3RP-340

QTR Groundwater Report

DATE:
March 2010

TETRA TECH, INC.

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

March 12, 2010

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

RE: ConocoPhillips Company Randleman #1 – September 2009 Quarterly 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

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

March 2010

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

1.0 INTRODUCTION

This report discusses the groundwater sampling event performed by Tetra Tech, Inc. (Tetra Tech) on September 23, 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 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. 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 sheen noticed in purge water removed from the wells. The absorbent socks will be monitored and replaced as necessary during subsequent monitoring events.

2.0 MONITORING SUMMARY, SAMPLING METHODOLOGY AND RESULTS

2.1 Monitoring Summary

A groundwater quality monitoring event at the Site was conducted on September 23, 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 September 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 September 23, 2009 groundwater quality 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 September 2009 groundwater monitoring event were performed by Southern Petroleum Laboratory (SPL) of Houston, Texas.

During the September 2009 groundwater monitoring event, each groundwater sample collected was analyzed for benzene, toluene, ethylbenzene, total xylenes (BTEX), and naphthalene by EPA Method 8260B; sulfate and chloride by EPA Method E300.0; total dissolved solids (TDS) by EPA Method 2540C; and dissolved aluminum, iron, manganese and chromium 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 September 23, 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 monitor well MW-4 was found to contain chloride at concentration of 2,130 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 1640 mg/L, 1390 mg/L, 1500 mg/L, and 3320 mg/L, respectively.
- **Dissolved Metals**

  Total metals testing was conducted during prior events as requested by the OCD in April of 2008; however, since all NMWQCC drinking water standards pertain to dissolved metals concentrations, with the exception of mercury, Tetra Tech requested and received approval from the OCD on September 8, 2009 to run dissolved metals analyses for only those metals which had exceeded the NMWQCC drinking water standards for metals previously run by total metals analysis. The dissolved metals samples were collected in unpreserved containers supplied by the laboratory, which were filtered and preserved by laboratory personnel prior to analysis for dissolved metals. Dissolved metals testing will continue for metals exceeding NMWQCC drinking water standards. With the exception of mercury, total metals data collected prior to September of 2009 cannot be compared to NMWQCC standards for dissolved metals

    - Aluminum
        - The NMWQCC aluminum groundwater quality standard for irrigation use is 5 mg/L; groundwater samples collected from all Site monitoring wells were found to be below the laboratory detection limit of 0.1 mg/L.

- Iron
  - The NMWQCC domestic water supply groundwater quality standard for iron is 1 mg/L; groundwater samples collected from all Site monitoring wells were found to be below standard for dissolved iron.
- Chromium
  - The human health NMWQCC groundwater quality standard for chromium is 0.05 mg/L; groundwater samples collected from all site monitoring wells were found to be below the laboratory detection limit of 0.005 mg/L.
- 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 6.82 mg/L, 1.11 mg/L, and 2.73 mg/L, respectively.

- **Benzene**
  - The human health NMWQCC groundwater quality standard for benzene is 10 µg/L. Groundwater samples collected from monitoring wells MW-1 and MW-3 were above the standard with concentrations of 18 µg/L and 13 µg/L, respectively.
- **Ethylbenzene and Toluene**
  - The human health NMWQCC groundwater quality standards for ethylbenzene and toluene are both 750 µg/L. Groundwater samples collected from all Site monitoring wells were below the standards for ethylbenzene and toluene.
- **Total Xylenes**
  - The human health NMWQCC groundwater quality standard for total xylenes is 620 µg/L, groundwater samples collected from MW-1, MW-3 and MW-4 were all found to be below standard for total xylenes however MW-2 exceeded the standard with a concentration of 720 µg/L.
- **Additional Sampling**
  - On October 1, 2009 Tetra Tech employees visited the site to hand auger a soil boring down gradient and to the east of the Site within the Kiffen Canyon Wash. The boring location is shown on **Figure 2**. One soil sample and one groundwater sample was collected from the boring. The groundwater sample collected was analyzed for BTEX by EPA method 8260, with all constituents found to be below the laboratory detection limit of 1µg/L. The soil sample collected from the Kiffen Canyon Wash boring was analyzed for TPH Gasoline Range Organics (GRO) and TPH Diesel Range Organics (DRO) by EPA Method 8015, as well as BTEX by EPA Method 8021. TPH GRO was found to be below the laboratory detection limit of 0.13 mg/Kg, TPH DRO was found at a concentration of 8 mg/kg, and all BTEX constituents were found to be below the laboratory detection limit of 1.3 µg/kg.

The corresponding laboratory analytical report for the September 2009 groundwater sampling event, including quality control summaries, is included in **Appendix B**. The laboratory analytical report for the samples collected from the Kiffen Canyon Wash is included as **Appendix C**. A map showing BTEX concentrations in groundwater from Site monitoring wells during the September 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 quality results begin to 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.

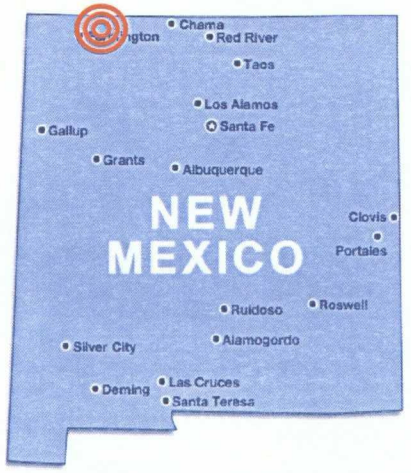
Williams Environmental Services (2002). *Randleman #1 Pit Remediation and Closure Report. Prepared for the New Mexico Oil Conservation Division.* Report Dated February 11, 2002. 3 pp (not including Figures, Tables, and Appendices).

FIGURES

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.

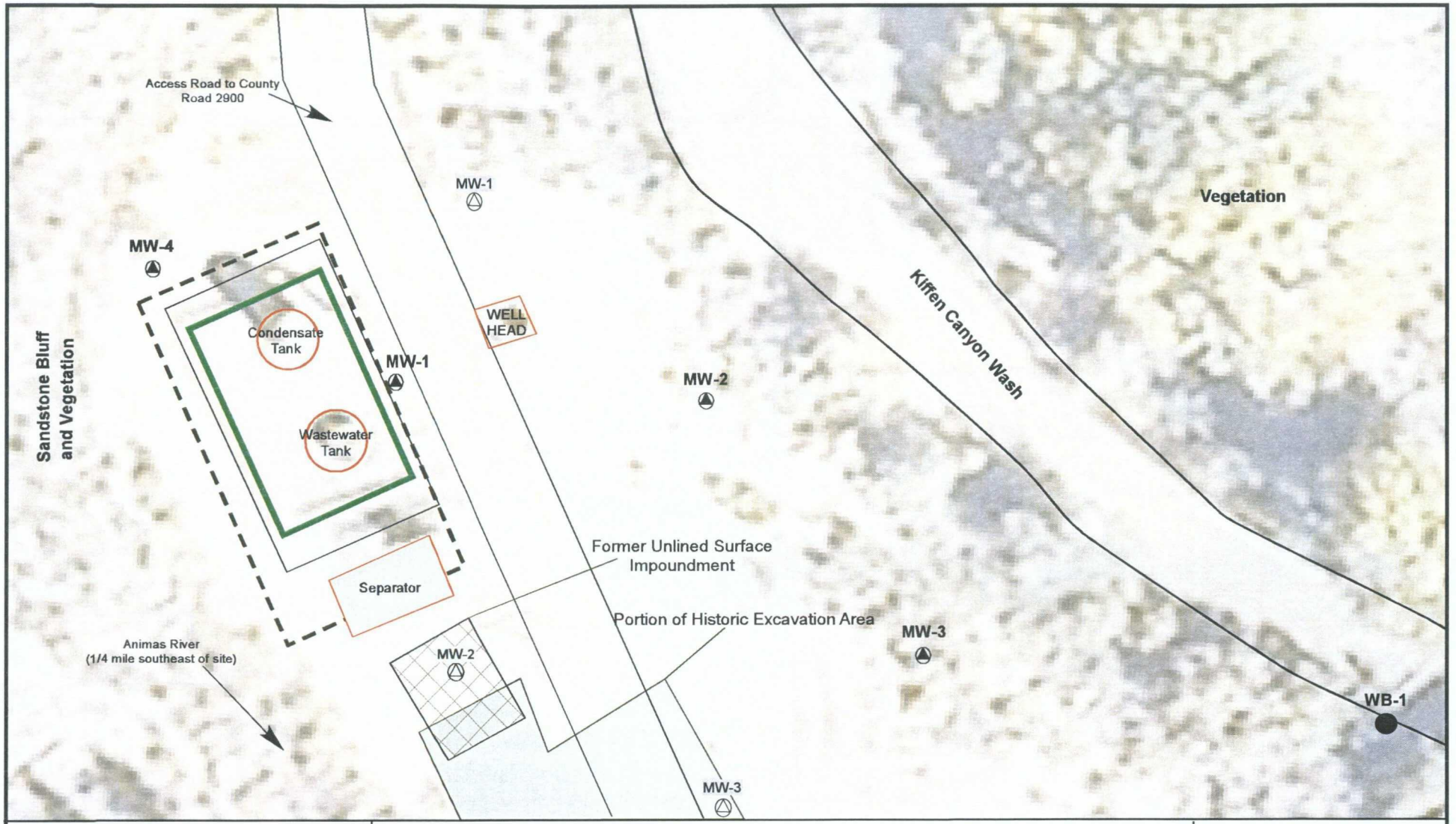


FIGURE 2:
SITE DETAIL MAP
CONOCOPHILLIPS COMPANY
RANDLEMAN #1 OIL AND GAS PRODUCTION WELL
Sec 13, T31N, R11W
Aztec, New Mexico

