AP - 090

STAGE 1 WORKPLAN

7/07/2008

AP090

Highlander Environmental Corp.

Midland, Texas

Stage 1 Abatement Plan
OXY, USA, Inc.
Todd Water Injection Station
Section 31, T7S, R36E
NMOCD AP090

July 7, 2008

1.0 EXECUTIVE SUMMARY

As part of a due diligence assessment for Pogo Producing Company (Pogo), this site, formerly operated by Latigo Petroleum, Inc., was inspected by Highlander Environmental Corp. of Midland, Texas. Due to visual historic spills, Highlander supervised the installation of auger holes and soil borings at the site. The site location is shown on Figures 1 and 2.

Several impacted areas were investigated around the facility. One borehole was installed northeast of the compressor building in an area measuring 45' x 55'. Three boreholes were placed east of the compressor building in and area measuring 55' x 150' and one borehole was placed north of the compressor building in an area measuring 45' x 215'. Elevated chloride concentrations were found from the surface to the total depth of all five boreholes. 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-1) was converted to a temporary 2-inch monitor well. Groundwater was encountered at approximately 69 feet below the top of casing (TOC). On September 6, 2006 and May 15, 2007, Highlander purged and sampled the well per New Mexico Oil Conservation Division (NMOCD) guidelines for analyses of chlorides and BTEX. Chloride concentrations exceed New Mexico Water Quality Control Commission (NMWQCC) standards, while hydrocarbon constituents (BTEX) were detected at levels below the NMWQCC action levels. The analytical results are shown in Table 3.

A total of eleven (11) monitor wells have been installed at this facility. The well locations are shown on the attached Figures 4 and 5. The wells have been surveyed, gauged and sampled. The results are summarized in Table 3.

On July 25, 2007, the Director of the (NMOCD), Environmental Bureau was notified in writing of groundwater impact at the above-referenced site in accordance with NM Rule 116. In order to further delineate the site, additional monitor wells were installed. During this time Plains Exploration & Production Company (PXP) purchased Pogo. In March 2008, OXY assumed operating responsibility for this site from PXP.

2.0 BACKGROUND & PREVIOUS WORK

Highlander Environmental Corp. (Highlander) performed a limited subsurface investigation at the Latigo Todd Water Injection Station, Section 31, Township 7 South, Range 36 East, Roosevelt County, New Mexico. The site location is shown on Figures 1 and 2.

Several impacted areas were investigated around the facility. A total of eleven auger holes were installed in visually impacted areas on July 24, 2006. TPH concentrations were either below the RRAL or confined to surficial soils (0-1.0') in all auger holes, with the exception of AH-4. Chloride concentrations were either not elevated or appeared to be defined or declining in five of the eleven auger holes. Five boreholes were installed near auger hole locations, AH-4(BH-1), AH-11 (BH-2), AH-10 (BH-3 and BH-4) and AH-7 (BH-5). BH-1 exhibited TPH concentrations above the RRAL to a depth of 15'-17' below ground surface (bgs). The sample from 20'-22' was below the RRAL. Elevated chloride concentrations were found from the surface to a depth of 70 feet below surface in BH-1. Chloride concentrations declined significantly in BH-5 at a depth of 18'-20' bgs. BH-2, BH-3 and BH-4 were all drilled to a depth of 30' and chloride concentrations were not defined. The auger 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-1) was converted to a temporary 2-inch monitor well. Groundwater was encountered at approximately 72 feet below top of casing (TOC). On September 6, 2006 and May 15, 2007, Highlander purged and sampled the well per OCD guidelines for analyses of chlorides and BTEX. Chloride concentrations exceed NMWQCC standards, while hydrocarbon constituents (BTEX) were detected at levels below the NMWQCC action levels. The monitor well was completed as a permanent monitor well. On July 25, 2007, the Director of the (NMOCD), Environmental Bureau was notified in writing of groundwater impact at the above-referenced site in accordance with NM Rule 116. The analytical results are shown in Table 3.

In September 2007, an additional ten (10) monitor wells were installed at this facility. The well locations are shown on the attached Figures 4 and 5. The wells were gauged and sampled on September 20, 2007 and December 7, 2007. The results are summarized in Table 3. Chloride concentrations exceeded NMWQCC standards. Hydrocarbon constituents (BTEX) were not detected at or above reporting limits, with the exception of MW-1 in the initial September 2006 sampling event. Although detected, the BTEC concentrations were all below the NMWQCC standards.

3.0 GEOLOGY & HYDROGEOLOGY

3.1 Regional and Local Geology

According to the *Geologic Atlas of Texas Brownfield Sheet* (1974), the site is comprised of windblown sand. The sands are dark brown to grayish brown and

occur in sheets locally in the form of cover sand, dunes and dune ridges. The sands are derived from lacustrine, fluviatile, and eolian deposits. Dune and dune ridges comprised of light brown to reddish sand overly the windblown sands in the western part of the area. These sands are mostly derived from the Gatuna Formation and average in thickness from 5 to 10 feet.

3.2 Regional and Local Hydrogeology

Groundwater occurs under unconfined conditions in the Ogallala Formation. The Ogallala Formation is regionally known as the High Plains Aquifer. Recharge to the Ogallala Formation occurs through infiltration of rainfall and snowmelt. Discharge occurs principally through pumping from wells.

The regional flow direction for groundwater in the High Plains aquifer is primarily to the south-southeast, however, the localized flow in this area appears to be towards the west-southwest, towards the edge of the Caprock. The depth to water in the monitor wells range from 62' to 81' (TOC), with the exception of MW-11, which remains dry with a total depth of 88' bgs.

3.3 Water Well Inventory

Highlander performed an internet search of the New Mexico Office of the State Engineer (OSE) and the United States Geologic Survey (USGS) databases for water wells within a ½ mile radius of the subject site.

No water well records were found in the OSE or USGS databases for the prescribed radius. The closest well reported is in Section 29, T-7-S, R-36-E, with a reported depth to water of 183'. The water well inventory data sheet is included in Appendix A.

4.0 SUBSURFACE SOILS

The soils in the vicinity of this site are typically windblown sands. The sands are dark brown to grayish brown and occur in sheets locally in the form of cover sand, dunes and dune ridges. The sands are derived from lacustrine, fluviatile, and eolian deposits. Dune and dune ridges comprised of light brown to reddish sand overly the windblown sands in the western part of the area. These sands are mostly derived from the Gatuna Formation and average in thickness from 5 to 10 feet. The soil borings at this site indicate sand and sandstone to approximately 60' where sandy clay is encountered.

5.0 GROUNDWATER QUALITY

5.1 Installation of Additional Monitor Wells

Additional monitor wells will be required at this facility to further delineate the source or sources and extent of groundwater impact. One additional monitor well, as required in the April 25, 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. Copies of the boring and completion logs are included in Appendix B. A water table map was generated for the most recent sampling event and is shown as Figure 4.

5.2 Monitoring Program

The original monitoring well (MW-1) has been sampled four times since September 6, 2006. The most recent sampling was performed on all eight monitor wells on December 7, 2007. Quarterly sampling of all wells will commence in the third quarter of 2008 and continue until further notice.

5.3 Hydrocarbons in Groundwater

Traces of toluene, ethylbenzene and xylene have only been reported in MW-1 in the initial September 2006 sampling event, and at levels well below the NMWQCC standards.

5.4 Other Constituents of Concern

Chloride concentrations have not been defined as shown on the attached Figure 5. Chloride concentrations are highest around MW-1.

6.0 CONCLUSIONS

TPH concentrations were either below the RRAL or limited to the surface 1.0' in all auger holes except AH-4. BH-1 showed TPH concentrations had declined below the RRAL at 20'-22' bgs. Chloride impact in the soil was not defined in the majority of auger holes or soil borings.

The extent of chloride impact in the groundwater has been not defined at this site, however, no BTEX constituents currently exceed the WQCC standards. There does not appear to be any receptors in the proximity of this site. Quarterly groundwater gauging and sampling will commence in the third quarter of 2008. Additional monitor wells and soil borings will be required to define the extent of chloride impact in soils and groundwater. OXY proposes to continue to monitor the existing monitor wells on a quarterly basis for evaluation and to develop an appropriate groundwater remediation system, if any.

7.0 SOIL CORRECTIVE ACTION PLAN (CAP)

The majority of TPH impact is limited to the initial 1.0' of soil. In these areas, the soils will either be excavated for offsite disposal or tilled and treated to promote degradation of TPH concentrations. The soils in the vicinity of AH-4 will be evaluated for potential removal and offsite disposal. The additional soil boring information will be used to further evaluate the extent of chloride impact for development of an appropriate remediation plan.

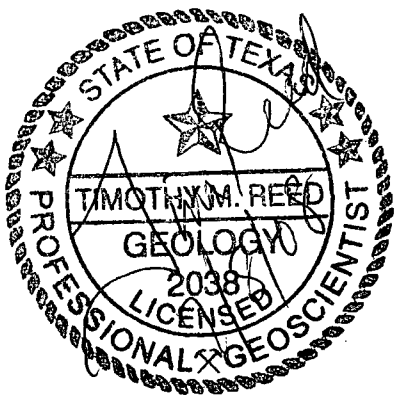
8.0 QUALITY ASSURANCE/ QUALITY CONTROL

All monitor wells were constructed to EPA and industry standards. All downhole equipment (i.e., drill rods, drill bits, etc.) were thoroughly decontaminated between each use with a steam cleaner.

The wells were inspected for the presence of phase-separated hydrocarbons (PSH) and found not to contain any. The wells were properly purged and sampled with clean, dedicated, polyethylene bailers and disposable line. The groundwater samples were submitted to a laboratory for analysis of Benzene, Toluene, Ethylbenzene, and Xylene (BTEX) by method EPA 8021B, chloride, sulfate and total dissolved solids.

9.0 PROPOSED SCHEDULE OF ACTIVITIES

Upon approval, quarterly sampling of the eleven (11) existing monitor wells will be continued and all results will be submitted in an annual summary report within the first quarter of 2009. Also, upon approval, all soil activities will be commenced and the results reported in the annual summary report.



Respectfully submitted,
Highlander-Tetra Tech

Timothy M. Reed, P.G.
Senior Project Manger

cc: Daniel Sanchez-NMOCD
enclosures: figures, water well information, boring and completion logs, tables

