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REPORTS

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August 2006

Closure Plan Investigation Report

Samson BD-04 Reserve Pit
Samson Investment Company

R.T. Hicks Consultants, Ltd.

901 Rio Grande Blvd. NW, Suite F-142, Albuquerque, NM 87104

August 2006

Closure Plan Investigation Report

SAMSON BD-04 RESERVE PIT

Prepared for:

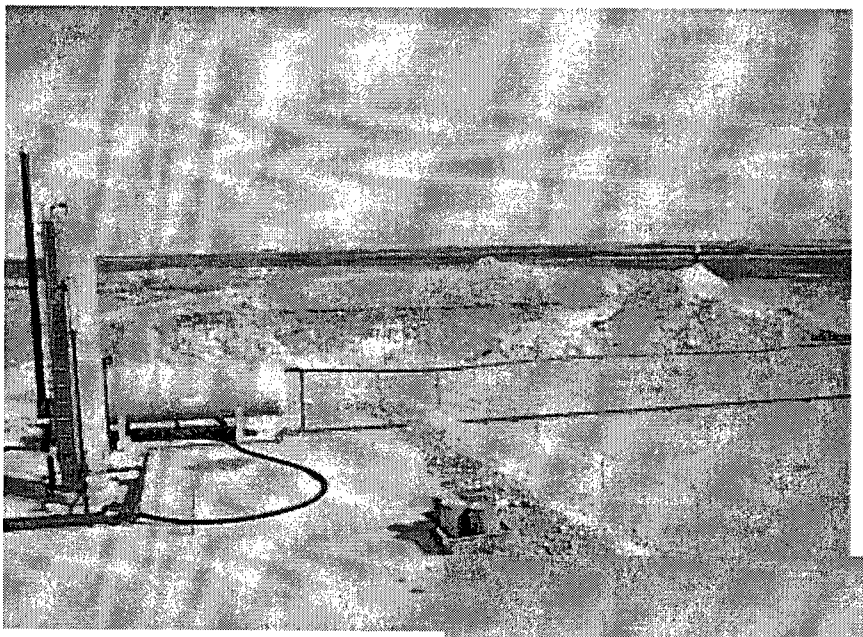
Samson Investment Company
Two West Second Street
Tulsa, OK 74103

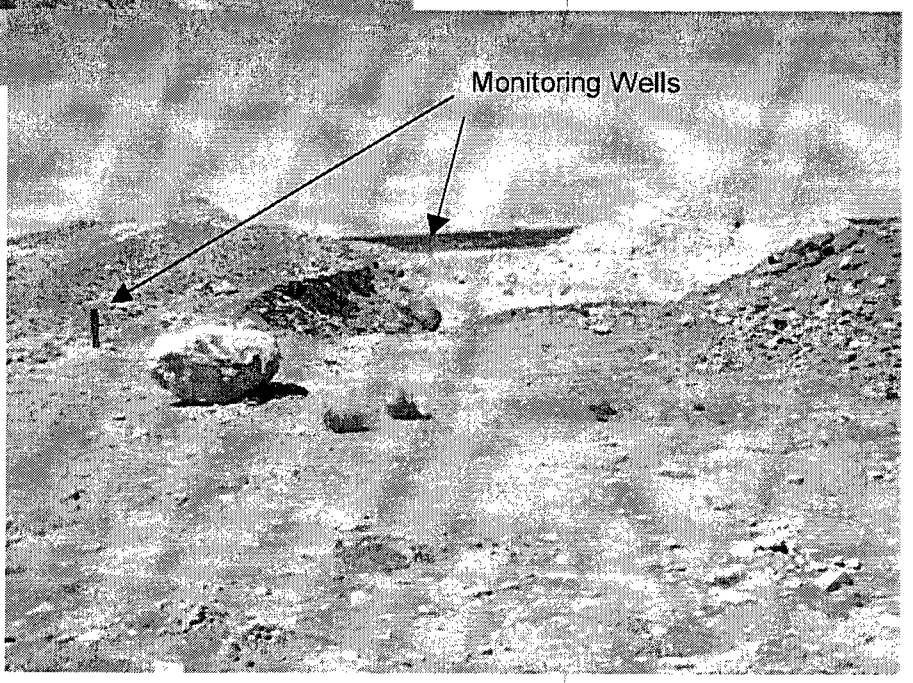
R.T. HICKS CONSULTANTS, LTD.

901 RIO GRANDE, SUITE F-142, ALBUQUERQUE, NM, 87104

1.0 INTRODUCTION

Plate 1 shows the location of the site relative to the junction of US highway 380 and State Highway 457, about 15.5 miles west-northwest of Tatum, New Mexico. The State "BD" No. 4 Reserve Pit is in T12S-R33E-Section 2, Unit Letter H (latitude 33° 18' 35" N, longitude 103° 34' 39" W). The photographs in Figures 1 and 2 (below) depict the site and nearby environs.





Figures 1 & 2 - Site and surrounding area.

The drilling reserve pit was constructed in 2004 by removing the top 1-2 feet of soil and placing it along the northeastern edge. Caliche below the topsoil excavated as part of the original pit construction was stockpiled on the eastern edge of the pit. The pit was used for approximately 60 days in 2004 and contained an average of 2 to 3 feet of brine water during that time. During the closure of the pit, sampling suggested that a release of brine drilling mud had occurred, impacting the underlying earth material. The reserve pit was over-excavated to a depth of 13 to 20 feet and all of the excavated material is stockpiled in two piles - the existing pile east of the pit and one on the southern edge of the pit.

Figure 1 is looking east from the tank battery with the excavated reserve pit in the background. In Figure 1, the eastern (red/pink) spoil pile, which contains material excavated prior to use of the pit, lies behind the pit. The southern spoil pile (white) to the right of the pit is material excavated from the pit as part of the release delineation program conducted after the residual pit material had dried. The clean top soil from the original reserve pit excavation is visible behind the equipment in Figure 1. Figure 2 is a view to the south of the eastern edge of the excavation, showing both monitoring wells and the general grain size of the material excavated from the pit. Figure 3 shows the wall of the excavation and the nature of the uppermost 10-13 feet of the vadose zone - the barbed wire fence on the top of the photo provides a reference scale.

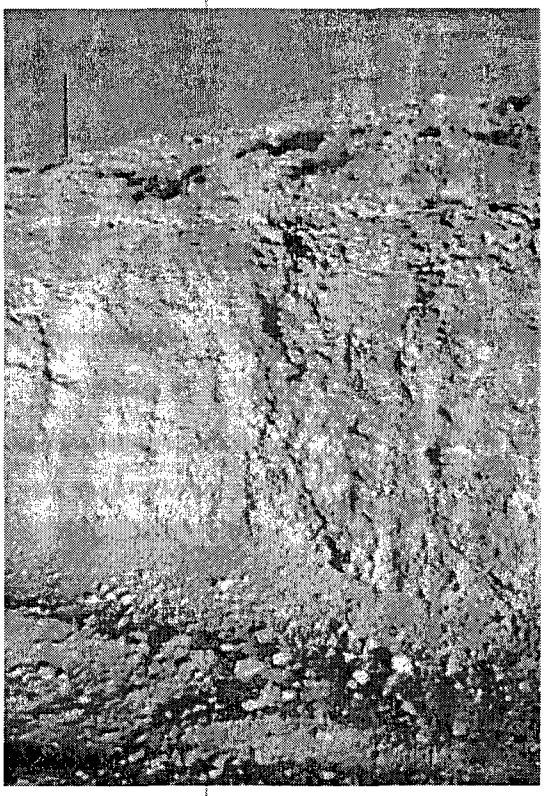


Figure 3 - Wall of the excavation shows upper 10-13 feet of the vadose zone.

Plate 2 is a topographic map of the site and the environs, showing the locations of nearby water supply wells. Plate 3 is 2005 image from Google Earth of the same radius, and indicates that the surrounding area is used primarily for oil and gas production and grazing.

The reserve pit was active during the drilling of the new well, a period of about 60 days in 2004. After sufficient time had passed to dry the residual material, closure of the pit commenced in 2005. Samson then directed the excavation of the residual material and the over excavation of the pit in late Fall 2005 as part of a delineation program. Plate 4 presents three aerial photographs of the area:

a) an aerial photograph prior to drilling BD-04 (1996-98)
b) an aerial photograph during the drilling (2004), and
c) a 2005 image showing the excavator during delineation operations

2.0 INVESTIGATION RESULTS

2.1 HYDROGEOLOGY

The State "BD" No. 4 site is located on the Llano Estacado or southern High Plains which is a plateau standing from 100 to 300 feet above the surrounding region. Near the site, in northern Lea County, the plains are nearly flat, broken only by low swales and small depressions. The southeast trending surface drainage system is poorly formed along the regional slope of approximately 10-15 feet/mile. Run-off from the average 14 inches of annual precipitation is largely captured by the shallow depressions where it infiltrates or is lost to evapotranspiration.

The rocks exposed at the surface are Tertiary age alluvial deposits and petrocalcic soils of the Tertiary Ogallala formation (see Plate 5). Descriptions of the samples from a site soil boring (background) and two monitoring wells (see Appendix A) indicate that a thin (less than 1-foot) layer of topsoil is present from which sparse vegetation, including mesquite trees and various native grasses exist. Underlying the top soil to a depth of approximately 28 feet is a broken caliche layer, which includes interbedded silt and find-grain sand with some hard, massive caliche boulders (see Figure 3).

Below the broken caliche layer, the Ogallala consists of fine-grain sand that varies in color, cementation, and grain size. Generally the grain size increases with depth and may include discontinuous beds of coarse-grain sand and gravel. The maximum thickness of the Ogallala formation is found approximately 15 miles west of the site, at the Mescalero Ridge (escarpment). According to state records from the area water wells the Ogallala formation is approximately 160 feet thick at the site, although very few of the wells actually penetrate the underlying Triassic red clays. Appendix B provides the well logs for these nearby wells from the Office of the State Engineer.

All ground water production in the area surrounding the site, based on data from the state well records, is from the Ogallala aquifer from approximately 50 to 160 feet bgs. Ground water was encountered in both of the site monitoring wells at approximately 40 feet bgs. Plate 6 shows the regional potentiometric surface of the aquifer based upon available data. It indicates that the regional ground water gradient is to the southeast at 0.0029 ft/ft. There are no prominent surface features that would suggest that the local ground water gradient should be different from what is observed on a regional scale.

Many reports discuss the hydrogeologic characteristics of the Ogallala Aquifer. The report from Masharrafieh and Chudnoff (Numerical Simulation of Groundwater Flow for Water Rights in the Lea County Underground Water Basin New Mexico, New Mexico Office of the State Engineer Technical Report 99-1, 1999, Figure 10) provides an estimate of the hydraulic conductivity and other parameters near the site (Figure 4). The State "BD" No. 4 site area is about 15 miles west of Tatum, which is within the model boundary. In this area, the 1999 report indicates a hydraulic conductivity for the underlying aquifer of approximately 41-60 feet/day. Based upon our drilling at the site and experience in the area, this value at the site appears reasonable.

An assessment of the background chemical quality of the Ogallala ground water in the surrounding area is based on information from New Mexico Infrastructure Data System. Water well L-1331 is located approximately 1.3 miles west-northwest of the site and has been sampled for chloride concentrations on May 9, 1984 (133 mg/l), June 20, 1990 (167 mg/L), and September 20, 1995 (116 mg/L). Water well L-6241 is located approximately 0.8 miles east-northeast of the site and has been sampled for chloride concentrations on November 8, 1979 (48 mg/L), June 13, 1984 (52 mg/L), June 20, 1990 (83 mg/L), and September 20, 1995 (38 mg/L). Total dissolved solids (TDS) concentrations were not available for these wells.

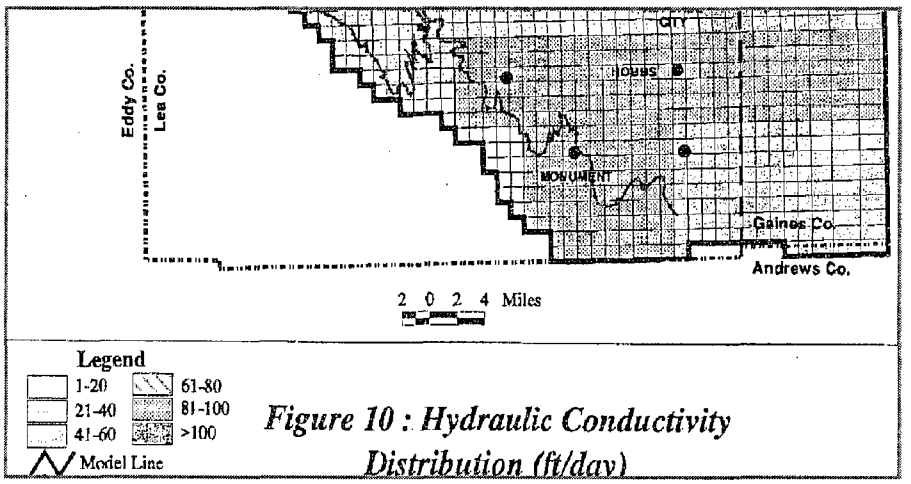


Figure 4- Map showing estimated hydraulic conductivity near the site.

2.2 CHARACTERIZATION ACTIVITIES AND METHODS

A composite soil sample from the bottom of the excavation was collected by others on December 2, 2005. Also on that date six 8- to 12-foot deep trenches were installed at the base of the excavation so that soil samples could be recovered at approximately 28 feet bgs. Plate 7 shows the locations of the sampling trenches.

Instead of taking a composite sample similar to what was done at the 13-foot depth, the samples from the six trenches were field screened using a HACH kit tester and the individual trench sample with the highest chloride concentration was submitted to the laboratory for analysis. The results indicate that the single chloride concentration at the 28-foot depth (6,958 mg/kg) is greater than the chloride concentration from the composite sample obtained at the 13-foot depth (4,958 mg/kg).

On May 8 and 9, 2006 Hicks Consultants collected soil samples from two hollow-stem auger borings placed adjacent to the reserve pit excavation, the borings were then converted to ground water monitoring wells. Monitoring Well No. 1 (MW-1) was placed near the south corner of the excavation and Monitoring Well No. 2 (MW-2) was placed near the east corner of the excavation. The highest chloride concentration in the soil was observed in MW-1 at nine feet below the surface (49.4 mg/kg); none of the other chloride concentrations in the soil samples exceeded 12 mg/kg. The results of the soil sampling at the site are summarized in Tables 1a and 1b, attached.

In addition to the two monitoring wells, a background soil boring was installed in a vegetated area to the north of the reserve pit.

Each well was completed by advancing the augers to approximately fifteen feet below the first ground water depth and installing 20 feet of 2-inch, 0.02-inch slotted PVC screens with 2-inch PVC blanks to the surface. The screens were covered with 8/16 silica sand (filterpack) and topped with at least 17 feet of bentonite, then cuttings to 1.5 feet bgs. The casing above the surface is protected by a steel locking access box set in a 3-foot by 3-foot concrete pad.

On May 11, 2006 both monitoring wells were developed by purging at least 50 gallons (20 well volumes) of water and on May 12, 2006 ground water samples were recovered. Prior to sampling, each monitoring well was purged of at least 3 well volumes of water using a disposable bailer at an average purge rate of 0.4 to 0.5 gallons per min (gpm). Temperature, pH, and conductivity were measured using a Hydac testing instrument during the purging operations to ensure that the ground water samples were representative of the aquifer. Each monitoring well sample

was recovered using a disposable bailer. The samples were placed (unfiltered and unpreserved) in 1-liter plastic bottles, chilled to 4°C and hand delivered to Environmental Labs of Texas (Odessa) for analyses of bromide and chloride using EPA method 300.0 and TDS using EPA method 160.1.

On July 12, 2006, Hicks Consultants elected to provide a better characterization of the chloride mass released at the site by collecting additional samples from the spoil piles and trenches.

We obtained:

From the south impacted pile:

- 4 representative samples from the south impacted pile (SIP-S, SIP-N, SIP-E, SIP-W)
- 1 sample of the coarse-clasts (about golf ball size) from the south impacted pile (SIPL-SL)

From the east impacted pile:

- 4 representative samples from the north side of the east impacted pile (NSEIP-S, NSEIP-N, NSEIP-E, NSEIP-W)
- 4 representative samples from the south side of the east impacted pile (SSEIP-S, SSEIP-N, SSEIP-E, SSEIP-W)
- 1 sample of coarse-clasts from the east impacted pile (EIPL)

From piles associated with each of the six trenches dug in the floor of the current excavation, one representative sample:

- 1 representative sample from the spoil pile associated with each of the six bottom excavation backhoe trenchs (EDT-NW, EDT-NC, EDT-NE, EDT-SW, EDT-SC, EDT-SE)

Figure 5 - Example of a sample location.

Plate 7 shows the locations of these samples with the identifying nomenclature as referenced above. Figure 5 shows a typical sample location. This sample site is the South Impacted Pile Southern location (SIPS). Note that the pile consists of about 20% cobble-sized clasts, 50% large clasts (smaller than cobbles and larger than 5mm), and 30% sand-sized. Note also that the photograph shows the surface crust of salt that exists due to the upward wicking of soil moisture, evaporation of the water and crystallization of the salt due to the evaporation. In all of the samples taken during this event, we dug a small trench as shown and placed a representative sample in a plastic bag for laboratory analysis. We attempted to capture a limited amount of the salty crust with each sample to collect what we believe is a sample representative of the entire pile.

Because we are interested in estimating the total mass of residual chloride and are not interested in maximum chloride concentrations, we asked Hall Analytical to modify their standard soil sample preparation procedure. Instead of extracting 10 grams of the sample for analysis, Hall used the entire sample consisting of large clasts and fine-grained material. In order to understand if chloride was concentrated in the fine-grained portion of the sample, as suspected, we also collected two samples of large (golf-ball size) clasts for separate analysis, as discussed above.

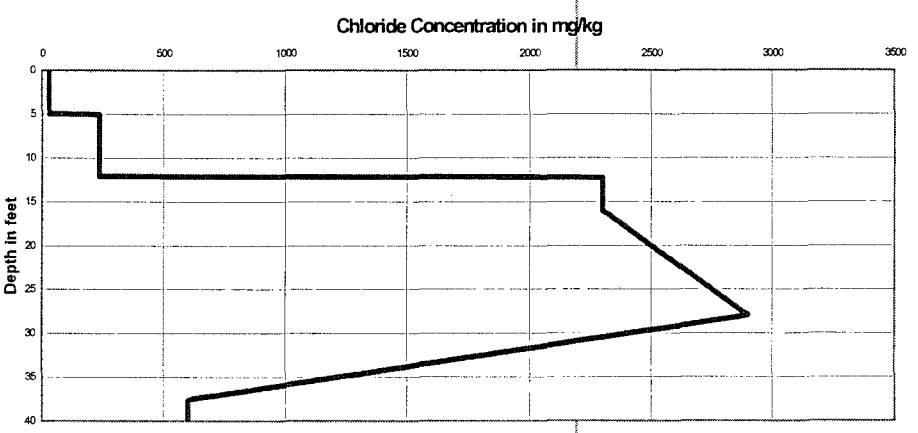
Finally, in August 2006, we collected a second set of ground water samples from the two monitoring wells which confirmed the previous results.

3.0 CONCENTRATIONS OF CONSTITUENTS IN THE UPPER VADOSE ZONE

Soil sampling results are presented in Table 1a and 1b. A summary of the ground water sample results from the monitoring wells is provided on Table 2 and the laboratory reports for both the soil and ground water samples are provided in Appendix C.

In ground water, the measured concentrations of TDS and chloride do not exceed the New Mexico Water Quality Control Commission (WQCC) standards. The result from MW-2 (44.5 mg/L) corresponds with the background measurements reported from the area water wells. At MW-1, located directly down gradient from the pit, the chloride concentration is 131 mg/L, which is above background but below WQCC Standards. A comparison of the ground water chloride-bromide (Cl/Br) ratio with that of the soil indicates that the chloride concentrations in the ground water may be slightly higher than the expected natural conditions as the Cl/Br ratio should be consistent in non-impacted media.

Figure 6: Chloride Profile of BD-4 Site



We used the data from Table 1 to create a chloride concentration profile of the site (see Figure 6). To create Figure 6, we used all of the available data. We calculated the concentration for the material from 10-13 feet bgs by averaging the concentration from the composite sample of the pit excavation bottom obtained in December 2005 with the four samples from the south spoil pile. This calculation yielded an average chloride concentration of 2300 mg/kg. We understand that the south spoil pile is the material excavated from 10-13 feet below ground surface. To arrive at a concentration for the material from 13-28 feet, we averaged the "hot spot" sample taken from these trenches in December 2005 with the six spoil pile samples obtained in July 2006, which yielded an average of about 2900 mg/kg. We assumed that the concentration increased in a linear fashion between 16 and 28 feet bgs, as shown in Figure 6.

