1R - 465

REPORTS

DATE:

9/28/2005

NEW CASE GW @ ce

COPY

Larson & Associates, Inc.
Environmental Consultants

September 28, 2005

Via e-mail: paul.sheeley@state.nm.us

Mr. Paul R. Sheeley
Environmental Engineering Specialist
State of New Mexico
Energy, Mineral and Natural Resources Department
Oil Conservation Division
1625 N. French Drive
Hobbs, New Mexico 88240

Re: Closure Report for Unlined Pit Excavation and Results of Groundwater Sample Analysis, John H. Hendrix Corporation, Will Cary Lease, Unit Letter F (SE/4, NW/4), Section 22, Township 22 South, Range 37 East, Lea County, New Mexico

Dear Mr. Sheeley:

This letter is submitted to the New Mexico Oil Conservation Division ("OCD") on behalf of John H. Hendrix Corporation ("JHHC") by Larson and Associates, Inc. ("LA"), its agent, and details the closure of an unlined pit excavation ("Site"), as well as, laboratory analysis of a groundwater sample collected from a monitoring well installed near the excavation. The unlined pit was located about 300 feet east of the Will Cary #5 well in unit letter F ("SE/4, NW/4"), Section 22, Township 22 South, Range 37 East, Lea County, New Mexico. A GPS coordinate for the Site is N. 32° 22.809' and W. 103° 09.063". Figure 1 presents a location and topographic map.

Background

On July 8, 2004, JHHC received notification from the OCD to empty and remediate the pit according to its rules and guidelines. On January 20 – 21, 2005, an investigation was performed following a work plan approved by OCD (*"Revised Unlined Surface Impoundment Investigation Work Plan, John H. Hendrix Corp., Will Cary Lease, Unit Letter F (SE/4, NW/4), Section 22, Township 22 South, Range 37 East, Lea County, New Mexico, January 7, 2005")* that revealed vadose-zone impacts to about 28 feet below ground surface ("bgs'). These findings were presented in a report to the OCD on February 21, 2005 (*"Investigation Report and Remediation Plan for Unlined Surface Impoundment, John H. Hendrix Corp., Will Cary Lease, Unit Letter F (SE/4, NW/4), Section 22, Township 22 South, Range 37 East, Lea County, New Mexico"*), and included a remedial action plan to excavate soil until the OCD recommended remediation action levels ("RRAL") for benzene, total BTEX (sum of benzene, toluene, ethyl benzene and xylene) and total petroleum hydrocarbons ("TPH") was achieved.

507 North Marienfeld, Suite 202 ◆ Midland, Texas 79701 ◆ Ph. (432) 687-0901 ◆ Fax (432) 687-0456

On April 19 – 22 and July 21, 2005, approximately 2,500 cubic yards of soil was excavated from the pit and transported to the JHHC landfarm (NM-02-0021) located northwest of Jal, New Mexico. Final soil samples collected from the bottom and sides of the excavation revealed no benzene, total BTEX or TPH above the RRAL of 10 milligrams per kilogram ("mg/kg") for benzene, 50 mg/kg (BTEX) and 1,000 mg/kg (TPH). Chloride ranged from 93.5 mg/kg in the bottom sample to 2,500 mg/kg in a sample from the west side at about 20 feet bgs.

On August 4, 2005, the OCD requested JHHC to submit a plan to install a clay barrier in the excavation, a monitoring well down gradient (southeast) of the excavation and analyze a groundwater sample for BTEX, anions (alkalinity, sulfate, chloride), ions (calcium, magnesium, potassium, sodium) and metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver). The plan was submitted to the OCD on August 9, 2005.

Excavation Closure

On August 11, 2005, the excavation was filled with clean soil to about 6 feet bgs. Clay was placed over the clean soil from about 4 to 6 feet bgs, slightly crowned and compacted using a vibrating roller. Pettigrew and Associates, Inc., measured the in-situ density of the clay at 4 locations (SG-1 through SG-4) using a portable instrument, and concluded that the clay had been compacted to at least 95% standard proctor. Clean soil was placed over the clay and slightly crowned above ground surface. The Site will be seeded to range grass. Attachment A presents the density test report.

Monitoring Well and Groundwater Samples

On September 13, 2005, Scarborough Drilling, Inc., located in Lameas, Texas, drilled monitoring well TMW-1 to approximately 90 feet bgs. The well was drilled about 20 feet southeast (down-gradient) of the excavation using air and water rotary techniques. Clay commonly referred as "redbed" was observed at about 86 feet bgs. The well was constructed using 2-inch diameter schedule 40 PVC threaded casing, and screen. The screen was placed from about 68.81 to 89.50 feet bgs, and surrounded with size 10 to 20 graded silica sand. Bentonite chips were placed from ground surface to about 56 feet bgs. The static depth-to-groundwater was measured at approximately 68.87 feet bgs. Water was bailed from the well to remove fine-grained sediment. Figure 2 presents a Site drawing showing the approximate location of the well. Table 1 presents a summary of the well construction details. Appendix B presents a geologic log and well diagram.

20+ screen

On September 20, 2005, approximately 3 casing-volumes of groundwater was removed from the well using a dedicated bailer before a groundwater sample was collected, labeled, chilled in an ice chest, delivered under chain-of-custody control to Environmental Lab of Texas, Inc. ("ELTI"). The laboratory analyzed the sample for BTEX, anions (alkalinity, sulfate, chloride), ions (calcium, magnesium, potassium, sodium) and metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium,

silver). The metal sample was filtered using 0.45-micron disposable filters prior to preservation. Table 2, Table 3, and Table 4 present summaries of the BTEX, metals general chemistry (anion and ion) results, respectively. Appendix C presents the analytical report.

No BTEX was present in the sample. Arsenic, barium and selenium were 0.0162 milligrams per liter ("mg/L)", 0.371 mg/L and 0.0061 mg/L, respectively, and were below the New Mexico Water Quality Control Commission ("WQCC") human health standards. Chloride, sulfate and total dissolved solids ("TDS") were 9,550 mg/L, 1,200 mg/L and 19,300 mg/L, respectively, and exceeded the WQCC domestic water quality standards.

