Rice Environmental Consulting & Safety
P.O. Box 5630 Hobbs, NM 88241
Phone 575.393.4411 Fax 575.393.0293

CERTIFIED MAIL
RETURN RECIEPT NO. 7008 1140 0001 3070 6266

April 19th, 2012

Mr. Edward Hansen
New Mexico Energy, Minerals, & Natural Resources
Oil Conservation Division, Environmental Bureau
1220 S. St. Francis Drive
Santa Fe, New Mexico 87505

RE: **Termination Request**
Apache Corporation
Lou Wortham #20 AD (1R0711-2726): UL/F sec. 11 T22S R37E

Mr. Hansen:

Apache Corporation (Apache) has retained Rice Environmental Consulting and Safety (RECS) to address potential environmental concerns at the above-referenced site. The site is located approximately 2.5 miles southeast of Eunice, New Mexico at UL/F, Sec. 11, T22S, R37E as shown on the Site Location Map (Figure 1). Groundwater at this site is located approximately +/-37 feet below ground surface (bgs).

On May 25th, 2011 six soil bores were installed at the site. The samples were field tested for chlorides and screened in the field for hydrocarbons with a photo-ionization detector. Representative samples from the bores were taken to a commercial laboratory for confirmation of chloride field numbers. Laboratory readings showed chloride numbers ranging from a high of 7,900 mg/kg at 18 ft bgs in SB-2 to a low of 16 mg/kg at the surface of SB-3.

Per the approval of the NMOCD District 1 Office, the site was excavated to 120 ft by 188 ft by 5 ft bgs. Two additional areas within the excavation were excavated to 21 ft bgs. These two areas surrounded SB-1 and SB-2 respectively and measured 10' x 10' each. At the base of these two excavations, liners were installed to inhibit the downward migration of chlorides. A one foot clay layer was placed at the base of the two excavations and a 20-mil reinforced poly liner was properly seated on top of the clay. Then the two excavations were backfilled to 5 ft bgs with clean imported caliche. On August 12th, 2011, a 20-mil reinforced poly liner was properly seated over the entire 120 ft by 188 ft excavation. The site was backfilled with clean, imported soil and contoured to the surrounding area. Soil amendments were added to the site and the site was seeded with a native vegetative mix on September 6th, 2011.

On August 9th, 2011, two monitor wells were installed at the site. MW-1, the source monitor well, was installed 35 ft south southeast of the excavation and MW-2, the up gradient monitor well, was installed 63 ft north northwest of the excavation. MW-1 has been sampled twice since its installation and MW-2 has been sampled three times since its installation (Figure 2). From the monitor well sampling conducted at the site, it is evident that chloride levels coming onto the site are higher than those leaving the site suggesting the site has an up gradient source of contamination. (Appendix A). Based on data found in the NMOCD website, there is evidence of an up gradient chloride contamination source which has impacted the surrounding area (Figure 3 and 4). These results indicate that this location and the surrounding area have pre-existing groundwater quality impairment, and that the effects of the Lou Wortham #20 AD are inconsequential. In addition, the liners installed at the site and the re-vegetation of the surface will inhibit chloride migration through the vadose zone to the aquifer. Since the up gradient monitor well shows higher chloride readings than the source well, and liners have been installed at the site which will inhibit chloride migration, the site will not contribute to the degradation of the aquifer. Therefore, RECS requests that the site be granted 'remediation termination' status of the regulatory file.

Upon NMOCD's approval of the Termination Request, both monitor wells will be plugged and abandoned with a 1-3% bentonite/concrete slurry with a three foot concrete cap.

RECS appreciates the opportunity to work with you on this project. Please call Hack Conder – RECS at (575) 393-9174 or Natalie Gladden – Apache Corp. (575) 394-1503 if you have any questions or wish to discuss the site.