FIGURES

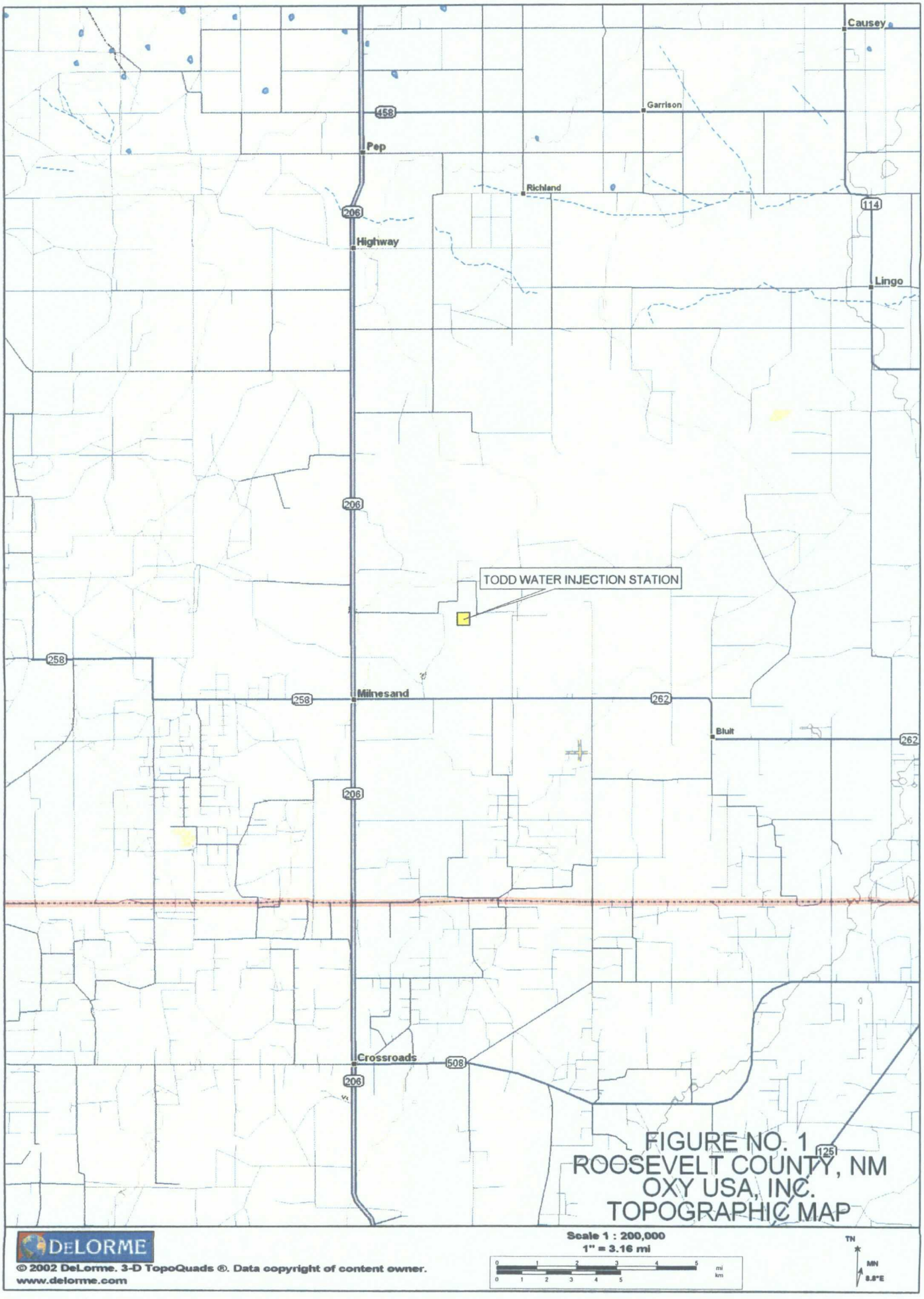


FIGURE NO. 1
ROOSEVELT COUNTY, NM
OXY USA, INC.
TOPOGRAPHIC MAP

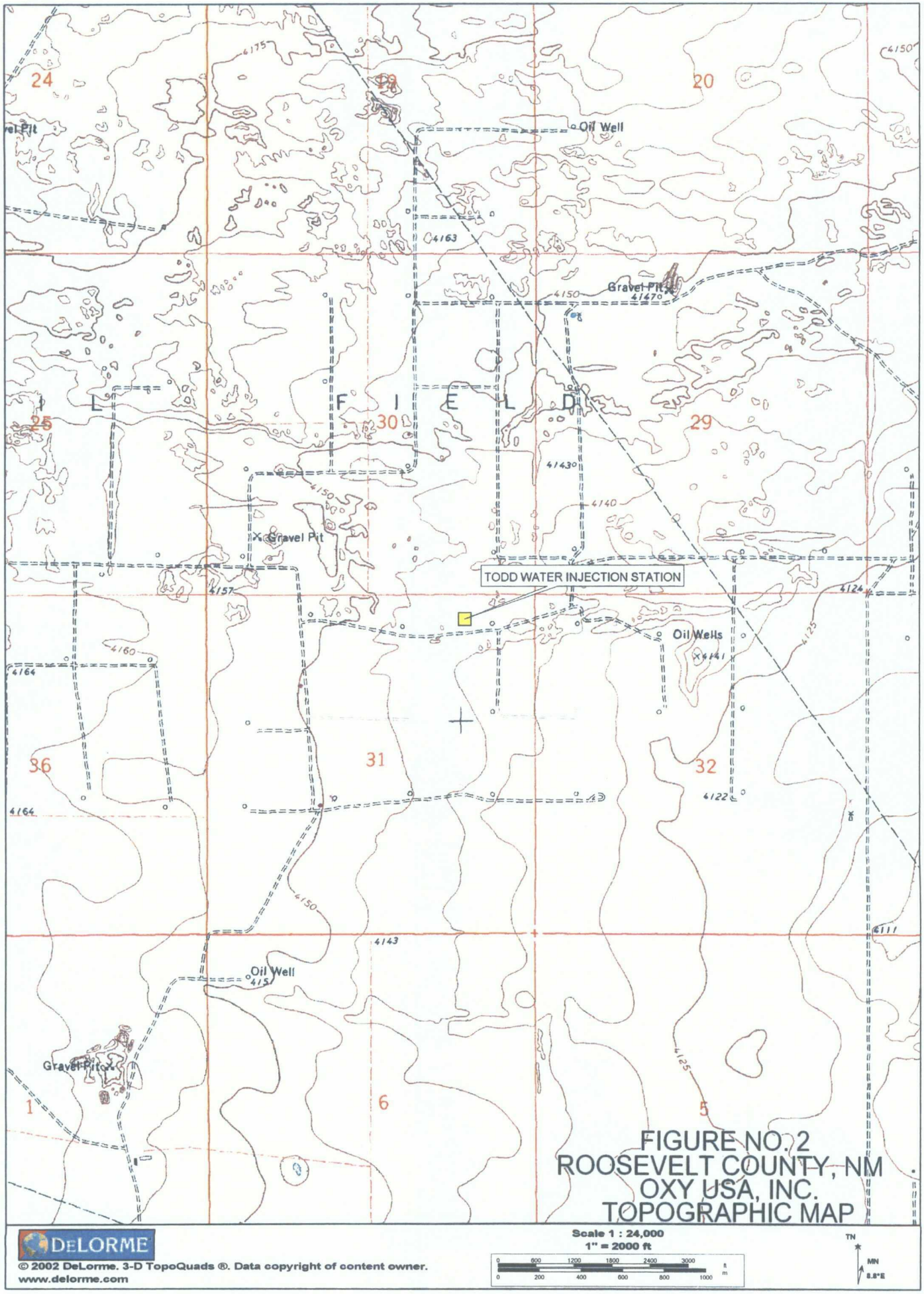
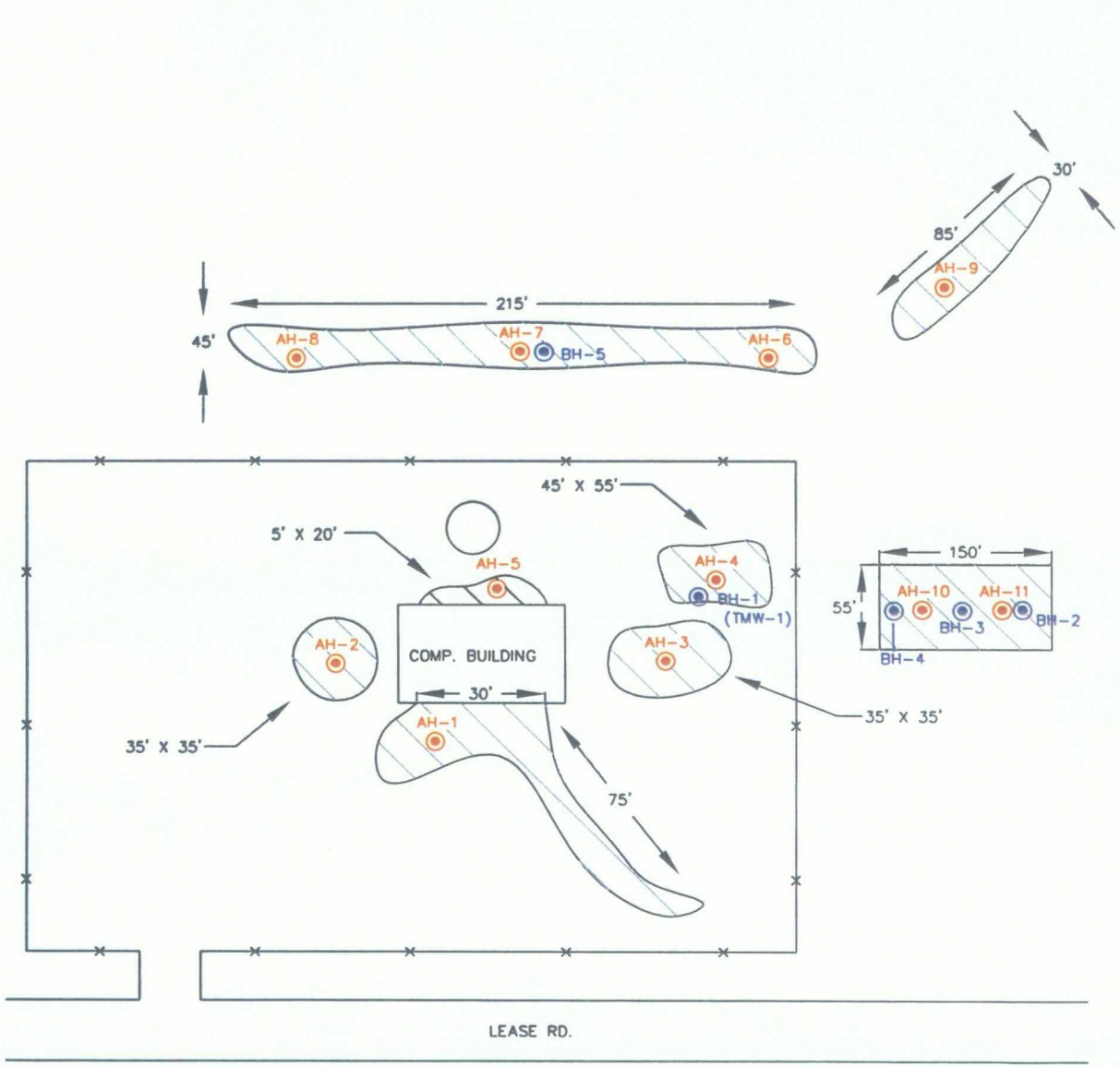


FIGURE NO. 2
ROOSEVELT COUNTY, NM
OXY USA, INC.
TOPOGRAPHIC MAP



BORE HOLES
SPILL AREAS
SAMPLE LOCATIONS

NOT TO SCALE

FIGURE NO. 3

ROOSEVELT COUNTY, NEW MEXICO

OXY USA, INC.
TODD WATER INJECTION STATION

HIGHLANDER ENVIRONMENTAL CORP.
MIDLAND, TEXAS

DATE: 11/30/06
DWN. BY: JJ
FILE: C:\POGO\2017\ TODD WATER STATION

FIGURE NO. 4

ROOSEVELT COUNTY, NEW MEXICO

OXY USA, INC.

TODD WATER INJECTION STATION
GROUNDWATER GRADIENT MAP
12/7/07

HIGHLANDER ENVIRONMENTAL CORP.
MIDLAND, TEXAS

DATE: 10/3/07
DRWN BY: RC
FILE: C:\PROJ\2617

SAMPLES COLLECTED ON 12/7/07
RESULTS IN mg/L

SCALE: 1" = 80'
0 40 80

MW 11
4081.97

MW 6
4074.62

4075

4070

4065

16' CALICHE RD.

10' CALICHE RD.

CHAINED FENCE

MW 4
4073.33

MW 5
4069.49

MW 10
4063.94

WELL PAD

PLUGGED OIL WELL

BLDG.

WATER TANK

PIT

MW 1
4072.79

(LINE LEAK)
AREA OF IMPACT

MW 3
4072.04

(LINE LEAK)
AREA OF IMPACT

OVERHEAD POWERLINE

MW 2
4072.25

MW 8
4068.35

MW 7
DRY

MW 9
4060.71

WIRE FENCE

N

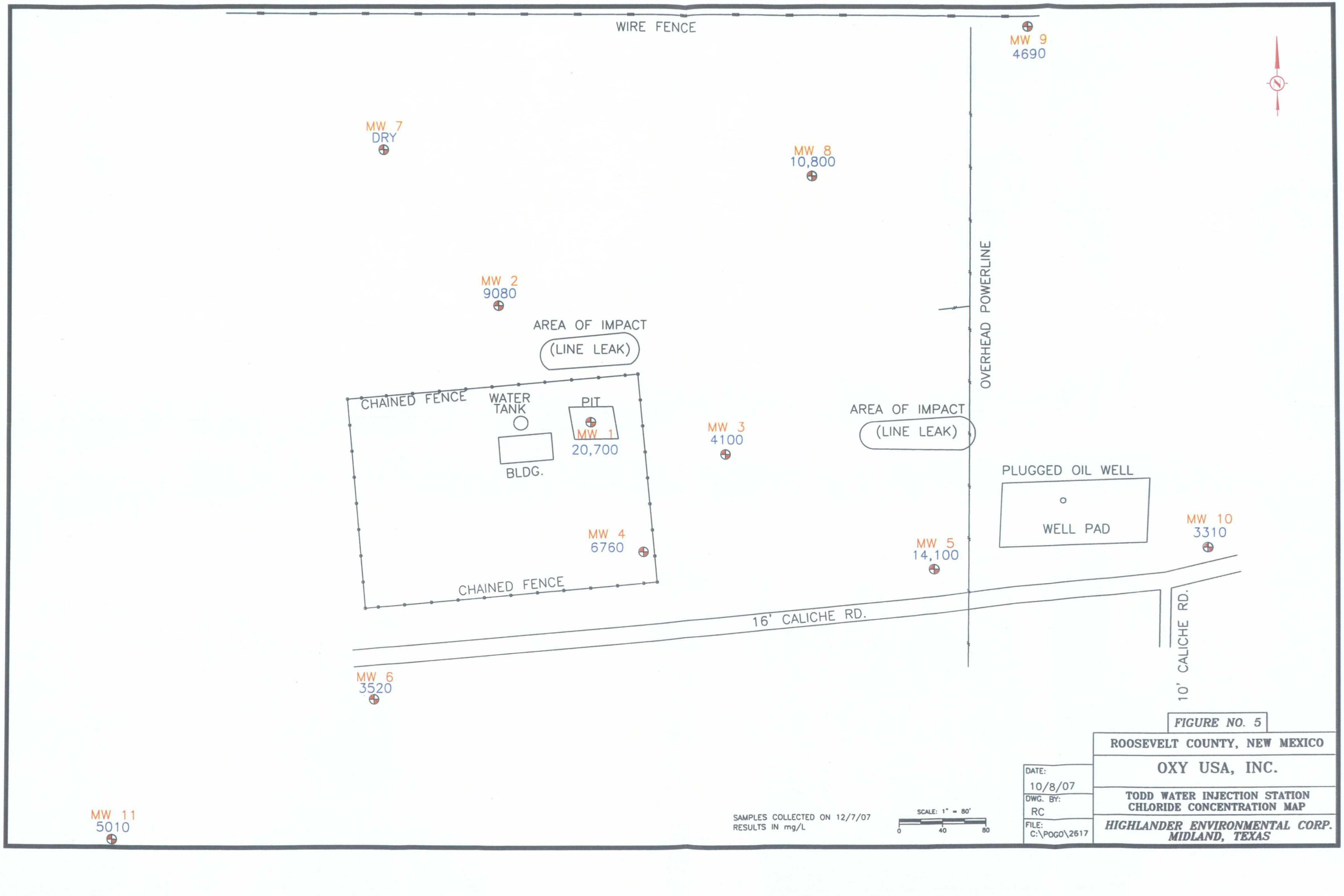


FIGURE NO. 5

ROOSEVELT COUNTY, NEW MEXICO

OXY USA, INC.

