3R - 124

2013 AGWMR

JAN 2014

2013 ANNUAL GROUNDWATER REPORT

Rowland Gas Com #1

3RP-124

Unit P, Section 25, Township 30N, Range 12W
San Juan County, New Mexico

PREPARED FOR:

Mr. Glenn Von Gonten
New Mexico Oil Conservation Division
1220 South St. Francis Street
Santa Fe, New Mexico 87505
(505) 476-3488

January 2014

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2013 XTO GROUNDWATER REPORT

ROWLAND GAS COM #1
3RP-124

SITE DETAILS

LEGALS – TWN: 30N	**RNG**: 12W	**SEC**: 25	**UNIT**: P
OCD HAZARD RANKING: 20		**LAND TYPE**: FEE	
LATITUDE: 36.77894		**LONGITUDE**: -108.04329	

INTRODUCTION

XTO Energy, Inc. (XTO) acquired the Rowland Gas Com #1 natural gas production well (Site) from Amoco Production Company (Amoco) in January of 1998. The Site produces from the Dakota Sandstone and is currently active. An irrigation ditch exists immediately west of the Site as depicted on the topographic map in ***Figure 1***.

HISTORY

According to a *Closure Verification Field Report* completed by Envirotech, Inc. (Envirotech) on August 2, 1993 and included as ***Attachment 1***, Amoco excavated soil impacted by petroleum hydrocarbons during historical operations of an unlined production pit at the Site. During the excavation, groundwater was encountered at 13 feet below ground surface (bgs). To address impacts to groundwater, Amoco installed monitoring wells MW-1, MW-2, MW-3, MW-4, and MW-5 in May of 1996. Completion Diagrams and Borehole Logs are presented in ***Attachment 2***. Groundwater analytical results from samples collected from monitoring wells MW-1, MW-2, and MW-3 did not exceed the New Mexico Water Quality Control Commission (NMWQCC) standards for benzene, toluene, ethylbenzene, and total xylenes (BTEX); therefore, Amoco discontinued sampling of these wells in accordance with the New Mexico Oil Conservation Division (NMOCD) approved Groundwater Management Plan. Groundwater from monitoring wells MW-4 and MW-5 contained BTEX concentrations exceeding NMWQCC standards. Amoco installed monitoring well MW-5 in a location within or immediately adjacent to a second source: an abandoned dehydrator unit with an assumed associated unlined pit. Amoco recommended installation of an additional monitoring well in the downgradient direction.

Monitoring well MW-6 was installed in June of 1997 to further delineate possible downgradient migration of petroleum hydrocarbon impact. A Completion Diagram and Borehole Log are shown in ***Attachment 2***. Initial groundwater sampling results from monitoring well MW-6 indicated BTEX concentrations were not detected or below NMWQCC standards and sampling of monitoring well MW-6 was discontinued.

During a site visit in 1998 after the XTO acquisition, it was discovered that monitoring well MW-4 had been damaged during location equipment upgrades. Monitoring well MW-4 was replaced in June 1998 with monitoring well MW-4R. Monitoring well MW-4R was positioned

closer to the former production pit excavation. A Completion Diagram and Borehole Log for the replacement monitoring well are presented in ***Attachment 2***.

In February of 1999, XTO submitted an annual groundwater report documenting activities conducted from 1996 through 1998 to the NMOCD. XTO recommended monitoring wells MW-4R and MW-5 be sampled on an annual basis until results indicated more frequent monitoring was warranted. XTO suggested that monitoring well MW-3 be re-sampled annually to verify no further migration of impacts to groundwater from the former production pit.

In 2000, XTO sampled groundwater from monitoring wells MW-3 and MW-6 and laboratory analytical results indicated no BTEX was detected in these samples. As a result, XTO discontinued sampling of these wells. XTO sampled monitoring well MW-4R once in 2000 and quarterly beginning in 2001 through 2002. No BTEX was detected in any of the quarterly samples. Since four consecutive quarters were documented with no BTEX constituents exceeding NMWQCC standards, XTO discontinued sampling of monitoring well MW-4R.

XTO sampled the remaining source well, MW-5, annually through 2006, semi-annually in 2007, and then quarterly from 2008 through 2010. Laboratory analytical results indicated concentrations of benzene and total xylenes consistently exceeded NMWQCC standards.

XTO submitted the 2010 annual groundwater report to the NMOCD in March of 2011 recommending continued quarterly sampling of groundwater for BTEX constituents in monitoring well MW-5 until NMWQCC standards were met for four consecutive quarters. Additionally, XTO recommended hydrogen peroxide be applied to the groundwater aquifer using monitoring well MW-5 as an injection point to oxygenate the aquifer and enhance bioremediation at the Site. The hydrogen peroxide injection work plan is presented in ***Attachment 3***. XTO met with Mr. Glenn Von Gonten at the NMOCD offices in October 2011 to present a brief history of the Site and the hydrogen peroxide work plan in person. NMOCD did not provide comments for the hydrogen peroxide work plan and XTO did not proceed with the action.

XTO submitted annual reports for 2011 and 2012 to the NMOCD recommending continued quarterly sampling of groundwater for BTEX constituents in monitoring well MW-5 until NMWQCC standards were met for four consecutive quarters. Since NMOCD did not comment on the hydrogen peroxide work plan, XTO resubmitted the work plan for hydrogen peroxide application at monitoring well MW-5 as a recommendation in the 2011 and 2012 annual reports. A summary of water level data and laboratory analytical results from historical groundwater monitoring is presented in ***Table 1*** and ***Table 2*** respectively.

In April and March of 2013, XTO opted to remove the remaining source material and excavated the remaining hydrocarbon impacted soil at the site. Details of the excavation are included in an excavation report in ***Attachment 4***. Approximately 2,187 cubic yards of

impacted soil were removed from around MW-5 and the monitoring well was destroyed. Confirmation samples collected from the sidewalls and floor of the excavation indicated concentrations of BTEX in the soil samples were below NMOCD standards. A groundwater sample collected from the center of the excavation did not contain BTEX concentrations exceeding NMWQCC standards. Based on source removal and analytical results of confirmation soil and groundwater samples, the NMOCD district office approved site closure on October 24, 2013 (***Attachment 4***).

CONCLUSIONS

By excavating impacted soil, XTO successfully removed all remaining hydrocarbon impacts at the Site.

RECOMMENDATIONS

Based on complete source removal and NMOCD's approval of the final excavation report, XTO considers the site closed and all remaining monitoring wells will be plugged and abandoned in accordance with XTO's monitoring well abandonment plan.

TABLE 1
GROUNDWATER ELEVATIONS SUMMARY

TABLE 1

HISTORICAL GROUNDWATER LEVELS AND ELEVATIONS
ROWLAND GAS COM #1
XTO ENERGY, INC.

Well ID	Date	Depth to Water (feet BTOC)	Groundwater Elevation (feet relative to site)
MW-3	6/14/1996	14.39	87.29
MW-3	5/26/1999	15.29	86.39
MW-3	6/30/2000	15.51	86.17
MW-3	6/28/2006	13.81	87.87
MW-3	6/15/2007	13.10	88.58
MW-3	12/26/2007	14.52	87.16
MW-3	3/12/2008	14.35	87.33
MW-3	6/2/2008	12.82	88.86
MW-3	9/22/2008	12.16	89.52
MW-3	12/5/2008	13.30	88.38
MW-3	3/2/2009	14.90	86.78
MW-3	6/10/2009	13.10	88.58
MW-3	9/15/2009	12.28	89.40
MW-3	12/10/2009	12.88	88.80
MW-3	3/15/2010	14.73	86.95
MW-3	6/23/2010	12.62	89.06
MW-3	9/15/2010	11.97	89.71
MW-3	12/13/2010	13.36	88.32
MW-3	3/10/2011	14.82	86.86
MW-3	6/16/2011	12.76	88.92
MW-3	9/13/2011	11.67	90.01
MW-3	12/14/2011	12.86	88.82
MW-3	3/8/2012	14.80	86.88
MW-3	6/14/2012	12.88	88.80
MW-3	9/12/2012	12.09	89.59
MW-3	12/12/2012	13.22	88.46
MW-4	6/14/1996	13.72	*
MW-4	6/24/1997	14.02	*
MW-4R	6/26/1998	11.52	86.55
MW-4R	5/26/1999	11.28	86.79
MW-4R	6/30/2000	11.69	86.38
MW-4R	5/16/2001	13.07	85.00
MW-4R	9/25/2001	11.81	86.26
MW-4R	12/19/2001	12.66	85.41
MW-4R	2/19/2002	13.97	84.10
MW-4R	6/28/2006	9.87	88.20
MW-4R	6/15/2007	9.02	89.05
MW-4R	12/26/2007	10.69	87.38
MW-4R	3/12/2008	11.10	86.97
MW-4R	6/2/2008	8.94	89.13
MW-4R	9/22/2008	8.28	89.79
MW-4R	12/5/2008	10.08	87.99
MW-4R	3/2/2009	11.84	86.23
MW-4R	6/10/2009	9.33	88.74

TABLE 1

HISTORICAL GROUNDWATER LEVELS AND ELEVATIONS
ROWLAND GAS COM #1
XTO ENERGY, INC.

Well ID	Date	Depth to Water (feet BTOC)	Groundwater Elevation (feet relative to site)
MW-4R	9/15/2009	8.52	89.55
MW-4R	12/10/2009	10.59	87.48
MW-4R	3/15/2010	11.67	86.40
MW-4R	6/23/2010	8.88	89.19
MW-4R	9/15/2010	8.35	89.72
MW-4R	12/13/2010	10.33	87.74
MW-4R	3/10/2011	12.06	86.01
MW-4R	6/16/2011	8.90	89.17
MW-4R	9/13/2011	7.75	90.32
MW-4R	12/14/2011	10.07	88.00
MW-4R	3/8/2012	12.06	86.01
MW-4R	6/14/2012	9.12	88.95
MW-4R	9/12/2012	8.45	89.62
MW-4R	12/12/2012	10.21	87.86
MW-5	6/14/1996	10.40	87.25
MW-5	6/24/1997	10.27	87.38
MW-5	6/26/1998	10.34	87.31
MW-5	5/26/1999	10.03	87.62
MW-5	6/30/2000	10.78	86.87
MW-5	5/16/2001	12.52	85.13
MW-5	6/26/2002	10.87	86.78
MW-5	6/30/2003	10.96	86.69
MW-5	6/21/2004	9.85	87.80
MW-5	6/27/2005	9.32	88.33
MW-5	6/28/2006	9.35	88.30
MW-5	6/15/2007	8.51	89.14
MW-5	12/26/2007	10.17	87.48
MW-5	3/12/2008	11.26	86.39
MW-5	6/2/2008	8.38	89.27
MW-5	9/22/2008	7.65	90.00
MW-5	12/5/2008	10.30	87.35
MW-5	3/2/2009	12.14	85.51
MW-5	6/10/2009	8.80	88.85
MW-5	9/15/2009	8.94	88.71
MW-5	12/10/2009	10.92	86.73
MW-5	3/15/2010	11.72	85.93
MW-5	6/23/2010	8.10	89.55
MW-5	9/15/2010	7.80	89.85
MW-5	12/13/2010	10.62	87.03
MW-5	3/10/2011	12.46	85.19
MW-5	6/16/2011	8.39	89.26
MW-5	9/13/2011	7.70	89.95
MW-5	12/14/2011	10.33	87.32
MW-5	3/8/2012	12.42	85.23
MW-5	6/14/2012	8.69	88.96

TABLE 1

HISTORICAL GROUNDWATER LEVELS AND ELEVATIONS
ROWLAND GAS COM #1
XTO ENERGY, INC.

Well ID	Date	Depth to Water (feet BTOC)	Groundwater Elevation (feet relative to site)
MW-5	9/12/2012	8.01	89.64
MW-5	12/12/2012	10.52	87.13
MW-6	6/24/1997	15.55	84.65
MW-6	5/26/1999	15.79	84.41
MW-6	6/30/2000	15.90	84.30
MW-6	6/28/2006	13.59	86.61
MW-6	6/15/2007	12.81	87.39
MW-6	12/26/2007	14.11	86.09
MW-6	3/12/2008	13.29	86.91
MW-6	6/2/2008	11.94	88.26
MW-6	9/22/2008	11.60	88.60
MW-6	12/5/2008	12.55	87.65
MW-6	3/2/2009	13.78	86.42
MW-6	6/10/2009	12.14	88.06
MW-6	9/15/2009	11.67	88.53
MW-6	12/10/2009	12.78	87.42
MW-6	3/15/2010	13.57	86.63
MW-6	6/23/2010	11.77	88.43
MW-6	9/15/2010	11.33	88.87
MW-6	12/13/2010	12.55	87.65
MW-6	3/10/2011	13.72	86.48
MW-6	6/16/2011	11.77	88.43
MW-6	9/13/2011**	11.55	90.19
MW-6	12/14/2011	12.71	89.03
MW-6	3/8/2012	14.21	87.53
MW-6	6/14/2012	12.42	89.32
MW-6	9/12/2012	11.94	89.80
MW-6	12/12/2012	13.01	88.73

Notes:
BTOC - below top of casing
* Top of casing elevation data not available.
** Surface casing repaired; new TOC elevation was surveyed and implemented.

TABLE 2
GROUNDWATER ANALYTICAL RESULTS SUMMARY

TABLE 2

GROUNDWATER ANALYTICAL RESULTS SUMMARY
ROWLAND GAS COM #1
XTO ENERGY, INC.

Well ID	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
NMWQCC Groundwater Standard		**10**	**750**	**750**	**620**
MW-3	6/14/1996	ND	ND	ND	ND
MW-3	5/26/1999	ND	NA	NA	NA
MW-3	6/30/2000	ND	ND	ND	ND
MW-4	6/14/1996	**94.3**	2.71	ND	106.4
MW-4	6/24/1997	**44.7**	0.5	0.4	3
MW-4R	6/26/1998	**13.4**	ND	ND	0.6
MW-4R	5/26/1999	**16.4**	0.9	2.1	72.2
MW-4R	6/30/2000	ND	ND	ND	ND
MW-4R	5/16/2001	ND	ND	ND	ND
MW-4R	9/25/2001	ND	ND	ND	ND
MW-4R	12/19/2001	ND	ND	ND	ND
MW-4R	2/19/2002	ND	ND	ND	ND
MW-5	6/14/1996	**25.4**	732	953	**9,070**
MW-5	6/24/1997	**58.8**	2.5	2.8	**6,290**
MW-5	6/26/1998	**1270**	89	41.4	**3,200**
MW-5	5/26/1999	**174**	129	252	**990**
MW-5	6/30/2000	**38**	6.4	**750**	**6,390**
MW-5	5/16/2001	**49**	34	700	**4,480**
MW-5	6/26/2002	**84**	ND	630	**3,460**
MW-5	6/30/2003	**51**	ND	420	**2,600**
MW-5	6/21/2004	**39**	19	490	**1,200**
MW-5	6/27/2005	**18**	44	420	**1,900**
MW-5	6/28/2006	**60**	ND	360	**1,500**
MW-5	6/15/2007	**55**	ND	240	**620**
MW-5	12/26/2007	ND	ND	ND	ND
MW-5	3/12/2008	**28**	3.6	88	290
MW-5	6/2/2008	**61**	4.6	300	**890**
MW-5	9/22/2008	**10**	ND	97	260
MW-5	12/5/2008	**32**	4.8	170	410

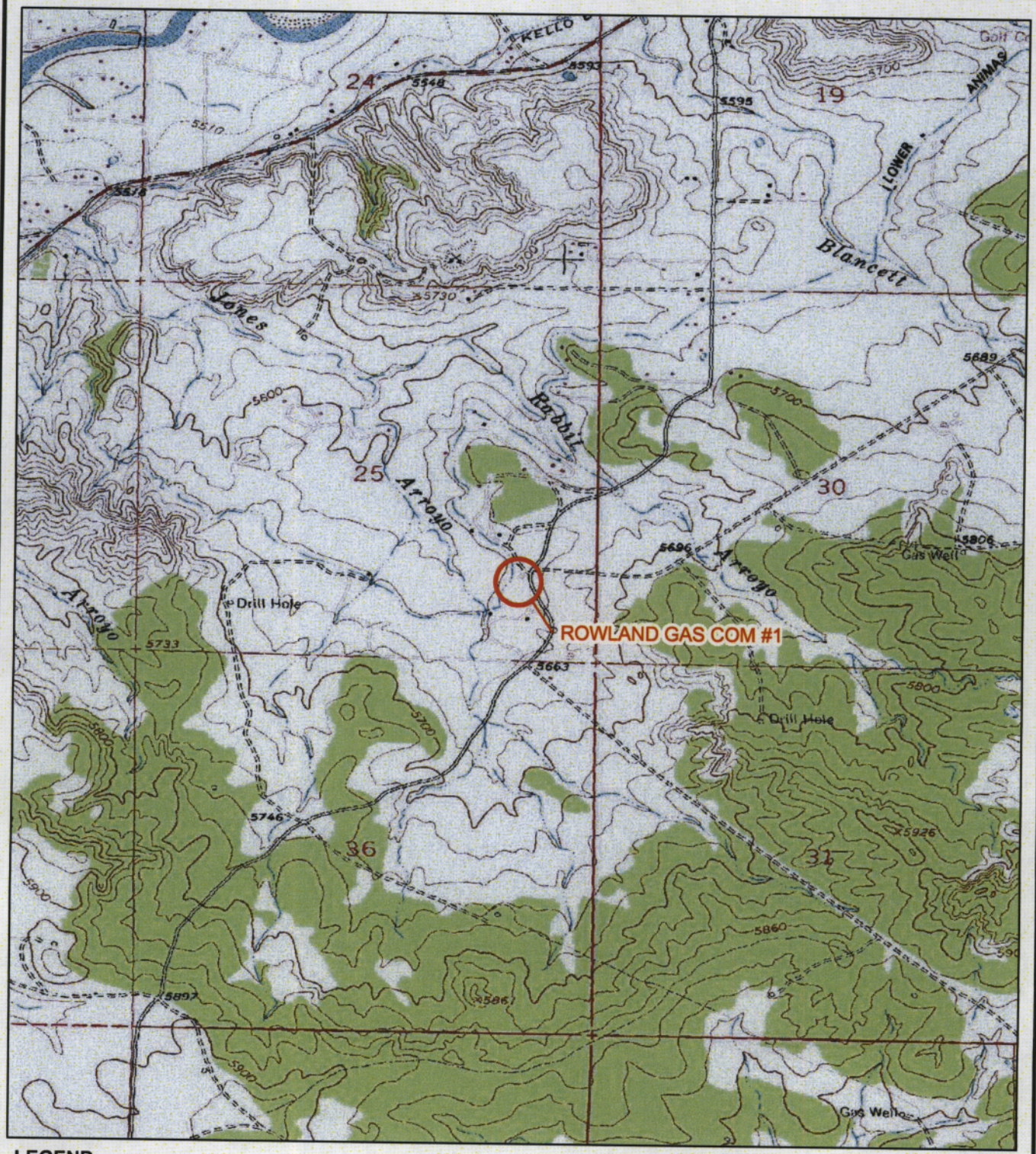
TABLE 2

GROUNDWATER ANALYTICAL RESULTS SUMMARY
ROWLAND GAS COM #1
XTO ENERGY, INC.

