3R – 426

2015 AGWMR

01 / 04 / 2016

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ConocoPhillips

Mr. Glenn von Gonten
New Mexico Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

January 4, 2016

Re: NMOCD Case No. 3R-426, 2015 Annual Groundwater Monitoring Report

Dear Mr. von Gonten:

Enclosed is the 2015 Annual Groundwater Monitoring Report for the San Juan 27-5 No. 34A site. This report, prepared by GHD Services Inc., contains the results of groundwater monitoring from September 2015.

Please let me know if you have any questions.

Sincerely,

B. K. Coffman

B. Keith Coffman

Enc

2014 Annual Groundwater Monitoring Report

ConocoPhillips San Juan 27-5 No. 34A
Rio Arriba County, New Mexico
API# 30-039-23739
NMOCD# 3R-426

ConocoPhillips Risk Management & Remediation

6121 Indian School Road, NE Suite 200 Albuquerque New Mexico 87110
074934 | Report No 006 | January 04 2016

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1. Introduction

1.1 Introduction

This *2015 Annual Groundwater Monitoring Report* presents the results of groundwater monitoring conducted by GHD Services, Inc. (GHD) at the ConocoPhillips Company (ConocoPhillips) San Juan 27-5 Number 34A natural gas production wellsite (Site). The Site is situated on federal land within Unit Letter E, Section 30, Township 27N, Range 05W of Rio Arriba County, New Mexico (Figure 1). The Site consists of a natural gas production well and associated equipment. General features of the Site are depicted on Figure 2.

1.2 Background

Hydrocarbon impacts were discovered beneath an aboveground storage tank (AST) during tank removal on January 30, 2009. Envirotech Inc. of Farmington, NM (Envirotech) was contacted for spill assessment services following the discovery. Envirotech collected a 5-point composite soil sample from beneath the AST, 4 grab soil samples from test holes advanced around the AST, and an additional 5-point composite soil sample collected from an excavation that was approximately 17 feet deep (Envirotech, 2009). Soil samples were collected and field analyzed for total petroleum hydrocarbons (TPH) using Environmental Protection Agency (EPA) method 418.1, and for organic vapors using a photoionization detector (PID). In addition, the 5-point composite soil samples were sent for laboratory analysis of benzene, toluene, ethylbenzene, and total xylenes (BTEX) by EPA Method 8021, and for TPH analysis by EPA Method 8015. Soil sample results from both 5-point composite samples and from one of the test holes exceeded the New Mexico Oil Conservation Division (NMOCD) recommended risk action levels (RRALs).

On March 3, 2009, Envirotech returned to the Site to continue sampling activities. A 49 feet by 49 feet by 20 feet deep area had been excavated prior to Envirotech's arrival on Site. Groundwater was encountered at 20 ft below ground surface (bgs). Envirotech sampled groundwater from the excavation and analyzed the sample for volatile organic compounds (VOCs) using EPA method 8260B (Envirotech, 2009). A benzene concentration of 96 micrograms per liter (µg/L) was detected in the groundwater sample. Composite soil samples were collected from the bottom of the excavation and from each of the 4 excavation side-walls, then field analyzed for organic vapors and TPH. Results from these samples were below RRALs for organic vapors. TPH concentrations were below RRALs in all soil samples except for the sample collected from the south excavation side-wall. Subsequently, excavation of impacted soil was continued to the south and additional four feet. Final dimensions of the excavation were reported to be 53 feet by 49 feet by 20 feet deep.

Personal communication on July 13, 2009 between Tetra Tech and Wade Hack, ConocoPhillips field manager, revealed that the area of the excavation was within the current berm location of the produced water and condensate tanks at the Site (Figure 2). A total of 1,900 cubic yards of impacted soil were removed from the Site and transported to a NMOCD permitted facility located in Farmington, New Mexico.

Envirotech recommended the installation of groundwater monitor wells to "determine groundwater gradient and the extent of groundwater contamination" (Envirotech, 2009). Between July 15, 2009 and July 16, 2009, EnviroDrill of Albuquerque, New Mexico installed 4 groundwater monitor wells at the Site under the supervision of Tetra Tech.

Tetra Tech began quarterly groundwater quality monitoring of the Site on July 28, 2009. In March of 2011, after eight consecutive quarters of compliance with New Mexico Water Quality Control Commission (NMWQCC) standards for BTEX, Tetra Tech recommended discontinuation of monitoring for BTEX. Monitoring of dissolved manganese was recommended to continue on an annual basis.

On June 15, 2011, Site consulting responsibilities were transferred from Tetra Tech to GHD (formerly CRA) of Albuquerque, NM. Groundwater has been sampled annually at the Site since September 2011. A generalized geologic cross section for the Site is provided as Figure 3. Site history is summarized in Table 1.

2. Groundwater Monitoring Summary, Methodology, and Analytical Results

2.1 Groundwater Monitoring Summary

Groundwater elevation measurements were recorded from Site monitor wells using an oil/water interface probe on September 21, 2015. Groundwater elevations for the Site are presented in Table 2.

September 2015 groundwater data indicates groundwater flow is towards the north-northwest and is consistent with historical records. Groundwater gradient was estimated to be 0.0026 feet per foot (ft/ft). A groundwater potentiometric surface map is presented as Figure 4.

2.2 Groundwater Monitoring Methodology

Monitoring wells MW-1, MW-2, MW-3 and MW-4 were purged of at least three casing volumes of water using a dedicated polyethylene disposable bailer prior to sampling. Groundwater quality parameters including pH, temperature, oxidation reduction potential, total dissolved solids, and conductivity were collected using a calibrated YSI-556 Multi-Parameter Sonde and were recorded on GHD groundwater sampling field forms. Field parameters collected during sampling are included in Table 3.

Groundwater samples were placed in laboratory prepared bottles, packed on ice and shipped under chain-of-custody documentation to Pace Analytical Laboratories (Pace) located in Lenexa, Kansas. Groundwater samples were analyzed for dissolved manganese by EPA Method 6010B.

2.3 Groundwater Monitoring Analytical Results

Groundwater concentrations for dissolved manganese were compared to the NMWQCC standard of 0.2 mg/L. Downgradient monitoring well (MW-2) was below 0.2 mg/L. Groundwater collected from monitoring well MW-2 has consistently been under NMWQCC standard for all contaminants of concern since 2011. The highest concentrations of dissolved manganese were detected in the cross-gradient well (MW-3) and the up-gradient well (MW-4) at 1.2 milligrams per kilogram (mg/kg) and 0.54 mg/kg, respectively. Concentrations of dissolved manganese in Site wells during the September 2015 monitoring event are depicted in Figure 5.

A summary of groundwater laboratory analytical results is presented in Table 4. A groundwater concentration map is included as Figure 5. The September 2015 laboratory analytical report is included as Appendix A.

