AE Order Number Banner

Report Description

This report shows an AE Order Number in Barcode format for purposes of scanning. The Barcode format is Code 39.

App Number: pGRL0907549264

1RP - 2121

JOHN H HENDRIX CORP

3/16/2009

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

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FEB 10 2009
HOBBSOCD

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 October 10, 2003

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	John H. Hendrix Corporation	Contact	Carolyn Doran Haynes
Address	110 N. Marienfeld, Midland, TX 79702	Telephone No.	575-390-9689
Facility Name	Cordelia Hardy #7	Facility Type	Production Oil Well

Surface Owner	Deck Estate	Mineral Owner	Lease No.

LOCATION OF RELEASE

API # 30-025-28899-00-00

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
F	29	T21S	R37E					Lea

Latitude_____ **Longitude**_____

NATURE OF RELEASE

Type of Release	Produced Oil	Volume of Release 4-6 bbls	Volume Recovered 0 bbls
Source of Release	Flow line pinhole.	Date and Hour of Occurrence	Date and Hour of Discovery 12/5/08
Was Immediate Notice Given? ☐ Yes ☐ No ☒ Not Required		If YES, To Whom?	
By Whom?		Date and Hour	
Was a Watercourse Reached? ☐ Yes ☒ No		If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*

WATER @ 85'

Describe Cause of Problem and Remedial Action Taken.*
Flow line leak due to freezing approximately 300' west of wellhead. Flowline has been replaced from the wellhead to the battery.

Describe Area Affected and Cleanup Action Taken.*
Area affected was approximately 160' x 6'. Oily soils were scraped-up and hot spots were excavated to 4' BGS where a 2-4' thick clay base was encountered. There was evidence of a previous release and there are 5 other flowlines/pipelines in the immediate area. The surface was restored with clean sandy material purchased from the landowner. The area will be seeded. Oily dirt was taken to Sundance Disposal. Ground water is 90-100' BGS at this location (area monitor wells water levels). Hydrocarbons left in place will naturally attenuate. Groundwater will be protected from any Chlorides left in place by the clay base and revegetation of the surface. This is the final report and lab results are attached. Hydrocarbons at the 4' bottom were < 100 mg/kg; BTEX < 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: CP Haynes	OIL CONSERVATION DIVISION	
Printed Name: Carolyn Doran Haynes	Approved by District Supervisor: Geoffrey Leking	
Title:	Approval Date: 03/16/09	Expiration Date: —
E-mail Address: cdoranhaynes@jhhc.org	Conditions of Approval:	Attached ☐ IRP-09-3-2121
Date: 2-3-09 Phone: 575-390-9689		

* Attach Additional Sheets If Necessary

FGIRL 0907548261

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API # 30-025-28899-00-00

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Source of Release	Flow line pinhole.	Date and Hour of Occurrence	Date and Hour of Discovery 12/5/08
Was Immediate Notice Given? ☐ Yes ☐ No ☒ Not Required		If YES, To Whom?	
By Whom?		Date and Hour	
Was a Watercourse Reached? ☐ Yes ☒ No		If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*

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Signature: C P Haynes

Printed Name: Carolyn Doran Haynes

Title:

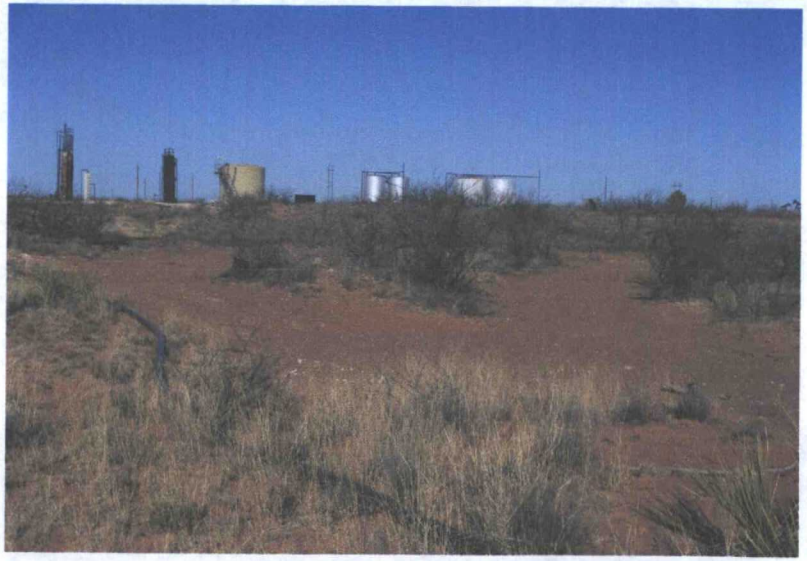
E-mail Address: cdoranhaynes@jhhc.org

Date: 2-3-09 Phone: 575-390-9689

* Attach Additional Sheets If Necessary

fGW-[illegible]