TODD WATER INJECTION STATION
CHLORIDE CONCENTRATION MAP

DATE:	10/8/07
DWG. BY:	RC
FILE:	C:\POGO\2617

HIGHLANDER ENVIRONMENTAL CORP.
MIDLAND, TEXAS

TABLES

Table 1
Pogo Producing Company
TODD WATER INJECTION STATION
Roosevelt 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	7/24/2006	0-1	**88.3**	**831**	**831.0**	<0.0500	<0.0500	<0.0500	<0.0500	**621**
	7/24/2006	1-1.5	<1.00	<50.0	<50.0	-	-	-	-	**243**
	7/24/2006	2-2.5	<1.00	<50.0	<50.0	-	-	-	-	**299**
AH-2	7/24/2006	0-1	**172**	**4300**	**4472**	**0.0816**	**0.372**	**0.772**	**0.731**	**5010**
	7/24/2006	1-1.5	<1.00	**82.1**	**82.1**	-	-	-	-	**670**
	7/24/2006	2-2.5	<1.00	<50.0	<50.0	-	-	-	-	**812**
AH-3	7/24/2006	0-1	<1.00	**288**	**288**	<0.0100	<0.0100	<0.0100	**0.0336**	**244**
	7/24/2006	1-1.5	<1.00	<50.0	<50.0	-	-	-	-	**208**
	7/24/2006	2-2.5	<1.00	<50.0	<50.0	-	-	-	-	**284**
	7/24/2006	4-4.5	<1.00	<50.0	<50.0	-	-	-	-	**1030**
AH-4	7/24/2006	0-1	<1.00	<50.0	<50.0	**0.0109**	<0.0100	<0.0100	<0.0100	**1310**
	7/24/2006	1-1.5	**9.02**	**1030**	**1039**	-	-	-	-	**1360**
	7/24/2006	2-2.5	**2150**	**6800**	**8950**	**24.8**	**54.9**	**72.4**	**57.4**	**2080**
	7/24/2006	4-4.5	**1830**	**4900**	**6730**	-	-	-	-	**1650**
	7/24/2006	6-6.5	**2940**	**8900**	**11840**	-	-	-	-	**2120**
	7/24/2006	7-7.5								**2780**
	7/24/2006	8.5-9	**8120**	**7030**	**15150**	**43.8**	**204**	**208**	**179**	**1880**

Table 1
Pogo Producing Company
TODD WATER INJECTION STATION
Roosevelt County, New Mexico

Sample ID	Date Sampled	Sample Depth (ft)	TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylene (mg/kg)	Chloride (mg/kg)
			C6-C12	C12-C35	Total					
AH-5	7/24/2006	0-1	**1080**	**6630**	**7710**	**2.64**	**4.86**	**8.01**	**6.26**	**4630**
	7/24/2006	1-1.5	<1.00	**62.9**	**62.9**	-	-	-	-	**2380**
	7/24/2006	2-2.5	<1.00	<50.0	<50.0	-	-	-	-	**752**
	7/24/2006	4-4.5								**2520**
	7/24/2006	5-5.5	<1.00	<50.00	<50.0	-	-	-	-	**1040**
AH-6	7/24/2006	0-1	<1.00	<50.0	<50.0	<0.0100	<0.0100	<0.0100	<0.0100	**780**
	7/24/2006	1-1.5	<1.00	<50.0	<50.0	-	-	-	-	**3780**
	7/24/2006	2-2.5								**1860**
	7/24/2006	3-3.5	<1.00	<50.0	<50.0	-	-	-	-	**66.4**
AH-7	7/24/2006	0-1	**87.5**	**3890**	**3977.5**	<0.200	<0.200	**0.584**	<0.200	**4610**
	7/24/2006	1-1.5	<1.00	<50.0	<50.0	-	-	-	-	**4560**
	7/24/2006	2-2.5								**20100**
	7/24/2006	3-3.5	<1.00	**79.2**	**79.2**	-	-	-	-	**13900**
AH-8	7/24/2006	0-1	<1.00	**68.2**	**68.2**	<0.0100	<0.0100	<0.0100	<0.0100	**66.8**
	7/24/2006	1-1.5	<1.00	<50.0	<50.0	-	-	-	-	**315**
AH-9	7/24/2006	0-1	**93.3**	**5640**	**5733.3**	<0.200	<0.200	<0.200	<0.200	**22.6**
	7/24/2006	1-1.5	<1.00	**137**	**137**	-	-	-	-	**15.9**

Table 1
Pogo Producing Company
TODD WATER INJECTION STATION
Roosevelt 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-10	7/24/2006	0-1	<1.00	<50.0	<50.0	<0.0100	<0.0100	<0.0100	<0.0100	**2140**
	7/24/2006	1-1.5	-	-	-	-	-	-	-	**4040**
	7/24/2006	2-2.5	-	-	-	-	-	-	-	**5250**
	7/24/2006	5-5.5	-	-	-	-	-	-	-	**7480**
	7/24/2006	6-6.5	-	-	-	-	-	-	-	**6320**
AH-11	7/24/2006	0-1	<1.00	<50.0	<50.0	<0.0100	<0.0100	<0.0100	<0.0100	**1660**
	7/24/2006	1-1.5	-	-	-	-	-	-	-	**8010**
	7/24/2006	2-2.5	-	-	-	-	-	-	-	**10800**
	7/24/2006	4-4.5	-	-	-	-	-	-	-	**11600**
	7/24/2006	6-6.5	-	-	-	-	-	-	-	**5940**
	7/24/2006	7-7.5	-	-	-	-	-	-	-	**14000**
	7/24/2006	8-8.5	-	-	-	-	-	-	-	**11400**
	7/24/2006	9-9.5	-	-	-	-	-	-	-	**8070**

Table 2
Pogo Producing Company
TODD WATER INJECTION STATION
Roosevelt 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	8/31/2006	10-12'	1290	6800	8090	30.7	65.3	71.6	55.4	1730
	8/31/2006	15-17'	770	2470	3240	3.38	7.53	10.1	30.1	2850
	8/31/2006	20-22'	21.7	65.9	87.60	0.0740	0.376	0.760	0.646	660
	8/31/2006	30-32'	-	-	-	-	-	-	-	583
	8/31/2006	40-42'	-	-	-	-	-	-	-	1610
	8/31/2006	50-52'	-	-	-	-	-	-	-	1220
	8/31/2006	60-62'	-	-	-	-	-	-	-	486
	8/31/2006	70-72'	1.16	<50.0	1.16	<0.0100	<0.0100	<0.0100	<0.0100	609
BH-2	9/11/2007	8-10	-	-	-	-	-	-	-	8670
	9/11/2007	13-15	-	-	-	-	-	-	-	8230
	9/11/2007	18-20	-	-	-	-	-	-	-	6590
	9/11/2007	23-25	-	-	-	-	-	-	-	6320
	9/11/2007	28-30	-	-	-	-	-	-	-	5710
BH-3	9/11/2007	8-10	-	-	-	-	-	-	-	1270
	9/11/2007	13-15	-	-	-	-	-	-	-	6700
	9/11/2007	18-20	-	-	-	-	-	-	-	5870
	9/11/2007	23-25	-	-	-	-	-	-	-	5750
	9/11/2007	28-30	-	-	-	-	-	-	-	6180
BH-4	9/11/2007	8-10	-	-	-	-	-	-	-	2570
	9/11/2007	13-15	-	-	-	-	-	-	-	7120
	9/11/2007	18-20	-	-	-	-	-	-	-	7450
	9/11/2007	23-25	-	-	-	-	-	-	-	8160

Table 2
Pogo Producing Company
TODD WATER INJECTION STATION
Roosevelt County, New Mexico

Sample ID	Date Sampled	Sample Depth (ft)	TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylene (mg/kg)	Chloride (mg/kg)
			C6-C12	C12-C35	Total					
	9/11/2007	28-30	-	-	-	-	-	-	-	**6180**
BH-5	9/11/2007	3-5	-	-	-	-	-	-	-	**5550**
	9/11/2007	8-10	-	-	-	-	-	-	-	**3080**
	9/11/2007	13-15	-	-	-	-	-	-	-	**2780**
	9/11/2007	18-20	-	-	-	-	-	-	-	**572**

(-) not analyzed

Table 3
Pogo Producing Company
TODD WATER INJECTION STATION
Roosevelt County, New Mexico

Sample ID	Date Sampled	Date Gauged	Total Depth (feet)	Top of Casing Elevation (feet)	Measured Groundwater Elevations (feet)	Corrected Groundwater Elevations (feet)	Sample Number	Benzene (mg/L)	Toluene (mg/L)	Ethyl-benzene (mg/L)	Xylenes (mg/L)	Chloride (mg/L)	TDS (mg/L)
TMW-1 (MW-1)	09/06/06	N.G.	80.10	4,142.16	N.G.	N.G.	102407	**0.00220**	**0.00350**	**0.00390**	**0.00280**	**8,250**	-
	05/15/07	N.G.		4,142.16	N.G.	N.G.	124635	<0.001	<0.001	<0.001	<0.001	**26,200**	-
	09/20/07	09/25/07		4,142.16	69.42	4,072.74	137376	<0.001	<0.001	<0.001	<0.001	**22,300**	-
	12/07/07	12/04/07		4,142.16	69.37	4,072.79	-	-	-	-	-	**20,700**	**38,200**
MW-2	09/24/07	09/25/07	84.80	4,143.19	73.35	4,069.84	137487	<0.001	<0.001	<0.001	<0.001	**6,820**	-
	12/07/07	12/04/07		4,143.19	70.94	4,072.25	-	-	-	-	-	**9,080**	**16,400**
MW-3	09/20/07	09/25/07	88.10	4,141.38	69.35	4,072.03	137377	<0.001	<0.001	<0.001	<0.001	**17,800**	-
	12/07/07	12/04/07		4,141.38	69.32	4,072.06	-	-	-	-	-	**4,100**	**9,000**
MW-4	09/20/07	09/25/07	87.80	4,142.03	68.73	4,073.30	137378	<0.001	<0.001	<0.001	<0.001	**29,000**	-
	12/07/07	12/04/07		4,142.03	68.70	4,073.33	-	-	-	-	-	**6,760**	**14,150**
MW-5	09/20/07	09/25/07	88.70	4,142.21	77.51	4,064.70	137379	<0.001	<0.001	<0.001	<0.001	**21,700**	-
	12/07/07	12/04/07		4,142.21	72.72	4,069.49	-	-	-	-	-	**14,100**	**21,100**

Pogo Producing Company

TODD WATER INJECTION STATION

Roosevelt County, New Mexico

Sample ID	Date Sampled	Date Gauged	Total Depth (feet)	Top of Casing Elevation (feet)	Measured Groundwater Elevations (feet)	Corrected Groundwater Elevations (feet)	Sample Number	Benzene (mg/L)	Toluene (mg/L)	Ethyl-benzene (mg/L)	Xylene (mg/L)	Chloride (mg/L)	TDS (mg/L)
MW-6	09/20/07	09/25/07	89.50	4,143.94	69.25	4,074.69	137380	<0.001	<0.001	<.0.001	<0.001	**3,540**	-
	12/07/07	12/04/07		4,143.94	69.32	4,074.62	-	-	-	-	-	**3,520**	**7,660**
MW-7	09/20/07	09/25/07	88.10	4,143.27	Dry	Dry	-	-	-	-	-	-	-
	12/07/07	12/04/07		4,143.27	Dry	Dry	-	-	-	-	-	-	-
MW-8	09/20/07	09/25/07	88.82	4,142.61	74.25	4,068.36	137381	<0.001	<0.001	<0.001	<0.001	**10,400**	-
	12/07/07	12/04/07		4,142.61	74.26	4,068.35	-	-	-	-	-	**10,800**	**20,300**
MW-9	09/26/07	09/25/07	92.25	4,141.66	81.18	4,060.48	137488	<0.001	<0.001	<0.001	<0.001	**4,290**	-
	12/07/07	12/04/07		4,141.66	80.95	4,060.71	-	-	-	-	-	**4,690**	**8,862**
MW-10	09/26/07	09/25/07	90.24	4,142.92	79.11	4,063.81	137489	<0.001	<0.001	<0.001	<0.001	**3,090**	-
	12/07/07	12/04/07		4,142.92	78.98	4,063.94	-	-	-	-	-	**3,310**	**6,410**
MW-11	09/26/07	09/25/07	81.49	4,145.09	75.65	4,069.44	137490	<0.001	<0.001	<0.001	<0.001	**4,080**	-
	12/07/07	12/04/07		4,145.09	63.12	4,081.97	-	-	-	-	-	**5,010**	**10,151**

