3R - 105

REPORTS

DATE:

FEB 2000

CROSS TIMBERS OIL COMPANY

GROUNDWATER REMEDIATION REPORT

1999

BERGIN GC #1E
(F) SECTION 21, T29N, R11W, NMPM
SAN JUAN COUNTY, NEW MEXICO

RECEIVED

APR 27 2000

ENVIRONMENTAL BUREAU
OIL CONSERVATION DIVISION

PREPARED FOR:
MR. WILLIAM C. OLSON
NEW MEXICO OIL CONSERVATION DIVISION

FEBRUARY 2000

PREPARD BY:
BLAGG ENGINEERING, INC.

Consulting Petroleum / Reclamation Services
P.O. Box 87
Bloomfield, New Mexico 87413

Cross Timbers Oil Company (CTOC)
Bergin GC # 1E - Separator Pit
Se/4 Nw/4 Sec. 21, T29N, R11W

Groundwater Monitor Well Sampling Procedures:

Groundwater samples were collected from site monitor wells (MW's) following USEPA: SW-846 protocol. The samples were collected using new disposable bailers and placed in new laboratory supplied 40 ml glass vials with teflon septa caps. Samples were analyzed for benzene, toluene, ethylbenzene, and total xylenes (BTEX) per USEPA Method 8021. When applicable, additional groundwater was collected and place in laboratory supplied 250 or 500 ml plastic containers and analyzed for general water quality per USEPA Method 600/4-79-020. The samples were preserved cool (BTEX samples also preserved with mercuric chloride) and hand delivered to a qualified laboratory for testing. Waste generated during monitor well sampling and development was disposed of utilizing the production tank located on the well site.

Water Quality Information:

The BTEX and general chemistry results for the 1999 quarterly sampling event are summarized in the following tables. BTEX levels in all MW's have achieved closure based on the previously approved groundwater management plan by either displaying non detectable levels during the initial sampling event (MW #1 and #4) or by being below the New Mexico Water Quality Control Commission's (NMWQCC) regulatory standards for four (4) consecutive sampling events (MW #2 and #3). During the August 25, 1999 sampling event, MW #4 was also sampled for BTEX to confirm containment of potential down gradient contamination from the source (pit) in question. As revealed in the summary, MW #4 was well below NMWQCC regulatory standards for all BTEX constituents. However, resampling for general chemistry constituents (conducted on May 13, 1999) reveal the chloride level in MW #2 to be above the NMWQCC regulatory standards. The chloride level was then verified during the August 25, 1999 sampling event within MW #2 and #3.

Summary and/or Recommendations:

Based on the enclosed documentation and addressing the attached NMOCD correspondence letter, dated April 21, 1999 (refer to section 1), the groundwater BTEX content within and down gradient of the separator pit area appears to have been remediated during the pit closure activities and possibly by natural attenuation. Therefore, CTOC request termination of sampling in all MW's for BTEX. It is recommended that MW #2 and #3 continued to be sampled on an annual basis for chloride until results suggest otherwise.

CROSS TIMBERS GROUNDWATER MONITOR WELL LABORATORY RESULTS
SUBMITTED BY BLAGG ENGINEERING, INC.

BERGIN GC # 1E - SEPARATOR PIT
UNIT F, SEC. 21, T29N, R11W

REVISED DATE: August 25, 1999

FILENAME: (BE-3Q-99.WK4) NJV

SAMPLE DATE	MONITOR WELL No:	D.T.W. (ft)	T.D. (ft)	TDS mg/L	COND. umhos	pH	PRODUCT (in)	BTEX EPA METHOD 8020 (PPB) Benzene	Toluene	Ethyl Benzene	Total Xylene
05-Jun-96	MW #1	11.65	15.00	2990	2400	7.0		ND	ND	ND	ND
13-May-99		12.73		2850	5700	7.0		NA	NA	NA	NA
05-Jun-96	MW #2	12.28	15.00	1230	1800	6.5		9.92	7.85	19.6	89.2
11-Sep-96		10.03			1600	6.9		5.86	7.57	11.8	24.6
27-Dec-96		10.30			5900	6.8		1.42	1.33	1.89	8.99
19-Mar-97		12.11			4600	7.2		2.54	ND	ND	ND
13-May-99		13.55		3485	6980	7.1		NA	NA	NA	NA
05-Jun-96	MW #3	13.24	15.00	1080	1700	6.7		11.8	23.1	12	137.9
11-Sep-96		11.00			1600	7.2		36.4	11.7	135	529
23-Jun-97		14.21			NA	NA		0.5	0.8	1.2	3.9
17-Sep-97		12.02			2000	6.9		ND	ND	52	305.6
18-Dec-97		11.41			1900	7.2		42.6	4	107	632
12-Jun-98		14.01	20.00		1900	7.1		ND	ND	ND	0.8
25-Jan-99		11.10			1700	7.2		ND	0.7	26.7	219.9
13-May-99		13.84		2134	4300	7.3		2.2	11.1	0.6	12.2
25-Aug-99		12.30			1900	7.1		8.6	2.3	4.5	24.8
18-Dec-97	MW #4	11.31	17.53		2100	7.0		ND	ND	ND	ND
13-May-99		14.28		2450	4900	7.4		NA	NA	NA	NA
25-Aug-99		12.74			1900	7.3		3.1	2.2	ND	1.7

GENERAL WATER QUALITY
CROSS TIMBERS OIL COMPANY
BERGIN GC # 1E
SAMPLE DATE : MAY 13, 1999

PARAMETERS	MW # 1	MW # 2	MW # 3	MW # 4	Units
LAB pH	6.95	7.12	7.29	7.35	s. u.
LAB CONDUCTIVITY @ 25 C	5,700	6,980	4,300	4,900	umhos / cm
TOTAL DISSOLVED SOLIDS @ 180 C	2,850	3,485	2,150	2,450	mg / L
TOTAL DISSOLVED SOLIDS (Calc)	2,825	3,453	2,134	2,447	mg / L
SODIUM ABSORPTION RATIO	3.9	11.7	3.0	2.7	ratio
TOTAL ALKALINITY AS CaCO3	284	780	328	324	mg / L
TOTAL HARDNESS AS CaCO3	1,365	920	1,085	1,330	mg / L
BICARBONATE as HCO3	284	780	328	324	mg / L
CARBONATE AS CO3	< 1	< 1	< 1	< 1	mg / L
HYDROXIDE AS OH	< 1	< 1	< 1	< 1	mg / L
NITRATE NITROGEN	15.0	6.0	6.1	12.5	mg / L
NITRITE NITROGEN	0.068	0.146	2.000	2.000	mg / L
CHLORIDE	18.5	503	9.0	10.5	mg / L
FLUORIDE	0.97	1.06	1.02	1.02	mg / L
PHOSPHATE	< 0.1	1.6	< 0.1	< 0.1	mg / L
SULFATE	1,740	1,290	1,250	1,470	mg / L
IRON	< 0.001	0.089	< 0.001	0.007	mg / L
CALCIUM	546	328	434	506	mg / L
MAGNESIUM	< 0.01	24.4	< 0.1	15.9	mg / L
POTASSIUM	2.5	10.0	2.5	2.5	mg / L
SODIUM	330	815	230	230	mg / L
CATION / ANION DIFFERENCE	0.08	0.08	0.39	0.32	%

NOTE : Chloride samples collected in MW # 2 & 3 on August 25, 1999 ; results are as follows:

