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Dr. Tomas Oberding
Energy, Minerals and Natural Resources Department
Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

Dear Dr. Oberding:

**Re: 2015 Annual Groundwater Monitoring Report
Bell Lake Gas Plant
Transwestern Pipeline Company
Lea County, New Mexico
GW-355**

On behalf of Transwestern Pipeline Company, LLC, GHD Services Inc. is pleased to submit the 2015 Annual Groundwater Monitoring Report for the Bell Lake Gas Plant site. The report details 2015 groundwater monitoring and assessment activities performed at the referenced site.

If you have any questions or require additional information, please feel free to contact us at (505) 884-0672, or rebecca.jones@ghd.com or bernard.bockisch@ghd.com.

Sincerely,

GHD

Rebecca Jones,
Geologist

Bernard Bockisch
Project Manager

CM/mc/3

cc: Stacy Boultinghouse, Energy Transfer Company

GHD Services Inc.



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1. Introduction

1.1 Introduction

This report discusses the groundwater monitoring event performed by GHD Services Inc. in 2015 at the Transwestern Pipeline Company, LLC. (Transwestern) Bell Lake Gas Plant (Site). The compressor station is owned and operated by DCP Midstream; however, the groundwater remediation activities remain with Transwestern. Lands located adjacent to the Site are owned by the State of New Mexico (State Land Office).

The Site is located approximately 25 miles northwest of Jal, in Lea County, New Mexico. Geographical coordinates for the Site are 32°14'55.59" North and 103°31'17.59" West. A Site location map and detail map are included as Figures 1 and 2, respectively.

1.2 Background

The Bell Lake Gas Plant began operation in 1961. During past operations, pipeline liquid wastes were placed in 3 unlined impoundments located on the northeast quarter of the facility property. Wastes were also placed in one concrete lined impoundment located near the northwest corner of the property (Figure 2). Impacts to a shallow, unconfined, perched groundwater zone appear to have originated from the former unlined waste impoundments. Primary constituents of concern (COCs) at the Site are total dissolved solids (TDS), chloride, and benzene.

An SVE system with 3 SVE wells was placed in service at the Site in June 1996. The original system was expanded by 4 wells in 1997 and again by 6 wells in 1999. Recovery of light, non-aqueous phase liquid (LNAPL) took place in SVE wells between 1998 and 2008.

SVE system monitoring results indicated that the VOC content in extracted vapor declined from an initial high of 4,000 µg/L in January 1998 to a low of 140 µg/L in October 2012. As a result, operation of the SVE system was discontinued in October 2012.

1.3 Hydrogeology

The Site is underlain by recent Quaternary alluvial and terrace deposits consisting primarily of loosely consolidated sands and gravels. A dense clay layer was observed at a total depth of 104 feet below ground level in boring MW-3. This clay is likely the basal confining layer for the shallow unconfined aquifer encountered below the subject property.

The shallow, unconfined, perched groundwater zone is present at the Site at approximately 90 feet below ground surface. Elevation of the perched groundwater has been stable at the Site since first recorded in 1993. There are no known uses of the perched zone within a 2-mile radius of the Site.

2. Groundwater Monitoring Summary, Methodology, and Analytical Results

2.1 Groundwater Monitoring Summary

On May 11, 2015 and November 9, 2015 groundwater elevation measurements were recorded from Site monitor wells using an oil/water interface probe. Groundwater elevations for the Site are presented in Table 1.

Based on the May 11 through May 14, 2015 monitoring event data, groundwater flow is towards the southeast and is consistent with historic records. The groundwater gradient was estimated to be 0.0023 feet per foot (ft/ft). A groundwater potentiometric surface map is presented as Figure 3.

Based on the November 9 through November 12, 2015 monitoring event data, groundwater flow is towards the southeast and is consistent with historic records. The groundwater gradient was estimated to be 0.0024 ft/ft. A groundwater potentiometric surface map is presented as Figure 4.

2.2 Groundwater Monitoring Methodology

Prior to collection of groundwater samples, water was purged from Site wells with a low flow bladder pump or hand bailed until field parameters, including pH, temperature, oxidation reduction potential, TDS, and conductivity stabilized or until 3 well volumes were removed. Field parameters were monitored using a Horiba multi-parameter sonde during the May sampling event and a YSI 556 multi-parameter sonde during the November sampling event. Field data observed from each sonde were recorded on GHD Well Sampling Field Forms.