Proposed Action

JHHC proposes to install a monitoring well northwest (up gradient) of the former pit to evaluate background conditions for chloride, sulfate and TDS in groundwater. The well will be constructed in the manner previously described, and a groundwater sample will be collected and analyzed for chloride, sulfate and TDS. JHHC will notify the OCD at least 72-hours prior to drilling the well and submit a report within 45 days after receipt of the laboratory report.

Your approval of the proposed action is requested. Please contact Mr. Marvin Burrows with JHHC at (505) 390-9689 or myself at (432) 687-0901 if you have questions. We may be reached by email at **Mburrows@valornet.com** or **Mark@LAEnvironmental.com**.

Sincerely,

Larson and Associates, Inc.

Mark J. Larson, P.G., C.P.G., C.G.W.P.
Senior Hydrogeologist/President

Encl.

RON WESTBROOK, VP
110 N MARIENFELD
STE 400
MIDLAND, TX
79701

- OK
- AP
- 15' SCREEN

cc: Mr. Wayne Price – OCD Santa Fe
Mr. Marvin Burrows – JHHC Eunice
Mr. Ron Westbrook – JHHC Midland

TABLES

507 North Marienfeld, Suite 202 ◆ Midland, Texas 79701 ◆ Ph. (432) 687-0901 ◆ Fax (432) 687-0456

Table 1
Summary of Monitoring Well Drilling and Completion Details
John H. Hendrix Corporation, Will Cary #5 Emergency Pit
Unit Letter F (SE/4, NW/4), Section 22, Township 22 South, Range 37 East
Lea County, New Mexico

Well Number	Date Drilled	Depth Drilled (Feet BGS)	Depth Completed (Feet BGS)	Well Diameter (Inches)	Casing Stickup (Feet)	Screen Interval (Feet BGS)	Water Level 09/21/05 (Feet BGS)
TMW-1	09/13/05	90.14	88.89	2	3.25	68.81 - 89.59	68.87

Notes:
1. BGS: Depth in feet below ground surface
2. AMSL: Elevation in feet above mean sea level

Well constructed with 2-inch Schedule 40 threaded PVC casing and 0.010-inch factory-slotted screen.

Table 2
Summary of BTEX Analysis of Groundwater Samples from Monitoring Well
John H. Hendrix Corporation, Will Cary #5 Emergency Pit
Unit Letter F (SE/4, NW/4), Section 22, Township 22 South, Range 37 East
Lea County, New Mexico

Well Number	Sample Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Total Xylene (mg/L)	BTEX (mg/L)
NMWQCC Standard:		**0.01**	**0.75**	**0.75**	**0.62**	
TMW-1	09/20/05	<0.001	<0.001	<0.001	<0.001	<0.005

Notes:
1. mg/L: Milligrams per liter
2. <: Less than method detection limit

Analysis performed by Environmental Lab of Texas, inc., Odessa, Texas, using method SW-846-8021B.

Table 3
Summary of General Chemistry Analysis of Groundwater Samples from Monitoring Well
John H. Hendrix Corporation, Will Cary #5 Emergency Pit
Unit Letter F, Section 22, Township 22 South, Range 37 East
Lea County, New Mexico

Well Number	Sample Date	Calcium (mg/L)	Potassium (mg/L)	Magnesium (mg/L)	Sodium (mg/L)	Total Alkalinity (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	TDS (mg/L)
NMWQCC Standard:		--	--	--	--	--	**250**	**600**	**1,000**
TMW-1	09/20/05	870	102	519	4,300	233	9,550	1,200	19,300

Notes: All analysis performed by Environmental Lab of Texas, Inc., Odessa, Texas.

1. mg/L: Milligrams per liter
2. --: No standard

Table 4
Summary of Disspolved Metals Analysis of Groundwater Samples from Monitoring Well
John H. Hendrix Corporation, Will Cary #5 Emergency Pit
Unit Letter F (SE/4, NW/4), Section 22, Township 22 South, Range 37 East
Lea County, New Mexico