MW # 2	632	mg / L
MW # 3	35.7	mg / L

GENERAL WATER QUALITY

CROSS TIMBERS OIL COMPANY

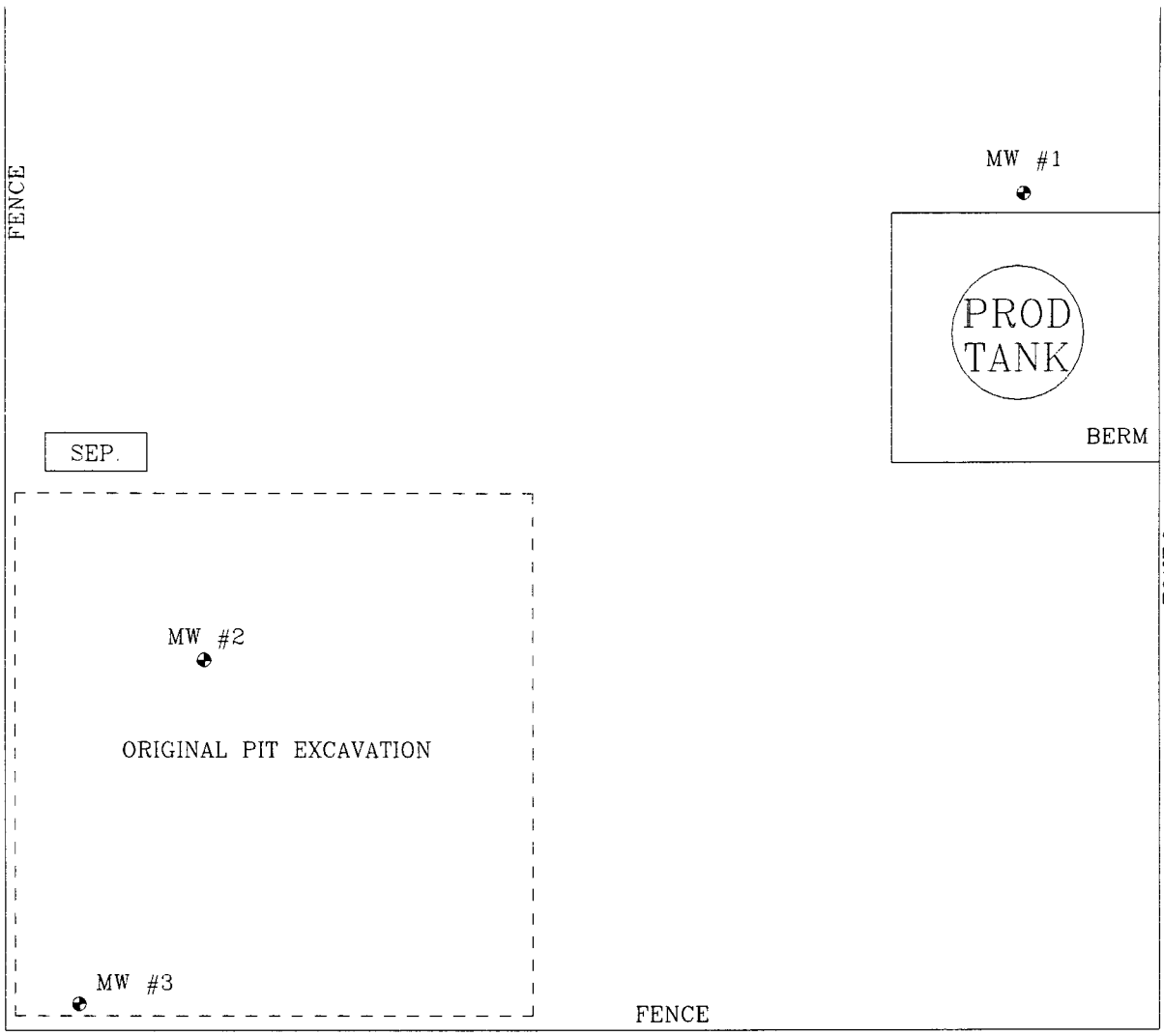
BERGIN GC # 1E

SAMPLE DATE : JUNE 10, 1996

PARAMETERS	MW # 1	MW # 2	MW # 3	MW # 4 12/18/97	Units
LAB pH	7.3	6.8	7.2	7.05	s. u.
LAB CONDUCTIVITY @ 25 C	3,100	1,450	2,240	3,335	umhos / cm
TOTAL DISSOLVED SOLIDS @ 180 C	2,990	1,230	1,080	1,664	mg / L
TOTAL DISSOLVED SOLIDS (Calc)	2,780	1,030	942	1,675	mg / L
SODIUM ABSORPTION RATIO	NA	NA	NA	0.3	ratio
TOTAL ALKALINITY AS CaCO3	239	597	478	290	mg / L
TOTAL HARDNESS AS CaCO3	1,770	682	505	1,422	mg / L
BICARBONATE as HCO3	239	597	478	290	mg / L
CARBONATE AS CO3	NA	NA	NA	< 1	mg / L
HYDROXIDE AS OH	NA	NA	NA	< 1	mg / L
NITRATE NITROGEN	NA	NA	NA	8.0	mg / L
NITRITE NITROGEN	NA	NA	NA	0.580	mg / L
CHLORIDE	12.5	33	33.0	859	mg / L
FLUORIDE	NA	NA	NA	1.28	mg / L
PHOSPHATE	NA	NA	NA	0.1	mg / L
SULFATE	1,800	243	277	28.2	mg / L
IRON	NA	NA	NA	NA	mg / L
CALCIUM	680	257	125	569	mg / L
MAGNESIUM	18.4	9.82	46.6	< 0.1	mg / L
POTASSIUM	< 5.0	5.0	< 5.0	3.1	mg / L
SODIUM	120	120	170	30.2	mg / L
CATION / ANION DIFFERENCE	2.21	2.90	4.00	0.00	%

FIGURE 1

⊕ WELL HEAD



MONITOR 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 ARE NOT TO SCALE.

MW #4

0 25 50 FT.