Following purging, groundwater samples were collected through Teflon® tubing attached to the low flow bladder pump or with a dedicated bailer. Disposable nitrile gloves were worn by sampling personnel and changed at each well location. The pump and associated tubing were cleaned using an Alconox soap and de-ionized water solution followed by a methanol/de-ionized water rinse, and finally, a de-ionized water rinse. Each solution was circulated through both the pump and tubing. The outer portion of the tubing that enters the groundwater was also cleaned between wells using an Alconox soap and de-ionized water solution. Rinsing was performed with additional deionized water.

Once groundwater was collected from each sampling location, the samples were immediately labeled, placed on ice, and submitted to Hall Environmental Analysis Laboratory for analyses of BTEX (benzene, toluene, ethylbenzene, and xylenes) by EPA Method 8260, TDS by SM 2540C, and for chloride by EPA Method 300.0. A summary of analytical results and field measured groundwater quality parameters is presented in Table 2. The corresponding Laboratory Analytical Report is included in Appendix A.

2.3 Groundwater Monitoring Analytical Results

The New Mexico Water Quality Control Commission (NMWQCC) mandates that groundwater quality in New Mexico be protected, and has issued groundwater quality standards in Title 20, Chapter 6, Part 2, Section 3103 of the New Mexico Administrative Code (20.6.2.3103 NMAC). Results of the groundwater monitoring event are discussed below:

- Depth to groundwater in Site wells ranged from 81.99 (MW-16) to 92.05 (SVE-11) feet below top of casing (btoc) during the May sampling event and from 81.97 (MW-16) to 92.06 (SVE-11) during the November sampling event. Groundwater flow was toward the southeast and is consistent with previous data. The groundwater gradient was approximately 0.0023 ft/ft during the May sampling event and 0.0024 ft/ft during the November sampling event. Groundwater potentiometric surface maps reflecting the groundwater elevations are presented as Figures 3 and 4.
- LNAPL was detected in Site well SVE-1 at a thickness of 0.26 feet during the May sampling event. No LNAPL was detected in any Site wells during the November sampling event.
- Benzene: The NMWQCC groundwater standard for benzene is 10 micrograms per liter ($\mu\text{g/L}$). During the May sampling event, groundwater samples collected from ten wells (MW-4, MW-5, MW-6, MW-8, MW-9, MW-10, MW-11, SVE-5, SVE-6, and SVE-11) contained benzene at concentrations exceeding 10 $\mu\text{g/L}$ with concentrations ranging from 12 to 340 $\mu\text{g/L}$ (Figure 5). During the November sampling event, groundwater samples collected from nine wells (MW-4, MW-5, MW-6, MW-8, MW-9, MW-10, MW-11, SVE-6, and SVE-11) exceeded the NMWQCC standard with concentrations ranging from 13 to 290 $\mu\text{g/L}$ (Figure 6). Monitor well SVE-5 was inadvertently not sampled during the November event.
- Toluene: The NMWQCC groundwater standard for toluene is 750 $\mu\text{g/L}$. During the May sampling event, no groundwater samples collected contained toluene at a concentration above the groundwater standard. During the November sampling event, no groundwater samples collected contained toluene at a concentration above the groundwater standard.
- Total Xylenes: The NMWQCC groundwater standard for total xylenes is 620 $\mu\text{g/L}$. During the May sampling event, the groundwater sample collected from SVE-5 contained xylenes at concentrations of 620 $\mu\text{g/L}$. During the November sampling event, no groundwater samples collected exceeded the groundwater standard.
- TDS: The NMWQCC groundwater standard for TDS is 1,000 milligrams per liter (mg/L). During the May sampling event, groundwater samples collected from 20 of the 21 sampled Site monitoring wells were found to contain TDS at concentrations exceeding 1,000 mg/L with concentrations ranging from 1,100 to 9,770 mg/L (Figure 7). During the November sampling event, groundwater samples collected from 20 of the 21 sampled Site monitoring wells were found to contain TDS at

SVE-2, SVE-3, SVE-6, SVE-7, and SVE-11) exceeded the NMWQCC standard with concentrations ranging from 260 mg/L to 4,100 mg/L (Figure 8).

A summary of the historical groundwater laboratory analytical results is presented in Table 2. The May 2015 and November 2015 laboratory analytical reports are included as Appendix A.

