3R - 084

DEC 2010
GWMR

06/10/2011

3R084

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

TETRA TECH, INC.

June 10, 2011

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

RE: Farmington B-Com Number 1E Natural Gas Well Site, Farmington, New Mexico. December 2010 Quarterly Groundwater Monitoring Report

Dear Mr. von Gonten:

Enclosed please find a copy of the above-referenced document as compiled by Tetra Tech, Inc., for this Farmington 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)

Cc: Brandon Powell, NMOCD, Aztec, NM
Terry Lauck, ConocoPhillips RM&R

QUARTERLY GROUNDWATER MONITORING REPORT FEBRUARY 2011 SAMPLING EVENT

FARMINGTON B COM NO. 1E NATURAL GAS WELL SITE FARMINGTON, SAN JUAN COUNTY, NEW MEXICO

OCD # 3R0084

API # 30-045-24774

Prepared for:

ConocoPhillips

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. 8690096.100

March 2011

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QUARTERLY GROUNDWATER MONITORING REPORT B COM NO.1E NATURAL GAS WELL SITE FARMINGTON, NEW MEXICO FEBRUARY 2011

1.0 INTRODUCTION

This report presents the results of quarterly groundwater monitoring completed by Tetra Tech, Inc. (Tetra Tech) on February 7, 2011, at the ConocoPhillips Company Farmington B Com No. 1E remediation site in Farmington, New Mexico (Site).

The Site is located on private property in southeast Farmington, New Mexico, near the corner of East Murray Drive and South Carlton Avenue. The Site consists of a gas production well and associated equipment and installations. The location and general features of the Site are presented as **Figures 1** and **2**, respectively. A generalized cross section of the site is included as **Figure 3**.

1.1 Site History

The history of the Site is outlined on **Table 1** and discussed in more detail in the following paragraphs.

Conoco Inc., predecessor to ConocoPhillips Company, owned the property and operated the gas well between July 1991 and January 1997. Merrion Oil & Gas Company is the current property owner and well operator. A Phase II Environmental Site Assessment associated with the property transfer was conducted by On Site Technologies, Limited (On Site) in March 1997. Soil hydrocarbon impacts were confirmed north of a production storage tank and west of a separator/dehydrator pit (**Figure 2**). Impacts were described by On Site as limited to a former unlined pit area with hydrocarbon migration primarily occurring vertically through the soil profile due to the porous and permeable subsurface soils; lateral migration was considered minimal (On Site, 1997). Soil excavation of the two impacted areas occurred in September 1997. A total of 906 cubic yards of impacted soil were removed from two excavation areas. Of the 906 cubic yards, 328 were transported offsite and 578 were screened and placed back into the excavated areas along with clean fill. During backfill activities, approximately 10 gallons of liquid fertilizer was sprayed into both excavations to enhance insitu degradation of residual hydrocarbons (On Site, 1997).

Groundwater Monitor Wells MW-1, MW-2, MW-3, MW-4, MW-5, and MW-6 were installed at the Site in February and August 1998 under the supervision of On Site. During 1998 and 1999, results from groundwater samples collected from MW-2 through MW-6 did not have benzene, toluene, ethylbenzene, and xylenes (BTEX) concentrations in excess of New Mexico Water Quality Control Commission (NMWQCC) groundwater quality standards. On Site then requested that groundwater quality monitoring in Monitor Wells MW-2 through MW-6 be discontinued. The request was approved by the New Mexico Energy, Minerals, and Natural Resources Department (NMEMNRD) in a letter to Ms. Shirley Ebert of Conoco Inc. (NMEMNRD, 2000). Although Monitor Wells MW-2 through MW-6 showed no hydrocarbon impacts during 1998 and 1999, light non-aqueous phase liquid (LNAPL) has

been present in MW-1 since its installation and recovery has been ongoing. Souder Miller and Associates (SMA) placed active and passive skimmers in MW-1 in May 2004. The passive skimmer collected a small amount of LNAPL; the active skimmer did not collect any LNAPL. SMA determined that an active skimmer was not a viable method of LNAPL recovery in MW-1 and proposed passive skimming or periodic hand bailing.

Tetra Tech began groundwater quality monitoring at the site in May 2005. Most recently, groundwater quality monitoring took place on February 7, 2011. This is the first quarter that dissolved manganese was tested.

2.0 METHODOLOGY AND RESULTS

2.1 Groundwater Monitoring Methodology

Groundwater Elevation Measurements

On February 7, 2011, groundwater elevation measurements were recorded for Monitor Wells MW-1 and MW-6 using a dual interface probe. Groundwater elevations are detailed in **Table 2**. A groundwater elevation contour map is presented as **Figure 4.** Based on the February 7, 2011 monitoring data, groundwater flow remains to the west and is consistent with recent and historical records at the Site. The Animas River is approximately ¾ miles from the Site and flows west as well.

Groundwater sampling

Groundwater samples were obtained from Monitor Wells MW-1 and MW-6 on February 7, 2011, this represents the eleventh round of consecutive quarterly groundwater monitoring at the Site. Approximately three well volumes were purged from each monitor well with a dedicated polyethylene 1.5-inch disposable bailer. Groundwater samples were placed in laboratory prepared bottles, packed on ice, and shipped under chain of custody documentation to Southern Petroleum Laboratories in Houston, Texas. The samples were analyzed for the presence of BTEX in accordance with Environmental Protection Agency (EPA) Method 8260B, and for dissolved iron and manganese according to EPA Method 6010B. Groundwater sampling field forms are included as **Appendix A**.

2.2 Groundwater Sampling Analytical Results

The 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).

- **Volatiles (BTEX)**
    - A hydrocarbon sheen was encountered in MW-1 during the February 2011 sampling event. Laboratory analysis of a groundwater sample from MW-1 revealed that benzene toluene and total xylenes were not present above laboratory detection limits (1.0 ug/L). NMWQCC groundwater quality standards for benzene, toluene, and total xylenes are 10 µg/L, 750 µg/L, and 620 µg/L, respectively. Ethylbenzene was detected at a

concentration of 26 µg/L; the NMWQCC groundwater quality standard for ethylbenzene is 750 µg/L.

- **Dissolved Manganese**
  - The groundwater quality standard for dissolved manganese is 0.2 milligrams per liter (mg/L). Groundwater samples collected from Monitor Wells MW-1 and MW-6 were found to contain dissolved manganese at concentrations of 0.459 mg/L and 0.543 mg/L, respectively.

Table 3 presents the laboratory analytical results. The laboratory analytical reports are included as **Appendix B**, and a BTEX concentration map is included as **Figure 5.** The SMA historical analytical data is attached as **Appendix C**.

3.0 CONCLUSIONS

Although a hydrocarbon sheen was observed in Monitor Well MW-1 during the February 2011 monitoring event, BTEX constituents were below laboratory detection limits. The LNAPL sheen has been intermittently detectable during quarterly groundwater pumping events since 2005 and is shown in a hydrograph of groundwater elevations in MW-1 and MW-6 (**Figure 6**). Generally, if MW-1 does not have an oil absorbent sock, a hydrocarbon sheen or measureable LNAPL is observed at various times of the year and at various depths.

Groundwater analytical results for Monitor Wells MW-1 and MW-6 continue to show BTEX concentrations below NMWQCC groundwater quality standards. To date, BTEX levels in MW-1 have been below NMWQCC groundwater quality standards since April 2009. 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 sample analytical results indicate that all constituents of concern are consistently below NMWQCC groundwater quality standards or have reached Site-specific background levels. Please contact Kelly Blanchard at 505-237-8440 or kelly.blanchard@tetratech.com if you have any questions or require additional information.