Sincerely,

Lara Weinheimer
Project Scientist
RECS
(575) 441-0431

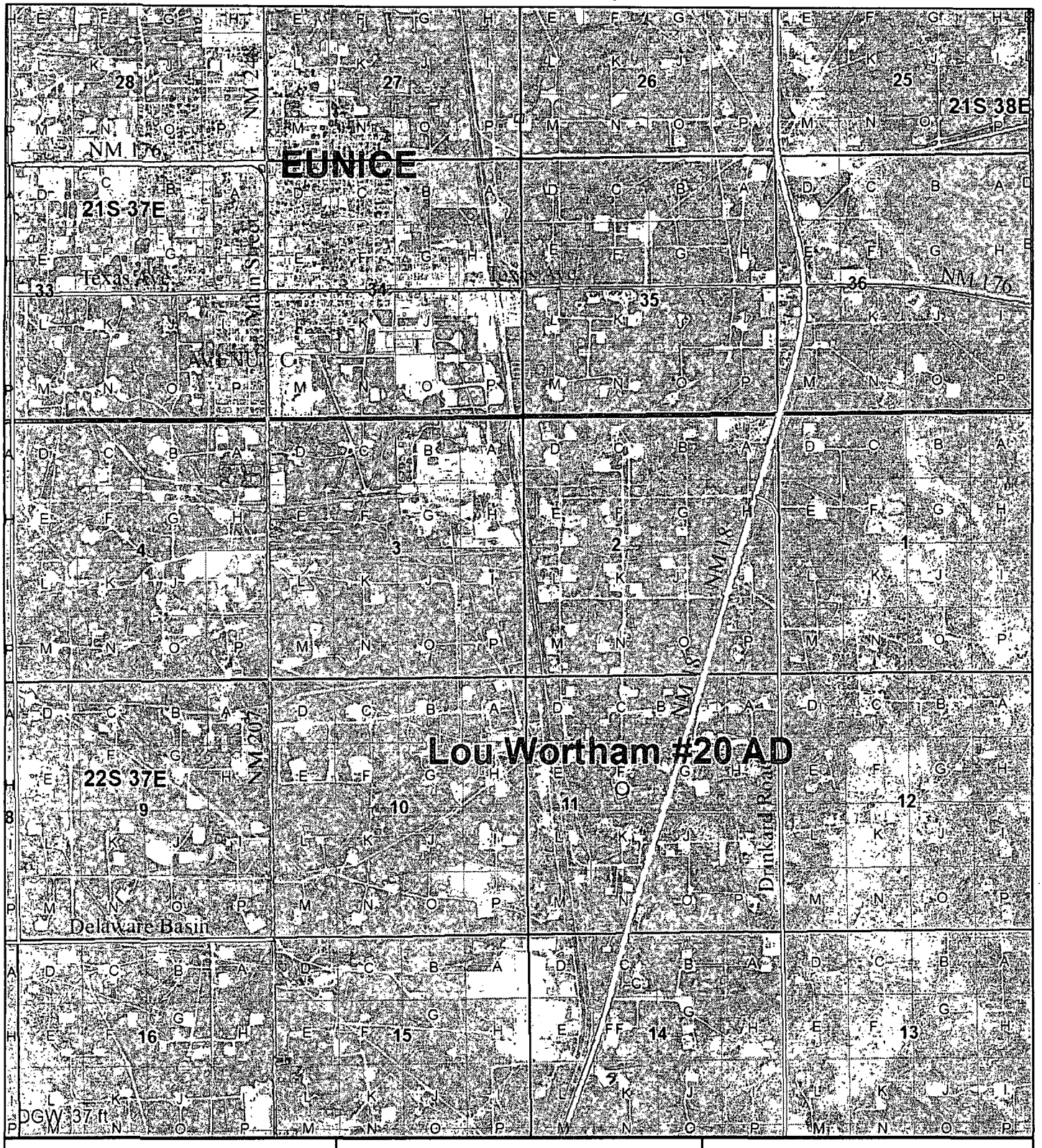
Attachments:

- Figure 1 – Site Location Map
- Figure 2 – Monitor Well Sampling Data
- Figure 3 – Up Gradient Chloride Contamination Source Map
- Figure 4 – Potentiometric Map
- Appendix A – Laboratory Confirmation

