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Dec 2010
GWMR

04/29/2011



TETRA TECH, INC.

3 R 428
6121 Indian School Rd. NE Suite 200
Albuquerque, NM 87110
(505) 237-8440

April 29, 2011

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

**RE: Sategna No. 2E, Quarterly Groundwater Monitoring Report – December
2010 Sampling Event**

Dear Mr. von Gonten:

Enclosed please find a copy of the above-referenced document created by Tetra Tech, Inc. for this Bloomfield 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
Project Manager

Cc: Brandon Powell, NMOCD

Enclosures (1)

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**2010 QUARTERLY GROUNDWATER
MONITORING REPORT
DECEMBER 2010**

**CONOCOPHILLIPS COMPANY
SATEGNA No. 2E
PRODUCTION FACILITY
SAN JUAN COUNTY, NEW MEXICO**

OCD No. - TBD
API # 30-045-24060

Prepared for:



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

Prepared by:



TETRATECH, INC.

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

April 2011

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QUARTERLY GROUNDWATER MONITORING REPORT

SATEGNA NO. 2E, SAN JUAN COUNTY, NEW MEXICO

DECEMBER 2010

1.0 INTRODUCTION

This report presents the results of the December 14, 2010 quarterly groundwater monitoring event conducted by Tetra Tech, Inc. (Tetra Tech) at the ConocoPhillips Company (ConocoPhillips) Sategna No. 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

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

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 two 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 initiated quarterly groundwater monitoring events with a baseline in April 2009.

During construction and trenching for relocation and reinstallation of production well equipment, additional hydrocarbon soil impacts were discovered and work was stopped. On April 2, 2009 Envirotech conducted 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. Tetra Tech returned to the site on April 23rd and 24th, to oversee removal of the hydrocarbon impacted soils that were discovered by the previous trenching west of the bermed area. Photoionization detector readings in the field indicated levels below the OCD action level, however, lab results were above the OCD action level for TPH for samples collected from all four walls of the excavation. The bottom sample results were below OCD action levels. The excavation was backfilled and equipment was reinstalled before analytical results were available.

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, depth to groundwater was measured in each well using a dual interface probe. Results are displayed in **Table 2**.

The casings for Monitor Wells MW-1, MW-2, and MW-3 were surveyed in March 2009 using an arbitrary reference-elevation of 100 feet. The data obtained from the Site survey and from the December 14, 2010 sampling event were used to create a groundwater elevation map for the Site (**Figure 3**). Using these data,

it was determined that the groundwater flow direction at the Site continues to be to the southwest. A generalized geologic cross section for the Site is presented as **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, polyethylene disposable bailer. While bailing each well, groundwater parameters 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 under chain-of-custody documentation to Southern Petroleum Laboratory (SPL) of Houston, Texas.

Each groundwater sample collected was analyzed for dissolved manganese by Environmental Protection Agency (EPA) Method 6010B; BTEX by EPA Method 8260B; and TDS by EPA Method 2540C. Results of all analyses are displayed in **Table 3**.

2.3 Groundwater Sampling Analytical Results

The New Mexico Water Quality Control Commission (NMWQCC) mandates that groundwater quality in New Mexico be protected, and has issued groundwater quality standards in Title 20, Chapter 6, Part 2, Section 3103 of the New Mexico Administrative Code (20.6.2.3103 NMAC). Groundwater quality standards have been set for the protection of human health, domestic water supply, and irrigation use. Exceedences of NMWQCC groundwater quality standards in Site monitor wells are discussed below.

- **Total Dissolved Solids**

The NMWQCC domestic water supply groundwater quality standard for TDS is 1,000 mg/L; groundwater collected from Monitor Wells MW-1, MW-2 and MW-3 was found to contain TDS concentrations of 2,520 mg/L, 3,000 mg/L, and 3,000 mg/L, respectively.

- **Manganese**

The NMWQCC domestic water supply groundwater quality standard for manganese is 0.2 mg/L; groundwater collected from Monitor Wells MW-1 and MW-3 was found to contain a manganese concentration of 0.232 and 1.13 mg/L, respectively.

- **Sulfate**

The NMWQCC domestic water supply groundwater quality standard for sulfate is 600 mg/L; groundwater collected from Monitor Wells MW-1, MW-2, and MW-3 were found to contain sulfate in concentrations of 1,600 mg/L, 1,610 mg/L, and 1,900 mg/L, respectively.

The corresponding laboratory analysis report for the December 14, 2010 groundwater sampling event is included in **Appendix B**. A map showing TDS, manganese, and sulfate concentrations in Site wells during the December 14, 2010 groundwater sampling event is included as **Figure 5**.

3.0 CONCLUSIONS AND RECOMMENDATIONS

To date, groundwater samples collected from Site monitor wells have never exceeded laboratory detection limits and therefore have been below NMWQCC groundwater quality standards for BTEX. Monitoring Wells MW-1, MW-2, and MW-3, were found to have concentrations exceeding the NMWQCC standard for sulfate and total dissolved solids. Groundwater collected from Monitoring Wells MW-1 and MW-3 were also found to exceed the NMWQCC standard for dissolved manganese. Sulfate and dissolved manganese concentrations appear to be stable.

Since BTEX is below standards in all three monitoring wells, and the other constituents of concern that are above NMWQCC standards appear to be stable or are at background levels; Tetra Tech recommends the discontinuation of quarterly groundwater monitoring and no further action at the Site. Please contact Kelly Blanchard at 505-237-8440 or kelly.blanchard@tetrattech.com if you have any questions or require additional information.

FIGURES

1. Site Location Map
2. Site Detail Map
3. Groundwater Elevation Map – December 2010
4. Generalized Geologic Cross Section
5. Groundwater Quality Map (Manganese, Total Dissolved Solids, and Sulfate – December 2010)