AMOCO PRODUCTION COMPANY
BERGIN GC 1E
SE/4 NW/4 SEC. 21, T29N, R11W
SAN JUAN COUNTY, NEW MEXICO

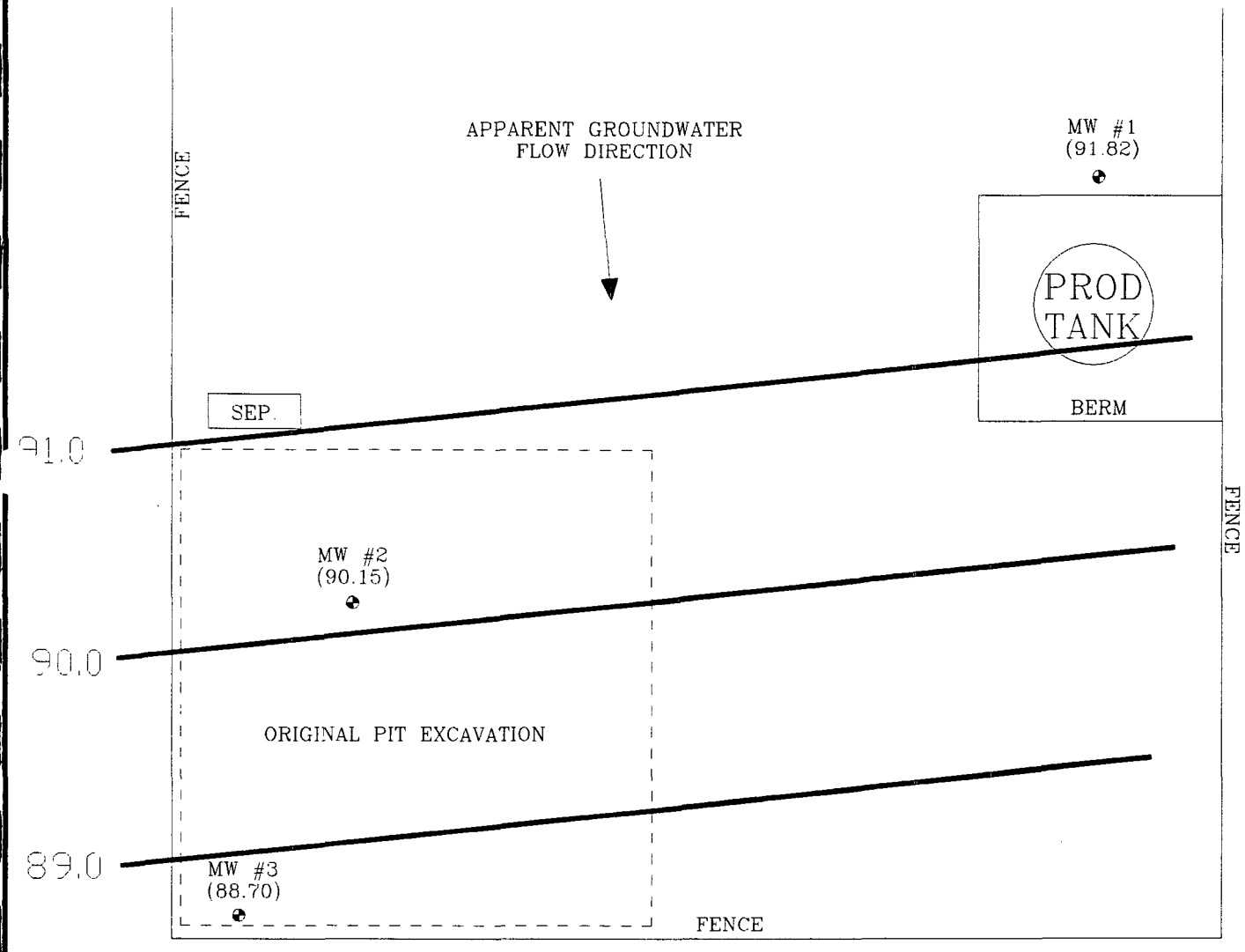
BLAGG ENGINEERING, INC.
CONSULTING PETROLEUM / RECLAMATION SERVICES
P.O. BOX 87
BLOOMFIELD, NEW MEXICO 87413
PHONE: (505) 632-1199

PROJECT: 1/4ly Monitor.
DRAWN BY: NJV
FILENAME: 12-18-SM.SKD
REVISED: 12/23/97 NJV

SITE MAP
12/97

FIGURE 2
(1st 1/4, 1999)

⊕ WELL HEAD



	Top of Well Elevation
MW #1	(101.65)
MW #2	(100.66)
MW #3	(99.80)
◕ MW #1 (91.82)	Groundwater Elevation as of 01/25/99.

MONITOR 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 ARE NOT TO SCALE.

0 25 50 FT.

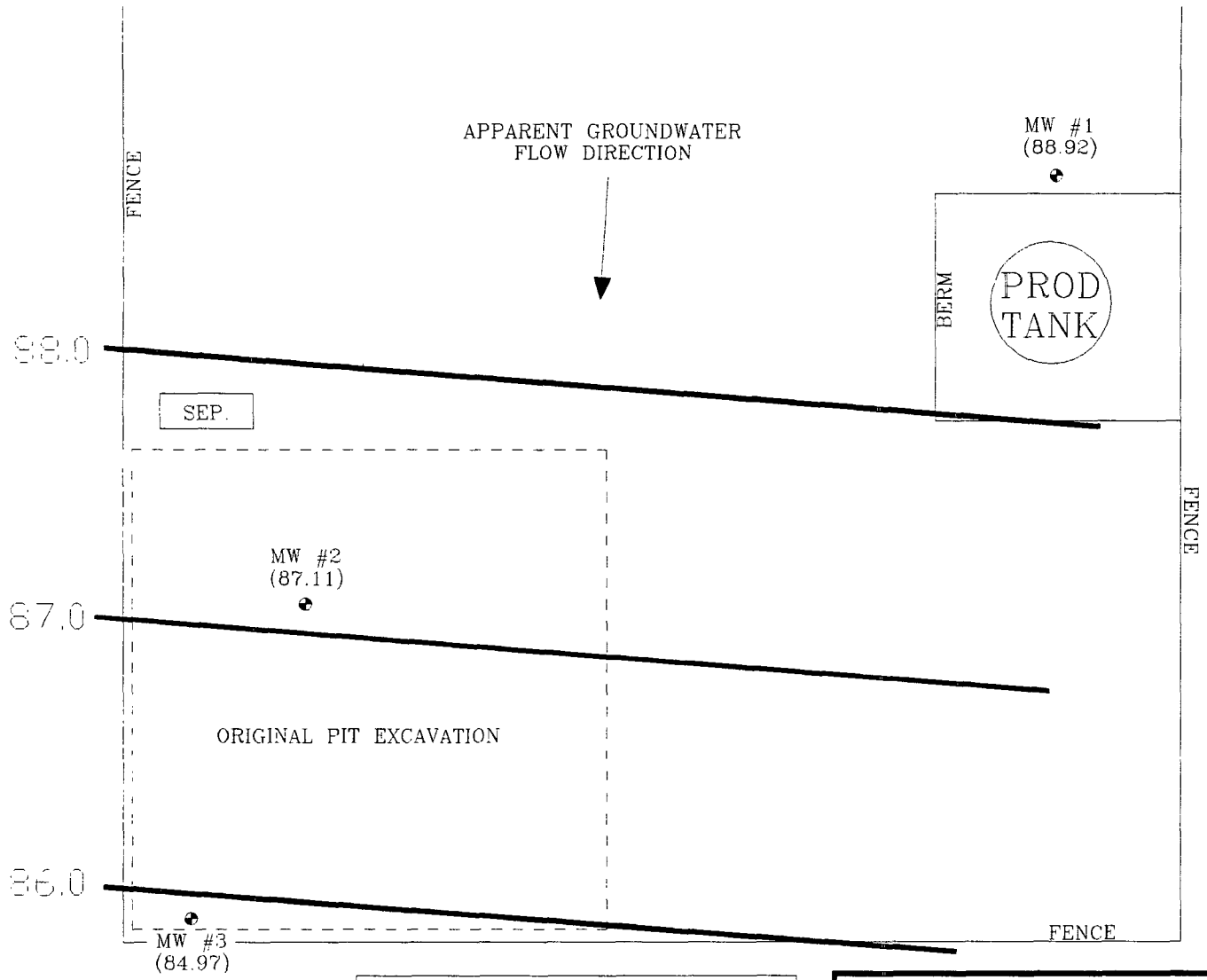
AMOCO PRODUCTION COMPANY
BERGIN GC 1E
SE/4 NW/4 SEC. 21, T29N, R11W
SAN JUAN COUNTY, NEW MEXICO

BLAGG ENGINEERING, INC.
CONSULTING PETROLEUM / RECLAMATION SERVICES
P.O. BOX 87
BLOOMFIELD, NEW MEXICO 87413
PHONE: (505) 632-1199

PROJECT: 1/4ly Monitor.
DRAWN BY: NJV
FILENAME: 01-25-GW.SKD
REVISED: 06/14/99 NJV

GROUNDWATER GRADIENT MAP 01/99

FIGURE 3
(2nd 1/4, 1999) ⊕ WELL HEAD



	Top of Well Elevation
MW #1 ———	(101.65)
MW #2 ———	(100.66)
MW #3 ———	(99.80)
◕ MW #1 (88.92)	Groundwater Elevation as of 05/13/99.