3. Conclusions and Recommendations

3.1 Conclusions

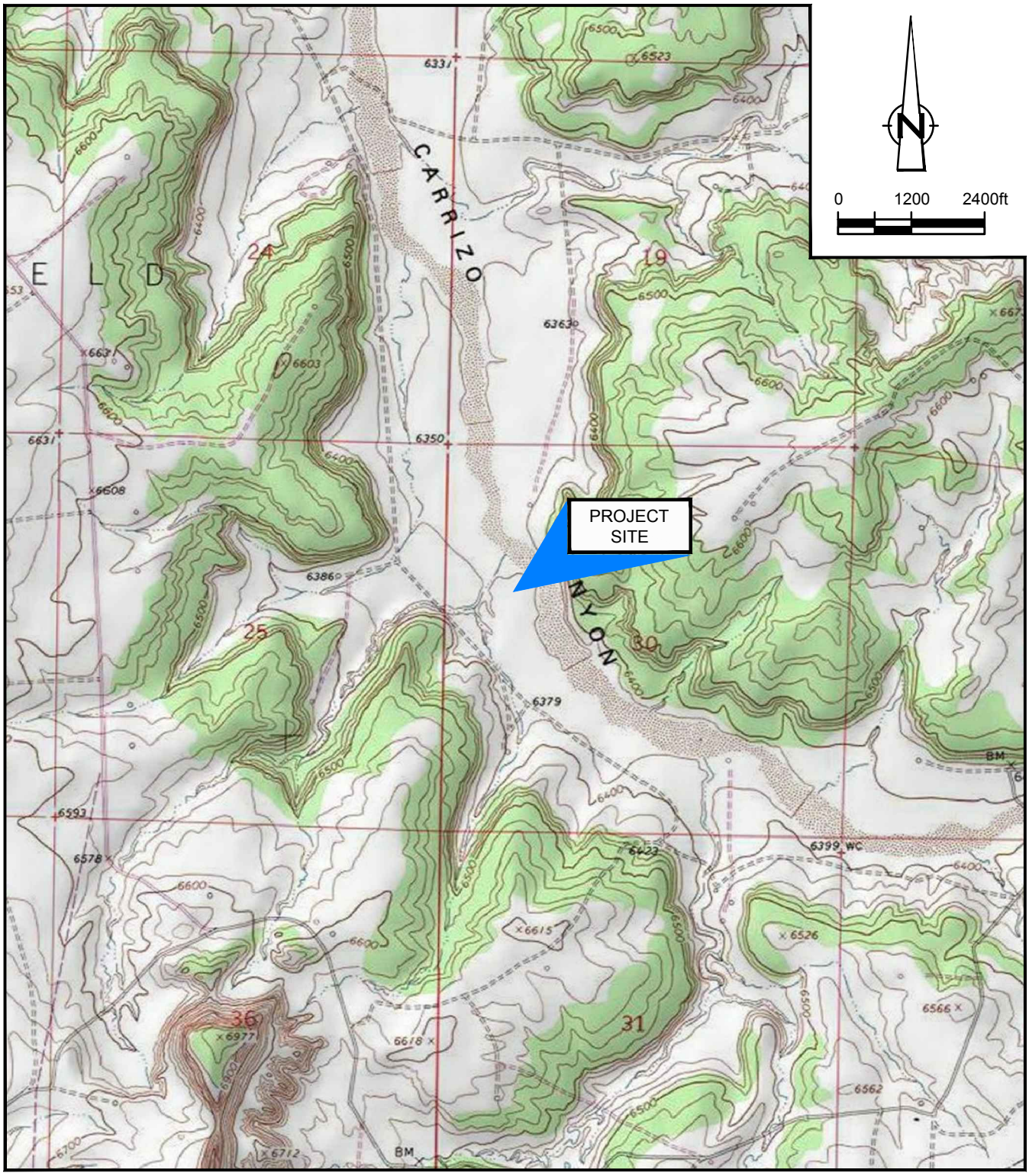
Based on the above referenced information, the following conclusions are presented below:

- Groundwater flow is towards the north-northwest and is consistent with historical records.
- Hydrocarbons have never been detected in Site groundwater monitoring wells at concentrations above laboratory detection limits.
- Concentrations of dissolved manganese in the cross-gradient (MW-3) and up-gradient (MW-4) Site monitoring wells have not attenuated since groundwater monitoring began at the Site, suggesting that observed dissolved manganese are background concentrations for the area.

3.2 Recommendations

On behalf of ConocoPhillips, GHD recommends Site closure and a No Further Action Status be granted based in the historical concentrations of hydrocarbons have never been detected in Site groundwater, manganese observed in Site wells are consistent with background, and the Site is located in a remote area with no identified receptors located on or off-site.

Figures



SOURCE: USGS 7.5 MINUTE QUAD
"SANTOS PEAK, NEW MEXICO"

