AP - 068

STAGE 1 WORKPLAN

1/14/2007

AP068

HUNGRY HORSE, LLC

ENVIRONMENTAL SERVICES

February 14, 2007

Mr. Glenn Von Gotten Energy, Minerals, and Natural Resources Department New Mexico Oil Conservation Division 1220 S. St. Francis Drive Santa Fe, New Mexico 87505 RECEIVED

FEB 23 2007

Oil Conservation Division Environmental Bureau

Subject: Apache Corporation - - NEDU #527 - Stage I Ground Water Abatement Plan

Dear Mr. Von Gotten:

Hungry Horse, LLC, on behalf of Apache Corporation (APACHE) submits for your consideration the Stage I Ground Water Abatement Plan for the "NEDU #527" pit closure site. This report documents the vertical and horizontal extents of chloride contamination at the site, excavation and disposal of chloride contaminated soils down to the 21-ft bgs level, borehole evaluation of soils below the 21-ft bgs level and ultimate confirmation of ground water impact at the site.

This submittal is consistent with NMOCD Rule 19 requirements of immediate notification and submittal of a Stage I Abatement Plan in the event that ground water contamination has occurred as a result of oilfield activities. On behalf of Apache Corporation, Hungry Horse LLC requests that the NMOCD consider the information provided within this documentation and allow Apache Corp to proceed with the proposed monitor well installations and further ground water investigations at this site.

Questions or comments regarding this project should be directed to Mr. Jerry Brian at the Hungry Horse office, or at 505-390-6149. Mr. Harold Swain of Apache Corporation can be contacted by phone at 915-527-3311.

Please address all official correspondence regarding this release and subsequent remediation activities to Mr. Harold Swain at:

Apache Corporation P.O. Box 848 Wink, TX 79789

(Sa)

Sincerely,

cc:

Jerry Brian, Senior Environmental Consultant/General Manager

Harold Swain, Apache Corporation, w/enclosure Larry Johnson, NMOCD – Hobbs District Office

File

APACHE CORPORATION

STAGE 1 GROUND WATER ABATEMENT PLAN (AP068)

NEDU #527 WELL SITE API#30-025-37242

UL-M (SW¼ OF THE SW¼) OF SECTION 10 T21S R37E

LATITUDE: N32° 29.387' LONGITUDE: 103° 09.502'

~2.7 MILES SOUTHWEST (BEARING 224°) OF EUNICE

LEA COUNTY, NEW MEXICO

February 14, 2007

PREPARED FOR APACHE CORPORATION BY:

HUNGRY HORSE, LLC

ENVIRONMENTAL SERVICES

3709 S. Eunice Hwy, P.O. Box 1058, Hobbs, New Mexico 88241 (505) 393-3386; Fax (505) 391-4585

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1.0 Company Contacts

Apache Corporation:

Harold Swain, Permian Basin Drilling Foreman

Phone: 915-527-3311

Email: <u>Harold.Swain@USA.ApacheCorp.com</u>
Mailing Address: P.O. Box 848, Wink, TX 79789

Hungry Horse, LLC:

Jerry Brian, General Manager/Environmental Consultant

Phone: 505-393-3386 Email: <u>irbrian@verizon.net</u>

Mailing Address: P.O. Box 1058, Hobbs, NM 88241

2.0 Introduction

By letter dated November 29, 2006, the New Mexico Oil Conservation Division is requiring Apache Corporation to submit a Stage 1 investigation proposal to complete the definition of the lateral and vertical extent of groundwater contamination at the Apache NEDU #527 well site located in Unit M, Section 10, T21S – R37E, Lea County, New Mexico. The plan is required pursuant to OCD Rule 19.E.1 and OCD Rule 19.E.3. The Stage 1 Abatement Plan presented herein complies with the requirements of these rules and incorporates work already performed at the site prior to detection of the groundwater impact.

3.0 Background

On the 7/23/06, Hungry Horse, LLC began to conduct a "dig & haul' remediation pit closure procedure on the NEDU # 527. All drilling material and chloride impacted material below the liner was removed to a depth of 10' bgs and disposed of at Sundance disposal facility.

On the 7/31/06, we began extracting samples beneath the pit liner for chloride analysis. Chloride impacted material has been removed to a depth of 21' bgs. Approximately 9000 yrds³ have been removed and disposed of at the NMOCD Approved Sundance disposal facility.

Vertical delineation continued until impacted groundwater was encountered in the SW Quadrant (BH # 3) at 62' bgs. The impact was reported to the New Mexico Oil Conservation Division (OCD) District One office in Hobbs and to Glenn Von Gotten at the OCD office in Santa Fe, NM on the 7/19/06.

4.0 Investigation Status

Prior to presentation of the Abatement Plan later in the document, the soil and groundwater work performed to date will be briefly reviewed below.

Based on investigation results and pursuant to NMOCD guidelines ("Guidelines for Remediation of Leaks, Spills and Releases" New Mexico Oil Conservation Division – August 13, 1993), Hungry Horse, LLC submitted a Risk Based remedial/clean-up work plan to the NMOCD on the 2/5/07. The work plan included further excavation of high

chloride impacted materials above the water table, utilizing a double cap method to prevent any further vertical downward migration of chlorides. It also proposed drilling three initial groundwater-monitoring wells to establish groundwater gradient and water quality.

4.1 Vertical and Horizontal Extent of Contamination in the Vadose Zone

Preliminary investigation of the extent of soil contamination was performed from the 7/31/06 until the 9/19/06.

On the 7/31/06, we began extracting samples beneath the pit liner for chloride analysis. A 5-point sampling plan (see site sampling map) was conducted in the pit area (NW quadrant, NE quadrant, Center, SW quadrant). Sample points were located in the center of each quadrant, and one sample point located in the center of the pit area.

The working pit area closest to the wellhead was divided into 3 areas (E Work Pit, Center Work Pit, and SW Work Pit). Sample points were located in the center of each area.

Samples were extracted from 10' bgs to 19' bgs. Field chloride tests were conducted to determine if chloride concentrations exceeded the acceptable MCL of 250-ppm.

A total of 16 confirmation grab samples were retrieved. These samples were properly packaged, preserved, and transported under Chain-of-Custody to Cardinal Laboratories of Hobbs, New Mexico for analysis. All samples were analyzed for Chlorides (EPA Method: 4500-Cl B).

Confirmation samples were extracted in the NE quadrant at 10'bgs, and 19' bgs. Analytical results indicated chloride concentrations were 17275-ppm, and 288-ppm, respectively (see table).

