3R - 428

JUNE QUARTERLY GWMR

SEP 2009

3R426

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

TETRA TECH, INC.

February 3, 2010

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

RE: (1) ConocoPhillips Sategna 2E Groundwater Monitor Well Installation and Baseline Groundwater Monitoring Report
San Juan County, New Mexico
(2) ConocoPhillips Sategna 2E Quarterly Groundwater Monitoring Report – June 2009
San Juan County, New Mexico

RECEIVED OCD
2010 FEB -4 A 11: 10

Dear Mr. von Gonten:

Enclosed please find a copy of the above-referenced documents as compiled by Tetra Tech, Inc. for this Farmington area ConocoPhillips 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 (2)

2009 QUARTERLY GROUNDWATER MONITORING REPORT

CONOCOPHILLIPS COMPANY

SATEGNA 2E
PRODUCTION FACILITY
SAN JUAN COUNTY, NEW MEXICO

OCD # - TBD

API # 30-045-24060

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

September 2009

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QUARTERLY GROUNDWATER MONITORING REPORT SATEGNA 2E, SAN JUAN COUNTY, NEW MEXICO JUNE 2009

1.0 INTRODUCTION

This report presents the results of the June 2009 quarterly groundwater monitoring event conducted by Tetra Tech, Inc. (Tetra Tech) at the ConocoPhillips Company (ConocoPhillips) Sategna 2E gas well production facility (Site) located on private land within Section 21, Township 29N, Range 11W of Bloomfield, New Mexico (**Figure 1**). A Site detail map is included as **Figure 2**.

1.1 Site Background

The historical timeline for the privately-owned Site is summarized below, and is presented in more detail in **Table 1**.

On November 24, 2008, approximately 8 barrels of condensate were found to have been released from an on-Site, aboveground storage tank (AST) as a result of corrosion in the tank. New Mexico Oil Conservation Division (OCD) Form C-141 was filled out by ConocoPhillips staff and notice was given to OCD via electronic mail. Form C-141 stated that the well was shut down and the production tank was emptied. The spilled fluids remained in the berm and none of the condensate was recovered. On November 25, 2008, Envirotech Inc. of Farmington, New Mexico (Envirotech) obtained grab soil samples from just outside the affected area for analysis of organic vapors. Results of this analysis were below OCD recommended action levels. Envirotech also hand-augered 2 soil borings to groundwater at a depth of approximately 8 feet below ground surface (bgs) and submitted groundwater samples to an analytical laboratory for benzene, toluene, ethylbenzene and xylenes (BTEX) analysis. Results of these analyses revealed BTEX in concentrations below OCD action levels for these constituents.

On December 4, 2008, Envirotech returned to the Site and obtained grab and composite soil samples from an excavation measuring approximately 30 feet by 18 feet by 5 feet deep (**Figure 2**). Heated headspace organic vapor results ranged from 6.5 parts per million (ppm) in a grab soil sample obtained from the bottom of the excavation to 1,400 ppm from a composite soil sample taken from the former location of the AST; the OCD action level for organic vapors is 100 ppm. Total petroleum hydrocarbons (TPH), BTEX, and chloride samples were obtained for soils analysis, and results were all below OCD action levels for BTEX. Results for TPH analysis obtained through Environmental Protection Agency (EPA) method 8015B for the composite soil sample taken at the site of the AST revealed results of 205 mg/kg; the OCD action level is 100 mg/kg. Results for TPH analysis obtained through EPA method 418.1 for the composite soil sample obtained at the location of the below ground tank revealed results of 521 mg/kg. The below ground tank was located within the berm and adjacent to the AST (**Figure 2**).

Envirotech noted seepage of groundwater into the excavation on December 4, 2008, and returned to the Site on December 5, 2008 to collect groundwater samples from the excavation for BTEX analysis. The OCD groundwater action levels for benzene, toluene, and total xylenes are 10 ug/l, 750 ug/l, and 620 ug/l, respectively. Benzene was found at a concentration of 327 ug/l, toluene was detected at 4,300 ug/l, and total xylenes were found at a concentration of 8,480 ug/L. During the week of December 8, 2008, a vacuum truck was utilized to pump the groundwater seepage from the surface of the excavated area. Once removed, further excavation took place and groundwater slowly seeped into the excavation; this process was repeated a total of 4 times. The first time water was pumped from the surface of the excavation, a hydrocarbon odor and free-phase, light non-aqueous phase liquid (LNAPL) were present. By the fourth and last event, neither the hydrocarbon odor nor free-phase LNAPL was present in the groundwater seepage. Each pumping event removed approximately 30-60 barrels of liquid from the Site.

In January 2009, Tetra Tech conducted a site visit to determine proposed groundwater monitor well locations. Groundwater monitor wells were installed at the Site on March 4, 2009 and March 5, 2009. Tetra Tech conducted a baseline groundwater monitoring event at the Site in April 2009. The first quarterly monitoring event for 2009 was conducted by Tetra Tech on June 17, 2009.

2.0 MONITORING SUMMARY AND SAMPLING METHODOLOGY AND RESULTS

2.1 Monitoring Summary

Prior to collection of groundwater samples from monitor wells MW-1, MW-2 and MW-3 for the first quarterly monitoring event at the Site, depth to groundwater in each well was determined. Results are displayed in **Table 2.**

The casings for monitor wells MW-1, MW-2, and MW-3 were surveyed in March 2009 using the wellhead as an arbitrary reference-elevation of 100 feet above mean sea level (amsl). The data obtained from the Site survey and from the June 2009 sampling event was used to create a groundwater elevation map for the Site (**Figure 3**). Using this data, it was determined that the groundwater flow direction at the Site is to the southwest. A generalized geologic cross section for the Site is presented in **Figure 4.**

2.2 Groundwater Sampling Methodology

During the groundwater monitoring event, Site monitor wells were purged of at least 3 casing volumes of groundwater using a 1.5-inch diameter, poly-vinyl chloride disposable 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. Laboratory analysis of all groundwater samples collected during the June 2009 groundwater monitoring event was performed by Southern Petroleum Laboratory (SPL) of Houston, Texas.

During the June 2009 groundwater monitoring event, each groundwater sample collected was analyzed for total metals (aluminum, iron, and manganese) by EPA Method 6010B; BTEX by EPA Method 8260B; and for total sulfate by EPA Method 375.4. With the exception of BTEX constituents - which are always analyzed during groundwater monitoring at any ConocoPhillips site - the suite of chemical constituents analyzed was determined from the results of the April 2009 baseline groundwater monitoring event. Metals and ions analyzed during the June 2009 groundwater monitoring event are those that were found above New Mexico Water Quality Control Commission (NMWQCC) groundwater quality standards (GWQS) during the April 2009 baseline monitoring event. However, the metals analysis requested during the baseline groundwater monitoring event was for total metals. NMWQCC GWQS for metals are for the dissolved phase, and as such, a number of metals were detected in Site groundwater samples above GWQS, both in April 2009 and June 2009. As a result, the metals data for the June 2009 sampling event has been omitted from this report. Results of all other analyses are displayed in **Table 3**. The dissolved form of those metals found to be in excess of the NMWQCC GWQS during the April 2009 monitoring event (aluminum, iron, manganese) will be analyzed during the next groundwater monitoring event to be conducted at the Site in September 2009. Dissolved metals found in excess of NMWQCC GWQS during the September 2009 sampling event will continue to be analyzed at the Site, while dissolved metals below GWQS will be discontinued from groundwater monitoring (personal communication with Jim Griswold, 2009).

2.3 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). 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 monitor wells are discussed below.