LEGEND

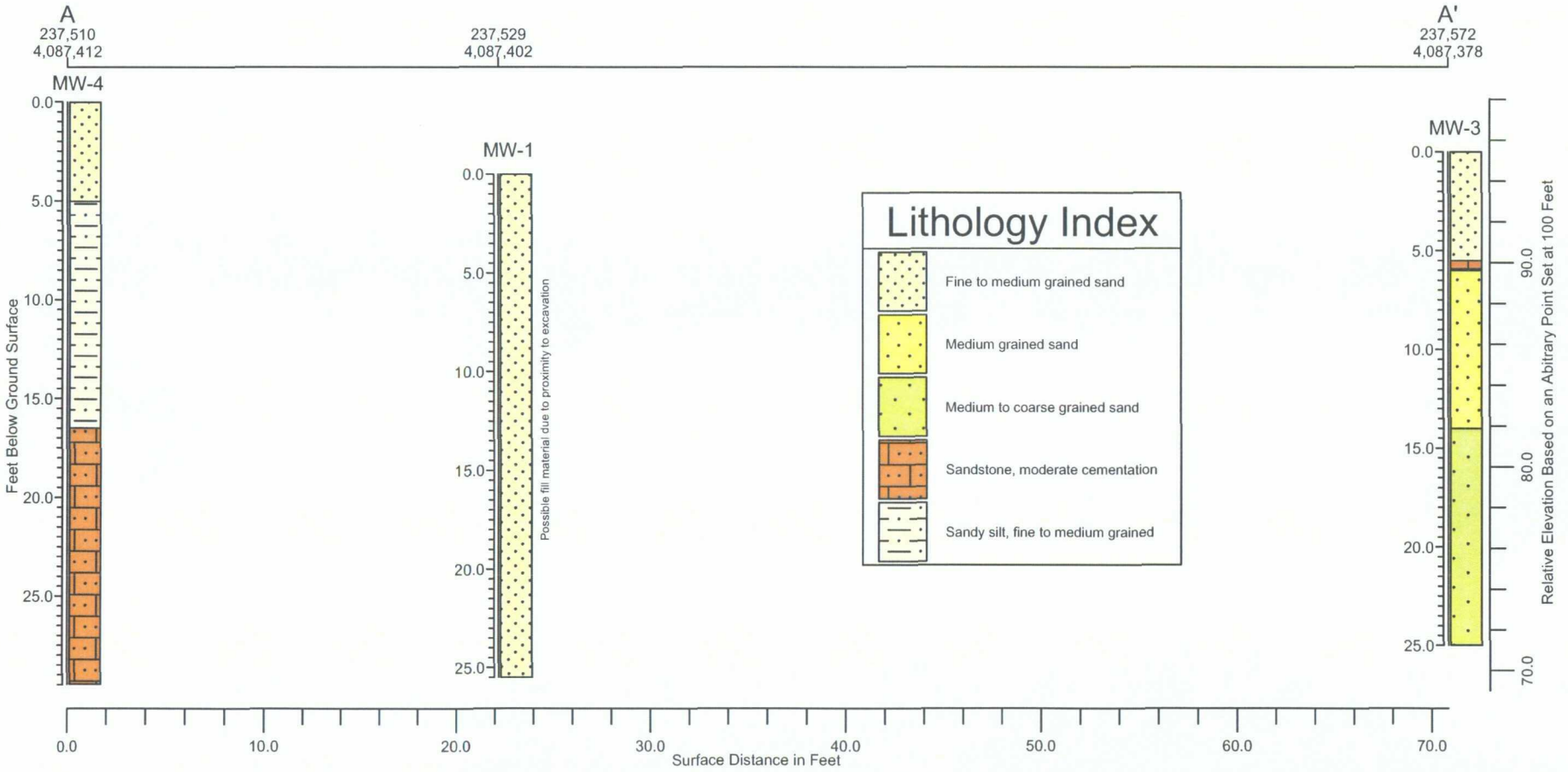
- GENERAL AREA of FEBRUARY 2009 EXCAVATION
- EQUIPMENT
- BERM
- MONITORING WELL
- APPROXIMATE LOCATION of HISTORIC MONITORING WELL (plugged and abandoned)
- KIFFEN CANYON WASH BORING LOCATION

0 15 30
FEET

N

TETRA TECH, INC.

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



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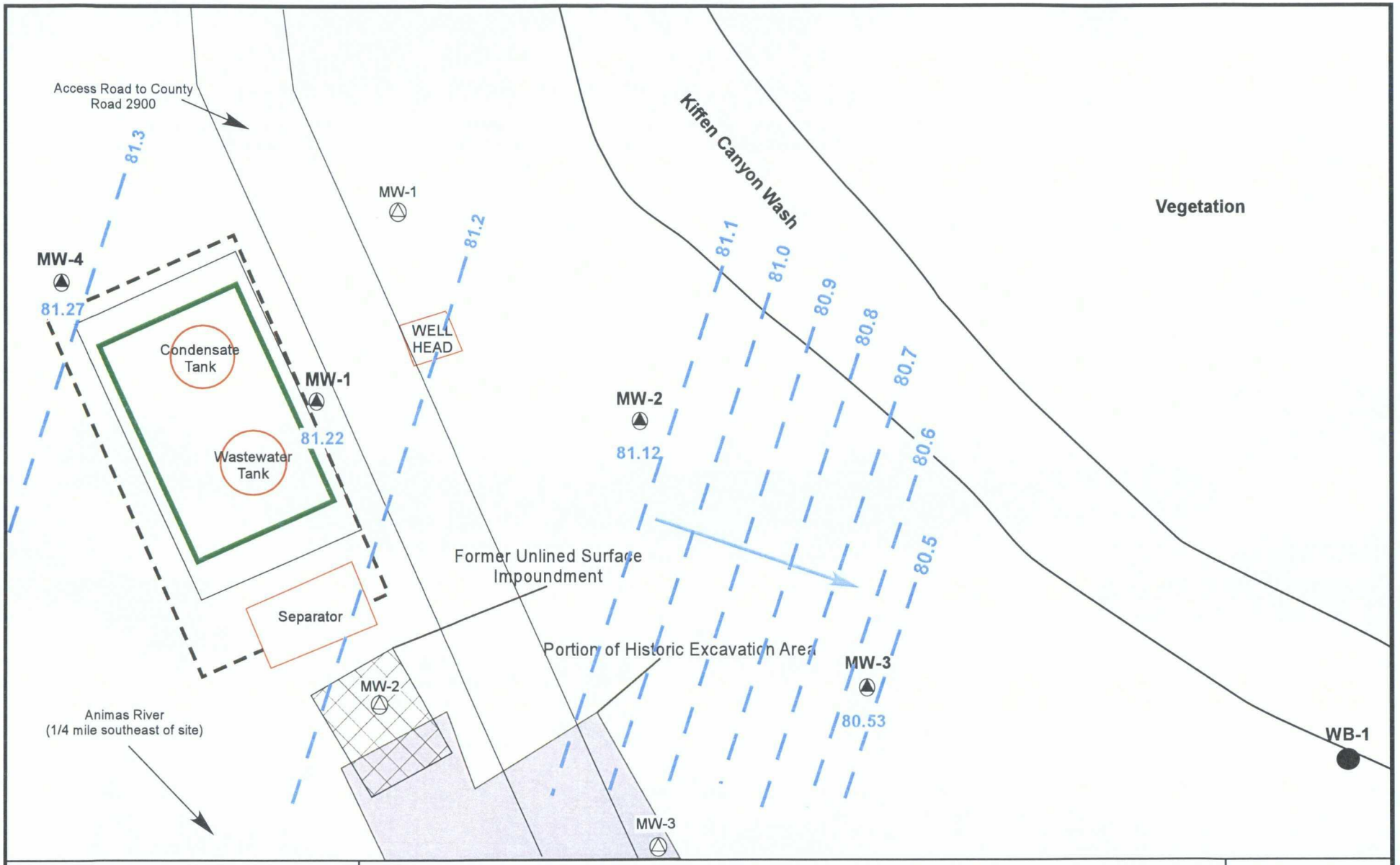

FIGURE 4:
GROUNDWATER ELEVATION MAP - SEPTEMBER 2009
CONOCOPHILLIPS COMPANY
RANDLEMAN #1
GAS PRODUCTION WELL
Sec 13, T31N, R11W
Aztec, New Mexico

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.