Well ID	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
NMWQCC Groundwater Standard		**10**	**750**	**750**	**620**
MW-5	3/2/2009	**180**	7.8	480	**1,400**
MW-5	6/10/2009	**120**	ND	240	590
MW-5	9/15/2009	**32**	< 5.0	160	380
MW-5	12/10/2009	**45**	< 5.0	58	110
MW-5	3/15/2010	**340**	< 5.0	48	110
MW-5	6/23/2010	**270**	13	130	350
MW-5	9/15/2010	**120**	<25	130	370
MW-5	12/13/2010	**270**	12	230	**630**
MW-5	3/10/2011	**620**	<50	600	**1,700**
MW-5	6/16/2011	**300**	<250	300	**820**
MW-5	9/13/2011	**290**	<25	240	**680**
MW-5	12/14/2011	**500**	6.6	420	**1,000**
MW-5	3/8/2012	**680**	<5.0	400	**1,000**
MW-5	6/14/2012	**390**	<50	350	**930**
MW-5	9/12/2012	**330**	<50	260	**630**
MW-5	12/12/2012	**450**	<25	310	**650**
MW-6	6/24/1997	ND	0.6	0.5	5.4
MW-6	6/30/2000	ND	ND	ND	ND

Notes:
µg/L - micrograms per liter
NMWQCC - New Mexico Water Quality Control Commission
ND - not detected
BOLD indicates value excees the NMWQCC standard
< - indicates the result was less than the laboratory detection limit

FIGURE 1
SITE LOCATION MAP



LEGEND

SITE LOCATION

IMAGE COURTESY OF USDA/NRCS, VARIOUS DATES

0 2,000 4,000

Feet

N

FIGURE 1
SITE LOCATION MAP
ROWLAND GAS COM #1
SESE SEC 25 T30N R12W
SAN JUAN COUNTY, NEW MEXICO
XTO ENERGY, INC.

P:\XTO Energy\GIS\MXD\XTO1002\XTO1002_ROWLAND_FIG01_SL.mxd

ATTACHMENT 1
ENVIROTECH CLOSURE VERIFICATION FIELD REPORT (1993)

ENVIROTECH Inc.

5796 US HWY. 64, FARMINGTON, NM 87401
(505) 632-0615

C4923
94923

FIELD REPORT: CLOSURE VERIFICATION

JOB No: 9210
PAGE No: 1 of 1

LOCATION: LEASE: ROLAND WELL#: 1 QD:
SEC: 25 TWP: 30N RNG: 12W BM: NM CNTY: SAN JUAN ST: NM PIT: PROD

DATE STARTED: 8/2/93
DATE FINISHED: 8/2/93

CONTRACTOR: BILL MOSS
EQUIPMENT USED: TRACKHOE

ENVIRONMENTAL SPECIALIST: NV

SOIL REMEDIATION: QUANTITY: 16 X 15 X 13
DISPOSAL FACILITY: CROUCH MESA COMPOST
LAND USE: RANGE & RESIDENTIAL
SURFACE CONDITIONS: UNKNOWN

FIELD NOTES & REMARKS: PIT LOCATED APPROXIMATELY 60 YARDS N10°W FROM WELLHEAD.

DEPTH TO GROUNDWATER: 13'
NEAREST WATER SOURCE: < 750 FT.
NEAREST SURFACE WATER: < 100 FT.

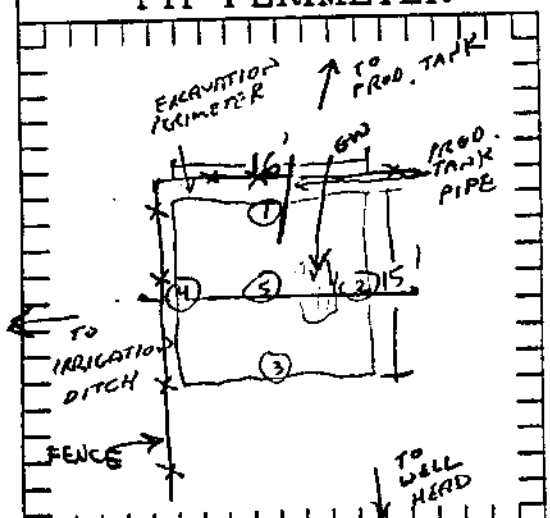
DK. YELLOWISH BROWN TO MEDIUM DK. GRAY SAND, NON-COHESIVE, SLIGHTLY MOIST, LOOSE TO STIFF, AND STRONG ODOR ON ALL BUT ④ @ 9'. GROUNDWATER CONTAINED A SLIGHT SHEEN ON ITS SURFACE.

FIELD 418.1 CALCULATIONS

SAMPLE I.D.	LAB No:	WEIGHT (g)	mL. FREON	DILUTION	READING	CALC. ppm

SCALE
0 FEET

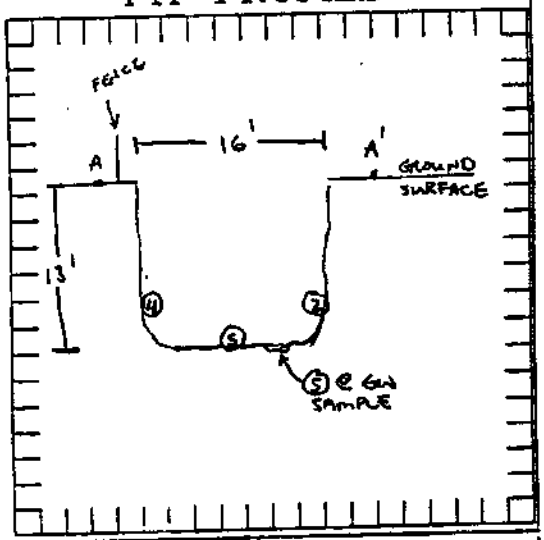
PIT PERIMETER



OVM RESULTS

SAMPLE ID	FIELD HEADSPACE PID (ppm)
① @ 9'	1511
② @ 9'	1403
③ @ 9'	1675
④ @ 9'	20.6
⑤ @ 13'	1654
⑤ @ GW (13')	
BTEX SAMPLE	

PIT PROFILE



TRAVEL NOTES: CALLOUT: 7/30/93 ONSITE: 8/2/93

ENVIROTECH LABS

5796 US HIGHWAY 64-3014 • FARMINGTON, NEW MEXICO 87401
PHONE: (505) 632-0615 • FAX: (505) 632-1865

EPA METHOD 8020
AROMATIC VOLATILE ORGANICS

Client:	Amoco	Project #:	92140
Sample ID:	5 @ GW (13')	Date Reported:	08-04-93
Laboratory Number:	5816	Date Sampled:	08-02-93
Sample Matrix:	Water	Date Received:	08-02-93
Preservative:	HgCl & Cool	Date Analyzed:	08-03-93
Condition:	Cool & Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	183	0.2
Toluene	1.1	0.4
Ethylbenzene	0.3	0.2
p,m-Xylene	2.1	0.4
o-Xylene	32.3	0.3

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	93 %
	Bromofluorobenzene	87 %

Method: Method 5030, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments: Roland GC #1 Production Pit C4923

Analyst

Review

2880

CHAIN OF CUSTODY RECORD

C4923

Client/Project Name	Project Location	ANALYSIS/PARAMETERS
Amoco 92140	PROD. PIT ROLAND GC #1	
Sampler: (Signature) Nelson Velez	Chain of Custody Tape No.	

Sample No./ Identification	Sample Date	Sample Time	Lab Number	Sample Matrix	No. of Containers	BTEX (8020)						Remarks
(5) 2 GW (13')	8/2/93	1040	5816	WATER	2	✓						

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Nelson Velez	8/2/93	1555	Sherri L. Spencer	8-2-93	1555
Relinquished by: (Signature)			Received by: (Signature)		
Relinquished by: (Signature)			Received by: (Signature)		

ENVIROTECH INC.
5796 U.S. Highway 64-3014
Farmington, New Mexico 87401
(505) 632-0615

san juan repro form 376-81

ATTACHMENT 2
COMPLETION DIAGRAMS AND BOREHOLE LOGS

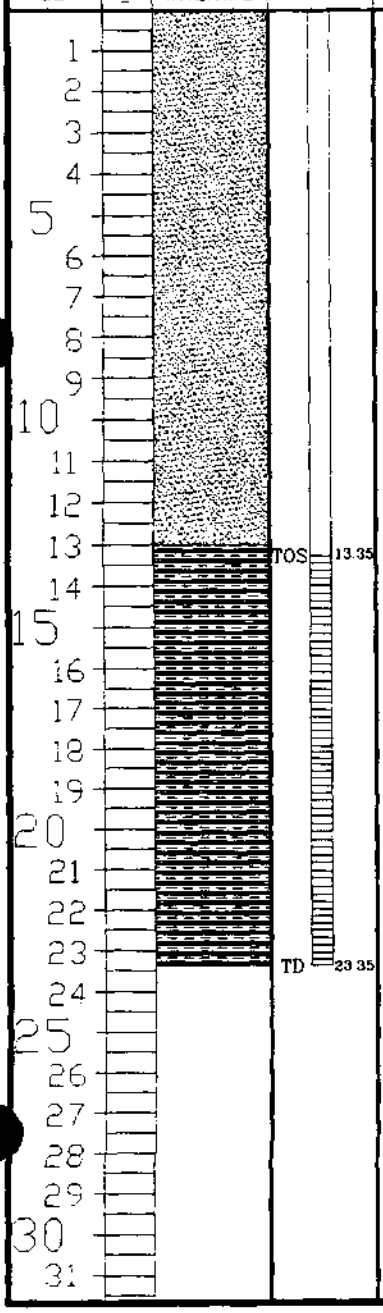
BLAGG ENGINEERING, Inc.

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

BORE / TEST HOLE REPORT

BORING # BH - 1
MW # 1
PAGE # 1
DATE STARTED 5/30/96
DATE FINISHED 6/03/96
OPERATOR JCB
PREPARED BY NJV

LOCATION NAME: ROWLAND GC # 1
CLIENT: AMOCO PRODUCTION COMPANY
CONTRACTOR: BLAGG ENGINEERING, INC.
EQUIPMENT USED: MOBILE DRILL RIG (EARTHPROBE)
BORING LOCATION: N18E, 201 FEET FROM WELL HEAD.



FIELD CLASSIFICATION AND REMARKS

GROUND SURFACE

TOP OF CASING APPROX. 1.65 FT. ABOVE GROUND SURFACE.

DARK YELLOWISH BROWN SAND TO SILTY SAND, NON COHESIVE, SLIGHTLY MOIST, FIRM TO DENSE, NO APPARENT HYDROCARBON ODOR OBSERVED (0 - 13.00 FT INTERVAL).

▼ GW DEPTH ON 6/14/96 = 14.46 FT. (APPROX.) FROM GROUND SURFACE.

DARK YELLOWISH BROWN CLAY, PLASTIC, SLIGHTLY MOIST TO SATURATED (AT GROUNDWATER), STIFF TO HARD, NO APPARENT HYDROCARBON ODOR OBSERVED (13.00 - 23.35 FT INTERVAL).

NOTES:
- SAND TO SILTY SAND.
- CLAY.
- TOS - TOP OF SCREEN FROM GROUND SURFACE.
- TD - TOTAL DEPTH OF MONITOR WELL FROM GROUND SURFACE.
- GW - GROUND WATER.

DRAWING: ROWLAN-1 | DATE: 3/06/97 | DWN BY: NJV

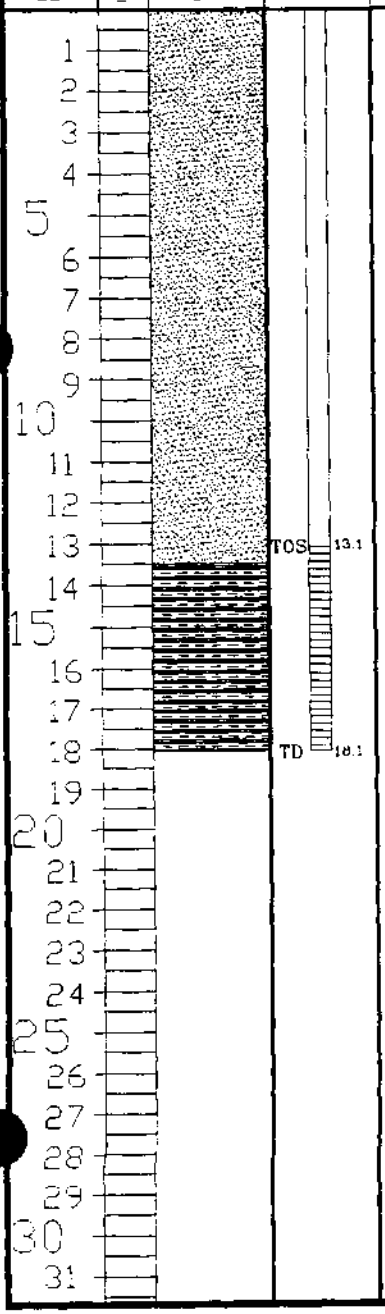
BLAGG ENGINEERING, Inc.

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

BORE / TEST HOLE REPORT

BORING # BH - 2
MW # 2
PAGE # 2
DATE STARTED 5/30/96
DATE FINISHED 6/03/96
OPERATOR JCB
PREPARED BY NJV

LOCATION NAME: ROWLAND GC # 1
CLIENT: AMOCO PRODUCTION COMPANY
CONTRACTOR: BLAGG ENGINEERING, INC.
EQUIPMENT USED: MOBILE DRILL RIG (EARTHPROBE)
BORING LOCATION: N23E, 156 FEET FROM WELL HEAD.



FIELD CLASSIFICATION AND REMARKS

GROUND SURFACE

TOP OF CASING APPROX. 1.90 FT. ABOVE GROUND SURFACE.

DARK YELLOWISH BROWN SAND TO SILTY SAND, NON COHESIVE, SLIGHTLY MOIST, FIRM TO DENSE, NO APPARENT HYDROCARBON ODOR OBSERVED (0.0 - 13.5 FT. INTERVAL).

▼ GW DEPTH ON 6/14/96 = 13.54 FT. (APPROX.) FROM GROUND SURFACE.

DARK YELLOWISH BROWN CLAY, PLASTIC, SATURATED (AT GROUNDWATER), STIFF TO HARD, NO APPARENT HYDROCARBON ODOR OBSERVED (13.5 - 18.1 FT. INTERVAL).

NOTES:
- SAND TO SILTY SAND.
- CLAY.
- TOS - TOP OF SCREEN FROM GROUND SURFACE.
- TD - TOTAL DEPTH OF MONITOR WELL FROM GROUND SURFACE.
- GW - GROUND WATER.

DRAWING: ROWLAN-2 | DATE: 3/06/97 | DWN BY: NJV

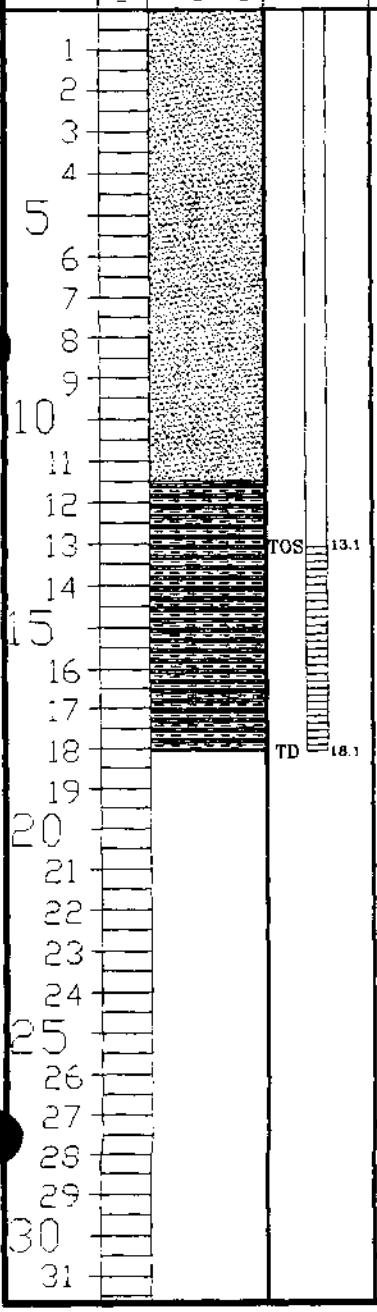
BLAGG ENGINEERING, Inc.