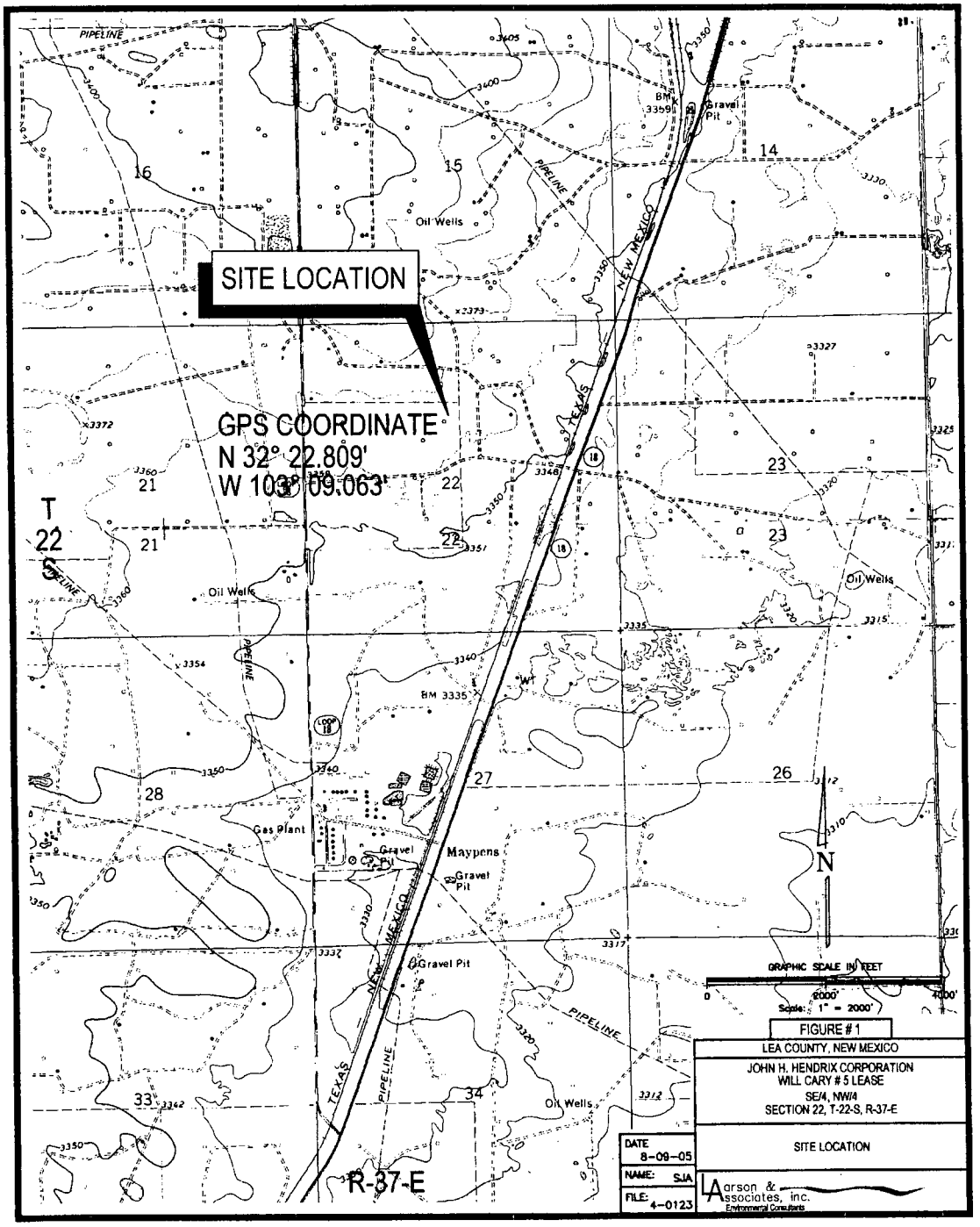
Well	Sample Date	Arsenic (mg/L)	Barium (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Lead (mg/L)	Mercury (mg/L)	Silver (mg/L)	Selenium (mg/L)
NMWQCC Standard:		**0.1**	**1.0**	**0.01**	**0.05**	**0.05**	**0.002**	**0.05**	**0.05**
TMW-1	09/20/05	0.0162	0.371	<0.001	<0.005	<0.011	<0.0005	<0.005	0.0061

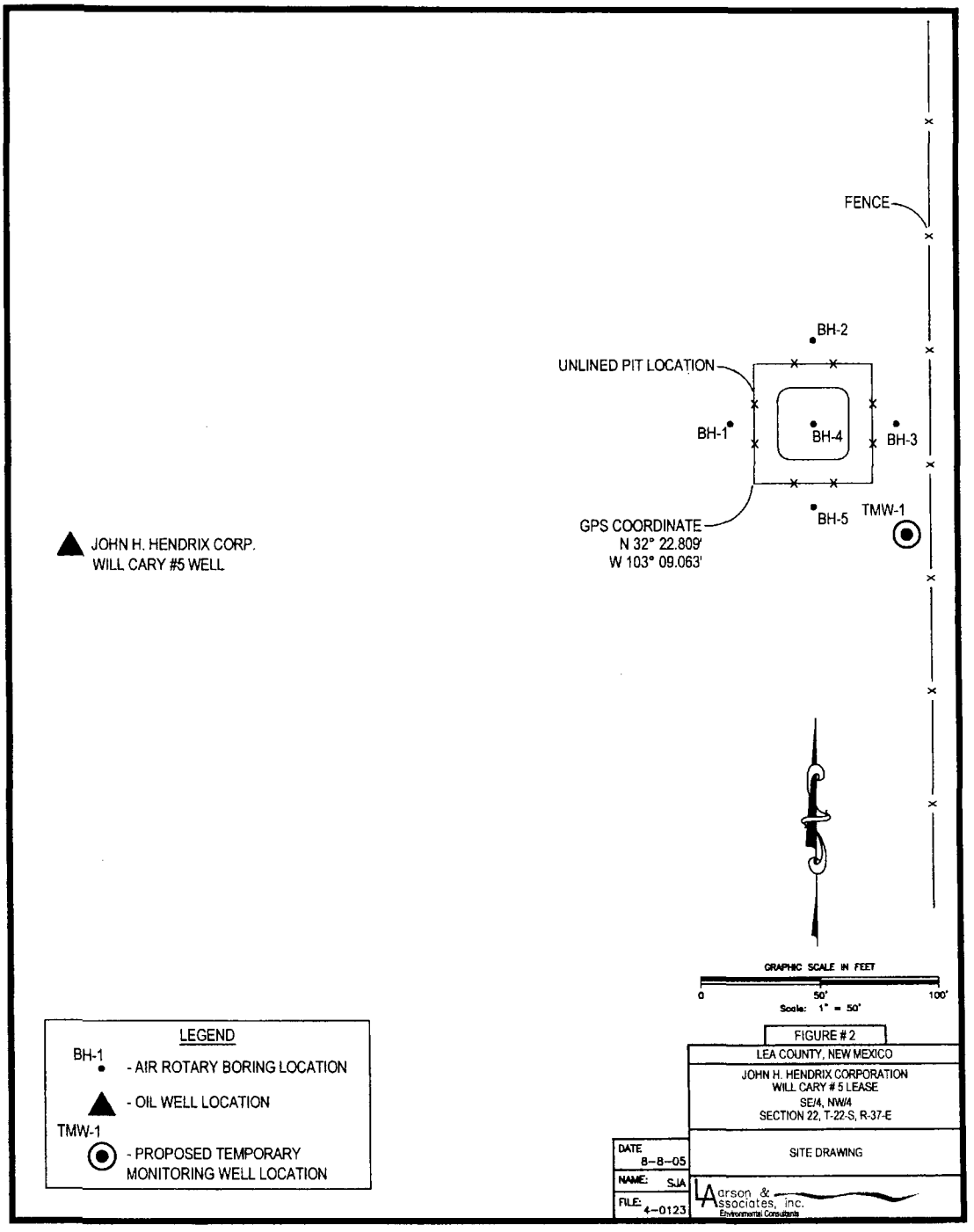
Notes: All analysis performed by Environmental Lab of Texas, Inc., Odessa, Texas.

