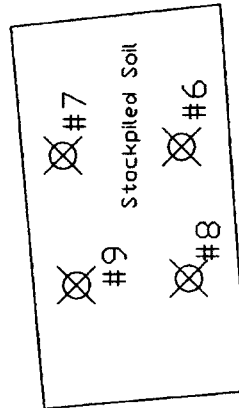
Pat McCasland  
Consultant

cc: Mike Warren, Apache Corporation (Mike.Warren@ApacheCorp.com)  
Bryan Tinsley, Apache Corporation (Bryan.Tinsley@ApacheCorp.com)  
Guinn Burks, Apache Corporation (Guinn.Burks@ApacheCorp.com)  
David Urbanski, Apache Corporation (David.Urbanski@ApacheCorp.com)  
file

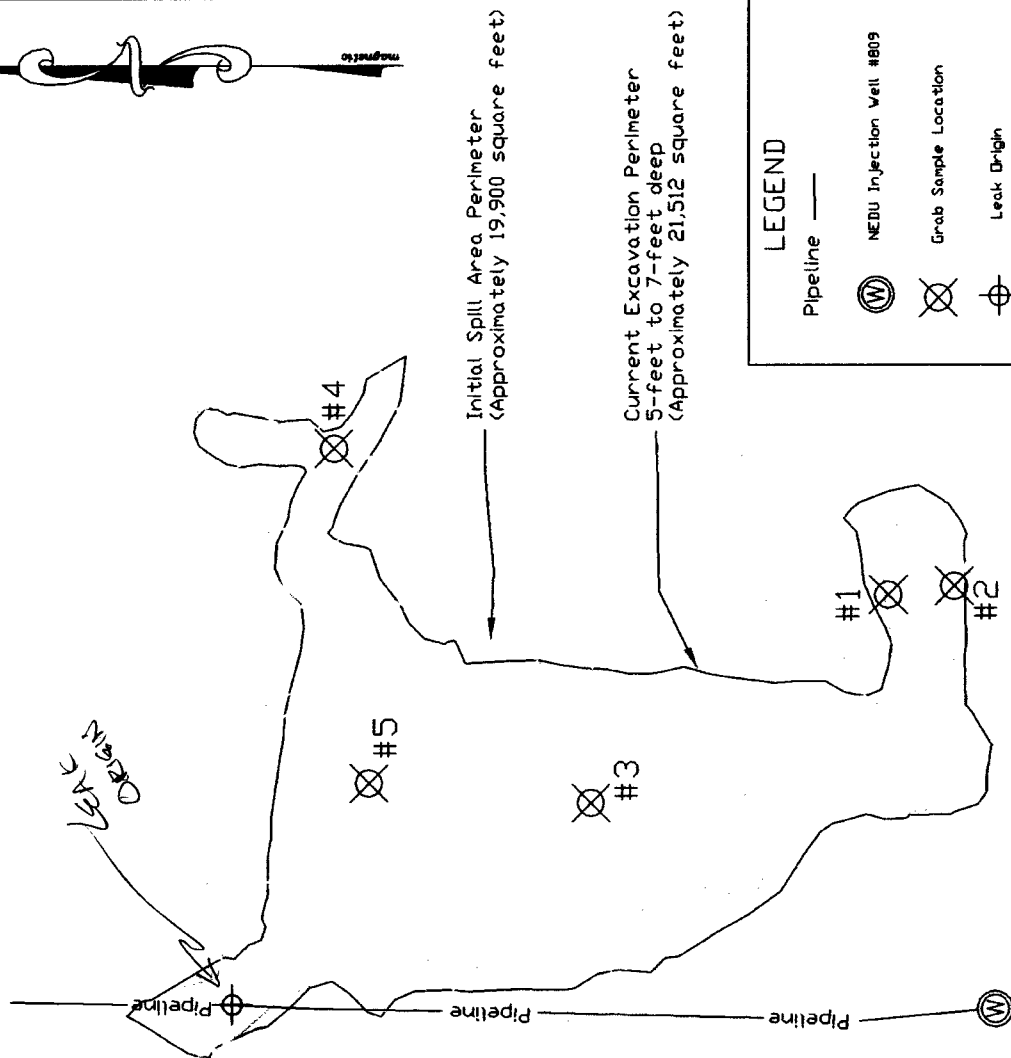
### Exhibits:

Figure 1 – Sample Location Map  
Figure 2 – Proposed Soil Boring Map  
Laboratory Report  
Photographs  
Site Information and Metrics Form  
C-141

Apache Corporation NEDU #809 Chloride Delineation			
Sample Location	Sample ID (Map#)	Sampling Interval feet (average) meters	Chloride (Laboratory) mg/kg
Southeast Flowpath North	Apache #1 (#1)	5	112
Southeast Flowpath South	Apache #2 (#2)	6	800
Central Flowpath	Apache #3 (#3)	7	848
Northeast Flowpath	Apache #4 (#4)	6	592
North Flowpath	Apache #5 (#5)	6	848
Spills Pile Southeast Corner	Apache Pile SE Corner (#6)	—	720
Spills Pile Northeast Corner	Apache Pile NE Corner (#7)	—	864
Spills Pile Southwest Corner	Apache Pile SW Corner (#8)	—	848
Spills Pile Northwest Corner	Apache Pile NW Corner (#9)	—	880



Disposal volume to date is 1,736 cubic yards.  
Approximately 3,919 cubic yards of soil impacted  
above the New Mexico Oil Conservation Division  
Guidelines are stockpiled inside a bermed and lined  
(10 mil polyethylene plastic) soil storage area.



**LEGEND**

Pipeline —

NEDU Injection Well #809

Grab Sample Location

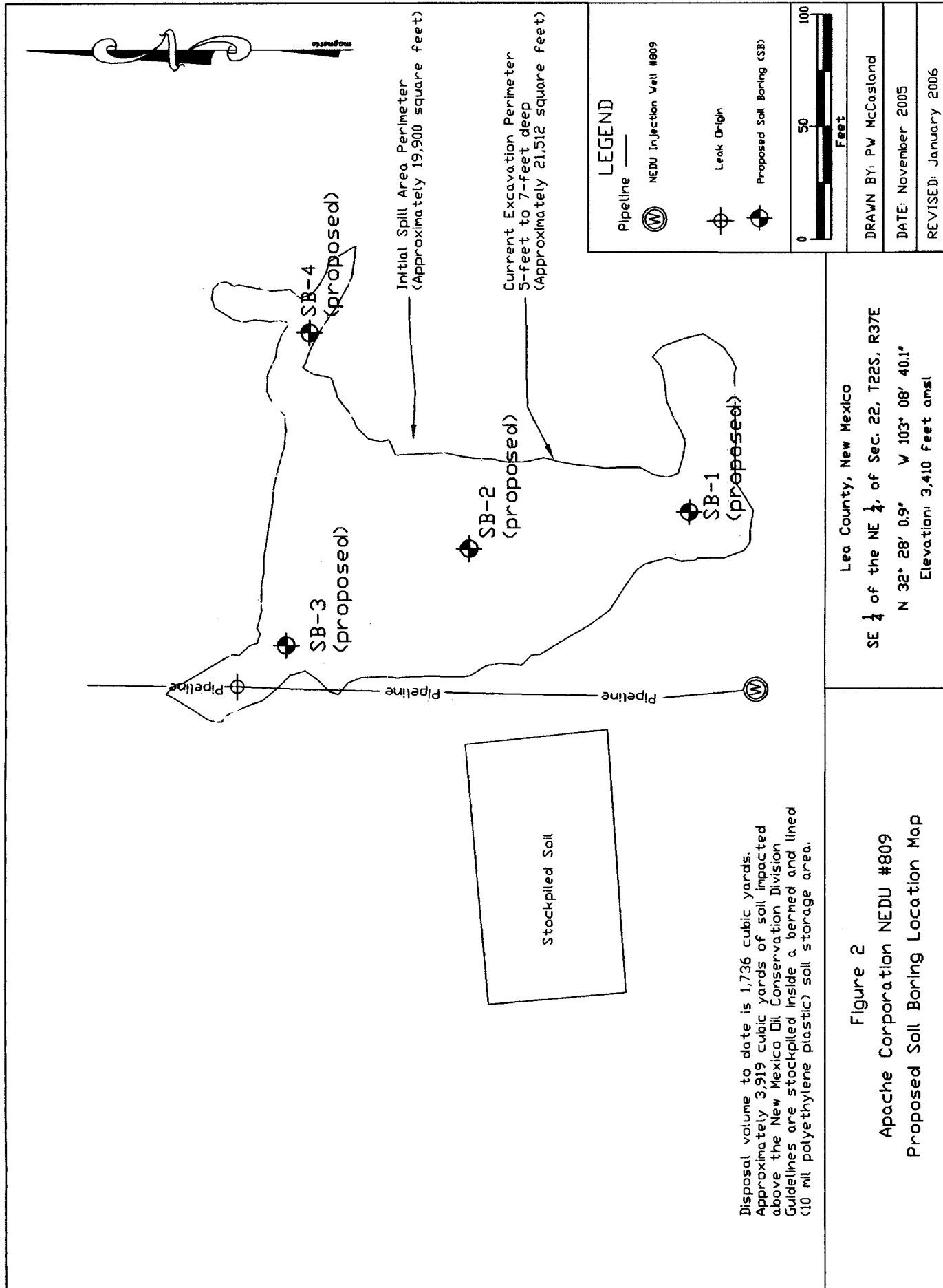
Leak Origin

0 50 100  
Feet

DRAWN BY: PW McCasland  
DATE: November 2005  
REVISED:

Lea County, New Mexico  
SE  $\frac{1}{4}$  of the NE  $\frac{1}{4}$  of Sec. 22, T22S, R37E  
N 32° 28' 09" W 103° 08' 40.1"  
Elevation: 3,410 feet amsl

Figure 1  
Apache Corporation  
NEDU #809 Site Map  
November 1, 2005



12°28'15"N

12°28'10"N

12°28'05"N

12°28'00"N

12°27'55"N

103°08'50"W

103°08'45"W

103°08'40"W

103°08'35"W

**Apache Corporation NEDU #809**  
**Aerial 1997 (USGS)**

UTM  
13 North  
NAD 1983 (Conus)