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

BORE / TEST HOLE REPORT

LOCATION NAME:	ROWLAND GC # 1
CLIENT:	AMOCO PRODUCTION COMPANY
CONTRACTOR:	BLAGG ENGINEERING, INC.
EQUIPMENT USED:	MOBILE DRILL RIG (EARTHPROBE)
BORING LOCATION:	N5E, 156 FEET FROM WELL HEAD.

BORING #.....	BH - 3
MW #.....	3
PAGE #.....	3
DATE STARTED	5/30/96
DATE FINISHED	6/03/96
OPERATOR.....	JCB
PREPARED BY	NJV



FIELD CLASSIFICATION AND REMARKS

GROUND SURFACE

TOP OF CASING APPROX. 1.90 FT. ABOVE GROUND SURFACE.

DARK YELLOWISH BROWN SAND TO SILTY SAND, NON COHESIVE, SLIGHTLY MOIST, FIRM TO DENSE, NO APPARENT HYDROCARBON ODOR OBSERVED (0.0 - 11.5 FT. INTERVAL).

▼ GW DEPTH ON 6/14/96 = 12.49 FT. (APPROX.) FROM GROUND SURFACE.

DARK YELLOWISH BROWN CLAY, PLASTIC, SATURATED (AT GROUNDWATER), STIFF TO HARD, NO APPARENT HYDROCARBON ODOR OBSERVED (11.5 - 18.1 FT. INTERVAL)

NOTES:
- SAND TO SILTY SAND.
- CLAY.
- TOS - TOP OF SCREEN FROM GROUND SURFACE.
- TD - TOTAL DEPTH OF MONITOR WELL FROM GROUND SURFACE.
- GW - GROUND WATER.

DRAWING: ROWLAN-3	DATE: 3/06/97	DWN BY: NJV

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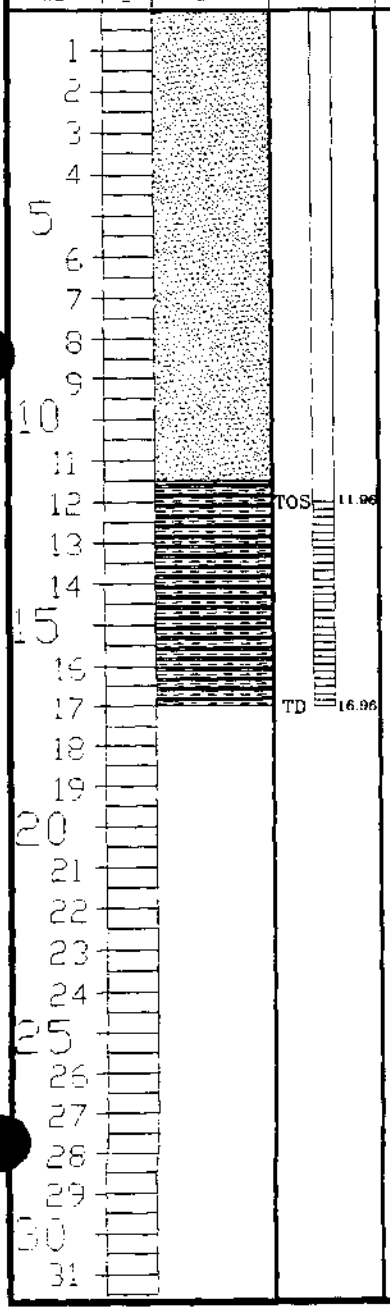
BORE / TEST HOLE REPORT

BORING # ..... BH - 3
MW # 3
PAGE # 3A
DATE STARTED 5/30/96
DATE FINISHED 6/03/96
OPERATOR ..... JCB
PREPARED BY NJV

LOCATION NAME: ROWLAND GC # 1
CLIENT: AMOCO PRODUCTION COMPANY
CONTRACTOR: BLAGG ENGINEERING, INC.
EQUIPMENT USED: MOBILE DRILL RIG (EARTHPROBE)
BORING LOCATION: N5E, 156 FEET FROM WELL HEAD.



FIELD CLASSIFICATION AND REMARKS

GROUND SURFACE

TOP OF CASING APPROX. 3.04 FT. ABOVE GROUND SURFACE (PULLED CASING UP 1.14 FT. 5/7/97).

DARK YELLOWISH BROWN SAND TO SILTY SAND, NON COHESIVE, SLIGHTLY MOIST, FIRM TO DENSE. NO APPARENT HYDROCARBON ODOR OBSERVED (0.0 - 11.5 FT. INTERVAL).

▼ GW DEPTH ON 6/14/96 = 12.49 FT. (APPROX.) FROM GROUND SURFACE.

DARK YELLOWISH BROWN CLAY, PLASTIC, SATURATED (AT GROUNDWATER), STIFF TO HARD. NO APPARENT HYDROCARBON ODOR OBSERVED (11.5 - 18.1 FT. INTERVAL).

NOTES:
- SAND TO SILTY SAND.
- CLAY.
- TOS - TOP OF SCREEN FROM GROUND SURFACE.
- TD - TOTAL DEPTH OF MONITOR WELL FROM GROUND SURFACE.
- GW - GROUND WATER.

DRAWING: ROW-3R | DATE: 5/08/97 | REV. BY: NJV

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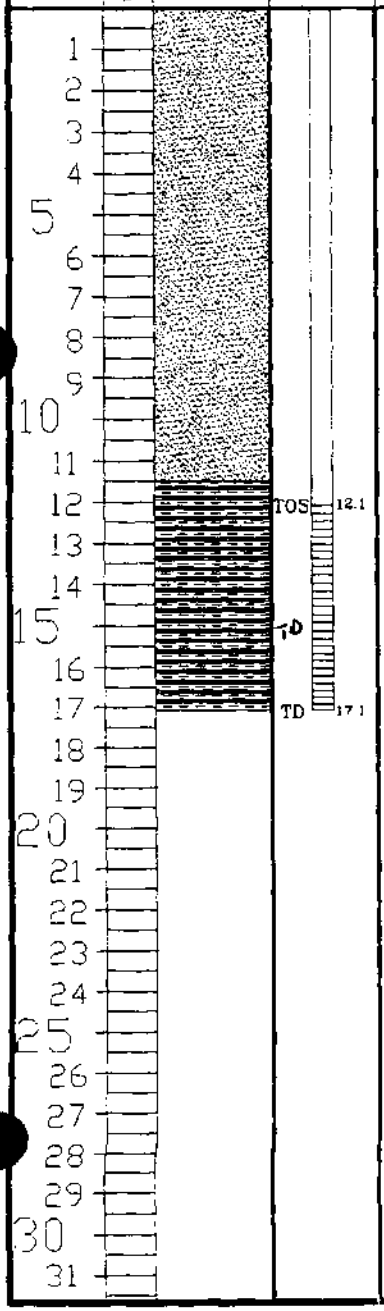
BORE / TEST HOLE REPORT

BORING #..... BH - 4
MW #..... 4
PAGE #..... 4
DATE STARTED 5/30/96
DATE FINISHED 6/03/96
OPERATOR..... JCB
PREPARED BY NJV

LOCATION NAME: ROWLAND GC # 1
CLIENT: AMOCO PRODUCTION COMPANY
CONTRACTOR: BLAGG ENGINEERING, INC.
EQUIPMENT USED: MOBILE DRILL RIG (EARTHPROBE)
BORING LOCATION: N1E, 216 FEET FROM WELL HEAD.



FIELD CLASSIFICATION AND REMARKS

GROUND SURFACE

TOP OF CASING APPROX. ~~1.00~~ FT ABOVE GROUND SURFACE.

DARK YELLOWISH BROWN SAND TO SILTY SAND, NON COHESIVE, SLIGHTLY MOIST, FIRM TO DENSE, NO APPARENT HYDROCARBON ODOR OBSERVED (0.0 - 10.0 FT. INTERVAL). LIGHT TO DARK MEDIUM GRAY, STRONG HYDROCARBON ODOR OBSERVED (10.0 - 11.5 FT. INTERVAL).

▼ GW DEPTH ON 6/14/96 = 11.82 FT. (APPROX.) FROM GROUND SURFACE.

DARK MEDIUM GRAY CLAY, PLASTIC, SATURATED, STIFF TO HARD, STRONG HYDROCARBON ODOR OBSERVED (11.5 - 17.1 FT. INTERVAL).

NOTES:
- SAND TO SILTY SAND.
- CLAY.
- TOS - TOP OF SCREEN FROM GROUND SURFACE.
- TD - TOTAL DEPTH OF MONITOR WELL FROM GROUND SURFACE.
- GW - GROUND WATER.

DRAWING: ROWLAN-4 | DATE: 3/06/97 | DWN BY: NJV

BLAGG ENGINEERING, Inc.

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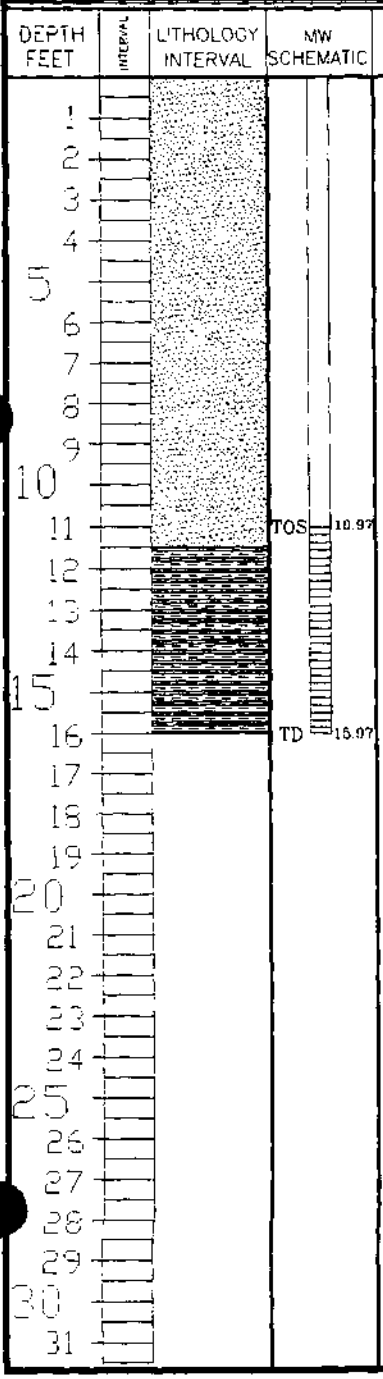
BLOOMFIELD, NM 87413
(505) 632-1199

BORE / TEST HOLE REPORT

BORING # BH - 4
MW # 4
PAGE # 4A
DATE STARTED 5/30/96
DATE FINISHED 6/03/96
OPERATOR JCB
PREPARED BY NJV

LOCATION NAME: ROWLAND GC # 1
CLIENT: AMOCO PRODUCTION COMPANY
CONTRACTOR: BLAGG ENGINEERING, INC.
EQUIPMENT USED: MOBILE DRILL RIG (EARTHPROBE)
BORING LOCATION: N1E, 216 FEET FROM WELL HEAD.



FIELD CLASSIFICATION AND REMARKS

GROUND SURFACE

TOP OF CASING APPROX. 3.03 FT. ABOVE GROUND SURFACE (PULLED CASING UP 1.13 FT. 5/7/97).

DARK YELLOWISH BROWN SAND TO SILTY SAND, NON COHESIVE, SLIGHTLY MOIST, FIRM TO DENSE, NO APPARENT HYDROCARBON ODOR OBSERVED (0.0 - 10.0 FT. INTERVAL). LIGHT TO DARK MEDIUM GRAY, STRONG HYDROCARBON ODOR OBSERVED (10.0 - 11.5 FT. INTERVAL).

▼ GW DEPTH ON 6/24/97 = 10.99 FT. (APPROX.) FROM GROUND SURFACE.

DARK MEDIUM GRAY CLAY, PLASTIC, SATURATED, STIFF TO HARD, STRONG HYDROCARBON ODOR OBSERVED (11.5 - 17.1 FT. INTERVAL).

NOTES:
- SAND TO SILTY SAND.
- CLAY.
- TOS - TOP OF SCREEN FROM GROUND SURFACE.
- TD - TOTAL DEPTH OF MONITOR WELL FROM GROUND SURFACE.
- GW - GROUND WATER.

DRAWING: ROW-4R | DATE: 6/25/97 | REV. BY: NJV

BLAGG ENGINEERING, Inc.

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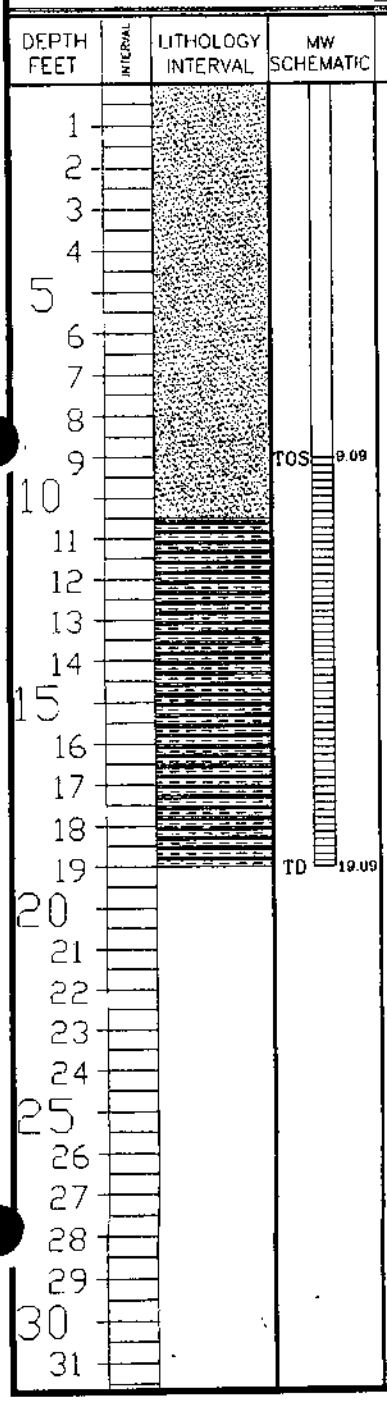
(505) 632-1199

BORE / TEST HOLE REPORT

BORING #..... BH - 4R
MW #..... 4R
PAGE #..... 4R
DATE STARTED 6/19/98
DATE FINISHED 6/19/98
OPERATOR..... JCB
PREPARED BY NJV

LOCATION NAME: ROWLAND GC # 1
CLIENT: AMOCO PRODUCTION COMPANY
CONTRACTOR: BLAGG ENGINEERING, INC.
EQUIPMENT USED: MOBILE DRILL RIG (EARTHPROBE)
BORING LOCATION: N9.5W, 189 FEET FROM WELL HEAD.



FIELD CLASSIFICATION AND REMARKS

GROUND SURFACE

TOP OF CASING APPROX. 0.91 FT. ABOVE GROUND SURFACE.

DARK YELLOWISH BROWN SAND TO SILTY SAND, NON COHESIVE, SLIGHTLY MOIST, FIRM TO DENSE, NO APPARENT HYDROCARBON ODOR DETECTED (0.0 - 10.5 FT. INTERVAL).

▼ GW DEPTH ON 6/26/98 = 10.61 FT. (APPROX.) FROM GROUND SURFACE.

DARK MEDIUM GRAY CLAY, PLASTIC, SATURATED, STIFF TO HARD, HYDROCARBON ODOR DETECTED (10.5 - 19.09 FT. INTERVAL).

NOTES:
- SAND TO SILTY SAND.
- CLAY.
- TOS - TOP OF SCREEN FROM GROUND SURFACE.
- TD - TOTAL DEPTH OF MONITOR WELL FROM GROUND SURFACE.
- GW - GROUND WATER.

DRAWING: ROW-4R | DATE: 6/22/98 | DRN. BY: NJV

BLAGG ENGINEERING, Inc.

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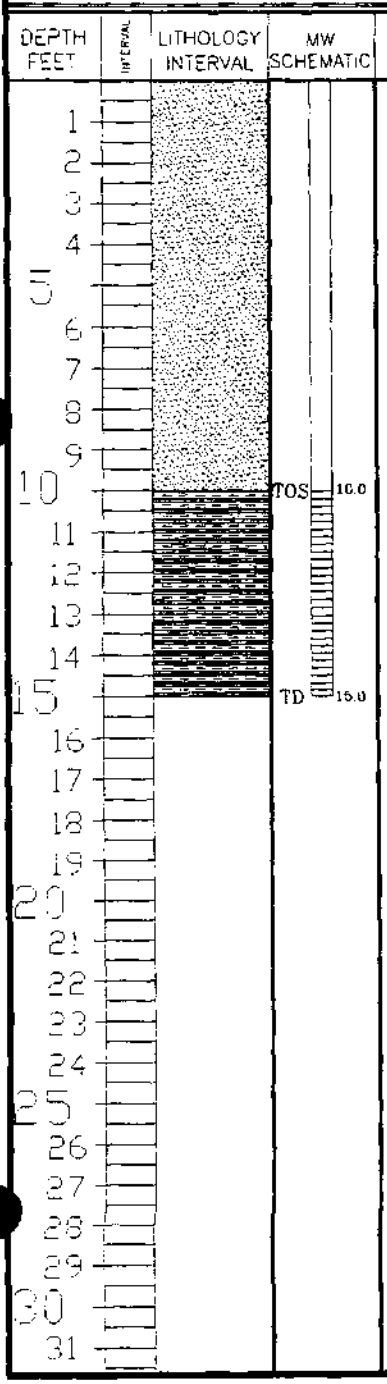
BLOOMFIELD, NM 87413
(505) 632-1199

BORE / TEST HOLE REPORT

BORING # ..... BH - 5
MW # 5
PAGE # 5
DATE STARTED 5/30/96
DATE FINISHED 6/03/96
OPERATOR ..... JCB
PREPARED BY NJV

LOCATION NAME: ROWLAND GC # 1
CLIENT: AMOCO PRODUCTION COMPANY
CONTRACTOR: BLAGG ENGINEERING, INC.
EQUIPMENT USED: MOBILE DRILL RIG (EARTHPROBE)
BORING LOCATION: N20W, 171 FEET FROM WELL HEAD.