1. mg/L: Milligrams per liter
2. <: Less than method detection limit

FIGURES

507 North Marienfeld, Suite 202 ◆ Midland, Texas 79701 ◆ Ph. (432) 687-0901 ◆ Fax (432) 687-0456


SITE LOCATION
GPS COORDINATE
N 32° 22.809'
W 103° 09.063'
T 22 S
R-37-E
Oil Wells
Gravel Pit
Maypens
Gas Plant
BM 3359
BM 3335
PIPELINE
TEXAS
NEW MEXICO
GRAPHIC SCALE IN FEET
Scale: 1" = 2000'
FIGURE # 1
LEA COUNTY, NEW MEXICO
JOHN H. HENDRIX CORPORATION
WILL CARY # 5 LEASE
SE/4, NW/4
SECTION 22, T-22-S, R-37-E
SITE LOCATION
DATE 8-09-05
NAME: SJA
FILE: 4-0123
Larson & Associates, inc.
Environmental Consultants


FENCE
BH-2
UNLINED PIT LOCATION
BH-1
BH-4
BH-3
BH-5
TMW-1
GPS COORDINATE
N 32° 22.809'
W 103° 09.063'
JOHN H. HENDRIX CORP.
WILL CARY #5 WELL
GRAPHIC SCALE IN FEET
0
50'
100'
Scale: 1" = 50'
LEGEND
BH-1 - AIR ROTARY BORING LOCATION
- OIL WELL LOCATION
TMW-1 - PROPOSED TEMPORARY MONITORING WELL LOCATION
FIGURE # 2
LEA COUNTY, NEW MEXICO
JOHN H. HENDRIX CORPORATION
WILL CARY # 5 LEASE
SE/4, NW/4
SECTION 22, T-22-S, R-37-E
SITE DRAWING
DATE: 8-8-05
NAME: SJA
FILE: 4-0123
Larson & Associates, inc.
Environmental Consultants

APPENDIX A

Density Test Report

507 North Marienfeld, Suite 202 ◆ Midland, Texas 79701 ◆ Ph. (432) 687-0901 ◆ Fax (432) 687-0456

LABORATORY TEST REPORT

PETTIGREW & ASSOCIATES, P.A.
1110 N. GRIMES
HOBBS, NM 88240
(505) 393-9827

AASHTO R18
DEBRA P. HICKS, P.E./L.S.I.
WILLIAM M. HICKS. III, P.E./P.S.

To: Larson & Associates
Attn: Mark Larson
507 N. Marienseld
Suite 202
Midland, TX 79701

Material: Red Clay

Test Method: ASTM: D 2922

Project: Will Cary #5

Date of Test: August 11, 2005

Depth: Finished Subgrade

Test No.	Location	Dry Density % Maximum	% Moisture	Depth
SG-1	Pit - 15' W. & 30' S. of the NE Corner	97.3	12.5	
SG-2	Pit - 15' E. & 15' N. of the SW Corner	97.0	12.1	
SG-3	Pit - 22' N. & 25' W. of the SE Corner	97.2	13.9	
SG-4	Pit - 12' W. & 20' N. of the SE Corner	100.2	12.2	

Control Density: 111.4
ASTM: D 698

Optimum Moisture: 16.8%

Required Compaction: 95%

Lab No.: 05 8582-8585

Copies To: Larson & Associates ✓

PETTIGREW & ASSOCIATES

BY: S.E.T.