(-) not analyzed N.G. - Not gauged TMW-1 converted to MW-1 on September 17, 2007

APPENDIX A

Water Well Data
Average Depth to Groundwater (ft)
Todd Water Injection Station, Roosevelt County, New Mexico

6 South 35 East

6	5	4	3	2	1
7	8	9	10	11	12 **75** **90**
18	17	16	15	14	13 **55**
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

6 South 36 East

6 **70**	5 **85**	4 **90**	3	2	1
7	8	9	10	11	12 **100**
18	17	16	15	14 **90**	13 **94**
19 **63**	20	21	22 **100**	23	24 **90**
30	29	28 **142**	27	26	25
31	32	33	34	35	36

6 South 37 East

6	5	4	3	2 **90**	1
7 **82**	8	9	10	11	12
18	17	16	15	14	13
19	20	21 **80**	22 **98**	23 **90**	24
30	29	28	27	26	25
31	32	33	34	35	36

7 South 35 East

6	5	4	3	2 **211**	1
7 **190**	8	9	10 **188**	11 **197**	12
18	17 **191**	16	15	14	13
19 **181**	20	21	22	23 **198**	24
30	29 **158**	28	27	26 **50**	25
31 **53**	32	33	34 **116**	35	36

7 South 36 East

6 **194**	5 **149**	4	3	2	1
7	8	9	10	11 **185**	12
18	17	16	15	14	13
19	20	21	22	23 **185**	24 **180**
30	29 **183**	28 **183**	27 **187**	26	25
31	32	33	34	35	36 **155**

7 South 37 East

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14 **172**	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

8 South 35 East

6	5	4	3	2	1
7	8	9	10 **80**	11 **70**	12
18	17 **60**	16	15	14 **78**	13
19	20	21	22	23	24
30	29 **120**	28	27	26	25
31	32	33	34	35	36

8 South 36 East

6	5	4	3	2	1
7	8	9	10	11	12
18	17 **184**	16	15 **85**	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

8 South 37 East

6	5	4	3 **177**	2	1
7 **87**	8	9	10 **112**	11	12
18 **90**	17	16 **97**	15	14	13
19 **92**	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

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: **BH-2**
Project Number: **2617**
Client: **Pogo Production Inc.**
Site Location: **Todd Water Station**
Location: **Roosevelt County, New Mexico**
Total Depth **30**
Date Drilled: **09/11/07**

DEPTH (Ft)	OVM	SAMPLE DESCRIPTION
0-5	--	Gray sandy clay (hydrocarbon stained with odor)
5-10	--	Gray sandy clay (hydrocarbon stained with odor)
10-15	--	Gray clayey sand (hydrocarbon stained)
15-20	--	Tan medium grain sand with limestone intermixed
20-25	--	Tan sand intermixed with limestone
25-30	--	Tan fine grain sand

Total Depth is 30 feet

SAMPLE LOG

Boring/Well: BH-3
Project Number: 2617
Client: Pogo Production Inc.
Site Location: Todd Water Station
Location: Roosevelt County, New Mexico
Total Depth 30
Date Drilled: 09/11/07

DEPTH (Ft)	OVM	SAMPLE DESCRIPTION
0-5	--	Gray sandy clay (hydrocarbon stained with odor)
5-10	--	Gray sandy clay (hydrocarbon stained with odor)
10-15	--	Tan medium grain sand
15-20	--	Tan medium grain sand with limestone intermixed
20-25	--	Tan medium grain sand with limestone
25-30	--	Tan fine grain sand

Total Depth is 30 feet

SAMPLE LOG

Boring/Well: **BH-4**
Project Number: **2617**
Client: **Pogo Production Inc.**
Site Location: **Todd Water Station**
Location: **Roosevelt County, New Mexico**
Total Depth **30**
Date Drilled: **09/11/07**

DEPTH (Ft)	OVM	SAMPLE DESCRIPTION
0-5	--	Gray sandy clay (hydrocarbon stained with odor)
5-10	--	Tan medium grain sand with limestone intermixed
10-15	--	Tan medium grain sand with limestone intermixed
15-20	--	Tan medium grain sand with limestone intermixed
20-25	--	Tan medium grain sand with limestone intermixed
25-30	--	Tan fine grain sand

Total Depth is 30 feet

SAMPLE LOG

Boring/Well: **BH-5**
Project Number: **2617**
Client: **Pogo Production Inc.**
Site Location: **Todd Water Station**
Location: **Roosevelt County, New Mexico**
Total Depth **30**
Date Drilled: **09/11/07**

DEPTH (Ft)	OVM	SAMPLE DESCRIPTION
0-5	--	Tan medium grain calcareous sand
5-10	--	Tan medium grain calcareous sand
10-15	--	Tan medium grain calcareous sand
15-20	--	Tan medium grain calcareous sand

Total Depth is 20 feet

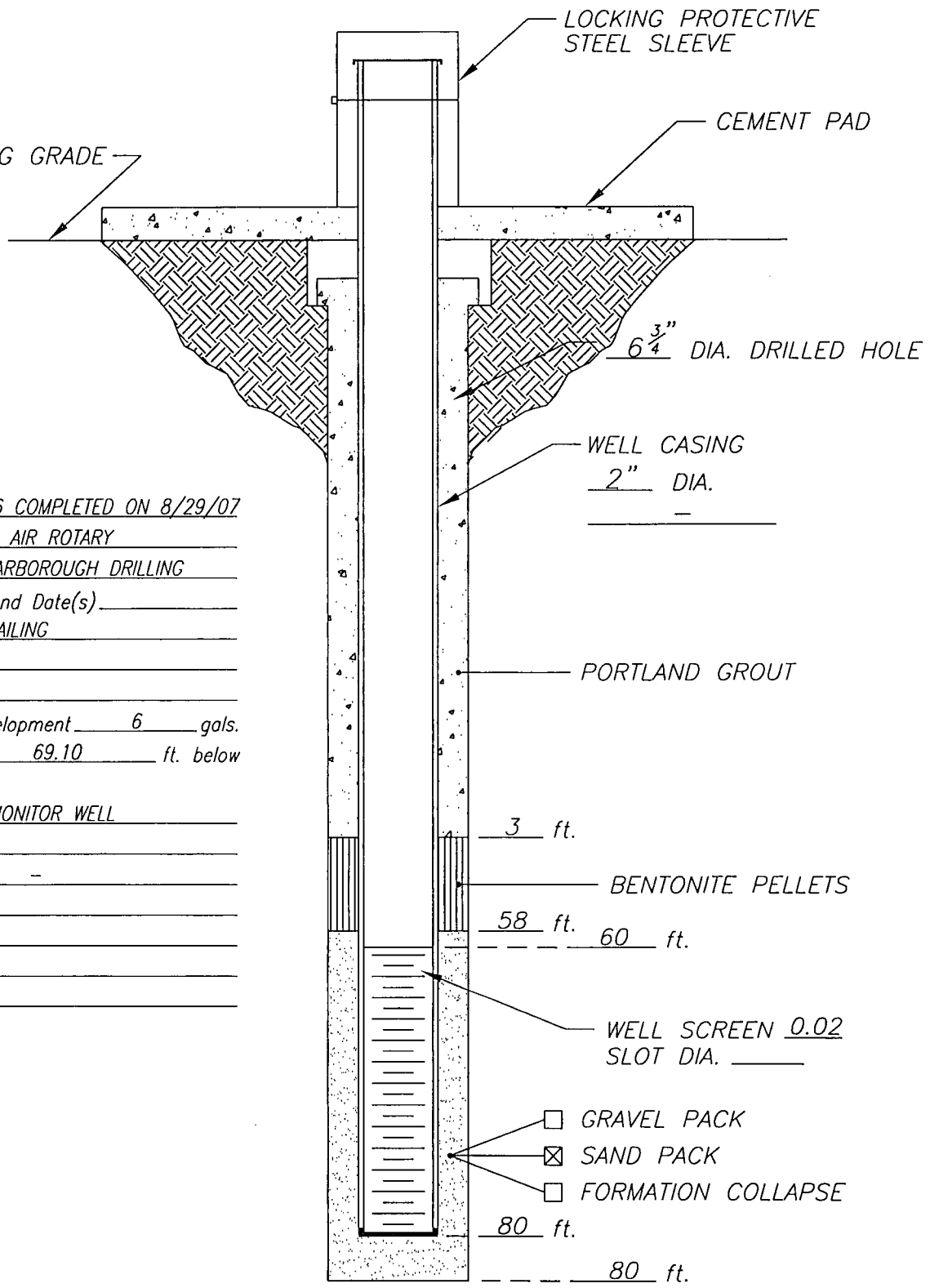
SAMPLE LOG

Boring/Well: MW-1
Project Number: 2617
Client: Pogo Production Inc.
Site Location: Todd Water Station
Location: Roosevelt County, New Mexico
Total Depth 80
Date Installed: 08/29/06

DEPTH (Ft)	OVM	SAMPLE DESCRIPTION
0-5	--	Dark hydrocarbon stained soil
5-10	--	Dark hydrocarbon stained soil
15-20	--	Brown/tan calcareous sand (strong hydrocarbon odor)
20-25	--	Tan/buff sandy limestone (hydrocarbo odor)
25-30	--	Tan calcareous sand (salty)
30-35	--	Tan calcareous sand (slightly salty)
35-40	--	Tan calcareous sand with strong hydrocarbon odor
40-45	--	Tan calacareous sand (salty)
50-55	--	Tan calcareous sand (salty)
45-50	--	Buff/tan calcareous fine grain sand
50-55	--	Tan/buff slightly calcareous fine grain sand
60-65	--	Tan calacareous sand (salty)
70-75	--	Tan sandy limestone (no salt)
75-80	--	Tan sandy limestone (no salt)

Total Depth is 80 feet Groundwater encountered at 71 feet below ground surface

WELL CONSTRUCTION LOG



Installation Date(s) 8/29/06 COMPLETED ON 8/29/07
Drilling Method AIR ROTARY
Drilling Contractor SCARBOROUGH DRILLING
Development Technique(s) and Date(s) HANDBAILING

Water Removed During Development 6 gals.
Static Depth to Water 69.10 ft. below Ground Level
Well Purpose MONITOR WELL

Remarks –

DATE: 10/3/07	CLIENT: POGO PRODUCING INC	WELL NO.
Highlander Environmental	PROJECT: TODD WATER STATION	MW-1
	LOCATION: ROOSEVELT CO, NM	

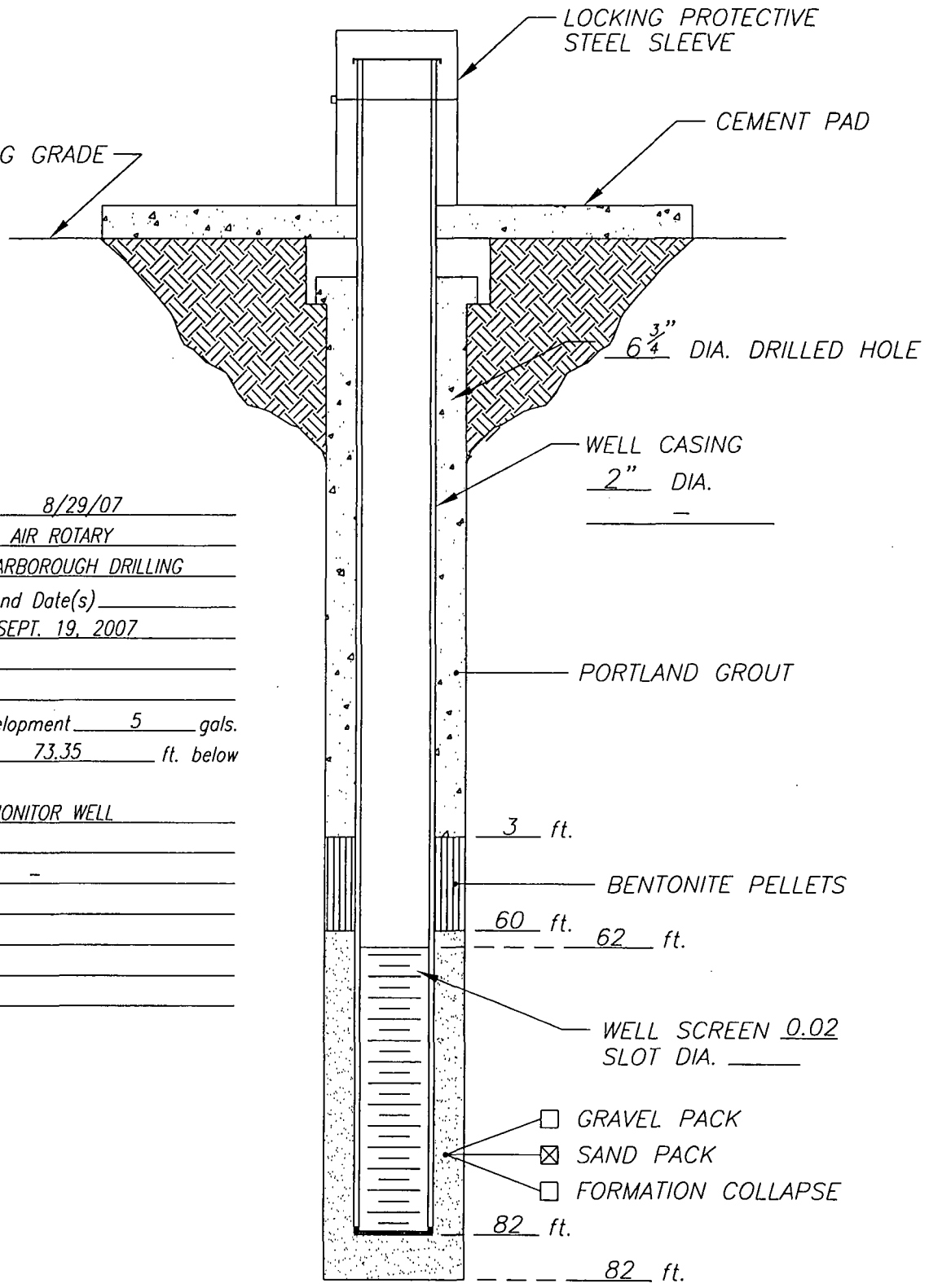
SAMPLE LOG

Boring/Well: MW-2
Project Number: 2617
Client: Pogo Production Inc.
Site Location: Todd Water Station
Location: Roosevelt County, New Mexico
Total Depth 82
Date Installed: 08/29/07

