Larson & Associates, Inc.
Environmental Consultants

December 18, 2009

RECEIVED OCD
2009 DEC 18 P 2:50

Mr. Edward Hansen
State of New Mexico – Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

RE: Three OCD Remediation Projects – John H. Hendrix Corporation, Lea County, New Mexico:
No. 1R-483, Elliott B-9 #1,4,&5 Tank Battery, Unit C (NE/4, NW/4), Section 9, T22S, R37E
No. 1R-484, Elliott B-9 #2&3 Tank Battery, Unit D (NW/4, NW/4), Section 9, T22S, R37E
No. 1RP0465, Will Cary #5 Emergency Pit, Unit F (SE/4, NW/4), Section 22, T22S, R37E

Dear Mr. Hansen:

The three enclosed reports are submitted to the State of New Mexico Oil Conservation Division on behalf of John H. Hendrix Corporation by Larson and Associates, Inc., its agent, and present the proposed remedial effort at the referenced sites.

If you have any questions or concerns, please call me at 432.687.0901 to discuss.

Sincerely,

LARSON & ASSOCIATES, INC.

William D. Green, PG No. 136
Texas Licensed Professional Geologist
wgreen@laenvironmental.com

Attachments

CC Ms. Carolyn Haynes – JHHC Midland
Mr. Larry Johnson – OCD District 1

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DEC 18 2009
Environmental Bureau
Oil Conservation Division

2009 Annual Report

Will Cary #5 Emergency Pit
1RP0465
Lea County, New Mexico

December 18, 2009

Project No. 4-0123

Prepared for:
John H. Hendrix Corporation
101 N. Marienfeld, Suite 400
Midland, Texas 79701

Prepared by:
Larson & Associates, Inc.
507 North Marienfeld, Suite 200
Midland, Texas 79701

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1.0 Executive Summary

This report presents the 2009 results for groundwater investigation and monitoring at the John H. Hendrix Corporation (JHHC) Will Cary #5 Lease, located in Unit F (SE/4, NW/4), Section 22, Township 22 South, Range 37 East, Eunice, Lea County, New Mexico (Site or Property, Figure 1).

The following groundwater investigation activities were conducted during the past year:

- Groundwater Gauging and Sampling Event on June 3, 2009
- Groundwater Gauging and Sampling Event on October 22, 2009

The following observations are documented in this report:

- Groundwater flow direction remains consistent towards the southeast
- Chloride or TDS values exceeding the WQCC domestic water supply standards were observed monitor wells MW-1 and MW-3
- The highest chloride and TDS values were observed in MW-1
- Chloride concentrations in MW-1 decreased approximately 30% between November 15, 2005 (12,100 mg/l) to October 22, 2009 (9,050 mg/l)
- Chloride concentrations in downgradient monitor well MW-5 range from 185 mg/l to 129 mg/l between April 11, 2006 and October 22, 2009, indicating plume stability
- Groundwater removal is not feasible for this site

Based on the cumulative results of source removal, infiltration restriction, groundwater monitoring, pump testing, AMIGO modeling, chloride concentration reduction, and demonstration of plume stability, JHHC requests the suspension of groundwater extraction and monitoring, and further requests permission to permanently plug and abandon associated monitor wells.

2.0 Investigation Chronology

The following events have been documented in connection with the 1RP0465 investigation.

July 6, 2004	New Mexico Oil Conservation Division (OCD) inspects the Will Cary lease. An open unlined pit was discovered during the routine inspection.
July 8, 2004	OCD issues a Notice of Violation (NOV) that required pit closure under the existing OCD rules.
January 20, 2005	Larson & Associates, Inc. (LAI) collected soil samples from five borings (BH-1 through BH-5) to assess extent of impact to vadose zone.
February 21, 2005	LAI compiles soil analytical results and submits *Investigation Report and Remediation Plan for Unlined Surface Impoundment* to the OCD.
April 2005	JHHC hauled approximately 1600 cubic yards of soil from the site its centralized surface waste management facility (NM-0021).
August 4 , 2005	OCD granted verbal approval to fill the excavation, but required the installation of a clay barrier near the top of the excavation along with a monitor well near the southeast corner of the excavation.
September 15, 2005	MW-1 installed approximately 20 feet southeast of the excavation.
September 20, 2005	Initial investigation conducted. Chloride, Sulfate and TDS constituents were identified in MW-1 above WQCC domestic water quality standards.
September 28, 2005	LAI submits *Closure Report for Unlined Pit Excavation and Results of Groundwater Sample Analysis,* to OCD.
October 25, 2005	OCD approves requests to install an upgradient (northwest) groundwater monitoring well.
November 8, 2005	MW-2 installed approximately 450 feet northwest of the site.
November 11, 2005	Groundwater monitoring event conducted. Chloride, Sulfate and TDS constituents were identified in MW-1 above WQCC domestic water quality standards.
December 6, 2005	Work plan submitted to the OCD concerning groundwater contamination.
January 25, 2006	OCD approves work plan and requires a final investigation report to be submitted no later than 60 days after completing fieldwork.
January 2006	OCD verbally approved an extension to complete two groundwater sampling events with submittal of final investigation report to be submitted in January 2007.
January 2006	Aerial photographs dated February 2, 1949, April 28, 1954, February 4, 1968, August 1973, March 29, 1977, June 3, 1983, July 19, 1986 and January 1, 1991 were reviewed. Photographs did not reveal any other sources for the Chloride and TDS in the immediate vicinity.
February 1-2, 2006	Electromagnetic conductivity (EM) surveying activities commence.
February 23-24, 2006	MW-3 (northeast), MW-4 (southwest), and MW-5 (southeast) installed.
April 11, 2006	Groundwater monitoring event conducted. Chloride, Sulfate and TDS constituents were identified in MW-1 and MW-3.
April 13, 2006	Groundwater gauging event performed.
December 13, 2006	Groundwater gauging event performed.
December 14, 2006	Groundwater monitoring event conducted. Chloride, Sulfate and TDS constituents were identified in MW-1 and MW-3.

December 2006	Attempted in-situ horizontal hydraulic conductivity (slug) test. Limited saturated thickness of the Ogallala formation prevented data collection.
January 31, 2007	*Groundwater Investigation Report for Will Cary Unlined Pit* submitted to OCD.
March 7, 2007	Groundwater monitoring event conducted. Chloride and TDS constituents were identified in MW-1 and MW-3.
August 20, 2007	Groundwater monitoring event conducted. Chloride and TDS constituents were identified in MW-1 and MW-3.
October 5, 2007	LAI performs pump test on MW-1. Determined that well could be continuously pumped at a rate of 80 mL/minute.
November 11, 2007	Installed 3,000 gallon poly tank next to MW-1.
December 13, 2007	Installed solar powered Xitech pump system.
January 3, 2008	Installed fence around remediation system, poly tank, and berm.
April 7, 2008	Groundwater gauging event performed.
April 8, 2008	Groundwater monitoring event conducted. Chloride and TDS constituents were identified in MW-1 and MW-3.
July 1, 2008	Xitech pump malfunctioned. JHHC decided to switch air supply to cylinder.
September 4-5, 2008	Groundwater gauging event performed. Groundwater monitoring event conducted. Chloride and TDS constituents were identified in MW-1 and MW-3.
February 12, 2009	Groundwater monitoring event conducted by Roseanne Johnson on behalf of JHHC. Chloride identified in MW-1.
June 3, 2009	Groundwater monitoring event conducted. Chloride and TDS constituents were identified in MW-1 and MW-3.
October 22, 2009	Groundwater monitoring event conducted. Chloride and TDS constituents were identified in MW-1 and MW-3.

3.0 Vicinity Characteristics

3.1 Topography

The elevation of the Site is approximately 3,300 feet above mean sea level as shown on the Eunice, New Mexico (1969) USGS 7.5-Minute Quadrangle Map. The topographic region is nearly flat with a slight southerly slope. A current topographic map is included as Figure 1.

3.2 Geology

The *Geologic Map of New Mexico* (2003) and the *Geologic Atlas of Texas, Hobbs Sheet* indicate the vicinity's surface geology is comprised of Holocene to mid-Pleistocene age interlaid eolian and piedmont-slope deposits. This material covers the eastern flank of the Pecos River valley. These surficial deposits are primarily derived from reworking the underlying Tertiary-aged Ogallala Formation of the Southern High Plains, which are also comprised of alluvial and eolian deposits with petrocalcic soils. The Ogallala Formation is comprised of fluviatile sand, silt, clay and localized gravel, with indistinct to massive crossbeds. The Ogallala sand is generally fine- to medium-grained quartz.

Monitor well boring logs indicate a general lithology of laterally continuous shale across the site and occurs approximately between 76 to 86 feet below ground surface (bgs). The shale is overlain by the Teriary-age Ogallala formation that consists of yellowish-red and reddish-yellow sand and silty sand. An unconsolidated veneer of eolian sand of approximately 15-foot thickness of carbonate-indurated sand (caliche) was observed at each location and is laterally continuous across the site. No vertical barriers (i.e., clay, shale, etc.) were observed in the borings, except in the Triassic-age shale, Chinle Formation, that is the lower confining unit for the Tertiary-age Ogallala formation.

3.3 Groundwater Occurrence

Regional direction for groundwater flow is towards the southeast. The *Office of the State Engineer Southeast New Mexico Water Level Data* does not identify any water well within the Section. Water levels observed at the facility have varied between 68.35 (MW-4, December 13, 2006) and 73.47 (MW-2, March 11, 2008) feet bgs during the life of this investigation.

3.4 Surface Water Occurrence

There are no streams, springs, or ponds on the Site, or within three miles of the site.

4.0 Groundwater Monitoring Results

During the semi-annual groundwater monitoring events, all five monitor wells associated with this investigation were gauged and sampled as conditions allowed (Figures 2a and 2b).

All monitoring data has been mapped using Surfer® version 8 surface contouring and mapping software. Data was reduced using the Kriging geostatistical gridding methodology. Kriging uses a linear least squares estimation algorithm that attempts to model trends suggested by the data.

4.1 Site-Specific Groundwater Hydrology

Table 1 presents a summary of the depth to groundwater measurements. No light-nonaqueous phase liquids (LNAPL) were observed in the established monitor wells during the 2009 monitoring events. Table 1 summarizes groundwater gauging data.

4.1.1 June 2009 Event

Groundwater potentiometric surface stood between 3,296.87 feet (MW-2) and 3,293.60 feet (MW-5) elevation using WGS 84 datum reference.

Groundwater flow direction is towards the southeast, consistent with previously-reported groundwater flow direction. Groundwater gradient was calculated using monitor well pair (MW-2 and MW-5); the results of this pair indicate an estimated gradient of 0.003845 feet per foot (ft/ft).

Figure 2a is a Surfer®-generated plot of the observed groundwater gradient for the June 2009 monitoring event.

4.1.2 October 2009 Event

Groundwater potentiometric surface stood between 3,296.84 feet (MW-2) and 3,293.73 feet (MW-5) elevation using WGS 84 datum reference.

Groundwater flow direction is towards the southeast, consistent with the previous groundwater monitoring event. Groundwater gradient was calculated using monitor well pair MW-2 and MW-5 and is estimated at 0.003915 ft/ft.

Figure 2b is a Surfer®-generated plot of the observed groundwater gradient for the October 2009 monitoring event.