Scale 1:4,000

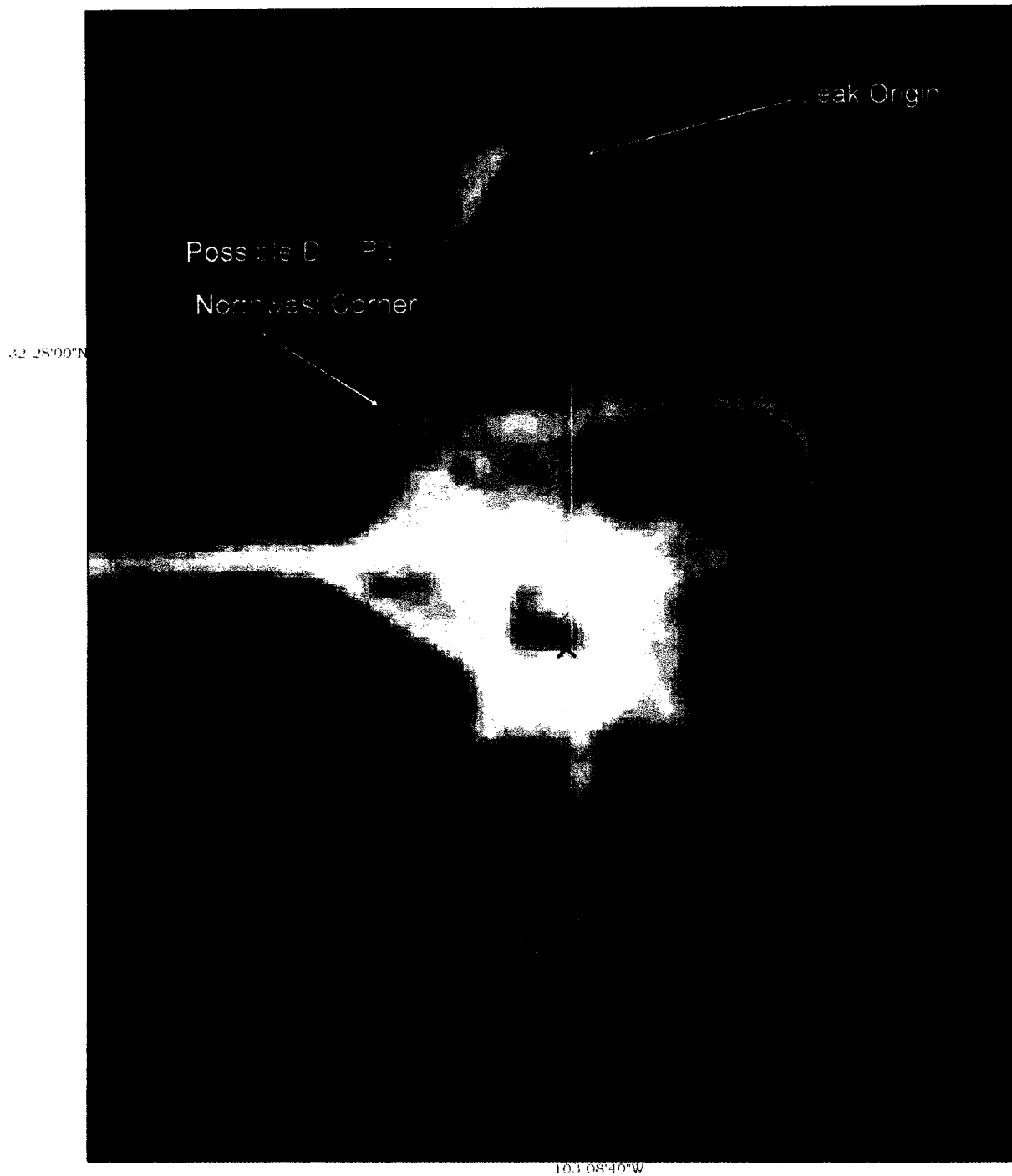


Feet

Multiple Files

11/10/2005





Apache Corporation NEDU #809  
Aerial 1997 (USGS)

UTM  
13 North  
NAD 1983 (Conus)



Scale 1:1,000



Feet

NEDU 809.cor  
11/10/2005





394-

PHONE (325) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603  
PHONE (505) 393-2326 • 161 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR  
APACHE CORP.  
ATTN: MIKE WARREN  
P.O. BOX 1849  
EUNICE, NM 88231  
FAX TO: (505) 394-2426

Receiving Date: 11/01/05  
Reporting Date: 11/03/05  
Project Number: NEDU #809  
Project Name: NOT GIVEN  
Project Location: EUNICE, NM

Analysis Date: 11/03/05  
Sampling Date: NOT GIVEN  
Sample Type: SOIL  
Sample Condition: COOL & INTACT  
Sample Received By: BC  
Analyzed By: AH

LAB NUMBER	SAMPLE ID	Cr (mg/Kg)
H10359-1	APACHE #1	112
H10359-2	APACHE #2	800
H10359-3	APACHE #3	848
H10359-4	APACHE #4	592
H10359-5	APACHE #5	848
H10359-6	APACHE PILE SE CORNER	720
H10359-7	APACHE PILE NE CORNER	864
H10359-8	APACHE PILE SW CORNER	848
H10359-9	APACHE PILE NW CORNER	880
Quality Control		980
True Value QC		1000
% Recovery		98.0
Relative Percent Difference		1.0

