3RP-340

QTR Groundwater Report

DATE:
AUG 2010

TETRA TECH, INC.

6121 Indian School Rd. NE Suite 200
Albuquerque, NM 87110
(505) 237-8440

August 19, 2010

Mr. Glen von Gonten
State of New Mexico Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

RE: ConocoPhillips Company Randleman #1 - Groundwater Monitoring Report, Aztec, New Mexico

Dear Mr. von Gonten:

Enclosed please find one copy of the above-referenced document as compiled by Tetra Tech, Inc., for this Aztec-area site.

Please do not hesitate to contact me at (505) 237-8440 if you have any questions or require additional information.

Sincerely,

Kelly E. Blanchard

Kelly E. Blanchard
Project Manager/Geologist

Cc: Brandon Powell, NMOCD

Enclosures (1)

QUARTERLY GROUNDWATER MONITORING REPORT

CONOCOPHILLIPS COMPANY
RANDLEMAN #1
PRODUCTION FACILITY
SAN JUAN COUNTY, NEW MEXICO

OCD # 3RP-340-0
API # 30-045-10698

Prepared for:

ConocoPhillips

Risk Management and Remediation
420 South Keeler Avenue
Bartlesville, OK 74004

Prepared by:

TETRA TECH, INC.

6121 Indian School Rd. NE, Suite 200
Albuquerque, NM 87110
Tetra Tech Project No. 1158690090

August 2010

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QUARTERLY GROUNDWATER MONITORING REPORT
RANDLEMAN #1, SAN JUAN COUNTY, NEW MEXICO
DECEMBER 2009

1.0 INTRODUCTION

This report discusses the groundwater sampling event performed by Tetra Tech, Inc. (Tetra Tech) on December 16, 2009 at the ConocoPhillips Company Randleman #1 site located outside of Aztec, New Mexico (Site). The Site is located on private land in Section 13, Township 31N, Range 11W, of San Juan County, New Mexico, as can be seen on **Figure 1**. A Site detail map is included as **Figure 2**.

1.1 Site Background

The historical timeline for the Site is summarized below, and is also presented in **Table 1**.

In April 1997, an unlined surface impoundment (**Figure 2**) was discovered to have been impacted by petroleum hydrocarbons. On April 29, 1997, excavation of the soil beneath the impoundment began; once complete, a total of 613 cubic yards of hydrocarbon impacted soil were removed and landfarmed at the nearby Randleman #3 site (Williams 2002). Three monitor wells were installed at the Site on May 14, 1997, and quarterly groundwater monitoring was conducted through March 1998. Evaluation of groundwater monitoring results initiated another excavation in April 1998 of 2,220 cubic yards of hydrocarbon impacted soil "to address residual soil contamination extending to the south of the original excavated area" (Williams, 2002). Quarterly groundwater monitoring was continued through September 2000, and after 4 consecutive quarters of groundwater monitoring results below New Mexico Water Quality Control Commission (NMWQCC) groundwater quality standards for benzene, toluene, ethylbenzene, and total xylenes (BTEX), Williams Environmental Services (Williams) requested that the New Mexico Oil Conservation Division (OCD) grant closure status to the Site. In June 2002, OCD granted closure for the Site, provided that Williams plug and abandon all Site groundwater monitor wells according to OCD standards (NMEMNRD, 2002). The historical excavation area and historical groundwater monitor wells are displayed in **Figure 2**.

On February 23, 2009, approximately 60 barrels of condensate were released from an on-Site production tank as a result of a hole in the tank. OCD Form C-141 was filled out by ConocoPhillips staff and notice was given to OCD via telephone. Form C-141 stated that the well was shut in, that the fluids remained in the berm surrounding the production tank, and that none of the fluids were recoverable. Form C-141 additionally stated that ConocoPhillips would remove the tank and would excavate hydrocarbon impacted soils and remove them from the Site.

On February 26, 2009, Envirotech Inc. of Farmington, NM (Envirotech) arrived on Site, performed the soil excavation, and collected soil samples for analysis. The area of release was excavated to approximately 42 feet by 51 feet by 7 feet deep. A total of 7 composite soil samples were collected from the excavation – 1 from each of the walls of the excavation and 3 samples from the bottom of the excavation. Soil samples

were collected in the field and were analyzed for total petroleum hydrocarbons (TPH) using Environmental Protection Agency (EPA) Method 418.1. Additionally, organic vapors were analyzed in the field using a photoionization detector (PID) and heated headspace techniques. TPH results ranged from 8 parts per million (ppm) in the soil sample collected from the north wall of the excavation to 1,080 ppm in the sample collected from the south wall of the excavation. Depth of soil samples was not noted in the samples obtained from the walls of the excavation, but the samples obtained from the bottom of the excavation were obtained at 2.5 feet below ground surface (bgs) and at 3 feet bgs along the east and west sides of the excavation, respectively. The OCD recommended action level for TPH at the Site was determined to be 100 ppm. Organic vapor concentrations ranged from 6.8 ppm in the sample obtained from the north wall of the excavation to 898 ppm in the sample obtained from the south wall of the excavation. Due to levels of TPH and organic vapors above OCD action levels, the excavation was continued (Envirotech, 2009).

On February 27, 2009, Envirotech returned to the Site to continue the excavation and sampling activities. Due to the fact that soil samples collected from the north, west, and east ends of the excavation on February 26, 2009 were found to be below OCD action levels for TPH and organic vapor, the focus of the excavation on February 27, 2009 was the south wall, the southeast wall, and the bottom of the southeast corner. At the end of the day, the excavation measured 81 feet by 43 feet by 20 feet deep (total depth is given for the deepest part of the excavation; other areas determined to be below OCD action levels went to approximately 8 feet bgs). A total of 8 soil samples were collected and analyzed in the field for TPH and organic vapors. The excavation continued until all samples were found to be below the OCD action levels of 100 ppm for both TPH and organic vapors along all four walls and the bottom of the excavation. Using this excavation approach, the southeast corner became the focus of the excavation, where after obtaining soil samples at 8, 13, and 15 feet bgs with both TPH and organic vapor results greater than 100 ppm, soil sample results for both of these constituents were not detected at a depth of 20 feet bgs, and the excavation was discontinued (Envirotech, 2009). The excavation area is depicted in **Figure 2**.

On March 2, 2009, groundwater was found seeping into the southeast corner of the excavation at a depth of approximately 20 feet bgs. A Rock Springs vacuum truck was contracted by Envirotech to collect groundwater from the excavation; approximately 10 gallons of water were removed. After removal of collected groundwater, Envirotech obtained a soil sample from the southeast corner of the excavation at a depth of 20 feet bgs. TPH and organic vapor results were found to be above OCD action levels. During field analysis of the soil sample, more groundwater had seeped into the excavation. More water was then removed from the excavation, and additional excavation was performed in order to attempt to obtain a soil sample below OCD action levels. A groundwater sample was collected from the area where water continued to seep into the excavation, and was sent for laboratory analysis of volatile organic compounds by EPA Method 8260. The groundwater sample was found to contain benzene, total xylenes and total naphthalenes above NMWQCC groundwater quality standards. Once this sample had been obtained, the excavation caved in, making further water removal via the vacuum truck impossible (Envirotech, 2009). The excavation area is depicted in **Figure 2**.

A total of 611 cubic yards of soil were removed from the Site and were transported to an OCD-permitted facility; clean fill was obtained from the landowner to backfill the excavation. Envirotech recommended the installation of groundwater monitor wells at the Site under OCD guidelines (Envirotech, 2009).

Tetra Tech installed four groundwater monitor wells at the Site between June 9, 2009 and June 10, 2009. From the soil boring data collected during monitoring well installation at the Site, a generalized geologic cross section was produced and can be seen as **Figure 3**. Tetra Tech conducted the first groundwater monitoring event at the Site on June 12, 2009. On June 18, 2009, the decision was made to place hydrocarbon absorbent socks into Monitor Wells MW-2 and MW-3 due to the presence of a spotty discontinuous hydrocarbon sheen noticed in purge water removed from the wells. The absorbent socks will be monitored and replaced as necessary during subsequent monitoring events. On September 23, 2009 the second quarterly groundwater monitoring event was conducted at the Site. Soil and groundwater samples were also collected from the Kiffen Canyon Wash on October 21, 2009 and analyzed for benzene, toluene, ethylbenzene and total xylenes (BTEX). In both the soil and groundwater collected from Kiffen Canyon Wash, BTEX constituents were found to be below standards.

2.0 MONITORING SUMMARY, SAMPLING METHODOLOGY AND RESULTS

2.1 Monitoring Summary

A groundwater sampling event was conducted at the Site on December 16, 2009. Prior to collection of groundwater samples from Monitor Well MW-1, MW-2, MW-3 and MW-4, depth to groundwater in each well was determined. Results are displayed in **Table 2**.

The casings for Site monitor wells were surveyed in June 2009 using an arbitrary reference-elevation of 100 feet above mean sea level (amsl). The data obtained from the Site survey and from the December 2009 sampling event was used to create a groundwater elevation map for the Site (**Figure 4**). Using these data, it was determined that the groundwater flow direction at the Site is to the east/southeast.

2.2 Groundwater Sampling Methodology

During the December 16, 2009 groundwater monitoring event, Site monitor wells were purged of at least 3 casing volumes of groundwater using a 1.5-inch diameter, polyethylene dedicated bailer. While bailing each well, groundwater parameter data such as temperature, pH, conductivity, total dissolved solids (TDS), oxidation-reduction potential (ORP) and dissolved oxygen (DO) were collected using a YSI 556 multi-parameter sonde and results were recorded on a Tetra Tech Water Sampling Field Form (**Appendix A**). Collected groundwater samples were placed in laboratory prepared bottles, packed on ice, and shipped with chain-of-custody documentation. Analysis of all groundwater samples collected during the December 2009 groundwater monitoring event were performed by Southern Petroleum Laboratory (SPL) of Houston, Texas.

During the December 2009 groundwater monitoring event, each groundwater sample collected was analyzed for BTEX by EPA Method 8260B; sulfate and chloride by EPA Method E300.0; TDS by EPA Method 2540C; and dissolved manganese by EPA Method 6010B. This list of quarterly sampling parameters was determined based on baseline analyses done on samples collected on June 12, 2009 (**Table 3**). A summary of analytical results from the December 16, 2009 sampling event is displayed in **Table 4**. Tetra Tech has prepared **Table 4** as a historical analytical results table to include all quarterly analytical parameters to help document trends in constituent concentrations over time. Results from future groundwater monitoring events at the Site will be compiled in this table.

2.3 Groundwater Sampling 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). Groundwater quality standards have been set for the protection of human health, domestic water supply, and irrigation use. Exceedences of NMWQCC groundwater quality standards in Site monitoring wells are discussed below.

- **Chloride**
  - The NMWQCC domestic water supply groundwater quality standard for chloride is 250 milligrams per liter (mg/L); the groundwater sample collected from Monitoring Well MW-4 was found to contain chloride at concentration of 3,430 mg/L.
- **Sulfate**
  - The NMWQCC domestic water supply groundwater quality standard for sulfate is 600 mg/L; groundwater samples collected from Monitor Well MW-1, MW-2, MW-3 and MW-4 were found to contain sulfate at concentrations of 1,960 mg/L, 1,510 mg/L, 1,920 mg/L, and 4,110 mg/L, respectively.
- **Manganese**
  - The NMWQCC domestic water supply groundwater quality standard for manganese is 0.2 milligrams per liter (mg/L). Groundwater samples collected from Monitor Wells MW-2, MW-3 and MW-4 were found to contain concentrations of manganese above the standard at 5.26 mg/L, 0.932 mg/L, and 1.8 mg/L, respectively.
- **Benzene**
  - The human health NMWQCC groundwater quality standard for benzene is 10 µg/L. Groundwater samples collected from Monitoring Wells MW-2 and MW-3 were above the standard with concentrations of 20 µg/L and 18 µg/L, respectively.
- **Total Xylenes**
  - The human health NMWQCC groundwater quality standard for total xylenes is 620 µg/L. The groundwater sample collected from MW-2 was found to be above standard for total xylenes with a concentration of 777.8 µg/L.

