1R - 491

WORKPLANS

DATE:
6/06/2008

1R491

Highlander Environmental Corp.
Midland, Texas

June 6, 2008

Mr. Glenn von Gonten
New Mexico Energy, Minerals, & Natural Resources
Oil Conservation Division, Environmental Bureau
1220 S. St. Francis Drive
Santa Fe, New Mexico 87504

Re: Response to Request for a Remediation Plan for the OXY USA, Inc., E.C. Hill Federal B-D Tank Battery, Located in Section 34, Township 23 South, Range 37 East, Lea County, New Mexico, OCD Case No. 1R491.

Dear Mr. Gonten:

Highlander Environmental Corp. (Highlander) was engaged to investigate this site as part of a due diligence assessment. This site is adjoined on the west by the E.C. Hill #7 Tank Battery, OCD Case # 1R492. The groundwater investigation and remediation of these sites will be conducted concurrently. The site location is shown on Figures 1 and 2.

FACILITY BACKGROUND

This facility is an old battery, which has had numerous spills from previous operators. Prior to OXY, the facility was operated by Plains Exploration (PXP), Pogo Producing Company and Latigo Petroleum, Inc. In March 2008, OXY assumed operating responsibility for this site from PXP.

Based upon the initial site investigation, a soils investigation was performed. The soil investigation consisted of placement of ten (10) auger holes (AH) and three (3) boreholes (BH) in and around the tank battery, to assess the subsurface soils. One borehole (BH-3) was converted to a monitor well to assess the groundwater qualities at the Site.

Total Petroleum Hydrocarbon (TPH) concentrations were below the RRAL for all samples from AH-5 and AH-6. The TPH concentrations were defined to below the RRAL in AH-7, AH-8, AH-9 and AH-10, ranging in depth from 1.0 feet below ground surface (bgs) to 6.0 feet bgs. TPH concentrations were not defined in AH-1, AH-2, AH-3 and AH-4. TPH concentrations were defined to below the RRAL in BH-1, BH-2 and BH-3 at depths of 25 feet bgs, 15 feet bgs and 60 feet bgs,

respectively. The auger hole and borehole locations are shown on Figure 3. The analytical results are shown in Table 1 and Table 2.

Based on the results, borehole (BH-3) was converted to a temporary 2-inch monitor well. Groundwater was encountered at approximately 78 feet below top of casing (TOC). On September 22, 2006 and May 16, 2007, Highlander purged and sampled the well per OCD guidelines for analyses of chlorides and BTEX. BTEX was not detected at or above reporting limits for either sampling event. Chloride concentrations exceeded the New Mexico Water Quality Control Commission (NMWQCC) standards for both the September 2006 and May 2007 sampling events, with concentrations of 1150 mg/L and 729 mg/L, respectively. The analytical results are shown in Table 3.

This site is adjacent to the E.C. Hill B-D tank battery and both sites were assessed concurrently. A total of six (6) monitor wells have been installed at these adjoining tank batteries sites for delineation purposes, but have not yet been surveyed, gauged or sampled.

HYDROLOGY AND GROUNDWATER SEARCH

Hydrology

Groundwater in the Teague Field study area, southern Lea County, is obtained almost entirely from the Ogallala formation with some wells in the Quaternary alluvium. Sediments of Quaternary age can be observed in southern Lea County in the form of alluvial deposits, probably of both Pleistocene and Recent age, and dune sands of Recent age. The Quaternary alluvium has been deposited in topographically low areas where the older Ogallala formation had been stripped away.

The primary aquifer, the Ogallala formation, consists of inter-fingering bodies of fine to coarse sand, gravel, silt, and clay-material. In places, the upper part of the formation contains several hard, erosionally resistant beds of caliche. The thickness of the Ogallala formation is primarily controlled by the morphology of the eroded pre-Ogallala surface. To the east of the study area, in the San Simon Ridge area, the Ogallala has been stripped. To the west of the study area, in the Rattlesnake Ridge area, the base of the Ogallala is above the elevation of the water table.

Water in the Ogallala formation is unconfined and is contained in the pore spaces of unconsolidated or partly consolidated sediments. The saturated thickness of the Ogallala in the study area reportedly varies between 60 feet and 80 feet below ground surface (bgs). The altitude of the water table in the area is approximately 3,220 feet above mean sea level (MSL) and the average depth to groundwater in the area is approximately 80 feet to 120 feet below ground surface. Groundwater flow in the area of the Teague Field is generally towards the south-southeast.

The quality of groundwater in the area is generally fresh with a total dissolved solids being typically less than 1,000 ppm. Water from the Quaternary alluvium generally is high in silica (65 to 82 ppm), moderately high in calcium plus magnesium, low in sodium plus potassium, moderately low in sulfate and chloride. Uncontaminated water from the Ogallala formation is high in silica (49 to 73 ppm), contains moderate concentrations of calcium and magnesium. The water is generally

hard.

The hydrogeologic data presented in this section was derived from Ground Water Report 6, "Geology and Ground Water Conditions in Southern Lea County, New Mexico," published by New Mexico Institute of Mining & Technology (1961).

Groundwater Search

According to the New Mexico State Engineer Office W.A.T.E.R.S. database, Average Depth to Water Report, water wells are located in Section 9, 16 and 32, Township 23 South, Range 37 East, with an average depth to water of 100', 115' and 106', respectively. Based on monitor wells installed at the Site the depth to groundwater at the Site is approximately 88.0' bgs. The water well inventory data sheet is included in Appendix A.

SUBSURFACE SOIL ASSESSMENT

Auger Hole/Borehole Sampling

A total of ten auger holes have been installed at this facility. TPH impact is limited to the surficial soils in the vicinity of AH-5, AH-6, AH-7, AH-8, AH-9 and AH-10. In the vicinity of AH-1 through AH-4, and the associated soil borings, the TPH impact is deeper, but defined to <50 mg/kg above the water table. No elevated chloride concentrations were observed during the sampling.

GROUNDWATER INVESTIGATION

Monitor Well Installation

A total of six (6) monitor wells have been installed around the E.C. Hill #7 and E.C. Hill B-D tank batteries. The monitor wells were drilled using air/water rotary drilling techniques, and constructed according to EPA and NMOCD standards. The monitor wells were constructed using two (2) inch diameter schedule 40 PVC threaded casing and factory slotted screen. The monitor wells were drilled to depths of 90' to 98' bgs. Twenty (20) feet of 0.020 slotted screen was placed in each of the wells, with 15 feet of screen below the water table and 5 feet above.

The well screen was surrounded with a graded silica sand to a depth approximately 2-3 feet above the screen. A layer of bentonite pellets, approximately 3 feet thick was placed in the borehole above the sand. The remainder of the borehole was filled with cement and bentonite grout to about one (1) foot below ground. The monitor wells were completed with locking steel protectors, set in a concrete pad measuring approximately 3 feet by 3 feet. The monitor well completion details are shown in Appendix B.

Following installation, the wells were developed by hand bailing using a dedicated hand bailer to remove fine grained sediment, disturbed during drilling, and to ensure collection of representative groundwater samples. Water removed from the well was placed in a 55-gallon drum. Copies of well completion logs are included in Appendix A.

Quality Assurance/Quality Control

Groundwater samples were collected as soon as possible after the groundwater returned to its static level. Each well was inspected for the presence of phase-separated hydrocarbons (PSH). Groundwater samples were collected using clean disposable polyethylene bailers and disposable line. The samples were transferred into labeled and preserved containers provided by the laboratory. All of the samples were delivered under proper chain-of-custody control to Environmental Labs of Texas, Inc., Odessa, Texas. The groundwater samples were analyzed for chloride by method 300.0, and Benzene, Toluene, Ethylbenzene, and Xylene (BTEX) by method EPA 8021B.

PROPOSED WORK PLAN FOR SOIL AND GROUNDWATER

Soil Remediation

Based upon the auger hole and borehole sample analyses, the impacted soils identified in AH-5 through AH-10 will be excavated to depths ranging from of 1.0' to 6.0' bgs to remove the soils above the TPH RRAL. The areas around BH-1(AH-1), BH-2, and BH-3(AH-2, AH-3 and AH-4) will be excavated to a depth of 4.0' bgs, and a 1.0' clay barrier or 40 mil liner will be placed into the excavation to isolate the residual TPH impacted soils. The excavated soils will be taken to an approved disposal facility.