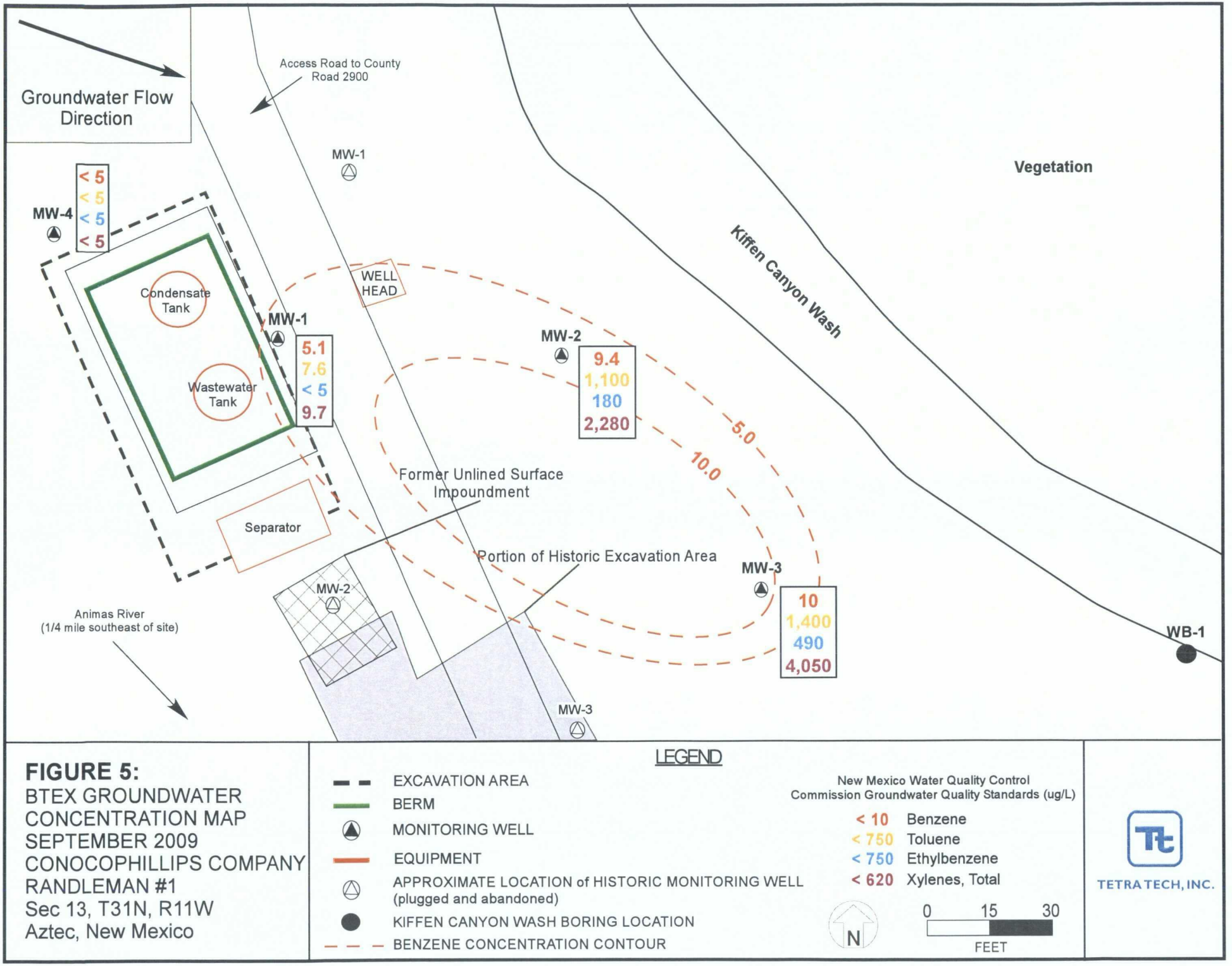

FIGURE 5:
BTEX GROUNDWATER CONCENTRATION MAP
SEPTEMBER 2009
CONOCOPHILLIPS COMPANY
RANDLEMAN #1
Sec 13, T31N, R11W
Aztec, New Mexico

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 in Site monitor wells to determine if hydrocarbons were accumulating in the water column.
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.

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
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
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
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

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**
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**
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**
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	**2,130**	**3,320**	< 0.1	0.0308	< 0.005	**2.73**	**8600**
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

Table 5. Kiffen Canyon Wash Soil and Groundwater Analytical Results Summary (October 2009)

Boring WB-1 Matrix	Date	Benzene (µg/kg - dry)	Toluene (µg/kg - dry)	Ethylbenzene (µg/kg - dry)	Xylenes (µg/kg - dry)	TPH GRO (mg/kg - dry)	TPH DRO (mg/kg - dry)
Soil at 2 Feet	10/1/2009	< 1.3	< 1.3	< 1.3	< 1.3	< 0.13	8
NMOCD Action Level		**10000 (µg/kg dry)**	**NE**	**NE**	**NE**	**100 (mg/kg - dry)**	

Boring WB-1 Matrix	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)
Groundwater	10/1/2009	< 1	< 1	< 1	< 1
NMWQCC Standards		**10 (µg/L)**	**750 (µg/L)**	**750 (µg/L)**	**620 (µg/L)**

Explanation

ND = Not Detected
NMOCD = New Mexico Oil Conservation Division
NMWQCC = New Mexico Water Quality Control Commission
mg/L = milligrams per liter (parts per million)
µg/L = micrograms per liter (parts per billion)
mg/kg = milligrams per kilogram (parts per million)
µg/kg = micrograms per kilogram (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. Date 9/23/09

Weather breezy, 70° Time Sampling Began 1420 Time Sampling Completed 1435

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~~ 23.77 Water-Level Elevation 81.22

Held ____ Depth to Water Below MP 13.97 Diameter of Casing 2"

Wet ____ Water Column in Well 9.8 Gallons Pumped/Bailed Prior to Sampling 6 gallons

Gallons per Foot 0.16

Gallons in Well 1.57 X3 = 4.7 Sampling Pump Intake Setting (feet below land surface)

Purging Equipment Purge pump / Bailer

SAMPLING DATA/FIELD PARAMETERS

gal	Time	Temperature (°C)	pH	Conductivity (µS/cm)	TDS (g/L)	DO (mg/L)	ORP (mV)	Turbidity / TDS
2.5	1425	15.08	6.68	3438	2.234	2.30	20.6	~~TDS~~ 443.5
4	1430	16.27	6.65	3352	2.179	6.23	51.9	171.2
5.5	1433	16.30	6.67	3400	2.21	6.30	65.4	237.4

Sampling Equipment Purge Pump/Bailer

Constituents Sampled	Container Description	Preservative
BTEX, Naphthalene	3 40mL VOA's	HCl
Sulfate, Chloride, TDS	16oz Plastic	None
Dissolved Al, Fe, Mn, Cr	16oz Plastic	None

Remarks

Sampling Personnel GD, 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 9/23/09

Weather breezy, 70° — Time Sampling Began 1448 — Time Sampling Completed 1515

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~~ 26.39 — Water-Level Elevation 81.12

Held — Depth to Water Below MP 15.67 — Diameter of Casing 2"

Wet — Water Column in Well 10.72 — Gallons Pumped/Bailed Prior to Sampling 6.25 gallons

Gallons per Foot 0.16

Gallons in Well 1.72x3=5.2 — Sampling Pump Intake (feet below land —

Purging Equipment Purge pump/ Bailer

SAMPLING DATA/FIELD PARAMETERS

Gal.	Time	Temperature (°C)	pH	Conductivity (µS/cm³)	TDS (g/L)	DO (mg/L)	ORP (mV)	Turbidity
1.2	14:55	14.66	6.44	2636	1.713	1.67	-122.1	181.9
2	14:59	13.62	6.61	2816	1.830	1.75	-131.4	304.5
3.5	15:05	~~12.95~~ 13.11	6.75	2865	1.863	1.54	-112.9	364.0
5	15:10	12.93	6.84	2878	1.865	1.98	-116.2	309.7

Sampling Equipment Purge Pump/Bailer

Constituents Sampled	Container Description	Preservative
BTEX	3 40mL VOA's	HCl
Sulfate, TDS, Chloride	16oz Plastic	None
Dissolved Al, Fe, Mn, Cr	16oz Plastic	None

Remarks Rusting noticed on sock but no real odor noticed, Purged H_2O is dark gray with mild hydrocarbon odor

Sampling Personnel CD, CM, AM

redox biosmell

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. Duplicate Date 9/23/09

Weather breezy, 70° Time Sampling Began 1525 Time Sampling Completed 1555

EVACUATION DATA duplicate @ 1610

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~~ 24.88 Water-Level Elevation 80.53

Heid ____ Depth to Water Below MP 15.78 Diameter of Casing 2"

Wet ____ Water Column in Well 9.1 Gallons Pumped/Bailed Prior to Sampling 4.5 gallons

Gallons per Foot 0.16

Gallons in Well 1.46 x 3 = 4.4 Sampling Pump Intake Setting (feet below land surface)

