



August 24, 2006

Mr. Larry Johnson, Environmental Engineer  
New Mexico Oil Conservation Division  
1625 North French  
Hobbs, New Mexico 88240

Re: Delineation Report and Remediation Proposal  
Apache Corporation NEDU 809, (Ref. #240011)  
UL- H of Section 22, T21S, R37E  
Latitude 32° 28' 0.9"N and Longitude 103° 08' 40.1"W  
Landowner: C.A. Bettis



Dear Mr. Johnson:

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.

**NOVEMBER 1, 2005 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, Figure 2 and Table 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. This delineation of the floor of the excavation did not adequately delineate the vertical extent of this release, consequently, to determine the vertical extents of impact, Apache proposed to collect soil samples from four strategically located soil borings (reference *Figure 2*) at 5-foot vertical intervals and submit to an independent laboratory for chloride analysis. This proposal, (reference previously submitted letter report dated January 20, 2006, Re: Status Report and Delineation Proposal), was subsequently approved by the NMOCD and implemented on February 3, 2006.

ENVIRONMENTAL PLUS, INC.

**FEBRUARY 3, 2006 DELINEATION SUMMARY**

Prior to advancing the soil borings and collecting the samples, the NMOCD was notified as was the New Mexico ONE CALL system. The soil borings were advanced with a hollow stem auger drill rig and discrete samples collected at the prescribed intervals with a decontaminated stainless steel split spoon sampler. A ramp was excavated on the southwest edge of the excavation to facilitate drill rig access to the floor of the excavation. The analytical results are summarized in Table 1 and illustrated below.

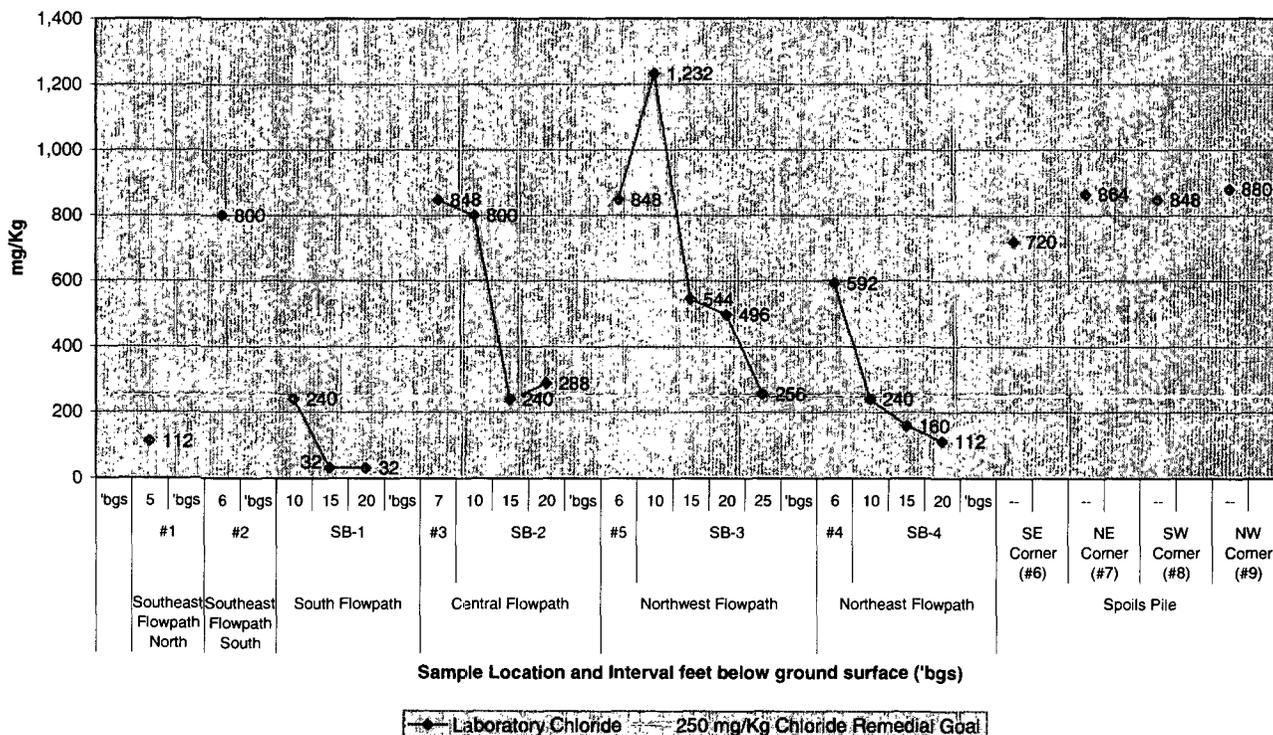
**Soil Boring 1 (SB-1)** was located in the south flowpath and advanced to 20-feet bgs. All samples were less than 250 mg/Kg.

**Soil Boring 2 (SB-2)** was located in the central flowpath and advanced to 20-feet bgs. The chloride concentrations ranged from 800 mg/Kg in the 10-foot bgs sample to 240 mg/Kg in the 15-foot bgs sample, however the 20-foot bgs sample increased to 288 mg/Kg.

**Soil Boring 3 (SB-3)** was located in the northwest flowpath, nearest the leak origin, and advanced to 25-feet bgs. The chloride concentrations ranged from 1,232 mg/Kg in the 10-foot bgs sample to 256 mg/Kg in the 25-foot bgs sample.

**Soil Boring 4 (SB-4)** was located in the northeast flowpath and advanced to 20-feet bgs. The chloride concentrations ranged from 240 mg/Kg in the 10-foot bgs sample to 112 mg/Kg in the 20-foot bgs sample.

**Figure 2**  
**Apache Corporation**  
**Northeast Drinkard Unit (NEDU) #809**  
**Chloride Delineation**



### DISCUSSION OF ANALYTICAL RESULTS

The analytical results collected to date indicate chloride impact in excess of the 250 mg/Kg NMOCD remedial goal persists in the floor of the excavation in all flowpath sectors with the exception of the southeast flowpath north sample location at 5-feet bgs. The vertical extent of impact ranges from 10-feet bgs in the northeast and south flowpaths to 20-feet bgs in the northeast flowpath and 25-feet bgs in the northwest flowpath. The vertical extent in the southeast flowpath south sample location is greater than 6-feet bgs and was not accessible by the drill rig.

| TABLE 2                            |                   |                     |
|------------------------------------|-------------------|---------------------|
| Apache Corporation                 |                   |                     |
| Northeast Drinkard Unit (NEDU)#809 |                   |                     |
| Sample Location                    | Sampling Interval | Laboratory Chloride |
|                                    | (FT. BGS)         | mg/Kg               |
| Southeast Flowpath North           | 5                 | 112                 |
| Southeast Flowpath South           | 6                 | 800                 |
| South Flowpath                     | 10                | 240                 |
| Central Flowpath                   | 20                | 288                 |
| Northwest Flowpath                 | 25                | 256                 |
| Northeast Flowpath                 | 10                | 240                 |
| Spoils Pile Southeast Corner       | --                | 720                 |
| Spoils Pile Northeast Corner       | --                | 864                 |
| Spoils Pile Southwest Corner       | --                | 848                 |
| Spoils Pile Northwest Corner       | --                | 880                 |
| NMOCD Remedial Goal                |                   | 250                 |

### REMEDICATION AND FINAL DELINEATION PROPOSAL

Apache proposes to delineate the vertical extent of chloride impact in the area of the southeast flowpath south sample location and remediate impacted soils down to a depth of 6-feet bgs by disposing in an NMOCD approved facility and, to prevent vertical migration, isolate the remaining chloride source term with an impermeable barrier. To verify adequate removal of impacted soils, soil samples will be collected from the sides of the excavation and submitted to an independent laboratory for chloride analysis. Selected samples will be analyzed for TPH and BTEX. Below is the generalized procedure being proposed.