Cordelia Hardy #7 Release Area after escavation



CH #7 Area after placement of new top soils

CH #7 Area Multiple flowlines in area, also 2 buried pipelines

Certificate of Analysis Summary 321229

John H. Hendrix Corp., Eunice, NM

Project Name: Cordelia Hardy # 7

Project Id:

Contact: Carolyn Haynes

Project Location:

Date Received in Lab: Wed Dec-24-08 09:00 am

Report Date: 30-DEC-08

Project Manager: Brent Barron, II

Analysis Requested									
	Lab Id:	321229-001		321229-002					
	Field Id:	5pt Bottom Comp		2' Below Btm					
	Depth:								
	Matrix:	SOIL		SOIL					
	Sampled:	Dec-23-08 00:00		Dec-23-08 00:00					
Anions by EPA 300	*Extracted:*								
	Analyzed:	Dec-29-08 08:21		Dec-29-08 08:21					
	Units/RL:	mg/kg	RL	mg/kg	RL				
Chloride		3690	51.6	2100	26.0				
BTEX by EPA 8021B	*Extracted:*	Dec-24-08 09:45		Dec-24-08 09:45					
	Analyzed:	Dec-24-08 12:43		Dec-24-08 13:07					
	Units/RL:	mg/kg	RL	mg/kg	RL				
Benzene		ND	0.0516	ND	0.0520				
Toluene		0.2136	0.1032	ND	0.1039				
Ethylbenzene		1.594	0.0516	0.7723	0.0520				
m,p-Xylenes		3.084	0.1032	1.622	0.1039				
o-Xylene		1.584	0.0516	0.8705	0.0520				
Total Xylenes		4.668	0.1032	2.4925	0.1039				
Total BTEX		6.4756	0.0516	3.2648	0.0520				
Percent Moisture	*Extracted:*								
	Analyzed:	Dec-24-08 11:00		Dec-24-08 11:00					
	Units/RL:	%	RL	%	RL				
Percent Moisture		3.10	1.00	3.79	1.00				
TPH By SW8015 Mod	*Extracted:*	Dec-24-08 10:00		Dec-24-08 10:00					
	Analyzed:	Dec-24-08 16:25		Dec-24-08 16:51					
	Units/RL:	mg/kg	RL	mg/kg	RL				
C6-C12 Gasoline Range Hydrocarbons		125	15.5	116	15.6				
C12-C28 Diesel Range Hydrocarbons		795	15.5	866	15.6				
C28-C35 Oil Range Hydrocarbons		177	15.5	152	15.6				
Total TPH		1097	15.5	1134	15.6				

Brent Barron
Odessa Laboratory Director

Certificate of Analysis Summary 322033

John H. Hendrix Corp., Eunice, NM

Project Name: Cordelia Hardy # 7

Project Id:

Contact: Carolyn Haynes

Project Location:

Date Received in Lab: Fri Jan-09-09 08:48 am

Report Date: 16-JAN-09

Project Manager: Brent Barron, II

Analysis Requested											
	Lab Id:	322033-001		322033-002		322033-003					
	Field Id:	Cordelia Hardy #7 4' BGS		Cordelia Hardy #7 6' BGS		Cordelia Hardy #7 8' BGS					
	Depth:	4- ft		6- ft		8- ft					
	Matrix:	SOIL		SOIL		SOIL					
	Sampled:	Jan-06-09 00:00		Jan-06-09 00:00		Jan-06-09 00:00					
Anions by EPA 300	***Extracted:***										
	Analyzed:	Jan-09-09 16:16		Jan-09-09 16:16		Jan-09-09 16:16					
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL				
Chloride		3040	27.9	321	12.6	79.9	5.41				
Percent Moisture	***Extracted:***										
	Analyzed:	Jan-09-09 13:10		Jan-09-09 13:10		Jan-09-09 13:10					
	Units/RL:	%	RL	%	RL	%	RL				
Percent Moisture		10.48	1.00	20.94	1.00	7.50	1.00				

Brent Barron
Odessa Laboratory Director

Certificate of Analysis Summary 322033

John H. Hendrix Corp., Eunice, NM

Project Name: Cordelia Hardy # 7

Project Id:

Contact: Carolyn Haynes

Project Location:

Date Received in Lab: Fri Jan-09-09 08:48 am

Report Date: 16-JAN-09

Project Manager: Brent Barron, II

Analysis Requested							
	Lab Id:	322033-001	322033-002	322033-003			
	Field Id:	Cordelia Hardy #7 4' BGS	Cordelia Hardy #7 6' BGS	Cordelia Hardy #7 8' BGS			
	Depth:		6- ft	8- ft			
	Matrix:	SOIL	SOIL	SOIL			
	Sampled:	Jan-06-09 00:00	Jan-06-09 00:00	Jan-06-09 00:00			
TPH By SW8015 Mod	*Extracted:*	Jan-09-09 14:30					
	Analyzed:	Jan-09-09 20:34					
	Units/RL:	mg/kg RL					
C6-C12 Gasoline Range Hydrocarbons		ND 16.8					
C12-C28 Diesel Range Hydrocarbons		16.9 16.8					
C28-C35 Oil Range Hydrocarbons		ND 16.8					
Total TPH		16.9 15.0					