- **Sulfate**
    - The NMWQCC domestic water supply groundwater quality standard for sulfate is 600 milligrams per liter (mg/L); groundwater samples collected from monitor well MW-1, MW-2 and MW-3 were found to contain sulfate at concentrations of 1,420 mg/L, 1,610 mg/L, and 1,650 mg/L, respectively.
- **Total Dissolved Solids**
    - The NMWQCC domestic water supply groundwater quality standard for TDS is 1,000 mg/L; groundwater collected from monitor well MW-1, MW-2 and MW-3 was found to contain final TDS concentrations of 1,964 mg/L, 2,027 mg/L, and 2,313 mg/L, respectively. Note that these values were obtained using the YSI sonde described in Section 2.2, and are not laboratory values. Laboratory samples for TDS will be submitted during the September 2009 monitoring event to verify these results. TDS data is included in **Appendix A**.

The corresponding laboratory analysis reports for the June 2009 groundwater sampling event, including quality control summaries, are included in **Appendix B**. A map showing sulfate and TDS concentrations in Site wells during the June 2009 groundwater sampling event is included as **Figure 5**.

3.0 CONCLUSIONS AND RECOMMENDATIONS

Tetra Tech has conducted the first quarterly groundwater monitoring event at the Site. The groundwater flow direction at the Site was determined to be to the southwest as of June 2009. Tetra Tech will continue to determine the groundwater flow direction at the Site and will note any changes as they occur.

The groundwater monitor wells have been incorporated into a quarterly monitoring schedule, and the next groundwater monitoring events at the Site are scheduled for September 2009 and December 2009. In September 2009, dissolved aluminum, iron, and manganese will be analyzed in groundwater samples collected from the Site. Any metals found above NMWQCC GWQS will be carried forward to the December 2009 groundwater monitoring event, while those metals not detected above GWQS will be discontinued from the Site monitoring program. Concentrations of sulfate and TDS have been detected above NMWQCC groundwater quality standards in all groundwater monitor wells at the Site. As a result, Tetra Tech recommends that these constituents continue to be monitored as part of the quarterly monitoring program at the Site. BTEX was not found above laboratory detection limits in any Site monitor well, and Tetra Tech will continue to monitor for BTEX parameters in order to move toward Site closure.

Please contact Kelly Blanchard at 505-237-8440 or kelly.blanchard@tetratech.com if you have any questions or require additional information.

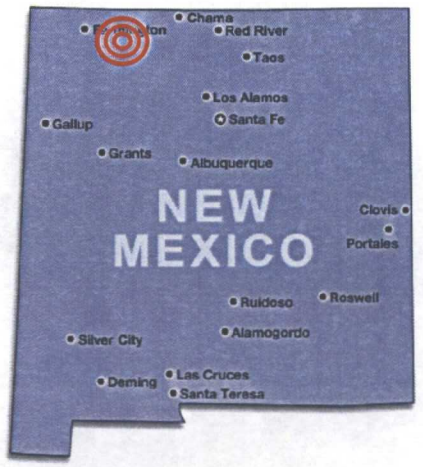
A. REFERENCES

Jim Griswold, New Mexico Oil Conservation Division (2009). Personal Communication with Kelly Blanchard, Tetra Tech Project Manager. September 8, 2009.

FIGURES

FIGURE 1.

Site Location Map
ConocoPhillips
Company
Sategna 2E
Bloomfield, NM



Directions from HWY 64 to ConocoPhillips Company Sategna 2E Site Location

ConocoPhillips Company Sategna 2E Site Location

N

TETRA TECH, INC.

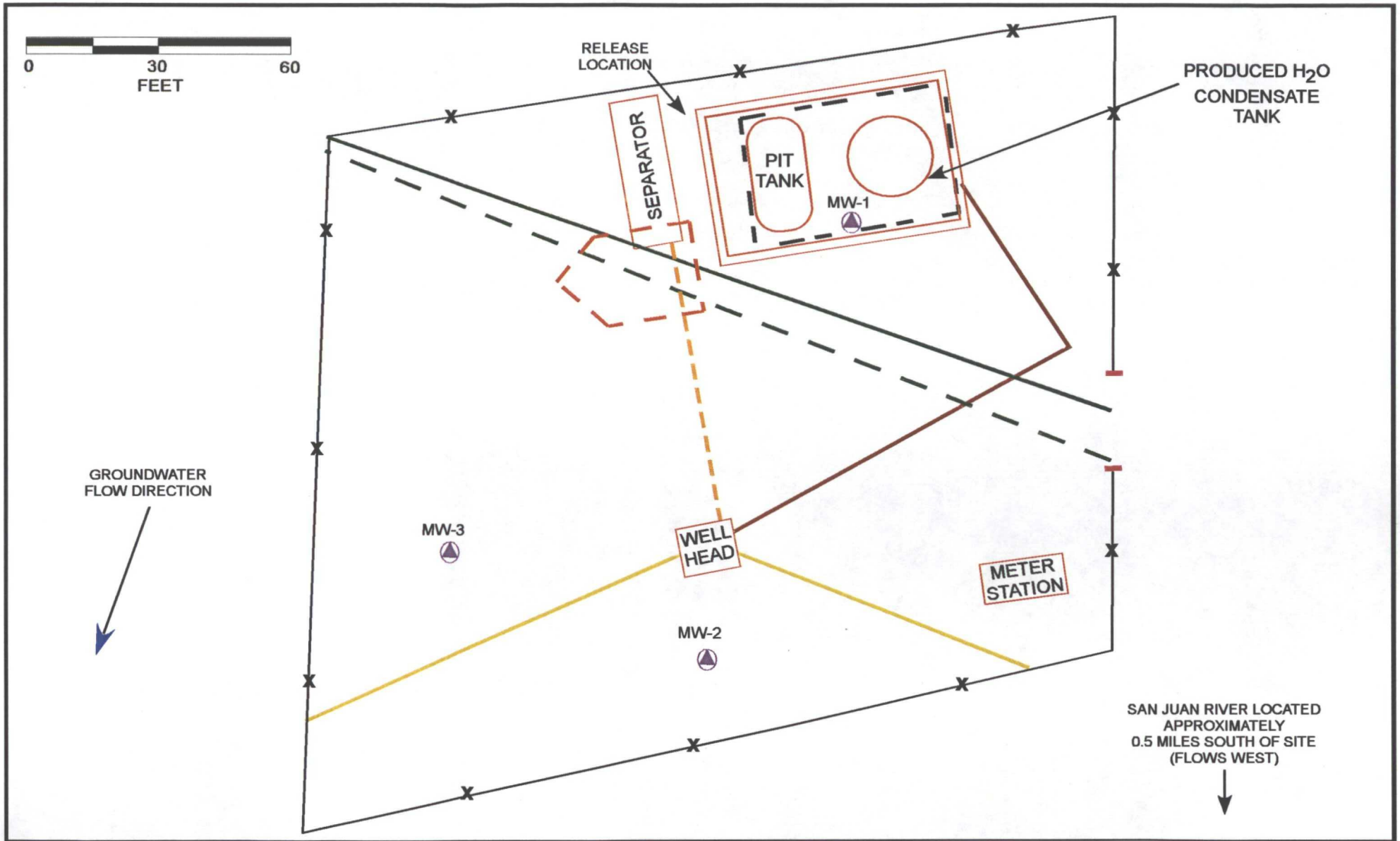


FIGURE 2:
SITE LAYOUT MAP
CONOCOPHILLIPS COMPANY
SATEGNA 2E GAS
PRODUCTION WELL
Sec 21, T29N, R11W
Bloomfield, New Mexico

LEGEND

- GENERAL AREA OF DECEMBER 2008 EXCAVATION
- BERM AND ASSOCIATED EQUIPMENT
- GATED ENTRANCE
- FENCE LINE
- MONITOR WELL
- ACTIVE SEWER LINE
- ABANDONED SEWER LINE
- SEPARATOR LINE
- GAS LINE
- ELECTRIC LINE
- GENERAL AREA OF MAR/APR 2009 EXCAVATION

N

TETRA TECH, INC.