FIELD CLASSIFICATION AND REMARKS

TOP OF CASING FLUSH WITH GROUND SURFACE (ADDED 1.95 FT. EXTENSION FOR SAMPLING PURPOSES).

DARK YELLOWISH BROWN SAND TO SILTY SAND, NON COHESIVE, SLIGHTLY MOIST, FIRM TO DENSE, NO APPARENT HYDROCARBON ODOR OBSERVED (0.0 - 8.0 FT. INTERVAL). LIGHT TO DARK MEDIUM GRAY, STRONG HYDROCARBON ODOR OBSERVED (8.0 - 10.0 FT. INTERVAL).

▼ GW DEPTH ON 6/14/96 = 8.45 FT. (APPROX.) FROM GROUND SURFACE.

DARK MEDIUM GRAY CLAY, PLASTIC, SATURATED, STIFF TO HARD. STRONG HYDROCARBON ODOR OBSERVED (10.0 - 15.0 FT. INTERVAL).

NOTES:
- SAND TO SILTY SAND.
- CLAY.
- TOS - TOP OF SCREEN FROM GROUND SURFACE.
- TD - TOTAL DEPTH OF MONITOR WELL FROM GROUND SURFACE.
- GW - GROUND WATER.

DRAWING: ROWLAN-5 | DATE: 3/06/97 | DWN BY: NJV

BLAGG ENGINEERING, Inc.

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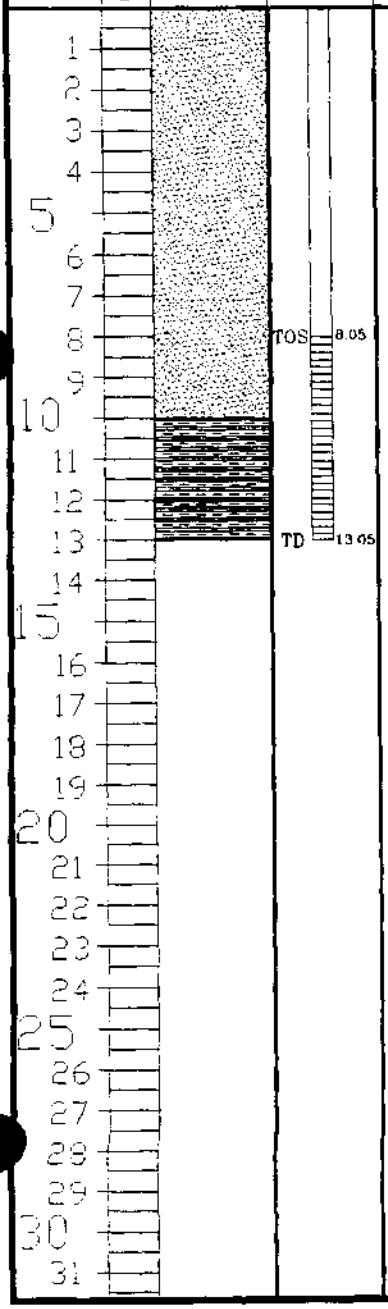
(505) 632-1199

BORE / TEST HOLE REPORT

BORING # ..... BH - 5
MW # 5
PAGE # 5A
DATE STARTED 5/30/96
DATE FINISHED 6/03/96
OPERATOR ..... JCB
PREPARED BY NJV

LOCATION NAME: ROWLAND GC # 1
CLIENT: AMOCO PRODUCTION COMPANY
CONTRACTOR: BLAGG ENGINEERING, INC.
EQUIPMENT USED: MOBILE DRILL RIG (EARTHPROBE)
BORING LOCATION: N20W, 171 FEET FROM WELL HEAD.



FIELD CLASSIFICATION AND REMARKS

GROUND SURFACE

TOP OF CASING APPROX. 1.95 FT ABOVE GROUND SURFACE (PULLED CASING UP 1.95 FT. 5/7/97).

DARK YELLOWISH BROWN SAND TO SILTY SAND, NON COHESIVE, SLIGHTLY MOIST, FIRM TO DENSE, NO APPARENT HYDROCARBON ODOR OBSERVED (0.0 - 8.0 FT. INTERVAL), LIGHT TO DARK MEDIUM GRAY, STRONG HYDROCARBON ODOR OBSERVED (8.0 - 10.0 FT. INTERVAL).

▼ GW DEPTH ON 6/24/97 = 8.32 FT. (APPROX.) FROM GROUND SURFACE.

DARK MEDIUM GRAY CLAY, PLASTIC, SATURATED, STIFF TO HARD, STRONG HYDROCARBON ODOR OBSERVED (10.0 - 15.0 FT. INTERVAL).

NOTES:
- SAND TO SILTY SAND.
- CLAY.
- TOS - TOP OF SCREEN FROM GROUND SURFACE.
- TD - TOTAL DEPTH OF MONITOR WELL FROM GROUND SURFACE.
- GW - GROUND WATER.

DRAWING: ROW-5R | DATE: 6/25/97 | REV. BY: NJV

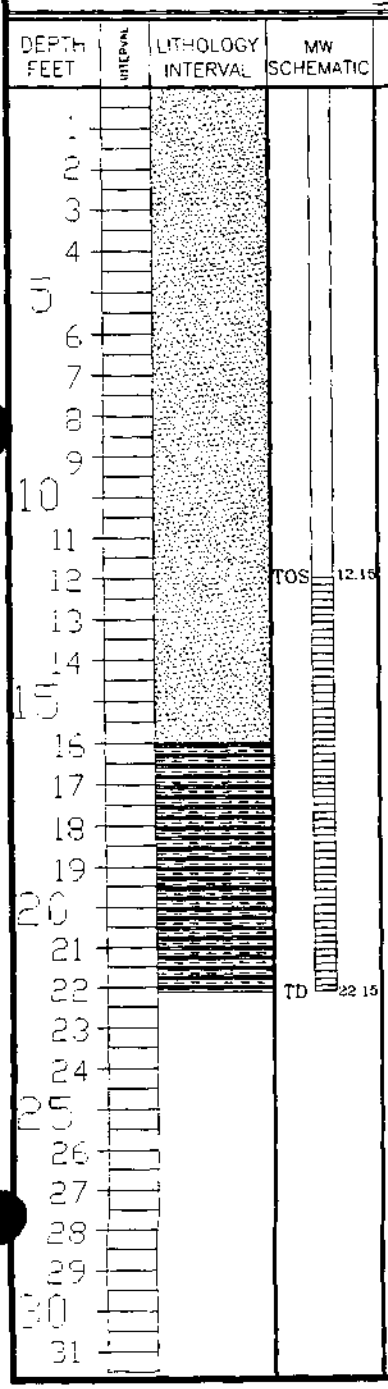
BLAGG ENGINEERING, Inc.

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

BORE / TEST HOLE REPORT

BORING #..... BH - 6
MW #..... 6
PAGE #..... 6
DATE STARTED 6/17/97
DATE FINISHED 6/17/97
OPERATOR..... JCB
PREPARED BY NJV

LOCATION NAME: ROWLAND GC # 1
CLIENT: AMOCO PRODUCTION COMPANY
CONTRACTOR: BLAGG ENGINEERING, INC.
EQUIPMENT USED: MOBILE DRILL RIG (EARTHPROBE)
BORING LOCATION: N10.5E, 258 FEET FROM WELL HEAD.



FIELD CLASSIFICATION AND REMARKS

GROUND SURFACE

TOP OF CASING APPROX. 2.85 FT. ABOVE GROUND SURFACE.

DARK YELLOWISH BROWN SAND TO SILTY SAND, NON COHESIVE TO SLIGHTLY PLASTIC, SLIGHTLY MOIST, FIRM TO DENSE, NO APPARENT HYDROCARBON ODOR OBSERVED (0.0 - 16.0 FT. INTERVAL).

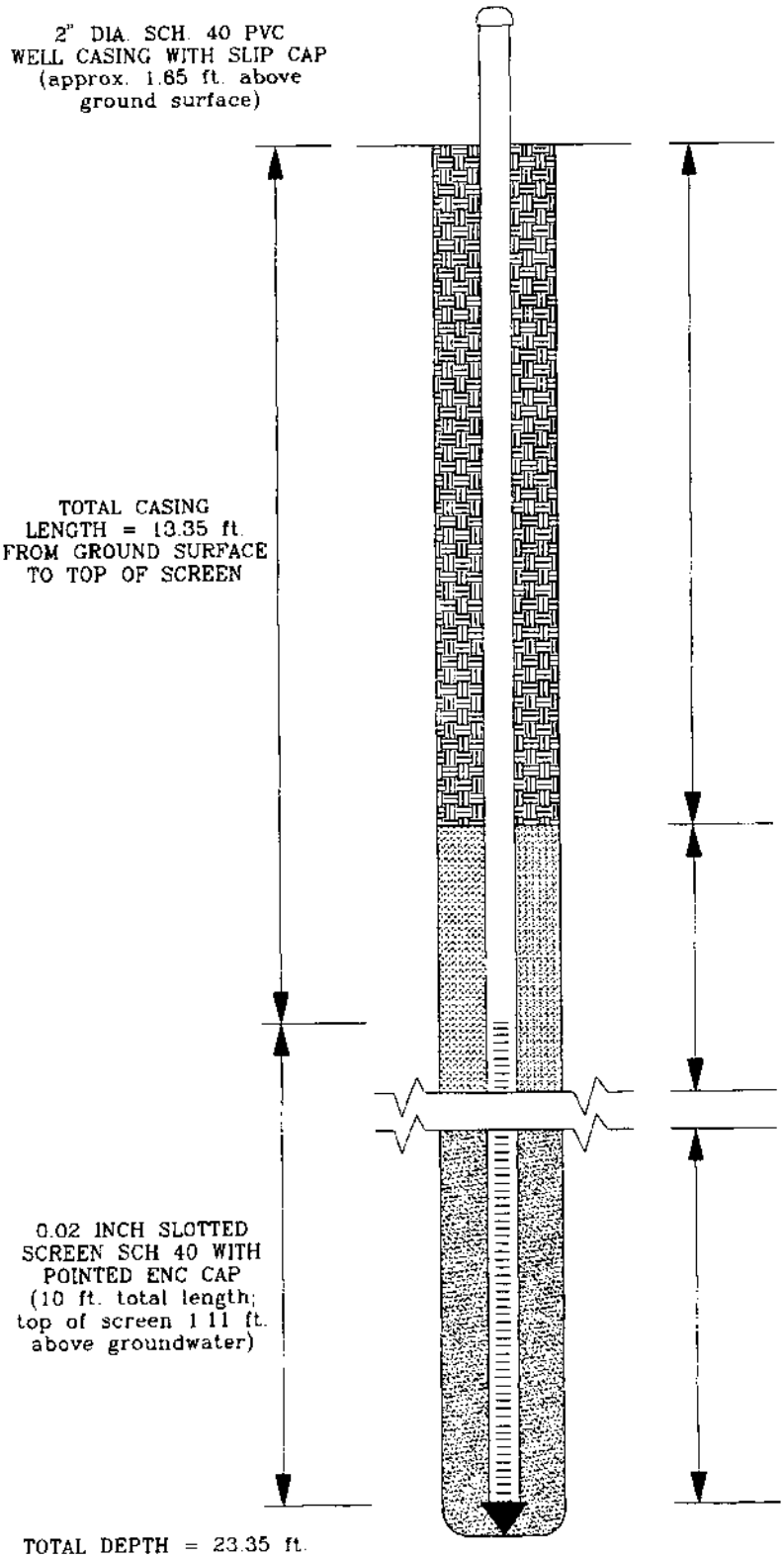
▼ GW DEPTH ON 6/24/97 = 12.70 FT. (APPROX.) FROM GROUND SURFACE.

LIGHT OLIVE GRAY CLAY, HIGHLY PLASTIC, SATURATED, STIFF TO HARD, NO APPARENT HYDROCARBON ODOR DETECTED (16.0 - 22.15 FT. INTERVAL).

NOTES:
- SAND TO SILTY SAND
- CLAY.
- TOS - TOP OF SCREEN FROM GROUND SURFACE.
- TD - TOTAL DEPTH OF MONITOR WELL FROM GROUND SURFACE.
- GW - GROUND WATER.

DRAWING: ROWLAN-6 | DATE: 6/25/97 | DWN BY: NJV

MONITOR WELL #1



AMOCO PRODUCTION COMPANY

ROWLAND GC # 1

MONITOR WELL CONSTRUCTION & COMPLETION

INSTALLED WITH MOBILE RIG

BLAGG ENGINEERING, INC.

CONSULTING PETROLEUM / RECLAMATION SERVICES

P.O. BOX 87

BLOOMFIELD, NEW MEXICO 87413

PHONE: (505) 632-1199

MONITOR WELL SCHEMATIC

DRAFTED BY: NJV

DATE: APR. '97

FILENAME: MW-

MONITOR WELL #2

AMOCO PRODUCTION COMPANY

ROWLAND GC # 1

MONITOR WELL CONSTRUCTION & COMPLETION

INSTALLED WITH MOBILE RIG

BLAGG ENGINEERING, INC.

CONSULTING PETROLEUM / RECLAMATION SERVICES

P.O. BOX 87

BLOOMFIELD, NEW MEXICO 87413

PHONE: (505) 632 1199

MONITOR WELL SCHEMATIC

DRAFTED BY: NJV

DATE: APR. '97

FILENAME: MW-2

MONITOR WELL #3

AMOCO PRODUCTION COMPANY

ROWLAND GC # 1

MONITOR WELL CONSTRUCTION & COMPLETION

INSTALLED WITH MOBILE RIG

BLAGG ENGINEERING, INC.

CONSULTING PETROLEUM / RECLAMATION SERVICES

P.O. BOX 87

BLOOMFIELD, NEW MEXICO 87413

PHONE: (505) 632-1199

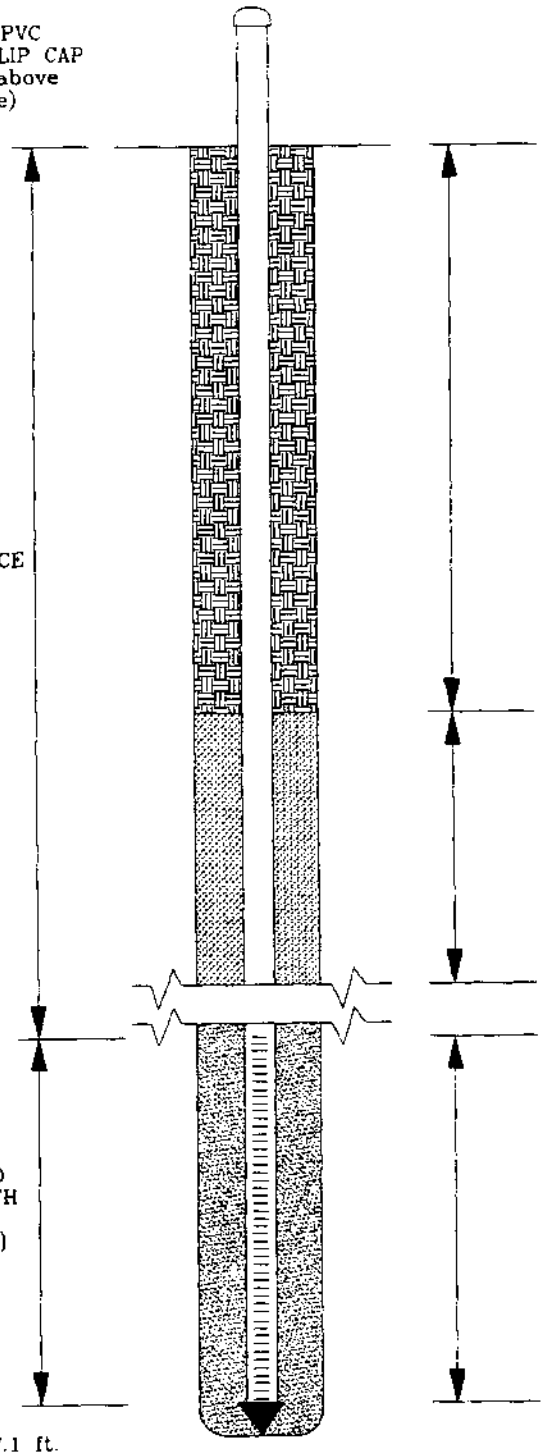
MONITOR WELL SCHEMATIC

DRAFTED BY: NJV

DATE: APR. '97

FILENAME: MW-3

MONITOR WELL #4



AMOCO PRODUCTION COMPANY

ROWLAND GC # 1

MONITOR WELL CONSTRUCTION & COMPLETION

INSTALLED WITH MOBILE RIG

BLAGG ENGINEERING, INC.

