3RP-134

Annual Groundwater Remediation Reports For Year 2009

March 2010

XTO ENERGY

March 8, 2010

Mr. Glenn von Gonten
Hydrologist-Groundwater Remediation
New Mexico Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

RE: Annual Groundwater Remediation Reports

Dear Mr. von Gonten,

XTO Energy Inc. (XTO) herein submits our Annual Groundwater Remediation Reports for year ending 2009, in accordance with the New Mexico Oil Conservation Division (NMOCD) approved Groundwater Management Plan (GWMP). Enclosed are summary reports with analytical data, summary tables, site maps, topographic maps, potentiometric surface diagrams and recommendations/proposed actions for:

- Bruington Gas Com #1- 3RP106
- Federal Gas Com #H1- 3RP110
- McCoy GC D #1E- 3RP414
- OH Randel #7- 3RP386
- Rowland Gas Com #1- 3RP124
- Valdez A #1E- 3RP134

We have also enclosed an Annual Groundwater Report for three sites that meet the closure requirements outlined in the GWMP. XTO respectfully requests closure of:

- EJ Johnson C #1E- 3RP385
- Frost, Jack B #2- 3RP416
- PO Pipken #3E- 3RP409

In previously submitted reports, eighteen sites met the closure requirements outlined in the GWMP. XTO has requested closure of these sites annually since 2006. The reports for the below listed sites are being submitted again for your review.

- Abrams J #1- 3RP100
  Closure Requested 01-2007
- Armenta Gas Com C #1E- 3RP394
  Closure Requested 01-2006
- Baca Gas Com A #1A- 3RP104
  Closure Requested 03-2008
- Bergin Gas Com #1E- 3RP105
  Closure Requested 01-2006
- Carson Gas Com #1E- 3RP415
  Closure Requested 04-2009
- Garcia Gas Com B #1- 3RP111
  Closure Requested 03-2008
- Haney Gas Com B #1E- 3RP113
  Closure Requested 03-2008
- Hare Gas Com B #1- 3RP413
  Closure Requested 03-2008
- Hare Gas Com B #1E- 3RP384
  Closure Requested 03-2008
- Hare Gas Com I #1- 3RP412
  Closure Requested 03-2008
- Masden Gas Com #1E- 3RP120
  Closure Requested 03-2008
- McDaniel Gas Com B #1E- 3RP121
  Closure Requested 03-2008
- Romero Gas Com A #1- 3RP123
  Closure Requested 01-2007
- Snyder Gas Com #1A- 3RP126
  Closure Requested 04-2009
- State Gas Com BS #1- 3RP127
  Closure Requested 01-2006
- Stedje Gas Com #1- 3RP128
  Closure Requested 03-2008
- Sullivan Frame A #1E- 3RP130
  Closure Requested 03-2008
- Sullivan Gas Com D #1- 3RP131
  Closure Requested 04-2009

Thank you for your review of the reports. XTO looks forward to hearing from you regarding closure requests and proposed remedial actions. If you have any questions please do not hesitate to contact me at (505) 333-3100.

Respectfully,

Martin Nee
EH & S Manager
San Juan Division

cc: Mr. Brandon Powell, Environmental, NMOCD District III Office, Aztec, NM
Ms. Ashley Ager, LT Environmental
File- San Juan Groundwater

Valdez A#1E

XTO ENERGY INC.

ANNUAL GROUNDWATER REPORT

2009

VALDEZ A #1E
3RP-134
(G) SECTION 24 – T29N – R11W, NMPM
SAN JUAN COUNTY, NEW MEXICO

PREPARED FOR:
MR. GLENN VON GONTEN
NEW MEXICO OIL CONSERVATION DIVISION

MARCH 2010

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2009 XTO GROUNDWATER REPORT

VALDEZ A #1E
3RP-134

SITE DETAILS

LEGALS - TWN: 29N **RNG:** 11W **SEC:** 24 **UNIT:** G
OCD HAZARD RANKING: 40 **LAND TYPE:** FEE
LATITUDE: 36.71186 **LONGITUDE:** 107.94220

INTRODUCTION

XTO Energy Inc. (XTO) acquired the Valdez A #1E well site from Amoco Production Company (Amoco) in January 1998. This is a gas producing well in the Dakota Sandstone and Otero Chacra formations and is currently active. The San Juan River flows in a west/southwest direction approximately 1000 feet from the location. A topographic map and site map are presented as Figures 1 and 2.

HISTORY

Tenneco Oil Company (Tenneco) was the original owner/operator of this well site. In September 1987, New Mexico Oil Conservation Division (OCD) augered four 10½'-18' holes at the well site and discovered groundwater contamination in the vicinity of the produced water tank and the separator (Attachment 1). Tenneco was required by OCD to install a series of monitoring wells in an effort to define the contamination plume and to monitor concentration levels of contaminants. Tenneco installed six monitoring wells (1-6) in June 1988. Completion Diagrams and Borehole Logs are presented in Figures 6-11 documenting drilling that occurred in 1988. Figure 5 shows placement of the first six monitoring wells installed. The monitoring wells were sampled in July 1988 with the exception of monitoring well 4 which was discovered damaged. Based on July 1988 data, benzene, toluene, ethyl benzene, and total xylene (BTEX) contaminants were subjective in extent. Groundwater from monitoring well 6 revealed BTEX concentrations in excess of New Mexico Water Quality Control Commission (WQCC) standards. Monitoring well 4 was repaired in August 1988 and all wells were sampled. Laboratory results revealed elevated BTEX concentrations in groundwater from monitoring wells 4 and 6. Tenneco submitted a groundwater report to OCD in September 1988 documenting activities and laboratory results.

Amoco acquired the location in January 1989. Based on historical lab data it is assumed that additional monitoring wells, MW-7, MW-8, MW-9 and MW-10 were installed in the first quarter of 1992 and that Amoco re-initiated groundwater monitoring. In January 1996 Amoco submitted a written request to OCD to discontinue routine groundwater monitoring at the site (Attachment 2). Based on data collected since 1988 it was assumed the impacted plume was stable and there was no risk to human health and the environment, making continued groundwater monitoring unnecessary. Since WQCC standards had not been met within the plume area the request was denied by OCD in March 1996.

XTO submitted a groundwater report to OCD in February 1999 to include data and activities for the years 1996-1998. Since installation of monitoring wells, groundwater results for monitoring wells MW-1, MW-3 and MW-9 have been below laboratory

equipment detection limits (0.2 ug/L) or below WQCC standards for BTEX. Groundwater results from monitoring wells MW-4, MW-5 and MW-10 revealed elevated concentrations for one sampling event and not-detectable or below WQCC standards for several sampling events thereafter. Groundwater results from monitoring wells MW-6, MW-7 and MW-8 consistently revealed BTEX concentrations exceeding WQCC standards, although there were significant decreases in concentrations. Monitoring well MW-2 has remained dry since sampling began in 1993. In June 1998, 0.88 feet of free phase product was documented in monitoring well MW-7. At that time XTO recommended continued sampling of groundwater from monitoring wells MW-6, MW-7, MW-8, MW-9 and MW-10 to track natural degradation and to confirm that free product was not migrating. Monitoring well MW-8 was damaged during the last quarter of 1998. Correspondence from OCD dated April 21, 1999 required XTO completely define the extent of impact downgradient and/or laterally.

In April 2002 monitoring wells MW-2, MW-3 and MW-5 were plugged and abandoned per surface owner's (FEE) request and OCD approval.

The 2005 annual groundwater report was submitted to the OCD in January 2006 proposing annual sampling of groundwater monitoring wells MW-6 and MW-7 until natural degradation reduced hydrocarbon impacts to below closure standards.

The 2006 annual groundwater report was submitted to the OCD in February 2007 proposing continued annual sampling of groundwater monitoring wells MW-6 and MW-7 until natural degradation reduced hydrocarbon impacts to below closure standards.

The 2007 annual groundwater report was submitted to the OCD in February 2008 proposing semi-annual sampling at monitoring wells MW-6 and MW-7 for BTEX constituents.

The 2008 annual groundwater report was submitted to the OCD in April 2009 proposing possible addition of chemical oxygenate to monitoring wells MW-6 and MW-7 and quarterly sampling.

Based on previous laboratory analysis it was determined that the addition of a chemical additive was not warranted at the time and semi-annual sampling would continue.

A summary of laboratory results from historical and current groundwater monitoring is presented as Table 1. Copies of the laboratory data sheets and associated quality assurance/quality control data for 2009 are presented as Attachment 3.

METHODOLOGY

Semi-annual groundwater samples were collected from monitoring wells MW-6 and MW-7 in 2009 and submitted for laboratory analysis of BTEX.

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. These data are recorded as Depth to Water (DTW) and Total Depth (TD) in feet on 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 (±0.4 units for pH, ±10 percent for electric conductivity and ±2° C for temperature). All purge water is disposed of into tanks on site.

Once each monitoring well is properly purged, groundwater samples are collected by filling at least two 40-millititer (ml) glass vials. The pre-cleaned and pre-preserved (with hydrochloric acid or mercuric chloride) 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 Hall Environmental Analysis Laboratory (HEAL) in Albuquerque, New Mexico in a sealed cooler via bus before designated holding times expire. 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

Laboratory results from monitoring well MW-6 reveal BTEX concentrations are still elevated but are currently below WQCC standards. Laboratory results from monitoring well MW-7 indicate some fluctuation in concentrations but natural degradation is occurring although benzene and total xylene concentrations continue to exceed WQCC standards. All laboratory analytical results are presented in Table 1. Laboratory reports are presented in Attachment 3.

Field data collected during site monitoring activities indicate a groundwater gradient that trends toward the southwest, in the general direction of the San Juan River. Figures 3-4 illustrate the estimated groundwater gradient for 2009.

CONCLUSIONS

Based on the laboratory results from 2009 degradation of BTEX is occurring even though concentrations remain elevated. Based on historical data it is assumed there is no further hydrocarbon impact either up gradient or down gradient of the source area.

RECOMMENDATIONS

XTO proposes possible addition of chemical oxygenate in monitoring well MW-7 to enhance biodegradation of the hydrocarbon in groundwater. In addition, XTO will begin quarterly sampling of groundwater for BTEX concentrations in monitoring wells MW-6 and M-7 until WQCC standards have been met for four consecutive quarters.