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Brent Barron
Odessa Laboratory Director

R. T. HICKS CONSULTANTS, LTD.

901 Rio Grande Blvd NW ▲ Suite F-142 ▲ Albuquerque, NM 87104 ▲ 505.266.5004 ▲ Fax: 505.266-0745

March 30, 2009

Geoffrey Leking
NMOCD
1625 N. French Drive
Hobbs, New Mexico 88240

RE: Cordelia Hardy #7
Google Earth Coordinates: 32 27 8.56, -103 11 19.05
NAD 83 32.45256, -103.18855 (on http://webmap.rthicksconsult.com/LeaAmigo.html)

Dear Mr. Leking,

Under contract to John Hendrix Corporation, R.T. Hicks Consultants, Ltd. submits this amendment to the C-141 previously submitted to your office on February 3, 2009.

Results of Initial Investigation

As described in the C-141,

- The area affected was approximately 160 feet x 6 feet (see Figure 1)
- A release of about 6 barrels of produced water caused the impact
- At 3-4 feet below surface excavations encountered a 2-4 foot thick clay
- The visual observations of the excavations permit a conclusion that one or more of the nearby non-Hendrix flowlines operated by others (see photos with C-141 submission) released small volumes of produced water in the past
- The maximum depth of chloride originating from flowline leakage in the area is less than 8 feet below ground surface (See Table 1)
- Residual hydrocarbons are present in very low concentrations (DRO = 16.9 mg/kg at 4 feet below grade)

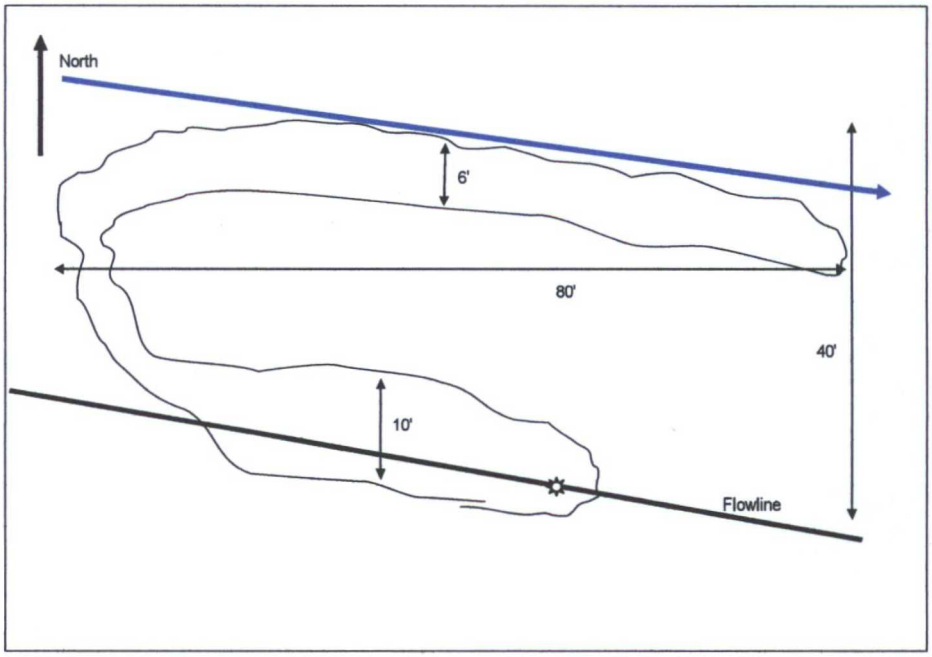


Figure 1: Sketch Map of Cordelia Hardy #7 Release

Table 1: Copy of Chloride

Results from Laboratory

322033-001		322033-002		322033-003	
Cordelia Hardy #7 4' BGS		Cordelia Hardy #7 6' BGS		Cordelia Hardy #7 8' BGS	
4- ft		6- ft		8- ft	
SOIL		SOIL		SOIL	
Jan-06-09 00:00		Jan-06-09 00:00		Jan-06-09 00:00	
Jan-09-09 16:16		Jan-09-09 16:16		Jan-09-09 16:16	
mg/kg	RL	mg/kg	RL	mg/kg	RL
3040	27.9	321	12.6	79.9	5.41
Jan-09-09 13:10		Jan-09-09 13:10		Jan-09-09 13:10	
%	RL	%	RL	%	RL
10.48	1.00	20.94	1.00	7.50	1.00

Corrective Actions

As described in the C-141

- Oily soils associated with the Hendrix release were scraped-up and hot spots were excavated to 4' BGS
- Oily dirt and attendant chloride soil was taken to Sundance Disposal
- The surface was restored with clean sandy soil purchased from the landowner.
- The area will be seeded.
- Flowline has been replaced from the wellhead to the battery.
- The continuous clay layer at 4-feet below ground surface and the absence of chloride below this clay demonstrate that vertical chloride migration is limited and excavation through this natural barrier would not be prudent.