We have no chloride data for soil below 28 feet bgs, but the monitoring wells provide data from which we can estimate the chloride concentration in the lowermost vadose zone. We know that about 18 months after the pit dried (summer 2006) the ground water chloride background concentration is about 45 mg/L and the concentration in down gradient well MW-1 is about 130 mg/L. Therefore, ongoing seepage of chloride from the vadose zone to ground water has caused chloride to increase by 85 mg/L. We employed the unsaturated zone simulation model HYDRUS-1D to estimate the natural flux from the vadose zone to ground water for an un-vegetated surface and the ground water data to estimate the ground water flux beneath the pit. We used a simple mixing equation in order to estimated the average chloride concentration in the material just above the water table. We conclude that the material between 28 feet and the ground water table is most likely about 600 mg/kg.

We believe that the chloride was distributed through the vadose zone relatively uniformly immediately below the original pit bottom (5 feet bgs) to a depth of about 13-16 feet. The relative uniformity of the chloride concentrations in the southern spoil pile and their agreement with the value from the 5-point composite sample at 13 feet provides support for this conclusion. The trench sample concentrations show a higher degree of scatter, demonstrating that some areas of the former pit were more highly impacted by seepage than others. From this data and our experience with other reserve pit sites we conclude that below 13-16 feet, preferential pathways of saturated flow caused an uneven distribution of chloride in the vadose zone. The mass of chloride within these pathways diminished with depth, creating an average chloride concentration of 600 mg/kg near the water table. Figure 7 presents the conceptual model of chloride distribution below the BD-04 reserve pit.

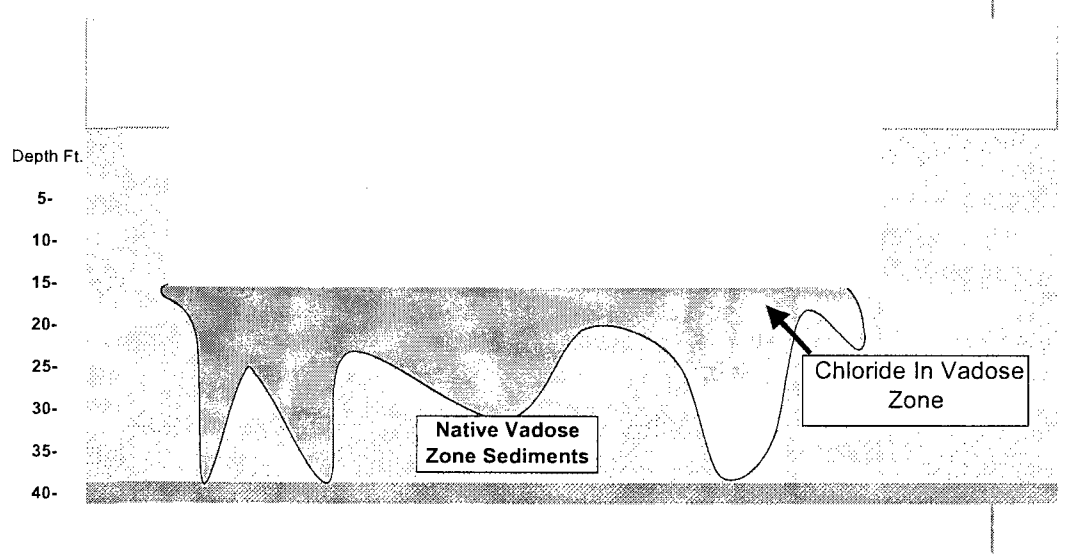


Figure 7. Sketch showing extent of chloride below moist areas.

Note also that Figure 6 also assumes that the chloride concentration of the material from 5-13 is about 250 mg/kg, the same concentration as the average obtained from sampling the east spoil pile. From 0-5 feet, we assumed the background concentration of about 30 mg/kg.

From the site characterization data we conclude that:

1. Elevated chloride concentrations in the upper vadose zone extend to at least 28 feet bgs.
2. In some limited areas of the former pit, preferential saturated flow have caused a small mass of chloride to penetrate the underlying aquifer.
3. The lateral extent of the subsurface impact is limited to the area below the pit.
4. Additional ground water characterization is not required.

TABLES

Table 1a
Laboratory Results of Soil Samples Obtained by Others
Results in mg/kg

Sample Location	Pit Comp.	Pit (max)*
Sample Depth (ft)	16 ft	28 ft
Sample Date	12/2/05	12/2/05
Benzene	--	--
Toluene	--	--
Ethyl Benzene	--	--
Total Xylenes	--	--
GRO (C_6-C_{10})	--	--
DRO (>C_{10}-C_{28})	--	--
Total Alkalinity	208	96
Chloride	**4,958**	**6,958**
Carbonate	0	76
Bicarbonate	254	40
Sulfate	943	298
Calcium	128	705
Magnesium	78	467
Potassium	136	70
Sodium	2,928	2,928
Bromide	--	--

* - Sample taken from area of highest Cl concentration based on HACH kit field screening

Table 1b
Laboratory Results Soil Borings and Spoil Pile Samples

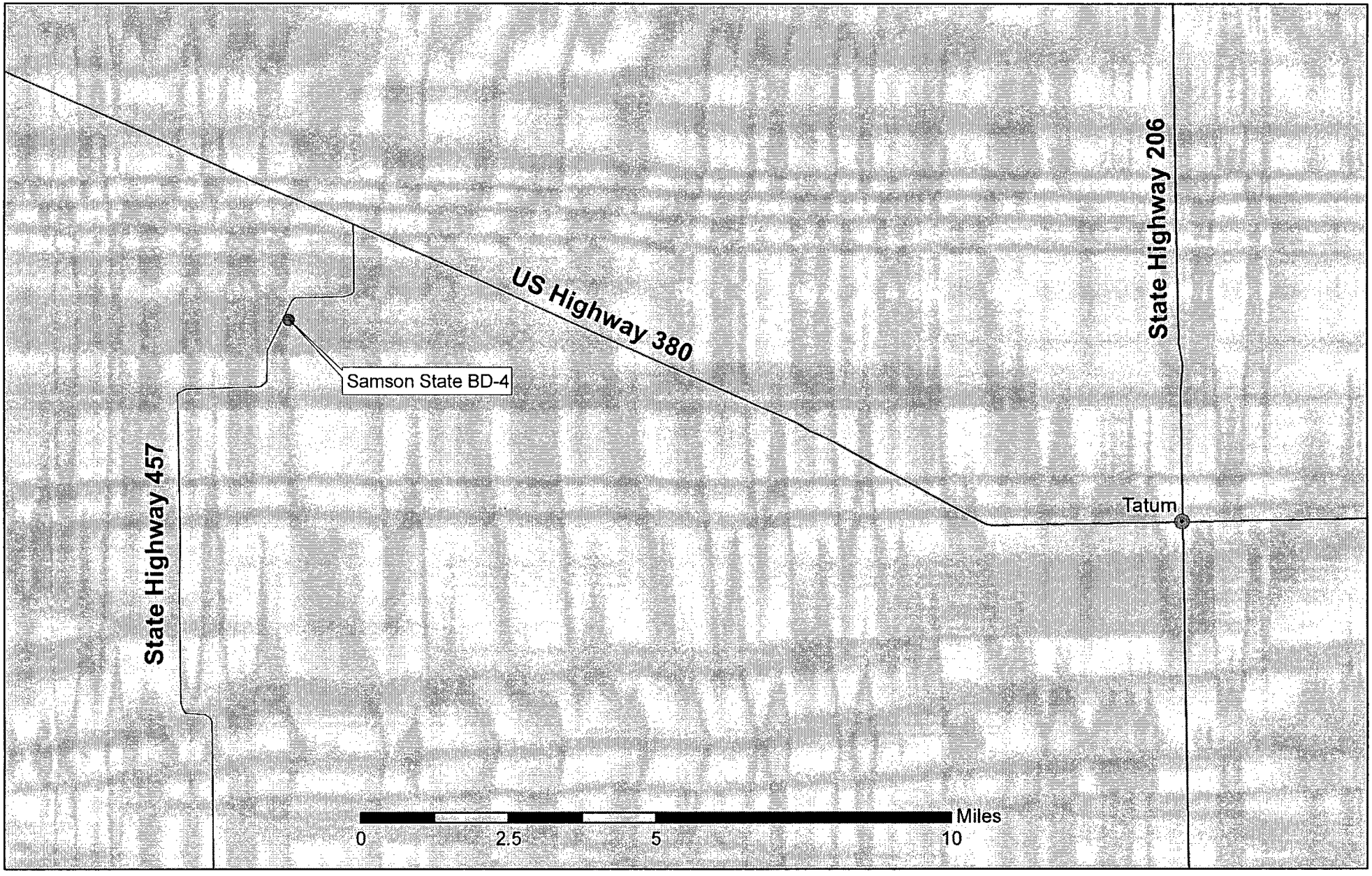
Monitoring Well/Spoil Pile	Sample Date	Depth (ft)	PID (ppm)	Br (mg/kg)	Cl (mg/kg)
MW-1	5/8/2006	9	0	--	49.4
		19	0	--	7.86
		29	0	--	3.38
		34	0	<0.1	5.02
MW-2	5/9/06	9	0	--	10.0
		19	0	--	7.30
		29	0	--	8.27
		34	0	--	7.77
		39	0	0.187	12.0
Spoil Pile Samples					
SSEIP-E	7/12/2006	2.0-5.0			230
SSEIP-S	7/12/2006	2.0-5.0			120
SSEIP-W	7/12/2006	2.0-5.0			190
SSEIP-N	7/12/2006	2.0-5.0			220
NSEIP-S	7/12/2006	2.0-5.0			320
NSEIP-E	7/12/2006	2.0-5.0			110
NSEIP-W	7/12/2006	2.0-5.0			300
NSEIP-N	7/12/2006	2.0-5.0			370
EIPL	7/12/2006	2.0-5.0			7.6
SIPL-SL	7/12/2006	5.0-13.0			1400
SIP-S	7/12/2006	5.0-13.0			2300
SIP-E	7/12/2006	5.0-13.0			940
SIP-N	7/12/2006	5.0-13.0			1700
SIP-W	7/12/2006	5.0-13.0			2500
EDT-SW	7/12/2006	13-28		<3	5400
EDT-NW	7/12/2006	13-28		<3	2000
EDT-SC	7/12/2006	13-28		<3	3000
EDT-NC	7/12/2006	13-28		<3	3700
EDT-SE	7/12/2006	13-28		<3	850
EDT-NE	7/12/2006	13-28		<3	1700

Table 2
Laboratory Results Summary - Groundwater Samples
Results in mg/L

Monitor Well Sample Date	MW-1 5/12/06	MW-2 5/12/06	MW-1 8/2/06	MW-2 8/2/06	WQCC Standard
Bromide	0.482	0.446			--
Chloride	131	44.5	115	42.2	**250**
Total Dissolved Solids	838	530	648	444	**1,000**
Cl/Br Ratio (unitless)	272	100			--

PLATES

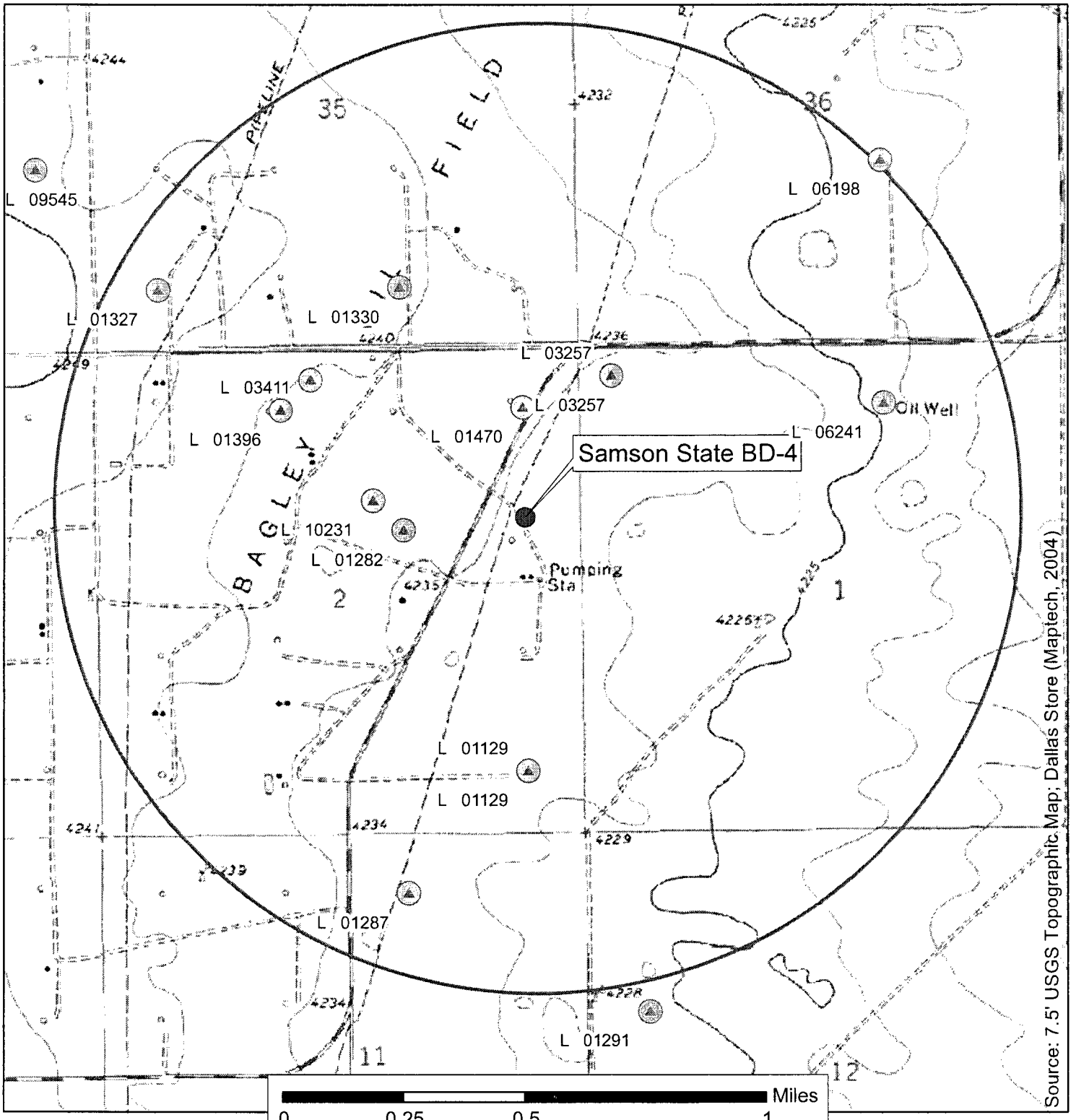
To access the site, proceed west from Tatum, NM approximately 15 miles on US Highway 380. Head south on State Highway 457 for approximately 2.5 miles. The site is on the east side of the highway.



R.T. Hicks Consultants, Ltd
901 Rio Grande Blvd NW Suite F-142
Albuquerque, NM 87104
Ph: 505.266.5004

Site Location Map	Plate 1
Samson Investment Company: State BD-04 Site Investigation Report	August 2006

N
W E
S

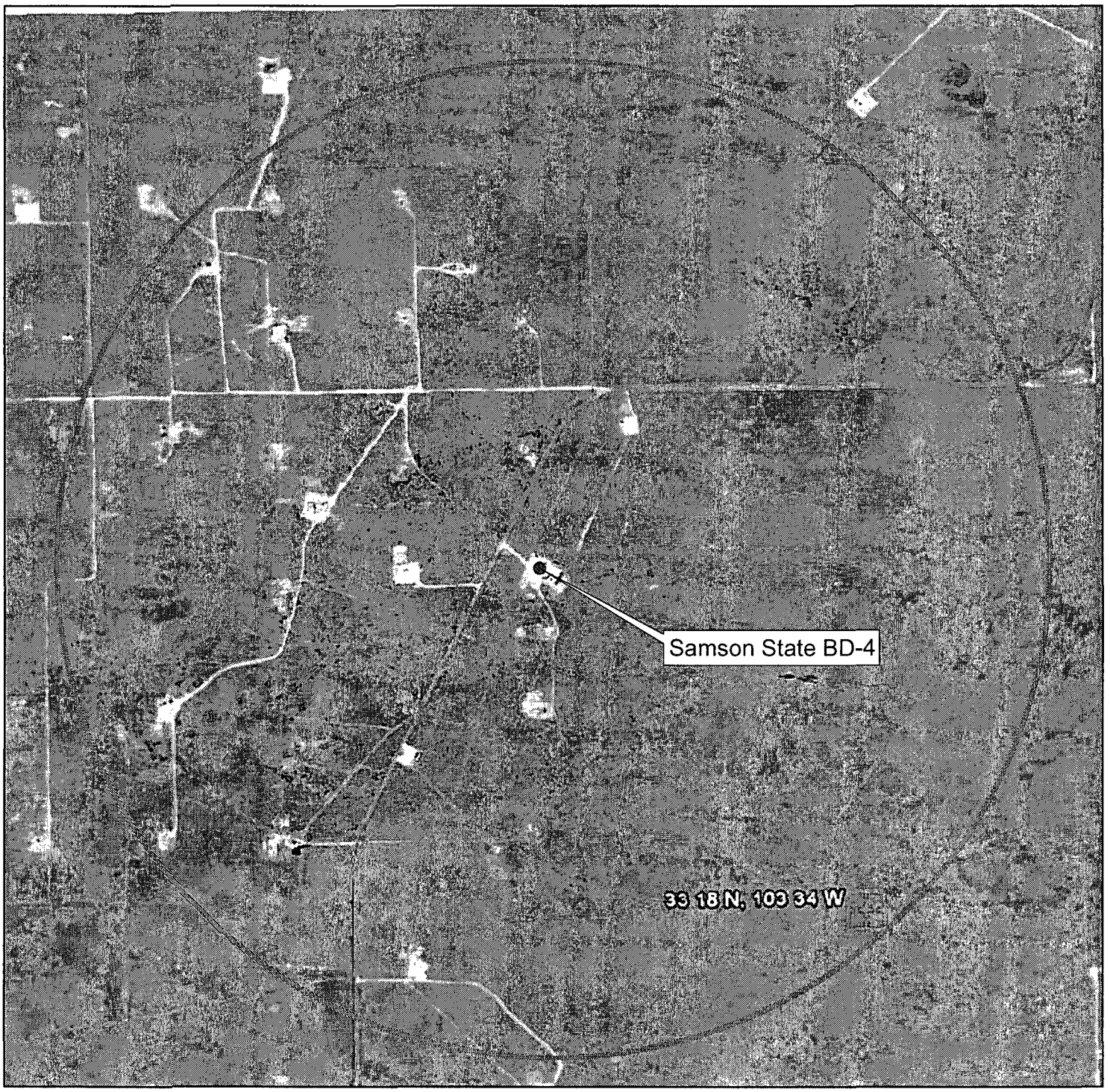


Legend

- Supply Wells listed in the OSE database
- 1-Mile Radius from State BD-04

N
W
E
S

R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	USGS Topographic Map with nearby supply wells.	Plate 2
	Samson Investment Company State BD-04 Site Investigation Report	August 2006



Source: Google Earth (2005 Aerial)