APPENDIX B

Geologic Log and Well Diagram

507 North Marienfeld, Suite 202 ◆ Midland, Texas 79701 ◆ Ph. (432) 687-0901 ◆ Fax (432) 687-0456

Client: John Hendrix Corpration

Project: Will Cary # 5

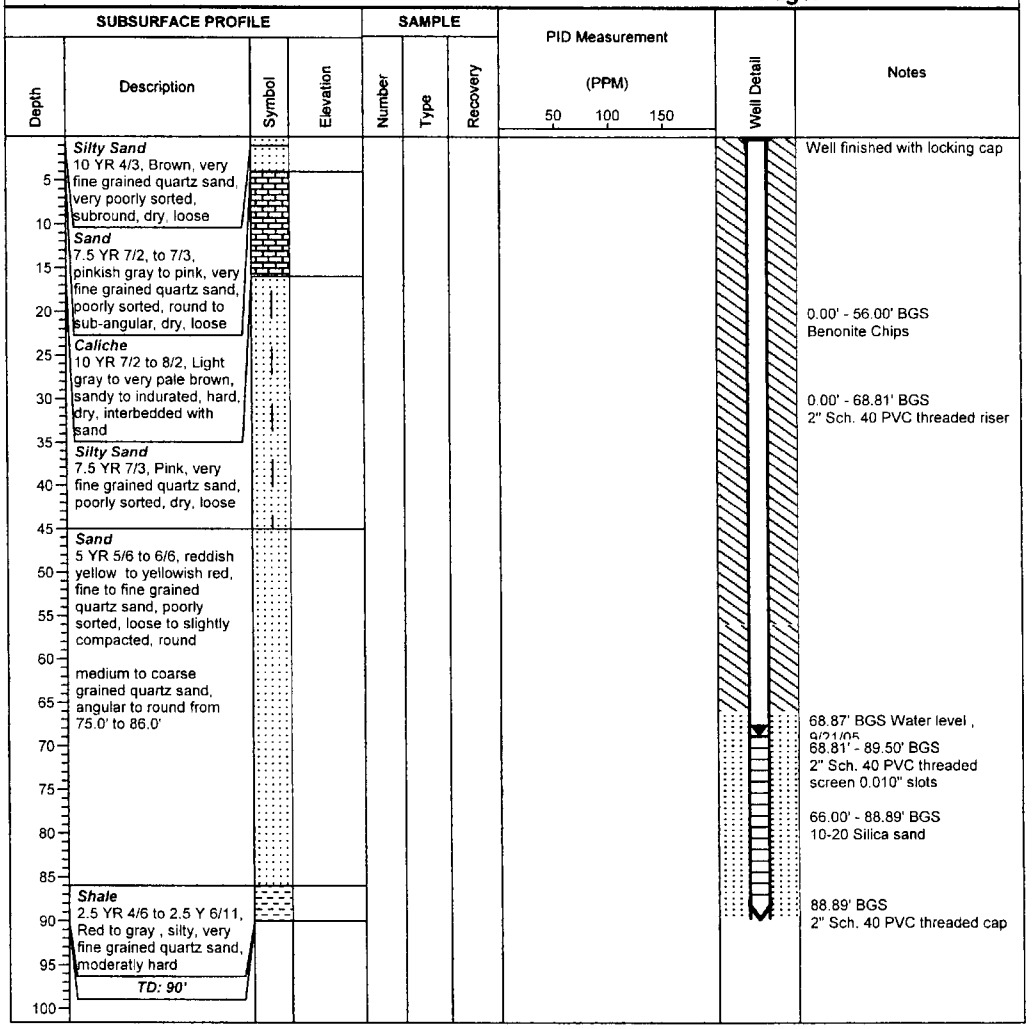
Project No.: 4-0123

Location: Lea County, New Mexico

Log: MW-1

Geologist: Mark Larson

Page: 1 of 1



Drilled By: Scarborough Drilling

Drill Method: Air Rotary

Drill Date: 9-13-05

Larson and Associates Inc.
507 N. Marienfeld, Suite 202
Midland, Texas 79701
(432) 687-0901

Well Size: 4 1/4"

TOC Elevation: N/A

Checked By: MJL

APPENDIX C

Laboratory Report

507 North Marienfeld, Suite 202 ◆ Midland, Texas 79701 ◆ Ph. (432) 687-0901 ◆ Fax (432) 687-0456

ENVIRONMENTAL LAB OF
12600 West I-20 East - Odessa, Texas 79765

Analytical Report

Prepared for:
Mark Larson
Larson & Associates, Inc.
P.O. Box 50685
Midland, TX 79710

Project: John H. Hendrix/ Will Cary #5
Project Number: 4-0123
Location: None Given

Lab Order Number: 5I21001

Report Date: 09/28/05

Larson & Associates, Inc.	Project: John H. Hendrix/ Will Cary #5	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 4-0123	Reported:
Midland TX, 79710	Project Manager: Mark Larson	09/28/05 08:28

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-1	5121001-01	Water	09/20/05 11:30	09/21/05 09:05

12600 West I-20 East - Odessa, Texas 79705 - (432) 563-1800 - Fax (432) 563-1713

Larson & Associates, Inc.	Project: John H. Hendrix/ Will Cary #5	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 4-0123	**Reported:**
Midland TX, 79710	Project Manager: Mark Larson	09/28/05 08:28

Organics by GC

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-1 (5I21001-01) Water									
Benzene	ND	0.00100	mg/L	1	EI52622	09/26/05	09/26/05	EPA 8021B	
Toluene	ND	0.00100	"	"	"	"	"	"	
Ethylbenzene	ND	0.00100	"	"	"	"	"	"	
Xylene (p/m)	ND	0.00100	"	"	"	"	"	"	
Xylene (o)	ND	0.00100	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*93.2 %*		*80-120*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*96.0 %*		*80-120*	"	"	"	"	

12600 West I-20 East - Odessa, Texas 79705 - (432) 563-1800 - Fax (432) 563-1713

Larson & Associates, Inc.	Project: John H. Hendrix/ Will Cary #5	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 4-0123	**Reported:**
Midland TX, 79710	Project Manager: Mark Larson	09/28/05 08:28

General Chemistry Parameters by EPA / Standard Methods

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-1 (5I21001-01) Water									
Total Alkalinity	**233**	2.00	mg/L	1	EI52214	09/21/05	09/21/05	EPA 310.2M	
Chloride	**9550**	250	"	500	EI52207	09/22/05	09/22/05	EPA 300.0	
Total Dissolved Solids	**19300**	5.00	"	1	EI52607	09/21/05	09/22/05	EPA 160.1	
Sulfate	**1200**	250	"	500	EI52207	09/22/05	09/22/05	EPA 300.0	

12600 West I-20 East - Odessa, Texas 79705 - (432) 563-1800 - Fax (432) 563-1713

Larson & Associates, Inc.	Project: John H. Hendrix/ Will Cary #5	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 4-0123	**Reported:**
Midland TX, 79710	Project Manager: Mark Larson	*09/28/05 08:28*

Total Metals by EPA / Standard Methods

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-1 (5121001-01) Water									
Silver	ND	0.00500	mg/L	1	EI52603	09/22/05	09/23/05	EPA 6010B	
Arsenic	**0.0162**	0.00800	"	"	"	"	"	"	
Barium	**0.371**	0.00100	"	"	"	"	"	6010B	
Calcium	**870**	2.00	"	200	EI52709	09/27/05	09/27/05	EPA 6010B	
Magnesium	**519**	0.0500	"	50	"	"	"	"	
Potassium	**102**	10.0	"	200	"	"	"	"	
Sodium	**4300**	20.0	"	2000	"	"	"	"	
Cadmium	ND	0.00100	"	1	EI52603	09/22/05	09/23/05	"	
Chromium	ND	0.00500	"	"	"	"	"	"	
Mercury	ND	0.000500	"	"	EI52712	09/27/05	09/27/05	EPA 7470A	
Lead	**ND**	0.0110	"	"	EI52603	09/22/05	09/23/05	EPA 6010B	
Selenium	**0.00610**	0.00400	"	"	"	"	"	"	

12600 West I-20 East - Odessa, Texas 79705 - (432) 563-1800 - Fax (432) 563-1713

Larson & Associates, Inc.	Project: John H. Hendrix/ Will Cary #5	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 4-0123	**Reported:**
Midland TX, 79710	Project Manager: Mark Larson	09/28/05 08:28