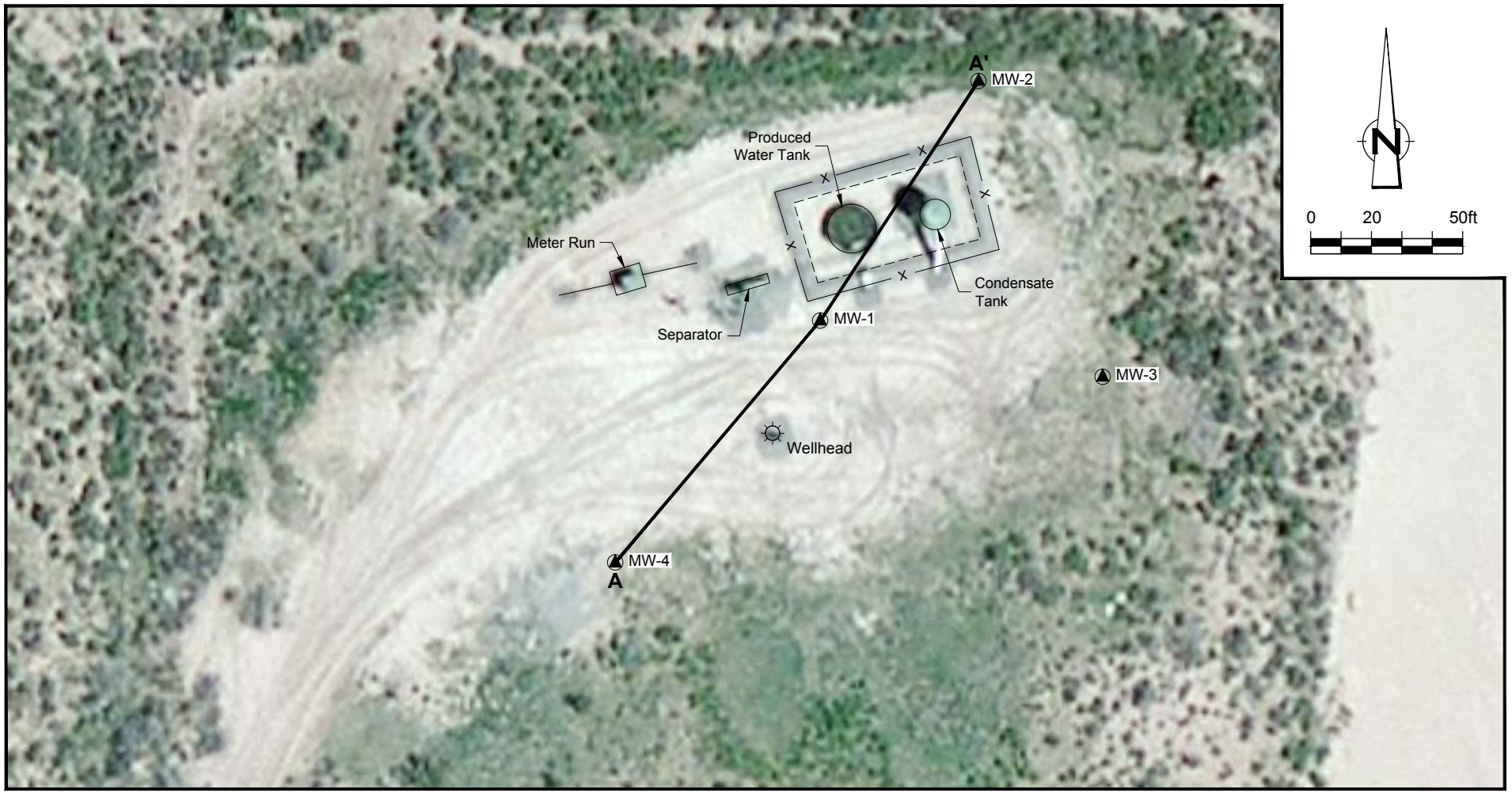
LAT/LONG: 36.5471° NORTH, 107.4066° WEST
COORDINATE: NAD83 DATUM, U.S. FOOT
STATE PLANE ZONE - NEW MEXICO CENTRAL

Figure 1

SITE LOCATION MAP
SAN JUAN 27-5 No. 34A
SECTION 30, T27N, R5W, RIO ARRIBA COUNTY, NEW MEXICO
ConocoPhillips Company

GHD

074934-95(006)GN-DL001 OCT 30/2015



LAT/LONG: 36.8089° NORTH, 107.9463° WEST
COORDINATE: NAD83 DATUM, U.S. FOOT
STATE PLANE ZONE - NEW MEXICO WEST

LEGEND

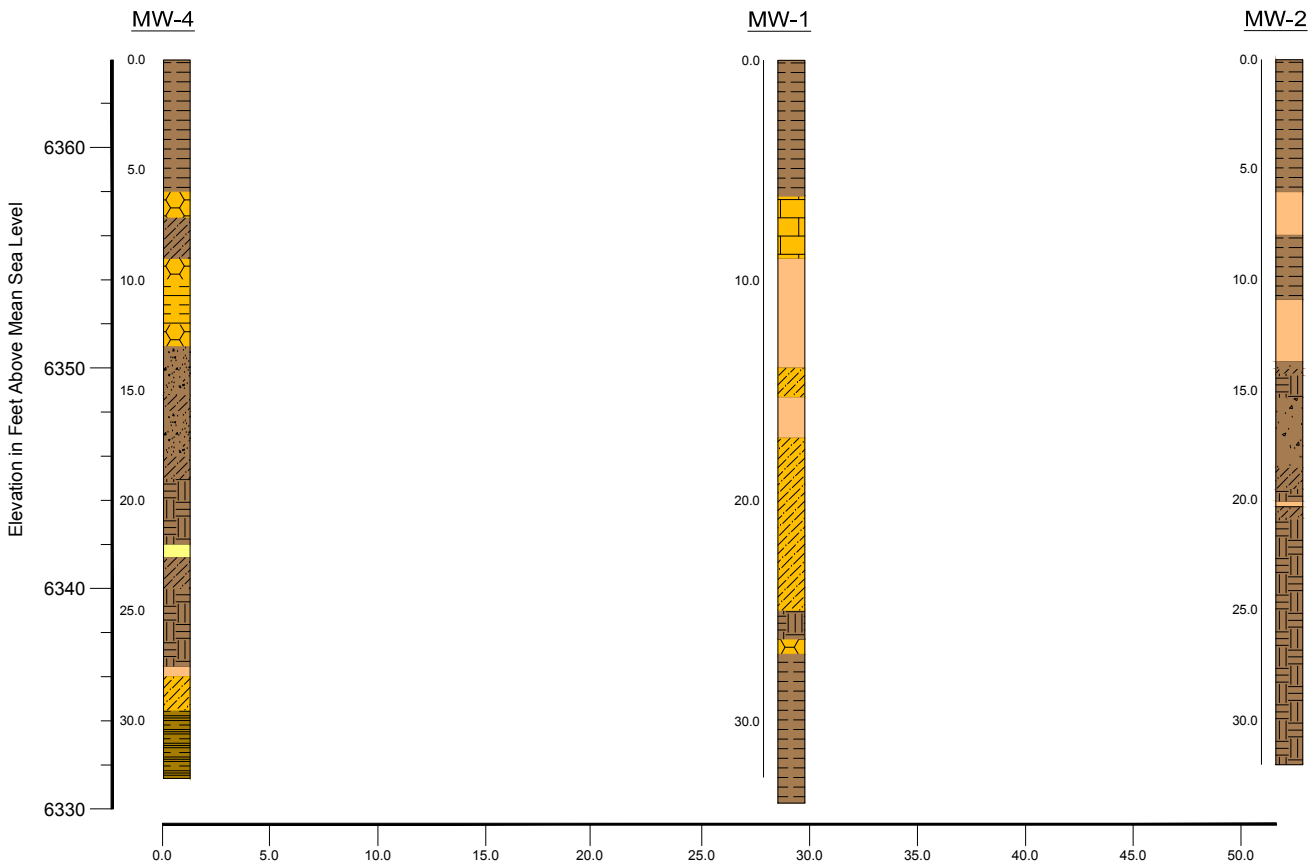
- Monitor Well Location
- Wellhead
- Trend of Figure 3 Cross-Section (A — A')

Figure 2

SITE MAP
SAN JUAN 27-5 No. 34A
SECTION 30, T27N, R5W, RIO ARRIBA COUNTY, NEW MEXICO
ConocoPhillips Company