- **Total Dissolved Solids**
    - The human health NMWQCC groundwater quality standard for total dissolved solids is 1,000 mg/L. Groundwater samples collected from Monitoring Wells MW-1, MW-2, MW-3 and MW-4 were above the standard with concentrations of 3,140 µg/L, 2,390 µg/L, 2,560 µg/L and 9,600 µg/L, respectively.

The corresponding laboratory analytical report for the December 2009 groundwater sampling event, including quality control summaries, is included in **Appendix B**. A map showing BTEX concentrations in groundwater from Site monitoring wells during the December 2009 groundwater sampling event is included as **Figure 5**.

3.0 CONCLUSIONS AND RECOMMENDATIONS

Tetra Tech recommends continued quarterly groundwater sampling at the Site in order to provide sufficient data for Site closure. Site closure will be requested when groundwater analytical results indicate that all constituents of concern are consistently below NMWQCC groundwater quality standards. Please contact Kelly Blanchard at 505-237-8440 or kelly.blanchard@tetratech.com if you have any questions or require additional information.

4.0 REFERENCES

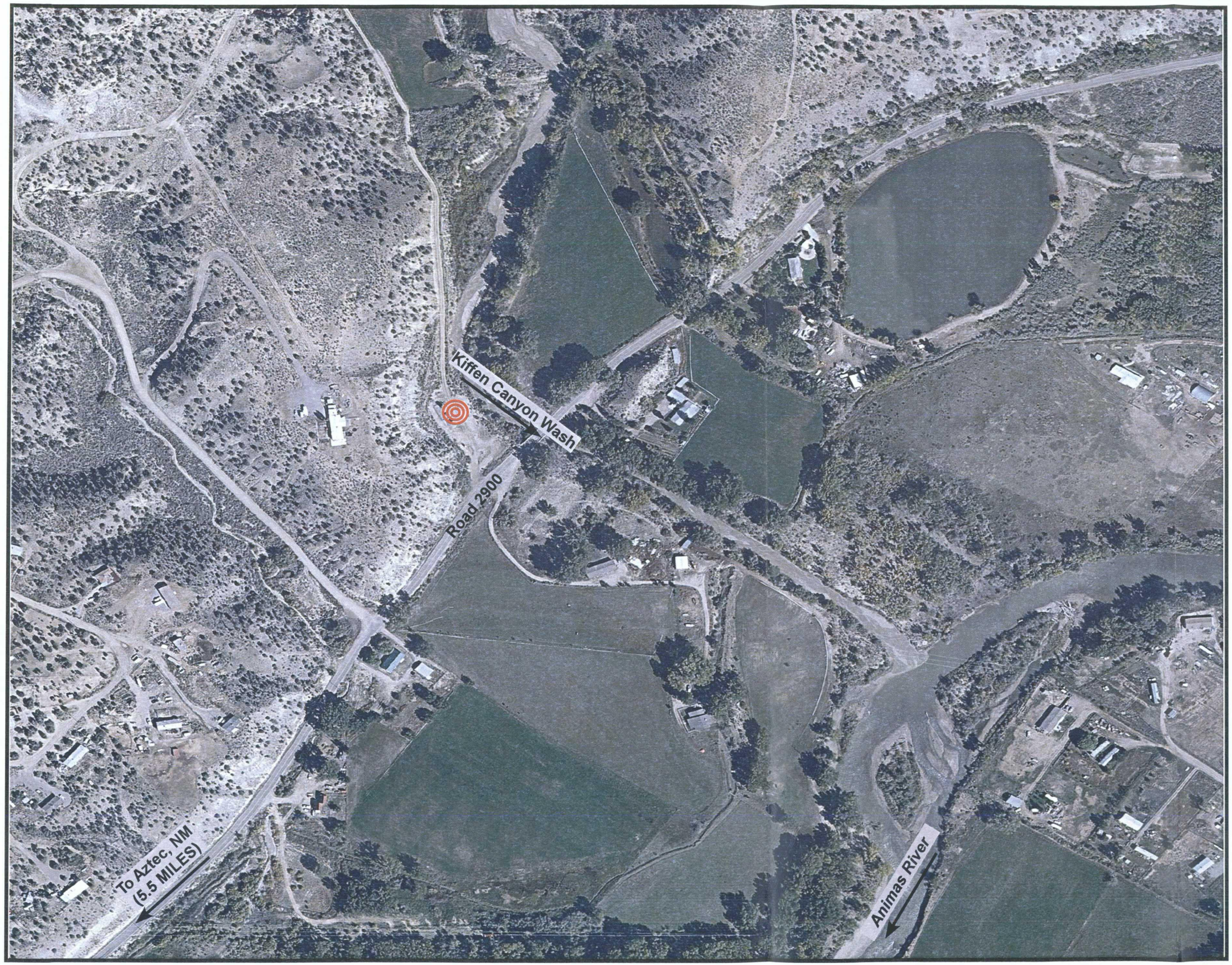
Envirotech Incorporated (2009). *Spill Cleanup Report, Located at: Burlington Resources* [sic] *Randleman #1 Well Site, Section 13, Township 31N, Range 11W, San Juan County, New Mexico.* Prepared for ConocoPhillips. Report Dated February 2009. 3 pp (not including Figures, Tables, and Appendices).

New Mexico Energy, Minerals and Natural Resources Department (2002). *Case # 3R0-340, Randleman #1 Dehy Pit, San Juan County* [sic], *New Mexico.* Letter from NMEMNRD to Williams Field Services. Dated June 14, 2002. 6 pp.

Williams Environmental Services (2002). *Randleman #1 Pit Remediation and Closure Report. Prepared for the New Mexico Oil Conservation Division.* Report Dated February 11, 2002. 3 pp (not including Figures, Tables, and Appendices).

FIGURES

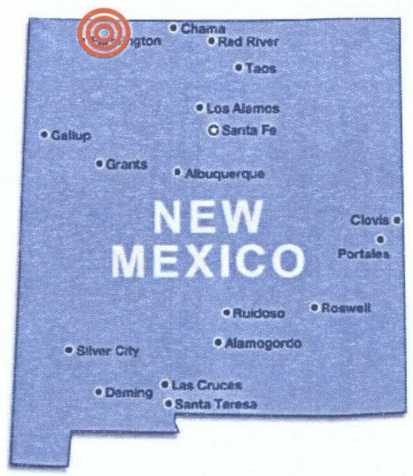
1. Site Location Map
2. Site Detail Map
3. Generalized Geologic Cross Section
4. Groundwater Elevation Map – December 2009
5. BTEX Groundwater Concentration Map – December 2009



ConocoPhillips - High Resolution Aerial Imagery

FIGURE 1.

Site Location Map
ConocoPhillips
Randleman #1
Aztec, NM



ConocoPhillips
Randleman #1 Site Location

0 225 450
Feet

N

TETRA TECH, INC.