3. Conclusions and Recommendations

3.1 Conclusions

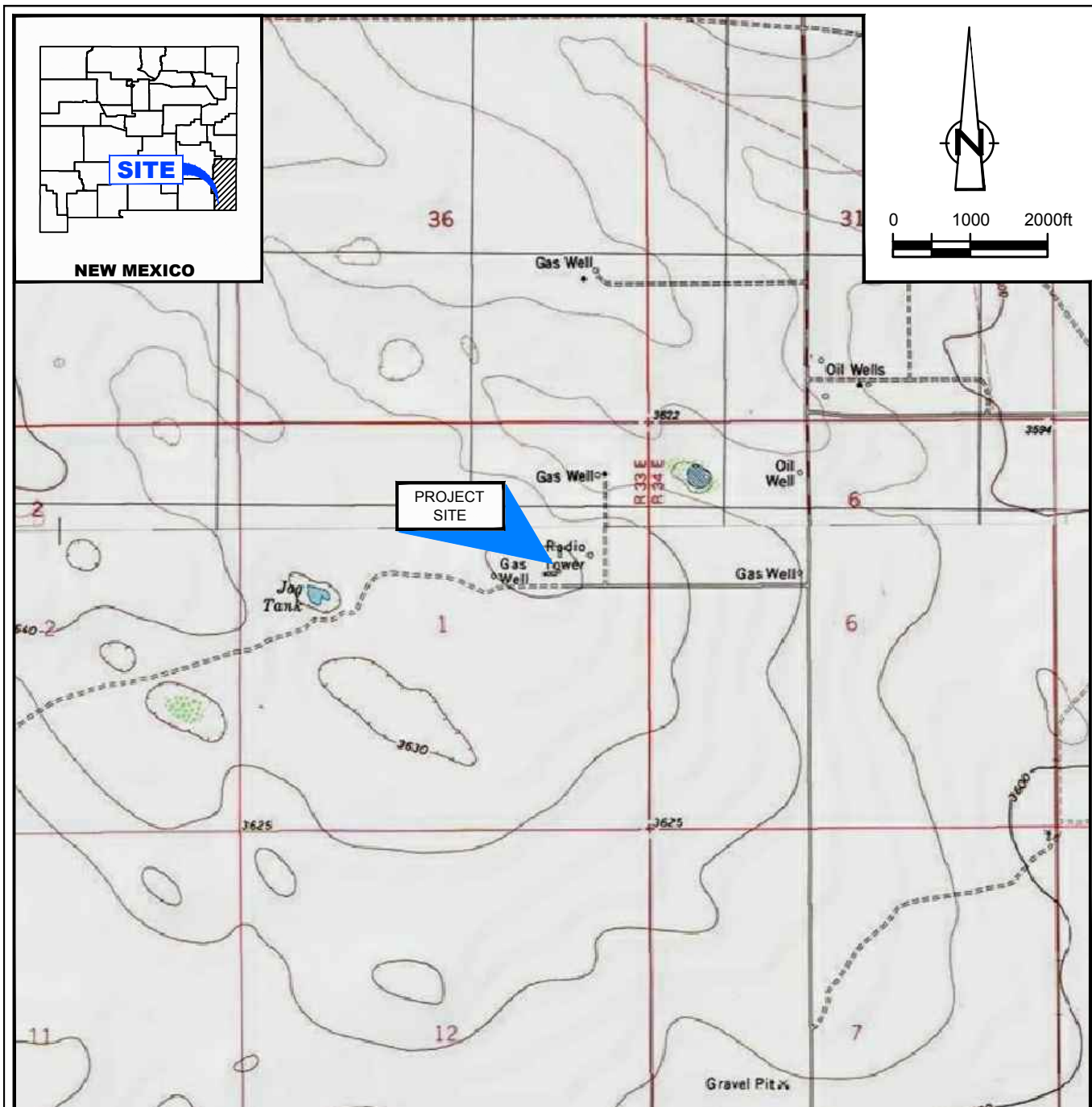
Groundwater elevations and analytical results from May and November 2015 groundwater sampling events were consistent with recent historical data trends. Samples collected from most Site monitoring wells exceeded the NMWQCC standard for both chloride and TDS. BTEX constituents were also above NMWQCC standards in ten wells during the May 2015 sampling event and nine wells during the November 2015 sampling event.

3.2 Recommendations

Based on an assessment of the data, GHD recommends:

- Complete horizontal delineation of the chloride groundwater plume by advancement of additional monitoring wells.
- Continue semi-annual groundwater sampling intervals in order to assess the concentrations of BTEX, chloride, and TDS.
- Reduce the number of wells to be sampled to include only the following wells: MW-2, MW-6, MW-7, MW-9, MW-12, MW-13, MW-14, MW-15, MW-16, SVE-3, SVE-5, and SVE-6.

Figures



Tables