GHD

074934-95(006)GN-DL001 OCT 30/2015

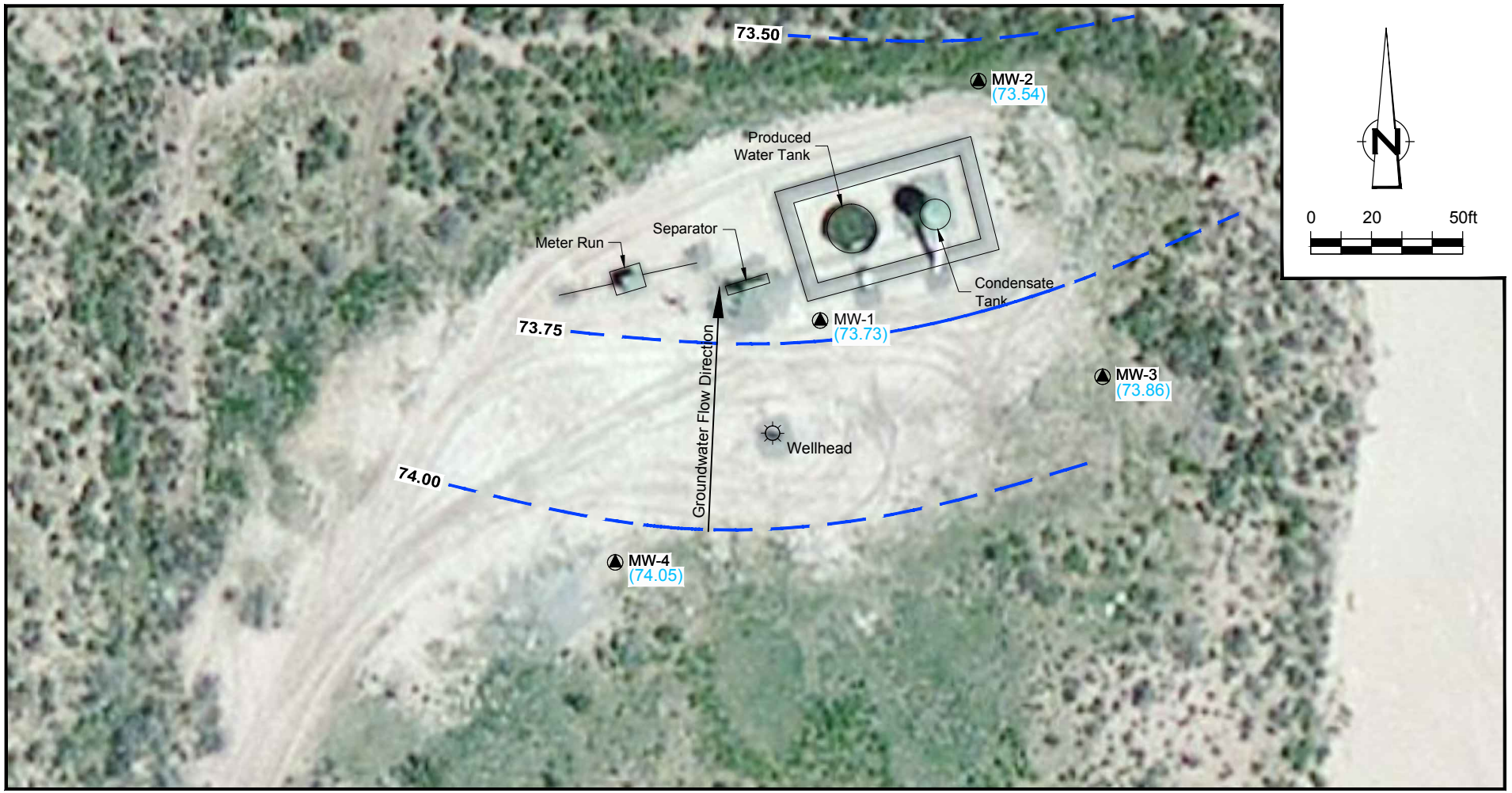


Lithology Index

- Clayey Sand
- Clayey Silt
- Clays
- Fine Grained Sand
- Fine to Medium Grained Silty Sand
- Medium Grained Sand
- Poor Recovery
- Sandy Silt
- Silty Clay
- Silty Sand
- Very Fine Grained Sand

Figure 3

GEOLOGICAL CROSS SECTION
SAN JUAN 27-5 No. 34A
SECTION 30, T27N, R5W, RIO ARRIBA COUNTY, NEW MEXICO
ConocoPhillips Company



LAT/LONG: 36.8089° NORTH, 107.9463° WEST
COORDINATE: NAD83 DATUM, U.S. FOOT
STATE PLANE ZONE - NEW MEXICO WEST

LEGEND

- Monitor Well Location
- Wellhead
- (74.05) Groundwater Elevation, Ft
- 74.00 Groundwater Elevation Contour, Ft
- Groundwater Flow Direction

Figure 4

SEPTEMBER 2015 GROUNDWATER POTENTIOMETRIC SURFACE MAP
SAN JUAN 27-5 No. 34A
SECTION 30, T27N, R5W, RIO ARRIBA COUNTY, NEW MEXICO
ConocoPhillips Company

GHD

LAT/LONG: 36.8089° NORTH, 107.9463° WEST
COORDINATE: NAD83 DATUM, U.S. FOOT
STATE PLANE ZONE - NEW MEXICO WEST

LEGEND

- Monitor Well Location
- Wellhead
- (0.54) Dissolved Mn (mg/L)

Figure 5

SEPTEMBER 2015 GROUNDWATER CONCENTRATION MAP
SAN JUAN 27-5 No. 34A
SECTION 30, T27N, R5W, RIO ARRIBA COUNTY, NEW MEXICO
ConocoPhillips Company

GHD

074934-95(006)GN-DL001 OCT 30/2015

Tables

Table 1

Site History Timeline
ConocoPhillips Company
San Juan 27-5 No. 34A
Rio Arriba County, New Mexico