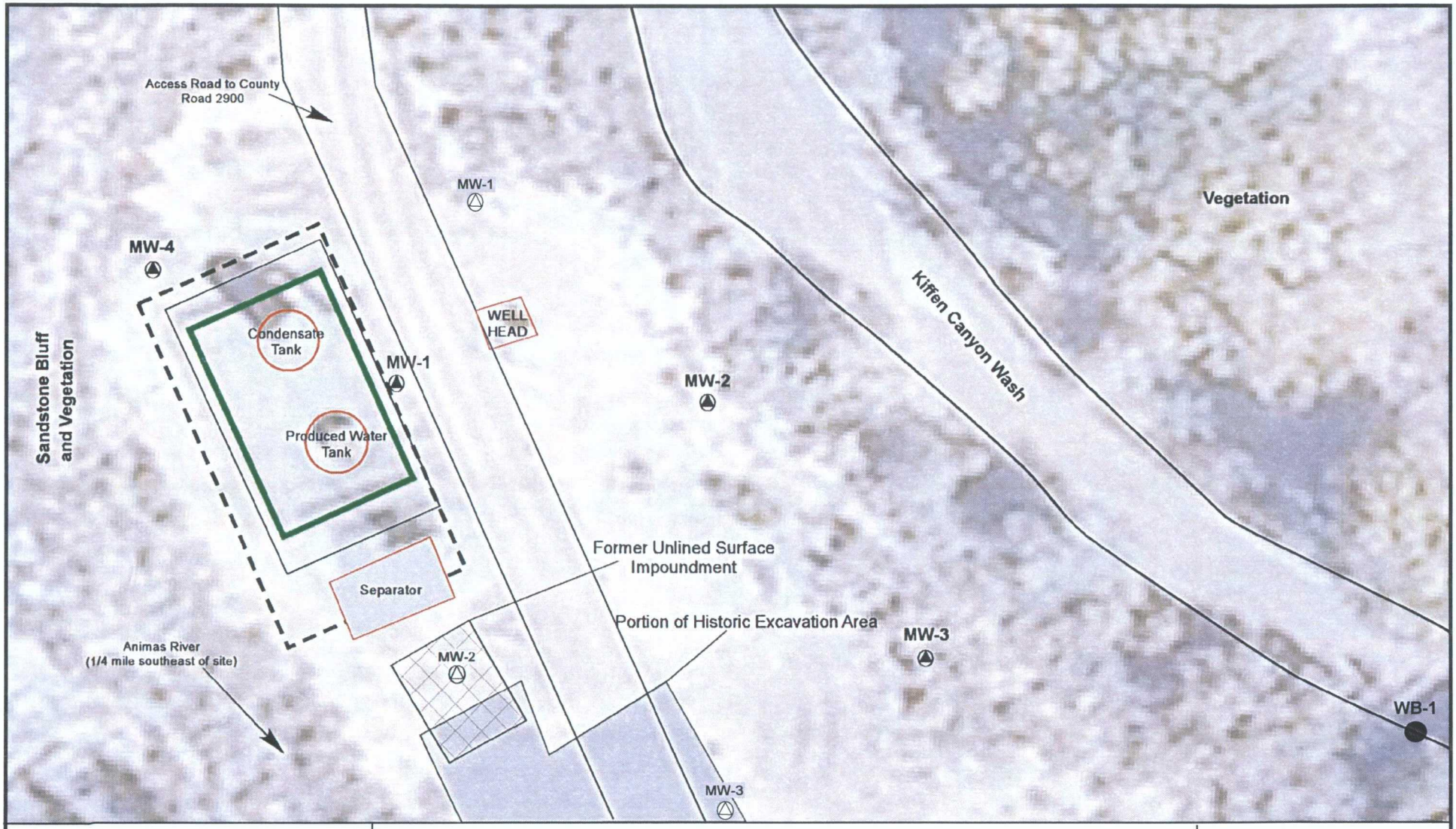


FIGURE 2:
SITE DETAIL MAP
CONOCOPHILLIPS COMPANY
RANDLEMAN #1
GAS PRODUCTION WELL
Sec 13, T31N, R11W
Aztec, New Mexico

LEGEND

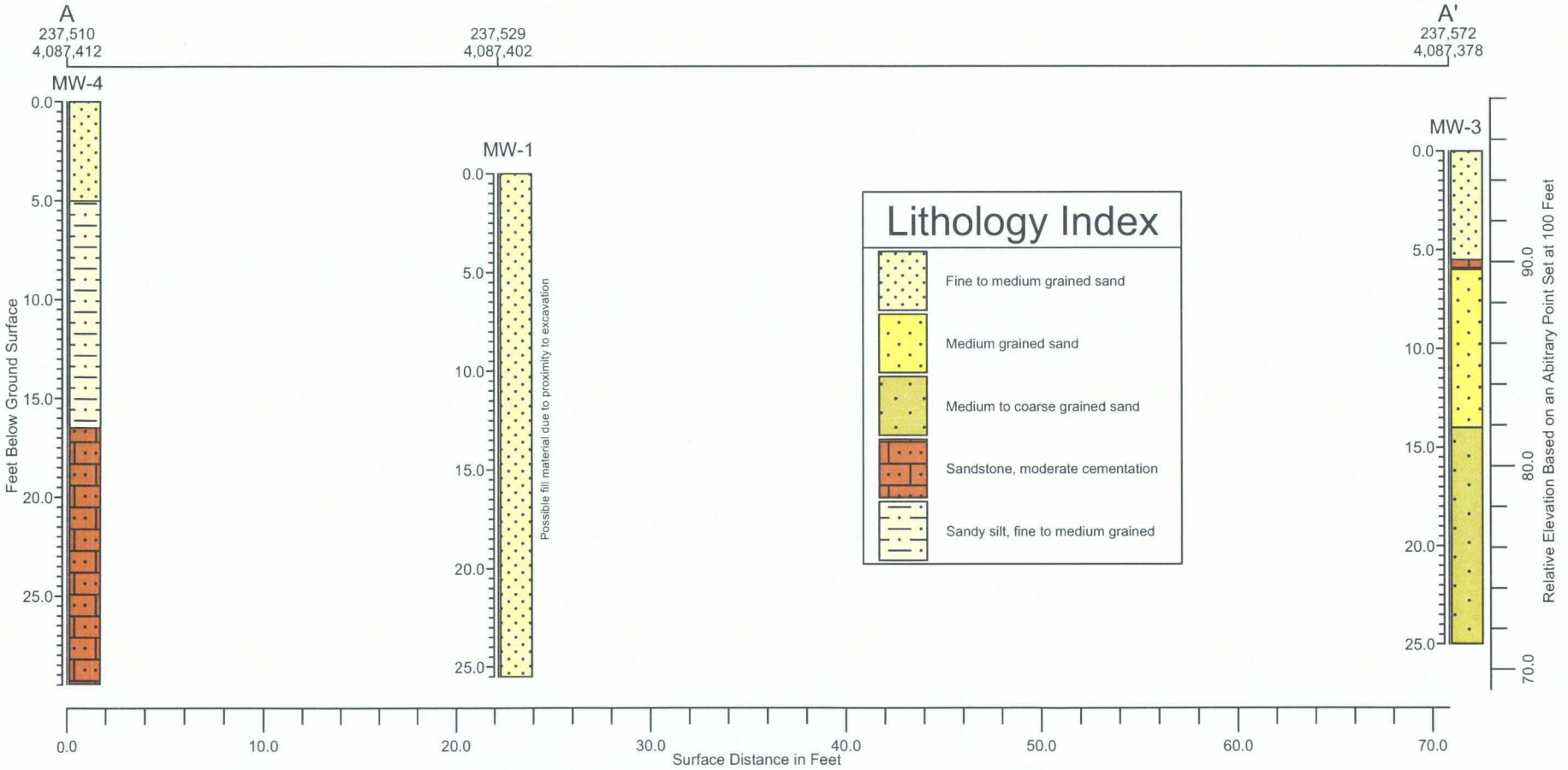
- GENERAL AREA of FEBRUARY 2009 EXCAVATION
- EQUIPMENT
- BERM
- MONITORING WELL
- APPROXIMATE LOCATION of HISTORIC MONITORING WELL (plugged and abandoned)
- KIFFEN CANYON WASH BORING LOCATION

0 15 30
FEET

N

TETRA TECH, INC.

Figure 3. Randleman #1 - Cross-Section A-A'



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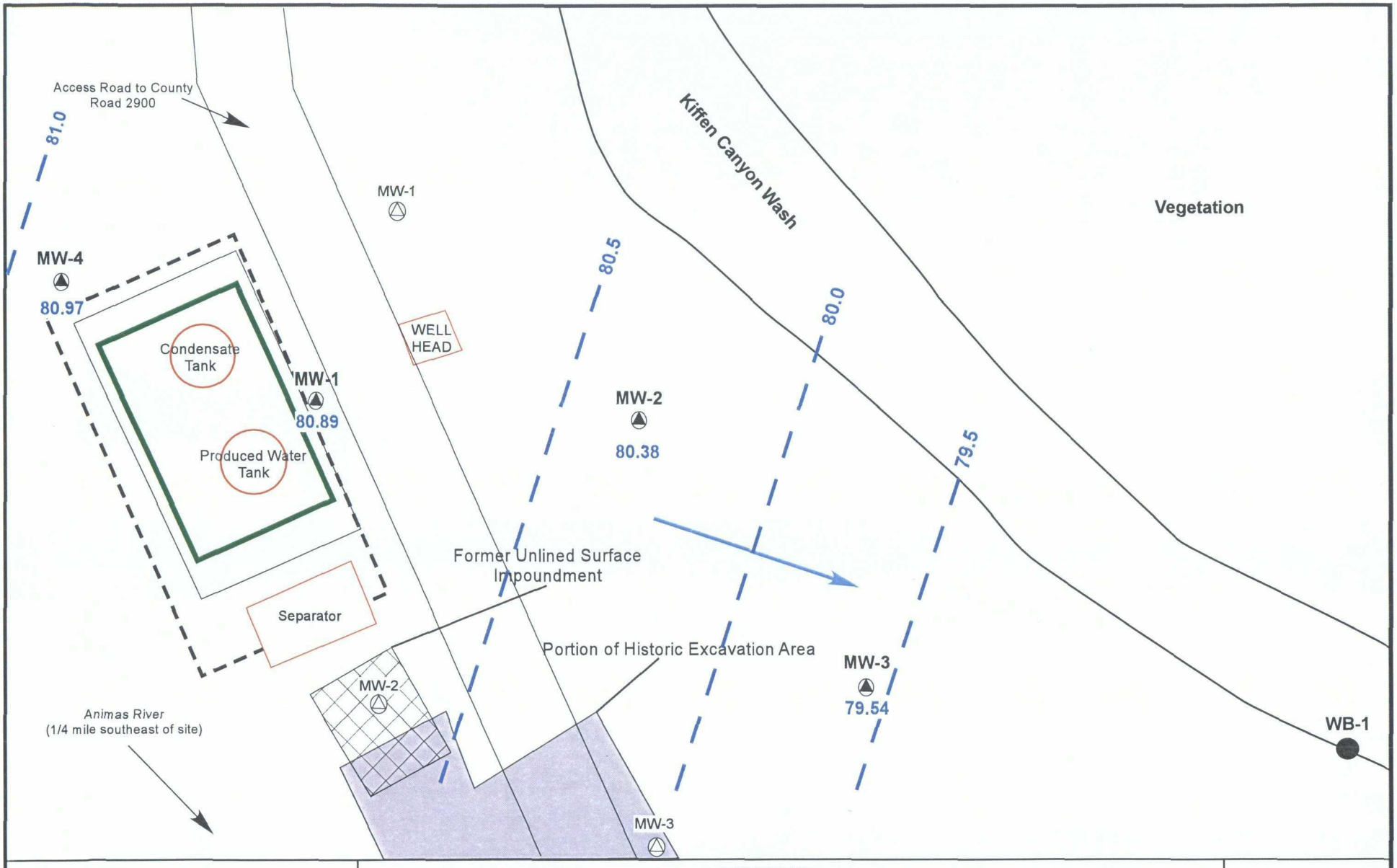

FIGURE 4:
GROUNDWATER ELEVATION MAP - DECEMBER 2009
CONOCOPHILLIPS COMPANY
RANDLEMAN #1
GAS PRODUCTION WELL
Sec 13, T31N, R11W
Aztec, New Mexico

LEGEND

- GENERAL AREA of EXCAVATION
- BERM
- MONITORING WELL
- GROUNDWATER ELEVATION CONTOUR
- GROUNDWATER FLOW DIRECTION
- APPROXIMATE LOCATION of HISTORIC MONITORING WELL (plugged and abandoned)
- 80.34 GROUNDWATER ELEVATION (elevation relative to wellhead; set at 100 feet above mean sea level)
- KIFFEN CANYON WASH BORING LOCATION

N

0 15 30
FEET

TETRA TECH, INC.

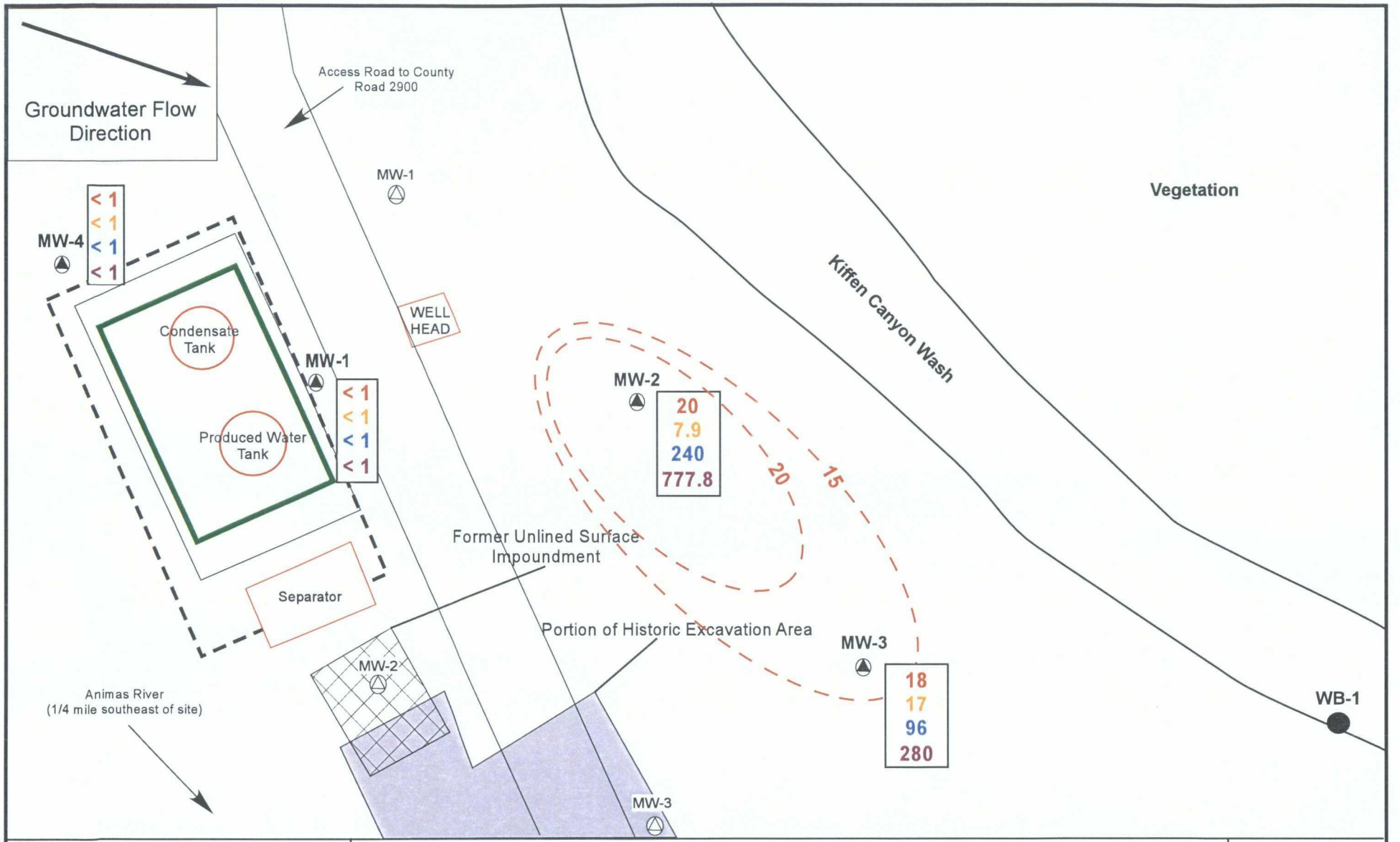

FIGURE 5:
BTEX GROUNDWATER CONCENTRATION MAP
DECEMBER 2009
CONOCOPHILLIPS COMPANY
RANDLEMAN #1
GAS PRODUCTION WELL
Sec 13, T31N, R11W
Aztec, New Mexico

LEGEND

- EXCAVATION AREA
- BERM
- MONITORING WELL
- EQUIPMENT
- APPROXIMATE LOCATION of HISTORIC MONITORING WELL (plugged and abandoned)
- KIFFEN CANYON WASH BORING LOCATION
- BENZENE CONCENTRATION CONTOUR

New Mexico Water Quality Control Commission Groundwater Quality Standards (ug/L)

< 10	Benzene
< 750	Toluene
< 750	Ethylbenzene
< 620	Xylenes, Total

N

0 15 30
FEET

TETRA TECH, INC.