Purging Equipment Purge pump / Bailer

SAMPLING DATA/FIELD PARAMETERS

Vol	Time	Temperature (°C)	pH	Conductivity (µS/cm³)	TDS (g/L)	DO (mg/L)	ORP (mV)
1.5	1531	14.84	6.58	3238	2.107	7.30	~~-237.2~~ -241.1
3	1540	14.11	6.63	3201	2.081	5.09	~~-48.8~~ 52.34
4.5	1552	14.38	6.80	3161	2.056	5.72	-250.9 36.78

Turb 45.16 ~~from well~~

Sampling Equipment Purge Pump/Bailer

Constituents Sampled	Container Description	Preservative
BTEX, Naphalene	3 40mL VOA's	HCl
Sulfate, Chloride, TDS	16 oz plastic	none
~~Fe~~ Dissolved Al, Fe, Cr, Mn	16 oz plastic	none

Remarks slight sheen, reduced bio odor,

Sampling Personnel GD, 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

Project No.:

Site Location: Aztec, NM

Site/Well No.: MW-4 | Coded/Replicate No.: | Date: 9/23/05

Weather: breezy, 70° | Time Sampling Began: 1353 | Time Sampling Completed: 1416

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~~ 28.25 | Water-Level Elevation: 81.27

Held: | Depth to Water Below MP: 17.56 | Diameter of Casing: 2"

Wet: | Water Column in Well: ~~11.71~~ 10.69 | Gallons Pumped/Bailed Prior to Sampling: 7 gallons

Gallons per Foot: 0.16

Gallons in Well: 1.71 X3 = 5.13 | Sampling Pump Intake Setting (feet below land surface):

Purging Equipment: Purge pump / Bailer

SAMPLING DATA/FIELD PARAMETERS

Gal	Time	Temperature (°C)	pH	Conductivity (µS/cm³)	TDS (g/L)	DO (mg/L)	ORP (mV)	Turb
1	1356	15.97	6.47	12535	8.149	2.14	122.9	449.2
3	1359	15.97	6.60	12337	8.022	2.37	109.0	531.0
5	1405	15.41	6.88	12884	8.377	2.29	84.0	1100
7	1411	15.36	6.81	12914	8.395	1.74	51.3	1100

Sampling Equipment: Purge Pump/Bailer

Constituents Sampled	Container Description	Preservative
BTEX, Naphthalene	3 40mL VOA's	HCl
Sulfate, Chloride, TDS	16oz Plastic	None
Dissolved Al, Fe, Cr, Mn	16oz Plastic	None

Remarks:

Sampling Personnel: G.D., C.M., A.M.

Well Casing Volumes

Gal./ft.			
1¼" = 0.077	2" = 0.16	3" = 0.37	4" = 0.65
1½" = 0.10	2½" = 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:

09091283

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:	Aztec, NM
		Site Address:	
		PO Number:	
		State:	New Mexico
		State Cert. No.:	
		Date Reported:	10/6/2009

This Report Contains A Total Of 18 Pages

Excluding This Page, Chain Of Custody

And

Any Attachments

10/7/2009

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:
09091283

Report To:		Project Name:	Randleman #1
Tetra Tech, Inc.		Site:	Aztec, 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:	10/6/2009
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.

Volatile Organics (8260):

Sample ID "Duplicate" (SPL ID: 09091283-05) was randomly selected for use in SPL's quality control program for Batch ID: R285202. The Matrix Spike (MS) recovery was outside of the advisable quality control limits due to possible matrix interference for the following analyte: Ethylbenzene. A Laboratory Control Sample (LCS) was analyzed as a quality control check for the analytical batch and all recoveries were within acceptable limits.

III. GENERAL REPORTING COMMENTS:

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.

10/7/2009

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:

09091283

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: Aztec, NM
Site Address:
PO Number:
State: New Mexico
State Cert. No.:
Date Reported: 10/6/2009

Client Sample ID	Lab Sample ID	Matrix	Date Collected	Date Received	COC ID	HOLD
MW-1	09091283-01	Water	9/23/2009 2:35:00 PM	9/26/2009 9:30:00 AM	331738	☐
MW-2	09091283-02	Water	9/23/2009 3:15:00 PM	9/26/2009 9:30:00 AM	331738	☐
MW-3	09091283-03	Water	9/23/2009 3:25:00 PM	9/26/2009 9:30:00 AM	331738	☐
MW-4	09091283-04	Water	9/23/2009 2:16:00 PM	9/26/2009 9:30:00 AM	331738	☐
Duplicate	09091283-05	Water	9/23/2009 4:10:00 PM	9/26/2009 9:30:00 AM	331738	☐
Trip Blank	09091283-06	Water	9/23/2009 4:15:00 PM	9/26/2009 9:30:00 AM	331738	☐

Erica Cardenas
Project Manager

10/7/2009
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-1 **Collected:** 09/23/2009 14:35 **SPL Sample ID:** 09091283-01

Site: Aztec, NM

Analyses/Method	Result	QUAL	Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
ION CHROMATOGRAPHY			**MCL**	**E300.0**	**Units: mg/L**		
Chloride	80.5		5	10	09/28/09 15:30	BDG	5222035
Sulfate	1640		250	500	09/28/09 16:37	BDG	5222039
METALS BY METHOD 6010B, DISSOLVED			**MCL**	**SW6010B**	**Units: mg/L**		
Aluminum	ND		0.1	1	10/06/09 10:44	AB1	5233407
Chromium	ND		0.005	1	10/06/09 10:44	AB1	5233407
Iron	ND		0.02	1	10/06/09 10:44	AB1	5233407
Manganese	0.17		0.005	1	10/06/09 10:44	AB1	5233407

Prep Method	Prep Date	Prep Initials	Prep Factor
SW3005A	09/28/2009 10:00	R_V	1.00

TOTAL DISSOLVED SOLIDS			**MCL**	**SM2540 C**	**Units: mg/L**		
Total Dissolved Solids (Residue,Filterable)	2880		20	2	09/28/09 10:30	CFS	5221952
VOLATILE ORGANICS BY METHOD 8260B			**MCL**	**SW8260B**	**Units: ug/L**		
Benzene	18		1	1	09/30/09 20:04	LT	5226818
Ethylbenzene	1.3		1	1	09/30/09 20:04	LT	5226818
Naphthalene	ND		1	1	09/30/09 20:04	LT	5226818
Toluene	5.4		1	1	09/30/09 20:04	LT	5226818
m,p-Xylene	10		2	1	09/30/09 20:04	LT	5226818
o-Xylene	1.6		1	1	09/30/09 20:04	LT	5226818
Xylenes,Total	11.6		1	1	09/30/09 20:04	LT	5226818
Surr: 1,2-Dichloroethane-d4	92.9		% 78-116	1	09/30/09 20:04	LT	5226818
Surr: 4-Bromofluorobenzene	95.4		% 74-125	1	09/30/09 20:04	LT	5226818
Surr: Toluene-d8	91.5		% 82-118	1	09/30/09 20:04	LT	5226818

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:** 09/23/2009 15:15 **SPL Sample ID:** 09091283-02

Site: Aztec, NM

Analyses/Method	Result	QUAL	Rep.Limit		Dil. Factor	Date Analyzed	Analyst	Seq. #
ION CHROMATOGRAPHY				**MCL**		**E300.0**	**Units: mg/L**	
Chloride	39.4		5		10	09/28/09 15:47	BDG	5222036
Sulfate	1390		250		500	09/28/09 16:54	BDG	5222040
METALS BY METHOD 6010B, DISSOLVED				**MCL**		**SW6010B**	**Units: mg/L**	
Aluminum	ND		0.1		1	10/06/09 10:48	AB1	5233408
Chromium	ND		0.005		1	10/06/09 10:48	AB1	5233408
Iron	0.0239		0.02		1	10/06/09 10:48	AB1	5233408
Manganese	6.82		0.005		1	10/06/09 10:48	AB1	5233408

Prep Method	Prep Date	Prep Initials	Prep Factor
SW3005A	09/28/2009 10:00	R_V	1.00

TOTAL DISSOLVED SOLIDS				**MCL**		**SM2540 C**	**Units: mg/L**	
Total Dissolved Solids (Residue,Filterable)	2480		20		2	09/28/09 10:30	CFS	5221953
VOLATILE ORGANICS BY METHOD 8260B				**MCL**		**SW8260B**	**Units: ug/L**	
Benzene	7.7		1		1	09/30/09 20:32	LT	5226823
Ethylbenzene	110		1		1	09/30/09 20:32	LT	5226823
Naphthalene	16		1		1	09/30/09 20:32	LT	5226823
Toluene	ND		1		1	09/30/09 20:32	LT	5226823
m,p-Xylene	720		10		5	10/05/09 4:24	LT	5231514
o-Xylene	ND		1		1	09/30/09 20:32	LT	5226823
Xylenes,Total	720		5		5	10/05/09 4:24	LT	5231514
Surr: 1,2-Dichloroethane-d4	89.2		% 78-116		5	10/05/09 4:24	LT	5231514
Surr: 1,2-Dichloroethane-d4	93.3		% 78-116		1	09/30/09 20:32	LT	5226823
Surr: 4-Bromofluorobenzene	96.6		% 74-125		5	10/05/09 4:24	LT	5231514
Surr: 4-Bromofluorobenzene	94.9		% 74-125		1	09/30/09 20:32	LT	5226823
Surr: Toluene-d8	92.0		% 82-118		5	10/05/09 4:24	LT	5231514
Surr: Toluene-d8	91.5		% 82-118		1	09/30/09 20:32	LT	5226823

