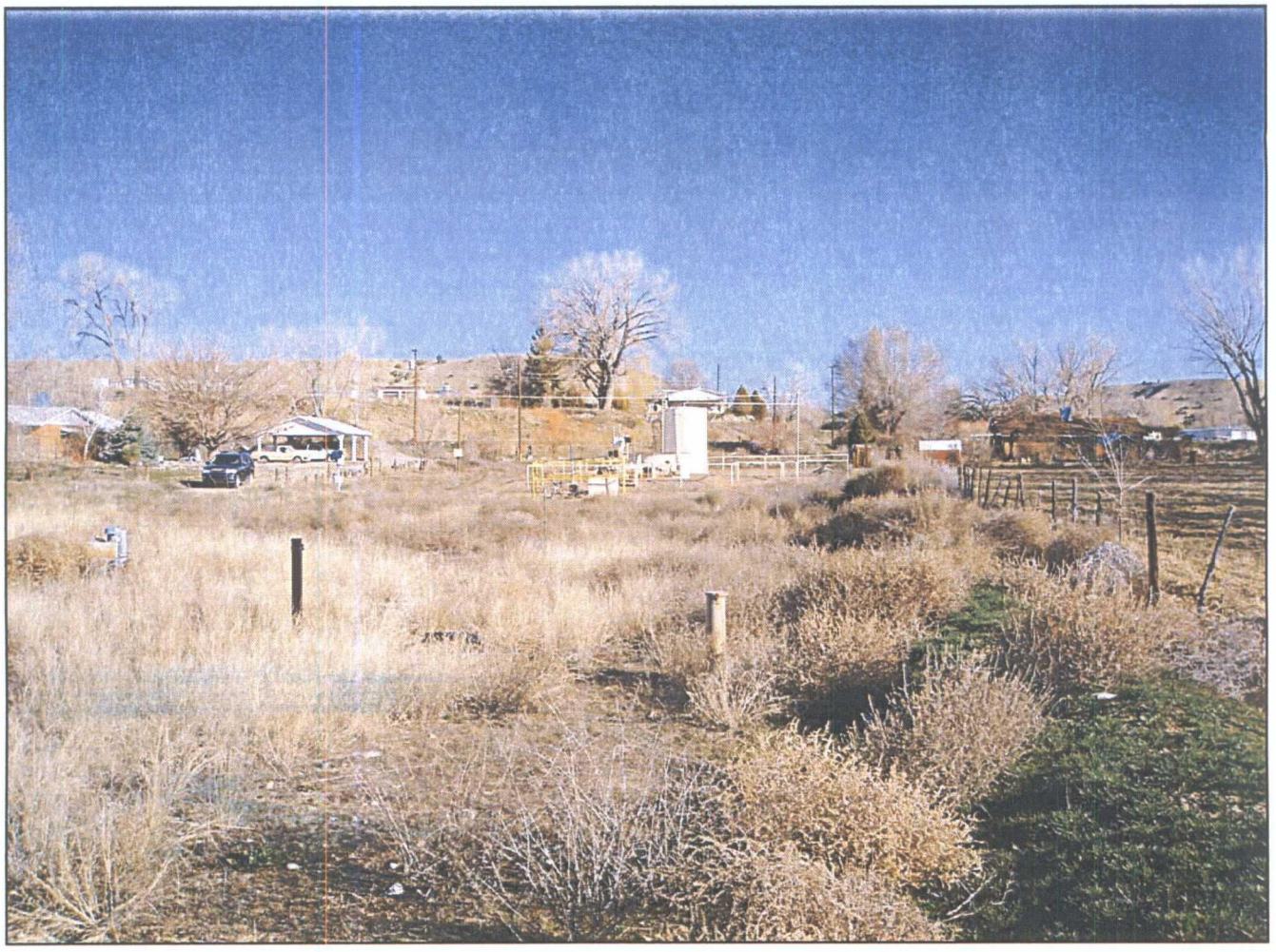
3R - 090

MONITORING REPORT

10/2008

SEMI-ANNUAL GROUNDWATER MONITORING REPORT
OCTOBER 2008 SAMPLING EVENT
CONOCOPHILLIPS COMPANY
NELL HALL #1
FLORA VISTA, NM
OCD # 3R0090



ConocoPhillips

TETRA TECH, INC.

February 2009

SEMI-ANNUAL GROUNDWATER MONITORING REPORT OCTOBER 2008 SAMPLING EVENT

CONOCOPHILLIPS
NELL HALL #1
FLORA VISTA, NEW MEXICO

OCD # 3R0090

Prepared for:

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February 2009

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SEMI-ANNUAL GROUNDWATER MONITORING REPORT CONOCOPHILLIPS NELL HALL #1 FLORA VISTA, NEW MEXICO

1.0 INTRODUCTION

This report presents the results of the semi-annual groundwater monitoring event conducted by Tetra Tech, Inc. (Tetra Tech) on October 22, 2008, at the ConocoPhillips Nell Hall #1 site in Flora Vista, New Mexico (Site).

The Site is located on Flora Vista Road in Flora Vista, New Mexico, approximately 2 miles west of Aztec, New Mexico. The Site consists of a gas production well and associated equipment. The location and general features of the Site are shown on Figures 1 and 2, respectively.

1.1 Site History

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

The environmental investigation at the Site began with the attempted closure of an unlined dehydrator discharge pit in the early 1990's. Soil impacts were discovered during earthmoving activities and groundwater monitoring wells MW-1, MW-2, and MW-3 were subsequently installed to determine if hydrocarbons had impacted groundwater beneath the Site. Due to an ongoing drought, the water table fell below the screened intervals of the installed groundwater monitoring wells, and continuous sampling of these well was not possible. On February 17 and 18, 2004, Souder Miller and Associates installed three additional monitoring wells (MW-4, MW-5, and MW-6) at sufficient depths to intersect the water table and to account for the effects of further seasonal/drought-based water table fluctuations. Groundwater monitoring wells MW-4 and MW-6 were installed to 35 feet below ground surface (bgs) with a 30-foot screened interval and MW-5 was installed to 39 feet bgs with a 35-foot screened interval. This screened interval was chosen in order to allow for continuous sampling of these wells even in the event of a water table fluctuation of up to 25 feet (Souder Miller and Associates, 2004).

Following installation, MW-4, MW-5, and MW-6 were sampled by Tetra Tech on a quarterly basis in 2004, on a semi-annual basis in 2005, annually in 2006, and finally on a semiannual basis beginning in February 2007 and continuing to the present. The latest semi-annual sampling event was performed by Tetra Tech on October 22, 2008. Groundwater samples collected during these events were analyzed for the presence of benzene, toluene, ethylbenzene, and xylenes (BTEX), sulfate, nitrate, phosphate, and ferrous iron.

2.0 METHODOLOGY AND RESULTS

The following sections describe the groundwater monitoring methodology used at the Site and results of laboratory analysis of groundwater samples.

2.1 Groundwater Monitoring Methodology

Groundwater Elevation Measurements

Prior to the start of groundwater sampling activities, the depth to water at each groundwater monitoring well within the Site was gauged using an interface probe, and the results were recorded on the groundwater sampling field form (Table 2, Appendix A). The probe was decontaminated with an Alconox solution and de-ionized water before and after each monitoring well was gauged. It should be noted that for determination of flow direction and gradient, water levels in the six (6) groundwater monitoring wells at the Site are collected during each sampling event, although groundwater samples have never been collected by Tetra Tech from MW-1, MW-2 or MW-3.

Table 2 presents the monitor well specifications and groundwater level data. Hydrographs illustrating the groundwater level fluctuations since March 2004 in groundwater monitoring wells MW-4, MW-5, and MW-6 are presented on Figures 3, 4, and 5, respectively. The data indicates that groundwater elevations are consistently lowest during the late-winter/early-spring months. The October 2008 groundwater elevation contour map indicates groundwater at the Site flows along a shallow gradient to the northeast and southwest from the approximate center of the Site (Figure 6). Historically, the groundwater flow direction and gradient vary from season to season. These fluctuations are believed to be the result of changes in irrigation rates and/or changes in base-flow conditions in the Animas River, which, at its closest point, lies approximately 0.6 miles to the south, southeast of the Site (Figure 1).

Groundwater Sampling

Monitor wells MW-4, MW-5, and MW-6 were sampled during this event as a continuation of semi-annual monitoring at the Site. Three well volumes were purged from each monitoring well before sampling was performed. A 1.5-inch submersible GeoSquirt pump was used to purge the well and to collect the groundwater sample. The purge water generated during the event was disposed of in the on-site waste water tank (Figure 2). The groundwater samples were placed in laboratory prepared bottles, packed on ice, and shipped with chain-of-custody documentation to Southern Petroleum Laboratory located in Houston, Texas. The samples were analyzed for the presence of BTEX by Environmental Protection Agency (EPA) Method 8260B, sulfate and nitrate by EPA Method 300.0, phosphate by EPA Method 365.1, and ferrous iron by Standard Method 20, 3500-Fe B Modified.

2.2 Groundwater Sampling Analytical Results

The October 2008 analytical results indicate that samples collected from monitor wells MW-4 and MW-5 were below New Mexico Water Quality Control Commission (NMWQCC) standards for all analyzed constituents. However, the groundwater sample collected from MW-6 contained 38.7 milligrams per liter (mg/L) ferrous iron, which is above the NMWQCC standard of 1 mg/L. Although benzene in MW-6 was not found above laboratory detection limits during the October 2008 sampling event, this constituent has fluctuated drastically throughout previous groundwater sampling events at the Site (Table 3). These results are postulated to be related to the fluctuating water table at the Site. To investigate this possibility, a graph depicting benzene and depth to water versus time in MW-6 was prepared and is attached as Figure 7. The

graph illustrates the clear inverse relationship between benzene concentrations and water column thickness in this groundwater monitoring well. Historically elevated benzene concentrations in MW-6 (peaking at 2,500 micrograms per liter [ug/L] in March 2004) should be viewed in this regard. It should also be noted that the March 2004 groundwater sample was collected immediately following installation of MW-6 in February 2004, in which soil samples collected at 25 and 30 feet bgs each resulted in an exceedence of the 50 milligram per kilogram (mg/kg) regulatory limit for BTEX, and soil samples collected at 25, 30, and 35 feet bgs were found to contain total petroleum hydrocarbons (TPH) at levels greater than the 100 mg/kg regulatory limit (Souder Miller and Associates, 2004).