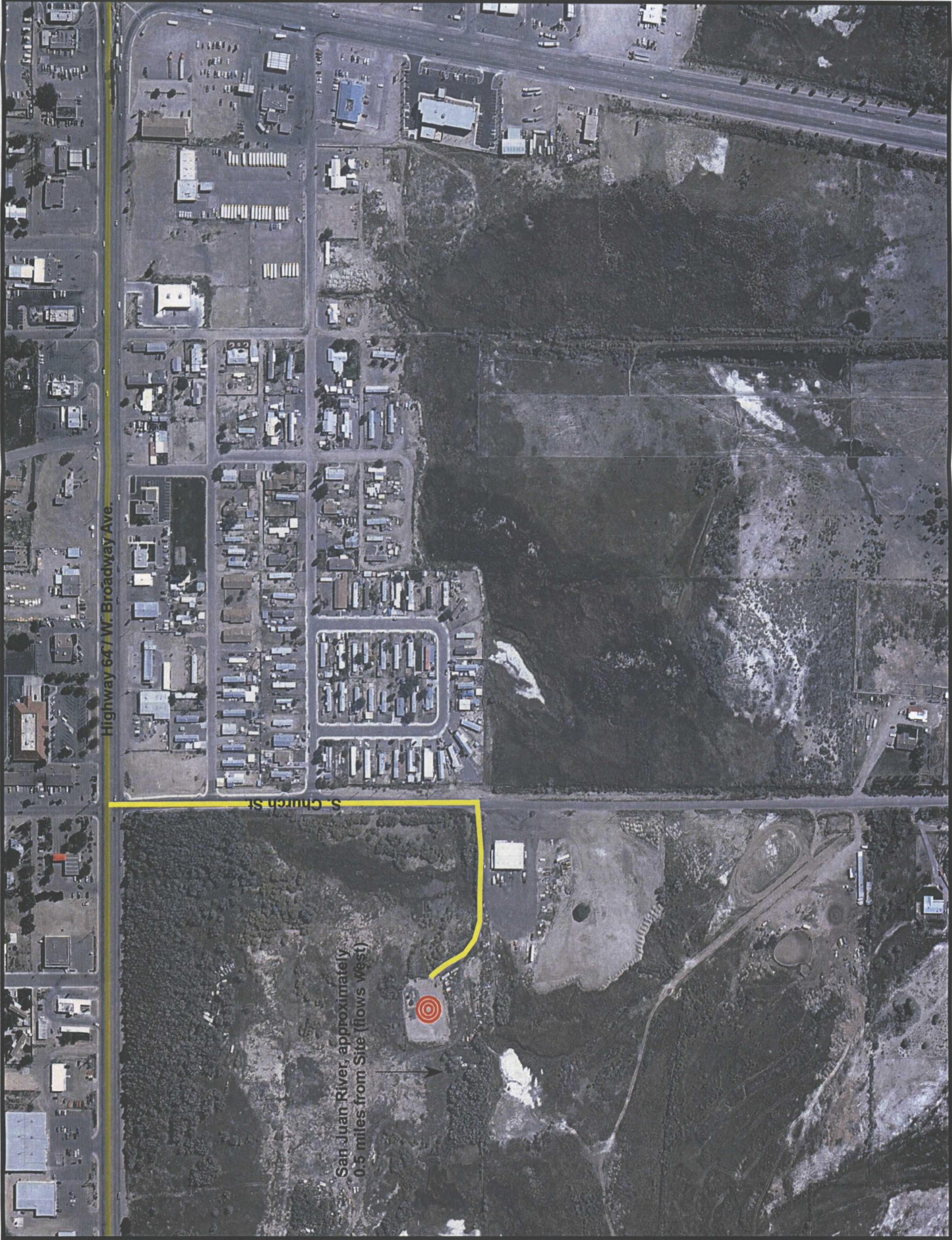
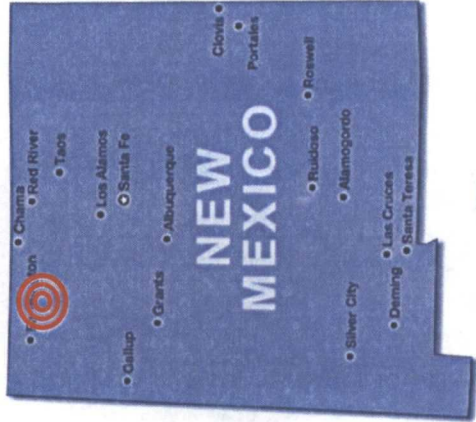


FIGURE 1.

Site Location Map
ConocoPhillips
Company
Sategna No. 2E
Bloomfield, NM



Directions from HWY 64 to
ConocoPhillips Company
Sategna No. 2E Site Loca-
tion



ConocoPhillips Company
Sategna No. 2E Site Location



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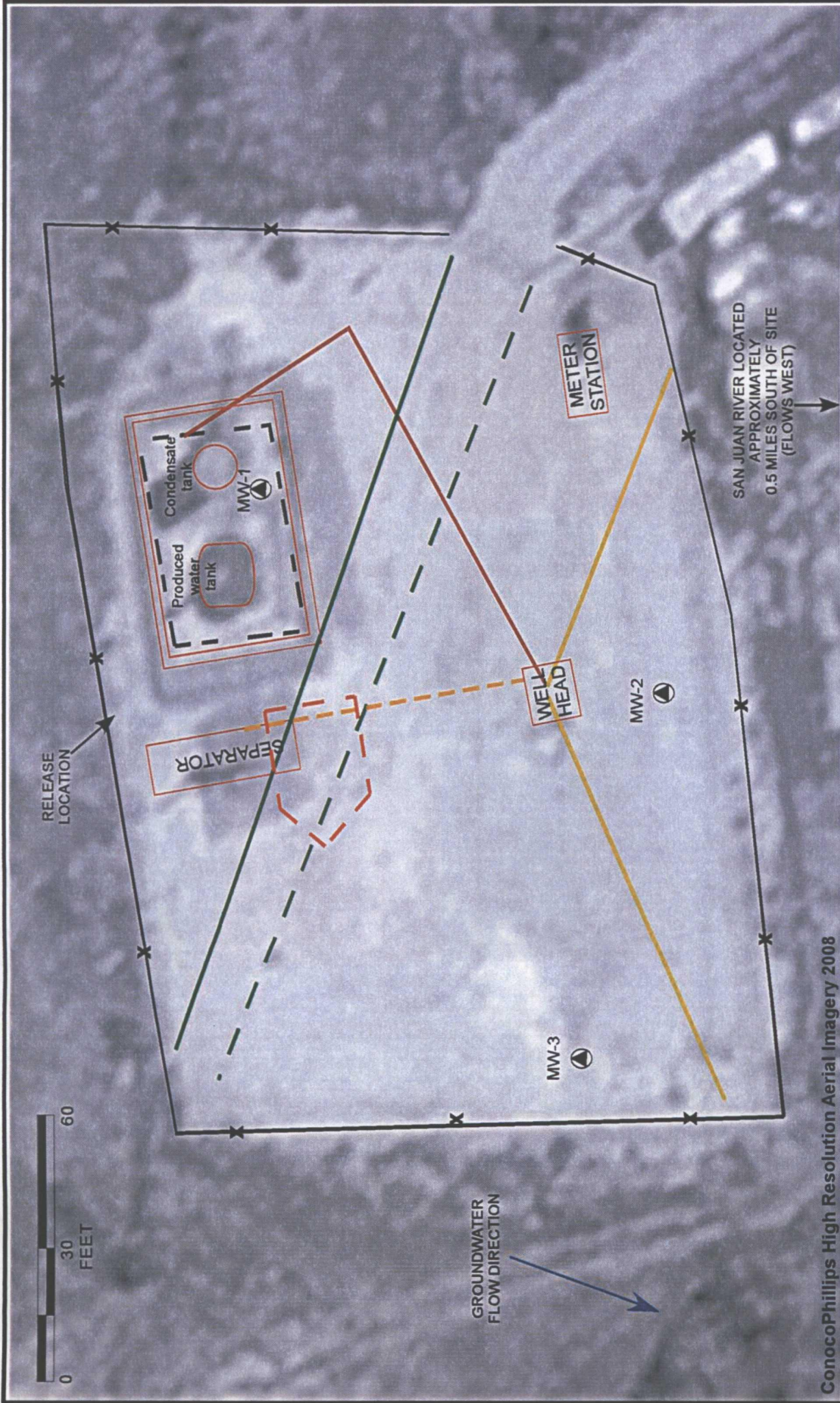