Confirmation samples were extracted in the NW quadrant at 12', 16' and 19' bgs. Analytical results indicated chloride concentrations were 16315-ppm, 8797-ppm, and 8557-ppm, respectively (see table).

Confirmation samples were extracted in the Center quadrant at 10', 12', 16' and 17' bgs. Analytical results indicated chloride concentrations were 2255-ppm, 272-ppm, 6158-ppm, and 112-ppm, respectively (see table).

Confirmation samples were extracted in the SW quadrant at 12', 16', 17', and 19' bgs. Analytical results indicated chloride concentrations were 26872-ppm, 37988-ppm, 10477-ppm, and 8717-ppm, respectively (see table).

Confirmation samples were extracted in the SE quadrant at 10', 16', and 19' bgs. Analytical results indicated chloride concentrations were 12396-ppm, 5806-ppm, and 1935-ppm, respectively (see table).

Confirmation samples were extracted in the Center Work Pit at 14' bgs. Analytical results indicated the chloride concentration was 176-ppm (see table).

Confirmation samples were extracted in the SW Work Pit at 14', and 19' bgs. Analytical results indicated chloride concentrations were 9677-ppm, and 5118-ppm, respectively (see table).

Confirmation samples were extracted in the E Work Pit at 19' bgs. Analytical results indicated the chloride concentration was 224-ppm (see table).

On the 9/14/06 and the 9/19/06, four bore holes (BH #1 - NE quadrant, BH #2 - SE quadrant, BH #3 - SW Quadrant, BH #4 - NW quadrant) (see site sampling map) were drilled and split spoon sampling conducted every 5'. A total of 22 discrete grab samples were retrieved.

The samples were properly packaged, preserved, and transported under Chain-of-Custody to Cardinal Laboratories of Hobbs, New Mexico for analysis. All samples were analyzed for Chlorides (EPA Method: 4500-Cl⁻B).

BH # 1- NE quadrant and BH #2 – SE quadrant were sampled at 25', 30', and 35' bgs respectively.

Chloride analysis at 25', 30', and 35' bgs indicated concentrations at BH #1 were 240-pm, 112-pm, and 48-pm, respectively (see table).

Chloride analysis at 25', 30', and 35' bgs indicated concentrations at BH #2 were 4319-pm, 1328-pm, and 128-pm, respectively (see table).

BH #3 – SW Quadrant was sampled at 25', 30', 35', 40', 45', 50', 55', 57', 60', and 62' bgs respectively.

Chloride analysis at 25', 30', 35', 40', 45', 50', 57', 60', and 62' bgs indicated concentrations at BH #3 were 10,157-ppm, 11,436-ppm, 8237-ppm, 3071-ppm, 2159-ppm, 1695-ppm, 1663-ppm, 656-ppm, and 2007-ppm (saturated zone), respectively (see table).

BH #4 – NW Quadrant was sampled at 25', 30', 35', 40', 45', 50', and 55' bgs respectively.

Chloride analysis at 25', 30', 35', 40', 45', 50', and 55'bgs indicated concentrations at BH #4 were 1408-ppm, 1871-ppm, 512-ppm, 432-ppm, 560-ppm, 400-ppm, and 16-ppm, respectively (see table).

4.2 Groundwater Characterization

Groundwater was encountered in BH #3 at 62' bgs with a chloride concentration of 2007-ppm.

The samples were properly packaged, preserved, and transported under Chain-of-Custody to Cardinal Laboratories of Hobbs, New Mexico for analysis. All samples were analyzed for Chlorides (EPA Method: 4500-Cl⁻B).

5.0 Abatement Plan

The purpose of the Stage 1 abatement plan is "to design and conduct a site investigation that will adequately define site conditions, and provide the data necessary to select and design an effective abatement option." Pursuant to OCD Rule 19.E.3, a State 1 abatement plan may include but not be limited to information as needed to select and

implement an abatement option. Accordingly, Apache will generate and include the following information and date in the report to be submitted following such site investigation as necessary to determine abatement options. Information previously generated and included with this report is expected to satisfy some to the investigation report requirements.

- a. Descriptions of the site, including a site map, and of site history including the mature of the release that caused the water impact, and a summary of previous investigations;
 - Information satisfying much of the requirement is submitted herein. It will be updated as necessary for submittal with the Stage 1 report.
- b. Additional site investigation to define (i) site geology and hydrogeology, the vertical and horizontal extent and magnitude of groundwater contamination, subsurface hydraulic conductivity, transmissivity, storativity, and rate and direction of contaminant migration, inventory of water wells inside and within one (1) mile from the perimeter of the three dimensional body where the standards set forth in [the rule] are exceeded, and location and number of such wells actually or potentially affected by the impact; and (ii) surfacewater hydrology, seasonal stream flow characteristics, groundwater/surfacewater relationships,...[etc.]

Additional investigation is necessary to fill gaps in data already collected at the site, including the drilling and installation of monitor wells, and measurement of aquifer properties. An inventory of water wells will be conducted within one mile of the perimeter of the site and wells that potentially could be affected by the contamination identified. Three temporary monitor wells will be installed and completed as permanent wells with a bentonite seal to within 2 ft. of the surface and a metal protective locking box cemented at the surface. Following evaluation of data collected from the initial monitor wells, additional monitoring wells will be drilled as deemed necessary.

To determine the hydraulic conductivity and transmissivity of the sediments, groundwater slug-tests will be conducted on the monitor wells and the draw down and recovery data analyzed with procedures commonly utilized for the purpose. Determination of storativity usually requires installation of closely spaced monitor wells so that one can serve as an observation well for the pumping well. At this location with a shallow water table, storativity can be estimated from technical publications and a separate monitor well solely for this purpose is not necessary.

No intermittent, ephemeral or permanent sources of surface water are present in the area of the impact, so no hydrological or biological studies of the impact of the release on surface water are necessary.

c. Monitoring program, including sampling stations and frequencies, for the duration of the abatement plan that may be modified, after approval by the Director, as additional sampling stations are created.

Following installation of the monitoring wells, they will be developed to remove any mud, silt and sand inadvertently introduced during the drilling process. The well locations and elevations will be located and surveyed by a registered professional surveyor. Water levels will be measured quarterly and wells will be sampled quarterly for CoC's following purging to ensure a fresh sample. In addition, the initial sampling will also include major cations and anions to establish a baseline condition for these constituents.

d. Quality assurance plan, consistent with the sampling and analytical techniques listed in [the Water Quality Control Commission regulations] for all work to be conducted pursuant to the abatement plan.