Historical laboratory analytical data, including the October 2008 data, are summarized on Table 3. The field groundwater sampling forms are presented in Appendix A, and the laboratory analytical report is presented in Appendix B. A geologic cross section has also been prepared using data obtained from the boring logs created during the installation of MW-4, MW-5, and MW-6 (Figure 8).

3.0 CONCLUSIONS

Tetra Tech will continue semi-annual groundwater sampling at the Site. The next groundwater sampling event is scheduled for April 2009. Please contact Kelly Blanchard at 505-237-8440 or kelly.blanchard@tetratech.com if you have any questions or require additional information.

4.0 REFERENCES

Souder Miller and Associates (2004). *Nell Hall Monitoring Well Installation Report.* Prepared for ConocoPhillips, Inc. Report Dated May 7. 64 pp.

FIGURES

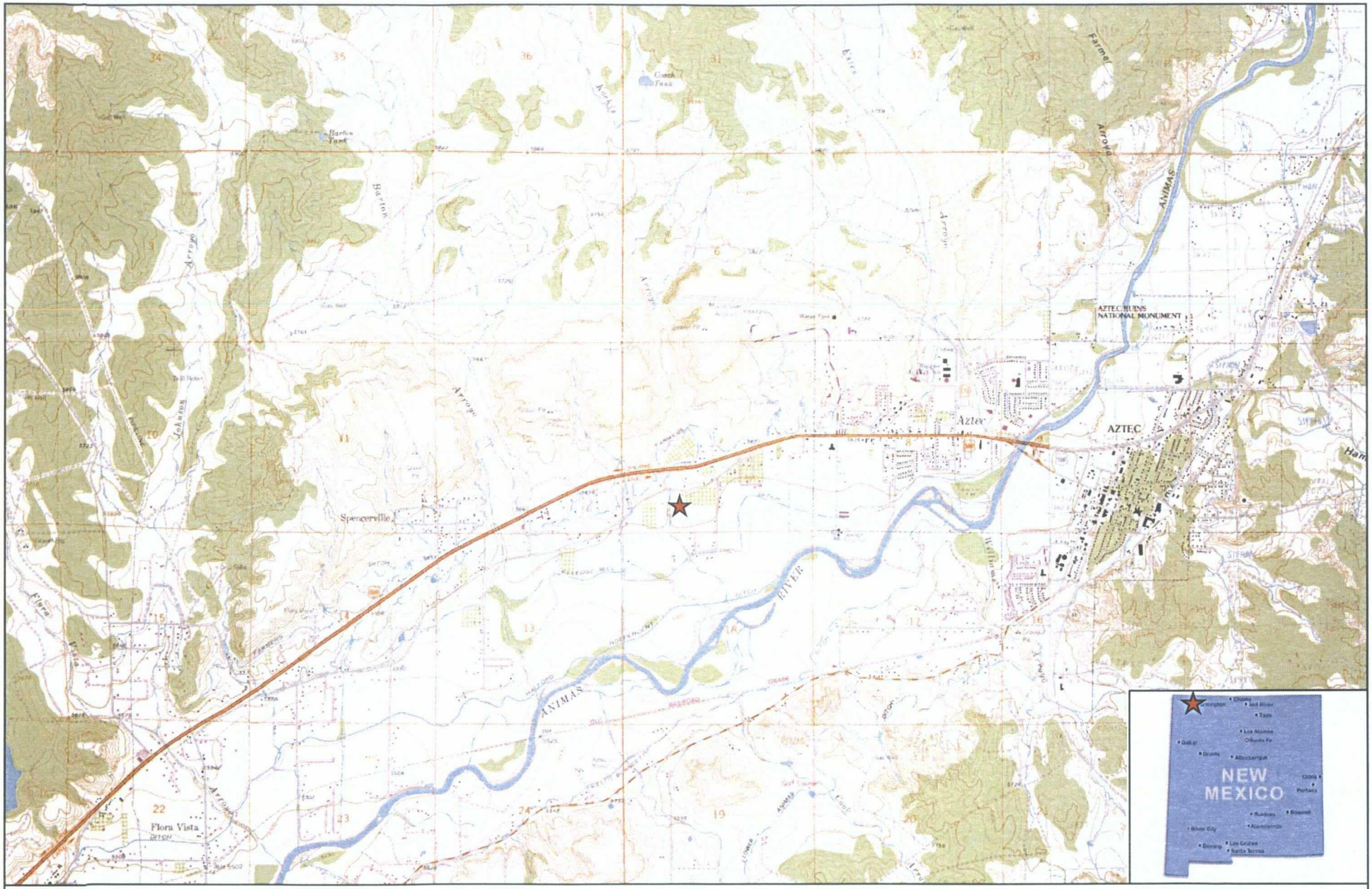
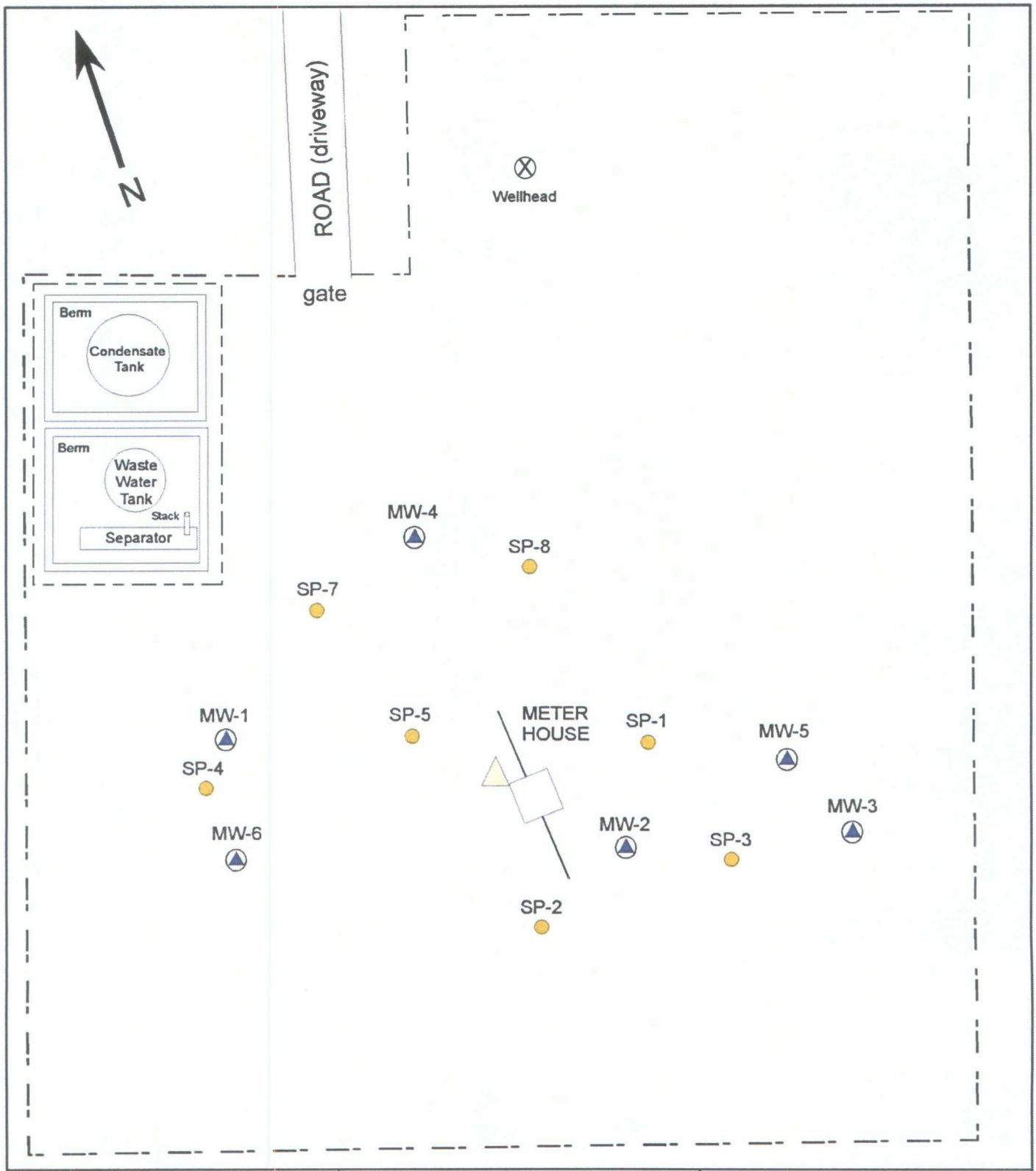


Figure 1. Site Location Map

ConocoPhillips
Nell Hall #1
Flora Vista, New Mexico

TETRA TECH, INC.

= Approximate Site Location



SCALE

0 10' 20' 40'

TETRA TECH, INC.

LEGEND

MW-2 - Monitoring Well Locations

SP-3 - Sparge Point Locations

- Survey Control Point

- Fence

NOTE: SP-1 Removed.

