

**3R - 110**

**2011 AGWMR**

**JAN 2012**



***2011 ANNUAL GROUNDWATER REPORT***

***FEDERAL GAS COM H #1***

***3RP-110***

***Unit C, Section 31, Township 30N, Range 12W  
San Juan County, New Mexico***

***PREPARED FOR:***

***MR. GLENN VON GONTEN  
NEW MEXICO OIL CONSERVATION DIVISION  
1220 SOUTH ST FRANCIS DRIVE  
SANTA FE, NEW MEXICO 87505  
(505) 476-3488***

***January 2012***

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# 2011 XTO GROUNDWATER REPORT

## FEDERAL GAS COM H #1 3RP-110

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### SITE DETAILS

LEGALS - TWN: 30N  
OCD HAZARD RANKING: 30  
LATITUDE: 36.77306

RNG: 12W

SEC: 31  
LAND TYPE: FEE  
LONGITUDE: 108.14085

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### INTRODUCTION

XTO Energy Inc. (XTO) acquired the Federal Gas Com H #1 well site from Amoco Production Company (Amoco) in January 1998. This is a gas producing well in the Dakota Sandstone and is currently active. A topographic map detailing the well site location is attached as **Figure 1**.

### HISTORY

In November 1999 XTO responded to a release of a produced water/condensate mixture of approximately 69 barrels. The clean up involved excavating and disposing of 304 cubic yards of impacted soil and sampling the perimeter of the excavation. A copy of the spill cleanup report, completed by Blagg Engineering, Inc in 2000, detailing cleanup activities is attached to this report as **Attachment 1**. In reviewing the field and analytical data at the time it appeared that vertical extent had been established and lateral extent of the impact met closure standards with the exception of the source area. Vertical vent piping was installed in January 2000 in an effort to passively remediate the remaining impacted soil.

In March 2005, while upgrading equipment on location, XTO discovered what was believed to be a historical earthen blow pit. Approximately 300 cubic yards of impacted soil was excavated and disposed of off site. This excavation overlapped part of the previous excavation from 1999. Groundwater was encountered during the second excavation and monitoring wells were installed in each of the source areas, but were not sampled at the time of installation. Completion Diagram and Borehole Logs documenting drilling that occurred in 2005 are presented in **Figure 3-4**.

In April 2006 a third monitoring well (MW-3) was installed cross gradient of the source area. Completion Diagram and Borehole Log for monitoring well MW-3 is presented in **Figure 5**. In June 2010, MW-3 was plugged and abandoned. In January 2011, MW-3R was installed near the location of MW-3. A Completion Diagram and Borehole Log was not completed for MW-3R since it's completion was the same as MW-3.

The 2006 annual groundwater report was submitted to the New Mexico Oil Conservation Division (OCD) in February 2007 proposing removal of passive remediation system (wind turbines) and quarterly sampling of monitoring wells in accordance with the OCD approved Groundwater Management Plan.

The 2007 annual groundwater report was submitted to the OCD in February 2008 proposing semi-annual sampling of monitoring wells MW-1 and MW-2 until analytical results show hydrocarbon constituents below New Mexico Water Quality Control Commission (WQCC) groundwater standards.

## 2011 XTO GROUNDWATER REPORT

The 2008 annual groundwater report was submitted to the OCD in April 2009 proposing installation of an additional monitoring well, quarterly sampling of monitoring wells MW-1 and MW-2, annual sampling of monitoring well MW-3 and possible addition of an oxygenate in monitoring wells MW-1 and MW-2.

The 2009 Annual Groundwater Report was submitted to Mr. Glenn Von Gonten in March of 2010, recommending quarterly groundwater sampling of monitoring wells MW-1 and MW-2 until four (4) consecutive quarters of analytical results show BTEX to be below the WQCC standards.

The 2010 annual groundwater report, submitted to Mr. Glenn Von Gonten in March of 2011, recommended XTO continue quarterly sampling at monitoring wells MW-1 and MW-2 until analytical results show hydrocarbon constituents are below New Mexico groundwater standards along with annual sampling of MW-3R to confirm migration has not occurred.

XTO also proposed the addition of a hydrogen peroxide slug into the aquifer using monitoring wells MW-1 and MW-2 as a conduit, indicating the hydrogen peroxide will enhance the bioremediation already naturally occurring in this groundwater aquifer. In June 2010, the Vertical vent piping installed in January 2000 was removed.

A summary of water levels and laboratory results from historical and current groundwater monitoring is presented as **Table 1** and **Table 2**. Laboratory reports for quarterly groundwater monitoring are attached to this report in **Attachment 2**.

### **METHODOLOGY**

In 2011, quarterly groundwater sampling was conducted at MW-1 and MW-2 and MW-3R was installed to replace MW-3. Quarterly groundwater samples were collected from monitoring wells MW-1 and MW-2 and submitted for laboratory analysis of benzene, toluene, ethyl benzene and total xylene (BTEX) in 2011.

#### *Water Level Measurements*

Static groundwater level monitoring includes recording depth to groundwater measurements with a Keck oil/water interface probe. The interface probe is decontaminated with Alconox™ soap and rinsed with de-ionized water prior to each measurement. This data are recorded in **Table 1**.

#### *Groundwater Sampling*

Prior to sampling groundwater, depth to groundwater and total depth of wells is measured with a Keck oil/water interface probe. Presence of any free-phase crude oil is also investigated using the interface probe. The interface probe is decontaminated with Alconox™ soap and rinsed with de-ionized water prior to each measurement. The volume of water in the wells is calculated, and a minimum of three casing volumes of water is purged from each well using a disposable bailer or a permanent decontaminated PVC bailer. As water is extracted, pH, electric conductivity and temperature are monitored. Wells are purged until these properties stabilize, indicating that the purge water is representative of aquifer conditions. Stabilization is defined as three consecutive stable readings for each water property ( $\pm 0.4$  units for pH,  $\pm 10$  percent for electric conductivity and  $\pm 2^\circ$  C for temperature). All purge water is disposed of into tanks on site. A copy of

## 2011 XTO GROUNDWATER REPORT

field sheets submitted to XTO Energy, Inc. during the 2011 monitoring are submitted in **Attachment 3**.

Once each monitoring well is properly purged, groundwater samples are collected by filling at least two 40-milliliter (ml) glass vials. The pre-cleaned non-preserved vials are filled and capped with no air inside to prevent degradation of the sample. Samples are labeled with the date and time of collection, well designation, project name, collector's name and parameters to be analyzed. They are immediately sealed and packed on ice. The samples are shipped to Environmental Science Corporation (ESC) based out of Mt. Juliet, Tennessee for analysis. Samples are shipped in a sealed cooler via Fed Ex overnight. Proper chain-of-custody (COC) procedures are followed with logs documenting the date and time sampled, sample number, type of sample, sampler's name, preservative used, analyses required and sampler's signature.

### *Groundwater Contour Maps*

Top of casing well elevations were surveyed using a surveyor's level; and groundwater elevations obtained from monitoring wells during site visits were used to draft groundwater contour maps. Contours were inferred based on groundwater elevations obtained and observation of physical characteristics at the site (topography, proximity to irrigation ditches, etc.).

## **RESULTS**

Benzene concentrations in MW-1 exceeded WQCC standards, but decreased during 2011 from a maximum of 33 parts per billion (ppb) in January to a minimum of 17 ppb during November. Total xylenes concentrations in MW-1 varied during the year, with a maximum concentration of 700 ppb during April to a minimum of 390 ppb during November. Toluene and ethylbenzene concentrations in MW-1 remain below the WQCC levels. Benzene concentrations in MW-2 varied from a maximum of 30 ppb during January to a low of 4 ppb during August. Toluene, ethylbenzene, and total xylenes concentrations in MW-2 remain below the WQCC levels. MW-3R was inadvertently left off of the sampling schedule in 2011; this well will be sampled annually in 2012 to confirm the plume has not migrated.

Field data collected during site monitoring activities in the first and second quarter indicate that the groundwater gradient trends toward the southeast. **Figure 2** contains the groundwater gradient maps for 2011.

## **CONCLUSIONS**

Laboratory analysis indicates a downward trend in the benzene and total xylenes concentrations in monitoring well MW-1. Benzene concentrations in MW-2 are stable. The data indicate that the hydrocarbons in the source areas are degrading, and installation of a downgradient monitoring well to the south/southwest of monitoring well MW-2 is not needed.

## **RECOMMENDATIONS**

XTO proposed continued quarterly sampling at monitoring wells MW-1 and MW-2 until analytical results show hydrocarbon constituents are below WQCC standards. XTO also proposes annual sampling of MW-3R to confirm the plume has not migrated.

Following OCD approval for closure, all monitoring well locations will be abandoned in accordance with the monitoring well abandonment plan.

## **Table 1**

# **Water Level Summary Table**

**TABLE 1**

**GROUNDWATER LEVEL SUMMARY**

**FEDERAL GAS COM H #1**

**XTO ENERGY, INC.**

<b>Well ID</b>	<b>Date</b>	<b>Depth to Groundwater (feet BTOC)</b>	<b>Groundwater Elevation (feet AMSL)</b>
MW-1	3/29/2007	31.34	5504.48
MW-1	7/23/2007	31.55	5504.27
MW-1	10/11/2007	31.09	5504.73
MW-1	1/8/2008	31.26	5504.56
MW-1	7/1/2008	31.40	5504.42
MW-1	1/20/2009	31.29	5504.53
MW-1	7/8/2009	31.58	5504.24
MW-1	10/20/2009	31.31	5504.51
MW-1	1/12/2010	31.29	5504.53
MW-1	4/7/2010	31.03	5504.79
MW-1	7/20/2010	31.11	5504.71
MW-1	10/7/2010	30.51	5505.31
MW-1	1/18/2011	30.56	5505.26
MW-1	4/12/2011	30.83	5504.99
MW-1	8/9/2011	30.92	5504.90
MW-1	11/9/2011	30.46	5505.36

MW-2	3/29/2007	33.05	5501.91
MW-2	7/23/2007	33.24	5501.72
MW-2	10/11/2007	32.87	5502.09
MW-2	1/8/2008	32.98	5501.98
MW-2	7/1/2008	33.08	5501.88
MW-2	1/20/2009	35.34	5499.62
MW-2	7/8/2009	33.23	5501.73
MW-2	10/20/2009	32.94	5502.02
MW-2	1/12/2010	32.94	5502.02
MW-2	4/7/2010	32.71	5502.25
MW-2	7/20/2010	32.80	5502.16
MW-2	10/7/2010	32.30	5502.66
MW-2	1/18/2011	32.33	5502.63
MW-2	4/12/2011	32.55	5502.41
MW-2	8/9/2011	32.70	5502.26





**TABLE 1**

**GROUNDWATER LEVEL SUMMARY**

**FEDERAL GAS COM H #1**

**XTO ENERGY, INC.**

<b>Well ID</b>	<b>Date</b>	<b>Depth to Groundwater (feet BTOC)</b>	<b>Groundwater Elevation (feet AMSL)</b>
MW-2	11/9/2011	32.28	5502.68

MW-3	12/6/2006	34.76	5504.79
MW-3	3/29/2007	34.85	5504.70
MW-3	7/23/2007	35.00	5504.55
MW-3	10/11/2007	34.55	5505.00
MW-3	1/8/2008	31.74	5507.81
MW-3	7/1/2008	34.86	5504.69
MW-3	1/20/2009	34.75	5504.80
MW-3	7/8/2009	35.01	5504.54
MW-3	10/20/2009	34.68	5504.87
MW-3	1/12/2010	34.71	5504.84
MW-3	4/7/2010	34.53	5505.02

MW-3R	1/18/2011	34.69	5501.91
MW-3R	4/12/2011	34.91	5501.69
MW-3R	8/9/2011	35.01	5501.59
MW-3R	11/9/2011	34.59	5502.01

**Notes:**

BTOC - below top of casing

AMSL - above mean sea level

## **Table 2**

# **Groundwater Results Summary Table**

**TABLE 2**  
**GROUNDWATER ANALYTICAL RESULTS**  
**FEDERAL GAS COM H #1 SITE**  
**XTO ENERGY, INC.**

Well ID	Date	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Total Xylenes (ug/L)
NMWQCC Groundwater Standard		10 ug/l	750 ug/l	750 ug/l	620 ug/l
MW-1	3/29/2007	39	ND	560	2,300
MW-1	7/23/2007	32	ND	610	2,300
MW-1	10/11/2007	50	18	440	1,500
MW-1	1/8/2008	47	7.1	730	3,000
MW-1	7/1/2008	18	9.6	350	980
MW-1	1/20/2009	30	22	370	910
MW-1	7/8/2009	16	ND	280	530
MW-1	10/20/2009	33	9.7	310	630
MW-1	1/12/2010	31	<1.0	270	500
MW-1	4/7/2010	33	16	290	630
MW-1	7/20/2010	27	10	360	710
MW-1	10/7/2010	26	<50	320	600
MW-1	1/18/2011	33	50	300	600
MW-1	4/12/2011	27	<100	320	700
MW-1	8/9/2011	20.8	21	257	444
MW-1	11/9/2011	17	<250	240	390

MW-2	3/29/2007	55	ND	39	60
MW-2	7/23/2007	39	ND	25	9.2
MW-2	10/11/2007	86	ND	97	140
MW-2	1/8/2008	65	ND	82	56
MW-2	7/1/2008	15	ND	22	7.3
MW-2	1/20/2009	38	ND	85	49
MW-2	7/8/2009	7.5	ND	13	3
MW-2	10/20/2009	20	<1.0	31	29
MW-2	1/12/2010	22	<1.0	54	41
MW-2	4/7/2010	37	1.3	110	130
MW-2	7/20/2010	17	<1.0	94	92
MW-2	10/7/2010	34	<5	120	140
MW-2	1/18/2011	30	<50	160	170
MW-2	4/12/2011	25	<25	62	100
MW-2	8/9/2011	4	<1	9.8	33.2
MW-2	11/9/2011	26	<5	160	160

**TABLE 2**  
**GROUNDWATER ANALYTICAL RESULTS**  
**FEDERAL GAS COM H #1 SITE**  
**XTO ENERGY, INC.**

Well ID	Date	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Total Xylenes (ug/L)
<b>NMWQCC Groundwater Standard</b>		<b>10 ug/l</b>	<b>750 ug/l</b>	<b>750 ug/l</b>	<b>620 ug/l</b>

MW-3	12/6/2006	ND	ND	ND	ND
MW-3	3/29/2007	ND	ND	ND	ND
MW-3	7/23/2007	ND	ND	ND	ND
MW-3	10/11/2007	ND	ND	ND	ND
MW-3*	1/8/2008	ND	ND	ND	ND