TABLES

Table 1. Randleman #1 Site History Timeline

DATE	ACTIVITY
September 20, 1951	Well spudded by Southern Union Gas Company.
August 1, 1952	Well acquired by Aztec Oil and Gas Company.
December 1, 1976	Southland Royalty Company acquired Aztec Oil and Gas Company
November 22, 1985	Southland Royalty Company acquired by Burlington Resources.
April 1, 1997	An unlined surface impoundment was discovered to have been impacted by petroleum hydrocarbons. On April 29, 1997, excavation of the soil beneath the impoundment began; once complete, a total of 613 cubic yards of hydrocarbon impacted soil were removed and landfarmed at the nearby Randleman #3 site.
May 14, 1997	Three groundwater monitor wells were installed at the Site. Groundwater monitoring was initiated on a quarterly basis through March 1998.
April 1, 1998	Evaluation of groundwater monitoring results initiated another excavation of 2,220 cubic yards of hydrocarbon impacted soil "to address residual soil contamination extending to the south of the original excavated area" (Williams, 2002).
February 1, 2002	Quarterly groundwater monitoring was continued through September 2000, and after 4 consecutive quarters of groundwater quality monitoring results below New Mexico Water Quality Control Commission (NMWQCC) groundwater quality standards for benzene, toluene, ethylbenzene, and total xylenes (BTEX), Williams Environmental Services (Williams) requested that the New Mexico Oil Conservation Division (OCD) grant closure status to the Site.
June 1, 2002	OCD granted closure for the Site, provided that Williams plug and abandon all Site groundwater monitoring wells according to OCD standards (NMEMNRD, 2002). The historical excavation area and historical groundwater monitor wells are displayed in Figure 2.
March 31, 2006	ConocoPhillips Company acquired Burlington Resources and all assets
February 23, 2009	Approximately 60 barrels of condensate were found to have spilled from a hole located on the back side of an on-Site condensate tank into the bermed area. The spilled fluids remained in the berm and none of the condensate was recovered. Form C-141 stated that the spill impacted the soil on the ground surface around the tank, that the production tank was to be removed, and that the affected soils were to be excavated.
February 26, 2009	Envirotech Inc. of Farmington, NM (Envirotech) performed the soil excavation and collected soil samples for analysis. The area of release was excavated to approximately 42 feet by 51 feet by 7 feet deep. 7 composite soil samples were collected from the excavation – 1 from each wall and 3 samples from the bottom of the excavation. Soil samples were analyzed for total petroleum hydrocarbons (TPH) using EPA Method 418.1. Additionally, organic vapors were measured using a Photoionization Detector (PID). TPH results ranged from 8 parts per million (ppm) in the north wall sample to 1,080 ppm in the south wall sample. The OCD recommended action level for TPH at the Site was determined to be 100 ppm. Organic vapor concentrations ranged from 6.8 ppm from the north wall sample, to 898 ppm in the south wall sample. Due to high levels of TPH and organic vapors, the excavation was continued.
February 27, 2009	Envirotech continue the excavation and sampling activities. Samples collected from the north, west, and east ends of the excavation on February 26, 2009 were found to be below OCD action levels for TPH, the focus of the excavation on February 27, 2009 was the south wall, the southeast wall, and the bottom of the southeast corner. At the end of the day, the excavation measured 81 feet by 43 feet by 20 feet deep (total depth is given for the deepest part of the excavation; other areas determined to be below OCD action levels went to approximately 8 feet bgs). Eight soil samples were collected and analyzed in the field for TPH and organic vapors. Excavation continued until all samples were found to be below100 ppm for both TPH and organic vapors.
March 2, 2009	Groundwater began to seep into the southeast corner of the excavation at 20 feet bgs. A vacuum truck was contracted to remove groundwater from the excavation; approximately 10 gallons of water were removed. After removal of groundwater, a soil sample from the southeast corner of the excavation was collected. TPH and organic vapor results were found to be above OCD action levels. More water was then removed from the excavation, and additional soil removal was performed. A groundwater sample was collected from the area where water continued to seep into the excavation, and was analyzed for volatile organic compounds by EPA Method 8260. The groundwater sample was found to contain benzene, total xylenes and total naphthalenes above New Mexico Water Quality Control Commission (NMWQCC) groundwater quality standards. Once this sample had been obtained, the excavation caved in, making further water removal impossible (Envirotech, 2009). A total of 611 cubic yards of soil were romoved from the Site. Clean fill was used to backfill the excavation.
June 9 through 11, 2009	Tetra Tech installs 4 groundwater monitor wells at the Site; MW-1, MW-2, MW-3 and MW-4.
June 12, 2009	Tetra Tech conducts the first groundwater monitoring event at the Site.
June 17, 2009	Depth to water measurements were taken by Tetra Tech in Site monitor wells to determine if hydrocarbons were accumulating in the water column. Hydrocarbon sheen was detected in MW-2 and MW-3.

Table 1. Randleman #1 Site History Timeline

June 18, 2009	Hydrocarbon-absorbent socks were placed in monitor wells MW-2 and MW-3 by Tetra Tech.
September 23, 2009	Second quarterly groundwater monitoring event at the Site conducted by Tetra Tech.
October 1, 2009	Tetra Tech on Site to hand auger one boring near the Kiffen Canyon Wash, which is located downgradient and east of the Site. Groundwater and soil samples collected from boring.
December 16, 2009	Third quarterly groundwater monitoring event at the Site conducted by Tetra Tech

Table 2. Groundwater Elevation Data Summary - ConocoPhillips Company Randleman #1

Well ID	Total Depth (ft bgs)	Screen Interval (ft)	*Elevation (ft) (TOC)	Date Measured	Depth to Groundwater (ft below TOC)	Relative Groundwater Elevation
MW-1	25.5	9 - 24	95.19	6/12/2009	13.98	81.21
				6/14/2009	13.96	81.23
				9/23/2009	13.97	81.22
				12/16/2009	14.30	80.89
MW-2	23.80	8.9 - 23.8	96.79	6/12/2009	15.57	81.22
				6/14/2009	15.63	81.16
				9/23/2009	15.67	81.12
				12/16/2009	16.41	80.38
MW-3	22.00	6.5 - 21.5	96.31	6/12/2009	16.00	80.31
				6/14/2009	15.97	80.34
				9/23/2009	15.78	80.53
				12/16/2009	16.77	79.54
MW-4	29.50	11 - 26	98.83	6/12/2009	17.68	81.15
				6/14/2009	17.52	81.31
				9/23/2009	17.56	81.27
				12/16/2009	17.86	80.97

ft = Feet
TOC = Top of casing
bgs = below ground surface
* Elevation relative to an arbitrary data point of 100 feet

Table 3. ConocoPhillips Company - Randleman #1 - GroundwaterBaseline Analytical Results Summary - June 2009

Constituent			Sample ID (samples collected on June 12, 2009)					
Ions	**Method**	**Units**	**MW-1**	**MW-2**	**MW-3**	**Duplicate**	**MW-4**	**NMWQCC Groundwater Quality Standard**
Bromide	E300.0	mg/L	< 0.5	<0.5	<0.5	NA	< 0.5	NE
Chloride	E300.0	mg/L	119	40.1	40.3	NA	**2,310**	250
Fluoride	E300.0	mg/L	0.518	0.621	<0.5	NA	0.652	1.6
Orthophospate (as P)	E300.0	mg/L	< 0.5	< 0.5	<0.5	NA	< 0.5	NE
Sulfate	E300.0	mg/L	**1,690**	**1,360**	**1,510**	NA	**4,190**	600
Nitrate (as N)	E300.0	mg/L	0.78	0.52	< 0.5	NA	< 0.5	10
Nitrite (as N)	E300.0	mg/L	< 0.5	< 0.5	< 0.5	NA	< 0.5	NE
Metals, Total	**Method**	**Units**	**MW-1**	**MW-2**	**MW-3**	**Duplicate**	**MW-4**	**NMWQCC Groundwater Quality Standard**
Mercury	SW7470A	mg/L	<0.0002	<0.0002	<0.0002	NA	< 0.0002	NE
Aluminum	SW6010B	mg/L	9.22*	2.99*	1.1*	NA	13.6*	NE
Boron	SW6010B	mg/L	0.135	<0.1	0.107	NA	0.523	NE
Calcium	SW6010B	mg/L	473	528	527	NA	496	NE
Iron	SW6010B	mg/L	6.81*	3.7*	1.65*	NA	20*	NE
Magnesium	SW6010B	mg/L	27.1	19.7	23.9	NA	32.2	NE
Potassium	SW6010B	mg/L	7.31	7.53	6	NA	19.1	NE
Sodium	SW6010B	mg/L	454	196	242	NA	2720	NE
Strontium	SW6010B	mg/L	8.51	8.54	10.5	NA	11.6	NE
Tin	SW6010B	mg/L	<0.005	<0.005	0.0061	NA	<0.005	NE
Antimony	SW6020A	mg/L	< 0.005	<0.005	<0.005	NA	< 0.005	NE
Arsenic	SW6020A	mg/L	< 0.005	0.00759	< 0.005	NA	<0.005	NE
Barium	SW6020A	mg/L	0.0857	0.107	0.0537	NA	0.131	NE
Beryllium	SW6020A	mg/L	< 0.004	<0.004	<0.004	NA	0.00468	NE
Cadmium	SW6020A	mg/L	< 0.005	< 0.005	< 0.005	NA	<0.005	NE
Chromium	SW6020A	mg/L	0.00601	< 0.005	< 0.005	NA	0.117*	NE
Cobalt	SW6020A	mg/L	0.0157	< 0.005	< 0.005	NA	0.0312	NE
Copper	SW6020A	mg/L	0.022	0.00699	< 0.005	NA	0.041	NE
Lead	SW6020A	mg/L	0.0124	0.00561	< 0.005	NA	0.0418	NE
Manganese	SW6020A	mg/L	4.79*	3.56*	3*	NA	4.92*	NE
Molybdenum	SW6020A	mg/L	< 0.01	<0.01	<0.01	NA	0.0146	NE
Nickel	SW6020A	mg/L	0.0185	0.0107	0.00971	NA	0.0372	NE
Selenium	SW6020A	mg/L	< 0.005	< 0.005	< 0.005	NA	0.00558	NE
Silver	SW6020A	mg/L	< 0.005	< 0.005	< 0.005	NA	< 0.005	NE
Thallium	SW6020A	mg/L	< 0.005	< 0.005	< 0.005	NA	< 0.005	NE
Vanadium	SW6020A	mg/L	0.012	0.00592	< 0.005	NA	0.0269	NE
Zinc	SW6020A	mg/L	0.0322	0.0152	<0.01	NA	0.103	NE
SVOCS (detections only)	**Method**	**Units**	**MW-1**	**MW-2**	**MW-3**	**Duplicate**	**MW-4**	**NMWQCC Groundwater Quality Standard**
2,4-Dimethylphenol	8270C	µg/L	<5	<5	18	NA	<5	NE
2-Methylnaphthalene	8270C	µg/L	<5	13	12	NA	<5	see
Naphthalene	8270C	µg/L	<5	14	20	NA	<5	below
Sum of 2-Methylnaphthalene & Naphthalene	8270C	µg/L	--	27	**32**	NA	--	30
Benzyl alcohol	8270C	µg/L	<5	6.8	<5		<5	NE
2-Methylphenol	8270C	µg/L	<5	<5	7.2	NA	<5	NE
3&4-Methylphenol	8270C	µg/L	<5	<5	8.3	NA	<5	NE
VOCs (detections and BTEX only)	**Method**	**Units**	**MW-1**	**MW-2**	**MW-3**	**Duplicate**	**MW-4**	**NMWQCC Groundwater Quality Standard**
1,2,4-Trimethylbenzene	8260B	µg/L	< 5	300	440	NA	< 5	NE
1,3,5-Trimethylbenzene	8260B	µg/L	< 5	96	140	NA	< 5	NE
4-Isopropyltoluene	8260B	µg/L	< 5	7.2	6.3	NA	< 5	NE
Isopropylbenzene	8260B	µg/L	< 5	24	46	NA	< 5	NE
Naphthalene	8260B	µg/L	< 5	21	**36**	NA	< 5	30
n-Butylbenzene	8260B	µg/L	< 5	5.2	< 5	NA	< 5	NE
n-Propylbenzene	8260B	µg/L	< 5	25	48	NA	< 5	NE
sec-Butylbenzene	8260B	µg/L	< 5	6.6	6.1	NA	< 5	NE
Benzene	8260B	µg/L	5.1	9.4	**10**	**10**	< 5	10
Toluene	8260B	µg/L	7.6	**1,100**	**1,400**	**1,400**	< 5	750
Ethylbenzene	8260B	µg/L	< 5	180	490	540	< 5	750
Total Xylenes	8260B	µg/L	9.7	**2,280**	**4,050**	**4,300**	< 5	620
Other	**Method**	**Units**	**MW-1**	**MW-2**	**MW-3**	**Duplicate**	**MW-4**	**NMWQCC Groundwater Quality Standard**
Alkalinity (as Calcium Carbonate)	SM2320B	mg/L	165	215	99	NA	200	NE
Diesel Range Organics	SW8015B	mg/L	< 0.1	0.76	1.2	NA	< 0.1	NE
Gasoline Range Organics	SW8015B	mg/L	0.22	11	21	NA	< 0.1	NE