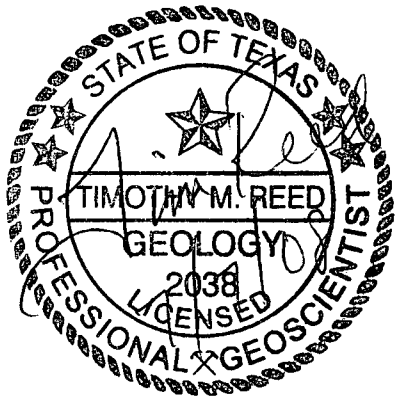
Groundwater Assessment

The six monitor wells installed have not yet been surveyed, gauged or sampled. The wells have been developed. In order to properly assess the delineation of the impacted groundwater, the wells will need to be surveyed and sampled. Once the data has been obtained and evaluated, an additional monitor well as required in the May 2008 NMOCD letter will be installed with the screened interval placed entirely below the water table. If the sampling data indicate the necessity for additional monitor wells, they will be installed accordingly to complete delineation.

Annual Reporting

An annual summary report will be prepared and submitted to the NMOCD, during the first quarter of each year, covering the previous year's activities. The report will summarize all activities conducted at the site, during that year. Additionally, the report will include conclusions and recommendations, if necessary, for system modifications, ongoing remediation and additional investigation, if deemed necessary.

If you have any question or comments concerning the assessment or the activities performed at the Site, please call me at (432) 682-4559.



Respectfully submitted,
Highlander Environmental Corp.

Timothy M. Reed, P.G.
Vice President

cc: Larry Johnson – NMOCD, Hobbs, NM.