MONITOR 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 ARE NOT TO SCALE.

MW #4 (84.97)

0 25 50 FT.

AMOCO PRODUCTION COMPANY
BERGIN GC 1E
SE/4 NW/4 SEC. 21, T29N, R11W
SAN JUAN COUNTY, NEW MEXICO

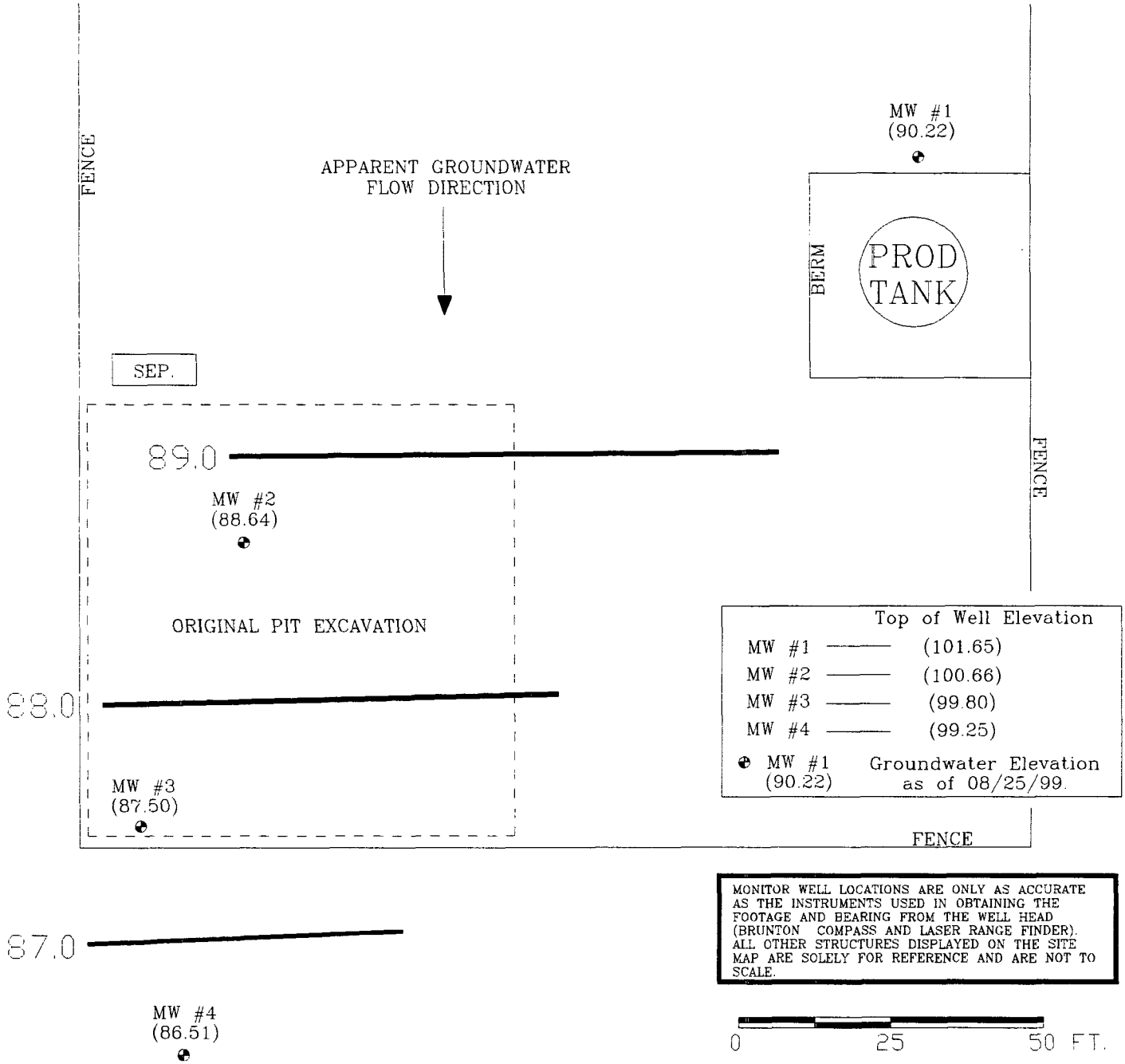
BLAGG ENGINEERING, INC.
CONSULTING PETROLEUM / RECLAMATION SERVICES
P.O. BOX 87
BLOOMFIELD, NEW MEXICO 87413
PHONE: (505) 632-1199

PROJECT: 1/4ly Monitor.
DRAWN BY: NJV
FILENAME: 05-13-GW.SKD
REVISED: 06/14/99 NJV

GROUNDWATER GRADIENT MAP 05/99

FIGURE 4
(3rd 1/4, 1999)

⊕ WELL HEAD



AMOCO PRODUCTION COMPANY BERGIN GC 1E SE/4 NW/4 SEC. 21, T29N, R11W SAN JUAN COUNTY, NEW MEXICO	BLAGG ENGINEERING, INC. CONSULTING PETROLEUM / RECLAMATION SERVICES P.O. BOX 87 BLOOMFIELD, NEW MEXICO 87413 PHONE: (505) 632-1199	PROJECT: 1/4ly Monitor. DRAWN BY: NJV FILENAME: 08-25-GW.SKD REVISED: 08/31/99 NJV	GROUNDWATER GRADIENT MAP 08/99

BLAGG ENGINEERING, INC.

MONITOR WELL SAMPLING DATA

CLIENT : AMOCO PRODUCTION CO.

CHAIN-OF-CUSTODY # : 6436

BERGIN GC # 1E - SEPARATOR PIT
UNIT F, SEC. 21, T29N, R11W

LABORATORY (S) USED : ENVIROTECH, INC.

Date : *January 25, 1999*

SAMPLER : N J V

Filename : *01-25-99.WK3*

PROJECT MANAGER : N J V

WELL #	WELL ELEV. (ft)	WATER ELEV. (ft)	DEPTH TO WATER (ft)	TOTAL DEPTH (ft)	SAMPLING TIME	pH	CONDUCT (umhos)	VOLUME PURGED (gal.)	FREE PRODUCT (ft)
1	101.65	91.82	9.83	15.00	-	-	-	-	-
2	100.66	90.15	10.51	15.00	-	-	-	-	-
3R	99.80	88.70	11.10	20.00	1400	7.2	1,700	4.50	
4	-	-	-	17.53	-	-	-	-	-

NOTES : Volume of water purged from well prior to sampling; V = pi X r2 X h X 7.48 gal./ft3) X 3 (wellbores).

(i.e. 2" MW r = (1/12) ft. h = 1 ft.) (i.e. 4" MW r = (2/12) ft. h = 1 ft.)

Ideally a minimum of three (3) wellbore volumes:

1.25 " well diameter = 0.19 gallons per foot of water (or 24 oz.).

2 bails per foot - small teflon bailer.

3 bails per foot - 3 / 4 " teflon bailer.