Regulatory Considerations

NMOCD Rule 19.15.29.11 states:

> The responsible person shall complete division-approved corrective action for releases that endanger public health or the environment. The responsible person shall address releases in accordance with a remediation plan submitted to and approved by the division or with an abatement plan submitted in accordance with 19.15.30 NMAC.

Rule 19.15.30 provides some guidance regarding acceptable standards for residual regulated constituents (e.g. chloride) in the vadose zone. Specifically Rule 19.15.30.9 states:

> The responsible person shall abate the vadose zone so that water contaminants in the vadose zone will not with reasonable probability contaminate ground water or surface water, in excess of the standards in Subsections B and C of 19.15.30.9 NMAC, through leaching, percolation or other transport mechanisms, or as the water table elevation fluctuates.

With respect to potential impacts to ground water quality, the Rules allow for regulated constituents to remain in the vadose zone provided that the responsible person meets the standard of care established in Rule 19.15.30.9 (above).

With respect to other regulated issues codified in Rule 19.15.29.11, allowing a small mass of chloride and/or hydrocarbons meets the criteria as outlined below:

Surface Water	Residual chloride is 4-feet below ground surface within clay unit, migration to surface water will not occur with reasonable probability
Public Health	Because ground water will not be impaired by this release (see below), public health, as defined by the Rules, cannot be impacted
Property	The landowner was informed of the spill and provided clean fill for the remedy, the value of property is not impacted by the release.
Environment	The ground surface will support vegetation due to the importation of clean fill and the natural habitat will return after successful re-vegetation.

Amigo Simulation of Cordelia Hardy #7

API's Amigo tool simulated the potential impact to ground water of the post-remedy condition at the Cordelia Hardy #7 site. The input data for Amigo are

- A background chloride cementation in underlying ground water of about 100 mg/L, based upon PTTC data
- An aquifer porosity of 0.3, based upon professional judgment
- Depth to the water table is 90 feet based upon USGS water level database
- The aquifer mixing zone (thickness) is probably less than 20 feet, based upon extrapolation of data from OSE Technical Report 99-1, therefore a mixing zone of 10 feet is conservative of ground water quality (see also http://pubs.usgs.gov/sim/3044/)
- The slope of the water table is about 0.002 to the east-southeast based upon 1996 water level data from the USGS (see also http://pubs.usgs.gov/sim/3044/)
- The hydraulic conductivity of the uppermost Ogallala in this area is about 60 ft/day based upon extrapolation of the data in the OSE Technical Report 99-1 (this map is displayed at www.webmap.rthicksconsult.com/LeaAmigo.html).
- An initial chloride load of 3.37 kg/m^2 to account for the removal of the upper 3 feet of soil impacted by the recent release and the presence of residual chloride in the clay from historic releases (see Appendix A)
- Data suggest a chloride concentration of the produced water of about 76,000 mg/L
- The length of the release parallel to ground water flow is 80 feet (Figure 1)
- Medium sand-soil from 0-3 feet below grade with a chloride concentration of 100 mg/kg (assumed maximum chloride content of clean fill provided by the landowner as described in the C-141) comprises the surface layer
- The soil profile below the surface layer is a mixture of 1 part medium sand with 1 part sandy clay and 1 part caliche (see Appendix B, well log of nearby monitoring

well showing the vadose zone is dominated by fine sand and cemented sandstone/caliche)

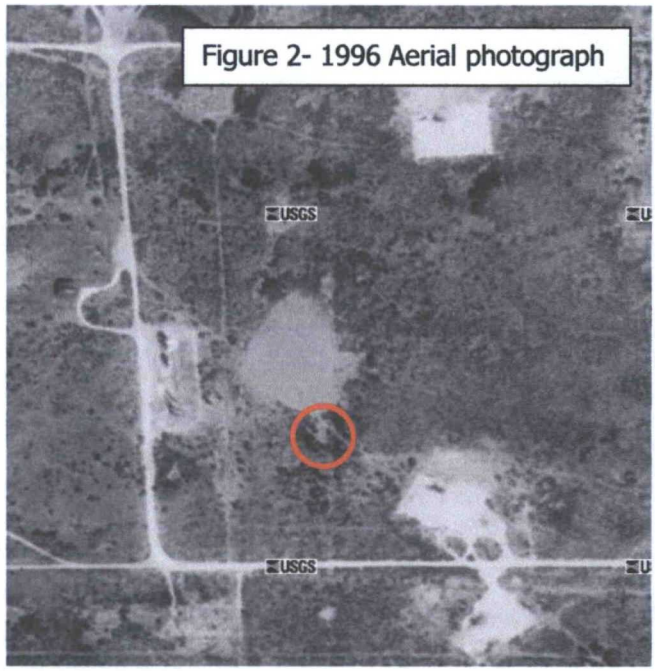
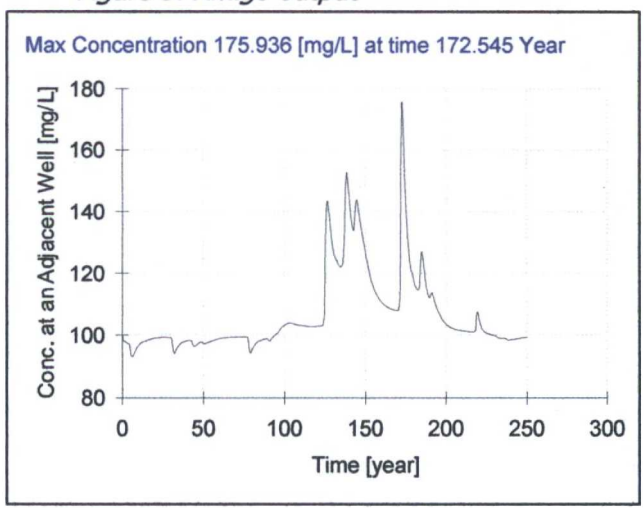