**Notes:**

ug/L - micrograms per liter

< - indicates result is less than the stated laboratory method detection limit

NMWQCC - New Mexico Water Quality Control Commission

ND - Not detected above the laboratory detection limit

**BOLD** values exceed the NMWQCC Standard

\* MW-3 was abandoned on May 10, 2010

# **Figure 1**

## **Topographic Map**



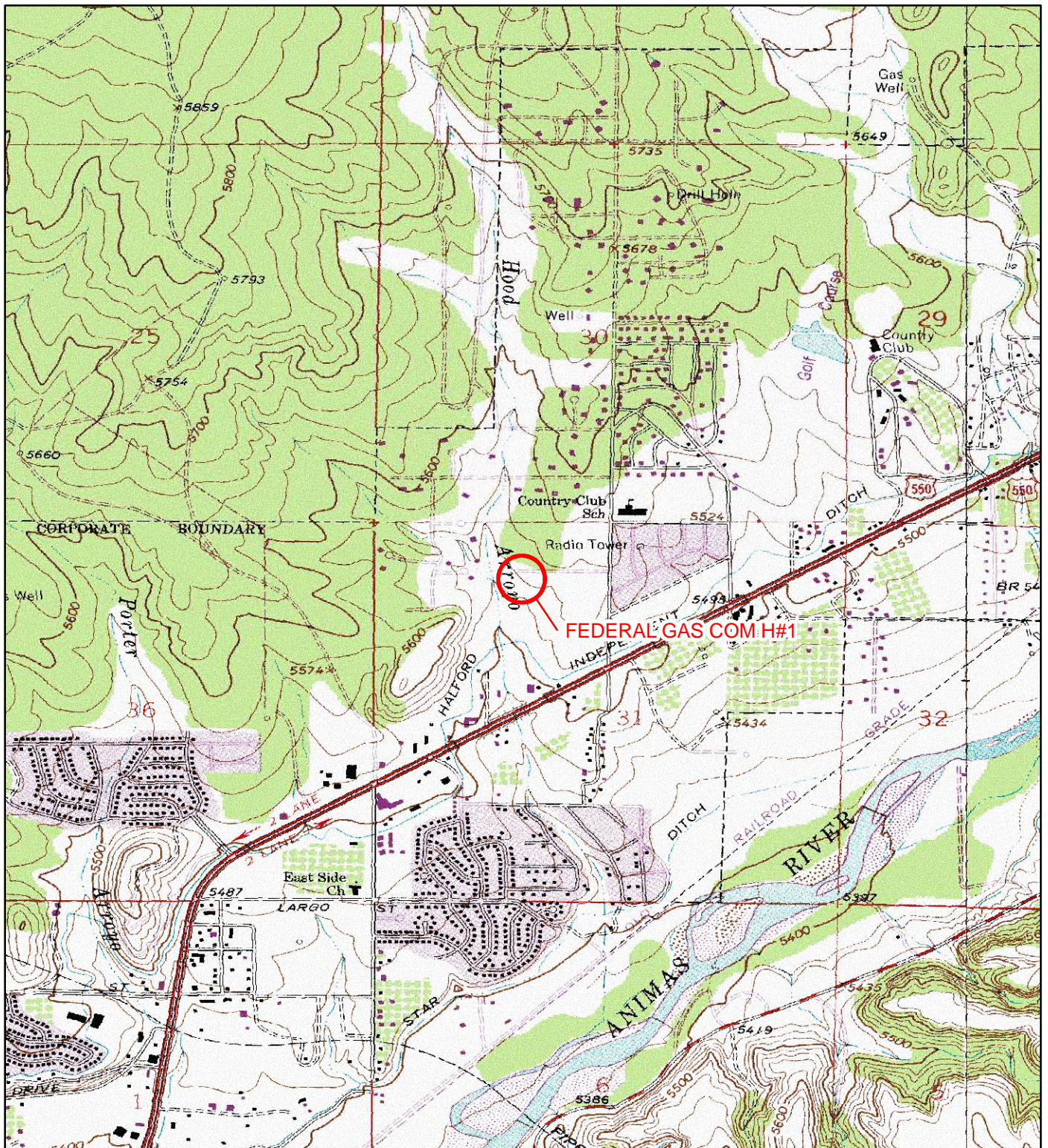


IMAGE COURTESY OF USDA/NRCS, VARIOUS DATES

# LEGEND

 SITE LOCATION

0 2,000 4,000  
Feet



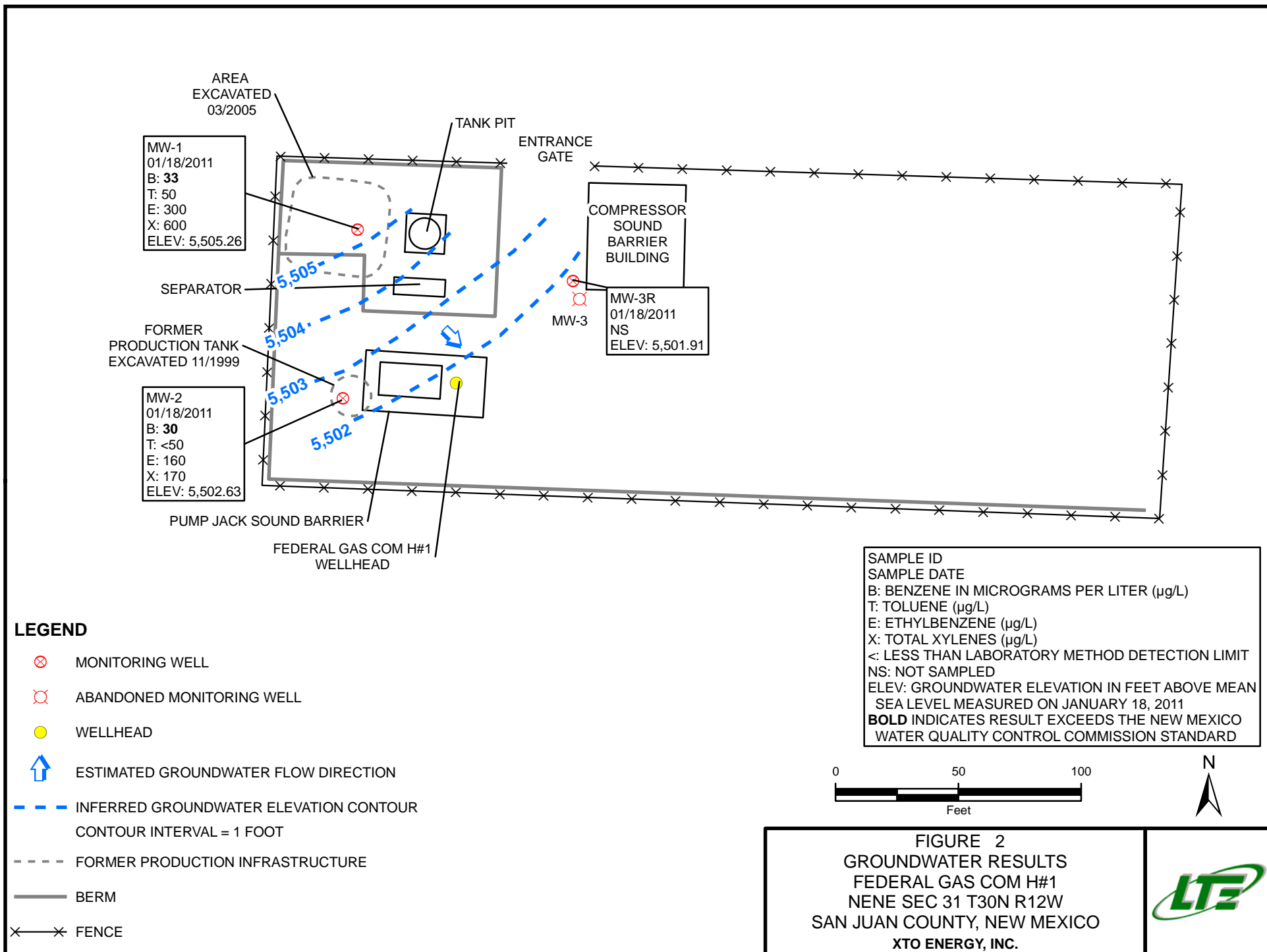
FIGURE 1  
SITE LOCATION MAP  
FEDERAL GAS COM H#1  
NENE SEC 31 T30N R12W  
SAN JUAN COUNTY, NEW MEXICO  
XTO ENERGY, INC.