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

Table 1

XTO ENERGY INC. GROUNDWATER LAB RESULTS

VALDEZ A #1E
UNIT G, SEC. 24, T29N, R11W

Sample Date	Monitor Well No.	DTW (ft)	TD (ft)	Product (ft)	Benzene ug/L	Toluene ug/L	Ethyl Benzene ug/L	Total Xylene ug/L
01-Jul-88	MW #1				ND	ND	ND	ND
31-Aug-88					ND	ND	ND	ND
05-Mar-92					ND	ND	ND	ND
23-Feb-93		13.59	20.30		ND	ND	ND	ND
07-Jun-93		12.92	20.88		ND	0.5	ND	1
08-Sep-93		12.06	20.36		ND	ND	ND	ND
09-Mar-94		14.20			ND	ND	ND	ND
24-Jun-94		12.39			ND	ND	ND	ND
23-Sep-94		11.35			0.9	0.2	ND	3.8
09-Dec-94		12.35	20.64		0.8	ND	ND	ND
13-Mar-95		13.71			ND	ND	ND	ND
01-Jul-88	MW #2				ND	ND	ND	ND
31-Aug-88					ND	ND	ND	ND
05-Mar-92					ND	ND	ND	ND
01-Jul-88	MW #3				ND	ND	ND	ND
31-Aug-88					ND	ND	ND	ND
05-Mar-92					3	6.9	0.3	7.8
23-Feb-93		14.02	22.80		ND	ND	ND	ND
07-Jun-93		13.66	23.00		ND	ND	ND	0.6
08-Sep-93		13.16	22.36		ND	0.6	ND	11.7
09-Mar-94		14.54			ND	ND	ND	ND
24-Jun-94		12.95			ND	ND	ND	ND
23-Sep-94		12.24			ND	ND	ND	ND
09-Dec-94		12.94	23.24		ND	ND	ND	ND
13-Mar-95		13.88			ND	ND	ND	ND
01-Jul-88	MW #4				NA	NA	NA	NA
31-Aug-88					111	730	230	1560
08-Mar-92					0.4	5.3	0.6	3.1
23-Feb-93		15.18	20.30		ND	6	7	2
07-Jun-93		14.80	20.83		ND	3.2	3.2	4.3
08-Sep-93		14.27	19.98		ND	5.9	22.4	7.7
09-Mar-94		15.67			ND	1.6	ND	1.6
24-Jun-94		14.10			ND	3.7	2.3	ND
23-Sep-94		13.38			0.7	ND	0.5	ND
09-Dec-94		14.10			0.7	2.7	ND	ND
13-Mar-95		15.04			ND	ND	ND	ND
01-Jul-88	MW #5				ND	0.5	ND	0.3
31-Aug-88					ND	0.4	ND	ND
05-Mar-92					ND	0.5	ND	1
23-Feb-93		14.83	17.30		1,320	482	175	731
07-Jun-93		13.02	23.71		ND	ND	ND	0.4
08-Sep-93		12.68	22.78		ND	1	ND	1.8
02-Dec-93		13.06			ND	ND	ND	ND
09-Mar-94		13.81			ND	0.4	ND	ND

XTO ENERGY INC. GROUNDWATER LAB RESULTS

VALDEZ A #1E
UNIT G, SEC. 24, T29N, R11W

Sample Date	Monitor Well No.	DTW (ft)	TD (ft)	Product (ft)	Benzene ug/L	Toluene ug/L	Ethyl Benzene ug/L	Total Xylene ug/L
24-Jun-94	MW #5	12.30			ND	ND	ND	ND
23-Sep-92		11.66			ND	ND	ND	ND
09-Dec-94		12.28			ND	ND	ND	ND
13-Mar-95		13.10			ND	ND	ND	ND
01-Jul-88	MW #6				1500	3300	550	4560
31-Aug-88					1700	1600	340	1300
05-Mar-92					65	44.1	20.3	82.7
23-Feb-93		15.06	19.40		2,090	7,800	578	4,080
07-Jun-93		14.72	19.50		1,300	444	293	840
08-Sep-93		14.27	18.35		770	980	174	783
02-Dec-93		14.69			540	1,140	144	867
09-Mar-94		15.49			580	1,520	130	888
24-Jun-94		14.05			542	1,923	164	1,172
23-Sep-94		13.40			484	1,696	170	1,300
09-Dec-94		14.02			593	2,242	183	1,707
10-Jan-95		14.28			450	1,380	153	1,248
09-Feb-95		14.58			710	2,160	271	2,297
13-Mar-95		14.85			19.8	2,471	289	2,460
10-Apr-95		15.00			525	1,840	222	1,502
19-Jun-95		14.48			299.3	998.8	114.5	1045.4
07-Aug-95		14.08			593	1,650	247	2,111
12-Sep-95		13.89			412	1,390	259	1,549
10-Oct-95		13.74			176	970	191	1,552
15-Nov-95		13.98			598	1,370	339	2,819
07-Dec-95		14.12			599	1,310	304	2,322
07-Mar-96		15.07			426	467	234	1,876
18-Jun-96		14.40			462	773	305	2,540
17-Jun-97		14.97			110	19.6	37.6	288.9
12-Jun-98		14.92			55.6	25.2	45.9	296.1
25-Sep-98		14.36			42.7	17.7	68.3	469
26-May-99		15.12			78.9	22	51.6	273.9
26-Jun-00		14.53			26	2.5	100	670
15-May-01		14.91			13	0.5	74	490
25-Jun-02		13.72			20	ND	200	1,740
20-May-03		14.47			14	1.1	190	1,400
19-Jun-04		14.07			7.5	ND	79	530
27-Sep-04		8.27			8.4	ND	140	1,100
29-Jun-05		9.13			6.9	ND	150	1,100
28-Jun-06		8.78	14.75		6.7	ND	190	790
15-Jun-07		9.76	20.40		2.1	ND	76	470
20-Dec-07		9.16	20.40		2.9	ND	130	750
03-Jun-08		9.58	20.40		1.5	ND	88	680
04-Dec-08		9.85	14.75		1.6	3.6	98	640
10-Jun-09		9.75	14.75		1.6	1.4	140	810
07-Dec-09					ND	ND	7.2	29

XTO ENERGY INC. GROUNDWATER LAB RESULTS

VALDEZ A #1E
UNIT G, SEC. 24, T29N, R11W

Sample Date	Monitor Well No.	DTW (ft)	TD (ft)	Product (ft)	Benzene ug/L	Toluene ug/L	Ethyl Benzene ug/L	Total Xylene ug/L
05-Mar-92	MW #7				1160	1110	302	1972
23-Feb-93		13.37	23.32		ND	1	ND	2
07-Jun-93		14.54	19.33		640	2,270	330	2,430
08-Sep-93		14.15	18.85		820	1,660	306	1,780
02-Dec-93		14.56			319	366	35.1	242
09-Mar-94		15.30			103	88	10.3	74
24-Jun-94		14.04			569	2,090	288	3,094
23-Sep-94		13.51			627	1,805	189	1,755
09-Dec-94		13.94	18.83		707	1,220	161	1,342
10-Jan-95		14.23			298	394	54.8	365.4
09-Feb-95		14.50			465	624	92	582
13-Mar-95		14.73			997.8	813.2	168.4	1015.9
10-Apr-95		14.87			648	456	104	623
19-Jun-95		14.39			366.7	414.7	66.1	602.2
07-Aug-95		14.04			869	1,000	171	1,431
12-Sep-95		13.85			1,725	846	141	1,035
10-Oct-95		13.73			143	689	93.6	925
15-Nov-95		13.94			710	1,000	178	1,642
07-Dec-95		14.05			1,050	606	167	996
07-Mar-96		14.94			101	10.3	8.69	42.27
18-Jun-96		14.34			128	65.5	11.5	175.3
17-Jun-97		14.83			360	16.3	16.5	127.5
12-Jun-98		14.83	18.83	0.88				
25-Sep-98				0.88				
26-May-99				0.05				
25-Aug-99				0.62				
30-Nov-99				0.7				
26-Jun-00		14.46	18.83		220	63	94	4,080
15-May-01		14.87			190	ND	76	880
25-Jun-02		13.72			190	14	32	264
20-May-03		14.43			99	ND	40	230
19-Jun-04		13.97			170	4.1	120	780
29-Jun-05		13.81			100	14	68	470
28-Jun-06		13.37	19.24		48	14	69	580
15-Jun-07		15.00	22.62		86	ND	67	97
20-Dec-07		13.65	22.62		310	ND	220	1,300
03-Jun-08		14.03	22.62		34	ND	63	490
04-Dec-08		13.46	19.24		100	31	430	3,600
10-Jun-09		14.20	19.24		43	25	160	1,100
07-Dec-09					62	33	320	2,400
05-Mar-92	MW #8				2,160	1770	830	2,920
23-Feb-93		15.68	17.00		2,830	25,500	1,680	5,430
08-Jun-93		15.36	17.01		3,220	1,940	1,110	4,960
09-Sep-93		15.16	17.73		245	2,040	135	1,499
02-Dec-93		15.44			307	2,520	119	1,388
09-Mar-94		15.98			223	340	61	232.9