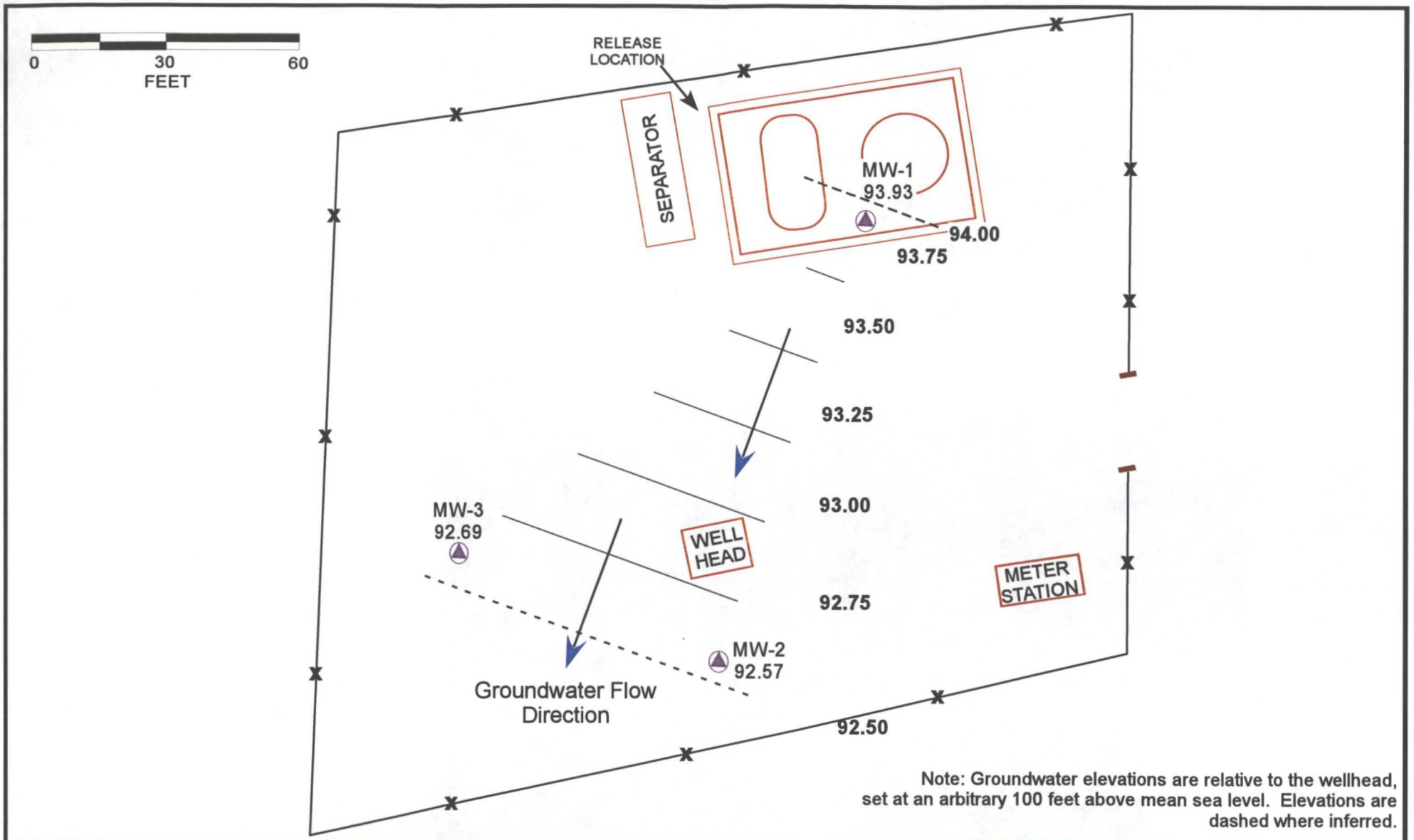


FIGURE 3:
GROUNDWATER ELEVATION MAP
June 2009
CONOCOPHILLIPS COMPANY
SATEGNA 2E GAS
PRODUCTION WELL
Sec 21, T29N, R11W
Bloomfield, New Mexico

LEGEND

- BERM AND ASSOCIATED EQUIPMENT
- GATED ENTRANCE
- FENCE LINE
- MONITORING WELL

0 30 60
FEET

N

TETRA TECH, INC.