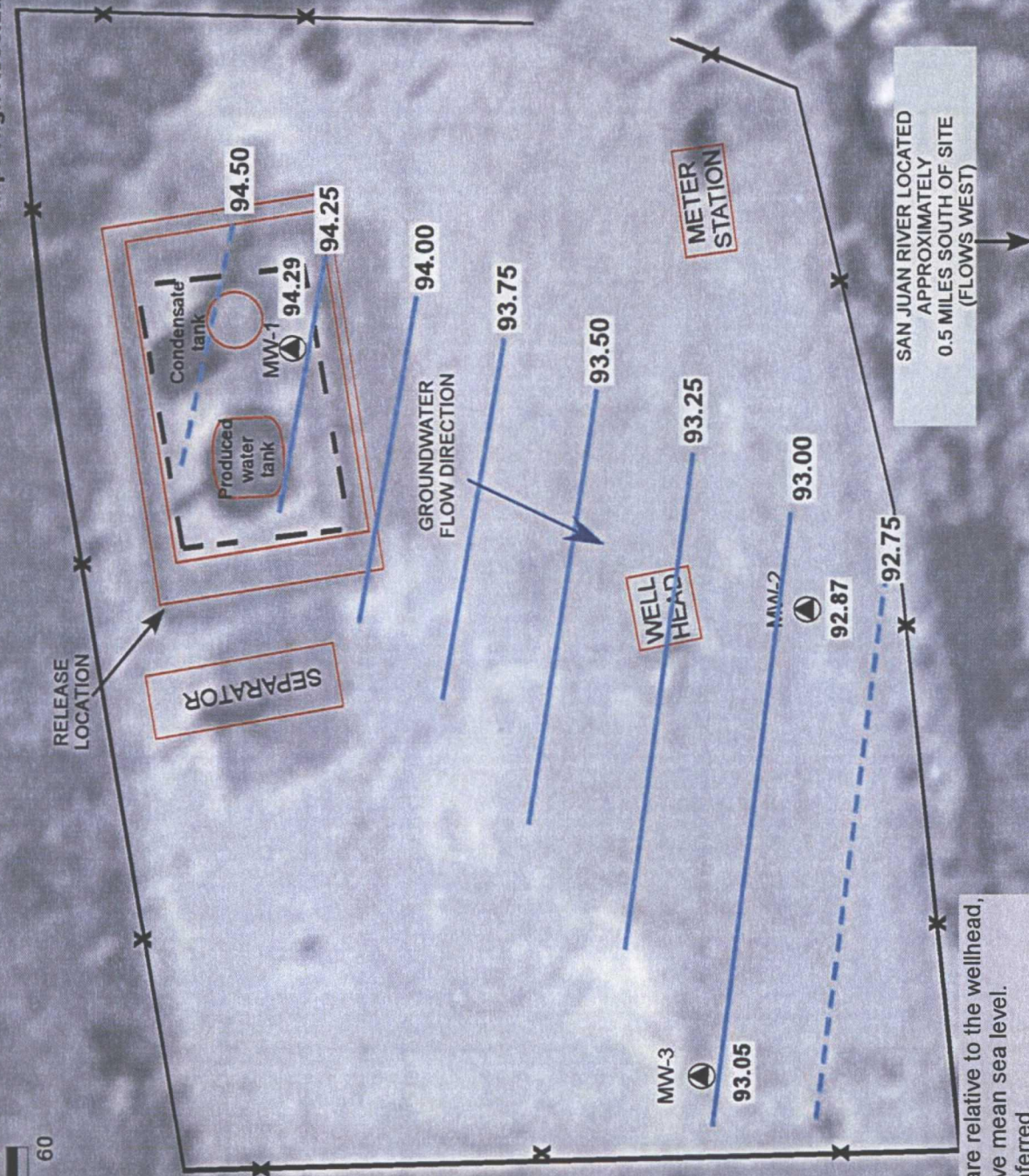
FIGURE 2:
SITE LAYOUT MAP
CONOCOPHILLIPS COMPANY
SATEGNA No. 2E GAS
PRODUCTION WELL
Sec 21, T29N, R11W
Bloomfield, New Mexico

LEGEND

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



TETRA TECH, INC.



Note: Groundwater elevations are relative to the wellhead, set at an arbitrary 100 feet above mean sea level. Elevations are dashed where inferred.

LEGEND

— BERM AND ASSOCIATED EQUIPMENT

—*— FENCE LINE

⊙ MONITORING WELL



TETRA TECH, INC.



FIGURE 3:

GROUNDWATER ELEVATION MAP

December 2010

CONOCOPHILLIPS COMPANY

SATEGNA No. 2E

GAS PRODUCTION WELL

Sec 21, T29N, R11W

Bloomfield, New Mexico

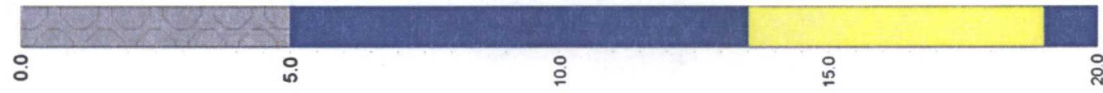
MW-1
A



MW-2



MW-3
A'