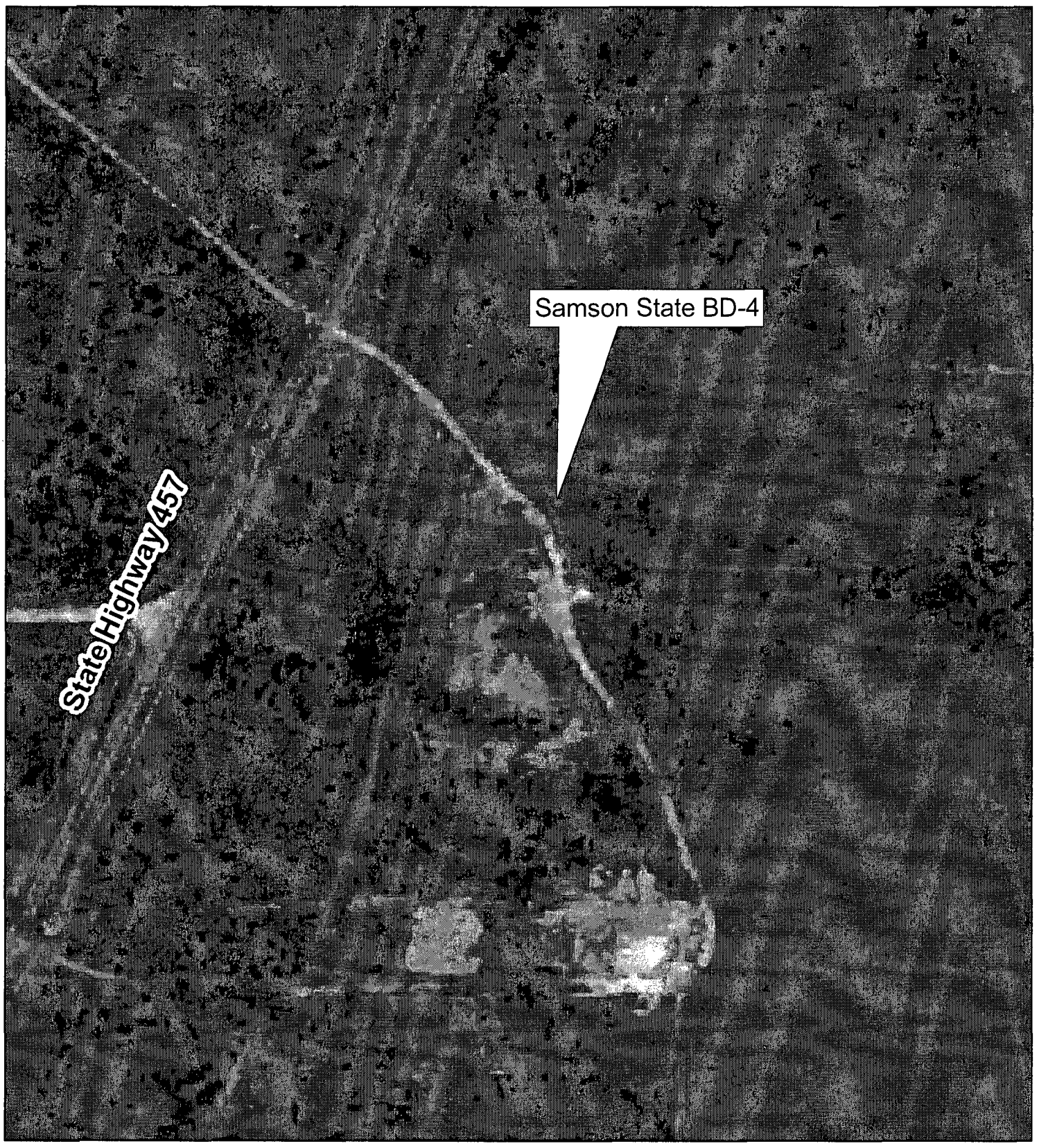
Legend

One-Mile Radius from State BD-04

N
W E
S

0 0.5 1 Miles

R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	2005 Aerial Photograph of Site and Environs	Plate 3
	Samson Investment Company State BD-04 Site Investigation Report	August 2006

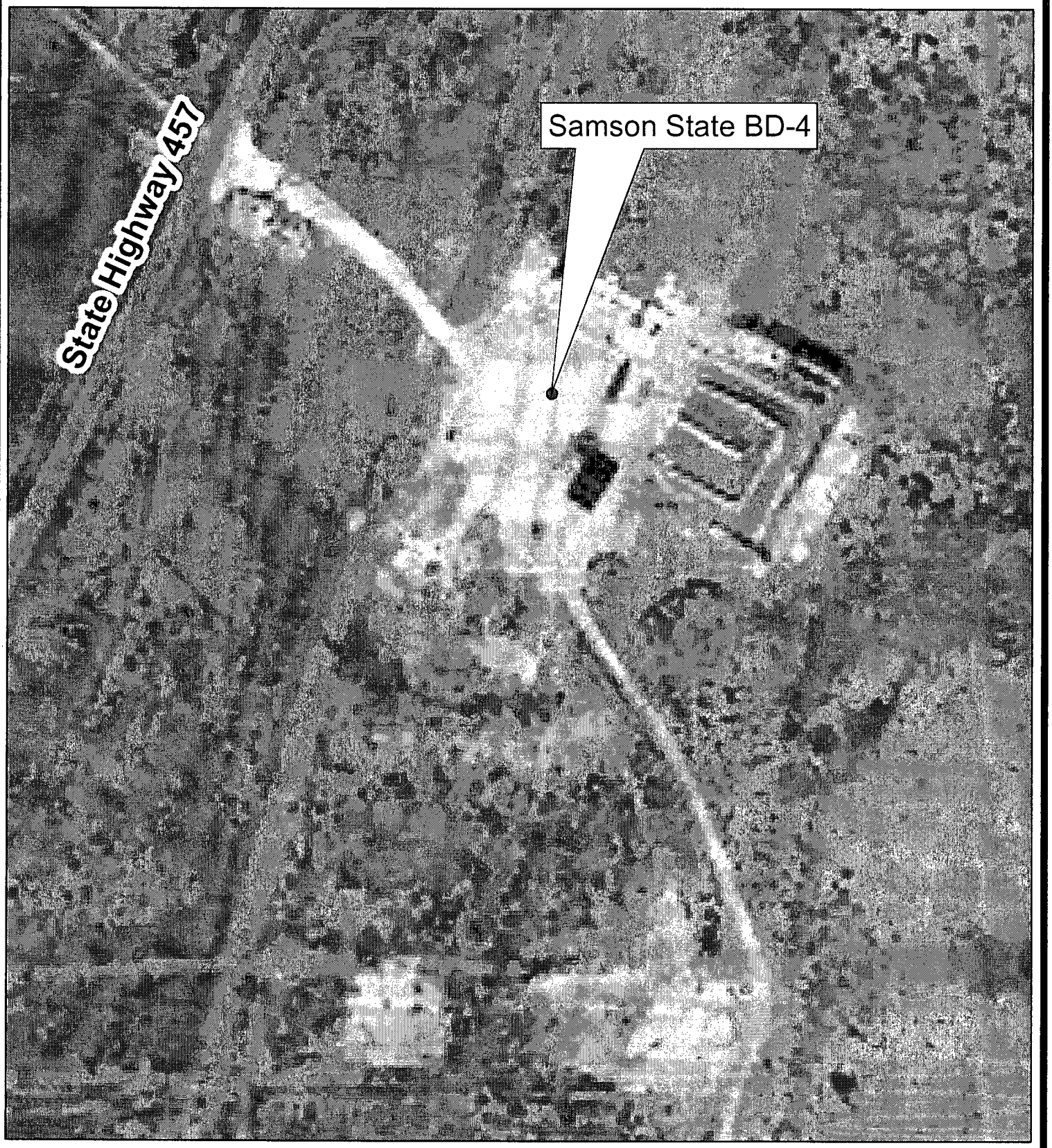


Source: RGIS, 2006 (rgis.unm.edu)

0 250 500 1,000 Feet

N W E S

R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	1996-98 Aerial Photograph of Site prior to drilling	Plate 4a
	Samson Investment Company State BD-04 Site Investigation Report	August 2006

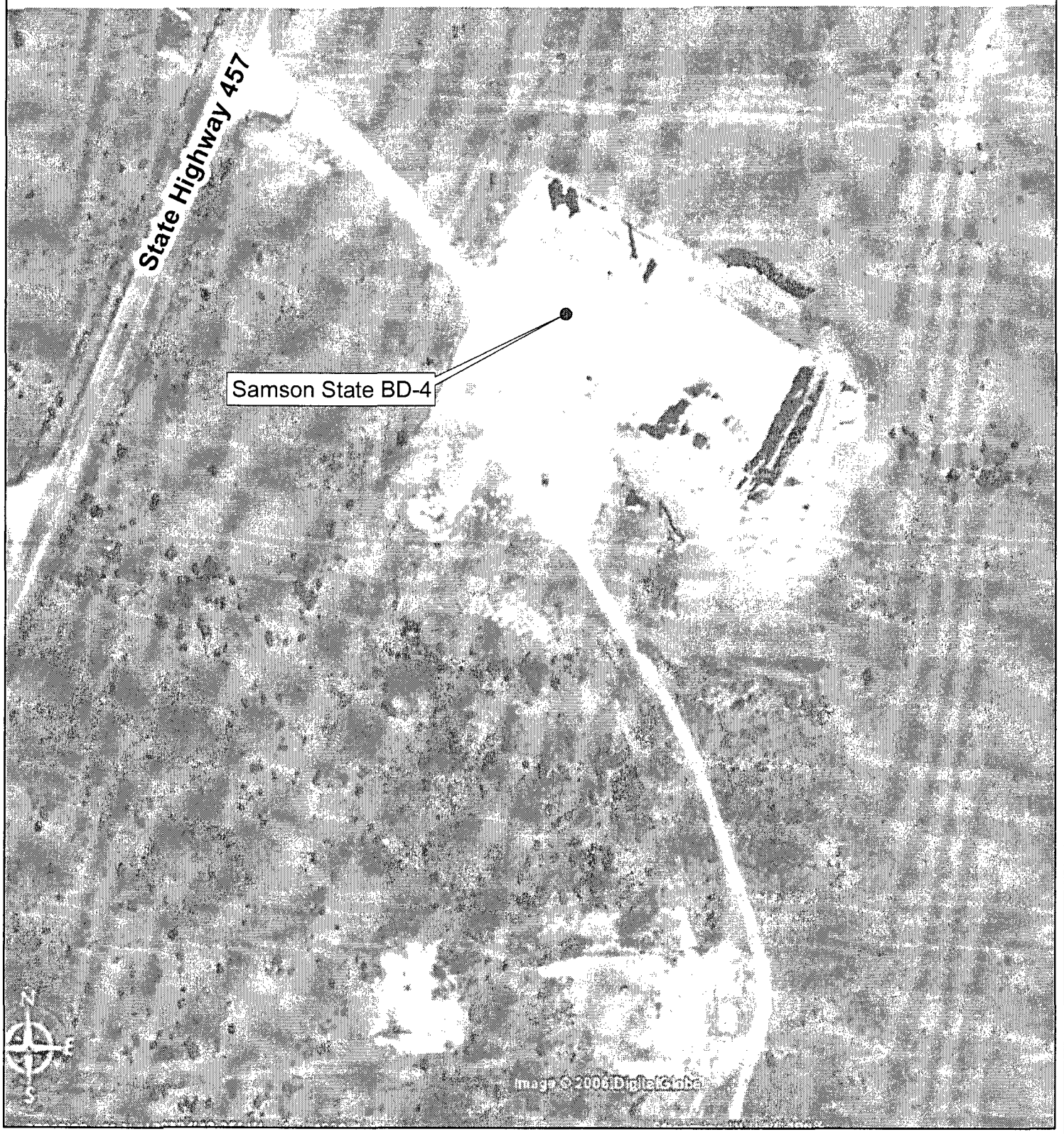


Source: RGIS, 2006 (rgis.unm.edu)

0 250 500 Feet

N W E S

R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	2004 Aerial Photograph of Site during drilling	Plate 4b
	Samson Investment Company State BD-04 Site Investigation Report	August 2006

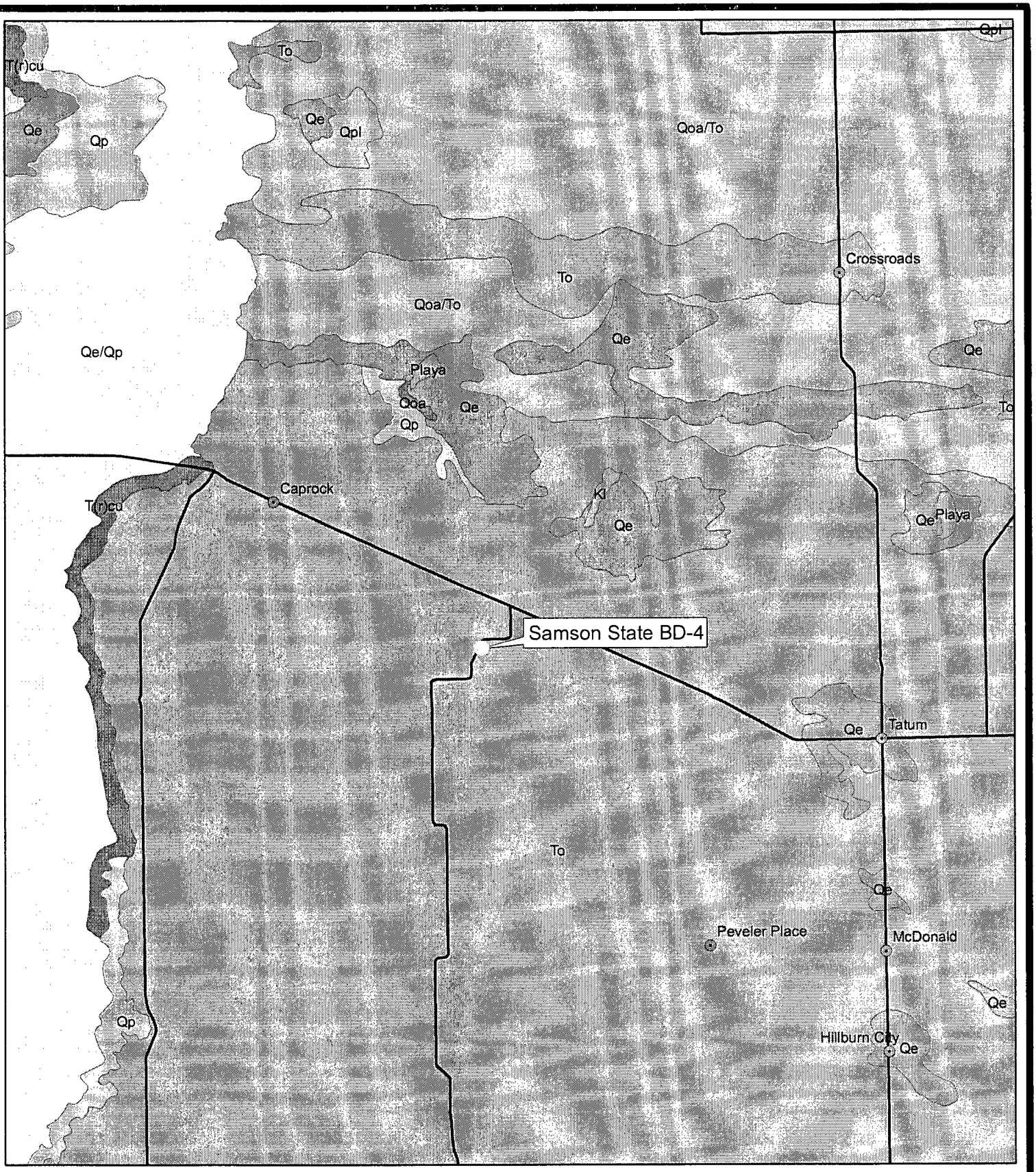


Source: Google Earth (2005 Aerial)

0 250 500 Feet

N W E S

R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	2005 Aerial Photograph of Site during pit closure	Plate 4c
	Samson Investment Company State BD-04 Site Investigation Report	August 2006



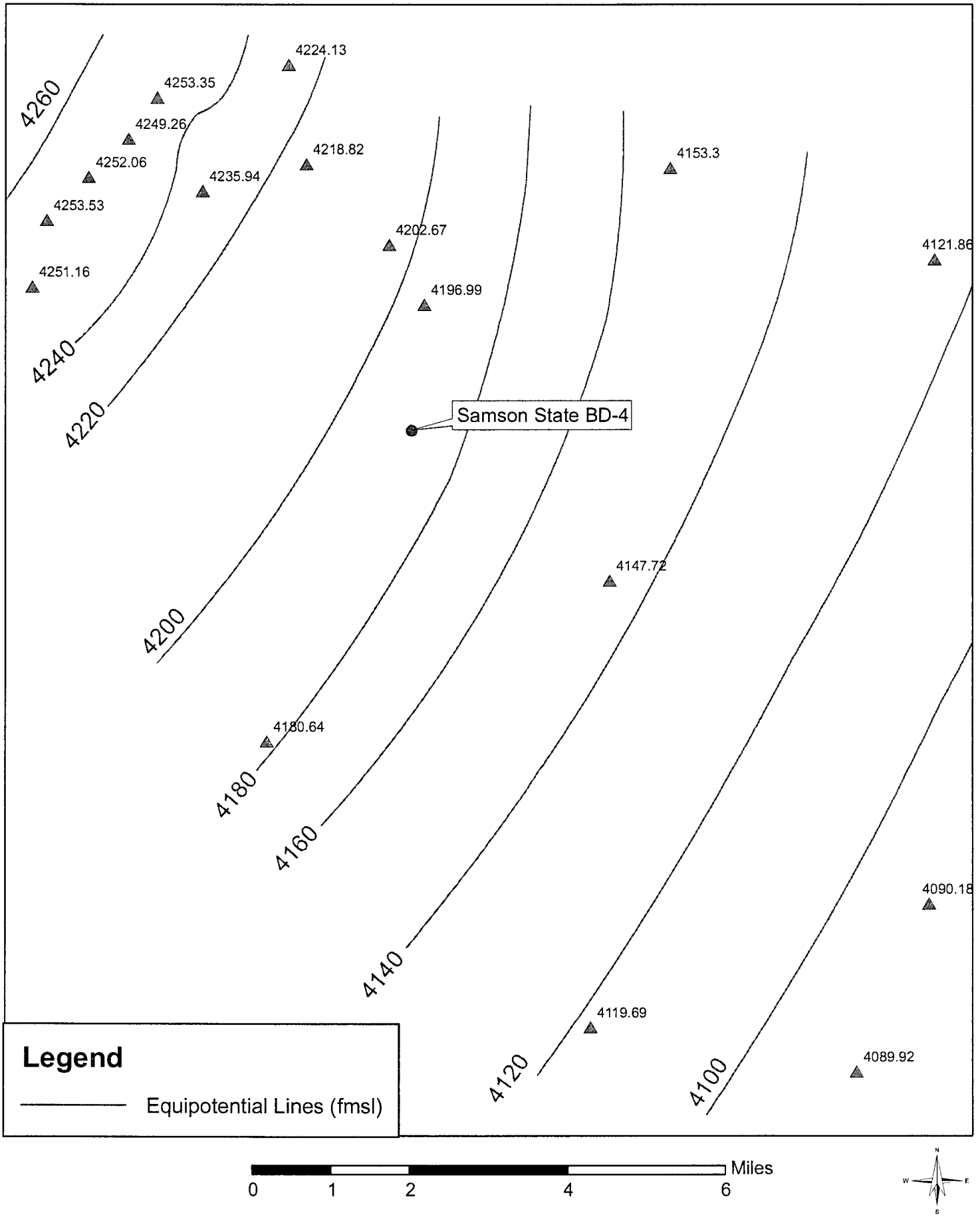
R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Geologic Map relative to Samson State BD#4	Plate 5
	Samson Investment Company State BD-04 Site Closure Report	August 2006