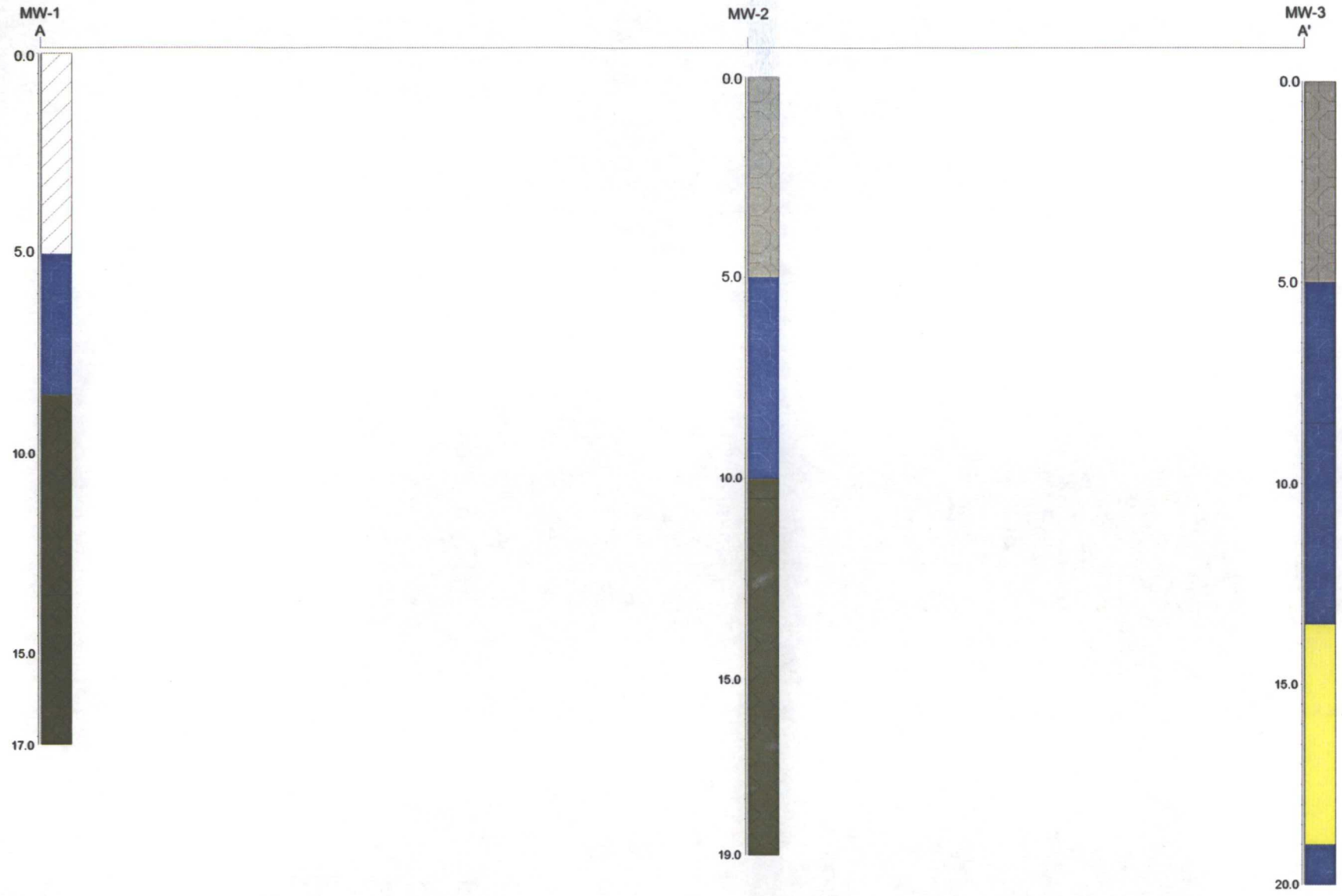
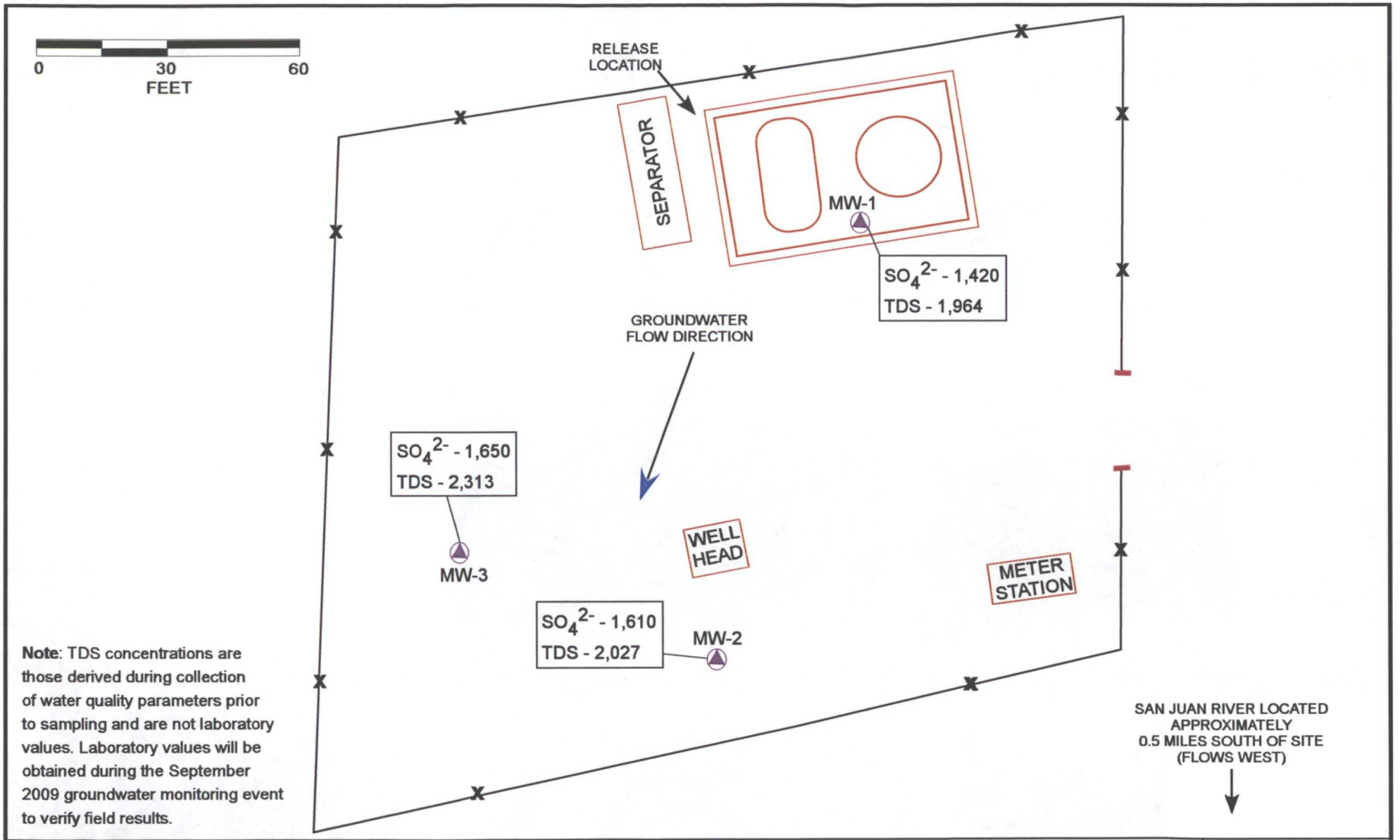


FIGURE 4:
GENERALIZED GEOLOGIC CROSS SECTION
CONOCOPHILLIPS COMPANY
SATEGNA 2E GAS PRODUCTION WELL
Sec 21, T29N, R11W
Bloomfield, New Mexico

LEGEND

- Backfill from excavation
- Clay
- Clayey sand with cobbles
- Coarse grained sand
- Well graded sand with clay

TETRA TECH, INC.



Note: TDS concentrations are those derived during collection of water quality parameters prior to sampling and are not laboratory values. Laboratory values will be obtained during the September 2009 groundwater monitoring event to verify field results.

FIGURE 5:
GROUNDWATER QUALITY MAP
CONOCOPHILLIPS COMPANY
SATEGNA 2E GAS PRODUCTION WELL
Sec 21, T29N, R11W
Bloomfield, New Mexico

LEGEND

- BERM AND ASSOCIATED EQUIPMENT
- GATED ENTRANCE
- FENCE LINE
- MONITOR WELL

SO_4^{2-} - 600
TDS - 1,000

Sulfate and Total Dissolved Solids Concentrations in Site Monitoring Wells. NMWQCC Groundwater Quality Standards Shown at Left (mg/L).

N

TETRA TECH, INC.