Notes:
MW = monitoring well
NMWQCC = New Mexico Water Quality Control Commission
Constituents in **BOLD** are in excess of NMWQCC groundwater quality standards
SVOCs = semi-volatile organic compounds
VOCs = volatile organic compounds
mg/L = milligrams per liter
µg/L = micrograms per liter
P = phosphate
N = nitrogen
NE = not established
NA = not analyzed
* = Concentration of total metals. Cannot be compared directly to the NMWQCC standard for dissolved metals; but were used to determine which metals to use dissolved metals analysese for during future quarterly sampling events.

Table 4. ConocoPhillips Randleman No. 1 - Quarterly Groundwater Analytical Results Summary

Well ID	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	Naphthalene (µg/L)	Chloride (mg/L)	Sulfate (mg/L)	Aluminum (mg/L)	Iron (mg/L)	Chromium (mg/L)	Manganese (mg/L)	Total Dissolved Solids (mg/L)
MW-1	6/14/2009	5.1	7.6	< 5	9.7	< 5	119	**1690**	9.22*	6.81*	.00601*	4.79*	NA
	9/23/2009	**18**	5.4	1.3	11.6	< 1	80.5	**1640**	< 0.1	< 0.02	< 0.005	0.17	**2880**
	12/16/2009	< 1	< 1	< 1	< 1	NA	127	**1960**	NA	NA	NA	0.108	**3140**
MW-2	6/14/2009	9.4	**1100**	180	**2280**	21	40.1	**1360**	2.99*	3.7*	< 0.005*	3.56*	NA
	9/23/2009	7.7	< 1	110	**720**	16	39.4	**1390**	< 0.1	0.0239	< 0.005	**6.82**	**2480**
	12/16/2009	**20**	7.9	240	**777.8**	NA	63.3	**1510**	NA	NA	NA	**5.26**	**2390**
MW-3	6/14/2009	**10**	**1400**	490	**4050**	**36**	40.3	**1510**	1.1*	1.65*	< 0.005*	3*	NA
	9/23/2009	**13**	8.5	89	320	3.9	64.5	**1500**	< 0.1	0.0486	< 0.005	**1.11**	**2720**
	12/16/2009	**18**	17	96	280	NA	99.1	**1920**	NA	NA	NA	**0.932**	**2560**
MW-4	6/14/2009	< 5	< 5	< 5	< 5	< 5	**2310**	**4190**	13.9*	20*	0.117*	4.92*	NA
	9/23/2009	< 1	< 1	< 1	< 1	< 1	**2130**	**3320**	< 0.1	0.0308	< 0.005	**2.73**	**8600**
	12/16/2009	< 1	< 1	< 1	< 1	NA	**3,430**	**4,110**	NA	NA	NA	**1.8**	**9600**
NMWQCC Standards		**10 (µg/L)**	**750 (µg/L)**	**750 (µg/L)**	**620 (µg/L)**	**30 (µg/L)**	**250 (mg/L)**	**600 (mg/L)**	**5 (mg/L)**	**1 (mg/L)**	**0.05 (mg/L)**	**0.2 (mg/L)**	**1000 (mg/L)**

Explanation

ND = Not Detected
NMWQCC = New Mexico Water Quality Control Commission
mg/L = milligrams per liter (parts per million)
µg/L = micrograms per liter (parts per billion)
NA = Not Analyzed
<0.7 = Below laboratory detection limit of 0.7 ug/L
Bold = concentrations that exceed the NMWQCC limits
* = Results reported for total metals analysis, results cannot be compared to NMWQCC Standards for dissolved metals

APPENDICES

APPENDIX A

Groundwater Sampling Field Forms

TETRA TECH, INC.

WATER SAMPLING FIELD FORM

Project Name Randleman 1 Page 1 of 4

Project No.

Site Location Aztec, NM

Site/Well No. MW-1 Coded/ Replicate No. Duplicate @ 1200 Date 12/16/09

Weather Cold, 28°F Time Sampling Began 1140 Time Sampling Completed 1155

EVACUATION DATA

Description of Measuring Point (MP) Top of Casing

Height of MP Above/Below Land Surface MP Elevation 95.19

Total Sounded Depth of Well Below MP 25.5 Water-Level Elevation 80.89

Held ____ Depth to Water Below MP 14.3 Diameter of Casing 2"

Wet ____ Water Column in Well 11.2 Gallons Pumped (Bailed) Prior to Sampling 5.5 gallons

Gallons per Foot 0.16

Gallons in Well 1.792 x 3 = 5.37 Sampling Pump Intake Setting (feet below land surface) —

Purging Equipment Purge pump / Bailer

SAMPLING DATA/FIELD PARAMETERS

Time	Temperature (°C)	pH	Conductivity (µS/cm³)	TDS (g/L)	DO (mg/L)	ORP (mV)	gallons
1150	15.04	6.03	3288	2.137	3.05	-34.6	3
1152	15.23	5.98	3287	2.136	2.64	-32.9	4
1153	15.26	5.99	3281	2.133	2.91	-31.2	6.25

Sampling Equipment Purge Pump/Bailer

Constituents Sampled	Container Description	Preservative
BTEX	3 40mL VOA's	HCl
Dissolved Mn	(1) 16 oz plastic	none (filter & preserve @ lab)
Chloride, sulfate, TDS	(1) 32 oz plastic	none

Remarks H_2O is light brown in color, no odor, no sheen

Sampling Personnel CM, AM

Well Casing Volumes

Gal./ft.							
	1 ¼" = 0.077	2" = 0.16	3" = 0.37	4" = 0.65
	1 ½" = 0.10	2 ½" = 0.24	3" ½ = 0.50	6" = 1.46

TETRA TECH, INC.

WATER SAMPLING FIELD FORM

Project Name: Randleman 1 — Page 2 of 4

Project No.:

Site Location: Aztec, NM

Site/Well No.: MW-2 — Coded/Replicate No.: — Date: 12/16/09

Weather: Cold, 28°F — Time Sampling Began: 1100 — Time Sampling Completed: 1120

EVACUATION DATA

Description of Measuring Point (MP): Top of Casing

Height of MP Above/Below Land Surface: — MP Elevation: 96.79

Total Sounded Depth of Well Below MP: 23.8 — Water-Level Elevation: 80.38

Held: — Depth to Water Below MP: 16.41 — Diameter of Casing: 2"

Wet: — Water Column in Well: 7.35 — Gallons Pumped (Bailed) Prior to Sampling: 3.75

Gallons per Foot: 0.16

Gallons in Well: 1.18 x 3 = 3.54 — Sampling Pump Intake (feet below land): —

Purging Equipment: Purge pump / (Bailer)

SAMPLING DATA/FIELD PARAMETERS

Time	Temperature (°C)	pH	Conductivity (µS/cm)	TDS (g/L)	DO (mg/L)	ORP (mV)	Vol
1109	13.47	6.31	1869	1.215	1.51	-180.5	1.5
1113	13.39	6.24	2420	1.573	1.69	-155.1	2.5
1116	13.40	6.23	2533	1.646	0.94	-134.1	3.5

Sampling Equipment: Purge Pump/(Bailer)

Constituents Sampled	Container Description	Preservative
BTEX	3 40mL VOA's	HCl
Dissolved Mn	(1) 16oz plastic	none/prefilter & preserve @ lab
Chloride, Sulfate & TDS	(1) 32oz plastic	none

Remarks: Purge H_2O is black, strong sulfer/weather Hydrocarbon odor observed.

Sampling Personnel: CM, AM

Well Casing Volumes

Gal./ft.	1 ¼" = 0.077	2" = 0.16	3" = 0.37	4" = 0.65
	1 ½" = 0.10	2 ½" = 0.24	3" ½ = 0.50	6" = 1.46

TETRA TECH, INC.

WATER SAMPLING FIELD FORM

Project Name Randleman 1 — Page 3 of 4

Project No.

Site Location Aztec, NM

Site/Well No. MW-3 — Coded/ Replicate No. — Date 12/16/09

Weather Cold, 28° F — Time Sampling Began 1035 — Time Sampling Completed 1105

EVACUATION DATA

Description of Measuring Point (MP) Top of Casing

Height of MP Above/Below Land Surface — MP Elevation 96.31

Total Sounded Depth of Well Below MP ~~22.~~ 24.5 — Water-Level Elevation 80.97

Held ____ Depth to Water Below MP 16.77 — Diameter of Casing 2"

Wet ____ Water Column in Well 7.73 — Gallons Pumped/Bailed Prior to Sampling

Gallons per Foot 0.16

Gallons in Well 1.237 — Sampling Pump Intake Setting (feet below land surface)

Purging Equipment Purge pump / Bailer — X3 = 3.71

SAMPLING DATA/FIELD PARAMETERS

Time	Temperature (°C)	pH	Conductivity (µS/cm³)	TDS (g/L)	DO (mg/L)	ORP (mV)	gallons
1057	13.32	6.12	2767	1.799	4.25	-142.7	2.75
1100	13.38	6.20	2752	1.789	3.94	-171.5	3.25
1103	13.47	6.17	2742	1.782	3.21	-188.2	3.50

Sampling Equipment Purge Pump/Bailer

Constituents Sampled	Container Description	Preservative
BTEX	3 40mL VOA's	HCl
Dissolved Mn	(1) 16 oz plastic	none (filter & preserve @ lab)
Chloride, Sulfate, TDS	(1) 32 oz plastic	none

Remarks purge H2O is black, very slight spotty discontinuous sheen strong sulfur/hydrocarbon odor observed (weathered)

Sampling Personnel CM, AM

Well Casing Volumes

Gal./ft.							
	1 ¼" = 0.077	2" = 0.16	3" = 0.37	4" = 0.65
	1 ½" = 0.10	2 ½" = 0.24	3" ½ = 0.50	6" = 1.46

TETRA TECH, INC.