METHOD: Standard Methods 4500-CrB

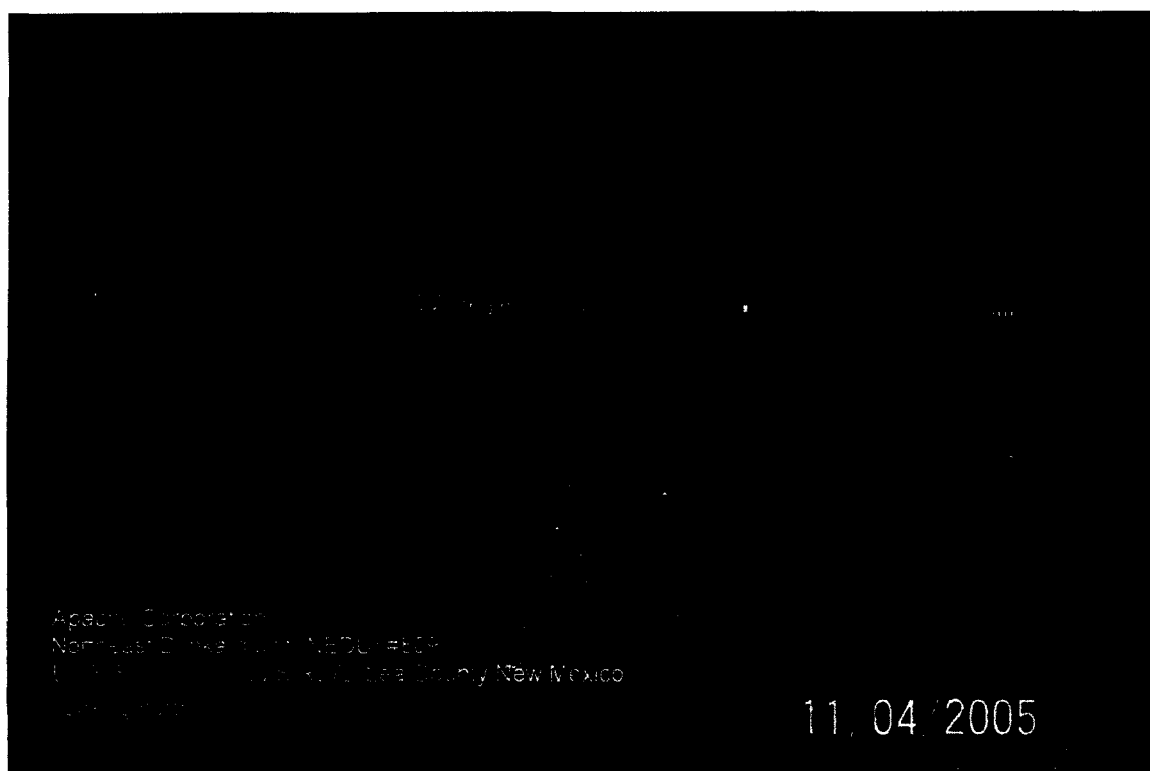
NOTE: Analyses performed on 1:4 w/v aqueous extracts.