2.00 " well diameter = 0.49 gallons per foot of water.

4.00 " well diameter = 1.95 gallons per foot of water.

Comments or note well diameter if not standard 2 ".

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Blagg / Cross Timbers	Project #:	04034-10
Sample ID:	MW # 3R	Date Reported:	01-27-99
Chain of Custody:	6436	Date Sampled:	01-25-99
Laboratory Number:	E580	Date Received:	01-26-99
Sample Matrix:	Water	Date Analyzed:	01-27-99
Preservative:	HgCl2 & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		0

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	**ND**	**1**	**0.2**
Toluene	**0.7**	**1**	**0.2**
Ethylbenzene	**26.7**	**1**	**0.2**
p,m-Xylene	**172**	**1**	**0.2**
o-Xylene	**47.9**	**1**	**0.1**
Total BTEX	**248**		

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Trifluorotoluene	**99 %**
	Bromofluorobenzene	**99 %**

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

Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: **Bergin GC #1E.**

Analyst

Review

5796 U.S. Highway 64 • Farmington, NM 87401 • Tel 505 • 632 • 0615 • Fax 505 • 632 • 1865

CHAIN OF CUSTODY RECORD

6436

Client / Project Name: BLAGG / CROSS TIMBERS

Project Location: BERGIN GC #1E

Sampler: NJV

Client No.: 04034-10

ANALYSIS / PARAMETERS

Sample No./ Identification	Sample Date	Sample Time	Lab Number	Sample Matrix	No. of Containers	BTEX (8021)					Remarks
MW #3R	1/25/99	1400	E580	WATER	2	✓					PRESERV. - $HgCl_2$ & COOL

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
[signature]	1/26/99	0659	[signature]	1.26.99	0659
Relinquished by: (Signature)			Received by: (Signature)		
Relinquished by: (Signature)			Received by: (Signature)		

Ref COC 6435-6436

ENVIROTECH INC.

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

Sample Receipt	Y	N	N/A
Received Intact	✓		
Cool - Ice/Blue Ice	✓		

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021
AROMATIC VOLATILE ORGANICS
QUALITY ASSURANCE REPORT

Client:	N/A	Project #:	N/A
Sample ID:	01-27-BTEX QA/QC	Date Reported:	01-27-99
Laboratory Number:	E580	Date Sampled:	N/A
Sample Matrix:	Water	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	01-27-99
Condition:	N/A	Analysis:	BTEX

Calibration and Detection Limits (ug/L)	I-Cal RF:	C-Cal RF:	%Diff. Accept. Range 0 - 15%	Blank Conc	Detect. Limit
Benzene	1.0822E-001	1.0857E-001	0.32%	ND	0.2
Toluene	5.6859E-002	5.6972E-002	0.20%	ND	0.2
Ethylbenzene	6.8692E-002	6.8982E-002	0.42%	ND	0.2
p,m-Xylene	6.7811E-002	6.7824E-002	0.02%	ND	0.2
o-Xylene	7.0740E-002	7.0953E-002	0.30%	ND	0.1

Duplicate Conc. (ug/L)	Sample	Duplicate	%Diff.	Accept Limit
Benzene	ND	ND	0.0%	0 - 30%
Toluene	0.7	0.7	0.0%	0 - 30%
Ethylbenzene	26.7	25.8	3.4%	0 - 30%
p,m-Xylene	172	172	0.0%	0 - 30%
o-Xylene	47.9	46.1	3.8%	0 - 30%

Spike Conc. (ug/L)	Sample	Amount Spiked	Spiked Sample	% Recovery	Accept Limits
Benzene	ND	50.0	50.0	100%	39 - 150
Toluene	0.7	50.0	50.7	100%	46 - 148
Ethylbenzene	26.7	50.0	75.6	99%	32 - 160
p,m-Xylene	172	100.0	264	97%	46 - 148
o-Xylene	47.9	50.0	95.3	97%	46 - 148

ND - Parameter not detected at the stated detection limit.

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

Comments: **QA/QC for samples E576 - E580.**

Analyst

Review

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BLAGG ENGINEERING, INC.

MONITOR WELL SAMPLING DATA

CLIENT : AMOCO PRODUCTION CO.

CHAIN-OF-CUSTODY # : 6662

BERGIN GC # 1E - SEPARATOR PIT
UNIT F, SEC. 21, T29N, R11W

LABORATORY (S) USED : ENVIROTECH, INC.

Date : May 13, 1999

Filename : 05-13-99.WK4

SAMPLER : N J V

PROJECT MANAGER : N J V

WELL #	WELL ELEV. (ft)	WATER ELEV. (ft)	DEPTH TO WATER (ft)	TOTAL DEPTH (ft)	SAMPLING TIME	pH	CONDUCT (umhos)	VOLUME PURGED (gal.)	FREE PRODUCT (ft)
1	101.65	88.92	12.73	15.00	1145	-	-	1.25	-
2	100.66	87.11	13.55	15.00	1215	-	-	0.75	-
3	99.80	85.96	13.84	20.00	1245	-	-	3.00	-
4	99.25	84.97	14.28	17.53	1315	-	-	1.60	-

NOTES : Volume of water purged from well prior to sampling: V = pi X r2 X h X 7.48 gal./ft3) X 3 (wellbores).

(i.e. 2" MW r = (1/12) ft. h = 1 ft.) (i.e. 4" MW r = (2/12) ft. h = 1 ft.)

Ideally a minimum of three (3) wellbore volumes:

1.25 " well diameter = 0.19 gallons per foot of water (or 24 oz.).

2 bails per foot - small teflon bailer.

3 bails per foot - 3 / 4 " teflon bailer.

2.00 " well diameter = 0.49 gallons per foot of water.

4.00 " well diameter = 1.95 gallons per foot of water.

Comments or note well diameter if not standard 2 ".

Collected BTEX sample for MW # 3 only . Collected anion / cation samples for all MW's listed above .

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Blagg / Cross Timbers	Project #:	403410
Sample ID:	MW #3	Date Reported:	05-15-99
Chain of Custody:	6662	Date Sampled:	05-13-99
Laboratory Number:	F241	Date Received:	05-14-99
Sample Matrix:	Water	Date Analyzed:	05-14-99
Preservative:	HgCl2 & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	**2.2**	**1**	**0.2**
Toluene	**11.1**	**1**	**0.2**
Ethylbenzene	**0.6**	**1**	**0.2**
p,m-Xylene	**9.3**	**1**	**0.2**
o-Xylene	**2.9**	**1**	**0.1**
Total BTEX	**26.1**		

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Trifluorotoluene	**97 %**
	Bromofluorobenzene	**97 %**

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

Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: **Bergin GC #1E.**

Analyst

Review

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ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

CATION / ANION ANALYSIS

Client:	Blagg / Cross Timbers	Project #:	403410
Sample ID:	MW #1	Date Reported:	05-16-99
Laboratory Number:	F239	Date Sampled:	05-13-99
Chain of Custody:	6662	Date Received:	05-14-99
Sample Matrix:	Water	Date Extracted:	N/A
Preservative:	Cool	Date Analyzed:	05-14-99
Condition:	Cool & Intact		