Figure 2. Site Layout Map

ConocoPhillips Nell Hall #1

Figure 3. MW-4 Hydrograph (March 2004 - March 2008) - ConocoPhillips Nell Hall #1

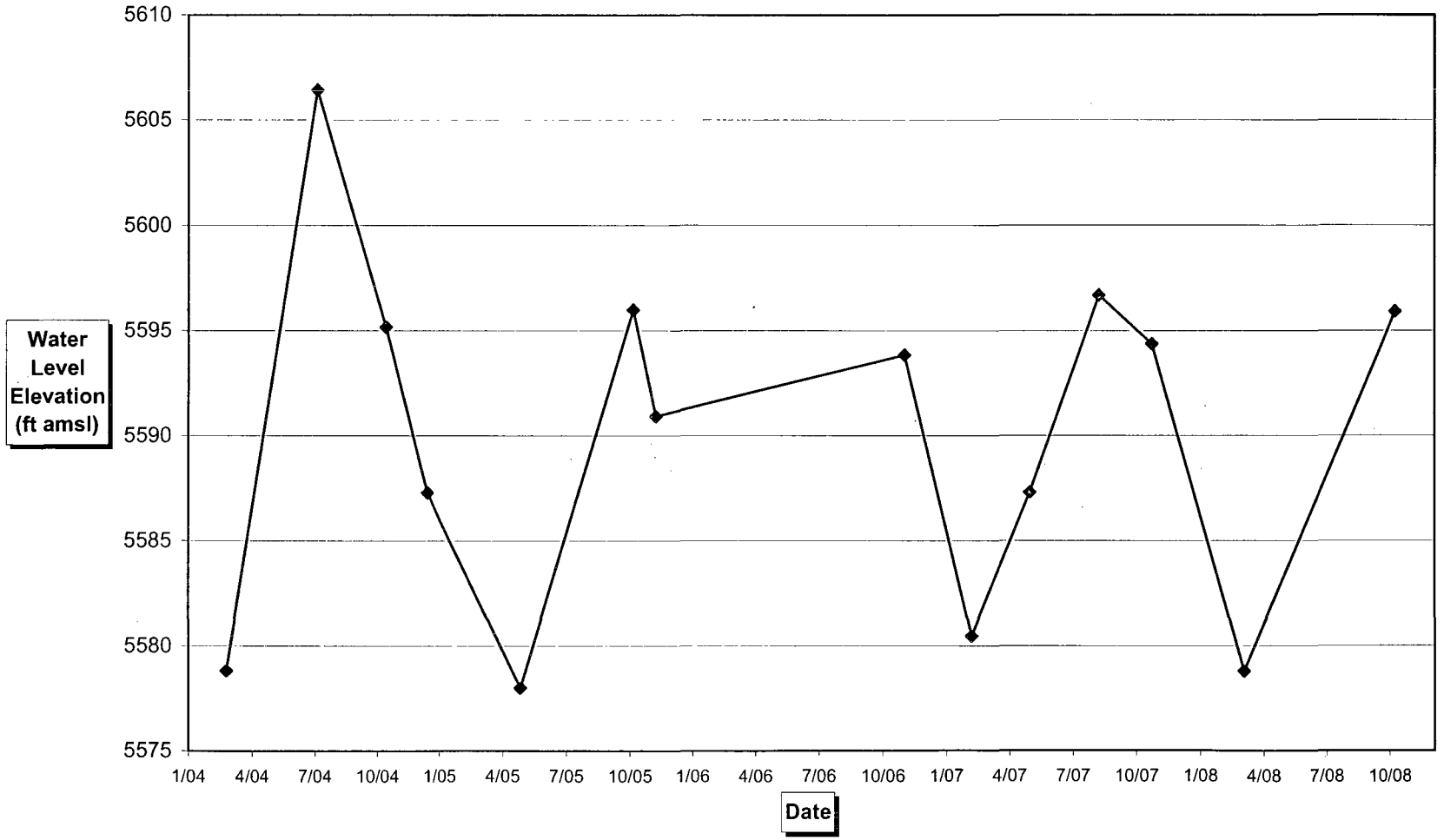


Figure 4. MW-5 Hydrograph (March 2004 - March 2008) - ConocoPhillips Nell Hall #1

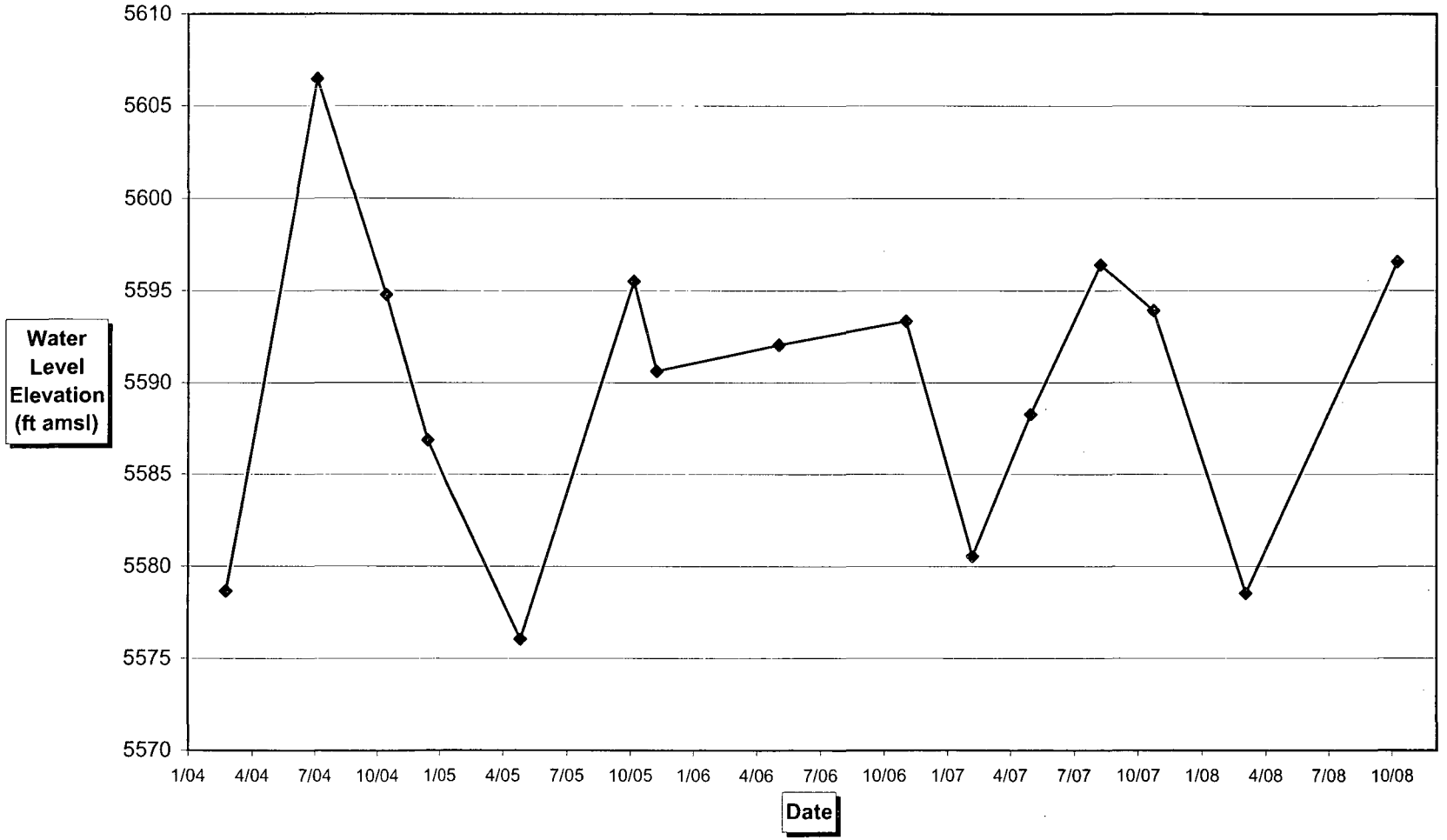
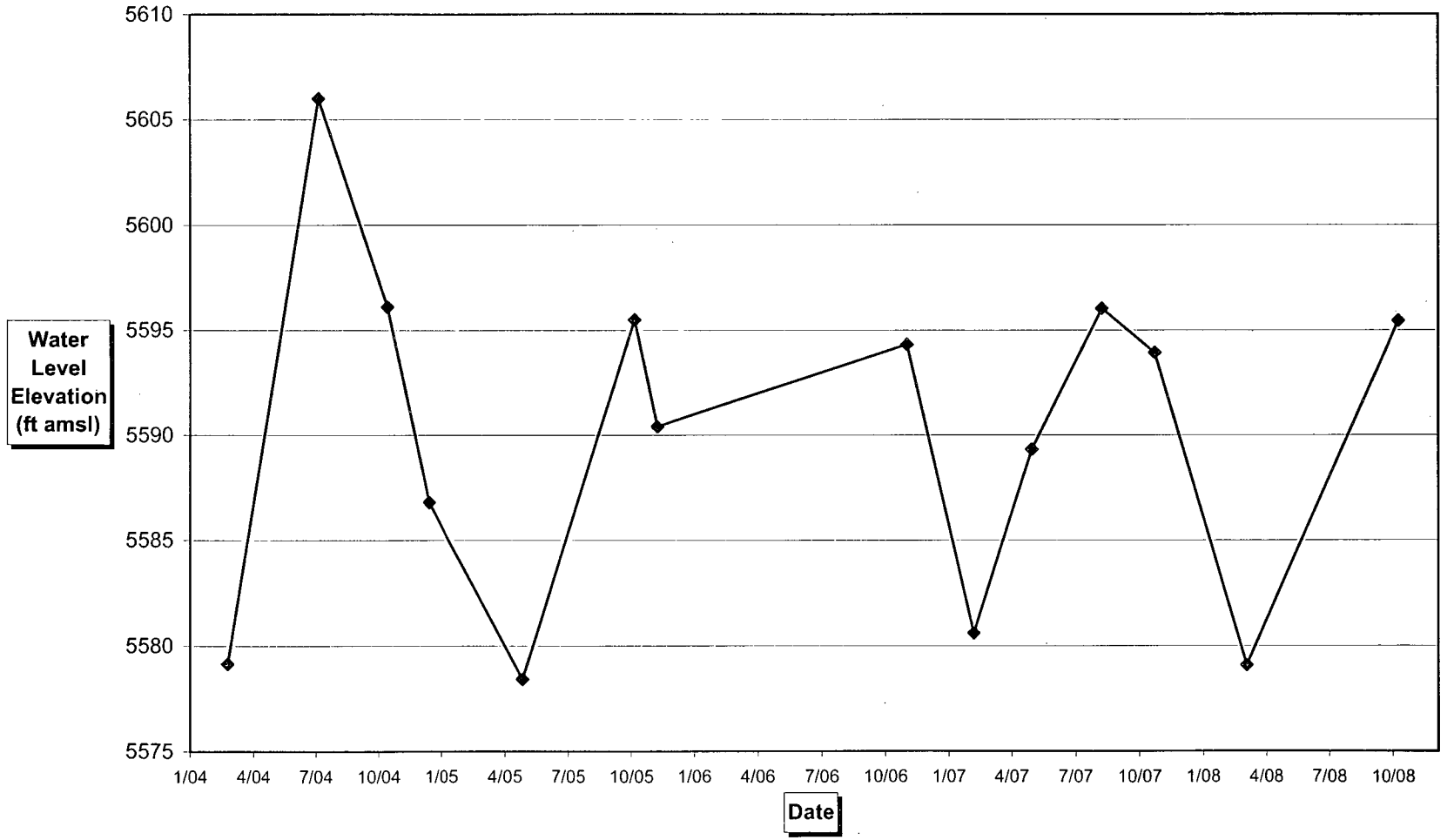
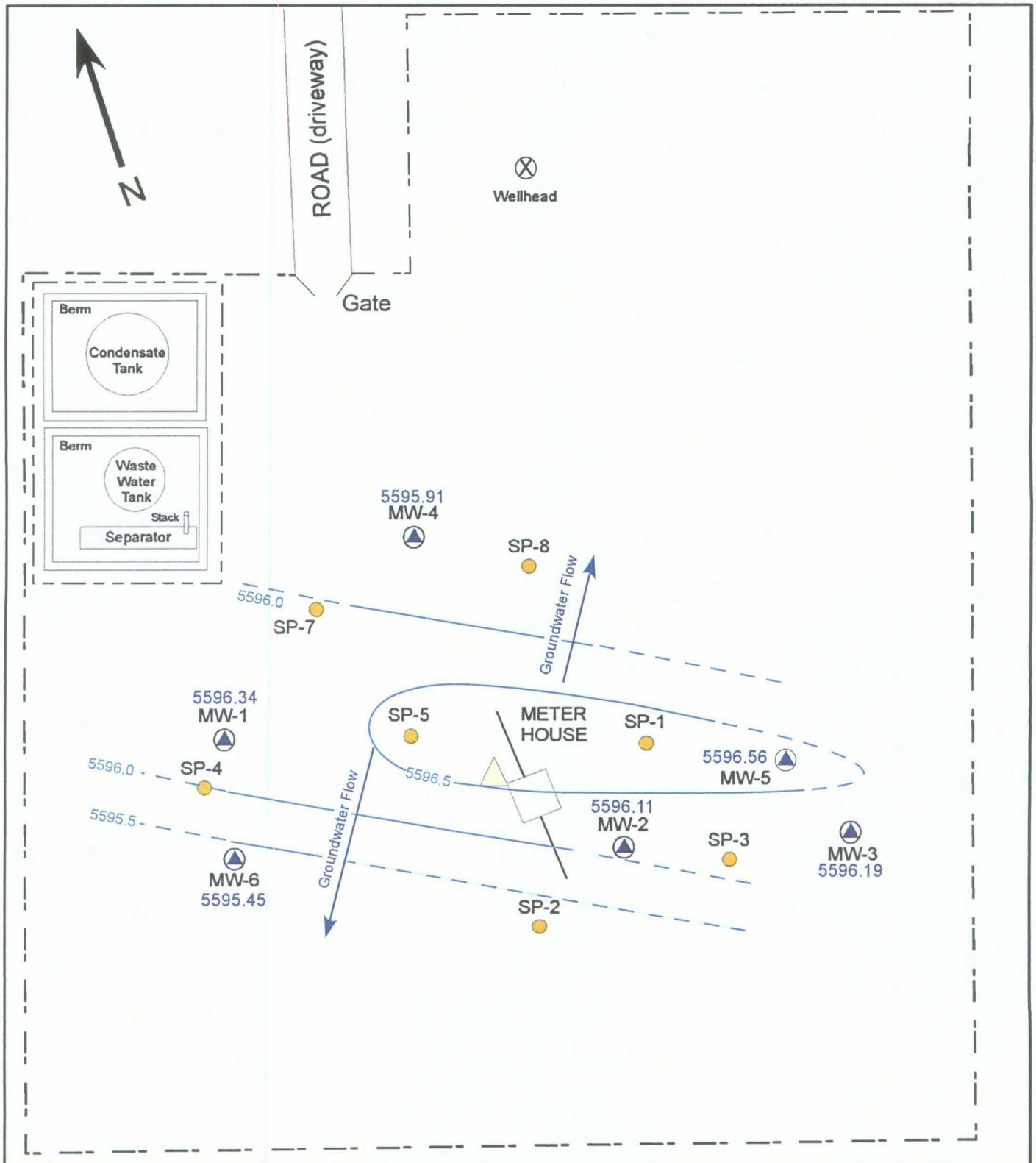