4.2 Groundwater Chemistry

Groundwater samples were collected from monitor wells after approximately three casing volumes of groundwater were removed from each well and the wells had sufficiently recovered. Purging and sampling was accomplished with either a stainless steel environmental pump with backflow preventer and polyethylene tubing, or for lower-volume wells, using dedicated disposable polyethylene bailers. Purge pumps were cleaned internally and externally with Alconox® and flushed with commercially available distilled water before the event and between wells.

Sample aliquots were collected in laboratory prepared containers, individually labeled, and placed into an ice-chilled chest and delivered under custody seal and chain-of-custody control. All samples were received intact and below the required temperature parameter.

The laboratory analyzed the samples for chloride and total dissolved solids (TDS). Duplicate samples for a quality control (QC) check were submitted as blind samples. The duplicates were collected from MW-1 during the sampling events. Laboratory analytical results are discussed in the following sections.

Water chemistry samples were analyzed for chloride anions (Standard Method E300), and total dissolved solids (Standard Methods M2540C). Chloride or TDS values exceeding WQCC values were observed in monitor wells MW-1 and MW-3. The chloride and TDS in MW-3 is not associated with the unlined pit since this well is located cross-gradient. Table 2 presents a summary of water chemistry analytical results. Appendix A contains the laboratory analytical reports.

4.2.1 June 2009 Results

Chlorides – Analytical data indicates the following samples exhibited chloride concentrations in excess of the 250 mg/l WQCC domestic water supply standard in the following samples:

- MW-1 (8,600 mg/l)
- MW-3 (256 mg/l)

TDS – Analytical data indicates the following samples exhibited TDS concentrations in excess of the 1,000 mg/l WQCC domestic water supply standard in the following samples:

- MW-1 (14,800 mg/l)
- MW-3 (1,300 mg/l)

Figures 3a and 4a are Surfer®-generated plots of observed chloride and TDS concentration for the June 2009 monitoring event.

4.2.2 October 2009 Results

Chlorides – Analytical data indicates the following samples exhibited chloride concentrations in excess of the 250 mg/l WQCC domestic water supply standard in the following samples:

- MW-1 (9,050 mg/l)

TDS – Analytical data indicates the following samples exhibited TDS concentrations in excess of the 1,000 mg/l WQCC domestic water supply standard in the following samples:

- MW-1 (14,800 mg/l)
- MW-3 (1,290 mg/l)

Figures 3b and 4b are Surfer®-generated plots of observed chloride and TDS concentration for the October 2009 monitoring event.

5.0 Pump Testing and Groundwater Modeling Results

In 2008 a pump test was initiated using MW-1 to determined if the well could be continuously pumped at a rate of 80 ml/minute. In 2008 the system recovered a total of 368 gallons of chloride-impacted water.

In 2009 the system was estimated to recover approximately 520 gallons, about 10 gallons per week. The system was not without problems. Initially a solar-battery powered pneumatic pump was installed in MW-1. This pump operated at the maximum recovery capacity, about 80 ml/minute. Oilfield thieves stole the solar panel and battery. The pneumatic system was then changed to use compressed nitrogen tanks; the regulator was stolen and replaced. In June the inlet of the pump started pulling in silt. The pump was reset, but did not remedy the problem. Given the extremely low recovery rate, averaging 3.76 ml/minute, it was decided to remove the pump from the well.

It does not appear that groundwater removal is technically feasible at this Site. An AMIGO one-dimensional vertical migration model was used to determine subsurface leaching potential at the site. The American Petroleum Institute (API) developed AMIGO software as a screening tool to simulate the chloride concentration in a water table (unconfined) aquifer affected by a surface release of chloride. AMIGO uses the output from HYDRUS-1D simulations in a ground water mixing model to graph chloride concentrations over time. The technical basis for AMIGO is presented in the API Publication 4734, *Modeling Study of Produced Water Release Scenarios* (Hendrickx and others, 2005). This program is designed to produce two output graphs; one for chloride concentration to depth in the vadose zone, the second for the flux of chlorides from the vadose zone to groundwater over time. AMIGO was designed with climatic data from the Permian Basin/Hobbs area.

Three model runs were conducted with the AMIGO tool (Appendix B). Site specific data from soil borings within the former emergency pit were used input for the vertical profile, with model defaults for the Lea County area. The variable for the three runs were the background chloride concentrations (137 mg/l), and the maximum length of chlorides in the release area aligned with groundwater flow direction (3.28, 10, and 20 feet). It appeared the model is insensitive to these inputs.

The model results mimic the limited empirical data, both of which support the removal of the surface source as adequate to abate chlorides leaching to the subsurface and groundwater. Since the impervious liner was installed in 2005, chloride concentrations in the immediately downgradient monitor well MW-1 have decreased about 30%. Continued decline in chlorides from the emergency pit source is expected to continue to decline.

In downgradient monitor well MW-5 chloride concentrations have ranged from 185 mg/l to 129 mg/l, between April 11, 2006 and October 22, 2009, further indicating the impacted groundwater plume is stable.

6.0 Conclusions Based Upon Current Investigation Data

The following observations are documented in this report:

- Groundwater flow direction remains consistent towards the southeast
- Chloride or TDS values exceeding the WQCC domestic water supply standards were observed monitor wells MW-1 and MW-3
- The highest chloride and TDS values were observed in MW-1
- Chloride concentrations in MW-1 decreased approximately 30% between November 15, 2005 (12,100 mg/l) to October 22, 2009 (9,050 mg/l)
- Chloride concentrations in downgradient monitor well MW-5 range from 185 mg/l to 129 mg/l between April 11, 2006 and October 22, 2009, indicating plume stability
- Groundwater removal is not technically feasible for this site

7.0 Proposed Remedial Investigation Actions for 2010

Based on the cumulative results of source removal, infiltration restriction, groundwater monitoring, pump testing, and AMIGO modeling, JHHC requests the suspension of groundwater extraction and monitoring, and further requests permission to permanently plug and abandon associated monitor wells.

Table 1
Summary of Monitoring Well Gauging 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 Information									Groundwater Data			
Well Number	**Date Drilled**	**Drilled Depth (bgs)**	**Well Depth from TOC**	**Well Diameter (inches)**	**Surface Elevation**	**Screen Interval (bgs)**	**Casing Stickup**	**TOC Elevation**	**Date Gauged**	**Depth to Product**	**Depth to Water**	**Corrected Water Elevation**
MW-1	09/13/05	90.00	92.14	2	3365.39	68.81 - 89.59	2.74	3368.13	4/13/2006	--	72.24	3295.89
									12/13/2006	--	72.29	3295.84
									3/7/2007	--	72.27	3295.86
									8/15/2007	--	72.28	3295.85
									3/11/2008	--	72.38	3295.75
									4/8/2008	--	72.92	3295.21
									7/1/2008	--	72.64	3295.49
									9/4/2008	--	72.91	3295.22
									6/3/2009	--	72.87	3295.26
									10/19/2009	--	72.56	3295.57
MW-2	11/08/05	82.40	83.35	2	3367.31	65.41 - 79.72	2.94	3370.25	4/13/2006	--	73.45	3296.8
									12/13/2006	--	73.46	3296.79
									3/7/2007	--	73.40	3296.85
									8/15/2007	--	73.41	3296.84
									3/11/2008	--	73.47	3296.78
									4/7/2008	--	73.36	3296.89
									7/1/2008	--	73.40	3296.85
									9/4/2008	--	73.43	3296.82
									6/3/2009	--	73.38	3296.87
									10/19/2009	--	73.42	3296.83
MW-3	02/23/06	80.00	80.48	2	3365.20	68.64 - 78.00	1.73	3366.93	4/13/2006	--	70.39	3296.54
									12/13/2006	--	70.46	3296.47
									3/7/2007	--	70.50	3296.43
									8/15/2007	--	70.53	3296.40
									3/11/2008	--	70.63	3296.30
									4/7/2008	--	70.55	3296.38
									7/1/2008	--	70.59	3296.34
									9/4/2008	--	70.59	3296.34
									6/3/2009	--	70.64	3296.29
									10/19/2009	--	70.67	3296.26

Table 1
Summary of Monitoring Well Gauging 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 Information									Groundwater Data			
Well Number	**Date Drilled**	**Drilled Depth (bgs)**	**Well Depth from TOC**	**Well Diameter (inches)**	**Surface Elevation**	**Screen Interval (bgs)**	**Casing Stickup**	**TOC Elevation**	**Date Gauged**	**Depth to Product**	**Depth to Water**	**Corrected Water Elevation**
MW-4	02/23/06	80.00	80.48	2	3363.70	68.94 - 78.38	1.76	3365.46	4/13/2006	--	69.83	3295.63
									12/13/2006	--	69.82	3295.64
									3/7/2007	--	69.82	3295.64
									8/15/2007	--	69.77	3295.69
									3/11/2008	--	69.83	3295.63
									4/7/2008	--	69.73	3295.73
									7/1/2008	--	69.78	3295.68
									9/4/2008	--	69.79	3295.67
									6/3/2009	--	69.76	3295.70
									10/19/2009	--	69.77	3295.69
MW-5	02/24/06	78.00	79.65	2	3362.07	67.00 - 76.50	2.44	3364.51	4/13/2006	--	71.01	3293.50
									12/13/2006	--	68.35	3296.16
									3/7/2007	--	70.75	3293.76
									8/15/2007	--	70.78	3293.73
									3/11/2008	--	70.87	3293.64
									4/7/2008	--	70.80	3293.71
									7/1/2008	--	70.83	3293.68
									9/4/2008	--	70.89	3293.62
									6/3/2009	--	70.91	3293.60
									10/19/2009	--	71.01	3293.50

Notes

bgs - below ground surface

TOC - top of casing

Elevations are above mean sea level (3365) referenced to 1984 Geodetic Datum.

Wells drilled and constructed by Scarborough Drilling, Inc., Lamesa, Texas, Schedule 40 screw-threaded PVC casing and screen.