XTO ENERGY INC. GROUNDWATER LAB RESULTS

VALDEZ A #1E
UNIT G, SEC. 24, T29N, R11W

Sample Date	Monitor Well No.	DTW (ft)	TD (ft)	Product (ft)	Benzene ug/L	Toluene ug/L	Ethyl Benzene ug/L	Total Xylene ug/L
24-Jun-94	MW #8	14.86			375	1,750	108	1,001
23-Sep-94		14.31			236	1,827	90	864
09-Dec-94		14.78	18.60		307	1,608	105	734
10-Jan-95		15.02			320	2,410	119	1,016
09-Feb-95		15.24			183	760	90.9	452
13-Mar-95		15.42			415	3,943	202	2,037
10-Apr-95		15.54			239	2,780	128	1,245
19-Jun-95					148.9	1448.2	72.8	681.2
07-Aug-95		14.86			168	1,590	92.7	893
12-Sep-95		14.71			499	1,420	74.1	788
10-Oct-95		14.60			88.1	817	52.1	614
15-Nov-95		14.78			158	2,110	150	1,488
07-Dec-95		14.87			156	1,920	135	1,277
07-Mar-96		15.60			98.1	1,320	82.5	778
18-Jun-96		15.15			5.45	2.25	ND	3.5
24-Dec-96		15.12	18.28		105	569	51	421
17-Jun-97		14.01			45.4	83	29.8	88.9
12-Jun-98		15.54			5.4	5.1	1.1	9.1
25-Sep-98		15.03			0.3	0.3	0.2	2.4
24-Mar-92	MW #9				1.3	ND	0.3	0.9
23-Feb-93		8.56	11.00		ND	1	ND	2
08-Jun-93		8.19			ND	2.1	0.3	2.3
09-Sep-93		8.00	10.92		0.9	0.6	ND	0.4
09-Mar-94		8.83			ND	2.1	0.7	7
24-Jun-94		7.80			1.6	5.5	4.1	3.1
23-Sep-94		7.30			0.8	2.5	3.1	1.2
09-Dec-94		7.70	11.08		0.8	1.6	ND	ND
13-Mar-95		8.31			ND	ND	ND	ND
25-Sep-98		7.93	11.08		0.6	0.2	ND	1.1
26-May-99		8.49			25.1	13.7	4.3	47
25-Aug-99		8.12			0.7	2	ND	2.7
30-Nov-99		7.99			4.2	2.9	0.3	4.6
26-Jun-00		8.07			ND	ND	ND	ND
20-Mar-01		8.57			ND	ND	ND	ND
24-Mar-92	MW #10				1380	1490	690	2550
23-Feb-93		8.65	9.80		ND	ND	ND	1
08-Jun-93		8.43	9.80		ND	0.7	ND	0.9
09-Sep-93		7.76			ND	0.3	ND	1.1
09-Mar-94		8.98			ND	2.3	ND	0.4
24-Jun-94		8.00	12.15		2.2	ND	ND	ND
23-Sep-94		7.56			0.7	0.7	ND	ND
09-Dec-94		7.88	12.44		ND	0.2	ND	ND
13-Mar-95		8.46			ND	ND	ND	ND
19-Jun-95		8.22			ND	ND	ND	ND
12-Sep-95		7.84			ND	ND	ND	ND

XTO ENERGY INC. GROUNDWATER LAB RESULTS

VALDEZ A #1E
UNIT G, SEC. 24, T29N, R11W

Sample Date	Monitor Well No.	DTW (ft)	TD (ft)	Product (ft)	Benzene ug/L	Toluene ug/L	Ethyl Benzene ug/L	Total Xylene ug/L
07-Dec-95	MW #10	7.93			ND	ND	ND	ND
07-Mar-96		8.62			ND	ND	ND	ND
18-Jun-96		8.22			ND	ND	ND	ND
25-Aug-99		8.30			1.7	0.9	ND	1.2
NMWQCC GROUNDWATER STANDARDS					10	750	750	620

Figure 1

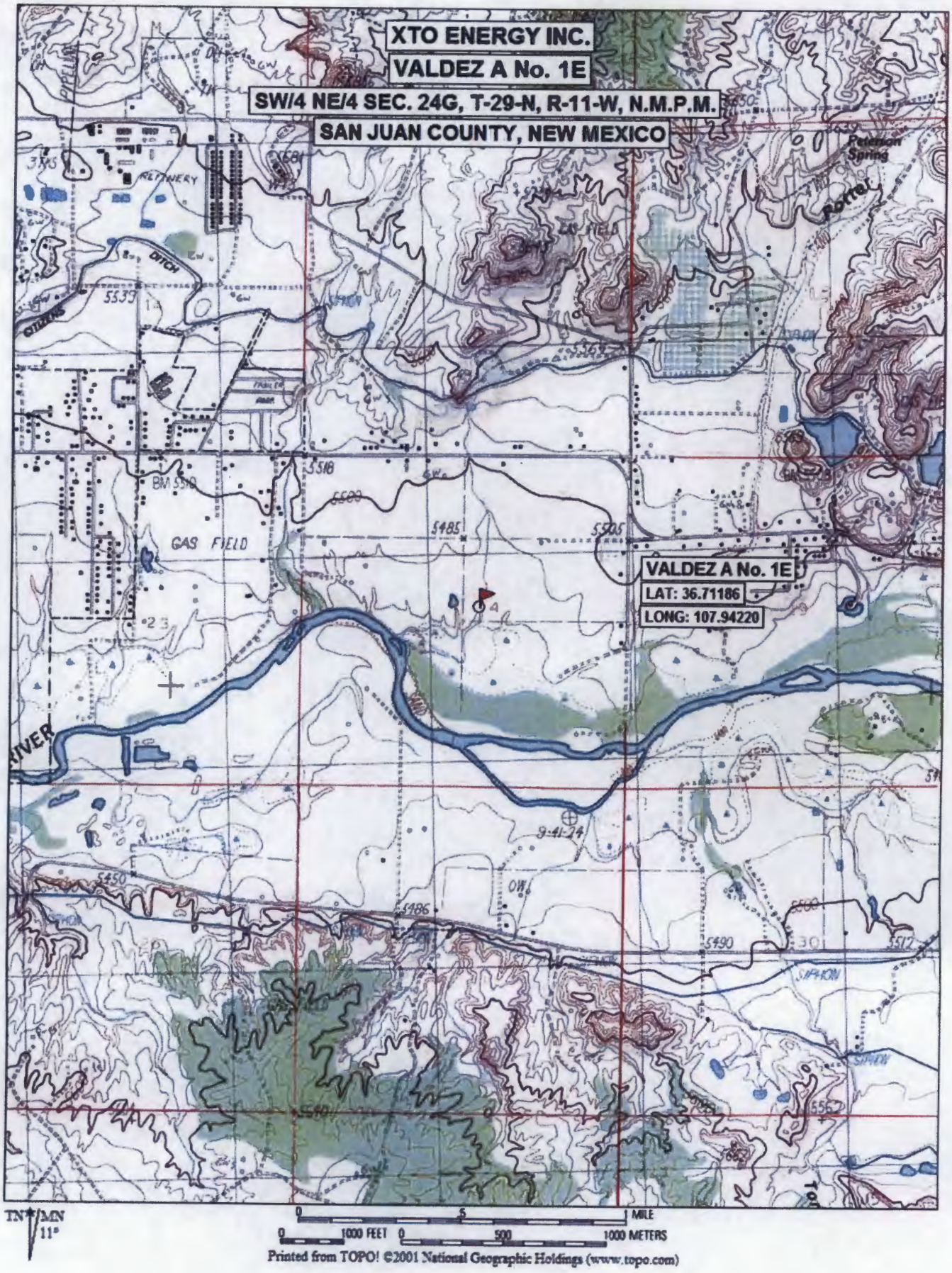
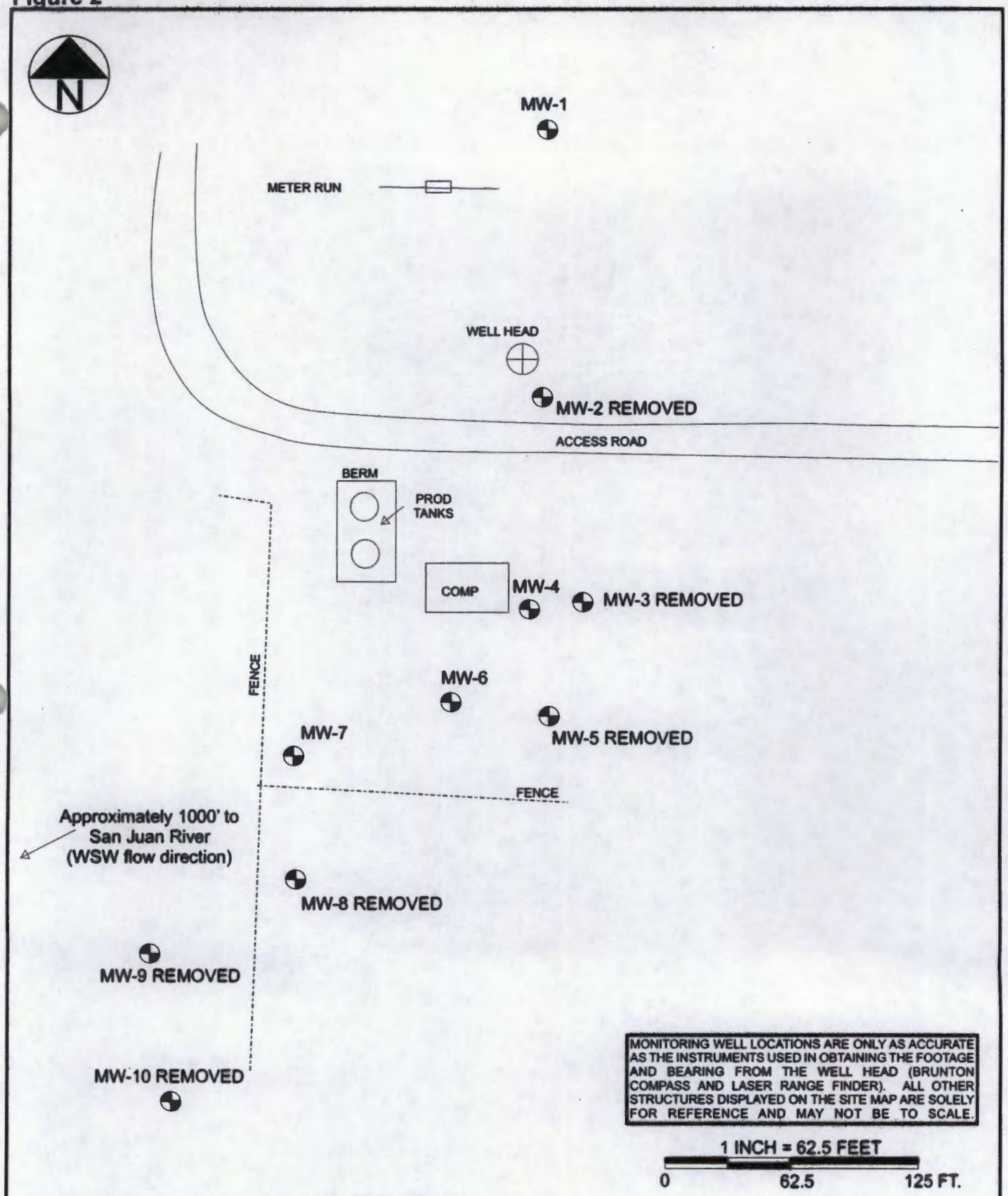
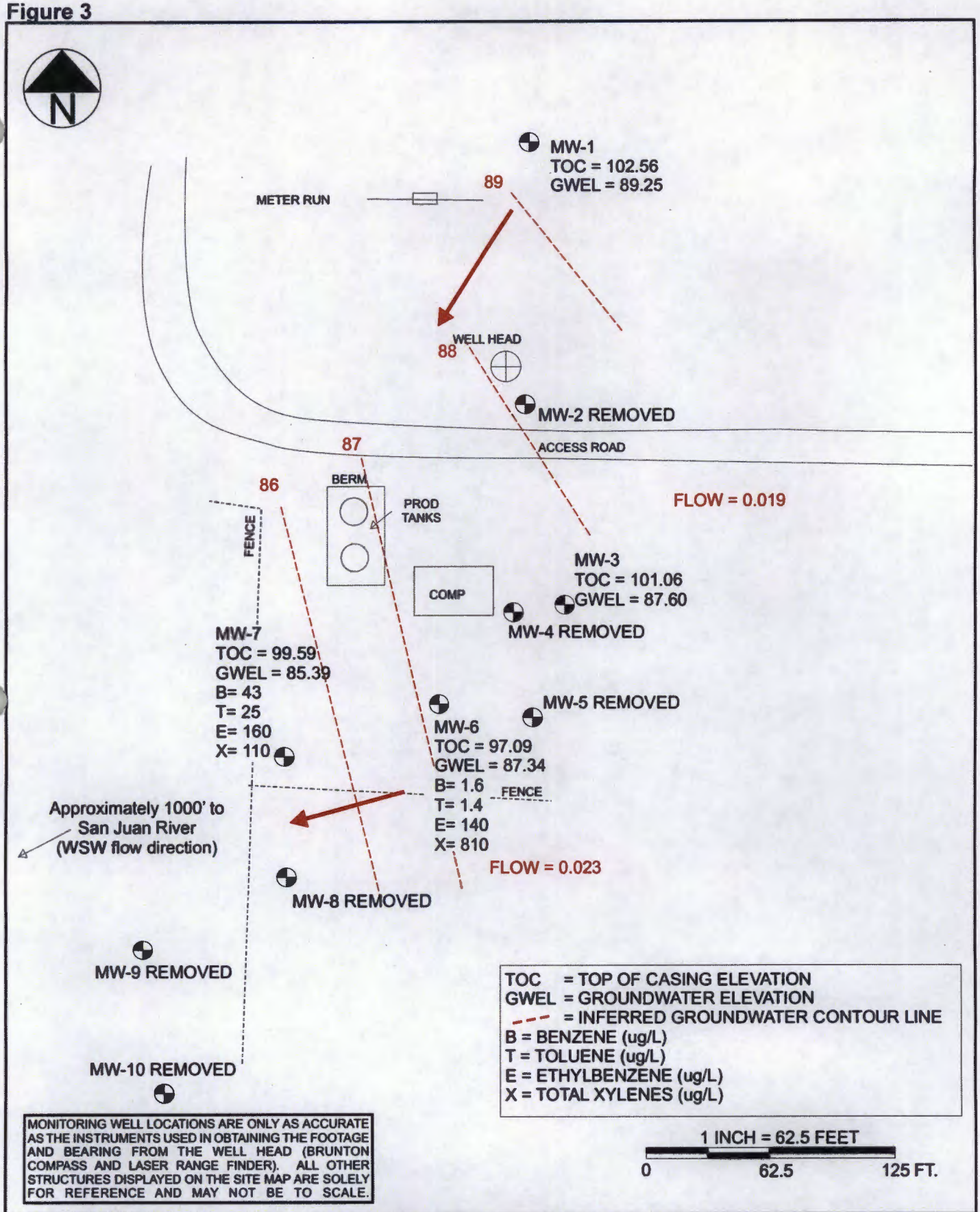