FIGURES

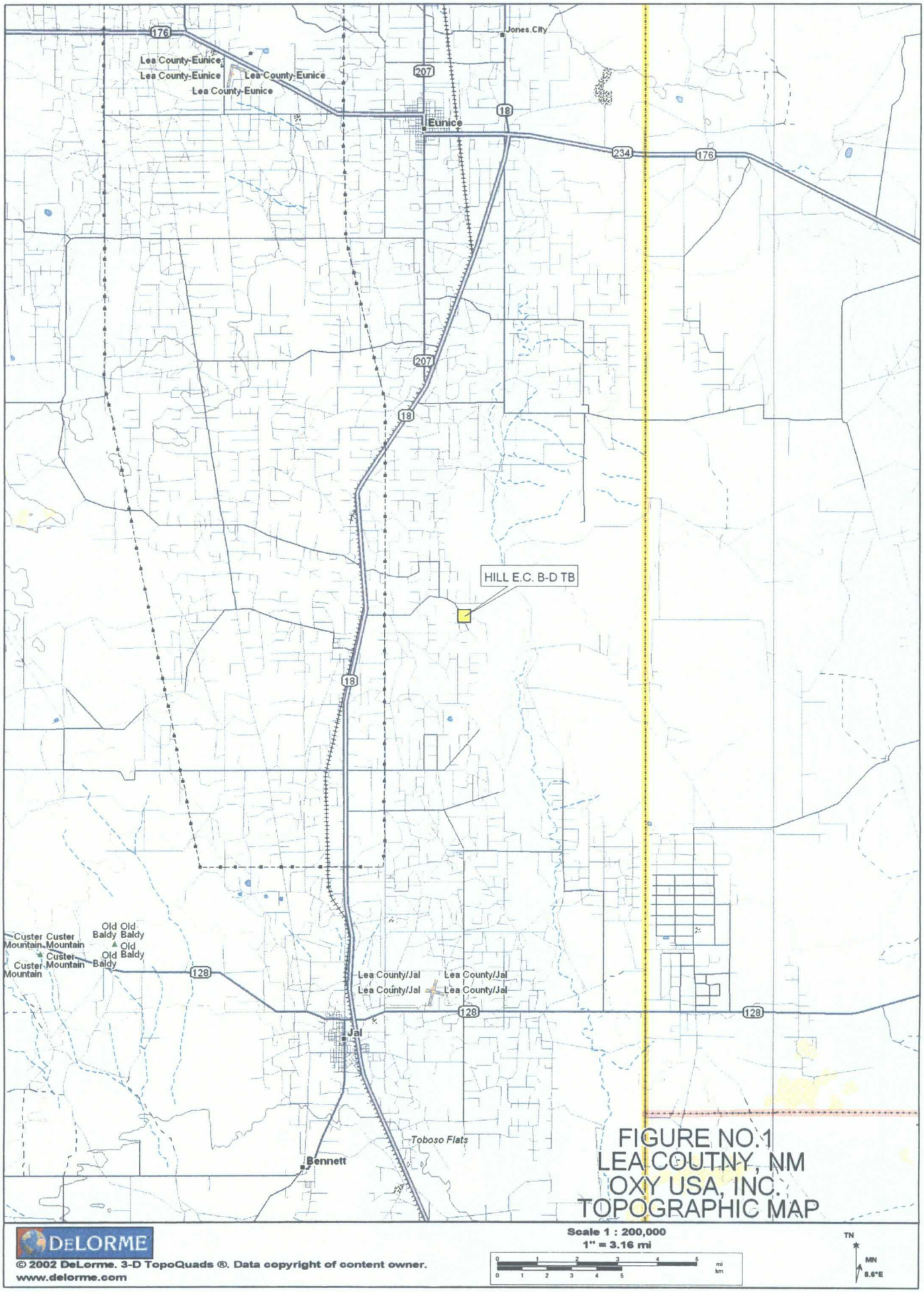


FIGURE NO. 1
LEA COUTNY, NM
OXY USA, INC.
TOPOGRAPHIC MAP

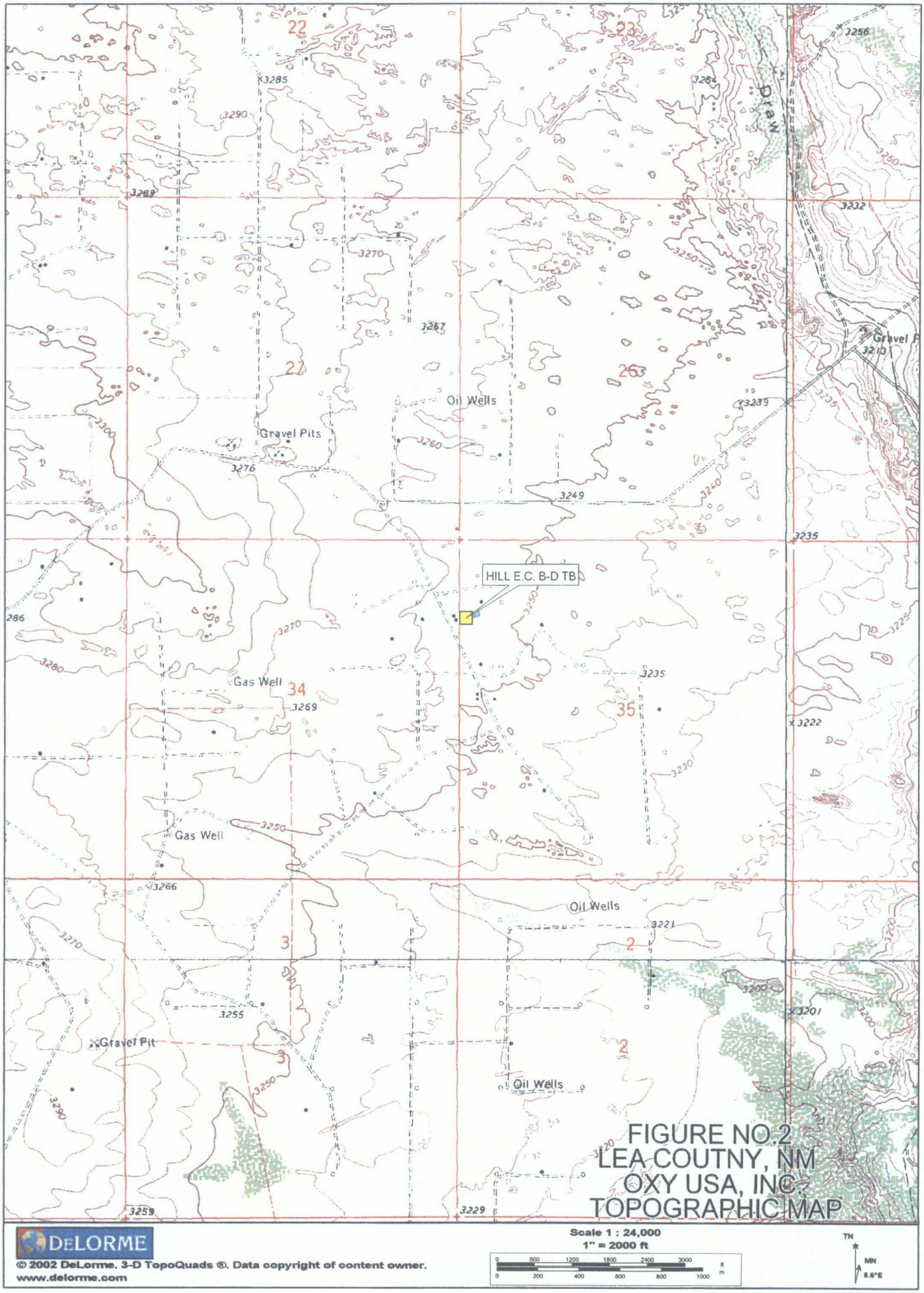
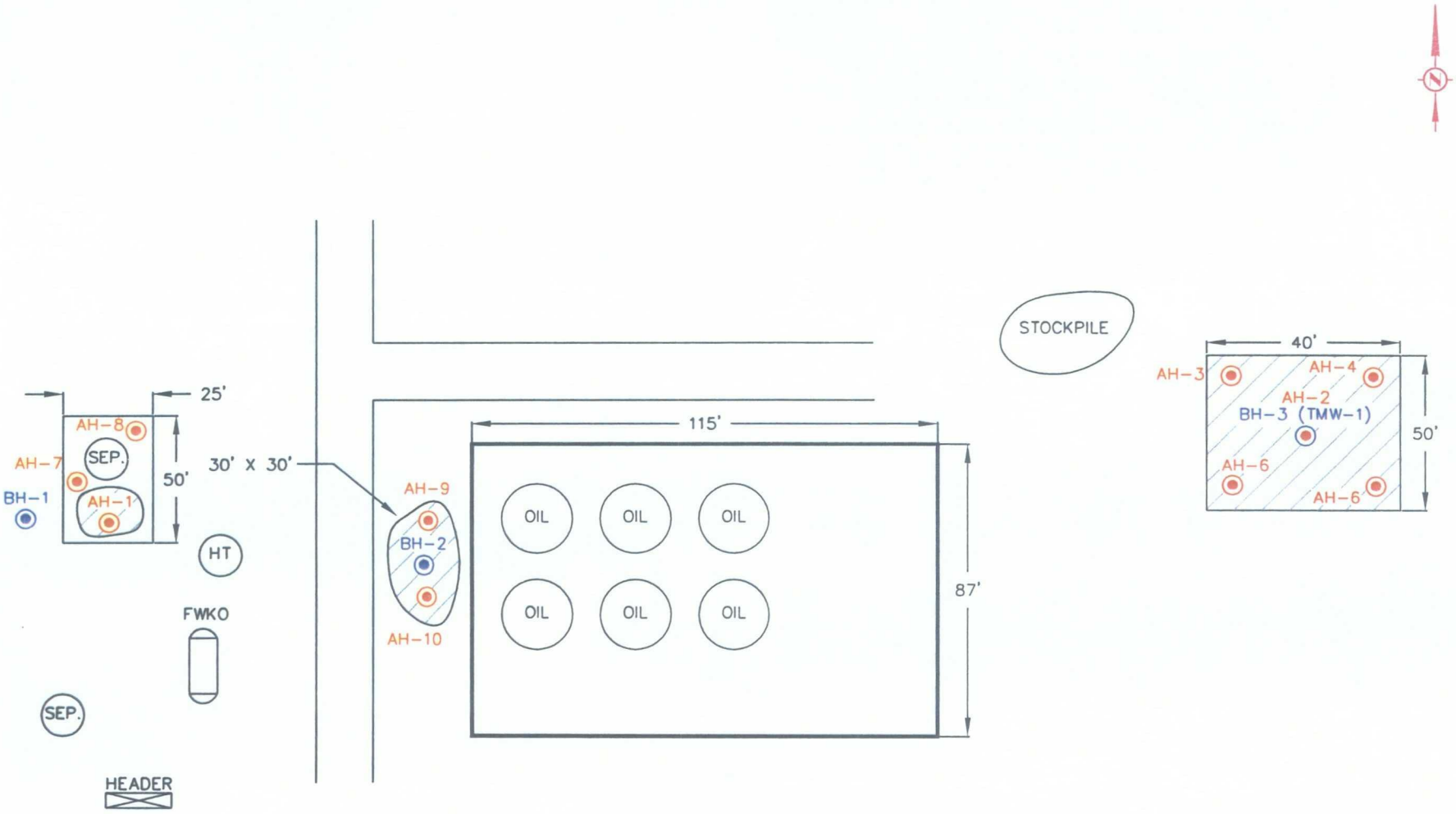


FIGURE NO.2
LEA COUTNY, NM
OXY USA, INC.
TOPOGRAPHIC MAP

Scale 1 : 24,000
1" = 2000 ft

TN
MN
8.6°E



BORE HOLE
SPILL AREA
SAMPLE LOCATIONS

NOT TO SCALE

FIGURE NO. 3

LEA COUNTY, NEW MEXICO

OXY USA, INC.
HILL E.C. B-D TB

DATE: 9/28/06
DWN. BY: JJ
FILE: C:\POCO\2617\E.C. HILL FED. B-D TB

HIGHLANDER ENVIRONMENTAL CORP.
MIDLAND, TEXAS

TABLES

Table 1
Pogo Producing Company
E.C. HILL B-D TANK BATTERY
Lea County, New Mexico

Sample ID	Date Sampled	Sample Depth (ft)	TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethlybenzene (mg/kg)	Xylene (mg/kg)	Chloride (mg/kg)
			C6-C12	C12-C35	Total					
AH-1	8/9/2006	0-1	1460	27300	28760	1.93	5.59	18.4	40.8	<50
	8/9/2006	1-1.5	1360	27200	28560	-	-	-	-	<50
	8/9/2006	2-2.5	1790	17700	19490	0.711	4.61	21.8	52.0	<50
	8/9/2006	4-4.5	2150	11700	13850	2.04	7.87	34.7	89.8	<200
	8/9/2006	6-6.5	5.55	157	162.55	-	-	-	-	319
	8/9/2006	8-8.5	432	2300	2732	-	-	-	-	<200
	8/9/2006	10-10.5	194	1280	1474	<0.200	<0.200	0.946	1.55	378
AH-2	8/9/2006	0-1	42	1240	1282	<0.200	<0.200	<0.200	<0.200	<50
	8/9/2006	1-1.5	<20.0	730	730	-	-	-	-	<200
	8/9/2006	2-2.5	920	38400	39320	0.880	<.200	6.14	15.2	<200
	8/9/2006	4-4.5	159	963	1122	<.200	<.200	0.479	0.376	<50
	8/9/2006	6-6.5	219	510	729	-	-	-	-	<50
	8/9/2006	8-8.5	214	1660	1874	-	-	-	-	<50
	8/9/2006	10-10.5	339	4330	4669	0.749	<.200	3.46	8.99	<50
AH-3	10/26/2007	0-1	4.85	1600	1604.85	-	-	-	-	-
	10/26/2007	2-2.5	2.56	84.80	87.36	-	-	-	-	-
	10/26/2007	4-4.5	339	1840	2179	-	-	-	-	-
	10/26/2007	6-6.5	3330	3980	7310	-	-	-	-	-
	10/26/2007	8-8.5	298	2560	2858	-	-	-	-	-

(-) Not Analyzed

Table 1
Pogo Producing Company
E.C. HILL B-D TANK BATTERY
Lea County, New Mexico

Sample ID	Date Sampled	Sample Depth (ft)	TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethlybenzene (mg/kg)	Xylene (mg/kg)	Chloride (mg/kg)
			C6-C12	C12-C35	Total					
AH-4	10/26/2007	0-1	**6.09**	<50.0	**6.09**	-	-	-	-	-
	10/26/2007	2-2.5	**4.41**	**1740**	**1744.41**	-	-	-	-	-
	10/26/2007	4-4.5	**96.70**	**1300**	**1396.70**	-	-	-	-	-
	10/26/2007	6-6.5	**339**	**1180**	**1519**	-	-	-	-	-
AH-5	10/26/2007	0-1	**6.05**	<50.0	**6.05**	-	-	-	-	-
	10/26/2007	1-1.5	**2.06**	<50.0	**2.06**	-	-	-	-	-
AH-6	10/26/2007	0-1	**1.39**	<50.0	**1.39**	-	-	-	-	-
	10/26/2007	1-1.5	**1.04**	<50.0	**1.04**	-	-	-	-	-
AH-7	10/26/2007	0-1	**18.30**	**5420**	**5438.30**	-	-	-	-	-
	10/26/2007	2-2.5	<1.00	<50.0	<50.0	-	-	-	-	-
	10/26/2007	4-4.5	<1.00	<50.0	<50.0	-	-	-	-	-
AH-8	10/26/2007	0-1	**164**	**8850**	**9014**	-	-	-	-	-
	10/26/2007	2-2.5	**289**	**10700**	**10989**	-	-	-	-	-
	10/26/2007	4-4.5	**128**	**4310**	**4438**	-	-	-	-	-
	10/26/2007	6-6.5	**9.88**	<50.0	**9.88**	-	-	-	-	-
	10/26/2007	8-8.5	**1.21**	<50.0	**1.21**	-	-	-	-	-
	10/26/2007	10-10.5	<1.00	<50.0	<50.0	-	-	-	-	-