Legend

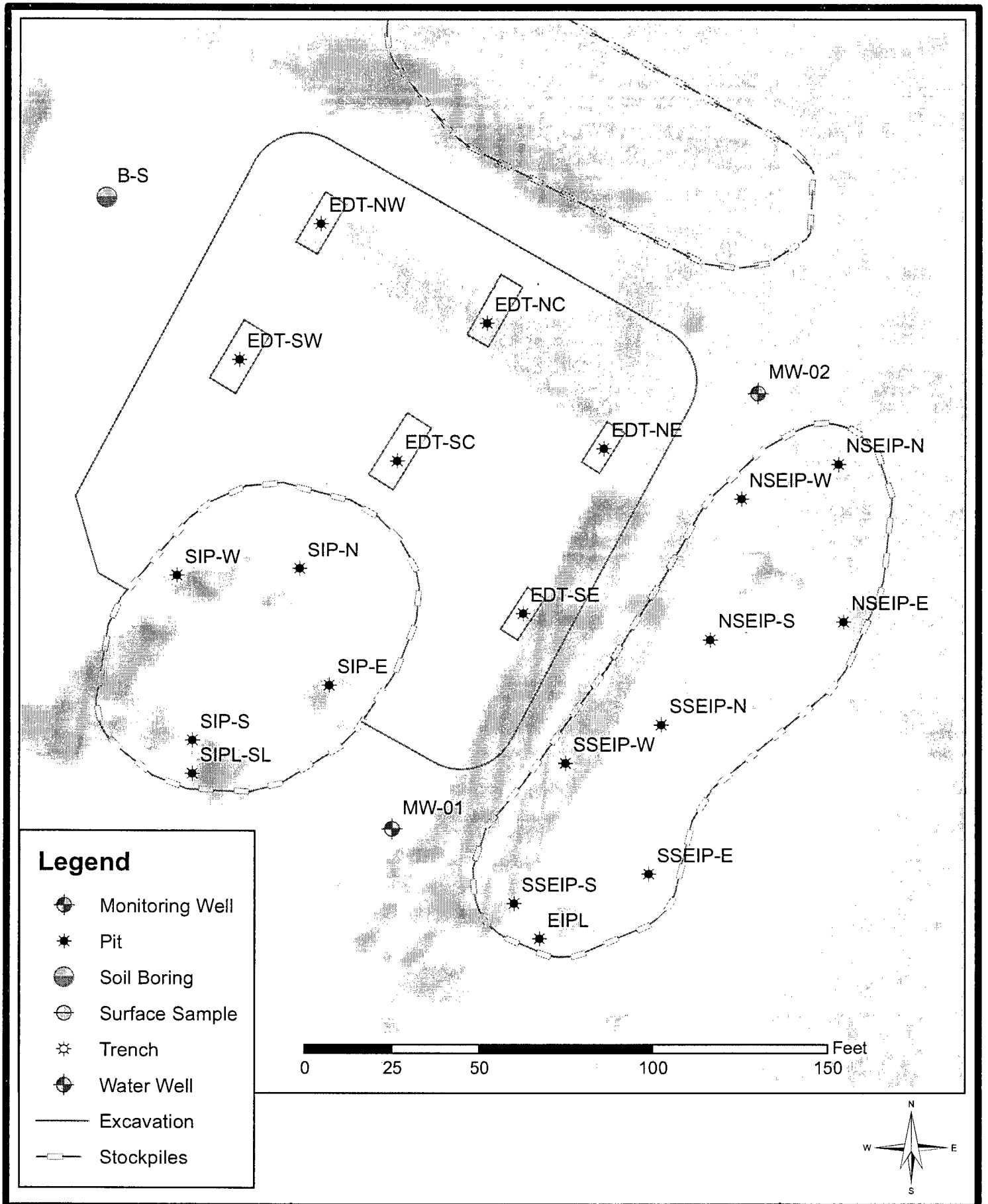
Geologic Map

Map Unit, Description

- Kl, Lower Cretaceous, undivided
- Playa, Playa Deposits
- Qe, Quaternary-Eolian Deposits
- Qe/Qp, Quaternary-Eolian Piedmont Deposits
- Qoa, Quaternary-Older Alluvial Deposits
- Qoa/To, Quaternary-Older Alluvial Deposits/Ogalalla
- Qp, Quaternary-Piedomon Alluvial Deposits
- Qpl, Quaternary-Lacustrine and Playa Deposits
- T(r)cu, Triassic-Upper Chinle Group
- To, Tertiary-Ogallala Formation



R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Potentiometric Surface Map (USGS 1996) Samson Investment Company State BD-04 Site Investigation Report	Plate 6 August 2006



R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Pit closure site map showing spoil piles and trench sample locations	Plate 7
	Samson Investment Company State BD-04 Site Investigation Report	August 2006

APPENDIX A

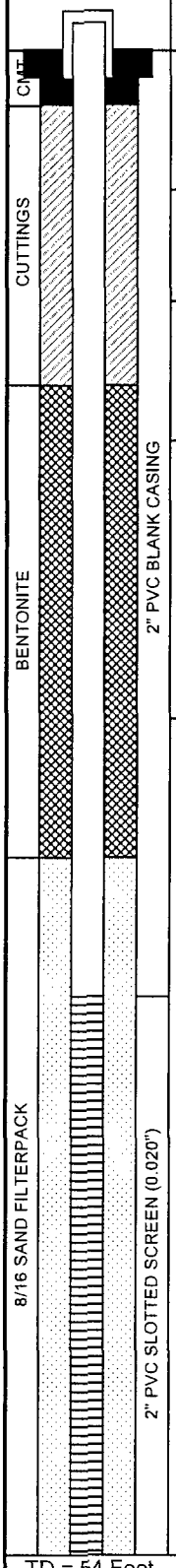
LITHOLOGIC LOG (MONITORING WELL)

R T Hicks Consultants Ltd

P O Box 7624
Midland, TX 79708
(432) 528-3878

MONITOR WELL NO.: MW-1
SITE ID: Samson State BD #4
SURFACE ELEVATION: Approximately 4233
CONTRACTOR: Atkins Engineering
DRILLING METHOD: Hollow-Stem
INSTALLATION DATE: 5/8/06
WELL PLACEMENT: South of reserve pit
COMMENTS: Lat. 33° 18' 34.3" North, Long. 103° 34' 38.8" West

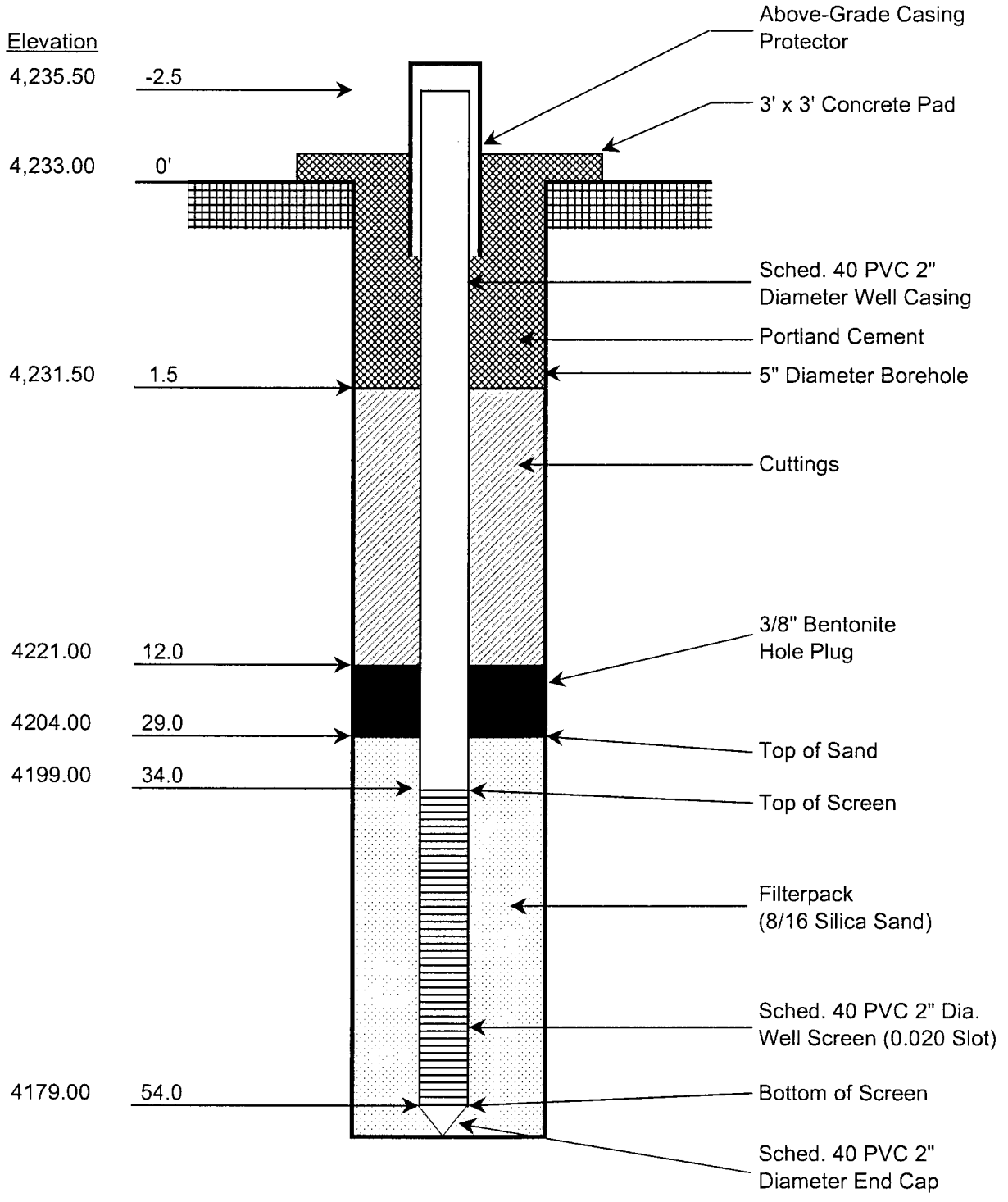
TOTAL DEPTH: 55.0 Ft
CLIENT: Samson Investment Co.
COUNTY: Lea County
STATE: New Mexico
LOCATION: T-12-S, R-33-E, Sec. 2 (H)
FIELD REP.: Dale Littlejohn
FILE NAME: \State BD-4\Lithlogs (5-06)



Lithology	SAMPLE DATA PHOTO	DEPTH	% REC	PID	Cl (Lab)	DEPTH	LITHOLOGIC DESCRIPTION LITHOLOGY, COLOR, GRAIN SIZE, SORTING, ROUNDING, CONSOL., DIST. DEATURES
							CALICHE grayish white with silt.
						5	
							CALICHE gray to grayish tan with silt and very fine grain sand.
		9-11	35%	0 ppm	49.4 mg/kg	10	SILT tan to light brown, with some caliche and fine gain sand.
						15	SAND light brown, fine grain, sub angular, well sorted, with some caliche.
		19-21	25%	0 ppm	7.86 mg/kg	20	
						25	SAND light brown, fine grain, sub angular, well sorted, with no caliche.
		29-31	30%	0 ppm	3.38 mg/kg	30	
		34-36	15%	0 ppm	5.02 mg/kg	35	
	No Sample Recovery					40	Saturated formation at 39 feet (838 mg/L Cl)
						45	
						50	

TD = 54 Feet

MONITORING WELL CONSTRUCTION DIAGRAM



R T Hicks Consultants Ltd	SITE: Samson State "BD" No. 4 Site		**Monitoring Well No. MW-1**
	DATE: 5/8/2006	REV. NO.: 1	
	AUTHOR: DTL	TECH: DTL	
	DRILLER: Atkins	FILE: Lithlogs (5-06)	

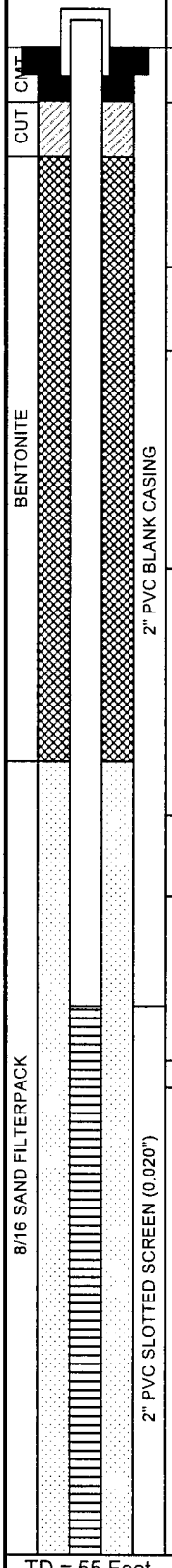
LITHOLOGIC LOG (MONITORING WELL)

R T Hicks Consultants Ltd

P O Box 7624
Midland, TX 79708
(432) 528-3878

MONITOR WELL NO.: MW-2
SITE ID: Samson State BD #4
SURFACE ELEVATION: Approximately 4233
CONTRACTOR: Atkins Engineering
DRILLING METHOD: Hollow-Stem
INSTALLATION DATE: 5/9/06
WELL PLACEMENT: East corner of reserve pit
COMMENTS: Lat. 33° 18' 35.5" North, Long. 103° 34' 37.6" West

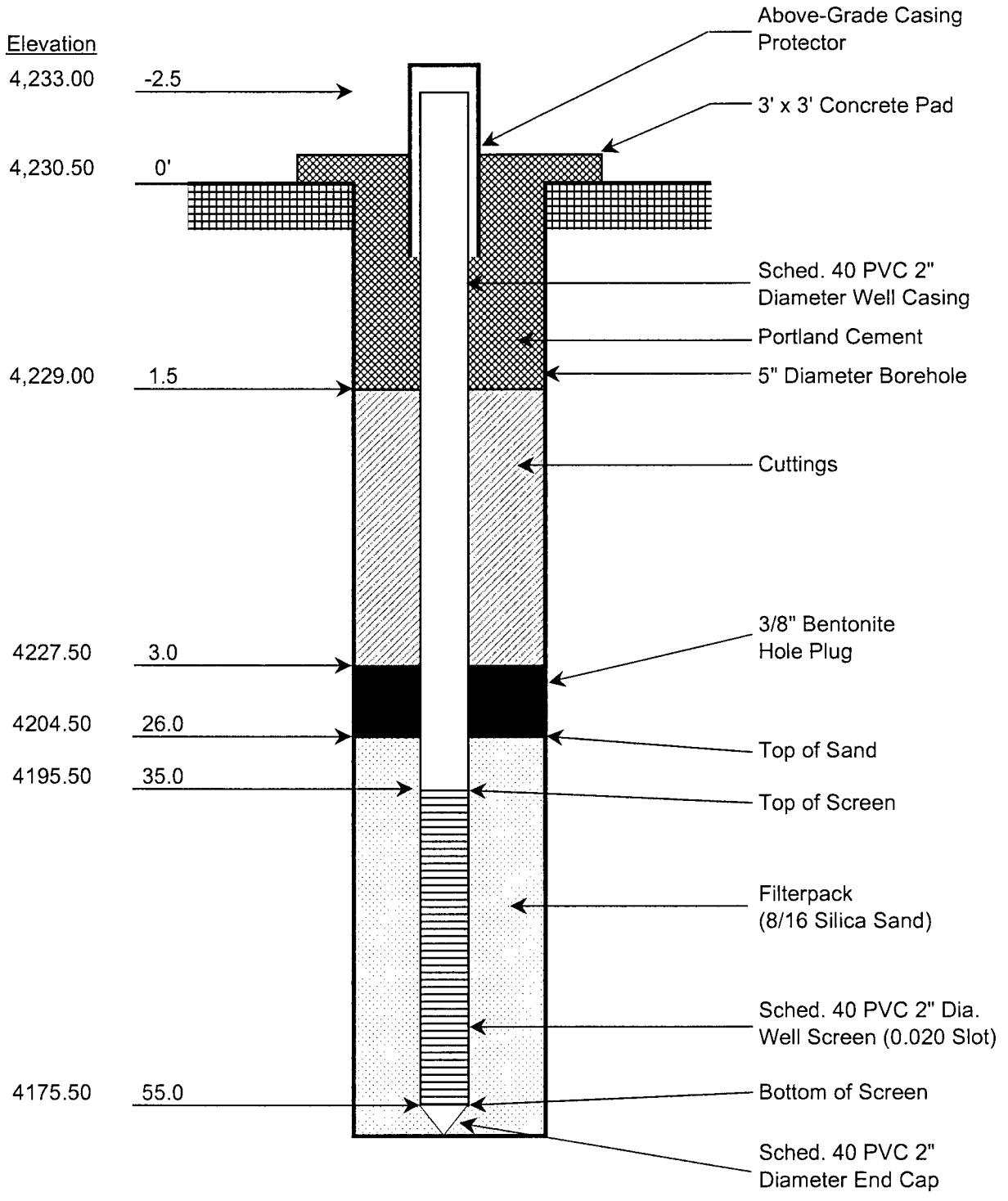
TOTAL DEPTH: 55.0 Ft
CLIENT: Samson Investment Co.
COUNTY: Lea County
STATE: New Mexico
LOCATION: T-12-S, R-33-E, Sec. 2 (H)
FIELD REP.: Dale Littlejohn
FILE NAME: \State BD-4\Lithlogs (5-06)



Lithology	SAMPLE DATA PHOTO	DEPTH	% REC	PID	Cl (Lab)	DEPTH	LITHOLOGIC DESCRIPTION LITHOLOGY, COLOR, GRAIN SIZE, SORTING, ROUNDING, CONSOL., DIST. DEATURES
							CALICHE with top soil, brownish gray, silty, hard.
						5	CALICHE AND SILT gray to pinkish gray.
		9-11	5%	0 ppm	10.0 mg/kg	10	CALICHE gray with very fine grain sandstone and silt. Very hard drilling to 11 feet.
						15	CALICHE AND SILT grayish white to grayish pink, with some interbedded sandstone.
		19-21	10%	0 ppm	7.30 mg/kg	20	CALICHE AND SILT gray to light brown with interbedded hard sandstone layers at 22 -23 feet and 27-28 feet.
		29-31	10%	0 ppm	8.27 mg/kg	25	
						30	CALICHE AND SILT gray to light brown with some fine grain sand.
		34-36	10%	0 ppm	7.77 mg/kg	35	SAND light brown, very fine grain, angular, poorly sorted, with some silt.
							SANDSTONE gray to lt brown, v fn gr, angular, p/s.
		39-41	10%	0 ppm	12.0 mg/kg	40	SILTY SAND gray to light brown, very fine grain, angular, poorly sorted. Moist formation at 39 feet, wet at 40 feet.
						45	
						50	
						55	

TD = 55 Feet

MONITORING WELL CONSTRUCTION DIAGRAM



R T Hicks Consultants Ltd	SITE: Samson State "BD" No. 4 Site		**Monitoring Well No. MW-2**
	DATE: 5/9/2006	REV. NO.: 1	
	AUTHOR: DTL	TECH: DTL	
	DRILLER: Atkins	FILE: Lithlogs (5-06)	

APPENDIX B

(This form to be executed in triplicate)

WELL RECORD

Date of Receipt ..... Permit No. L-1396

Name of permittee, Great Western Drilling Co.

Street or P. O., ..., City and State Midland Texas

1. Well location and description: The Shallow (shallow or artesian) well is located in NE ¼, NW ¼,

..... ¼ of Section 2, Township 12 S, Range 33 E; Elevation of top of

casing above sea level, ... feet; diameter of hole, 7 inches; total depth, 162 feet;

depth to water upon completion, ... feet; drilling was commenced March, 1953,

and completed March, 1953; name of drilling contractor J.W.Matthews

.....; Address, Datum N.M.; Driller's License No. WD-116

2. Principal Water-bearing Strata:

	Depth in Feet From	To	Thickness	Description of Water-bearing Formation
No. 1	142	147	5	Grey sand seep only
No. 2				
No. 3				
No. 4				
No. 5				

3. Casing Record:

Diameter in inches	Pounds per ft.	Threads per inch	Depth of Casing or Liner Top	Bottom	Feet of Casing	Type of Shoe	Perforation From	To

4. If above construction replaces old well to be abandoned, give location: ..... ¼, ... ¼, ... ¼

of Section ....., Township ....., Range .....; name and address of plugging contractor,

.....

.....

date of plugging ....., 19.....; describe how well was plugged: .....

.....

.....

.....

RECEIVED
OCT 14 1953
OFFICE
GROUND WATER SUPERVISOR
ROSWELL, NEW MEXICO

L-1396 OWD- OK

(This form to be executed in triplicate)

WELL RECORD

Date of Receipt ..... Permit No. L-1396

Name of permittee, Great Western Drilling Co.

Street or P. O., ..., City and State Midland Texas

1. Well location and description: The shallow (shallow or artesian) well is located in NE ¼, NW ¼, ...¼ of Section 2, Township 12 S, Range 33 E; Elevation of top of casing above sea level, ... feet; diameter of hole, 7 inches; total depth, 162 feet; depth to water upon completion, ... feet; drilling was commenced March, 1953, and completed March, 1953; name of drilling contractor J.W.Matthews; Address, Eatan N.M.; Driller's License No. WD-116

2. Principal Water-bearing Strata:

	Depth in Feet From	To	Thickness	Description of Water-bearing Formation
No. 1	142	167	5	Grey sand seep only
No. 2				
No. 3				
No. 4				
No. 5				

3. Casing Record:

Diameter in inches	Pounds per ft.	Threads per inch	Depth of Casing or Liner Top	Depth of Casing or Liner Bottom	Feet of Casing	Type of Shoe	Perforation From	Perforation To

4. If above construction replaces old well to be abandoned, give location: ....¼, ...¼, ...¼ of Section ....., Township ....., Range .....; name and address of plugging contractor, ...