XTO ENERGY INC.
VALDEZ A No. 1E
SW/4 NE/4 SEC. 24G, T-29-N, R-11-W, N.M.P.M.
SAN JUAN COUNTY, NEW MEXICO
VALDEZ A No. 1E
LAT: 36.71186
LONG: 107.94220
GAS FIELD
DITCH
REFINERY
Peterson Spring
TN 11° MN
0 5 1 MILE
0 1000 FEET 0 500 1000 METERS
Printed from TOPO! ©2001 National Geographic Holdings (www.topo.com)

Figure 2



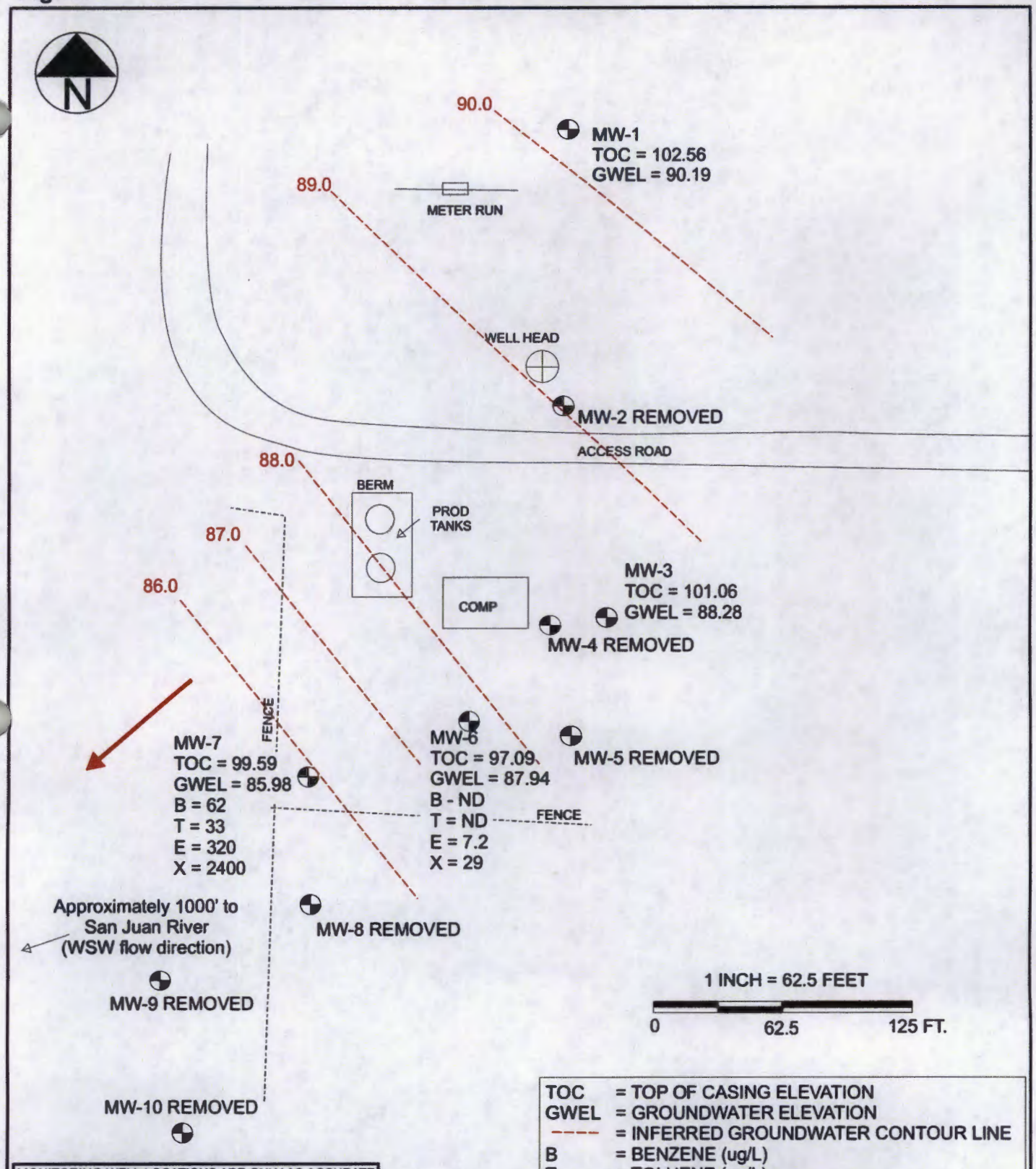
Lodestar Services, Inc PO Box 3861 Farmington, NM 87499	VALDEZ A #1E SW/4 NE/4 SEC. 24, T29N, R11W SAN JUAN COUNTY, NEW MEXICO	PROJECT: XTO GROUND WATER DRAWN BY: ALA REVISED: 01/30/08	SITE MAP 06/28/2006

Figure 3



Lodestar Services, Inc PO Box 3861 Farmington, NM 87499	VALDEZ A #1E SW/4 NE/4 SEC. 24, T29N, R11W SAN JUAN COUNTY, NEW MEXICO	PROJECT: XTO GROUND WATER DRAWN BY:ADH REVISED: 06/28/2009	GROUNDWATER GRADIENT MAP 06/10/09

Figure 4



TOC	= TOP OF CASING ELEVATION
GWEL	= GROUNDWATER ELEVATION
----	= INFERRED GROUNDWATER CONTOUR LINE
B	= BENZENE (ug/L)
T	= TOLUENE (ug/L)
E	= ETHYLBENZENE (ug/L)
X	= TOTAL XYLENES (ug/L)
ND	= NOT DETECTED

MONITORING WELL 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 MAY NOT BE TO SCALE.