DEPTH (Ft)	OVM	SAMPLE DESCRIPTION
0-5	--	Buff sandy limestone
5-10	--	Buff/tan calcareous sand
10-15	--	Tan/buff calcareous sand
15-20	--	Buff sandy limestone
20-25	--	Buff sandy limestone
25-30	--	Buff/tan calcareous sand
30-35	--	Tan well sorted fine grain sand
35-40	--	Tan/buff slightly calcareous fine grain sand
40-45	--	Buff fine grain sandy limestone
45-50	--	Buff/tan calcareous fine grain sand
50-55	--	Tan/buff slightly calcareous fine grain sand
55-60	--	Tan/buff slightly calcareous fine grain sand
60-65	--	Tan/buff slightly calcareous fine grain sand
65-70	--	Tan/buff slightly calcareous fine grain sand
70-75	--	Tan fine grain sandy clay with pebbles intermixed (moist)
75-80	--	Tan fine grain sandy clay with pebbles intermixed (moist)
80-82	--	Tan fine grain sandy clay

Total Depth is 82 feet Groundwater encountered at 71 feet below ground surface

WELL CONSTRUCTION LOG



Installation Date(s) 8/29/07
Drilling Method AIR ROTARY
Drilling Contractor SCARBOROUGH DRILLING
Development Technique(s) and Date(s)
HANDBAILING - SEPT. 19, 2007

Water Removed During Development 5 gals.
Static Depth to Water 73.35 ft. below Ground Level
Well Purpose MONITOR WELL

Remarks -

DATE: 10/3/07	CLIENT: POGO PRODUCING INC	WELL NO.
Highlander Environmental	PROJECT: TODD WATER STATION	MW-2
	LOCATION: ROOSEVELT CO, NM	

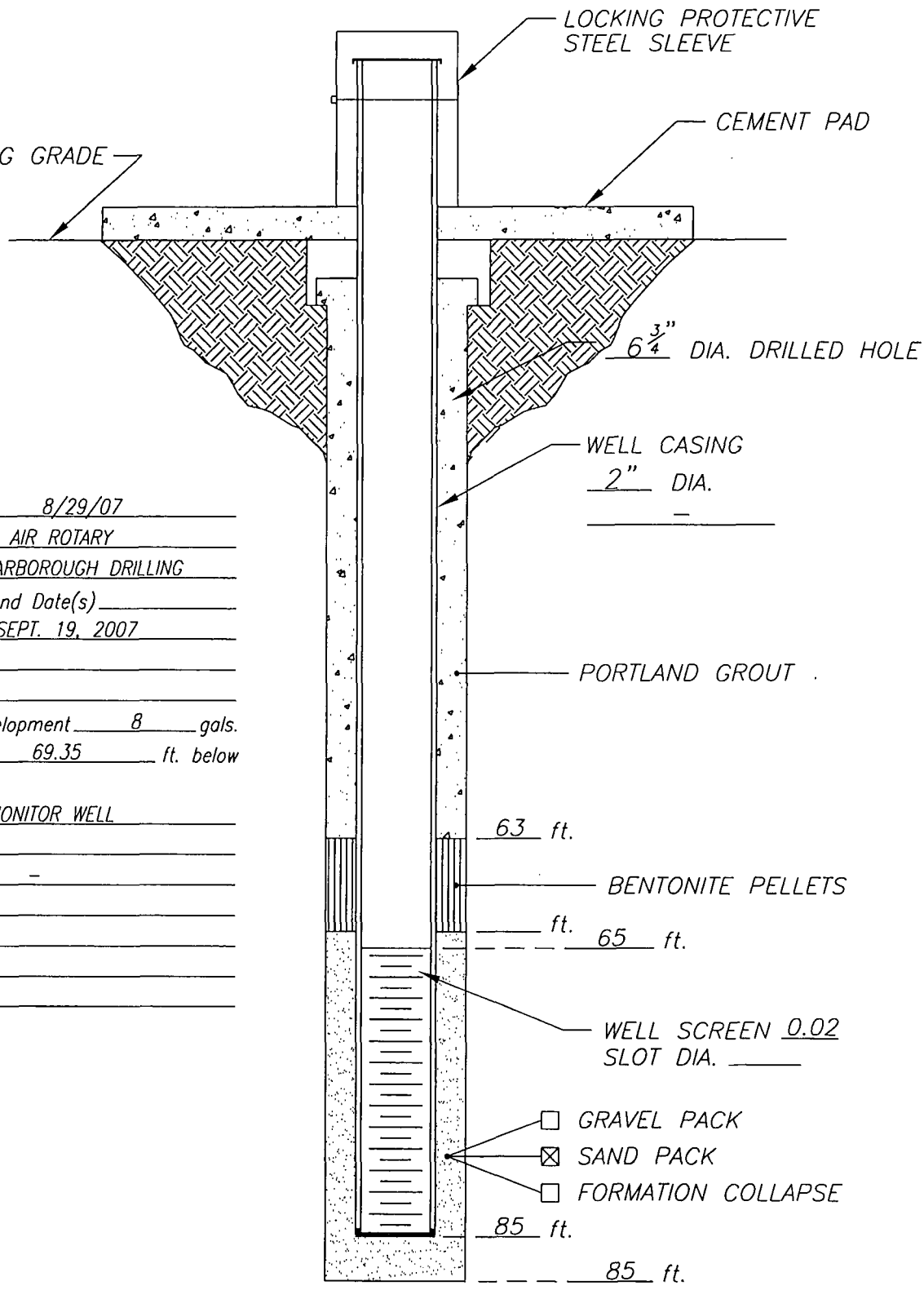
SAMPLE LOG

Boring/Well: MW-3
Project Number: 2617
Client: Pogo Production Inc.
Site Location: Todd Water Station
Location: Roosevelt County, New Mexico
Total Depth 85
Date Installed: 08/29/07

DEPTH (Ft)	OVM	SAMPLE DESCRIPTION
0-5	--	Buff sandy limestone with clay intermixed
5-10	--	Buff/tan sandy limestone
10-15	--	Tan calcareous sand with clay intermixed
15-20	--	Buff slightly sandy limestone with some clay intermixed
20-25	--	Buff limestone
25-30	--	Tan calcareous fine grain well sorted sand (blow sand)
30-35	--	Tan calcareous fine grain well sorted sand (blow sand)
35-40	--	Tan/red well sorted fine grain sand (blow sand)
40-45	--	Tan/buff calcareous fine grain sand with lenses of limestone intermixed
45-50	--	Tan (slightly calcareous) fine grain sand
50-55	--	Tan/buff calcareous very fine grain well sorted sand
55-60	--	Tan/buff calcareous very fine grain well sorted sand
60-65	--	Tan/buff calcareous very fine grain well sorted sand
65-70	--	Tan sand with some sandstone intermixed
70-75	--	Tan well sorted very fine grain sand with sandstone intermixed
75-80	--	Two feet of sandstone to 77 feet, then fine grain sand with chert/quartz intermixed
80-85	--	Tan clay of high plasticity starting at 84 feet

Total Depth is 85 feet Groundwater encountered at 70 feet below ground surface

WELL CONSTRUCTION LOG



Installation Date(s) 8/29/07
Drilling Method AIR ROTARY
Drilling Contractor SCARBOROUGH DRILLING
Development Technique(s) and Date(s)
HANDBAILING - SEPT. 19, 2007

Water Removed During Development 8 gals.
Static Depth to Water 69.35 ft. below Ground Level
Well Purpose MONITOR WELL

Remarks -

DATE: 10/3/07	CLIENT: POGO PRODUCING INC	WELL NO.
Highlander Environmental	PROJECT: TODD WATER STATION	MW-3
	LOCATION: ROOSEVELT CO, NM	

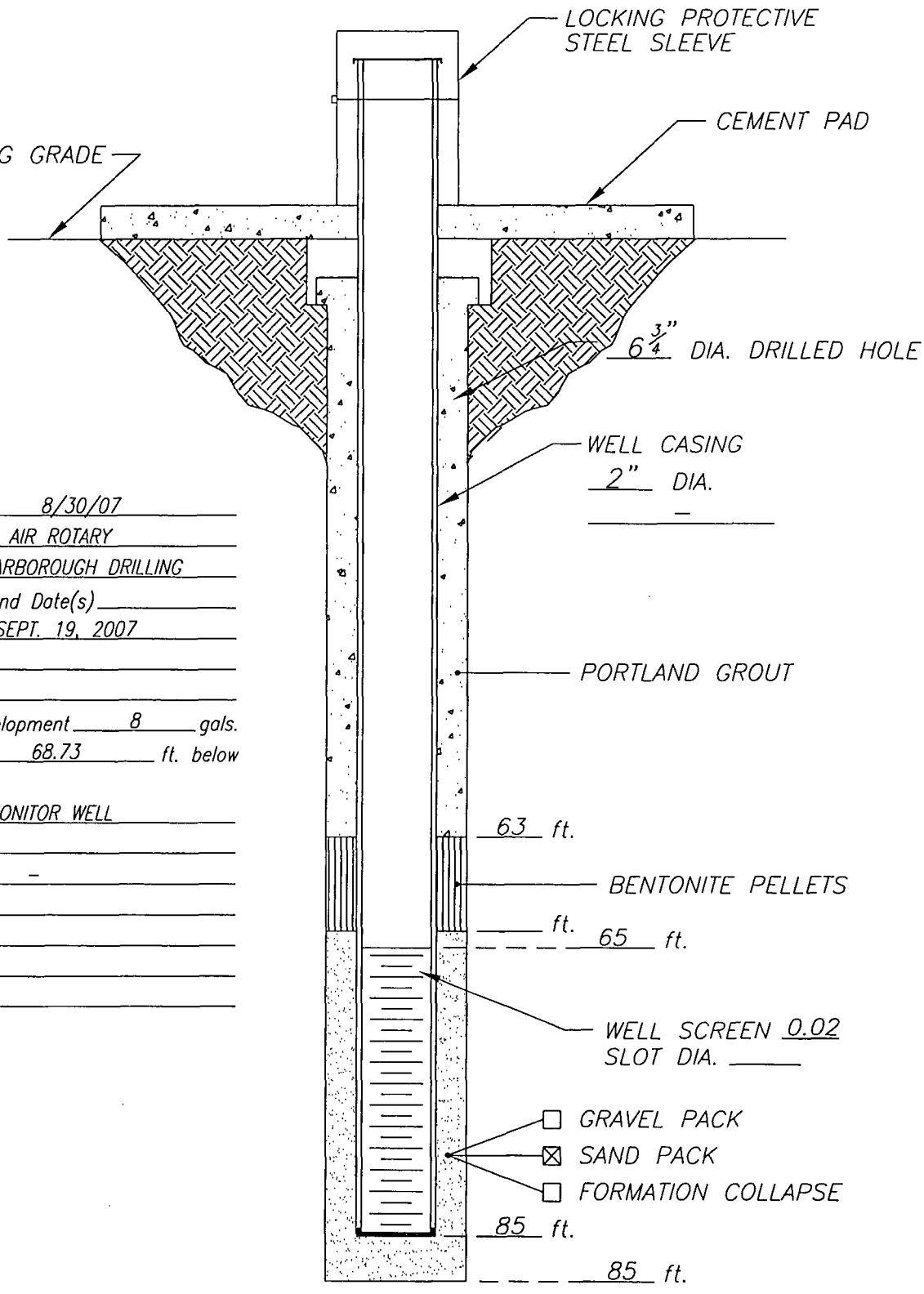
SAMPLE LOG

Boring/Well: MW-4
Project Number: 2617
Client: Pogo Production Inc.
Site Location: Todd Water Station
Location: Roosevelt County, New Mexico
Total Depth 85
Date Installed: 08/30/07