.....

date of plugging ....., 19.....; describe how well was plugged: .....

.....

.....

.....

RECEIVED
OCT 14 1953
OFFICE
GROUND WATER SUPERVISOR
ROSWELL, NEW MEXICO

L-1396 OWD- OK

5. Log of Well:

Depth in feet From	Depth in feet To	Thickness in feet	Description of Formation
0	2	2	Soil
2	10	8	Caliche
10	60	50	Yellow shale
60	142	82	Grey to light blue sandy shales
142	147	5	Dirty grey sand (water seep)
147	158	11	Blue shale
158	162	4	Red bed
			L S Elev ____ Trc ____
			Depth to K ____ Trc ____
			Elev of K ____ Trc ____
			Loc. No. ____
			Hydro. Survey ____ Field Check ____
			SOURCE OF ALTITUDE GIVEN
			Interpolated from Topo. Sheet ____
			Determined by Inst. Leveling ____
			Other ____

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described well.

J. W. Mathews
Licensed Well Driller

Instructions

This form shall be executed, preferably typewritten, in triplicate and filed with the State Engineer's Office at Roswell, New Mexico, within 10 days after drilling has been completed. Data on water-bearing strata and on all formations encountered should be as complete and accurate as possible.

(This form to be executed in triplicate)

PLUGGING
WELL RECORD

Date of Receipt..... Permit No. L-1396

Name of permittee, Great Western Drilling Co.

Street or P.O., Box 191, City and State Lubbock, Texas

1. Well location and description: The Shallow well is located in ¼, NE ¼, (shallow or artesian)
NW ¼ of Section 2, Township 12 South, Range 33 East; Elevation of top of casing above sea level, X feet; diameter of hole, 7 inches; total depth, feet; depth to water upon completion, feet; ~~drilling~~ Plugging was commenced November 4, 1952, and completed November 4, 1952; name of drilling contractor Abbott Bros. P.O. Box 637; Address, Hobbs, New Mexico; Driller's License No. WD-46

2. Principal Water-bearing Strata:

	Depth in Feet From	To	Thickness	Description of Water-bearing Formation
No. 1	4' concrete plug set 2' below surface on rubble filled hole			
No. 2				
No. 3				
No. 4				
No. 5				

3. Casing Record:

Diameter in inches	Pounds per ft.	Threads per inch	Depth of Casing or Liner Top	Depth of Casing or Liner Bottom	Feet of Casing	Type of Shoe	Perforations From	Perforations To

4. If above construction replaces old well to be abandoned, give location: ¼, ¼, ¼ of Section, Township, Range; name and address of plugging contractor, Abbott Brothers, P.O. Box 637; Hobbs, New Mexico

date of plugging November 4, 1952; describe how well was plugged: 4' Concrete plug set 2' below surface over rubble filled hole.

FILED
NOV 13 1952
OFFICE
ARTESIAN WELL SUPERVISOR
ROSWELL, NEW MEXICO

5. Log of Well:

Depth in feet From	Depth in feet To	Thickness in feet	Description of Formation

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described well.

Abbott Brothers

By: _____

Licensed Well Driller

Instructions

This form shall be executed, preferably typewritten, in triplicate and filed with the State Engineer's Office at Roswell, New Mexico, within 10 days after drilling has been completed. Data on water-bearing strata and on all formations encountered should be as complete and accurate as possible.

(This form to be executed in triplicate)

WELL RECORD

Date of Receipt March 10 1952 Permit No. L-1396

Name of permittee, Great Western Drilling Company

Street or P.O., P.O. Box 191, City and State Lubbock, Texas

1. Well location and description: The shallow (shallow or artesian) well is located in NE ¼, NW ¼, ¼ of Section 2, Township 12S, Range 33E; Elevation of top of casing above sea level, unknown feet; diameter of hole, 8 inches; total depth, 126 feet; depth to water upon completion, 45 feet; drilling was commenced March 5, 19 52, and completed March 6, 19 52; name of drilling contractor Claude Patum 524 W Washington; Address, Lovington, N. M.; Driller's License No. WD33

2. Principal Water-bearing Strata:

	Depth in Feet From	To	Thickness	Description of Water-bearing Formation
No. 1	45	126	81	water sands
No. 2				
No. 3				
No. 4				
No. 5				

3. Casing Record:

Diameter in inches	Pounds per ft.	Threads per inch	Depth of Casing or Liner Top	Bottom	Feet of Casing	Type of Shoe	Perforations From	To
6	17	8	0	126	126	none	100	126

4. If above construction replaces old well to be abandoned, give location: Does not apply ¼, ¼, ¼ of Section, Township, Range; name and address of plugging contractor,

date of plugging, 19; describe how well was plugged:

FILED
APR 3 1952
OFFICE
SUPERVISOR WELL SUPERVISION
ROSWELL, NEW MEXICO

5. Log of Well:

Depth in feet From	Depth in feet To	Thickness in feet	Description of Formation
0	3	3	Soil
3	12	9	Rock
12	35	23	Caliche and rock
35	45	10	Sandstone
45	75	30	Water sand
75	126	51	Rock sands

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described well.

C. Claude Tatum
Licensed Well Driller

Instructions

This form shall be executed, preferably typewritten, in triplicate and filed with the State Engineer's Office at Roswell, New Mexico, within 10 days after drilling has been completed. Data on water-bearing strata and on all formations encountered should be as complete and accurate as possible.

(This form to be executed in triplicate)

WELL RECORD

Date of Receipt..... Permit No. L-2165

Name of permittee, Amerada Petroleum Corporation

Street or P.O., Drawer D, City and State Monumeht, New Mexico

1. Well location and description: The shallow well is located in SW ¼, NW ¼, NW ¼ of Section #2, Township 12-S, Range 33-E; Elevation of top of casing above sea level, 4235' feet; diameter of hole, 7" inches; total depth, 114' feet; depth to water upon completion, 38' feet; drilling was commenced July 25, 1950, and completed July 26, 1950; name of drilling contractor W. H. Howard; Address, Lovington, New Mexico; Driller's License No.....

(shallow or artesian)

2. Principal Water-bearing Strata:

	Depth in Feet From	To	Thickness	Description of Water-bearing Formation
No. 1	48'	113'	65'	Water Sand
No. 2				
No. 3				
No. 4				
No. 5				

3. Casing Record:

Diameter in inches	Pounds per ft.	Threads per inch	Depth of Casing or Liner Top	Depth of Casing or Liner Bottom	Feet of Casing	Type of Shoe	Perforations From	Perforations To
6" OD	9#	Vict. (Weld)	0'	114'	114'	None	70'	110'

4. If above construction replaces old well to be abandoned, give location: -- -- ¼, ¼, ¼ of Section....., Township....., Range.....; name and address of plugging contractor,

.....

.....

date of plugging....., 19.....; describe how well was plugged: .....

.....

.....

.....

FILED
JUN 30 1950
OFFICE
ARTESIAN WELL SUPERVISOR
ROSWELL, NEW MEXICO

Well #3 on Caprock - 1-287-3

5. Log of Well:

Depth in feet From	Depth in feet To	Thickness in feet	Description of Formation
0'	1'	1'	Soil
1'	20'	19'	Caliche & Rock
20'	48'	28'	Sandstone
48'	113'	65'	Water Sands
113'	114'	1'	Red Bed & Red Rock

L S Elev _____ _____
Depth to K_____ Trc_____
Elev of K_____ Trc_____

PBU 12.33.2.113

Loc. No._____
Hydro. Survey_____ Field Check_____

SOURCE OF ALTITUDE GIVEN
Interpolated from Topo. Sheet X
Determined by Inst. Leveling_____
Other_____

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described well.

W. H. Howard (N.M.)
Licensed Well Driller

Instructions

This form shall be executed, preferably typewritten, in triplicate and filed with the State Engineer's Office at Roswell, New Mexico, within 10 days after drilling has been completed. Data on water-bearing strata and on all formations encountered should be as complete and accurate as possible.

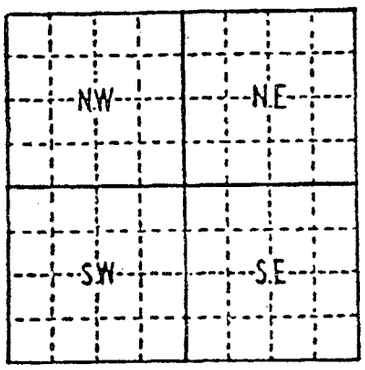
L-2165

12.33.2.113

WELL RECORD

File No. L-1139

INSTRUCTIONS: This form should be typewritten, and filed in the office of the State Engineer, P. O. Box 1079, Santa Fe, New Mexico, or in the office of the Artesian Well Supervisor, Roswell, New Mexico. Section 5 should be answered only if an old artesian well has been plugged. All other sections should be answered in full in every case, regardless of whether the well drilled is shallow or artesian in character. This report must be subscribed and sworn to before a Notary Public.



(Plat of 640 Acres)
Locate Well Accurately

Owner of well George P. Livermore

Street and Number

Post Office Lubbock, Texas

Well was drilled under Permit No. and

is located in the SW ¼ SW ¼ ¼ of Section 2

Township 12 S, Range 33 E

Drilling Contractor Claude Tatum

Street and Number

Post Office

Drilling was commenced, 19. Drilling was completed, 19.

Elevation at top of casing in feet above sea level

State whether well is shallow or artesian

Total depth of well feet. Water level upon completion of well feet below land surface.

Sec. 2 PRINCIPAL WATER-BEARING STRATA

No. 1, from to, Thickness in feet, Formation

No. 2, from to, Thickness in feet, Formation

No. 3, from to, Thickness in feet, Formation

No. 4, from to, Thickness in feet, Formation

No. 5, from to, Thickness in feet, Formation

Sec. 3 RECORD OF CASING

Diameter in Inches	Pounds per Foot	Threads per Inch	Name of Manufacturer	Feet of Casing	Type of Shoe	Perforated From	Perforated To	Purpose

Sec. 4 RECORD OF MUDDING AND CEMENTING

Diameter of Hole in Inches	Number of Sacks of Cement	Methods Used	Specific Gravity of Mud	Tons of Clay Used

JUN 20 1961

ARTESIAN WELL SUPERVISOR
ROSWELL, NEW MEXICO

Sec. 5 PLUGGING RECORD OF OLD WELL

Well is located in the ¼ ¼ ¼ of Section, Township,

Range Name of plugging contractor

Street and Number Post Office

Tons of clay used Tons of roughage used Type of roughage

Was plugging approved by Artesian Well Supervisor?

Cement plugs were placed as follows:

No. 1 was placed at feet. Number of sacks of cement used

No. 2 was placed at feet. Number of sacks of cement used

No. 3 was placed at feet. Number of sacks of cement used

No. 4 was placed at feet. Number of sacks of cement used

No. 5 was placed at feet. Number of sacks of cement used

(over)

L-1139

Sec. 6

LOG OF WELL

FROM (Depth in Feet)	TO (Depth in Feet)	THICKNESS IN FEET	CLASSIFICATION OF FORMATION
0	10		Cleeche & Rock
10	18		Rock
18	22		Hard Rock
22	50		Sandstone
55	130		Water Sands

I, Roland Tatum, do solemnly swear that, to the best of my knowledge and belief, the foregoing information is a true and correct record of the well for which report is hereby made, insofar as can be determined from all available records.

SUBSCRIBED AND SWORN TO BEFORE ME this 22nd day of June, A.D., 19 51

Jewell Henry
Notary Public

My Commission Expires July 28, 1954

Signed Roland Tatum

Position Driller

Street and Number

Post Office

Revised June 1972

STATE ENGINEER OFFICE

WELL RECORD

Section 1. GENERAL INFORMATION

(A) Owner of well Amerada Hess Corp. Owner's Well No. _____

Street or Post Office Address c/o Glenn's Water Well Service, Inc.

City and State Tatum, New Mexico 88267

Well was drilled under Permit No. L-10,231 and is located in the:

a. SE ¼ NW ¼ SW ¼ NE ¼ of Section 2 Township 12-S. Range 33-E. N.M.P.M.

b. Tract No. _____ of Map No. _____ of the _____

c. Lot No. _____ of Block No. _____ of the _____
Subdivision, recorded in _____ County.

d. X= _____ feet, Y= _____ feet, N.M. Coordinate System _____ Zone in the _____ Grant.

(B) Drilling Contractor Glenn's Water Well Service, Inc. License No. WD 421

Address P.O. Box 692 Tatum, New Mexico 88267

Drilling Began 11-18-91 Completed 11-18-91 Type tools rotary Size of hole 9 7/8 in.

Elevation of land surface or _____ at well is _____ ft. Total depth of well 134 ft.

Completed well is ☒ shallow ☐ artesian. Depth to water upon completion of well 42 ft.

Section 2. PRINCIPAL WATER-BEARING STRATA

Depth in Feet From	Depth in Feet To	Thickness in Feet	Description of Water-Bearing Formation	Estimated Yield (gallons per minute)
66	134	68	sand	100

Section 3. RECORD OF CASING

Diameter (inches)	Pounds per foot	Threads per in.	Depth in Feet Top	Depth in Feet Bottom	Length (feet)	Type of Shoe	Perforations From	Perforations To
6 5/8	.219		1	134	134		66	134

Section 4. RECORD OF MUDDING AND CEMENTING

Depth in Feet From	Depth in Feet To	Hole Diameter	Sacks of Mud	Cubic Feet of Cement	Method of Placement

Section 5. PLUGGING RECORD

Plugging Contractor _____

Address _____

Plugging Method _____

Date Well Plugged _____

Plugging approved by:

_____
State Engineer Representative

No.	Depth in Feet Top	Depth in Feet Bottom	Cubic Feet of Cement
1			
2			
3			
4			

FOR USE OF STATE ENGINEER ONLY

Date Received November 25, 1991

Quad _____ FWL _____ FSL _____

File No. L-10,231 Use OWD Location No. 12.33.2.231432

TSD

12.33.2.231432

Section 6. LOG OF HOLE

Depth in Feet From	Depth in Feet To	Thickness in Feet	Color and Type of Material Encountered
0	3	3	soil
3	28	25	caleche
28	42	14	sand and rock
42	134	92	water sand

Section 7. REMARKS AND ADDITIONAL INFORMATION

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described hole.

Driller

INSTRUCTIONS: This form should be executed in triplicate, preferably typewritten, and submitted to the appropriate district office of the State Engineer. All questions, except Section 5, shall be answered as completely and accurately as possible when any well is drilled, repaired or deepened. When this form is used as a plugging record, only Section 1(a) and Section 6 need be completed.

(This form to be executed in triplicate)

WELL RECORD

Date of Receipt Oct. 12, 1951 Permit No. L-1282

Name of permittee, Amerada Petroleum Corporation

Street or P.O., Roswell Star Route, City and State Tatum, New Mexico

1. Well location and description: The shallow (shallow or artesian) well is located in SW ¼, NE ¼, ¼ of Section 2, Township 12, Range 33E; Elevation of top of casing above sea level, Not known feet; diameter of hole, 8 inches; total depth, 122 feet; depth to water upon completion, 55 feet; drilling was commenced Oct. 9, 1951, and completed Oct. 11, 1951; name of drilling contractor Claude Tatum 524 W Washington; Address, Lovington, New Mexico; Driller's License No. WD33

2. Principal Water-bearing Strata:

	Depth in Feet From	To	Thickness	Description of Water-bearing Formation
No. 1	55	122	67	Light red sand
No. 2				
No. 3				
No. 4				
No. 5				

3. Casing Record:

Diameter in inches	Pounds per ft.	Threads per inch	Depth of Casing or Liner Top	Depth of Casing or Liner Bottom	Feet of Casing	Type of Shoe	Perforations From	Perforations To
7	20	10		122	122	None	90	122

FILED
MAR 17 1952
OFFICE
ARTESIAN WELL SUPERVISOR
ROSWELL, NEW MEXICO

4. If above construction replaces old well to be abandoned, give location: Does not apply ¼, New Well of Section, Township, Range; name and address of plugging contractor,

date of plugging, 19; describe how well was plugged:

FILED
FEB 18 1952
OFFICE
ARTESIAN WELL SUPERVISOR
ROSWELL, NEW MEXICO

L-1282

5. Log of Well:

Depth in feet From	Depth in feet To	Thickness in feet	Description of Formation
0	1	1	Soil
1	14	13	Caliche
14	17	3	Hard rock
17	55	38	Sandstone
55	122	67	Water sands

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described well.

Licensed Well Driller

Instructions

This form shall be executed, preferably typewritten, in triplicate and filed with the State Engineer's Office at Roswell, New Mexico, within 10 days after drilling has been completed. Data on water-bearing strata and on all formations encountered should be as complete and accurate as possible.

FIELD ENGR. LOG

(This form to be executed in triplicate)

WELL RECORD

Date of Receipt [illegible] Permit No. [illegible]

Name of permittee, [illegible]

Street or P.O., [illegible], City and State [illegible]

1. Well location and description: The [illegible] (shallow or artesian) well is located in [illegible] ¼, [illegible] ¼, ... ¼ of Section 2, Township [illegible], Range [illegible]; Elevation of top of casing above sea level, [illegible] feet; diameter of hole, 8 inches; total depth, 110 feet; depth to water upon completion, 45 feet; drilling was commenced May 23, 19[illegible], and completed May [illegible], 1952; name of drilling contractor [illegible]; Address, [illegible]; Driller's License No. [illegible]

2. Principal Water-bearing Strata:

	Depth in Feet From	To	Thickness	Description of Water-bearing Formation
No. 1	25	45	20	[illegible]
No. 2	45	110	65	[illegible]
No. 3				
No. 4				
No. 5				

3. Casing Record:

Diameter in inches	Pounds per ft.	Threads per inch	Depth of Casing or Liner Top	Bottom	Feet of Casing	Type of Shoe	Perforations From	To
6	[illegible]	[illegible]		110	110	[illegible]	[illegible]	110

4. If above construction replaces old well to be abandoned, give location: [illegible] ¼ of Section ...., Township ...., Range ....; name and address of plugging contractor, ...

date of plugging ...., 19....; describe how well was plugged: ....

FILED
JUN [illegible] 1952

5. Log of Well:

Depth in feet From	Depth in feet To	Thickness in feet	Description of Formation
0	2	2	Soil
2	25	23	Caliche and rock
25	45	20	Caliche
45	110	65	Water sands

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described well.

Blanche Tatum
Licensed Well Driller

Instructions

This form shall be executed, preferably typewritten, in triplicate and filed with the State Engineer's Office at Roswell, New Mexico, within 10 days after drilling has been completed. Data on water-bearing strata and on all formations encountered should be as complete and accurate as possible.

(This form to be executed in triplicate)

WELL RECORD

Date of Receipt _____ Permit No. L-1291

Name of permittee, J. T. Acrey

Street or P.O., Gen. Del., City and State Tatum, New Mexico

1. Well location and description: The shallow (shallow or artesian) well is located in - ¼, SW ¼, NW ¼ of Section 12, Township 12 S, Range 33 E; Elevation of top of casing above sea level, _____ feet; diameter of hole, 7 inches; total depth, 90 feet; depth to water upon completion, 55 feet; drilling was commenced Oct. 21, 19~~52~~ 51 and completed Oct. 22, 19 51; name of drilling contractor Abbott Bros.; Address, Box 637, Hobbs, N. M.; Driller's License No. WD-46

2. Principal Water-bearing Strata:

	Depth in Feet From	To	Thickness	Description of Water-bearing Formation
No. 1	55	90	35	Water Sand
No. 2				
No. 3				
No. 4				
No. 5				

3. Casing Record:

Diameter in Inches	Pounds per ft.	Threads per Inch	Depth of Casing or Liner Top	Depth of Casing or Liner Bottom	Feet of Casing	Type of Shoe	Perforations From	Perforations To
NONE								

4. If above construction replaces old well to be abandoned, give location: ¼, ¼, ¼ of Section, Township, Range; name and address of plugging contractor,

date of plugging, 19; describe how well was plugged:

Well #2 on Photo Hobbs 3-2-14

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ROSWELL, NEW MEXICO

L 1291

5. Log of Well:

Depth in feet From	To	Thickness in feet	Description of Formation
0	2	2	Soil
2	20	18	Caliche
20	55	35	Caliche & Sand
55	90	35	Water Sand

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described well.

ABBOTT BROS.

By: Clyde Abbott

Licensed Well Driller

Instructions

This form shall be executed, preferably typewritten, in triplicate and filed with the State Engineer's Office at Roswell, New Mexico, within 10 days after drilling has been completed. Data on water-bearing strata and on all formations encountered should be as complete and accurate as possible.