Figure 2- 1996 Aerial photograph

The Mass Load calculation of the mass of residual chloride is 3.37 kg/m^2, as described in Appendix A, is calculated from the soil sample data. Using the data for the recent spill of John H. Hendrix Corporation (6 barrel release of 76,000 mg/L chloride in the fluid), Mass Load calculates a chloride load of 0.83 kg/m^2 (see Appendix A). This calculation suggests that the residual subsurface chloride did not originate from this release. Examination of the 1996 aerial photograph for this location (see http://webmap.rthicksconsult.com/LeaAmigo.html) shows a small patch of ground void of vegetation (in the red circle of Figure 2), which supports a conclusion that a historic brine release occurred in this area. The barren area north of the red circle is additional evidence of historic releases in the area that are not associated with John H. Hendrix Corporation.

The Amigo simulation using the input data outlined above (Figure 3) shows that "water contaminants in the vadose zone will not with reasonable probability contaminate ground water or surface water, in excess of the standards in Subsections B and C of 19.15.30.9 NMAC, through leaching, percolation or other transport mechanisms, or as the water table elevation fluctuates." Appendix C is the Amigo report.

Figure 3: Amigo output



Request for Closure of the Regulatory File

NMOCD Rules and site-specific evaluation of data demonstrate that the residual chloride mass caused by historic releases of produced water will not with reasonable probability cause ground water to exceed the standards. The small mass of residual hydrocarbons will degrade long before the 100-year period required for constituents in the release to enter ground water. Neither public health, property nor the environment is impacted by the releases at this site. The corrective action implemented by John H. Hendrix Corporation removed all of the produced water released by the 2009 event

described herein. On behalf of John H. Hendrix Corporation, this report requests closure of the regulatory file associated with this site. We would be pleased to discuss our findings and the Amigo evaluation.

Sincerely,
R.T. Hicks Consultants, Ltd.

Randall Hicks

Copy: John H. Hendrix Corporation

Appendix A

Input Table for Data Collected at Time of Release			
	Area of Effected Area		
User Input	Enter either square feet or square meters **(not both)**	**Square Feet**	**Square Meters**
		960.00	
	Volume of Release		
User Input	Enter either gallons or barrels **(not both)**	**Gallons**	**Barrels (42 gal.)**
			6.00
	Resulting Depth of Release (for User's comparison with other field data if available)		
	meters	0.01	
	centimeters.	1.07	
	inches	0.42	
User Input	Enter Concentration of Spill	**mg/L**	
		78000.00	
Output for AMIGO	**Chloride Load in kg/m^2**	0.83427	

User Input (not both)	Depth to W	Meters		Feet	90		**2743.20**
User Input (optional)	User provided moist bulk density (rho_m)					kg/M^3	**1550 kg/m^3 - Moist bulk density used in calculations**
User Inputs (optional)	Dry Bulk Density (rho, 1415 is default value)				1415	kg/m^3	
	Vol. Moist. Content (Theta_v, 0.135 is defaul				0.135		
	Calculated moist bulk density (rho_m) =				1550	kg/m^3	

		Proportional Area	Chl. Load of each	Equal Area	
User Input (Optional) Pro. Area Weights must sum to between 0.975 and 1.025	Boring 1		3.71	1.00	
	Boring 2		0.00	0.00	
	Boring 3		0.00	0.00	
	Boring 4		0.00	0.00	
	Boring 5		0.00	0.00	
	Boring 6		0.00	0.00	
	Boring 7		0.00	0.00	
	Boring 8		0.00	0.00	
	Boring 9		0.00	0.00	
	Boring 10		0.00	0.00	
	Sum of weights	0		1	
Output for	**Boreholes**			**3.71**	**kg/m^2**