- Advance a soil boring in the area of the southeast flowpath south sample location to delineate the vertical extent of chloride impact in excess of the NMOCD remedial goal;
- Dispose of the stockpiled soil in the Sundance facility;
- Collect samples of the sides of the excavation at 25-foot horizontal intervals and analyze for chloride to identify soils impacted above the 250 mg/Kg NMOCD remedial goal;
- Excavate and dispose of soil impacted in excess of the 250 mg/Kg NMOCD remedial goal down to a depth 6-feet bgs;
- Collect samples of the sides of the excavation at 25-foot horizontal intervals and analyze for chloride to identify soils impacted above the 250 mg/Kg NMOCD remedial goal;
- Analyze selected samples for TPH and BTEX;
- Submit analytical results to the NMOCD and notify of intent to install liner;
- Receive approval from NMOCD to proceed with liner installation;
- Contour and smooth the floor of the excavation to be slightly higher in the central part of the excavation to promote shedding of storm water;

- Install a 20 mil thick polyethylene liner to isolate and prevent vertical migration of the chloride source term remaining below the 6-foot bgs interval;
- Backfill the excavation with local clean soil and reseed; and
- Prepare and submit final closure documentation and final C-141.

Apache Corporation will implement this proposal upon approval by the NMOCD.

Should you have any questions or concerns please feel free to contact me at (505)394-3481 or Mr. Bryan Tinsley at (505)394-2743. All official communications should be addressed to:

Apache Corporation  
Bryan Tinsley, Area Supervisor  
P.O. Box 1849  
Eunice, New Mexico 88231

Sincerely,



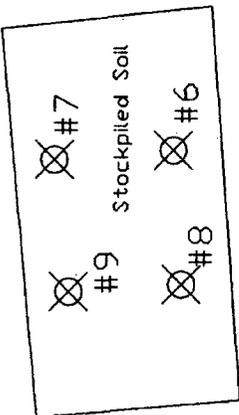
Pat McCasland  
Senior Consultant

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

Exhibits:

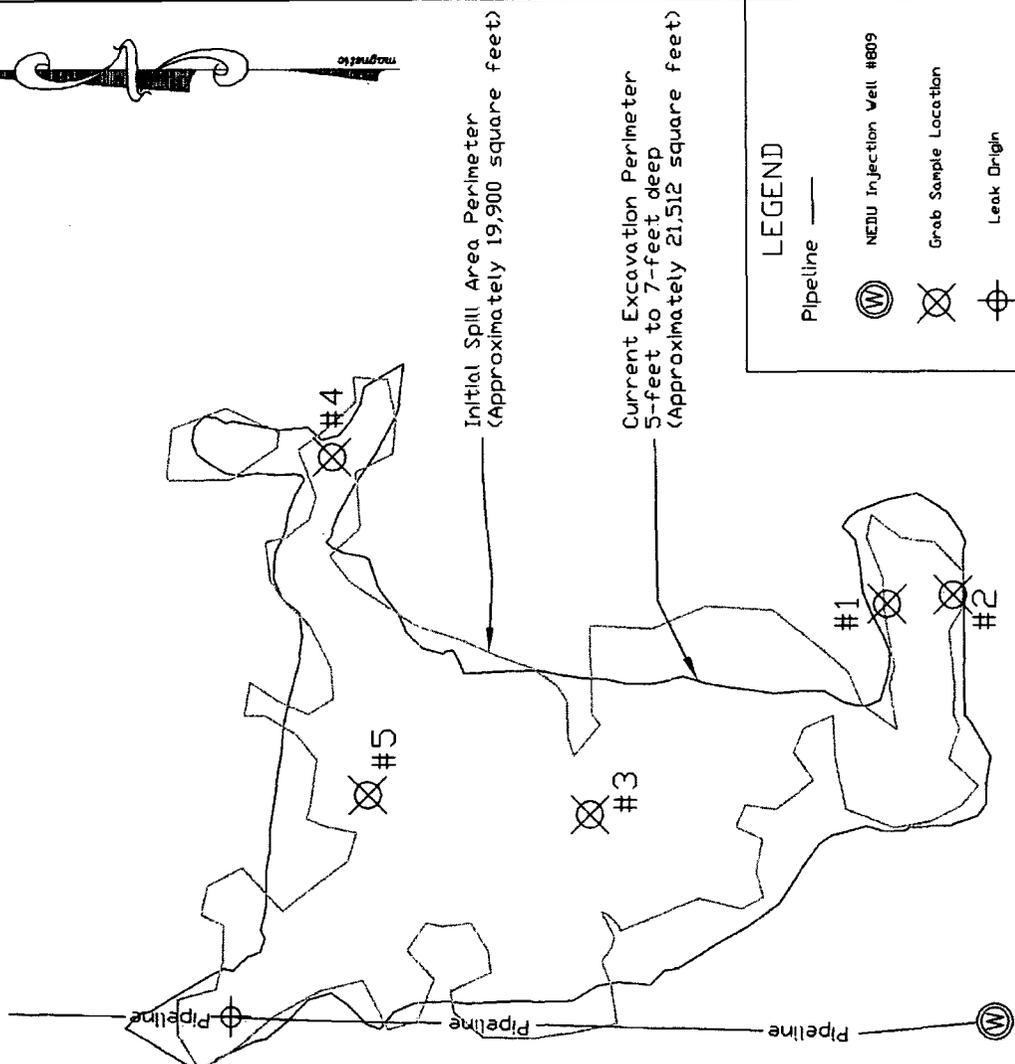
Figure 1 – Sample Location Map  
Figure 2 – Soil Boring Map  
Aerial Map and possible drill pit  
Table 1 – Analytical Results Summary  
Laboratory Reports  
Photographs  
Site Information and Metrics Form  
C-141

| Apache Corporation<br>NEDU #809 Chloride Delineation |                            |   |                                   |
|--|----------------------------|---|-----------------------------------|
| Sample Location                                      | Sample ID (Map#)           | Sampling Interval<br>feet above ground<br>surface | Chloride<br>(Laboratory)<br>mg/kg |
| Southwest Flowpath North                             | Apache #1 (#1)             | 5   | 112                               |
| Southwest 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.