Table 2
Summary of Anions, Cations and Total Dissolved Solids in Groundwater
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

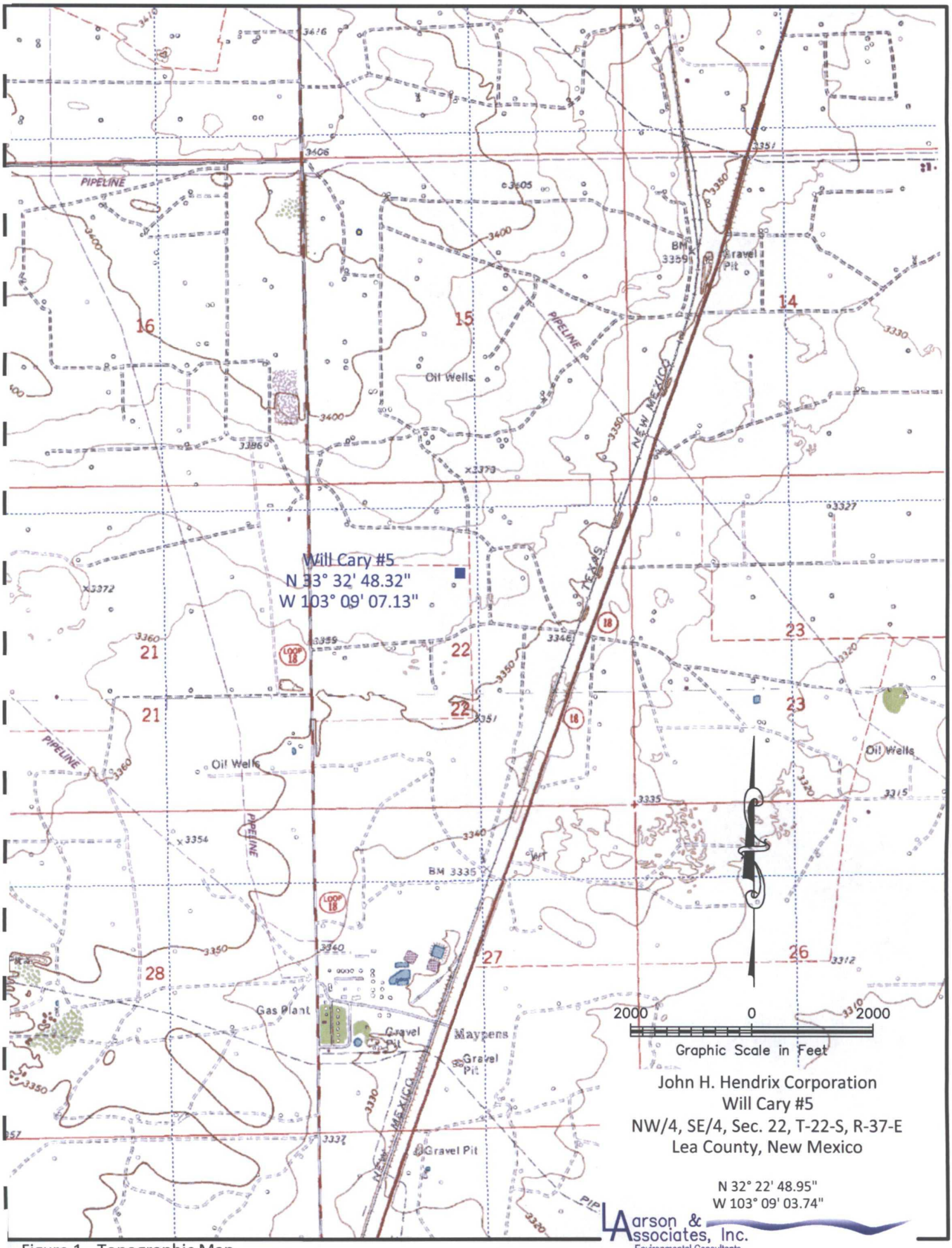
Well ID	Date	Alkalinity	Chloride	Sulfate	TDS	Calcium	Magnesium	Potassium	Sodium
WQCC Standard:			250	600	1,000				
MW-1	09/21/05	233	**9,550**	**1,200**	**19,300**	870	519	102	4,300
	11/15/05	292	**12,100**	**1,020**	**21,400**	1,090	675	214	7,040
	04/11/06	378	**10,000**	**671**	**19,600**	744	448	141	7,590
	12/14/06	456	**10,900**	**610**	**17,500**	960	482	127	5,660
	03/07/07	429	**10,900**	414	**18,000**	546	327	78.6	5,320
	08/20/07	450	**9,950**	480	**18,300**	565	355	82.8	6,510
	04/08/08	458	**9,710**	475	**16,900**	--	--	--	--
	09/04/08	490	**9,460**	386	**15,800**	--	--	--	--
	02/12/09	--	**8,600**	--	--	--	--	--	--
	06/03/09	551	**8,600**	486	**15,000**	--	--	--	--
	10/22/09	--	**9,050**	--	**14,800**	--	--	--	--
MW-2	11/15/05	164	101	146	694	74.4	49.8	10.0	109
	04/11/06	163	142	214	756	60.1	44.8	7.9	113
	12/14/06	180	152	250	800	64.9	66.3	7.7	107
	03/07/07	187	137	221	804	62.6	46.6	74.4	102
	08/20/07	187	150	246	806	64.3	51.4	7.82	112
	04/08/08	181	161	247	816	--	--	--	--
	09/05/08	260	114	203	736	--	--	--	--
	06/03/09	215	144	245	864	--	--	--	--
	10/22/09	--	135	--	788	--	--	--	--
MW-3	04/11/06	164	248	367	**1,180**	98.4	65.2	10.6	146
	12/14/06	178	**257**	430	**1,300**	139	110	10.6	149
	03/07/07	176	244	394	**1,260**	108	712	9.88	127
	08/20/07	174	**269**	429	**1,290**	110	78	9.84	144
	04/08/08	171	**259**	443	**1,260**	--	--	--	--
	09/04/08	192	239	384	**1,080**	--	--	--	--
	06/03/09	205	**256**	345	**1,300**	--	--	--	--
	10/22/09	--	234	--	**1,290**	--	--	--	--

Table 2
Summary of Anions, Cations and Total Dissolved Solids in Groundwater
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 ID	Date	Alkalinity	Chloride	Sulfate	TDS	Calcium	Magnesium	Potassium	Sodium
WQCC Standard:			**250**	**600**	**1,000**				
MW-4	04/11/06	200	146	155	638	55.3	37.6	8.62	115
	12/14/06	236	115	172	702	62.6	39.6	7.35	104
	03/07/07	220	102	156	665	51.3	37.5	7.16	92.4
	08/20/07	217	109	168	664	50.4	38.4	7.55	101
	04/08/08	217	113	173	653	--	--	--	--
	09/05/08	320	81	140	602	--	--	--	--
	06/03/09	259	108	162	695	--	--	--	--
	10/22/09	--	94.3	--	622	--	--	--	--
MW-5	04/11/06	192	185	157	754	49.3	32.3	8.48	175
	12/14/06	204	138	181	582	81.3	44.1	7.98	114
	03/07/07	204	104	142	586	56.4	40.8	7.40	85.4
	08/20/07	178	121	171	624	56.6	41.1	7.88	92.9
	04/08/08	184	132	178	690	--	--	--	--
	09/04/08	208	152	147	668	--	--	--	--
	06/03/09	229	120	183	678	--	--	--	--
	10/22/09	--	129	--	810	--	--	--	--
Duplicate									
MW-3	12/14/06	180	238	391	**1,090**	145	122	11.20	173
MW-1	03/07/07	427	**11,200**	489	**17,800**	588	353	73.1	4,660
MW-1	08/20/07	442	**9,620**	478	**17,300**	588	370	82.3	4,740
MW-3	04/08/08	171	**271**	449	**1,270**	--	--	--	--
MW-1	09/04/08	510	**9,420**	378	**15,700**	--	--	--	--
MW-1	06/03/09	537	**8,500**	534	**15,000**	--	--	--	--
MW-1	10/22/09	--	**9,330**	--	**15,500**	--	--	--	--

Notes:
Results are reported in milligrams per liter (mg/L)
< - Less than the method detection limit

JWW



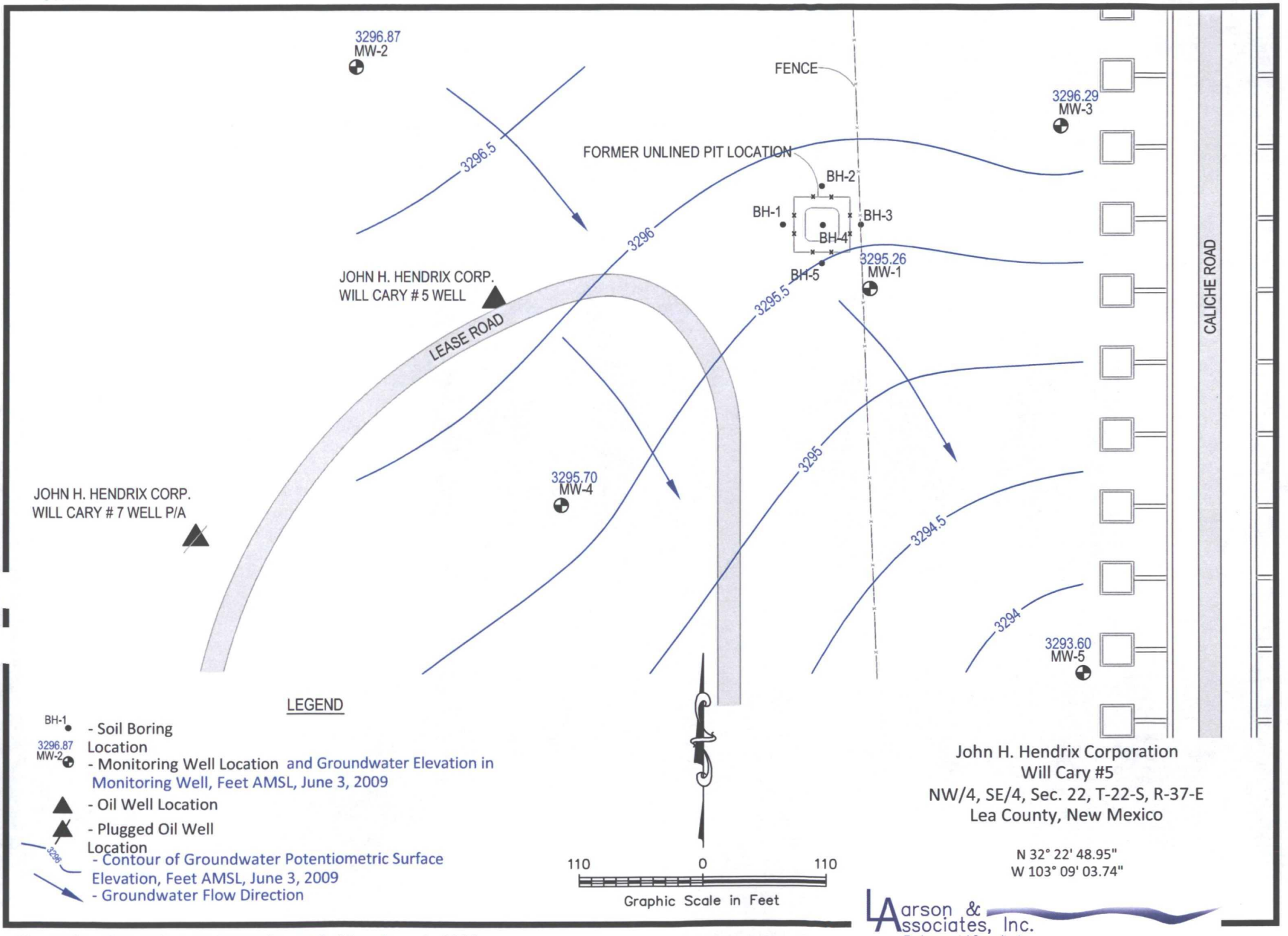
John H. Hendrix Corporation
Will Cary #5
NW/4, SE/4, Sec. 22, T-22-S, R-37-E
Lea County, New Mexico

N 32° 22' 48.95"
W 103° 09' 03.74"

Larson & Associates, Inc.
Environmental Consultants

Figure 1 - Topographic Map

JWW



John H. Hendrix Corporation
Will Cary #5
NW/4, SE/4, Sec. 22, T-22-S, R-37-E
Lea County, New Mexico

N 32° 22' 48.95"
W 103° 09' 03.74"