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:** 09/23/2009 15:25 **SPL Sample ID:** 09091283-03

Site: Aztec, NM

Analyses/Method	Result	QUAL	Rep.Limit		Dil. Factor	Date Analyzed	Analyst	Seq. #
ION CHROMATOGRAPHY				**MCL**		**E300.0**	**Units: mg/L**	
Chloride	64.5		5		10	09/28/09 16:04	BDG	5222037
Sulfate	1500		250		500	09/28/09 17:11	BDG	5222041
METALS BY METHOD 6010B, DISSOLVED				**MCL**		**SW6010B**	**Units: mg/L**	
Aluminum	ND		0.1		1	10/06/09 10:53	AB1	5233409
Chromium	ND		0.005		1	10/06/09 10:53	AB1	5233409
Iron	0.0486		0.02		1	10/06/09 10:53	AB1	5233409
Manganese	1.11		0.005		1	10/06/09 10:53	AB1	5233409

Prep Method	Prep Date	Prep Initials	Prep Factor
SW3005A	09/28/2009 10:00	R_V	1.00

TOTAL DISSOLVED SOLIDS				**MCL**		**SM2540 C**	**Units: mg/L**	
Total Dissolved Solids (Residue,Filterable)	2720		20		2	09/28/09 10:30	CFS	5221955
VOLATILE ORGANICS BY METHOD 8260B				**MCL**		**SW8260B**	**Units: ug/L**	
Benzene	13		1		1	10/05/09 3:57	LT	5231757
Ethylbenzene	89		1		1	10/05/09 3:57	LT	5231757
Naphthalene	3.9		1		1	10/05/09 3:57	LT	5231757
Toluene	8.5		1		1	10/05/09 3:57	LT	5231757
m,p-Xylene	210		2		1	10/05/09 3:57	LT	5231757
o-Xylene	110		1		1	10/05/09 3:57	LT	5231757
Xylenes,Total	320		1		1	10/05/09 3:57	LT	5231757
Surr: 1,2-Dichloroethane-d4	88.9		% 78-116		1	10/05/09 3:57	LT	5231757
Surr: 4-Bromofluorobenzene	95.4		% 74-125		1	10/05/09 3:57	LT	5231757
Surr: Toluene-d8	91.8		% 82-118		1	10/05/09 3:57	LT	5231757

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-4 **Collected:** 09/23/2009 14:16 **SPL Sample ID:** 09091283-04

Site: Aztec, NM

Analyses/Method	Result	QUAL	Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
ION CHROMATOGRAPHY				**MCL**	**E300.0**	**Units: mg/L**	
Chloride	2130		250	500	09/28/09 16:21	BDG	5222038
Sulfate	3320		250	500	09/28/09 16:21	BDG	5222038
METALS BY METHOD 6010B, DISSOLVED				**MCL**	**SW6010B**	**Units: mg/L**	
Aluminum	ND		0.1	1	10/06/09 10:57	AB1	5233410
Chromium	ND		0.005	1	10/06/09 10:57	AB1	5233410
Iron	0.0308		0.02	1	10/06/09 10:57	AB1	5233410
Manganese	2.73		0.005	1	10/06/09 10:57	AB1	5233410

Prep Method	Prep Date	Prep Initials	Prep Factor
SW3005A	09/28/2009 10:00	R_V	1.00

TOTAL DISSOLVED SOLIDS				**MCL**	**SM2540 C**	**Units: mg/L**	
Total Dissolved Solids (Residue,Filterable)	8600		50	5	09/28/09 10:30	CFS	5221956
VOLATILE ORGANICS BY METHOD 8260B				**MCL**	**SW8260B**	**Units: ug/L**	
Benzene	ND		1	1	09/30/09 21:27	LT	5226827
Ethylbenzene	ND		1	1	09/30/09 21:27	LT	5226827
Naphthalene	ND		1	1	09/30/09 21:27	LT	5226827
Toluene	ND		1	1	09/30/09 21:27	LT	5226827
m,p-Xylene	ND		2	1	09/30/09 21:27	LT	5226827
o-Xylene	ND		1	1	09/30/09 21:27	LT	5226827
Xylenes,Total	ND		1	1	09/30/09 21:27	LT	5226827
Surr: 1,2-Dichloroethane-d4	93.8		% 78-116	1	09/30/09 21:27	LT	5226827
Surr: 4-Bromofluorobenzene	95.7		% 74-125	1	09/30/09 21:27	LT	5226827
Surr: Toluene-d8	91.4		% 82-118	1	09/30/09 21:27	LT	5226827

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:** 09/23/2009 16:10 **SPL Sample ID:** 09091283-05

Site: Aztec, NM

Analyses/Method	Result	QUAL	Rep.Limit		Dil. Factor	Date Analyzed	Analyst	Seq. #
VOLATILE ORGANICS BY METHOD 8260B				**MCL**	**SW8260B**	**Units: ug/L**		
Benzene	15		1		1	09/30/09 15:29	LT	5226810
Ethylbenzene	79		1		1	09/30/09 15:29	LT	5226810
Naphthalene	3.6		1		1	09/30/09 15:29	LT	5226810
Toluene	9.2		1		1	09/30/09 15:29	LT	5226810
m,p-Xylene	190		2		1	09/30/09 15:29	LT	5226810
o-Xylene	97		1		1	09/30/09 15:29	LT	5226810
Xylenes,Total	287		1		1	09/30/09 15:29	LT	5226810
Surr: 1,2-Dichloroethane-d4	89.4		%	78-116	1	09/30/09 15:29	LT	5226810
Surr: 4-Bromofluorobenzene	93.9		%	74-125	1	09/30/09 15:29	LT	5226810
Surr: Toluene-d8	93.0		%	82-118	1	09/30/09 15:29	LT	5226810

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:** 09/23/2009 16:15 **SPL Sample ID:** 09091283-06

Site: Aztec, 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	09/30/09 15:02	LT	5226809
Ethylbenzene	ND		1	1	09/30/09 15:02	LT	5226809
Naphthalene	ND		1	1	09/30/09 15:02	LT	5226809
Toluene	ND		1	1	09/30/09 15:02	LT	5226809
m,p-Xylene	ND		2	1	09/30/09 15:02	LT	5226809
o-Xylene	ND		1	1	09/30/09 15:02	LT	5226809
Xylenes,Total	ND		1	1	09/30/09 15:02	LT	5226809
Surr: 1,2-Dichloroethane-d4	89.7		% 78-116	1	09/30/09 15:02	LT	5226809
Surr: 4-Bromofluorobenzene	96.8		% 74-125	1	09/30/09 15:02	LT	5226809
Surr: Toluene-d8	91.9		% 82-118	1	09/30/09 15:02	LT	5226809

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

Quality Control Report

Conoco Phillips

Randleman #1

Analysis: Metals by Method 6010B, Dissolved
Method: SW6010B
WorkOrder: 09091283
Lab Batch ID: 94143

Method Blank

RunID: ICP2_091006A-5233393 Units: mg/L
Analysis Date: 10/06/2009 9:44 Analyst: AB1
Preparation Date: 09/28/2009 10:00 Prep By: R_V Method SW3005A

Analyte	Result	Rep Limit
Aluminum	ND	0.1
Chromium	ND	0.005
Iron	ND	0.02
Manganese	ND	0.005

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
09091283-01C	MW-1
09091283-02C	MW-2
09091283-03C	MW-3
09091283-04C	MW-4

Laboratory Control Sample (LCS)

RunID: ICP2_091006A-5233394 Units: mg/L
Analysis Date: 10/06/2009 9:48 Analyst: AB1
Preparation Date: 09/28/2009 10:00 Prep By: R_V Method SW3005A

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Aluminum	1.000	1.068	106.8	80	120
Chromium	1.000	1.044	104.4	80	120
Iron	1.000	1.053	105.3	80	120
Manganese	1.000	1.067	106.7	80	120

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

Sample Spiked: 09091275-02
RunID: ICP2_091006A-5233396 Units: mg/L
Analysis Date: 10/06/2009 9:57 Analyst: AB1
Preparation Date: 09/28/2009 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
Aluminum	ND	1	1.070	103.5	1	1.097	106.2	2.492	20	75	125
Chromium	ND	1	1.067	106.6	1	1.070	106.9	0.2808	20	75	125
Iron	0.3398	1	1.416	107.6	1	1.413	107.3	0.2121	20	75	125
Manganese	0.02860	1	1.092	106.3	1	1.092	106.3	0	20	75	125

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B/V - 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: 09091283
Lab Batch ID: R285202

Method Blank

RunID: N_090930A-5226808 Units: ug/L
Analysis Date: 09/30/2009 14:07 Analyst: LT

Analyte	Result	Rep Limit
Benzene	ND	1.0
Ethylbenzene	ND	1.0
Naphthalene	ND	1.0
Toluene	ND	1.0
m,p-Xylene	ND	2.0
o-Xylene	ND	1.0
Xylenes,Total	ND	1.0
Surr: 1,2-Dichloroethane-d4	90.1	78-116
Surr: 4-Bromofluorobenzene	97.6	74-125
Surr: Toluene-d8	92.8	82-118

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
09091283-01A	MW-1
09091283-02A	MW-2
09091283-04A	MW-4
09091283-05A	Duplicate
09091283-06A	Trip Blank

Laboratory Control Sample (LCS)

RunID: N_090930A-5226807 Units: ug/L
Analysis Date: 09/30/2009 13:12 Analyst: LT

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Benzene	20.0	20.4	102	74	123
Ethylbenzene	20.0	19.5	97.4	72	127
Naphthalene	20.0	20.0	100	33	148
Toluene	20.0	19.4	97.0	74	126
m,p-Xylene	40.0	40.0	100	71	129
o-Xylene	20.0	20.0	100	74	130
Xylenes,Total	60	60	100	71	130
Surr: 1,2-Dichloroethane-d4	50.0	45	90.0	78	116
Surr: 4-Bromofluorobenzene	50.0	47.2	94.4	74	125
Surr: Toluene-d8	50.0	45.4	90.9	82	118

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

Sample Spiked: 09091283-05
RunID: N_090930A-5226813 Units: ug/L
Analysis Date: 09/30/2009 15:57 Analyst: LT

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B/V - 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: 09091283
Lab Batch ID: R285202

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	14.9	20	31.9	85.2	20	31.5	83.0	1.33	22	70	124
Ethylbenzene	78.9	20	105	128 *	20	103	121	1.45	20	76	122
Naphthalene	3.56	20	23.3	98.9	20	23.7	100	1.33	20	42	140
Toluene	9.18	20	26.0	84.3	20	25.5	81.5	2.19	24	80	117
m,p-Xylene	187	40	238	N/C	40	235	N/C	N/C	20	69	127
o-Xylene	97.3	20	130	N/C	20	127	N/C	N/C	20	84	114
Xylenes,Total	284	60	368	N/C	60	362	N/C	N/C	20	69	127
Surr: 1,2-Dichloroethane-d4	ND	50	45	90.0	50	44.7	89.4	0.739	30	78	116
Surr: 4-Bromofluorobenzene	ND	50	47.3	94.6	50	47.2	94.3	0.274	30	74	125
Surr: Toluene-d8	ND	50	45.6	91.3	50	45.6	91.3	0.0368	30	82	118

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B/V - 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: 09091283
Lab Batch ID: R285486

Method Blank

RunID: N_091004C-5231513 Units: ug/L
Analysis Date: 10/05/2009 3:29 Analyst: LT

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
09091283-02A	MW-2
09091283-03A	MW-3

Analyte	Result	Rep Limit
Benzene	ND	1.0
Ethylbenzene	ND	1.0
Naphthalene	ND	1.0
Toluene	ND	1.0
m,p-Xylene	ND	2.0
o-Xylene	ND	1.0
Xylenes,Total	ND	1.0
Surr: 1,2-Dichloroethane-d4	89.2	78-116
Surr: 4-Bromofluorobenzene	97.5	74-125
Surr: Toluene-d8	92.4	82-118

Laboratory Control Sample (LCS)

RunID: N_091004C-5231512 Units: ug/L
Analysis Date: 10/05/2009 2:35 Analyst: LT

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Benzene	20.0	21.6	108	74	123
Ethylbenzene	20.0	21.4	107	72	127
Naphthalene	20.0	21.3	106	33	148
Toluene	20.0	21.4	107	74	126
m,p-Xylene	40.0	44.0	110	71	129
o-Xylene	20.0	22.1	110	74	130
Xylenes,Total	60.0	66.1	110	71	130
Surr: 1,2-Dichloroethane-d4	50.0	44.5	88.9	78	116
Surr: 4-Bromofluorobenzene	50.0	47.9	95.8	74	125
Surr: Toluene-d8	50.0	45.1	90.3	82	118

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

Sample Spiked: 09091283-02
RunID: N_091004C-5231515 Units: ug/L
Analysis Date: 10/05/2009 4:51 Analyst: LT

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B/V - 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: 09091283
Lab Batch ID: R285486

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	8.64	100	104	95.1	100	103	94.2	0.897	22	70	124
Ethylbenzene	147	100	232	85.1	100	230	82.3	1.21	20	76	122
Naphthalene	17.5	100	113	95.3	100	117	99.8	3.89	20	42	140
Toluene	ND	100	94.9	93.1	100	94.0	92.1	0.986	24	80	117
m,p-Xylene	723	200	863	69.8	200	863	70.1	0.0644	20	69	127
o-Xylene	ND	100	97.4	95.0	100	97.0	94.6	0.410	20	84	114
Xylenes,Total	725.5	300	960.4	78.18	300	960.0	78.23	0.01637	20	69	127
Surr: 1,2-Dichloroethane-d4	ND	250	224	89.5	250	224	89.6	0.0197	30	78	116
Surr: 4-Bromofluorobenzene	ND	250	238	95.3	250	237	94.9	0.458	30	74	125
Surr: Toluene-d8	ND	250	228	91.2	250	228	91.1	0.174	30	82	118

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B/V - 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: 09091283
Lab Batch ID: R284901

Method Blank

RunID: WET_090928R-5221948 Units: mg/L
Analysis Date: 09/28/2009 10:30 Analyst: CFS

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

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
09091283-01B	MW-1
09091283-02B	MW-2
09091283-03B	MW-3
09091283-04B	MW-4

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

RunID: WET_090928R-5221950 Units: mg/L
Analysis Date: 09/28/2009 10:30 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	201.0	100.5	200.0	199.0	99.50	1.0	10	95	107

Sample Duplicate

Original Sample: 09091283-02
RunID: WET_090928R-5221953 Units: mg/L
Analysis Date: 09/28/2009 10:30 Analyst: CFS

Analyte	Sample Result	DUP Result	RPD	RPD Limit
Total Dissolved Solids (Residue,Filterabl	2480	2486	0.0805	10

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B/V - 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.

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

Quality Control Report

Conoco Phillips

Randleman #1

Analysis: Ion Chromatography **WorkOrder:** 09091283
Method: E300.0 **Lab Batch ID:** R284904

Method Blank

RunID: IC2_090928A-5222022 Units: mg/L
Analysis Date: 09/28/2009 9:56 Analyst: BDG

Analyte	Result	Rep Limit
Chloride	ND	0.50
Sulfate	ND	0.50

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
09091283-01B	MW-1
09091283-02B	MW-2
09091283-03B	MW-3
09091283-04B	MW-4

Laboratory Control Sample (LCS)

RunID: IC2_090928A-5222023 Units: mg/L
Analysis Date: 09/28/2009 10:12 Analyst: BDG

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Chloride	10.00	9.768	97.68	85	115
Sulfate	10.00	10.25	102.5	85	115

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

Sample Spiked: 09091282-01
RunID: IC2_090928A-5222044 Units: mg/L
Analysis Date: 09/28/2009 18:01 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	ND	500	514.8	99.58	500	462.0	89.04	10.79	20	80	120
Sulfate	428.9	500	984.7	111.2	500	909.4	96.10	7.947	20	80	120

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B/V - 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:	**09091283**	Received By:	**AMV**
Date and Time Received:	**9/26/2009 9:30:00 AM**	Carrier name:	**Fedex-Priority**
Temperature:	**1.6°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?** 1. COC indicates "MW-2" was collected at 15:15 but container labels say 15:20. COC indicates "MW-3" was collected at 15:25 vs. container labels 15:55.	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: 1/2. Logged in per COC.

Client Instructions:

SPL, Inc.
Analysis Request & Chain of Custody Record

SPL Workorder No. 0909283 — 331738 — page ____ of ____

Client Name: Tetra Tech / ConocoPhillips
Address: 6121 Indian School Rd Ste 200
City: Albuquerque State: NM Zip: 87110
Phone/Fax: 505.237.8440 505.237.8656
Client Contact: Kelly Blanchard Email: kelly.blanchard@tetratech.com
Project Name/No.: Bandleman #1
Site Name:
Site Location: Aztec, 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 V=vial G=glass 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 ONLY	Naphthalene	Sulfate, Chloride, TDS	Dissolved Al, Fe, Cl and Manganese
MW-1	9/23/09	1435		X	W	V	40	1	3	X	X		
MW-1	9/23/09	1435		X	W	P	16	NONE	2			X	X
MW-2	9/23/09	1515		X	W	V	40	1	3	X	X		
MW-2	9/23/09	1515		X	W	P	16	NONE	2			X	X
MW-3	9/23/09	1525		X	W	V	40	1	3	X	X		
MW-3	9/23/09	1525		X	W	P	16	NONE	2			X	X
MW-4	9/23/09	1416		X	W	V	40	1	3	X	X		
MW-4	9/23/09	1416		X	W	P	16	NONE	2			X	X
Duplicate	9/23/09	1610		X	W	V	40	1	3	X			
Trip Blank	9/23/09	1615			W	V	40	1	2	X			

Client/Consultant Remarks: Please filter and preserve metals container prior to analysis
Laboratory remarks:
Intact? ☑ Y ☐ N
Ice? ☑ Y ☐ N
Temp: 1.6

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): KW

	date	time	
1. Relinquished by Sampler:	9/25/09	1450	2. Received by:
3. Relinquished by:	date	time	4. Received by:
5. Relinquished by:	date 9/26/09	time 9:30	6. Received by Laboratory: Amanda Vicknair

☒ 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

APPENDIX C

Kiffen Canyon Wash Soil and Groundwater Laboratory Analysis Report

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

Conoco Phillips

Certificate of Analysis Number:

09100145

Report To:		Project Name:	Randleman #1
Tetra Tech, Inc.		Site:	San Juan County, 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:	10/16/2009
ph: (505) 237-8440	fax:		

This Report Contains A Total Of 15 Pages

Excluding This Page, Chain Of Custody

And

Any Attachments

10/19/2009

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:
09100145

Report To:		Project Name:	Randleman #1
Tetra Tech, Inc.		Site:	San Juan County, 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:	10/16/2009
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:

There were no exceptions noted.

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.

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.

Erica Cardenas

10/19/2009

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:

09100145

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: San Juan County, NM
Site Address:
PO Number:
State: New Mexico
State Cert. No.:
Date Reported: 10/16/2009

Client Sample ID	Lab Sample ID	Matrix	Date Collected	Date Received	COC ID	HOLD
WB1	09100145-01	Water	10/1/2009 11:25:00 AM	10/3/2009 9:30:00 AM		☐
WB1 (2ft)	09100145-02	Soil	10/1/2009 11:15:00 AM	10/3/2009 9:30:00 AM		☐
Trip Blank	09100145-03	Water	10/2/2009 11:15:00 AM	10/3/2009 9:30:00 AM		☐

E Cardenas

10/19/2009

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: WB1 **Collected:** 10/01/2009 11:25 **SPL Sample ID:** 09100145-01

Site: San Juan County, 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	10/13/09 1:59	JC	5245268
Ethylbenzene	ND		1	1	10/13/09 1:59	JC	5245268
Toluene	ND		1	1	10/13/09 1:59	JC	5245268
m,p-Xylene	ND		1	1	10/13/09 1:59	JC	5245268
o-Xylene	ND		1	1	10/13/09 1:59	JC	5245268
Xylenes,Total	ND		1	1	10/13/09 1:59	JC	5245268
Surr: 1,2-Dichloroethane-d4	95.4		% 78-116	1	10/13/09 1:59	JC	5245268
Surr: 4-Bromofluorobenzene	100		% 74-125	1	10/13/09 1:59	JC	5245268
Surr: Toluene-d8	96.9		% 82-118	1	10/13/09 1:59	JC	5245268

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: WB1 (2ft) **Collected:** 10/01/2009 11:15 **SPL Sample ID:** 09100145-02

Site: San Juan County, NM

Analyses/Method	Result	QUAL		Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORGANICS					**MCL**	**SW8015B**	**Units: mg/kg-dry**	
Diesel Range Organics (C10-C28)	8			6.4	1	10/09/09 10:21	NW	5240636
Surr: n-Pentacosane	81.5		%	20-154	1	10/09/09 10:21	NW	5240636

Prep Method	Prep Date	Prep Initials	Prep Factor
SW3550B	10/05/2009 9:43	FAK	1.00

GASOLINE RANGE ORGANICS					**MCL**	**SW8015B**	**Units: mg/kg-dry**	
Gasoline Range Organics	ND			0.13	1	10/08/09 9:08	WLV	5237254
Surr: 1,4-Difluorobenzene	97.0		%	63-142	1	10/08/09 9:08	WLV	5237254
Surr: 4-Bromofluorobenzene	102		%	50-159	1	10/08/09 9:08	WLV	5237254

Prep Method	Prep Date	Prep Initials	Prep Factor
SW5030B	10/07/2009 11:52	XML	1.00

PERCENT MOISTURE					**MCL**	**D2216**	**Units: wt%**	
Percent Moisture	21.4			0	1	10/05/09 15:41	CFS	5232242

PURGEABLE AROMATICS					**MCL**	**SW8021B**	**Units: ug/kg-dry**	
Benzene	ND			1.3	1	10/08/09 9:08	WLV	5237452
Toluene	ND			1.3	1	10/08/09 9:08	WLV	5237452
Ethylbenzene	ND			1.3	1	10/08/09 9:08	WLV	5237452
m,p-Xylene	ND			1.3	1	10/08/09 9:08	WLV	5237452
o-Xylene	ND			1.3	1	10/08/09 9:08	WLV	5237452
Xylenes,Total	ND			1.3	1	10/08/09 9:08	WLV	5237452
Surr: 1,4-Difluorobenzene	95.0		%	70-130	1	10/08/09 9:08	WLV	5237452
Surr: 4-Bromofluorobenzene	100		%	63-145	1	10/08/09 9:08	WLV	5237452

Prep Method	Prep Date	Prep Initials	Prep Factor
SW5030B	10/07/2009 11:52	XML	1.00

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: Trip Blank **Collected:** 10/02/2009 11:15 **SPL Sample ID:** 09100145-03

Site: San Juan County, 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	10/13/09 1:32	JC	5245267
Ethylbenzene	ND			1	1	10/13/09 1:32	JC	5245267
Toluene	ND			1	1	10/13/09 1:32	JC	5245267
m,p-Xylene	ND			1	1	10/13/09 1:32	JC	5245267
o-Xylene	ND			1	1	10/13/09 1:32	JC	5245267
Xylenes,Total	ND			1	1	10/13/09 1:32	JC	5245267
Surr: 1,2-Dichloroethane-d4	99.2		%	78-116	1	10/13/09 1:32	JC	5245267
Surr: 4-Bromofluorobenzene	100		%	74-125	1	10/13/09 1:32	JC	5245267
Surr: Toluene-d8	98.6		%	82-118	1	10/13/09 1:32	JC	5245267

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

Quality Control Report

Conoco Phillips

Randleman #1

Analysis: Diesel Range Organics
Method: SW8015B

WorkOrder: 09100145
Lab Batch ID: 94364

Method Blank

RunID: HP_V_091006E-5240620 Units: mg/kg
Analysis Date: 10/06/2009 2:15 Analyst: NW
Preparation Date: 10/05/2009 9:43 Prep By: FAK Method SW3550B

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
09100145-02A	WB1 (2ft)

Analyte	Result	Rep Limit
Diesel Range Organics (C10-C28)	ND	5.0
Surr: n-Pentacosane	85.4	20-154

Laboratory Control Sample (LCS)

RunID: HP_V_091006E-5240621 Units: mg/kg
Analysis Date: 10/06/2009 2:35 Analyst: NW
Preparation Date: 10/05/2009 9:43 Prep By: FAK Method SW3550B

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Diesel Range Organics (C10-C28)	33.3	29.8	89.4	57	150
Surr: n-Pentacosane	1.66	1.36	82.1	20	154

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

Sample Spiked: 09100141-08
RunID: HP_V_091006E-5240624 Units: mg/kg-dry
Analysis Date: 10/06/2009 7:42 Analyst: NW
Preparation Date: 10/05/2009 9:43 Prep By: FAK Method SW3550B

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Diesel Range Organics (C10-C28)	ND	37	30.1	77.8	37	31.3	81.2	4.07	50	21	175
Surr: n-Pentacosane	ND	1.85	1.42	76.7	1.85	1.42	76.9	0.267	30	20	154

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B/V - 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.

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

Quality Control Report

Conoco Phillips

Randleman #1

Analysis: Gasoline Range Organics
Method: SW8015B
WorkOrder: 09100145
Lab Batch ID: R285831

Method Blank

RunID: HP_O_091007C-5237240
Units: mg/kg
Analysis Date: 10/08/2009 0:32
Analyst: WLV
Preparation Date: 10/08/2009 0:32
Prep By: Method SW5030B

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
09100145-02A	WB1 (2ft)

Analyte	Result	Rep Limit
Gasoline Range Organics	ND	0.10
Surr: 1,4-Difluorobenzene	100.8	63-142
Surr: 4-Bromofluorobenzene	104.5	50-159

Laboratory Control Sample (LCS)

RunID: HP_O_091007C-5237239
Units: mg/kg
Analysis Date: 10/08/2009 0:03
Analyst: WLV
Preparation Date: 10/08/2009 0:03
Prep By: Method SW5030B

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Gasoline Range Organics	1.00	1.03	103	70	130
Surr: 1,4-Difluorobenzene	0.100	0.102	102	63	142
Surr: 4-Bromofluorobenzene	0.100	0.106	106	50	159

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

Sample Spiked: 09100141-01
RunID: HP_O_091007C-5237244
Units: mg/kg-dry
Analysis Date: 10/08/2009 3:25
Analyst: WLV
Preparation Date: 10/07/2009 11:33
Prep By: XML Method SW5030B

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Gasoline Range Organics	ND	1.24	0.889	71.8	1.24	1.04	84.3	16.0	50	26	147
Surr: 1,4-Difluorobenzene	ND	0.124	0.124	100	0.124	0.123	99.2	1.20	30	63	142
Surr: 4-Bromofluorobenzene	ND	0.124	0.127	103	0.124	0.130	105	2.21	30	50	159

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
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
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits

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.