TABLES

Table 1. Site History Timeline

Date	Activity
November 24, 2008	Approximately eight (8) barrels of condensate were found to have spilled from an on-Site, aboveground storage tank (AST); corrosion was thought to be the cause of the release. Form C-141 was filled out by ConocoPhillips staff and notice was given to Brandon Powell via electronic mail. Form C-141 stated that the well was shut down and the production tank was emptied. The spilled fluids remained in the berm and none of the condensate was recovered.
November 25, 2008	Envirotech Inc. of Farmington, NM (Envirotech) obtained heated headspace soil results from just outside of the affected area; results were 0.2 and 1.1 parts per million (ppm). Depth of soil samples was not noted. Envirotech hand augered two soil borings to groundwater at a depth of approximately 8 feet below ground surface (bgs) and submitted groundwater samples for analysis. Results were below OCD action levels for benzene, toluene, ethylbenzene, and total xylenes (BTEX) in groundwater. Envirotech notes that groundwater levels in the soil borings increased to approximately 5 feet bgs, and groundwater beneath the Site was thought to be under confined aquifer conditions (Kerr, 2009).
December 4, 2008	Envirotech returned to the Site and obtained grab and composite soil samples from an excavation measuring approximately* 30 feet by 18 feet by 5 feet deep (Figure 2). Heated headspace results show values ranging from 6.5 ppm in a grab soil sample obtained from the bottom of the excavation to 1,400 ppm from a composite soil sample taken from the former location of the AST. Total petroleum hydrocarbons (TPH), BTEX, and chloride samples were obtained for soils analysis, and results were all below OCD action levels for BTEX; one soil sample obtained for chlorides showed results of 370 milligrams per kilogram (mg/kg). Results for TPH analysis obtained through Environmental Protection Agency (EPA) method 8015B for the composite soil sample taken at the site of the AST revealed results of 205 mg/kg; the OCD action level is 100 mg/kg. Results for TPH analysis obtained through EPA method 418.1 for the composite soil sample obtained at the location of the below ground tank revealed results of 521 mg/kg. The below ground tank was located within the berm and adjacent to the AST
December 4, 2008	Results of all other soil analyses at all other sampling locations were below OCD action levels (Appendix A).
December 5, 2008	Envirotech notes seepage of groundwater into the excavation on December 4, 2008, and returns to the Site on December 5, 2008 to collect groundwater samples from the excavation for BTEX analysis. (Kerr, 2009). The OCD groundwater action levels for benzene, toluene, and total xylenes are 10 ug/l, 750 ug/l, and 620 ug/l, respectively. Benzene was found at a concentration of 327 ug/l, toluene was detected at 4,300 ug/l, and total xylenes were found at a concentration of 8,480 ug/L (Appendix A).
Week of December 8, 2008	A vacuum truck was utilized to pump groundwater seepage from the surface of the excavated area. Once removed, further excavation took place and groundwater slowly seeped into the excavation; this process was repeated a total of four (4) times. The first time water was pumped from the surface of the excavation, a hydrocarbon odor and free phase, light non-aqueous phase liquid (LNAPL) were present. By the fourth and last event, neither the hydrocarbon odor nor free-phase LNAPL was present in the groundwater seepage. Each pumping event removed approximately 30-60 barrels of liquid from the Site (Frost, 2009).
January 20, 2009 & January 30, 2009	Tetra Tech conducted a Site visit to determine proposed groundwater monitoring well locations.
March 4-5, 2009	Tetra Tech installed three groundwater monitor wells at the Site: MW-1, MW-2, and MW-3.
March 2009	Construction and trenching for relocation of well operational equipment and tanks uncovered additional hydrocarbon impacted soils between the well head and separator tank. Work was stopped.
April 2, 2009	Tetra Tech conducted the first quarterly groundwater monitoring event at the Site.

Table 1. Site History Timeline

Date	Activity
April 2, 2009	Envirotech created an exploratory trench between the proposed location of the separator tank and the well head and found an abandoned sewer line associated with hydrocarbon-impacted soils. The trenching was stopped and the excavated soils were stockpiled on site.
April 23 - 24, 2009	Tetra Tech provided oversight for removal of approximately 96 cubic yards of hydrocarbon-impacted soils located west of the tank berm and in the vicinity of the abandoned sewer line.
June 17, 2009	Tetra Tech conducted the second quarterly groundwater monitoring event at the Site.

Table 2 - Groundwater Elevation Data Summary

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	20.30	2.2 - 17.2	99.36	4/2/2009	5.15	94.21
				6/17/2009	5.43	93.93
MW-2	20.90	3.33 - 18.33	98.78	4/2/2009	5.96	92.82
				6/17/2009	6.21	92.57
MW-3	20.28	3.0 - 18.0	98.66	4/2/2009	5.70	92.96
				6/17/2009	5.97	92.69

ft = Feet

TOC = Top of casing

bgs = below ground surface

* Elevation relative to wellhead, set at 100 feet.

Table 3. Groundwater Laboratory Analytical Results - ConocoPhillips Company Sategna 2E

Well ID	Date	Sulfate (mg/L)	Aluminum (mg/L)	Iron (mg/L)	Manganese (mg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
MW-1	4/2/2009	**1,790**	**7.25**	**7.2**	**2.7**	< 5	< 5	< 5	< 5
	6/17/2009	**1,420**	**6.87**	**5.63**	**2.37**	< 5	< 5	< 5	< 5
MW-1 Duplicate	4/2/2009	NA	NA	NA	NA	< 5	< 5	< 5	< 5
	6/17/2009	**1,330**	**6.51**	**4.93**	**2.38**	< 5	< 5	< 5	< 5
MW-2	4/2/2009	**1,850**	**10.1**	**10.4**	**6.76**	< 5	< 5	< 5	< 5
	6/17/2009	**1,610**	**5.24**	**5.52**	**2.6**	< 5	< 5	< 5	< 5
MW-3	4/2/2009	**2,110**	0.848	**1.02**	**1.9**	< 5	< 5	< 5	< 5
	6/17/2009	**1,650**	0.702	**1.49**	**2.22**	< 5	< 5	< 5	< 5
Method		E375.4	*SW6010B*	*SW6010B*	*SW6010B*	*8260B*	*8260B*	*8260B*	*8260B*
NMWQCC Groundwater Quality Standard		600	5.0	1.0	0.2	10	750	750	620

Notes:
MW = monitoring well
NMWQCC = New Mexico Water Quality Control Commission
Constituents in **BOLD** exceed NMWQCC groundwater quality standards
mg/L = milligrams per liter
µg/L = micrograms per liter
NA = not analyzed
<5 = result below laboratory detection limit

APPENDIX A

Groundwater Sampling Field Forms

WATER SAMPLING FIELD FORM

Project No. Saltegra 2E — 1 of ____

Site Location Bloomfield, NM

Site/Well No. MW- 2 — Coded/ Replicate No. ____ — Date 6/17/09

Weather hot — Time Sampling Began 1300 — Time Sampling Completed 1320

EVACUATION DATA

Description of Measuring Pt (MP) ____

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

Total Sounded Depth of Well Below MP 20.90 — Water-Level Elevation ____

Held ____ — Depth to Water Below MP 6.21 — Diameter of Casing (2 inch/4 inch)

Wet ____ — Water Column in Well 14.69 — Gallons Pumped/Bailed Prior to Sampling ____

Gallons per Foot 0.16

Gallons in Well 2.35 x 3 = 7.05 — Sampling Pump Intake (feet below land surface) ____

Purging Equipment ____

SAMPLING DATA/FIELD PARAMETERS

Time	Temperature	pH	Conductivity mS/cm	TDS g/L	DO	DO%	ORP	Other
1312	13.75	7.36	3125	2.031	3.74	35.5	180.7	
1315	13.84	7.47	3127	2.033	3.22	30.5	180.8	
1318	13.38	7.30	3120	2.027	2.92	27.0	181.2	

Sampling Equipment Low Flow Pump / Disposable Bailer

Constituents Sampled	Container Description	Preservative
BTEX	40 ml VOA	HCl
M, Fe, Mn (TOTAL)	32oz plastic	HNO_3
SO_4^{2-}	32oz plastic	None

Remarks ____

Sampling Personnel ____

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

WATER SAMPLING FIELD FORM

Project No. Jategna 2E — 2 of ____

Site Location Bloomfield, NM

Site/Well No. MW- 3 — Coded/ Replicate No. ____ — Date 6/17/09

Weather hot — Time Sampling Began 1328 — Time Sampling Completed 1440

EVACUATION DATA

Description of Measuring Pt (MP) ____

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

Total Sounded Depth of Well Below MP 20.28 — Water-Level Elevation ____

Held ____ — Depth to Water Below MP 5.97 — Diameter of Casing (2 inch) 4 inch

Wet ____ — Water Column in Well 14.31 — Gallons Pumped/Bailed Prior to Sampling ____

Gallons per Foot 0.16

Gallons in Well 2.29 x 3 = 6.87 — Sampling Pump Intake (feet below land surface) ____