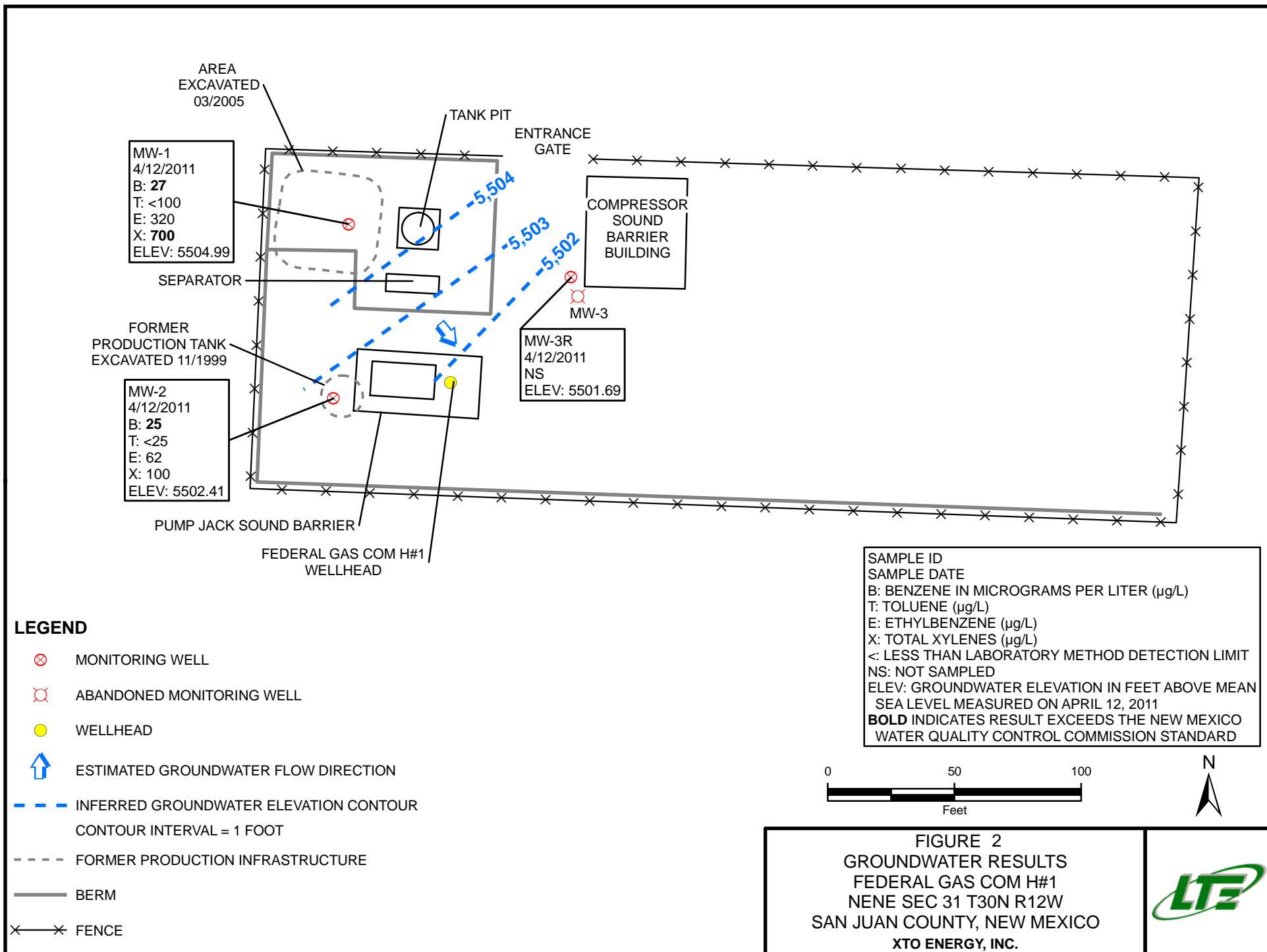


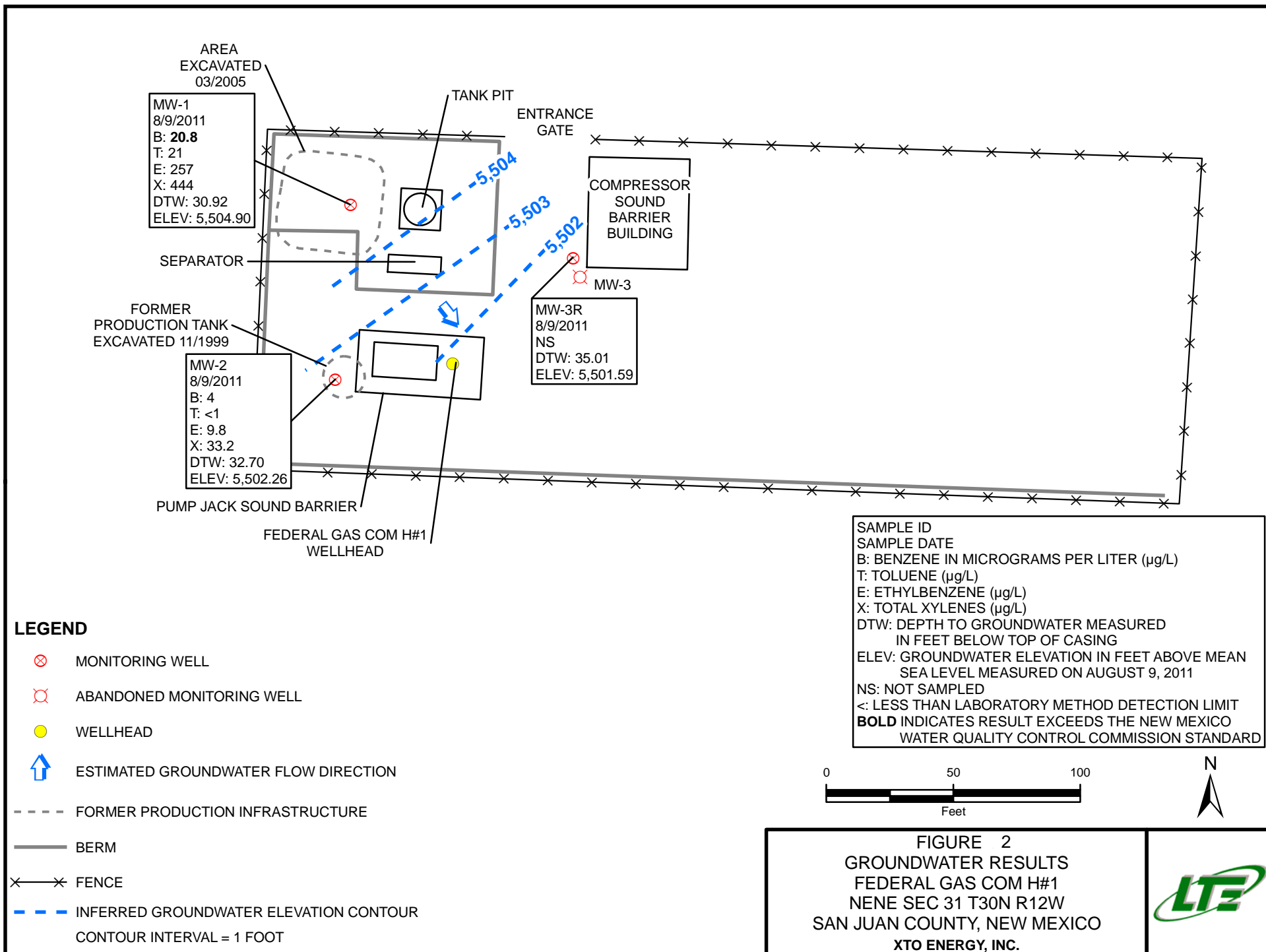
## **Figure 2**

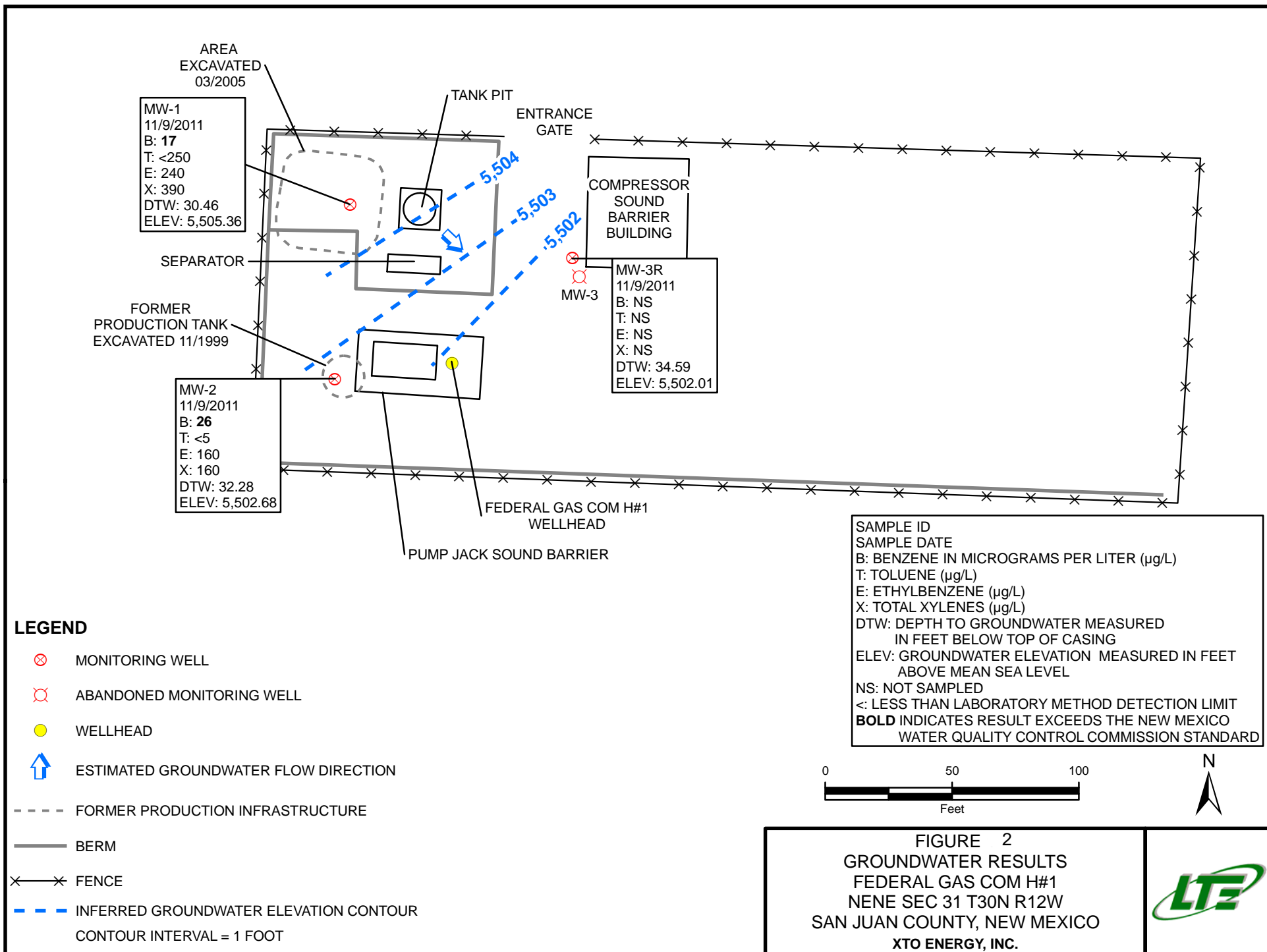
# **Potentiometric Surface Diagrams**











## **Figure 3-5**

# **Completion Diagrams And Borehole Logs**

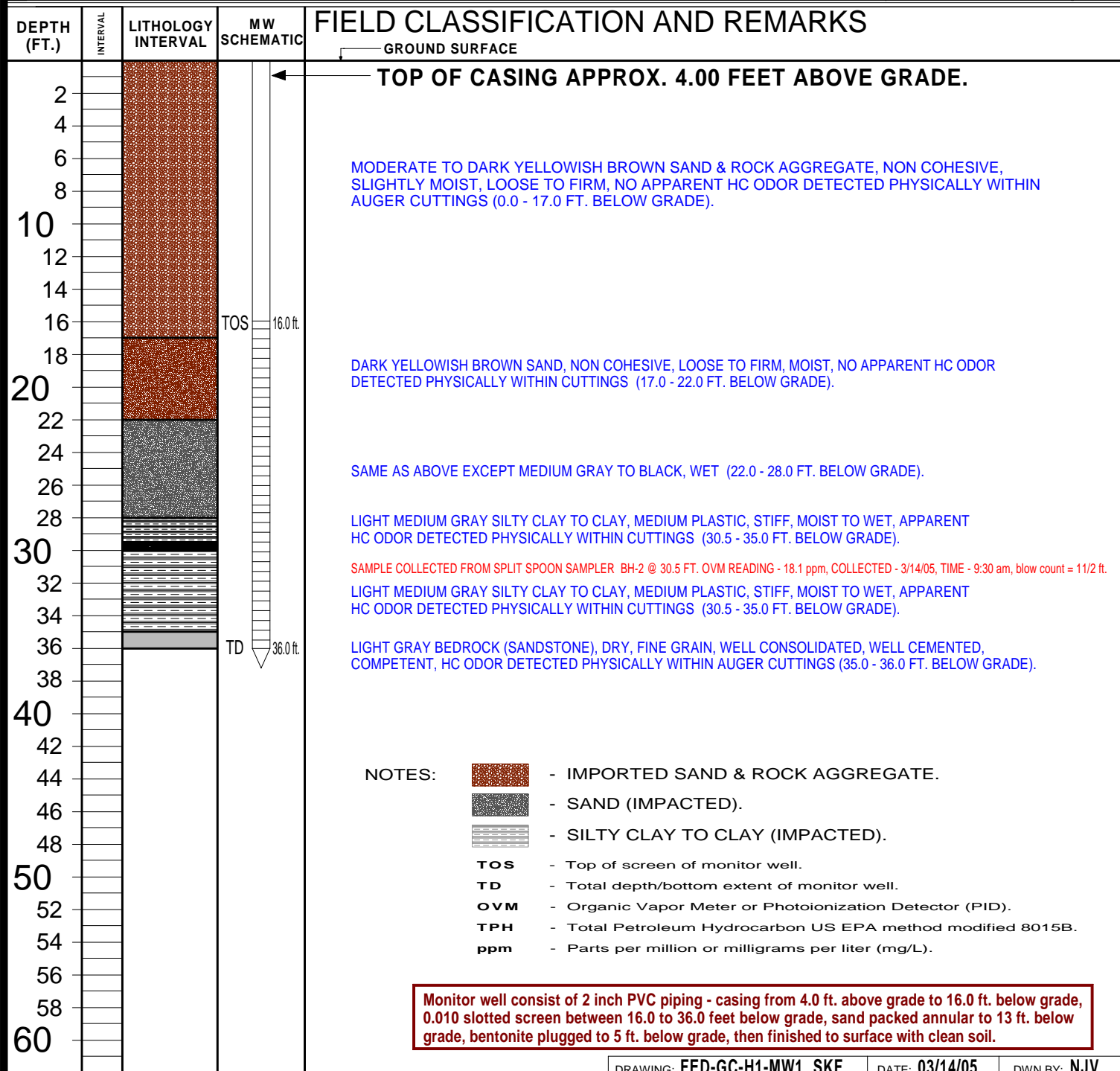
# BLAGG ENGINEERING, Inc.

P.O. BOX 87  
BLOOMFIELD, NM 87413  
(505) 632-1199

## BORE / TEST HOLE REPORT

CLIENT: **XTO ENERGY INC.**  
LOCATION NAME: **FEDERAL GC H # 1 UNIT C, SEC. 31, T30N, R12W**  
CONTRACTOR: **BLAGG ENGINEERING, INC./ENVIROTECH**  
EQUIPMENT USED: **MOBILE DRILL RIG SIMILAR TO CME 75**  
BORING LOCATION: **171 FEET, N61.5W FROM WELL HEAD.**

BORING #..... BH - 1  
MW #..... 1  
PAGE #..... 1  
DATE STARTED 03/14/05  
DATE FINISHED 03/14/05  
OPERATOR..... KP  
PREPARED BY NJV



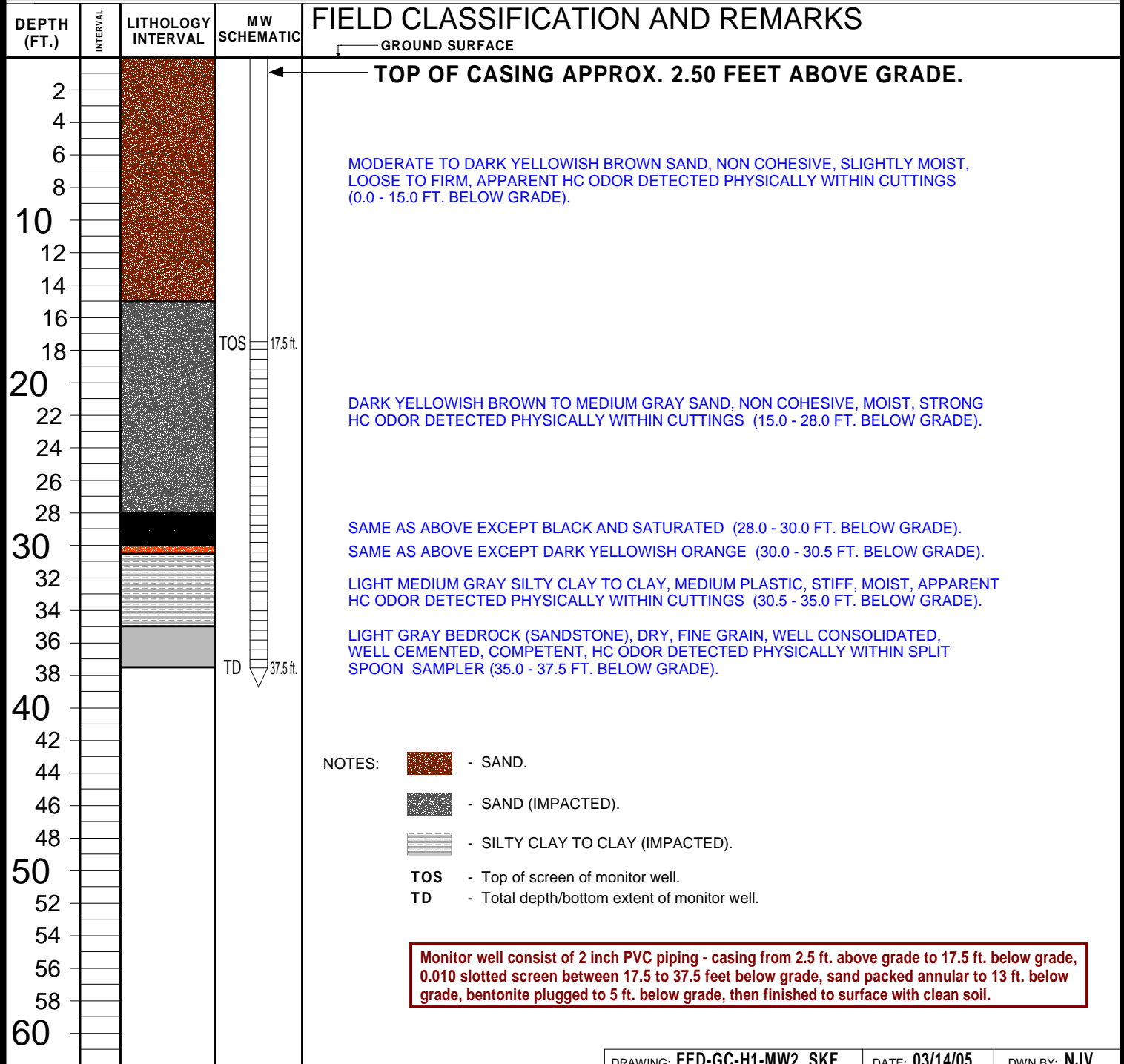
# BLAGG ENGINEERING, Inc.

P.O. BOX 87  
BLOOMFIELD, NM 87413  
(505) 632-1199

## BORE / TEST HOLE REPORT

CLIENT: **XTO ENERGY INC.**  
LOCATION NAME: **FEDERAL GC H # 1 UNIT C, SEC. 31, T30N, R12W**  
CONTRACTOR: **BLAGG ENGINEERING, INC./ENVIROTECH**  
EQUIPMENT USED: **MOBILE DRILL RIG SIMILAR TO CME 75**  
BORING LOCATION: **156 FEET, N82W FROM WELL HEAD.**

BORING #..... **BH - 2**  
MW #..... **2**  
PAGE #..... **2**  
DATE STARTED **03/14/05**  
DATE FINISHED **03/14/05**  
OPERATOR..... **KP**  
PREPARED BY **NJV**



Location Map:

MW-1 ●



MW-3R ●

Compressor

MW-2 ●

Pump Jack &  
Sound BarrierMW-3  
(Abandoned)

**Compliance • Engineering • Remediation**  
**LT Environmental, Inc.**  
 2243 Main Avenue, Suite 3  
 Durango, Colorado 81301

**BORING LOG/MONITORING WELL COMPLETION DIAGRAM**

Boring/Well Number:

MW-3R

Project:

XTO Groundwater Monitoring

Site Name:

Federal H#1

Date:

1/7/2011

Project Number:

XTO1002

Location:

36.774886; -108.142525

Logged By:

D. Hencmann

Drilled By:

EnviroDrill, Inc.

Elevation:

5536.6

Detector:

N/A

Drilling Method:

Hollow Stem Auger

Sampling Method:

N/A

Gravel Pack:

10/20 Colorado Silica Sand

Seal:

Bentonite Pellets

Grout:

Neat Cement

Casing Type:

Schedule 40 PVC

Diameter:

2 inch

Length:

28 feet

Hole Diameter:

Depth to Liquid:

None

Screen Type:

Schedule 40 PVC

Slot:

0.010 inch

Diameter:

2 inch

Length:

15 feet

Total Depth:

40 feet

Depth to Water:

34 feet

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Soil/Rock Type	Lithology/Remarks	Well Completion
					0			Not Logged (replacement well)	
					4				
					8				
					12				
					16				
					20				
					24				
					28				
					32				
					36				
					40				

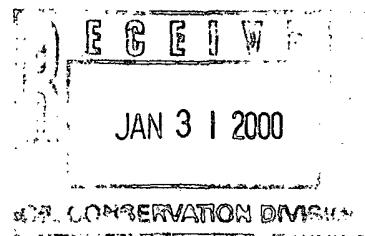
# **Attachment 1**

## **Blagg Engineering, Inc. Spill Cleanup Report (1999)**



## **BLAGG ENGINEERING, INC.**

P.O. Box 87, Bloomfield, New Mexico 87413  
Phone: (505) 632-1199 Fax: (505) 632-3903



January 28, 2000

Mr. Denny G. Foust -Environmental Geologist  
New Mexico Oil Conservation Division - (NMOCD)  
1000 Rio Brazos Road  
Aztec, New Mexico 87410

**RE: Cross Timbers Oil Co. Federal GC H # 1 Spill Cleanup Report  
Unit C, SEC. 31, T30N, R12W, San Juan County, New Mexico**

Dear Mr. Foust:

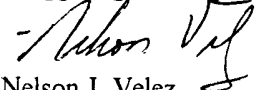
On behalf of Cross Timbers Oil Company, Blagg Engineering, Inc. (BEI) respectfully submits the attached report affiliated with the Federal GC H # 1 spill release (approximately 69 barrels) which occurred on approximately November 25, 1999.

In briefly summarizing the cleanup effort which took place between November 26<sup>th</sup> and 29<sup>th</sup>, 1999, approximately 304 cubic yards of impacted soil was removed (refer to Figure 1) and transported to Envirotech, Inc.'s Soil Remediation Facility (NMOCD rule 7/11 permit for commercial facility - Landfarm #2) located in NW/4, Sec. 6, T26N, R10W, NMPM, San Juan County, NM. The excavation perimeter was arbitrarily and judgmentally sampled during and upon completion of the excavation activity (refer to Figure 2 for sample locations and result summary). In reviewing the field and analytical results, it appears that vertical extent has been established utilizing the PB @ 12 ft. and PB5 @ 14 ft. data and that lateral extent of contamination appears to have met state closure standards with the exception of the 2A sample point area (point of release). It was then suggested and agreed upon between BEI and NMOCD to remediate the remaining contamination passively (estimated to be 20-30 cubic yards) utilizing vertical vent piping (refer to Figure 3) and a 50% Nitrogen, 0% Phosphorus, 0% Potassium fertilizer application (installed and introduced on January 25, 2000 by BEI).

Based upon the attached information given, Cross Timbers Oil Company is requesting closure based on risk that the remaining soil contamination does not appear to pose a present or future threat to groundwater (estimated at a depth greater than 30 feet), health, or the environment.

If you have any questions or comments concerning this report, please contact myself or Jeff Blagg at the address or phone number listed above. Thank you for your cooperation.

Respectfully submitted,  
**Blagg Engineering, Inc.**

  
Nelson J. Velez  
Staff Geologist

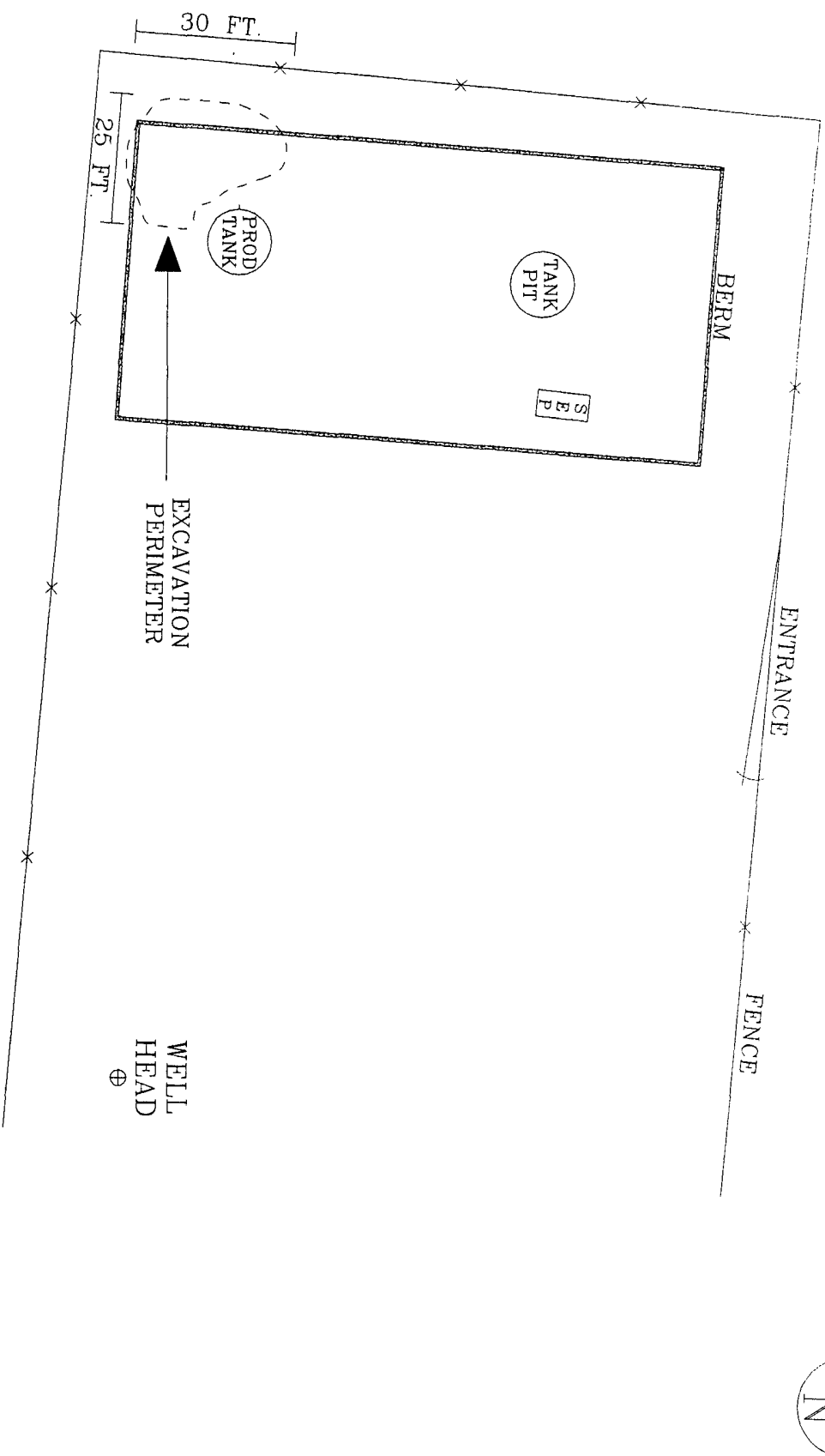
Attachments: Spill Cleanup Report

xc: Bill Olson, Hydrologist, NMOCD, Santa Fe Office, NM  
Rueben Sanchez, Environmental Team Lead, BLM, Farmington, NM (2 copies)  
Terry Matthews, Regional Supervisor, Cross Timbers Oil Co., Farmington, NM