Samples will be collected and handled in accordance with appropriate protocols for collection, preservation and transport of samples including maintaining a chain-of-custody and record keeping. The analytical laboratory selected to perform the analyses will be monitored for compliance with the applicable QA/QC standards.

e. A schedule for all Stage 1 abatement plan activities, including the submission of summary quarterly progress reports, and the submission, for approval by the Director, of a detailed final site investigation report.

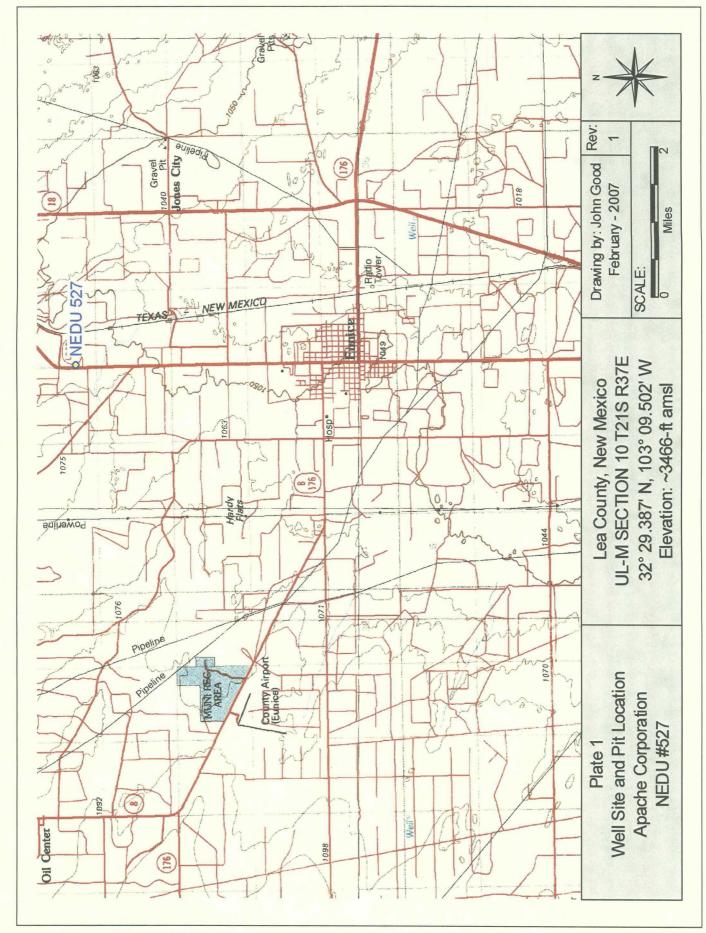
It is expected that all investigation work proposed within the Stage 1 abatement plan will be completed within three months of the date of approval. Quarterly progress reports will be submitted within 30 days following the end of the previous quarter. The report will include work performed and analytical results from testing of water quality in new and existing monitor wells. A final report will be prepared and submitted within 60 days of the completion of the work.

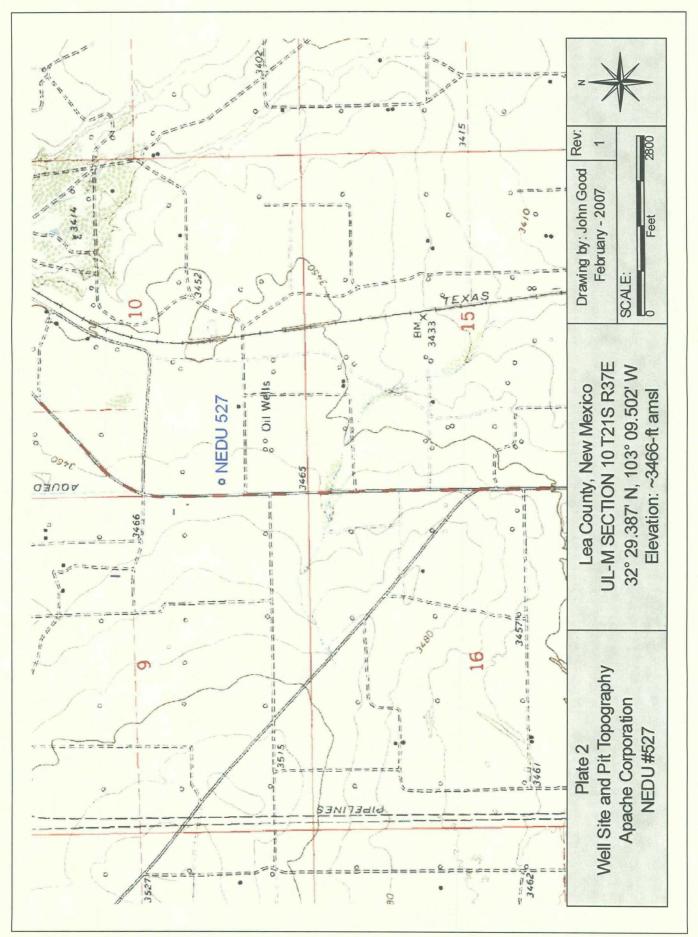
f. Any additional information that may be required to design and perform and adequate site investigation.

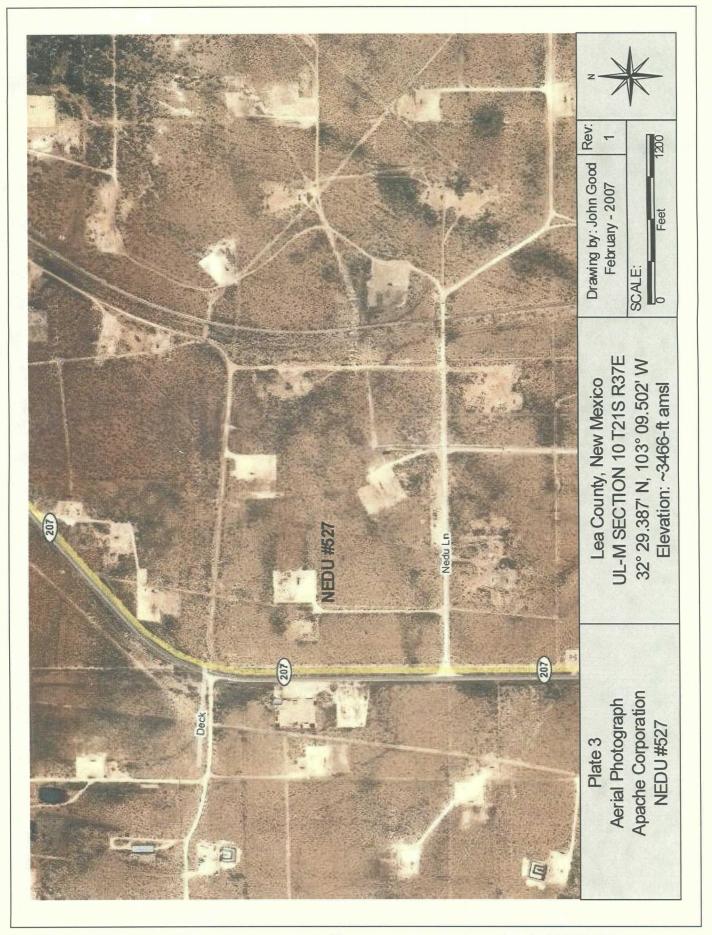
The information necessary to design and perform an adequate site investigation is included in the above paragraphs.