Figures

RICE Environmental Consulting and Safety (RECS)
P.O. Box 5630 Hobbs, NM 88241
Phone 575.393.4411 Fax 575.393.0293

Site Map



RICE ENVIRONMENTAL CONSULTING & SAFETY, LLC

Apache
Lou Wortham #20 AD

NMOCD Case #: 1R0711-2726

LEGALS: UL/F sec. 11
T22S R37E

Figure 1

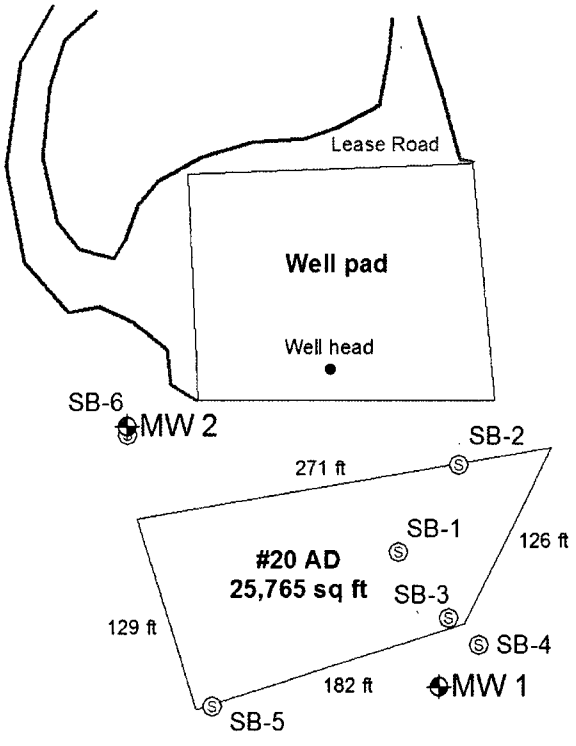
N W E S

0 0.25 0.5 1 Miles

Drawing date: 8-18-11
Drafted by: L. Weinheimer

Monitor Well Sampling

MW	Depth to Water	Total Depth	Sample Date	Cl
2	40.34	50.95	8/13/2011	18000
2	40.35	50.95	9/12/2011	17800
2	40.35	50.95	11/16/2011	18000



MW	Depth to Water	Total Depth	Sample Date	Cl
1	39.67	80.78	9/12/2011	17400
1	39.69	80.78	11/16/2011	17000