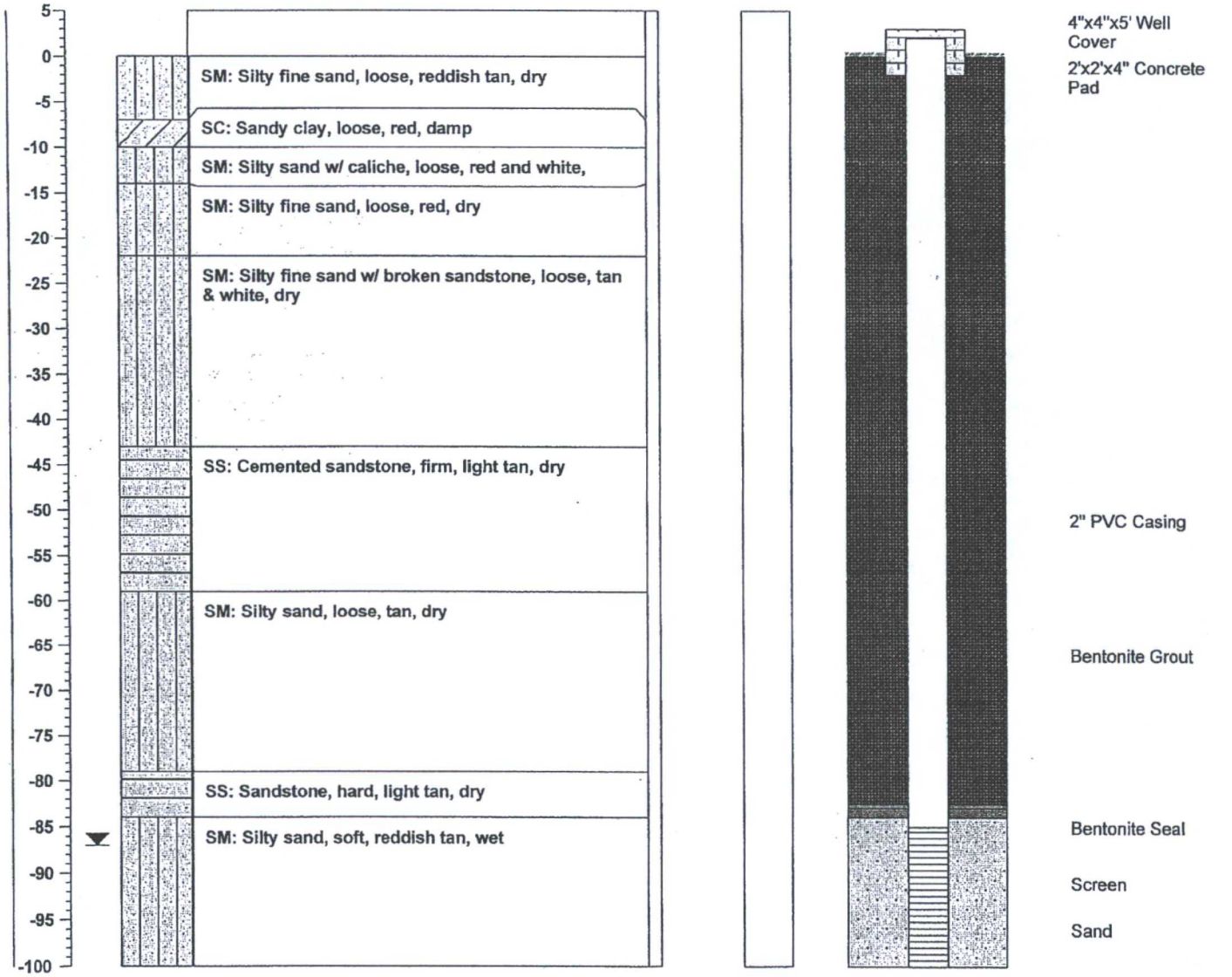
	Boring 1	Boring ID:										
		If a Composite Sample from a Depth Interval						Grab Samples		Z	Chl. Conc.	
	Sample Number (increasing depth)	Feet			Meters			z	z			
		Top of Sample	Bottom of Sample	Ave. Depth	Top of Sample	Bottom of Sample	Ave. Depth	Feet	Meters	Assigned depth in cm	mg/kg	
	1	0	3	1.5			0			45.72	100	
	2			0			0	4		121.92	3040	
	3			0			0	6		182.88	321	
	4			0			0	8		243.84	79.9	
	5			0			0			0		
	6			0			0			0		
User Inputs	7			0			0			0		
	8			0			0			0		
	9			0			0			0		
For Depths, use feet or meters **(not both)**	10			0			0			0		
	11			0			0			0		
	12			0			0			0		
	13			0			0			0		
	14			0			0			0		
Up to 10 Borings are allowed.	15			0			0			0		
	16			0			0			0		
	17			0			0			0		
	18			0			0			0		
	19			0			0			0		
	20			0			0			0		
	21			0			0			0		
	22			0			0			0		
	23			0			0			0		
	24			0			0			0		
	25			0			0			0		
	26			0			0			0		
	27			0			0			0		
	28			0			0			0		
	29			0			0			0		
	30			0			0			0		
									Chloride load for Boring 1 in kg/m^2 =			3.71