(-) Not Analyzed

Table 1
Pogo Producing Company
E.C. HILL B-D TANK BATTERY
Lea County, New Mexico

Sample ID	Date Sampled	Sample Depth (ft)	TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethlybenzene (mg/kg)	Xylene (mg/kg)	Chloride (mg/kg)
			C6-C12	C12-C35	Total					
AH-9	10/30/2007	0-1	**91.80**	**11200**	**11291.80**	-	-	-	-	-
	10/30/2007	2-2.5	**68.40**	**81.40**	**149.80**	-	-	-	-	-
	10/30/2007	4-4.5	**1.43**	<50.0	**1.43**	-	-	-	-	-
	10/30/2007	6-6.5	<1.00	<50.0	<50.0	-	-	-	-	-
	10/30/2007	8-8.5	<1.00	<50.0	<50.0	-	-	-	-	-
	10/30/2007	10-10.5	<1.00	<50.0	<50.0	-	-	-	-	-
AH-10	10/30/2007	0-1	<5.00	**2330**	**2330**	-	-	-	-	-
	10/30/2007	2-2.5	**95.30**	**6590**	**6685.30**	-	-	-	-	-
	10/30/2007	4-4.5	<1.00	<50.0	<50.0	-	-	-	-	-
	10/30/2007	6-6.5	<1.00	<50.0	<50.0	-	-	-	-	-
	10/30/2007	8-8.5	<1.00	<50.0	<50.0	-	-	-	-	-
	10/30/2007	10-10.5	<1.00	<50.0	<50.0	-	-	-	-	-
Stockpile #1	8/9/2006	N/A	**38.2**	**120**	**158.2**	<0.200	<0.200	<0.200	<0.200	<50
Stockpile #2	8/9/2006	N/A	<20.0	**6700**	**6700**	<0.200	<0.200	<0.200	**0.210**	<50

(-) Not Analyzed

Table 2
Pogo Producing Company
E.C. HILL B-D TANK BATTERY
Lea County, New Mexico

Sample ID	Date Sampled	Sample Depth (ft)	TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethlybenzene (mg/kg)	Xylene (mg/kg)	Chloride (mg/kg)
			C6-C12	C12-C35	Total					
BH-1	9/11/2006	10-12'	**623**	**3250**	**3873**	<0.200	<0.200	**4.56**	**9.28**	-
	9/11/2006	15-17'	**512**	**387**	**899**	<0.200	<0.200	**5.36**	**10.4**	-
	9/11/2006	20-22'	**303**	**920**	**1223**	-	-	-	-	-
	9/11/2006	25-27'	**25.3**	<50.0	**25.3**	-	-	-	-	-
BH-2	9/11/2006	0-2'	**294**	**10400**	**10694**	**1.33**	<0.200	**5.66**	**5.84**	<200
	9/11/2006	3-5'	**589**	**1070**	**1659**	**1.39**	<0.200	**7.02**	**9.61**	<200
	9/11/2006	5-7'	**220**	**841**	**1061**	-	-	-	-	<200
	9/11/2006	10-12'	**224**	**532**	**756**	<0.200	<0.200	**1.42**	**2.33**	<200
	9/11/2006	15-17'	**34.1**	<50.0	**34.1**	<0.200	<0.200	<0.200	**0.357**	<200
	9/11/2006	20-22'	<20.0	<50.0	<50.0	-	-	-	-	**278**
	9/11/2006	30-32'	<20.0	<50.0	<50.0	-	-	-	-	<200
BH-3	9/12/2006	10-12'	**465**	**2590**	**3055**	<0.200	<0.200	**3.14**	**6.13**	-
	9/12/2006	15-17'	**497**	**4670**	**5167**	**0.295**	<0.200	**3.59**	**6.74**	-
	9/12/2006	20-22'	**479**	**2090**	**2569**	<0.200	<0.200	**1.51**	**4.80**	-
	9/12/2006	30-32'	**261**	**3350**	**3611**	<0.200	<0.200	**0.454**	**0.962**	-
	9/12/2006	40-42'	**262**	**3250**	**3512**	<0.200	<0.200	<0.200	**0.419**	-
	9/12/2006	50-52'	**46.0**	**1090**	**1136**	<0.200	<0.200	<0.200	**0.290**	-
	9/12/2006	60-62'	<20.0	<50.0	<50.0	<0.200	<0.200	<0.200	**0.246**	-

(-) not analyzed

Table 3
Pogo Producing Company
E.C. HILL B-D TANK BATTERY
Lea County, New Mexico

Sample ID	Date Sampled	Sample Number	TPH (mg/kg)			Benzene (mg/L)	Toluene (mg/L)	Ethlybenzene (mg/L)	Xylene (mg/L)	Chloride (mg/L)
			C6-C12	C12-C35	Total					
TMW-1	9/22/2006	104310	-	-	-	<0.00100	<0.00100	<0.00100	<0.00100	**1150**
	5/16/2007	-	-	-	-	<0.00100	<0.00100	<0.00100	<0.00100	**729**

(-) not analyzed

APPENDIX A

Water Well Data
Average Depth to Groundwater (ft)
Hill E.C. B-D 17 Tank Battery and Hill E.C. B Federal #7, Lea County, New Mexico

22 South 36 East

6 **195**	5 **212**	4	3	2	1 **137**
7	8	9	10	11	12
18	17	16 **170**	15	14	13
19	20	21	22 **22**	23	24
30	29	28	27 **160**	26	25 **118**
31	32	33	34	35 **181** **187**	36

22 South 37 East

6	5 **85**	4	3	2	1
7	8	9 **90**	10	11	12
18 **190**	17	16	15 **125**	14 **65**	13
19	20	21 **65**	22	23	24 **60**
30	29	28	27 **53**	26 **65**	25
31	32	33	34	35	36

22 South 38 East

6	5	4
7	8	9
18	17	16
19	20	21
30	29	28
31	32	33

23 South 36 East

6	5	4 **160**	3	2	1
7	8	9	10	11	12
18	17	16 **220**	15 **149**	14	13
19	20	21	22 **400**	23 **143**	24
30	29	28	27	26	25
31 **189**	32	33	34	35	36 **127**

23 South 37 East

6 **102**	5	4	3 **70**	2 **64**	1
7	8	9 **100**	10 **66**	11 **68**	12
18	17	16 **115** **100**	15	14	13
19	20 **108**	21	22	23	24
30	29	28 **117**	27 **88**	26	25
31	32 **106** **97**	33 **87**	34	35	36

23 South 38 East

6	5	4
7	8	9
18	17	16
19	20	21
30	29	28
31	32	33

24 South 36 East

6	5	4 **165**	3	2	1
7	8	9	10	11	12
18	17	16	15 **312**	14	13
19	20	21	22	23 **160**	24
30	29	28	27	26	25
31	32	33 **54** **53**	34	35	36

24 South 37 East

6	5 **111**	4	3	2	1
7 **119**	8 **90**	9	10 **120**	11 **64**	12 **18**
18 **124**	17	16 **67**	15	14	13
19	20	21 **69**	22	23 **94**	24 **100**
30	29	28 **70**	27 **41**	26	25 **89** **90**
31	32	33	34 **55**	35	36

24 South 38 East

6	5	4
7	8	9
18	17	16
19 **56**	20	21
30 **68** **30**	29	28
31 **97**	32	33

88 New Mexico State Engineers Well Reports

105 USGS Well Reports

90 Geology and Groundwater Conditions in Southern Lea, County, NM (Report 6)
Geology and Groundwater Resources of Eddy County, NM (Report 3)