DEPTH (Ft)	OVM	SAMPLE DESCRIPTION
0-5	--	Gray clayey sand
5-10	--	Gray clayey sand
10-15	--	Tan/gray clayey medium grain sand
15-20	--	Buff sandy limestone
20-25	--	Buff sandy limestone with chert layers intermixed
25-30	--	Tan well sorted fine grain calcareous sand (blow sand)
30-35	--	Tan well sorted fine grain sand (blow sand)
35-40	--	Tan well sorted fine grain sand (blow sand)
40-45	--	Tan well sorted fine grain sand with layers of limestone intermixed
45-50	--	Tan well sorted fine grain sand with sandstone intermixed
50-55	--	Tan well sorted fine grain sand
55-60	--	Tan well sorted fine grain sand
60-65	--	Tan well sorted fine grain sand
65-70	--	Tan well sorted fine grain sand with sandstone intermixed
70-75	--	Tan well sorted fine grain sand with sandstone intermixed
75-80	--	Tan sandy clay of high plasticity
80-85	--	Tan sandy clay of high plasticity

Total Depth is 85 feet Groundwater encountered at 69 feet below ground surface

WELL CONSTRUCTION LOG



Installation Date(s) 8/30/07
Drilling Method AIR ROTARY
Drilling Contractor SCARBOROUGH DRILLING
Development Technique(s) and Date(s)
HANDBAILING - SEPT. 19, 2007

Water Removed During Development 8 gals.
Static Depth to Water 68.73 ft. below Ground Level
Well Purpose MONITOR WELL

Remarks -

DATE: 10/3/07	CLIENT: POGO PRODUCING INC	WELL NO.
Highlander Environmental	PROJECT: TODD WATER STATION	MW-4
	LOCATION: ROOSEVELT CO, NM	

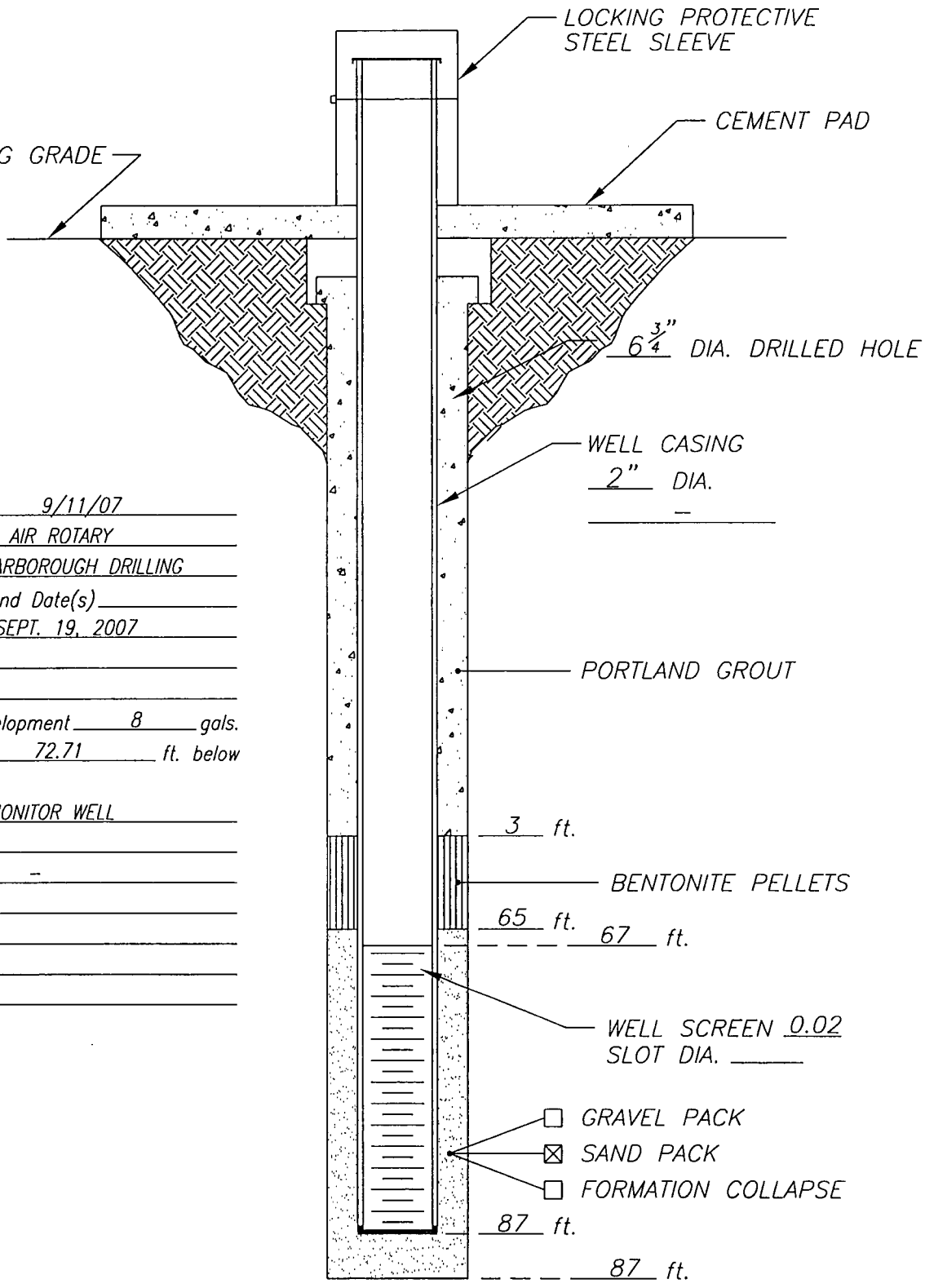
SAMPLE LOG

Boring/Well: MW-5
Project Number: 2617
Client: Pogo Production Inc.
Site Location: Todd Water Station
Location: Roosevelt County, New Mexico
Total Depth 87
Date Installed: 09/11/07

DEPTH (Ft)	OVM	SAMPLE DESCRIPTION
0-5	--	Gray/red medium grain sand with limestone
5-10	--	Tan fine grain well sorted sand
10-15	--	Buff/red calcareous sand
15-20	--	Buff/red calcareous sand
20-25	--	Buff sandy limestone
25-30	--	Light tan calcareous fine grain sand
30-35	--	Light tan calcareous fine grain sand
35-40	--	Tan fine grain well sorted sand
40-45	--	Buff fine grain calcareous sand
45-50	--	Buff fine grain calcareous sand
50-55	--	Tan fine grain well sorted sand
55-60	--	Tan well sorted fine grain sand
60-65	--	Yellow/tan fine grain sand
65-70	--	Tan/brown medium grain sand
70-75	--	Tan/brown medium grain sand
75-80	--	Tan fine grain well sorted sand
80-85	--	Yellow/tan clay of high plasticity
85-87	--	Yellow clay of high plasticity

Total Depth is 87 feet Groundwater encountered at 72 feet below ground surface

WELL CONSTRUCTION LOG



Installation Date(s) 9/11/07
Drilling Method AIR ROTARY
Drilling Contractor SCARBOROUGH DRILLING
Development Technique(s) and Date(s)
HANDBAILING – SEPT. 19, 2007

Water Removed During Development 8 gals.
Static Depth to Water 72.71 ft. below Ground Level
Well Purpose MONITOR WELL

Remarks –

DATE: 10/3/07	CLIENT: POGO PRODUCING INC	WELL NO.
Highlander Environmental	PROJECT: TODD WATER STATION	MW-5
	LOCATION: ROOSEVELT CO, NM	

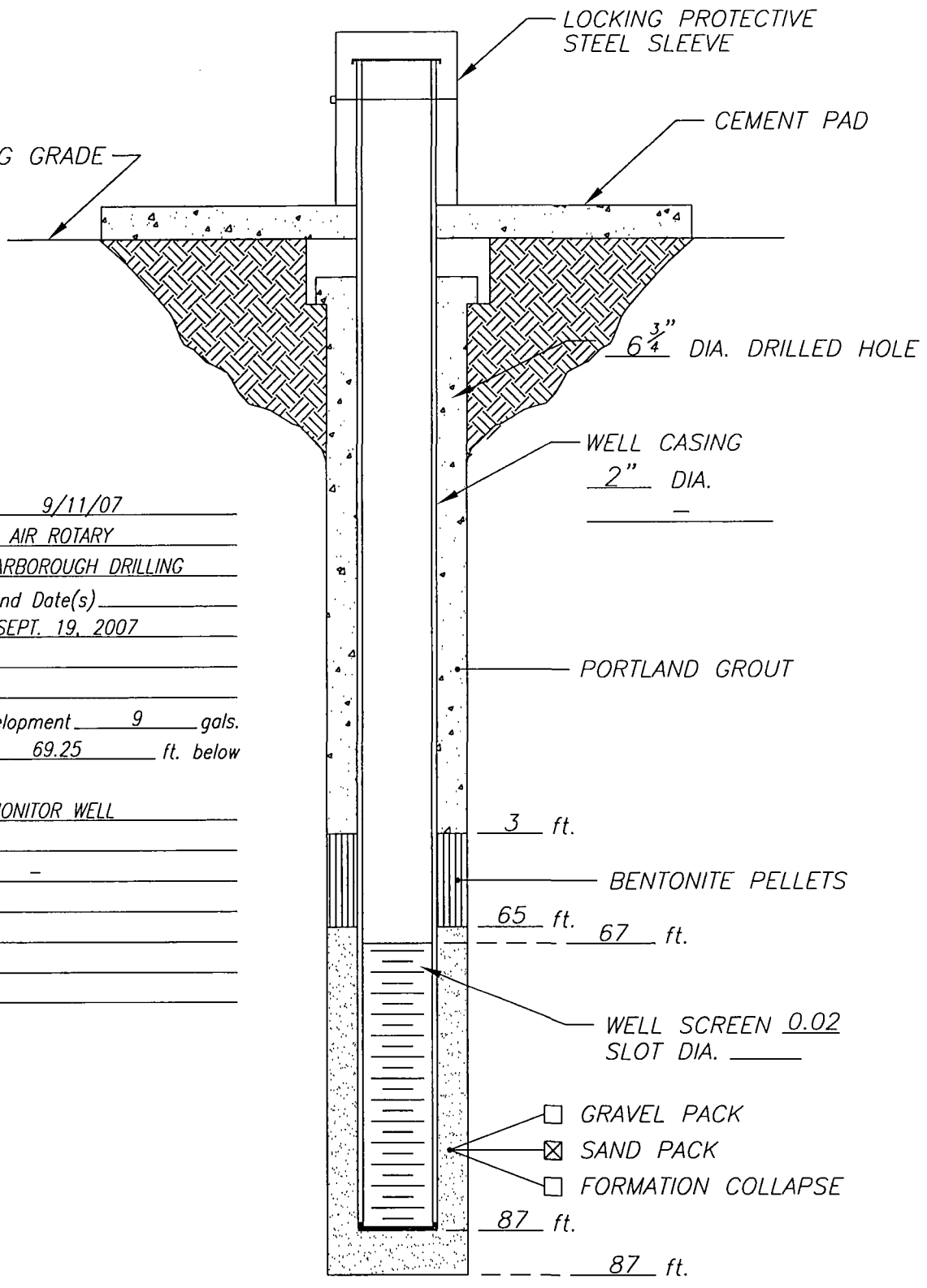
SAMPLE LOG

Boring/Well: MW-6
Project Number: 2617
Client: Pogo Production Inc.
Site Location: Todd Water Station
Location: Roosevelt County, New Mexico
Total Depth 87
Date Installed: 09/11/07

DEPTH (Ft)	OVM	SAMPLE DESCRIPTION
0-5	--	Brown medium grain sand
5-10	--	Buff fine grain calcareous sand
10-15	--	Buff fine grain calcareous sand
15-20	--	Buff sandy limestone
20-25	--	Buff sandy limestone
25-30	--	Tan/buff calcareous sand
30-35	--	Tan calcareous fine grain sand
35-40	--	Tan calcareous fine grain sand
40-45	--	Tan/buff calcareous sand (increasing limestone)
45-50	--	Tan fine grain calcareous sand
50-55	--	Tan fine grain calcareous sand
55-60	--	Tan fine grain sand
60-65	--	Tan fine grain sand with sandstone intermixed
65-70	--	Tan medium grain sand with some sandstone intermixed
70-75	--	Fine grain tan sand with some gravel intermixed
75-80	--	Tan sandy clay with gravel intermixed (moist)
80-85	--	Yellow to tan clay of high plasticity
85-87	--	Yellow to tan clay of high plasticity

Total Depth is 87 feet Groundwater encountered at 74 feet below ground surface

WELL CONSTRUCTION LOG



Installation Date(s) 9/11/07
Drilling Method AIR ROTARY
Drilling Contractor SCARBOROUGH DRILLING
Development Technique(s) and Date(s)
HANDBAILING – SEPT. 19, 2007

Water Removed During Development 9 gals.
Static Depth to Water 69.25 ft. below Ground Level
Well Purpose MONITOR WELL

Remarks –

DATE: 10/3/07	CLIENT: POGO PRODUCING INC PROJECT: TODD WATER STATION LOCATION: ROOSEVELT CO, NM	WELL NO.
Highlander Environmental		MW-6