Appendix B

Borehole/Well Log

Facility Name:	Jct N-29 BD; Rice Operating Co.	UTM/Geographic/State Plane:	UTM
Address:	3 miles west of Eunice	X:	670447.6
City, State:	Eunice, NM	Y:	3591382.9
County:	Lea	Z:	3464 ft msl
Driller:	Atkins Engineering Associates Inc.	Datum:	NAD 83
Auger Type:	4.25 Hollow Stem	Borehole ID:	B-29 BD
Auger Dia.:	8"	Well ID:	Jct N-29 BD-shallow
Drill Date:	08/11/2005	Total Depth:	100

DEPTH	W.L.	Lithology	Soil Description	Sample/ Blow Counts	PID ppm	Well Construction	Well Description



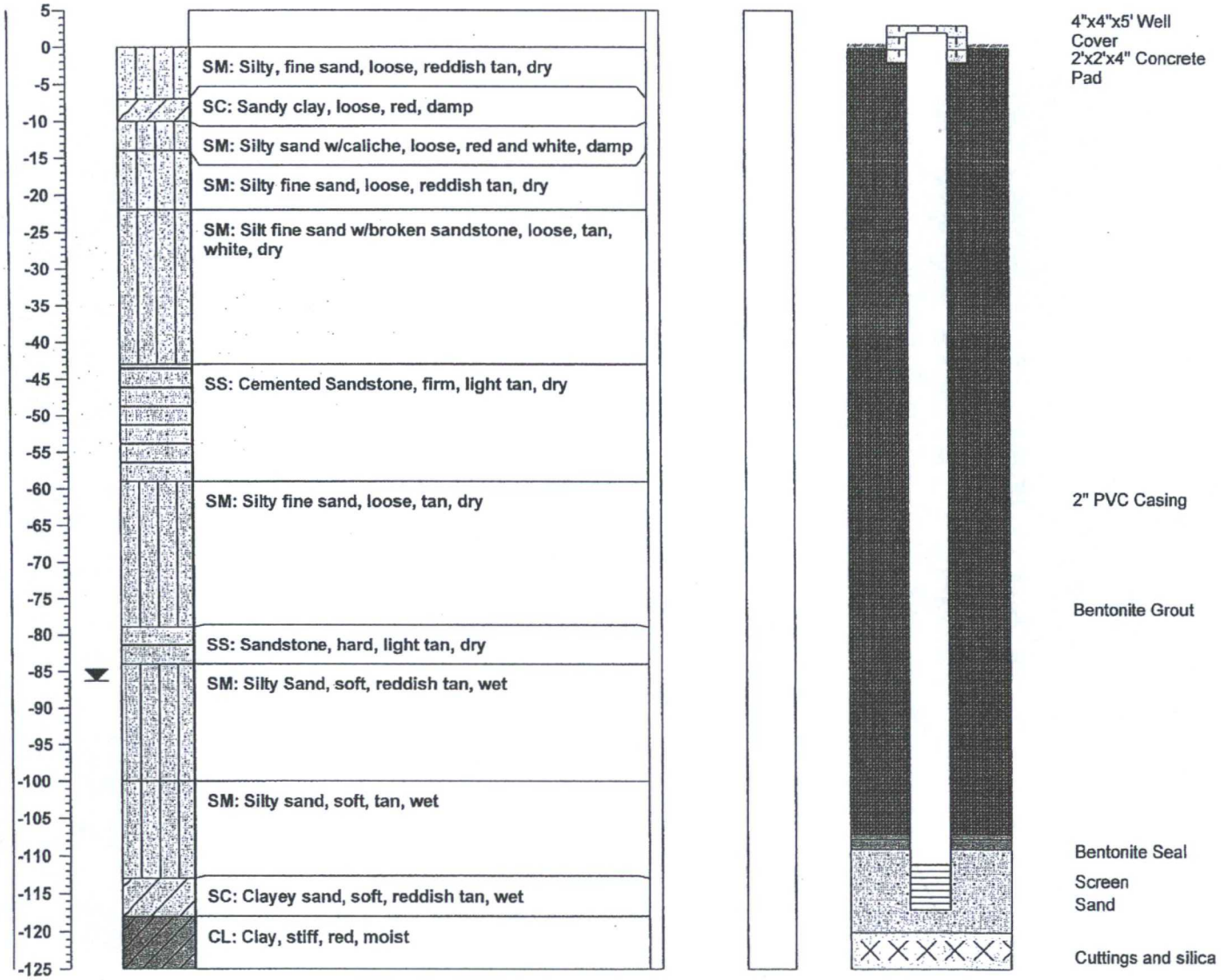
R.T. Hicks Consultants, Ltd

901 Rio Grande Blvd NW Suite F-142
Albuquerque, NM 87104
Ph: 505-266-5004 Fax: 505-266-0745

Borehole/Well Log

Facility Name:	Jct N-29 BD; Rice Operating Co.	UTM/Geographic/State Plane:	UTM
Address:	3 miles west of Eunice	X:	670453.6
City, State:	Eunice, NM	Y:	3591382.9
County:	Lea	Z:	3464 ft msl
Driller:	Atkins Engineering Associates Inc.	Datum:	NAD 83
Auger Type:	4.25 Hollow Stem	Borehole ID:	B-29 BD
Auger Dia.:	8"	Well ID:	Jct N-29 BD-deep
Drill Date:	07/20/05	Total Depth:	125