WATER SAMPLING FIELD FORM

Project Name: Randleman 1 — Page 4 of 4

Project No.:

Site Location: Aztec, NM

Site/Well No.: MW-4 — Coded/Replicate No.: — Date: 12/16/09

Weather: Cold, 28°F — Time Sampling Began: 1200 — Time Sampling Completed: 1225

EVACUATION DATA

Description of Measuring Point (MP): Top of Casing

Height of MP Above/Below Land Surface: — MP Elevation: 98.83

Total Sounded Depth of Well Below MP: 29.5 — Water-Level Elevation: 80.97

Held: — Depth to Water Below MP: 17.86 — Diameter of Casing: 2"

Wet: — Water Column in Well: 11.64 — Gallons Pumped/Bailed Prior to Sampling:

Gallons per Foot: 0.16

Gallons in Well: 1.86 x 3 = 5.58 — Sampling Pump Intake Setting (feet below land surface): —

Purging Equipment: Purge pump / Bailer

SAMPLING DATA/FIELD PARAMETERS

Time	Temperature (°C)	pH	Conductivity (µS/cm³)	TDS (g/L)	DO (mg/L)	ORP (mV)	Vol
1213	14.29	6.05	11609	7.549	1.62	-32.1	2.5g
1219	14.67	6.12	11953	7.7766	1.69	-23.6	3.5g
1221	14.79	6.15	11744	7.632	1.58	-22.6	4.5g
1223	14.83	6.13	11723	7.619	1.31	-22.5	5.5g

Sampling Equipment: Purge Pump/Bailer

Constituents Sampled	Container Description	Preservative
BTEX	3 40mL VOA's	HCl
Dissolved Mn	(1) 16oz plastic	none (filter & preserve @ lab)
Chloride, Sulfate, TDS	(1) 32oz plastic	none

Remarks:

Sampling Personnel: CM, AM

Well Casing Volumes

Gal./ft.							
	1 ¼" = 0.077	2" = 0.16	3" = 0.37	4" = 0.65
	1 ½" = 0.10	2 ½" = 0.24	3" ½ = 0.50	6" = 1.46

APPENDIX B

Groundwater Laboratory Analysis Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Conoco Phillips

Certificate of Analysis Number:

09120784

Report To:		Project Name:	Randleman #1
Tetra Tech, Inc. Kelly Blanchard 6121 Indian School Road, N.E. Suite 200 Albuquerque NM 87110- ph: (505) 237-8440 fax:		Site:	Blanco,NM
		Site Address:	
		PO Number:	
		State:	New Mexico
		State Cert. No.:	
		Date Reported:	12/29/2009

This Report Contains A Total Of 19 Pages

Excluding This Page, Chain Of Custody

And

Any Attachments

12/29/2009

Date

Test results meet all requirements of NELAC, unless specified in the narrative.

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Case Narrative for:

Conoco Phillips

Certificate of Analysis Number:

09120784

Report To:		Project Name:	Randleman #1
Tetra Tech, Inc.		Site:	Blanco,NM
Kelly Blanchard		Site Address:	
6121 Indian School Road, N.E.			
Suite 200		PO Number:	
Albuquerque		State:	New Mexico
NM		State Cert. No.:	
87110-		Date Reported:	12/29/2009
ph: (505) 237-8440	fax:		

I. SAMPLE RECEIPT:

All samples were received intact. The internal ice chest temperatures were measured on receipt and are recorded on the attached Sample Receipt Checklist.

II: ANALYSES AND EXCEPTIONS:

Per the Conoco Phillips TSM Revision 0, a copy of the internal chain of custody is to be included in final data package. However, due to LIMS limitations, this cannot be provided at this time.

III. GENERAL REPORTING COMMENTS:

Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report (" mg\kg-dry " or " ug\kg-dry ").

Matrix spike (MS) and matrix spike duplicate (MSD) samples are chosen and tested at random from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. Since the MS and MSD are chosen at random from an analytical batch, the sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The Laboratory Control Sample (LCS) and the Method Blank (MB) are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

Some of the percent recoveries and RPD's on the QC report for the MS/MSD may be different than the calculated recoveries and RPD's using the sample result and the MS/MSD results that appear on the report because, the actual raw result is used to perform the calculations for percent recovery and RPD.

Any other exceptions associated with this report will be footnoted in the analytical result page(s) or the quality control summary page(s).

Please do not hesitate to contact us if you have any questions or comments pertaining to this data report. Please reference the above Certificate of Analysis Number.

This report shall not be reproduced except in full, without the written approval of the laboratory. The reported results are only representative of the samples submitted for testing.

SPL, Inc. is pleased to be of service to you. We anticipate working with you in fulfilling all your current and future analytical needs.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or by his designee, as verified by the following signature.

E Cardenas

Erica Cardenas
Project Manager

Date

Test results meet all requirements of NELAC, unless specified in the narrative.

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Conoco Phillips

Certificate of Analysis Number:

09120784

Report To: Tetra Tech, Inc.
Kelly Blanchard
6121 Indian School Road, N.E.
Suite 200
Albuquerque
NM
87110-
ph: (505) 237-8440 fax: (505) 881-3283

Fax To:

Project Name: Randleman #1
Site: Blanco,NM
Site Address:
PO Number:
State: New Mexico
State Cert. No.:
Date Reported: 12/29/2009

Client Sample ID	Lab Sample ID	Matrix	Date Collected	Date Received	COC ID	HOLD
MW-4	09120784-01	Water	12/16/2009 12:25:00 PM	12/18/2009 9:30:00 AM	292840	☐
MW-1	09120784-02	Water	12/16/2009 11:55:00 AM	12/18/2009 9:30:00 AM	292840	☐
MW-2	09120784-03	Water	12/16/2009 11:20:00 AM	12/18/2009 9:30:00 AM	292840	☐
MW-3	09120784-04	Water	12/16/2009 11:05:00 AM	12/18/2009 9:30:00 AM	292840	☐
Duplicate	09120784-05	Water	12/16/2009 12:00:00 PM	12/18/2009 9:30:00 AM	292839	☐
Trip Blank	09120784-06	Water	12/16/2009 11:30:00 AM	12/18/2009 9:30:00 AM	292839	☐

E Cardenas

12/29/2009

Erica Cardenas
Project Manager

Date

Kesavalu M. Bagawandoss Ph.D., J.D.
Laboratory Director

Ted Yen
Quality Assurance Officer

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Client Sample ID: MW-4 **Collected:** 12/16/2009 12:25 **SPL Sample ID:** 09120784-01

Site: Blanco,NM

Analyses/Method	Result	QUAL	Rep.Limit		Dil. Factor	Date Analyzed	Analyst	Seq. #
ION CHROMATOGRAPHY				**MCL**		**E300.0**	**Units: mg/L**	
Chloride	3430		250		500	12/28/09 14:49	BDG	5345599
Sulfate	4110		250		500	12/28/09 14:49	BDG	5345599
METALS BY METHOD 6010B, DISSOLVED				**MCL**		**SW6010B**	**Units: mg/L**	
Manganese	1.8		0.005		1	12/29/09 13:07	AB1	5346746

Prep Method	Prep Date	Prep Initials	Prep Factor
SW3005A	12/21/2009 10:00	R_V	1.00

TOTAL DISSOLVED SOLIDS				**MCL**		**SM2540 C**	**Units: mg/L**	
Total Dissolved Solids (Residue,Filterable)	9600		50		5	12/21/09 16:30	CFS	5339527
VOLATILE ORGANICS BY METHOD 8260B				**MCL**		**SW8260B**	**Units: ug/L**	
Benzene	ND		1		1	12/25/09 13:22	LU_L	5343872
Ethylbenzene	ND		1		1	12/25/09 13:22	LU_L	5343872
Toluene	ND		1		1	12/25/09 13:22	LU_L	5343872
m,p-Xylene	ND		1		1	12/25/09 13:22	LU_L	5343872
o-Xylene	ND		1		1	12/25/09 13:22	LU_L	5343872
Xylenes,Total	ND		1		1	12/25/09 13:22	LU_L	5343872
Surr: 1,2-Dichloroethane-d4	104		% 70-130		1	12/25/09 13:22	LU_L	5343872
Surr: 4-Bromofluorobenzene	102		% 74-125		1	12/25/09 13:22	LU_L	5343872
Surr: Toluene-d8	102		% 82-118		1	12/25/09 13:22	LU_L	5343872

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
E - Estimated Value exceeds calibration curve
TNTC - Too numerous to count
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Client Sample ID: MW-1 **Collected:** 12/16/2009 11:55 **SPL Sample ID:** 09120784-02

Site: Blanco,NM

Analyses/Method	Result	QUAL	Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
ION CHROMATOGRAPHY				**MCL**	**E300.0**	**Units: mg/L**	
Chloride	127		50	100	12/28/09 6:26	BDG	5345583
Sulfate	1960		100	200	12/28/09 15:06	BDG	5345600
METALS BY METHOD 6010B, DISSOLVED				**MCL**	**SW6010B**	**Units: mg/L**	
Manganese	0.108		0.005	1	12/29/09 13:11	AB1	5346747

Prep Method	Prep Date	Prep Initials	Prep Factor
SW3005A	12/21/2009 10:00	R_V	1.00

TOTAL DISSOLVED SOLIDS				**MCL**	**SM2540 C**	**Units: mg/L**	
Total Dissolved Solids (Residue,Filterable)	3140		40	4	12/21/09 16:30	CFS	5339528
VOLATILE ORGANICS BY METHOD 8260B				**MCL**	**SW8260B**	**Units: ug/L**	
Benzene	ND		1	1	12/25/09 13:51	LU_L	5343873
Ethylbenzene	ND		1	1	12/25/09 13:51	LU_L	5343873
Toluene	ND		1	1	12/25/09 13:51	LU_L	5343873
m,p-Xylene	ND		1	1	12/25/09 13:51	LU_L	5343873
o-Xylene	ND		1	1	12/25/09 13:51	LU_L	5343873
Xylenes,Total	ND		1	1	12/25/09 13:51	LU_L	5343873
Surr: 1,2-Dichloroethane-d4	97.7	%	70-130	1	12/25/09 13:51	LU_L	5343873
Surr: 4-Bromofluorobenzene	98.4	%	74-125	1	12/25/09 13:51	LU_L	5343873
Surr: Toluene-d8	98.7	%	82-118	1	12/25/09 13:51	LU_L	5343873

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
E - Estimated Value exceeds calibration curve
TNTC - Too numerous to count
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Client Sample ID: MW-2 **Collected:** 12/16/2009 11:20 **SPL Sample ID:** 09120784-03

Site: Blanco,NM

Analyses/Method	Result	QUAL	Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
ION CHROMATOGRAPHY				**MCL**	**E300.0**	**Units: mg/L**	
Chloride	63.3		50	100	12/28/09 7:16	BDG	5345586
Sulfate	1510		50	100	12/28/09 7:16	BDG	5345586
METALS BY METHOD 6010B, DISSOLVED				**MCL**	**SW6010B**	**Units: mg/L**	
Manganese	5.26		0.005	1	12/29/09 13:16	AB1	5346748

Prep Method	Prep Date	Prep Initials	Prep Factor
SW3005A	12/21/2009 10:00	R_V	1.00

TOTAL DISSOLVED SOLIDS				**MCL**	**SM2540 C**	**Units: mg/L**	
Total Dissolved Solids (Residue,Filterable)	2390		20	2	12/21/09 16:30	CFS	5339529
VOLATILE ORGANICS BY METHOD 8260B				**MCL**	**SW8260B**	**Units: ug/L**	
Benzene	20		1	1	12/25/09 14:17	LU_L	5343874
Ethylbenzene	240		10	10	12/26/09 21:08	LU_L	5344886
Toluene	7.9		1	1	12/25/09 14:17	LU_L	5343874
m,p-Xylene	770		10	10	12/26/09 21:08	LU_L	5344886
o-Xylene	7.8		1	1	12/25/09 14:17	LU_L	5343874
Xylenes,Total	777.8		10	10	12/26/09 21:08	LU_L	5344886
Surr: 1,2-Dichloroethane-d4	102	%	70-130	10	12/26/09 21:08	LU_L	5344886
Surr: 1,2-Dichloroethane-d4	99.9	%	70-130	1	12/25/09 14:17	LU_L	5343874
Surr: 4-Bromofluorobenzene	105	%	74-125	10	12/26/09 21:08	LU_L	5344886
Surr: 4-Bromofluorobenzene	105	%	74-125	1	12/25/09 14:17	LU_L	5343874
Surr: Toluene-d8	97.8	%	82-118	10	12/26/09 21:08	LU_L	5344886
Surr: Toluene-d8	103	%	82-118	1	12/25/09 14:17	LU_L	5343874