Date/Time Period	*Event/Action*	*Description/Comments*
January 30, 2009	Site Assessment	Hydrocarbon impacts are visually confirmed during tank removal at the Site. Envirotech Inc. of Farmington, New Mexico (Envirotech) conducted spill assessment and initial soil sampling.
March 3, 2009	Soil Excavation	Envirotech oversees soil excavation at the Site. Final dimensions of excavated area are 53'x49'x20' deep. Groundwater is encountered at 20' bgs and sampled. Laboratory results for benzene were found at a concentration of 95.6 micrograms per liter (ug/L), above the NMWQCC standard.
March 20, 2009	Excavation Report	Envirotech excavation report states that a total of 1,900 cubic yards of soil was removed from the Site and transported to an OCD-permitted facility in Farmington, NM. Envirotech recommended the installation of groundwater monitor wells at the Site (Envirotech, 2009).
April 2, 2009	Site Assessment	Tetra Tech visits the Site visit to determine placement of proposed groundwater monitor wells.
July 15, 2009 & July 16, 2009	Monitor Well Installation	Four groundwater monitor wells are installed by EnviroDrill under the supervision of Tetra Tech (MW-1, MW-2, MW-3, MW-4).
July 28, 2009	Groundwater Monitoring	Baseline quarterly groundwater monitoring event was conducted at the Site by Tetra Tech.
September 29, 2009	Groundwater Monitoring	Quarterly groundwater monitoring event conducted at the Site by Tetra Tech.
December 15, 2009	Groundwater Monitoring	Quarterly groundwater monitoring event conducted at the Site by Tetra Tech.
April 8, 2010	Groundwater Monitoring	Quarterly groundwater monitoring event conducted at the Site by Tetra Tech.
June 8, 2010	Groundwater Monitoring	Quarterly groundwater monitoring event conducted at the Site by Tetra Tech.
September 21, 2010	Groundwater Monitoring	Quarterly groundwater monitoring event conducted at the Site by Tetra Tech.
December 15, 2010	Groundwater Monitoring	Seventh quarterly groundwater monitoring event conducted at the Site by Tetra Tech. Manganese concentrations exceed NMWQCC standards in monitor wells MW-1, MW-2, and MW-3.
March 15, 2011	Groundwater Monitoring	Eighth quarterly groundwater monitoring event conducted at the Site by Tetra Tech. Manganese concentrations exceed NMWQCC standards in monitor wells MW-1, MW-2, and MW-3. After eight consecutive quarters of compliance with BTEX standards, the monitoring schedule is changed to annual sampling for dissolved manganese only.
June 15, 2011	Tranfer of Site Consulting Responsibilities	Site consulting responsibilities are transferred from Tetra Tech to Conestoga-Rovers & Associates, Inc. of Albuquerque, NM (CRA).
September 28, 2011	Groundwater Monitoring	Annual monitoring event for dissolved manganese only completed by CRA.
September 24, 2012	Groundwater Monitoring	Annual monitoring event for dissolved manganese only completed by CRA.
October 1, 2013	Groundwater Monitoring	Annual monitoring event for dissolved manganese only completed by CRA.
March 25, 2014	Groundwater Monitoring	Semi-Annual monitoring event for dissolved manganese only completed by CRA.
September 22, 2014	Groundwater Monitoring	Semi-Annual monitoring event for dissolved manganese only completed by CRA.
September 21, 2015	Groundwater Monitoring	Annual monitoring event for dissolved manganese only completed by GHD (formerly CRA).

Table 2

Monitor Well Specifications and Groundwater Elevations
ConocoPhillips Company
San Juan 27-5 No. 34A
Rio Arriba County, New Mexico

Well ID	*Total Depth (ft bgs)*	*Screen Interval (ft)*	** TOC Elevation (ft)*	*Date Measured*	*Depth to Groundwater (ft below TOC)*	*Relative Groundwater Elevation*
MW-1	33.13	18.73 - 33.73	97.44	7/28/2009	23.21	74.23
				9/29/2009	23.88	73.56
				12/15/2009	24.15	73.29
				4/8/2010	21.76	75.68
				6/8/2010	22.26	75.18
				9/21/2010	23.24	74.20
				12/15/2010	23.60	73.84
				3/15/2011	22.92	74.52
				9/28/2011	24.10	73.34
				9/24/2012	25.20	72.24
				10/1/2013	22.77	74.67
				3/25/2014	23.65	73.79
				9/22/2014	24.40	73.04
				9/21/2015	23.71	73.73
MW-2	34.29	15 - 30	96.78	7/28/2009	22.72	74.06
				9/29/2009	23.40	73.38
				12/15/2009	23.66	73.12
				4/8/2010	21.21	75.57
				6/8/2010	21.81	74.97
				9/21/2010	22.78	74.00
				12/15/2010	23.13	73.65
				3/15/2011	22.44	74.34
				9/28/2011	23.62	73.16
				9/24/2012	24.72	72.06
				10/1/2013	22.20	74.58
				3/25/2014	23.19	73.59
				9/22/2014	23.93	72.85
				9/21/2015	23.24	73.54
MW-3	33.11	17.55 - 32.55	97.24	7/28/2009	22.84	74.40
				9/29/2009	23.54	73.70
				12/15/2009	23.80	73.44
				4/8/2010	21.22	76.02
				6/8/2010	21.90	75.34
				9/21/2010	22.90	74.34
				12/15/2010	23.27	73.97
				3/15/2011	22.55	74.69
				9/28/2011	23.73	73.51
				9/24/2012	24.89	72.35
				10/1/2013	22.21	75.03
				3/25/2014	23.33	73.91
				9/22/2014	24.08	73.16
				9/21/2015	23.38	73.86
MW-4	33.47	17.6 - 32.6	97.23	7/28/2009	22.62	74.61
				9/29/2009	23.31	73.92
				12/15/2009	23.57	73.66
				4/8/2010	21.25	75.98
				6/8/2010	21.75	75.48
				9/21/2010	22.67	74.56
				12/15/2010	23.03	74.20
				3/15/2011	22.35	74.88
				9/28/2011	23.50	73.73
				9/24/2012	24.62	72.61
				10/1/2013	22.30	74.93
				3/25/2014	23.10	74.13
				9/22/2014	23.85	73.38
				9/21/2015	23.18	74.05

Notes:
ft = Feet
TOC = Top of casing
bgs = below ground surface
*Groundwater elevation is relative to an arbitrary 100 feet

Table 3

Field Parameters Summary
ConocoPhillips Company
San Juan 27-5 No. 34-A
Rio Arriba County, New Mexico

Well ID	*Sample Date*	*Temperature (°C)*	*pH*	*TDS (g/L)*	*Conductivity (µS/cm)*	*DO (mg/L)*	*ORP (mV)*	*Volume (gallons)*
MW-1	9/23/2015	12.80	7.74	0.51	783	7.13	45.8	3.50
	9/23/2015	12.62	6.11	0.51	777	5.51	113.0	4.00
	9/23/2015	12.58	5.79	0.51	779	4.28	116.3	4.50
MW-2	9/23/2015	12.65	6.92	0.57	882	6.86	127.0	2.00
MW-3	9/23/2015	13.01	6.07	0.45	684	4.51	111.4	3.75
	9/23/2015	13.08	6.30	0.45	685	4.10	91.0	4.25
	9/23/2015	13.08	6.44	0.45	685	3.87	82.1	4.75
MW-4	9/23/2015	12.01	6.94	0.86	1315	6.42	63.8	2.00

Notes:
TDS = total dissolved solids
DO = dissolved oxygen
ORP = oxidation-reduction potential

Table 4

Groundwater Analytical Results Summary
ConocoPhillips Company
San Juan 27-5 No. 34A
Rio Arriba County, New Mexico