NJV/njv

FED-H1.CVL

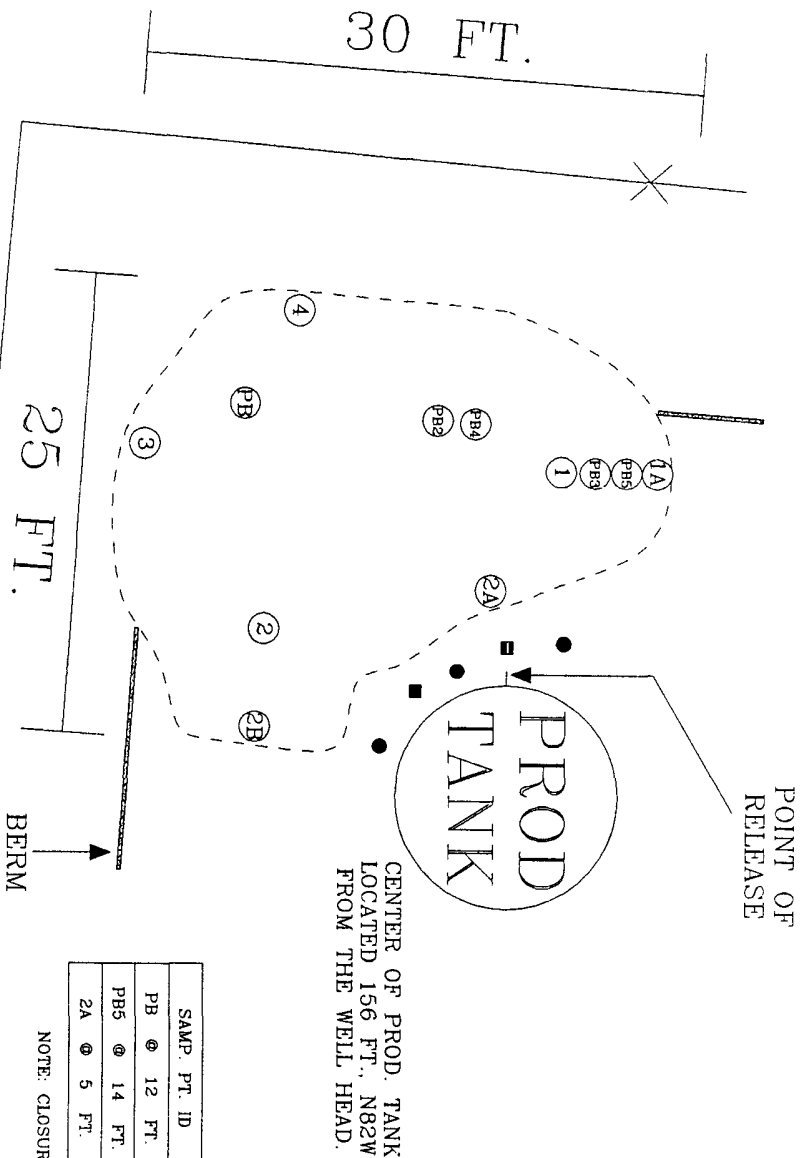
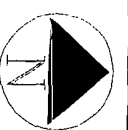
# FIGURE 1



PRODUCTION TANK & SEPARATOR LOCATIONS ARE ONLY AS ACCURATE AS THE INSTRUMENTS USED IN OBTAINING THE FOOTAGE AND BEARING FROM THE WELL HEAD (BRUNTON COMPASS AND LASER RANGE FINDER). ALL OTHER STRUCTURES DISPLAYED ON THE SITE MAP ARE SOLELY FOR REFERENCE AND ARE NOT TO SCALE.

<p>CROSS TIMBERS OIL COMPANY</p> <p>FEDERAL GC H #1</p> <p>NE/4 NW/4 SEC. 31, T30N, R12W</p> <p>SAN JUAN COUNTY, NEW MEXICO</p>	<p>BLAGG ENGINEERING, INC.</p> <p>CONSULTING PETROLEUM / RECLAMATION SERVICES</p> <p>P.O. BOX 87</p> <p>BLOOMFIELD, NEW MEXICO 87413</p> <p>PHONE: (505) 632-1199</p>	<p>PROJECT: SPILL CLEAN UP</p> <p>DRAWN BY: NJV</p> <p>FILENAME: FED-MAP.SKD</p>	<p>SITE MAP</p> <p>11/99</p>
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# FIGURE 2



NOV 29, 1999

SAMP. PT. ID	OVW READING (ppm)
1 @ 6 FT.	219
1A @ 6 FT.	131.6
2 @ 5 FT.	242
2A @ 5 FT.	248
2B @ 5 FT.	126.7
3 @ 6 FT.	115.2
4 @ 6 FT.	97.1
PB @ 12 FT.	78.3
PB2 @ 11 FT.	275
PB3 @ 11 FT.	510
PB4 @ 12 FT.	121.9
PB5 @ 14 FT.	142.1

NOTE: CLOSURE STANDARD - OVW < 100 ppm.

SAMP. PT. ID	TPH (ppm)	BENZENE (ppb)	TOTAL BTEX (ppb)
PB @ 12 FT.	19.7	-	-
PB5 @ 14 FT.	12.0	620	5,240
2A @ 5 FT.	3,540	12,130	41,460

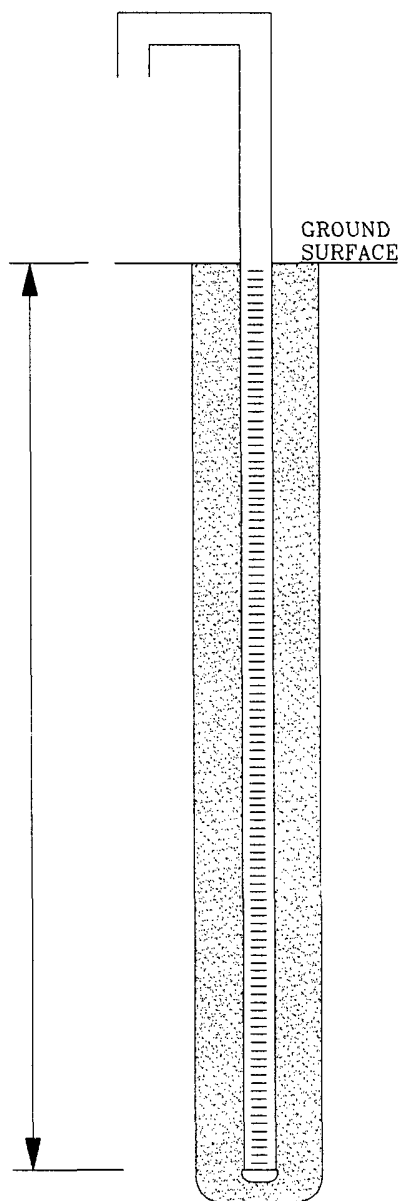
NOTE: CLOSURE STANDARDS - TPH < 100 ppm, benzene < 10,000 ppb, & total BTEX < 50,000 ppb.

LEGEND:

- DENOTES BORING LOCATION OF FERTILIZER APPLICATION.
- DENOTES BORING LOCATION OF VERTICAL PASSIVE VENT PIPING.

<p>CROSS TIMBERS OIL COMPANY</p> <p>FEDERAL GC H #1</p> <p>NE/4 NW/4 SEC. 31, T30N, R12W</p> <p>SAN JUAN COUNTY, NEW MEXICO</p>	<p>BLAGG ENGINEERING, INC.</p> <p>CONSULTING PETROLEUM / RECLAMATION SERVICES</p> <p>P.O. BOX 87</p> <p>BLOOMFIELD, NEW MEXICO 87413</p> <p>PHONE: (505) 632-1199</p>	<p>PROJECT: SPILL CLEAN UP</p> <p>DRAWN BY: NJV</p> <p>FILENAME: FED-MAP2.SKD</p>	<p>SITE MAP</p> <p>11/99</p>
---	---	---	------------------------------

# FIGURE 3



2" DIA. SCH. 40  
PVC WELL CASING

GROUND  
SURFACE

ENTIRE LENGTH  
CONSIST OF 0.01  
INCH SLOTTED  
SCREEN SCH 40  
WITH SLIP CAP

ANNULAR COMPLETED  
WITH SOIL REMOVED  
WITH HAND AUGER

TOTAL DEPTH = 15.00 ft.  
FROM GROUND SURFACE

CROSS TIMBERS OIL COMPANY

FEDERAL GC H # 1

MONITOR WELL CONSTRUCTION & COMPLETION

INSTALLED WITH HAND AUGER

BLAGG ENGINEERING, INC.

CONSULTING PETROLEUM / RECLAMATION SERVICES

P.O. BOX 87

BLOOMFIELD, NEW MEXICO 87413

PHONE: (505) 632-1199

VENT PIPING SCHEMATIC

DRAFTED BY: NJV

DATE: JAN. '00

FILENAME: FED--PVP.SKD

# ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

## EPA METHOD 8015 Modified Nonhalogenated Volatile Organics Total Petroleum Hydrocarbons

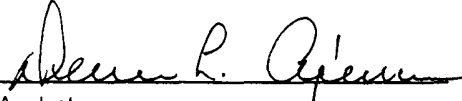
Client:	Blagg / Cross Timbers	Project #:	403410
Sample ID:	PB @ 12'	Date Reported:	11-30-99
Laboratory Number:	G509	Date Sampled:	11-29-99
Chain of Custody No:	7443	Date Received:	11-30-99
Sample Matrix:	Soil	Date Extracted:	11-30-99
Preservative:	Cool	Date Analyzed:	11-30-99
Condition:	Cool and Intact	Analysis Requested:	8015 TPH

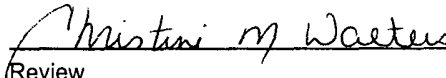
Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	0.6	0.2
Diesel Range (C10 - C28)	19.1	0.1
Total Petroleum Hydrocarbons	19.7	0.2

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Federal GC H #1 Tank Spill.**

  
Analyst

  
Review

# ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

## EPA METHOD 8015 Modified Nonhalogenated Volatile Organics Total Petroleum Hydrocarbons

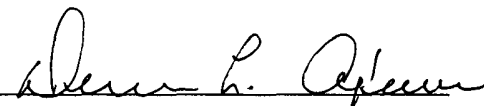
Client:	Blagg / Cross Timbers	Project #:	403410
Sample ID:	PB5 @ 14'	Date Reported:	11-30-99
Laboratory Number:	G510	Date Sampled:	11-29-99
Chain of Custody No:	7443	Date Received:	11-30-99
Sample Matrix:	Soil	Date Extracted:	11-30-99
Preservative:	Cool	Date Analyzed:	11-30-99
Condition:	Cool and Intact	Analysis Requested:	8015 TPH

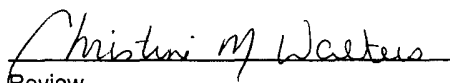
Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	8.2	0.2
Diesel Range (C10 - C28)	3.8	0.1
Total Petroleum Hydrocarbons	12.0	0.2

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Federal GC H #1 Tank Spill.**

  
Analyst

  
Review

# ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

## EPA METHOD 8015 Modified Nonhalogenated Volatile Organics Total Petroleum Hydrocarbons

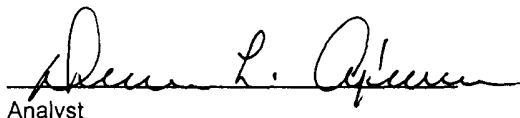
Client:	Blagg / Cross Timbers	Project #:	403410
Sample ID:	2A @ 5'	Date Reported:	11-30-99
Laboratory Number:	G511	Date Sampled:	11-29-99
Chain of Custody No:	7443	Date Received:	11-30-99
Sample Matrix:	Soil	Date Extracted:	11-30-99
Preservative:	Cool	Date Analyzed:	11-30-99
Condition:	Cool and Intact	Analysis Requested:	8015 TPH

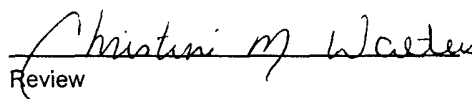
Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	3,170	0.2
Diesel Range (C10 - C28)	372	0.1
Total Petroleum Hydrocarbons	3,540	0.2

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: Federal GC H #1 Tank Spill.

  
Analyst

  
Review

# ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

## EPA METHOD 8021 AROMATIC VOLATILE ORGANICS

Client:	Blagg / Cross Timbers	Project #:	403410
Sample ID:	PB5 @ 14'	Date Reported:	11-30-99
Laboratory Number:	G510	Date Sampled:	11-29-99
Chain of Custody:	7443	Date Received:	11-30-99
Sample Matrix:	Soil	Date Analyzed:	11-30-99
Preservative:	Cool	Date Extracted:	11-30-99
Condition:	Cool & Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	820	10.4
Toluene	506	10.4
Ethylbenzene	159	10.4
p,m-Xylene	3,280	10.4
o-Xylene	475	5.2
Total BTEX	5,240	


ND - Parameter not detected at the stated detection limit.

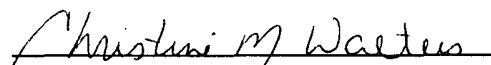
Surrogate Recoveries:	Parameter	Percent Recovery
	Trifluorotoluene	100 %
	Bromofluorobenzene	100 %

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: Federal GC H #1 Tank Spill.

  
Analyst

  
Review



# ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

## EPA METHOD 8021 AROMATIC VOLATILE ORGANICS

Client:	Blagg / Cross Timbers	Project #:	403410
Sample ID:	2A @ 5'	Date Reported:	11-30-99
Laboratory Number:	G511	Date Sampled:	11-29-99
Chain of Custody:	7443	Date Received:	11-30-99
Sample Matrix:	Soil	Date Analyzed:	11-30-99
Preservative:	Cool	Date Extracted:	11-30-99
Condition:	Cool & Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	12,130	10.4
Toluene	4,690	10.4
Ethylbenzene	15,590	10.4
p,m-Xylene	5,860	10.4
o-Xylene	3,190	5.2
Total BTEX	41,460	

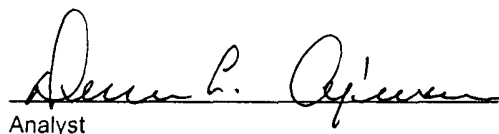
ND - Parameter not detected at the stated detection limit.

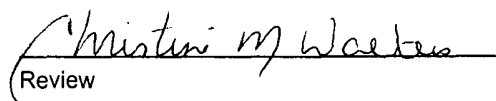
Surrogate Recoveries:	Parameter	Percent Recovery
	Trifluorotoluene	100 %
	Bromofluorobenzene	100 %

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: Federal GC H #1 Tank Spill.

  
Analyst

  
Review

# CHAIN OF CUSTODY RECORD

7443

Client / Project Name			Project Location			ANALYSIS / PARAMETERS											
BLAGG / CROSS TUNERS			TANK SPILL FEDERAL GC H #1														
Sampler: NTV			Client No. 403410			No. of Containers		Remarks									
Sample No./ Identification	Sample Date	Sample Time	Lab Number	Sample Matrix		for (8015)	for (8021)										
PB @ 12'	11/29/99	1205	6509	SOIL	1	✓				PRESERV - COOL							
PB @ 14'	11/29/99	1540	6510	SOIL	1	✓	✓			PRESERV - COOL							
2A @ 5'	11/29/99	1520	6511	SOIL	1	✓	✓			PRESERV - COOL							
Relinquished by: (Signature)			Date	Time	Received by: (Signature)			Date	Time								
Michael VLF			11/30/99	0722	Debra R. Ojennus			11/30/99	0722								
Relinquished by: (Signature)					Received by: (Signature)												
Relinquished by: (Signature)					Received by: (Signature)												
<div style="display: flex; justify-content: space-between;"> <div> <b>ENVIROTECH INC.</b>                      5796 U.S. Highway 64                      Farmington, New Mexico 87401                      (505) 632-0615                 </div> <div> <b>Sample Receipt</b>  <table border="1"> <tr> <td>Received Intact</td> <td>Y</td> <td>N</td> <td>N/A</td> </tr> <tr> <td>Cool - Ice/Blue Ice</td> <td>✓</td> <td></td> <td></td> </tr> </table> </div> </div>										Received Intact	Y	N	N/A	Cool - Ice/Blue Ice	✓		
Received Intact	Y	N	N/A														
Cool - Ice/Blue Ice	✓																

# ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA Method 8015 Modified  
Nonhalogenated Volatile Organics  
Total Petroleum Hydrocarbons

Quality Assurance Report

Client:	QA/QC	Project #:	N/A
Sample ID:	11-30-TPH QA/QC	Date Reported:	11-30-99
Laboratory Number:	G509	Date Sampled:	N/A
Sample Matrix:	Methylene Chloride	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	11-30-99
Condition:	N/A	Analysis Requested:	TPH

	I-Cal Date	I-Cal RF	C-Cal RF	% Difference	Accept. Range
Gasoline Range C5 - C10	06-17-99	2.6810E-002	2.6783E-002	0.10%	0 - 15%
Diesel Range C10 - C28	06-17-99	2.6962E-002	2.6908E-002	0.20%	0 - 15%

Blank Conc. (mg/L - mg/Kg)	Concentration	Detection Limit
Gasoline Range C5 - C10	ND	0.2
Diesel Range C10 - C28	ND	0.1
Total Petroleum Hydrocarbons	ND	0.2

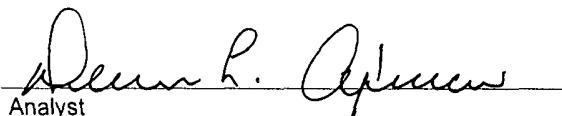
Duplicate Conc. (mg/Kg)	Sample	Duplicate	% Difference	Accept. Range
Gasoline Range C5 - C10	0.6	0.6	0.0%	0 - 30%
Diesel Range C10 - C28	19.1	19.1	0.0%	0 - 30%

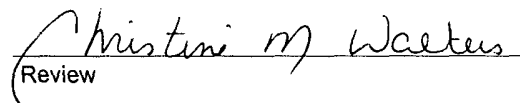
Spike Conc. (mg/Kg)	Sample	Spike Added	Spike Result	% Recovery	Accept. Range
Gasoline Range C5 - C10	0.6	250	250	100%	75 - 125%
Diesel Range C10 - C28	19.1	250	269	100%	75 - 125%

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: QA/QC for samples G509 - G511.