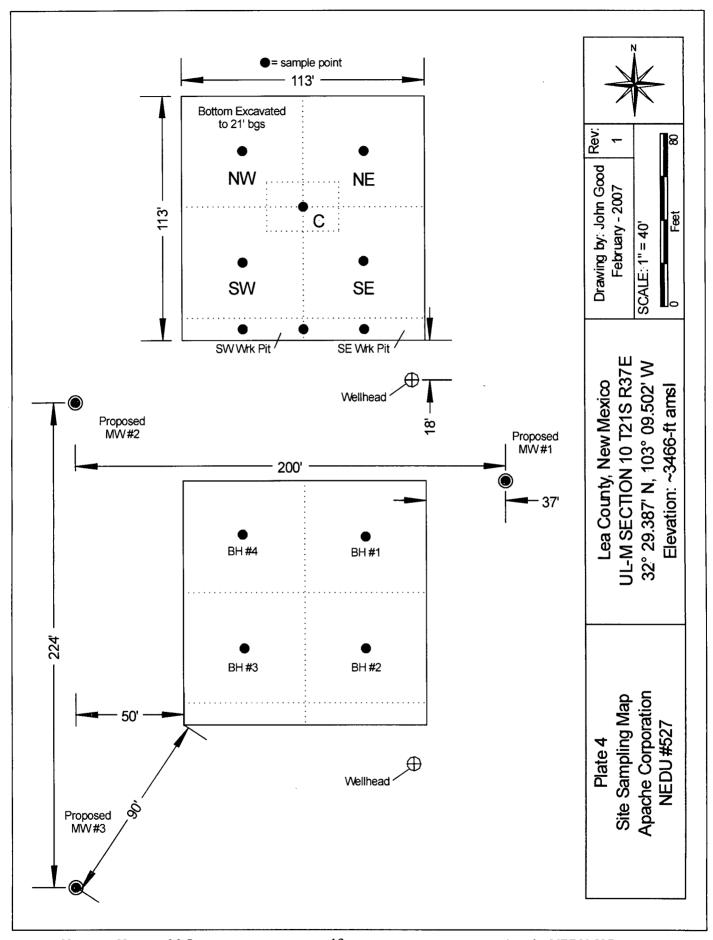
ATTACHMENTS

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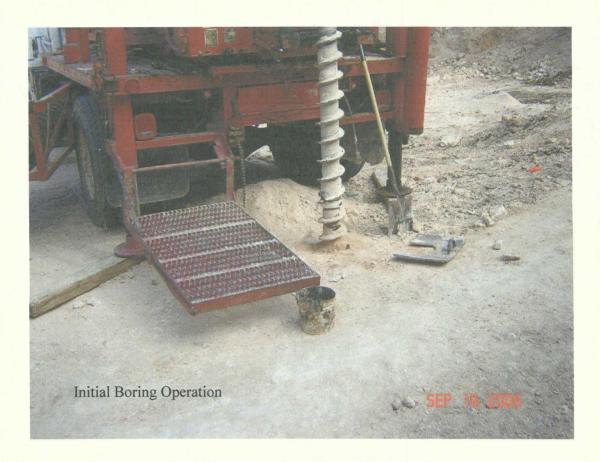


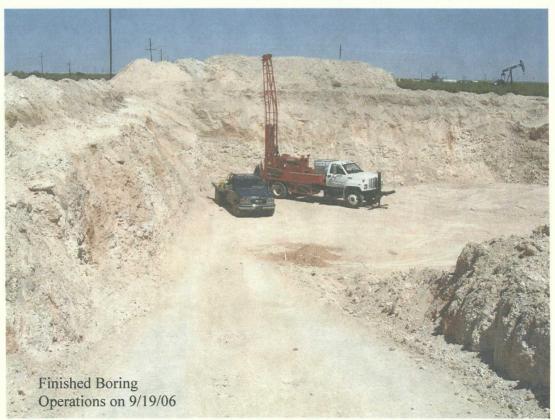


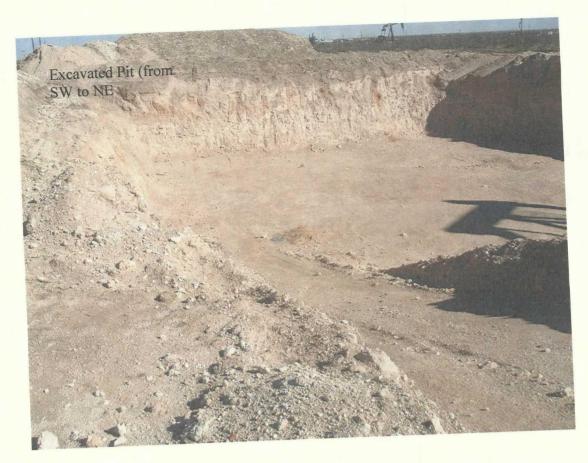
	SUMI	ARY TAE	BLE C
Date	Location	Depth	ppm
7/31/2006	NE	10' BGS	17275
9/6/2006	NE	19' BGS	288
7/31/2006	NW	12' BGS	16315
8/806	NW	16' BGS	8797
9/6/2006	NW	19' BGS	8557
7/31/2006	С	10' BGS	2255
7/31/2006	С	12' BGS	272
8/8/2006	С	16' BGS	6158
8/8/2006	С	17' BGS	112
7/31/2006	SW	12' BGS	26872
8/8/2006	SW	16' BGS	37988
8/8/2006	SW	17' BGS	10477
9/6/2006	SW	19' BGS	8717
7/31/2006	SE	10' BGS	12396
8/8/2006	SE	16' BGS	5806
9/6/2006	SE	19' BGS	1935
8/8/2006	C.WRK.PIT	14' BGS	176
8/8/2006	SW.WRK.PIT	14' BGS	9677
8/28/2006	SW.WRK.PIT	19' BGS	5118
9/6/2006	E.WRK.PIT	19' BGS	224