Organics by GC - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EI52622 - EPA 5030C (GC)										
Blank (EI52622-BLK1)				Prepared & Analyzed: 09/26/05						
Benzene	ND	0.00100	mg/L							
Toluene	ND	0.00100	"							
Ethylbenzene	ND	0.00100	"							
Xylene (p/m)	ND	0.00100	"							
Xylene (o)	ND	0.00100	"							
Surrogate: a,a,a-Trifluorotoluene	*44.5*		*ug/l*	*40.0*		*111*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*47.8*		*"*	*40.0*		*120*	*80-120*			
LCS (EI52622-BS1)				Prepared & Analyzed: 09/26/05						
Benzene	43.1		ug/l	50.0		86.2	80-120			
Toluene	41.6		"	50.0		83.2	80-120			
Ethylbenzene	49.3		"	50.0		98.6	80-120			
Xylene (p/m)	91.4		"	100		91.4	80-120			
Xylene (o)	52.4		"	50.0		105	80-120			
Surrogate: a,a,a-Trifluorotoluene	*38.0*		*"*	*40.0*		*95.0*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*42.0*		*"*	*40.0*		*105*	*80-120*			
Calibration Check (EI52622-CCV1)				Prepared: 09/26/05 Analyzed: 09/27/05						
Benzene	49.9		ug/l	50.0		99.8	80-120			
Toluene	44.9		"	50.0		89.8	80-120			
Ethylbenzene	50.2		"	50.0		100	80-120			
Xylene (p/m)	92.4		"	100		92.4	80-120			
Xylene (o)	50.9		"	50.0		102	80-120			
Surrogate: a,a,a-Trifluorotoluene	*40.2*		*"*	*40.0*		*100*	*0-200*			
Surrogate: 4-Bromofluorobenzene	*39.6*		*"*	*40.0*		*99.0*	*0-200*			
Matrix Spike (EI52622-MS1)	**Source: 5I23008-07**			Prepared: 09/26/05 Analyzed: 09/27/05						
Benzene	0.0413	0.00100	mg/L	0.0500	ND	82.6	80-120			
Toluene	0.0406	0.00100	"	0.0500	ND	81.2	80-120			
Ethylbenzene	0.0483	0.00100	"	0.0500	ND	96.6	80-120			
Xylene (p/m)	0.0887	0.00100	"	0.100	ND	88.7	80-120			
Xylene (o)	0.0537	0.00100	"	0.0500	ND	107	80-120			
Surrogate: a,a,a-Trifluorotoluene	*33.5*		*ug/l*	*40.0*		*83.8*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*43.5*		*"*	*40.0*		*109*	*80-120*			

Larson & Associates, Inc.	Project: John H. Hendrix/ Will Cary #5	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 4-0123	**Reported:**
Midland TX, 79710	Project Manager: Mark Larson	09/28/05 08:28

Organics by GC - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EI52622 - EPA 5030C (GC)										
Matrix Spike Dup (EI52622-MSD1)	**Source: 5123008-07**			Prepared: 09/26/05 Analyzed: 09/27/05						
Benzene	0.0461	0.00100	mg/L	0.0500	ND	92.2	80-120	11.0	20	
Toluene	0.0448	0.00100	"	0.0500	ND	89.6	80-120	9.84	20	
Ethylbenzene	0.0553	0.00100	"	0.0500	ND	111	80-120	13.9	20	
Xylene (p/m)	0.0985	0.00100	"	0.100	ND	98.5	80-120	10.5	20	
Xylene (o)	0.0572	0.00100	"	0.0500	ND	114	80-120	6.33	20	
Surrogate: a,a,a-Trifluorotoluene	*34.5*		*ug/l*	*40.0*		*86.2*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*46.8*		*"*	*40.0*		*117*	*80-120*			

12600 West I-20 East - Odessa, Texas 79705 - (432) 563-1800 - Fax (432) 563-1713

Larson & Associates, Inc.	Project: John H. Hendrix/ Will Cary #5	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 4-0123	**Reported:**
Midland TX, 79710	Project Manager: Mark Larson	09/28/05 08:28

General Chemistry Parameters by EPA / Standard Methods - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EI52207 - General Preparation (WetChem)										
Blank (EI52207-BLK1)				Prepared & Analyzed: 09/22/05						
Sulfate	ND	0.500	mg/L							
Chloride	ND	0.500	"							
LCS (EI52207-BS1)				Prepared & Analyzed: 09/22/05						
Sulfate	8.98		mg/L	10.0		89.8	80-120			
Chloride	8.42		"	10.0		84.2	80-120			
Calibration Check (EI52207-CCV1)				Prepared & Analyzed: 09/22/05						
Chloride	8.44		mg/L	10.0		84.4	80-120			
Sulfate	8.99		"	10.0		89.9	80-120			
Duplicate (EI52207-DUP1)		**Source: 5I19032-06**		Prepared & Analyzed: 09/22/05						
Chloride	2040	100	mg/L		2070			1.46	20	
Sulfate	796	100	"		804			1.00	20	
Batch EI52214 - General Preparation (WetChem)										
Blank (EI52214-BLK1)				Prepared & Analyzed: 09/21/05						
Total Alkalinity	ND	2.00	mg/L							
Calibration Check (EI52214-CCV1)				Prepared & Analyzed: 09/21/05						
Bicarbonate Alkalinity	229		mg/L	200		114	80-120			
Duplicate (EI52214-DUP1)		**Source: 5I19006-01**		Prepared & Analyzed: 09/21/05						
Total Alkalinity	174	2.00	mg/L		173			0.576	20	

12600 West I-20 East - Odessa, Texas 79705 - (432) 563-1800 - Fax (432) 563-1713

Larson & Associates, Inc.	Project: John H. Hendrix/ Will Cary #5	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 4-0123	**Reported:**
Midland TX, 79710	Project Manager: Mark Larson	09/28/05 08:28