Parameter	Analytical Result	Units		Units
pH	**6.95**	s.u.		
Conductivity @ 25° C	**5,700**	umhos/cm		
Total Dissolved Solids @ 180C	**2,850**	mg/L		
Total Dissolved Solids (Calc)	**2,825**	mg/L		
SAR	**3.9**	ratio		
Total Alkalinity as CaCO3	**284**	mg/L		
Total Hardness as CaCO3	**1,365**	mg/L		
Bicarbonate as HCO3	**284**	mg/L	4.65	meq/L
Carbonate as CO3	**<1**	mg/L	0.00	meq/L
Hydroxide as OH	**<1**	mg/L	0.00	meq/L
Nitrate Nitrogen	**15.0**	mg/L	0.24	meq/L
Nitrite Nitrogen	**0.068**	mg/L	0.00	meq/L
Chloride	**18.5**	mg/L	0.52	meq/L
Fluoride	**0.97**	mg/L	0.05	meq/L
Phosphate	**<0.1**	mg/L	0.00	meq/L
Sulfate	**1,740**	mg/L	36.23	meq/L
Iron	**<0.001**	mg/L		
Calcium	**546**	mg/L	27.25	meq/L
Magnesium	**<0.01**	mg/L	0.00	meq/L
Potassium	**2.5**	mg/L	0.06	meq/L
Sodium	**330**	mg/L	14.36	meq/L
Cations			41.66	meq/L
Anions			41.70	meq/L
Cation/Anion Difference			**0.08%**	

Reference: U.S.E.P.A., 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983. Water And Waste Water", 18th ed., 1992.

Comments: **Bergin GC #1E.**

Analyst

Review

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ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

CATION / ANION ANALYSIS

Client:	Blagg / Cross Timbers	Project #:	403410
Sample ID:	MW #2	Date Reported:	05-16-99
Laboratory Number:	F240	Date Sampled:	05-13-99
Chain of Custody:	6662	Date Received:	05-14-99
Sample Matrix:	Water	Date Extracted:	N/A
Preservative:	Cool	Date Analyzed:	05-14-99
Condition:	Cool & Intact		

Parameter	Analytical Result	Units		Units
pH	**7.12**	s.u.		
Conductivity @ 25° C	**6,980**	umhos/cm		
Total Dissolved Solids @ 180C	**3,485**	mg/L		
Total Dissolved Solids (Calc)	**3,453**	mg/L		
SAR	**11.7**	ratio		
Total Alkalinity as CaCO3	**780**	mg/L		
Total Hardness as CaCO3	**920**	mg/L		
Bicarbonate as HCO3	**780**	mg/L	12.78	meq/L
Carbonate as CO3	**<1**	mg/L	0.00	meq/L
Hydroxide as OH	**<1**	mg/L	0.00	meq/L
Nitrate Nitrogen	**6.0**	mg/L	0.10	meq/L
Nitrite Nitrogen	**0.146**	mg/L	0.00	meq/L
Chloride	**503**	mg/L	14.19	meq/L
Fluoride	**1.06**	mg/L	0.06	meq/L
Phosphate	**1.6**	mg/L	0.05	meq/L
Sulfate	**1,290**	mg/L	26.86	meq/L
Iron	**0.089**	mg/L		
Calcium	**328**	mg/L	16.37	meq/L
Magnesium	**24.4**	mg/L	2.01	meq/L
Potassium	**10.0**	mg/L	0.26	meq/L
Sodium	**815**	mg/L	35.45	meq/L
Cations			54.08	meq/L
Anions			54.04	meq/L
Cation/Anion Difference			**0.08%**	

Reference: U.S.E.P.A., 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983. Water And Waste Water", 18th ed., 1992.

Comments: **Bergin GC #1E.**

Analyst

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ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

CATION / ANION ANALYSIS

Client:	Blagg / Cross Timbers	Project #:	403410
Sample ID:	MW #3	Date Reported:	05-16-99
Laboratory Number:	F241	Date Sampled:	05-13-99
Chain of Custody:	6662	Date Received:	05-14-99
Sample Matrix:	Water	Date Extracted:	N/A
Preservative:	Cool	Date Analyzed:	05-14-99
Condition:	Cool & Intact		

Parameter	Analytical Result	Units		Units
pH	**7.29**	s.u.		
Conductivity @ 25° C	**4,300**	umhos/cm		
Total Dissolved Solids @ 180C	**2,150**	mg/L		
Total Dissolved Solids (Calc)	**2,134**	mg/L		
SAR	**3.0**	ratio		
Total Alkalinity as CaCO3	**328**	mg/L		
Total Hardness as CaCO3	**1,085**	mg/L		
Bicarbonate as HCO3	**328**	mg/L	5.38	meq/L
Carbonate as CO3	**<1**	mg/L	0.00	meq/L
Hydroxide as OH	**<1**	mg/L	0.00	meq/L
Nitrate Nitrogen	**6.1**	mg/L	0.10	meq/L
Nitrite Nitrogen	**2.000**	mg/L	0.04	meq/L
Chloride	**9.0**	mg/L	0.25	meq/L
Fluoride	**1.02**	mg/L	0.05	meq/L
Phosphate	**<0.1**	mg/L	0.00	meq/L
Sulfate	**1,250**	mg/L	26.03	meq/L
Iron	**<0.001**	mg/L		
Calcium	**434**	mg/L	21.66	meq/L
Magnesium	**<0.1**	mg/L	0.00	meq/L
Potassium	**2.5**	mg/L	0.06	meq/L
Sodium	**230**	mg/L	10.01	meq/L
Cations			31.73	meq/L
Anions			31.85	meq/L
Cation/Anion Difference			**0.39%**	

Reference: U.S.E.P.A., 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983. Water And Waste Water", 18th ed., 1992.

Comments: **Bergin GC #1E.**

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ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

CATION / ANION ANALYSIS

Client:	Blagg / Cross Timbers	Project #:	403410
Sample ID:	MW #4	Date Reported:	05-16-99
Laboratory Number:	F242	Date Sampled:	05-13-99
Chain of Custody:	6662	Date Received:	05-14-99
Sample Matrix:	Water	Date Extracted:	N/A
Preservative:	Cool	Date Analyzed:	05-14-99
Condition:	Cool & Intact		

Parameter	Analytical Result	Units		Units
pH	**7.35**	s.u.		
Conductivity @ 25° C	**4,900**	umhos/cm		
Total Dissolved Solids @ 180C	**2,450**	mg/L		
Total Dissolved Solids (Calc)	**2,447**	mg/L		
SAR	**2.7**	ratio		
Total Alkalinity as CaCO3	**324**	mg/L		
Total Hardness as CaCO3	**1,330**	mg/L		
Bicarbonate as HCO3	**324**	mg/L	5.31	meq/L
Carbonate as CO3	**<1**	mg/L	0.00	meq/L
Hydroxide as OH	**<1**	mg/L	0.00	meq/L
Nitrate Nitrogen	**12.5**	mg/L	0.20	meq/L
Nitrite Nitrogen	**2.000**	mg/L	0.04	meq/L
Chloride	**10.5**	mg/L	0.30	meq/L
Fluoride	**1.02**	mg/L	0.05	meq/L
Phosphate	**<0.1**	mg/L	0.00	meq/L
Sulfate	**1,470**	mg/L	30.61	meq/L
Iron	**0.007**	mg/L		
Calcium	**506**	mg/L	25.25	meq/L
Magnesium	**15.9**	mg/L	1.31	meq/L
Potassium	**2.5**	mg/L	0.06	meq/L
Sodium	**230**	mg/L	10.01	meq/L
Cations			36.63	meq/L
Anions			36.51	meq/L
Cation/Anion Difference			**0.32%**	

Reference: U.S.E.P.A., 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983. Water And Waste Water", 18th ed., 1992.