*	Saturated	zone -	ground	water	sample
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CH	LORIDE AN	IALYSES		
	Date	Location	Depth	ppm
	9/14/2006	BH #1	25' BGS	240
	9/14/2006	BH #1	30' BGS	112
	9/14/2006	BH #1	35' BGS	48
	9/14/2006	BH #2	25' BGS	4319
	9/14/2006	BH #2	30' BGS	1328
	9/14/2006	BH #2	35' BGS	128
	9/14/2006	BH #3	25' BGS	10157
	9/14/2006	BH #3	30' BGS	11436
	9/14/2006	BH #3	35' BGS	8237
]	9/14/2006	BH #3	40' BGS	3071
	9/14/2006	BH #3	45' BGS	2159
	9/14/2006	BH #3	50' BGS	1695
	9/19/2006	BH #3	57' BGS	1663
	9/19/2006	BH #3	60' BGS	656
	9/19/2006	BH #3	62' BGS	2007*
	9/19/2006	BH #4	25' BGS	1408
	9/19/2006	BH #4	30' BGS	1871
	9/19/2006	BH #4	35' BGS	512
	9/19/2006	BH #4	40' BGS	432
	9/19/2006	BH #4	45' BGS	560
_	9/19/2006	BH #4	50' BGS	400
	9/19/2006	BH #4	55' BGS	16









Cardinal Laboratories Analytical Reports

(Photocopies attached to printed reports)



ANALYTICAL RESULTS FOR HUNGRY HORSE, LLC ATTN: JERRY BRIAN P.O. BOX 1058 HOBBS, NM 88241 FAX TO: (505) 393-3386

Receiving Date: 09/20/06 Reporting Date: 09/21/06 Project Owner: APACHE Project Name: NEDU #527

Project Location: LEA COUNTY, NM

Analysis Date: 09/21/06 Sampling Date: 09/19/06 Sample Type: SOIL & WATER

Sample Condition: COOL & INTACT

Sample Received By: NF

Analyzed By: HM

		CI
LAB NO.	SAMPLE ID	(ppm)
H11550-1	BH#3-57' BGS	*1663
H11550-2	BH#3-60' BGS	*656
H11550-3	BH#3-62' BGS	2007
H11550-4	BH#4-25' BGS	*1408
H11550-5	BH#4-30' BGS	*1871
H11550-6	BH#4-35' BGS	*512
H11550-7	BH#4-40' BGS	*432
H11550-8	BH#4-45' BGS	*560
H11550-9	BH#4-50' BGS	*400
H11550-10	BH#4-55' BGS	*16
Quality Cont	rol	960
True Value (1000
% Recovery		96
<u> </u>	cent Difference	1.0

METHOD: Standard Methods 4500-CITB	- 1		7	
	1	METHOD: Standard Methods	4500-	CIB

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

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H11550

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Total Self.

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AD W. S. W. W.

ARDINAL LABORATORIES, INC. 2111 Beechwood, Abilene, TX 79603 101 East Marland, Hobbs, NM 88240 (915) 673-7001 Fax (915) 673-7020 (505) 393-2326 Fax (505) 393-2476

Company Name:	1 Hander Hand	57			ANALYSIS REQUEST
Project Manager:	PO		P.O. #:	33 33 33 33 33 33 33 33 33 33 33 33 33	
Address:	20. Ros 1058		Company:		
Clty:	State: Walzip:	14883 HD	Attn:		
Phone #:	370-6149 Fax#393-338	-3386	Address:		
Project #:	Project Owner:	Hoache	Cfty:		
Project Name:	WEDU # 527	9	State: Zip:		
Project Location:	m dra Cuta		Phone #:		
Sampler Name:	The state of the s		Fax #:		
FOR LAB USE ONLY		MATRIX	PRESERV, SAMPLING	Ę	
Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP. # CONTAINERS WASTEWATER SOIL CRUDE OIL	отнея: Асір/вьяе: Отнея: Отнея:	TIME	
111550-1	BH#3-57 BAS	×	90/12/06	a Am	
۲,	BH #3-60' BSS	X			
۲ ک	BH#3 - 62' B55	<u>></u>			
7	BH#4- 25735	X			
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C-	40, 11	*			
1	48,	×			
6.	50' ''		\rightarrow		
PLEASE NOTE: Liability or analyses. All claims including	PLEASE NOTE: Labelity and Damages. Cardend's labelity and client's exchance remody for any data arising whether based in contract or tort, shall be limbed to the amount paid by the client for the answers are not any other cause whetherewe about he deemed makes made in white and account of the contract	claim arising whether based in contract or t med waked infess made to willon and race	n contract or tort, shall be limited to the amount paid by the client for the	is a clear for the	Terms and Conditions: Interest will be charged on all accounts more than
service. In no event shall Ca	service. Into event shall Cardinal be labble for Indidental or consequents diamages, including without influence and the consequents of the conseq	hout Entlation, business Interruptions, loss o	of use, or loss of profits incurred by client, its	subsidiaries	and eliconta of collections, including attorney's fees.

empreor, recented and user or requested and any order cause whatboever shall be deemed waterd arises made in willing and received by Cardinal within 30 days after computed on the application is served. In no event shall cardinal be lable for incidental or consequental damages, including without inflation, business interruptions, loss of use, or loss of profits incurred by client, its substitutions affects or an arise of services incurred by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.

Add'I Phone #: Add'I Fax #: Phone Result: Fax Result: REMARKS: CHECKED BY: (Injitials) Sample Condition
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Free Free
No No Received By: (Lab St Time: Date Of Time: ~~~~ Sampler - UPS - Bus - Other: Delivered By: (Circle One) Relinquished By

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

217	AKDINAL LABOKA I OKIES, IIVC. 2111 Beechwood, Abilene, TX 79603 101 E (015) 673-7000 (505)	9, I/VC. 3 101 East Marland, Hobbs, NM 88240 1 (505) 393-2326 Eav (505) 393-2476	Hobbs, NM 88240		·	Page of	
Company Name:	Hungry Harres	~				ANALYSIS REQUEST	
Project Manager:			P.O. #:				
Address: 💫	0. Bex 105P		Company:				
E	State: NM	Zip: SBAY	Attn:				
θ#.	70-6149 Fax# 39	3-3386	Address:				
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ame:	NEDU HOST		State: Zip:				
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FOR LAB USE ONLY		MATRIX	PRESERV SAMPLING	NG			
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LEASE NOTE: Liability and	PLEASE NOTE: Liability and Damages. Cardinate liability and client's exclusive remedy for any datim athirty whether based in contract or tont, shet be limited to the amount paid by the direct for the plant for the contract of the contract	daim arbing whether based in contract or to ned waked unless made in witting and reco	ort, shed be limited to the amount paid by the shed by Cardinal within 30 days after comp	e dent for the letton of the spoilcable		Terms and Conditions: latered will be charged on all accounts more the sound of the price of 24% ser arrum from the price of date of 24% ser arrum from the price of 24% ser arrum from the 24% ser arru	than than
tervice. In no event shall Card	amples, require include uses on regression are my one current enterprise in the property of the property of the store that Cardial be labele for incidental or consequental demograe, including without laritation, business interruptions, loss of use, or loss of profits incurred by client, its substitutions, assistance or successors triping out of or resided to the performance of services hereunder by Cardinal, repardless of whether such claim is besed upon any of the above stated resource or otherwise.	hout limitation, business interruptions, loss o dinal, regardless of whether such daim is b	f use, or loss of profits incurred by client, it seed upon any of the above stated reasons	the subsidiaries, ne of otherwise,		and all costs of collections, including attorney's fees.	
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W. Carrier

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



ANALYTICAL RESULTS FOR **HUNGRY HORSE LLC** ATTN: JERRY BRIAN 4614 N. GRIMES HOBBS, NM 88240 FAX TO:

Receiving Date: 09/15/06 Reporting Date: 09/15/06

Project Owner: APACHE (APA-06-002)

Project Name: NEDU #527 Project Location: NOT GIVEN Analysis Date: 09/15/06 Sampling Date: 09/14/06 Sample Type: SOIL

Sample Condition: COOL & INTACT

Sample Received By: BC

Analyzed By: HM

		CI [—]
LAB NO.	SAMPLE ID	(mg/kg)
H11539-1	S091406-BH1-25	240
H11539-2	S091406-BH1-30	112
H11539-3	S091406-BH1-35	48
H11539-4	S091406-BH2-25	4319
H11539-5	S091406-BH2-30	1328
H11539-6	S091406-BH2-35	128
H11539-7	S091406-BH3-25	10157
H11539-8	S091406-BH3-30	11436
H11539-9	S091406-BH3-35	8237
H11539-10	S091406-BH3-40	3071
H11539-11	S091406-BH3-45	2159
H11539-12	S091406-BH3-50	1695
Quality Cont	rol	990
True Value (1000
% Recovery		99
	cent Difference	1.0

MICTHOD: Standard Mathada	AEOO CED
METHOD: Standard Methods	4500-Cl ⁻ B

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

ARDINAL LABORATORIES, INC.
2111 Beechwood, Abilene, TX 79603 101 East Marland, Hobbs, NM 88240 (915) 673-7001 Fax (915) 673-7020 (505) 393-2326 Fax (505) 393-2476

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/	-	P.O. #:	
		Company: Hunge, Ho	House
ity: Hosss State: N	M Zip: 88241	Attn:	
hone # 505-390-6149 Fax#		Address:	
roject#: A & A ~ 0 6 ~ 0 0 Z Project Owner:	WINDER PRACHE	City:	
roject Name: NFDX #517		State: Zip:	
roject Location:		Phone #:	
iampler Name: JOHN GOOD		Fax #:	
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	RS		
Lab I.D. Sample I.D.	(G)RAB OR (# CONTAINE GROUNDWA WASTEWAT SOIL CRUDE OIL SLUDGE	OTHER: ACID/BASE: ICE / COOL OTHER: DATE	TIME
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-9 -BH3 - 35	У - - -	4	02:4
-10 BH3 - 40	K 1	+ +	
# F	y for any claim anaing whether based in contract o	or tort, shall be limited to the anount paid by the di- received by Cardinal within 30 days after completion	
swice. In no event shall Cardinal be label for Incidental or consequental damages, Including without larkation, business Interruptions, loss of upon of loss of profits incurred by client, its subsidiasies, "lifetes or successors arising out of or related to the performance of services has under by Cardinal, regardless of whether such cleam is based upon any of the above stated reasons or otherwise.	auding without first ation, business interruptions, los ler by Cardinal, regardless of whether such claim is	se of use, or loss of profits incurred by client, its sul is based upon any of the above stated reasons or o	
amplen Relinguished/ Date:	Received By:	P	Result: □Yes □No
1-15 Time:	1.00	20 7	REMARKS:
Date:	Received By: (Lab Staff)		
Time:	Mar estate	ナイチへ	
Delivered By: (Circle One)	Sample Condition	Sition CHECKED BY:	
Sampler - UPS - Bus - Other:	₹ <u>2</u> 71271 ह		<i>/</i> .

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

ARDINAL LABORATORIES, INC.

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Amore Horse LLC	(915) 673-7001 Fax (915) 673-7020 (505) 393-2326 Fax (505) 393-2476	2111 Beechwood, Abilene, TX 79603 101 East Marland, Hobbs, NM 88240
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	93-2326 Fax	st Marland, H
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	76	8240
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		REMARKS:			Time:		
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Yerns and Conditions: Interest will be charged on all accounts more then		wount paid by the offert for the	ort, shad be imited to the ar	saing whether besed in contract or	exclusive remedy for any claim as	PLEASE NOTE: Liability and Darmages. Candrat's liability and client's exclusive remedy for any claim arising whether besed in contract or tart, shall be limited to the amount ped by the claim to the	PLEASE NOTE: Liability at
		9-14 5:20		<u>-</u> え	BH3-50 X	+ -6	-12
		4.14 5:00	9	~ X	BH3-47 X	1- 204130S	H11539-11
		DATE TIME	OTHER: ACID/BASE: ICE / COOL OTHER:	# CONTAINERS GROUNDWATER WASTEWATER SOIL CRUDE OIL SLUDGE	(G)RAB OR (C)OMP	Sample I.D.	Lab I.D.
		SAMPLING	PRESERV.	MATRIX) .		FOR LAB USE ONLY
			Fax#:		000	HOTZ P	Sampler Name:
			Phone #:				Project Location:
		Zip:	State: 2		12	NEON #527	Project Name:
			City:	でもつまる	1	APA - 06-00 2 Project Owner:	Project #: 🕂 🤄
			Address:		Fax #	505.390-6149 Fax#	Phone #: 50
			Attn:	11-683	State: N w Zip:	240	city: Hob
			Company:				Address:
			P.O. #:		Brian	" Jagry c	Project Manager:
ANALYSIS REQUEST		10	77.0	<u>C</u>	boss LL	· Hungry b	Company Name:

Sample Condition Cool Intact IXYes IXYes

CHECKED BY: (initials)

Sampler - UPS - Bus - Other: Delivered By: (Circle One) Relinquished By:

Time:

Received By: (Lab Staff)

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



ANALYTICAL RESULTS FOR HUNGRY HORSE LLC ATTN: JERRY BRIAN P.O. BOX 1058 HOBBS, NM 88241 FAX TO: (505) 393-3386

Receiving Date: 09/06/06 Reporting Date: 09/07/06 Project Owner: APACHE

Project Name: APACHE NEDU #527
Project Location: APACHE NEDU # 527

Analysis Date: 09/07/06 Sampling Date: 09/06/06 Sample Type: SOIL

Sample Condition: COOL & INTACT

Sample Received By: BC

Analyzed By: HM

CIT LAB NO. SAMPLE ID (mg/kg)

	T
H11511-1 E - WORKING PIT - 19' BGS	224
H11511-2 NE - 19' BGS	288
H11511-3 SE - 19' BGS	1935
Quality Control	980
True Value QC	1000
% Recovery	98
Relative Percent Difference	1.0

METHOD: Standard Methods 4500-Cl B

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

Chemist

Date

H11511



ARDINAL LABORATORIES, INC. 2111 Beechwood, Abliene, TX 79603 101 East Marland, Hobbs, NM 88240

	(325) 673-7001 Fax (325) 673-7020	0 (505) 393-2326 Fax (505) 393-2476	393-2476			Pageof_	
Company Name:	Hunary Horse	1	BILL TO		ANALYSIS	REQUEST	Ц
Project Manager:	beach last an		P.O. #:				_
Address:	41/10		Company:				
city: Hob	bbs State: 10m	ZID: 88240	Attn:				
#	Fax*:		Address:				
Project #:	Project Owner: (A	mens	City:				
Project Name:	aniche Winners	(0)	State: Zip:				
Project Location:			7 14.				
Sampler Name:			Fax #:				
FOR LABUSE ONLY		MATRIX	PRESERV. SAMPL	LING			
Lab I.D.	Sample I.D.		ASE:	Л	<u></u>		
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onice. In no event shell Caroli	enke, in no werd while Cardinal be lable for holderful or consequental denages, holding without limitation, business interruptions, loss of use, or toss of profits hoursed by client, its subsideries, interess which out of or related to the performance of services hereurafe by Cardinal, reperforms of whether such daims is besed upon any of the bowe batted frescome or otherwise.	is interruptions, loss of use, or loss of profits incur- tement such claim is based upon any of the above a	ed by client, its subsideries, tated reasons or otherwise,		and all costs of collections, including attorney's bees.	torney's kes.	
Sampler Relinquished	ingd: Date: 9-1-0/	Received By:		Phone Result: Fax Result:	O Yes O No		
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[†] Cardinal cannot accept verbal changes. Please fax written changes to (325) 673-7020.



ANALYTICAL RESULTS FOR HUNGRY HORSE LLC ATTN: JERRY BRIAN P.O. BOX 1058 HOBBS, NM 88241 FAX TO: (505) 393-3386

Receiving Date: 09/05/06
Reporting Date: 09/06/06
Project Owner: APACHE
Project Name: NEDU #527
Project Location: LEA COUNTY

Analysis Date: 09/06/06 Sampling Date: 08/28/06 Sample Type: SOIL

Sample Condition: COOL & INTACT

Sample Received By: NF

Analyzed By: HM

CI

LAB NO.	SAMPLE ID	(mg/kg)
H11500-1	NW - 19' BGS	8557
H11500-2	SW - 19' BGS	8717
H11500-3	SW - WRK PIT - 19' BGS	5118
Quality Con	atrol	990
True Value		1000
% Recovery		99
Relative Pe	rcent Difference	1.0

METHOD: Standard Methods 4500-CIB

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

Ch/emist

Date Date

Date

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ARDINAL LABORATORIES, INC. 2111 Beechwood, Abilene, TX 79603 101 East Marland, Hobbs, NM 88240

	(325) 673-7001 Fax (326) 673-7020	20 (505) 393-2326 Fax (505) 393-2476	5) 393-2476			Pageof_	
Company Name:	Hungers Horse		BILL TO		ANALYSIS I	REQUEST	
Project Manager:	1 P 1 R 1 P 2		P.O. #:				
Address: XOB	30x 1058		Company:				* * .
city: Hobs	State: NM	077688 :diz	Attn:				. **
Phone #: 390	>-6149 Fax#: 393	-3386	Address:				
Project#:	Project Owner:	Apache	City:				
Project Name:	MEDY # G27	1	State: Zlp:				
Project Location:	Les County		Phone #:				
Sampler Name:	173		Fax#:				
FOR LABUSE ONLY		MATRIX	PRESERV. SAMPL	PLING			
· •		ERS ATER		· -			
Lab I.D.	Sample I.D.	(G)RAB OR # CONTAINI GROUNDW. WASTEWAT SOIL OIL SLUDGE	OTHER: ACID/BASE: ICE / COOL OTHER: DATE	TIME			
J 1 - 00511H	UW 119 BDS	び	30/86/8				
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-3 S	W-W-K Pit - 19 305	4	30/Ke/8	X			
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PLEASE NOTE: Liability and Dam nalyses. All daims including those N	<u>PILYSE NOTE: Liabidy and Damaget. Cardinal's labidity and client's exclusive remedy for any claim arising whether based in contract or lot, thall be limited to the amount paid by the client his the manyase. All claims bakeding those for neighnose and any other cuses whateverse that be desired which divide which of the properties of the applicable marks — In on word and Cardinal to bable for holdered or consequented demonstrat, bakedin which or hashes it required, bose of use, or lose of profits hazard by defend in a</u>	whether based in contract or lort, shall be lim aide in writing and received by Cardinel which 30 see infernations, buse of use, or lose of profits inc	ked to the amount paid by the client for the days after completon of the applicable treed by client, its addidates.	· u -	Yerms and Conditions: Interest will be charged on all accounts more than 30 days past due at the rate of 24% per annum from the original date of invoke and all costs of collections, including attorney's ites.	harged on all accounts more the annum from the original date or princy's fees.	i Invoice,
official or a successors arising out of	Milde or successing which god of or related to the performance of services hereunder by Cardinal, pyerdaes of whether such defin is based upon any of the above stated researce or otherwise	whether such claim is based upon any of the above	e stated ressors or otherwise,				
Sampler Relinquished:	,	Received By:		Phone Result: Fax Result: REMARKS:	☐ Yes ☐ No		
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T Cardinal cannot accept verbal changes. Please fax written changes to (325) 673-7020.