Lodestar Services, Inc PO Box 3861 Farmington, NM 87499	VALDEZ A #1E SW/4 NE/4 SEC. 24, T29N, R11W SAN JUAN COUNTY, NEW MEXICO	PROJECT: XTO GROUND WATER DRAWN BY: ADH REVISED: 12/31/2009	GROUNDWATER GRADIENT MAP 12/07/2009

Figure 5

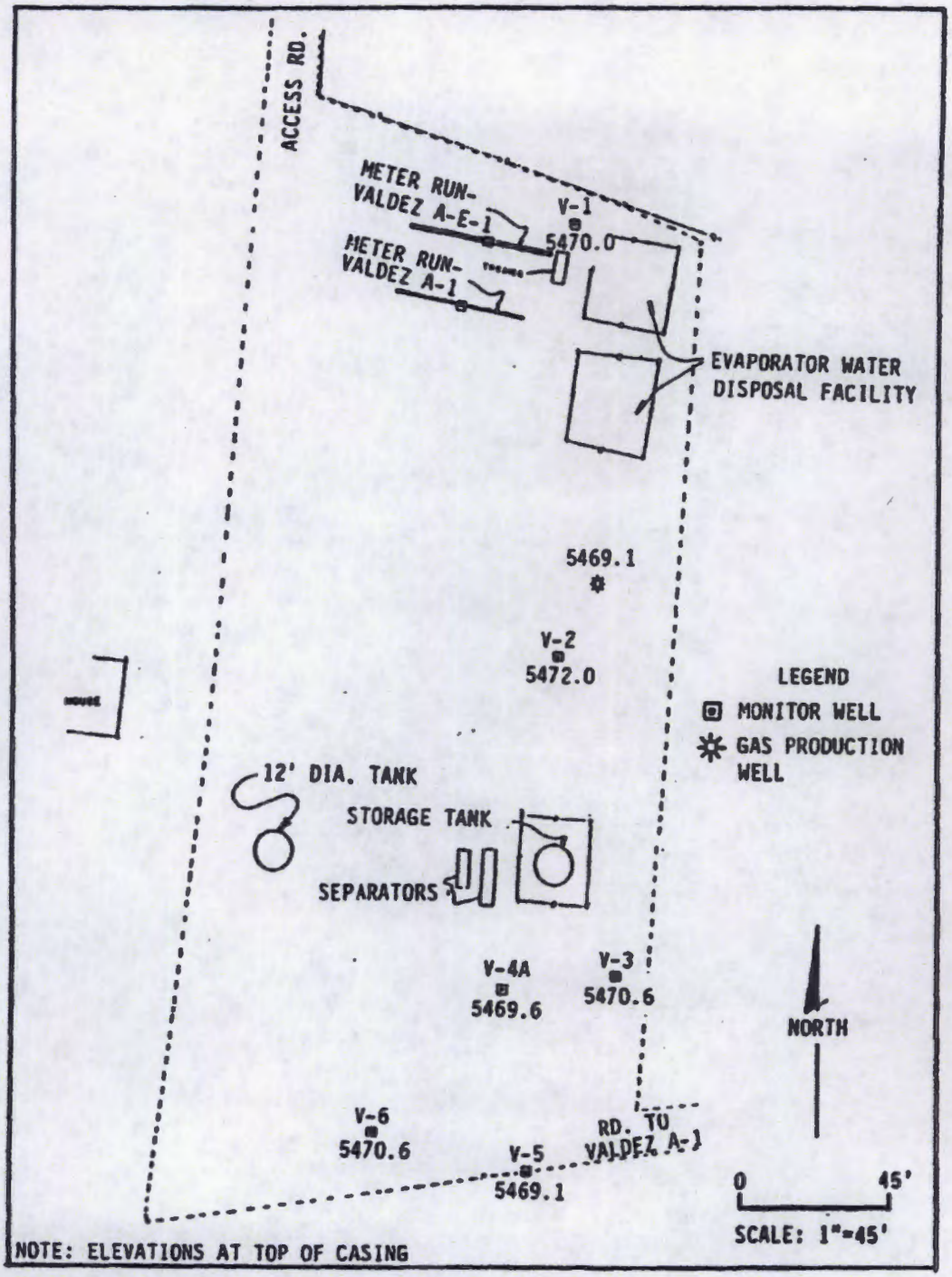
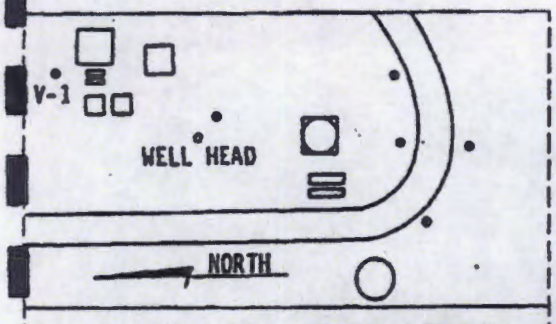


FIGURE 4-1

SITE MAP OF MONITOR WELL LOCATIONS AT VALDEZ A-1-E WELL SITE

Figure 6

BOREHOLE LOG (SOIL)



1/4 1/4 1/4 1/4 S 36 T 29N R 11W

Page 1 of 1

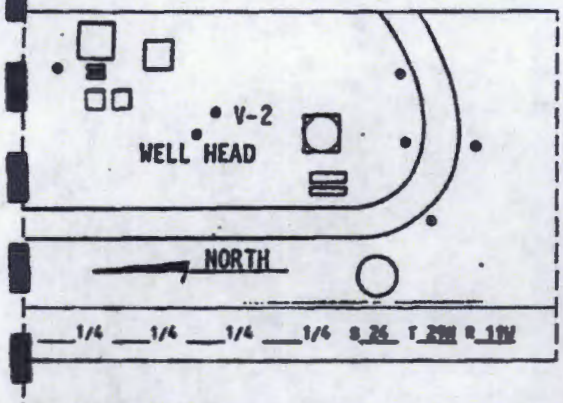
SITE ID: Valdez LOCATION ID: V-1
SITE COORDINATES (ft.): 2390 FNL, 2500 FEL
N E
GROUND ELEVATION (ft. MSL):
STATE: New Mexico COUNTY: San Juan
DRILLING METHOD: HSA
DRILLING CONTR.: Western Technologies
DATE STARTED: 7/01/88 DATE COMPLETED: 7/01/88
FIELD REP.: W.S. Dubrk, P. Linley
COMMENTS:

LOCATION DESCRIPTION:

DEPTH	LITH.	REC	SAN	RUN #	RUN FROM	RUN TO	SAMPLE REC.	SAMPLE TYPE	USCS	VISUAL CLASSIFICATION
0									CH	0'-13' Clay - moderate brown 5 YR 3/4, plastic, damp, no odor.
5									MH	13'-17' Silt - dark yellowish brown, 10 YR 4/2, with clay and minor sand grains.
10									GC	17'-20.5' Gravel - with clay and sand, poor cutting return. Water noted at 17'.
15										
20	T.D. 20.17'									
25										
30										

Figure 7

BOREHOLE LOG (SOIL)



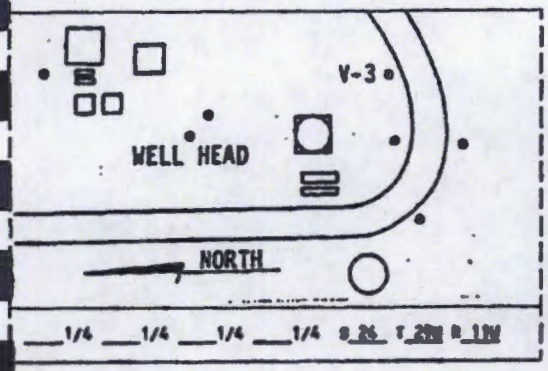
SITE ID: Valdez LOCATION ID: V-2
SITE COORDINATES (ft.): 2390 FNL, 2500 FEL
N E
GROUND ELEVATION (ft. MSL):
STATE: New Mexico COUNTY: San Juan
DRILLING METHOD: HSA
DRILLING CONTR.: Western Technologies
DATE STARTED: 7/01/88 DATE COMPLETED: 7/01/88
FIELD REP.: W.S. Dubyk, P. Linley
COMMENTS: Cored.

LOCATION DESCRIPTION:

DEPTH	LITH.	REC	SAM	RUN #	RUN FROM	RUN TO	SAMPLE REC.	SAMPLE TYPE	USCS	VISUAL CLASSIFICATION
0				1	0'	3'	100%		CH	0'-3' Clay - silty, damp, pale brown 5 YR 5/2 plastic, no odor, fill material.
5				2	3'	8'	60%		SC	3'-8' Sand and Silt - clayey, poorly sorted, moderately rounded, very fine to coarse, yellowish gray damp, probably fill. Grayish Orange Pink 5 Y 7/2.
10				3	8'	13.5'	100%		CH	8'-13.5' Clay - slightly silty, plastic damp, no odor, caliche streaks in fracs. Dark yellowish brown 10 YR 4/2.
15				4	13.5'	18.5'	75%		CH	13.5'-18.5' Clay - as above. Gravel at 18.4', to 2" diameter, slightly rounded, in clay and sand matrix. No coring after 18.5'.
20	T.D. 21.5'			5	18.5'	21.5'	0%		GC	18.5'-21.5' Gravel - no recovery, very slow drilling.
25										
30										

Figure 8

BOREHOLE LOG (SOIL)



Page 1 of 1

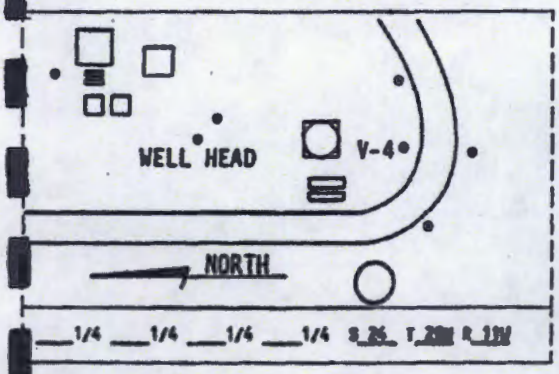
SITE ID: Valdez LOCATION ID: V-3
SITE COORDINATES (ft.): 2390 FNL, 2500 FEL
N E
GROUND ELEVATION (ft. MSL):
STATE: New Mexico COUNTY: San Juan
DRILLING METHOD: HSA
DRILLING CONTR.: Western Technologies
DATE STARTED: 6/30/88 DATE COMPLETED: 6/30/88
FIELD REP.: W.S. Dubvk, P. Linley
COMMENTS:

LOCATION DESCRIPTION:

DEPTH	LITH.	REC	SAN	RUN #	RUN FROM	RUN TO	SAMPLE REC.	SAMPLE TYPE	USCS	VISUAL CLASSIFICATION
0									ML	0'-8' Fill - very fine grained silty clay, no odor, light brown 5 YR 6/4.
5									CH	8'-18' Clay - silty, minor rounded quartz grains; plastic, cohesive, carbonate, damp, no odor caliche in fracs. Water at 18' medium brown, 5 YR 4/4.
10										
15									GC	18'-23' Gravel - no sample return difficult drilling.
20										
25	TD 22.94'									
30										

Figure 9

BOREHOLE LOG (SOIL)



Page 1 of 1

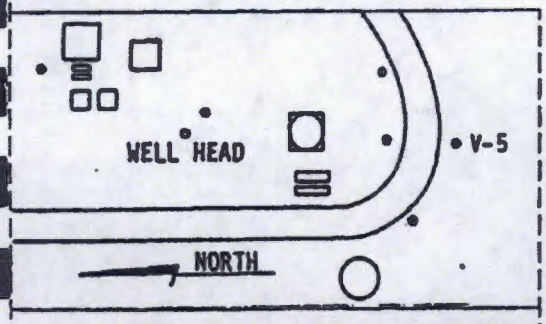
SITE ID: Valdez LOCATION ID: V-4
SITE COORDINATES (ft.): 2390 FNL, 2500 FEL
N E
GROUND ELEVATION (ft. MSL):
STATE: New Mexico COUNTY: San Juan
DRILLING METHOD: HSA
DRILLING CONTR.: Western Technologies
DATE STARTED: 7/1/88 DATE COMPLETED: 7/1/88
FIELD REP.: W.S. Dubyk, P. Linley
COMMENTS: Cored with continuous sampler

LOCATION DESCRIPTION:

DEPTH	LITH.	REC	SAN	RUN #	RUN FROM	RUN TO	SAMPLE REC.	SAMPLE TYPE	USCS	VISUAL CLASSIFICATION
0				1	2'	7'	100%			0'-7' Fill - Clayey sand, no odor.
									CH	7'-13' Clay - Dusky, yellowish brown 10 YR 2/2, laminated, damp, plastic. Hydrocarbon string at 11', odor noted.
5				2	7'	12'	100%			
									CH	13'-17.5' Clay - as above, grades downward into sandy clay, medium yellowish brown, 10 YR 5/4.
10				3	12'	14'	50%			17.5'-18' Sand - with minor gravel moderately yellowish
									GC	brown 10 YR 5/4 moderately sorted, fine to coarse grained. Core to 18'.
15				4	14'	18'	100%		GC	18' Gravel - no sample, difficult drilling.
20										
	T.D. 23'									
25										
30										

Figure 10

BOREHOLE LOG (SOIL)



___1/4 ___1/4 ___1/4 ___1/4 S 24 T 29N R 11W

Page 1 of 1

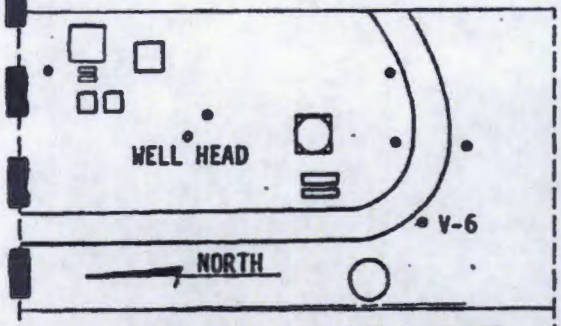
SITE ID: Valdez LOCATION ID: V-5
SITE COORDINATES (ft.): 2390 FNL, 2500 FEL
N _____ E _____
GROUND ELEVATION (ft. MSL): _____
STATE: New Mexico COUNTY: San Juan
DRILLING METHOD: HSA
DRILLING CONTR.: Western Technologies
DATE STARTED: 6/30/88 DATE COMPLETED: 6/30/88
FIELD REP.: W.S. Dubyk, P. Linley
COMMENTS: _____

LOCATION DESCRIPTION: _____

DEPTH	LITH.	REC	SAN	RUN #	RUN FROM	RUN TO	SAMPLE REC.	SAMPLE TYPE	USCS	VISUAL CLASSIFICATION
0										0'-8' Fill - silty clay, light brown 5 YR 5/6, no odor.
									CH	8'-13' Clay - silty, laminated, dusky brown 5 YR 2/2 plastic, damp, no odor.
5										
									ML	13'-17.5' Silt - with clay and ~20% medium to coarse sand grains. Laminated, dusky brown 5 YR 2/2 damp, no odor, plastic.
10										
									GC	17'-23' Gravel - no sample return. H_2O at 17' noted at top of hole. Difficult drilling at 18'.
15										
20										
	T.D. 23'									
25										
30										

Figure 11

BOREHOLE LOG (SOIL)



1/4 1/4 1/4 1/4 S 24 T 29N R 13W

Page 1 of 1

SITE ID: Valdez LOCATION ID: V-6
SITE COORDINATES (ft.): 2390 FNL, 2500 FEL
N E
GROUND ELEVATION (ft. MSL):
STATE: New Mexico COUNTY: San Juan
DRILLING METHOD: HSA
DRILLING CONTR.: Western Technologies
DATE STARTED: 6/29/88 DATE COMPLETED: 6/30/88
FIELD REP.: W.S. Dubyk, P. Linley
COMMENTS:

LOCATION DESCRIPTION:

DEPTH	LITH.	REC	SAN	RUN #	RUN FROM	RUN TO	SAMPLE REC.	SAMPLE TYPE	USCS	VISUAL CLASSIFICATION
0										0'-9' Fill - Silty clay, pale brown 5 YR 5/2, very fine grained.
									CH	9'-17' Clay - Silty, carbonate, lined fracs. medium brown 5 YR 4/4, odor at 12'.
5										
									GC	17'-18' Gravel - cobbles, difficult drilling.
10										
									CH	18'-20' Clay - grayish brown 5 YR 3/2; odor noted; plastic, wet.
15										
									GC	20'-20.5' Cobbles - gravel, no sample return. Very difficult drilling (refusal).
20	TD 20.81'									
25										
30										

Attachment 1

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION

GARREY CARRUTHERS
GOVERNOR

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87504
(505) 827-5800

June 6, 1988

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Martin W. Buys
Tenneco Oil Company
P. O. Box 3249
Englewood, Colorado 80155

RE: Ground Water Contamination Sites: Tenneco Valdez A1E
Tenneco Riddle F LS 3A

Dear Mr. Buys:

On September 17, 1987, the Oil Conservation Division (OCD) personnel augered four 10½'-18' holes at the Valdez A1E well site and discovered ground water contamination in the vicinity of the produced water tank and the separator. You have been sent laboratory analyses and a field map of the well site.

On October 27, 1987, the OCD augered five 13'-16' holes at the Riddle F LS #3A well site and discovered ground water contamination in the vicinity of the dehydrator and tank drain pit. Copies of the laboratory analysis of fluids found in Auger Hole #2 and a field map locating the auger holes in relation to the well site are enclosed.

Because ground water contamination has been found at these well sites, Tenneco is required to install a series of monitor wells at the sites to define the contamination plume and to monitor contaminant concentration levels. At this time remedial action is not being required. The need for such action will be reevaluated after review of information and data collected at these sites.

OCD staff will be available the week of June 27 to supervise installation of the monitor wells and to split samples of fluids found in the wells. Monitor well installation requirements have been discussed with you by phone.

If you have any questions, please contact me at (505) 827-5812 or Jami Bailey at (505) 827-5884.

Sincerely,

David G. Boyer
Environmental Bureau Chief

DGB:JB:sl

Enclosure

cc: OCD - Aztec

Attachment 2

NEW MEXICO ENERGY, MINERALS
& NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION
2040 South Pacheco Street
Santa Fe, New Mexico 87505
(505) 827-7131

March 12, 1996

CERTIFIED MAIL
RETURN RECEIPT NO. Z-765-962-549

Mr. B.D. Shaw
Amoco Production Company
200 Amoco Court
Farmington, New Mexico 87401

RE: GROUND WATER CONTAMINATION
VALDEZ A#1E

Dear Mr. Shaw:

The New Mexico Oil Conservation Division (OCD) has completed a review of Amoco Production Company's (Amoco) JANUARY 8, 1996 "REDUCTION OF GROUNDWATER MONITORING REQUIREMENTS FOR AMOCO WELL SITE VALDEZ A-1-E". This document contains Amoco's request to cease ground water monitoring related to contamination from a former unlined production pit at the Valdez A#1E well site.

According to New Mexico Water Quality Control Commission (WQCC) regulations, a responsible party is required to remediate and monitor contaminated ground water until WQCC standards have been achieved. While the data shows that the contaminated ground water plume has decreased in size, ground water within the plume is still approximately 65 times WQCC ground water standards. Since WQCC standards have not been met, the OCD cannot approve a proposal to cease remedial actions and ground water monitoring. Therefore, the above referenced request is denied.

The OCD would like to point out to Amoco that according to WQCC regulation 4103.F. and 4106 Amoco can voluntarily submit an "Abatement Plan" which could petition for approval of alternate abatement standards. The WQCC regulations are enclosed for your reference.

If you have any questions, please call me at (505) 827-7154.

Sincerely,

William C. Olson
Hydrogeologist
Environmental Bureau

cc: OCD Aztec District Office

Southern
Rockies
Business
Unit

January 8, 1996

San Juan Operations Center

Mr. William Olsen
New Mexico Oil Conservation Division
P.O. Box 2088
Santa Fe, NM 87504

RE: REDUCTION OF GROUNDWATER MONITORING REQUIREMENTS FOR AMOCO WELL SITE VALDEZ A-1-E

Dear Bill:

I have asked Geoscience Consultants, Ltd. (GCL) to evaluate the groundwater chemistry of the above-referenced site. The data, which have been collected from 1988 to 1996, are presented in the attached table, figure, and graphs. Amoco believes the data support our request to cease routine groundwater monitoring at this site. The justification and contingency plan presented below demonstrate that the plume is stable, natural biodegradation is occurring at this site, threats to human health and the environment do not exist, and installation of a remedy at this site would best be accomplished after plugging and abandonment of the on-site natural gas production well.