Well ID	*Sample ID*	*Date*	*Sample Type*	*Benzene (mg/L)*	*Toluene (mg/L)*	*Ethylbenzene (mg/L)*	*Xylenes (total) (mg/L)*	*Manganese (dissolved) (mg/L)*	*Total Dissolved Solids (TDS) (mg/L)*
NMWQCC Groundwater Quality Standards				**0.01**	**0.75**	**0.75**	**0.62**	**0.2**	**1000**
MW-1	MW-1	7/28/2009	(orig)	< 0.005	< 0.005	< 0.005	< 0.005	--	--
	MW-1	9/29/2009	(orig)	< 0.001	< 0.001	< 0.001	< 0.001	**0.694**	--
	MW-1	12/15/2009	(orig)	< 0.001	< 0.001	< 0.001	< 0.001	**0.576**	--
	MW-1	4/8/2010	(orig)	< 0.001	< 0.001	< 0.001	< 0.001	**0.896**	640
	MW-1	6/8/2010	(orig)	< 0.001	< 0.001	< 0.001	< 0.001	**0.612**	--
	MW-1	9/21/2010	(orig)	< 0.001	< 0.001	< 0.001	< 0.001	**0.784**	--
	MW-1	12/15/2010	(orig)	< 0.001	< 0.001	< 0.001	< 0.001	**0.933**	--
	MW-1	3/15/2011	(orig)	< 0.001	< 0.001	< 0.001	< 0.001	**0.732**	--
	GW-074934-092811-CM-001	9/28/2011	(orig)	--	--	--	--	**0.789**	--
	GW-074934-092412-CM-MW-1	9/24/2012	(orig)	--	--	--	--	**0.76**	--
	GW-074934-100113-CM-MW-1	10/1/2013	(orig)	--	--	--	--	< 0.005	--
	GW-074934-032514-CM-MW-1	3/25/2014	(orig)	--	--	--	--	**0.37**	--
	GW-074934-092114-CB-MW-1	9/22/2014	(orig)	--	--	--	--	**0.55**	--
	GW-074934-092115-CB-MW-1	9/21/2015	(orig)	--	--	--	--	**0.42**	--
	GW-074934-092115-CB-DUP	9/21/2015	(duplicate)	--	--	--	--	**0.30**	--
MW-2	MW-2	7/28/2009	(orig)	< 0.005	< 0.005	< 0.005	< 0.005	--	--
	MW-2	9/29/2009	(orig)	< 0.001	< 0.001	< 0.001	< 0.001	**1.38**	--
	MW-2	12/15/2009	(orig)	< 0.001	< 0.001	< 0.001	< 0.001	**1.92**	--
	MW-2	4/8/2010	(orig)	< 0.001	< 0.001	< 0.001	< 0.001	**2.43**	700
	MW-2	6/8/2010	(orig)	< 0.001	< 0.001	< 0.001	< 0.001	**2.12**	--
	MW-2	9/21/2010	(orig)	< 0.001	< 0.001	< 0.001	< 0.001	**2.25**	--
	MW-2	12/15/2010	(orig)	< 0.001	< 0.001	< 0.001	< 0.001	**2.17**	--
	MW-2	3/15/2011	(orig)	< 0.001	< 0.001	< 0.001	< 0.001	**2.01**	--
	GW-074934-092811-CM-003	9/28/2011	(orig)	--	--	--	--	**0.592**	--
	GW-074934-092412-CM-MW-2	9/24/2012	(orig)	--	--	--	--	0.12	--
	GW-074934-092412-CM-DUP	9/24/2012	(duplicate)	--	--	--	--	0.13	--
	GW-074934-100113-CM-MW-2	10/1/2013	(orig)	--	--	--	--	0.0214	--
	GW-074934-100113-CM-DUP	10/1/2013	(duplicate)	--	--	--	--	0.0194	--
	GW-074934-032514-CM-MW-2	3/25/2014	(orig)	--	--	--	--	0.038	--
	GW-074934-092114-CB-MW-2	9/22/2014	(orig)	--	--	--	--	0.095	--
	GW-074934-092115-CB-MW-2	9/21/2015	(orig)	--	--	--	--	0.033	--

Table 4

Groundwater Analytical Results Summary
ConocoPhillips Company
San Juan 27-5 No. 34A
Rio Arriba County, New Mexico

Well ID	*Sample ID*	*Date*	*Sample Type*	*Benzene (mg/L)*	*Toluene (mg/L)*	*Ethylbenzene (mg/L)*	*Xylenes (total) (mg/L)*	*Manganese (dissolved) (mg/L)*	*Total Dissolved Solids (TDS) (mg/L)*
NMWQCC Groundwater Quality Standards				**0.01**	**0.75**	**0.75**	**0.62**	**0.2**	**1000**
MW-3	MW-3	7/28/2009	(orig)	< 0.005	< 0.005	< 0.005	< 0.005	--	--
	MW-3	9/29/2009	(orig)	< 0.001	< 0.001	< 0.001	< 0.001	**1.7**	--
	MW-3	12/15/2009	(orig)	< 0.001	< 0.001	< 0.001	< 0.001	**2.04**	--
	MW-3	4/8/2010	(orig)	< 0.001	< 0.001	< 0.001	< 0.001	**2.51**	525
	MW-3	6/8/2010	(orig)	< 0.001	< 0.001	< 0.001	< 0.001	**2.51**	--
	MW-3	9/21/2010	(orig)	< 0.001	< 0.001	< 0.001	< 0.001	**2.87**	--
	MW-3	12/15/2010	(orig)	< 0.001	< 0.001	< 0.001	< 0.001	**2.69**	--
	MW-3	3/15/2011	(orig)	< 0.001	< 0.001	< 0.001	< 0.001	**2.01**	--
	GW-074934-092811-JP-002	9/28/2011	(orig)	--	--	--	--	**2.03**	--
	GW-074934-092412-CM-MW-3	9/24/2012	(orig)	--	--	--	--	**1.2**	--
	GW-074934-100113-CM-MW-3	10/1/2013	(orig)	--	--	--	--	< 0.005	--
	GW-074934-032514-CM-MW-3	03/25/2014	(orig)	--	--	--	--	**0.87**	--
	GW-074934-032514-CM-DUP	03/25/2014	(duplicate)	--	--	--	--	**0.89**	--
	GW-074934-092114-CB-MW-3	9/22/2014	(orig)	--	--	--	--	**0.97**	--
	GW-074934-092115-CB-MW-3	9/21/2015	(orig)	--	--	--	--	**1.2**	--
MW-4	MW-4	7/28/2009	(orig)	< 0.005	< 0.005	< 0.005	< 0.005	--	--
	MW-4	9/29/2009	(orig)	< 0.001	< 0.001	< 0.001	< 0.001	**0.269**	--
	MW-4	12/15/2009	(orig)	< 0.001	< 0.001	< 0.001	< 0.001	0.0579	--
	MW-4	4/8/2010	(orig)	< 0.001	< 0.001	< 0.001	< 0.001	0.121	684
	MW-4	6/8/2010	(orig)	< 0.001	< 0.001	< 0.001	< 0.001	0.0384	--
	MW-4	9/21/2010	(orig)	< 0.001	< 0.001	< 0.001	< 0.001	0.0301	--
	MW-4	12/15/2010	(orig)	< 0.001	< 0.001	< 0.001	< 0.001	0.0088	--
	MW-4	3/15/2011	(orig)	< 0.001	< 0.001	< 0.001	< 0.001	0.008	--
	GW-074934-092811-CM-005	9/28/2011	(orig)	--	--	--	--	0.0461	--
	GW-074934-092412-CM-MW-4	9/24/2012	(orig)	--	--	--	--	0.026	--
	GW-074934-100113-CM-MW-4	10/1/2013	(orig)	--	--	--	--	0.157	--
	GW-074934-032514-CM-MW-4	3/25/2014	(orig)	--	--	--	--	**0.31**	--
	GW-074934-092114-CB-MW-4	9/22/2014	(orig)	--	--	--	--	0.18	--
	GW-074934-092115-CB-MW-4	9/21/2015	(orig)	--	--	--	--	**0.54**	--