(This form to be executed in triplicate)

WELL RECORD

Date of Receipt..... Permit No. L-2073

Name of permittee, Amerada Petroleum Corporation

Street or P.O., Drawer D, City and State Monument, New Mexico

1. Well location and description: The shallow (shallow or artesian) well is located in NW ¼, SE ¼, SE ¼ of Section #11, Township 12-S, Range 33-E; Elevation of top of casing above sea level, 4240' feet; diameter of hole, 12-3/4" inches; total depth, 130' feet; depth to water upon completion, 40' feet; drilling was commenced May 25, 19 49, and completed May 27, 19 49; name of drilling contractor Edward B. Burke

215 E. Skelly; Address, Hobbs, New Mexico; Driller's License No. WD-111

2. Principal Water-bearing Strata:

	Depth in Feet From	To	Thickness	Description of Water-bearing Formation
No. 1	90'	128'	38'	Water Sand
No. 2				
No. 3				
No. 4				
No. 5				

3. Casing Record:

Diameter in Inches	Pounds per ft.	Threads per Inch	Depth of Casing or Liner Top	Depth of Casing or Liner Bottom	Feet of Casing	Type of Shoe	Perforations From	Perforations To
10-3/4"	40.5#	8VT	0'	130'	130'	None	100'	126'

4. If above construction replaces old well to be abandoned, give location: - - ¼, ¼, ¼ of Section, Township, Range; name and address of plugging contractor,

date of plugging, 19; describe how well was plugged:

Well #2 on Hobbs 3-3-24

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JUN 2 1953
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ROSWELL, NEW MEXICO

L-2073

Drillers Log Ed. B. Burke 5/25 27/49

5. Log of Well:

Depth in feet From	Depth in feet To	Thickness in feet	Description of Formation
0'	1'	1'	Top Soil
1'	30'	29'	Caliche
30'	60'	30'	White Clay
60'	80'	20'	Hard Sand - Shells
80'	90'	10'	Red Clay
90'	128'	38'	Water Sand
128'	130'	2'	Red Bed & Red Rock

L- 2073 12. 33. 11. 4A 1

L S Elev ____
Depth to K____ Trc____
Elev of K____ Trc____

Loc. No.____
Hydro. Survey____ Field Check____

SOURCE OF ALTITUDE GIVEN
Interpolated from Topo. Sheet____
Determined by Inst. Leveling____
Other____

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described well.

Edward B. Burke (16. Mr.)
Licensed Well Driller

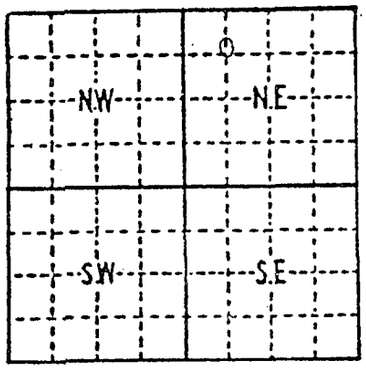
Instructions

This form shall be executed, preferably typewritten, in triplicate and filed with the State Engineer's Office at Roswell, New Mexico, within 10 days after drilling has been completed. Data on water-bearing strata and on all formations encountered should be as complete and accurate as possible.

WELL RECORD

File No. L-1287

INSTRUCTIONS: This form should be typewritten, and filed in the office of the State Engineer, P. O. Box 1079, Santa Fe, New Mexico, or in the office of the Artesian Well Supervisor, Roswell, New Mexico. Section 5 should be answered only if an old artesian well has been plugged. All other sections should be answered in full in every case, regardless of whether the well drilled is shallow or artesian in character. This report must be subscribed and sworn to before a Notary Public.



(Plat of 640 Acres)
Locate Well Accurately

Owner of well George P. Livermore

Street and Number

Post Office Lubbock, Texas

Well was drilled under Permit No. L-1287 and

is located in the center ¼ NW ¼ NE ¼ of Section 11

Township 12 South, Range 33 East

Drilling Contractor Abbott Brothers

Street and Number

Post Office Hobbs, New Mexico

Drilling was commenced 22nd Oct., 1951. Drilling was completed 22nd. Oct., 1951

Elevation at top of casing in feet above sea level

State whether well is shallow or artesian Shallow

Total depth of well 130 feet. Water level upon completion of well 65 feet below land surface.

Sec. 2 PRINCIPAL WATER-BEARING STRATA

No. 1, from 65 to 130, Thickness in feet 65, Formation sand

No. 2, from to, Thickness in feet, Formation

No. 3, from to, Thickness in feet, Formation

No. 4, from to, Thickness in feet, Formation

No. 5, from to, Thickness in feet, Formation

Sec. 3 RECORD OF CASING

Diameter in Inches	Pounds per Foot	Threads per Inch	Name of Manufacturer	Feet of Casing	Type of Shoe	Perforated From	Perforated To	Purpose
7"				130		100	130	

Sec. 4 RECORD OF MUDDING AND CEMENTING

Diameter of Hole in Inches	Number of Sacks of Cement	Methods Used	Specific Gravity of Mud	Tons of Clay Used

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OCT 26 1951
OFFICE
ARTESIAN WELL SUPERVISOR
ROSWELL, NEW MEXICO

Sec. 5 PLUGGING RECORD OF OLD WELL

Well is located in the ¼ ¼ ¼ of Section

Range Name of plugging contractor

Street and Number Post Office

Tons of clay used Tons of roughage used Type of roughage

Was plugging approved by Artesian Well Supervisor?

Cement plugs were placed as follows:

No. 1 was placed at feet. Number of sacks of cement used

No. 2 was placed at feet. Number of sacks of cement used

No. 3 was placed at feet. Number of sacks of cement used

No. 4 was placed at feet. Number of sacks of cement used

No. 5 was placed at feet. Number of sacks of cement used

(over)

L-1287

12 32 11.411

Sec. 6

LOG OF WELL

FROM (Depth in Feet)	TO (Depth in Feet)	THICKNESS IN FEET	CLASSIFICATION OF FORMATION
0	2	2	Soil
2	28	26	Caliche
28	58	30	Packed Sand
58	65	7	Hard shell
65	130	65	Water Sand

I, Clyde Abbott for Abbott Bros., do solemnly swear that, to the best of my knowledge and belief, the foregoing information is a true and correct record of the well for which report is hereby made, insofar as can be determined from all available records.

SUBSCRIBED AND SWORN TO BEFORE ME this 24th day of October, A.D., 1951

John W. Thurman
Notary Public

My Commission Expires Sept. 26, 1953

Signed Clyde Abbott

Position Partner

Street and Number

Post Office Hobbs, New Mexico

(This form to be executed in triplicate)

PLUGGING WELL RECORD

Date of Receipt ..... Permit No. L-1287

Name of permittee, George P. Livermore, Inc.

Street or P.O., Box 191, City and State Lubbock, Texas

1. Well location and description: The shallow (shallow or artesian) well is located in ¼, NW ¼, NE ¼ of Section 11, Township 12 S, Range 33 E; Elevation of top of casing above sea level, x feet; diameter of hole, 7 inches; total depth, 130 feet; depth to water upon completion, ... feet; ~~XXXXX~~ Plugging was commenced November 4, 19 52, and completed November 4, 19 52; name of drilling contractor Abbott Brothers P.O. Box 637; Address, Hobbs, New Mexico; Driller's License No. WD-46

2. Principal Water-bearing Strata:

	Depth in Feet From	To	Thickness	Description of Water-bearing Formation
No. 1	4'			Concret plug set 2' below surface on rubble filled hole
No. 2				
No. 3				
No. 4				
No. 5				

3. Casing Record:

Diameter in inches	Pounds per ft.	Threads per inch	Depth of Casing or Liner Top	Depth of Casing or Liner Bottom	Feet of Casing	Type of Shoe	Perforations From	Perforations To

4. If above construction replaces old well to be abandoned, give location: ¼, ¼, ¼ of Section ....., Township ....., Range .....; name and address of plugging contractor, Abbott Brothers, P.O. Box 637; Hobbs, New Mexico

date of plugging November 4, 19 52; describe how well was plugged: 4' Concrete plug set 2' below surface on rubble filled hole

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NOV 13 1952
OFFICE
ARTESIAN WELL SUPERVISION
ROSWELL, NEW MEXICO

L 1287

5. Log of Well:

Depth in feet From	To	Thickness in feet	Description of Formation

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described well.

ABBOTT BROTHERS

by: _____

Licensed Well Driller

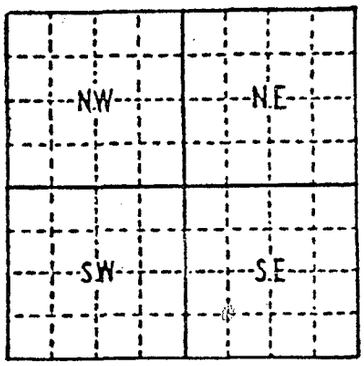
Instructions

This form shall be executed, preferably typewritten, in triplicate and filed with the State Engineer's Office at Roswell, New Mexico, within 10 days after drilling has been completed. Data on water-bearing strata and on all formations encountered should be as complete and accurate as possible.

WELL RECORD

File No. L-33

INSTRUCTIONS: This form should be typewritten, and filed in the office of the State Engineer, P. O. Box 1079, Santa Fe, New Mexico, or in the office of the Artesian Well Supervisor, Roswell, New Mexico. Section 5 should be answered only if an old artesian well has been plugged. All other sections should be answered in full in every case, regardless of whether the well drilled is shallow or artesian in character. This report must be subscribed and sworn to before a Notary Public.



(Plat of 640 Acres)
Locate Well Accurately

Owner of well Amanada Oil Co.

Street and Number —

Post Office Tatum New Mexico

Well was drilled under Permit No. L-1125 and Water Well on oil Lease

is located in the SW ¼ SE ¼ ¼ of Section 3

Township 12 South, Range 33 EAST

Drilling Contractor C.O. Aldridge

Street and Number 614 North 2nd St

Post Office Lovington New Mexico

Drilling was commenced May 10, 19 37 Drilling was completed May 14, 19 37

Elevation at top of casing in feet above sea level —

State whether well is shallow or artesian Shallow

Total depth of well 90 feet. Water level upon completion of well 50 feet below land surface.

Sec. 2 PRINCIPAL WATER-BEARING STRATA

No. 1, from 32 to 78, Thickness in feet 28, Formation Sandy Sand

No. 2, from 78 to 90, Thickness in feet 12, Formation Quick Sand

No. 3, from — to —, Thickness in feet —, Formation —

No. 4, from — to —, Thickness in feet —, Formation —

No. 5, from — to —, Thickness in feet —, Formation —

Sec. 3 RECORD OF CASING

Diameter in Inches	Pounds per Foot	Threads per Inch	Name of Manufacturer	Feet of Casing	Type of Shoe	Perforated From	Perforated To	Purpose
6	Just Rod	Used		90	None	50	90	

Sec. 4 RECORD OF MUDDING AND CEMENTING

Diameter of Hole in Inches	Number of Sacks of Cement	Methods Used	Specific Gravity of Mud	Tons of Clay Used

RECEIVED
MAY 20 1937
OFFICE
ARTESIAN WELL SUPERVISOR
ROSWELL, NEW MEXICO

Sec. 5 PLUGGING RECORD OF OLD WELL

Well is located in the ¼ ¼ ¼ of Section —, Township —,

Range — Name of plugging contractor —

Street and Number — Post Office —

Tons of clay used — Tons of roughage used — Type of roughage —

— Was plugging approved by Artesian Well Supervisor? —

Cement plugs were placed as follows:

No. 1 was placed at — feet. Number of sacks of cement used —

No. 2 was placed at — feet. Number of sacks of cement used —

No. 3 was placed at — feet. Number of sacks of cement used —

No. 4 was placed at — feet. Number of sacks of cement used —

No. 5 was placed at — feet. Number of sacks of cement used —

(over)

L-1125

10 22 2 U2

Sec. 6

LOG OF WELL

FROM (Depth in Feet)	TO (Depth in Feet)	THICKNESS IN FEET	CLASSIFICATION OF FORMATION
0	1	1	Soil
1	5	4	Lime Rock
5	25	20	Caliche
25	50	25	Gray Sand
50	78	28	Water Sand
78	90	12	Quick Sand

I, E. C. Alldredge, do solemnly swear that, to the best of my knowledge and belief, the foregoing information is a true and correct record of the well for which report is hereby made, insofar as can be determined from all available records.

SUBSCRIBED AND SWORN TO BEFORE ME this .....day of....., A.D., 19.....

.....
Notary Public

My Commission Expires.....

Signed E. C. Alldredge

Position Contractor & Driller

Street and Number 614 North 2nd St.

Post Office Lovington N. Mex.

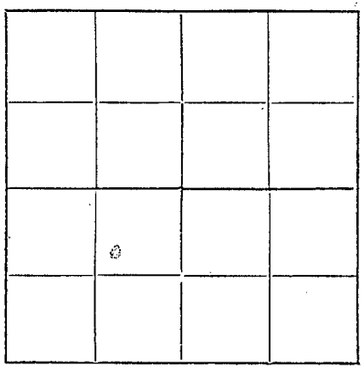
Form WR-23 STATE ENGINEER OFFICE

FIELD ENGR. LOG

WELL RECORD

INSTRUCTIONS: This form should be executed in triplicate, preferably typewritten, and submitted to the nearest district office of the State Engineer. All sections, except Section 5, shall be answered as completely and accurately as possible when any well is drilled, repaired or deepened. When this form is used as a plugging record, only Section 1A and Section 5 need be completed.

Section 1



(Plat of 640 acres)

(A) Owner of well Amerada Pet. Corp.

Street and Number Roswell Star Route

City Tatum, State New Mexico

Well was drilled under Permit No. L-1241 (1) and is located in the SW ¼ NE ¼ SW ¼ of Section 2 Twp. 12S Rge. 33E

(B) Drilling Contractor O. B. Musselwhite License No. WD99

Street and Number Box 56

City Hobbs, State New Mexico

Drilling was commenced May 15, 19 65

Drilling was completed May 18, 19 65

Elevation at top of casing in feet above sea level Unkown Total depth of well 119

State whether well is shallow or artesian Shallow Depth to water upon completion 50

Section 2 PRINCIPAL WATER-BEARING STRATA

No.	Depth in Feet From	Depth in Feet To	Thickness in Feet	Description of Water-Bearing Formation
1				Cleaned out.
2				
3				
4				
5				

Section 3 RECORD OF CASING

Dia in.	Pounds ft.	Threads in	Depth Top	Depth Bottom	Feet	Type Shoe	Perforations From	Perforations To
6 5/8	12	None	0	119	119	None	90	119

Section 4 RECORD OF MUDDING AND CEMENTING

Depth in Feet From	Depth in Feet To	Diameter Hole in in.	Tons Clay	No. Sacks of Cement	Methods Used

Section 5 PLUGGING RECORD

Name of Plugging Contractor License No.

Street and Number City State

Tons of Clay used Tons of Roughage used Type of roughage

Plugging method used Date Plugged 19

Plugging approved by:

Basin Supervisor

Cement Plugs were placed as follows:

No.	Depth of Plug From	Depth of Plug To	No. of Sacks Used

FOR USE OF STATE ENGINEER ONLY

STATE ENGINEER OFFICE RECEIVED 1965 MAY 28 AM 8:11

Date Received

File No. L-1241 (1) Use OWD Location No. 12.33.3.323

OWD D.C.

Section 6

LOG OF WELL

Depth in Feet From	Depth in Feet To	Thickness in Feet	Color	Type of Material Encountered
1	6	5	Gray	Cement plug
				Cleaned out to 119 ft.

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described well.

O. R. Musselwhite
Well Driller

(This form to be executed in triplicate)

WELL RECORD

Date of Receipt Jan. 11, 1951 Permit No. L-1331

Name of permittee, Amerada Petroleum Corporation

Street or P.O., Roswell Star Route, City and State Tatum, New Mexico

1. Well location and description: The shallow (shallow or artesian) well is located in NE ¼, NW ¼, ¼ of Section 8, Township 12S, Range 33E; Elevation of top of casing above sea level, Not known feet; diameter of hole, 8 inches; total depth, 125 feet; depth to water upon completion, 68 feet; drilling was commenced Jan. 9, 1952, and completed Jan. 10, 19 52; name of drilling contractor Claude Tatum 52½ W Washington; Address, Lovington, N. M.; Driller's License No. WD33

2. Principal Water-bearing Strata:

	Depth in Feet From	To	Thickness	Description of Water-bearing Formation
No. 1	70	125	55	Water sand
No. 2				
No. 3				
No. 4				
No. 5				

3. Casing Record:

Diameter in Inches	Pounds per ft.	Threads per Inch	Depth of Casing or Liner Top	Bottom	Feet of Casing	Type of Shoe	Perforations From	To
None								

4. If above construction replaces old well to be abandoned, give location Does not apply New Well ¼ of Section ..., Township ..., Range ...; name and address of plugging contractor,

...

...

date of plugging ..., 19...; describe how well was plugged:

...

...

...

RECEIVED
MAR 17 1952
ARTESIAN WELL SUPERVISOR
ROSWELL, NEW MEXICO

FILED
FEB 18 1952
OFFICE
ARTESIAN WELL SUPERVISOR
ROSWELL, NEW MEXICO

L-1331

5. Log of Well:

Depth in feet From	Depth in feet To	Thickness in feet	Description of Formation
0	1	1	soil
1	20	19	Caliche
20	70	50	Sandstone
70	125	55	Watersands

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described well.

Claude Tatum
Licensed Well Driller

Instructions

This form shall be executed, preferably typewritten, in triplicate and filed with the State Engineer's Office at Roswell, New Mexico, within 10 days after drilling has been completed. Data on water-bearing strata and on all formations encountered should be as complete and accurate as possible.

(This form to be executed in triplicate)

WELL RECORD

Date of Receipt Oct. 17, 1951 Permit No. L-1241

Name of permittee, Amerada Patroleum Corporation

Street or P.O., Roswell Star Route, City and State Tatum New Mexico

1. Well location and description: The shallow (shallow or artesian) well is located in NE ¼, SW ¼, ¼ of Section 3, Township 12 S, Range 33E; Elevation of top of casing above sea level, not known feet; diameter of hole, 8 inches; total depth, 120 feet; depth to water upon completion, 50 feet; drilling was commenced Oct. 15, 1951, and completed Oct. 16, 1951; name of drilling contractor Claude Tatum 524 W Washington; Address, Lovington, N. M.; Driller's License No. WD33

2. Principal Water-bearing Strata:

	Depth in Feet From	To	Thickness	Description of Water-bearing Formation
No. 1	50	120	70	White sandstone
No. 2				
No. 3				
No. 4				
No. 5				

3. Casing Record:

Diameter in inches	Pounds per ft.	Threads per inch	Depth of Casing or Liner Top	Depth of Casing or Liner Bottom	Feet of Casing	Type of Shoe	Perforations From	Perforations To
7	20	10		120	120	none	80	120

FILED
MAR 17 1952
OFFICE
ARTESIAN WELL SUPERVISOR
ROSWELL, NEW MEXICO

4. If above construction replaces old well to be abandoned, give location Does not apply ¼, New Well ¼ of Section, Township, Range; name and address of plugging contractor,

date of plugging, 19; describe how well was plugged:

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FEB 18 1952
OFFICE
ARTESIAN WELL SUPERVISOR
ROSWELL, NEW MEXICO

L-1241

E.H

5. Log of Well:

Depth in feet From	Depth in feet To	Thickness in feet	Description of Formation
0	2	2	soil
2	12	10	caliche
12	15	3	Hard rock
15	50	35	sand stone
50	120	70	water sands

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described well.

Claude Tatum
Licensed Well Driller

Instructions

This form shall be executed, preferably typewritten, in triplicate and filed with the State Engineer's Office at Roswell, New Mexico, within 10 days after drilling has been completed. Data on water-bearing strata and on all formations encountered should be as complete and accurate as possible.

(This form to be executed in triplicate)

PLUGGING WELL RECORD

Date of Receipt ..... Permit No. L-1029

Name of permittee, Amerada Petroleum Corporation

Street or P.O., Drawer D, City and State Monument, New Mexico

1. Well location and description: The shallow (shallow or artesian) well is located in SE ¼, SE ¼, -- ¼ of Section #2, Township 12-S, Range 33-E; Elevation of top of casing above sea level, 4230' feet; diameter of hole, 7" inches; total depth, 130' feet; depth to water upon completion, 40' feet; drilling was commenced May 14, 19 51, and completed May 16, 19 51; name of drilling contractor R. L. Tatum and G.L. Shelton, Lovington; Address, New Mexico; Driller's License No. .....