Larson & Associates, Inc.
Environmental Consultants

Figure 2a - Groundwater Potentiometric Map, June 3, 2009

JWW

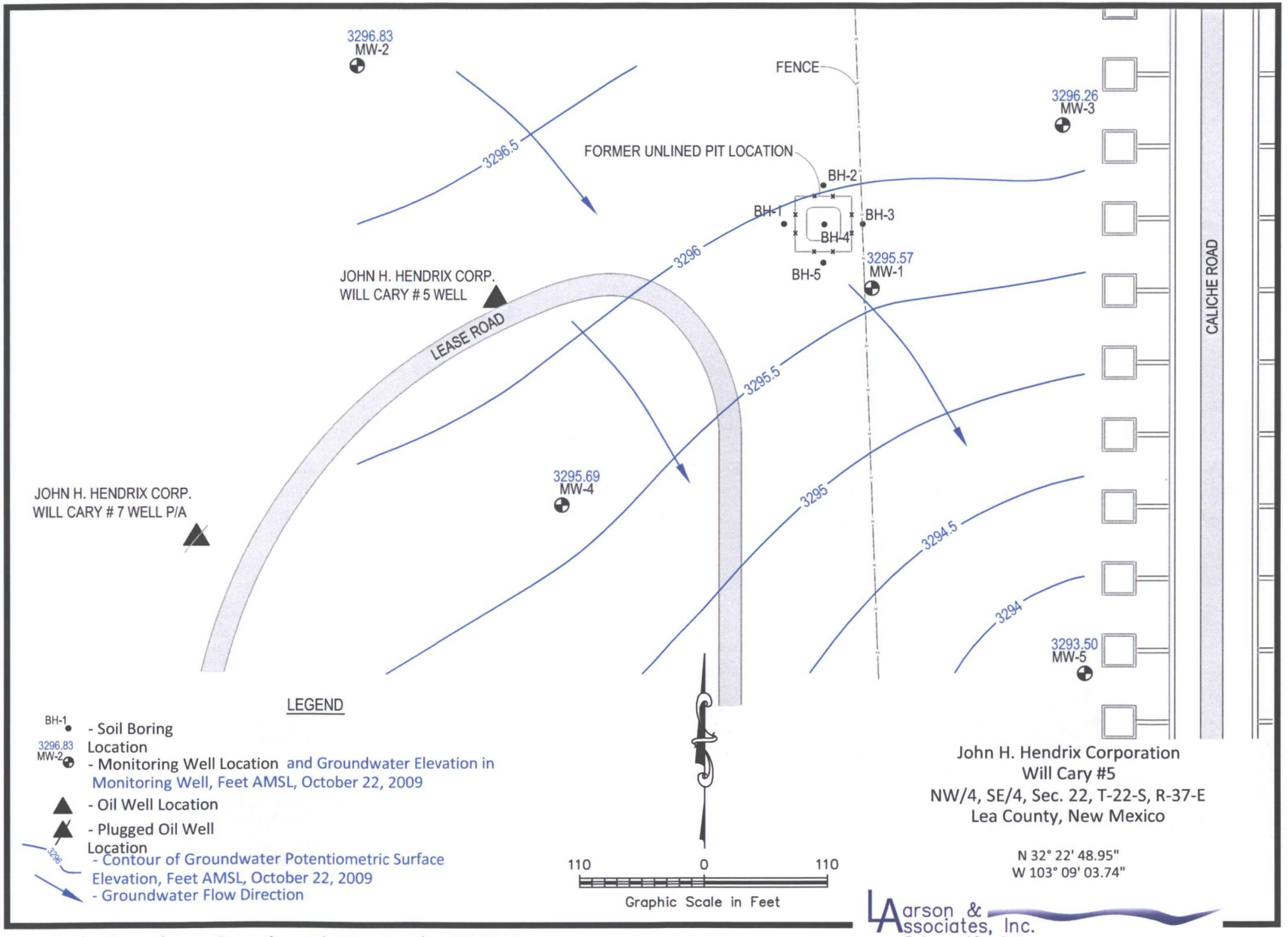
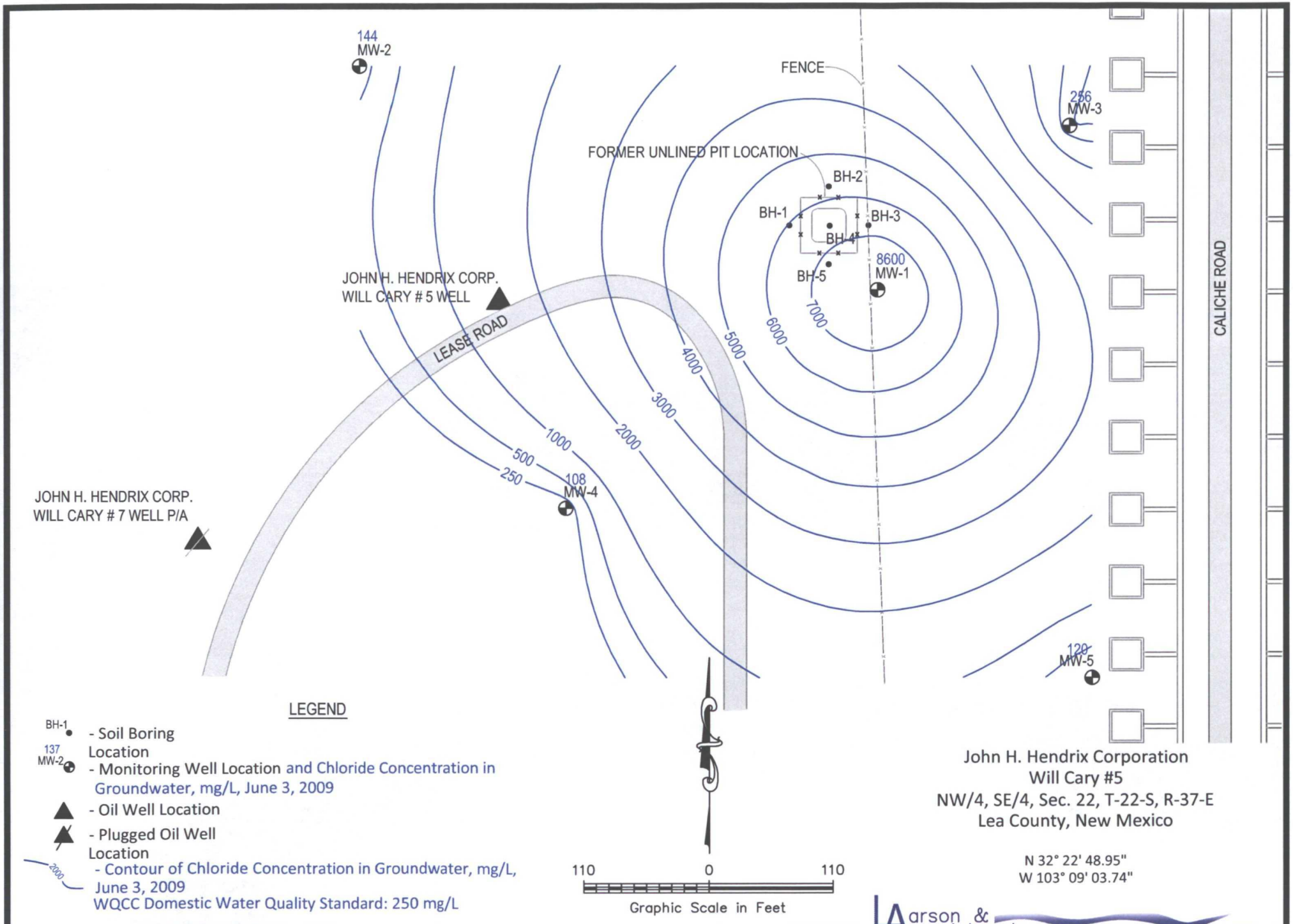


Figure 2b - Groundwater Potentiometric Map, October 22, 2009

Larson & Associates, Inc.
Environmental Consultants

JWW



John H. Hendrix Corporation
Will Cary #5
NW/4, SE/4, Sec. 22, T-22-S, R-37-E
Lea County, New Mexico

N 32° 22' 48.95"
W 103° 09' 03.74"