Figure 5. MW-6 Hydrograph (March 2004 - October 2008) - ConocoPhillips Nell Hall #1





SCALE

0 10' 20' 40'

TETRA TECH, INC.

LEGEND

MW-2 Monitoring Well Locations

SP-3 Sparge Point Locations

Survey Control Point

Fence

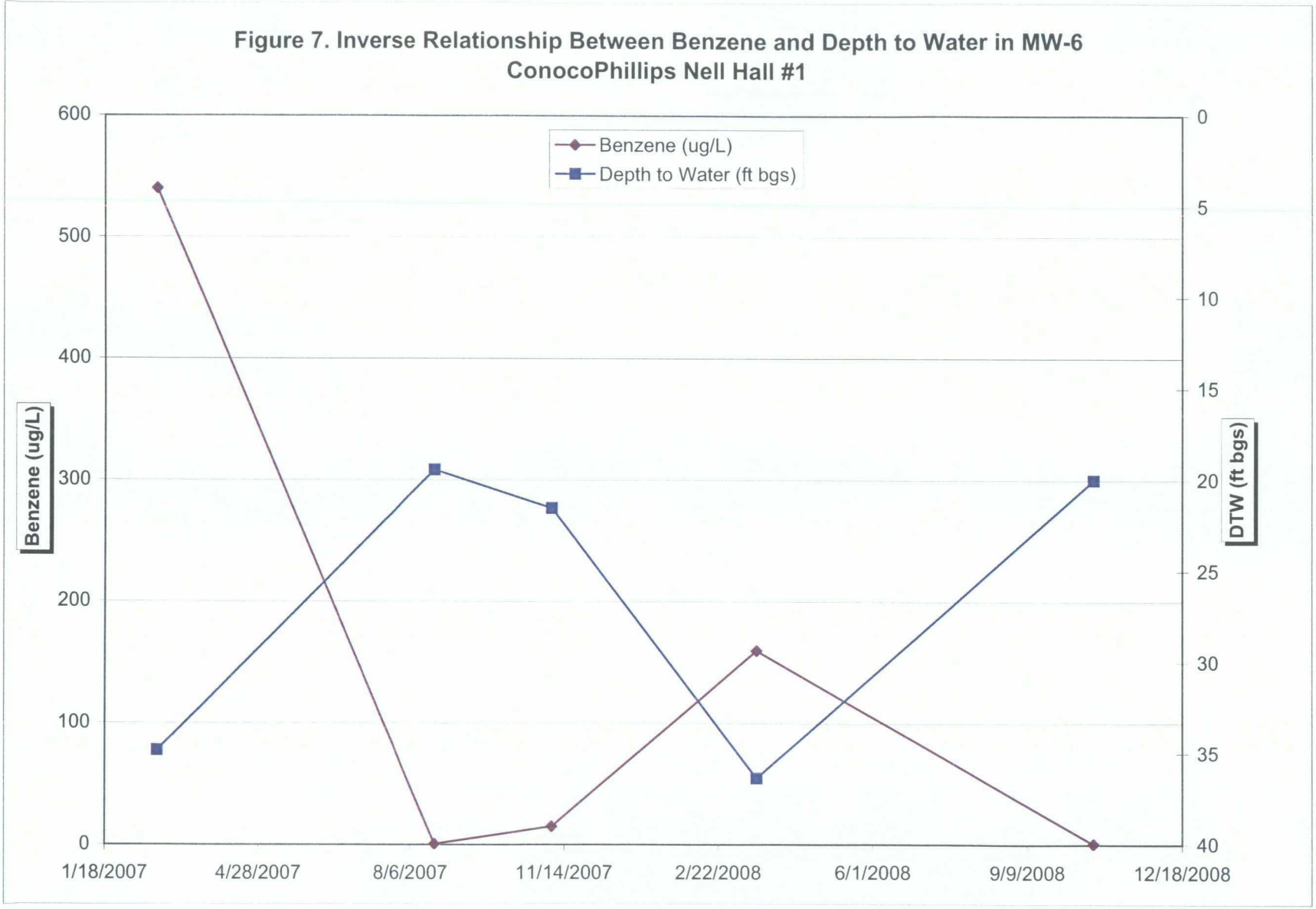
Groundwater Contour

NOTE: SP-1 Removed.