2. Principal Water-bearing Strata:

	Depth in Feet From	To	Thickness	Description of Water-bearing Formation
No. 1	45'	130'	85'	Water Sand
No. 2				
No. 3				
No. 4				
No. 5				

3. Casing Record:

Diameter in inches	Pounds per ft.	Threads per inch	Depth of Casing or Liner Top	Depth of Casing or Liner Bottom	Feet of Casing	Type of Shoe	Perforations From	Perforations To
6"OD	9#	Vict.	0'	130'	130'	None	85'	125'

4. If above construction replaces old well to be abandoned, give location: -- -- ¼, ¼, ¼ of Section ....., Township ....., Range .....; name and address of plugging contractor, J. F. McAdams, Box 1716, Hobbs, New Mexico

date of plugging April 12, 19 52; describe how well was plugged: Casing was pulled. Four sacks of cement were spotted in bottom of hole. Hole was filled, packed and covered. Location was cleaned.

FILED
MAY 12 1952
OFFICE
ARTESIAN WELL SUPERVISOR
ROSWELL, NEW MEXICO

5. Log of Well:

Depth in feet From	Depth in feet To	Thickness in feet	Description of Formation

The undersigned hereby certifies that, to the best of his knowledge and belief, the foreg is a true and correct record of the above described well.

D. C. Capps

D. C. Capps

Dist. Supt., Amerada Pet. Corp.

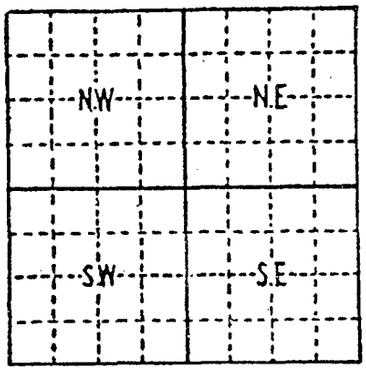
Instructions

This form shall be executed, preferably typewritten, in triplicate and filed with the State Engineer's Office at Roswell, New Mexico, within 10 days after drilling has been completed. Data on water-bearing strata and on all formations encountered should be as complete and accurate as possible.

...L RECORD

File No. L-1129

INSTRUCTIONS: This form should be typewritten, and filed in the office of the State Engineer, P. O. Box 1079, Santa Fe, New Mexico, or in the office of the Artesian Well Supervisor, Roswell, New Mexico. Section 5 should be answered only if an old artesian well has been plugged. All other sections should be answered in full in every case, regardless of whether the well drilled is shallow or artesian in character. This report must be subscribed and sworn to before a Notary Public.



(Plat of 640 Acres)
Locate Well Accurately

Owner of well Amerada Pet. Corp.

Street and Number

Post Office Roswell Star Rt. Tatum, N. Mex.

Well was drilled under Permit No. L-1129 and

is located in the ¼ SE ¼ SE ¼ of Section 2

Township 12, Range 33 E

Drilling Contractor Claude Tatum

Street and Number

Post Office

Drilling was commenced May 11, 19 51 Drilling was completed May 15, 19 51

Elevation at top of casing in feet above sea level

State whether well is shallow or artesian Shallow

Total depth of well 130 feet. Water level upon completion of well 55 feet below land surface.

Sec. 2 PRINCIPAL WATER-BEARING STRATA

No. 1, from 45 to 80, Thickness in feet 35, Formation Water Sand

No. 2, from 80 to 130, Thickness in feet 50, Formation quick sand

No. 3, from to, Thickness in feet, Formation

No. 4, from to, Thickness in feet, Formation

No. 5, from to, Thickness in feet, Formation

Sec. 3 RECORD OF CASING

Diameter in Inches	Pounds per Foot	Threads per Inch	Name of Manufacturer	Feet of Casing	Type of Shoe	Perforated From	Perforated To	Purpose
7"				130		~~85~~ 50	105	

Sec. 4 RECORD OF MUDDING AND CEMENTING

Diameter of Hole in Inches	Number of Sacks of Cement	Methods Used	Specific Gravity of Mud	Tons of Clay Used

FILED
JUN 18 1951
ARTESIAN WELL SUPERVISOR
ROSWELL, NEW MEXICO

Sec. 5 PLUGGING RECORD OF OLD WELL

Well is located in the ¼ ¼ ¼ of Section, Township,

Range Name of plugging contractor

Street and Number Post Office

Tons of clay used Tons of roughage used Type of roughage

Was plugging approved by Artesian Well Supervisor?

Cement plugs were placed as follows:

No. 1 was placed at feet. Number of sacks of cement used

No. 2 was placed at feet. Number of sacks of cement used

No. 3 was placed at feet. Number of sacks of cement used

No. 4 was placed at feet. Number of sacks of cement used

No. 5 was placed at feet. Number of sacks of cement used

(over)

L-1129

12.33.2.440

Sec. 6

LOG OF WEL.

FROM (Depth in Feet)	TO (Depth in Feet)	THICKNESS	ASSIFICATION OF FORMATION
0	3		Soil
3	25		Calleshie
25	45		Sandstone
45	80		Water Sand
80	130		Quick Sand

I, Claude Jackson, do solemnly swear that, to the best of my knowledge and belief, the foregoing information is a true and correct record of the well for which report is hereby made, insofar as can be determined from all available records.

SUBSCRIBED AND SWORN TO BEFORE ME this 22nd day of June, A.D., 1961

Jewell Henry
Notary Public

My Commission Expires June 28, 1962

Signed Claude Jackson

Position Driller

Street and Number

Post Office

(This form to be executed in triplicate)

WELL RECORD

Date of Receipt Dec 9 1951 Permit No. L-1330

Name of permittee, Amerada Petroleum Corporation

Street or P.O., Roswell Star Route, City and State Tatum, New Mexico

1. Well location and description: The shallow (shallow or artesian) well is located in ~~NE~~ SW ¼, SE ¼, ¼ of Section 35, Township 14, Range 33E; Elevation of top of casing above sea level, Not known feet; diameter of hole, 8 inches; total depth, 110 feet; depth to water upon completion, 55 feet; drilling was commenced Dec 20, 19 51, and completed Dec 21, 19 51; name of drilling contractor Claude Tatum 524 W Washington; Address, Lovington, New Mexico Driller's License No. WD33

2. Principal Water-bearing Strata:

	Depth in Feet From	To	Thickness	Description of Water-bearing Formation
No. 1	25	55	30	Sandstone
No. 2	55	110	55	Quicksands
No. 3	110	115	5	Watersand
No. 4				
No. 5				

3. Casing Record:

Diameter in inches	Pounds per ft.	Threads per inch	Depth of Casing or Liner Top	Depth of Casing or Liner Bottom	Feet of Casing	Type of Shoe	Perforations From	Perforations To
6 5/8	15	None		110	110	None	80	110

FILED MAR 17 1952 OFFICE ARTESIAN WELL SUPERVISOR ROSWELL, NEW MEXICO

4. If above construction replaces old well to be abandoned, give location: Does not apply ¼, New Well ¼ of Section, Township, Range; name and address of plugging contractor,

date of plugging, 19; describe how well was plugged:

FILED FEB 18 1952 OFFICE ARTESIAN WELL SUPERVISOR ROSWELL, NEW MEXICO

L-1330 F.H

5. Log of Well:

Depth in feet From	Depth in feet To	Thickness in feet	Description of Formation
0	2	2	soil
2	6	4	rock
6	25	19	caliche
25	55	30	sandstone
55	110	55	quicksand

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described well.

Claude Tatum
Licensed Well Driller

Instructions

This form shall be executed, preferably typewritten, in triplicate and filed with the State Engineer's Office at Roswell, New Mexico, within 10 days after drilling has been completed. Data on water-bearing strata and on all formations encountered should be as complete and accurate as possible.

APPENDIX C

ENVIRONMENTAL LAB OF

12600 West I-20 East - Odessa, Texas 79765

Analytical Report

Prepared for:

Dale Littlejohn

R.T. Hicks Consultants Ltd.- Midland

P.O. Box 7624

Midland, TX 79708

Project: Samson State BD No. 4

Project Number: L-126-5

Location: Lea Co., NM

Lab Order Number: 6E16008

Report Date: 06/22/06

R.T. Hicks Consultants Ltd.- Midland
P.O. Box 7624
Midland TX, 79708

Project: Samson State BD No. 4
Project Number: L-126-5
Project Manager: Dale Littlejohn

Fax: (432) 689-4578

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-1 9'	6E16008-01	Soil	05/08/06 10:09	05/16/06 15:45
MW-1 19'	6E16008-02	Soil	05/08/06 10:30	05/16/06 15:45
MW-1 29'	6E16008-03	Soil	05/08/06 10:50	05/16/06 15:45
MW-1 34'	6E16008-04	Soil	05/08/06 11:10	05/16/06 15:45
MW-2 9'	6E16008-05	Soil	05/09/06 12:20	05/16/06 15:45
MW-2 19'	6E16008-06	Soil	05/09/06 12:45	05/16/06 15:45
MW-2 29'	6E16008-07	Soil	05/09/06 13:30	05/16/06 15:45
MW-2 34'	6E16008-08	Soil	05/09/06 13:55	05/16/06 15:45
MW-2 39'	6E16008-09	Soil	05/09/06 14:20	05/16/06 15:45
MW-1	6E16008-10	Water	05/12/06 10:25	05/16/06 15:45
MW-2	6E16008-11	Water	05/12/06 11:00	05/16/06 15:45

R.T. Hicks Consultants Ltd.- Midland
P.O. Box 7624
Midland TX, 79708

Project: Samson State BD No. 4
Project Number: L-126-5
Project Manager: Dale Littlejohn

Fax: (432) 689-4578

General Chemistry Parameters by EPA / Standard Methods

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-1 9' (6E16008-01) Soil									
Chloride	**49.4**	1.00	mg/kg	2	EE61902	05/18/06	05/18/06	EPA 300.0	
MW-1 19' (6E16008-02) Soil									
Chloride	**7.86**	1.00	mg/kg	2	EE61902	05/18/06	05/18/06	EPA 300.0	
MW-1 29' (6E16008-03) Soil									
Chloride	**3.38**	1.00	mg/kg	2	EE61902	05/18/06	05/18/06	EPA 300.0	
MW-1 34' (6E16008-04) Soil									
Bromide	ND	0.100	mg/kg	2	EE61905	05/18/06	05/18/06	EPA 300.0	
Chloride	**5.02**	1.00	"	"	EE61902	05/18/06	05/18/06	"	
MW-2 9' (6E16008-05) Soil									
Chloride	**9.99**	1.00	mg/kg	2	EE61902	05/18/06	05/18/06	EPA 300.0	
MW-2 19' (6E16008-06) Soil									
Chloride	**7.30**	1.00	mg/kg	2	EE61902	05/18/06	05/18/06	EPA 300.0	
MW-2 29' (6E16008-07) Soil									
Chloride	**8.27**	1.00	mg/kg	2	EE61902	05/18/06	05/18/06	EPA 300.0	
MW-2 34' (6E16008-08) Soil									
Chloride	**7.77**	1.00	mg/kg	2	EE61902	05/18/06	05/18/06	EPA 300.0	
MW-2 39' (6E16008-09) Soil									
Bromide	**0.187**	0.100	mg/kg	2	EE61905	05/18/06	05/18/06	EPA 300.0	
Chloride	**12.0**	1.00	"	"	EE61902	05/18/06	05/18/06	"	
MW-1 (6E16008-10) Water									
Bromide	**0.482**	0.0500	mg/L	1	EE61705	05/17/06	05/17/06	EPA 300.0	
Chloride	**131**	5.00	"	10	EE61704	05/17/06	05/17/06	"	
Total Dissolved Solids	**838**	5.00	"	1	EE61718	05/17/06	05/17/06	EPA 160.1	

R.T. Hicks Consultants Ltd.- Midland
P.O. Box 7624
Midland TX, 79708

Project: Samson State BD No. 4
Project Number: L-126-5
Project Manager: Dale Littlejohn

Fax: (432) 689-4578

General Chemistry Parameters by EPA / Standard Methods

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-2 (6E16008-11) Water									
Bromide	**0.446**	0.0500	mg/L	1	EE61705	05/17/06	05/17/06	EPA 300.0	
Chloride	**44.5**	2.50	"	5	EE61704	05/17/06	05/17/06	"	
Total Dissolved Solids	**530**	5.00	"	1	EE61718	05/17/06	05/17/06	EPA 160.1	

R.T. Hicks Consultants Ltd.- Midland
P.O. Box 7624
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Project: Samson State BD No. 4
Project Number: L-126-5
Project Manager: Dale Littlejohn

Fax: (432) 689-4578

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 EE61704 - General Preparation (WetChem)										
Blank (EE61704-BLK1)				Prepared & Analyzed: 05/17/06						
Chloride	ND	0.500	mg/L							
LCS (EE61704-BS1)				Prepared & Analyzed: 05/17/06						
Chloride	10.1	0.500	mg/L	10.0		101	80-120			
Calibration Check (EE61704-CCV1)				Prepared & Analyzed: 05/17/06						
Chloride	10.2		mg/L	10.0		102	80-120			
Duplicate (EE61704-DUP1)		**Source: 6E16004-04**		Prepared & Analyzed: 05/17/06						
Chloride	26200	250	mg/L		25800			1.54	20	
Matrix Spike (EE61704-MS1)		**Source: 6E16004-04**		Prepared & Analyzed: 05/17/06						
Chloride	31700	250	mg/L	5000	25800	118	80-120			
Batch EE61705 - General Preparation (WetChem)										
Blank (EE61705-BLK1)				Prepared & Analyzed: 05/17/06						
Bromide	ND	0.0500	mg/L							
LCS (EE61705-BS1)				Prepared & Analyzed: 05/17/06						
Bromide	1.96	0.0500	mg/L	2.00		98.0	80-120			
Calibration Check (EE61705-CCV1)				Prepared & Analyzed: 05/17/06						
Bromide	2.05		mg/L	2.00		102	80-120			
Duplicate (EE61705-DUP1)		**Source: 6E16004-04**		Prepared & Analyzed: 05/17/06						
Bromide	66.0	5.00	mg/L		66.1			0.151	20	

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

R.T. Hicks Consultants Ltd.- Midland
P.O. Box 7624
Midland TX, 79708

Project: Samson State BD No. 4
Project Number: L-126-5
Project Manager: Dale Littlejohn

Fax: (432) 689-4578

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 EE61705 - General Preparation (WetChem)										
Matrix Spike (EE61705-MS1)		**Source: 6E16004-04**		Prepared & Analyzed: 05/17/06						
Bromide	264	0.0500	mg/L	200	66.1	99.0	80-120			
Batch EE61718 - Filtration Preparation										
Blank (EE61718-BLK1)				Prepared & Analyzed: 05/17/06						
Total Dissolved Solids	ND	5.00	mg/L							
Duplicate (EE61718-DUP1)		**Source: 6E16010-01**		Prepared & Analyzed: 05/17/06						
Total Dissolved Solids	3990	5.00	mg/L		3900			2.28	5	
Batch EE61902 - Water Extraction										
Blank (EE61902-BLK1)				Prepared & Analyzed: 05/18/06						
Chloride	ND	0.500	mg/kg							
LCS (EE61902-BS1)				Prepared & Analyzed: 05/18/06						
Chloride	10.3	0.500	mg/kg	10.0		103	80-120			
Calibration Check (EE61902-CCV1)				Prepared & Analyzed: 05/18/06						
Chloride	10.6		mg/L	10.0		106	80-120			
Duplicate (EE61902-DUP1)		**Source: 6E16007-04**		Prepared & Analyzed: 05/18/06						
Chloride	4350	50.0	mg/kg		4360			0.230	20	
Duplicate (EE61902-DUP2)		**Source: 6E16008-13**		Prepared & Analyzed: 05/18/06						
Chloride	71000	1000	mg/kg		71000			0.00	20	

R.T. Hicks Consultants Ltd.- Midland
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Project: Samson State BD No. 4
Project Number: L-126-5
Project Manager: Dale Littlejohn

Fax: (432) 689-4578

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 EE61902 - Water Extraction										
Matrix Spike (EE61902-MS1)		**Source: 6E16007-04**		Prepared & Analyzed: 05/18/06						
Chloride	5640	50.0	mg/kg	1000	4360	128	80-120			S-07
Matrix Spike (EE61902-MS2)		**Source: 6E16008-13**		Prepared & Analyzed: 05/18/06						
Chloride	95000	1000	mg/kg	20000	71000	120	80-120			
Batch EE61905 - Water Extraction										
Blank (EE61905-BLK1)				Prepared & Analyzed: 05/18/06						
Bromide	ND	0.0500	mg/kg							
LCS (EE61905-BS1)				Prepared & Analyzed: 05/18/06						
Bromide	2.17	0.0500	mg/kg	2.00		108	80-120			
Calibration Check (EE61905-CCV1)				Prepared & Analyzed: 05/18/06						
Bromide	2.27		mg/kg	2.00		114	80-120			
Duplicate (EE61905-DUP1)		**Source: 6E16007-04**		Prepared & Analyzed: 05/18/06						
Bromide	0.990	0.100	mg/kg		1.01			2.00	20	
Duplicate (EE61905-DUP2)		**Source: 6E16008-13**		Prepared & Analyzed: 05/18/06						
Bromide	ND	100	mg/kg		ND				20	
Matrix Spike (EE61905-MS1)		**Source: 6E16007-04**		Prepared & Analyzed: 05/18/06						
Bromide	208	5.00	mg/kg	200	1.01	103	80-120			
Matrix Spike (EE61905-MS2)		**Source: 6E16008-13**		Prepared & Analyzed: 05/18/06						
Bromide	4130	100	mg/kg	4000	ND	103	80-120			

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P.O. Box 7624
Midland TX, 79708

Project: Samson State BD No. 4
Project Number: L-126-5
Project Manager: Dale Littlejohn

Fax: (432) 689-4578

Notes and Definitions

S-07	Recovery outside Laboratory historical or method prescribed limits.
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: 6/22/2006

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.

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

Environmental Lab of Texas

12600 West I-20 East
Odessa, Texas 79765
Phone: 432-563-1800
Fax: 432-563-1713

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: Dale Littlejohn
Company Name: RT Hicks Consultants Ltd
Company Address: P.O. Box 7624
City/State/Zip: Midland, Texas 79708
Telephone No: (432) 528-3878
Fax No: (432) 689-4578 (Fax)
Sampler Signature: Dale Littlejohn

Project Name: Samson State BD No. 4
Project #: L-126-5
Project Loc: Lea Co., NM
PO #:

LAB # (lab use only)	FIELD CODE	Date Sampled	Time Sampled	No. of Containers	Preservative: Ice	HNO_3	HCl	NaOH	H_2SO_4	None	Other (Specify)	Matrix: Water	Sludge	Soil	Other (specify)	Analyze For: TCLP: TPH: 418.1 8015M 1005 1006	TOTAL: TPH: 418.1 8015M 1005 1006	Cations (Ca, Mg, Na, K)	Anions (Cl, SO4, CO3, HCO3)	SAR / ESP / CEC	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEX 8021B/5030 or BTEX 8260	RCI	N.O.R.M.	Chloride	Bromide	Total Dissolved Solids		RUSH TAT (Pre-Schedule)
01	MW-1 (9')	5/8/06	1009	1	X					X				X													X				
02	MW-1 (19')	5/8/06	1030	1	X					X				X													X				
03	MW-1 (29')	5/8/06	1050	1	X					X				X													X				
04	MW-1 (34')	5/8/06	1110	1	X					X				X													X	X			
05	MW-2 (9')	5/9/06	1220	1	X					X				X													X				
06	MW-2 (19')	5/9/06	1245	1	X					X				X													X				
07	MW-2 (29')	5/9/06	1330	1	X					X				X													X				
08	MW-2 (34')	5/9/06	1355	1	X					X				X													X				
09	MW-2 (39')	5/9/06	1420	1	X					X				X													X	X			

Special Instructions: Send Invoice to RT Hicks Consult. 901 Rio Grande Blvd. NW, Suite F-142, Albuquerque, NM 87104; Send results to Dale Littlejohn at the adress above.