RICE ENVIRONMENTAL CONSULTING & SAFETY, LLC

Apache
Lou Wortham
#20 AD

LEGALS: UL/F sec. 11
T22S R37E

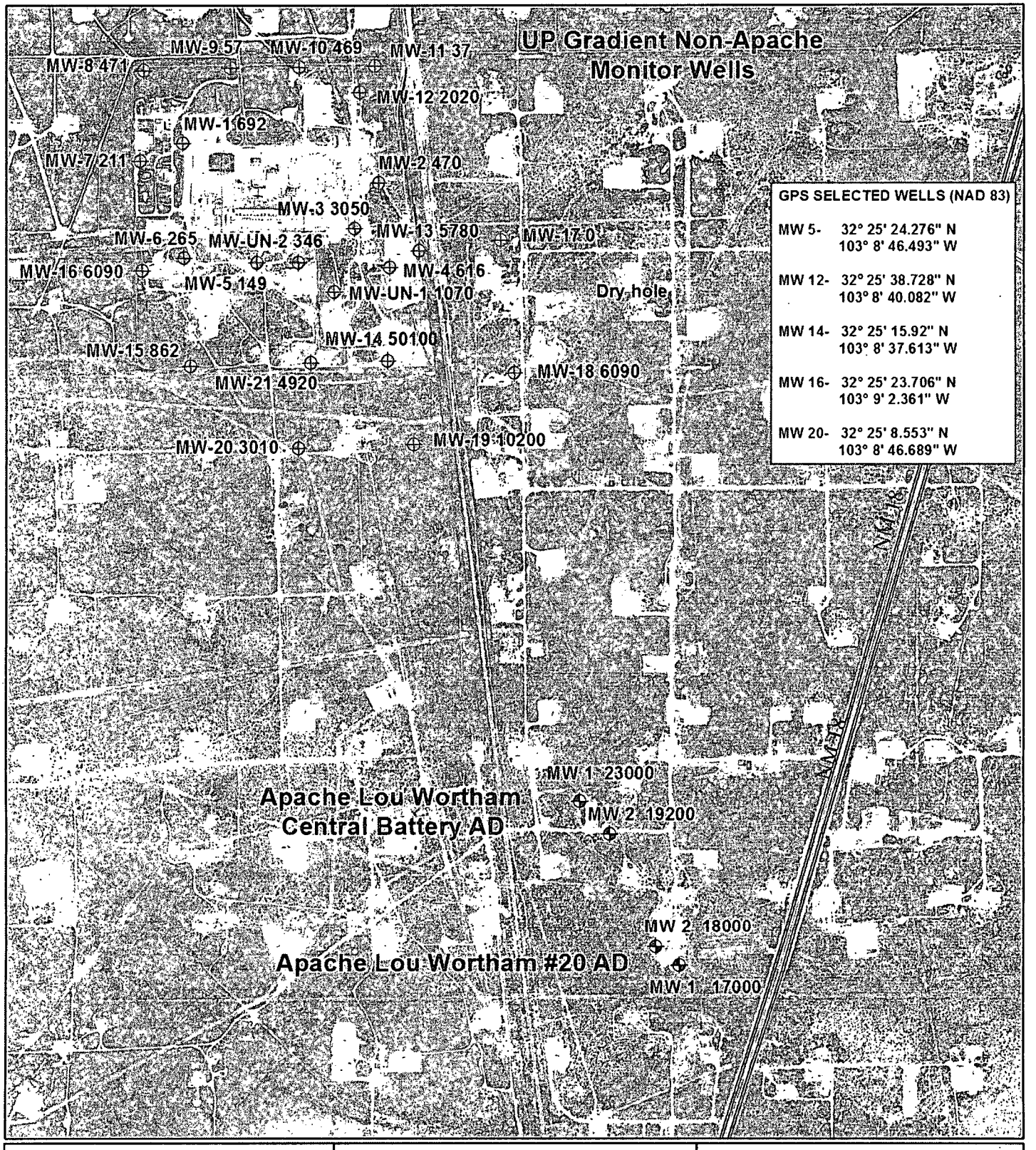
NMOCD Case #: 1R0711-2726

Figure 2

N W E S

0 37.5 75 150
Feet

Drawing date: 12-22-11
Drafted by: L. Weinheimer



RICE ENVIRONMENTAL CONSULTING & SAFETY, LLC

Regional Chloride Concentrations

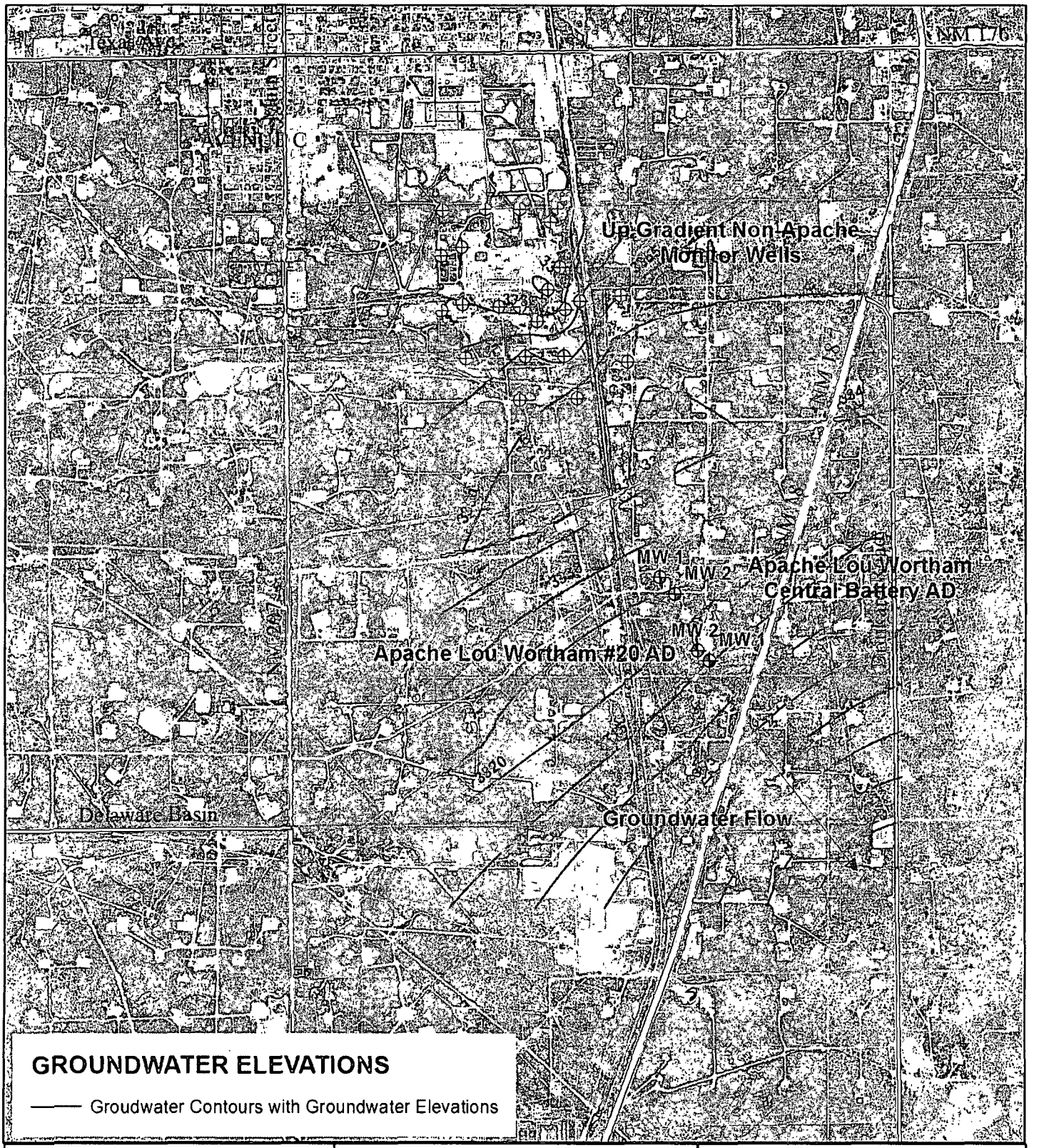
LEGALS: sec. 2, 3, 10 & 11
T22S R37E

Figure 3

N
W E
S

0 500 1,000 2,000
Feet

Drawing date: 1-5-12
Drafted by: L. Weinheimer & T. Grieco



RICE ENVIRONMENTAL CONSULTING & SAFETY, LLC

Regional Potentiometric Map

LEGALS: sec. 2, 3, 10 & 11 T22S R37E

Figure 4

N W E S

0 875 1,750 3,500 Feet

Drawing date: 1-5-11
Drafted by: L. Weinheimer

Appendix A
Laboratory Confirmation

RICE Environmental Consulting and Safety (RECS)
P.O. Box 5630 Hobbs, NM 88241
Phone 575.393.4411 Fax 575.393.0293

CARDINAL Laboratories

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

November 18, 2011

NATALIE GLADDEN

APACHE - EUNICE

P. O. BOX 1849

EUNICE, NM 88231

RE: APACHE LOU WORTHAM #20 AD

Enclosed are the results of analyses for samples received by the laboratory on 11/17/11 14:25.