Notes:
NMWQCC = New Mexico Water Quality Control Commission
mg/L = milligrams per liter (parts per million)
< 0.001 = Below laboratory detection limit of 0.001 mg/L
Bold = concentrations that exceed the NMWQCC limits
-- = not analyzed

Appendices

Appendix A
2015 Annual Groundwater Laboratory Analytical Report

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

October 01, 2015

Jeffrey Walker
GHD Services, Inc
6121 Indian School Rd NE
Ste 200
Albuquerque, NM 87110

RE: Project: 074934 SAN JUAN 27-5 NO 34A
Pace Project No.: 60203539

Dear Jeffrey Walker:
Enclosed are the analytical results for sample(s) received by the laboratory on September 24, 2015. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Alice Flanagan
alice.flanagan@pacelabs.com
Project Manager

Enclosures

cc: Angela Bown, GHD Services, Inc,
Christine Mathews, GHD Services, Inc.

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CERTIFICATIONS

Project: 074934 SAN JUAN 27-5 NO 34A
Pace Project No.: 60203539

Kansas Certification IDs
9608 Loiret Boulevard, Lenexa, KS 66219
WY STR Certification #: 2456.01
Arkansas Certification #: 15-016-0
Illinois Certification #: 003097
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212008A
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407
Utah Certification #: KS00021

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
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SAMPLE SUMMARY

Project: 074934 SAN JUAN 27-5 NO 34A
Pace Project No.: 60203539

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60203539001	**GW 074934 092115 CB MW-1**	Water	09/21/15 14:15	09/24/15 08:40
60203539002	**GW 074934 092115 CB MW-2**	Water	09/21/15 14:40	09/24/15 08:40
60203539003	**GW 074934 092115 CB MW-3**	Water	09/21/15 14:25	09/24/15 08:40
60203539004	**GW 074934 092115 CB MW-4**	Water	09/21/15 14:35	09/24/15 08:40
60203539005	**GW 074934 092115 CB DUP**	Water	09/21/15 08:00	09/24/15 08:40

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SAMPLE ANALYTE COUNT

Project: 074934 SAN JUAN 27-5 NO 34A
Pace Project No.: 60203539

Lab ID	Sample ID	Method	Analysts	Analytes Reported
60203539001	**GW 074934 092115 CB MW-1**	EPA 6010	SMW	1
60203539002	**GW 074934 092115 CB MW-2**	EPA 6010	SMW	1
60203539003	**GW 074934 092115 CB MW-3**	EPA 6010	SMW	1
60203539004	**GW 074934 092115 CB MW-4**	EPA 6010	SMW	1
60203539005	**GW 074934 092115 CB DUP**	EPA 6010	SMW	1

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: 074934 SAN JUAN 27-5 NO 34A
Pace Project No.: 60203539

Method: **EPA 6010**
Description: 6010 MET ICP, Dissolved
Client: GHD Services_COP NM
Date: October 01, 2015

General Information:
5 samples were analyzed for EPA 6010. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 3010 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

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ANALYTICAL RESULTS

Project: 074934 SAN JUAN 27-5 NO 34A
Pace Project No.: 60203539

Sample: GW 074934 092115 CB MW-1 **Lab ID: 60203539001** Collected: 09/21/15 14:15 Received: 09/24/15 08:40 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, Dissolved	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Manganese, Dissolved	**0.42**	mg/L	0.0050	1	09/25/15 12:30	09/28/15 18:40	7439-96-5	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 074934 SAN JUAN 27-5 NO 34A
Pace Project No.: 60203539

Sample: GW 074934 092115 CB MW-2 **Lab ID: 60203539002** Collected: 09/21/15 14:40 Received: 09/24/15 08:40 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, Dissolved	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Manganese, Dissolved	**0.033**	mg/L	0.0050	1	09/25/15 12:30	09/28/15 18:42	7439-96-5	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 074934 SAN JUAN 27-5 NO 34A
Pace Project No.: 60203539

Sample: GW 074934 092115 CB MW-3 **Lab ID: 60203539003** Collected: 09/21/15 14:25 Received: 09/24/15 08:40 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, Dissolved	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Manganese, Dissolved	**1.2**	mg/L	0.0050	1	09/25/15 12:30	09/28/15 18:45	7439-96-5	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 074934 SAN JUAN 27-5 NO 34A
Pace Project No.: 60203539

Sample: GW 074934 092115 CB MW-4 **Lab ID: 60203539004** Collected: 09/21/15 14:35 Received: 09/24/15 08:40 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, Dissolved	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Manganese, Dissolved	**0.54**	mg/L	0.0050	1	09/25/15 12:30	09/28/15 18:47	7439-96-5	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 074934 SAN JUAN 27-5 NO 34A
Pace Project No.: 60203539

Sample: GW 074934 092115 CB DUP **Lab ID: 60203539005** Collected: 09/21/15 08:00 Received: 09/24/15 08:40 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, Dissolved	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Manganese, Dissolved	**0.30**	mg/L	0.0050	1	09/25/15 12:30	09/28/15 18:49	7439-96-5	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 074934 SAN JUAN 27-5 NO 34A
Pace Project No.: 60203539

QC Batch: MPRP/33286 Analysis Method: EPA 6010
QC Batch Method: EPA 3010 Analysis Description: 6010 MET Dissolved
Associated Lab Samples: 60203539001, 60203539002, 60203539003, 60203539004, 60203539005

METHOD BLANK: 1639420 Matrix: Water
Associated Lab Samples: 60203539001, 60203539002, 60203539003, 60203539004, 60203539005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Manganese, Dissolved	mg/L	ND	0.0050	09/28/15 18:02	