Trends in BTEX Concentrations

The attached concentration/time plots demonstrate the benzene, toluene, ethylbenzene, and xylenes (BTEX) concentrations outside the center of mass of the plume have remained low and below Water Quality Control Commission (WQCC) standards since 1992. Concentrations in wells inside the center of mass of the plume (MW-6, MW-7, MW-8, and MW-10) are remaining fairly constant or, in the case of well MW-10, have decreased (if the initial 1988 analysis is valid). Some "spikes" in BTEX concentrations may be due to sampling or analytical error.

No Plume Migration

The attached plume map clearly shows the plume has not migrated over time and, in fact, the plume has actually retracted slightly towards the center of mass. It is our understanding that no new water supply wells have been installed near the site and therefore the plume should not migrate from its present position. It appears to be essentially in a steady state, if not slowly retracting.

A solute transport model simulation conducted by RESPEC in 1992 is superimposed on the plume map. This model predicted the extent of contamination if retardation factors, such as bioremediation, did not occur. Clearly, plume conditions predicted by the model were never borne out by groundwater quality analyses conducted since 1992. Natural bioremediation of BTEX constituents is a well-documented process in the literature and is probably responsible for the static

plume observed at this site. Irrigation return water provides nutrients and oxygen to the system, and the petroleum hydrocarbons sorbed to the subsurface soils and dissolved in groundwater provide a carbon source. The rate of petroleum hydrocarbon transport from the source soils is completely offset by the metabolism of these hydrocarbons by indigenous microbes. Amoco strongly believes this process is operating effectively at this site, based upon the eight years of groundwater data.

Human Health and Environment Adequately Protected

The land use in the area is agricultural/pastureland, and we believe it will likely remain so for the lifetime of the gas production well. Provided current conditions do not change, the plume will remain stable or slowly degrade, and not impact a human or ecological receptor. If conditions change, Amoco will implement the contingency plan outlined below.

- If a domestic water well is installed within 200 feet (the length of the plume) of the edge of the plume, or if an irrigation well is installed within 400 feet of the edge of the plume, Amoco will commence semi-annual monitoring of MW-10 and any other monitoring well that lies between the plume's center of mass and the production well.

- If a spill of natural gas liquids occurs, Amoco will commence quarterly monitoring of MW-10 and the monitoring well nearest the spill location.

- If groundwater pumping or spillage causes plume migration, as demonstrated by monitoring, Amoco will commence active remediation of groundwater through a soil venting program and, if required, an air sparging program to arrest the plume and prevent more extensive degradation of groundwater quality.

- One year prior to plugging and abandonment of the natural gas production well, Amoco will collect one year of quarterly monitoring data from all monitoring wells. If contamination remains to the extent that WQCC standards would be exceeded at a place of reasonably foreseeable future use, as determined by the NMOCD, Amoco will install an appropriate groundwater remedy or institutional controls to ensure that all regulatory requirements are met.

Based upon the stability of the plume and the lack of risk it poses to human health and the environment, Amoco believes that continuation of groundwater monitoring is unnecessary. Amoco will commit to remediation of the plume or institutional controls to fully protect usable groundwater (1) if and when site conditions change, (2) the well is plugged, or (3) Amoco or any subsequent operator loses control of the site. Based on the above information, we urge you to approve this request to cease groundwater monitoring at this site.

If you have any questions on the information I have provided you, please feel free to give me a call.

Sincerely,
Amoco

Buddy Shaw

Buddy Shaw

J:\AMOCO.LTR

cc: Roger Anderson, NMOCD
Randall Hicks, GCL

Attachment 3

Hall Environmental Analysis Laboratory, Inc.

Date: *25-Jun-09*

CLIENT: XTO Energy
Project: Ground Water
Lab Order: 0906245

Lab ID: 0906245-01 **Collection Date:** 6/10/2009 2:06:00 PM
Client Sample ID: ~~EJ Johnson C1E-MW-5R~~ **Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8021B: VOLATILES						Analyst: NSB
Benzene	ND	1.0		µg/L	1	6/17/2009 6:45:43 PM
Toluene	ND	1.0		µg/L	1	6/17/2009 6:45:43 PM
Ethylbenzene	ND	1.0		µg/L	1	6/17/2009 6:45:43 PM
Xylenes, Total	ND	2.0		µg/L	1	6/17/2009 6:45:43 PM
Surr: 4-Bromofluorobenzene	85.1	65.9-130		%REC	1	6/17/2009 6:45:43 PM

Lab ID: 0906245-02 **Collection Date:** 6/10/2009 10:15:00 AM
Client Sample ID: ~~Rowland GC1-MW-5~~ **Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8021B: VOLATILES						Analyst: NSB
Benzene	120	5.0		µg/L	5	6/17/2009 11:50:00 PM
Toluene	ND	5.0		µg/L	5	6/17/2009 11:50:00 PM
Ethylbenzene	240	5.0		µg/L	5	6/17/2009 11:50:00 PM
Xylenes, Total	590	10		µg/L	5	6/17/2009 11:50:00 PM
Surr: 4-Bromofluorobenzene	110	65.9-130		%REC	5	6/17/2009 11:50:00 PM

Lab ID: 0906245-03 **Collection Date:** 6/10/2009 11:20:00 AM
Client Sample ID: Valdez A1E-MW-7 **Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8021B: VOLATILES						Analyst: NSB
Benzene	43	1.0		µg/L	1	6/18/2009 1:21:18 AM
Toluene	25	1.0		µg/L	1	6/18/2009 1:21:18 AM
Ethylbenzene	160	10		µg/L	10	6/18/2009 12:50:55 AM
Xylenes, Total	1100	20		µg/L	10	6/18/2009 12:50:55 AM
Surr: 4-Bromofluorobenzene	111	65.9-130		%REC	10	6/18/2009 12:50:55 AM

Lab ID: 0906245-04 **Collection Date:** 6/10/2009 1:10:00 PM
Client Sample ID: ~~Jack Frost B2-MW-4~~ **Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8021B: VOLATILES						Analyst: NSB
Benzene	19	1.0		µg/L	1	6/18/2009 2:22:07 AM
Toluene	ND	1.0		µg/L	1	6/18/2009 2:22:07 AM
Ethylbenzene	1.2	1.0		µg/L	1	6/18/2009 2:22:07 AM
Xylenes, Total	ND	2.0		µg/L	1	6/18/2009 2:22:07 AM
Surr: 4-Bromofluorobenzene	93.2	65.9-130		%REC	1	6/18/2009 2:22:07 AM

Qualifiers:

*	Value exceeds Maximum Contaminant Level
E	Estimated value
J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit
S	Spike recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
MCL	Maximum Contaminant Level
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

Date: *25-Jun-09*

CLIENT: XTO Energy
Project: Ground Water

Lab Order: 0906245

Lab ID: 0906245-05
Client Sample ID: Valdez A1E-MW-6

Collection Date: 6/10/2009 11:50:00 AM
Matrix: AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8021B: VOLATILES						Analyst: [illegible]
Benzene	1.6	1.0		µg/L	1	6/18/2009 3:22:39 AM
Toluene	1.4	1.0		µg/L	1	6/18/2009 3:22:39 AM
Ethylbenzene	140	10		µg/L	10	6/18/2009 2:52:23 AM
Xylenes, Total	810	20		µg/L	10	6/18/2009 2:52:23 AM
Surr: 4-Bromofluorobenzene	99.3	65.9-130		%REC	10	6/18/2009 2:52:23 AM

Qualifiers:

*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
E	Estimated value	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	MCL	Maximum Contaminant Level
ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike recovery outside accepted recovery limits		

QA/QC SUMMARY REPORT

Client: XTO Energy
Project: Ground Water **Work Order:** 0906245

Analyte	Result	Units	PQL	%Rec	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Method: EPA Method 8021B: Volatiles									
Sample ID: 0906245-01A MSD		*MSD*			Batch ID:	R34138	Analysis Date:		6/17/2009 8:16:58 PM
Benzene	22.37	µg/L	1.0	112	85.9	113	0.526	27	
Toluene	21.26	µg/L	1.0	106	86.4	113	1.97	19	
Ethylbenzene	20.74	µg/L	1.0	103	83.5	118	3.21	10	
Xylenes, Total	60.36	µg/L	2.0	101	83.4	122	4.04	13	
Sample ID: 5ML RB		*MBLK*			Batch ID:	R34138	Analysis Date:		6/17/2009 9:34:54 AM
Benzene	ND	µg/L	1.0						
Toluene	ND	µg/L	1.0						
Ethylbenzene	ND	µg/L	1.0						
Xylenes, Total	ND	µg/L	2.0						
Sample ID: 100NG BTEX CCV		*LCS*			Batch ID:	R34138	Analysis Date:		6/17/2009 8:47:28 PM
Benzene	21.71	µg/L	1.0	109	85.9	113			
Toluene	20.57	µg/L	1.0	103	86.4	113			
Ethylbenzene	20.04	µg/L	1.0	100	83.5	118			
Xylenes, Total	58.31	µg/L	2.0	97.2	83.4	122			
Sample ID: 0906245-01A MS		*MS*			Batch ID:	R34138	Analysis Date:		6/17/2009 7:46:33 PM
Benzene	22.49	µg/L	1.0	112	85.9	113			
Toluene	21.68	µg/L	1.0	108	86.4	113			
Ethylbenzene	21.42	µg/L	1.0	106	83.5	118			
Xylenes, Total	62.85	µg/L	2.0	105	83.4	122			

Qualifiers:

E	Estimated value	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
R	RPD outside accepted recovery limits	S	Spike recovery outside accepted recovery limits

Hall Environmental Analysis Laboratory, Inc.

Sample Receipt Checklist

Client Name XTO ENERGY | Date Received: 6/12/2009

Work Order Number 0906245 | Received by: ARS

Checklist completed by: _____ Signature | 6/12/09 Date | Sample ID labels checked by: TS AB Initials

Matrix: | Carrier name: Greyhound

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐	
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐	Not Shipped ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	N/A ☑	
Chain of custody present?	Yes ☑	No ☐		
Chain of custody signed when relinquished and received?	Yes ☑	No ☐		
Chain of custody agrees with sample labels?	Yes ☑	No ☐		
Samples in proper container/bottle?	Yes ☑	No ☐		
Sample containers intact?	Yes ☑	No ☐		
Sufficient sample volume for indicated test?	Yes ☑	No ☐		
All samples received within holding time?	Yes ☑	No ☐		Number of preserved bottles checked for pH:
Water - VOA vials have zero headspace?	No VOA vials submitted ☐	Yes ☑	No ☐	
Water - Preservation labels on bottle and cap match?	Yes ☐	No ☐	N/A ☑	
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑	<2 >12 unless noted below.
Container/Temp Blank temperature?	1.6°	<6° C Acceptable If given sufficient time to cool.		