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



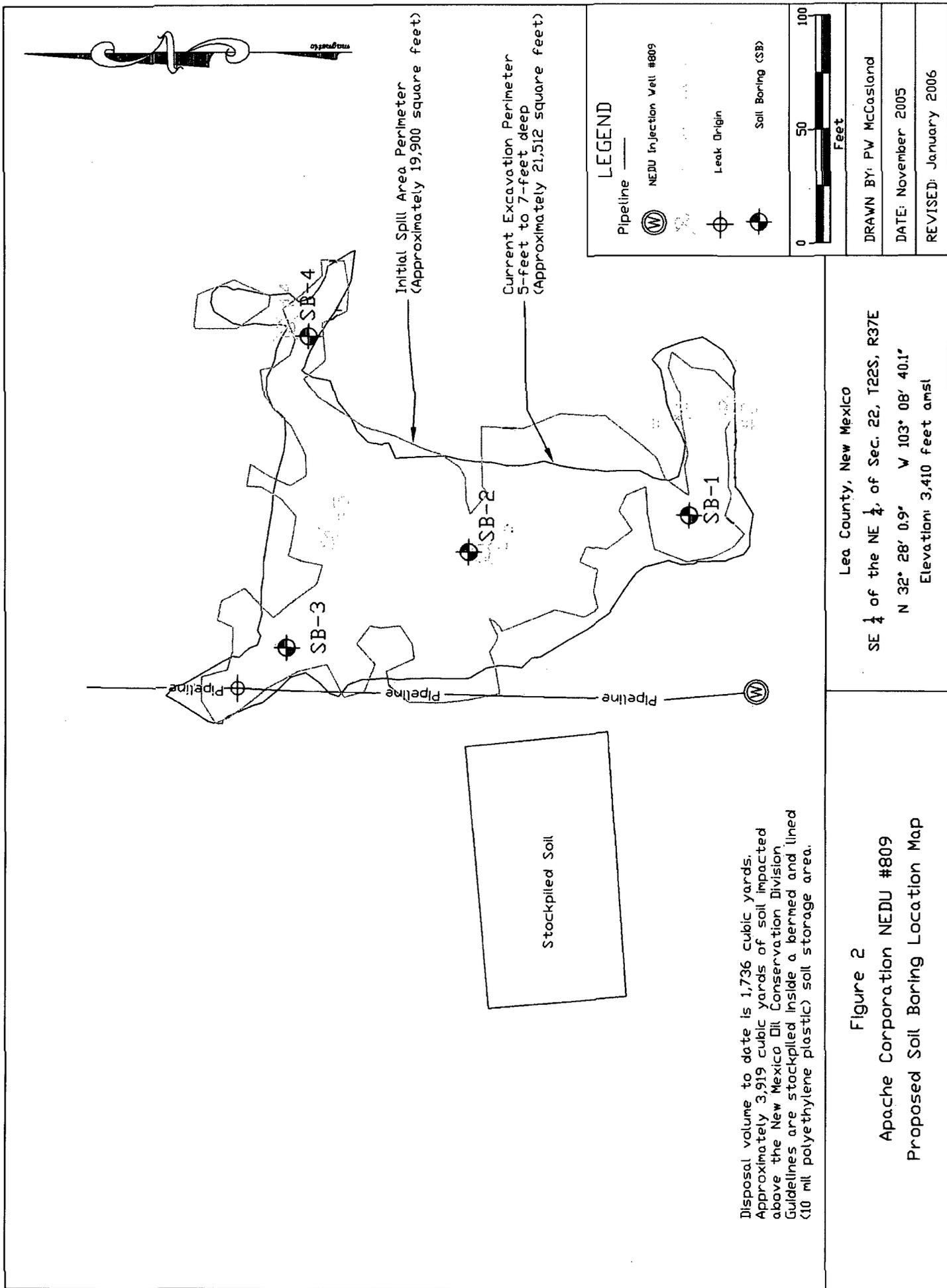
**LEGEND**

- 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 1/4 of the NE 1/4 of Sec. 22, T22S, R37E  
 N 32° 28' 0.9" W 103° 08' 40.1"  
 Elevation: 3,410 feet amsl



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.

Lea County, New Mexico  
 SE 1/4 of the NE 1/4 of Sec. 22, T22S, R37E  
 N 32° 28' 0.9" W 103° 08' 40.1"  
 Elevation: 3,410 feet amsl

**Figure 2**  
 Apache Corporation NEDU #809  
 Proposed Soil Boring Location Map

DRAWN BY: PW McCasland  
 DATE: November 2005  
 REVISED: January 2006

TABLE 1  
Apache Corporation  
Northeast Drinkard Unit (NEDU)#809

| Sample Location                                     | SAMPLE ID#                 | Date      | Sampling Interval (FT. BGS) | Soil Status (excavated or in-situ) | Lithology | VOC <sup>2</sup> ppm | GRO <sup>3</sup> mg/Kg | DRO <sup>4</sup> mg/Kg | TPH <sup>5</sup> mg/Kg | BTEX mg/Kg | Benzene mg/Kg | Toluene mg/Kg | Ethylbenzene mg/Kg | m,p, & o Xylene mg/Kg | Laboratory Chloride mg/Kg | Corrected Field Chloride mg/Kg |
|---|----------------------------|-----------|-----------------------------|------------------------------------|-----------|----------------------|------------------------|------------------------|------------------------|------------|---------------|---------------|--------------------|-----------------------|---------------------------|--------------------------------|
|   |                            |           |                             |                                    |           |                      |                        |                        |                        |            |               |               |                    |                       |                           |                                |
| Southeast Flowpath North                            | Apache #1 (#1)             | 9/26/2003 | 5                           | in-situ                            | Red Sand  | 1.70                 | 10                     | 10                     | 20                     | na         | na            | na            | na                 | na                    | 112                       | 40                             |
| Southeast Flowpath South                            | Apache #2 (#2)             | 9/26/2003 | 6                           | in-situ                            | Red Sand  | 1.40                 | na                     | na                     | na                     | na         | na            | na            | na                 | na                    | 800                       | 880                            |
| South Flowpath                                      | SB-1 10-11                 | 2/3/2006  | 10                          | in-situ                            | Red Sand  | na                   | 10                     | 10                     | 20                     | 0.015      | 0.005         | 0.005         | 0.005              | 0.015                 | 240                       |                                |
|   | SB-1 15-16                 | 2/3/2006  | 15                          | in-situ                            | Red Sand  | na                   | na                     | na                     | na                     | na         | na            | na            | na                 | na                    | 32                        |                                |
|   | SB-1 20-21                 | 2/3/2006  | 20                          | in-situ                            | Red Sand  | na                   | 10                     | 10                     | 20                     | 0.015      | 0.005         | 0.005         | 0.005              | 0.015                 | 32                        |                                |
| Central Flowpath                                    | Apache #3 (#3)             | 9/26/2003 | 7                           | in-situ                            | Red Sand  | 0.90                 | na                     | na                     | na                     | na         | na            | na            | na                 | na                    | 848                       | 840                            |
|   | SB-2 10-11                 | 2/3/2006  | 10                          | in-situ                            | Red Sand  | na                   | 10                     | 10                     | 20                     | 0.015      | 0.005         | 0.005         | 0.005              | 0.015                 | 800                       |                                |
|   | SB-2 15-16                 | 2/3/2006  | 15                          | in-situ                            | Red Sand  | na                   | na                     | na                     | na                     | na         | na            | na            | na                 | na                    | 240                       |                                |
|   | SB-2 20-21                 | 2/3/2006  | 20                          | in-situ                            | Red Sand  | na                   | 10                     | 10                     | 20                     | 0.015      | 0.005         | 0.005         | 0.005              | 0.015                 | 288                       |                                |
|   | Apache #5 (#5)             | 9/26/2003 | 6                           | in-situ                            | Red Sand  | 0.60                 | na                     | na                     | na                     | na         | na            | na            | na                 | na                    | 848                       | 920                            |
| Northwest Flowpath                                  | SB-3 10-11                 | 2/3/2006  | 10                          | in-situ                            | Red Sand  | na                   | 10                     | 10                     | 20                     | 0.015      | 0.005         | 0.005         | 0.005              | 0.015                 | 1232                      |                                |
|   | SB-3 15-16                 | 2/3/2006  | 15                          | in-situ                            | Red Sand  | na                   | na                     | na                     | na                     | na         | na            | na            | na                 | na                    | 544                       |                                |
|   | SB-3 20-21                 | 2/3/2006  | 20                          | in-situ                            | Red Sand  | na                   | na                     | na                     | na                     | na         | na            | na            | na                 | na                    | 496                       |                                |
| Northeast Flowpath                                  | SB-3 25-26                 | 2/3/2006  | 25                          | in-situ                            | Red Sand  | na                   | 10                     | 10                     | 20                     | 0.015      | 0.005         | 0.005         | 0.005              | 0.015                 | 256                       |                                |
|   | Apache #4 (#4)             | 9/26/2003 | 6                           | in-situ                            | Red Sand  | 0.80                 | na                     | na                     | na                     | na         | na            | na            | na                 | na                    | 592                       | 820                            |
|   | SB-4 10-11                 | 2/3/2006  | 10                          | in-situ                            | Red Sand  | na                   | 10                     | 10                     | 20                     | 0.015      | 0.005         | 0.005         | 0.005              | 0.015                 | 240                       |                                |
|   | SB-4 15-16                 | 2/3/2006  | 15                          | in-situ                            | Red Sand  | na                   | na                     | na                     | na                     | na         | na            | na            | na                 | na                    | 160                       |                                |
| Spoils Pile Southeast Corner                        | Apache Pile SE Corner (#6) | 9/26/2003 | --                          | excavated                          | Red Sand  | 0.20                 | na                     | na                     | na                     | na         | na            | na            | na                 | 720                   | 800                       |                                |
| Spoils Pile Northeast Corner                        | Apache Pile NE Corner (#7) | 9/26/2003 | --                          | excavated                          | Red Sand  | 0.40                 | 10                     | 10                     | 20                     | na         | na            | na            | na                 | 864                   | 860                       |                                |
| Spoils Pile Southwest Corner                        | Apache Pile SW Corner (#8) | 9/29/2003 | --                          | excavated                          | Red Sand  | 1.70                 | na                     | na                     | na                     | na         | na            | na            | na                 | 848                   | 860                       |                                |
| Spoils Pile Northwest Corner                        | Apache Pile NW Corner (#9) | 9/29/2003 | --                          | excavated                          | Red Sand  | 1.60                 | na                     | na                     | na                     | na         | na            | na            | na                 | 880                   | 920                       |                                |
| Background (300-foot south)                         | NEDU 809 Background        | 9/29/2003 | Surface                     | in-situ                            | Red Sand  | 1.20                 | na                     | na                     | na                     | na         | na            | na            | na                 | na                    | na                        | 20                             |
| New Mexico Oil Conservation Division Remedial Goals |                            |           |                             |                                    |           |                      |                        |                        |                        |            |               |               |                    |                       |                           |                                |
| 100.00  |                            |           |                             |                                    |           |                      |                        |                        |                        |            |               |               |                    |                       |                           |                                |
| 50  |                            |           |                             |                                    |           |                      |                        |                        |                        |            |               |               |                    |                       |                           |                                |
| 1,000   |                            |           |                             |                                    |           |                      |                        |                        |                        |            |               |               |                    |                       |                           |                                |

<sup>1</sup> bgs - below ground surface

<sup>2</sup> VOC-Volatile Organic Contaminants/Constituents

<sup>3</sup> GRO-Gasoline Range Organics C<sub>6</sub>-C<sub>10</sub>

<sup>4</sup> DRO-Diesel Range Organics C<sub>10</sub>-C<sub>28</sub>

<sup>5</sup> TPH-Total Petroleum Hydrocarbon = GRO+DRO.

<sup>6</sup> Bolded values are in excess of the New Mexico Oil Conservation Division guideline threshold for the parameter

<sup>7</sup> Italicized values are < the instrument detection limit.

<sup>8</sup> na - Not Analyzed

Reported detection limits are considered "de minimus" values and are included in the GRO/DRO and BTEX summations.

BTEX = the mass sum of benzene, toluene, ethylbenzene and total xylenes

32°28'15"N

32°28'10"N

32°28'05"N

32°28'00"N

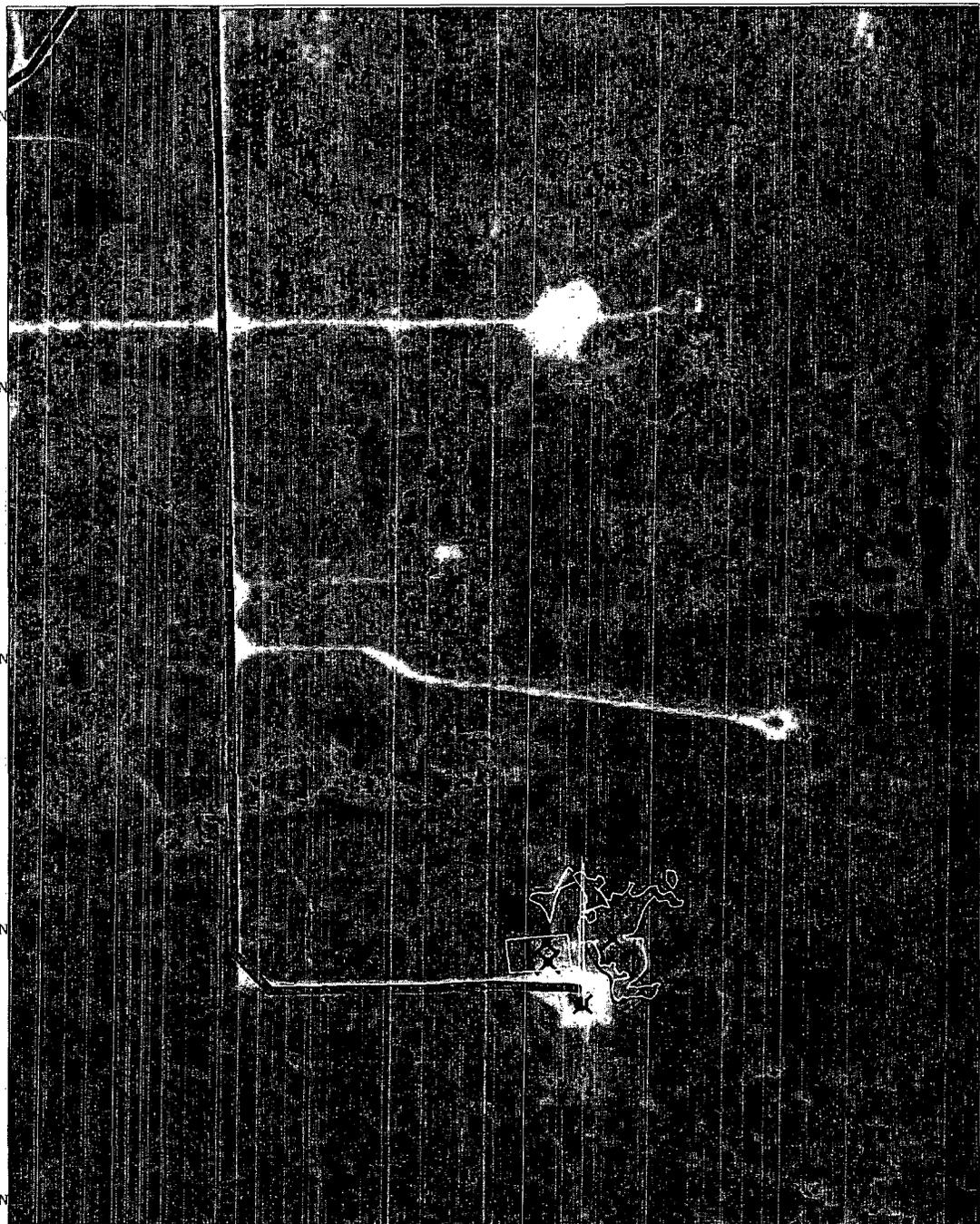
32°27'55"N

103°08'50"W

103°08'45"W

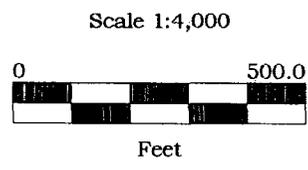
103°08'40"W

103°08'35"W



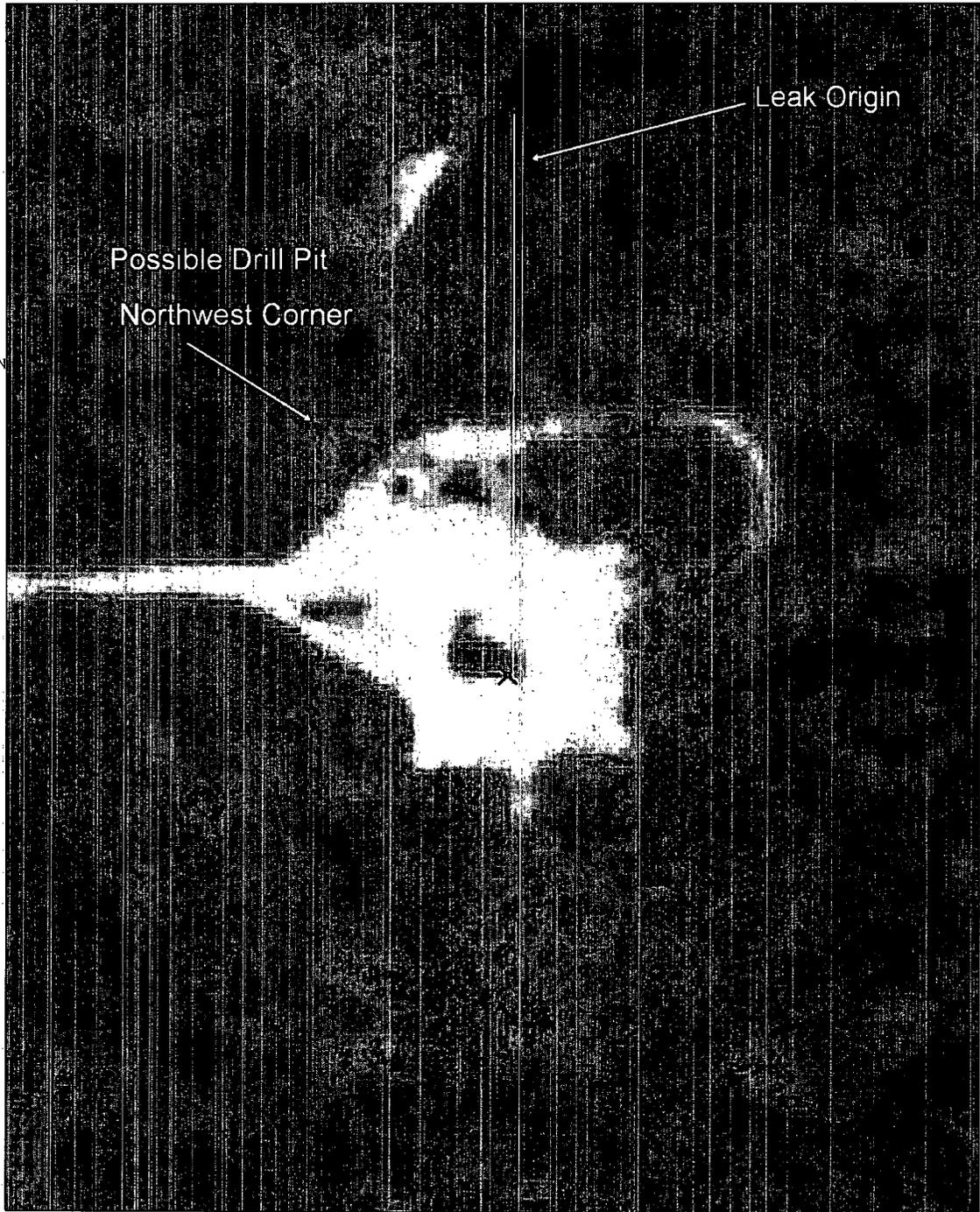
# Apache Corporation NEDU #809 Aerial 1997 (USGS)

UTM  
13 North  
NAD 1983 (Conus)



Multiple Files  
11/10/2005





103°08'40\"/>

# Apache Corporation NEDU #809 Aerial 1997 (USGS)

UTM  
13 North  
NAD 1983 (Conus)



Scale 1:1,000



Feet

NEDU 809.cor

11/10/2005





394-00

PHONE (325) 673-7301 • 2111 BEECHWOOD • ABILENE, TX 79603  
PHONE (505) 393-2326 • 101 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: AM

| LAB NUMBER                  | SAMPLE ID             | Cl <sup>-</sup><br>(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-ClB

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 deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable 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 provided by Cardinal, regardless of whether such claim is based upon any of the above-stated reasons or otherwise.



# ARDINAL LABORATORIES

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

ANALYTICAL RESULTS FOR  
ENVIRONMENTAL PLUS, INC.  
ATTN: PAT McCASLAND  
P.O. BOX 1558  
EUNICE, NM 88231  
FAX TO: (505) 394-2601

Receiving Date: 02/08/06  
Reporting Date: 02/10/06  
Project Owner: APACHE CORPORATION (#240011)  
Project Name: NEDU 809  
Project Location: NOT GIVEN

Sampling Date: 02/03/06  
Sample Type: SOIL  
Sample Condition: COOL & INTACT  
Sample Received By: HM  
Analyzed By: BC

| LAB NUMBER                  | SAMPLE ID  | GRO<br>(C <sub>6</sub> -C <sub>10</sub> )<br>(mg/Kg) | DRO<br>(>C <sub>10</sub> -C <sub>20</sub> )<br>(mg/Kg) | BENZENE<br>(mg/Kg) | TOLUENE<br>(mg/Kg) | ETHYL<br>BENZENE<br>(mg/Kg) | TOTAL<br>XYLENES<br>(mg/Kg) |