DEPTH	W.L.	Lithology	Soil Description	Sample/ Blow Counts	PID ppm	Well Construction	Well Description



R.T. Hicks Consultants, Ltd

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Albuquerque, NM 87104
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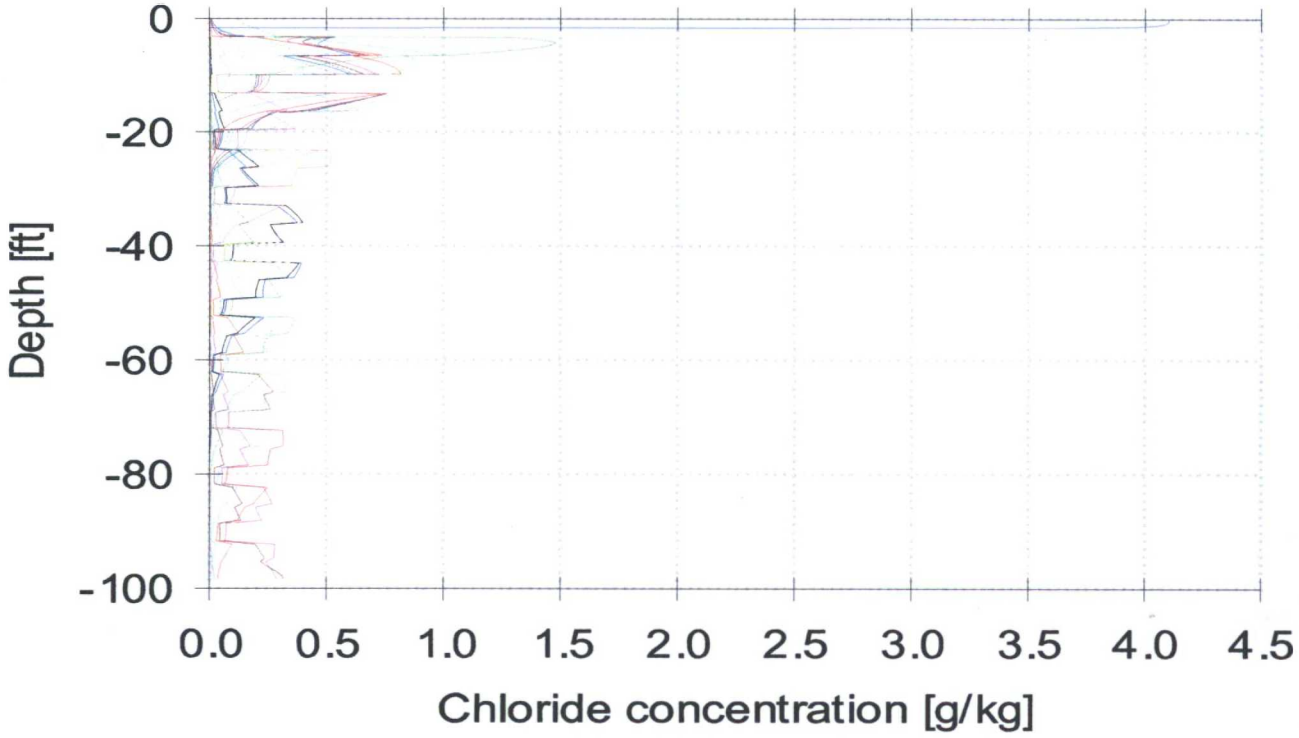
Appendix C

Project: AppendCcordeliaHardy
Path: E:\cordelia\AppendCcordeliaHardy.ami
Date: 3/28/2009
Units: English (inches)
Climate: Arid Hot (NM/W.Texas, Hobbs)
Plant Uptake Trigger: 1% Input Concentration

Groundwater Characteristics
Background Cl Concentration in Aquifer: 100 [mg/L]
Aquifer porosity: 0.3 [-]
Groundwater Table Depth: 90 [ft]
Aquifer Thickness: 10 [ft]
Slope of Water Table: 0.002 [-]
Hydraulic Conductivity: 60 [ft/d]
Groundwater Flux: 1.2 [ft2/d]

Source Characteristics
Chloride Load:: 3.71 [kg/m2]
Max. length of the spill in direction of GW flow:: 80 [ft]

Soil Profiles
Surface Layer: Medium Sand
Soil Profile: P7 - Sandy Clay (1) + Caliche (1) + Medium Sand (1)



Max Concentration 175.936 [mg/L] at time 172.545 Year