LEGEND

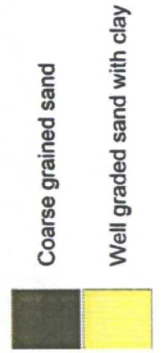
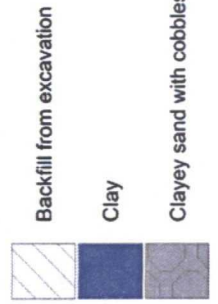
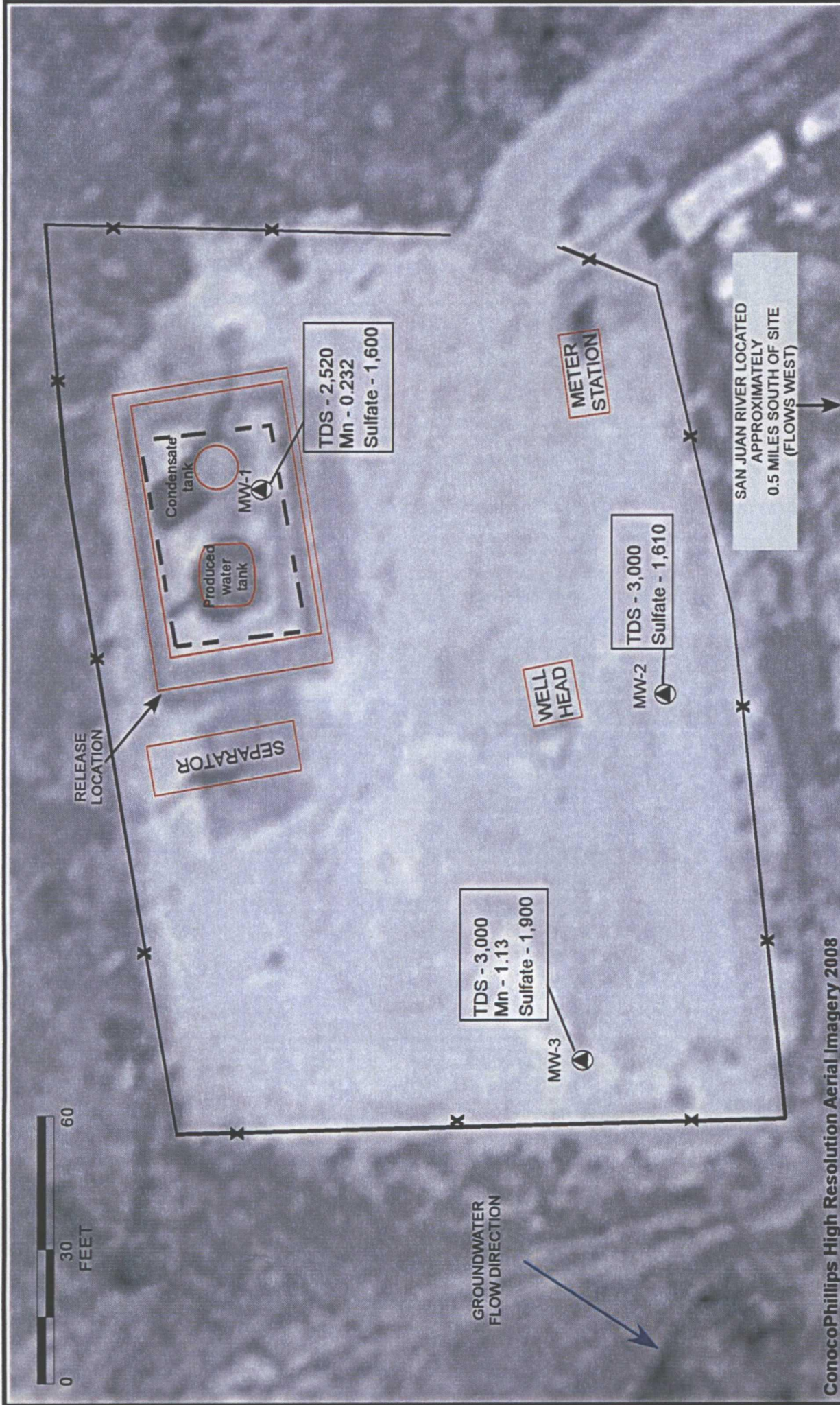


FIGURE 4:
GENERALIZED GEOLOGIC CROSS SECTION
CONOCOPHILLIPS COMPANY
SATEGNA No. 2E GAS PRODUCTION WELL
Sec 21, T29N, R11W
Bloomfield, New Mexico



TETRA TECH, INC.



ConocoPhillips High Resolution Aerial Imagery 2008

FIGURE 5:

GROUNDWATER QUALITY MAP
 December 2010
 CONOCOPHILLIPS COMPANY
 SATEGNA No. 2E
 GAS PRODUCTION WELL
 Sec 21, T29N, R11W
 Bloomfield, New Mexico

LEGEND

— BERM AND ASSOCIATED EQUIPMENT

* FENCE LINE

⊙ MONITOR WELL

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

TDS - 1,000
 Mn - 0.2
 Sulfate - 600

0 30 60
 FEET



TETRA TECH, INC.

TABLES

- I. Site History Timeline
2. Groundwater Elevation Data Summary (April 2009 – December 2010)
3. Groundwater Laboratory Analytical Results Summary

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 augured 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 (Figure 2). 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.
September 28, 2009	Tetra Tech conducted the third quarterly groundwater monitoring event at the Site.
December 14, 2009	Tetra Tech conducted the fourth quarterly groundwater monitoring event at the Site.
March 31, 2010	Tetra Tech conducted the fifth quarterly groundwater monitoring event at the Site.
June 7, 2010	Tetra Tech conducted the sixth quarterly groundwater monitoring event at the Site.
September 23, 2010	Tetra Tech conducted the seventh quarterly groundwater monitoring event at the Site.
December 14, 2010	Tetra Tech conducted the eighth 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
				9/28/2009	5.45	93.91
				12/14/2009	5.06	94.30
				3/31/2010	5.03	94.33
				6/7/2010	5.41	93.95
				9/23/2010	5.25	94.11
MW-2	20.90	3.33 - 18.33	98.78	12/14/2010	5.07	94.29
				4/2/2009	5.96	92.82
				6/17/2009	6.21	92.57
				9/28/2009	6.23	92.55
				12/14/2009	5.92	92.86
				3/31/2010	5.90	92.88
				6/7/2010	6.21	92.57
MW-3	20.28	3.0 - 18.0	98.66	9/23/2010	6.06	92.72
				12/14/2010	5.91	92.87
				4/2/2009	5.70	92.96
				6/17/2009	5.97	92.69
				9/28/2009	5.96	92.70
				12/14/2009	5.63	93.03
				3/31/2010	5.61	93.05
				6/7/2010	5.95	92.71
				9/23/2010	5.77	92.89
				12/14/2010	5.61	93.05

ft = Feet

TOC = Top of casing

bgs = below ground surface

* Elevation relative to wellhead, set at 100 feet.

Table 3. Groundwater Laboratory Analytical Results Summary

Well ID	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	Sulfate (mg/L)	Aluminum (mg/L)	Iron (mg/L)	Manganese (mg/L)	Total Dissolved Solids (mg/L)
MW-1	4/2/2009	< 5	< 5	< 5	< 5	1790	7.25*	7.2*	2.7*	NA
	6/17/2009	< 5	< 5	< 5	< 5	1420	6.87*	5.63*	2.37*	NA
	9/28/2009	< 1	< 1	< 1	< 1	1770	< 0.1	< 0.02	0.243	2590
	12/14/2009	< 1	< 1	< 1	< 1	NA	NA	NA	0.152	2470
	3/31/2010	< 1	< 1	< 1	< 1	1320	NA	NA	0.176	2470
	6/7/2010	< 1	< 1	< 1	< 1	1330	NA	NA	0.206	2580
MW-2	9/23/2010	< 1	< 1	< 1	< 1	1560	NA	NA	0.238	3210
	12/14/010	< 1	< 1	< 1	< 1	1600	NA	NA	0.232	2520
	4/2/2009	< 5	< 5	< 5	< 5	1850	10.1*	10.4*	6.76*	NA
	6/17/2009	< 5	< 5	< 5	< 5	1610	5.24*	5.52*	2.6*	NA
	9/28/2009	< 1	< 1	< 1	< 1	1840	< 0.1	0.0217	0.168	2260
	12/14/2009	< 1	< 1	< 1	< 1	NA	NA	NA	0.158	2470
MW-3	3/31/2010	< 1	< 1	< 1	< 1	1530	NA	NA	0.136	2620
	6/7/2010	< 1	< 1	< 1	< 1	1290	NA	NA	0.157	2590
	9/23/2010	< 1	< 1	< 1	< 1	1510	NA	NA	0.0981	2800
	12/14/010	< 1	< 1	< 1	< 1	1610	NA	NA	0.128	3000
	4/2/2009	< 5	< 5	< 5	< 5	2110	0.848*	1.02*	1.9*	NA
	6/17/2009	< 5	< 5	< 5	< 5	1650	0.702*	1.49*	2.22*	NA
MW-3	9/28/2009	< 1	< 1	< 1	< 1	2230	< 0.1	< 0.02	2.68	3340
	12/14/2009	< 1	< 1	< 1	< 1	NA	NA	NA	2.4	3060
	3/31/2010	< 1	< 1	< 1	< 1	1660	NA	NA	1.71	3090
	6/7/2010	< 1	< 1	< 1	< 1	1760	NA	NA	0.968	2650
	9/23/2010	< 1	< 1	< 1	< 1	1910	NA	NA	1.68	3570
	12/14/010	< 1	< 1	< 1	< 1	1900	NA	NA	1.13	3000
NMWQCC Standards		10 (µg/L)	750 (µg/L)	750 (µg/L)	620 (µg/L)	600 (mg/L)	5 (mg/L)	1 (mg/L)	0.2 (mg/L)	1000 (mg/L)