Larson & Associates, Inc.
Environmental Consultants

Figure 3a - Chloride Concentration Map, June 3, 2009

JWW

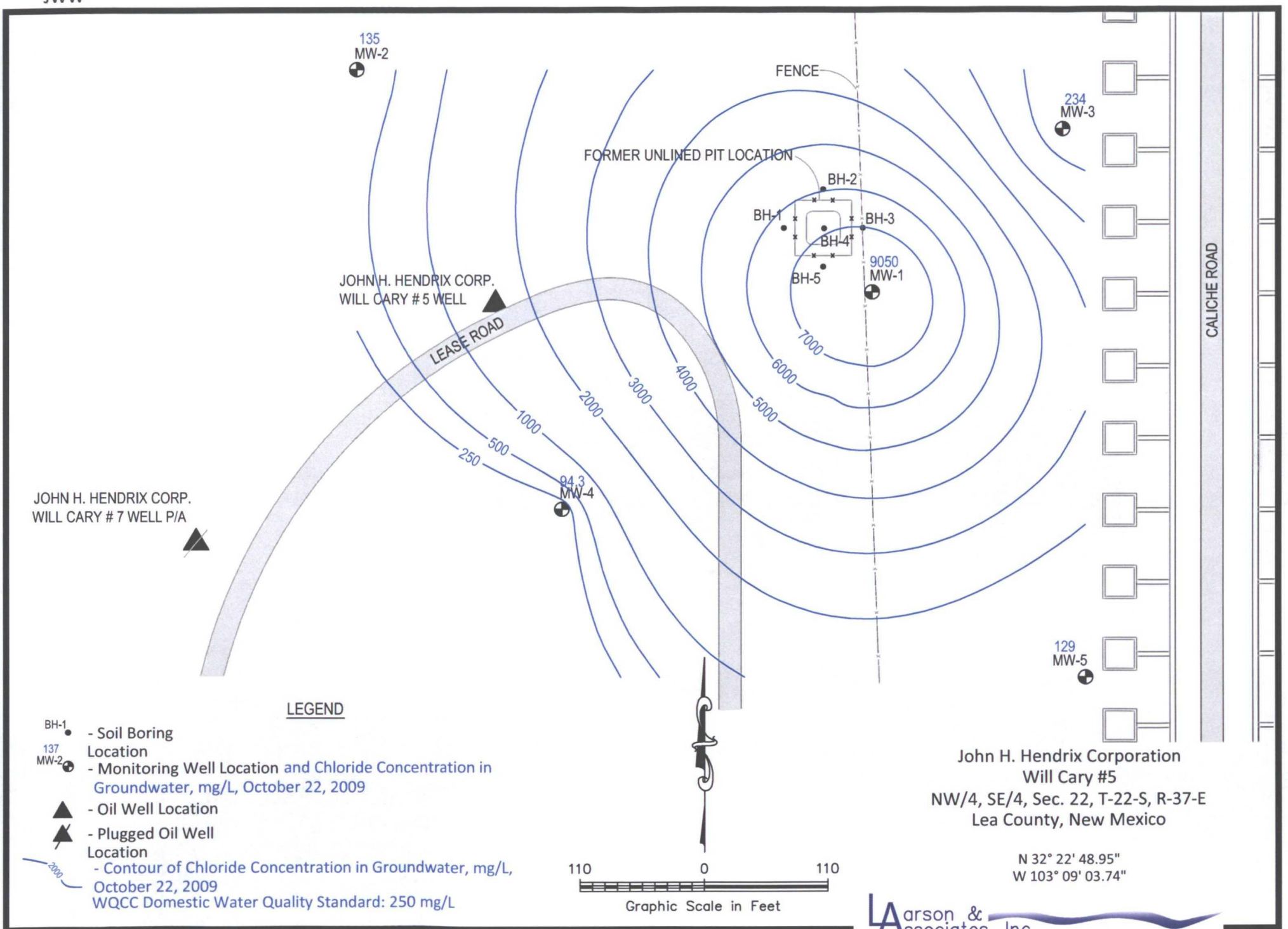


Figure 3b - Chloride Concentration Map, October 22, 2009

JWW

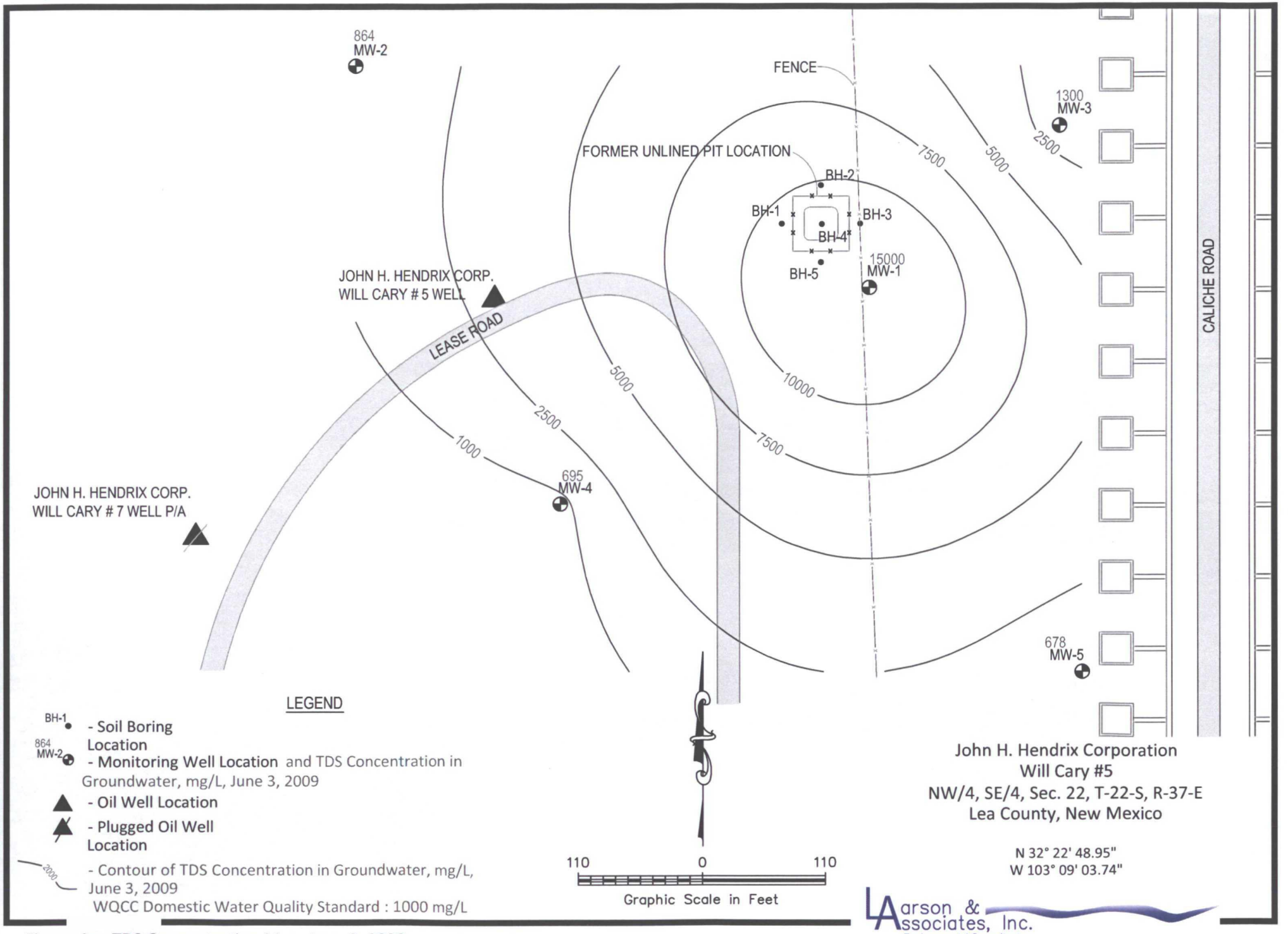


Figure 4a - TDS Concentration Map, June 3, 2009

JWW

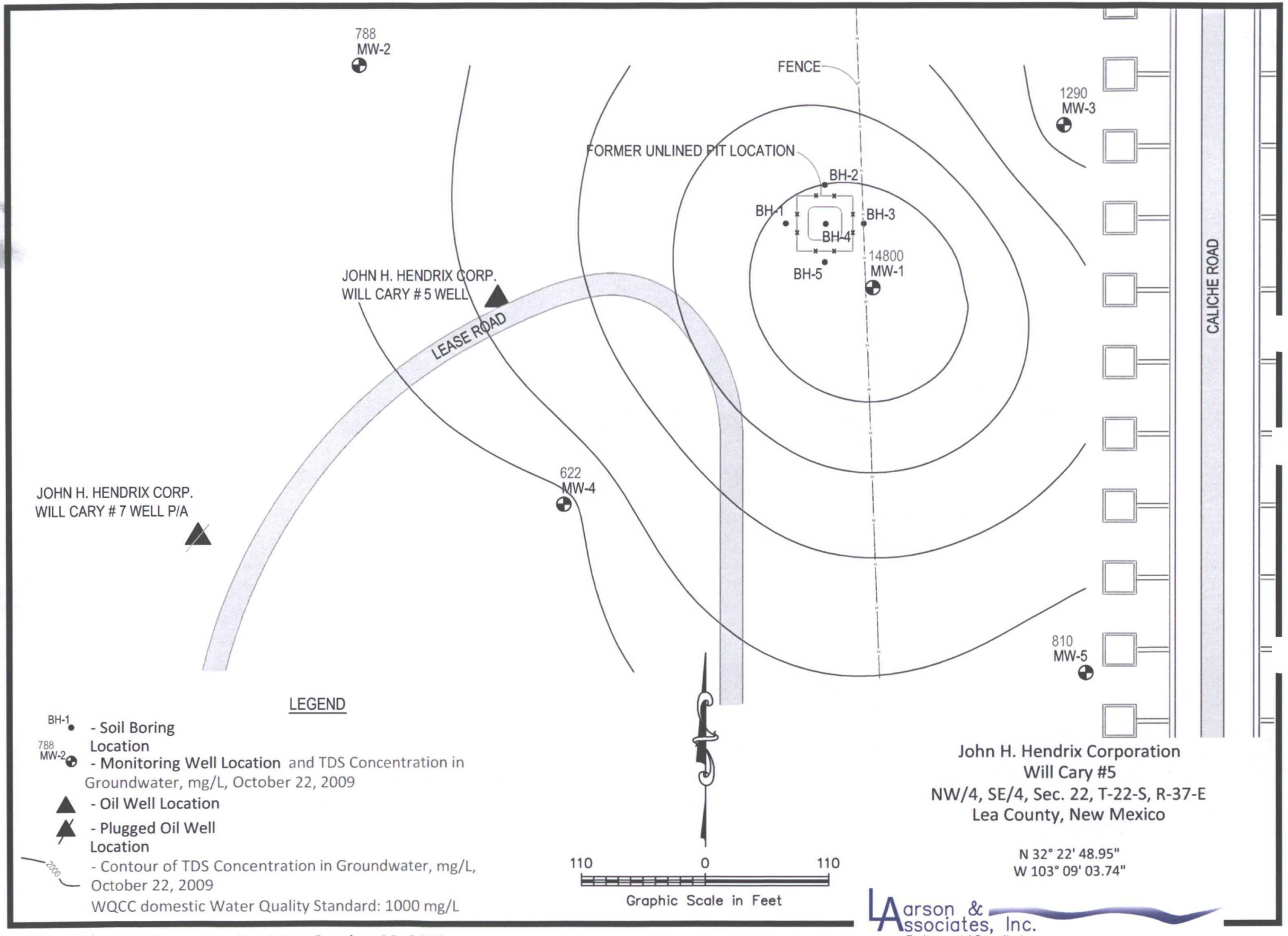


Figure 4b - TDS Concentration Map, October 22, 2009

CARDINAL LABORATORIES

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

ANALYTICAL RESULTS FOR
LARSON & ASSOCIATES, INC.
ATTN: MICHELLE GREEN
507 N. MARIEFELD, SUITE 200
MIDLAND, TX 79701

Receiving Date: 06/03/09
Reporting Date: 06/10/09
Project Number: 4-0123
Project Name: WILL CARY #5
Project Location: NOT GIVEN

Sampling Date: 06/03/09
Sample Type: GROUND WATER
Sample Condition: COOL & INTACT @ 2.5°C
Sample Received By: ML
Analyzed By: AB/HM

LAB NO.	SAMPLE ID	Cl^- (mg/L)	SO_4 (mg/L)	TDS (mg/L)	CO_3 (mg/L)	HCO_3 (mg/L)
Analysis Date:		06/05/09	06/09/09	06/08/09	06/09/09	06/09/09
H17547-1	MW-1	8,600	486	15,000	0	551
H17547-2	MW-2	144	245	864	0	215
H17547-3	MW-3	256	345	1,300	0	205
H17547-4	MW-4	108	162	695	0	259
H17547-5	MW-5	120	183	678	0	229
H17547-6	DUPL-1	8,500	534	15,000	0	537
Quality Control		490	42.7	NR	NR	988
True Value QC		500	40.0	NR	NR	1000
% Recovery		98.0	107	NR	NR	98.8
Relative Percent Difference		< 0.1	3.0	4.1	NR	1.2
METHOD: Standard Methods, EPA		4500-ClˉB	375.4	160.1	310.1	310.1

Chemist

06/10/09
Date

H17547 Larson & Associates

CARDINAL LABORATORIES
101 East Marland, Hobbs, NM 88240
(575) 393-2326 Fax (575) 393-2476

Page 1 of 1

Company Name: Larson + Associates Inc	**BILL TO**
Project Manager: Michelle Green	P.O. #:
Address: 507 N. Marienfeld Suite 200	Company: JHHC
City: Midland State: Tx Zip: 79701	Attn: Carolyn Haynes
Phone #: 432 687 0901 Fax #:	Address:
Project #: 4-0123 Project Owner:	City:
Project Name: Will Cary #5	State: Zip:
Project Location:	Phone #:
Sampler Name: Dan McGinnis	Fax #:

ANALYSIS REQUEST: Anions - Chlorides + TDS

Lab I.D. (FOR LAB USE ONLY)	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX: GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER:	PRESERV.: ACID/BASE:	ICE / COOL	OTHER:	SAMPLING: DATE	TIME	Anions - Chlorides + TDS
H17547-1	MW-1		1	✓							✓		6-3	1005	✓
-2	MW-2		1	✓							✓		6-3	1045	✓
-3	MW-3		1	✓							✓		6-3	1140	✓
-4	MW-4		1	✓							✓		6-3	1113	✓
-5	MW-5		1	✓							✓		6-3	1155	✓
-6	Dupl-1		1	✓							✓		6-3		✓

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising whether based in contract or tort, shall be limited to the amount paid by the client for the analyses. All claims including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequental damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.