Figure 6. October 2008 Groundwater Elevation Contour Map

ConocoPhillips Nell Hall #1
Flora Vista, New Mexico

Figure 7. Inverse Relationship Between Benzene and Depth to Water in MW-6
ConocoPhillips Nell Hall #1



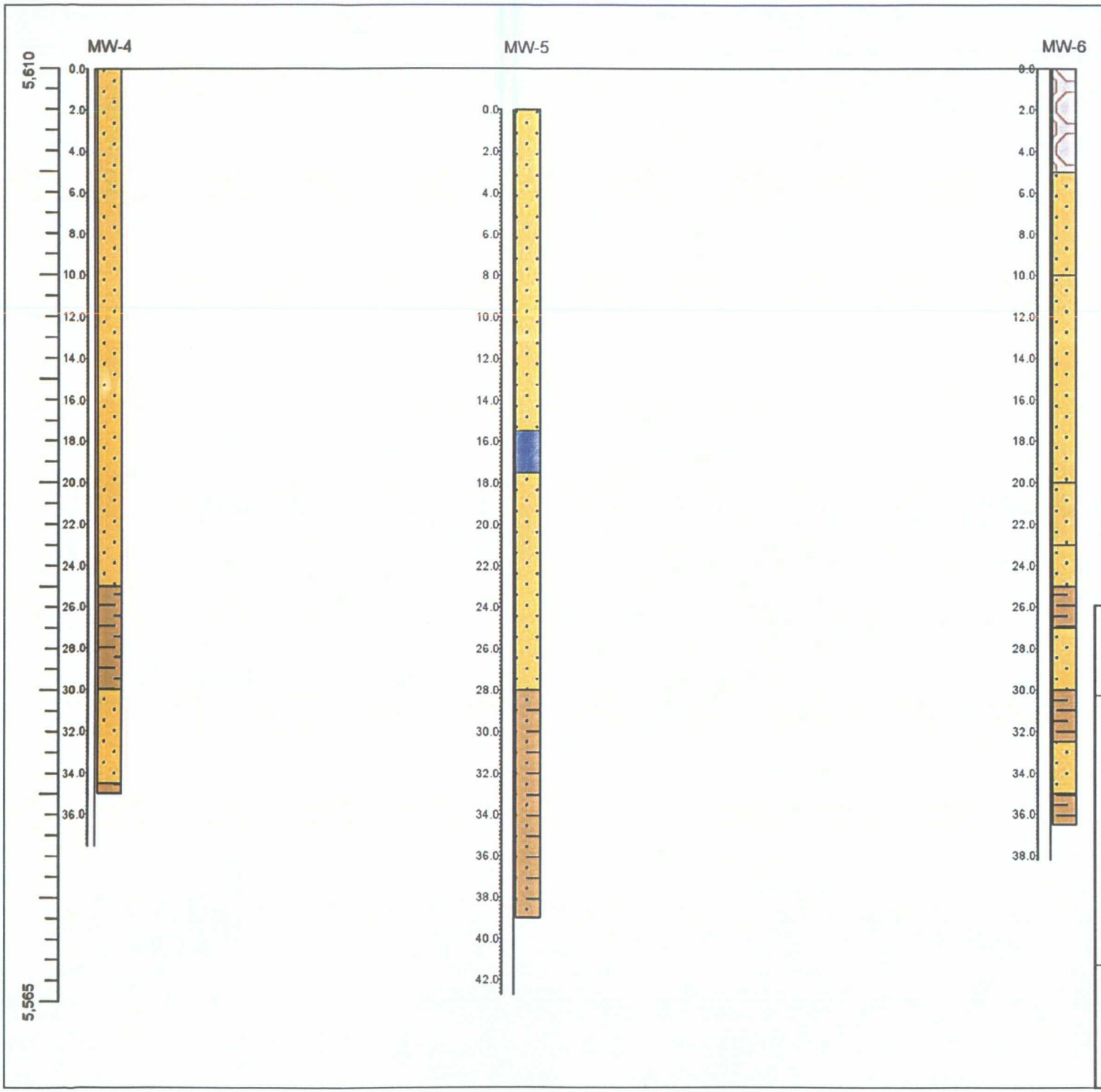


Figure 8. Site Cross Section
ConocoPhillips - Nell Hall #1

Legend

- Clays
- Sand
- Sandy Fat Clay
- Silty Sand

TETRA TECH, INC.

TABLES

Table 1. Site History Timeline - ConocoPhillips Nell Hall #1

Date/Time Period	Event/Action	Description/Comments
Early 1990's	Soil and Groundwater Impacts Discovered	Impacts discovered during attempted closure of an unlined dehydrator discharge pit
	Monitor Well Installation and sampling	Monitor wells MW-1, MW-2, and MW-3 were installed to evaluate groundwater impacts but the wells went dry due to an ongoing drought; Sampled from 1996 through 2002 when water was present. Air Sparge wells SP-1 and 2 sampled through 1999; SP-6, SP-7and SP-8 sampled through 2002. SP-2 and SP-7 were over the standard for benzene when sampling was discontinued.
March-02	Groundwater sampling	Continued sampling recommended until four (4) sampling events demonstrate contamination levels below NMWQCC groundwater quality standards.
June-02	Groundwater sampling	Continued sampling recommended until four (4) sampling events demonstrate contamination levels below NMWQCC groundwater quality standards.
September-02	Groundwater sampling	Continued sampling recommended until four (4) sampling events demonstrate contamination levels below NMWQCC groundwater quality standards.
2002	ConocoPhillips acquires Nell Hall Production Well	ConocoPhillips recognizes the unfinished nature of the original pit closure, and begins work to bring site into regulatory closure.
February 17-18, 2004	Monitor Well Installation	Monitor wells MW-4, MW-5, and MW-6 were installed at deeper depths (35 to 39 feet BGS) to adequately intersect the water table, as previously installed groundwater monitoring wells continually went dry. The lowest water levels at the site are found to occur in early spring and late winter. Installed 30 to 35 feet of screen to allow for seasonal groundwater fluctuations of up to 25 feet.
March 8 - December 27, 2004	Monitor Well Sampling	Quarterly groundwater sampling of monitor wells MW-4, MW-5, and MW-6; benzene spike in March (MW-6) coincides with MW-6 well installation and discovery of BTEX and TPH impacts to soil at 25-35 feet bgs in MW-6 soil samples collected during drilling.
May 11 - November 22, 2005	Monitor Well Sampling	Semi-annual sampling of monitor wells MW-4, MW-5, and MW-6
November 15, 2006	Monitor Well Sampling	Annual sampling of monitor wells MW-4, MW-5, and MW-6
February 21, 2007 - October 22, 2008	Monitor Well Sampling	Resumption of semi-annual sampling of monitor wells MW-4, MW-5, and MW-6 during summer and fall months when water is most likely to be present in wells.
February 6, 2009	BTEX vs. depth to water plotted in MW-6	BTEX concentrations show inverse relationship to water column thickness in MW-6; plotted from 2/21/07 to 10/22/08 (N=5)

Table 2. Groundwater Elevation Summary (March 2004 - March 2008) - ConocoPhillips Nell Hall #1

Well ID	Date Installed	Total Depth (ft. bgs)	Screen Interval (ft)	Elevation (ft. msl) (TOC)	Date Measured	Groundwater Level (ft TOC)	Groundwater Elevation (ft amsl)
MW-1	Unknown	28.61	Unknown	5615.72	5/10/2005	Dry	NC
					10/20/2005	19.25	5596.47
					11/22/2005	24.15	5591.57
					5/17/2006	NM	NC
					11/15/2006	21.40	5594.32
					2/19/2007	Dry	NC
					5/14/2007	24.85	5590.87
					8/22/2007	24.61	5591.11
					11/6/2007	20.87	5594.85
					3/17/2008	Dry	NC
					10/22/2008	19.38	5596.34
MW-2	Unknown	27.31	Unknown	5614.94	5/10/2005	Dry	NC
					10/20/2005	18.81	5596.13
					11/22/2005	23.74	5591.20
					5/17/2006	22.06	5592.88
					11/15/2006	21.01	5593.93
					2/19/2007	Dry	NC
					5/14/2007	Dry	NC
					8/22/2007	18.03	5596.91
					11/6/2007	20.43	5594.51
					3/17/2008	Dry	NC
					10/22/2008	18.83	5596.11
MW-3	Unknown	27.03	Unknown	5615.53	5/10/2005	Dry	NC
					10/20/2005	19.36	5596.17
					11/22/2005	24.24	5591.29
					5/17/2006	22.82	5592.71
					11/15/2006	21.53	5594.00
					2/19/2007	Dry	NC
					5/14/2007	Dry	NC
					8/22/2007	18.36	5597.17
					11/6/2007	20.95	5594.58
					3/17/2008	Dry	NC
					10/22/2008	19.34	5596.19
MW-4	2/18/2004	35	5-35	5614.87	3/8/2004	36.04	5578.83
					7/19/2004	8.44	5606.43
					10/27/2004	19.69	5595.18
					12/27/2004	27.58	5587.29
					5/10/2005	Dry	NC
					10/20/2005	18.87	5596.00
					11/22/2005	23.93	5590.94
					5/17/2006	NM	NC
					11/15/2006	21.02	5593.85
					2/19/2007	34.40	5580.47
					5/14/2007	27.56	5587.31
					8/22/2007	18.18	5596.69
					11/6/2007	20.48	5594.39
					3/17/2008	36.08	5578.79
					10/2/2008	18.96	5595.91

Table 2. Groundwater Elevation Summary (March 2004 - March 2008) - ConocoPhillips Nell Hall #1

Well ID	Date Installed	Total Depth (ft. bgs)	Screen Interval (ft)	Elevation (ft. msl) (TOC)	Date Measured	Groundwater Level (ft TOC)	Groundwater Elevation (ft amsl)
MW-5	2/17/2004	39	4-39	5615.86	3/8/2004	37.19	5578.67
					7/19/2004	9.38	5606.48
					10/27/2004	21.07	5594.79
					12/27/2004	28.99	5586.87
					5/10/2005	39.79	5576.07
					10/20/2005	20.34	5595.52
					11/22/2005	25.23	5590.63
					5/17/2006	23.80	5592.06
					11/15/2006	22.51	5593.35
					2/19/2007	35.31	5580.55
					5/14/2007	27.59	5588.27
					8/22/2007	19.45	5596.41
					11/6/2007	21.94	5593.92
					3/17/2008	37.33	5578.53
					10/22/2008	19.3	5596.56
MW-6	2/18/2004	35	5-35	5615.44	3/8/2004	36.27	5579.17
					7/19/2004	9.43	5606.01
					10/27/2004	19.33	5596.11
					12/27/2004	28.62	5586.82
					5/10/2005	Dry	NC
					10/20/2005	19.94	5595.50
					11/22/2005	25.02	5590.42
					5/17/2006	NM	NC
					11/15/2006	21.12	5594.32
					2/19/2007	34.82	5580.62
					5/14/2007	26.12	5589.32
					8/22/2007	19.41	5596.03
					11/6/2007	21.51	5593.93
					3/17/2008	36.34	5579.10
					10/22/2008	19.99	5595.45