ANALYTICAL RESULTS FOR HUNGRY HORSE ATTN: JERRY BRIAN P.O. BOX 1058 HOBBS, NM 88241 FAX TO: (505) 393-3386

Receiving Date: 08/17/06
Reporting Date: 08/18/06
Project Owner: APACHE
Project Name: NEDU #527

Project Location: LEA COUNTY, NM

Analysis Date: 08/18/06

Sampling Date: 08/08/06 & 08/16/06

Sample Type: SOIL

Sample Condition: COOL & INTACT

Sample Received By: BC

Analyzed By: AB

		CI
LAB NO.	SAMPLE ID	(mg/kg)
H11451-1	C - 16' BGS	6158
H11451-2	SE - 16' BGS	5806
H11451-3	NW - 16' BGS	8797
H11451-4	SW - 16' BGS	37988
H11451-5	C WRK PIT - 14' BGS	176
H11451-6	SW WRK PIT - 17' BGS	9677
H11451-7	C - 17' BGS	112
H11451-8	SW - 17' BGS	10477
Quality Co	ntrol	980
True Value		1000
% Recover		98
	ercent Difference	2.0

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

METHOD: Standard Methods

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Date

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ARDINAL LABORATORIES, INC.
2111 Beechwood, Abilene, TX 79603 101 East Marland, Hobbs, NM 88240

	(915) 673-7001 Fax (915) 673-7020 (505) 393	(505) 393-2326 Fax	-2326 Fax (505) 393-2476	476		Lage of	i
Company Name:	Hunger Horse		8	BILL TO		ANALYSIS REQUEST	
Project Manager:	1 88		P.O. #:				
Address: X	10. Box 1058		Company:				
City:	bos State: NM Zip:	145 BB 341	Attn:				
Phone #:	396-6149 Fax# 393-338	-3386	Address:				
Project #:	Project Owner:	Hoache	Cify:				
Project Name:	NEDY #527		State:	Zip:			·
Project Location:			Phone #:				
Sampler Name:	r oft		Fax#:				
FOR LAB USE ONLY		MATRIX	PRESERV.	SAMPLING			
Lab I.D.	Sample I.D.	# CONTAINERS BROUNDWATER SOIL CRUDE OIL CRUDE	OTHER: ACID/BASE: ICE / COOL OTHER:	DAȚE TIME	<u>ر</u>		
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7	SE-11, BBS						
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7,5	SW-16-365						
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-6 -7	SW WORP: 1-17 355			,			
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,	SW- U-BBS	<i>></i>		4	7		
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PLEASE NOTE: Liability or anothers. All chains including	PEEMS NOTE: Labely and bancage. Confederable bishely end delark analysis ender the ray data include based in control or (or table bishely and bancage) and and delark analysis ender the ray data include based in control or (or table bished) to be annual bed to be an analysis and an analysis of the second of th	stfartg whether besed in contract or to what unless made is suffer and reco	ort, shall be limited to the	s amount paid by the client for the	1	Terms and Conditions: Interest will be charged on all accounts more than 30 down and due at the rate of 20th an exercin from the administrator of includes	I accounts more than the addition date of involve
service. In no event shall Ce	strayees, he waste a now and to programme and any outer cause with above that the bestings wanted blasse made service. In no event shall cardinal be table for incidental or consequental damages, including without limitation, business	med Ultasa more as wising and several medians.	fuse, or loss of profits is	o in writing and recoved by Learana water ou days affer continuous of the appare interruptions, loss of use, or loss of profits incurred by client, its subsidiaries,		So carys peek cure at the face of 44% per at fulfill from the and all costs of collections, knduding attorney's fees.	THE ORIGINAL CARE OF BINGHAD,
affiliates or successors arisk	affiliates or successors arising out of or related to the performance of services hereunder by Candinal, regardless of whet	recorders of whether such claim is b	sed upon any of the ab	ther such claim is based upon any of the above stated reasons or officerwise.			

☐ No Add'I Phone# Phone Result: Fax Result: REMARKS: Receiyed By: (Lab Staff Date SON OG I'me', 30RM Date: Time: Delivered Bv: (Circle One) Sampler UPS - Bus - Other: Relinquished By:

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

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11 Beechwood, Abilene, TX 79603 101 East Marland, Hobbs, NM 88240 (915) 673-7001 Fax (915) 673-7020 (505) 393-2326 Fax (505) 393-2476

	(915) 673-7001	(915) 673-7001 Fax (915) 673-7020	(505) 393-2326 Fax (505) 393-2476	05) 393-2476			Page	of	-
Company Name:	Mission Hose	6		,		ANALYSIS RE	REQUEST		لــا
roject Manager:	10,70		BILLTO	PO #:					
Address: P.S.	Bex 1058		Company:						
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ė#:	5-6147		Address:						
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oroject#:	Project Owner:	wner: Apache	State:	Zip:					
کر :broject Name	EDU #527		Phone #:						
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2	5-10' R		7-	7-3:06					
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4	C-12' BGS		8	8-7-8-2:65pm					<u> </u>
~~	SW-12'B6S		5.	5-7.86 2.05pm					
16	124-121865		8-	5-7-06 2.07pm	-				
	-								
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sivice. In no event shall Cardina Mates or successors arising ou	the liable for incidental or consequent of a related to the performance of s	tal damages, including without limitation ervices hereunder by Cardnal, regards	ävide. In to även shal Cardinal ba lable for incidental or consequental damages, including without limitetion, business interruptions, loss of use, or loss of profits incurred by clent, its subsidantes, fillates or successors and ing or elated to the performance of services hereunder by Cardinal, insplintess of whether, such claim is based upon any of the above stated reasons or otherwise.	of profits incurred by client, its y of the above stated reasons o	subsidaries, r otherwise,	and all costs of collection	and all costs of collections, including attorney's fees.		Ì
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† Cardinal cannot accept verbal changes. Please fax written changes to 915-673-7020.

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