Comments: **Bergin GC #1E.**

Analyst

Review

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CHAIN OF CUSTODY RECORD

6662

Client / Project Name	Project Location
BLAGG / CROSS TIMBERS	BERGIN GC #1E

Sampler:	Client No.
NJV	403410

Sample No./ Identification	Sample Date	Sample Time	Lab Number	Sample Matrix	No. of Containers	ANION/ CATION	BTEX (8021)					Remarks
												ANION/CATION SAMPLES PRESERV. - COOL
MW #1	5/13/99	1145	F239	WATER	1	✓						
MW #2	5/13/99	1215	F240	WATER	1	✓						
MW #3	5/13/99	1245	F241	WATER	3	✓	✓					BTEX - PRESERV. HgCl2 & COOL
MW #4	5/13/99	1315	F242	WATER	1	✓						

ANALYSIS / PARAMETERS

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Nikon VM	5/13/99	1620	J. C. Blagg	5/13/99	1620
Relinquished by: (Signature)			Received by: (Signature)		
J. C. Blagg	5/14/99	0718	Allen P. Ogburn	5.14.99	0718
Relinquished by: (Signature)			Received by: (Signature)		

ENVIROTECH INC.

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Sample Receipt	Y	N	N/A
Received Intact	✓		
Cool - Ice/Blue Ice	✓		

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	N/A	Project #:	N/A
Sample ID:	05-14-BTEX QA/QC	Date Reported:	05-14-99
Laboratory Number:	F237	Date Sampled:	N/A
Sample Matrix:	Soil	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	05-14-99
Condition:	N/A	Analysis:	BTEX

Calibration and Detection Limits (ug/L)	I-Cal RF:	C-Cal RF:	%Diff. Accept. Range 0 - 15%	Blank Conc	Detect. Limit
Benzene	4.5104E-002	4.5212E-002	0.2%	ND	0.2
Toluene	2.2820E-002	2.2861E-002	0.2%	ND	0.2
Ethylbenzene	3.1405E-002	3.1471E-002	0.2%	ND	0.2
p,m-Xylene	3.1037E-002	3.1115E-002	0.3%	ND	0.2
o-Xylene	2.9125E-002	2.9175E-002	0.2%	ND	0.1

Duplicate Conc. (ug/Kg)	Sample	Duplicate	%Diff.	Accept Range	Detect. Limit
Benzene	128	128	0.0%	0 - 30%	8.8
Toluene	1,500	1,500	0.0%	0 - 30%	8.4
Ethylbenzene	650	649	0.1%	0 - 30%	7.6
p,m-Xylene	5,340	5,340	0.0%	0 - 30%	10.8
o-Xylene	1,910	1,930	1.0%	0 - 30%	5.2

Spike Conc. (ug/Kg)	Sample	Amount Spiked	Spiked Sample	% Recovery	Accept Range
Benzene	128	50.0	177	100%	39 - 150
Toluene	1,500	50.0	1,550	100%	46 - 148
Ethylbenzene	650	50.0	698	100%	32 - 160
p,m-Xylene	5,340	100.0	5,430	100%	46 - 148
o-Xylene	1,910	50.0	1,960	100%	46 - 148

ND - Parameter not detected at the stated detection limit.

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

Comments: **QA/QC for samples F237 - F238, F241 and F246.**

Analyst

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BLAGG ENGINEERING, INC.

MONITOR WELL SAMPLING DATA

CLIENT : CROSS TIMBERS OIL CO.

CHAIN-OF-CUSTODY # : 6701

BERGIN GC # 1E - SEPARATOR PIT
UNIT F, SEC. 21, T29N, R11W

LABORATORY (S) USED : ENVIROTECH, INC.

Date : August 25, 1999

SAMPLER : N J V

Filename : 08-25-99.WK4

PROJECT MANAGER : N J V

WELL #	WELL ELEV. (ft)	WATER ELEV. (ft)	DEPTH TO WATER (ft)	TOTAL DEPTH (ft)	SAMPLING TIME	pH	CONDUCT (umhos)	VOLUME PURGED (gal.)	FREE PRODUCT (ft)
1	101.65	90.22	11.43	15.00	-	-	-	-	-
2	100.66	88.64	12.02	15.00	0830	6.6	3,700	1.50	-
3	99.80	87.50	12.30	20.00	0815	7.1	1,900	3.75	-
4	99.25	86.51	12.74	17.53	0920	7.3	1,900	2.50	-

NOTES : Volume of water purged from well prior to sampling: V = pi X r2 X h X 7.48 gal./ft3) X 3 (wellbores).

(i.e. 2" MW r = (1/12) ft. h = 1 ft.) (i.e. 4" MW r = (2/12) ft. h = 1 ft.)

Ideally a minimum of three (3) wellbore volumes:

1.25 " well diameter = 0.19 gallons per foot of water (or 24 oz.).

2 bails per foot - small teflon bailer.

3 bails per foot - 3 / 4 " teflon bailer.

2.00 " well diameter = 0.49 gallons per foot of water.

4.00 " well diameter = 1.95 gallons per foot of water.

Comments or note well diameter if not standard 2 ".

Collected BTEX for MW #'s 3 & 4 . Collected chloride samples in MW #'s 2 & 3 .

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Blagg / Cross Timbers	Project #:	403410
Sample ID:	MW # 3	Date Reported:	08-27-99
Chain of Custody:	6701	Date Sampled:	08-25-99
Laboratory Number:	G000	Date Received:	08-26-99
Sample Matrix:	Water	Date Analyzed:	08-26-99
Preservative:	HgCl2 & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	**8.6**	**1**	**0.2**
Toluene	**2.3**	**1**	**0.2**
Ethylbenzene	**4.5**	**1**	**0.2**
p,m-Xylene	**21.0**	**1**	**0.2**
o-Xylene	**3.8**	**1**	**0.1**
Total Xylene	**24.8**		
Total BTEX	**40.2**		

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Trifluorotoluene	**97 %**
	Bromofluorobenzene	**97 %**

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

Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: **Bergin GC # 1E.**

Analyst

Review

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ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Blagg / Cross Timbers	Project #:	403410
Sample ID:	MW # 4	Date Reported:	08-27-99
Chain of Custody:	6701	Date Sampled:	08-25-99
Laboratory Number:	G001	Date Received:	08-26-99
Sample Matrix:	Water	Date Analyzed:	08-26-99
Preservative:	HgCl2 & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	**3.1**	**1**	**0.2**
Toluene	**2.2**	**1**	**0.2**
Ethylbenzene	**ND**	**1**	**0.2**
p,m-Xylene	**1.4**	**1**	**0.2**
o-Xylene	**0.3**	**1**	**0.1**
Total Xylene	**1.7**		
Total BTEX	**7.0**		

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Trifluorotoluene	**99 %**
	Bromofluorobenzene	**99 %**

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

Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: **Bergin GC # 1E.**

Analyst

Review

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ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

Total Chloride

Client:	Blagg / Cross Timbers	Project #:	403410
Sample ID:	MW # 2	Date Reported:	08-27-99
Lab ID#:	F999	Date Sampled:	08-25-99
Sample Matrix:	Water	Date Received:	08-26-99
Preservative:	Cool	Date Analyzed:	08-26-99
Condition:	Cool & Intact	Chain of Custody:	6701

Parameter	Concentration (mg/L)
Total Chloride	**632**

Reference: Method 9077 Test Methods for Total Chlorine. USEPA SW-846, Sept. 1994.