Amy Hill  
Chemist

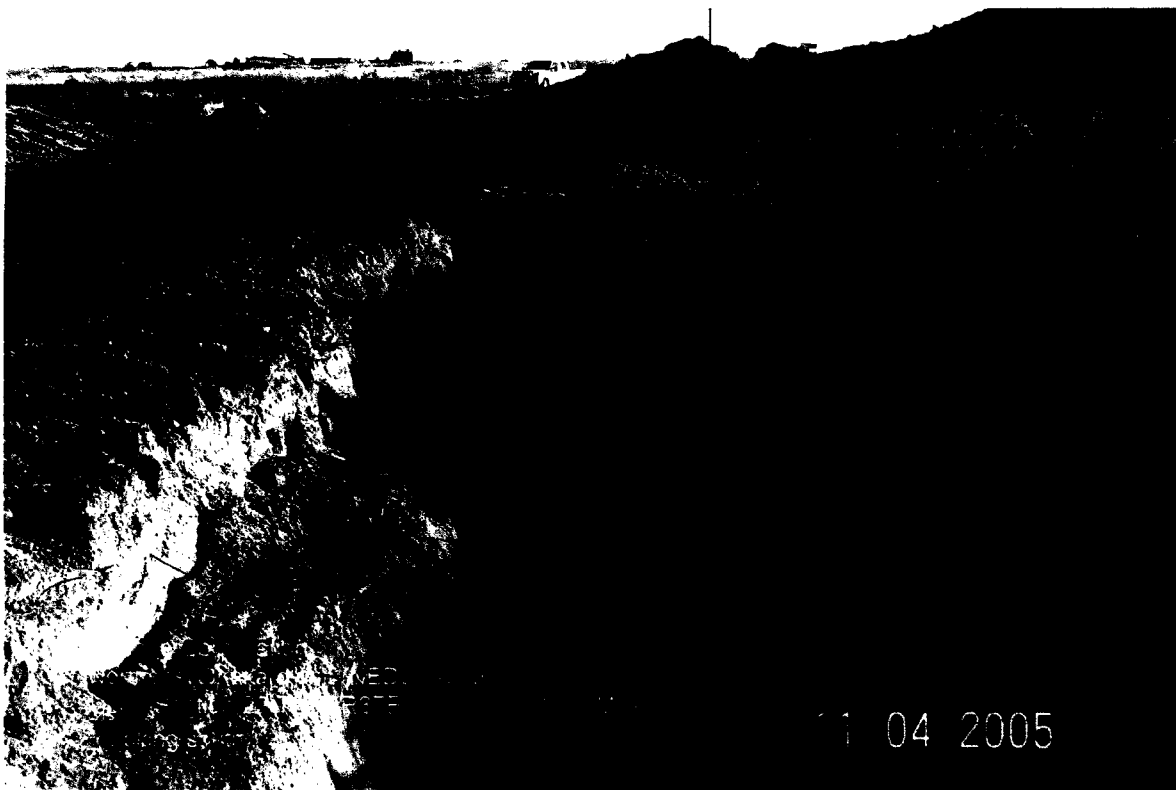
11/3/05  
Date

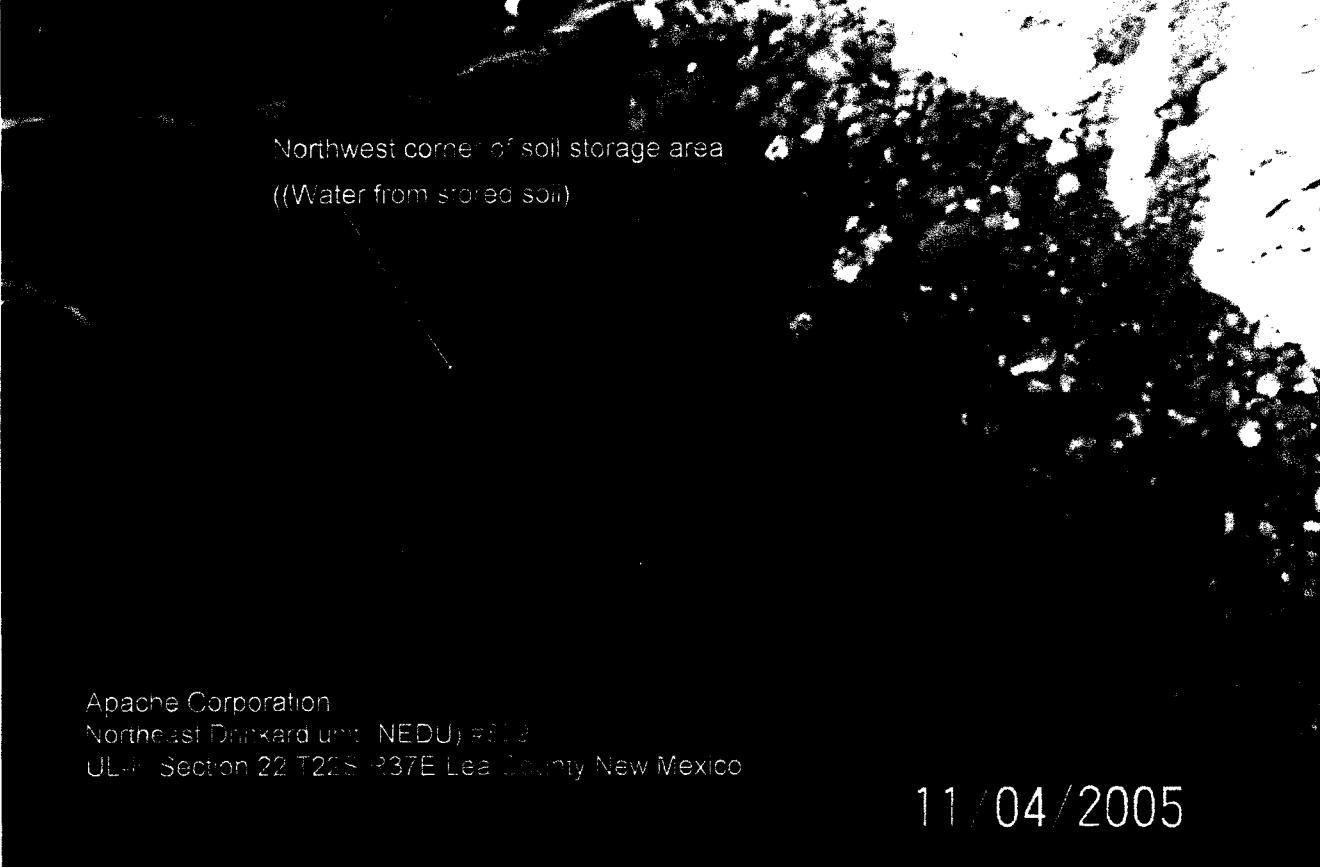
H10359

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be disposed without unless made in writing and received by Cardinal within thirty (30) days after completion of the application service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services rendered by Cardinal, regardless of whether such claim is based upon any of the above-stated remedies or otherwise.







An aerial photograph showing a large, dark, irregularly shaped area, likely a soil storage area. The area is surrounded by lighter-colored terrain. A line points from the text "Northwest corner of soil storage area" to the top-left corner of the dark area. Another line points from the text "((Water from stored soil))" to a small, lighter-colored area within the dark area.

Northwest corner of soil storage area  
((Water from stored soil))

Apache Corporation  
Northeast Drinkard unit (NEDU) #812  
UL-# Section 22 T22S R37E Lea County New Mexico

11/04/2005



Apache Corporation Site Information and Metrics		Incident Date: 10/21/2005	NMOCD Notified: 10/21/2005
SITE: NEDU 809		Assigned Site Reference #: 240011	
Company: Apache Corporation			