General Chemistry Parameters by EPA / Standard Methods - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EI52607 - General Preparation (WetChem)										
Blank (EI52607-BLK1)				Prepared & Analyzed: 09/22/05						
Total Dissolved Solids	ND	5.00	mg/L							
Duplicate (EI52607-DUP1)	**Source: 5119003-01**			Prepared & Analyzed: 09/22/05						
Total Dissolved Solids	812	5.00	mg/L		840			3.39	5	
Duplicate (EI52607-DUP2)	**Source: 5119033-08**			Prepared & Analyzed: 09/22/05						
Total Dissolved Solids	22100	5.00	mg/L		22400			1.35	5	

12600 West I-20 East - Odessa, Texas 79705 - (432) 563-1800 - Fax (432) 563-1713

Larson & Associates, Inc.	Project: John H. Hendrix/ Will Cary #5	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 4-0123	**Reported:**
Midland TX, 79710	Project Manager: Mark Larson	09/28/05 08:28

Total Metals by EPA / Standard Methods - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EI52603 - EPA 3005A										
Blank (EI52603-BLK1)				Prepared: 09/22/05 Analyzed: 09/23/05						
Selenium	ND	0.00400	mg/L							
Lead	ND	0.0110	"							
Chromium	ND	0.00500	"							
Cadmium	ND	0.00100	"							
Barium	ND	0.00100	"							
Arsenic	ND	0.00800	"							
Silver	ND	0.00500	"							
LCS (EI52603-BS1)				Prepared: 09/22/05 Analyzed: 09/23/05						
Cadmium	0.203	0.00100	mg/L	0.200		102	85-115			
Selenium	0.424	0.00400	"	0.400		106	85-115			
Silver	0.103	0.00500	"	0.100		103	85-115			
Chromium	0.205	0.00500	"	0.200		102	85-115			
Barium	0.215	0.00100	"	0.200		108	85-115			
Arsenic	0.822	0.00800	"	0.800		103	85-115			
Lead	1.08	0.0110	"	1.10		98.2	85-115			
LCS Dup (EI52603-BSD1)				Prepared: 09/22/05 Analyzed: 09/23/05						
Silver	0.0953	0.00500	mg/L	0.100		95.3	85-115	7.77	20	
Chromium	0.213	0.00500	"	0.200		106	85-115	3.83	20	
Cadmium	0.200	0.00100	"	0.200		100	85-115	1.49	20	
Barium	0.212	0.00100	"	0.200		106	85-115	1.41	20	
Arsenic	0.835	0.00800	"	0.800		104	85-115	1.57	20	
Selenium	0.434	0.00400	"	0.400		108	85-115	2.33	20	
Lead	1.07	0.0110	"	1.10		97.3	85-115	0.930	20	
Calibration Check (EI52603-CCV1)				Prepared: 09/22/05 Analyzed: 09/23/05						
Lead	1.04		mg/L	1.00		104	90-110			
Barium	1.08		"	1.00		108	90-110			
Cadmium	1.08		"	1.00		108	90-110			
Selenium	1.03		"	1.00		103	90-110			
Arsenic	1.06		"	1.00		106	90-110			
Chromium	1.10		"	1.00		110	90-110			
Silver	0.521		"	0.500		104	90-110			

12600 West I-20 East - Odessa, Texas 79705 - (432) 563-1800 - Fax (432) 563-1713

Larson & Associates, Inc.	Project: John H. Hendrix/ Will Cary #5	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 4-0123	**Reported:**
Midland TX, 79710	Project Manager: Mark Larson	09/28/05 08:28

Total Metals by EPA / Standard Methods - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EI52603 - EPA 3005A										
Matrix Spike (EI52603-MS1)	**Source: 5I21001-01**			Prepared: 09/22/05 Analyzed: 09/23/05						
Chromium	0.185	0.00500	mg/L	0.200	ND	92.5	75-125			
Cadmium	0.193	0.00100	"	0.200	ND	96.5	75-125			
Lead	1.19	0.0110	"	1.10	ND	108	75-125			
Selenium	0.443	0.00400	"	0.400	0.00610	109	75-125			
Silver	0.150	0.00500	"	0.100	ND	150	75-125			
Arsenic	0.882	0.00800	"	0.800	0.0162	108	75-125			
Barium	0.577	0.00100	"	0.200	0.371	103	75-125			
Matrix Spike Dup (EI52603-MSD1)	**Source: 5I21001-01**			Prepared: 09/22/05 Analyzed: 09/23/05						
Barium	0.575	0.00100	mg/L	0.200	0.371	102	75-125	0.347	20	
Cadmium	0.195	0.00100	"	0.200	ND	97.5	75-125	1.03	20	
Chromium	0.197	0.00500	"	0.200	ND	98.5	75-125	6.28	20	
Lead	1.16	0.0110	"	1.10	ND	105	75-125	2.55	20	
Selenium	0.435	0.00400	"	0.400	0.00610	107	75-125	1.82	20	
Arsenic	0.866	0.00800	"	0.800	0.0162	106	75-125	1.83	20	
Silver	0.157	0.00500	"	0.100	ND	157	75-125	4.56	20	
Post Spike (EI52603-PS1)	**Source: 5I21001-01**			Prepared: 09/22/05 Analyzed: 09/23/05						
Silver	0.170		mg/L	0.100	ND	170	85-115			PS-1
Batch EI52709 - 6010B/No Digestion										
Blank (EI52709-BLK1)				*Prepared & Analyzed: 09/27/05*						
Calcium	ND	0.0100	mg/L							
Magnesium	ND	0.00100	"							
Potassium	ND	0.0500	"							
Sodium	ND	0.0100	"							

12600 West I-20 East - Odessa, Texas 79705 - (432) 563-1800 - Fax (432) 563-1713

Larson & Associates, Inc.	Project: John H. Hendrix/ Will Cary #5	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 4-0123	**Reported:**
Midland TX, 79710	Project Manager: Mark Larson	09/28/05 08:28

Total Metals by EPA / Standard Methods - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EI52709 - 6010B/No Digestion										
Calibration Check (EI52709-CCV1)				Prepared & Analyzed: 09/27/05						
Calcium	2.02		mg/L	2.00		101	85-115			
Magnesium	1.83		"	2.00		91.5	85-115			
Potassium	2.08		"	2.00		104	85-115			
Sodium	1.77		"	2.00		88.5	85-115			
Duplicate (EI52709-DUP1)	**Source: 5I19003-01**			Prepared & Analyzed: 09/27/05						
Calcium	78.0	0.500	mg/L		80.2			2.78	20	
Magnesium	32.2	0.0100	"		32.6			1.23	20	
Potassium	8.07	0.250	"		8.08			0.124	20	
Sodium	88.9	0.500	"		87.7			1.36	20	
Batch EI52712 - EPA 7470A										
Blank (EI52712-BLK1)				Prepared & Analyzed: 09/27/05						
Mercury	ND	0.000500	mg/L							
LCS (EI52712-BS1)				Prepared & Analyzed: 09/27/05						
Mercury	0.000860	0.000500	mg/L	0.00100		86.0	85-115			
Calibration Check (EI52712-CCV1)				Prepared & Analyzed: 09/27/05						
Mercury	0.000900		mg/L	0.00100		90.0	90-110			
Matrix Spike (EI52712-MS1)	**Source: 5I21001-01**			Prepared & Analyzed: 09/27/05						
Mercury	0.000750	0.000500	mg/L	0.00100	ND	75.0	75-125			
Matrix Spike Dup (EI52712-MSD1)	**Source: 5I21001-01**			Prepared & Analyzed: 09/27/05						
Mercury	0.000760	0.000500	mg/L	0.00100	ND	76.0	75-125	1.32	20	

12600 West I-20 East - Odessa, Texas 79705 - (432) 563-1800 - Fax (432) 563-1713

Larson & Associates, Inc.	Project: John H. Hendrix/ Will Cary #5	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 4-0123	**Reported:**
Midland TX, 79710	Project Manager: Mark Larson	09/28/05 08:28

Notes and Definitions

PS-1	Matix spike recoveries were outside method and/or historical control limits due to matrix interference. Interference was confirmed by similar results from a post matrix spike.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
LCS	Laboratory Control Spike
MS	Matrix Spike
Dup	Duplicate

Report Approved By: Raland K Tuttle Date: 9/28/2005

Raland K. Tuttle, Lab Manager
Celey D. Keene, Lab Director, Org. Tech Director
Peggy Allen, QA Officer
Jeanne Mc Murrey, Inorg. Tech Director
LaTasha Cornish, Chemist
Sandra Sanchez, Lab Tech.

CHAIN—OF—CUSTODY RECORD

Larson & Associates, Inc. Environmental Consultants
Fax: 432-687-0456
432-687-0901
507 N. Marienfeld, Ste. 202 • Midland, TX 79701

CLIENT NAME: Hendrix
SITE MANAGER: Mark Larson
PROJECT NO.: 4-0123
PROJECT NAME: Will Carry #5
PAGE 1 OF 1
LAB PO #

DATE	TIME	WATER	SOIL	OTHER	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	PARAMETERS/METHOD NUMBER: CATIONS	ANIONS	TDS	BTEX	RCRA B Metals				LAB I.D. NUMBER (LAB USE ONLY)	REMARKS (I.E., FILTERED, UNFILTERED, PRESERVED, UNPRESERVED, GRAB COMPOSITE)
9/20	1130	✓			MW-1	4	1	1	1	2	1				512100	1-9

SAMPLED BY: (Signature) DATE: 9/20 TIME: 1130
RELINQUISHED BY: (Signature) DATE: 9/21 TIME: 0905
RECEIVED BY: (Signature) DATE: TIME:

RELINQUISHED BY: (Signature) DATE: TIME:
RECEIVED BY: (Signature) DATE: TIME:
SAMPLE SHIPPED BY: (Circle)
FEDEX BUS AIRBILL #:
HAND DELIVERED UPS OTHER:

COMMENTS:
TURNAROUND TIME NEEDED

RECEIVING LABORATORY: ELOT
ADDRESS:
CITY: STATE: ZIP:
CONTACT: PHONE:
RECEIVED BY: (Signature)
DATE: 9/21/05 TIME: 9:05

WHITE – RECEIVING LAB
YELLOW – RECEIVING LAB (TO BE RETURNED TO LA AFTER RECEIPT)
PINK – PROJECT MANAGER
GOLD – QA/QC COORDINATOR

SAMPLE CONDITION WHEN RECEIVED: 1.0°C
1L-Amb.
2-VOA 500mL-HNO3
LA CONTACT PERSON:
SAMPLE TYPE:

Environmental Lab of Texas
Variance / Corrective Action Report – Sample Log-In

Client: Larson

Date/Time: 9/21/05 9:05

Order #: 5I2100I

Initials: CK

Sample Receipt Checklist

Temperature of container/cooler?	Yes	No	1.0 C
Shipping container/cooler in good condition?	Yes	No	
Custody Seals intact on shipping container/cooler?	Yes	No	Not present
Custody Seals intact on sample bottles?	Yes	No	Not present
Chain of custody present?	Yes	No	
Sample Instructions complete on Chain of Custody?	Yes	No	
Chain of Custody signed when relinquished and received?	Yes	No	
Chain of custody agrees with sample label(s)	Yes	No	
Container labels legible and intact?	Yes	No	
Sample Matrix and properties same as on chain of custody?	Yes	No	
Samples in proper container/bottle?	Yes	No	
Samples properly preserved?	Yes	No	
Sample bottles intact?	Yes	No	
Preservations documented on Chain of Custody?	Yes	No	
Containers documented on Chain of Custody?	Yes	No	
Sufficient sample amount for indicated test?	Yes	No	
All samples received within sufficient hold time?	Yes	No	
VOC samples have zero headspace?	Yes	No	Not Applicable

Other observations:

_____

_____

_____

Variance Documentation:

Contact Person: _____ Date/Time: _____ Contacted by: _____

Regarding:

_____

_____

_____

Corrective Action Taken:

_____

_____

_____

_____

_____

_____

_____

_____