  
Analyst

  
Review

# ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

## EPA METHOD 8021 AROMATIC VOLATILE ORGANICS QUALITY ASSURANCE REPORT

Client:	N/A	Project #:	N/A
Sample ID:	11-30-BTEX QA/QC	Date Reported:	11-30-99
Laboratory Number:	G503	Date Sampled:	N/A
Sample Matrix:	Water	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	11-30-99
Condition:	N/A	Analysis:	BTEX

Calibration and Detection Limits (ug/L)	I-Cal RF:	C-Cal RF:	%Diff.	Blank Conc	Detect Limit
		Accept. Range 0 - 15%			
Benzene	7.0291E-002	7.0516E-002	0.32%	ND	0.2
Toluene	6.3951E-002	6.3963E-002	0.02%	ND	0.2
Ethylbenzene	5.2614E-002	5.2677E-002	0.12%	ND	0.2
p,m-Xylene	3.9700E-002	3.9708E-002	0.02%	ND	0.2
o-Xylene	6.5791E-003	6.5989E-003	0.30%	ND	0.1

Duplicate Conc. (ug/L)	Sample	Duplicate	%Diff.	Accept Limit
Benzene	ND	ND	0.0%	0 - 30%
Toluene	ND	ND	0.0%	0 - 30%
Ethylbenzene	ND	ND	0.0%	0 - 30%
p,m-Xylene	ND	ND	0.0%	0 - 30%
o-Xylene	ND	ND	0.0%	0 - 30%

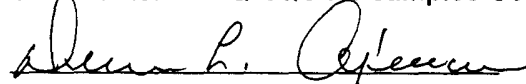
Spike Conc. (ug/L)	Sample	Amount Spiked	Spiked Sample	% Recovery	Accept Limits
Benzene	ND	50.0	50.1	100%	39 - 150
Toluene	ND	50.0	50.0	100%	46 - 148
Ethylbenzene	ND	50.0	50.0	100%	32 - 160
p,m-Xylene	ND	100.0	100	100%	46 - 148
o-Xylene	ND	50.0	50.0	100%	46 - 148

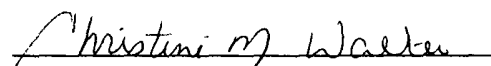
ND - Parameter not detected at the stated detection limit.

\* - Administrative level set at 80 - 120.

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.  
Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: QA/QC for samples G503 - G508 and G510 - G511.

  
Analyst

  
Review

## **Attachment 2**

# **2011 Laboratory Reports**



12065 Lebanon Rd.  
Mt. Juliet, TN 37122  
(615) 758-5858  
1-800-767-5859  
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

James McDaniel  
XTO Energy - San Juan Division  
382 Road 3100  
Aztec, NM 87410

## Report Summary

Friday January 21, 2011

Report Number: L497900

Samples Received: 01/19/11

Client Project: XTO1002

Description: Federal H 1

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By:

Daphne Richards , ESC Representative

### Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - I-2327, CT - PH-0197, FL - E87487  
GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375/DW21704, ND - R-140  
NJ - TN002, NJ NELAP - TN002, SC - 84004, TN - 2006, VA - 00109, WV - 233  
AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032008A,  
TX - T104704245, OK-9915

Accreditation is only applicable to the test methods specified on each scope of accreditation held by ESC Lab Sciences.

Note: The use of the preparatory EPA Method 3511 is not approved or endorsed by the CA ELAP.

This report may not be reproduced, except in full, without written approval from ESC Lab Sciences. Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.



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Mt. Juliet, TN 37122  
(615) 758-5858  
1-800-767-5859  
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

# REPORT OF ANALYSIS

James McDaniel  
XTO Energy - San Juan Division  
382 Road 3100  
Aztec, NM 87410

January 21, 2011

Date Received : January 19, 2011  
Description : Federal H 1

Sample ID : FEDERAL MW-1

Collected By : Brooke Herb  
Collection Date : 01/18/11 12:28

ESC Sample # : L497900-01

Site ID : FEDERAL H 1

Project # : XTO1002

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzene	0.033	0.0025	mg/l	8021B	01/20/11	5
Toluene	0.050	0.025	mg/l	8021B	01/20/11	5
Ethylbenzene	0.30	0.0025	mg/l	8021B	01/20/11	5
Total Xylene	0.60	0.0075	mg/l	8021B	01/20/11	5
Surrogate Recovery(%)						
a,a,a-Trifluorotoluene(PID)	106.		% Rec.	8021B	01/20/11	5

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

The reported analytical results relate only to the sample submitted.

This report shall not be reproduced, except in full, without the written approval from ESC.

Reported: 01/21/11 14:54 Printed: 01/21/11 14:54



12065 Lebanon Rd.  
Mt. Juliet, TN 37122  
(615) 758-5858  
1-800-767-5859  
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

James McDaniel  
XTO Energy - San Juan Division  
382 Road 3100  
Aztec, NM 87410

January 21, 2011

Date Received : January 19, 2011  
Description : Federal H 1

Sample ID : FEDERAL MW-2

Collected By : Brooke Herb  
Collection Date : 01/18/11 11:28

ESC Sample # : L497900-02

Site ID : FEDERAL H 1

Project # : XTO1002

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzene	0.030	0.0050	mg/l	8021B	01/19/11	10
Toluene	BDL	0.050	mg/l	8021B	01/19/11	10
Ethylbenzene	0.16	0.0050	mg/l	8021B	01/19/11	10
Total Xylene	0.17	0.015	mg/l	8021B	01/19/11	10
Surrogate Recovery(%)						
a,a,a-Trifluorotoluene(PID)	107.		% Rec.	8021B	01/19/11	10

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

The reported analytical results relate only to the sample submitted.

This report shall not be reproduced, except in full, without the written approval from ESC.

Reported: 01/21/11 14:54 Printed: 01/21/11 14:54



Summary of Remarks For Samples Printed  
01/21/11 at 14:54:26

TSR Signing Reports: 288  
R5 - Desired TAT

No Energy fee. Charge \$10 Shipping Fee per Dave V 1/4/10 When transferring TS to a new dash # DO  
NOT charge a fee

Sample: L497900-01 Account: XTORNM Received: 01/19/11 08:15 Due Date: 01/26/11 00:00 RPT Date: 01/21/11 14:54

Sample: L497900-02 Account: XTORNM Received: 01/19/11 08:15 Due Date: 01/26/11 00:00 RPT Date: 01/21/11 14:54



**YOUR LAB OF CHOICE**

XTO Energy - San Juan Division  
James McDaniel  
382 Road 3100

Aztec, NM 87410

Quality Assurance Report  
Level II

L497900

12065 Lebanon Rd.  
Mt. Juliet, TN 37122  
(615) 758-5858  
1-800-767-5859  
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

January 21, 2011

Analyte	Result	Laboratory Blank		Limit	Batch	Date Analyzed
		Units	% Rec			
Benzene	< .0005	mg/l			WG517835	01/19/11 14:19
Ethylbenzene	< .0005	mg/l			WG517835	01/19/11 14:19
Toluene	< .005	mg/l			WG517835	01/19/11 14:19
Total Xylene	< .0015	mg/l			WG517835	01/19/11 14:19
a,a,a-Trifluorotoluene(PID)		% Rec.	107.8	55-122	WG517835	01/19/11 14:19
Benzene	< .0005	mg/l			WG518010	01/20/11 12:52
Ethylbenzene	< .0005	mg/l			WG518010	01/20/11 12:52
Toluene	< .005	mg/l			WG518010	01/20/11 12:52
Total Xylene	< .0015	mg/l			WG518010	01/20/11 12:52
a,a,a-Trifluorotoluene(PID)		% Rec.	108.5	55-122	WG518010	01/20/11 12:52

Analyte	Units	Laboratory Control Sample		% Rec	Limit	Batch
		Known Val	Result			
Benzene	mg/l	.05	0.0439	87.8	79-114	WG517835
Ethylbenzene	mg/l	.05	0.0485	97.0	80-116	WG517835
Toluene	mg/l	.05	0.0454	90.8	79-112	WG517835
Total Xylene	mg/l	.15	0.141	94.3	84-118	WG517835
a,a,a-Trifluorotoluene(PID)				105.8	55-122	WG517835
Benzene	mg/l	.05	0.0522	104.	79-114	WG518010
Ethylbenzene	mg/l	.05	0.0526	105.	80-116	WG518010
Toluene	mg/l	.05	0.0518	104.	79-112	WG518010
Total Xylene	mg/l	.15	0.152	101.	84-118	WG518010
a,a,a-Trifluorotoluene(PID)				107.1	55-122	WG518010

Analyte	Units	Laboratory Control Sample Duplicate			Limit	RPD	Limit	Batch
		Result	Ref	%Rec				
Benzene	mg/l	0.0468	0.0439	94.0	79-114	6.36	20	WG517835
Ethylbenzene	mg/l	0.0512	0.0485	102.	80-116	5.54	20	WG517835
Toluene	mg/l	0.0488	0.0454	98.0	79-112	7.19	20	WG517835
Total Xylene	mg/l	0.149	0.141	99.0	84-118	5.16	20	WG517835
a,a,a-Trifluorotoluene(PID)				107.0	55-122			WG517835
Benzene	mg/l	0.0545	0.0522	109.	79-114	4.35	20	WG518010
Ethylbenzene	mg/l	0.0551	0.0526	110.	80-116	4.82	20	WG518010
Toluene	mg/l	0.0536	0.0518	107.	79-112	3.38	20	WG518010
Total Xylene	mg/l	0.159	0.152	106.	84-118	4.97	20	WG518010
a,a,a-Trifluorotoluene(PID)				106.6	55-122			WG518010

Analyte	Units	Matrix Spike				Limit	Ref Samp	Batch
		MS Res	Ref Res	TV	% Rec			
Benzene	mg/l	0.0452	0	.05	90.4	35-147	L497858-09	WG517835
Ethylbenzene	mg/l	0.0496	0	.05	99.2	39-141	L497858-09	WG517835
Toluene	mg/l	0.0473	0	.05	94.6	35-148	L497858-09	WG517835
Total Xylene	mg/l	0.145	0	.15	97.0	33-151	L497858-09	WG517835
a,a,a-Trifluorotoluene(PID)					105.3	55-122		WG517835
Benzene	mg/l	0.0525	0	.05	105.	35-147	L497956-02	WG518010
Ethylbenzene	mg/l	0.0528	0	.05	106.	39-141	L497956-02	WG518010
Toluene	mg/l	0.0520	0	.05	104.	35-148	L497956-02	WG518010
Total Xylene	mg/l	0.152	0	.15	101.	33-151	L497956-02	WG518010

\* Performance of this Analyte is outside of established criteria.

For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'



YOUR LAB OF CHOICE

XTO Energy - San Juan Division  
James McDaniel  
382 Road 3100

Aztec, NM 87410

Quality Assurance Report  
Level II

L497900

12065 Lebanon Rd.  
Mt. Juliet, TN 37122  
(615) 758-5858  
1-800-767-5859  
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

January 21, 2011

Analyte	Units	MSD	Matrix	Spike	Duplicate	Limit	RPD	Limit	Ref	Samp	Batch
			Ref	%Rec	%Rec						
a,a,a-Trifluorotoluene(PID)						107.1	55-122				
Analyte	Units	MSD	Matrix	Spike	Duplicate	Limit	RPD	Limit	Ref	Samp	Batch
			Ref	%Rec	%Rec						
Benzene	mg/l	0.0458	0.0452	91.6	35-147	1.37	20	L497858-09	WG517835		
Ethylbenzene	mg/l	0.0499	0.0496	99.8	39-141	0.620	20	L497858-09	WG517835		
Toluene	mg/l	0.0473	0.0473	94.6	35-148	0.0200	20	L497858-09	WG517835		
Total Xylene	mg/l	0.144	0.145	95.9	33-151	1.10	20	L497858-09	WG517835		
a,a,a-Trifluorotoluene(PID)				106.4	55-122	WG517835					
Benzene	mg/l	0.0578	0.0525	116.	35-147	9.60	20	L497956-02	WG518010		
Ethylbenzene	mg/l	0.0593	0.0528	119.	39-141	11.7	20	L497956-02	WG518010		
Toluene	mg/l	0.0577	0.0520	115.	35-148	10.3	20	L497956-02	WG518010		
Total Xylene	mg/l	0.172	0.152	115.	33-151	12.4	20	L497956-02	WG518010		
a,a,a-Trifluorotoluene(PID)				106.9	55-122	WG518010					

Batch number /Run number / Sample number cross reference

WG517835: R1544349: L497900-02  
WG518010: R1545509: L497900-01

\* \* Calculations are performed prior to rounding of reported values.  
\* Performance of this Analyte is outside of established criteria.  
For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'



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Est. 1970

January 21, 2011

The data package includes a summary of the analytic results of the quality control samples required by the SW-846 or CWA methods. The quality control samples include a method blank, a laboratory control sample, and the matrix spike/matrix spike duplicate analysis. If a target parameter is outside the method limits, every sample that is effected is flagged with the appropriate qualifier in Appendix B of the analytic report.

Method Blank - an aliquot of reagent water carried through the entire analytic process. The method blank results indicate if any possible contamination exposure during the sample handling, digestion or extraction process, and analysis. Concentrations of target analytes above the reporting limit in the method blank are qualified with the "B" qualifier.

Laboratory Control Sample - is a sample of known concentration that is carried through the digestion/extraction and analysis process. The percent recovery, expressed as a percentage of the theoretical concentration, has statistical control limits indicating that the analytic process is "in control". If a target analyte is outside the control limits for the laboratory control sample or any other control sample, the parameter is flagged with a "J4" qualifier for all effected samples.

Matrix Spike and Matrix Spike Duplicate - is two aliquots of an environmental sample that is spiked with known concentrations of target analytes. The percent recovery of the target analytes also has statistical control limits. If any recoveries that are outside the method control limits, the sample that was selected for matrix spike/matrix spike duplicate analysis is flagged with either a "J5" or a "J6". The relative percent difference (%RPD) between the matrix spike and the matrix spike duplicate recoveries is all calculated. If the RPD is above the method limit, the effected samples are flagged with a "J3" qualifier.





[illegible]

\*Matrix: SS-Soil/Solid GW-Groundwater WW-Wastewater DW-Drinking Water OT- Other\_\_\_\_\_

pH\_\_\_\_\_Temp\_\_\_\_\_

Remarks: NON-PRESERVED VOA's

4241 9815 CID Flow \_\_\_\_\_ Other \_\_\_\_\_

Relinquisher by: (Signature) 	Date: 1/18/11	Time: 1330	Received by: (Signature) 	Samples returned via: FedEx_X__UPS__Other__	Condition (lab use only)
Relinquisher by: (Signature)	Date:	Time:	Received by: (Signature) 	Temp: 20.7 °C	Bottles Received: 4
Relinquisher by: (Signature)	Date:	Time:	Received for lab by: (Signature) 	Date: 1/19/11	Time: 0815
					pH Checked: NCF:



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Est. 1970

James McDaniel  
XTO Energy - San Juan Division  
382 Road 3100  
Aztec, NM 87410

## Report Summary

Friday April 15, 2011

Report Number: L510958

Samples Received: 04/13/11

Client Project:

Description: Federal H 1

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By:

Daphne Richards , ESC Representative

### Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - I-2327, CT - PH-0197, FL - E87487  
GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375/DW21704, ND - R-140  
NJ - TN002, NJ NELAP - TN002, SC - 84004, TN - 2006, VA - 00109, WV - 233  
AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032008A,  
TX - T104704245, OK-9915

Accreditation is only applicable to the test methods specified on each scope of accreditation held by ESC Lab Sciences.

Note: The use of the preparatory EPA Method 3511 is not approved or endorsed by the CA ELAP.

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REPORT OF ANALYSIS

James McDaniel  
XTO Energy - San Juan Division  
382 Road 3100  
Aztec, NM 87410

April 15, 2011

Date Received : April 13, 2011  
Description : Federal H 1

Sample ID : MW-2

Collected By : Julie Linn  
Collection Date : 04/12/11 10:52

ESC Sample # : L510958-01

Site ID : FEDERAL H1

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzene	0.025	0.0025	mg/l	8021B	04/14/11	5
Toluene	BDL	0.025	mg/l	8021B	04/14/11	5
Ethylbenzene	0.062	0.0025	mg/l	8021B	04/14/11	5
Total Xylene	0.10	0.0075	mg/l	8021B	04/14/11	5
Surrogate Recovery(%)						
a,a,a-Trifluorotoluene(PID)	106.		% Rec.	8021B	04/14/11	5

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

The reported analytical results relate only to the sample submitted.