Street Address: PO Box 1849			
Mailing Address: 1.5 miles North of Eunice			
City, State, Zip: Eunice, New Mexico 88231			
Representative: Mike Warren			
Representative Telephone: 505.394.2743			
Telephone:			
Fluid volume released (bbls): ~600-800 bbls		Recovered (bbls): 480	
>25 bbls: Notify NMOCD verbally within 24 hrs and submit form C-141 within 15 days. (Also applies to unauthorized releases >500 mcf Natural Gas)			
5-25 bbls: Submit form C-141 within 15 days (Also applies to unauthorized releases of 50-500 mcf Natural Gas)			
Leak, Spill, or Pit (LSP) Name: NEDU 809			
Source of contamination: Water injection system line			
Land Owner, i.e., BLM, ST, Fee, Other: C.A. Bettis			
LSP Dimensions			
LSP Area: 19,900 ft <sup>2</sup>			
Location of Reference Point (RP)			
Location distance and direction from RP			
Latitude: 32 28' 0.9"N			
Longitude: 103 8' 40.1"W			
Elevation above mean sea level: 3,410'amsl			
Feet from South Section Line			
Feet from West Section Line			
Location- Unit or ¼: SE¼ of the NE¼		Unit Letter: H	
Location- Section: 22			
Location- Township: T21S			
Location- Range: R37E			
Surface water body within 1000' radius of site: none			
Surface water body within 1000' radius of site:			