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
E - Estimated Value exceeds calibration curve
TNTC - Too numerous to count
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

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Client Sample ID: MW-3 **Collected:** 12/16/2009 11:05 **SPL Sample ID:** 09120784-04

Site: Blanco,NM

Analyses/Method	Result	QUAL	Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
ION CHROMATOGRAPHY			**MCL**	**E300.0**	**Units: mg/L**		
Chloride	99.1		50	100	12/28/09 7:33	BDG	5345587
Sulfate	1920		50	100	12/28/09 7:33	BDG	5345587
METALS BY METHOD 6010B, DISSOLVED			**MCL**	**SW6010B**	**Units: mg/L**		
Manganese	0.932		0.005	1	12/29/09 13:21	AB1	5346749

Prep Method	Prep Date	Prep Initials	Prep Factor
SW3005A	12/21/2009 10:00	R_V	1.00

TOTAL DISSOLVED SOLIDS			**MCL**	**SM2540 C**	**Units: mg/L**		
Total Dissolved Solids (Residue,Filterable)	2560		20	2	12/21/09 16:30	CFS	5339530
VOLATILE ORGANICS BY METHOD 8260B			**MCL**	**SW8260B**	**Units: ug/L**		
Benzene	18		1	1	12/26/09 22:31	LU_L	5344887
Ethylbenzene	96		1	1	12/26/09 22:31	LU_L	5344887
Toluene	17		1	1	12/26/09 22:31	LU_L	5344887
m,p-Xylene	180		1	1	12/26/09 22:31	LU_L	5344887
o-Xylene	100		1	1	12/26/09 22:31	LU_L	5344887
Xylenes,Total	280		1	1	12/26/09 22:31	LU_L	5344887
Surr: 1,2-Dichloroethane-d4	97.7	%	70-130	1	12/26/09 22:31	LU_L	5344887
Surr: 4-Bromofluorobenzene	109	%	74-125	1	12/26/09 22:31	LU_L	5344887
Surr: Toluene-d8	102	%	82-118	1	12/26/09 22:31	LU_L	5344887

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
E - Estimated Value exceeds calibration curve
TNTC - Too numerous to count
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

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Client Sample ID: Duplicate **Collected:** 12/16/2009 12:00 **SPL Sample ID:** 09120784-05

Site: Blanco,NM

Analyses/Method	Result	QUAL	Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
VOLATILE ORGANICS BY METHOD 8260B			**MCL**	**SW8260B**	**Units: ug/L**		
Benzene	ND		1	1	12/25/09 14:44	LU_L	5343875
Ethylbenzene	ND		1	1	12/25/09 14:44	LU_L	5343875
Toluene	ND		1	1	12/25/09 14:44	LU_L	5343875
m,p-Xylene	ND		1	1	12/25/09 14:44	LU_L	5343875
o-Xylene	ND		1	1	12/25/09 14:44	LU_L	5343875
Xylenes,Total	ND		1	1	12/25/09 14:44	LU_L	5343875
Surr: 1,2-Dichloroethane-d4	105		% 70-130	1	12/25/09 14:44	LU_L	5343875
Surr: 4-Bromofluorobenzene	102		% 74-125	1	12/25/09 14:44	LU_L	5343875
Surr: Toluene-d8	101		% 82-118	1	12/25/09 14:44	LU_L	5343875

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
E - Estimated Value exceeds calibration curve
TNTC - Too numerous to count
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

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Client Sample ID: Trip Blank **Collected:** 12/16/2009 11:30 **SPL Sample ID:** 09120784-06

Site: Blanco,NM

Analyses/Method	Result	QUAL		Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
VOLATILE ORGANICS BY METHOD 8260B				**MCL**	**SW8260B**	**Units: ug/L**		
Benzene	ND			1	1	12/25/09 12:56	LU_L	5343871
Ethylbenzene	ND			1	1	12/25/09 12:56	LU_L	5343871
Toluene	ND			1	1	12/25/09 12:56	LU_L	5343871
m,p-Xylene	ND			1	1	12/25/09 12:56	LU_L	5343871
o-Xylene	ND			1	1	12/25/09 12:56	LU_L	5343871
Xylenes,Total	ND			1	1	12/25/09 12:56	LU_L	5343871
Surr: 1,2-Dichloroethane-d4	102		%	70-130	1	12/25/09 12:56	LU_L	5343871
Surr: 4-Bromofluorobenzene	100		%	74-125	1	12/25/09 12:56	LU_L	5343871
Surr: Toluene-d8	100		%	82-118	1	12/25/09 12:56	LU_L	5343871

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
E - Estimated Value exceeds calibration curve
TNTC - Too numerous to count
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

Quality Control Documentation

HOUSTON LABORATORY
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Quality Control Report

Conoco Phillips

Randleman #1

Analysis: Metals by Method 6010B, Dissolved
Method: SW6010B
WorkOrder: 09120784
Lab Batch ID: 96603

Method Blank

RunID: ICP2_091229A-5346723 Units: mg/L
Analysis Date: 12/29/2009 11:17 Analyst: AB1
Preparation Date: 12/21/2009 10:00 Prep By: R_V Method SW3005A

Analyte	Result	Rep Limit
Manganese	ND	0.005

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
09120784-01B	MW-4
09120784-02B	MW-1
09120784-03B	MW-2
09120784-04B	MW-3

Laboratory Control Sample (LCS)

RunID: ICP2_091229A-5346724 Units: mg/L
Analysis Date: 12/29/2009 11:22 Analyst: AB1
Preparation Date: 12/21/2009 10:00 Prep By: R_V Method SW3005A

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Manganese	0.1000	0.1073	107.3	80	120

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 09120780-01
RunID: ICP2_091229A-5346726 Units: mg/L
Analysis Date: 12/29/2009 11:31 Analyst: AB1
Preparation Date: 12/21/2009 10:00 Prep By: R_V Method SW3005A

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Manganese	0.5764	0.1	0.7183	N/C	0.1	0.7158	N/C	N/C	20	75	125

Qualifiers:
ND/U - Not Detected at the Reporting Limit
B - Analyte Detected In The Associated Method Blank
J - Estimated Value Between MDL And PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count

QC results presented on the QC Summary Report have been rounded. RPD and percent recovery values calculated by the SPL LIMS system are derived from QC data prior to the application of rounding rules.

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Quality Control Report

Conoco Phillips

Randleman #1

Analysis: Volatile Organics by Method 8260B
Method: SW8260B

WorkOrder: 09120784
Lab Batch ID: R292280

Method Blank

RunID: K_091224B-5343862 Units: ug/L
Analysis Date: 12/25/2009 8:27 Analyst: LU_L

Analyte	Result	Rep Limit
Benzene	ND	1.0
Ethylbenzene	ND	1.0
Toluene	ND	1.0
m,p-Xylene	ND	1.0
o-Xylene	ND	1.0
Xylenes,Total	ND	1.0
Surr: 1,2-Dichloroethane-d4	100.3	70-130
Surr: 4-Bromofluorobenzene	103.4	74-125
Surr: Toluene-d8	101.6	82-118

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
09120784-01A	MW-4
09120784-02A	MW-1
09120784-03A	MW-2
09120784-05A	Duplicate
09120784-06A	Trip Blank

Laboratory Control Sample (LCS)

RunID: K_091224B-5343861 Units: ug/L
Analysis Date: 12/25/2009 7:55 Analyst: LU_L

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Benzene	20.0	21.7	109	74	123
Ethylbenzene	20.0	19.2	95.9	72	127
Toluene	20.0	19.3	96.7	74	126
m,p-Xylene	40.0	39.2	98.0	71	129
o-Xylene	20.0	19.4	96.9	74	130
Xylenes,Total	60.0	58.6	97.7	71	130
Surr: 1,2-Dichloroethane-d4	50.0	52.6	105	70	130
Surr: 4-Bromofluorobenzene	50.0	50.9	102	74	125
Surr: Toluene-d8	50.0	50.2	100	82	118

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 09120826-05
RunID: K_091224B-5343865 Units: ug/L
Analysis Date: 12/25/2009 10:00 Analyst: LU_L

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte Detected In The Associated Method Blank
J - Estimated Value Between MDL And PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count

QC results presented on the QC Summary Report have been rounded. RPD and percent recovery values calculated by the SPL LIMS system are derived from QC data prior to the application of rounding rules.

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Quality Control Report

Conoco Phillips

Randleman #1

Analysis: Volatile Organics by Method 8260B
Method: SW8260B

WorkOrder: 09120784
Lab Batch ID: R292280

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Benzene	ND	20	21.1	105	20	21.3	107	1.18	22	70	124
Ethylbenzene	ND	20	17.6	88.2	20	18.2	91.2	3.37	20	76	122
Toluene	ND	20	19.0	94.8	20	18.9	94.4	0.418	24	80	117
m,p-Xylene	ND	40	35.6	89.1	40	37.0	92.4	3.70	20	69	127
o-Xylene	ND	20	18.9	94.6	20	19.0	95.1	0.575	20	84	114
Xylenes,Total	ND	60	54.5	90.9	60	56.0	93.3	2.63	20	69	127
Surr: 1,2-Dichloroethane-d4	ND	50	51.7	103	50	53.4	107	3.19	30	70	130
Surr: 4-Bromofluorobenzene	ND	50	50.6	101	50	51.5	103	1.91	30	74	125
Surr: Toluene-d8	ND	50	49.2	98.3	50	49.3	98.6	0.262	30	82	118

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte Detected In The Associated Method Blank
J - Estimated Value Between MDL And PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count

QC results presented on the QC Summary Report have been rounded. RPD and percent recovery values calculated by the SPL LIMS system are derived from QC data prior to the application of rounding rules.

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Quality Control Report

Conoco Phillips

Randleman #1

Analysis: Volatile Organics by Method 8260B
Method: SW8260B

WorkOrder: 09120784
Lab Batch ID: R292328

Method Blank

RunID: K_091226C-5344882 Units: ug/L
Analysis Date: 12/26/2009 13:37 Analyst: LU_L

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
09120784-03A	MW-2
09120784-04A	MW-3

Analyte	Result	Rep Limit
Benzene	ND	1.0
Ethylbenzene	ND	1.0
Toluene	ND	1.0
m,p-Xylene	ND	1.0
o-Xylene	ND	1.0
Xylenes,Total	ND	1.0
Surr: 1,2-Dichloroethane-d4	102.4	70-130
Surr: 4-Bromofluorobenzene	103.5	74-125
Surr: Toluene-d8	101.7	82-118

Laboratory Control Sample (LCS)

RunID: K_091226C-5344881 Units: ug/L
Analysis Date: 12/26/2009 12:11 Analyst: LU_L

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Benzene	20.0	20.2	101	74	123
Ethylbenzene	20.0	19.9	99.3	72	127
Toluene	20.0	20.4	102	74	126
m,p-Xylene	40.0	40.1	100	71	129
o-Xylene	20.0	19.8	99.2	74	130
Xylenes,Total	60.0	59.9	99.8	71	130
Surr: 1,2-Dichloroethane-d4	50.0	49.7	99.5	70	130
Surr: 4-Bromofluorobenzene	50.0	51.1	102	74	125
Surr: Toluene-d8	50.0	51.6	103	82	118

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 09120660-01
RunID: K_091226C-5344884 Units: ug/L
Analysis Date: 12/26/2009 19:44 Analyst: LU_L

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte Detected In The Associated Method Blank
J - Estimated Value Between MDL And PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count

QC results presented on the QC Summary Report have been rounded. RPD and percent recovery values calculated by the SPL LIMS system are derived from QC data prior to the application of rounding rules.