|-----------------------------|------------|--|--|--------------------|--------------------|-----------------------------|-----------------------------|
| ANALYSIS DATE:              |            | 02/08/06   | 02/08/06   | 02/09/06           | 02/09/06           | 02/09/06                    | 02/09/06                    |
| H10713-1                    | SB-1 10-11 | <10.0  | <10.0  | <0.005             | <0.005             | <0.005                      | <0.015                      |
| H10713-3                    | SB-1 20-21 | <10.0  | <10.0  | <0.005             | <0.005             | <0.005                      | <0.015                      |
| H10713-4                    | SB-2 10-11 | <10.0  | <10.0  | <0.005             | <0.005             | <0.005                      | <0.015                      |
| H10713-6                    | SB-2 20-21 | <10.0  | <10.0  | <0.005             | <0.005             | <0.005                      | <0.015                      |
| H10713-7                    | SB-3 10-11 | <10.0  | <10.0  | <0.005             | <0.005             | <0.005                      | <0.015                      |
| H10713-10                   | SB-3 25-26 | <10.0  | <10.0  | <0.005             | <0.005             | <0.005                      | <0.015                      |
| H10713-11                   | SB-4 10-11 | <10.0  | <10.0  | <0.005             | <0.005             | <0.005                      | <0.015                      |
| H10713-13                   | SB-4 20-21 | <10.0  | <10.0  | <0.005             | <0.005             | <0.005                      | <0.015                      |
| Quality Control             |            | 774  | 794  | 0.102              | 0.108              | 0.101                       | 0.294                       |
| True Value QC               |            | 800  | 800  | 0.100              | 0.100              | 0.100                       | 0.300                       |
| % Recovery                  |            | 96.7   | 99.3   | 102.0              | 109                | 101                         | 98.1                        |
| Relative Percent Difference |            | 8.8  | 0.9  | 9.5                | 6.2                | 5.9                         | 4.7                         |

METHODS: TPH GRO & DRO - EPA SW-846 8015 M; BTEX - SW-846 8260.