Explanation

ND = Not Detected

NMWQCC = New Mexico Water Quality Control Commission

mg/L = milligrams per liter (parts per million)

µg/L = micrograms per liter (parts per billion)

NA = Not Analyzed

< 0.7 = Below laboratory detection limit of 0.7 µg/L

Bold = concentrations that exceed the NMWQCC limits

* = Results reported for total metals analysis, results cannot be compared to NMWQCC Standards for dissolved metals

2. 1991
Groundwater Sampling Field Forms

APPENDIX A

Groundwater Sampling Field Forms



TETRA TECH, INC.

WATER SAMPLING FIELD FORM

Project Name Sategna 2EPage 1 of 3Project No. 114-690174Site Location Bloomfield, NMSite/Well No. MW-1Coded/
Replicate No. 1035Date 12/14/10Weather Sunny, coldTime Sampling
Began 0950-1020Time Sampling
Completed 1040300

EVACUATION DATA

Description of Measuring Point (MP) Top of Casing

Height of MP Above/Below Land Surface _____

MP Elevation 99.36Total Sounded Depth of Well Below MP 20.3Water-Level Elevation 94.29Held _____ Depth to Water Below MP 5.07Diameter of Casing 2"Wet _____ Water Column in Well 15.23Gallons Pumped/Bailed
Prior to Sampling 7.5Gallons per Foot 0.16Gallons in Well 2.43 x 3 = 7.31Sampling 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.)
<u>1032</u>	<u>13.35</u>	<u>7.26</u>	<u>1420</u>	<u>1.188</u>	<u>1.24</u>	<u>11.9</u>	<u>79.9</u>	<u>10.5</u>
<u>1034</u>	<u>13.80</u>	<u>7.25</u>	<u>1410</u>	<u>1.188</u>	<u>1.40</u>	<u>15.4</u>	<u>81.0</u>	<u>7.0</u>
<u>1035</u>	<u>12.90</u>	<u>7.24</u>	<u>1400</u>	<u>1.188</u>	<u>1.36</u>	<u>13.0</u>	<u>82.2</u>	<u>7.5</u>

Sampling Equipment Purge Pump/Bailer

Constituents Sampled _____ Container Description _____ Preservative _____

BTEX _____ 3 40mL VOA's _____ HCl _____

Dissolved Mn _____ 16 oz Plastic _____ None _____

Sulfate, TDS _____ 32 oz Plastic _____ None _____

Remarks H₂O is clear, no odor or Green detectedSampling Personnel Cassie Brown, Christine Mathews

Well Casing Volumes

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



WATER SAMPLING FIELD FORM

Project Name Sategna 2EPage 2 of 3Act No. 114690174Site Location Bloomfield, NMSite/Well No. MW-2Coded/
Replicate No. _____Date 12/14/10Weather Sunny, coldTime Sampling
Began 950Time Sampling
Completed 1005

EVACUATION DATA

Description of Measuring Point (MP) Top of Casing

Height of MP Above/Below Land Surface _____

MP Elevation 98.78Total Sounded Depth of Well Below MP 20.9Water-Level Elevation 92.87Held _____ Depth to Water Below MP 5.91Diameter of Casing 2"Wet _____ Water Column in Well 14.99Gallons Pumped/Bailed
Prior to Sampling 7.25Gallons per Foot 0.16Gallons in Well 7.39 x 3 = 7.19Sampling Pump Intake
(feet below land) _____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.)
1000	13.43	7.25	1442	1.203	2.32	21.9	60.4	6.25
1002	13.32	7.24	1438	1.204	1.84	17.5	61.4	6.75
1004	13.15	7.23	1433	1.204	1.83	17.5	61.1	7.25

Sampling Equipment Purge Pump/Bailer

Constituents Sampled

Container Description

Preservative

BTEX 3 40mL VOA's

HCl _____

Dissolved Mn 16 oz Plastic

None _____

Sulfate, TDS 32 oz Plastic

None _____

Remarks H₂O is light brown with high clay contentSampling Personnel Cassie Brown, Christine Mathews

Well Casing Volumes

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



WATER SAMPLING FIELD FORM

Project Name Sategna 2EPage 3 of 3Jct No. 114-690174Site Location Bloomfield, NMSite/Well No. MW-3Coded/
Replicate No. _____Date 12/14/10Weather Sunny, coldTime Sampling
Began 0930Time Sampling
Completed 1105

EVACUATION DATA

Description of Measuring Point (MP) Top of Casing

Height of MP Above/Below Land Surface _____

MP Elevation 98.66Total Sounded Depth of Well Below MP 20.28Water-Level Elevation 93.05Held _____ Depth to Water Below MP 5.61Diameter of Casing 2"Wet _____ Water Column in Well 14.67Gallons Pumped/Bailed
Prior to Sampling 7.0Gallons per Foot 0.16Gallons in Well 2.347 x 3Sampling Pump Intake Setting
(feet below land surface) —Purging Equipment Purge pump/Bailer - (7.04)

SAMPLING DATA/FIELD PARAMETERS

Time	Temperature (°C)	pH	Conductivity (µS/cm ³)	TDS (g/L)	DO (mg/L)	DO %	ORP (mV)	Volume (gal.)
1057	13.64	7.26	1603	1.382	2.04	19.6	52.1	5.5
1102	11.02	7.21	1608	1.372	1.84	17.8	30.8	6.2
1102	14.14	7.22	1604	1.304	1.51	14.8	25.6	7.0

Sampling Equipment Purge Pump/Bailer

Constituents Sampled

Container Description

Preservative

BTEX 3 40mL VOA's HClDissolved Mn 16 oz Plastic NoneSulfate, TDS 32 oz Plastic NoneRemarks Bailed dry @ 3.5 gallons H₂O is light brown, NoSampling Personnel Cassie Brown, Christine Mathews odor or sheen

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:
10120592

<u>Report To:</u> Tetra Tech, Inc. Kelly Blanchard 6121 Indian School Road, N.E. Suite 200 Albuquerque NM 87110- ph: (505) 237-8440 fax:	<u>Project Name:</u> Sategna 2E <u>Site:</u> Bloomfield, NM <u>Site Address:</u> <u>PO Number:</u> <u>State:</u> New Mexico <u>State Cert. No.:</u> <u>Date Reported:</u> 1/4/2011
--	---