CONSULTING PETROLEUM / RECLAMATION SERVICES

P.O. BOX 87

BLOOMFIELD, NEW MEXICO 87413

PHONE: (505) 632-1199

MONITOR WELL SCHEMATIC

DRAFTED BY: NJV

DATE: APR. '97

FILENAME: MW-

MONITOR WELL #4R

AMOCO PRODUCTION COMPANY

ROWLAND GC # 1

MONITOR WELL CONSTRUCTION & COMPLETION

INSTALLED WITH MOBILE RIG

BLAGG ENGINEERING, INC.

CONSULTING PETROLEUM / RECLAMATION SERVICES

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PHONE: (505) 632-1199

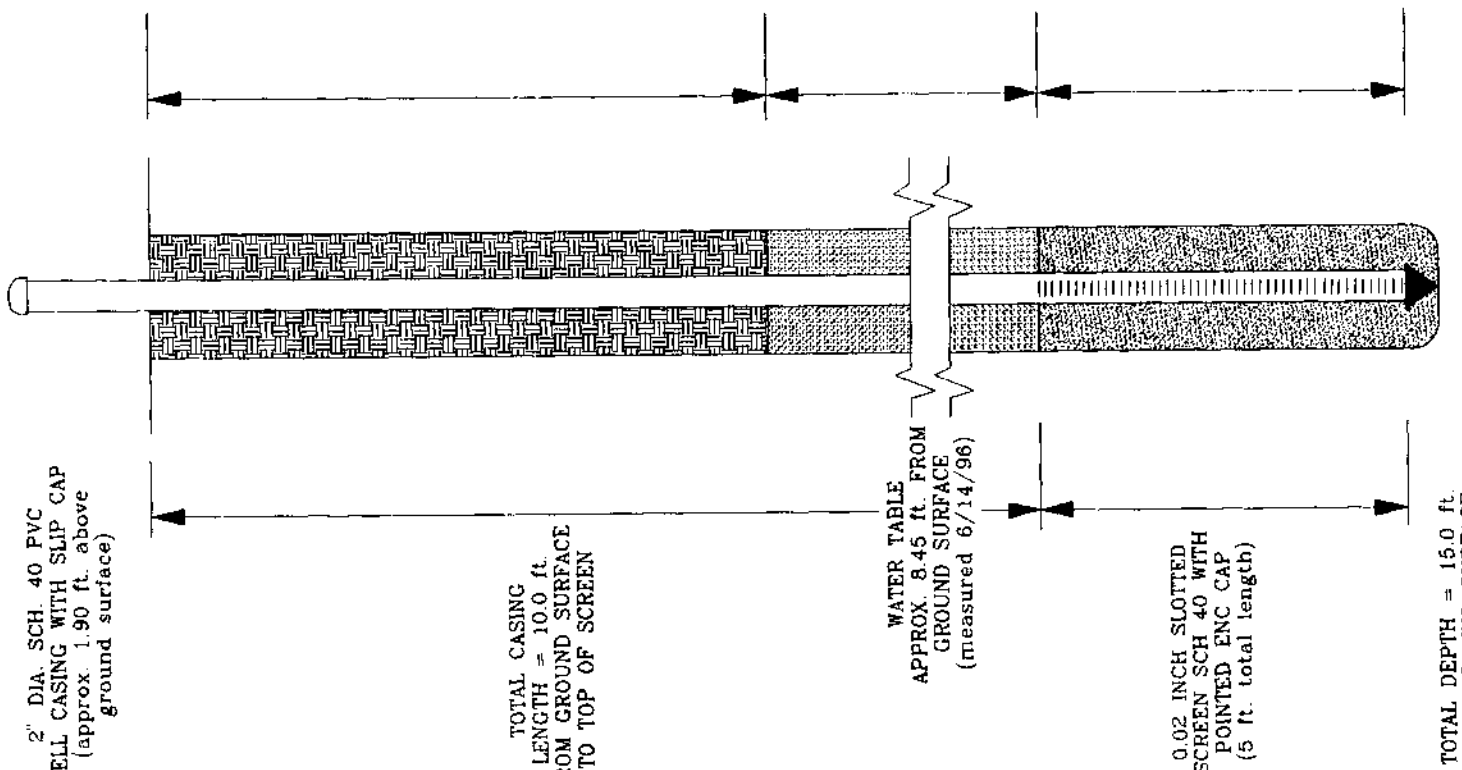
MONITOR WELL SCHEMATIC

DRAFTED BY: NJV

DATE: JUN. '98

FILENAME: MW-4R

MONITOR WELL #5



AMOCO PRODUCTION COMPANY

ROWLAND GC # 1

MONITOR WELL CONSTRUCTION & COMPLETION

INSTALLED WITH MOBILE RIG

BLAGG ENGINEERING, INC.

CONSULTING PETROLEUM / RECLAMATION SERVICES

P.O. BOX 87

BLOOMFIELD, NEW MEXICO 87413

PHONE: (505) 632-1199

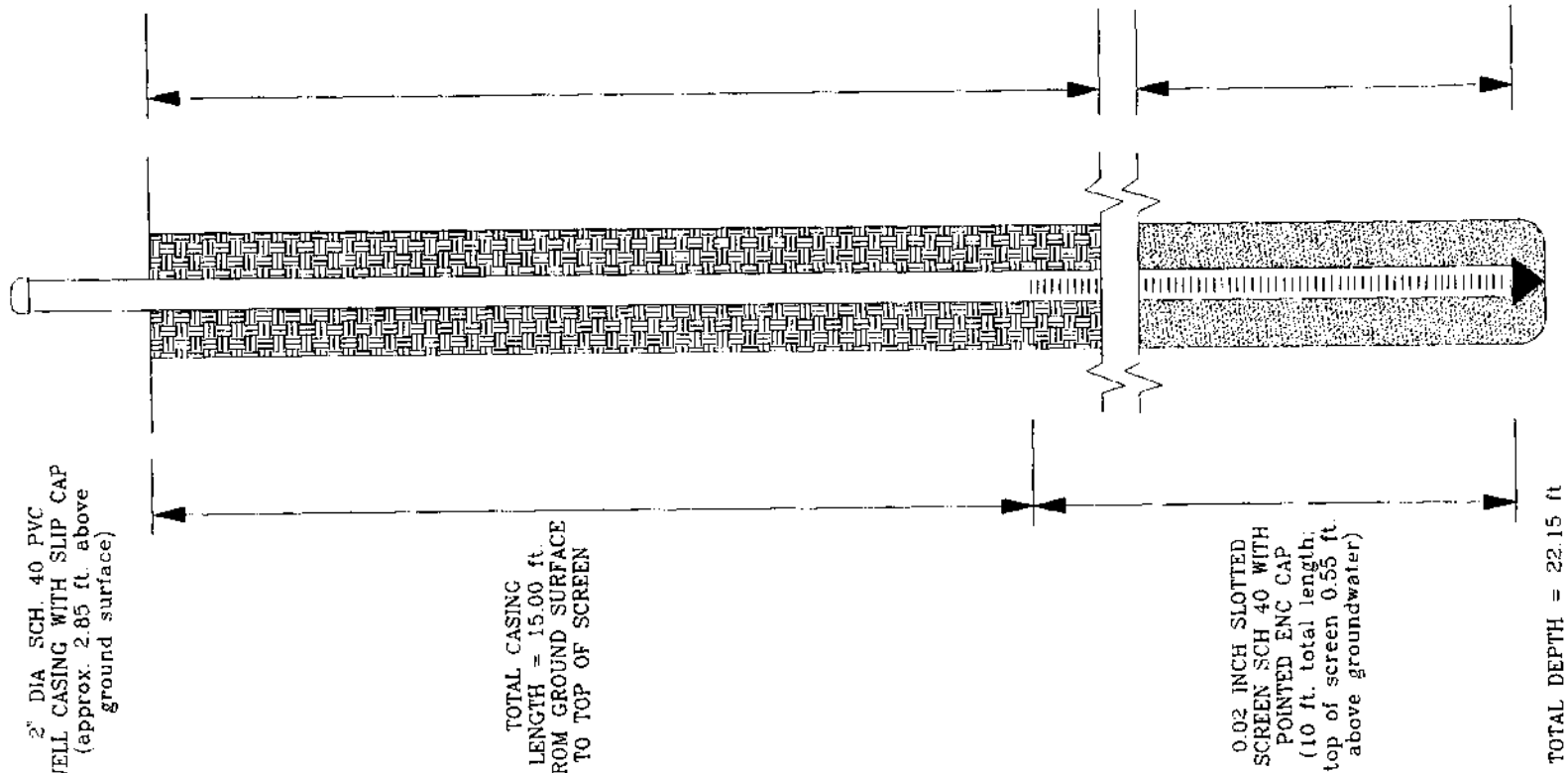
MONITOR WELL SCHEMATIC

DRAFTED BY: NJV

DATE: APR. '97

FILENAME: MW--

MONITOR WELL #6



AMOCO PRODUCTION COMPANY

ROWLAND GC # 1

MONITOR WELL CONSTRUCTION & COMPLETION

INSTALLED WITH MOBILE RIG

BLAGG ENGINEERING, INC.

CONSULTING PETROLEUM / RECLAMATION SERVICES

P.O. BOX 87

BLOOMFIELD, NEW MEXICO 87413

PHONE: (505) 632-1199

MONITOR WELL SCHEMATIC

DRAFTED BY: NJV

DATE: JUN. '97

FILENAME: MW-6

ATTACHMENT 3
HYDROGEN PEROXIDE INJECTION WORK PLAN (2011)

COMPLIANCE / ENGINEERING / REMEDIATION

LT Environmental, Inc.
2243 Main Avenue, Suite 3
Durango, Colorado 81301
T 970.385.1096 / F 970.385.1873

January 28, 2011

Mr. James McDaniel
XTO Energy, Inc.
382 Road 3100
Aztec, New Mexico 87410

RE: Hydrogen Peroxide Injection Work Plan
XTO Energy, Inc.
Rowland Gas Com #1
Farmington, New Mexico

Dear Mr. McDaniel:

LT Environmental (LTE) presents the following scope of work to XTO Energy, Inc. (XTO) to conduct hydrogen peroxide injection as a remedial alternative at the Rowland Gas Com #1 site (site). XTO intends to pursue this remedial alternative to address the petroleum hydrocarbon impacts to the groundwater at the site. A cost estimate for these activities will be sent under a separate cover letter.

Site Description

The site is located at latitude 36.779300° north by -108.043654° west, World Geodetic System 1984 (WGS 84) in San Juan County, New Mexico. It is on the west side of Road 3100 in between Road 3175 and Road 3177 in Farmington, New Mexico.

Groundwater at the Site contains concentrations of benzene, toluene, ethylbenzene and total xylenes (BTEX) in excess of the New Mexico Water Quality Control Commission (NMWQCC) standards as a result of unlined pits previously used at the site. Soils impacted by an unlined production pit and an unlined separator pit were excavated in 1993. Groundwater was encountered within the production pit excavation, and six groundwater monitoring wells were later installed. Based on initial sampling results from MW-1 and MW-2, which indicated that BTEX concentrations were non-detect or below NMWQCC standards, sampling was discontinued at these wells. BTEX concentrations in MW-3 and MW-6 were also below NMWQCC standards, but these wells were placed on an annual sampling schedule to monitor potential migration of BTEX constituents identified in groundwater from MW-4 and MW-5. In 1998, MW-4 was damaged and replaced by MW-4R. The new well was positioned closer to the original production pit excavation.

Annual sampling results through 2004 indicated that BTEX concentrations were consistently beneath detection levels in MW-3, MW-4R and MW-6, so sampling was discontinued in all wells except MW-5. MW-5 has been sampled on a quarterly schedule since 2007. Table 1 provides historical sample results. Benzene concentrations in MW-5

have been highly variable, ranging from 1,270 µg/l to 10 µg/l. The most recent benzene concentrations have been from 120 µg/l to 340 µg/l during 2010. Concentrations of total xylenes have steadily declined in MW-5 from 3,000 µg/l to 600 µg/l. Toluene and ethylbenzene concentrations are below NMWQCC standards.

Groundwater is encountered at a depth from approximately 7.5 to 15.5 feet below ground surface (bgs) at the site. An irrigation ditch is located approximately 250 feet west of the site. The flow of water in the ditch impacts the depth to groundwater and groundwater flow direction. Groundwater flow direction is variable, flowing to the east when the irrigation ditch contains water. If the ditch does not contain water, groundwater flow direction varies from the southeast to the northeast. Both depth to groundwater and groundwater flow direction vary seasonally, and are highly influenced by the flow of water in the irrigation ditch.

Lithology at the site is not known.

Scope of Work

Currently, the only remedial action at this site is monitored natural attenuation. XTO desires to pursue a more aggressive remedial option, consisting of slugs of liquid hydrogen peroxide poured into MW-5. The following sequence of events for the hydrogen peroxide injections at the Site is suggested:

1. Purge the groundwater from MW-5 until dry.
2. Pour hydrogen peroxide into each well casing until the hydrogen peroxide is within 6 inches of the top of the casing and stays that way for a period of 2 minutes.
3. The concentration of the hydrogen peroxide will not exceed 8%, the concentration at which hydrogen peroxide is classified as a hazardous material (Class 1 Oxidizer) by the U.S. Department of Transportation. The total volume of MW-5 is 2.4 gallons. These volumes will be used as a starting point for well application. Additional volumes may be necessary.
4. Wait 7 days.
5. Measure depth to groundwater in MW-5.
6. Purge three well casing volumes from MW-5. If three well casing volumes cannot be purged, then purge the wells until dry. Parameters including pH, electrical conductivity, and temperature will be monitored during purging. Collect a groundwater sample for analysis of BTEX by EPA Method 8021B to determine effectiveness of the treatment and alter hydrogen peroxide concentrations and volumes as necessary.
7. Repeat steps 1 through 6 weekly for a total of 4 weeks.
8. Measure depth to groundwater in MW-5.
9. Purge three well casing volumes from MW-5. If three well casing volumes cannot be purged, then purge the wells until dry. Collect a weekly groundwater sample for

analysis of BTEX by EPA Method 8021B for an additional 4 weeks to determine if rebound of BTEX concentrations occurs.

10. Analyze results and make recommendations for additional treatment or monitoring.

All samples will be shipped via overnight courier to ESC analytical laboratories in Mt. Juliet, Tennessee for analysis with a standard turn-around time. No quality assurance/quality control samples (i.e. trip blanks or field blanks) will be used.

LTE will prepare a site specific health and safety plan (HASP) for the hydrogen peroxide injection and the groundwater sampling activities. A cost estimate for this work plan will be transmitted to XTO under a separate cover letter.

Schedule

LTE plans to implement this plan in March and April of 2011. Upon completion of the 8 weeks of activities, LTE will evaluate the data and submit a report to XTO. The report will include recommendations for any additional activities at the site.

Sincerely,

LT ENVIRONMENTAL, INC.

Julie Linn, P.G.
Senior Geologist

Copy: Ashley Ager, LTE

ATTACHMENT 4
EXCAVATION REPORT (2013)

District I
1625 N. French Dr., Hobbs, NM 88240
District II
1301 W. Grand Avenue, Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-141
Revised October 10, 2003

Submit 2 Copies to appropriate District Office in accordance with Rule 116 on back side of form

Release Notification and Corrective Action

OPERATOR

☐ Initial Report ☒ Final Report

Name of Company: XTO Energy, Inc.	Contact: James McDaniel
Address: 382 Road 3100, Aztec, New Mexico 87410	Telephone No.: (505) 333-3701
Facility Name: Rowland Gas COM #1 (~~30-045-09129~~) 30-045-09124	Facility Type: Gas Well

Surface Owner: Private	Mineral Owner:	Lease No.:

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
P	25	30N	12W	1030	FSL	910	FEL	San Juan

Latitude: 36.7789 **Longitude:** -108.0439

NATURE OF RELEASE

Type of Release: Historical	Volume of Release: Unknown	Volume Recovered: Unknown
Source of Release: Historical Earthen Pit	Date and Hour of Occurrence: NA	Date and Hour of Discovery: ~~NA~~ 4/25/2013
Was Immediate Notice Given? ☐ Yes ☐ No ☒ Not Required	If YES, To Whom?	RCVD MAY 28 '13
By Whom?	Date and Hour:	OIL CONS. DIV.
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	DIST. 3

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.*
The Rowland Gas COM #1 well site is the site of an active groundwater site, NMOCD #3RP-124. Due to elevated benzene levels found during quarterly groundwater monitoring, XTO Energy performed a subsurface investigation of the area around the impacted monitoring well, and discovered impacted soil beneath the surface. Management decided to excavate the impacted source material, hoping to alleviate groundwater impacts. The site was ranks a 60 due to a depth to groundwater of less than 50 feet, distance to an irrigation ditch of less than 200 feet, and an estimated distance to a water well of less than 1,000 feet. This set the closure standard to 100 ppm TPH, 10 ppm benzene and 50 ppm total BTEX.

Describe Area Affected and Cleanup Action Taken.*
All remediation efforts are outlined in the attached LT Environmental Excavation Report. All samples, including a water sample, returned results below the regulatory standards determined for this site.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Signature:	OIL CONSERVATION DIVISION
Printed Name: James McDaniel, CHMM #15676	Approved by District Supervisor:
Title: EH&S Supervisor	Approval Date: 10/24/2013 Expiration Date:
E-mail Address: james_mcdaniel@xtoenergy.com	Conditions of Approval: Attached ☐
Date: May 23, 2013 Phone: 505-333-3701	

CERTIFIED HAZARDOUS MATERIALS MANAGER
JAMES P. McDANIEL
15676
CHMM
EXPIRES MAY 16, 2016

nJK1329743151

COMPLIANCE / ENGINEERING / REMEDIATION

LT Environmental Inc.
2243 Main Avenue, Suite 3
Durango, Colorado 81301
T 970.385.1096 / F 970.385.1873

May 10, 2013

Mr. James McDaniel
XTO Energy, Inc.
382 County Road 3100
Aztec, New Mexico 87410

RE: Report of Excavation Activities
XTO Energy, Inc.
Rowland Gas Com #1

Dear Mr. McDaniel:

LT Environmental, Inc. (LTE) is pleased to present to XTO Energy, Inc. (XTO) this letter summarizing the results of excavation activities at the Rowland Gas Com #1 natural gas production well located in Unit P of Section 25 in Township 30N, Range 12W of San Juan County, New Mexico (Site; Figure 1). The purpose of the excavation was to remove the historical source of petroleum hydrocarbons impacting groundwater in existing monitoring well MW-5.