Cardinal Laboratories is accredited through Texas NELAP for:

Method SW-846 8021	Benzene, Toluene, Ethyl Benzene, and Total Xylenes
Method SW-846 8260	Benzene, Toluene, Ethyl Benzene, and Total Xylenes
Method TX 1005	Total Petroleum Hydorcarbons

Certificate number T104704398-08-TX. Accreditation applies to solid and chemical materials and non-potable water matrices.

Cardinal Laboratories is accreditated through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V2, V3)

Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Celey D. Keene

Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

APACHE - EUNICE
NATALIE GLADDEN
P. O. BOX 1849
EUNICE NM, 88231
Fax To: 394-2425

Received:	11/17/2011	Sampling Date:	11/16/2011
Reported:	11/18/2011	Sampling Type:	Water
Project Name:	APACHE LOU WORTHAM #20 AD	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	T22S-R37E-SEC11 UL-F ~ LEA CTY NM		

Sample ID: MONITOR WELL #1 (H102506-01)

Chloride, SM4500Cl-B **mg/L** **Analyzed By: HM**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**17000**	4.00	11/18/2011	ND	104	104	100	3.77	

Sample ID: MONITOR WELL #2 (H102506-02)

Chloride, SM4500Cl-B **mg/L** **Analyzed By: HM**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**18000**	4.00	11/18/2011	ND	104	104	100	3.77	

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Notes and Definitions

ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C
	Samples reported on an as received basis (wet) unless otherwise noted on report

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

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

Cardinal Laboratories, Inc.

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

LAB Order ID # _____

Company Name: Apache	BILL TO Company: Apache	PO#
Project Manager: Hack Conder, Rice Env Consulting Safety	Address: (Street, City, Zip)	
Address: (Street, City, Zip) 122 W Taylor Street ~ Hobbs, New Mexico 88240	Phone#:	Fax#:
Phone #: (575) 393-9174	Fax #: (575) 397-1471	
Project #:	Project Name: Apache Lou Wortham #20 AD	
Project Location: T22S-R37E-Sec11 UL-F ~ Lea County New Mexico	Sampler Signature: Rozanne Johnson (575)631-9310 rozanne@valornet.com	

LAB # (LAB USE ONLY) H102505	FIELD CODE	(G)rab or (C)omp	# CONTAINERS	MATRIX: WATER	SOIL	AIR	SLUDGE	PRESERVATIVE METHOD: HCL (2 40ml VOA)	HNO_3	$NaHSO_4$	H_2SO_4	ICE (1-1Liter HDPE)	NONE	SAMPLING: DATE (2011)	TIME	MTBE 8021B/602	BTEX 8021B/602	TPH 418.1/TX1005 / TX1005 Extended (C35)	PAH 8270C	Total Metals Ag As Ba Cd Cr Pb Se Hg 6010B/200.7	TCLP Metals Ag As Ba Cd Cr Pb Se Hg	TCLP Volatiles	TCLP Semi Volatiles	TCLP Pesticides	RCI	GC/MS Vol. 8260B/624	GC/MS Semi. Vol. 8270C/625	PCB's 8082/608	Pesticides 8081A/608	BOD, TSS, pH	Moisture Content	Cations (Ca, Mg, Na, K)	Anions (Cl, SO4, CO3, HCO3)	Sulfates	Total Dissolved Solids	Chlorides	Turn Around Time ~ 24 Hours
1	Monitor Well #1	G	1	X								1		11-16	13:55																					X	
2	Monitor Well #2	G	1	X								1		11-16	15:00																					X	

Relinquished by: Rozanne Johnson	Date: 11-17-2011	Time: 14:25	Received by: Jodi Henson
Relinquished by:	Date:	Time:	Received By: (Laboratory Staff)
Delivered By: (Circle One) Sampler - UPS - Bus - Other:	Sample Condition: Cool: Yes / No; Intact: Yes / No		CHECKED BY: (Initials)

Date: 11/17/11 Time: 14:25

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

REMARKS:

Email Results to: hconder@riceswd.com
kjones@riceswd.com
lweinheimer@rice-ecs.com
rozanne@valornet.com

#26