This Report Contains A Total Of 16 Pages

Excluding This Page, Chain Of Custody

And

Any Attachments

1/4/2011

Date

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

Version 2.0 - Modified December 23, 2010



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

Case Narrative for:
Conoco Phillips

Certificate of Analysis Number:
10120592

Report To: Tetra Tech, Inc. Kelly Blanchard 6121 Indian School Road, N.E. Suite 200 Albuquerque NM 87110- ph: (505) 237-8440 fax:	Project Name: Sategna 2E Site: Bloomfield, NM Site Address: PO Number: State: New Mexico State Cert. No.: Date Reported: 1/4/2011
--	--

I. SAMPLE RECEIPT:

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

II: ANALYSES AND EXCEPTIONS:

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

III. GENERAL REPORTING COMMENTS:

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

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

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

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

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

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

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

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

10120592 Page 1

1/4/2011

Erica Cardenas
Project Manager

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

Date



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

Conoco Phillips

Certificate of Analysis Number:

10120592

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

Project Name: Sategna 2E
Site: Bloomfield, NM
Site Address:

PO Number:
State: New Mexico

State Cert. No.:

Date Reported: 1/4/2011

Fax To:

Client Sample ID	Lab Sample ID	Matrix	Date Collected	Date Received	COC ID	HOLD
MW-1	10120592-01	Water	12/14/2010 10:40	12/17/2010 9:05:00 AM	303444	☐
MW-2	10120592-02	Water	12/14/2010 10:05	12/17/2010 9:05:00 AM	303440	☐
MW-3	10120592-03	Water	12/14/2010 11:05	12/17/2010 9:05:00 AM	303440	☐
Duplicate	10120592-04	Water	12/14/2010 10:35	12/17/2010 9:05:00 AM	303440	☐
Trip Blank	10120592-05	Water	12/15/2010 21:30	12/17/2010 9:05:00 AM	303441	☐

Erica Cardenas

Erica Cardenas
Project Manager

1/4/2011

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: 12/14/2010 10:40 SPL Sample ID: 10120592-01

Site: Bloomfield, NM

Analyses/Method	Result	QUAL	Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
ION CHROMATOGRAPHY				MCL	E300.0	Units: mg/L	
Sulfate	1600		250	500	12/19/10 18:47	ESK	5678097
METALS BY METHOD 6010B, DISSOLVED				MCL	SW6010B	Units: mg/L	
Manganese	0.232		0.005	1	12/22/10 1:26	EG	5680505

Prep Method	Prep Date	Prep Initials	Prep Factor
SW3005A	12/17/2010 13:30	M_W	1.00

TOTAL DISSOLVED SOLIDS				MCL	SM2540 C	Units: mg/L	
Total Dissolved Solids (Residue, Filterable)	2520		20	2	12/17/10 16:00	MM1	5677494

VOLATILE ORGANICS BY METHOD 8260B				MCL	SW8260B	Units: ug/L	
Benzene	ND		1	1	12/26/10 6:19	JC	5684418
Ethylbenzene	ND		1	1	12/26/10 6:19	JC	5684418
Toluene	ND		1	1	12/26/10 6:19	JC	5684418
m,p-Xylene	ND		2	1	12/26/10 6:19	JC	5684418
o-Xylene	ND		1	1	12/26/10 6:19	JC	5684418
Xylenes, Total	ND		1	1	12/26/10 6:19	JC	5684418
Surr: 1,2-Dichloroethane-d4	98.0	%	70-130	1	12/26/10 6:19	JC	5684418
Surr: 4-Bromofluorobenzene	85.1	%	74-125	1	12/26/10 6:19	JC	5684418
Surr: Toluene-d8	109	%	82-118	1	12/26/10 6:19	JC	5684418

Qualifiers: ND/U - Not Detected at the Reporting Limit
B - Analyte Detected In The Associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
TNTC - Too numerous to count

>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

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

Client Sample ID: MW-2

Collected: 12/14/2010 10:05 SPL Sample ID: 10120592-02

Site: Bloomfield, NM

Analyses/Method	Result	QUAL	Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
ION CHROMATOGRAPHY				MCL	E300.0	Units: mg/L	
Sulfate	1610		250	500	12/19/10 19:03	ESK	5678098

METALS BY METHOD 6010B, DISSOLVED				MCL	SW6010B	Units: mg/L	
Manganese	0.128		0.005	1	12/22/10 1:32	EG	5680506

Prep Method	Prep Date	Prep Initials	Prep Factor
SW3005A	12/17/2010 13:30	M_W	1.00

TOTAL DISSOLVED SOLIDS				MCL	SM2540 C	Units: mg/L	
Total Dissolved Solids (Residue, Filterable)	3000		20	2	12/17/10 16:00	MM1	5677496

VOLATILE ORGANICS BY METHOD 8260B				MCL	SW8260B	Units: ug/L	
Benzene	ND		1	1	12/26/10 6:48	JC	5684419
Ethylbenzene	ND		1	1	12/26/10 6:48	JC	5684419
Toluene	ND		1	1	12/26/10 6:48	JC	5684419
m,p-Xylene	ND		2	1	12/26/10 6:48	JC	5684419
o-Xylene	ND		1	1	12/26/10 6:48	JC	5684419
Xylenes, Total	ND		1	1	12/26/10 6:48	JC	5684419
Surr: 1,2-Dichloroethane-d4	97.9	%	70-130	1	12/26/10 6:48	JC	5684419
Surr: 4-Bromofluorobenzene	86.1	%	74-125	1	12/26/10 6:48	JC	5684419
Surr: Toluene-d8	105	%	82-118	1	12/26/10 6:48	JC	5684419

Qualifiers: ND/U - Not Detected at the Reporting Limit
B - Analyte Detected In The Associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
TNTC - Too numerous to count

>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

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

Client Sample ID:MW-3

Collected: 12/14/2010 11:05 SPL Sample ID: 10120592-03

Site: Bloomfield, NM

Analyses/Method	Result	QUAL	Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
ION CHROMATOGRAPHY				MCL	E300.0	Units: mg/L	
Sulfate	1900		250	500	12/19/10 19:19	ESK	5678099
METALS BY METHOD 6010B, DISSOLVED				MCL	SW6010B	Units: mg/L	
Manganese	1.13		0.005	1	12/22/10 1:39	EG	5680507

Prep Method	Prep Date	Prep Initials	Prep Factor
SW3005A	12/17/2010 13:30	M_W	1.00

TOTAL DISSOLVED SOLIDS				MCL	SM2540 C	Units: mg/L	
Total Dissolved Solids (Residue,Filterable)	3000		20	2	12/17/10 16:00	MM1	5677497