Domestic water wells within 1000' radius of site: none			
Domestic water wells within 1000' radius of site:			
Agricultural water wells within 1000' radius of site: none			
Agricultural water wells within 1000' radius of site:			
Public water supply wells within 1000' radius of site: none			
Public water supply wells within 1000' radius of site:			
Depth from land surface to ground water (DG) ~68'bgs			
Depth of contamination (DC) - ?			
Depth to ground water (DG - DC = DtGW) - 50-100 feet			
<b>1. Ground Water</b>		<b>2. Wellhead Protection Area</b>	
If Depth to GW <50 feet: 20 points		If <1000' from water source, or; <200' from private domestic water source: 20 points	
If Depth to GW 50 to 99 feet: 10 points		If >1000' from water source, or; >200' from private domestic water source: 0 points	
If Depth to GW >100 feet: 0 points			
Ground water Score = 10		Wellhead Protection Area Score = 0	
Site Rank (1+2+3) = 10		Surface Water Score = 0	
<b>Total Site Ranking Score and Acceptable Concentrations</b>			
Parameter	>19	10-19	0-9
Benzene <sup>1</sup>	10 ppm	10 ppm	10 ppm
BTEX <sup>1</sup>	50 ppm	50 ppm	50 ppm
TPH	100 ppm	1000 ppm	5000 ppm
<sup>1</sup> 100 ppm field VOC headspace measurement may be substituted for lab analysis			