LABORATORY CONTROL SAMPLE: 1639421

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Manganese, Dissolved	mg/L	1	1.0	100	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1639422 1639423

Parameter	Units	60203119001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Manganese, Dissolved	mg/L	3750 ug/L	1	1	4.8	4.8	108	107	75-125	0	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: 074934 SAN JUAN 27-5 NO 34A
Pace Project No.: 60203539

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 074934 SAN JUAN 27-5 NO 34A
Pace Project No.: 60203539

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60203539001	**GW 074934 092115 CB MW-1**	EPA 3010	MPRP/33286	EPA 6010	ICP/24537
60203539002	**GW 074934 092115 CB MW-2**	EPA 3010	MPRP/33286	EPA 6010	ICP/24537
60203539003	**GW 074934 092115 CB MW-3**	EPA 3010	MPRP/33286	EPA 6010	ICP/24537
60203539004	**GW 074934 092115 CB MW-4**	EPA 3010	MPRP/33286	EPA 6010	ICP/24537
60203539005	**GW 074934 092115 CB DUP**	EPA 3010	MPRP/33286	EPA 6010	ICP/24537

Pace Analytical
www.pacelabs.com

Sample Condition Upon Receipt
ESI Tech Spec Client

WO# : 60203539

60203539

Client Name: GHD_COP

Optional
Proj Due Date:
Proj Name:

Courier: FedEx ☒ UPS ☐ VIA ☐ Clay ☐ PEX ☐ ECI ☐ Pace ☐ Other ☐ Client ☐

Tracking #: 6508 8158 4345 Pace Shipping Label Used? Yes ☐ No ☐

Custody Seal on Cooler/Box Present: Yes ☒ No ☐ Seals intact: Yes ☒ No ☐

Packing Material: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☒ Other ☐

Thermometer Used: CF +0.6 T-239 CF +0.6 T-262 **Type of Ice:** (Wet) Blue None ☐ Samples received on ice, cooling process has begun.
(circle one)

Cooler Temperature: 2.6

Date and initials of person examining contents: JB 9/24

Temperature should be above freezing to 6°C

Chain of Custody present:	☒Yes ☐No ☐N/A	1.
Chain of Custody filled out:	☒Yes ☐No ☐N/A	2.
Chain of Custody relinquished:	☒Yes ☐No ☐N/A	3.
Sampler name & signature on COC:	☒Yes ☐No ☐N/A	4.
Samples arrived within holding time:	☒Yes ☐No ☐N/A	5.
Short Hold Time analyses (<72hr):	☐Yes ☒No ☐N/A	6.
Rush Turn Around Time requested:	☐Yes ☒No ☐N/A	7.
Sufficient volume:	☒Yes ☐No ☐N/A	8.
Correct containers used:	☒Yes ☐No ☐N/A	
Pace containers used:	☒Yes ☐No ☐N/A	9.
Containers intact:	☒Yes ☐No ☐N/A	10.
Unpreserved 5035A soils frozen w/in 48hrs?	☐Yes ☐No ☒N/A	11.
Filtered volume received for dissolved tests?	☐Yes ☐No ☒N/A	12.
Sample labels match COC:	☒Yes ☐No ☐N/A	
Includes date/time/ID/analyses Matrix: WT		13.
All containers needing preservation have been checked.	☒Yes ☐No ☐N/A	
All containers needing preservation are found to be in compliance with EPA recommendation.	☒Yes ☐No ☐N/A	14.
Exceptions: VOA, Coliform, O&G, WI-DRO (water)	☐Yes ☒No	Initial when completed / Lot # of added preservative
Trip Blank present:	☐Yes ☐No ☒N/A	
Pace Trip Blank lot # (if purchased):		15.
Headspace in VOA vials (>6mm):	☐Yes ☐No ☒N/A	16.
Project sampled in USDA Regulated Area:	☐Yes ☐No ☒N/A	17. List State:
Additional labels attached to 5035A vials in the field?	☐Yes ☐No ☒N/A	18.

Client Notification/ Resolution: Copy COC to Client? Y / N Field Data Required? Y / N

Person Contacted: Date/Time:

Comments/ Resolution:

Project Manager Review: AAF Date: 09/24/15

Temp Log: Record start and finish times when unpacking cooler, if >20 min, recheck sample temps.

Start: 1109	Start:
End: 1114	End:
Temp:	Temp:

Pace Analytical

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page : 1 Of 1

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	GHD Services_COP NM	Report To:	Jeffrey Walker	Attention:	
Address:	6121 Indian School Rd NE	Copy To:		Company Name:	
	Albuquerque, NM 87110			Address:	
Email:	jeff.walker@ghd.com	Purchase Order #:		Pace Quote:	
Phone:	505-377-3920 Fax	Project Name:	074934 San Juan 27-5 No 34A	Pace Project Manager:	alice.flanagan@pacelabs.com,
Requested Due Date:		Project #:		Pace Profile #:	

Regulatory Agency
State / Location
NM

SAMPLE ID
One Character per box.
(A-Z, 0-9 / , -)
Sample Ids must be unique

MATRIX	CODE
Drinking Water	DW
Water	WT
Waste Water	WW
Product	P
Soil/Solid	SL
Oil	OL
Wipe	WP
Air	AR
Other	OT
Tissue	TS

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Requested Analysis Filtered (Y/N) Y/N	Analyses Test: Dissolved Mn	Residual Chlorine (Y/N)	602/8534
1	~~GW.074934.092115.CB.MW-1~~	WT	G			~~9/21/15~~	~~0935~~														
2	~~GW.074934.092115.CB.MW-2~~	WT	G			~~9/21/15~~	~~1040~~														
3	~~GW.074934.092115.CB.MW-3~~	WT	G			~~9/21/15~~	~~1050~~														
4	~~GW.074934.092115.CB.MW-4~~	WT	G			~~9/21/15~~	~~1100~~														
5	~~GW.074934.092115.CB.DUP~~	WT	G			~~9/21/15~~	—														
6																					
7	GW.074934.092115.CB.MW-1	WT	G			9/21/15	1415		1			X							X		001
8	GW.074934.092115.CB.MW-2	WT	G			9/21/15	1440		1			X							X		002
9	GW.074934.092115.CB.MW-3	WT	G			9/21/15	1425		1			X							X		003
10	GW.074934.092115.CB.MW-4	WT	G			9/21/15	1435		1			X							X		004
11	GW.074934.092115.CB.DUP	WT	G			9/21/15	—		1			X							X		005
12																					

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
	Jessie Brown GHD	9.23.15	1400		9/24	0840	2.6	X	Y	Y

SAMPLER NAME AND SIGNATURE				
PRINT Name of SAMPLER:	Jessie Brown			
SIGNATURE of SAMPLER:	Jessie Brown	DATE Signed:	9.23.15	

TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

9/28/15