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Reported: 04/15/11 15:50 Printed: 04/15/11 15:50



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Est. 1970

# REPORT OF ANALYSIS

James McDaniel  
XTO Energy - San Juan Division  
382 Road 3100  
Aztec, NM 87410

April 15, 2011

Date Received : April 13, 2011  
Description : Federal H 1

Sample ID : MW-1

Collected By : Julie Linn  
Collection Date : 04/12/11 12:00

ESC Sample # : L510958-02

Site ID : FEDERAL H1

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzene	0.027	0.010	mg/l	8021B	04/14/11	20
Toluene	BDL	0.10	mg/l	8021B	04/14/11	20
Ethylbenzene	0.32	0.010	mg/l	8021B	04/14/11	20
Total Xylene	0.70	0.030	mg/l	8021B	04/14/11	20
Surrogate Recovery(%)						
a,a,a-Trifluorotoluene(PID)	106.		% Rec.	8021B	04/14/11	20

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

The reported analytical results relate only to the sample submitted.

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Reported: 04/15/11 15:50 Printed: 04/15/11 15:50



Summary of Remarks For Samples Printed  
04/15/11 at 15:50:48

TSR Signing Reports: 288  
R5 - Desired TAT

drywt

Sample: L510958-01 Account: XTORNM Received: 04/13/11 09:00 Due Date: 04/20/11 00:00 RPT Date: 04/15/11 15:50

Sample: L510958-02 Account: XTORNM Received: 04/13/11 09:00 Due Date: 04/20/11 00:00 RPT Date: 04/15/11 15:50



**YOUR LAB OF CHOICE**

XTO Energy - San Juan Division  
James McDaniel  
382 Road 3100

Aztec, NM 87410

Quality Assurance Report  
Level II

L510958

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April 15, 2011

Analyte	Result	Laboratory Blank		Limit	Batch	Date Analyzed
		Units	% Rec			
Benzene	< .0005	mg/l			WG530993	04/14/11 12:30
Ethylbenzene	< .0005	mg/l			WG530993	04/14/11 12:30
Toluene	< .005	mg/l			WG530993	04/14/11 12:30
Total Xylene	< .0015	mg/l			WG530993	04/14/11 12:30
a,a,a-Trifluorotoluene(PID)		% Rec.	106.7	55-122	WG530993	04/14/11 12:30

Analyte	Units	Laboratory Control Sample		% Rec	Limit	Batch
		Known Val	Result			
Benzene	mg/l	.05	0.0488	97.7	79-114	WG530993
Ethylbenzene	mg/l	.05	0.0494	98.8	80-116	WG530993
Toluene	mg/l	.05	0.0482	96.3	79-112	WG530993
Total Xylene	mg/l	.15	0.144	96.1	84-118	WG530993
a,a,a-Trifluorotoluene(PID)				104.4	55-122	WG530993

Analyte	Units	Laboratory Control Sample Duplicate			Limit	RPD	Limit	Batch
		Result	Ref	%Rec				
Benzene	mg/l	0.0489	0.0488	98.0	79-114	0.170	20	WG530993
Ethylbenzene	mg/l	0.0497	0.0494	99.0	80-116	0.620	20	WG530993
Toluene	mg/l	0.0489	0.0482	98.0	79-112	1.43	20	WG530993
Total Xylene	mg/l	0.144	0.144	96.0	84-118	0.110	20	WG530993
a,a,a-Trifluorotoluene(PID)				107.0	55-122			WG530993

Analyte	Units	Matrix Spike			% Rec	Limit	Ref Samp	Batch
		MS Res	Ref Res	TV				
Benzene	mg/l	0.0495	0.000800	.05	97.5	35-147	L511038-03	WG530993
Ethylbenzene	mg/l	0.0492	0	.05	98.5	39-141	L511038-03	WG530993
Toluene	mg/l	0.0489	0	.05	97.8	35-148	L511038-03	WG530993
Total Xylene	mg/l	0.144	0	.15	95.9	33-151	L511038-03	WG530993
a,a,a-Trifluorotoluene(PID)					105.3	55-122		WG530993

Analyte	Units	Matrix Spike Duplicate			Limit	RPD	Limit	Ref Samp	Batch
		MSD	Ref	%Rec					
Benzene	mg/l	0.0511	0.0495	101.	35-147	3.20	20	L511038-03	WG530993
Ethylbenzene	mg/l	0.0510	0.0492	102.	39-141	3.57	20	L511038-03	WG530993
Toluene	mg/l	0.0516	0.0489	103.	35-148	5.24	20	L511038-03	WG530993
Total Xylene	mg/l	0.149	0.144	99.6	33-151	3.78	20	L511038-03	WG530993
a,a,a-Trifluorotoluene(PID)				105.7	55-122				WG530993

Batch number /Run number / Sample number cross reference

WG530993: R1651009: L510958-01 02

\* \* Calculations are performed prior to rounding of reported values.  
\* Performance of this Analyte is outside of established criteria.  
For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'



**YOUR LAB OF CHOICE**

XTO Energy - San Juan Division  
James McDaniel  
382 Road 3100

Aztec, NM 87410

Quality Assurance Report  
Level II

L510958

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April 15, 2011

The data package includes a summary of the analytic results of the quality control samples required by the SW-846 or CWA methods. The quality control samples include a method blank, a laboratory control sample, and the matrix spike/matrix spike duplicate analysis. If a target parameter is outside the method limits, every sample that is effected is flagged with the appropriate qualifier in Appendix B of the analytic report.

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Laboratory Control Sample - is a sample of known concentration that is carried through the digestion/extraction and analysis process. The percent recovery, expressed as a percentage of the theoretical concentration, has statistical control limits indicating that the analytic process is "in control". If a target analyte is outside the control limits for the laboratory control sample or any other control sample, the parameter is flagged with a "J4" qualifier for all effected samples.

Matrix Spike and Matrix Spike Duplicate - is two aliquots of an environmental sample that is spiked with known concentrations of target analytes. The percent recovery of the target analytes also has statistical control limits. If any recoveries that are outside the method control limits, the sample that was selected for matrix spike/matrix spike duplicate analysis is flagged with either a "J5" or a "J6". The relative percent difference (%RPD) between the matrix spike and the matrix spike duplicate recoveries is all calculated. If the RPD is above the method limit, the effected samples are flagged with a "J3" qualifier.

Company Name/Address <b>XTO Energy, Inc.</b> <b>382 County Road 3100</b> <b>Aztec, NM 87410</b>			Alternate Billing XTORN031810S  Report to: James McDaniel E-mail to: james_mcdaniel@xtoenergy.com			Analysis/Container/Preserv <div style="display: flex; align-items: center;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg); border: 1px solid black; padding: 5px; margin-right: 5px;">             (Non-Reserved)              BTEX 8021 B           </div> <table border="1" style="width: 100%; height: 100%; border-collapse: collapse;"> <tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr> </table> </div>																														G017  Chain of Custody Page 1 of 1	
Project Description: <b>FEDERAL H #1</b>			City/State Collected: <b>Farmington, NM</b>			Prepared by:  <div style="text-align: center;">   <b>ENVIRONMENTAL Science corp</b>          12065 Lebanon Road          Mt. Juliet TN 37122           Phone (615)758-5858          Phone (800) 767-5859          FAX (615)758-5859       </div>																															
PHONE: 505-333-3701 FAX:		Client Project No. <b>—</b>		Lab Project #																																	
Collected by: <b>Julie Linn</b>		Site/Facility ID# <b>FEDERAL H #1</b>		P.O.#																																	
Collected by (signature):		Rush? (Lab MUST be Notified) <input type="checkbox"/> Next Day.....100% <input type="checkbox"/> Two Day.....50% <input type="checkbox"/> Three Day.....25%		Date Results Needed Email? <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes FAX? <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes																																	
Packed on Ice N <input checked="" type="checkbox"/>						CoCode (lab use only) <b>XTORNM</b> Template/Prelogin  Shipped Via: Fed Ex																															
Sample ID		Comp/Grab	Matrix	Depth	Date	Time	Cnts	Remarks/contaminant										Sample # (lab only)																			
<b>MW-2</b>		<b>Grab</b>	<b>GW</b>	<b>N/A</b>	<b>4/12/11</b>	<b>1052</b>	<b>3</b>	<b>X</b>										<b>LS1095801</b>																			
<b>MW-1</b>		<b>Grab</b>	<b>GW</b>	<b>N/A</b>	<b>4/12/11</b>	<b>1200</b>	<b>3</b>	<b>X</b>										<b>02</b>																			

Matrix: SS-Soil/Solid GW-Groundwater WW-Wastewater DW-Drinking Water OT- Other \_\_\_\_\_

pH \_\_\_\_\_ Temp \_\_\_\_\_

Remarks: "ONLY 1 COC Per Site!!"

Flow \_\_\_\_\_ Other \_\_\_\_\_

Relinquisher by: (Signature)		Date: <b>4/12/11</b> Time: <b>1530</b>		Received by: (Signature)		Samples returned via: FedEx <input checked="" type="checkbox"/> UPS <input type="checkbox"/> Other <input type="checkbox"/>		Condition (lab use only)	
Relinquisher by: (Signature)		Date: Time:		Received by: (Signature)		Temp: <b>3.4</b> Bottles Received: <b>6V</b>		OK	
Relinquisher by: (Signature)		Date: Time:		Received for lab by: (Signature)		Date: <b>4/13/11</b> Time: <b>0900</b>		pH Checked: NCF:	

**Technical Report for**

**LT Environmental**

**LT: XTO Energy**

**Federal H #1, Farmington NM**

**Accutest Job Number: T83904**

**Sampling Date: 08/09/11**

**Report to:**

**LT Environmental  
2243 Main Ave S.  
Durango, CO 87301  
jlinn@ltenv.com**

**ATTN: Julie Linn**

**Total number of pages in report: 17**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.



**Paul Canevaro  
Laboratory Director**

**Client Service contact: Georgia Jones 713-271-4700**

Certifications: TX (T104704220-10-3) AR (88-0756) AZ (AZ0769) FL (E87628) KS (E-10366)  
LA (85695/04004) OK (9103)

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Test results relate only to samples analyzed.

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Sample Summary

LT Environmental

Job No: T83904

LT: XTO Energy  
Project No: Federal H #1, Farmington NM

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
T83904-1	08/09/11	16:05	08/10/11	AQ	Ground Water	MW-1
T83904-2	08/09/11	15:32	08/10/11	AQ	Ground Water	MW-2

Sample Results

Report of Analysis



## Report of Analysis

<b>Client Sample ID:</b>	MW-1	<b>Date Sampled:</b>	08/09/11
<b>Lab Sample ID:</b>	T83904-1	<b>Date Received:</b>	08/10/11
<b>Matrix:</b>	AQ - Ground Water	<b>Percent Solids:</b>	n/a
<b>Method:</b>	SW846 8021B		
<b>Project:</b>	LT: XTO Energy		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	TT000919.D	2	08/12/11	WV	n/a	n/a	GTT39
Run #2	TT000959.D	2	08/15/11	WV	n/a	n/a	GTT40

	Purge Volume
Run #1	5.0 ml
Run #2	5.0 ml

## Purgeable Aromatics

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	20.8	2.0	ug/l	
108-88-3	Toluene	21.0	2.0	ug/l	
100-41-4	Ethylbenzene	257	2.0	ug/l	
1330-20-7	Xylenes (total)	444	6.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	272% <sup>a</sup>	263% <sup>a</sup>	58-125%
98-08-8	aaa-Trifluorotoluene	98%	97%	73-139%

(a) Outside control limits due to matrix interference. Confirmed by reanalysis.

ND = Not detected  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b>	MW-2	<b>Date Sampled:</b>	08/09/11
<b>Lab Sample ID:</b>	T83904-2	<b>Date Received:</b>	08/10/11
<b>Matrix:</b>	AQ - Ground Water	<b>Percent Solids:</b>	n/a
<b>Method:</b>	SW846 8021B		
<b>Project:</b>	LT: XTO Energy		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	TT000960.D	1	08/15/11	WV	n/a	n/a	GTT40
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

## Purgeable Aromatics

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	4.0	1.0	ug/l	
108-88-3	Toluene <sup>a</sup>	ND	1.0	ug/l	
100-41-4	Ethylbenzene	9.8	1.0	ug/l	
1330-20-7	Xylenes (total)	33.2	3.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	109%		58-125%
98-08-8	aaa-Trifluorotoluene	98%		73-139%

(a) More than 40% RPD for detected concentrations between two GC columns.

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Misc. Forms

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### Custody Documents and Other Forms

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Includes the following where applicable:

- Chain of Custody

3.1 3

2

pH \_\_\_\_\_ Temp 5.1

Flow\_\_\_\_\_ Other\_\_\_\_\_

Relinquisher by: (Signature) <i>[Signature]</i>	Date: 8/9/11	Time: 1700	Received by: (Signature) <i>[Signature]</i>	Samples returned via: FedEx_X_UPS_Other__	Condition (lab use only)
Relinquisher by: (Signature) <i>[Signature]</i>	Date: 8/10/11	Time: 915	Received by: (Signature) <i>[Signature]</i>	Temp: Bottles Received:	
Relinquisher by: (Signature)	Date:	Time:	Received for lab of: (Signature)	Date: Time:	pH Checked: NCF:

Page 1 of 3

Accutest Job Number: T83904      Client: XTO ENERGY      Project: FEDERAL H#1  
 Date / Time Received: 8/10/2011      Delivery Method: \_\_\_\_\_      Airbill #s: 854263473292  
 No. Coolers: 1      Therm ID: IRGUN4;      Temp Adjustment Factor: -0.1;  
 Cooler Temps (Initial/Adjusted): #1: (5.2/5.1);

**Cooler Security**

	<u>Y</u>	<u>or</u>	<u>N</u>		<u>Y</u>	<u>or</u>	<u>N</u>
1. Custody Seals Present:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	3. COC Present:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Custody Seals Intact:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	4. Smpl Dates/Time OK	<input checked="" type="checkbox"/>		<input type="checkbox"/>

**Cooler Temperature**

	<u>Y</u>	<u>or</u>	<u>N</u>
1. Temp criteria achieved:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Cooler temp verification:			<u>IR Gun</u>
3. Cooler media:			<u>Ice (Bag)</u>

**Quality Control Preservation**

	<u>Y</u>	<u>or</u>	<u>N</u>	<u>N/A</u>	<u>WTB</u>	<u>STB</u>
1. Trip Blank present / cooler:	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Trip Blank listed on COC:	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>		
3. Samples preserved properly:	<input checked="" type="checkbox"/>		<input type="checkbox"/>			
4. VOCs headspace free:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		

**Sample Integrity - Documentation**

	<u>Y</u>	<u>or</u>	<u>N</u>
1. Sample labels present on bottles:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Container labeling complete:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
3. Sample container label / COC agree:	<input checked="" type="checkbox"/>		<input type="checkbox"/>

**Sample Integrity - Condition**

	<u>Y</u>	<u>or</u>	<u>N</u>
1. Sample recvd within HT:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. All containers accounted for:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
3. Condition of sample:			<u>Intact</u>

**Sample Integrity - Instructions**

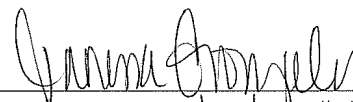
	<u>Y</u>	<u>or</u>	<u>N</u>	<u>N/A</u>
1. Analysis requested is clear:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
2. Bottles received for unspecified tests	<input type="checkbox"/>		<input checked="" type="checkbox"/>	
3. Sufficient volume recvd for analysis:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
4. Compositing instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Filtering instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>

Comments

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 Houston, TX 77036  
 www.accutest.com

  
 6/10/11

**T83904: Chain of Custody**
**Page 2 of 3**

## Sample Receipt Log

 Job #: T83904

 Date / Time Received: 8/10/2011 9:15:00 AM

 Initials: VG

 Client: XTO ENERGY

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	T83904-1	40 ml	1	VR	N/P	Note #2 - Preservative check not applicable.	IRGUN4	5.2	-0.1	5.1
1	T83904-1	40 ml	2	VR	N/P	Note #2 - Preservative check not applicable.	IRGUN4	5.2	-0.1	5.1
1	T83904-1	40 ml	3	VR	N/P	Note #2 - Preservative check not applicable.	IRGUN4	5.2	-0.1	5.1
1	T83904-2	40 ml	1	VR	N/P	Note #2 - Preservative check not applicable.	IRGUN4	5.2	-0.1	5.1
1	T83904-2	40 ml	2	VR	N/P	Note #2 - Preservative check not applicable.	IRGUN4	5.2	-0.1	5.1
1	T83904-2	40 ml	3	VR	N/P	Note #2 - Preservative check not applicable.	IRGUN4	5.2	-0.1	5.1

**T83904: Chain of Custody**

**Page 3 of 3**

## GC Volatiles

### QC Data Summaries

---

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

## Method Blank Summary

Page 1 of 1

**Job Number:** T83904  
**Account:** LTENCOD LT Environmental  
**Project:** LT: XTO Energy

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GTT39-MB	TT000905.D	1	08/12/11	WV	n/a	n/a	GTT39

The QC reported here applies to the following samples:

Method: SW846 8021B

T83904-1

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
100-41-4	Ethylbenzene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
1330-20-7	Xylenes (total)	ND	3.0	ug/l	

CAS No.	Surrogate Recoveries	Limits
460-00-4	4-Bromofluorobenzene	90% 58-125%
98-08-8	aaa-Trifluorotoluene	93% 73-139%