Explanation

amsl = Above mean sea level
bgs = Below ground surface
ft = Feet
NC = Not calculated
NM = Not measured
TOC = Top of casing

Table 3. Groundwater Analytical Results Summary (March 2004 - October 2008)
ConocoPhillips Nell Hall #1

Well ID	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	Nitrate (mg/L)	Sulfate (mg/L)	Ferrous Iron (mg/L)	Phosphate (mg/L)
MW-4	3/8/2004	**13**	12	64	**1,400**	NA	NA	NA	NA
	7/19/2004	<0.5	<0.5	<0.5	<0.5	NA	NA	NA	NA
	10/27/2004	**11**	8	21	130	NA	NA	NA	NA
	12/27/2004	<2.5	<2.5	<2.5	<0.5	NA	NA	NA	NA
	5/11/2005	dry							
	11/22/2005	<0.5	<0.7	<0.8	<0.8	<0.40	105	**2.7**	<0.25
	11/15/2006	<0.5	<0.7	<0.8	<0.8	<0.25	110	0.083	<0.25
	2/21/2007	<0.5	<0.7	<0.8	<0.8	<0.25	59.6	**1.6**	0.28
	8/22/2007	<0.5	<0.7	<0.8	<0.8	<0.25	96.5	0.04	<0.25
	11/6/2007	<0.5	<0.7	<0.8	<0.8	3.3	111	<0.008	0.17
	3/17/2008	<5	<5	<5	<5	<0.5	64.5	0.187	0.9
	10/22/2008	<5	<5	<5	<5	1.9	93.8	<0.1	0.18
MW-5	3/8/2004	1.1	<0.5	1	17	NA	NA	NA	NA
	7/19/2004	<0.5	0.55	<0.5	0.72	NA	NA	NA	NA
	10/27/2004	<0.5	<0.5	<0.5	<1.0	NA	NA	NA	NA
	12/27/2004	<0.5	<0.5	<0.5	<1.0	NA	NA	NA	NA
	5/11/2005	<0.5	<0.7	<0.8	<0.8	2.3	139	<0.0080	1.2
	11/22/2005	<0.5	<0.7	<0.8	<0.8	<0.40	38	<0.0080	0.43
	11/15/2006	<0.5	<0.7	<0.8	<0.8	2.3	77.9	<0.0080	<0.25
	2/21/2007	<0.5	<0.7	<0.8	<0.8	1.3	83.3	<0.0080	0.28
	8/22/2007	<0.5	<0.7	<0.8	<0.8	5.6	125	<0.0080	<0.25
	11/6/2007	<0.5	<0.7	<0.8	<0.8	4	59	<0.0080	<0.25
	3/17/2008	<5	<5	<5	<5	0.986	69.7	0.876	1.4
	10/22/2008	<5	<5	<5	<5	0.532	105	<.1	<.15
MW-6	3/8/2004	**2,500**	14	**1,600**	**21,031**	NA	NA	NA	NA
	7/19/2004	<0.5	<0.5	0.98	2.6	NA	NA	NA	NA
	10/27/2004	0.4	0.3	0.5	2.1	NA	NA	NA	NA
	12/27/2004	**45**	6.8	14	71.7	NA	NA	NA	NA
	5/11/2005	dry							
	11/22/2005	10	0.7	16	150	<0.40	3.4	**7.7**	2.8
	11/15/2006	<0.5	<0.7	<0.8	<0.8	<0.25	41.3	0.19	<0.25
	2/21/2007	**540**	<1	76	**810**	<0.25	1.8	**6.4**	9.0
	8/22/2007	<0.5	<0.7	<0.8	<0.8	<0.25	12.6	0.95	<0.25
	11/6/2007	**15**	<0.7	47	390	<0.25	5.6	**3.6**	0.1
	3/18/2008	**160**	<5	<5	33	NA	NA	**8.88**	NA
	10/22/2008	<5	<5	<5	<5	<1.0	5.15	**38.7**	0.9
NMWQCC Standards		10 (µg/L)	750 (µg/L)	750 (µg/L)	620 (µg/L)	10 (mg/L)	600 (mg/L)	1 (mg/L)	NE

Explanation

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

APPENDIX A

GROUNDWATER SAMPLING FIELD FORMS

TETRA TECH, INC.

WATER SAMPLING FIELD FORM

Project Name Nell Hall #1 Page 1 of 3

Project No. 1158690099

Site Location Flora Vista, NM

Site/Well No. MW-4 Coded/ Replicate No. _____ Date _____

Weather Sunny, Cool Time Sampling Began 11:10 Time Sampling Completed 11:30

EVACUATION DATA

Description of Measuring Point (MP) Top of Casing

Height of MP Above/Below Land Surface _____ MP Elevation _____

Total Sounded Depth of Well Below MP 37.6 Water-Level Elevation _____

Held _____ Depth to Water Below MP 18.96 Diameter of Casing 2" / 4"

Wet _____ Water Column in Well 18.64 Gallons Pumped/Bailed Prior to Sampling 9 gallons

Gallons per Foot .16

Gallons in Well 2.98 Sampling Pump Intake Setting (feet below land surface) _____

Purging Equipment (Purge pump) / Bailer QED Squirt

SAMPLING DATA/FIELD PARAMETERS

Time	Temperature	pH	Conductivity	Turbidity	Other TDS	ORP	DO	DO%
11:28	10.42	6.82	1.071	0.081	21.2		7.52	76.5
11:32	18.38	6.82	1.084	.704	23.7		2.56	27.2

Sampling Equipment Purge Pump/Bailer

Constituents Sampled	Container Description	Preservative
BTEX, Nitrate, Sulfate, Ferrous Iron,		
Phosphate		

Remarks 1st bucket, slight brown color, no odor

Sampling Personnel Christine Mathews and Ana Moreno

Well Casing Volumes

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

TETRA TECH, INC.

WATER SAMPLING FIELD FORM

Project Name Nell Hall #1 Page 2 of 3

Project No. 1158690099

Site Location Flora Vista, NM

Site/Well No. MW-6 Coded/ Replicate No. Date 10-22-08

Weather sunny/warm Time Sampling Began 11:40 Time Sampling Completed 12:00

EVACUATION DATA

Description of Measuring Point (MP) Top of Casing

Height of MP Above/Below Land Surface MP Elevation

Total Sounded Depth of Well Below MP 38.21 Water-Level Elevation

Held Depth to Water Below MP 19.99 Diameter of Casing 2 1/4"

Wet Water Column in Well 18.22 Gallons Pumped/Bailed Prior to Sampling 9 gallons

Gallons per Foot .16

Gallons in Well 2.91 Sampling Pump Intake Setting (feet below land surface)

Purging Equipment Purge pump/ Geo Grunt

SAMPLING DATA/FIELD PARAMETERS

Time	Temperature	pH	Conductivity	Turbidity	Other	DO	DO%
11:52	18.71	6.79	1.197	.768		3.22	32.2
11:57	18.7	6.80	1.197	.778	-148.5	.40	4.3
11:59	18.51	6.78	1.183	.769	-153.2	.49	5.02

Sampling Equipment Purge Pump/Bailer

Constituents Sampled	Container Description	Preservative
BTEX, Nitrate, Sulfate, Ferrous Iron,		
Phosphate		

Remarks H_2O gray, has bio matter type odor, no sheen

Sampling Personnel Christine Mathews and Ana Moreno

Well Casing Volumes

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

TETRA TECH, INC.

WATER SAMPLING FIELD FORM

Project Name Nell Hall #1 Page 3 of 3

Project No. 1158690099

Site Location Flora Vista, NM

Site/Well No. MW-5 Coded/ Replicate No. _____ Date _____

Weather _____ Time Sampling Began 12:10 Time Sampling Completed 12:30

EVACUATION DATA

Description of Measuring Point (MP) Top of Casing

Height of MP Above/Below Land Surface _____ MP Elevation _____

Total Sounded Depth of Well Below MP 42.8 Water-Level Elevation _____

Held _____ Depth to Water Below MP 19.30 Diameter of Casing (2") / 4"

Wet _____ Water Column in Well _____ Gallons Pumped/Bailed Prior to Sampling 11.5 gallons

Gallons per Foot _____

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

Purging Equipment purge pump / geo squirt

SAMPLING DATA/FIELD PARAMETERS TDS ORP

Time	Temperature	pH	Conductivity	Turbidity	Other	DO	DO%
12:21	18.47	7.04	.444	.614	38.0	7.85	83.8
12:24	18.46	7.06	.458	.622	33.3	7.42	79.3
12.25	18.46	7.03	.443	.613	38.1	7.38	78.8

Sampling Equipment Purge Pump/Bailer

Constituents Sampled	Container Description	Preservative
BTEX, Nitrate, Sulfate, Ferrous Iron,		
Phosphate		

Remarks water clear & no odor or sheen

Sampling Personnel Christine Mathews and Ana Moreno

Well Casing Volumes

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

APPENDIX B

LABORATORY ANALYTICAL REPORT

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

Conoco Phillips

Certificate of Analysis Number:

08101356

Report To:		Project Name:	COP Nell Hall
Tetra Tech EM, Inc.		Site:	Flora Vista, NM
Kelly Blanchard		Site Address:	
6121 Indian School Road, N.E.			
Suite 200		PO Number:	4509596741
Albuquerque		State:	New Mexico
NM		State Cert. No.:	
87110-		Date Reported:	11/3/2008
ph: (505) 881-3188	fax:		

This Report Contains A Total Of 16 Pages

Excluding This Page, Chain Of Custody

And

Any Attachments

11/3/2008

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:

08101356

Report To:		Project Name:	COP Nell Hall
Tetra Tech EM, Inc.		Site:	Flora Vista, NM
Kelly Blanchard		Site Address:	
6121 Indian School Road, N.E.			
Suite 200		PO Number:	4509596741
Albuquerque		State:	New Mexico
NM		State Cert. No.:	
87110-		Date Reported:	11/3/2008
ph: (505) 881-3188	fax:		

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.