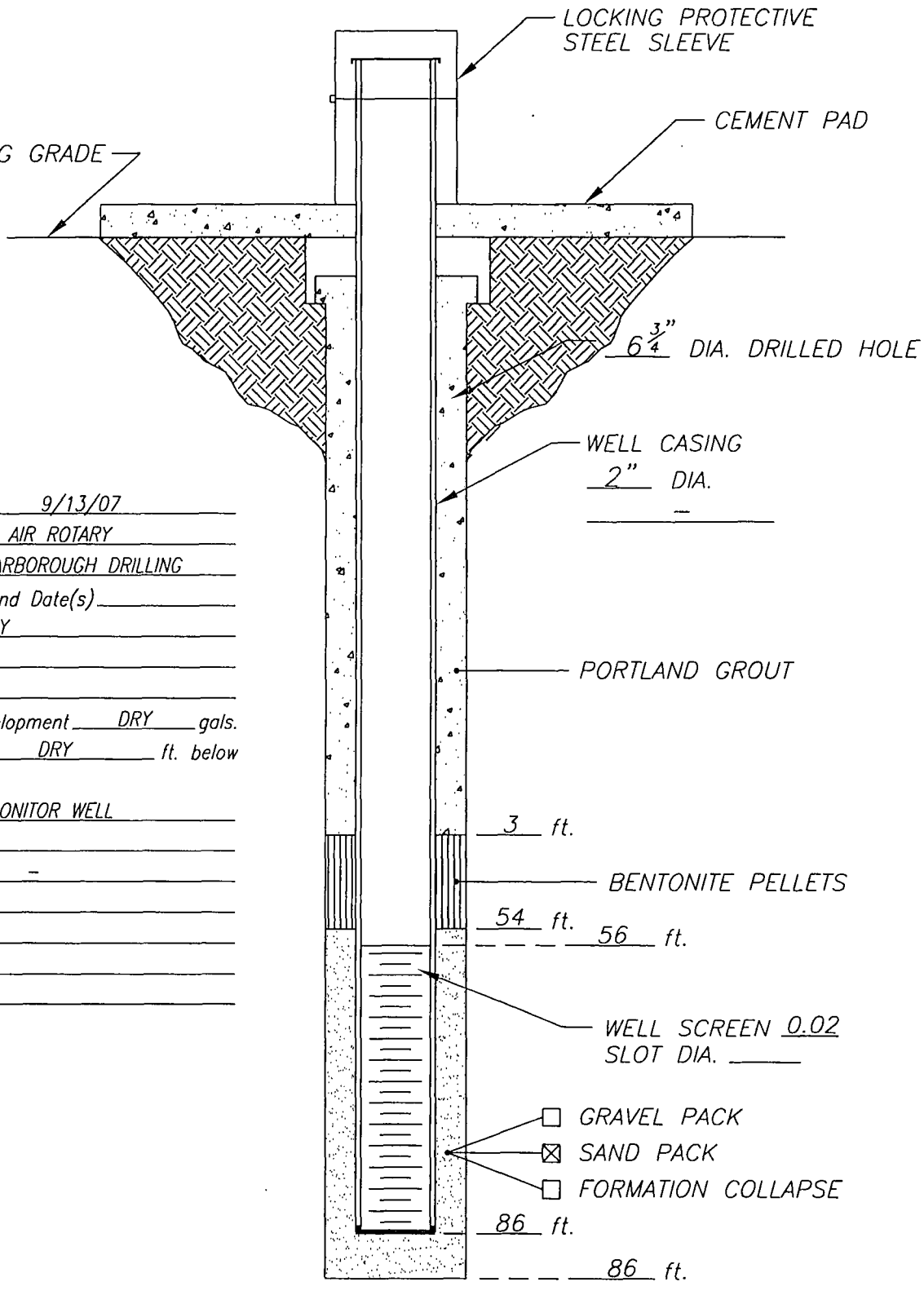
SAMPLE LOG

Boring/Well: MW-7
Project Number: 2617
Client: Pogo Production Inc.
Site Location: Todd Water Station
Location: Roosevelt County, New Mexico
Total Depth 86
Date Installed: 09/13/07

DEPTH (Ft)	OVM	SAMPLE DESCRIPTION
0-5	--	Brown medium grain sand
5-10	--	Grayish tan calcareous sand
10-15	--	Tan/buff calcareous sand
15-20	--	Tan/buff calcareous sand
20-25	--	Tan/buff calcareous sand (increasing limestone)
25-30	--	Tan/buff calcareous fine grain sand
30-35	--	Tan calcareous fine grain sand
35-40	--	Tan calcareous fine grain sand
40-45	--	Tan calcareous fine grain sand
45-50	--	Tan fine grain sand (blow sand)
50-55	--	Tan fine grain sand with sandstone intermixed
55-60	--	Tan fine grain sand with sandstone intermixed
60-65	--	Tan sandy clay (moist)
65-70	--	Tan sandy clay
70-75	--	Tan/yellow clay of high plasticity
75-80	--	Tan/yellow clay of high plasticity
80-85	--	Tan/yellow clay of high plasticity

Total Depth is 86 feet Moist layer encountered at 65 feet but well is dry.

WELL CONSTRUCTION LOG



Installation Date(s) 9/13/07
Drilling Method AIR ROTARY
Drilling Contractor SCARBOROUGH DRILLING
Development Technique(s) and Date(s) DRY

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

Remarks -

DATE: 10/3/07	CLIENT: POGO PRODUCING INC	WELL NO.
Highlander Environmental	PROJECT: TODD WATER STATION	MW-7
	LOCATION: ROOSEVELT CO, NM	

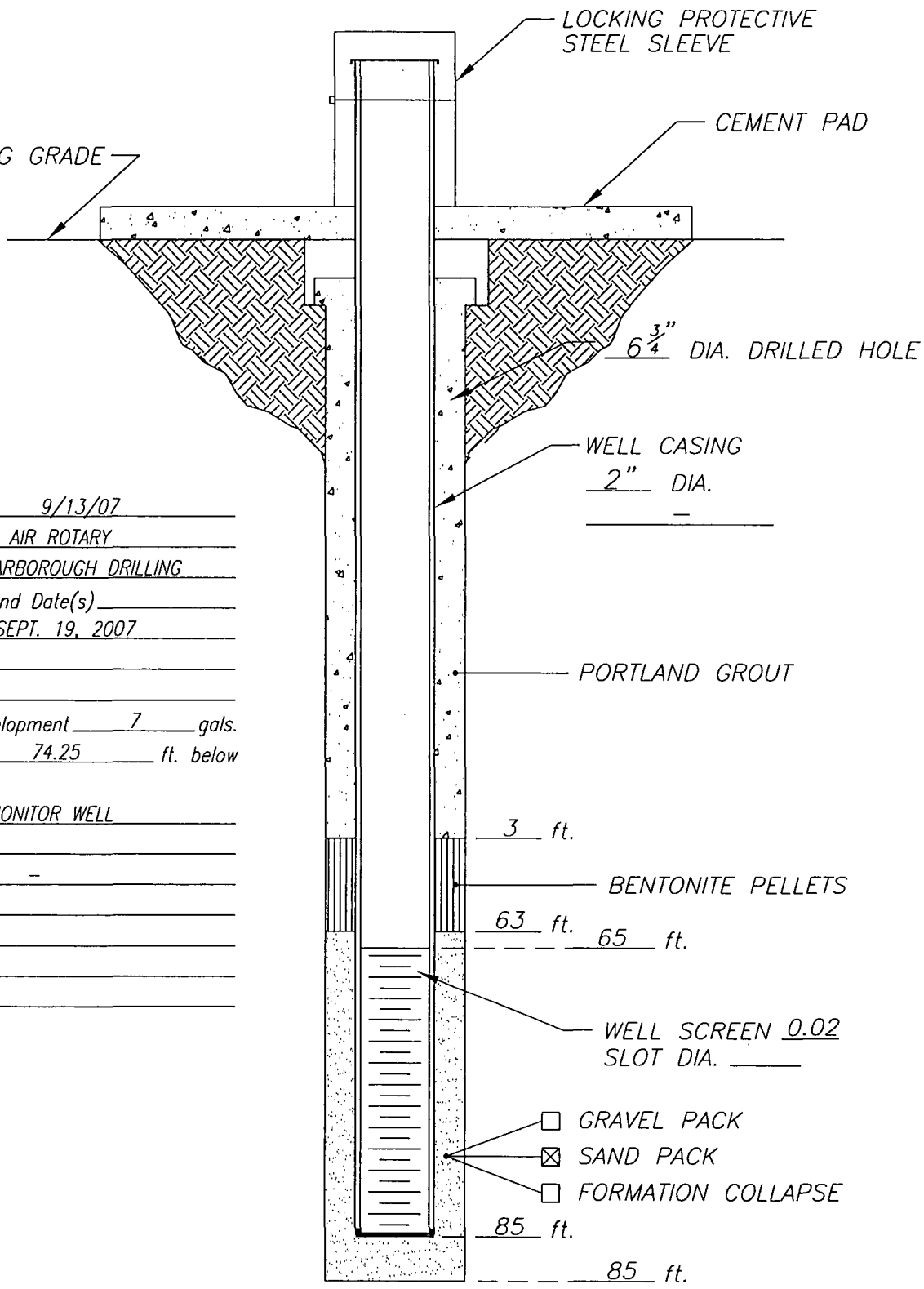
SAMPLE LOG

Boring/Well: MW-8
Project Number: 2617
Client: Pogo Production Inc.
Site Location: Todd Water Station
Location: Roosevelt County, New Mexico
Total Depth 85
Date Installed: 09/13/07

DEPTH (Ft)	OVM	SAMPLE DESCRIPTION
0-5	--	Tan medium grain sand
5-10	--	Tan/buff fine grain calcareous sand
10-15	--	Tan/buff fine grain calcareous sand
15-20	--	Tan/buff fine grain sand with limestone intermixed
20-25	--	Tan calcareous fine grain sand
25-30	--	Buff/tan sandy limestone
30-35	--	Tan/buff fine grain sand
35-40	--	Tan fine grain sand (blow sand)
40-45	--	Tan fine grain sand (blow sand) intermixed with some sandstone
45-50	--	Tan fine grain calcareous sand
50-55	--	Tan fine grain sand (blow sand)
55-60	--	Tan fine grain sand (blow sand)
60-65	--	Tan fine grain sand (blow sand)
65-70	--	Tan fine grain sand (blow sand) with sandstone intermixed
70-75	--	Tan fine grain sand (blow sand) with sandstone intermixed
75-80	--	Tan fine grain sand (blow sand) with sandstone intermixed
80-85	--	Tan/yellow clay of high plasticity.

Total Depth is 87 feet Groundwater encountered at 75 feet below ground surface.

WELL CONSTRUCTION LOG



Installation Date(s) 9/13/07
Drilling Method AIR ROTARY
Drilling Contractor SCARBOROUGH DRILLING
Development Technique(s) and Date(s)
HANDBAILING – SEPT. 19, 2007

Water Removed During Development 7 gals.
Static Depth to Water 74.25 ft. below Ground Level
Well Purpose MONITOR WELL

Remarks –

DATE: 10/3/07	CLIENT: POGO PRODUCING INC	WELL NO.
Highlander Environmental	PROJECT: TODD WATER STATION	MW-8
	LOCATION: ROOSEVELT CO, NM	

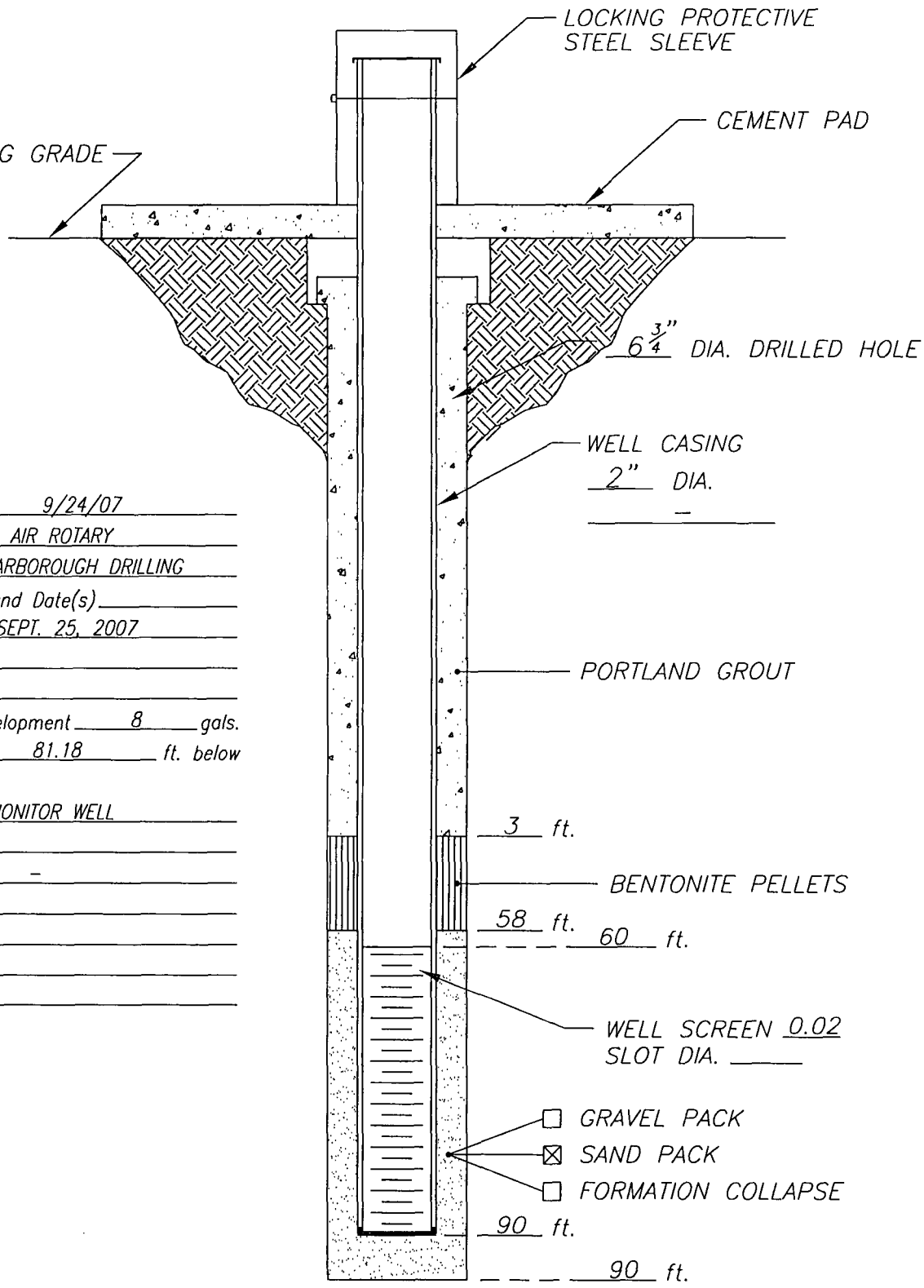
SAMPLE LOG

Boring/Well: MW-9
Project Number: 2617
Client: Pogo Production Inc.
Site Location: Todd Water Station
Location: Roosevelt County, New Mexico
Total Depth 90
Date Installed: 09/24/07