District I  
1625 N. French Dr., Hobbs, NM 88240  
District II  
1301 W. Grand Avenue, Artesia, NM 88210  
District III  
1000 Rio Brazos Road, Aztec, NM 87410  
District IV  
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico  
Energy Minerals and Natural Resources  
Oil Conservation Division  
1220 South St. Francis Dr.  
Santa Fe, NM 87505

Form C-141  
Revised March 17, 1999

Submit 2 Copies to appropriate  
District Office in accordance  
with Rule 116 on back  
side of form

### Release Notification and Corrective Action

#### OPERATOR

☒ Initial Report ☐ Final Report

Name of Company <b>Apache Corporation</b>	Contact <b>Mike Warren</b>
Address PO Box 1849, Eunice, New Mexico 88231	Telephone No. 505.394.2743
Facility Name NEDU 809	Facility Type Water injection system line

Surface Owner C.A. Bettis	Mineral Owner	Lease No.
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#### LOCATION OF RELEASE

Unit Letter H	Section 22	Township T21S	Range R37E	Feet from the	North/South Line	Feet from the	East/West Line	County: Lea
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Latitude: 32 28' 0.9"N

Longitude: 103 8' 40.1"W

#### NATURE OF RELEASE

Type of Release Produced Water	Volume of Release 600-800 barrels	Volume Recovered 480 barrels
Source of Release Water injection system line	Date and Hour of Occurrence 10/21/2005 AM	Date and Hour of Discovery 10/21/2005 PM
Was Immediate Notice Given? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Required	If YES, To Whom? Paul Kautz	
By Whom? Mike Warren, Apache	Date and Hour 10/21/2005 PM	
Was a Watercourse Reached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If YES, Volume Impacting the Watercourse. NA	

If a Watercourse was Impacted, Describe Fully.\*  
NA

#### Describe Cause of Problem and Remedial Action Taken.\*

2" Fiberglass injection pipeline failed. The line was shut in and repaired and a vacuum trucks were utilized to recover and dispose of approximately 480 barrels of produced water.

#### Describe Area Affected and Cleanup Action Taken.\*

The site will be delineated and remediated in accordance with the NMOCD guidelines. Remedial Goals: Chloride = 250 mg/Kg or a concentration that will not be capable of impacting local groundwater in excess of the 250 mg/L New Mexico Water Quality Control Commission Standard; TPH 8015m = 1,000 mg/Kg; Benzene = 10 mg/Kg; and BTEX, i.e., the mass sum of Benzene, Ethyl Benzene, Toluene, and Xylenes = 50 mg/Kg.

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

Signature:	<b>OIL CONSERVATION DIVISION</b>		
Printed Name: Mike Warren	Approved by District Supervisor:		
Title: Area Supervisor	Approval Date:	Expiration Date:	
Date: Phone: 505.394.2743	Conditions of Approval:	Attached <input type="checkbox"/>	

\* Attach Additional Sheets If Necessary