VOLATILE ORGANICS BY METHOD 8260B				MCL	SW8260B	Units: ug/L	
Benzene	ND		1	1	12/26/10 7:17	JC	5684420
Ethylbenzene	ND		1	1	12/26/10 7:17	JC	5684420
Toluene	ND		1	1	12/26/10 7:17	JC	5684420
m,p-Xylene	ND		2	1	12/26/10 7:17	JC	5684420
o-Xylene	ND		1	1	12/26/10 7:17	JC	5684420
Xylenes, Total	ND		1	1	12/26/10 7:17	JC	5684420
Surr: 1,2-Dichloroethane-d4	96.5	%	70-130	1	12/26/10 7:17	JC	5684420
Surr: 4-Bromofluorobenzene	84.8	%	74-125	1	12/26/10 7:17	JC	5684420
Surr: Toluene-d8	102	%	82-118	1	12/26/10 7:17	JC	5684420

Qualifiers: ND/U - Not Detected at the Reporting Limit
B - Analyte Detected In The Associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
TNTC - Too numerous to count

>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

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

Client Sample ID: Duplicate

Collected: 12/14/2010 10:35 SPL Sample ID: 10120592-04

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		1	1	12/26/10 7:46	JC	5684421
Ethylbenzene	ND		1	1	12/26/10 7:46	JC	5684421
Toluene	ND		1	1	12/26/10 7:46	JC	5684421
m,p-Xylene	ND		2	1	12/26/10 7:46	JC	5684421
o-Xylene	ND		1	1	12/26/10 7:46	JC	5684421
Xylenes, Total	ND		1	1	12/26/10 7:46	JC	5684421
Surr: 1,2-Dichloroethane-d4	98.3		% 70-130	1	12/26/10 7:46	JC	5684421
Surr: 4-Bromofluorobenzene	89.4		% 74-125	1	12/26/10 7:46	JC	5684421
Surr: Toluene-d8	101		% 82-118	1	12/26/10 7:46	JC	5684421

Qualifiers: ND/U - Not Detected at the Reporting Limit
B - Analyte Detected In The Associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
TNTC - Too numerous to count

>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

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

Client Sample ID: Trip Blank

Collected: 12/15/2010 21:30 SPL Sample ID: 10120592-05

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		1	1	12/26/10 5:51	JC	5684417
Ethylbenzene	ND		1	1	12/26/10 5:51	JC	5684417
Toluene	ND		1	1	12/26/10 5:51	JC	5684417
m,p-Xylene	ND		2	1	12/26/10 5:51	JC	5684417
o-Xylene	ND		1	1	12/26/10 5:51	JC	5684417
Xylenes, Total	ND		1	1	12/26/10 5:51	JC	5684417
Surr: 1,2-Dichloroethane-d4	102		% 70-130	1	12/26/10 5:51	JC	5684417
Surr: 4-Bromofluorobenzene	85.8		% 74-125	1	12/26/10 5:51	JC	5684417
Surr: Toluene-d8	112		% 82-118	1	12/26/10 5:51	JC	5684417

Qualifiers: ND/U - Not Detected at the Reporting Limit
B - Analyte Detected In The Associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
TNTC - Too numerous to count

>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

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Quality Control Documentation



Quality Control Report

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

Conoco Phillips

Sategna 2E

Analysis: Metals by Method 6010B, Dissolved
Method: SW6010B

WorkOrder: 10120592
Lab Batch ID: 103991

Method Blank

RunID: ICP2_101221C-5680478 Units: mg/L
Analysis Date: 12/21/2010 22:43 Analyst: EG
Preparation Date: 12/17/2010 12:45 Prep By: M_ Method: SW3005A

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
10120592-01B	MW-1
10120592-02B	MW-2
10120592-03B	MW-3

Analyte	Result	Rep Limit
Manganese	ND	0.005

Laboratory Control Sample (LCS)

RunID: ICP2_101221C-5680479 Units: mg/L
Analysis Date: 12/21/2010 22:49 Analyst: EG
Preparation Date: 12/17/2010 12:45 Prep By: M_ Method: SW3005A

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Manganese	0.1000	0.09500	95.00	80	120

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

Sample Spiked: 10120587-03
RunID: ICP2_101221C-5680481 Units: mg/L
Analysis Date: 12/21/2010 23:01 Analyst: EG
Preparation Date: 12/17/2010 12:45 Prep By: M_ Method: SW3005A

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Manganese	8.643	0.1	8.779	N/C	0.1	8.936	N/C	N/C	20	75	125

Qualifiers: ND/U - Not Detected at the Reporting Limit
B - Analyte Detected In The Associated Method Blank
J - Estimated Value Between MDL And PQL
E - Estimated Value exceeds calibration curve
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.

Version 2.0 - Modified December 23, 2010

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Quality Control Report

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

Conoco Phillips

Sategna 2E

Analysis: Volatile Organics by Method 8260B
Method: SW8260B

WorkOrder: 10120592
Lab Batch ID: R313389

Method Blank

RunID: Q_101225C-5684414 Units: ug/L
Analysis Date: 12/26/2010 2:00 Analyst: JC

Analyte	Result	Rep Limit
Benzene	ND	1.0
Ethylbenzene	ND	1.0
Toluene	ND	1.0
m,p-Xylene	ND	2.0
o-Xylene	ND	1.0
Xylenes, Total	ND	1.0
Surr: 1,2-Dichloroethane-d4	91.1	70-130
Surr: 4-Bromofluorobenzene	86.8	74-125
Surr: Toluene-d8	116.7	82-118

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
10120592-01A	MW-1
10120592-02A	MW-2
10120592-03A	MW-3
10120592-04A	Duplicate
10120592-05A	Trip Blank

Laboratory Control Sample (LCS)

RunID: Q_101225C-5684413 Units: ug/L
Analysis Date: 12/26/2010 1:31 Analyst: JC

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Benzene	20.0	17.6	88.0	74	123
Ethylbenzene	20.0	18.1	90.5	72	127
Toluene	20.0	20.7	103	74	126
m,p-Xylene	40.0	35.5	88.7	71	129
o-Xylene	20.0	18.6	92.9	74	130
Xylenes, Total	60.0	54.1	90.1	71	130
Surr: 1,2-Dichloroethane-d4	50.0	47.5	95.1	70	130
Surr: 4-Bromofluorobenzene	50.0	48.2	96.3	74	125
Surr: Toluene-d8	50.0	56.4	113	82	118

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

Sample Spiked: H1012046100
RunID: Q_101225C-5684415 Units: ug/L
Analysis Date: 12/26/2010 3:27 Analyst: JC

Qualifiers: ND/U - Not Detected at the Reporting Limit
B - Analyte Detected In The Associated Method Blank
J - Estimated Value Between MDL And PQL
E - Estimated Value exceeds calibration curve
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.