Burgess J. A. Cooke, Ph.D.

2/10/06  
Date

H10713A.XLS

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 deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable 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 hereunder by Cardinal, regardless of whether such claim is based upon any of the above-stated reasons or otherwise.



PHONE (325) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603

PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR  
 ENVIRONMENTAL PLUS, INC.  
 ATTN: PAT McCASLAND  
 P.O. BOX 1558  
 EUNICE, NM 88231  
 FAX TO: (505) 394-2601

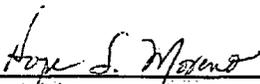
Receiving Date: 02/08/06  
 Reporting Date: 02/10/06  
 Project Owner: APACHE CORPORATION (#240011)  
 Project Name: NEDU 809  
 Project Location: NOT GIVEN

Analysis Date: 02/10/06  
 Sampling Date: 02/03/06  
 Sample Type: SOIL  
 Sample Condition: COOL & INTACT  
 Sample Received By: HM  
 Analyzed By: HM

| LAB NUMBER                  | SAMPLE ID  | Cl <sup>-</sup><br>(mg/Kg) |
|-----------------------------|------------|----------------------------|
| H10713-1                    | SB-1 10-11 | 240                        |
| H10713-2                    | SB-1 15-16 | 32                         |
| H10713-3                    | SB-1 20-21 | 32                         |
| H10713-4                    | SB-2 10-11 | 800                        |
| H10713-5                    | SB-2 15-16 | 240                        |
| H10713-6                    | SB-2 20-21 | 288                        |
| H10713-7                    | SB-3 10-11 | 1232                       |
| H10713-8                    | SB-3 15-16 | 544                        |
| H10713-9                    | SB-3 20-21 | 496                        |
| H10713-10                   | SB-3 25-26 | 256                        |
| H10713-11                   | SB-4 10-11 | 240                        |
| H10713-12                   | SB-4 15-16 | 160                        |
| H10713-13                   | SB-4 20-21 | 112                        |
| Quality Control             |            | 510                        |
| True Value QC               |            | 500                        |
| % Recovery                  |            | 102                        |
| Relative Percent Difference |            | 0.04                       |

METHOD: Standard Methods      4500-ClB

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

  
 Chemist

02-13-06  
 Date

H10713



# Cardinal Laboratories Inc.

101 East Marland, Hobbs, NM 88240  
505-393-2326 Fax 505-393-2476

21111 Beechwood, Abilene, TX 79603  
915-673-7001 Fax 915-673-7020

**Company Name** Environmental Plus, Inc.  
**EPI Project Manager** Pat McCasland  
**Billing Address** P.O. BOX 1558  
 Eunice New Mexico 88231  
**EPI Phone#/Fax#** 505-394-3481 / 505-394-2601  
**Client Company** Apache Corporation  
**Facility Name** NEDU 809  
**Project Reference** #240011  
**EPI Sampler Name** George Blackburn

**TO** Apache Corporation  
 PO Box 1849  
 Eunice, NM 88231  
 ATT: Bryan Tinsley

| BILL TO  |             | ANALYSIS REQUEST |                |                             |    |      |           |  |  |  |  |  |  |  |  |  |  |  |  |  |
|----------|-------------|------------------|----------------|-----------------------------|----|------|-----------|--|--|--|--|--|--|--|--|--|--|--|--|--|
| LAB I.D. | SAMPLE I.D. | TPH 8015M        | CHLORIDES (CI) | SULFATES (SO <sub>4</sub> ) | PH | TCLP | OTHER >>> |  |  |  |  |  |  |  |  |  |  |  |  |  |

| LAB I.D. | SAMPLE I.D.            | # CONTAINERS | (GRAB OR (C)OMP) | MATRIX       |            |      |           |        |        |           | PRESERV. |       |      | SAMPLING |      |
|----------|------------------------|--------------|------------------|--------------|------------|------|-----------|--------|--------|-----------|----------|-------|------|----------|------|
|          |                        |              |                  | GROUND WATER | WASTEWATER | SOIL | CRUDE OIL | SLUDGE | OTHER: | ACID/BASE | ICE/COOL | OTHER | DATE | TIME     |      |
| 10713    | 1SB-1 10-11            | X            | X                | X            | X          | X    | X         | X      | X      | X         | X        | X     | X    | 2/3/06   | 7:30 |
| -2       | SB-1 15-16             | X            | X                | X            | X          | X    | X         | X      | X      | X         | X        | X     | X    | 2/3/06   | 7:40 |
| -3       | SB-1 20-21             | X            | X                | X            | X          | X    | X         | X      | X      | X         | X        | X     | X    | 2/3/06   | 7:50 |
| -4       | SB-2 10-11             | X            | X                | X            | X          | X    | X         | X      | X      | X         | X        | X     | X    | 2/3/06   | 8:10 |
| -5       | SB-2 15-16             | X            | X                | X            | X          | X    | X         | X      | X      | X         | X        | X     | X    | 2/3/06   | 8:20 |
| -6       | SB-2 20-21 as per Bill | X            | X                | X            | X          | X    | X         | X      | X      | X         | X        | X     | X    | 2/3/06   | 8:30 |
| -7       | SB-3 10-11 02.15.06    | X            | X                | X            | X          | X    | X         | X      | X      | X         | X        | X     | X    | 2/3/06   | 8:50 |
| -8       | SB-3 15-16             | X            | X                | X            | X          | X    | X         | X      | X      | X         | X        | X     | X    | 2/3/06   | 9:00 |
| -9       | SB-3 20-21             | X            | X                | X            | X          | X    | X         | X      | X      | X         | X        | X     | X    | 2/3/06   | 9:10 |
| -10      | SB-3 25-26             | X            | X                | X            | X          | X    | X         | X      | X      | X         | X        | X     | X    | 2/3/06   | 9:20 |

**Received By:** *Pat McCasland* **Time:** 2:50 PM  
**Received By:** *Jaron Boone* **Time:** 2:26 PM  
**Received By:** *Jaron Boone* **Time:** 9:40 AM  
 (lab staff)  
 Checked By: *Jaron Boone*  
 Sample Cool & Intact:  Yes  No  
 Remarks: CoC requested



# Cardinal Laboratories Inc.

101 East Marland, Hobbs, NM 88240  
505-393-2326 Fax 505-393-2476

2111 Beechwood, Abilene, TX 79603  
915-673-7001 Fax 915-673-7020

**Company Name** Environmental Plus, Inc.  
**EPI Project Manager** Pat McCasland  
**Billing Address** P.O. BOX 1558  
**City, State, Zip** Eunice, New Mexico 88231  
**EPI Phone#/Fax#** 505-394-3481 / 505-394-2601  
**Client Company** Apache Corporation  
**Facility Name** NEDU 809  
**Project Reference** #240011  
**EPI Sampler Name** George Blackburn