## Method Blank Summary

Page 1 of 1

**Job Number:** T83904  
**Account:** LTENCOD LT Environmental  
**Project:** LT: XTO Energy

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GTT40-MB	TT000941.D	1	08/15/11	WV	n/a	n/a	GTT40

The QC reported here applies to the following samples:

Method: SW846 8021B

T83904-1, T83904-2

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
100-41-4	Ethylbenzene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
1330-20-7	Xylenes (total)	ND	3.0	ug/l	

CAS No.	Surrogate Recoveries	Limits
460-00-4	4-Bromofluorobenzene	92% 58-125%
98-08-8	aaa-Trifluorotoluene	95% 73-139%

Blank Spike Summary

Job Number: T83904  
Account: LTENCOD LT Environmental  
Project: LT: XTO Energy

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GTT39-BS	TT000904.D	1	08/12/11	WV	n/a	n/a	GTT39

The QC reported here applies to the following samples: Method: SW846 8021B

T83904-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	20	18.0	90	86-121
100-41-4	Ethylbenzene	20	18.2	91	81-116
108-88-3	Toluene	20	18.2	91	87-117
1330-20-7	Xylenes (total)	60	55.0	92	85-115

CAS No.	Surrogate Recoveries	BSP	Limits
460-00-4	4-Bromofluorobenzene	91%	58-125%
98-08-8	aaa-Trifluorotoluene	93%	73-139%

Blank Spike Summary

Job Number: T83904  
Account: LTENCOD LT Environmental  
Project: LT: XTO Energy

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GTT40-BS	TT000940.D	1	08/15/11	WV	n/a	n/a	GTT40

The QC reported here applies to the following samples: Method: SW846 8021B

T83904-1, T83904-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	20	18.9	95	86-121
100-41-4	Ethylbenzene	20	18.9	95	81-116
108-88-3	Toluene	20	18.9	95	87-117
1330-20-7	Xylenes (total)	60	56.9	95	85-115

CAS No.	Surrogate Recoveries	BSP	Limits
460-00-4	4-Bromofluorobenzene	92%	58-125%
98-08-8	aaa-Trifluorotoluene	94%	73-139%

# Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

**Job Number:** T83904  
**Account:** LTENCOD LT Environmental  
**Project:** LT: XTO Energy

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
T83996-4MS	TT000910.D	1	08/12/11	WV	n/a	n/a	GTT39
T83996-4MSD	TT000911.D	1	08/12/11	WV	n/a	n/a	GTT39
T83996-4	TT000912.D	1	08/12/11	WV	n/a	n/a	GTT39
T83996-4	TT000931.D	20	08/12/11	WV	n/a	n/a	GTT39

The QC reported here applies to the following samples:

Method: SW846 8021B

T83904-1

CAS No.	Compound	T83996-4 ug/l	Spike Q ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	40.2	20	58.3	91	58.3	91	0	86-121/19
100-41-4	Ethylbenzene	1150 <sup>b</sup>	20	1170	100	1180	150* <sup>a</sup>	1	81-116/14
108-88-3	Toluene	29.7	20	49.0	97	49.3	98	1	87-117/16
1330-20-7	Xylenes (total)	556 <sup>b</sup>	60	637	135* <sup>a</sup>	643	145* <sup>a</sup>	1	85-115/12

CAS No.	Surrogate Recoveries	MS	MSD	T83996-4	T83996-4	Limits
460-00-4	4-Bromofluorobenzene	499% *	503% *	515% * <sup>c</sup>	111%	58-125%
98-08-8	aaa-Trifluorotoluene	283% *	279% *	274% * <sup>c</sup>	103%	73-139%

(a) Outside control limits due to high level in sample relative to spike amount.

(b) Result is from Run #2.

(c) Outside control limits due to matrix interference. Confirmed by reanalysis.

# Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

**Job Number:** T83904  
**Account:** LTENCOD LT Environmental  
**Project:** LT: XTO Energy

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
T84176-1MS	TT000943.D	1	08/15/11	WV	n/a	n/a	GTT40
T84176-1MSD	TT000944.D	1	08/15/11	WV	n/a	n/a	GTT40
T84176-1	TT000942.D	1	08/15/11	WV	n/a	n/a	GTT40
T84176-1	TT000948.D	20	08/15/11	WV	n/a	n/a	GTT40

The QC reported here applies to the following samples:

Method: SW846 8021B

T83904-1, T83904-2

CAS No.	Compound	T84176-1 ug/l	Spike Q ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	2010 <sup>b</sup>	20	1840	-850* <sup>a</sup>	1800	-1050* <sup>a</sup>	2	86-121/19
100-41-4	Ethylbenzene	22.2	20	42.5	102	43.9	109	3	81-116/14
108-88-3	Toluene	21.5	20	40.4	95	39.0	88	4	87-117/16
1330-20-7	Xylenes (total)	1280 <sup>b</sup>	60	1420	233* <sup>a</sup>	1390	183* <sup>a</sup>	2	85-115/12

CAS No.	Surrogate Recoveries	MS	MSD	T84176-1	T84176-1	Limits
460-00-4	4-Bromofluorobenzene	143% *	166% *	143% * <sup>c</sup>	99%	58-125%
98-08-8	aaa-Trifluorotoluene	124%	122%	127%	99%	73-139%

(a) Outside control limits due to high level in sample relative to spike amount.

(b) Result is from Run #2.

(c) Outside control limits due to matrix interference. Confirmed by reanalysis.



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Est. 1970

James McDaniel  
XTO Energy - San Juan Division  
382 Road 3100  
Aztec, NM 87410

## Report Summary

Wednesday November 16, 2011

Report Number: L546125

Samples Received: 11/10/11

Client Project:

Description: FEDERAL H 1

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By:

Daphne Richards , ESC Representative

### Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - I-2327, CT - PH-0197, FL - E87487  
GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375/DW21704, ND - R-140  
NJ - TN002, NJ NELAP - TN002, SC - 84004, TN - 2006, VA - 00109, WV - 233  
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REPORT OF ANALYSIS

James McDaniel  
XTO Energy - San Juan Division  
382 Road 3100  
Aztec, NM 87410

November 16, 2011

Date Received : November 10, 2011  
Description : FEDERAL H 1

Sample ID : MW-1

Collected By : Brooke Herb  
Collection Date : 11/09/11 15:10

ESC Sample # : L546125-01

Site ID : FEDERAL H 1

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzene	0.017	0.0050	mg/l	8021B	11/15/11	10
Toluene	BDL	0.25	mg/l	8021B	11/12/11	50
Ethylbenzene	0.24	0.025	mg/l	8021B	11/12/11	50
Total Xylene	0.39	0.075	mg/l	8021B	11/12/11	50
Surrogate Recovery(%)						
a,a,a-Trifluorotoluene(PID)	93.7		% Rec.	8021B	11/12/11	50

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

The reported analytical results relate only to the sample submitted.

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Reported: 11/16/11 09:41 Printed: 11/16/11 09:41



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REPORT OF ANALYSIS

James McDaniel  
XTO Energy - San Juan Division  
382 Road 3100  
Aztec, NM 87410

November 16, 2011

Date Received : November 10, 2011  
Description : FEDERAL H 1

Sample ID : MW-2

Collected By : Brooke Herb  
Collection Date : 11/09/11 14:42

ESC Sample # : L546125-02

Site ID : FEDERAL H 1

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzene	0.026	0.00050	mg/l	8021B	11/12/11	1
Toluene	BDL	0.0050	mg/l	8021B	11/12/11	1
Ethylbenzene	0.16	0.00050	mg/l	8021B	11/12/11	1
Total Xylene	0.16	0.0015	mg/l	8021B	11/12/11	1
Surrogate Recovery(%)						
a,a,a-Trifluorotoluene(PID)	89.5		% Rec.	8021B	11/12/11	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

The reported analytical results relate only to the sample submitted.

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Reported: 11/16/11 09:41 Printed: 11/16/11 09:41



Summary of Remarks For Samples Printed  
11/16/11 at 09:41:33

TSR Signing Reports: 288  
R5 - Desired TAT

drywt

Sample: L546125-01 Account: XTORNM Received: 11/10/11 09:00 Due Date: 11/17/11 00:00 RPT Date: 11/16/11 09:41

Sample: L546125-02 Account: XTORNM Received: 11/10/11 09:00 Due Date: 11/17/11 00:00 RPT Date: 11/16/11 09:41



**YOUR LAB OF CHOICE**

XTO Energy - San Juan Division  
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382 Road 3100

Aztec, NM 87410

Quality Assurance Report  
Level II

L546125

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November 16, 2011

Analyte	Result	Laboratory Blank		Limit	Batch	Date Analyzed
		Units	% Rec			
Benzene	< .0005	mg/l			WG565205	11/11/11 22:37
Ethylbenzene	< .0005	mg/l			WG565205	11/11/11 22:37
Toluene	< .005	mg/l			WG565205	11/11/11 22:37
Total Xylene	< .0015	mg/l			WG565205	11/11/11 22:37
a,a,a-Trifluorotoluene(PID)		% Rec.	94.33	55-122	WG565205	11/11/11 22:37
Benzene	< .0005	mg/l			WG565661	11/15/11 14:54
a,a,a-Trifluorotoluene(PID)		% Rec.	97.43	55-122	WG565661	11/15/11 14:54

Analyte	Units	Laboratory Control Sample		% Rec	Limit	Batch
		Known Val	Result			
Benzene	mg/l	.05	0.0428	85.5	79-114	WG565205
Ethylbenzene	mg/l	.05	0.0468	93.6	80-116	WG565205
Toluene	mg/l	.05	0.0460	91.9	79-112	WG565205
Total Xylene	mg/l	.15	0.139	92.7	84-118	WG565205
a,a,a-Trifluorotoluene(PID)				91.58	55-122	WG565205
Benzene	mg/l	.05	0.0417	83.4	79-114	WG565661
a,a,a-Trifluorotoluene(PID)				101.0	55-122	WG565661

Analyte	Units	Laboratory Control Sample Duplicate			Limit	RPD	Limit	Batch
		Result	Ref	%Rec				
Benzene	mg/l	0.0436	0.0428	87.0	79-114	2.03	20	WG565205
Ethylbenzene	mg/l	0.0485	0.0468	97.0	80-116	3.61	20	WG565205
Toluene	mg/l	0.0465	0.0460	93.0	79-112	1.15	20	WG565205
Total Xylene	mg/l	0.143	0.139	95.0	84-118	2.70	20	WG565205
a,a,a-Trifluorotoluene(PID)				91.83	55-122			WG565205
Benzene	mg/l	0.0420	0.0417	84.0	79-114	0.570	20	WG565661
a,a,a-Trifluorotoluene(PID)				97.73	55-122			WG565661

Analyte	Units	Matrix Spike				Limit	Ref Samp	Batch
		MS Res	Ref Res	TV	% Rec			
Benzene	mg/l	0.0443	0.0260	.05	36.6	35-147	L546128-01	WG565205
Ethylbenzene	mg/l	0.0492	0.00230	.05	93.8	39-141	L546128-01	WG565205
Toluene	mg/l	0.0474	0.0160	.05	62.9	35-148	L546128-01	WG565205
Total Xylene	mg/l	0.148	0.0200	.15	85.1	33-151	L546128-01	WG565205
a,a,a-Trifluorotoluene(PID)					94.16	55-122		WG565205
Benzene	mg/l	0.0401	0.000700	.05	78.8	35-147	L546585-32	WG565661
a,a,a-Trifluorotoluene(PID)					98.84	55-122		WG565661

Analyte	Units	Matrix Spike Duplicate			Limit	RPD	Limit	Ref Samp	Batch
		MSD	Ref	%Rec					
Benzene	mg/l	0.0420	0.0443	32.0*	35-147	5.34	20	L546128-01	WG565205
Ethylbenzene	mg/l	0.0465	0.0492	88.5	39-141	5.57	20	L546128-01	WG565205
Toluene	mg/l	0.0444	0.0474	56.8	35-148	6.60	20	L546128-01	WG565205
Total Xylene	mg/l	0.139	0.148	79.1	33-151	6.21	20	L546128-01	WG565205
a,a,a-Trifluorotoluene(PID)				92.47	55-122				WG565205

\* Performance of this Analyte is outside of established criteria.  
For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'



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James McDaniel  
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Quality Assurance Report  
Level II

L546125

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November 16, 2011

Analyte	Units	MSD	Matrix Spike Duplicate		Limit	RPD	Limit	Ref Samp	Batch
			Ref	%Rec					
Benzene	mg/l	0.0417	0.0401	82.0	35-147	3.99	20	L546585-32	WG565661
a,a,a-Trifluorotoluene(PID)				101.4	55-122				WG565661

Batch number /Run number / Sample number cross reference

WG565205: R1931252: L546125-01 02  
WG565661: R1932732: L546125-01

\* \* Calculations are performed prior to rounding of reported values.  
\* Performance of this Analyte is outside of established criteria.  
For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'



**YOUR LAB OF CHOICE**

XTO Energy - San Juan Division  
James McDaniel  
382 Road 3100

Aztec, NM 87410

Quality Assurance Report  
Level II

L546125

12065 Lebanon Rd.  
Mt. Juliet, TN 37122  
(615) 758-5858  
1-800-767-5859  
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Tax I.D. 62-0814289

Est. 1970

November 16, 2011

The data package includes a summary of the analytic results of the quality control samples required by the SW-846 or CWA methods. The quality control samples include a method blank, a laboratory control sample, and the matrix spike/matrix spike duplicate analysis. If a target parameter is outside the method limits, every sample that is effected is flagged with the appropriate qualifier in Appendix B of the analytic report.

Method Blank - an aliquot of reagent water carried through the entire analytic process. The method blank results indicate if any possible contamination exposure during the sample handling, digestion or extraction process, and analysis. Concentrations of target analytes above the reporting limit in the method blank are qualified with the "B" qualifier.

Laboratory Control Sample - is a sample of known concentration that is carried through the digestion/extraction and analysis process. The percent recovery, expressed as a percentage of the theoretical concentration, has statistical control limits indicating that the analytic process is "in control". If a target analyte is outside the control limits for the laboratory control sample or any other control sample, the parameter is flagged with a "J4" qualifier for all effected samples.

Matrix Spike and Matrix Spike Duplicate - is two aliquots of an environmental sample that is spiked with known concentrations of target analytes. The percent recovery of the target analytes also has statistical control limits. If any recoveries that are outside the method control limits, the sample that was selected for matrix spike/matrix spike duplicate analysis is flagged with either a "J5" or a "J6". The relative percent difference (%RPD) between the matrix spike and the matrix spike duplicate recoveries is all calculated. If the RPD is above the method limit, the effected samples are flagged with a "J3" qualifier.



# **Attachment 3**

## **Field Notes**

# SAMPLING PURGE LOG

Project Name: XTO Groundwater  
 Client: XTO Energy, Inc.  
 Project Manager: Julie Linn

Location: Federal H #1  
 Date: 1/18/2011  
 Sampler's Name: Brooke Herb

Well No: MW-1  
 Time: 11:43

Measuring Point: TOC Depth to Water: 30.56 ft  
 Well Diameter: 2" Total Depth: 38 ft  
 Water Column Height: 7.44 ft

Depth to Product: NA ft  
 Product Thickness: NA ft

Sampling Method: ☐ Submersible Pump ☐ Centrifugal Pump ☐ Peristaltic Pump ☐ Other \_\_\_\_\_  
☒ Bottom Valve Bailer ☐ Double Check Valve Bailer

Criteria: ☒ 3 to 5 Casing Volumes of Water Removal ☒ Stabilization of Indicator Parameters ☐ Other \_\_\_\_\_

## Water Volume in Well

Gallons of water per foot	Feet of water in well	Gallons of water in well	3 casing volumes to be removed
0.1631	7.44	1.213464	3.64

Time (military)	pH (su)	EC (ms)	Temp (°C)	ORP (millivolts)	D.O. (mg/L)	Turbidity (NTU)	Vol Evac. Gallons	Comments/Flow Rate
11:58	6.72	4.33	14.9				0.25	Clear, very strong HC odor
11:59	6.74	4.35	14.7				0.5	no change
12:00	6.72	4.57	16.0				0.75	gray to clear with black specks, slightly cloudy, strong HC odor
12:02	6.73	4.57	15.5				1	more turbid
12:04	6.70	4.57	15.4				1.5	no change
12:08	6.74	4.49	15.3				2	no change
12:12	6.72	4.41	15.1				2.5	no change
12:14	6.71	4.54	15.6				3	slightly more turbid
12:16	6.73	4.41	15.3				3.25	no change
12:18	6.69	4.52	15.6				3.5	no change
12:21	6.69	4.46	15.4				3.75	cloudy gray, strong odor
12:23	6.7	4.50	15.5				4	no change
<b>Final:</b>								
12:25	6.69	4.46	15.5				4.25	no change

COMMENTS: Replaced old bailing twine.