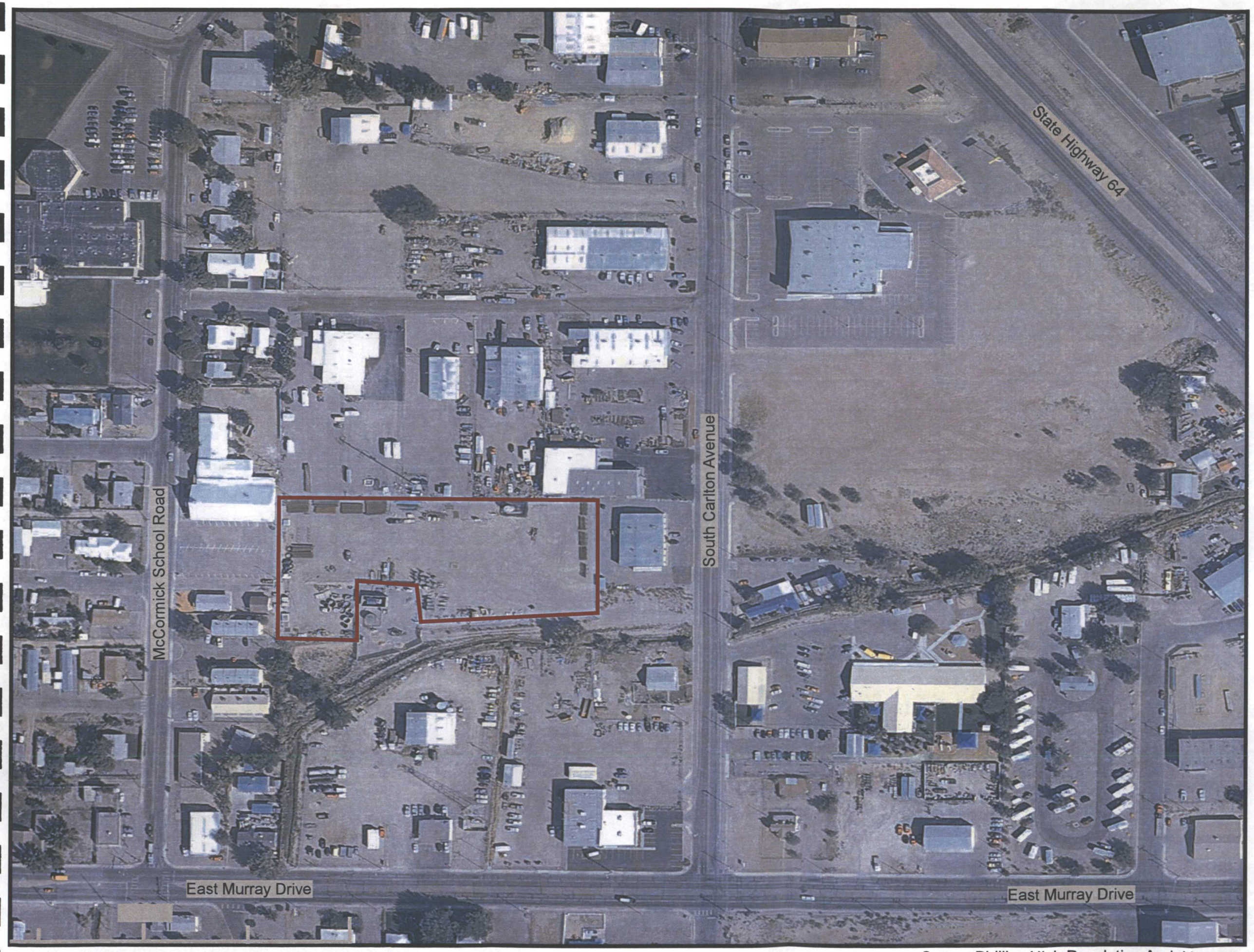
4.0 REFERENCES

New Mexico Energy, Minerals, and Natural Resources Department. (2000). *Re: Farmington B Com #1E Well Site*. Letter to Ms. Shirley Ebert, Conoco, Inc. December 13, 2000.

On-Site Technologies, Ltd. (1997). *Annual Summary, Pit Closures and Groundwater Impact Updates, State of New Mexico, 1996*. Prepared for Conoco Inc., Midland Division. Report dated April 22, 1997. 21 pp.

On-Site Technologies, Ltd. (1997). *Re: Remediation Summary Farmington B Com #1E.* . Letter Attn: Mr. Neal Goates, Senior Environmental Specialist, Conoco, Inc. November 26, 1997.

FIGURES



ConocoPhillips High Resolution Aerial imagery

FIGURE 1.

Site Location Map
Farmington
B Com No.1E
Farmington, NM

ConocoPhillips Company B Com #1E Site Location

Feet
0 150 300

Section 15, T29N, R13W
San Juan County, NM

N

TETRA TECH, INC.

FIGURE 2:
SITE LAYOUT MAP

FARMINGTON
B COM NO. 1E
Section 15, T29N, R13W
San Juan County, NM

LEGEND

- WELLHEAD
- MONITORING WELL
- FENCE
- FORMER SEPARATOR/DEHYDRATOR
- FORMER SEPARATOR/DEHYDRATOR PIT
- EXISTING MERRION OIL EQUIPMENT
- FORMER PIT EXCAVATION

0 40 80
FEET

N

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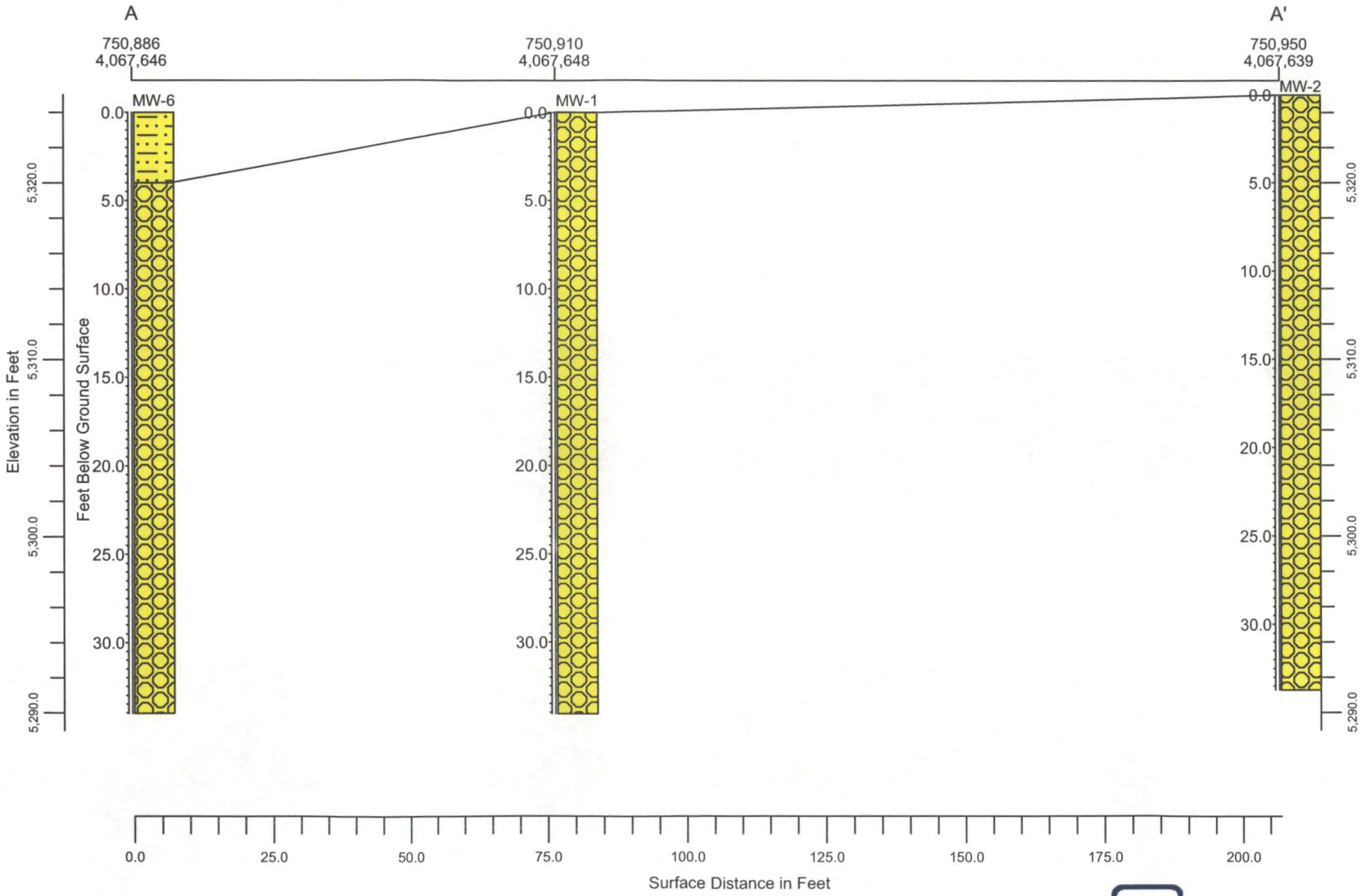
Figure 3.

B Com No. 1E - Cross-Section A-A'



5/24/2010

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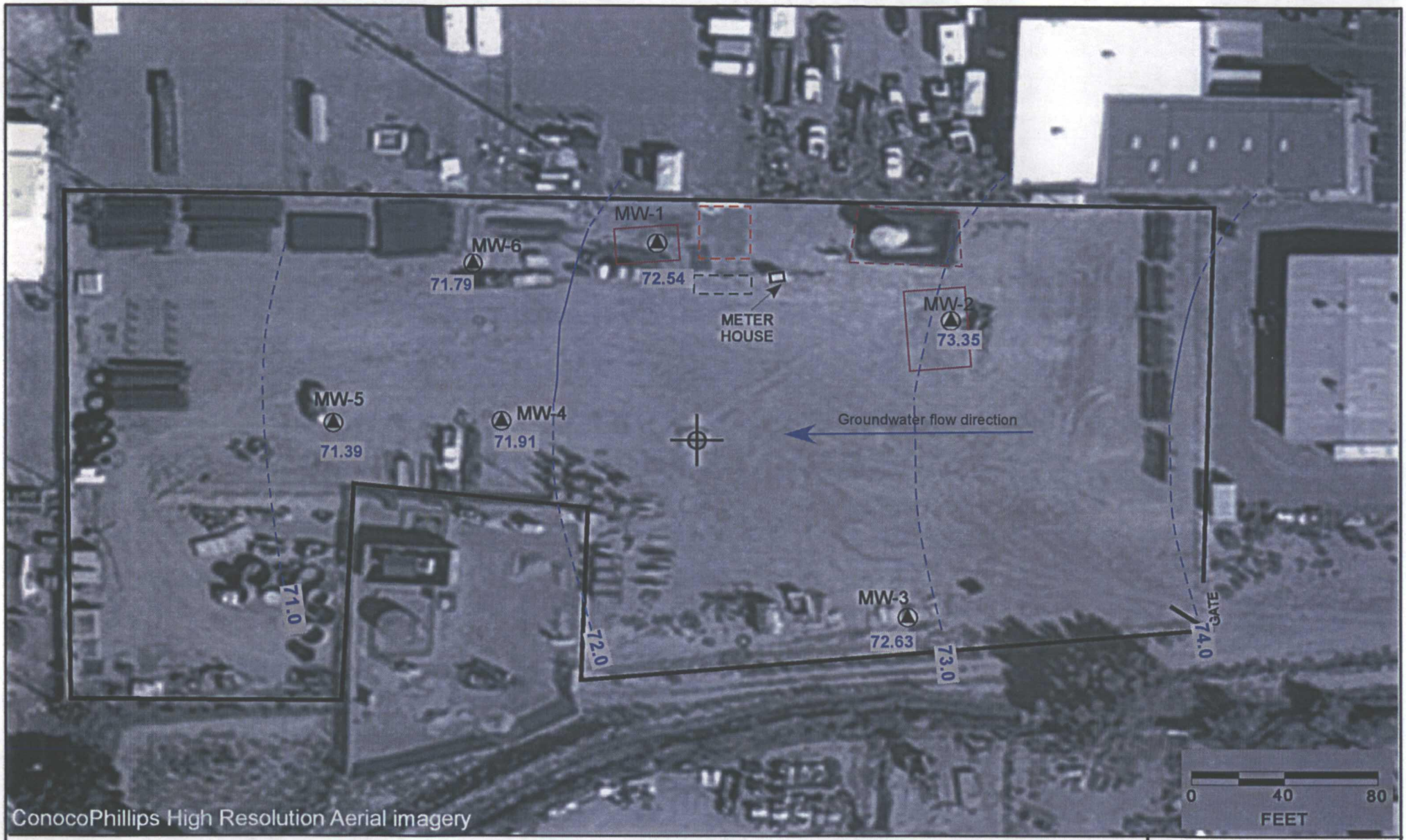


FIGURE 4:
GROUNDWATER ELEVATION CONTOUR MAP
FEBRUARY 2011 QUARTERLY MONITORING

FARMINGTON B COM NO. 1E
Section 15, T29N, R13W
San Juan County, NM

LEGEND

- WELLHEAD
- MONITORING WELL
- FENCE
- GW CONTOUR LINE
- INFERRED GW CONTOUR LINE
- FORMER SEPARATOR/DEHYDRATOR
- FORMER SEPARATOR/DEHYDRATOR PIT
- EXISTING MERRION OIL PRODUCED WATER AND CONDENSATE TANKS
- FORMER PIT EXCAVATION

N

TETRA TECH, INC.

FIGURE 5:
BTEX CONCENTRATION MAP
FEBRUARY 2011 QUARTERLY MONITORING

FARMINGTON
B COM NO. 1E
Section 15, T29N, R13W
San Juan County, NM

LEGEND

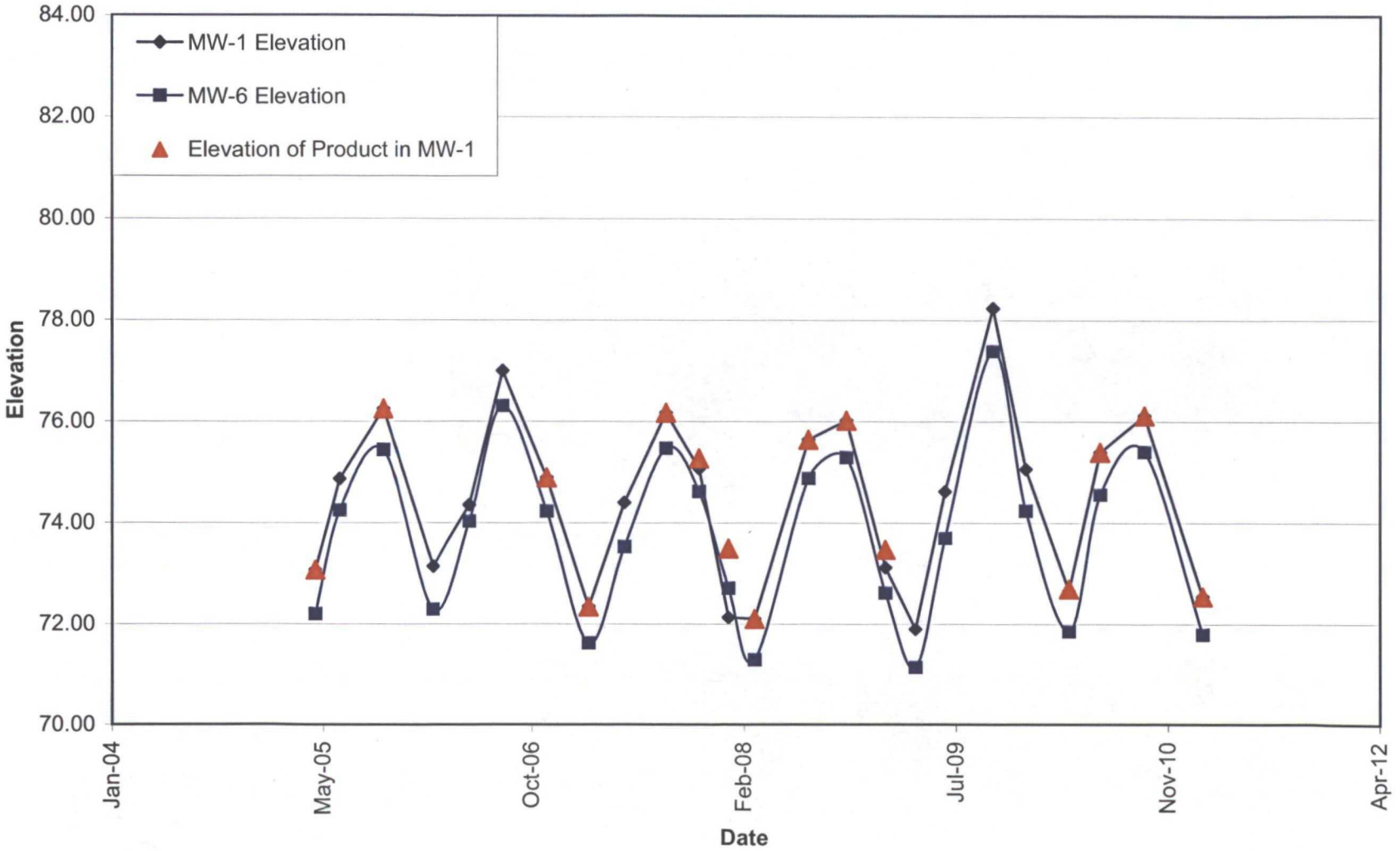
- WELLHEAD
- MONITORING WELL
- FENCE
- FORMER SEPARATOR/DEHYDRATOR
- FORMER SEPARATOR/DEHYDRATOR PIT
- EXISTING MERRION OIL PRODUCED WATER AND CONDENSATE TANKS
- FORMER PIT EXCAVATION

0 40 80
FEET

N

TETRA TECH, INC.

FIGURE 6
FARMINGTON B-COM NO. 1E HYDROGRAPH
Updated: March 2011



TABLES

Table 1. Site History Timeline - Farmington B Com No. 1E

Date/Time Period	Event/Action	Description
February 18, 1982	Well Completed	Pioneer Production Corp. completed the Farmington B-COM No. 1E gas production well
July 1, 1991	Conoco Inc. well purchase	Conoco Inc. purchases wellsite from Mesa Operating Limited Partnership of Amarillo, Texas
January 1, 1997	Change of ownership	Conoco Inc. sold the property and mineral lease to Merrion Oil & Gas Co.
March, 1997	Site Assessment	Phase II Environmental Site Assessment is conducted by On Site Technologies.Three test holes advanced with Auger refusal encountered at 7 feet below ground surface (bgs) due to gravel and cobbles. No samples collected. On Site Technologies later excavates four additional test holes ranging in depth from 14 to 19 feet bgs. Soil samples are collected from each excavation. TPH and BTEX contamination is found in the vicinity of a former unlined pit.
September, 1997	Soil Excavation	On Site Technologies oversees soil excavation of two pits. 906 cubic yards of impacted soil were removed; of which 328 were disposed of offsite and 578 cubic yards were placed back in the pits along with clean fill. Approximately 10 gallons of liquid fertilizer was sprayed into each pit during backfill.
February and August 1998	Monitor Well Installation	Six monitor wells (MW-1 through MW-6) installed at the site under the supervision of On Site.
October 29, 2004	Groundwater Removal from Monitor Well MW-1	First removal of groundwater - 160 gallons removed by vacuum truck operated by Riley Industrial Services of Farmington, NM
November 1, 2004	Groundwater Removal from Monitor Well MW-1	40 gallons removed by vacuum truck operated by Riley Industrial Services of Farmington, NM
December 3, 2004	Groundwater Removal from Monitor Well MW-1	150 gallons removed by vacuum truck operated by Riley Industrial Services of Farmington, NM
May 9th and 10th, 2005	Monitor Well Sampling	Tetra Tech begins quarterly monitoring at the site. Groundwater samples collected from Monitor Wells MW-1 and MW-6. A sheen is noted in MW-1; an oil absorbant sock is placed in the well.
July 6, 2005	Groundwater Removal from Monitor Well MW-1	138 gallons removed by vacuum truck operated by Riley Industrial Services of Farmington, NM
October 19, 2005	Groundwater Removal from Monitor Well MW-1 and Monitor Well Sampling	Groundwater samples collected from Monitor Wells MW-1 and MW-6. 186 gallons removed from MW-1; a sheen is observed in purge water and oil absorbant sock is replaced.
February 16, 2006	Groundwater Removal from Monitor Well MW-1	144 gallons removed by vacuum truck operated by Riley Industrial Services of Farmington, NM
May 15, 2006		152 gallons removed by vacuum truck operated by Riley Industrial Services of Farmington, NM
August 2, 2006		457 gallons removed by vacuum truck operated by Riley Industrial Services of Farmington, NM
November 14, 2006		423 gallons removed by vacuum truck operated by Riley Industrial Services of Farmington, NM
November 14, 2006	Monitor Well Sampling	Third sampling of monitor wells MW-1 and MW-6 conducted by Tetra Tech
February 20, 2007	Groundwater Removal from Monitor Well MW-1	220 gallons removed vacuum truck operated by Riley Industrial Services of Farmington, NM
May 15, 2007		364 gallons removed by vacuum truck operated by Riley Industrial Services of Farmington, NM
August 21, 2007		684 gallons removed by vacuum truck operated by Riley Industrial Services of Farmington, NM
November 7, 2007		651 gallons removed by vacuum truck operated by Riley Industrial Services of Farmington, NM
November 7, 2007	Monitor Well Sampling	Fourth sampling of monitor wells MW-1 and MW-6 conducted by Tetra Tech
January 16, 2008	Groundwater Removal from Monitor Well MW-1	149 gallons removed by vacuum truck operated by Riley Industrial Services of Farmington, NM
March 18, 2008	Groundwater Removal from Monitor Well MW-1	93 gallons removed by vacuum truck operated by Riley Industrial Services of Farmington, NM
July 24, 2008	Monitor Well Sampling	Initiation of quarterly sampling for Monitor Wells MW-1and MW-6
October 22, 2008	Monitor Well Sampling	Continuation of quarterly sampling for Monitor Wells MW-1 and MW-6

Table 1. Site History Timeline - Farmington B Com No. 1E

Date/Time Period	Event/Action	Description
January 21, 2009	Monitor Well Sampling	Continuation of quarterly sampling for Monitor Wells MW-1 and MW-6. Free product found in MW-1; oil absorbent sock placed in the well.
April 1, 2009	Monitor Well Sampling	Continuation of quarterly sampling for Monitor Wells MW-1 and MW-6. No free product detected in MW-1.
June 10, 2009	Monitor Well Sampling	Continuation of quarterly sampling for Monitor Wells MW-1 and MW-6. No free product detected in MW-1.
October 1, 2009	Monitor Well Sampling	Continuation of quarterly sampling for Monitor Wells MW-1 and MW-6. No free product detected in MW-1. **First quarter of compliance** with all COCs bellow NMWQCC standards.
December 17, 2009	Monitor Well Sampling	Continuation of quarterly sampling for Monitor Wells MW-1 and MW-6. No free product detected in MW-1. **Second quarter of compliance** with all COCs bellow NMWQCC standards.
March 29, 2010	Monitor Well Sampling	Continuation of quarterly sampling for Monitor Wells MW-1 and MW-6. A thin hydrocarbon sheen is detected in MW-1. **Third quarter of compliance** with all COC's below NMWQCC standards.
June 11, 2010	Monitor Well Sampling	Continuation of quarterly sampling for Monitor Wells MW-1 and MW-6. A thin hydrocarbon sheen is detected in MW-1. **Fourth quarter of compliance** with all COC's below NMWQCC standards
September 24, 2010	Monitor Well Sampling	Continuation of quarterly sampling for Monitor Wells MW-1 and MW-6. A thin hydrocarbon sheen is detected in MW-1. **Fifth quarter of compliance** with all COC's below NMWQCC standards.
February 7, 2011	Monitor Well Sampling	Continuation of quarterly sampling for Monitor Wells MW-1 and MW-6. A thin hydrocarbon sheen is detected in MW-1. **Sixth quarter of compliance** with NMWQCC standards for BTEX; however, dissolved manganese concentrations in MW-1 and MW-6 were above standards.

Table 2. Farmington B Com #1E
Groundwater Elevation Summary

Well ID	Total Depth (ft. bgs)	Screen Interval (ft)	*Elevation (ft.) (TOC)	Date Measured	Depth to Water (ft. below TOC)	Depth to Product (ft. below TOC)**	Relative Groundwater Elevation (ft TOC)
MW-1	34.09	19.09 - 34.09	101.37	5/9/2005	28.30	Sheen	73.07
				7/6/2005	26.50	NA	74.87
				10/19/2005	25.12	Sheen	76.25
				2/16/2006	28.23	NA	73.14
				5/15/2006	27.02	NA	74.35
				8/2/2006	24.37	NA	77.00
				11/14/2006	26.48	Sheen	74.89
				2/20/2007	29.03	Sheen	72.34
				5/15/2007	26.97	NA	74.40
				8/21/2007	25.20	Sheen	76.17
				11/7/2007	26.30	26.1	75.07
				1/16/2008	29.24	27.88	72.13
				3/18/2008	29.27	29.27	72.10
				7/24/2008	25.73	Sheen	75.64
				10/22/2008	25.35	Sheen	76.02
				1/21/2009	28.25	27.90	73.12
				4/1/2009	29.47	NA	71.90
				6/10/2009	26.75	NA	74.62
				10/1/2009	23.14	NA	78.23
				12/17/2009	26.31	NA	75.06
				3/29/2010	28.71	28.68	72.66
				6/11/2010	25.98	Sheen	75.39
				9/24/2010	25.26	Sheen	76.11
				2/7/2011	28.83	Sheen	72.54
MW-2	33.72	18.72 - 33.72	101.57	5/9/2005	27.28	NA	74.29
				7/6/2005	25.52	NA	76.05
				10/19/2005	24.30	NA	77.27
				2/16/2006	27.38	NA	74.19
				5/15/2006	25.62	NA	75.95
				8/2/2006	23.51	NA	78.06
				11/14/2006	26.08	NA	75.49
				2/20/2007	28.13	NA	73.44
				5/15/2007	25.86	NA	75.71
				8/21/2007	24.45	NA	77.12
				11/7/2007	25.31	NA	76.26
				1/16/2008	27.27	NA	74.30
				3/18/2008	28.68	NA	72.89
				7/24/2008	24.77	NA	76.80
				10/22/2008	24.55	NA	77.02
				1/21/2009	27.23	NA	74.34
				4/1/2009	28.76	NA	72.81
				6/10/2009	25.76	NA	75.81
				10/1/2009	22.22	NA	79.35
				12/17/2009	25.62	NA	75.95
				3/29/2010	27.96	NA	73.61
				6/11/2010	24.99	NA	76.58
				9/24/2010	24.54	NA	77.03
				2/7/2011	28.22	NA	73.35

Table 2. Farmington B Com #1E
Groundwater Elevation Summary

Well ID	Total Depth (ft. bgs)	Screen Interval (ft)	*Elevation (ft.) (TOC)	Date Measured	Depth to Water (ft. below TOC)	Depth to Product (ft. below TOC)**	Relative Groundwater Elevation (ft TOC)
MW-3	32.44	17.44 - 32.44	102.1	5/9/2005	27.81	NA	74.29
				7/6/2005	26.03	NA	76.07
				10/19/2005	25.06	NA	77.04
				2/16/2006	28.57	NA	73.53
				5/15/2006	26.15	NA	75.95
				8/2/2006	23.83	NA	78.27
				11/14/2006	26.75	NA	75.35
				2/20/2007	29.31	NA	72.79
				5/15/2007	26.23	NA	75.87
				8/21/2007	25.00	NA	77.10
				11/7/2007	26.12	NA	75.98
				1/16/2008	28.46	NA	73.64
				3/18/2008	29.97	NA	72.13
				7/24/2008	25.27	NA	76.83
				10/22/2008	25.35	NA	76.75
				1/21/2009	28.56	NA	73.54
				4/1/2009	30.20	NA	71.90
				6/10/2009	26.55	NA	75.55
				10/1/2009	23.00	NA	79.10
				12/17/2009	26.86	NA	75.24
				3/29/2010	29.41	NA	72.69
				6/11/2010	25.62	NA	76.48
				9/24/2010	25.23	NA	76.87
				2/7/2011	29.47	NA	72.63
MW-4	32.72	17.72 - 32.72	101.4	5/9/2005	28.73	NA	72.67
				7/6/2005	26.66	NA	74.74
				10/19/2005	25.62	NA	75.78
				2/16/2006	28.91	NA	72.49
				5/15/2006	26.86	NA	74.54
				8/2/2006	24.59	NA	76.81
				11/14/2006	27.02	NA	74.38
				2/20/2007	29.61	NA	71.79
				5/15/2007	27.25	NA	74.15
				8/21/2007	25.56	NA	75.84
				11/7/2007	26.50	NA	74.90
				1/16/2008	28.55	NA	72.85
				3/18/2008	29.99	NA	71.41
				7/24/2008	26.02	NA	75.38
				10/22/2008	25.84	NA	75.56
				1/21/2009	28.69	NA	72.71
				4/1/2009	30.22	NA	71.18
				6/10/2009	27.31	NA	74.09
				10/1/2009	23.80	NA	77.60
				12/17/2009	27.07	NA	74.33
				3/29/2010	29.51	NA	71.89
				6/11/2010	26.43	NA	74.97
				9/24/2010	25.70	NA	75.70
				2/7/2011	29.49	NA	71.91

Table 2. Farmington B Com #1E
Groundwater Elevation Summary

Well ID	Total Depth (ft. bgs)	Screen Interval (ft)	*Elevation (ft.) (TOC)	Date Measured	Depth to Water (ft. below TOC)	Depth to Product (ft. below TOC)**	Relative Groundwater Elevation (ft TOC)
MW-5	34.09	19.09 - 34.09	100.52	5/9/2005	28.50	NA	72.02
				7/6/2005	26.32	NA	74.20
				10/19/2005	25.30	NA	75.22
				2/16/2006	28.62	NA	71.90
				5/15/2006	26.55	NA	73.97
				8/2/2006	24.23	NA	76.29
				11/14/2006	27.67	NA	72.85
				2/20/2007	29.34	NA	71.18
				5/15/2007	27.04	NA	73.48
				8/21/2007	25.21	NA	75.31
				11/7/2007	26.13	NA	74.39
				1/16/2008	28.18	NA	72.34
				3/18/2008	29.65	NA	70.87
				7/24/2008	25.73	NA	74.79
				10/22/2008	25.49	NA	75.03
				1/21/2009	28.38	NA	72.14
				4/1/2009	29.92	NA	70.60
				6/10/2009	27.09	NA	73.43
				10/1/2009	23.50	NA	77.02
				12/17/2009	26.77	NA	73.75
				3/29/2010	29.21	NA	71.31
				6/11/2010	26.16	NA	74.36
				9/24/2010	25.31	NA	75.21
				2/7/2011	29.13	NA	71.39
MW-6	34.02	19.02 - 34.02	102.14	5/9/2005	29.94	NA	72.20
				7/6/2005	27.89	NA	74.25
				10/19/2005	26.70	NA	75.44
				2/16/2006	29.85	NA	72.29
				5/15/2006	28.11	NA	74.03
				8/2/2006	25.83	NA	76.31
				11/14/2006	27.91	NA	74.23
				2/20/2007	30.52	NA	71.62
				5/15/2007	28.61	NA	73.53
				8/21/2007	26.67	NA	75.47
				11/7/2007	27.52	NA	74.62
				1/16/2008	29.43	NA	72.71
				3/18/2008	30.85	NA	71.29
				7/24/2008	27.26	NA	74.88
				10/22/2008	26.85	NA	75.29
				1/21/2009	29.52	NA	72.62
				4/1/2009	31.00	NA	71.14
				6/10/2009	28.44	NA	73.70
				10/1/2009	24.75	NA	77.39
				12/17/2009	27.90	NA	74.24
				3/29/2010	30.29	NA	71.85
				6/11/2010	27.58	NA	74.56
				9/24/2010	26.74	NA	75.40
				2/7/2011	30.35	NA	71.79

ft. = Feet
TOC = Top of casing
* Relative Elevation
NA - not applicable or not measured.
bgs = below ground surface
** Where non-aqueous phase liquid (NAPL) is present greater than sheen, depth to water equals the Top of Casing elevation minus the depth to water, plus the NAPL thickness multiplied by 0.79.

Table 3. Farmington B Com No.1E Groundwater Laboratory Analytical Results Summary

Well ID	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	Nitrate as N (mg/L)	Sulfate (mg/L)	Iron (mg/L)	Dissolved Manganese (mg/L)
MW-1	2/19/1998	**210**	34	370	**2,044**	NS	NS	NS	NS
	6/12/1998	3" free product in bailer - not sampled							
	9/15/1998	free product - not sampled							
	12/29/1998	**350**	BDL	420	**2,800**	NS	NS	NS	NS
	1/22/2004	free product - not sampled							
	5/9/2005	**17**	<0.7	74	250	<0.40	77.8	14.9*	NS
	10/19/2005	**34**	<1.0	170	**1400**	0.15	39.9	15*	NS
	11/14/2006	**18**	<0.7	190	**1600**	<0.015	145	8.8*	NS
	11/7/2007	7	<0.7	120	250	<0.015	38.4	6.4*	NS
	7/24/2008	<5.0	<5.0	90	35	<0.5	4.76	17.2*	NS
	Duplicate	<5.0	<5.0	110	59	NS	NS	NS	NS
	10/22/2008	<5.0	<5.0	88	165	<0.5	17	21.1*	NS
	Duplicate	<5.0	<5.0	95	186	NS	NS	NS	NS
	1/21/2009	free product - not sampled							
	4/1/2009	<5.0	<5.0	11	<5.0	NS	NS	5.26*	NS
	6/10/2009	<5.0	<5.0	96	<5.0	NS	NS	9.8*	NS
	10/1/2009	1.3	<1.0	58	142	NS	NS	0.233	NS
	12/17/2009	1.4	<1.0	100	2.8	NS	NS	0.521	NS
	3/29/2010	<1.0	<1.0	51	<1.0	NS	NS	0.0803	NS
	6/11/2010	1.1	<1.0	98	1.8	NS	NS	0.0217	NS
	9/24/2010	<1.0	<1.0	92	27.8	NS	NS	0.0285	NS
	2/7/2011	<1.0	<1.0	26	<1.0	NS	NS	NS	**0.459**
MW-6	9/15/1998	BDL	BDL	BDL	BDL	NS	NS	NS	NS
	12/29/1998	BDL	BDL	BDL	BDL	NS	NS	NS	NS
	3/3/1999	BDL	BDL	BDL	BDL	NS	NS	NS	NS
	6/15/1999	BDL	BDL	BDL	BDL	NS	NS	NS	NS
	9/15/1999	BDL	0.7	1.1	BDL	NS	NS	NS	NS
	12/14/1999	BDL	1.8	0.7	1.9	NS	NS	NS	NS
	1/22/2004	BDL	BDL	BDL	BDL	NS	NS	NS	NS
	5/9/2005	<0.5	<0.7	<0.8	<0.8	<0.4	97	15.9*	NS
	10/19/2005	<0.5	<0.7	<0.8	<0.8	5.4	52.6	1.4*	NS
	11/14/2006	<0.5	<0.7	<0.8	1	<0.015	159	5.8*	NS
	11/7/2007	<0.5	<0.7	<0.8	<0.8	<0.015	112	3*	NS
	7/24/2008	<5.0	<5.0	<5.0	<5.0	<0.5	44.4	28.5*	NS
	10/22/2008	<5.0	<5.0	<5.0	<5.0	<0.5	43.7	1.77*	NS
	1/21/2009	<5.0	<5.0	<5.0	<5.0	<0.5	31.1	9.59*	NS
	4/1/2009	<5.0	<5.0	<5.0	<5.0	NS	NS	16.2*	NS
	6/10/2009	<5.0	<5.0	<5.0	<5.0	NS	NS	3.86*	NS
	10/1/2009	<1.0	<1.0	<1.0	<1.0	NS	NS	<0.02	NS
	12/17/2009	<1.0	<1.0	<1.0	<1.0	NS	NS	0.0511	NS
	3/29/2010	<1.0	<1.0	<1.0	<1.0	NS	NS	<0.0200	NS
	6/11/2010	<1.0	<1.0	<1.0	<1.0	NS	NS	<0.0200	NS
	9/24/2010	<1.0	<1.0	<1.0	<1.0	NS	NS	<0.0200	NS
	2/7/2011	<1.0	<1.0	<1.0	<1.0	NS	NS	NS	**0.543**
NMWQCC Standards		**10 (µg/L)**	**750 (µg/L)**	**750 (µg/L)**	**620 (µg/L)**	**10 (mg/L)**	**600 (mg/L)**	**1 (mg/L)**	**0.2 (mg/L)**

NMWQCC = New Mexico Water Quality Control Commission
mg/L = milligrams per liter (parts per million)
µg/L = micrograms per liter (parts per billion)
NE=Not Established
NS = not sampled

BDL = Below laboratory detection limits
<0.7 = Below laboratory detection limit of 0.7 µg/L
* = Results reported for total ferrous iron, not comparable to NMWQCC standard for dissolved iron

APPENDIX A
GROUNDWATER SAMPLING FIELD FORMS

TETRA TECH, INC.

WATER SAMPLING FIELD FORM

Project Name B Com 1E — Page 1 of 2

Project No.

Site Location Farmington, NM

Site/Well No. MW-1 — Coded/ Replicate No. 1200 — Date 2·7·11

Weather Sunny, cold 32° — Time Sampling Began 1145 — Time Sampling Completed 1155

EVACUATION DATA

Description of Measuring Point (MP) Top of Casing

Height of MP Above/Below Land Surface — MP Elevation

Total Sounded Depth of Well Below MP ~~34.09~~ 33.93 — Water-Level Elevation

Held ____ Depth to Water Below MP 28.83 — Diameter of Casing 2"

Wet ____ Water Column in Well 5.1 — Gallons Pumped/Bailed Prior to Sampling

Gallons per Foot 0.16

Gallons in Well .81 x 3 = 2.44 — Sampling Pump Intake Setting (feet below land surface)

Purging Equipment Purge pump / Bailer

SAMPLING DATA/FIELD PARAMETERS

Time	Temperature (°C)	pH	Conductivity (µS/cm)	TDS (g/L)	DO (mg/L)	DO %	ORP (mV)	Volume (gal.)

Sampling Equipment Purge Pump/Bailer

Constituents Sampled	Container Description	Preservative
BTEX	3 40mL VOA's	HCl
Dissolved Fe	1 16 oz plastic	none

Remarks Green → No Parameters due to Green. H_2O is black

Sampling Personnel Cassie Brown, Christine Mathews

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 B Com 1E — Page 2 of 2

Project No.

Site Location Farmington, NM

Site/Well No. MW-6 — Coded/ Replicate No. — Date 2.7.11

Weather sunny cold 32° — Time Sampling Began 1125 — Time Sampling Completed 1140

EVACUATION DATA

Description of Measuring Point (MP) Top of Casing

Height of MP Above/Below Land Surface — MP Elevation

Total Sounded Depth of Well Below MP 34.02 — Water-Level Elevation

Held ____ Depth to Water Below MP 30.35 — Diameter of Casing 2"

Wet ____ Water Column in Well 3.67 — Gallons Pumped/Bailed Prior to Sampling 2.0

Gallons per Foot 0.16

Gallons in Well 0.587 x 3 = 1.76 — Sampling Pump Intake Setting (feet below land surface)

Purging Equipment Purge pump / Bailer

SAMPLING DATA/FIELD PARAMETERS

Time	Temperature (°C)	pH	Conductivity (µS/cm³)	TDS (g/L)	DO (mg/L)	DO %	ORP (mV)	Volume (gal.)
1130	17.13	7.06	658	.503	1.35	13.8	110.2	1.75
1132	17.21	7.03	655	.500	1.03	10.7	76.1	1.25
1135	17.16	7.04	653	.499	1.25	12.9	50.0	1.75

Sampling Equipment Purge Pump / Bailer

Constituents Sampled	Container Description	Preservative
BTEX	3 40mL VOA's	HCl
Dissolved Fe	1 16 oz plastic	none

Remarks well volume is low. H_2O is light brown orange no odor or sheen observed

Sampling Personnel Cassie Brown, Christine Mathews

Well Casing Volumes

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

APPENDIX B

LABORATORY ANALYTICAL REPORT

ACCUTEST LABORATORIES

SPL Environmental
8880 Interchange Drive
Houston, TX 77054
Phone: (713) 660-0901
Fax: (713) 660-8975

Certificate of Analysis

March 10, 2011

Workorder: H11020078

Kelly Blanchard
Tetra Tech
6121 Indian School Road NE
Suite 200
Albuquerque, NM 87110

Project: COP - B Com #1E

Project Number: COP - B Com #1E

Site: COP - B Com #1E, Farmington, NM

PO Number: ENFOS

NELAC Cert. No.: T104704205-09-3

This Report Contains A Total Of 15 Pages

Excluding Any Attachments

ACCUTEST LABORATORIES

SPL Environmental
8880 Interchange Drive
Houston, TX 77054
Phone: (713) 660-0901
Fax: (713) 660-8975

Certificate of Analysis

March 10, 2011

Workorder: H11020078

Kelly Blanchard
Tetra Tech
6121 Indian School Road NE
Suite 200
Albuquerque, NM 87110

Project: COP - B Com #1E

Project Number: COP - B Com #1E

Site: COP - B Com #1E, Farmington, NM

PO Number: ENFOS

NELAC Cert. No.: T104704205-09-3

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.

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.

ACCUTEST LABORATORIES

SPL Environmental
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Houston, TX 77054
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Fax: (713) 660-8975

Certificate of Analysis

March 10, 2011

Workorder: H11020078

Kelly Blanchard
Tetra Tech
6121 Indian School Road NE
Suite 200
Albuquerque, NM 87110

Project: COP - B Com #1E

Project Number: COP - B Com #1E

Site: COP - B Com #1E, Farmington, NM

PO Number: ENFOS

NELAC Cert. No.: T104704205-09-3

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, Senior Project Manager

Enclosures

ACCUTEST LABORATORIES

SPL Environmental
8880 Interchange Drive
Houston, TX 77054
Phone: (713) 660-0901
Fax: (713) 660-8975

SAMPLE SUMMARY

Workorder: H11020078 : COP - B Com #1E

Project Number: COP - B Com #1E

Lab ID	Sample ID	Matrix	COC ID	Date/Time Collected	Date/Time Received
H11020078001	MW-1	Water		2/7/2011 11:55	2/8/2011 09:20
H11020078002	MW-6	Water		2/7/2011 11:40	2/8/2011 09:20
H11020078003	Duplicate	Water		2/7/2011 12:00	2/8/2011 09:20
H11020078004	Trip Blank	Water		2/7/2011 12:40	2/8/2011 09:20

ACCUTEST LABORATORIES

SPL Environmental
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Fax: (713) 660-8975

ANALYTICAL RESULTS

Workorder: H11020078 : COP - B Com #1E Project Number: COP - B Com #1E

Lab ID: **H11020078001** Date/Time Received: 2/8/2011 09:20 Matrix: Water
Sample ID: **MW-1** Date/Time Collected: 2/7/2011 11:55

VOLATILES

Analysis Desc: SW-846 8260B SW-846 5030Analytical Batches:
Batch: 3205 SW-846 8260B on 02/14/2011 14:18 by LKL

Parameters	Results ug/l	Qual	Report Limit	MDL	DF	RegLmt	Batch Information Prep	Analysis
Benzene	ND		1.0	0.13	1			3205
Ethylbenzene	26		1.0	0.48	1			3205
Toluene	ND		1.0	0.13	1			3205
m,p-Xylene	ND		1.0	0.58	1			3205
o-Xylene	ND		1.0	0.35	1			3205
Xylenes, Total	ND		1.0	0.35	1			3205
4-Bromofluorobenzene (S)	105 %		74-125		1			3205
1,2-Dichloroethane-d4 (S)	89.4 %		70-130		1			3205
Toluene-d8 (S)	101 %		82-118		1			3205

ICP DISSOLVED METALS

Analysis Desc: SW-846 6010B Preparation Batches:
Batch: 2396 SW-846 3010A on 02/08/2011 15:00 by R_V
Analytical Batches:
Batch: 1825 SW-846 6010B on 02/18/2011 22:02 by EBG

Parameters	Results mg/l	Qual	Report Limit	MDL	DF	RegLmt	Batch Information Prep	Analysis
Manganese	0.459		0.00500	0.000300	1		2396	1825

ACCUTEST LABORATORIES

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ANALYTICAL RESULTS

Workorder: H11020078 : COP - B Com #1E | Project Number: COP - B Com #1E

Lab ID: **H11020078002** | Date/Time Received: 2/8/2011 09:20 | Matrix: Water

Sample ID: **MW-6** | Date/Time Collected: 2/7/2011 11:40

VOLATILES

Analysis Desc: SW-846 8260B | SW-846 5030Analytical Batches:
Batch: 3205 SW-846 8260B on 02/14/2011 14:44 by LKL

Parameters	Results ug/l	Qual	Report Limit	MDL	DF	RegLmt	Batch Information Prep	Analysis
Benzene	ND		1.0	0.13	1			3205
Ethylbenzene	ND		1.0	0.48	1			3205
Toluene	ND		1.0	0.13	1			3205
m,p-Xylene	ND		1.0	0.58	1			3205
o-Xylene	ND		1.0	0.35	1			3205
Xylenes, Total	ND		1.0	0.35	1			3205
4-Bromofluorobenzene (S)	101 %		74-125		1			3205
1,2-Dichloroethane-d4 (S)	86 %		70-130		1			3205
Toluene-d8 (S)	102 %		82-118		1			3205

ICP DISSOLVED METALS

Analysis Desc: SW-846 6010B | Preparation Batches:
Batch: 2396 SW-846 3010A on 02/08/2011 15:00 by R_V
Analytical Batches:
Batch: 1825 SW-846 6010B on 02/18/2011 22:26 by EBG

Parameters	Results mg/l	Qual	Report Limit	MDL	DF	RegLmt	Batch Information Prep	Analysis
Manganese	0.543		0.00500	0.000300	1		2396	1825

ACCUTEST LABORATORIES

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Fax: (713) 660-8975

ANALYTICAL RESULTS

Workorder: H11020078 : COP - B Com #1E

Project Number: COP - B Com #1E

Lab ID: **H11020078003**
Sample ID: **Duplicate**

Date/Time Received: 2/8/2011 09:20
Date/Time Collected: 2/7/2011 12:00

Matrix: Water

VOLATILES

Analysis Desc: SW-846 8260B
SW-846 5030Analytical Batches:
Batch: 3205 SW-846 8260B on 02/14/2011 12:59 by LKL

Parameters	Results ug/l	Qual	Report Limit	MDL	DF	RegLmt	Batch Information Prep	Analysis
Benzene	ND		1.0	0.13	1			3205
Ethylbenzene	23		1.0	0.48	1			3205
Toluene	ND		1.0	0.13	1			3205
m,p-Xylene	ND		1.0	0.58	1			3205
o-Xylene	ND		1.0	0.35	1			3205
Xylenes, Total	ND		1.0	0.35	1			3205
4-Bromofluorobenzene (S)	100 %		74-125		1			3205
1,2-Dichloroethane-d4 (S)	88.8 %		70-130		1			3205
Toluene-d8 (S)	100 %		82-118		1			3205

ACCUTEST LABORATORIES

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ANALYTICAL RESULTS

Workorder: H11020078 : COP - B Com #1E

Project Number: COP - B Com #1E

Lab ID: **H11020078004**
Sample ID: **Trip Blank**

Date/Time Received: 2/8/2011 09:20
Date/Time Collected: 2/7/2011 12:40

Matrix: Water

VOLATILES

Analysis Desc: SW-846 8260B
SW-846 5030Analytical Batches:
Batch: 3205 SW-846 8260B on 02/14/2011 15:10 by LKL

Parameters	Results ug/l	Qual	Report Limit	MDL	DF	RegLmt	Batch Information Prep	Analysis
Benzene	ND		1.0	0.13	1			3205
Ethylbenzene	ND		1.0	0.48	1			3205
Toluene	ND		1.0	0.13	1			3205
m,p-Xylene	ND		1.0	0.58	1			3205
o-Xylene	ND		1.0	0.35	1			3205
Xylenes, Total	ND		1.0	0.35	1			3205
4-Bromofluorobenzene (S)	103 %		74-125		1			3205
1,2-Dichloroethane-d4 (S)	91 %		70-130		1			3205
Toluene-d8 (S)	103 %		82-118		1			3205

ACCUTEST LABORATORIES

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QUALITY CONTROL DATA

Workorder: H11020078 : COP - B Com #1E — Project Number: COP - B Com #1E

QC Batch: MSV/3204 — Analysis Method: SW-846 8260B

QC Batch Method: SW-846 5030 — Preparation: 02/14/2011 00:00 by LKL

Associated Lab Samples: H11020078001 H11020078002 H11020078003 H11020078004 H11020131001 H11020131002

METHOD BLANK: 93173

Analysis Date/Time Analyst: 02/14/2011 11:39 LKL

Parameter	Units	Blank Result	Qualifiers	Reporting Limit
Benzene	ug/l	ND		1.0
Ethylbenzene	ug/l	ND		1.0
Toluene	ug/l	ND		1.0
m,p-Xylene	ug/l	ND		1.0
o-Xylene	ug/l	ND		1.0
Xylenes, Total	ug/l	ND		1.0
4-Bromofluorobenzene (S)	%	103		74-125
1,2-Dichloroethane-d4 (S)	%	91.6		70-130
Toluene-d8 (S)	%	102		82-118

LABORATORY CONTROL SAMPLE: 93174

Analysis Date/Time Analyst: 02/14/2011 11:13 LKL

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits
Benzene	ug/l	20	19.4	97.0	74-123
Ethylbenzene	ug/l	20	21.5	107	72-127
Toluene	ug/l	20	21.0	105	74-126
m,p-Xylene	ug/l	40	43.0	108	71-129
o-Xylene	ug/l	20	21.8	109	74-130
Xylenes, Total	ug/l	60	64.79	108	71-130
4-Bromofluorobenzene (S)	%			104	74-125
1,2-Dichloroethane-d4 (S)	%			92.3	70-130
Toluene-d8 (S)	%			102	82-118

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 93175 93176 Original: H11020078003

MS Analysis Date/Time Analyst: 02/14/2011 13:24 LKL

MSD Analysis Date/Time Analyst: 02/14/2011 13:51 LKL

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD
Benzene	ug/l	ND	20	19.0	19.7	95.1	98.3	70-124	3.3	20
Ethylbenzene	ug/l	23	20	43.8	43.0	102	98.1	35-175	1.8	20
Toluene	ug/l	ND	20	19.9	19.3	99.3	96.4	70-131	3.0	20
m,p-Xylene	ug/l	ND	40	39.4	37.9	98.6	94.8	35-175	3.9	20

QC results presented in the QC Control Data 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. Also, MS/MSD % recoveries are calculated by the SPL LIMS using any detected value greater than the MDL.

ACCUTEST LABORATORIES

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QUALITY CONTROL DATA

Workorder: H11020078 : COP - B Com #1E

Project Number: COP - B Com #1E

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 93175 93176 Original: H11020078003

MS Analysis Date/Time Analyst: 02/14/2011 13:24 LKL

MSD Analysis Date/Time Analyst: 02/14/2011 13:51 LKL

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD
o-Xylene	ug/l	ND	20	20.3	19.7	101	98.4	35-175	3.1	20
Xylenes, Total	ug/l	ND	60	59.74	57.6	99.6	96.0	35-175	3.6	20
4-Bromofluorobenzene (S)	%	100				105	104	74-125		
1,2-Dichloroethane-d4 (S)	%	88.8				90.2	91.1	70-130		
Toluene-d8 (S)	%	100				104	100	82-118		

QC results presented in the QC Control Data 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. Also, MS/MSD % recoveries are calculated by the SPL LIMS using any detected value greater than the MDL.

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QUALITY CONTROL DATA

Workorder: H11020078 : COP - B Com #1E | Project Number: COP - B Com #1E

QC Batch: DIGM/2396 | Analysis Method: SW-846 6010B

QC Batch Method: SW-846 3010A | Preparation: 02/08/2011 15:00 by R_V

Associated Lab Samples: H11020078001 H11020078002

METHOD BLANK: 92477

Analysis Date/Time Analyst: 02/18/2011 21:50 EBG

Parameter	Units	Blank Result	Qualifiers	Reporting Limit
Manganese	mg/l	ND		0.00500

LABORATORY CONTROL SAMPLE: 92478

Analysis Date/Time Analyst: 02/18/2011 21:56 EBG

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits
Manganese	mg/l	0.10	0.1002	100	80-120

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 92479 92480 Original: H11020078001

MS Analysis Date/Time Analyst: 02/18/2011 22:08 EBG

MSD Analysis Date/Time Analyst: 02/18/2011 22:14 EBG

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD
Manganese	mg/l	0.459	0.10	0.5332	0.5573	NC	NC	75-125	NC	20

QC results presented in the QC Control Data 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. Also, MS/MSD % recoveries are calculated by the SPL LIMS using any detected value greater than the MDL.

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Legend

(S) - Indicates analyte is a surrogate

Qualifier	Qualifier Description
*	Recovery/RPD value outside QC limits
+	DCS Concentration
B	Analyte detected in the Method Blank
C	MTBE results were not confirmed by GCMS
D	Recovery out of range due to dilution
E	Results exceed calibration range
H	Exceeds holding time
I	Estimated value, between MDL and PQL (Florida)
J	Estimated value
JN	The analysis indicates the presence of an analyte
MI	Matrix Interference
N	Recovery outside of control limits
NC	Not Calculable (Sample Duplicate)
NC	Not Calculated - Sample concentration > 4 times the spike
ND	Not Detected at reporting Limits
P	Pesticide dual column results, greater then 25%
Q	Received past holding time
TNTC	Too numerous to count
U	Not Detected at reporting Limits

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Workorder: H11020078 : COP - B Com #1E

Project Number: COP - B Com #1E

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
H11020078001	**MW-1**	SW-846 3010A	DIGM/2396	SW-846 6010B	ICP/1825
H11020078002	**MW-6**	SW-846 3010A	DIGM/2396	SW-846 6010B	ICP/1825
H11020078001	**MW-1**	SW-846 5030	MSV/3204	SW-846 8260B	MSV/3205
H11020078002	**MW-6**	SW-846 5030	MSV/3204	SW-846 8260B	MSV/3205
H11020078003	**Duplicate**	SW-846 5030	MSV/3204	SW-846 8260B	MSV/3205
H11020078004	**Trip Blank**	SW-846 5030	MSV/3204	SW-846 8260B	MSV/3205

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Sample Receipt Checklist

WorkOrder:	H11020078	Received By	LOG
Date and Time	02/08/2011 09:20	Carrier Name:	FEDEXS
Temperature:	3.5/3.5°C	Chilled By:	Water Ice

1.	Shipping container/cooler in good condition?	YES
2.	Custody seals intact on shipping container/cooler?	YES
3.	Custody seals intact on sample bottles?	Not Present
4.	Chain of custody present?	YES
5.	Chain of custody signed when relinquished and received?	YES
6.	Chain of custody agrees with sample labels?	YES
7.	Samples in proper container/bottle?	YES
8.	Samples containers intact?	YES
9.	Sufficient sample volume for indicated test?	YES
10.	All samples received within holding time?	YES
11.	Container/Temp Blank temperature in compliance?	YES
12.	Water - VOA vials have zero headspace?	YES
	1) 1 Trip Blank vial was received broken.	
13.	Water - Preservation checked upon receipt(except VOA*)?	Not Applicable

*VOA Preservation Checked After Sample Analysis

SPL Representative:	Elessa Sommers	Contact Date & Time:	2/9/2011 13:11
Client Name Contacted:	Kelly Blanchard		
Client Instructions:	Notified client by e-mail that one of two vials was received broken for the Trip Blank.		

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SPL, Inc.

Analysis Request & Chain of Custody Record

H11020078

306319

1 of 1

Client Name:	Tetra Tech					matrix	bottle	size	pres		Requested Analysis								
Address:	6121 Indian School Rd #200					W=water S=soil O=oil A=air SL=sludge E=encore X=other	P=plastic G=glass	A=amber glass V=vial X=other	1=1 liter 4=4oz 40=vial 8=8oz 16=16oz X=other	1=HCl 3=H2SO4 2=HNO3 X=other	Number of Containers	BTEX 8260	Dissolved Mn						
City	Albuquerque	State	NM	Zip	87110														
Phone/Fax:	505-237-8440																		
Client Contact:	Kelly Blanchard	Email:	kelly.blanchard@tetratech.com																
Project Name/No.:	B-Com #1E																		
Site Name:																			
Site Location:	Farmington, NM																		
Invoice To:	ConocoPhillips	Ph:																	
SAMPLE ID		DATE	TIME	comp	grab														
MW-1		2/7/11	1155		X	W	V	40	1	3	X	X							
MW-6		2/7/11	1140		X	W	V	40	1	3	X	X							
on ##	Duplicate	2/7/11	1200		X	W	V	40	1	3	X	X							
Trip Blank		2/7/11	1240		X	W	V	40	1	2	X								
MW-1		2/7/11	1155		X	W	P	16	Ø	1		X							
MW-6		2/7/11	1140		X	W	P	16	Ø	1		X							

Client/Consultant Remarks: Please Filter metals before analysis

Laboratory remarks:

Intact? ☐ Y ☐ N
Ice? ☐ Y ☐ N
Temp:

Requested TAT

- ☐ 1 Business Day
- ☐ 2 Business Days
- ☐ 3 Business Days
- ☐ Contract
- ☒ Standard
- ☐ Other _____

Rush TAT requires prior notice

Special Reporting Requirements Results: Fax ☐ Email ☐ PDF ☐

Standard QC ☒ Level 3 QC ☐ Level 4 QC ☐ TX TRRP ☐ LA RECAP ☐

Special Detection Limits (specify):

PM review (initial):

	date	time	
1. Relinquished by Sampler:	2/7/11	1300	2. Received by:
3. Relinquished by:	date	time	4. Received by:
5. Relinquished by:	date 2/8/11	time 9:20	6. Received by Laboratory:

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

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

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

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APPENDIX C

HISTORICAL ANALYTICAL DATA

Table 2
BTEX Ground Water Analytical Summary
Farmington B Com 1E
Unit O, Sec. 15 T29N, R13W

Sample ID#	Monitor Well	Remarks	BTEX per EPA 8020 (ppb)			
			Benzene	Toluene	Ethylbenzene	Total-Xylene
9802020-01A	MW#1	On Site Lab.	210.0	34.0	370.0	2044.0
3" of free product	in the bailer					
Not Sampled	free product	in well				
9812053-04A			350.0	BDL	420	2800.0
Water	Samples	Taken	in	1999		
Not Sampled	free product	in well				
9802020-02A	MW#2	On Site Lab.	2.4	5.3	16.0	470.0
9806055-02A			0.8	2.7	32.0	171.0
9809035-01A			1.3	2.5	39.0	33.3
9812053-05A			BDL	0.6	2.1	35.0
9903012-05A			BDL	BDL	64	119.0
9906055-05A			BDL	BDL	BDL	BDL
9909054-05A			BDL	BDL	4.1	68.1
9912018-05A			BDL	BDL	1.8	36.4
0401011-004A		lina ba Lab	BDL	BDL	BDL	BDL
9802020-03A	MW#3	On Site Lab.	0.9	1.2	1.6	5.3
9806055-01A			BDL	BDL	0.5	2.0
9809035-02A			BDL	BDL	BDL	BDL
9812053-06A			BDL	BDL	BDL	BDL
9903012-04A			BDL	BDL	BDL	BDL
9906055-04A			BDL	0.9	3.1	56.0
9909054-04A			BDL	0.6	BDL	BDL
9912018-04A			BDL	BDL	BDL	BDL
0401011-002A		lina ba Lab	BDL	BDL	BDL	BDL
Action	Levels		10.0	750.0	750.0	620.0

Table 2
BTEX Ground Water Analytical Summary
Farmington B Com 1E
Unit O, Sec. 15 T29N, R13W

Sample ID#	Monitor Well	Remarks	BTEX per EPA 8020 (ppb)			
9809035-03A	MW#4	On Site Lab.	BDL	BDL	BDL	BDL
9812053-03A			BDL	BDL	0.6	BDL
9903012-03A			BDL	BDL	BDL	BDL
9906055-03A			BDL	BDL	BDL	BDL
9909054-03A			BDL	BDL	BDL	BDL
9912018-03A			BDL	0.7	BDL	BDL
0003041-01A			BDL	BDL	BDL	BDL
0006009-02A			BDL	BDL	BDL	BDL
0009020*01A			BDL	BDL	BDL	BDL
0401011-003A		Iina ba Lab	BDL	BDL	BDL	BDL
9809035-04A	MW#5	On Site Lab.	BDL	BDL	BDL	BDL
9812053-02A			BDL	BDL	BDL	BDL
9903012-02A			BDL	BDL	BDL	BDL
9906055-02A			BDL	BDL	BDL	BDL
9909054-02A			BDL	BDL	BDL	BDL
9912018-02A			BDL	0.8	BDL	BDL
0003041-02A			BDL	BDL	BDL	BDL
0006009-01A			BDL	BDL	BDL	BDL
9912018-05A			BDL	BDL	1.8	36.4
0401011-005A		Iina ba Lab	BDL	BDL	BDL	BDL
9809035-05A	MW#6	On Site Lab.	BDL	BDL	BDL	BDL
9812053-01A			BDL	BDL	BDL	BDL
9903012-01A			BDL	BDL	BDL	BDL
9906055-01A			BDL	BDL	BDL	BDL
9909054-01A			BDL	0.7	1.1	BDL
9912018-01A			BDL	1.8	0.7	1.9
0401011-006A		Iina ba Lab	BDL	BDL	BDL	BDL
Action	Levels		10.0	750.0	750.0	620.0

Table 2
BTEX Ground Water Analytical Summary
Farmington B Com 1E
Unit O, Sec. 15 T29N, R13W

Sample ID#	Monitor Well	Remarks	Anions ppm	Iron ppm	BOD	COD
	MW#1	Ilna ba Lab	Not Sampled			
0401011-004	MW#2		65.1	BDL		
0401011-002	MW#3		73.3	BDL		
0401011-003	MW#4		67.7	BDL		
0401011-005	MW#5		86.8	BDL		
0401011-006	MW#6		28.2	0.194		