Version 2.0 - Modified December 23, 2010

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Quality Control Report

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

Conoco Phillips

Sategna 2E

Analysis: Volatile Organics by Method 8260B
Method: SW8260B

WorkOrder: 10120592
Lab Batch ID: R313389

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	18.3	91.5	20	18.2	91.2	0.334	22	70	124
Ethylbenzene	ND	20	19.0	95.2	20	20.2	101	5.83	20	76	122
Toluene	ND	20	21.3	106	20	22.6	113	6.14	24	80	117
m,p-Xylene	ND	40	37.9	94.7	40	40.5	101	6.74	20	69	127
o-Xylene	ND	20	18.6	93.0	20	20.6	103	10.4	20	84	114
Xylenes, Total	ND	60	56.5	94.1	60	61.1	102	7.97	20	69	127
Surr: 1,2-Dichloroethane-d4	ND	50	47.8	95.6	50	47.4	94.8	0.904	30	70	130
Surr: 4-Bromofluorobenzene	ND	50	47	94.1	50	48.4	96.8	2.88	30	74	125
Surr: Toluene-d8	ND	50	53.4	107	50	57.0	114	6.58	30	82	118

Qualifiers: ND/U - Not Detected at the Reporting Limit

B - Analyte Detected In The Associated Method Blank

J - Estimated Value Between MDL And PQL

E - Estimated Value exceeds calibration curve

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.

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Quality Control Report

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

Conoco Phillips

Sategna 2E

Analysis: Total Dissolved Solids
Method: SM2540 C

WorkOrder: 10120592
Lab Batch ID: R313000A

Method Blank

RunID: WET_1012170-5677470 Units: mg/L
Analysis Date: 12/17/2010 16:00 Analyst: MM1

Samples in Analytical Batch:

Lab Sample ID Client Sample ID
10120592-01C MW-1

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

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

RunID: WET_1012170-5677472 Units: mg/L
Analysis Date: 12/17/2010 16:00 Analyst: MM1

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

Sample Duplicate

Original Sample: 10120589-01
RunID: WET_1012170-5677489 Units: mg/L
Analysis Date: 12/17/2010 16:00 Analyst: MM1

Analyte	Sample Result	DUP Result	RPD	RPD Limit
Total Dissolved Solids (Residue,Filterable)	770	775	0.647	10

Qualifiers: ND/U - Not Detected at the Reporting Limit
B - Analyte Detected In The Associated Method Blank
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E - Estimated Value exceeds calibration curve
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TNTC - Too numerous to count

MI - Matrix Interference
D - Recovery Unreportable due to Dilution
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Version 2.0 - Modified December 23, 2010



Quality Control Report

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

Conoco Phillips

Sategna 2E

Analysis: Total Dissolved Solids
Method: SM2540 C

WorkOrder: 10120592
Lab Batch ID: R313000B

Method Blank

RunID: WET_101217O-5677470 Units: mg/L
Analysis Date: 12/17/2010 16:00 Analyst: MM1

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
10120592-02C	MW-2
10120592-03C	MW-3

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

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

RunID: WET_101217O-5677472 Units: mg/L
Analysis Date: 12/17/2010 16:00 Analyst: MM1

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

Sample Duplicate

Original Sample: 10120592-03
RunID: WET_101217O-5677497 Units: mg/L
Analysis Date: 12/17/2010 16:00 Analyst: MM1

Analyte	Sample Result	DUP Result	RPD	RPD Limit
Total Dissolved Solids (Residue,Filterable)	3000	3022	0.797	10

Qualifiers: ND/U - Not Detected at the Reporting Limit
B - Analyte Detected In The Associated Method Blank
J - Estimated Value Between MDL And PQL
E - Estimated Value exceeds calibration curve
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

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Quality Control Report

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

Conoco Phillips

Satagna 2E

Analysis: Ion Chromatography
Method: E300.0

WorkOrder: 10120592
Lab Batch ID: R313024

Method Blank

RunID: IC1_101219A-5678068 Units: mg/L
Analysis Date: 12/19/2010 9:55 Analyst: ESK

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
10120592-01C	MW-1
10120592-02C	MW-2
10120592-03C	MW-3

Analyte	Result	Rep Limit
Sulfate	ND	0.50

Laboratory Control Sample (LCS)

RunID: IC1_101219A-5678069 Units: mg/L
Analysis Date: 12/19/2010 10:11 Analyst: ESK

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Sulfate	10.00	9.924	99.24	90	110

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

Sample Spiked: 10120639-02
RunID: IC1_101219A-5678086 Units: mg/L
Analysis Date: 12/19/2010 15:34 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	1418	5000	6522	102.1	5000	6523	102.1	0.01504	15	80	120

Qualifiers: ND/U - Not Detected at the Reporting Limit
B - Analyte Detected In The Associated Method Blank
J - Estimated Value Between MDL And PQL
E - Estimated Value exceeds calibration curve
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
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*Sample Receipt Checklist
And
Chain of Custody*



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

Sample Receipt Checklist

Workorder: 10120592	Received By: T_B
Date and Time Received: 12/17/2010 9:05:00 AM	Carrier name: Fedex-Standard Overnight
Temperature: 3.5°C	Chilled by: Water Ice

- | | | | |
|---|---|-----------------------------|--|
| 1. Shipping container/cooler in good condition? | Yes ☒ | No ☐ | Not Present ☐ |
| 2. Custody seals intact on shipping 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?
2100/3.5, 1960/3.0, 1950/4.0, 2084/3.5, 2062/4.0, 2073/4.0 | 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 WORKSHEET NO.

303440

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Client Name: <u>Teha Tek, Inc.</u>		Requested Analysis	
Address: <u>10121 Indian School Rd NE #200</u>			
City: <u>Albuquerque</u>	State: <u>NM</u>		
Phone/Fax: <u>505 237-8440</u>	Zip: <u>87112</u>		
Client Contact: <u>Kelly Blanchard</u>			
Email: <u>kelly.blanchard@tehtek.com</u>			
Project Name/No.: <u>Integra 2E</u>			
Site Name: <u>Boonville, NM</u>			
Site Location: <u>Boonville, NM</u>			
Invoice To:			
SAMPLE ID	DATE	TIME	Ph:
MW-1	12.14.10	1040	
MW-1	12.14.10	1040	
MW-1	12.14.10	1040	
MW-2	12.14.10	1005	
MW-2	12.14.10	1005	
MW-2	12.14.10	1005	
MW-3	12.14.10	1105	
MW-3	12.14.10	1105	
MW-3	12.14.10	1105	
MW-3	12.14.10	1035	
Laboratory remarks:			
Client/Consultant Remarks:			
Special Reporting Requirements: Results: Fax ☐ Email ☒ PDF ☒ TX TRRP ☐ LA RECAP ☐			
Standard of ☐ Level 3 QC ☐ Level 4 QC ☐			
1. Relinquished by Sample: <u>[Signature]</u> date: <u>12.16.10</u>			
3. Relinquished by: <u>[Signature]</u> date: <u>12.16.10</u>			
5. Relinquished by: <u>[Signature]</u> date: <u>12.17.10</u>			
Requested TAT ☐ 1 Business Day ☐ Contract ☐ 2 Business Days ☐ Standard ☐ 3 Business Days ☐ Other			
Rush TAT requires prior notice			
Special Detection Limits (specify):			
Intact? ☐ Y ☐ N Ice? ☐ Y ☐ N Temp: <u>3.5</u> ☐ Y ☐ N			
PM review (initial):			
2. Received by: <u>[Signature]</u> time: <u>0800</u>			
4. Received by: <u>[Signature]</u> time: <u>0805</u>			
6. Received by: <u>[Signature]</u> time: <u>0805</u>			

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