Sampler Relinquished: [signature]	Date: 6-3-09 Time: 3:25	Received By: [signature]	Phone Result: ☐ No Add'l Phone #:
Relinquished By:	Date: Time:	Received By:	Fax Result: ☐ No Add'l Fax #:
Delivered By: (Circle One) Sampler - UPS - Bus - Other:	Temp. 25°C	Sample Condition Cool ☐ Yes ☐ No Intact ☑ Yes ☐ No	CHECKED BY: (Initials) MCB

REMARKS:

† Cardinal cannot accept verbal changes. Please fax written changes to 575-393-2476.

Analytical Report 348989

for

Larson & Associates

Project Manager: Michelle Green

Will Cary # 5

4-0123

22-OCT-09

12600 West I-20 East Odessa, Texas 79765

Xenco-Houston (EPA Lab code: TX00122):
Texas (T104704215-08-TX), Arizona (AZ0738), Arkansas (08-039-0), Connecticut (PH-0102), Florida (E871002)
Illinois (002082), Indiana (C-TX-02), Iowa (392), Kansas (E-10380), Kentucky (45), Louisiana (03054)
New Hampshire (297408), New Jersey (TX007), New York (11763), Oklahoma (9218), Pennsylvania (68-03610)
Rhode Island (LAO00308), USDA (S-44102)

Xenco-Atlanta (EPA Lab Code: GA00046):
Florida (E87428), North Carolina (483), South Carolina (98015), Utah (AALI1), West Virginia (362), Kentucky (85)
Louisiana (04176), USDA (P330-07-00105)

Xenco-Miami (EPA Lab code: FL01152): Florida (E86678), Maryland (330)
Xenco-Tampa Mobile (EPA Lab code: FL01212): Florida (E84900)
Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400-08-TX)
Xenco-Dallas (EPA Lab code: TX01468): Texas (T104704295-08-TX)
Xenco-Corpus Christi (EPA Lab code: TX02613): Texas (T104704370-08-TX)
Xenco-Boca Raton (EPA Lab Code: FL00449): Florida(E86240),
South Carolina(96031001), Louisiana(04154), Georgia(917)

XENCO Laboratories

22-OCT-09

Project Manager: **Michelle Green**
Larson & Associates
P.O. Box 50685
Midland, TX 79710

Reference: XENCO Report No: **348989**
Will Cary # 5
Project Address:

Michelle Green:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number 348989. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. Estimation of data uncertainty for this report is found in the quality control section of this report unless otherwise noted. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 348989 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

Brent Barron, II
Odessa Laboratory Manager

XENCO Laboratories

Sample Cross Reference 348989

Larson & Associates, Midland, TX

Will Cary # 5

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
MW-1	W	Oct-19-09 10:30		348989-001
MW-2	W	Oct-19-09 11:45		348989-002
MW-3	W	Oct-19-09 11:00		348989-003
MW-4	W	Oct-19-09 12:15		348989-004
MW-5	W	Oct-19-09 11:20		348989-005
Dup-01	W	Oct-19-09 00:00		348989-006

CASE NARRATIVE

XENCO Laboratories

Client Name: Larson & Associates
Project Name: Will Cary # 5

Project ID: 4-0123
Work Order Number: 348989

Report Date: 22-OCT-09
Date Received: 10/19/2009

Sample receipt non conformances and Comments:

None

Sample receipt Non Conformances and Comments per Sample:

None

Analytical Non Conformances and Comments:

Batch: LBA-778028 Inorganic Anions by EPA 300
E300MI

Batch 778028, Chloride recovered above QC limits in the Matrix Spike.
Samples affected are: 348989-001, -002, -006, -004, -005, -003.
The Laboratory Control Sample for Chloride is within laboratory Control Limits

Batch: LBA-778248 TDS by SM2540C
None

Certificate of Analysis Summary 348989

Larson & Associates, Midland, TX

Project Name: Will Cary # 5

Project Id: 4-0123
Contact: Michelle Green
Project Location:

Date Received in Lab: Mon Oct-19-09 03:00 pm
Report Date: 22-OCT-09
Project Manager: Brent Barron, II

Analysis Requested													
	Lab Id:	348989-001		348989-002		348989-003		348989-004		348989-005		348989-006	
	Field Id:	MW-1		MW-2		MW-3		MW-4		MW-5		Dup-01	
	Depth:												
	Matrix:	WATER		WATER		WATER		WATER		WATER		WATER	
	Sampled:	Oct-19-09 10:30		Oct-19-09 11:45		Oct-19-09 11:00		Oct-19-09 12:15		Oct-19-09 11:20		Oct-19-09 00:00	
Anions by E300	***Extracted:***												
	Analyzed:	Oct-20-09 13:48		Oct-20-09 13:48		Oct-20-09 13:48		Oct-20-09 13:48		Oct-20-09 13:48		Oct-20-09 13:48	
	Units/RL:	mg/L	RL	mg/L	RL	mg/L	RL	mg/L	RL	mg/L	RL	mg/L	RL
Chloride		9050	250	135	5.00	234	10.0	94.3	5.00	129	5.00	9330	250
TDS by SM2540C	***Extracted:***												
	Analyzed:	Oct-20-09 15:30		Oct-20-09 15:30		Oct-20-09 15:30		Oct-20-09 15:30		Oct-20-09 15:30		Oct-20-09 15:30	
	Units/RL:	mg/L	RL	mg/L	RL	mg/L	RL	mg/L	RL	mg/L	RL	mg/L	RL
Total dissolved solids		14800	5.00	788	5.00	1290	5.00	622	5.00	810	5.00	15500	5.00

Brent Barron, II
Odessa Laboratory Manager

XENCO Laboratories

Flagging Criteria

X In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to effect the recovery of the spike concentration. This condition could also effect the relative percent difference in the MS/MSD.

B A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.

D The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.

E The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.

F RPD exceeded lab control limits.

J The target analyte was positively identified below the MQL and above the SQL.

U Analyte was not detected.

L The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.

H The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.

K Sample analyzed outside of recommended hold time.

JN A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.

BRL Below Reporting Limit.

RL Reporting Limit

* Outside XENCO's scope of NELAC Accreditation.

Laboratories

Blank Spike Recovery

Project Name: Will Cary # 5

Work Order #: 348989 **Project ID:** 4-0123

Lab Batch #: 778028 **Sample:** 778028-1-BKS **Matrix:** Water

Date Analyzed: 10/20/2009 **Date Prepared:** 10/20/2009 **Analyst:** LATCOR

Reporting Units: mg/L **Batch #:** 1

Anions by E300 Analytes	Blank Result [A]	BLANK /BLANK SPIKE RECOVERY STUDY Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Control Limits %R	Flags
Chloride	ND	10.0	10.3	103	90-110	

Blank Spike Recovery [D] = 100*[C]/[B]
All results are based on MDL and validated for QC purposes.
BRL - Below Reporting Limit

XENCO Laboratories

Form 3 - MS Recoveries

Project Name: Will Cary # 5

Work Order #: 348989
Lab Batch #: 778028
Project ID: 4-0123
Date Analyzed: 10/20/2009
Date Prepared: 10/20/2009
Analyst: LATCOR
QC- Sample ID: 348989-001 S
Batch #: 1
Matrix: Water
Reporting Units: mg/L

Inorganic Anions by EPA 300	MATRIX / MATRIX SPIKE RECOVERY STUDY					
Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
Chloride	9050	5000	14700	113	90-110	X

Matrix Spike Percent Recovery [D] = 100*(C-A)/B
Relative Percent Difference [E] = 200*(C-A)/(C+B)
All Results are based on MDL and Validated for QC Purposes

BRL - Below Reporting Limit

Sample Duplicate Recovery

Project Name: Will Cary # 5

Work Order #: 348989

Lab Batch #: 778028 **Project ID:** 4-0123
Date Analyzed: 10/20/2009 **Date Prepared:** 10/20/2009 **Analyst:** LATCOR
QC- Sample ID: 348989-001 D **Batch #:** 1 **Matrix:** Water
Reporting Units: mg/L

Anions by E300 Analyte	SAMPLE / SAMPLE DUPLICATE RECOVERY				
	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Chloride	9050	9130	1	20	

Lab Batch #: 778248
Date Analyzed: 10/20/2009 **Date Prepared:** 10/20/2009 **Analyst:** WRU
QC- Sample ID: 348989-001 D **Batch #:** 1 **Matrix:** Water
Reporting Units: mg/L

TDS by SM2540C Analyte	SAMPLE / SAMPLE DUPLICATE RECOVERY				
	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Total dissolved solids	14800	14900	1	30	

Spike Relative Difference RPD 200 * | (B-A)/(B+A) |
All Results are based on MDL and validated for QC purposes.
BRL - Below Reporting Limit

CHAIN-OF-CUSTODY

Larson & Associates, Inc.
Environmental Consultants
507 N. Marienfeld, Ste. 200
Midland, TX 79701
432-687-0901

Data Reported to: 348989

DATE: 10-19-09 PAGE 1 OF 1
PO #: LAB WORK ORDER #:
PROJECT LOCATION OR NAME: Will Can. #5
LAI PROJECT #: 4-0123 COLLECTOR: DMcGinnis

TRRP report? ☐ Yes ☐ No
TIME ZONE: Time zone/State:

S=SOIL P=PAINT
W=WATER SL=SLUDGE
A=AIR OT=OTHER

Field Sample I.D:	Lab #	Date	Time (MST)	Matrix	# of Containers	PRESERVATION: HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESERVED	ANALYSES	FIELD NOTES
MW-1	01	10-19	1030	W	1				✓		TDS ☐ TSS ☐ X; CHLORIDE ☐ ANIONS ☐ X	
MW-2	02		1145	W	1				✓			
MW-3	03		1100	W	1				✓			
MW-4	04		1215	W	1				✓			
MW-5	05		1120	W	1				✓			
Dup-01	06			W	1				✓			
TOTAL												

ANALYSES: BTEX ☐ MTBE ☐ TRPH 418.1 ☐ TPH 1005 ☐ TPH 1006 ☐ GASOLINE MOD 8015 ☐ DIESEL - MOD 8015 ☐ VOC 8260 ☐ SVOC 8270 ☐ PAH 8270 ☐ HOLDPAH ☐ 8081 PESTICIDES ☐ 8151 HERBICIDES ☐ 8082 PCBS ☐ TCLP - METALS (RCRA) ☐ TCLP VOC ☐ TCLP - PEST ☐ HERB ☐ Semi-VOC ☐ TOTAL METALS (RCRA) ☐ OTHER LIST ☐ LEAD - TOTAL ☐ D.W. 200.8 ☐ TCLP ☐ RCI ☐ TOX ☐ FLASHPOINT ☐ pH ☐ % MOISTURE ☐ CYANIDE ☐ EXPLOSIVES ☐ HEXAVALENT CHROMIUM ☐ PECHLORATE ☐ ALKALINITY ☐

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
Dmh Whl	10-19-09/1500	Andrea Sam
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)

TURN AROUND TIME
NORMAL ☑
1 DAY ☐
2 DAY ☐
OTHER ☐

LABORATORY USE ONLY:
RECEIVING TEMP: 2.6 THERM #: A7
CUSTODY SEALS - ☐ BROKEN ☐ INTACT ☑ NOT USED
☐ CARRIER BILL #
☑ HAND DELIVERED

Environmental Lab of Texas

Variance/ Corrective Action Report- Sample Log-In

Client: Larson & Assoc.