34 NMOCD - Groundwater Data

APPENDIX B

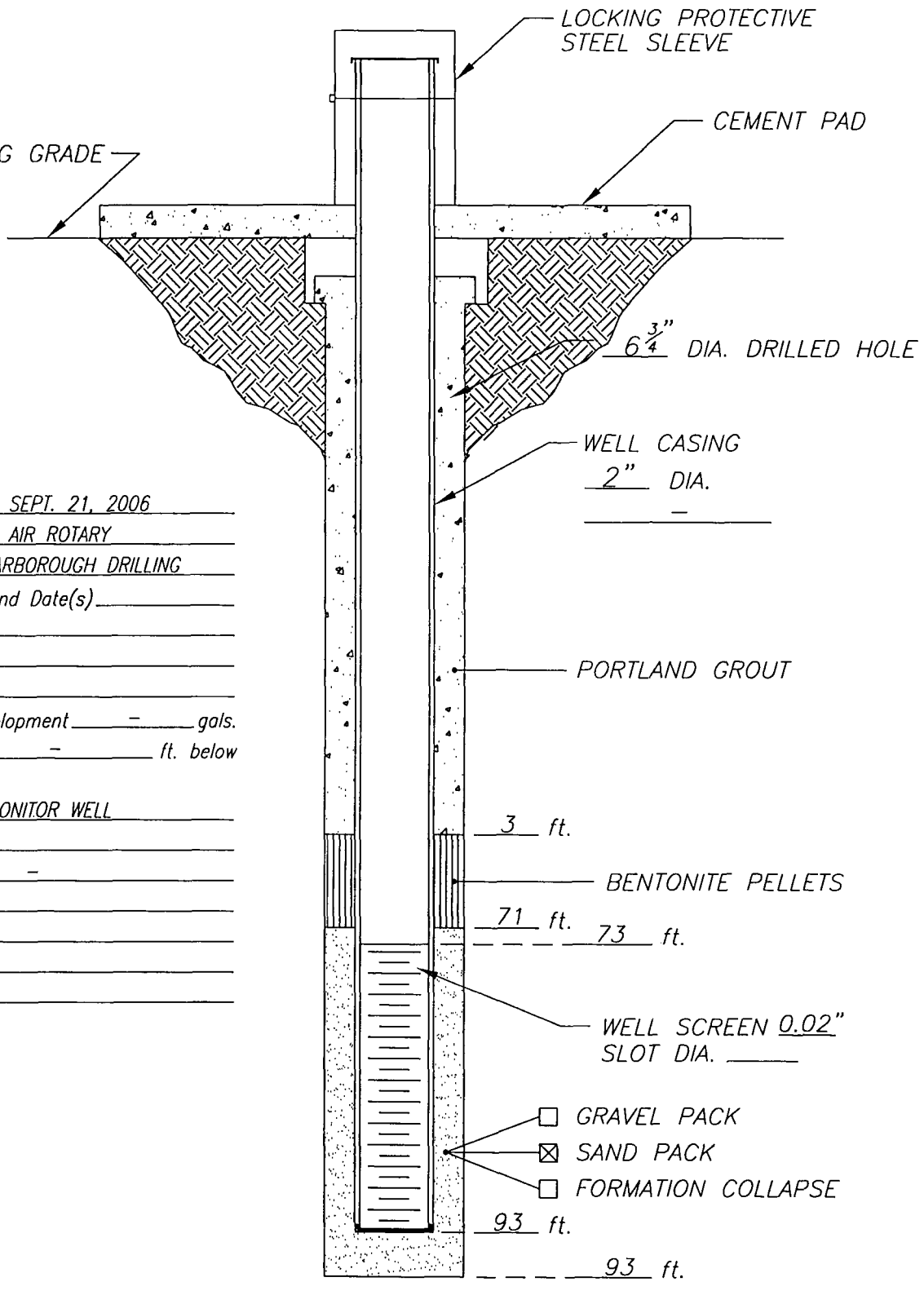
SAMPLE LOG

Boring/Well: MW-1
Project Number: 2617
Client: Pogo Production Inc.
Site Location: Hill BD
Location: Lea County, New Mexico
Total Depth 98
Date Installed: 09/20/06

DEPTH (Ft)	OVM	SAMPLE DESCRIPTION
0-5	--	Dark black hydrocarbon stained soil
5-10	--	Dark black hydrocarbon stained soil
10-15	--	Dark black hydrocarbon stained soil
17-20	--	Brown/dark brown silty very fine grain sand with some staining
30-35	--	Reddish brown very fine grain silty sand with no staining but strong odor
35-40	--	Reddish brown very fine grain silty sand with no staining but strong odor
40-45	--	Brown very fine grain silty sand with no staining but strong odor
45-50	--	Tan sandstone very hard at 46 feet
50-55	--	Very hard sandstone
55-60	--	Buff silty very fine grain sand with sandstone
60-65	--	Buff silty very fine grain sand with sandstone
65-70	--	Tan very fine grain silty sand
70-75	--	Tan very fine grain silty sand
75-78	--	Tan very fine grain silty sand (wet at 78)
80-85	--	Light brown silty very fine grain sand (wet)
85-90	--	Light brown silty very fine grain sand (wet)
90-98	--	Light brown silty very fine grain sand (wet)

Total Depth is 98 feet Groundwater encountered at 78 feet below ground surface.

WELL CONSTRUCTION LOG



Installation Date(s) SEPT. 21, 2006

Drilling Method AIR ROTARY

Drilling Contractor SCARBOROUGH DRILLING

Development Technique(s) and Date(s) –

Water Removed During Development – gals.

Static Depth to Water – ft. below Ground Level

Well Purpose MONITOR WELL

Remarks –

DATE: SEPT. 21, 2006	CLIENT: POGO PRODUCING INC	WELL NO.
Highlander Environmental	PROJECT: TEAGUE FIELD, POGO.BD + FED #7 TB	MW-1
	LOCATION: LEA CO, NM	

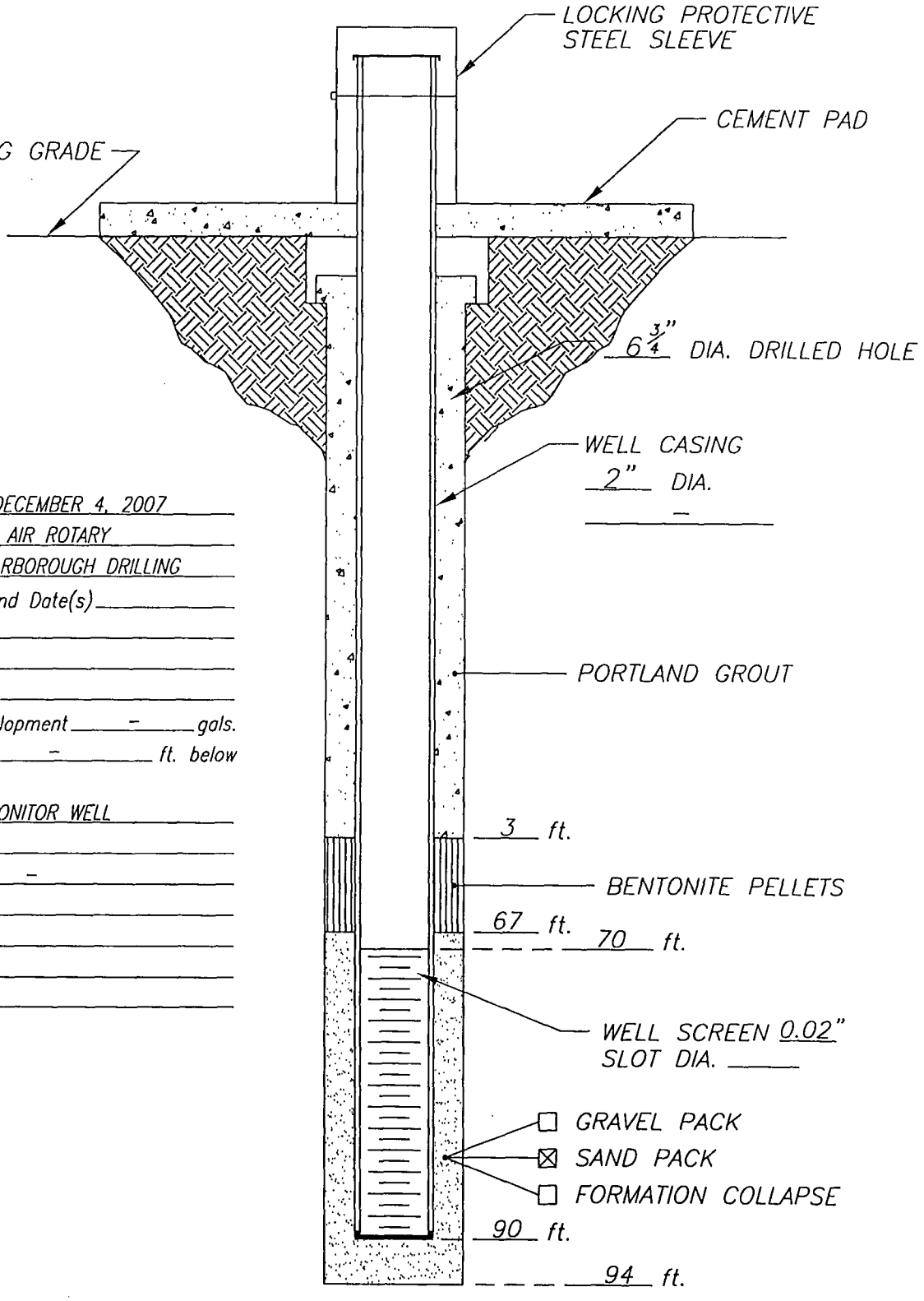
SAMPLE LOG

Boring/Well: MW-2
Project Number: 2617
Client: Pogo Production Inc.
Site Location: BD and Tank Battery Federal #7
Location: Lea County, New Mexico
Total Depth 90
Date Installed: 12/04/07