Instrumentation: ☒ pH Meter ☐ DO Monitor ☒ Conductivity Meter ☒ Temperature Meter ☐ Other \_\_\_\_\_

Water Disposal: on site sump

Sample ID: MW-1 Sample Time: 12:28

Analysis Requested: ☒ BTEX ☐ VOC: ☐ Alkalinity ☐ TDS ☐ Cations ☐ Anions ☐ Nitrate ☐ Nitrite ☐ Metals  
☐ Other \_\_\_\_\_

Trip Blank: No

Duplicate Sample: No



# SAMPLING PURGE LOG

Project Name: XTO Groundwater  
 Client: XTO Energy, Inc.  
 Project Manager: Julie Linn

Location: Federal H #1  
 Date: 1/18/2011  
 Sampler's Name: Brooke Herb

Well No: MW-2  
 Time: 11:00

Measuring Point: TOC Depth to Water: 32.33 ft  
 Well Diameter: 2" Total Depth: 38.35 ft  
 Water Column Height: 6.02 ft  
 Depth to Product: NA ft  
 Product Thickness: NA ft

Sampling Method: ☐ Submersible Pump ☐ Centrifugal Pump ☐ Peristaltic Pump ☐ Other \_\_\_\_\_  
☒ Bottom Valve Bailer ☐ Double Check Valve Bailer

Criteria: ☒ 3 to 5 Casing Volumes of Water Removal ☒ Stabilization of Indicator Parameters ☐ Other \_\_\_\_\_

Water Volume in Well			
Gallons of water per foot	Feet of water in well	Gallons of water in well	3 casing volumes to be removed
0.1631	6.02	0.981862	2.95

Time (military)	pH (su)	EC (ms)	Temp (°C)	ORP (millivolts)	D.O. (mg/L)	Turbidity (NTU)	Vol Evac. Gallons	Comments/Flow Rate
11:05	6.66	3.67	14.6				0.25	Light gray to clear, very strong HC odor
11:06	6.74	3.67	14.5				0.5	same as above with black specks
11:07	6.76	3.78	15.0				0.75	no change
11:08	6.83	3.83	14.7				1	no change
11:10	6.86	3.83	14.5				1.25	slightly more turbid/ cloudy
11:13	6.85	3.72	14.5				1.75	no change
11:17	6.76	3.76	14.2				2.25	no change
11:19	6.79	3.92	14.5				2.5	no change - bailing down
11:20	6.77	3.83	14.6				2.75	no change
11:22	6.77	3.85	14.5				3	no change
<b>Final:</b> 11:24	6.78	3.86	14.6				3.25	no change

COMMENTS:

Instrumentation: ☒ pH Meter ☐ DO Monitor ☒ Conductivity Meter ☒ Temperature Meter ☐ Other \_\_\_\_\_

Water Disposal: on site sump

Sample ID: MW-2 Sample Time: 11:28

Analysis Requested: ☒ BTEX ☐ VOC: ☐ Alkalinity ☐ TDS ☐ Cations ☐ Anions ☐ Nitrate ☐ Nitrite ☐ Metals  
☐ Other \_\_\_\_\_

Trip Blank: No Duplicate Sample: No





# SAMPLING PURGE LOG

Project Name: XTO Groundwater  
 Client: XTO Energy, Inc.  
 Project Manager: Julie Linn

Location: Federal H #1  
 Date: 4/12/2011  
 Sampler's Name: J. Linn/M. Spearman

Well No: MW-1  
 Time: 11:07

Measuring Point: TOC Depth to Water: 30.83 ft  
 Well Diameter: 2" Total Depth: 38.1 ft  
 Water Column Height: 7.27 ft  
 Depth to Product: NA ft  
 Product Thickness: NA ft

Sampling Method: ☐ Submersible Pump ☐ Centrifugal Pump ☐ Peristaltic Pump ☐ Other \_\_\_\_\_  
☒ Bottom Valve Bailer ☐ Double Check Valve Bailer

Criteria: ☒ 3 to 5 Casing Volumes of Water Removal ☒ Stabilization of Indicator Parameters ☐ Other \_\_\_\_\_

Water Volume in Well			
Gallons of water per foot	Feet of water in well	Gallons of water in well	3 casing volumes to be removed
0.1631	7.27	1.185737	3.56

Time (military)	pH (su)	EC (ms)	Temp (°C)	ORP (millivolts)	D.O. (mg/L)	Turbidity (NTU)	Vol Evac. Gallons	Comments/Flow Rate
11:14	6.76	4.61	15.3				0.25	clear, H2S odor, sheen
11:18	6.81	4.71	15.2				0.5	No change
11:21	6.88	4.77	15.1				0.75	pale orange color, odor
11:25	6.79	4.74	15.0				1	No change
11:30	6.87	4.79	16.6				2	No change
11:38	6.82	4.80	16.5				3	No change
11:42	6.88	4.82	15.7				3.25	darker grey color, odor
11:47	6.70	4.80	15.8				3.5	No change
11:50	6.84	4.82	15.4				3.7	No change
11:55	6.82	4.77	15.1				3.95	No change
11:58	6.81	4.76	15.1				4.2	No change
<b>Final:</b>	6.81	4.76	15.1				4.2	

COMMENTS:

Instrumentation: ☒ pH Meter ☐ DO Monitor ☒ Conductivity Meter ☒ Temperature Meter ☐ Other \_\_\_\_\_

Water Disposal: on site sump

Sample ID: MW-1 Sample Time: 12:00

Analysis Requested: ☒ BTEX ☐ VOCs ☐ Alkalinity ☐ TDS ☐ Cations ☐ Anions ☐ Nitrate ☐ Nitrite ☐ Metals  
☐ Other \_\_\_\_\_

Trip Blank: No

Duplicate Sample: No



# SAMPLING PURGE LOG

Project Name: XTO Groundwater  
 Client: XTO Energy, Inc.  
 Project Manager: Julie Linn

Location: Federal H #1  
 Date: 4/12/2011  
 Sampler's Name: J. Linn/M. Spearman

Well No: MW-2  
 Time: 10:15

Measuring Point: TOC Depth to Water: 32.55 ft Depth to Product: NA ft  
 Well Diameter: 2" Total Depth: 38.46 ft Product Thickness: NA ft  
 Water Column Height: 5.91 ft

Sampling Method: ☐ Submersible Pump ☐ Centrifugal Pump ☐ Peristaltic Pump ☐ Other \_\_\_\_\_  
☒ Bottom Valve Bailer ☐ Double Check Valve Bailer

Criteria: ☒ 3 to 5 Casing Volumes of Water Removal ☒ Stabilization of Indicator Parameters ☐ Other \_\_\_\_\_

Water Volume in Well			
Gallons of water per foot	Feet of water in well	Gallons of water in well	3 casing volumes to be removed
0.1631	5.91	0.963921	2.89

Time (military)	pH (su)	EC (ms)	Temp (°C)	ORP (millivolts)	D.O. (mg/L)	Turbidity (NTU)	Vol Evac. Gallons	Comments/Flow Rate
10:23	6.58	3.94	15.6				0.25	clear, H2S odor
10:25	6.77	3.97	15.2				0.5	no change
10:26	6.63	3.97	15.2				0.75	no change
10:28	6.86	4.00	15.0				1	less odor
10:31	6.83	4.05	14.9				1.5	stronger odor, light grey/brown tint
10:35	6.87	4.06	15.0				2	no change
10:36	6.70	4.04	15.1				2.2	no change
10:38	6.82	4.04	14.9				2.4	no change
10:40	6.73	4.02	15.1				2.6	bailing down
10:42	6.83	4.05	14.8				2.8	bailing down
10:44	6.76	4.04	15.2				3	bailing down
10:46	6.85	4.06	15.1				3.2	bailing down
10:48	6.75	4.04	15.0				3.4	bailing down
<b>Final:</b>								
	6.75	4.04	15.0				3.4	

COMMENTS:

Instrumentation: ☒ pH Meter ☐ DO Monitor ☒ Conductivity Meter ☒ Temperature Meter ☐ Other \_\_\_\_\_

Water Disposal: on site sump

Sample ID: MW-2 Sample Time: 10:52

Analysis Requested: ☒ BTEX ☐ VOCs ☐ Alkalinity ☐ TDS ☐ Cations ☐ Anions ☐ Nitrate ☐ Nitrite ☐ Metals  
☐ Other \_\_\_\_\_

Trip Blank: No

Duplicate Sample: No



# SAMPLING PURGE LOG

Project Name: XTO Groundwater Location: Federal Well No: MW-1  
 Client: XTO Energy, Inc. Date: 8/9/2011 Time: 15:40  
 Project Manager: Julie Linn Sampler's Name: Brooke Herb

Measuring Point: TOC Depth to Water: 30.92 ft Depth to Product: NA ft  
 Well Diameter: 2" Total Depth: 38 ft Product Thickness: NA ft  
 Water Column Height: 7.08 ft

Sampling Method: ☐ Submersible Pump ☐ Centrifugal Pump ☐ Peristaltic Pump ☐ Other \_\_\_\_\_  
☒ Bottom Valve Bailer ☐ Double Check Valve Bailer

Criteria: ☒ 3 to 5 Casing Volumes of Water Removal ☒ Stabilization of Indicator Parameters ☐ Other \_\_\_\_\_

Water Volume in Well			
Gallons of water per foot	Feet of water in well	Gallons of water in well	3 casing volumes to be removed
0.1631	7.08	1.154748	3.46

Time (military)	pH (su)	EC (ms)	Temp (°C)	ORP (millivolts)	D.O. (mg/L)	Turbidity (NTU)	Vol Evac. Gallons	Comments/Flow Rate
15:45	6.56	4.74	14.0				0.25	Clear, very strong HC odor
15:48	6.58	4.81	18.3				0.50	same as above, with black particles
15:50	6.58	4.87	18.5				0.75	no change
15:51	6.59	4.88	18.3				1.00	light gray
15:53	6.58	4.93	17.8				2.00	no change
15:55	6.57	4.87	17.5				2.50	no change
15:57	6.52	4.90	17.1				2.75	no change
15:59	6.52	4.99	17.2				3.00	no change
16:03	6.52	4.96	17.0				3.25	very minor sheen
16:05	6.50	4.94	17.0				3.50	cloudier
<b>Final:</b>	6.50	4.94	17.0				3.50	

COMMENTS:

Instrumentation: ☒ pH Meter ☐ DO Monitor ☒ Conductivity Meter ☒ Temperature Meter ☐ Other \_\_\_\_\_

Water Disposal: on site sump

Sample ID: MW-1 Sample Time: 16:05

Analysis Requested: ☒ BTEX ☐ VOCs ☐ Alkalinity ☐ TDS ☐ Cations ☐ Anions ☐ Nitrate ☐ Nitrite ☐ Metals  
☐ Other \_\_\_\_\_

Trip Blank: No

Duplicate Sample: No



# SAMPLING PURGE LOG

Project Name: XTO Groundwater Location: Federal Well No: MW-2  
 Client: XTO Energy, Inc. Date: 8/9/2011 Time: 15:05  
 Project Manager: Julie Linn Sampler's Name: Brooke Herb

Measuring Point: TOC Depth to Water: 32.7 ft Depth to Product: NA ft  
 Well Diameter: 2" Total Depth: 38.36 ft Product Thickness: NA ft  
 Water Column Height: 5.66 ft

Sampling Method: ☐ Submersible Pump ☐ Centrifugal Pump ☐ Peristaltic Pump ☐ Other \_\_\_\_\_  
☒ Bottom Valve Bailer ☐ Double Check Valve Bailer

Criteria: ☒ 3 to 5 Casing Volumes of Water Removal ☒ Stabilization of Indicator Parameters ☐ Other \_\_\_\_\_

Water Volume in Well			
Gallons of water per foot	Feet of water in well	Gallons of water in well	3 casing volumes to be removed
0.1631	5.66	0.923146	2.77

Time (military)	pH (su)	EC (ms)	Temp (°C)	ORP (millivolts)	D.O. (mg/L)	Turbidity (NTU)	Vol Evac. Gallons	Comments/Flow Rate
15:08	6.54	3.88	18.2				0.25	Clear, very strong HC odor, no sheen
15:09	6.50	3.88	17.8				0.50	no change
15:10	6.56	3.88	17.9				0.75	no change
15:13	6.61	3.99	16.7				1.00	very slight yellow/grey tint
15:15	6.58	3.92	17.3				2.00	slightly cloudier
15:17	6.56	3.97	17.5				2.25	no change
15:20	6.59	3.93	17.4				2.50	no change
15:26	6.57	4.00	17.3				2.75	no change
15:30	6.59	4.01	17.2				3.00	no change
<b>Final:</b>	6.59	4.01	17.2				3.00	

COMMENTS:

Instrumentation: ☒ pH Meter ☐ DO Monitor ☒ Conductivity Meter ☒ Temperature Meter ☐ Other \_\_\_\_\_

Water Disposal: on site sump

Sample ID: MW-2 Sample Time: 15:32

Analysis Requested: ☒ BTEX ☐ VOCs ☐ Alkalinity ☐ TDS ☐ Cations ☐ Anions ☐ Nitrate ☐ Nitrite ☐ Metals  
☐ Other \_\_\_\_\_

Trip Blank: No

Duplicate Sample: No



# SAMPLING PURGE LOG

Project Name: XTO Groundwater Location: Federal Well No: MW-1  
 Client: XTO Energy, Inc. Date: 11/9/2011 Time: 14:49 PM  
 Project Manager: Julie Linn Sampler's Name: Brooke Herb

Measuring Point: TOC Depth to Water: 30.46 ft Depth to Product: NA ft  
 Well Diameter: 2" Total Depth: 38.05 ft Product Thickness: NA ft  
 Water Column Height: 7.59 ft

Sampling Method: ☐ Submersible Pump ☐ Centrifugal Pump ☐ Peristaltic Pump ☐ Other \_\_\_\_\_  
☒ Bottom Valve Bailer ☐ Double Check Valve Bailer

Criteria: ☒ 3 to 5 Casing Volumes of Water Removal ☒ Stabilization of Indicator Parameters ☐ Other \_\_\_\_\_

Water Volume in Well			
Gallons of water per foot	Feet of water in well	Gallons of water in well	3 casing volumes to be removed
0.1631	7.59	1.237929	3.71

Time (military)	pH (su)	EC (ms)	Temp (°C)	ORP (millivolts)	D.O. (mg/L)	Turbidity (NTU)	Vol Evac. Gallons	Comments/Flow Rate
14:51	6.88	5.32	15.3				0.25	Clear, very strong HC odor
14:53	6.91	5.26	15.3				0.50	same as above, with black particles
14:55	6.87	5.42	15.3				0.75	no change
14:57	6.91	5.41	15.2				1.00	no change
14:59	6.86	5.39	15.3				2.00	no change
15:01	6.86	5.36	15.3				2.75	no change
15:02	6.82	5.36	15.3				3.00	no change
15:04	6.80	5.41	15.4				3.25	no change
15:06	6.83	5.38	15.3				3.50	no change
<b>Final:</b>								
15:08	6.83	5.40	15.4				3.75	no change

COMMENTS:

Instrumentation: ☒ pH Meter ☐ DO Monitor ☒ Conductivity Meter ☒ Temperature Meter ☐ Other \_\_\_\_\_

Water Disposal: on site sump

Sample ID: MW-1 Sample Time: 15:10

Analysis Requested: ☒ BTEX ☐ VOCs ☐ Alkalinity ☐ TDS ☐ Cations ☐ Anions ☐ Nitrate ☐ Nitrite ☐ Metals  
☐ Other \_\_\_\_\_

Trip Blank: No

Duplicate Sample: No



# SAMPLING PURGE LOG

Project Name: XTO Groundwater Location: Federal Well No: MW-2  
 Client: XTO Energy, Inc. Date: 11/9/2011 Time: 14:18  
 Project Manager: Julie Linn Sampler's Name: Brooke Herb

Measuring Point: TOC Depth to Water: 32.28 ft Depth to Product: NA ft  
 Well Diameter: 2" Total Depth: 38.45 ft Product Thickness: NA ft  
 Water Column Height: 6.17 ft

Sampling Method: ☐ Submersible Pump ☐ Centrifugal Pump ☐ Peristaltic Pump ☐ Other \_\_\_\_\_  
☒ Bottom Valve Bailer ☐ Double Check Valve Bailer

Criteria: ☒ 3 to 5 Casing Volumes of Water Removal ☒ Stabilization of Indicator Parameters ☐ Other \_\_\_\_\_

Water Volume in Well			
Gallons of water per foot	Feet of water in well	Gallons of water in well	3 casing volumes to be removed
0.1631	6.17	1.006327	3.02

Time (military)	pH (su)	EC (ms)	Temp (°C)	ORP (millivolts)	D.O. (mg/L)	Turbidity (NTU)	Vol Evac. Gallons	Comments/Flow Rate
14:21	6.68	4.67	15.1				0.25	Clear, very strong HC odor
14:23	6.82	4.80	15.3				0.50	light gray with black particles, HC odor
14:25	6.81	4.89	15.3				0.75	no change
14:30	6.84	4.89	15.3				1.00	no change
14:32	6.78	4.89	15.0				2.00	no change
14:34	6.80	4.89	14.9				2.25	no change
14:36	6.79	4.90	15.0				2.50	no change
14:38	6.81	4.88	15.1				2.75	no change
<b>Final:</b> 14:40	6.79	4.87	14.9				3.00	no change

COMMENTS:

Instrumentation: ☒ pH Meter ☐ DO Monitor ☒ Conductivity Meter ☒ Temperature Meter ☐ Other \_\_\_\_\_

Water Disposal: on site sump

Sample ID: MW-2 Sample Time: 14:42

Analysis Requested: ☒ BTEX ☐ VOCs ☐ Alkalinity ☐ TDS ☐ Cations ☐ Anions ☐ Nitrate ☐ Nitrite ☐ Metals  
☐ Other \_\_\_\_\_

Trip Blank: No

Duplicate Sample: No