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

Quality Control Report

Conoco Phillips

Randleman #1

Analysis: Purgeable Aromatics
Method: SW8021B

WorkOrder: 09100145
Lab Batch ID: R285847

Method Blank

RunID: HP_O_091007E-5237440 Units: ug/kg
Analysis Date: 10/08/2009 0:32 Analyst: WLV
Preparation Date: 10/08/2009 0:32 Prep By: Method SW5030B

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
09100145-02A	WB1 (2ft)

Analyte	Result	Rep Limit
Benzene	ND	1.0
Ethylbenzene	ND	1.0
Toluene	ND	1.0
m,p-Xylene	2.2	1.0
o-Xylene	ND	1.0
Xylenes,Total	2.2	1.0
Surr: 1,4-Difluorobenzene	98.3	70-130
Surr: 4-Bromofluorobenzene	103.1	63-145

Laboratory Control Sample (LCS)

RunID: HP_O_091007E-5237439 Units: ug/kg
Analysis Date: 10/07/2009 23:35 Analyst: WLV
Preparation Date: 10/07/2009 23:35 Prep By: Method SW5030B

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Benzene	20.0	17.1	85.3	70	130
Ethylbenzene	20.0	16.9	84.4	75	122
Toluene	20.0	17.4	87.0	75	123
m,p-Xylene	40.0	33.8	84.6	74	122
o-Xylene	20.0	16.6	83.0	70	130
Xylenes,Total	60.0	50.4	84.0	70	130
Surr: 1,4-Difluorobenzene	100	95.6	95.6	70	130
Surr: 4-Bromofluorobenzene	100	100	100	63	145

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

Sample Spiked: 09100141-01
RunID: HP_O_091007E-5237456 Units: ug/kg-dry
Analysis Date: 10/08/2009 2:27 Analyst: WLV
Preparation Date: 10/07/2009 11:33 Prep By: XML Method SW5030B

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B/V - 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.

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

Quality Control Report

Conoco Phillips

Randleman #1

Analysis: Purgeable Aromatics
Method: SW8021B

WorkOrder: 09100145
Lab Batch ID: R285847

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	24.8	20.7	83.8	24.8	21.1	85.1	1.52	31	41	133
Ethylbenzene	ND	24.8	19.7	79.6	24.8	20.2	81.4	2.28	39	31	129
Toluene	ND	24.8	20.7	83.5	24.8	21.2	85.6	2.42	25	34	130
m,p-Xylene	ND	49.5	38.2	77.2	49.5	39.4	79.5	2.98	26	35	123
o-Xylene	ND	24.8	19.1	77.2	24.8	19.3	78.0	0.996	35	33	124
Xylenes,Total	ND	74.3	57.3	77.2	74.3	58.7	79.0	2.32	35	33	124
Surr: 1,4-Difluorobenzene	ND	124	121	97.8	124	120	96.7	1.07	30	70	130
Surr: 4-Bromofluorobenzene	ND	124	130	105	124	128	103	1.47	30	63	145

Qualifiers:

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B/V - 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.
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Quality Control Report

Conoco Phillips

Randleman #1

Analysis: Volatile Organics by Method 8260B
Method: SW8260B

WorkOrder: 09100145
Lab Batch ID: R286355

Method Blank

RunID: Q_091012C-5245261 Units: ug/L
Analysis Date: 10/12/2009 22:50 Analyst: JC

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
09100145-01A	WB1
09100145-03A	Trip Blank

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	102.6	78-116
Surr: 4-Bromofluorobenzene	103.7	74-125
Surr: Toluene-d8	100.0	82-118

Laboratory Control Sample (LCS)

RunID: Q_091012C-5245260 Units: ug/L
Analysis Date: 10/12/2009 21:57 Analyst: JC

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Benzene	20.0	20.5	103	74	123
Ethylbenzene	20.0	20.1	100	72	127
Toluene	20.0	20.2	101	74	126
m,p-Xylene	40.0	40.8	102	71	129
o-Xylene	20.0	21.3	107	74	130
Xylenes,Total	60.0	62.1	104	71	130
Surr: 1,2-Dichloroethane-d4	50.0	50.9	102	78	116
Surr: 4-Bromofluorobenzene	50.0	52.1	104	74	125
Surr: Toluene-d8	50.0	49.7	99.3	82	118

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

Sample Spiked: 09100426-01
RunID: Q_091012C-5245263 Units: ug/L
Analysis Date: 10/12/2009 23:44 Analyst: JC

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B/V - 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

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HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
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Quality Control Report

Conoco Phillips

Randleman #1

Analysis: Volatile Organics by Method 8260B
Method: SW8260B

WorkOrder: 09100145
Lab Batch ID: R286355

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	19.4	97.0	20	19.7	98.3	1.34	22	70	124
Ethylbenzene	ND	20	18.5	92.7	20	19.1	95.6	3.13	20	76	122
Toluene	ND	20	18.4	92.1	20	18.6	93.0	1.02	24	80	117
m,p-Xylene	ND	40	37.3	93.4	40	38.0	95.1	1.81	20	69	127
o-Xylene	ND	20	19.4	97.2	20	19.9	99.6	2.46	20	84	114
Xylenes,Total	ND	60	56.7	94.6	60	57.9	96.6	2.03	20	69	127
Surr: 1,2-Dichloroethane-d4	ND	50	50.4	101	50	48.0	96.1	4.73	30	78	116
Surr: 4-Bromofluorobenzene	ND	50	51.7	103	50	50.3	101	2.88	30	74	125
Surr: Toluene-d8	ND	50	48.3	96.7	50	48.8	97.6	0.974	30	82	118

Qualifiers:

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B/V - 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

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HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
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Quality Control Report

Conoco Phillips
Randleman #1

Analysis: PERCENT MOISTURE
Method: D2216

WorkOrder: 09100145
Lab Batch ID: R285537A

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
09100145-02A	WB1 (2ft)

Sample Duplicate

Original Sample: 09100145-02
RunID: WET_091005I-5232242 Units: wt%
Analysis Date: 10/05/2009 15:41 Analyst: CFS

Analyte	Sample Result	DUP Result	RPD	RPD Limit
Percent Moisture	21.4	21.44	0.138	20

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B/V - 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

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Sample Receipt Checklist

And

Chain of Custody

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

Sample Receipt Checklist

Workorder:	**09100145**	Received By:	**AMV**
Date and Time Received:	**10/3/2009 9:30:00 AM**	Carrier name:	**Fedex-Priority**
Temperature:	**1.0°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: _____

8880 Interchange Drive, Houston, TX 77054

Analysis Request and Chain of Custody Record

SPL Workorder No: 09100145

Company Name: Tetra Tech / Conoco Phillips	
Contact: Kelly Blanchard	
Address: 6121 Indian School Rd. NE, Ste. 200	
Phone/Fax: (505) 237-8440 / (505) 237-8656	
Email Address: kelly.blanchard@tetratech.com	
Invoice To: Conoco Phillips	
Purchase Order No:	
Project Name/No: ~~Hampton #1~~ Randleman #1	
Site Address:	
Sampled By: Christine Mathews / Cassie Brown	

Sampling Event Description

- Quarterly ☐
- Semi-Annual ☐
- WC-Waste Char. ☐
- Other (describe below) ☐

QA/QC Level

TRRP ☐ LVL 3 ☐ STD ☐ Other ☐

SAMPLE ID	DATE	TIME	Water	Soil	Sludge	Other	Number Containers	Container Type	Preservative	BTEX - 8260	TPH GRO & DRO (8015)	BTEX (8021)
WB1	10-1-09	1125	X				3	3 VOA	HCL	X		
WB1 (2ft)	10-1-09	1115		X			1	glass	NONE		X	X
Trip Blank	10-2-09	1115	X				2	VOA	HCL	X		NO

REQUESTED ANALYSIS

TAT

24hr ☐ 72hr ☐ 48hr ☐ 10 day ☐ Other ☐

Special Detection Limits (Specify):

Special Reporting Requirements (Specify):

Consultant Remarks:

Laboratory Remarks:

PM review

Relinquished by Sampler:	Date	Time	Received by:
Christine Mathews	10-2-09	1130	
Relinquished by:	Date	Time	Received by
Relinquished by:	Date	Time	Received by SPL, Inc.:
	10/3/09	9:30	Amanda Vickrey

1.0°C