DEPTH (Ft)	OVM	SAMPLE DESCRIPTION
0-5	--	Tan fine grain sand
5-10	--	Tan fine grain sand
10-15	--	White limestone with sand intermixed
15-20	--	White limestone with sand intermixed
20-25	--	Tan fine grain sand (loose sugar sand)
25-30	--	Tan fine grain sand (loose sugar sand)
30-35	--	Tan fine grain sand (loose sugar sand)
35-40	--	Tan fine grain sand (loose sugar sand)
40-45	--	Tan fine grain sand (loose sugar sand)
45-50	--	Tan fine grain sand with some sandstone intermixed
50-55	--	Tan fine grain sand with some white limestone
55-60	--	Tan fine grain sand with some white limestone
60-65	--	Tan fine grain sand with sandstone intermixed (loose)
65-70	--	Tan fine grain sand with sandstone intermixed (loose)
70-75	--	Tan fine grain sand with sandstone intermixed (loose)
75-80	--	Tan fine grain sand with sandstone intermixed (loose)
80-85	--	Tan fine grain sand with sandstone intermixed (loose)
85-90	--	Tan fine grain sand with sandstone intermixed (loose)

Total Depth is 90 feet Groundwater encountered at 80 feet below ground surface.

WELL CONSTRUCTION LOG



Installation Date(s) DECEMBER 4, 2007

Drilling Method AIR ROTARY

Drilling Contractor SCARBOROUGH DRILLING

Development Technique(s) and Date(s) –

Water Removed During Development – gals.

Static Depth to Water – ft. below Ground Level

Well Purpose MONITOR WELL

Remarks –

DATE: 12/10/07 Highlander Environmental	CLIENT: POGO PRODUCING INC PROJECT: TEAGUE FIELD, POGO.BD + FED #7 TB LOCATION: LEA CO, NM	WELL NO. MW-2

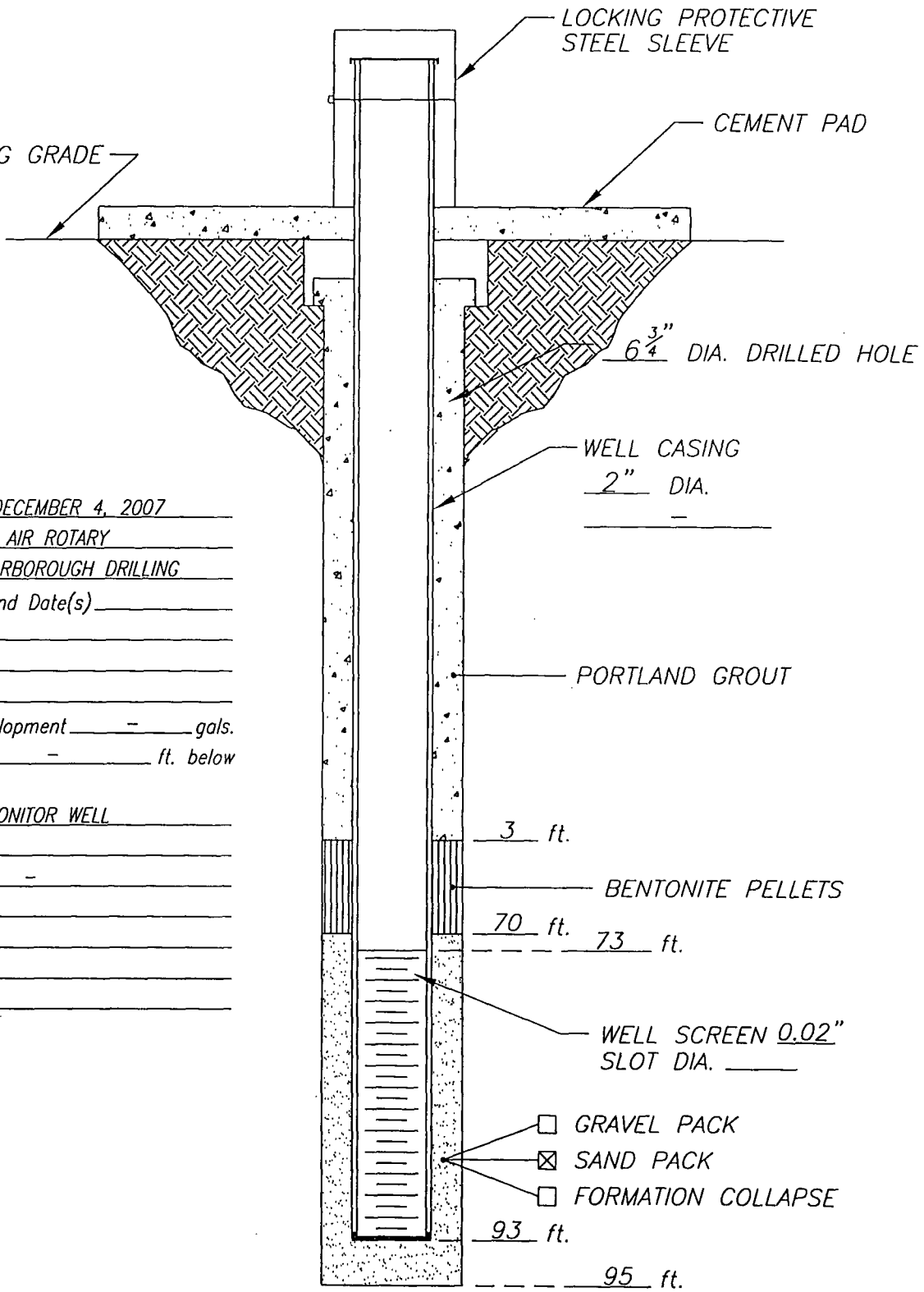
SAMPLE LOG

Boring/Well: MW-3
Project Number: 2617
Client: Pogo Production Inc.
Site Location: BD and Tank Battery Federal #7
Location: Lea County, New Mexico
Total Depth 90
Date Installed: 12/04/07

DEPTH (Ft)	OVM	SAMPLE DESCRIPTION
0-5	--	Brown fine to medium grain sand
5-10	--	White limestone with fine grain sand (loose)
10-15	--	Tan fine grain sand (blow sand, loose)
15-20	--	Tan fine grain sand (blow sand, loose)
20-25	--	Tan fine grain sand (blow sand, loose)
25-30	--	Tan fine grain sand (blow sand, loose)
30-35	--	Tan fine grain reddish sand
35-40	--	Tan fine grain reddish sand
40-45	--	Tan fine grain reddish sand
45-50	--	Tan fine grain reddish sand
50-55	--	Light tan/white sand with limestone intermixed with some sandstone
55-60	--	Light tan/white sand with limestone intermixed with some sandstone
60-65	--	Tan sand with some gravel and sandstone intermixed
65-70	--	Tan sand with some gravel and sandstone intermixed
70-75	--	Tan sand with some gravel and sandstone intermixed
75-80	--	Tan sand with some gravel and sandstone intermixed
80-85	--	Tan sand with some gravel and sandstone intermixed
85-90	--	Tan sand with some gravel and sandstone intermixed
90-95	--	Tan sand with some gravel and sandstone intermixed

Total Depth is 95 feet Groundwater encountered at 80 feet below ground surface.