Purging Equipment ____ mS/cm3

SAMPLING DATA/FIELD PARAMETERS

Time	Temperature	pH	Conductivity	TDS	DO	DO%	ORP	Other
1332	15.57	7.11	5977	3.884	1.90	19.5	-110.3	
1335	13.46	7.31	4113	2.675	2.83	27.5	-102.2	
1435	13.76	7.72	3885	2.521	3.42	36.0	-13.3	
1438	12.93	7.53	3557	2.313	4.17	38.7	12.4	

Sampling Equipment — Low Flow Pump / (Disposable Bailer)

Constituents Sampled	Container Description	Preservative
BTEX		
Fe, Mn, Al		
SO_4^{2-}		

Remarks ____

Sampling Personnel ____

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

WATER SAMPLING FIELD FORM

Project No. Satagna #2E — 3 of ____

Site Location Bloomfield, NM

Site/Well No. MW- 1 — Coded/ Replicate No. ____ — Date 6/17/09

Weather hot — Time Sampling Began 1340 — Time Sampling Completed 1410

EVACUATION DATA duplicate @ 1400

Description of Measuring Pt (MP) ____

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

Total Sounded Depth of Well Below MP 20.30 — Water-Level Elevation ____

Held ____ — Depth to Water Below MP 5.43 — Diameter of Casing (2 inch) / 4 inch

Wet ____ — Water Column in Well 14.87 — Gallons Pumped/Bailed Prior to Sampling ____

Gallons per Foot 0.16

Gallons in Well 2.38 x 3 = 7.14 — Sampling Pump Intake (feet below land surface) ____

Purging Equipment ____

SAMPLING DATA/FIELD PARAMETERS

Time	Temperature	pH	Conductivity	TDS	DO	DO%	ORP	Other
1354	14.54	7.80	3091	2.009	5.03	48.5	-2.9	
1402	13.88	7.40	3032	1.970	4.49	42.7	14.6	
1404	13.83	7.38	3022	1.964	3.11	30.2	18.3	

Sampling Equipment — Low Flow Pump / ~~Disposable Bailer~~

Constituents Sampled	Container Description	Preservative
BTEX	3 VOAs	HCl
Fe, Mn, Al	32 oz plastic	HNO3
SO_4^{2-}	"	none

Remarks ____

Sampling Personnel GD, AM

Well Casing Volumes

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

APPENDIX B

Groundwater Laboratory Analysis Reports

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

Conoco Phillips

Certificate of Analysis Number:

09060994

Report To:		Project Name:	COP Sategna 2E
Tetra Tech, Inc.		Site:	Bloomfield, NM
Kelly Blanchard		Site Address:	
6121 Indian School Road, N.E.			
Suite 200		PO Number:	4511228605
Albuquerque		State:	New Mexico
NM		State Cert. No.:	
87110-		Date Reported:	7/2/2009
ph: (505) 237-8440	fax:		

This Report Contains A Total Of 14 Pages

Excluding This Page, Chain Of Custody

And

Any Attachments

7/2/2009

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:

09060994

Report To:		Project Name:	COP Sategna 2E
Tetra Tech, Inc.		Site:	Bloomfield, NM
Kelly Blanchard		Site Address:	
6121 Indian School Road, N.E.			
Suite 200		PO Number:	4511228605
Albuquerque		State:	New Mexico
NM		State Cert. No.:	
87110-			
ph: (505) 237-8440	fax:	Date Reported:	7/2/2009

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: ANALYSIS AND EXCEPTIONS:

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

III. GENERAL REPORTING COMMENTS:

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

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

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

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

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

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

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:

09060994

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: COP Sategna 2E
Site: Bloomfield, NM
Site Address:

PO Number: 4511228605
State: New Mexico
State Cert. No.:
Date Reported: 7/2/2009

Client Sample ID	Lab Sample ID	Matrix	Date Collected	Date Received	COC ID	HOLD
MW-1	09060994-01	Water	6/17/2009 2:10:00 PM	6/18/2009 10:00:00 AM		☐
MW-2	09060994-02	Water	6/17/2009 1:20:00 PM	6/18/2009 10:00:00 AM	327830	☐
MW-3	09060994-03	Water	6/17/2009 2:40:00 PM	6/18/2009 10:00:00 AM	327830	☐
Duplicate	09060994-04	Water	6/17/2009 2:00:00 PM	6/18/2009 10:00:00 AM	327830	☐
Trip Blank	09060994-05	Water	6/17/2009 2:00:00 PM	6/18/2009 10:00:00 AM	327830	☐

E Cardenas

7/2/2009

Erica Cardenas
Project Manager

Date

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

Ted Yen
Quality Assurance Officer

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

Client Sample ID: MW-1 **Collected:** 06/17/2009 14:10 **SPL Sample ID:** 09060994-01

Site: Bloomfield, NM

Analyses/Method	Result	QUAL	Rep.Limit		Dil. Factor	Date Analyzed	Analyst	Seq. #
METALS BY METHOD 6010B, TOTAL				**MCL**	**SW6010B**	**Units: mg/L**		
Aluminum	6.87		0.1		1	06/24/09 15:29	EG	5084243
Iron	5.63		0.02		1	06/24/09 15:29	EG	5084243
Magnesium	35.3		0.1		1	06/24/09 15:29	EG	5084243

Prep Method	Prep Date	Prep Initials	Prep Factor
SW3010A	06/20/2009 11:30	AB1	1.00

SULFATE, TOTAL				**MCL**	**E375.4**	**Units: mg/L**		
Sulfate	1420		120	120		06/24/09 12:07	ESK	5082945
VOLATILE ORGANICS BY METHOD 8260B				**MCL**	**SW8260B**	**Units: ug/L**		
Benzene	ND		5		1	06/29/09 14:08	LU_L	5090881
Ethylbenzene	ND		5		1	06/29/09 14:08	LU_L	5090881
Toluene	ND		5		1	06/29/09 14:08	LU_L	5090881
m,p-Xylene	ND		5		1	06/29/09 14:08	LU_L	5090881
o-Xylene	ND		5		1	06/29/09 14:08	LU_L	5090881
Xylenes,Total	ND		5		1	06/29/09 14:08	LU_L	5090881
Surr: 1,2-Dichloroethane-d4	94.6		% 78-116		1	06/29/09 14:08	LU_L	5090881
Surr: 4-Bromofluorobenzene	102		% 74-125		1	06/29/09 14:08	LU_L	5090881
Surr: Toluene-d8	101		% 82-118		1	06/29/09 14:08	LU_L	5090881

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
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Client Sample ID: MW-2 **Collected:** 06/17/2009 13:20 **SPL Sample ID:** 09060994-02

Site: Bloomfield, NM

Analyses/Method	Result	QUAL	Rep.Limit		Dil. Factor	Date Analyzed	Analyst	Seq. #
METALS BY METHOD 6010B, TOTAL				**MCL**	**SW6010B**	**Units: mg/L**		
Aluminum	5.24		0.1		1	06/24/09 15:33	EG	5084244
Iron	5.52		0.02		1	06/24/09 15:33	EG	5084244
Magnesium	35.8		0.1		1	06/24/09 15:33	EG	5084244

Prep Method	Prep Date	Prep Initials	Prep Factor
SW3010A	06/20/2009 11:30	AB1	1.00