Background

On August 2, 1993, the previous operator, Amoco Production Company (Amoco), excavated soil impacted by petroleum hydrocarbons during historical operations of two unlined production pits at the Site (Figure 2). To address impacts to groundwater, Amoco installed monitoring wells MW-1, MW-2, MW-3, MW-4, and MW-5 in May of 1996 and MW-6 in June of 1997. Groundwater from MW-4 and MW-5 contained benzene, toluene, ethylbenzene, and total xylenes (BTEX) concentrations exceeding New Mexico Water Quality Control Commission (NMWQCC) standards. Groundwater analytical results from samples collected from MW-1, MW-2, MW-3, and MW-6 did not exceed the NMWQCC standards for BTEX; therefore, Amoco discontinued sampling of these wells. In 1998, MW-4 was damaged during equipment upgrades and replaced with MW-4R. BTEX concentrations were last detected in groundwater sampled from MW-4R in May of 1999 and sampling of MW-4R was discontinued in February 2002. Groundwater sampled from MW-5 has consistently contained elevated BTEX concentrations. Since 2009, the benzene concentrations have varied seasonally, but exhibited an overall net increase. Based on a limited subsurface investigation indicating the lateral extent of impacted soil was limited, XTO decided to remove the historical source impacting groundwater in MW-5.

Excavation Activities

During the period from April 26, 2013 to May 1, 2013, XTO contractors removed impacted soil from the Site. An LTE geologist noted visual evidence of soil impact beginning at 7 feet to 13 feet below the ground surface (bgs) and extending to an average depth of 17 feet bgs. The final dimensions of the excavation were approximately 90 feet long by 45 feet wide and the total

depth of the excavation ranged from 15 feet to 19 feet bgs. A total estimated volume of 2,187 cubic yards were excavated, 1,365 cubic yards of which was transported to the Industrial Ecosystems Inc. Landfarm near Aztec, New Mexico. The remainder was clean overburden that was stockpiled on site and used to backfill the excavation. Groundwater monitoring well MW-5 was removed during the excavation.

As soil was removed, LTE personnel conducted field screening of organic vapor concentrations with a photoionization detector (PID) according to New Mexico Oil Conservation Division (NMOCD) headspace techniques to determine if additional excavation was required. Once PID measurements indicated impacted soil had been removed, LTE collected confirmation samples of the sidewalls and floor of the excavation in locations depicted on Figure 3 by depositing five aliquots of soil into plastic bags, thoroughly mixing the contents and sampling into four ounce glass jars. Soil samples were stored on ice and delivered to Envirotech Laboratory (Envirotech) in Bloomfield, New Mexico following strict chain-of-custody procedures. The soil samples were analyzed for BTEX by United States Environmental Protection Agency (USEPA) Method 8021B and total petroleum hydrocarbons (TPH) by USEPA Method 8015B.

LTE sampled groundwater that pooled in excavation by collecting a grab sample in a decontaminated pitcher or bailer and immediately filling three pre-cleaned and pre-preserved 40 milliliter (ml) glass vials with zero headspace to prevent degradation of the sample. Envirotech analyzed the sample for BTEX according to USEPA Method 8021B.

Results

Laboratory analytical results indicate BTEX and TPH concentrations in soil on the sidewalls and the floor of the excavation did not exceed NMOCD standards for sites where groundwater is less than 50 feet deep. Laboratory analytical results are listed on Table 1 and depicted in Figure 3. The complete laboratory reports are included in Attachment A.

Groundwater was encountered at approximately 15 feet bgs. No BTEX concentrations were detected in the groundwater sample. Laboratory analytical results from groundwater samples are shown in Table 2 and depicted in Figure 3. The complete laboratory analytical report is included in Attachment A.

Conclusions

From April 26, 2013 through May 1, 2013, XTO removed a total of 1,365 cubic yards of impacted soil from the Site. Laboratory analytical results of soil samples collected from the sidewalls and floor of the excavation confirm all impacted soil was removed. A groundwater sample collected from within the excavation did not contain detectable concentrations of BTEX indicating the historical source of petroleum hydrocarbons affecting groundwater at former monitoring well MW-5 has been addressed. Upon receipt of the confirmation sample results, XTO backfilled the excavation.

LTE appreciates the opportunity to provide environmental services to XTO. If you have any questions regarding this report, please contact us at (970) 385-1096.

Sincerely,

LT ENVIRONMENTAL, INC.

Devin Hencmann
Staff Geologist

Ashley L. Ager
Senior Geologist/Office Manager

Attachments (6)

Figure 1 – Site Location Map
Figure 2 – Site Map
Figure 3 – Excavation Site Map
Table 1 – Soil Analytical Results
Table 2 – Groundwater Analytical Results
Attachment A – Analytical Laboratory Reports

FIGURES

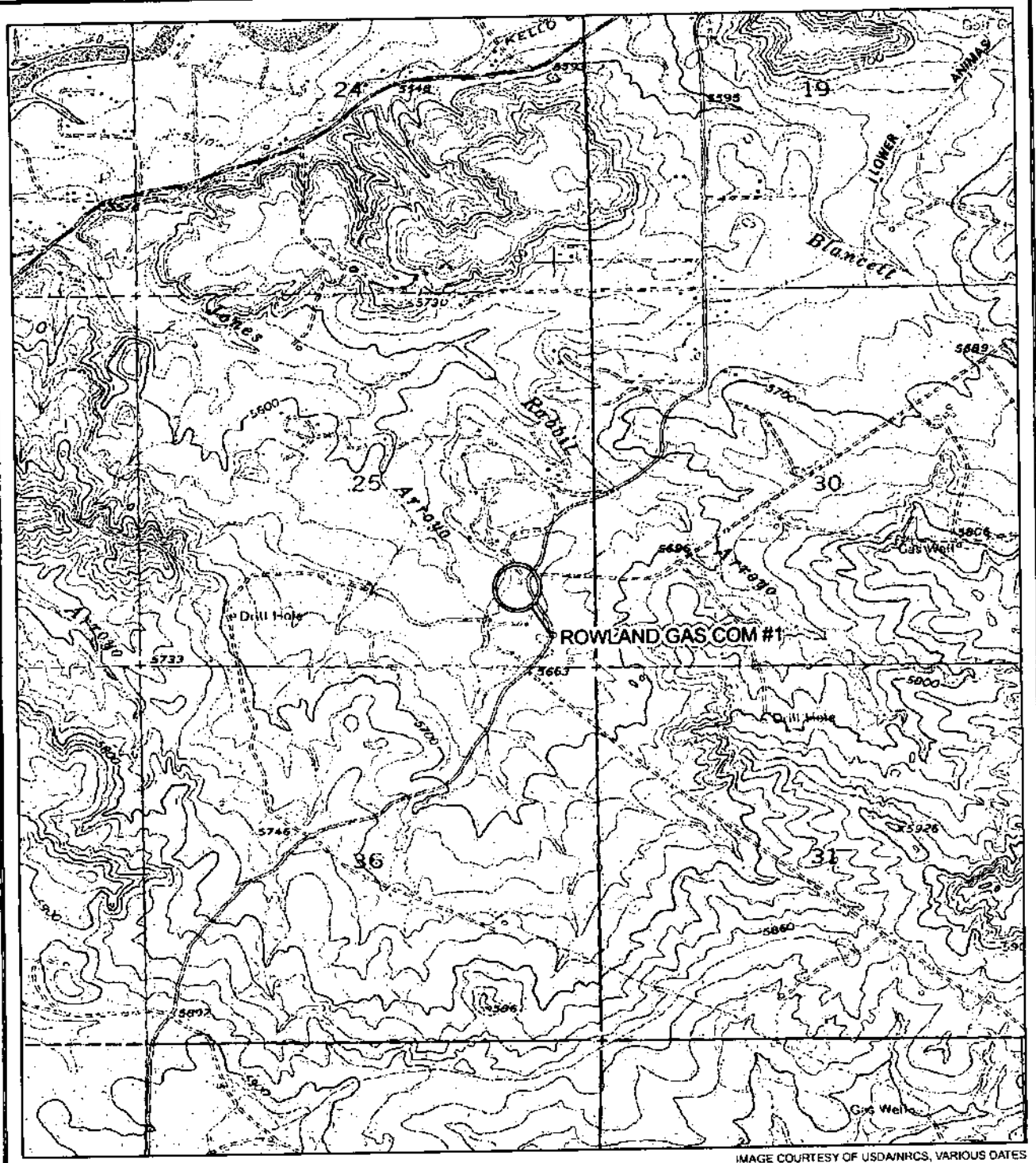


FIGURE 1
SITE LOCATION MAP
ROWLAND GAS COM #1
SESE SEC 25 T30N R12W
SAN JUAN COUNTY, NEW MEXICO
XTO ENERGY, INC.

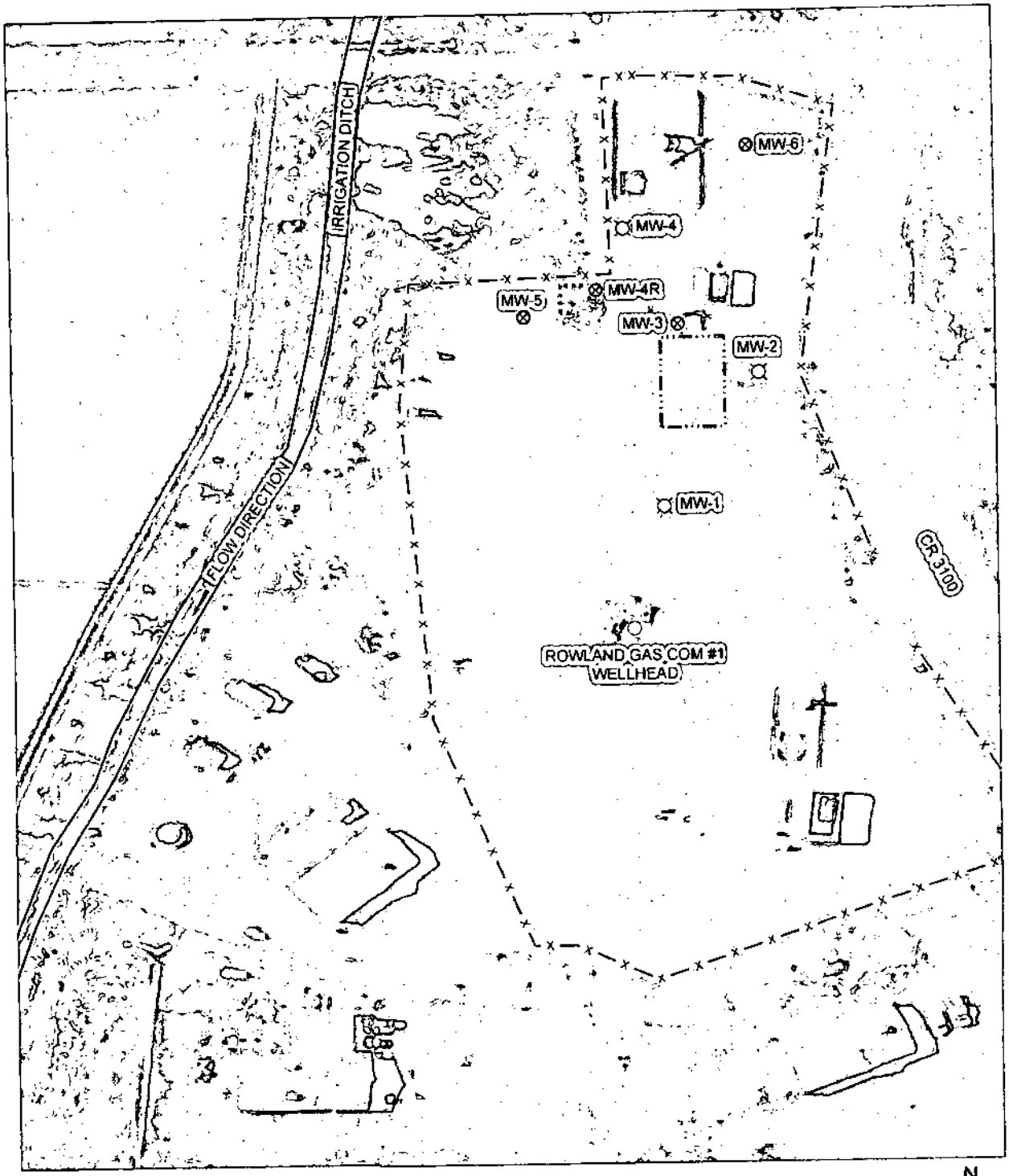
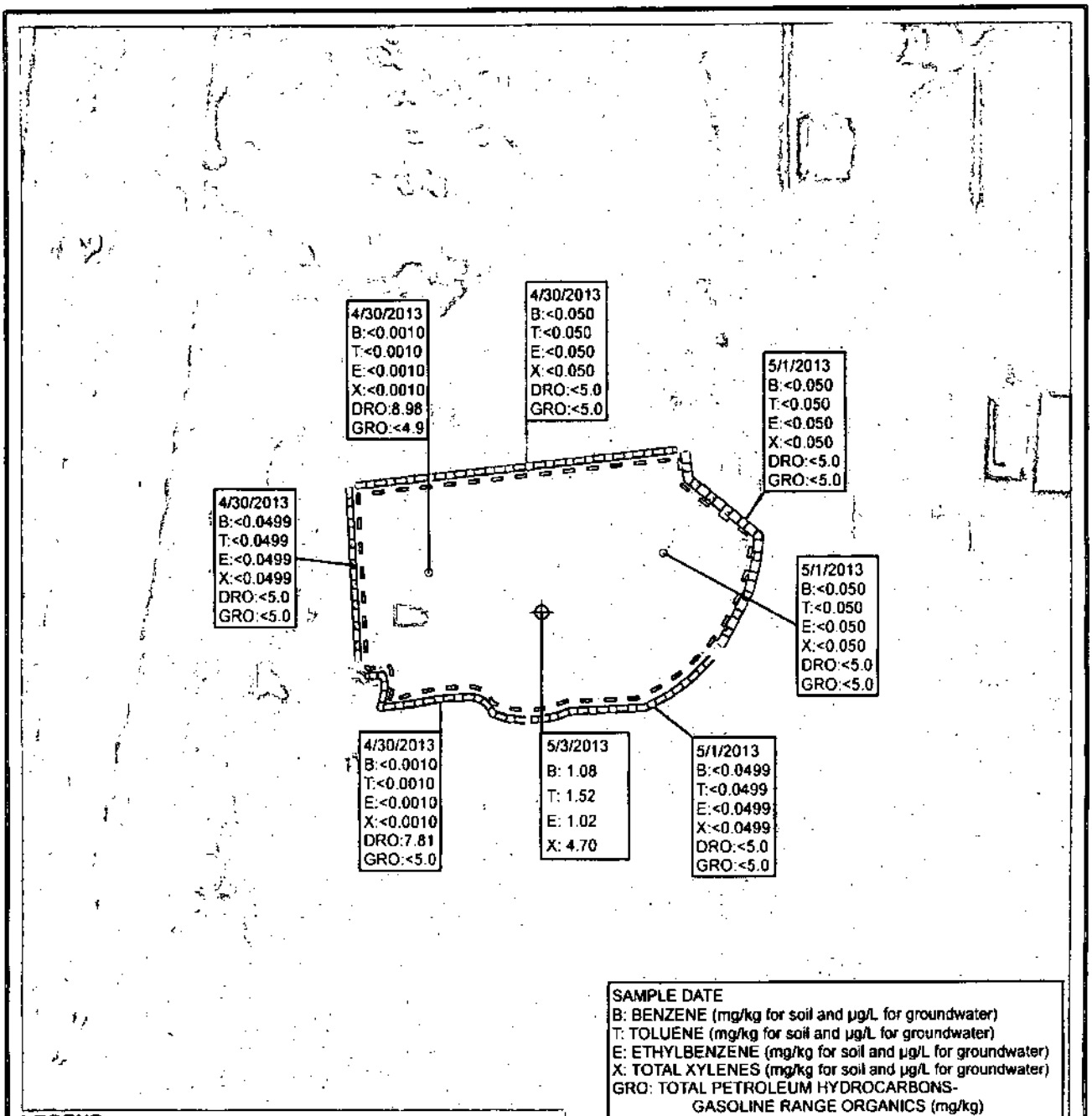


FIGURE 2
SITE MAP
ROWLAND GAS COM #1
SESE SEC 25 T30N R12W
SAN JUAN COUNTY, NEW MEXICO

XTO ENERGY, INC.