Date/ Time: 10.19.09 15:00

Lab ID # : 348989

Initials: AL

Sample Receipt Checklist

				Client Initials
#1	Temperature of container/ cooler?	(Yes)	No	2.6 °C	
#2	Shipping container in good condition?	(Yes)	No		
#3	Custody Seals intact on shipping container/ cooler?	Yes	No	(Not Present)	
#4	Custody Seals intact on sample bottles/ container?	Yes	No	(Not Present)	
#5	Chain of Custody present?	(Yes)	No		
#6	Sample instructions complete of Chain of Custody?	(Yes)	No		
#7	Chain of Custody signed when relinquished/ received?	(Yes)	No		
#8	Chain of Custody agrees with sample label(s)?	(Yes)	No	ID written on Cont./ Lid	
#9	Container label(s) legible and intact?	(Yes)	No	Not Applicable	
#10	Sample matrix/ properties agree with Chain of Custody?	(Yes)	No		
#11	Containers supplied by ELOT?	(Yes)	No		
#12	Samples in proper container/ bottle?	(Yes)	No	See Below	
#13	Samples properly preserved?	(Yes)	No	See Below	
#14	Sample bottles intact?	(Yes)	No		
#15	Preservations documented on Chain of Custody?	(Yes)	No		
#16	Containers documented on Chain of Custody?	(Yes)	No		
#17	Sufficient sample amount for indicated test(s)?	(Yes)	No	See Below	
#18	All samples received within sufficient hold time?	(Yes)	No	See Below	
#19	Subcontract of sample(s)?	Yes	No	(Not Applicable)	
#20	VOC samples have zero headspace?	Yes	No	(Not Applicable)	

Variance Documentation

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

Regarding: _____

Corrective Action Taken:

Check all that Apply:

- ☐ See attached e-mail/ fax
- ☐ Client understands and would like to proceed with analysis
- ☐ Cooling process had begun shortly after sampling event

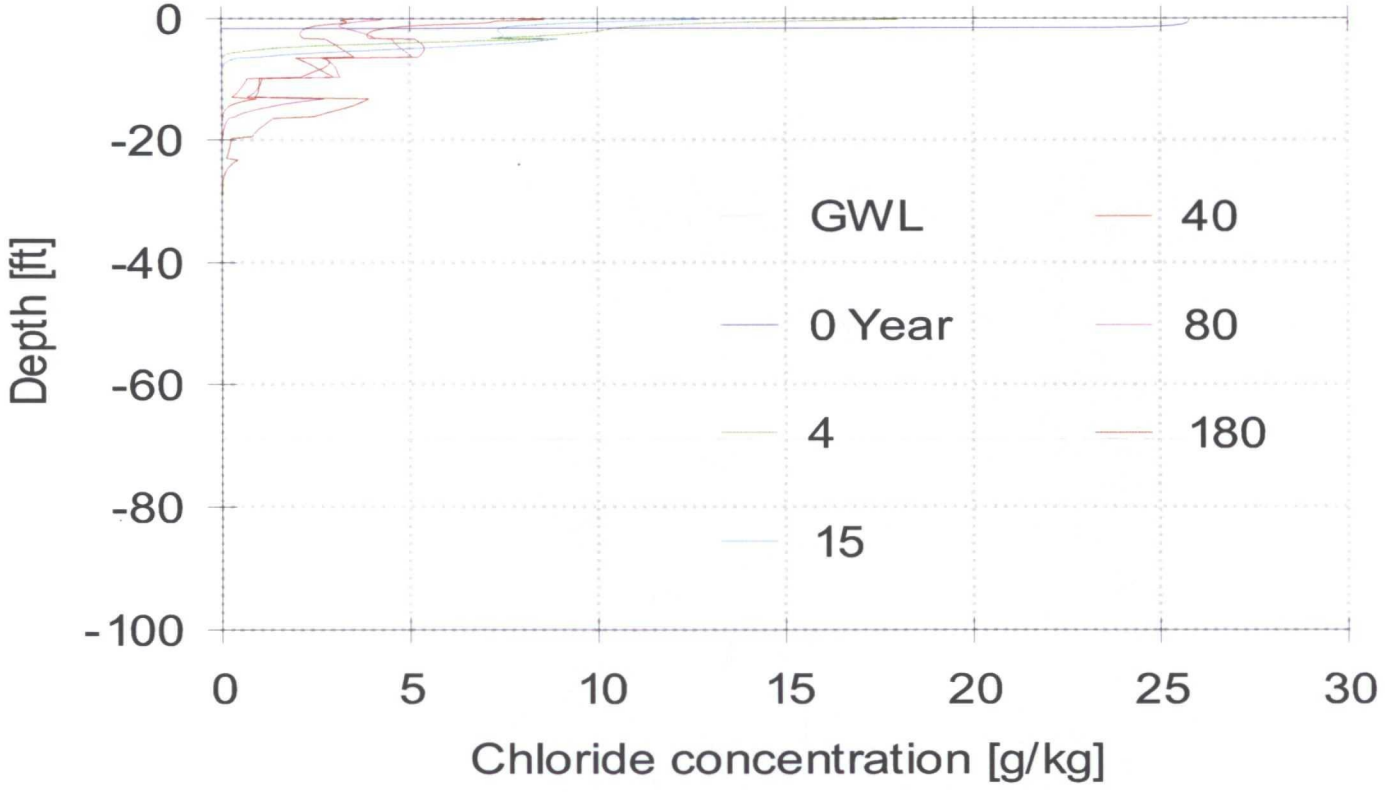
Project: Will Cary #5.ami
Path: C:\Program Files\API\AMIGO\Projects\Will Cary #5.ami
Date: 11/4/2009
Units: English (inches)
Climate: Arid Hot (NM/W.Texas, Hobbs)
Plant Uptake Trigger: 1% Input Concentration

Groundwater Characteristics
Background Cl Concentration in Aquifer: 137 [mg/L]
Aquifer porosity: 0.3 [-]
Groundwater Table Depth: 70 [ft]
Aquifer Thickness: 7 [ft]
Slope of Water Table: 0.0037 [-]
Hydraulic Conductivity: 3.28084 [ft/d]
Groundwater Flux: 0.0849738 [ft2/d]

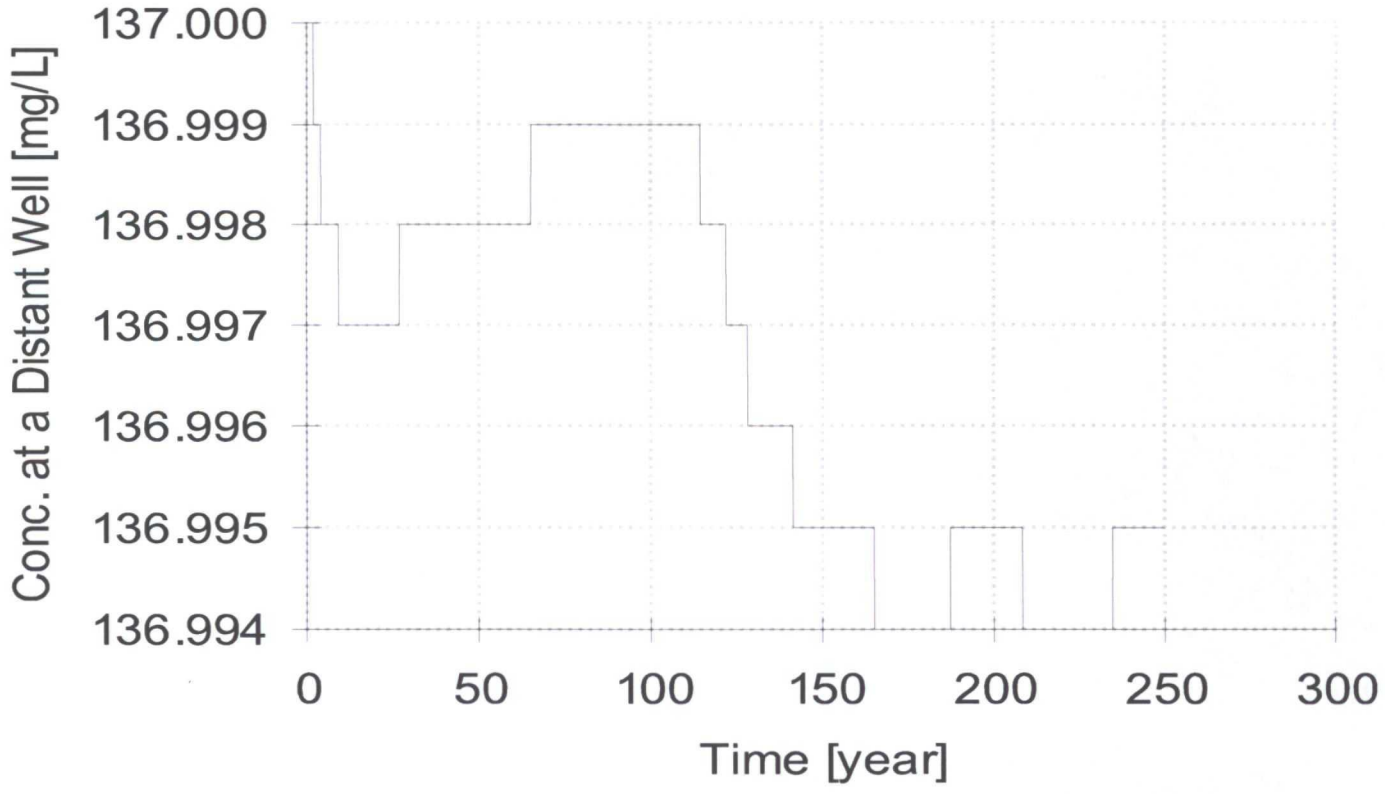
Source Characteristics
Chloride Load:: 23.6004 [kg/m2]
Max. length of the spill in direction of GW flow:: 3.28084 [ft]

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

Distant Well Parameters
Distance to Well:65[ft]
Source Width:3.28[ft]
Longitudinal Dispersivity:10[-]
Transverse Dispersivity:1[-]



Max Concentration 137.000 [mg/L] at time 0.537 Year



Project: Will Cary #5.ami
Path: C:\Program Files\API\AMIGO\Projects\Will Cary #5.ami
Date: 11/4/2009
Units: English (inches)
Climate: Arid Hot (NM/W.Texas, Hobbs)
Plant Uptake Trigger: 1% Input Concentration