Comments: **Bergin GC # 1 E.**

Analyst

Review

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ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

Total Chloride

Client:	Blagg / Cross Timbers	Project #:	403410
Sample ID:	MW # 3	Date Reported:	08-27-99
Lab ID#:	G000	Date Sampled:	08-25-99
Sample Matrix:	Water	Date Received:	08-26-99
Preservative:	Cool	Date Analyzed:	08-26-99
Condition:	Cool & Intact	Chain of Custody:	6701

Parameter	Concentration (mg/L)
Total Chloride	**35.7**

Reference: Method 9077 Test Methods for Total Chlorine. USEPA SW-846, Sept. 1994.

Comments: **Bergin GC # 1 E.**

Analyst

Review

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CHAIN OF CUSTODY RECORD

6701

Client / Project Name	Project Location	ANALYSIS / PARAMETERS
BLAGG/CROSS TIMBERS	BERGIN GC # 1E	

Sampler:	Client No.
NJV	403410

Sample No./ Identification	Sample Date	Sample Time	Lab Number	Sample Matrix	No. of Containers	BTEX (8021)	CHLORIDE					Remarks
MW # 2	8/25/99	0830	F999	WATER	4 ~~3~~		✓					BTEX - PRESERV.
MW # 3	8/25/99	0815	G000	WATER	3	✓	✓					$HgCl_2$ & COOL
MW # 4	8/25/99	0920	G001	WATER	2	✓						
												CHLORIDE SAMPLES
												PRESERV. - COOL

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Nelson Velez	8/26/99	0714	Theresa L. Apodaca	8.26.99	0214
Relinquished by: (Signature)			Received by: (Signature)		
Relinquished by: (Signature)			Received by: (Signature)		

ENVIROTECH INC.

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Farmington, New Mexico 87401
(505) 632-0615

Sample Receipt	Y	N	N/A
Received Intact	✓		
Cool - Ice/Blue Ice	✓		

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021
AROMATIC VOLATILE ORGANICS
QUALITY ASSURANCE REPORT

Client:	N/A	Project #:	N/A
Sample ID:	08-26-PM-BTEX QA/QC	Date Reported:	08-27-99
Laboratory Number:	F994	Date Sampled:	N/A
Sample Matrix:	Water	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	08-26-99
Condition:	N/A	Analysis:	BTEX

Calibration and Detection Limits (ug/L)	I-Cal RF:	C-Cal RF:	%Diff. Accept. Range 0 - 15%	Blank Conc	Detect. Limit
Benzene	3.6219E-001	3.6335E-001	0.32%	ND	0.2
Toluene	2.7867E-002	2.7872E-002	0.02%	ND	0.2
Ethylbenzene	4.1931E-002	4.1981E-002	0.12%	ND	0.2
p,m-Xylene	3.6569E-002	3.6576E-002	0.02%	ND	0.2
o-Xylene	3.1955E-002	3.2051E-002	0.30%	ND	0.1

Duplicate Conc. (ug/L)	Sample	Duplicate	%Diff.	Accept Limit
Benzene	1.5	1.4	6.7%	0 - 30%
Toluene	2.1	2.0	4.8%	0 - 30%
Ethylbenzene	0.2	0.2	0.0%	0 - 30%
p,m-Xylene	2.8	2.8	0.0%	0 - 30%
o-Xylene	0.7	0.7	0.0%	0 - 30%

Spike Conc. (ug/L)	Sample	Amount Spiked	Spiked Sample	% Recovery	Accept Limits
Benzene	1.5	50.0	51.5	100%	39 - 150
Toluene	2.1	50.0	52.1	100%	46 - 148
Ethylbenzene	0.2	50.0	50.2	100%	32 - 160
p,m-Xylene	2.8	100.0	103	100%	46 - 148
o-Xylene	0.7	50.0	50.7	100%	46 - 148

ND - Parameter not detected at the stated detection limit.

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

Comments: **QA/QC for samples F994 - F998 and G000 - G004.**

Analyst

Review

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STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION
2040 S. PACHECO
SANTA FE, NEW MEXICO 87505
(505) 827-7131

April 21, 1999

CERTIFIED MAIL
RETURN RECEIPT NO: Z-274-520-641

Ms. Nina Hutton
Cross Timbers Oil Company
810 Houston St., Suite 2000
Fort Worth, Texas 76102-6298

RE: SAN JUAN BASIN GROUND WATER MONITORING REPORTS

Dear Ms. Hutton:

The New Mexico Oil Conservation Division (OCD) has reviewed Cross Timbers Oil Company's (CTOC) February 11, 1999 "CROSS TIMBERS OIL CO. GROUNDWATER MONITORING (AMOCO) 1996-1998 REPORTS, SAN JUAN COUNTY, NEW MEXICO" which was submitted on behalf of CTOC by their consultant Blagg Engineering, Inc. This document contains the results of CTOC's investigation, remediation and monitoring of ground water contamination related to the disposal of oilfield wastes in unlined pits at 7 sites in the San Juan Basin.

Based upon a review of the above referenced documents, the OCD has the following comments and requirements:

1. The downgradient and/or lateral extent of chloride and/or total dissolved solids contamination at the sites listed below has not been completely defined. The OCD requires that CTOC completely define the extent of these contaminants at each site pursuant to the previously approved ground water management plan for these sites.

   - Bergin GC #1E — Unit F, Sec. 21, T29N, R11W
   - Rowland GC #1 — Unit P, Sec. 25, T30N, R12W
   - State GC BS #1 — Unit F, Sec. 21, T29N, R11W
   - Sullivan GC D#1 — Unit B, Sec. 26, T29N, R11W

2. The downgradient and/or lateral extent of benzene, toluene, ethylbenzene, xylene (BTEX), chloride and/or total dissolved solids contamination at the sites listed below has not been completely defined. The OCD requires that CTOC completely define the extent of these contaminants at each site pursuant to the previously approved ground water management plan for these sites.

   - Bruington GC #1 — Unit E, Sec. 14, T29N, R11W
   - Valdez A #1E — Unit G, Sec. 24, T29N, R11W

3. A review of the sampling data shows that during some samplings only ground water from the monitor wells at the source is sampled and there is no downgradient monitoring to show that contaminated ground water is contained. In order to effectively monitor contaminant migration, the OCD requires that the ground water monitoring plan be modified to include additional ground water sampling of all monitor wells at each site on an annual basis. During the annual sampling event ground water from all monitor wells will be sampled and analyzed for BTEX, TDS, polynuclear aromatic hydrocarbons (PAH) and New Mexico Water Quality Control Commission (WQCC) cations and anions and metals using EPA approved methods and quality assurance/quality control procedures. Specific analytes may be dropped from the annual sampling event for certain sites if that analyte has not been found to be above WQCC standard in the sites source areas and the reasons for dropping those analytes are included in the annual reports. This sampling requirement will also be added to the ground water monitoring plan for all future ground water sampling at all CTOC sites with contaminated ground water.

4. CTOC recently purchased a number of well sites in the San Juan Basin from Amoco. Some of these sites were found to have ground water contamination which was discovered by Amoco during pit closure activities. The OCD does not have a listing of status of these sites. Please provide the OCD with a listing of all CTOC well sites in the San Juan Basin at which the presence of ground water was discovered during pit assessment or closure activities and the status of each site.

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

Sincerely,

William C. Olson
Hydrologist
Environmental Bureau

xc: Denny Foust, OCD Aztec District Office
Nelson Velez, Blagg Engineering, Inc.