**Billing**  
 Apache Corporation  
 PO Box 1849  
 Eunice, NM 88231  
 ATT: Bryan Tinsley

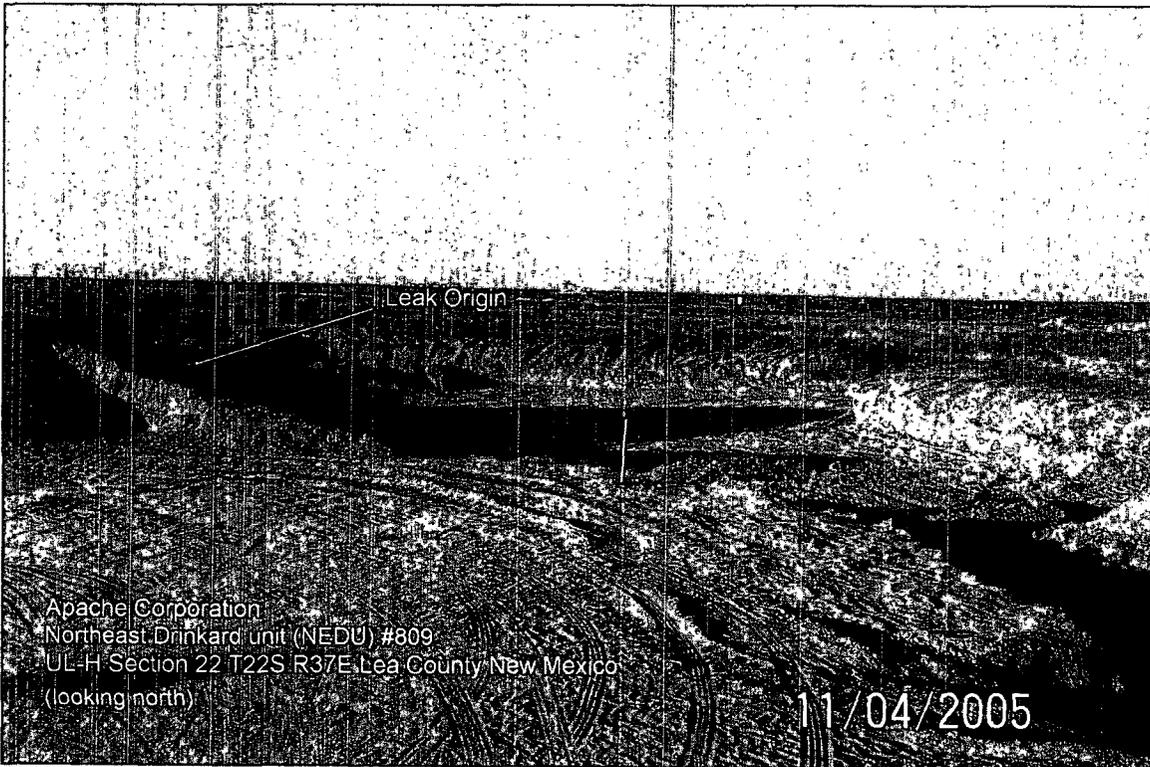
| LAB I.D. |             | ANALYSIS REQUEST |            |      |           |        |        |           |          |       |        |       |            |           |                |                             |    |      |          |  |
|----------|-------------|------------------|------------|------|-----------|--------|--------|-----------|----------|-------|--------|-------|------------|-----------|----------------|-----------------------------|----|------|----------|--|
| LAB I.D. | SAMPLE I.D. | GROUND WATER     | WASTEWATER | SOIL | CRUDE OIL | SLUDGE | OTHER: | ACID/BASE | ICE/COOL | OTHER | DATE   | TIME  | BTEX 8021B | TPH 8015M | CHLORIDES (Cl) | SULFATES (SO <sub>4</sub> ) | PH | TCLP | OTHER >> |  |
| H0913-11 | SB-4 10-11  |                  |            | X    |           |        |        |           | X        |       | 2/3/06 | 9:45  | X          | X         | X              |                             |    |      |          |  |
| -12      | SB-4 15-16  |                  |            | X    |           |        |        |           | X        |       | 2/3/06 | 9:55  | X          | X         | X              |                             |    |      |          |  |
| -13      | SB-4 20-21  |                  |            | X    |           |        |        |           | X        |       | 2/3/06 | 10:05 | X          | X         | X              |                             |    |      |          |  |
| 4        |             |                  |            |      |           |        |        |           |          |       |        |       |            |           |                |                             |    |      |          |  |
| 5        |             |                  |            |      |           |        |        |           |          |       |        |       |            |           |                |                             |    |      |          |  |
| 6        |             |                  |            |      |           |        |        |           |          |       |        |       |            |           |                |                             |    |      |          |  |
| 7        |             |                  |            |      |           |        |        |           |          |       |        |       |            |           |                |                             |    |      |          |  |
| 8        |             |                  |            |      |           |        |        |           |          |       |        |       |            |           |                |                             |    |      |          |  |
| 9        |             |                  |            |      |           |        |        |           |          |       |        |       |            |           |                |                             |    |      |          |  |
| 10       |             |                  |            |      |           |        |        |           |          |       |        |       |            |           |                |                             |    |      |          |  |

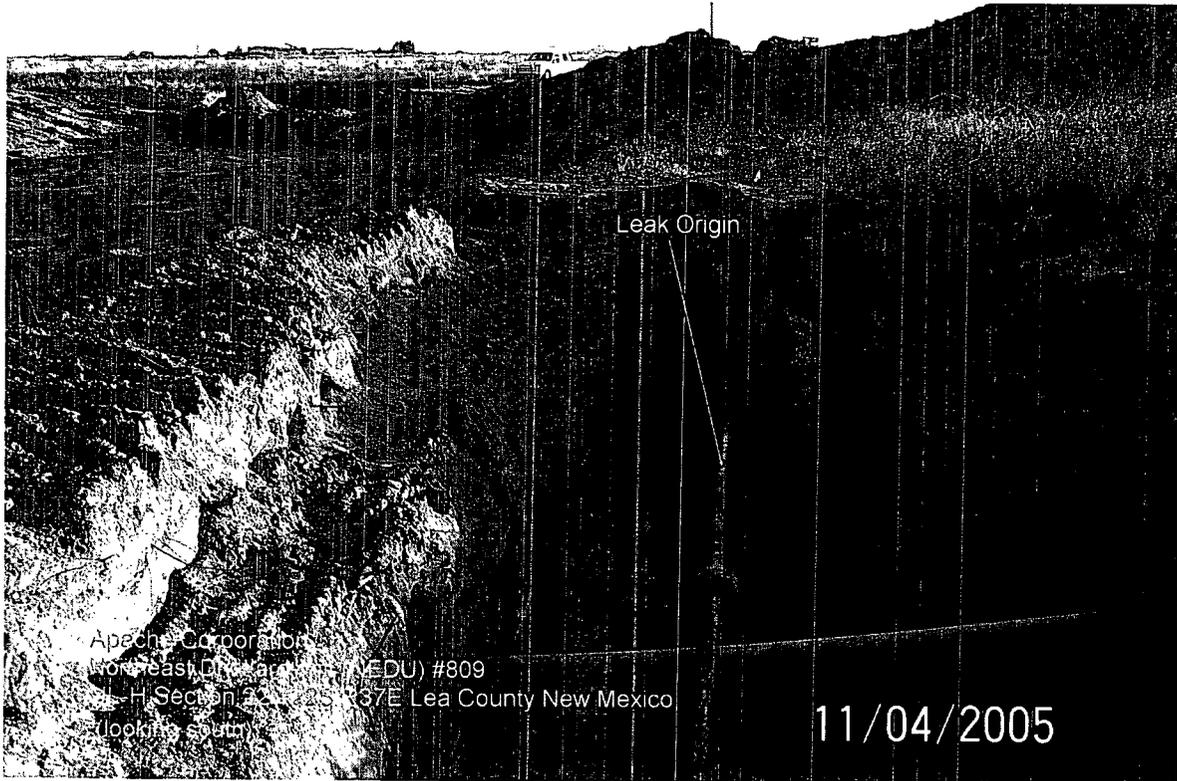
**Sampler Relinquished:** *Pat McCasland*  
**Relinquished by:** *Pat McCasland*  
**Delivered by:** *Jaren Boone*