Groundwater Characteristics
Background Cl Concentration in Aquifer: 137 [mg/L]
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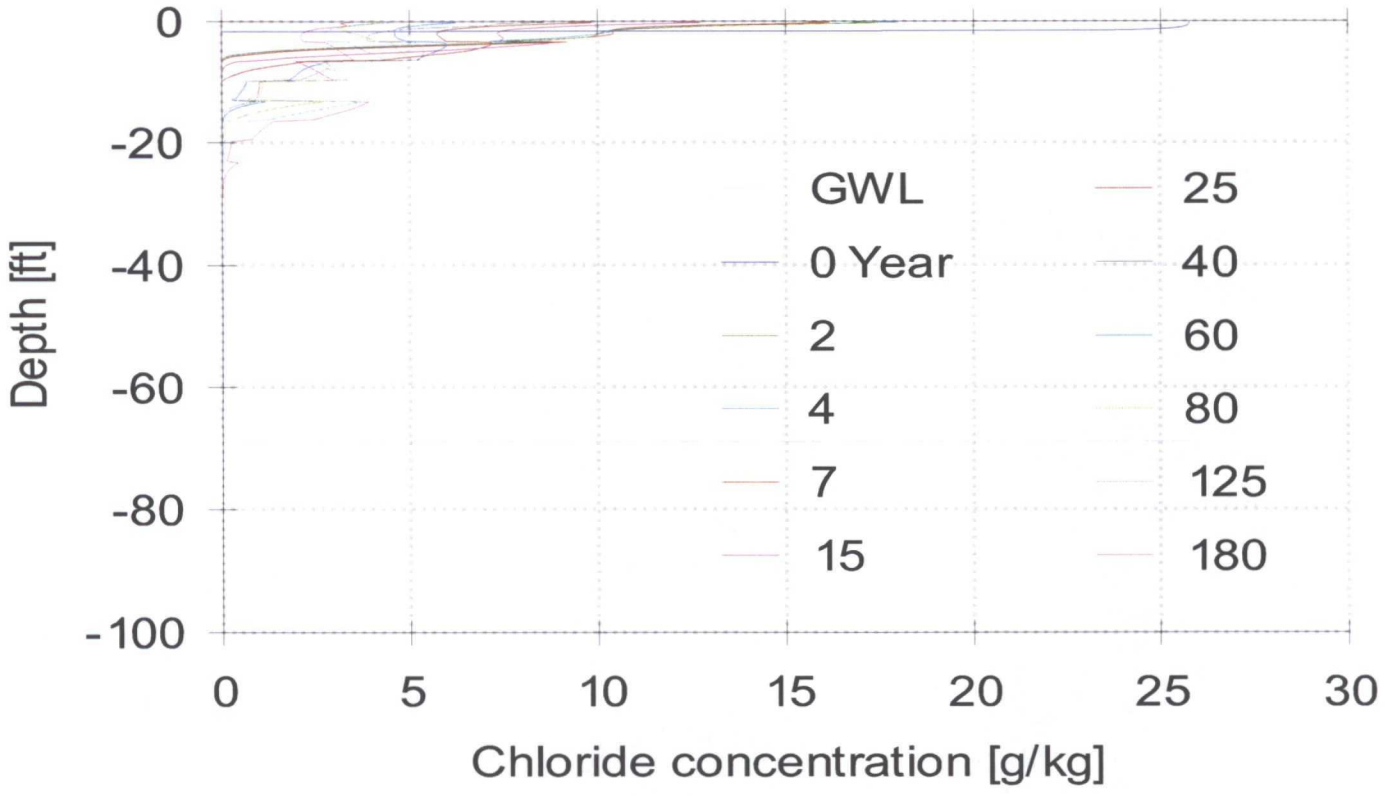
Groundwater Table Depth: 70 [ft]
Aquifer Thickness: 7 [ft]
Slope of Water Table: 0.0037 [-]
Hydraulic Conductivity: 3.28084 [ft/d]
Groundwater Flux: 0.0849738 [ft2/d]

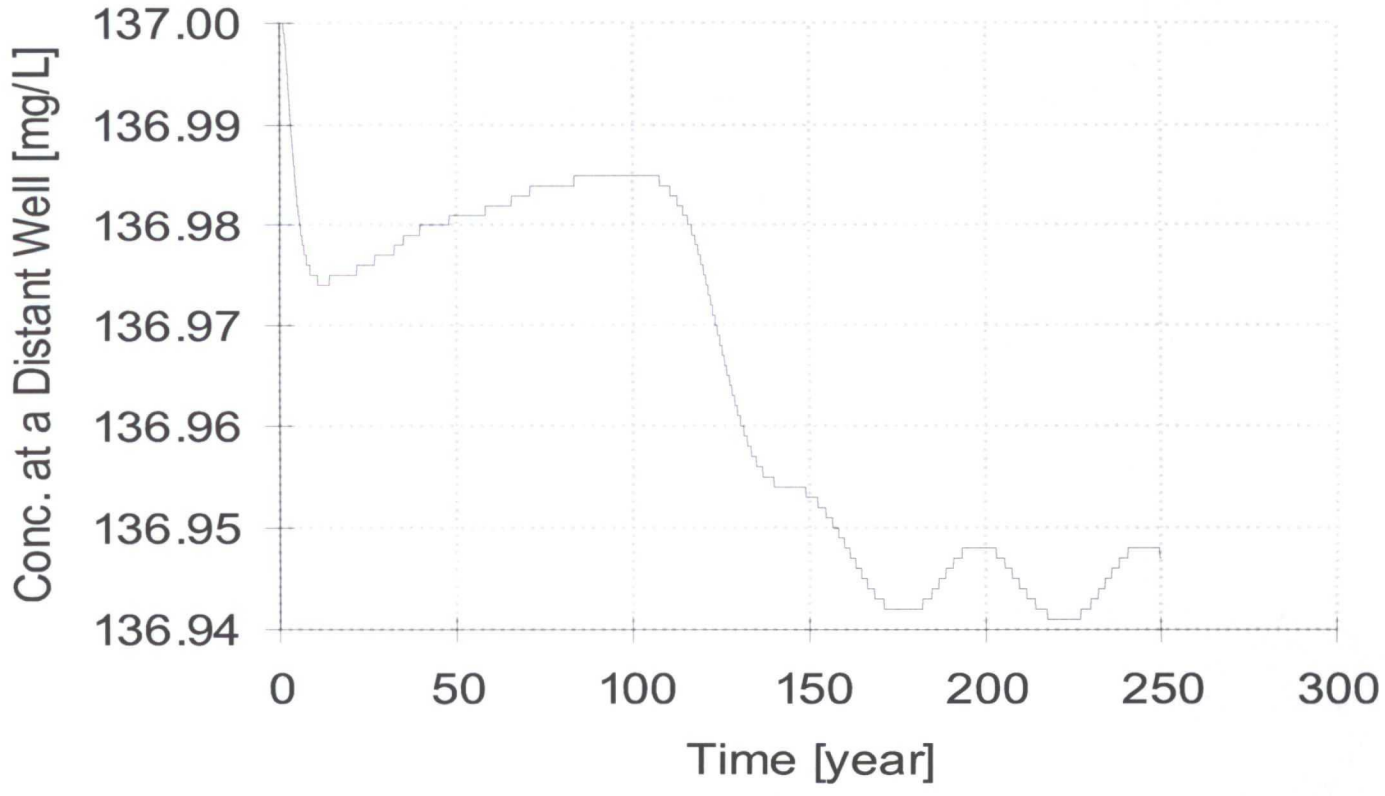
Source Characteristics
Chloride Load:: 23.6004 [kg/m2]
Max. length of the spill in direction of GW flow:: 10 [ft]

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

Distant Well Parameters
Distance to Well:65[ft]
Source Width:10[ft]
Longitudinal Dispersivity:10[-]
Transverse Dispersivity:1[-]



Max Concentration 137.000 [mg/L] at time 0.537 Year



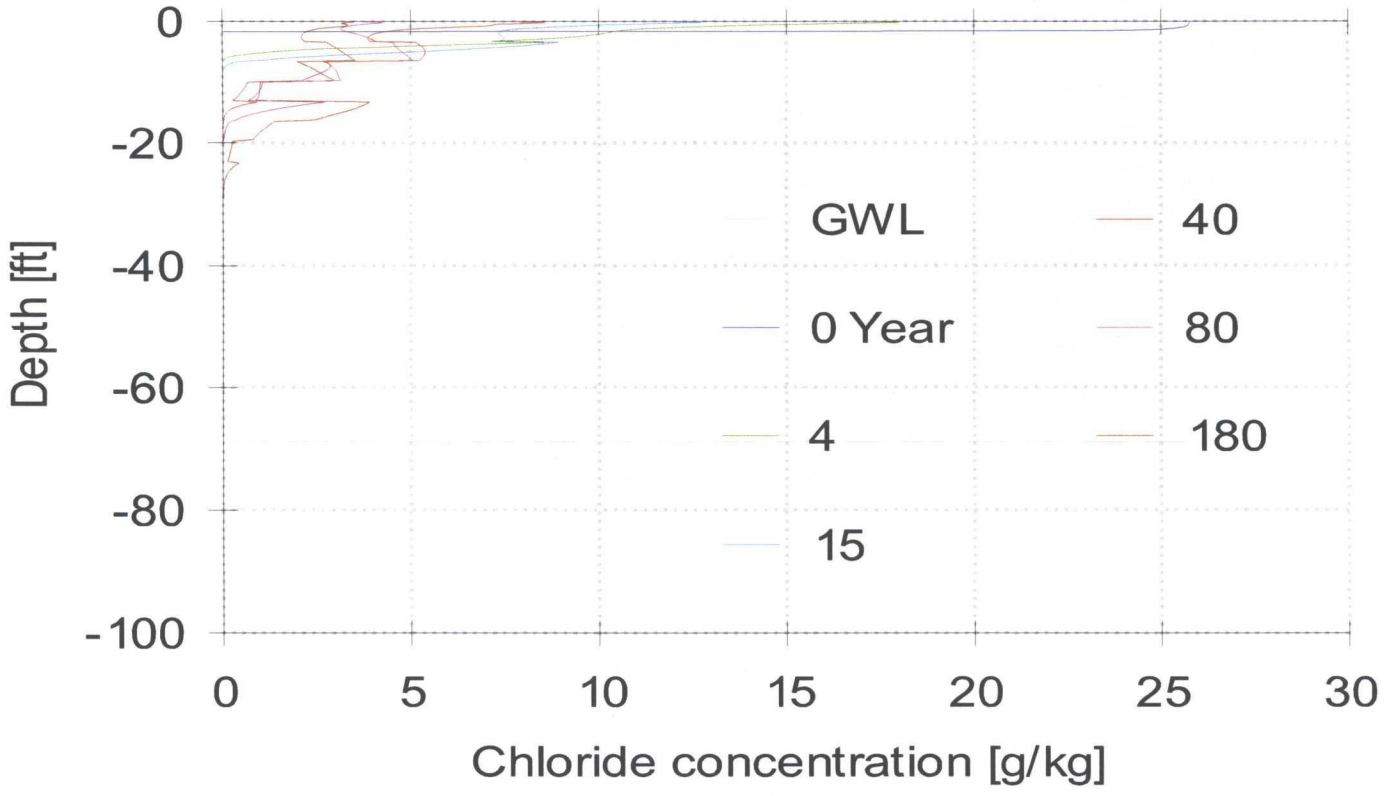
Project: Will Cary #5.ami
Path: C:\Program Files\API\AMIGO\Projects\Will Cary #5.ami
Date: 11/4/2009
Units: English (inches)
Climate: Arid Hot (NM/W.Texas, Hobbs)
Plant Uptake Trigger: 1% Input Concentration

Groundwater Characteristics
Background Cl Concentration in Aquifer: 137 [mg/L]
Aquifer porosity: 0.3 [-]
Groundwater Table Depth: 70 [ft]
Aquifer Thickness: 7 [ft]
Slope of Water Table: 0.0037 [-]
Hydraulic Conductivity: 3.28084 [ft/d]
Groundwater Flux: 0.0849738 [ft2/d]

Source Characteristics
Chloride Load:: 23.6004 [kg/m2]
Max. length of the spill in direction of GW flow:: 20 [ft]

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

Distant Well Parameters
Distance to Well:65[ft]
Source Width:20[ft]
Longitudinal Dispersivity:10[-]
Transverse Dispersivity:1[-]



Max Concentration 137.001 [mg/L] at time 0.537 Year