COMMENTS:

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

Chain-of-Custody Record

Client: XTO Energy
Kim Champlin
Mailing Address: 382 CR 3100
Aztec, NM 87410
Phone #: 505.333.3207
email or Fax#:
QA/QC Package:
☑ Standard ☐ Level 4 (Full Validation)
Accreditation
☐ NELAP ☐ Other _____
☐ EDD (Type) _____

Turn-Around Time:
☑ Standard ☐ Rush _____
Project Name: Groundwater
Project #:
Project Manager: Ashley Ager
Sampler: adh
On Ice: ☑ Yes ☐ No
Sample Temperature: 4

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH (Method 418.1)	EDB (Method 504.1)	8310 (PNA or PAH)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	8021 BTEX				Air Bubbles (Y or N)
10Jun09	14:06	aq	EJ Johnson CTE-MW-5R	3/glass	HCl	1												✓				
10Jun09	10:15	aq	Rowland GC1-MW-5	3/glass	HCl	2												✓				
10Jun09	11:20	aq	Valdez AZE-MW-7	3/glass	HCl	3												✓				
10Jun09	13:10	aq	Jackfrost BZ-MW-4	3/glass	HCl	4												✓				
10Jun09	11:50	aq	Valdez AZE-MW-6	3/glass	HCl	5												✓				

Date:	Time:	Relinquished by:	Received by:	Date	Time
11Jun09	1700			9:20 6/12/09	
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks:
please copy (via email) results to
ala@lodestarservices.com
adh@lodestarservices.com
NOTE: 1 trip blank broken upon receipt

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory, Inc.

Date: *16-Dec-09*

CLIENT: XTO Energy
Project: Ground Water
Lab Order: 0912211

Lab ID: 0912211-01 **Collection Date:** 12/7/2009 1:07:00 PM
Client Sample ID: Valdez A #1E MW6 **Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8021B: VOLATILES						Analyst: NSB
Benzene	ND	1.0		µg/L	1	12/10/2009 5:29:54 PM
Toluene	ND	1.0		µg/L	1	12/10/2009 5:29:54 PM
Ethylbenzene	7.2	1.0		µg/L	1	12/10/2009 5:29:54 PM
Xylenes, Total	29	2.0		µg/L	1	12/10/2009 5:29:54 PM
Surr: 4-Bromofluorobenzene	89.6	65.9-130		%REC	1	12/10/2009 5:29:54 PM

Lab ID: 0912211-02 **Collection Date:** 12/7/2009 12:34:00 PM
Client Sample ID: Valdez A #1E MW-7 **Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8021B: VOLATILES						Analyst: NSB
Benzene	62	1.0		µg/L	1	12/10/2009 7:01:02 PM
Toluene	33	1.0		µg/L	1	12/10/2009 7:01:02 PM
Ethylbenzene	320	10		µg/L	10	12/10/2009 6:30:34 PM
Xylenes, Total	2400	100		µg/L	50	12/11/2009 11:57:57 AM
Surr: 4-Bromofluorobenzene	105	65.9-130		%REC	10	12/10/2009 6:30:34 PM

Lab ID: 0912211-03 **Collection Date:** 12/7/2009 11:15:00 AM
Client Sample ID: ~~EJ Johnson MW-5~~ **Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8021B: VOLATILES						Analyst: NSB
Benzene	ND	1.0		µg/L	1	12/11/2009 12:03:52 AM
Toluene	ND	1.0		µg/L	1	12/11/2009 12:03:52 AM
Ethylbenzene	ND	1.0		µg/L	1	12/11/2009 12:03:52 AM
Xylenes, Total	ND	2.0		µg/L	1	12/11/2009 12:03:52 AM
Surr: 4-Bromofluorobenzene	90.2	65.9-130		%REC	1	12/11/2009 12:03:52 AM

Lab ID: 0912211-04 **Collection Date:** 12/7/2009 1:59:00 PM
Client Sample ID: ~~Bruington GC #1 MW-1~~ **Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8021B: VOLATILES						Analyst: NSB
Benzene	ND	1.0		µg/L	1	12/11/2009 12:34:11 AM
Toluene	ND	1.0		µg/L	1	12/11/2009 12:34:11 AM
Ethylbenzene	ND	1.0		µg/L	1	12/11/2009 12:34:11 AM
Xylenes, Total	ND	2.0		µg/L	1	12/11/2009 12:34:11 AM
Surr: 4-Bromofluorobenzene	87.9	65.9-130		%REC	1	12/11/2009 12:34:11 AM

Qualifiers:

*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
E	Estimated value	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	MCL	Maximum Contaminant Level
ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike recovery outside accepted recovery limits		

QA/QC SUMMARY REPORT

Client: XTO Energy
Project: Ground Water **Work Order:** 0912211

Analyte	Result	Units	PQL	SPK Va	SPK ref	%Rec	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Method: EPA Method 8021B: Volatiles											
Sample ID: 5ML RB		*MBLK*				**Batch ID: R36519**		**Analysis Date: 12/10/2009 9:24:16 AM**			
Benzene	ND	µg/L	1.0								
Toluene	ND	µg/L	1.0								
Ethylbenzene	ND	µg/L	1.0								
Xylenes, Total	ND	µg/L	2.0								
Sample ID: 5ML RB		*MBLK*				**Batch ID: R36545**		**Analysis Date: 12/11/2009 9:26:11 AM**			
Benzene	ND	µg/L	1.0								
Toluene	ND	µg/L	1.0								
Ethylbenzene	ND	µg/L	1.0								
Xylenes, Total	ND	µg/L	2.0								
Sample ID: 100NG BTEX LCS		*LCS*				**Batch ID: R36519**		**Analysis Date: 12/10/2009 9:02:21 PM**			
Benzene	19.63	µg/L	1.0	20	0	98.2	85.9	113			
Toluene	20.20	µg/L	1.0	20	0	101	86.4	113			
Ethylbenzene	19.78	µg/L	1.0	20	0.072	98.5	83.5	118			
Xylenes, Total	59.81	µg/L	2.0	60	0	99.7	83.4	122			
Sample ID: 100NG BTEX LCS		*LCS*				**Batch ID: R36545**		**Analysis Date: 12/11/2009 8:33:09 PM**			
Benzene	20.04	µg/L	1.0	20	0	100	85.9	113			
Toluene	20.13	µg/L	1.0	20	0	101	86.4	113			
Ethylbenzene	19.71	µg/L	1.0	20	0.066	98.2	83.5	118			
Xylenes, Total	58.27	µg/L	2.0	60	0	97.1	83.4	122			

Qualifiers:

E	Estimated value	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
R	RPD outside accepted recovery limits	S	Spike recovery outside accepted recovery limits

Hall Environmental Analysis Laboratory, Inc.

Sample Receipt Checklist

Client Name XTO ENERGY | Date Received: 12/10/2009

Work Order Number 0912211 | Received by: ARS

Checklist completed by: _____ Signature 12/10/09 Date | Sample ID labels checked by: _____ Initials

Matrix: | Carrier name: Greyhound

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐	
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐	Not Shipped ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	N/A ☑	
Chain of custody present?	Yes ☑	No ☐		
Chain of custody signed when relinquished and received?	Yes ☑	No ☐		
Chain of custody agrees with sample labels?	Yes ☑	No ☐		
Samples in proper container/bottle?	Yes ☑	No ☐		
Sample containers intact?	Yes ☑	No ☐		
Sufficient sample volume for indicated test?	Yes ☑	No ☐		
All samples received within holding time?	Yes ☑	No ☐		Number of preserved bottles checked for pH:
Water - VOA vials have zero headspace?	No VOA vials submitted ☐	Yes ☑	No ☐	
Water - Preservation labels on bottle and cap match?	Yes ☐	No ☐	N/A ☑	
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑	*<2 >12 unless noted below.*
Container/Temp Blank temperature?	0.2°	*<6° C Acceptable* If given sufficient time to cool.		

COMMENTS:

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

Chain-of-Custody Record

Client: XTO

Kim Champlin

Mailing Address: 382 CR 3100

Aztec, NM 87410

Phone #: (505) 333-3207

email or Fax#:

QA/QC Package:

☒ Standard ☐ Level 4 (Full Validation)

Accreditation

☐ NELAP ☐ Other

☐ EDD (Type)

Turn-Around Time:

☒ Standard ☐ Rush

Project Name: XTO Groundwater

Project #:

Project Manager: Ashley Ager

Sampler: Devin Hencmann

On Ice: ☒ Yes ☐ No

Sample Temperature: 0.2

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 0912211	BTEX (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH (Method 418.1)	EDB (Method 504.1)	8310 (PNA or PAH)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)					Air Bubbles (Y or N)
12/7/09	1307	Aq	Valdez A #1E MW6	3	HCl	1	X															
12/7/09	1234	AQ	Valdez A#1E MW-7	3	$HgCl_2$	2	X															
12/7/09	1115	AQ	EJ Johnson MW-5	3	HCl	3	X															
12/7/09	1359	AQ	Bruington GC#1 MW-1	3	HCl	4	X															
12/7/09	1422	AQ	Bruington GC#1 MW-2	2	$HgCl_2$	5	X															
12/7/09	1447	AQ	Bruington GC#1 MW-4	3	HCl	6	X															
12-7-09	1515	AQ	Bruington GC#1 MW-3	3	HCl	7	X															
12-7-09	1540	AQ	Bruington GC#1 MW-5	2	$HgCl_2$	8	X															
12-7-09	1600	AQ	Bruington GC#1 MW-6	3	NONE	9	X															
12-7-09	1630	AQ	Bruington GC#1 MW-7	2	$HgCl_2$	10	X															
12-7-09	1655	AQ	Bruington GC#1 MW-8	3	$HgCl_2$	11	X															

Date	Time	Relinquished by:	Received by:	Date	Time
12/9/09	19:00			12/10/09	10:05
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: Please copy results to ala@lodestarservices.com

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.