SULFATE, TOTAL				**MCL**	**E375.4**	**Units: mg/L**		
Sulfate	1610		120	120		06/24/09 11:54	ESK	5082944
VOLATILE ORGANICS BY METHOD 8260B				**MCL**	**SW8260B**	**Units: ug/L**		
Benzene	ND		5		1	06/29/09 14:35	LU_L	5090882
Ethylbenzene	ND		5		1	06/29/09 14:35	LU_L	5090882
Toluene	ND		5		1	06/29/09 14:35	LU_L	5090882
m,p-Xylene	ND		5		1	06/29/09 14:35	LU_L	5090882
o-Xylene	ND		5		1	06/29/09 14:35	LU_L	5090882
Xylenes,Total	ND		5		1	06/29/09 14:35	LU_L	5090882
Surr: 1,2-Dichloroethane-d4	89.3		% 78-116		1	06/29/09 14:35	LU_L	5090882
Surr: 4-Bromofluorobenzene	101		% 74-125		1	06/29/09 14:35	LU_L	5090882
Surr: Toluene-d8	99.5		% 82-118		1	06/29/09 14:35	LU_L	5090882

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
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HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
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Client Sample ID: MW-3 **Collected:** 06/17/2009 14:40 **SPL Sample ID:** 09060994-03

Site: Bloomfield, NM

Analyses/Method	Result	QUAL	Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
METALS BY METHOD 6010B, TOTAL				**MCL**	**SW6010B**	**Units: mg/L**	
Aluminum	0.702		0.1	1	06/24/09 15:37	EG	5084245
Iron	1.49		0.02	1	06/24/09 15:37	EG	5084245
Magnesium	37.3		0.1	1	06/24/09 15:37	EG	5084245

Prep Method	Prep Date	Prep Initials	Prep Factor
SW3010A	06/20/2009 11:30	AB1	1.00

SULFATE, TOTAL				**MCL**	**E375.4**	**Units: mg/L**	
Sulfate	1650		120	120	06/24/09 11:53	ESK	5082943
VOLATILE ORGANICS BY METHOD 8260B				**MCL**	**SW8260B**	**Units: ug/L**	
Benzene	ND		5	1	06/29/09 15:02	LU_L	5090883
Ethylbenzene	ND		5	1	06/29/09 15:02	LU_L	5090883
Toluene	ND		5	1	06/29/09 15:02	LU_L	5090883
m,p-Xylene	ND		5	1	06/29/09 15:02	LU_L	5090883
o-Xylene	ND		5	1	06/29/09 15:02	LU_L	5090883
Xylenes,Total	ND		5	1	06/29/09 15:02	LU_L	5090883
Surr: 1,2-Dichloroethane-d4	93.3	%	78-116	1	06/29/09 15:02	LU_L	5090883
Surr: 4-Bromofluorobenzene	99.7	%	74-125	1	06/29/09 15:02	LU_L	5090883
Surr: Toluene-d8	101	%	82-118	1	06/29/09 15:02	LU_L	5090883

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
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Client Sample ID: Duplicate **Collected:** 06/17/2009 14:00 **SPL Sample ID:** 09060994-04

Site: Bloomfield, NM

Analyses/Method	Result	QUAL	Rep.Limit		Dil. Factor	Date Analyzed	Analyst	Seq. #
METALS BY METHOD 6010B, TOTAL				**MCL**	**SW6010B**	**Units: mg/L**		
Aluminum	6.51		0.1		1	06/24/09 15:41	EG	5084246
Iron	4.93		0.02		1	06/24/09 15:41	EG	5084246
Magnesium	35.6		0.1		1	06/24/09 15:41	EG	5084246

Prep Method	Prep Date	Prep Initials	Prep Factor
SW3010A	06/20/2009 11:30	AB1	1.00

SULFATE, TOTAL				**MCL**	**E375.4**	**Units: mg/L**		
Sulfate	1330		120	120		06/24/09 12:07	ESK	5082946
VOLATILE ORGANICS BY METHOD 8260B				**MCL**	**SW8260B**	**Units: ug/L**		
Benzene	ND		5		1	06/29/09 15:29	LU_L	5090884
Ethylbenzene	ND		5		1	06/29/09 15:29	LU_L	5090884
Toluene	ND		5		1	06/29/09 15:29	LU_L	5090884
m,p-Xylene	ND		5		1	06/29/09 15:29	LU_L	5090884
o-Xylene	ND		5		1	06/29/09 15:29	LU_L	5090884
Xylenes,Total	ND		5		1	06/29/09 15:29	LU_L	5090884
Surr: 1,2-Dichloroethane-d4	91.5	%	78-116		1	06/29/09 15:29	LU_L	5090884
Surr: 4-Bromofluorobenzene	99.6	%	74-125		1	06/29/09 15:29	LU_L	5090884
Surr: Toluene-d8	101	%	82-118		1	06/29/09 15:29	LU_L	5090884

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:** 06/17/2009 14:00 **SPL Sample ID:** 09060994-05

Site: Bloomfield, 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		5	1	06/29/09 6:55	LU_L	5090877
Ethylbenzene	ND		5	1	06/29/09 6:55	LU_L	5090877
Toluene	ND		5	1	06/29/09 6:55	LU_L	5090877
m,p-Xylene	ND		5	1	06/29/09 6:55	LU_L	5090877
o-Xylene	ND		5	1	06/29/09 6:55	LU_L	5090877
Xylenes,Total	ND		5	1	06/29/09 6:55	LU_L	5090877
Surr: 1,2-Dichloroethane-d4	92.2		% 78-116	1	06/29/09 6:55	LU_L	5090877
Surr: 4-Bromofluorobenzene	99.7		% 74-125	1	06/29/09 6:55	LU_L	5090877
Surr: Toluene-d8	101		% 82-118	1	06/29/09 6:55	LU_L	5090877

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

COP Sategna 2E

Analysis: Metals by Method 6010B, Total **WorkOrder:** 09060994
Method: SW6010B **Lab Batch ID:** 91295

Method Blank

RunID: ICP2_090624A-5084226 Units: mg/L
Analysis Date: 06/24/2009 14:17 Analyst: EG
Preparation Date: 06/20/2009 11:30 Prep By: AB1 Method SW3010A

Analyte	Result	Rep Limit
Aluminum	ND	0.1
Iron	ND	0.02
Magnesium	ND	0.1

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
09060994-01B	MW-1
09060994-02B	MW-2
09060994-03B	MW-3
09060994-04B	Duplicate

Laboratory Control Sample (LCS)

RunID: ICP2_090624A-5084227 Units: mg/L
Analysis Date: 06/24/2009 14:21 Analyst: EG
Preparation Date: 06/20/2009 11:30 Prep By: AB1 Method SW3010A

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Aluminum	1.000	1.078	107.8	80	120
Iron	1.000	1.067	106.7	80	120
Magnesium	1.000	0.9775	97.75	80	120

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

Sample Spiked: 09060865-02
RunID: ICP2_090624A-5084229 Units: mg/L
Analysis Date: 06/24/2009 14:30 Analyst: EG
Preparation Date: 06/20/2009 11:30 Prep By: AB1 Method SW3010A

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	103.1	1	1.067	102.8	0.2808	20	75	125
Iron	0.6258	1	1.633	100.7	1	1.701	107.5	4.079	20	75	125
Magnesium	59.59	1	60.91	N/C	1	63.61	N/C	N/C	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.