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.

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:

08101356

Report To: Tetra Tech EM, Inc.
Kelly Blanchard
6121 Indian School Road, N.E.
Suite 200
Albuquerque
NM
87110-
ph: (505) 881-3188 fax: (505) 881-3283

Fax To:

Project Name: COP Nell Hall
Site: Flora Vista, NM
Site Address:
PO Number: 4509596741
State: New Mexico
State Cert. No.:
Date Reported: 11/3/2008

Client Sample ID	Lab Sample ID	Matrix	Date Collected	Date Received	COC ID	HOLD
MW-5	08101356-01	Water	10/22/2008 11:30:00 AM	10/23/2008 10:00:00 AM		☐
MW-4	08101356-02	Water	10/22/2008 12:00:00 PM	10/23/2008 10:00:00 AM		☐
MW-6	08101356-03	Water	10/22/2008 12:30:00 PM	10/23/2008 10:00:00 AM		☐
DUPLICATE	08101356-04	Water	10/22/2008 12:15:00 PM	10/23/2008 10:00:00 AM		☐
TRIP BLANK	08101356-05	Water	10/22/2008	10/23/2008 10:00:00 AM		☐

Erica Cardenas
Project Manager

11/3/2008
Date

Richard R. Reed
Laboratory Director

Ted Yen
Quality Assurance Officer

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

Client Sample ID: MW-5 **Collected:** 10/22/2008 11:30 **SPL Sample ID:** 08101356-01

Site: Flora Vista, NM

Analyses/Method	Result	QUAL	Rep.Limit		Dil. Factor	Date Analyzed	Analyst	Seq. #
ION CHROMATOGRAPHY				**MCL**	**E300.0**	**Units: mg/L**		
Sulfate	105		10		20	10/24/08 17:26	TW	4735552
Nitrogen,Nitrate (As N)	0.532		0.5		1	10/23/08 14:53	TW	4734577
IRON, FERROUS				**MCL**	**M3500-FE D**	**Units: mg/L**		
Iron, Ferrous	ND		0.1		1	10/23/08 12:00	ESK	4735363
PHOSPHATE				**MCL**	**E365.2**	**Units: mg/L**		
Phosphate	ND		0.15		1	10/25/08 13:00	A_E	4735661
VOLATILE ORGANICS BY METHOD 8260B				**MCL**	**SW8260B**	**Units: ug/L**		
Benzene	ND		5		1	10/28/08 18:27	LU_L	4740895
Ethylbenzene	ND		5		1	10/28/08 18:27	LU_L	4740895
Toluene	ND		5		1	10/28/08 18:27	LU_L	4740895
m,p-Xylene	ND		5		1	10/28/08 18:27	LU_L	4740895
o-Xylene	ND		5		1	10/28/08 18:27	LU_L	4740895
Xylenes,Total	ND		5		1	10/28/08 18:27	LU_L	4740895
Surr: 1,2-Dichloroethane-d4	96.0		% 62-130		1	10/28/08 18:27	LU_L	4740895
Surr: 4-Bromofluorobenzene	104		% 70-130		1	10/28/08 18:27	LU_L	4740895
Surr: Toluene-d8	104		% 74-122		1	10/28/08 18:27	LU_L	4740895

Qualifiers:

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

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

Client Sample ID: MW-4 **Collected:** 10/22/2008 12:00 **SPL Sample ID:** 08101356-02

Site: Flora Vista, NM

Analyses/Method	Result	QUAL	Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
ION CHROMATOGRAPHY			**MCL**	**E300.0**	**Units: mg/L**		
Sulfate	93.8		5	10	10/24/08 19:38	TW	4735560
Nitrogen,Nitrate (As N)	1.9		0.5	1	10/23/08 15:09	TW	4734578
IRON, FERROUS			**MCL**	**M3500-FE D**	**Units: mg/L**		
Iron, Ferrous	ND		0.1	1	10/23/08 12:00	ESK	4735366
PHOSPHATE			**MCL**	**E365.2**	**Units: mg/L**		
Phosphate	0.18		0.15	1	10/25/08 13:00	A_E	4735662
VOLATILE ORGANICS BY METHOD 8260B			**MCL**	**SW8260B**	**Units: ug/L**		
Benzene	ND		5	1	10/28/08 18:56	LU_L	4740896
Ethylbenzene	ND		5	1	10/28/08 18:56	LU_L	4740896
Toluene	ND		5	1	10/28/08 18:56	LU_L	4740896
m,p-Xylene	ND		5	1	10/28/08 18:56	LU_L	4740896
o-Xylene	ND		5	1	10/28/08 18:56	LU_L	4740896
Xylenes,Total	ND		5	1	10/28/08 18:56	LU_L	4740896
Surr: 1,2-Dichloroethane-d4	96.0		% 62-130	1	10/28/08 18:56	LU_L	4740896
Surr: 4-Bromofluorobenzene	106		% 70-130	1	10/28/08 18:56	LU_L	4740896
Surr: Toluene-d8	104		% 74-122	1	10/28/08 18:56	LU_L	4740896

Qualifiers:

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

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

Client Sample ID: MW-6 **Collected:** 10/22/2008 12:30 **SPL Sample ID:** 08101356-03

Site: Flora Vista, NM

Analyses/Method	Result	QUAL	Rep.Limit		Dil. Factor	Date Analyzed	Analyst	Seq. #
ION CHROMATOGRAPHY				**MCL**		**E300.0**	**Units: mg/L**	
Sulfate	5.15		1		2	10/24/08 19:54	TW	4735561
Nitrogen,Nitrate (As N)	ND		1		2	10/23/08 15:25	TW	4734579
IRON, FERROUS				**MCL**		**M3500-FE D**	**Units: mg/L**	
Iron, Ferrous	38.7		2.5		25	10/23/08 12:00	ESK	4735367
PHOSPHATE				**MCL**		**E365.2**	**Units: mg/L**	
Phosphate	0.89		0.15		1	10/25/08 13:00	A_E	4735663
VOLATILE ORGANICS BY METHOD 8260B				**MCL**		**SW8260B**	**Units: ug/L**	
Benzene	28		5		1	10/28/08 19:25	LU_L	4740897
Ethylbenzene	52		5		1	10/28/08 19:25	LU_L	4740897
Toluene	ND		5		1	10/28/08 19:25	LU_L	4740897
m,p-Xylene	170		5		1	10/28/08 19:25	LU_L	4740897
o-Xylene	ND		5		1	10/28/08 19:25	LU_L	4740897
Xylenes,Total	170		5		1	10/28/08 19:25	LU_L	4740897
Surr: 1,2-Dichloroethane-d4	96.0		% 62-130		1	10/28/08 19:25	LU_L	4740897
Surr: 4-Bromofluorobenzene	104		% 70-130		1	10/28/08 19:25	LU_L	4740897
Surr: Toluene-d8	104		% 74-122		1	10/28/08 19:25	LU_L	4740897

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: DUPLICATE **Collected:** 10/22/2008 12:15 **SPL Sample ID:** 08101356-04

Site: Flora Vista, NM

Analyses/Method	Result	QUAL	Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
VOLATILE ORGANICS BY METHOD 8260B			**MCL**	**SW8260B**	**Units: ug/L**		
Benzene	26		5	1	10/28/08 19:54	LU_L	4740898
Ethylbenzene	48		5	1	10/28/08 19:54	LU_L	4740898
Toluene	ND		5	1	10/28/08 19:54	LU_L	4740898
m,p-Xylene	160		5	1	10/28/08 19:54	LU_L	4740898
o-Xylene	ND		5	1	10/28/08 19:54	LU_L	4740898
Xylenes,Total	160		5	1	10/28/08 19:54	LU_L	4740898
Surr: 1,2-Dichloroethane-d4	96.0		% 62-130	1	10/28/08 19:54	LU_L	4740898
Surr: 4-Bromofluorobenzene	108		% 70-130	1	10/28/08 19:54	LU_L	4740898
Surr: Toluene-d8	104		% 74-122	1	10/28/08 19:54	LU_L	4740898

Qualifiers:

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

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

Client Sample ID: TRIP BLANK **Collected:** 10/22/2008 0:00 **SPL Sample ID:** 08101356-05

Site: Flora Vista, 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	10/28/08 17:30	LU_L	4740894
Ethylbenzene	ND		5	1	10/28/08 17:30	LU_L	4740894
Toluene	ND		5	1	10/28/08 17:30	LU_L	4740894
m,p-Xylene	ND		5	1	10/28/08 17:30	LU_L	4740894
o-Xylene	ND		5	1	10/28/08 17:30	LU_L	4740894
Xylenes,Total	ND		5	1	10/28/08 17:30	LU_L	4740894
Surr: 1,2-Dichloroethane-d4	96.0		% 62-130	1	10/28/08 17:30	LU_L	4740894
Surr: 4-Bromofluorobenzene	106		% 70-130	1	10/28/08 17:30	LU_L	4740894
Surr: Toluene-d8	104		% 74-122	1	10/28/08 17:30	LU_L	4740894

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 Nell Hall

Analysis: Volatile Organics by Method 8260B
Method: SW8260B
WorkOrder: 08101356
Lab Batch ID: R255337

Method Blank

RunID: K_081028C-4740890 Units: ug/L
Analysis Date: 10/28/2008 12:15 Analyst: LU_L
Preparation Date: 10/28/2008 12:15 Prep By: Method:

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	96.0	62-130
Surr: 4-Bromofluorobenzene	104.0	70-130
Surr: Toluene-d8	104.0	74-122

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
08101356-01A	MW-5
08101356-02A	MW-4
08101356-03A	MW-6
08101356-04A	DUPLICATE
08101356-05A	TRIP BLANK

Laboratory Control Sample (LCS)

RunID: K_081028C-4740889 Units: ug/L
Analysis Date: 10/28/2008 11:02 Analyst: LU_L
Preparation Date: 10/28/2008 11:02 Prep By: Method:

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Benzene	20.0	19.0	95.0	76	126
Ethylbenzene	20.0	21.0	105	67	122
Toluene	20.0	19.0	95.0	70	131
m,p-Xylene	40.0	44.0	110	72	150
o-Xylene	20.0	21.0	105	78	141
Xylenes,Total	60	65	110	72	150
Surr: 1,2-Dichloroethane-d4	50.0	48	96.0	62	130
Surr: 4-Bromofluorobenzene	50.0	54	108	70	130
Surr: Toluene-d8	50.0	52	104	74	122

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

Sample Spiked: 08101520-01
RunID: K_081028C-4740892 Units: ug/L
Analysis Date: 10/28/2008 14:40 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 Nell Hall

Analysis: Volatile Organics by Method 8260B **WorkOrder:** 08101356
Method: SW8260B **Lab Batch ID:** R255337

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	18.0	90.0	20	19.0	95.0	5.41	22	76	127
Ethylbenzene	ND	20	14.0	70.0	20	15.0	75.0	6.90	20	35	175
Toluene	8.00	20	25.0	85.0	20	25.0	85.0	0	24	70	131
m,p-Xylene	ND	40	29.0	72.5	40	30.0	75.0	3.39	20	35	175
o-Xylene	ND	20	15.0	75.0	20	15.0	75.0	0	20	35	175
Xylenes,Total	ND	60	44	73	60	45	75	2.2	20	35	175
Surr: 1,2-Dichloroethane-d4	ND	50	52	104	50	50.0	100	3.92	30	62	130
Surr: 4-Bromofluorobenzene	ND	50	53	106	50	53.0	106	0	30	70	130
Surr: Toluene-d8	ND	50	54	108	50	55.0	110	1.83	30	74	122

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 Nell Hall

Analysis: Ion Chromatography
Method: E300.0

WorkOrder: 08101356
Lab Batch ID: R254936

Method Blank

RunID: IC1_081023A-4734570 Units: mg/L
Analysis Date: 10/23/2008 12:57 Analyst: TW

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
08101356-01C	MW-5
08101356-02C	MW-4
08101356-03C	MW-6

Analyte	Result	Rep Limit
Nitrogen,Nitrate (As N)	ND	0.50

Laboratory Control Sample (LCS)

RunID: IC1_081023A-4734571 Units: mg/L
Analysis Date: 10/23/2008 13:14 Analyst: TW

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Nitrogen,Nitrate (As N)	10.00	9.292	92.92	85	115

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

Sample Spiked: 08101323-01
RunID: IC1_081023A-4734575 Units: mg/L
Analysis Date: 10/23/2008 14:20 Analyst: TW

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Nitrogen,Nitrate (As N)	0.5150	10	8.966	84.51	10	8.844	83.29	1.370	20	80	120

Qualifiers:

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

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

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

Quality Control Report

Conoco Phillips

COP Nell Hall

Analysis: Iron, Ferrous
Method: M3500-Fe D

WorkOrder: 08101356
Lab Batch ID: R254999

Method Blank

RunID: WET_081023ZC-4735359 Units: mg/L
Analysis Date: 10/23/2008 12:00 Analyst: ESK

Analyte	Result	Rep Limit
Iron, Ferrous	ND	0.10

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
08101356-01B	MW-5
08101356-02B	MW-4
08101356-03B	MW-6

Laboratory Control Sample (LCS)

RunID: WET_081023ZC-4735360 Units: mg/L
Analysis Date: 10/23/2008 12:00 Analyst: ESK

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Iron, Ferrous	2.000	1.920	95.99	85	115

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

Sample Spiked: 08101356-01
RunID: WET_081023ZC-4735364 Units: mg/L
Analysis Date: 10/23/2008 12:00 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
Iron, Ferrous	ND	1	0.9674	96.74	1	0.9674	96.74	0	20	85	115

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 Nell Hall

Analysis: Ion Chromatography
Method: E300.0
WorkOrder: 08101356
Lab Batch ID: R255018B

Method Blank

RunID: IC1_081024A-4735547 Units: mg/L
Analysis Date: 10/24/2008 16:04 Analyst: TW

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
08101356-01C	MW-5
08101356-02C	MW-4
08101356-03C	MW-6

Analyte	Result	Rep Limit
Sulfate	ND	0.50

Laboratory Control Sample (LCS)

RunID: IC1_081024A-4735548 Units: mg/L
Analysis Date: 10/24/2008 16:20 Analyst: TW

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Sulfate	10.00	9.954	99.54	85	115

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

Sample Spiked: 08101356-01
RunID: IC1_081024A-4735553 Units: mg/L
Analysis Date: 10/24/2008 17:42 Analyst: TW

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	105.0	200	288.1	91.55	200	303.7	99.36	5.281	20	80	120

Qualifiers:

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

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

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Quality Control Report

Conoco Phillips

COP Nell Hall

Analysis: Phosphate
Method: E365.2
WorkOrder: 08101356
Lab Batch ID: R255022

Method Blank

RunID: WET_081025F-4735654 Units: mg/L
Analysis Date: 10/25/2008 13:00 Analyst: A_E

Analyte	Result	Rep Limit
Phosphate	ND	0.15

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
08101356-01D	MW-5
08101356-02D	MW-4
08101356-03D	MW-6

Laboratory Control Sample (LCS)

RunID: WET_081025F-4735655 Units: mg/L
Analysis Date: 10/25/2008 13:00 Analyst: A_E

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Phosphate	0.750	0.735	98.0	80	120

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

Sample Spiked: 08101323-01
RunID: WET_081025F-4735659 Units: mg/L
Analysis Date: 10/25/2008 13:00 Analyst: A_E

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Phosphate	0.735	0.75	1.52	105	0.75	1.52	105	0	20	80	120

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
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:	**08101356**	Received By:	**L_C**
Date and Time Received:	**10/23/2008 10:00:00 AM**	Carrier name:	**Fedex-Priority**
Temperature:	**3.5°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	☑	
	1. Sample for phosphate received in unpreserved container.					
8.	**Sample containers intact?**	Yes	☑	No	☐	
9.	**Sufficient sample volume for indicated test?**	Yes	☑	No	☐	
10.	**All samples received within holding time?**	Yes	☑	No	☐	
11.	**Container/Temp Blank temperature in compliance?**	Yes	☑	No	☐	
12.	**Water - VOA vials have zero headspace?**	Yes	☑	No	☐	VOA Vials Not Present ☐
13.	**Water - Preservation checked upon receipt (except VOA*)?**	Yes	☑	No	☐	Not Applicable ☐

***VOA Preservation Checked After Sample Analysis**

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

Client Name Contacted: _____

Non Conformance Issues: 1. Added 5mls Sulfuric Lot# 100608 as per EC.

Client Instructions:

Chain of Custody Record

Client: Tetra Tech/ Conoco Phillips

SPL Workorder Number: 08-161356

Attention: Kelly Blanchard/Tetra Tech

Phone: 505-237-8440 | email: kelly.blanchard@tetratech.c

Address: 6121 Indian School Road, NE Ste. 200

City: Albuquerque | State: NM | Zip Code: 87110

Project Name: Nell Hall #1

P.O. Number:

Sampled By: signature — Ana Moreno, Christina Mathews

Sample ID	Collected Date	Collected Time	Sample Type Comp	Sample Type Grab	Matrix Water	Matrix Soil	Bottle Type	Preservative Type	# of Containers	Requested Analysis: 8260-BTEX	300-NO2,SO4	365.1-PO4	Fe2+
MW-5	10/22	11:30		X	X		1	3	3	X			
"	"	"		X	X		6	3	1				X
"	"	"		X	X		3	1	2		X	X	
MW-4	10/22	12:00		X	X		1	3	3	X			
"	"	"		X	X		6	3	1				X
"	"	"		X	X		3	1	2		X	X	
MW-6	10/22	12:30		X	X		1	3	3	X			
"	"	"		X	X		6	3	1				X
"	"	"		X	X		3	1	2		X	X	
Duplicate	10/22	12:15		X	X		1	3	3	X			

RUSH

Turnaround Time Requirements
24 hr( ) 48 hr( )
72 hr( ) 5 wday( )
10 wday - Standard( )

Remarks:

Intact? Y or N

Temperature: 3.5°C

6) 16 oz Amb

Bottle Types: 1: 3/40ml Vials 2. 1L Glass 3. 1L Plastic 4. 1L Amber Glass 5. 8oz Plastic

Preservative Types: 1: NONE 2. HNO3 3. HCL 4. H2SO4

	Date	Time	
Relinquished by Sampler:	10/22/08	1430	Received by:
Relinquished by:	Date	Time	Received by:
Relinquished by:	Date 10/23/08	Time 10:00	Received by SPL, Inc.

Chain of Custody Record

Client: Tetra Tech/ Conoco Phillips
SPL Workorder Number: 08101356

Attention: Kelly Blanchard/Tetra Tech

Phone: 505-237-8440 | email: kelly.blanchard@tetratech.c

Address: 6121 Indian School Road, NE Ste. 200

City: Albuquerque | State: NM | Zip Code: 87110

Project Name: Nell Hall #1

P.O. Number:

Sampled By:
signature: Christine Matthews
print: Christine Matthews

Sample ID	Collected Date	Collected Time	Sample Type Comp	Sample Type Grab	Matrix Water	Matrix Soil	Bottle Type	Preservative Type	# of Containers	Requested Analysis: 8260-BTEX	300-NO2,SO4	365.1-PO4	Fe2+
~~Duplicate~~ Trip Blank	10/22	1400			X		1	3	2	X			

Turnaround Time Requirements
24 hr( ) 48 hr( )
72 hr( ) 5 wday( )
10 wday - Standard( )

Remarks:

Intact? Y or N
Temperature: 3.5 c

Bottle Types: 1: 3/40ml Vials 2. 1L Glass 3. 1L Plastic 4. 1L Amber Glass 5. 8oz Plastic
Preservative Types: 1: NONE 2. HNO3 3. HCL 4. H2SO4

	Date	Time	
Relinquished by Sampler:	10/22/08	1430	Received by:
Relinquished by:	Date	Time	Received by:
Relinquished by:	Date 10/23/08	Time 10:00	Received by SPL, Inc.