WELL CONSTRUCTION LOG



Installation Date(s) DECEMBER 4, 2007
Drilling Method AIR ROTARY
Drilling Contractor SCARBOROUGH DRILLING
Development Technique(s) and Date(s) –

Water Removed During Development – gals.
Static Depth to Water – ft. below Ground Level
Well Purpose MONITOR WELL

Remarks –

DATE: 12/10/07	CLIENT: POGO PRODUCING INC	WELL NO.
Highlander Environmental	PROJECT: TEAGUE FIELD, POGO.BD + FED #7 TB	MW-3
	LOCATION: LEA CO, NM	

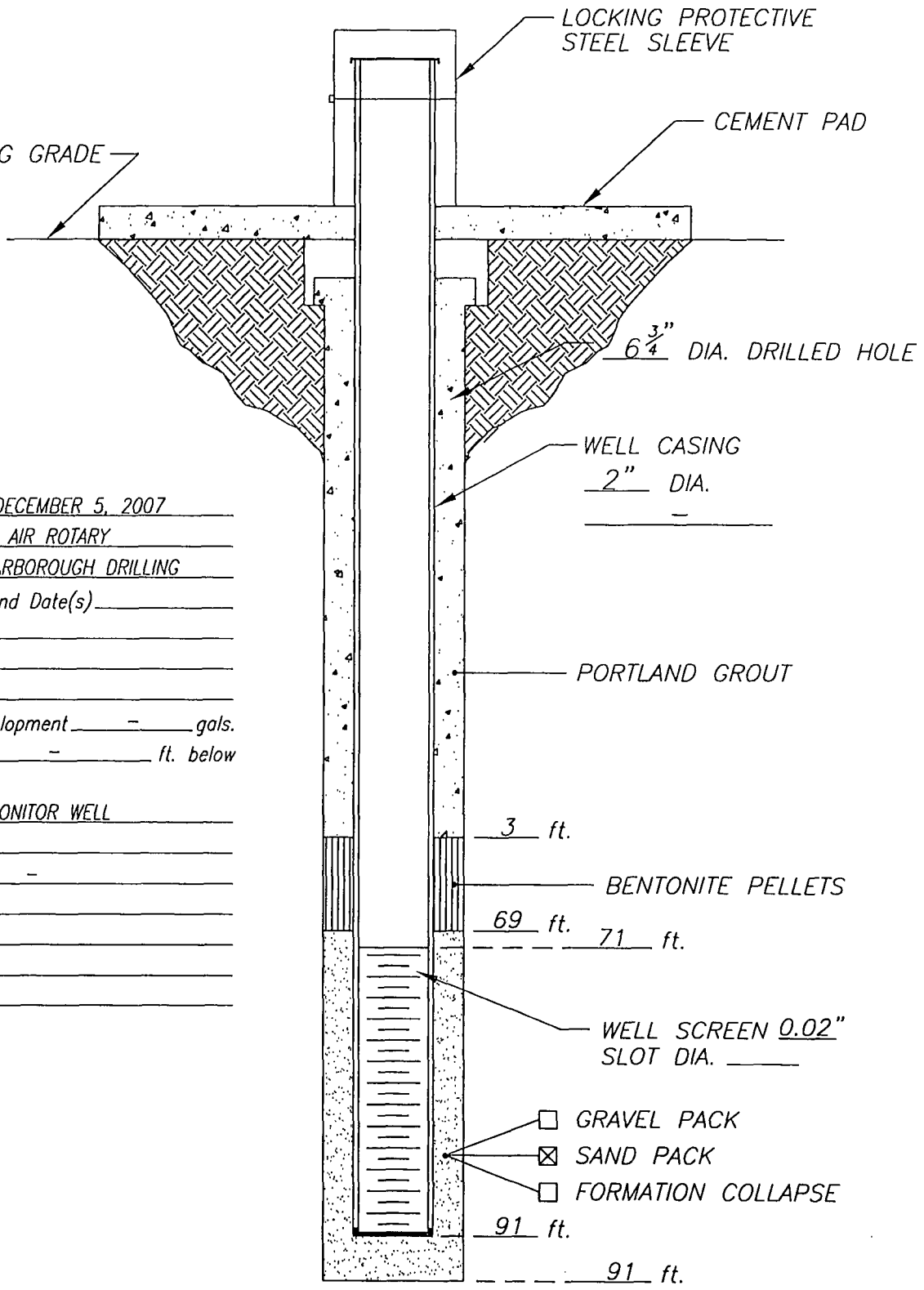
SAMPLE LOG

Boring/Well: MW-4
Project Number: 2617
Client: Pogo Production Inc.
Site Location: BD and Tank Battery Federal #7
Location: Lea County, New Mexico
Total Depth 95
Date Installed: 12/05/07

DEPTH (Ft)	OVM	SAMPLE DESCRIPTION
0-5	--	Tan/brown well sorted medium grain sand
5-10	--	Tan/brown well sorted medium grain sand
10-15	--	Buff fine grain calcareous sand
15-20	--	Tan/buff slightly calcareous medium grain sand
20-25	--	Tan/brown well sorted medium grain sand
25-30	--	Tan/brown medium grain sand (beach sand)
30-35	--	Tan/brown medium grain sand (beach sand)
35-40	--	Tan/brown medium grain sand intermixed with some limestone
40-45	--	Tan medium grain sand with some limestone intermixed
45-50	--	Tan medium grain sand with some limestone intermixed
50-55	--	Tan fine grain well sorted sand
55-60	--	Tan fine grain well sorted sand
60-65	--	Tan fine grain well sorted sand
65-70	--	Tan fine grain well sorted sand
70-75	--	Tan fine grain well sorted sand
75-80	--	Tan fine grain well sorted sand
80-85	--	Tan fine grain well sorted sand
85-90	--	Tan fine grain well sorted sand
90-95	--	Tan fine grain well sorted sand

Total Depth is 95 feet Groundwater encountered at 85 feet below ground surface.

WELL CONSTRUCTION LOG



Installation Date(s) DECEMBER 5, 2007
Drilling Method AIR ROTARY
Drilling Contractor SCARBOROUGH DRILLING
Development Technique(s) and Date(s) –

Water Removed During Development – gals.
Static Depth to Water – ft. below Ground Level
Well Purpose MONITOR WELL

Remarks –

DATE: 12/10/07 *Highlander Environmental*	CLIENT: *POGO PRODUCING INC* PROJECT: *TEAGUE FIELD, POGO.BD + FED #7 TB* LOCATION: *LEA CO, NM*	WELL NO. MW-4

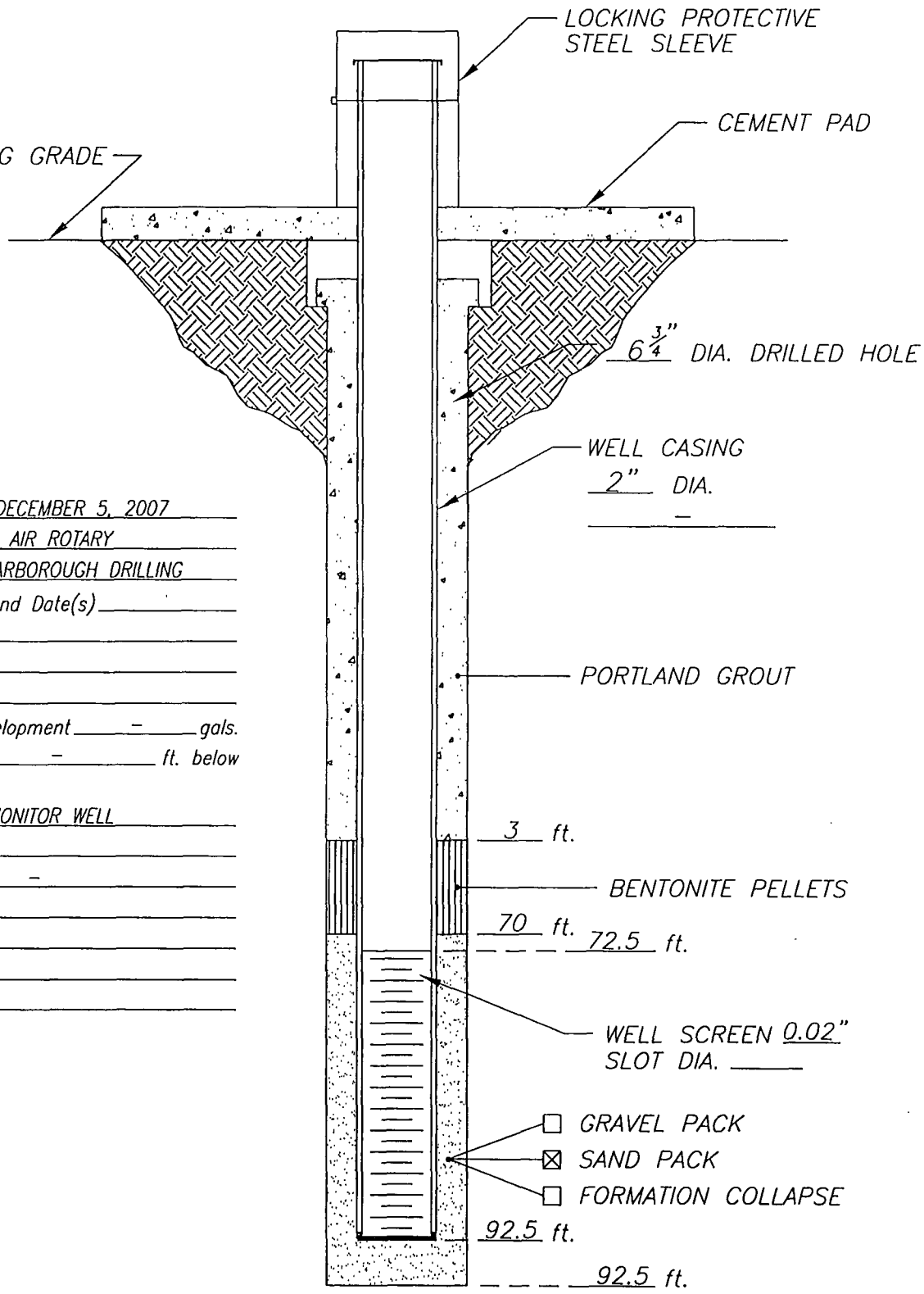
SAMPLE LOG

Boring/Well: MW-5
Project Number: 2617
Client: Pogo Production Inc.
Site Location: BD and Tank Battery Federal #7
Location: Lea County, New Mexico
Total Depth 92.5
Date Installed: 12/05/07

DEPTH (Ft)	OVM	SAMPLE DESCRIPTION
0-5	--	Tan/brown well sorted medium grain sand
5-10	--	Tan/brown well sorted medium grain sand
10-15	--	Buff fine grain sandy limestone
15-20	--	Tan/buff medium grain sand
20-25	--	Tan medium grain calcareous sand
25-30	--	Tan/brown medium grain sand (beach sand)
30-35	--	Tan/brown medium grain sand (beach sand)
35-40	--	Tan/brown medium grain sand (beach sand)
40-45	--	Tan/brown medium grain sand (beach sand)
45-50	--	Tan/brown medium grain sand with limestone intermixed
50-55	--	Tan/brown medium grain sand
55-60	--	Tan/brown medium grain sand (beach sand)
60-65	--	Tan/brown medium grain sand (beach sand)
65-70	--	Tan/brown medium grain sand (beach sand)
70-75	--	Tan/brown medium grain sand (beach sand)
75-80	--	Tan/brown medium grain sand (beach sand)
80-85	--	Tan/brown medium grain sand (beach sand)
85-90	--	Tan/brown medium grain sand (beach sand)
90-95	--	Tan/brown medium grain sand (beach sand)

Total Depth is 95 feet Groundwater encountered at 83 feet below ground surface.

WELL CONSTRUCTION LOG



Installation Date(s) DECEMBER 5, 2007
Drilling Method AIR ROTARY
Drilling Contractor SCARBOROUGH DRILLING
Development Technique(s) and Date(s) –

Water Removed During Development – gals.
Static Depth to Water – ft. below Ground Level
Well Purpose MONITOR WELL

Remarks –

DATE: 12/10/07	CLIENT: POGO PRODUCING INC	WELL NO.
Highlander Environmental	PROJECT: TEAGUE FIELD, POGO.BD + FED #7 TB	MW-5
	LOCATION: LEA CO, NM	

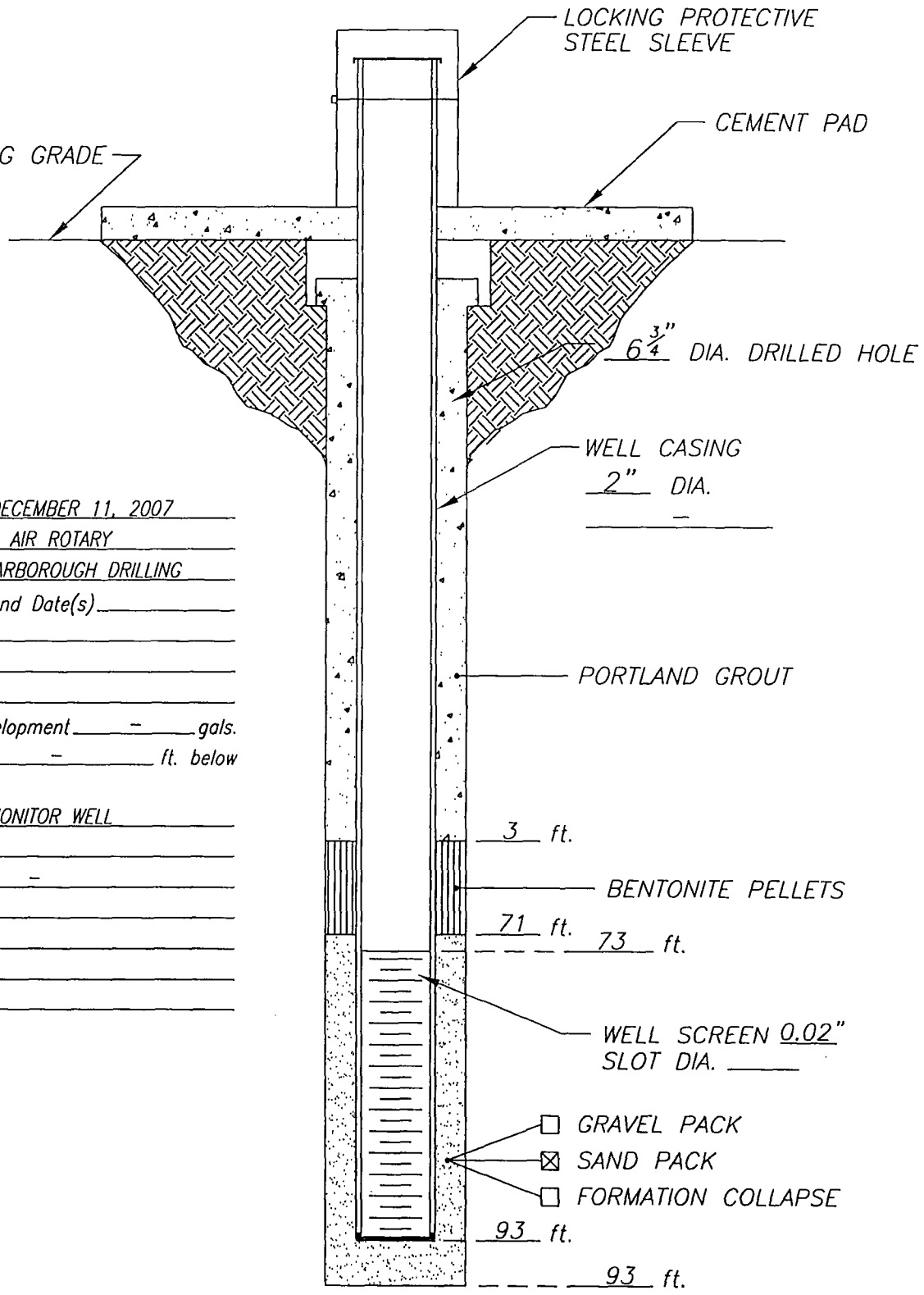
SAMPLE LOG

Boring/Well: MW-6
Project Number: 2617
Client: Pogo Production Inc.
Site Location: BD and Tank Battery Federal #7
Location: Lea County, New Mexico
Total Depth 93
Date Installed: 12/11/07

DEPTH (Ft)	OVM	SAMPLE DESCRIPTION
0-5	--	Tan/brown fine to medium grain sand
5-10	--	Brown medium grain sand
10-15	--	Buff/tan calcareous sand (50/50)
15-20	--	Tan/buff calcareous sand (60S/40L)
20-25	--	Buff/tan calcareous sand (50/50)
25-30	--	Tan fine grain sand (beach sand)
30-35	--	Tan fine grain sand (beach sand)
35-40	--	Tan fine grain sand (beach sand)
40-45	--	Tan fine grain sand (beach sand)
45-50	--	Buff/tan calcareous sand (60S/40L)
50-55	--	Buff/tan calcareous sand (60S/40L)
55-60	--	Buff/tan calcareous sand (60S/40L)
60-65	--	Buff/tan calcareous sand with sandstone intermixed
65-70	--	Buff/tan calcareous sand with sandstone intermixed
70-75	--	Tan/brown to buff calcareous sand
75-80	--	Yellow calcareous medium grain sand
80-85	--	Tan fine grain sand
85-90	--	Tan fine grain sand
90-95	--	Tan fine grain sand

Total Depth is 95 feet Groundwater encountered at 86 feet below ground surface.

WELL CONSTRUCTION LOG



Installation Date(s) DECEMBER 11, 2007
Drilling Method AIR ROTARY
Drilling Contractor SCARBOROUGH DRILLING
Development Technique(s) and Date(s) –

Water Removed During Development – gals.
Static Depth to Water – ft. below Ground Level
Well Purpose MONITOR WELL

Remarks –

DATE: 12/11/07	CLIENT: POGO PRODUCING INC	WELL NO.
Highlander Environmental	PROJECT: TEAGUE FIELD, POGO.BD + FED #7 TB	MW-6
	LOCATION: LEA CO, NM	