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Quality Control Report

Conoco Phillips

Randleman #1

Analysis: Volatile Organics by Method 8260B **WorkOrder:** 09120784
Method: SW8260B **Lab Batch ID:** R292328

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Benzene	ND	20	21.2	106	20	20.8	104	1.93	22	70	124
Ethylbenzene	ND	20	18.8	94.0	20	19.2	96.0	2.12	20	76	122
Toluene	ND	20	19.2	96.1	20	19.4	96.9	0.855	24	80	117
m,p-Xylene	ND	40	38.2	95.5	40	39.1	97.8	2.40	20	69	127
o-Xylene	ND	20	19.2	96.2	20	19.7	98.7	2.54	20	84	114
Xylenes,Total	ND	60	57.4	95.8	60	58.8	98.1	2.45	20	69	127
Surr: 1,2-Dichloroethane-d4	ND	50	51.9	104	50	50.2	100	3.36	30	70	130
Surr: 4-Bromofluorobenzene	ND	50	51.5	103	50	51.4	103	0.0117	30	74	125
Surr: Toluene-d8	ND	50	48.4	96.8	50	49.7	99.3	2.62	30	82	118

Qualifiers:
ND/U - Not Detected at the Reporting Limit
B - Analyte Detected In The Associated Method Blank
J - Estimated Value Between MDL And PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count

QC results presented on the QC Summary Report have been rounded. RPD and percent recovery values calculated by the SPL LIMS system are derived from QC data prior to the application of rounding rules.

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Quality Control Report

Conoco Phillips

Randleman #1

Analysis: Total Dissolved Solids
Method: SM2540 C

WorkOrder: 09120784
Lab Batch ID: R292020

Method Blank

RunID: WET_091221K-5339511 Units: mg/L
Analysis Date: 12/21/2009 16:30 Analyst: CFS

Analyte	Result	Rep Limit
Total Dissolved Solids (Residue,Filterable)	ND	10

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
09120784-01C	MW-4
09120784-02C	MW-1
09120784-03C	MW-2
09120784-04C	MW-3

Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD)

RunID: WET_091221K-5339513 Units: mg/L
Analysis Date: 12/21/2009 16:30 Analyst: CFS

Analyte	LCS Spike Added	LCS Result	LCS Percent Recovery	LCSD Spike Added	LCSD Result	LCSD Percent Recovery	RPD	RPD Limit	Lower Limit	Upper Limit
Total Dissolved Solids (Residue,Filterabl	200.0	198.0	99.00	200.0	202.0	101.0	2.0	10	95	107

Sample Duplicate

Original Sample: 09120860-02
RunID: WET_091221K-5339537 Units: mg/L
Analysis Date: 12/21/2009 16:30 Analyst: CFS

Analyte	Sample Result	DUP Result	RPD	RPD Limit
Total Dissolved Solids (Residue,Filterabl	531	533	0.376	10

Qualifiers:
ND/U - Not Detected at the Reporting Limit
B - Analyte Detected In The Associated Method Blank
J - Estimated Value Between MDL And PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count

QC results presented on the QC Summary Report have been rounded. RPD and percent recovery values calculated by the SPL LIMS system are derived from QC data prior to the application of rounding rules.

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Quality Control Report

Conoco Phillips

Randleman #1

Analysis: Ion Chromatography
Method: E300.0

WorkOrder: 09120784
Lab Batch ID: R292366C

Method Blank

RunID: IC2_091227A-5345581 Units: mg/L
Analysis Date: 12/28/2009 5:35 Analyst: BDG

Analyte	Result	Rep Limit
Chloride	ND	0.50
Sulfate	ND	0.50

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
09120784-01C	MW-4
09120784-02C	MW-1
09120784-04C	MW-3

Laboratory Control Sample (LCS)

RunID: IC2_091227A-5345582 Units: mg/L
Analysis Date: 12/28/2009 5:52 Analyst: BDG

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Chloride	10.00	10.88	108.8	85	115
Sulfate	10.00	10.62	106.2	85	115

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 09120685-03
RunID: IC2_091227A-5345597 Units: mg/L
Analysis Date: 12/28/2009 14:16 Analyst: BDG

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Chloride	200.9	10	234.7	N/C	10	217.2	N/C	N/C	20	80	120
Sulfate	1.013	10	16.05	150.4 *	10	14.33	133.1 *	11.35	20	80	120

Qualifiers:
ND/U - Not Detected at the Reporting Limit
B - Analyte Detected In The Associated Method Blank
J - Estimated Value Between MDL And PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count

QC results presented on the QC Summary Report have been rounded. RPD and percent recovery values calculated by the SPL LIMS system are derived from QC data prior to the application of rounding rules.

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Quality Control Report

Conoco Phillips

Randleman #1

Analysis: Ion Chromatography
Method: E300.0

WorkOrder: 09120784
Lab Batch ID: R292366D

Method Blank

RunID: IC2_091227A-5345581 Units: mg/L
Analysis Date: 12/28/2009 5:35 Analyst: BDG

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
09120784-02C	MW-1
09120784-03C	MW-2

Analyte	Result	Rep Limit
Chloride	ND	0.50
Sulfate	ND	0.50

Laboratory Control Sample (LCS)

RunID: IC2_091227A-5345582 Units: mg/L
Analysis Date: 12/28/2009 5:52 Analyst: BDG

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Chloride	10.00	10.88	108.8	85	115
Sulfate	10.00	10.62	106.2	85	115

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 09120773-07
RunID: IC2_091227A-5345578 Units: mg/L
Analysis Date: 12/28/2009 4:45 Analyst: BDG

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Chloride	15.67	10	42.52	268.5 *	10	27.39	117.1	43.30 *	20	80	120
Sulfate	12.22	10	26.45	142.3 *	10	26.72	145.0 *	1.008	20	80	120

Qualifiers:
ND/U - Not Detected at the Reporting Limit
B - Analyte Detected In The Associated Method Blank
J - Estimated Value Between MDL And PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count

QC results presented on the QC Summary Report have been rounded. RPD and percent recovery values calculated by the SPL LIMS system are derived from QC data prior to the application of rounding rules.

Sample Receipt Checklist

And

Chain of Custody

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Sample Receipt Checklist

Workorder:	**09120784**	Received By:	**RE**
Date and Time Received:	**12/18/2009 9:30:00 AM**	Carrier name:	**Fedex-Standard Overnight**
Temperature:	**4.9°C**	Chilled by:	**Water Ice**

1.	**Shipping container/cooler in good condition?**	Yes	☑	No	☐	Not Present ☐
2.	**Custody seals intact on shippping container/cooler?**	Yes	☑	No	☐	Not Present ☐
3.	**Custody seals intact on sample bottles?**	Yes	☐	No	☐	Not Present ☑
4.	**Chain of custody present?**	Yes	☑	No	☐	
5.	**Chain of custody signed when relinquished and received?**	Yes	☑	No	☐	
6.	**Chain of custody agrees with sample labels?**	Yes	☑	No	☐	
7.	**Samples in proper container/bottle?**	Yes	☑	No	☐	
8.	**Sample containers intact?**	Yes	☑	No	☐	
9.	**Sufficient sample volume for indicated test?**	Yes	☑	No	☐	
10.	**All samples received within holding time?**	Yes	☑	No	☐	
11.	**Container/Temp Blank temperature in compliance?**	Yes	☑	No	☐	
12.	**Water - VOA vials have zero headspace?**	Yes	☑	No	☐	VOA Vials Not Present ☐
13.	**Water - Preservation checked upon receipt (except VOA*)?**	Yes	☐	No	☐	Not Applicable ☑

***VOA Preservation Checked After Sample Analysis**

SPL Representative: _____ **Contact Date & Time:** _____

Client Name Contacted: _____

Non Conformance Issues: _____

Client Instructions: _____

SPL, Inc.
Analysis Request & Chain of Custody Record

292340

09120784 page 1 of 2

Client Name: Tetra Tech
Address: 6121 Indian School Rd. NE Suite 200
City Albuquerque State NM Zip
Phone/Fax: 505-237-8440
Client Contact: Kelly Blanchard Email: Kelly.blanchard@tetratech.com
Project Name/No.: Bandleman 1
Site Name:
Site Location: Blanco, NM
Invoice To: ConocoPhillips Ph:

SAMPLE ID	DATE	TIME	comp	grab	matrix (W=water S=soil O=oil A=air SL=sludge E=envore X=other)	bottle (P=plastic A=amber glass G=glass V=vial X=other)	size (1=1 liter 4=4oz 40=vial 8=8oz 16=16oz X=other)	pres. (1=HCl 2=HNO3 3=H2SO4 X=other)	Number of Containers	Requested Analysis: BTEX	Dissolved Mn	Chloride, Sulfate, +TDS
MW-4	12/16/09	1225		X	W	V	40	1	3	X		
MW-4	12/16/09	1225		X	W	P	16	X	1		X	
MW-4	12/16/09	1225		X	W	P	1	X	1			X
MW-1	12/16/09	1155		X	W	V	40	1	3	X		
MW-1	12/16/09	1155		X	W	P	16	X	1		X	
MW-1	12/16/09	1155		X	W	P	1	X	1			X
MW-2	12/16/09	1120		X	W	V	40	1	3	X		
MW-2	12/16/09	1120		X	W	P	16	X	1		X	
MW-2	12/16/09	1120		X	W	P	1	X	1			X
MW-3	12/16/09	1105		X	W	V	40	1	3	X		

Client/Consultant Remarks:

Laboratory remarks:

Intact? Y N
Ice? Y N
Temp: 4.9

Requested TAT
- 1 Business Day
- 2 Business Days
- 3 Business Days
- Other
- Contract
- Standard

Rush TAT requires prior notice

Special Reporting Requirements: Results: Fax Email PDF
Standard QC Level 3 QC Level 4 QC TX TRRP LA RECAP

Special Detection Limits (specify):

PM review (initial):

	date	time	
1. Relinquished by Sampler:	12/17/09	1200	2. Received by:
3. Relinquished by:	date	time	4. Received by:
5. Relinquished by:	12/18/09	0930	6. Received by Laboratory:

8880 Interchange Drive
Houston, TX 77054 (713) 660-0901

500 Ambassador Caffery Parkway
Scott, LA 70583 (337) 237-4775

459 Hughes Drive
Traverse City MI 49686 (231) 947-5777

252839

SPL, Inc.
Analysis Request & Chain of Custody Record

09120784 — page 2 of 2

Client Name: Tetra Tech
Address: 6121 Indian School Rd NE Suite 200
City: Albuquerque State: NM Zip: [illegible]
Phone/Fax: 505-237-4440
Client Contact: Kelly Blanchard Email: kelly.blanchard@tetratech.com
Project Name/No.: Candleman
Site Name:
Site Location: Blanco, NM
Invoice To: ConocoPhillips Ph:

SAMPLE ID	DATE	TIME	comp	grab	matrix (W=water S=soil O=oil A=air SL=sludge E=encore X=other)	bottle (P=plastic A=amber glass G=glass V=vial X=other)	size (1=1 liter 4=4oz 40=vial 8=8oz 16=16oz X=other)	pres. (1=HCl 2=HNO3 3=H2SO4 X=other none)	Number of Containers	BTEX	Dissolved Mn	Chloride, Sulfate, + TDS						
MW-3	12/16/09	1105		X	W	P	16	X	1		X							
MW-3	12/16/09	1105		X	W	P	1	X	1			X						
Duplicate	12/16/09	1200		X	W	V	40	1	3	X								
Trip Blank	~~12/16/09~~ 12/17/09	1130		X	W	V	40	1	2	X								

Client/Consultant Remarks:

Laboratory remarks:

Intact? ☐ Y ☐ N
Ice? ☐ Y ☐ N
Temp:

Requested TAT
☐ 1 Business Day ☐ Contract
☐ 2 Business Days ☒ Standard
☐ 3 Business Days
☐ Other ....
Rush TAT requires prior notice

Special Reporting Requirements Results: Fax ☐ Email ☒ PDF ☐
Standard QC ☒ Level 3 QC ☐ Level 4 QC ☐ TX TRRP ☐ LA RECAP ☐

Special Detection Limits (specify):

PM review (initial):

	date	time	
1. Relinquished by Sampler: [signature]	12/17/09	1200	2. Received by:
3. Relinquished by:			4. Received by:
5. Relinquished by:	12/17/09	0930	6. Received by Laboratory: [signature]

☐ 8880 Interchange Drive
Houston, TX 77054 (713) 660-0901

☐ 500 Ambassador Caffery Parkway
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☐ 459 Hughes Drive
Traverse City, MI 49686 (231) 947-5777