Sample Containers Intact? Y / N
Temperature Upon Receipt:
Laboratory Comments: 1.0 °C
1-poly
4oz jar glass
w/o seals/labels

Relinquished by:	Date	Time	Received by:	Date	Time
Dale Littlejohn	5/10/06	8:45			
Relinquished by:	Date	Time	Received by ELOT:	Date	Time
			Carrie Kelly	5/10/06	3:45

Environmental Lab of Texas
12600 West I-20 East
Odessa, Texas 79765
Phone: 432-563-1800
Fax: 432-563-1713

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: Dale Littlejohn
Company Name: RT Hicks Consultants Ltd
Company Address: P.O. Box 7624
City/State/Zip: Midland, Texas 79708
Telephone No: (432) 528-3878
Fax No: (432) 689-4578 (Fax)
Sampler Signature: Dale Littlejohn

Project Name: Samson State BD No. 4
Project #: L-126-5
Project Loc: Lea Co., NM
PO #:

6E160008

LAB # (lab use only)	FIELD CODE	Date Sampled	Time Sampled	No. of Containers	Preservative: Ice	HNO_3	HCl	NaOH	H_2SO_4	None	Other (Specify)	Matrix: Water	Sludge	Soil	Other (specify):	Analyze For: TCLP: / TOTAL: TPH: 418.1 8015M 1005 1006	Cations (Ca, Mg, Na, K)	Anions (Cl, SO4, CO3, HCO3)	SAR / ESP / CEC	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEX 8021B/5030 or BTEX 8260	RCI	N.O.R.M.	Chloride	Bromide	Total Dissolved Solids		RUSH TAT (Pre-Schedule)
-10	MW-1	5/12/06	1025	1	X					X		X														X	X	X		
-11	MW-2	5/12/06	1100	1	X					X		X														X	X	X		
-12	Pit A (28')	5/12/06	1130	1	X					X				X												X	X			
-13	Pit B (28')	5/12/06	1132	1	X					X				X												X	X			
-14	Pit C (28')	5/12/06	1135	1	X					X				X												X	X			
-15	Pit D (28')	5/12/06	1125	1	X					X				X												X	X			
-16	Pit E (28')	5/12/06	1121	1	X					X				X												X	X			
-17	Pit F (28')	5/12/06	1137	1	X					X				X												X	X			

Special Instructions: Send Invoice to RT Hicks Consult. 901 Rio Grande Blvd. NW, Suite F-142, Albuquerque, NM 87104; Send results to Dale Littlejohn at the adress above.

Sample Containers Intact? (Y) N
Temperature Upon Receipt:
Laboratory Comments:

Relinquished by:	Date	Time	Received by:	Date	Time
Dale Littlejohn	5/16/06	3:45			
Relinquished by:	Date	Time	Received by ELOT:	Date	Time
			Cecilia Kelly	5/16/06	3:45

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

t: R.T. Hicks

Time: 5/16/00 3:45

r #: 6E16009

s: CK

Sample Receipt Checklist

erature of container/cooler?			1.0 C
ng container/cooler in good condition?	~~Yes~~	No	
dy Seals intact on shipping container/cooler?	Yes	No	~~Not present~~
dy Seals intact on sample bottles?	Yes	No	~~Not present~~
of custody present?	~~Yes~~	No	
e Instructions complete on Chain of Custody?	~~Yes~~	No	
of Custody signed when relinquished and received?	~~Yes~~	No	
of custody agrees with sample label(s)	~~Yes~~	No	
ner labels legible and intact?	~~Yes~~	No	
e Matrix and properties same as on chain of custody?	~~Yes~~	No	
es in proper container/bottle?	~~Yes~~	No	
es properly preserved?	~~Yes~~	No	
e bottles intact?	~~Yes~~	No	
vations documented on Chain of Custody?	~~Yes~~	No	
ners documented on Chain of Custody?	~~Yes~~	No	
ent sample amount for indicated test?	~~Yes~~	No	
nples received within sufficient hold time?	~~Yes~~	No	
amples have zero headspace?	Yes	No	~~Not Applicable~~

observations:

Variance Documentation:

ct Person: - Date/Time: Contacted by:

rding:

ctive Action Taken:

ENVIRONMENTAL LAB OF

12600 West I-20 East - Odessa, Texas 79765

Analytical Report

Prepared for:

Dale Littlejohn

R.T. Hicks Consultants Ltd.

901 Rio Grande Blvd, NW Ste., F-142

Albuquerque, NM 87104

Project: Samson State BD No.4

Project Number: None Given

Location: BD State #4

Lab Order Number: 6H03002

Report Date: 08/09/06

R.T. Hicks Consultants Ltd.
901 Rio Grande Blvd, NW Ste., F-142
Albuquerque NM, 87104

Project: Samson State BD No.4
Project Number: None Given
Project Manager: Dale Littlejohn

Fax: (413) 403-9968

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-2 (0608021500))	6H03002-01	Water	08-02-2006 15:00	08-03-2006 10:51
MW-1 (0608021555)	6H03002-02	Water	08-02-2006 15:55	08-03-2006 10:51

R.T. Hicks Consultants Ltd.
901 Rio Grande Blvd, NW Ste., F-142
Albuquerque NM, 87104

Project: Samson State BD No.4
Project Number: None Given
Project Manager: Dale Littlejohn

Fax: (413) 403-9968

General Chemistry Parameters by EPA / Standard Methods

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-2 (0608021500)) (6H03002-01) Water									
Chloride	**42.2**	5.00	mg/L	10	EH60306	08/03/06	08/03/06	EPA 300.0	
Total Dissolved Solids	**444**	10.0	"	1	EH60901	08/04/06	08/08/06	EPA 160.1	
MW-1 (0608021555) (6H03002-02) Water									
Chloride	**115**	5.00	mg/L	10	EH60306	08/03/06	08/03/06	EPA 300.0	
Total Dissolved Solids	**648**	10.0	"	1	EH60901	08/04/06	08/08/06	EPA 160.1	

R.T. Hicks Consultants Ltd.
901 Rio Grande Blvd, NW Ste., F-142
Albuquerque NM, 87104

Project: Samson State BD No.4
Project Number: None Given
Project Manager: Dale Littlejohn

Fax: (413) 403-9968

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 EH60306 - General Preparation (WetChem)										
Blank (EH60306-BLK1)				Prepared & Analyzed: 08/03/06						
Chloride	ND	0.500	mg/L							
LCS (EH60306-BS1)				Prepared & Analyzed: 08/03/06						
Chloride	9.71	0.500	mg/L	10.0		97.1	80-120			
Calibration Check (EH60306-CCV1)				Prepared & Analyzed: 08/03/06						
Chloride	9.89		mg/L	10.0		98.9	80-120			
Duplicate (EH60306-DUP1)	**Source: 6H02012-01**			Prepared & Analyzed: 08/03/06						
Chloride	ND	0.500	mg/L		ND				20	
Matrix Spike (EH60306-MS1)	**Source: 6H02012-01**			Prepared & Analyzed: 08/03/06						
Chloride	10.2	0.500	mg/L	10.0	ND	102	80-120			
Batch EH60901 - Filtration Preparation										
Blank (EH60901-BLK1)				Prepared: 08/04/06 Analyzed: 08/08/06						
Total Dissolved Solids	ND	10.0	mg/L							
Duplicate (EH60901-DUP1)	**Source: 6H03002-01**			Prepared: 08/04/06 Analyzed: 08/08/06						
Total Dissolved Solids	470	10.0	mg/L		444			5.69	5	R5

R.T. Hicks Consultants Ltd.
901 Rio Grande Blvd, NW Ste., F-142
Albuquerque NM, 87104

Project: Samson State BD No.4
Project Number: None Given
Project Manager: Dale Littlejohn

Fax: (413) 403-9968

Notes and Definitions

R5	RPD is outside of historic values
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: 8/9/2006

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.

Environmental Lab of Texas

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

12600 West I-20 East
Odessa, Texas 79765

Phone: 432-563-1800
Fax: 432-563-1713

Project Manager: Dale Littlejohn

Company Name: R.T. Hicks Consultants Ltd.

Company Address: 901 Rio Grande Blvd., NW Ste., F-142

City/State/Zip: Albuquerque, NM 87104

Telephone No: 505-266-5004 638-7333

Fax No: 413-403-9968

Sampler Signature: [signature]

e-mail:

Project Name: Samson Resources

Project #:

Project Loc: BD State #4

PO #:

Report Format: ☒ Standard ☐ TRRP ☐ NPDES

(lab use only)
ORDER #: 6H03002

LAB # (lab use only)	FIELD CODE	Beginning Depth	Ending Depth	Date Sampled	Time Sampled	No. of Containers	Ice	HNO_3	HCl	H_2SO_4	NaOH	$Na_2S_2O_3$	None	Other (Specify)	DW=Drinking Water SL=Sludge	GW = Groundwater S=Soil/Solid	NP=Non-Potable Specify Other	TPH: 418.1 8015M 1005 1006	Cations (Ca, Mg, Na, K)	Anions (Cl, SO4, CO3, HCO3)	SAR / ESP / CEC	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEX 8021B/5030 or BTEX 8260	RCI	N.O.R.M.	Chlorides	TDS			RUSH TAT (Pre-Schedule) 24, 48, 72 hrs	Standard TAT
01	MW-2 (0608021500)			8/2/06	1500	1	✓						✓			GW												✓	✓				✓
02	MW-1 (0608021555)			8/2/06	~~1500~~ 1555	1	✓						✓			GW												✓	✓				✓

Analyze For: TCLP: / TOTAL:

Special Instructions:

Relinquished by:	Date	Time	Received by:	Date	Time
[signature]	8/3/06	1050			
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by ELOT: Career [signature]	8/3/06	10:51

Laboratory Comments:

Sample Containers Intact?	(Y)	N
VOCs Free of Headspace?	Y	(N)
Custody seals on container(s)	Y	(N)
Custody seals on cooler(s)	Y	(N)
Sample Hand Delivered	(Y)	N
~~by Sampler~~/Client Rep. ?	(Y)	N
by Courier? UPS DHL FedEx Lone Star		

1L-poly

Temperature Upon Receipt: -1.0 °C
not frozen

Environmental Lab of Texas

Variance/ Corrective Action Report- Sample Log-In

R.T. Hicks

Time: 8/3/06 10:51

) # : 06H03002

i: CK

Sample Receipt Checklist

				Client Initials
Temperature of container/ cooler?	Yes	No	-1.0 °C	
Shipping container in good condition?	~~Yes~~	No		
Custody Seals intact on shipping container/ cooler?	Yes	No	~~Not Present~~	
Custody Seals intact on sample bottles/ container?	Yes	No	~~Not Present~~	
Chain of Custody present?	~~Yes~~	No		
Sample instructions complete of Chain of Custody?	~~Yes~~	No		
Chain of Custody signed when relinquished/ received?	~~Yes~~	No		
Chain of Custody agrees with sample label(s)?	Yes	No	~~ID written on Cont./ Lid~~	
Container label(s) legible and intact?	Yes	No	~~Not Applicable~~	
Sample matrix/ properties agree with Chain of Custody?	~~Yes~~	No		
Containers supplied by ELOT?	~~Yes~~	No		
Samples in proper container/ bottle?	~~Yes~~	No	See Below	
Samples properly preserved?	~~Yes~~	No	See Below	
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(s)?	~~Yes~~	No	See Below	
All samples received within sufficient hold time?	~~Yes~~	No	See Below	
VOC samples have zero headspace?	Yes	No	~~Not Applicable~~	

Variance Documentation

ıtact: _____ Contacted by: _____ Date/ Time: _____

ıarding: _____

_____

rective Action Taken:

_____

_____

_____

eck 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

HALL
ENVIRONMENTAL
ANALYSIS
LABORATORY

COVER LETTER

Wednesday, July 26, 2006

Randall Hicks
R.T. Hicks Consultants, LTD
901 Rio Grande Blvd. NW
Suite F-142
Albuquerque, NM 87104

TEL: (505) 266-5004
FAX (505) 266-0745

RE: Samson BD-04

Order No.: 0607165

Dear Randall Hicks:

Hall Environmental Analysis Laboratory, Inc. received 20 sample(s) on 7/14/2006 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent.

Reporting limits are determined by EPA methodology. No determination of compounds below these (denoted by the ND or < sign) has been made.

Please don't hesitate to contact HEAL for any additional information or clarifications.

Sincerely,

Andy Freeman, Business Manager
Nancy McDuffie, Laboratory Manager

AZ license # AZ0682
ORELAP Lab # NM100001

Hall Environmental Analysis Laboratory, Inc.

Date: *26-Jul-06*

CLIENT:	R.T. Hicks Consultants, LTD	**Lab Order:**	0607165
Project:	Samson BD-04		

Lab ID: 0607165-01 **Collection Date:** 7/12/2006 10:00:00 AM
Client Sample ID: UID0028-SIP-EAST **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 9056A: ANIONS						Analyst: TES
Chloride	940	6.0		mg/Kg	20	7/25/2006 7:39:36 AM

Lab ID: 0607165-02 **Collection Date:** 7/12/2006 10:00:00 AM
Client Sample ID: UID0028-SIP-North **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 9056A: ANIONS						Analyst: TES
Chloride	1700	6.0		mg/Kg	20	7/25/2006 7:57:00 AM

Lab ID: 0607165-03 **Collection Date:** 7/12/2006 10:00:00 AM
Client Sample ID: UID0028-SIP-South **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 9056A: ANIONS						Analyst: TES
Chloride	2300	15		mg/Kg	50	7/25/2006 8:14:25 AM

Lab ID: 0607165-04 **Collection Date:** 7/12/2006 10:00:00 AM
Client Sample ID: UID0028-SIP-West **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 9056A: ANIONS						Analyst: TES
Chloride	2500	15		mg/Kg	50	7/25/2006 8:31:50 AM

Lab ID: 0607165-05 **Collection Date:** 7/12/2006 10:40:00 AM
Client Sample ID: UID0028-NSEIP-East **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 9056A: ANIONS						Analyst: TES
Chloride	110	3.0		mg/Kg	10	7/24/2006 12:26:05 PM

Qualifiers:	*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
	S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

Date: *26-Jul-06*

CLIENT: R.T. Hicks Consultants, LTD
Project: Samson BD-04
Lab Order: 0607165

Lab ID: 0607165-06 **Collection Date:** 7/12/2006 10:40:00 AM
Client Sample ID: UID0028-NSEIP-North **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 9056A: ANIONS						Analyst: TES
Chloride	370	3.0		mg/Kg	10	7/24/2006 12:43:29 PM

Lab ID: 0607165-07 **Collection Date:** 7/12/2006 10:40:00 AM
Client Sample ID: UID0028-NSEIP-South **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 9056A: ANIONS						Analyst: TES
Chloride	320	3.0		mg/Kg	10	7/24/2006 1:00:53 PM

Lab ID: 0607165-08 **Collection Date:** 7/12/2006 10:40:00 AM
Client Sample ID: UID0028-NSEIP-West **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 9056A: ANIONS						Analyst: TES
Chloride	300	3.0		mg/Kg	10	7/24/2006 8:55:31 PM

Lab ID: 0607165-09 **Collection Date:** 7/12/2006 10:15:00 AM
Client Sample ID: UID0028-SSEIP-East **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 9056A: ANIONS						Analyst: TES
Chloride	230	3.0		mg/Kg	10	7/24/2006 9:12:55 PM

Lab ID: 0607165-10 **Collection Date:** 7/12/2006 10:15:00 AM
Client Sample ID: UID0028-SSEIP-North **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 9056A: ANIONS						Analyst: TES
Chloride	220	3.0		mg/Kg	10	7/24/2006 9:30:19 PM

Qualifiers:

- * Value exceeds Maximum Contaminant Level
- E Value above quantitation range
- J Analyte detected below quantitation limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

Date: *26-Jul-06*

CLIENT: R.T. Hicks Consultants, LTD
Project: Samson BD-04
Lab Order: 0607165

Lab ID: 0607165-11 **Collection Date:** 7/12/2006 10:15:00 AM
Client Sample ID: UID0028-SSEIP-South **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 9056A: ANIONS						Analyst: TES
Chloride	120	3.0		mg/Kg	10	7/24/2006 9:47:44 PM

Lab ID: 0607165-12 **Collection Date:** 7/12/2006 10:15:00 AM
Client Sample ID: UID0028-SSEIP-West **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 9056A: ANIONS						Analyst: TES
Chloride	190	3.0		mg/Kg	10	7/24/2006 10:05:09 PM

Lab ID: 0607165-13 **Collection Date:** 7/12/2006 10:55:00 AM
Client Sample ID: UID0028-EDT-South Center **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 9056A: ANIONS						Analyst: TES
Chloride	3000	15		mg/Kg	50	7/25/2006 3:09:15 PM
Bromide	ND	3.0		mg/Kg	10	7/24/2006 10:22:33 PM

Lab ID: 0607165-14 **Collection Date:** 7/12/2006 10:55:00 AM
Client Sample ID: UID0028-EDT-South East **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 9056A: ANIONS						Analyst: TES
Chloride	850	3.0		mg/Kg	10	7/24/2006 10:39:58 PM
Bromide	ND	3.0		mg/Kg	10	7/24/2006 10:39:58 PM

Lab ID: 0607165-15 **Collection Date:** 7/12/2006 10:55:00 AM
Client Sample ID: UID0028-EDT-South West **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 9056A: ANIONS						Analyst: TES
Chloride	5400	15		mg/Kg	50	7/25/2006 3:26:40 PM
Bromide	ND	3.0		mg/Kg	10	7/24/2006 10:57:22 PM

Qualifiers:
- * Value exceeds Maximum Contaminant Level
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- J Analyte detected below quantitation limits
- ND Not Detected at the Reporting Limit
- S Spike Recovery outside accepted recovery limits

Hall Environmental Analysis Laboratory, Inc.

Date: *26-Jul-06*

CLIENT: R.T. Hicks Consultants, LTD
Project: Samson BD-04

Lab Order: 0607165

Lab ID: 0607165-16 **Collection Date:** 7/12/2006 10:55:00 AM
Client Sample ID: UID0028-EDT-North Center **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 9056A: ANIONS						Analyst: TES
Chloride	3700	15		mg/Kg	50	7/25/2006 3:44:05 PM
Bromide	ND	3.0		mg/Kg	10	7/24/2006 11:49:35 PM

Lab ID: 0607165-17 **Collection Date:** 7/12/2006 10:55:00 AM
Client Sample ID: UID0028-EDT-North East **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 9056A: ANIONS						Analyst: TES
Chloride	1700	6.0		mg/Kg	20	7/25/2006 4:01:30 PM
Bromide	ND	3.0		mg/Kg	10	7/25/2006 12:06:59 AM

Lab ID: 0607165-18 **Collection Date:** 7/12/2006 10:55:00 AM
Client Sample ID: UID0028-EDT-North West **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 9056A: ANIONS						Analyst: TES
Chloride	2000	6.0		mg/Kg	20	7/25/2006 4:18:54 PM
Bromide	ND	3.0		mg/Kg	10	7/25/2006 12:24:23 AM

Lab ID: 0607165-19 **Collection Date:** 7/12/2006 11:05:00 AM
Client Sample ID: UID0028-SIPL-South Large **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 9056A: ANIONS						Analyst: TES
Chloride	1400	6.0		mg/Kg	20	7/25/2006 4:36:19 PM

Lab ID: 0607165-20 **Collection Date:** 7/12/2006 11:00:00 AM
Client Sample ID: UID0028-EIPL **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 9056A: ANIONS						Analyst: TES
Chloride	7.6	3.0		mg/Kg	10	7/25/2006 12:59:11 AM

Qualifiers:				
	*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
	S	Spike Recovery outside accepted recovery limits		

QA/QC SUMMARY REPORT

Client: R.T. Hicks Consultants, LTD
Project: Samson BD-04 **Work Order:** 0607165

Analyte	Result	Units	PQL	%Rec	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Method: E300									
Sample ID: MB-10840		*MBLK*			Batch ID:	10840	Analysis Date:	7/24/2006 10:24:13 AM	
Chloride	ND	mg/Kg	0.30						
Bromide	ND	mg/Kg	0.30						
Sample ID: MB-10840		*MBLK*			Batch ID:	10840	Analysis Date:	7/24/2006 10:41:37 AM	
Chloride	ND	mg/Kg	0.30						
Bromide	ND	mg/Kg	0.30						
Sample ID: LCS-10840		*LCS*			Batch ID:	10840	Analysis Date:	7/24/2006 10:59:02 AM	
Chloride	14.77	mg/Kg	0.30	98.4	90	110			
Bromide	7.710	mg/Kg	0.30	103	90	110			

Qualifiers:

E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
R	RPD outside accepted recovery limits	S	Spike Recovery outside accepted recovery limits