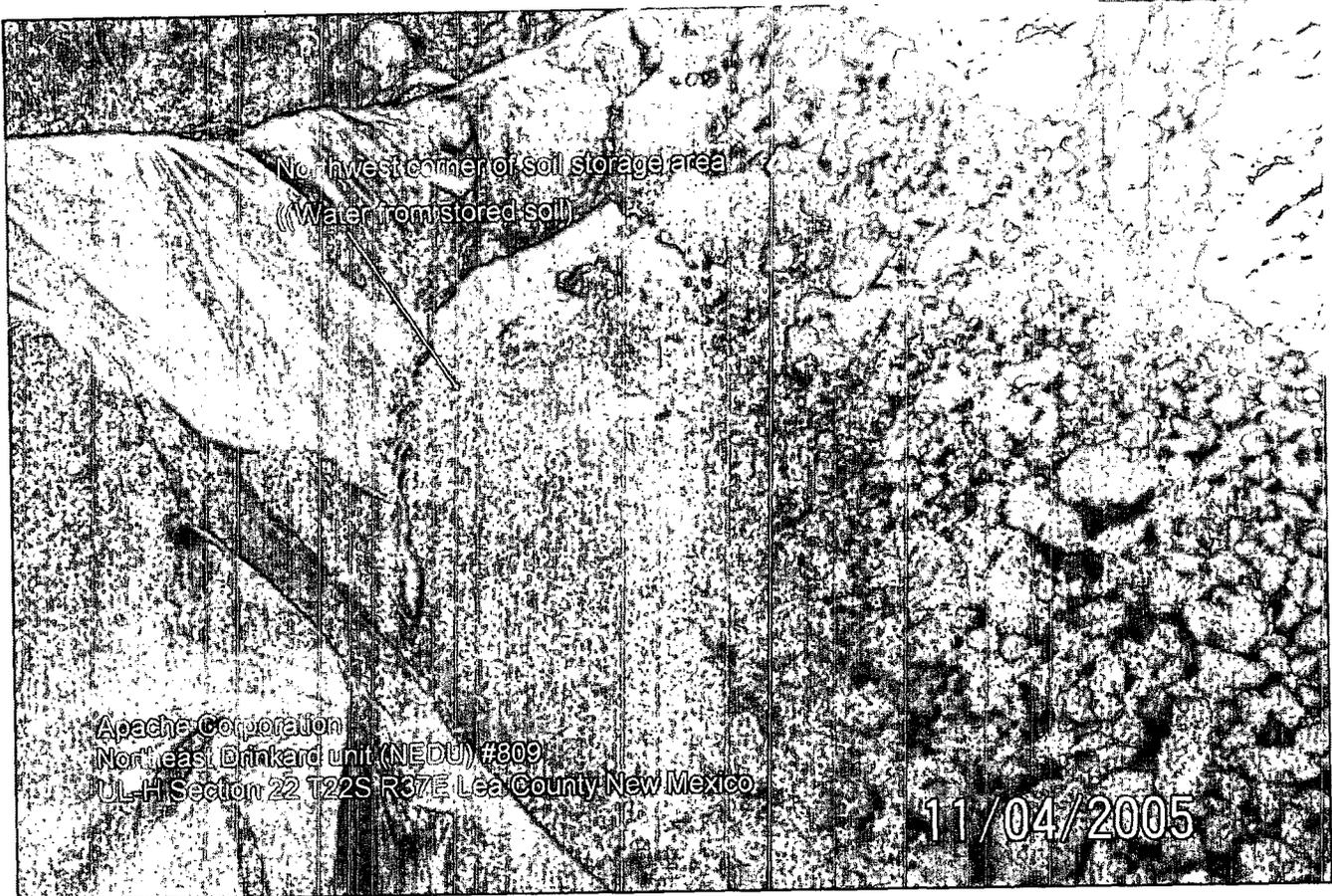
**Received By:** *Jaren Boone*  
 Date: 2-8-06  
 Time: 1:40  
 Received By: (lab staff)  
 Date: 02-08-06  
 Time: 1:40

Sample Cool & Intact:  Yes  No  
 Checked By: \_\_\_\_\_

**Fax Results To Pat McCasland 505-394-2601**  
 REMARKS: CoC requested:







Apache Corporation  
Northeast Drinkard unit (NEDU) #809  
ULH Section 22 T22S R37E Lea County New Mexico

11/04/2005



|   |         |  |  |
|---|---------|--|--|
| Apache Corporation Site<br>Information and Metrics  |         | Incident Date:<br>10/21/2005   | NMOCD Notified:<br>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.<br>(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 1/4: SE 1/4 of the NE 1/4   |         | 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>   | <b>3. Distance to Surface Water Body</b> |
| If Depth to GW <50 feet: 20 points  |         | If <1000' from water source, or; <200' from private domestic water source: 20 points | <200 horizontal feet: 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  | 200-100 horizontal feet: 10 points       |
| If Depth to GW >100 feet: 0 points  |         |  | >1000 horizontal feet: 0 points          |
| Ground water Score = 10   |         | Wellhead Protection Area Score = 0   | Surface Water Score = 0                  |
| Site Rank (1+2+3) = 10  |         |  |  |
| <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<br><b>Apache Corporation</b>     | Contact<br><b>Bryan Tinsley</b>              |
| Address<br>PO Box 1849, Eunice, New Mexico 88231 | Telephone No.<br>505.394.2743                |
| Facility Name<br>NEDU 809                        | Facility Type<br>Water injection system line |

|                              |               |           |
|------------------------------|---------------|-----------|
| Surface Owner<br>C.A. Bettis | Mineral Owner | Lease No. |
|------------------------------|---------------|-----------|

API# 30025067300000

**LOCATION OF RELEASE**

|                  |               |                  |               |               |                  |               |                |             |
|------------------|---------------|------------------|---------------|---------------|------------------|---------------|----------------|-------------|
| Unit Letter<br>H | Section<br>22 | Township<br>T21S | Range<br>R37E | Feet from the | North/South Line | Feet from the | East/West Line | County: Lea |
|------------------|---------------|------------------|---------------|---------------|------------------|---------------|----------------|-------------|

Latitude: 32° 28' 0.9"N

Longitude: 103° 8' 40.1"W

**NATURE OF RELEASE**

|  |   |   |
|--|---|---|
| Type of Release<br>Produced Water  | Volume of Release<br>600-800 barrels            | Volume Recovered<br>480 barrels             |
| Source of Release<br>Water injection system line   | Date and Hour of Occurrence<br>10/21/2005 AM    | Date and Hour of Discovery<br>10/21/2005 PM |
| Was Immediate Notice Given?<br><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Required | If YES, To Whom?<br>Paul Kautz                  |   |
| By Whom?<br>Mike Warren, Apache  | Date and Hour<br>10/21/2005 PM                  |   |
| Was a Watercourse Reached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No   | If YES, Volume Impacting the Watercourse.<br>NA |   |
| If a Watercourse was Impacted, Describe Fully.*<br>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 garrels 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><u>OIL CONSERVATION DIVISION</u></b> |                                   |
| Printed Name: Bryan Tinsley | 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

application - PRAC 0627540969

RP# 1056