SAMPLE DATE
B: BENZENE (mg/kg for soil and µg/L for groundwater)
T: TOLUENE (mg/kg for soil and µg/L for groundwater)
E: ETHYLBENZENE (mg/kg for soil and µg/L for groundwater)
X: TOTAL XYLENES (mg/kg for soil and µg/L for groundwater)
GRO: TOTAL PETROLEUM HYDROCARBONS- GASOLINE RANGE ORGANICS (mg/kg)
DRO: TOTAL PETROLEUM HYDROCARBONS- DIESEL RANGE ORGANICS (mg/kg)
<: INDICATES RESULT IS LESS THAN THE LABORATORY REPORTING LIMIT

IMAGE COURTESY OF ESRI/BING MAPS

LEGEND

- SOIL SAMPLE
- EXCAVATION GROUNDWATER SAMPLE
- SOUTH WALL MIDDLE EAST COMPOSITE SAMPLE LOCATION
- SOUTH WALL MIDDLE WEST COMPOSITE SAMPLE LOCATION
- EAST WALL COMPOSITE SAMPLE LOCATION
- NORTH WALL COMPOSITE SAMPLE LOCATION
- WEST WALL COMPOSITE SAMPLE LOCATION
- EXCAVATION EXTENT

0 30 60
Feet

N

FIGURE 3
EXCAVATION SITE MAP
ROWLAND GAS COM #1
SESE SEC 25 T30N R12W
SAN JUAN COUNTY, NEW MEXICO
XTO ENERGY, INC. - SAN JUAN DIVISION

TABLES

TABLE 1

SOIL ANALYTICAL RESULTS
ROWLAND GAS COM #1
XTO ENERGY, INC.

Sample ID	Date Sampled	Field Headspace Reading (ppm)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	DRO (mg/kg)	GRO (mg/kg)
North Wall Comp.	4/30/2013	0.0	<0.050	<0.050	<0.050	<0.050	<5.0	<5.0
West Wall Comp.	4/30/2013	97.8	<0.0499	<0.0499	<0.0499	<0.0499	<5.0	<5.0
East Wall Comp.	5/1/2013	2.3	<0.0010	<0.0010	<0.0010	<0.0010	7.81	<5.0
South Wall Middle East Comp.	5/1/2013	0.0	<0.0499	<0.0499	<0.0499	<0.0499	<5.0	<5.0
South Wall Middle West Comp.	4/30/2013	0.0	<0.050	<0.050	<0.050	<0.050	<5.0	<5.0
Floor Comp.	4/30/2013	0.0	<0.050	<0.050	<0.050	<0.050	<5.0	<5.0
East Floor Comp.	5/1/2013	1.7	<0.0010	<0.0010	<0.0010	<0.0010	8.98	<4.9
NMOCD Standard			**10**			**50**	**Combined to 100**	

Notes:

GRO - Gasoline Range Organics

DRO - Diesel Range Organics

mg/kg - milligrams per kilogram

NMOCD - New Mexico Oil Conservation Commission

ppm - parts per million

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

TABLE 2

GROUNDWATER ANALYTICAL RESULTS
ROWLAND GAS COM #1
XTO ENERGY, INC.

Sample ID	Date Sampled	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
Excavation GW	5/3/2013	1.08	1.52	1.02	4.70
NMWQCC Standard		**10**	**750**	**750**	**650**

Notes:
BTEX - benzene, toluene, ethylbenzene, and total xylenes
NMWQCC - New Mexico Water Quality Control Commission
µg/L - micrograms per liter
< indicates result is less than the stated laboratory method detection limit

ATTACHMENT A
LABORTORY ANALTYICAL REPORTS

envirotech
Analytical Laboratory

Analytical Report

Report Summary

Client: XTO Energy Inc.

Chain Of Custody Number: 15475

Samples Received: 4/30/2013 4:23:00PM

Job Number: 98031-0528

Work Order: P304096

Project Name/Location: Rowland Gas Com #1

Entire Report Reviewed By: _____ Date: 5/1/13

Tim Cain, Laboratory Manager

5796 US Highway 64, Farmington, NM 87401 Ph (505) 632-0615 Fx (505) 632-1865

Three Springs • 65 Mercado Street, Suite 115, Durango, CO 81301 Ph (970) 259-0615 Fr (800) 362-1879

envirotech-inc.com

laboratory@envirotech-inc.com

envirotech
Analytical Laboratory

XTO Energy Inc.	Project Name:	Rowland Gas Com #1	
382 CR 3100	Project Number:	98031-0528	**Reported:**
Aztec NM, 87410	Project Manager:	James McDaniel	01-May-13 14:26

Analyical Report for Samples

Client Sample ID	Lab Sample ID	Matrix	Sampled	Received	Container
South wall middle-west comp	P304096-01A	Solid	04/30/13	04/30/13	Glass Jar, 4 oz.
West wall comp	P304096-02A	Solid	04/30/13	04/30/13	Glass Jar, 4 oz.
Floor comp	P304096-03A	Solid	04/30/13	04/30/13	Glass Jar, 4 oz.
North wall comp	P304096-04A	Solid	04/30/13	04/30/13	Glass Jar, 4 oz.

XTO Energy Inc.	Project Name:	Rowland Gas Com #1	
382 CR 3100	Project Number:	98031-0528	**Reported:**
Aztec NM, 87410	Project Manager:	James McDaniel	01-May-13 14:26

South wall middle-west comp

P304096-01 (Solid)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Volatile Organics by EPA 8021									
Benzene	ND	50.0	ug/kg	1	1318015	01-May-13	01-May-13	EPA 8021B	
Toluene	ND	50.0	ug/kg	1	1318015	01-May-13	01-May-13	EPA 8021B	
Ethylbenzene	ND	50.0	ug/kg	1	1318015	01-May-13	01-May-13	EPA 8021B	
p,m-Xylene	ND	50.0	ug/kg	1	1318015	01-May-13	01-May-13	EPA 8021B	
o-Xylene	ND	50.0	ug/kg	1	1318015	01-May-13	01-May-13	EPA 8021B	
Total BTEX	ND	50.0	ug/kg	1	1318015	01-May-13	01-May-13	EPA 8021B	
Surrogate: Bromochlorobenzene		*90.5 %*	*80-120*		*1318015*	*01-May-13*	*01-May-13*	*EPA 8021B*	
Surrogate: 1,4-Difluorobenzene		*91.9 %*	*80-120*		*1318015*	*01-May-13*	*01-May-13*	*EPA 8021B*	
Surrogate: Fluorobenzene		*91.3 %*	*80-120*		*1318015*	*01-May-13*	*01-May-13*	*EPA 8021B*	
Nonhalogenated Organics by 8015									
Gasoline Range Organics (C6-C10)	ND	5.00	mg/kg	1	1318016	01-May-13	01-May-13	EPA 8015D	
Diesel Range Organics (C10-C28)	ND	5.00	mg/kg	1	1318016	01-May-13	01-May-13	EPA 8015D	
GRO and DRO Combined Fractions	ND	5.00	mg/kg	1	1318016	01-May-13	01-May-13	EPA 8015D	

XTO Energy Inc.	Project Name:	Rowland Gas Com #1	
382 CR 3100	Project Number:	98031-0528	**Reported:**
Aztec NM, 87410	Project Manager:	James McDaniel	01-May-13 14:26

West wall comp

P304096-02 (Solid)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Volatile Organics by EPA 8021									
Benzene	ND	49.9	ug/kg	1	1318015	01-May-13	01-May-13	EPA 8021B	
Toluene	ND	49.9	ug/kg	1	1318015	01-May-13	01-May-13	EPA 8021B	
Ethylbenzene	ND	49.9	ug/kg	1	1318015	01-May-13	01-May-13	EPA 8021B	
p,m-Xylene	ND	49.9	ug/kg	1	1318015	01-May-13	01-May-13	EPA 8021B	
o-Xylene	ND	49.9	ug/kg	1	1318015	01-May-13	01-May-13	EPA 8021B	
Total BTEX	ND	49.9	ug/kg	1	1318015	01-May-13	01-May-13	EPA 8021B	
Surrogate: Bromochlorobenzene		*92.2 %*	*80-120*		*1318015*	*01-May-13*	*01-May-13*	*EPA 8021B*	
Surrogate: 1,4-Difluorobenzene		*96.6 %*	*80-120*		*1318015*	*01-May-13*	*01-May-13*	*EPA 8021B*	
Surrogate: Fluorobenzene		*95.9 %*	*80-120*		*1318015*	*01-May-13*	*01-May-13*	*EPA 8021B*	
Nonhalogenated Organics by 8015									
Gasoline Range Organics (C6-C10)	ND	5.00	mg/kg	1	1318016	01-May-13	01-May-13	EPA 8015D	
Diesel Range Organics (C10-C28)	ND	5.00	mg/kg	1	1318016	01-May-13	01-May-13	EPA 8015D	
GRO and DRO Combined Fractions	ND	5.00	mg/kg	1	1318016	01-May-13	01-May-13	EPA 8015D	

envirotech
Analytical Laboratory

XTO Energy Inc.	Project Name:	Rowland Gas Com #1	
382 CR 3100	Project Number:	98031-0528	**Reported:**
Aztec NM, 87410	Project Manager:	James McDaniel	01-May-13 14:26

Floor comp

P304096-03 (Solid)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Volatile Organics by EPA 8021									
Benzene	ND	50.0	ug/kg	1	1318015	01-May-13	01-May-13	EPA 8021B	
Toluene	ND	50.0	ug/kg	1	1318015	01-May-13	01-May-13	EPA 8021B	
Ethylbenzene	ND	50.0	ug/kg	1	1318015	01-May-13	01-May-13	EPA 8021B	
p,m-Xylene	ND	50.0	ug/kg	1	1318015	01-May-13	01-May-13	EPA 8021B	
o-Xylene	ND	50.0	ug/kg	1	1318015	01-May-13	01-May-13	EPA 8021B	
Total BTEX	ND	50.0	ug/kg	1	1318015	01-May-13	01-May-13	EPA 8021B	
Surrogate: Bromochlorobenzene		*91.0 %*	*80-120*		*1318015*	*01-May-13*	*01-May-13*	*EPA 8021B*	
Surrogate: 1,4-Difluorobenzene		*88.1 %*	*80-120*		*1318015*	*01-May-13*	*01-May-13*	*EPA 8021B*	
Surrogate: Fluorobenzene		*87.6 %*	*80-120*		*1318015*	*01-May-13*	*01-May-13*	*EPA 8021B*	
Nonhalogenated Organics by 8015									
Gasoline Range Organics (C6-C10)	ND	5.00	mg/kg	1	1318016	01-May-13	01-May-13	EPA 8015D	
Diesel Range Organics (C10-C28)	ND	5.00	mg/kg	1	1318016	01-May-13	01-May-13	EPA 8015D	
GRO and DRO Combined Fractions	ND	5.00	mg/kg	1	1318016	01-May-13	01-May-13	EPA 8015D	

XTO Energy Inc	Project Name:	Rowland Gas Com #1	
382 CR 3100	Project Number:	98031-0528	**Reported:**
Aztec NM, 87410	Project Manager:	James McDaniel	01-May-13 14:26

North wall comp

P304096-04 (Solid)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Volatile Organics by EPA 8021									
Benzene	ND	50.0	ug/kg	1	1318015	01-May-13	01-May-13	EPA 8021B	
Toluene	ND	50.0	ug/kg	1	1318015	01-May-13	01-May-13	EPA 8021B	
Ethylbenzene	ND	50.0	ug/kg	1	1318015	01-May-13	01-May-13	EPA 8021B	
p,m-Xylene	ND	50.0	ug/kg	1	1318015	01-May-13	01-May-13	EPA 8021B	
o-Xylene	ND	50.0	ug/kg	1	1318015	01-May-13	01-May-13	EPA 8021B	
Total BTEX	ND	50.0	ug/kg	1	1318015	01-May-13	01-May-13	EPA 8021B	
Surrogate: Bromochlorobenzene		*90.6 %*	*80-120*		*1318015*	*01-May-13*	*01-May-13*	*EPA 8021B*	
Surrogate: 1,4-Difluorobenzene		*91.5 %*	*80-120*		*1318015*	*01-May-13*	*01-May-13*	*EPA 8021B*	
Surrogate: Fluorobenzene		*91.3 %*	*80-120*		*1318015*	*01-May-13*	*01-May-13*	*EPA 8021B*	
Nonhalogenated Organics by 8015									
Gasoline Range Organics (C6-C10)	ND	5.00	mg/kg	1	1318016	01-May-13	01-May-13	EPA 8015D	
Diesel Range Organics (C10-C28)	ND	5.00	mg/kg	1	1318016	01-May-13	01-May-13	EPA 8015D	
GRO and DRO Combined Fractions	ND	5.00	mg/kg	1	1318016	01-May-13	01-May-13	EPA 8015D	

envirotech
Analytical Laboratory

XTO Energy Inc.	Project Name:	Rowland Gas Com #1	
382 CR 3100	Project Number:	98031-0528	**Reported:**
Aztec NM, 87410	Project Manager:	James McDaniel	01-May-13 14:26

Volatile Organics by EPA 8021 - Quality Control

Envirotech Analytical Laboratory

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1318015 - Purge and Trap EPA 5030A										
Blank (1318015-BLK1)				Prepared: 30-Apr-13 Analyzed: 01-May-13						
Benzene	ND	50.0	ug/kg							
Toluene	ND	50.0	"							
Ethylbenzene	ND	50.0	"							
p,m-Xylene	ND	50.0	"							
o-Xylene	ND	50.0	"							
Total BTEX	ND	50.0	"							
Surrogate: Bromochlorobenzene	*45.1*		*ug/L*	*50.0*		*90.2*	*80-120*			
Surrogate: 1,4-Difluorobenzene	*47.9*		"	*50.0*		*95.7*	*80-120*			
Surrogate: Fluorobenzene	*46.8*		"	*50.0*		*93.7*	*80-120*			
Duplicate (1318015-DUP1)	**Source: P304089-01**			Prepared: 30-Apr-13 Analyzed: 01-May-13						
Benzene	ND	50.0	ug/kg		ND				30	
Toluene	ND	50.0	"		ND				30	
Ethylbenzene	ND	50.0	"		ND				30	
p,m-Xylene	ND	50.0	"		ND				30	
o-Xylene	ND	50.0	"		ND				30	
Surrogate: Bromochlorobenzene	*50.2*		*ug/L*	*50.0*		*100*	*80-120*			
Surrogate: 1,4-Difluorobenzene	*52.1*		"	*50.0*		*104*	*80-120*			
Surrogate: Fluorobenzene	*51.7*		"	*50.0*		*103*	*80-120*			
Matrix Spike (1318015-MS1)	**Source: P304089-01**			Prepared: 30-Apr-13 Analyzed: 01-May-13						
Benzene	51.6		ug/L	50.0	0.27	103	39-150			
Toluene	51.8		"	50.0	0.51	103	46-148			
Ethylbenzene	51.6		"	50.0	0.26	103	32-160			
p,m-Xylene	103		"	100	0.74	103	46-148			
o-Xylene	51.6		"	50.0	0.60	102	46-148			
Surrogate: Bromochlorobenzene	*47.8*		"	*50.0*		*95.5*	*80-120*			
Surrogate: 1,4-Difluorobenzene	*51.1*		"	*50.0*		*102*	*80-120*			
Surrogate: Fluorobenzene	*51.0*		"	*50.0*		*102*	*80-120*			

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XTO Energy Inc.	Project Name:	Rowland Gas Com #1	
382 CR 3100	Project Number:	98031-0528	**Reported:**
Aztec NM, 87410	Project Manager:	James McDaniel	01-May-13 14:26

Nonhalogenated Organics by 8015 - Quality Control

Envirotech Analytical Laboratory

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1318016 - GRO/DRO Extraction EPA 3550C										
Blank (1318016-BLK1)				Prepared: 30-Apr-13 Analyzed: 01-May-13						
Gasoline Range Organics (C6-C10)	ND	4.99	mg/kg							
Diesel Range Organics (C10-C28)	ND	4.99	"							
GRO and DRO Combined Fractions	ND	4.99	"							
Duplicate (1318016-DUP1)	**Source: P304089-01**			Prepared: 30-Apr-13 Analyzed: 01-May-13						
Gasoline Range Organics (C6-C10)	ND	5.00	mg/kg		ND				30	
Diesel Range Organics (C10-C28)	ND	5.00	"		ND				30	
Matrix Spike (1318016-MS1)	**Source: P304089-01**			Prepared: 30-Apr-13 Analyzed: 01-May-13						
Gasoline Range Organics (C6-C10)	268	5.26	mg/kg	263	ND	102	75-125			
Diesel Range Organics (C10-C28)	266	5.26	"	263	ND	101	75-125			

XTO Energy Inc.	Project Name:	Rowland Gas Com #1	
382 CR 3100	Project Number:	98031-0528	**Reported:**
Aztec NM, 87410	Project Manager:	James McDaniel	01-May-13 14:26

Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

CHAIN OF CUSTODY RECORD

15475

Client:	Project Name / Location:
XTO Energy, Inc.	Rowland Gas Com #1
Email results to:	Sampler Name:
James_medaniel@xtoenergy.com	Devin Hencmann
Client Phone No.:	Client No.:
505-787-0519	98031-0528

Sample No./ Identification	Sample Date	Sample Time	Lab No.	No./Volume of Containers	Preservative			ANALYSIS / PARAMETERS																
					$HgCl_2$	HCl	None	~~TPH (Method 8015) 418.1~~	BTEX (Method 8021)	VOC (Method 8260)	RCRA 8 Metals	Cation / Anion	RCI	TCLP with H/P	CO Table 910-1	TPH (418.1)	CHLORIDE	TPH 8015 NO MRO			Sample Cool	Sample Intact
South wall Middle-west comp	4/30/13	1340	P3040916-01	1 x 4oz			X		X									X			X	X
West wall comp	4/30/13	1210	P3040916-02	1x 4oz			X		X									X			X	X
Floor comp	4/30/13	1010	P3040916-03	1x 4oz			X		X									X			X	X
North wall comp	4/29/13	1415	P3040916-04	1x 4oz			X		X									X			X	X

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	4/30/13	1623		4/30/13	1623
Relinquished by: (Signature)			Received by: (Signature)		
Sample Matrix Soil ☒ Solid ☐ Sludge ☐ Aqueous ☐ Other ☐ _____					

☐ Sample(s) dropped off after hours to secure drop off area.