DEPTH (Ft)	OVM	SAMPLE DESCRIPTION
0-5	--	Tan/brown medium grain sand
5-10	--	Buff fine grain sand
10-15	--	Tan fine grain sand
15-20	--	Buff sandy limestone
20-25	--	Buff sandy limestone
25-30	--	Buff/tan sandy limestone
30-35	--	Tan/buff calcareous sand
35-40	--	Tan fine grain sand
40-45	--	Tan/buff fine grain calcareous sand
45-50	--	Tan/buff fine grain calcareous sand
50-55	--	Tan fine grain sand (blow sand)
55-60	--	Tan fine grain sand (blow sand)
60-65	--	Tan fine grain sand (blow sand)
65-70	--	Tan fine grain sand (blow sand)
70-75	--	Tan fine to medium grain sand (moist)
75-80	--	Brown/tan medium grain sand
80-85	--	Brown/tan medium grain sand
85-90	--	Tan/yellow clay of high plasticity

Total Depth is 90 feet Groundwater encountered at 75 feet below ground surface.

WELL CONSTRUCTION LOG



Installation Date(s) 9/24/07
Drilling Method AIR ROTARY
Drilling Contractor SCARBOROUGH DRILLING
Development Technique(s) and Date(s)
HANDBAILING – SEPT. 25, 2007

Water Removed During Development 8 gals.
Static Depth to Water 81.18 ft. below Ground Level
Well Purpose MONITOR WELL

Remarks –

DATE: 10/3/07	CLIENT: POGO PRODUCING INC PROJECT: TODD WATER STATION LOCATION: ROOSEVELT CO, NM	WELL NO. MW-9

Highlander Environmental

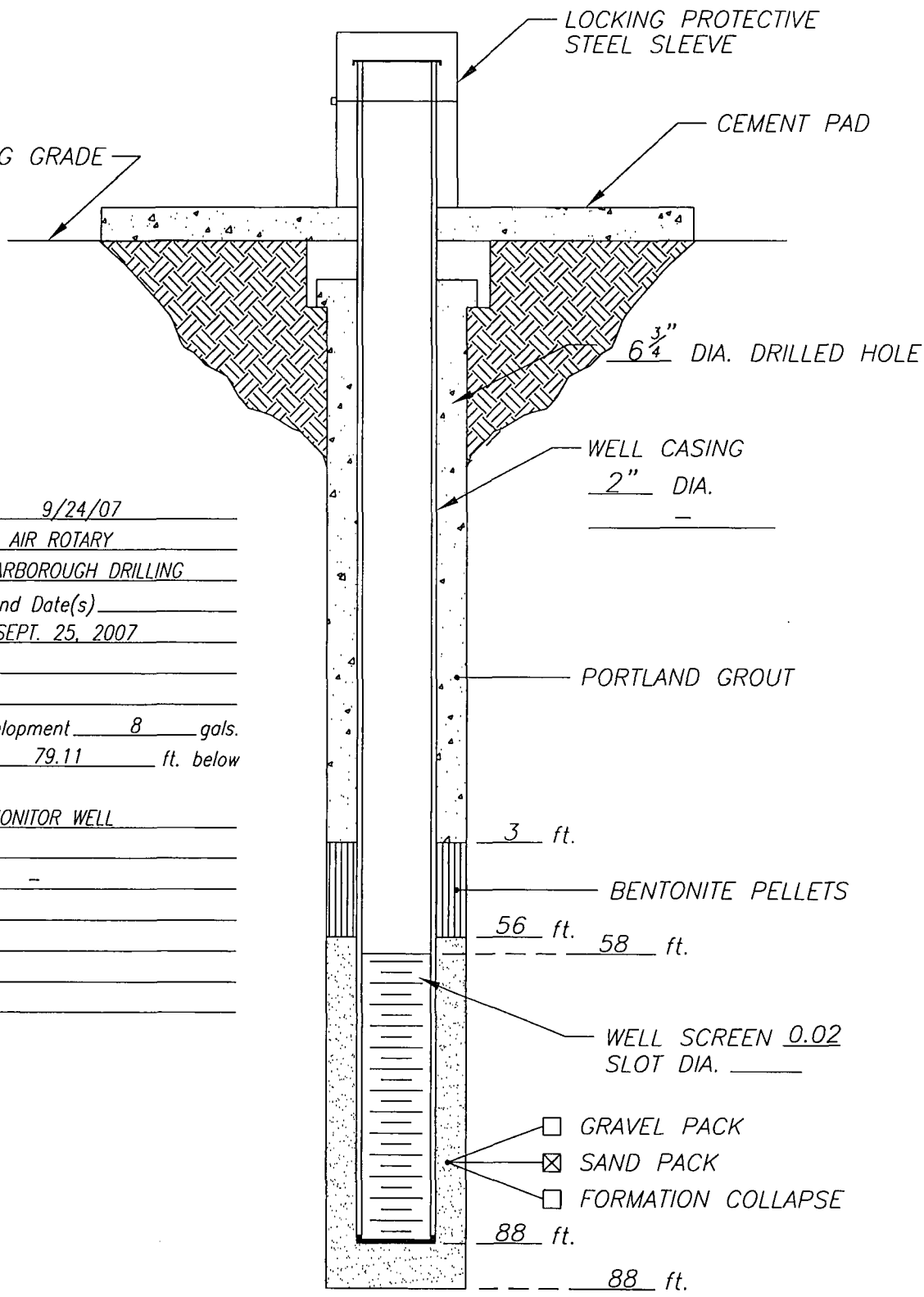
SAMPLE LOG

Boring/Well: MW-10
Project Number: 2617
Client: Pogo Production Inc.
Site Location: Todd Water Station
Location: Roosevelt County, New Mexico
Total Depth 88
Date Installed: 09/24/07

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

Total Depth is 88 feet Groundwater encountered at 79 feet below ground surface.

WELL CONSTRUCTION LOG



Installation Date(s) 9/24/07
Drilling Method AIR ROTARY
Drilling Contractor SCARBOROUGH DRILLING
Development Technique(s) and Date(s)
HANDBAILING – SEPT. 25, 2007

Water Removed During Development 8 gals.
Static Depth to Water 79.11 ft. below Ground Level
Well Purpose MONITOR WELL

Remarks –

DATE: 10/3/07	CLIENT: POGO PRODUCING INC	WELL NO.
Highlander Environmental	PROJECT: TODD WATER STATION	MW–10
	LOCATION: ROOSEVELT CO, NM	

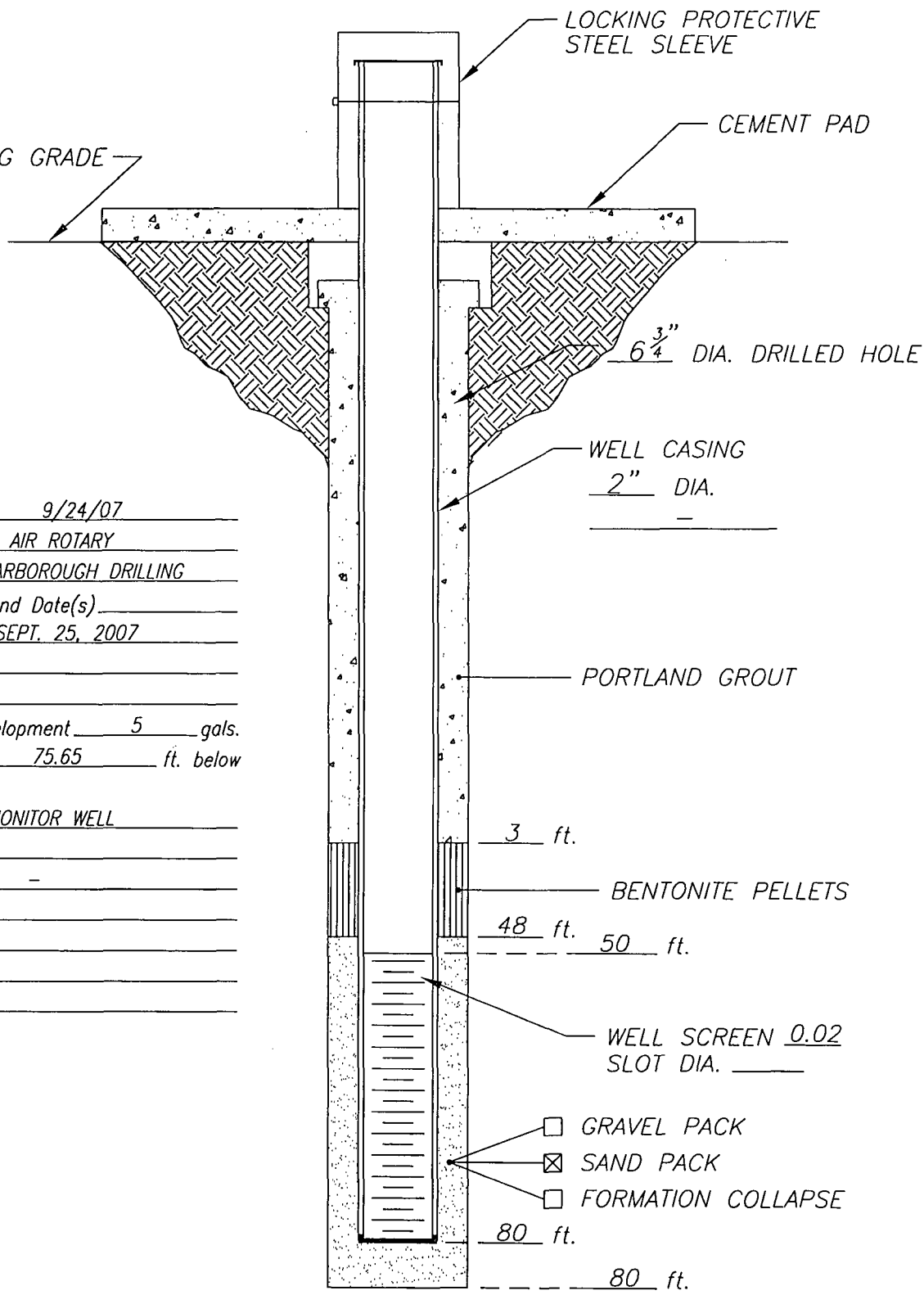
SAMPLE LOG

Boring/Well: MW-11
Project Number: 2617
Client: Pogo Production Inc.
Site Location: Todd Water Station
Location: Roosevelt County, New Mexico
Total Depth 80
Date Installed: 09/24/07

DEPTH (Ft)	OVM	SAMPLE DESCRIPTION
0-5	--	Tan medium grain sand
5-10	--	Buff fine grain sandy limestone
10-15	--	Buff/tan fine grain calcareous sand
15-20	--	Buff/tan fine grain sandy limestone
20-25	--	Buff/tan fine grain calcareous sand
25-30	--	Tan very fine grain calcareous sand
30-35	--	Tan very fine grain calcareous sand
35-40	--	Tan/buff fine grain calcareous sand
40-45	--	Tan/buff fine grain calcareous sand
45-50	--	Tan fine grain calcareous sand
50-55	--	Tan fine grain calcareous sand
55-60	--	Tan fine grain calcareous sand
60-65	--	Tan fine grain calcareous sand
65-70	--	Tan clay of high plasticity
70-75	--	Tan clay of high plasticity
75-80	--	Tan clay of high plasticity

Total Depth is 80 feet Groundwater encountered at 73 feet below ground surface.

WELL CONSTRUCTION LOG



Installation Date(s) 9/24/07
Drilling Method AIR ROTARY
Drilling Contractor SCARBOROUGH DRILLING
Development Technique(s) and Date(s)
HANDBAILING – SEPT. 25, 2007

Water Removed During Development 5 gals.
Static Depth to Water 75.65 ft. below Ground Level
Well Purpose MONITOR WELL

Remarks –

DATE: 10/3/07	CLIENT: POGO PRODUCING INC	WELL NO.
Highlander Environmental	PROJECT: TODD WATER STATION	MW-11
	LOCATION: ROOSEVELT CO, NM	