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

Quality Control Report

Conoco Phillips

COP Sategna 2E

Analysis: Volatile Organics by Method 8260B
Method: SW8260B
WorkOrder: 09060994
Lab Batch ID: R276883

Method Blank

RunID: K_090628C-5090876 Units: ug/L
Analysis Date: 06/29/2009 6:28 Analyst: LU_L

Analyte	Result	Rep Limit
Benzene	ND	5.0
Ethylbenzene	ND	5.0
Toluene	ND	5.0
m,p-Xylene	ND	5.0
o-Xylene	ND	5.0
Xylenes,Total	ND	5.0
Surr: 1,2-Dichloroethane-d4	94.8	78-116
Surr: 4-Bromofluorobenzene	98.9	74-125
Surr: Toluene-d8	100.4	82-118

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
09060994-01A	MW-1
09060994-02A	MW-2
09060994-03A	MW-3
09060994-04A	Duplicate
09060994-05A	Trip Blank

Laboratory Control Sample (LCS)

RunID: K_090628C-5090875 Units: ug/L
Analysis Date: 06/29/2009 6:01 Analyst: LU_L

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Benzene	20.0	19.9	99.4	74	123
Ethylbenzene	20.0	20.8	104	72	127
Toluene	20.0	21.8	109	74	126
m,p-Xylene	40.0	43.9	110	71	129
o-Xylene	20.0	23.2	116	74	130
Xylenes,Total	60.0	67.1	112	71	130
Surr: 1,2-Dichloroethane-d4	50.0	47.5	94.9	78	116
Surr: 4-Bromofluorobenzene	50.0	53.1	106	74	125
Surr: Toluene-d8	50.0	50.4	101	82	118

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

Sample Spiked: 09060791-02
RunID: K_090628C-5090879 Units: ug/L
Analysis Date: 06/29/2009 10:58 Analyst: LU_L

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

COP Sategna 2E

Analysis: *Volatile Organics by Method 8260B* **WorkOrder:** *09060994*
Method: **SW8260B** **Lab Batch ID:** **R276883**

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	18.5	92.4	20	18.0	90.2	2.40	22	70	124
Ethylbenzene	ND	20	19.0	94.8	20	19.1	95.7	0.966	20	76	122
Toluene	ND	20	19.6	97.9	20	19.0	95.0	3.02	24	80	117
m,p-Xylene	ND	40	36.6	91.5	40	38.7	96.7	5.56	20	69	127
o-Xylene	ND	20	20.6	103	20	19.9	99.4	3.62	20	84	114
Xylenes,Total	ND	60	57.2	95.3	60	58.6	97.6	2.35	20	69	127
Surr: 1,2-Dichloroethane-d4	ND	50	47	94.1	50	47.0	94.0	0.0638	30	78	116
Surr: 4-Bromofluorobenzene	ND	50	52.2	104	50	51.8	104	0.659	30	74	125
Surr: Toluene-d8	ND	50	50.1	100	50	50.5	101	0.710	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.

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

Quality Control Report

Conoco Phillips
COP Sategna 2E

Analysis: Sulfate, Total
Method: E375.4
WorkOrder: 09060994
Lab Batch ID: R276382A

Method Blank

RunID: KONELAB_090624A-5082934 Units: mg/L
Analysis Date: 06/24/2009 7:41 Analyst: ESK

Analyte	Result	Rep Limit
Sulfate	ND	1.0

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
09060994-01C	MW-1
09060994-02C	MW-2
09060994-03C	MW-3
09060994-04C	Duplicate

Laboratory Control Sample (LCS)

RunID: KONELAB_090624A-50829 Units: mg/L
Analysis Date: 06/24/2009 9:59 Analyst: ESK

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Sulfate	10.00	8.394	83.94	80	120

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

Sample Spiked: 09060953-01
RunID: KONELAB_090624A-50829 Units: mg/L
Analysis Date: 06/24/2009 11:29 Analyst: ESK

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Sulfate	65.37	10	65.44	N/C	10	64.96	N/C	N/C	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
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.

Sample Receipt Checklist

And

Chain of Custody

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

Sample Receipt Checklist

Workorder:	09060994	Received By:	RE
Date and Time Received:	6/18/2009 10:00:00 AM	Carrier name:	Fedex-Priority
Temperature:	3.6°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?	Yes ☑	No ☐	
7.	Samples in proper container/bottle?	Yes ☑	No ☐	
8.	Sample containers intact?	Yes ☑	No ☐	
9.	Sufficient sample volume for indicated test?	Yes ☑	No ☐	
10.	All samples received within holding time?	Yes ☑	No ☐	
11.	Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
12.	Water - VOA vials have zero headspace?	Yes ☑	No ☐	VOA Vials Not Present ☐
13.	Water - Preservation checked upon receipt (except VOA*)?	Yes ☑	No ☐	Not Applicable ☐

*VOA Preservation Checked After Sample Analysis

SPL Representative: _____ Contact Date & Time: _____

Client Name Contacted: _____

Non Conformance Issues: _____

Client Instructions: _____

SPL, Inc.
Analysis Request & Chain of Custody Record

SPL Workorder No.: 0906094 | 327830 | page ___ of ___

Client Name: Tetra Tech
Address: 6121 Indian School Rd. NE Suite 200
City: Albuquerque State: NM Zip:
Phone/Fax: 505-237-8440
Client Contact: Kelly Blanchard Email: kelly.blanchard@tetratech.com
Project Name/No.: Sategren 2E
Site Name:
Site Location: Bloomfield, NM
Invoice To: Ph:

SAMPLE ID	DATE	TIME	comp	grab	matrix (W=water S=soil O=oil A=air SL=sludge E=encore X=other)	bottle (P=plastic A=amber glass G=glass V=vial X=other)	size (1=1 liter 4=4oz 40=vial 8=8oz 16=16oz X=other)	pres. (1=HCl 2=HNO3 3=H2SO4 X=other None)	Number of Containers	Requested Analysis: BTEX	Total Metals (Ca,Mg,K,Na)	Chlorides
MW-1	6/17/09	1410		X	W	V	40	1	3	X		
MW-2	6/17/09	1320		X	W	V	40	1	3	X		
MW-3	6/17/09	1440		X	W	V	40	1	3	X		
Duplicate	6/17/09	1400		X	W	V	40	1	3	X		
MW-1	6/17/09	1410		X	W	P	X	2	1		X	
MW-2	6/17/09	1320		X	W	P	X	2	1		X	
MW-3	6/17/09	1440		X	W	P	X	2	1		X	
Duplicate	6/17/09	1400		X	W	P	X	2	1		X	
MW-1	6/17/09	1410		X	W	P	X	X	1			X
MW-2	6/17/09	1320		X	W	P	X	X	1			X

Client/Consultant Remarks:
X=3207

Laboratory remarks:

Intact? ☐ Y ☐ N
Ice? ☐ Y ☐ N
Temp:

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

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

Special Detection Limits (specify):

PM review (initials):

	date	time		
1. Relinquished by Sampler:	6/17/09	1630	2. Received by:	
3. Relinquished by:	date	time	4. Received by:	
5. Relinquished by:	date 6/18/09	time 0830	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

SPL, Inc.

Analysis Request & Chain of Custody Record

SPL Workorder No.: 327802

090609 94

page ____ of ____

Client Name: Tetra Tech

Address: 6121 Indian School Rd. NE Suite 205

City: Albuquerque State: NM Zip:

Phone/Fax: 505-237-8440

Client Contact: Kelly Blanchard Email: kelly.blanchard@tetratech.com

Project Name/No.: Santana 2E

Site Name:

Site Location: Bloomfield, NM

Invoice To: Ph:

SAMPLE ID	DATE	TIME	comp	grab	matrix (W=water S=soil O=oil A=air SL=sludge F=concrete X=other)	bottle (P=plastic A=amber glass G=glass V=vial X=other)	size (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 (Sulfate)
MW-3	6/17/09	1440		X	W	P	X	X	1	X
Duplicate	6/17/09	1400		X	W	P	X	X	1	X

Client/Consultant Remarks:

X = 320.1

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):

1. Relinquished by Sampler:	date 6/17/09	time 1630	2. Received by:	
3. Relinquished by:	date	time	4. Received by:	
5. Relinquished by:	date 6/18/09	time 0930	6. Received by Laboratory:	

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