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Analytical Report

Report Summary

Client: XTO Energy Inc.

Chain Of Custody Number: 15477

Samples Received: 5/1/2013 5:00:00PM

Job Number: 98031-0528

Work Order: P305001

Project Name/Location: Rowland Gas Com #1

Entire Report Reviewed By: _____ Date: 5/3/13

Tim Cain, Laboratory Manager

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XTO Energy Inc.	Project Name:	Rowland Gas Com #1	
382 CR 3100	Project Number:	98031-0528	**Reported:**
Aztec NM, 87410	Project Manager:	James McDaniel	03-May-13 14:55

Analyical Report for Samples

Client Sample ID	Lab Sample ID	Matrix	Sampled	Received	Container
South Wall Middle East Composite	P305001-01A	Soil	05/01/13	05/01/13	Glass Jar, 4 oz.
East Floor Comp.	P305001-02A	Soil	05/01/13	05/01/13	Glass Jar, 4 oz.
East Wall Comp.	P305001-03A	Soil	05/01/13	05/01/13	Glass Jar, 4 oz.

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XTO Energy Inc.	Project Name:	Rowland Gas Com #1	
382 CR 3100	Project Number:	98031-0528	**Reported:**
Aztec NM, 87410	Project Manager:	James McDaniel	03-May-13 14:55

South Wall Middle East Composite

P305001-01 (Solid)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Volatile Organics by EPA 8021									
Benzene	ND	49.9	ug/kg	1	1318027	02-May-13	02-May-13	EPA 8021B	
Toluene	ND	49.9	ug/kg	1	1318027	02-May-13	02-May-13	EPA 8021B	
Ethylbenzene	ND	49.9	ug/kg	1	1318027	02-May-13	02-May-13	EPA 8021B	
p,m-Xylene	ND	49.9	ug/kg	1	1318027	02-May-13	02-May-13	EPA 8021B	
o-Xylene	ND	49.9	ug/kg	1	1318027	02-May-13	02-May-13	EPA 8021B	
Total BTEX	ND	49.9	ug/kg	1	1318027	02-May-13	02-May-13	EPA 8021B	
Surrogate: Bromochlorobenzene		*99.8 %*	*80-120*		*1318027*	*02-May-13*	*02-May-13*	*EPA 8021B*	
Surrogate: 1,4-Difluorobenzene		*103 %*	*80-120*		*1318027*	*02-May-13*	*02-May-13*	*EPA 8021B*	
Surrogate: Fluorobenzene		*101 %*	*80-120*		*1318027*	*02-May-13*	*02-May-13*	*EPA 8021B*	
Nonhalogenated Organics by 8015									
Gasoline Range Organics (C6-C10)	ND	5.00	mg/kg	1	1318028	02-May-13	02-May-13	EPA 8015D	
Diesel Range Organics (C10-C28)	ND	5.00	mg/kg	1	1318028	02-May-13	02-May-13	EPA 8015D	
GRO and DRO Combined Fractions	ND	5.00	mg/kg	1	1318028	02-May-13	02-May-13	EPA 8015D	

XTO Energy Inc.	Project Name:	Rowland Gas Com #1	
382 CR 3100	Project Number:	98031-0528	**Reported:**
Aztec NM, 87410	Project Manager:	James McDaniel	03-May-13 14:55

East Floor Comp.

P305001-02 (Solid)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Volatile Organics by EPA 8021									
Benzene	ND	1.00	ug/kg	0.02	1318027	02-May-13	02-May-13	EPA 8021B	
Toluene	ND	1.00	ug/kg	0.02	1318027	02-May-13	02-May-13	EPA 8021B	
Ethylbenzene	ND	1.00	ug/kg	0.02	1318027	02-May-13	02-May-13	EPA 8021B	
p,m-Xylene	ND	1.00	ug/kg	0.02	1318027	02-May-13	02-May-13	EPA 8021B	
o-Xylene	ND	1.00	ug/kg	0.02	1318027	02-May-13	02-May-13	EPA 8021B	
Total BTEX	ND	1.00	ug/kg	0.02	1318027	02-May-13	02-May-13	EPA 8021B	
Surrogate: Bromochlorobenzene		*94.0 %*	*80-120*		*1318027*	*02-May-13*	*02-May-13*	*EPA 8021B*	
Surrogate: 1,4-Difluorobenzene		*94.2 %*	*80-120*		*1318027*	*02-May-13*	*02-May-13*	*EPA 8021B*	
Surrogate: Fluorobenzene		*93.7 %*	*80-120*		*1318027*	*02-May-13*	*02-May-13*	*EPA 8021B*	
Nonhalogenated Organics by 8015									
Gasoline Range Organics (C6-C10)	ND	4.99	mg/kg	1	1318028	02-May-13	02-May-13	EPA 8015D	
Diesel Range Organics (C10-C28)	**8.98**	4.99	mg/kg	1	1318028	02-May-13	02-May-13	EPA 8015D	
GRO and DRO Combined Fractions	**8.98**	4.99	mg/kg	1	1318028	02-May-13	02-May-13	EPA 8015D	

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XTO Energy Inc.	Project Name:	Rowland Gas Com #1	
382 CR 3100	Project Number:	98031-0528	**Reported:**
Aztec NM, 87410	Project Manager:	James McDaniel	03-May-13 14:55

East Wall Comp.

P305001-03 (Solid)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Volatile Organics by EPA 8021									
Benzene	ND	1.00	ug/kg	0.02	1318027	02-May-13	02-May-13	EPA 8021B	
Toluene	ND	1.00	ug/kg	0.02	1318027	02-May-13	02-May-13	EPA 8021B	
Ethylbenzene	ND	1.00	ug/kg	0.02	1318027	02-May-13	02-May-13	EPA 8021B	
p,m-Xylene	ND	1.00	ug/kg	0.02	1318027	02-May-13	02-May-13	EPA 8021B	
o-Xylene	ND	1.00	ug/kg	0.02	1318027	02-May-13	02-May-13	EPA 8021B	
Total BTEX	ND	1.00	ug/kg	0.02	1318027	02-May-13	02-May-13	EPA 8021B	
Surrogate: Bromochlorobenzene		*93.4 %*	*80-120*		*1318027*	*02-May-13*	*02-May-13*	*EPA 8021B*	
Surrogate: 1,4-Difluorobenzene		*96.5 %*	*80-120*		*1318027*	*02-May-13*	*02-May-13*	*EPA 8021B*	
Surrogate: Fluorobenzene		*96.0 %*	*80-120*		*1318027*	*02-May-13*	*02-May-13*	*EPA 8021B*	
Nonhalogenated Organics by 8015									
Gasoline Range Organics (C6-C10)	ND	5.00	mg/kg	1	1318028	02-May-13	02-May-13	EPA 8015D	
Diesel Range Organics (C10-C28)	**7.81**	5.00	mg/kg	1	1318028	02-May-13	02-May-13	EPA 8015D	
GRO and DRO Combined Fractions	**7.81**	5.00	mg/kg	1	1318028	02-May-13	02-May-13	EPA 8015D	

XTO Energy Inc.	Project Name:	Rowland Gas Com #1	
382 CR 3100	Project Number:	98031-0528	**Reported:**
Aztec NM, 87410	Project Manager:	James McDaniel	03-May-13 14:55

Volatile Organics by EPA 8021 - Quality Control

Envirotech Analytical Laboratory

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1318027 - Purge and Trap EPA 5030A										
Blank (1318027-BLK1)			Prepared & Analyzed: 02-May-13							
Benzene	ND	50.0	ug/kg							
Toluene	ND	50.0	"							
Ethylbenzene	ND	50.0	"							
p,m-Xylene	ND	50.0	"							
o-Xylene	ND	50.0	"							
Total BTEX	ND	50.0	"							
Surrogate: Bromochlorobenzene	*46.8*		*ug/L*	*50.0*		*93.5*	*80-120*			
Surrogate: 1,4-Difluorobenzene	*51.3*		"	*50.0*		*103*	*80-120*			
Surrogate: Fluorobenzene	*50.2*		"	*50.0*		*100*	*80-120*			
Duplicate (1318027-DUP1)	**Source: P305001-01**		Prepared & Analyzed: 02-May-13							
Benzene	ND	49.9	ug/kg		ND				30	
Toluene	ND	49.9	"		ND				30	
Ethylbenzene	ND	49.9	"		ND				30	
p,m-Xylene	ND	49.9	"		ND				30	
o-Xylene	ND	49.9	"		ND				30	
Surrogate: Bromochlorobenzene	*49.7*		*ug/L*	*50.0*		*99.4*	*80-120*			
Surrogate: 1,4-Difluorobenzene	*50.4*		"	*50.0*		*101*	*80-120*			
Surrogate: Fluorobenzene	*50.2*		"	*50.0*		*100*	*80-120*			
Matrix Spike (1318027-MS1)	**Source: P305001-01**		Prepared & Analyzed: 02-May-13							
Benzene	51.5		ug/L	50.0	0.26	102	39-150			
Toluene	51.3		"	50.0	0.49	102	46-148			
Ethylbenzene	51.2		"	50.0	0.22	102	32-160			
p,m-Xylene	102		"	100	0.73	101	46-148			
o-Xylene	51.1		"	50.0	0.54	101	46-148			
Surrogate: Bromochlorobenzene	*49.9*		"	*50.0*		*99.8*	*80-120*			
Surrogate: 1,4-Difluorobenzene	*51.5*		"	*50.0*		*103*	*80-120*			
Surrogate: Fluorobenzene	*51.7*		"	*50.0*		*103*	*80-120*			

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XTO Energy Inc.	Project Name:	Rowland Gas Com #1	
382 CR 3100	Project Number:	98031-0528	**Reported:**
Aztec NM, 87410	Project Manager:	James McDaniel	03-May-13 14:55

Nonhalogenated Organics by 8015 - Quality Control

Envirotech Analytical Laboratory

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1318028 - GRO/DRO Extraction EPA 3550C										
Blank (1318028-BLK1)				Prepared & Analyzed: 02-May-13						
Gasoline Range Organics (C6-C10)	ND	4.99	mg/kg							
Diesel Range Organics (C10-C28)	ND	4.99	"							
GRO and DRO Combined Fractions	ND	4.99	"							
Duplicate (1318028-DUP1)	**Source: P305001-01**			Prepared & Analyzed: 02-May-13						
Gasoline Range Organics (C6-C10)	ND	5.00	mg/kg		ND				30	
Diesel Range Organics (C10-C28)	ND	5.00	"		ND				30	
Matrix Spike (1318028-MS1)	**Source: P305001-01**			Prepared & Analyzed: 02-May-13						
Gasoline Range Organics (C6-C10)	264	5.26	mg/kg	263	ND	100	75-125			
Diesel Range Organics (C10-C28)	272	5.26	"	263	ND	103	75-125			

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XTO Energy Inc.	Project Name:	Rowland Gas Com #1	
382 CR 3100	Project Number:	98031-0528	**Reported:**
Aztec NM, 87410	Project Manager:	James McDaniel	03-May-13 14:55

Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

CHAIN OF CUSTODY RECORD

15477

Client: XTO Energy Inc.	Project Name / Location: Rowland GC #1
Email results to: James_Mcdaniel@xtoenergy.com	Sampler Name: Devin Hensmann
Client Phone No.: 505-787-0519	Client No.: 96031-0528

Sample No./ Identification	Sample Date	Sample Time	Lab No.	No./Volume of Containers	Preservative $HgCl_2$	Preservative HCl	TPH (Method 8015)	BTEX (Method 8021)	VOC (Method 8260)	RCRA 8 Metals	Cation / Anion	RCI	TCLP with H/P	CO Table 910-1	TPH (418.1)	CHLORIDE				Sample Cool	Sample Intact
South Wall Middle East composite	5/1/13	1620	P305001-01	1 x 4oz			X	X												Y	X
East Floor comp	5/1/13	1345	P305001-02	1 x 4oz			X	X												X	X
East wall comp.	5/1/13	1350	P305001-03	1 x 4oz			X	X													

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	5/1/13	1700		5/1/13	1700
Relinquished by: (Signature)			Received by: (Signature)		

Sample Matrix

Soil ☒ Solid ☐ Sludge ☐ Aqueous ☐ Other ☐ _____

☐ Sample(s) dropped off after hours to secure drop off area.

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Analytical Report

Report Summary

Client: XTO Energy Inc.

Chain Of Custody Number: 15478

Samples Received: 5/1/2013 5:00:00PM

Job Number: 98031-0528

Work Order: P305002

Project Name/Location: Rowland Gas Com #1

Entire Report Reviewed By: _____ Date: 5/3/13

Tim Cain, Laboratory Manager

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XTO Energy Inc.	Project Name:	Rowland Gas Com #1	
382 CR 3100	Project Number:	98031-0528	**Reported:**
Aztec NM, 87410	Project Manager:	James McDaniel	03-May-13 15:03

Analyical Report for Samples

Client Sample ID	Lab Sample ID	Matrix	Sampled	Received	Container
Excavation GW	P305002-01A	Water	05/01/13	05/01/13	Voa vial, 40mL, HCl
	P305002-01B	Water	05/01/13	05/01/13	Voa vial, 40mL, HCl
	P305002-01C	Water	05/01/13	05/01/13	Voa vial, 40mL, HCl

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XTO Energy Inc.	Project Name:	Rowland Gas Com #1	
382 CR 3100	Project Number:	98031-0528	**Reported:**
Aztec NM, 87410	Project Manager:	James McDaniel	03-May-13 15:03

Excavation GW

P305002-01 (Water)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Volatile Organics by EPA 8021									
Benzene	1.08	1.00	ug/L	1	1318029	02-May-13	02-May-13	EPA 8021B	
Toluene	1.52	1.00	ug/L	1	1318029	02-May-13	02-May-13	EPA 8021B	
Ethylbenzene	1.02	1.00	ug/L	1	1318029	02-May-13	02-May-13	EPA 8021B	
p,m-Xylene	3.63	1.00	ug/L	1	1318029	02-May-13	02-May-13	EPA 8021B	
o-Xylene	1.07	1.00	ug/L	1	1318029	02-May-13	02-May-13	EPA 8021B	
Total BTEX	8.33	1.00	ug/L	1	1318029	02-May-13	02-May-13	EPA 8021B	
Surrogate: Bromochlorobenzene		*102 %*	*80-120*		*1318029*	*02-May-13*	*02-May-13*	*EPA 8021B*	
Surrogate: 1,4-Difluorobenzene		*99.3 %*	*80-120*		*1318029*	*02-May-13*	*02-May-13*	*EPA 8021B*	
Surrogate: Fluorobenzene		*100 %*	*80-120*		*1318029*	*02-May-13*	*02-May-13*	*EPA 8021B*	

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XTO Energy Inc.	Project Name:	Rowland Gas Com #1	
382 CR 3100	Project Number:	98031-0528	**Reported:**
Aztec NM, 87410	Project Manager:	James McDaniel	03-May-13 15:03

Volatile Organics by EPA 8021 - Quality Control

Envirotech Analytical Laboratory

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1318029 - Purge and Trap EPA 5030A										
Blank (1318029-BLK1)			Prepared & Analyzed: 02-May-13							
Benzene	ND	50.0	ug/L							
Toluene	ND	50.0	"							
Ethylbenzene	ND	50.0	"							
p,m-Xylene	ND	50.0	"							
o-Xylene	ND	50.0	"							
Total BTEX	ND	50.0	"							
Surrogate: Bromochlorobenzene	*47.6*		"	*50.0*		*95.3*	*80-120*			
Surrogate: 1,4-Difluorobenzene	*48.1*		"	*50.0*		*96.3*	*80-120*			
Surrogate: Fluorobenzene	*48.4*		"	*50.0*		*96.8*	*80-120*			
Duplicate (1318029-DUP1)	**Source: P305002-01**		Prepared & Analyzed: 02-May-13							
Benzene	1.10	1.00	ug/L		1.08			1.83	30	
Toluene	1.68	1.00	"		1.52			9.99	30	
Ethylbenzene	1.09	1.00	"		1.02			6.43	30	
p,m-Xylene	3.76	1.00	"		3.63			3.44	30	
o-Xylene	1.06	1.00	"		1.07			0.376	30	
Surrogate: Bromochlorobenzene	*45.7*		"	*50.0*		*91.4*	*80-120*			
Surrogate: 1,4-Difluorobenzene	*48.2*		"	*50.0*		*96.5*	*80-120*			
Surrogate: Fluorobenzene	*48.6*		"	*50.0*		*97.2*	*80-120*			
Matrix Spike (1318029-MS1)	**Source: P305002-01**		Prepared & Analyzed: 02-May-13							
Benzene	2480	50.0	ug/L	2500	1.08	99.0	39-150			
Toluene	2510	50.0	"	2500	1.52	100	46-148			
Ethylbenzene	2540	50.0	"	2500	1.02	101	32-160			
p,m-Xylene	5020	50.0	"	5000	3.63	100	46-148			
o-Xylene	2510	50.0	"	2500	1.07	100	46-148			
Surrogate: Bromochlorobenzene	*51.3*		"	*50.0*		*103*	*80-120*			
Surrogate: 1,4-Difluorobenzene	*47.4*		"	*50.0*		*94.7*	*80-120*			
Surrogate: Fluorobenzene	*47.8*		"	*50.0*		*95.5*	*80-120*			

envirotech
Analytical Laboratory

XTO Energy Inc.	Project Name:	Rowland Gas Com #1	
382 CR 3100	Project Number:	98031-0528	**Reported:**
Aztec NM, 87410	Project Manager:	James McDaniel	03-May-13 15:03

Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference