

3R - 122

REPORTS

DATE:

1999

BLAGG ENGINEERING, INC.

P.O. Box 87, Bloomfield, New Mexico 87413

Phone: (505)632-1199 Fax: (505)632-3903

February 21, 2000

Mr. William C. Olson - Hydrologist
State of New Mexico Oil Conservation Division
2040 South Pacheco
State Land Office Building
Santa Fe, NM 87505

RECEIVED

FEB 25 2000

ENVIRONMENTAL BUREAU
OIL CONSERVATION DIVISION

**RE: 1999 ANNUAL GROUNDWATER REPORTS
SAN JUAN COUNTY, NEW MEXICO
PERMANENT CLOSURE REQUESTED**

Dear Mr. Olson:

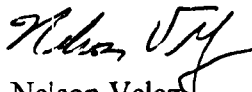
Blagg Engineering, Inc., on behalf of Cross Timbers Oil Company, respectfully submits the attached 1999 annual groundwater reports in which permanent closure is requested. This reporting adheres to the NMOCD's previously approved groundwater management plan.

A total of ten (10) well sites, listed on the following page, are associated with this correspondence. All work performed on these well sites have been incorporated into individual packets.

The summary, conclusions, and/or recommendations made within these reports are based on information made available from the enclosed material. Any site specific inquiries should be examined within the individual packets.

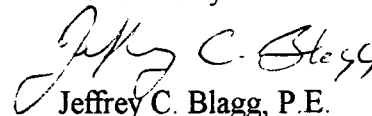
If you have questions, please call and contact either myself or Jeffrey C. Blagg. Thank you for your cooperation and assistance.

Sincerely,
BLAGG ENGINEERING, INC.



Nelson Velez
Staff Geologist

Reviewed by:



Jeffrey C. Blagg, P.E.
President

Attachments: Individual Well site packets

cc: Denny Foust, Deputy Oil & Gas Inspector, New Mexico Oil Conservation Division, Aztec, NM
Bill Liese, Regional Environmental Officer, Bureau of Land Management, Farmington, NM (2 copies)
Nina Hutton, Environmental & Safety Manager, Cross Timbers Oil Company, Ft. Worth, TX

NV/nv

PERM-99.CVL

Groundwater Sites Requesting Permanent Closure

- | | | |
|-----|-----------------------|-----------------------------|
| 1. | Baca GC A #1A | Unit G, Sec. 26, T29N, R10W |
| 2. | Haney GC B #1E | Unit M, Sec. 20, T29N, R10W |
| 3. | Hare GC C #1 | Unit M, Sec. 25, T29N, R10W |
| 4. | Masden GC # 1E | Unit D, Sec. 28, T29N, R11W |
| 5. | McDaniel GC B # 1E | Unit F, Sec. 26, T29N, R10W |
| 6. | Pearce GC # 1E | Unit J, Sec. 23, T29N, R11W |
| 7. | Sanchez GC # 1 | Unit G, Sec. 28, T29N, R10W |
| 8. | Snyder GC # 1A | Unit F, Sec. 19, T29N, R9W |
| 9. | Sullivan Frame A # 1E | Unit A, Sec. 30, T29N, R10W |
| 10. | Texas National GC # 1 | Unit K, Sec. 19, T29N, R9W |

CROSS TIMBERS OIL COMPANY

GROUNDWATER REMEDIATION REPORT

1999

**PEARCE GC #1E
(J) SECTION 23, T29N, R11W, NMPM
SAN JUAN COUNTY, NEW MEXICO**

RECEIVED

FEB 25 2000

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

ENVIRONMENTAL BUREAU
OIL CONSERVATION DIVISION

FEBRUARY 2000

***PREPARED BY:
BLAGG ENGINEERING, INC.***

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

**Cross Timbers Oil Company (CTOC)
Pearce GC # 1E - Blow Pit
Sw/4 Nw/4 Sec. 26, T29N, R10W**

<u>Site Assessment Date:</u>	May 20, 1992 (Documentation Included)
<u>Pit closure Date:</u>	Nov.-Dec., 1993 (Documentation Included)
<u>Monitor Well Installation Date:</u>	November 10 & 11, 1999
<u>Monitor Well Sampling Date:</u>	November 18, 1999

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. Additional groundwater was collected and place in laboratory supplied 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 separator tank pit located on the well site.

Water Quality Information:

The BTEX results for all three (3) MW's during the November 18, 1999 sampling event were non detectable at practical quantitation limits. The general water quality results did meet New Mexico Water Quality Control Commission's (NMWQCC) regulatory standards for most constituents. However, all MW's, although exceeding NMWQCC standards, do display relatively similar levels for total alkalinity, total dissolved solids, and sulfate.

Summary and/or Recommendations:

Based on the enclosed documentation, the groundwater within the blow pit area appears to be adequate for permanent closure. All aspects of the NMOCD previously approved groundwater management plan has been adhered to. Therefore, CTOC is requesting permanent closure status for this pit.

CROSS TIMBERS OIL CO. GROUNDWATER MONITOR WELL LAB RESULTS
SUBMITTED BY BLAGG ENGINEERING, INC.

PEARCE GC #1E - BLOW PIT
UNIT J, SEC. 23, T29N, R11W

DRAFTED: DECEMBER 10, 1999

FILENAME: (1E-4Q-99.WK4) NJV

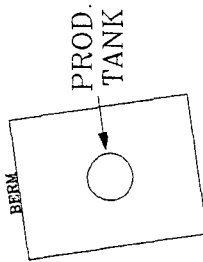
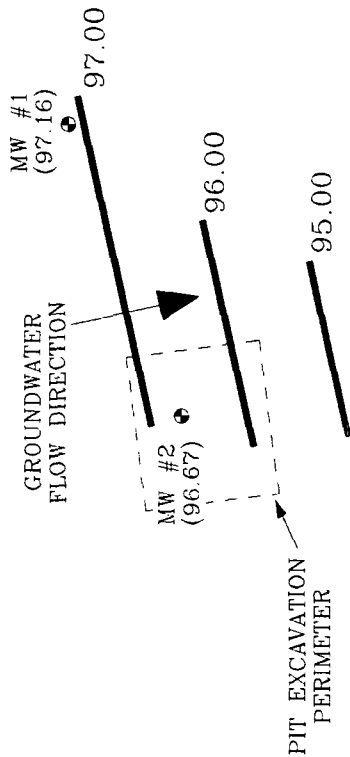
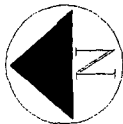
SAMPLE DATE	MONITOR WELL No:	D.T.W. (ft)	T.D. (ft)	TDS mg/L	COND. umhos	pH	PRODUCT (in)	BTEX EPA METHOD 8020 (PPB)			
								Benzene	Toluene	Ethyl Benzene	Total Xylene
18-Nov-99	MW #1	5.47	13.00	3,500	7,020	7.0		ND	ND	ND	ND
18-Nov-99	MW #2	3.64	13.00	4,310	8,630	7.2		ND	ND	ND	ND
18-Nov-99	MW #3	8.29	13.00	3,480	6,990	7.2		ND	ND	ND	ND

GENERAL WATER QUALITY
CROSS TIMBERS OIL COMPANY
PEARCE GC # 1E

SAMPLE DATE : November 18 , 1999

PARAMETERS	MW # 1	MW # 2	MW # 3	Units
LAB pH	7.00	7.18	7.16	s. u.
LAB CONDUCTIVITY @ 25 C	7,020	8,630	6,990	umhos / cm
TOTAL DISSOLVED SOLIDS @ 180 C	3,500	4,310	3,480	mg / L
TOTAL DISSOLVED SOLIDS (Calc)	3,430	4,270	3,450	mg / L
SODIUM ABSORPTION RATIO	5.8	9.1	6.3	ratio
TOTAL ALKALINITY AS CaCO3	246	284	268	mg / L
TOTAL HARDNESS AS CaCO3	1,424	1,416	1,376	mg / L
BICARBONATE as HCO3	246	284	268	mg / L
CARBONATE AS CO3	< 0.01	< 0.01	< 0.01	mg / L
HYDROXIDE AS OH	< 0.1	< 0.1	< 0.1	mg / L
NITRATE NITROGEN	0.2	0.8	0.4	mg / L
NITRITE NITROGEN	0.046	0.048	0.017	mg / L
CHLORIDE	5.0	27.8	5.2	mg / L
FLUORIDE	1.25	1.25	1.41	mg / L
PHOSPHATE	0.2	2.0	0.2	mg / L
SULFATE	2,230	2,760	2,230	mg / L
IRON	2.56	0.132	0.007	mg / L
CALCIUM	477	413	435	mg / L
MAGNESIUM	56.6	93.8	70.3	mg / L
POTASSIUM	7.5	12.0	7.0	mg / L
SODIUM	506	790	538	mg / L
CATION / ANION DIFFERENCE	0.05	0.06	0.06	%

FIGURE 2
(4th 1/4, 1999)



Top of Well Elevation	
MW #1	(102.63)
MW #2	(100.13)
MW #3	(102.49)
MW #1	Groundwater Elevation as of 11/18/99.

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.

1 INCH = 50 FT.
0 50 100 FT.

WELL HEAD ⊕

CROSS TIMBERS OIL COMPANY
PEARCE GC #1E
NW/4 SE/4 SEC. 23, 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: MW SAMPLING
DRAWN BY: NJV
FILENAME: PEARC-GW.SKD

GROUNDWATER
GRADIENT
MAP
11/99

BLAGG ENGINEERING, Inc.

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

BORE / TEST HOLE REPORT

BORING #..... BH - 2
MW #..... 2
PAGE #..... 2
DATE STARTED 11/11/99
DATE FINISHED 11/11/99
OPERATOR..... DE
PREPARED BY NJV

CLIENT: CROSS TIMBERS OIL COMPANY
LOCATION NAME: PEARCE GC #1E
CONTRACTOR: BLAGG ENGINEERING, INC.
EQUIPMENT USED: MOBILE DRILL RIG (ENVIROTECH CME61)
BORING LOCATION: 201 FT., N23.5E FEET FROM WELL HEAD.

DEPTH FEET	INTERVAL	LITHOLOGY INTERVAL	MW SCHEMATIC	FIELD CLASSIFICATION AND REMARKS
				GROUND SURFACE
1				TOP OF CASING APPROX. 1.70 FT. ABOVE GROUND SURFACE.
2				GW DEPTH ON 11/18/99 = 1.94 FT. (APPROX.) FROM GROUND SURFACE.
3				
4				
5				
6				
7				
8				
9				
10				
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27				
28				
29				
30				
31				

NOTE:  - SAND TO SILTY SAND.

TOS - TOP OF SCREEN FROM GROUND SURFACE.

TD - TOTAL DEPTH OF MONITOR WELL FROM GROUND SURFACE.

GW - GROUND WATER.

DRAWING: BH-2.SKD DATE: 1/21/00 DWN BY: NJV

31         

DRAWING: BH-3.SKD DATE: 1/21/00 DWN BY: NJV

MONITOR WELL #1

CROSS TIMBERS OIL COMPANY

PEARCE GC # 1E

MONITOR WELL CONSTRUCTION & COMPLETION

INSTALLED WITH MOBILE RIG

BLAGG ENGINEERING, INC.

CONSULTING PETROLEUM / RECLAMATION SERVICES

P.O. BOX 87

BLOOMFIELD, NEW MEXICO 87413

PHONE: (505) 632-1199

MONITOR WELL SCHEMATIC

DRAFTED BY: NJV

DATE: JAN. '00

FILENAME: MW-1

2" DIA. SCH. 40 PVC
WELL CASING WITH SLIP
CAP (approx. 3.18 ft.
above ground surface)

TOTAL CASING
LENGTH = 1.82 ft.
FROM GROUND SURFACE
TO TOP OF SCREEN

0.01 INCH SLOTTED
SCREEN SCH 40
(approx. 0.47 ft.
above water table)

0.01 INCH SLOTTED
SCREEN SCH 40 WITH
POINTED END CAP
(10 ft. total length;
approx. 9.53 ft. below
water table)

TOTAL DEPTH = 11.82 ft.
FROM GROUND SURFACE

GROUND
SURFACE

1.00 ft. INTERVAL COMPLETED
WITH BENTONITE PLUG

1.29 ft. ANNULAR ABOVE
WATER TABLE COMPLETED
WITH COLORADO SILICA SAND

WATER TABLE
APPROX. 2.29 ft. FROM
GROUND SURFACE
(measured 11/18/99)

11.71 ft. ANNULAR BELOW
WATER TABLE COMPLETED
WITH COLORADO SILICA SAND

0.01 INCH SLOTTED
SCREEN SCH 40 WITH
POINTED END CAP
(10 ft. total length;
approx. 9.36 ft. below
water table)

12.06 ft. ANNULAR BELOW
WATER TABLE COMPLETED
WITH COLORADO SILICA SAND

RING, INC.

LAMATION SERVICES

37

EXICO 87413

-1199

MONITOR WE

DRAFTED BY

DATE:

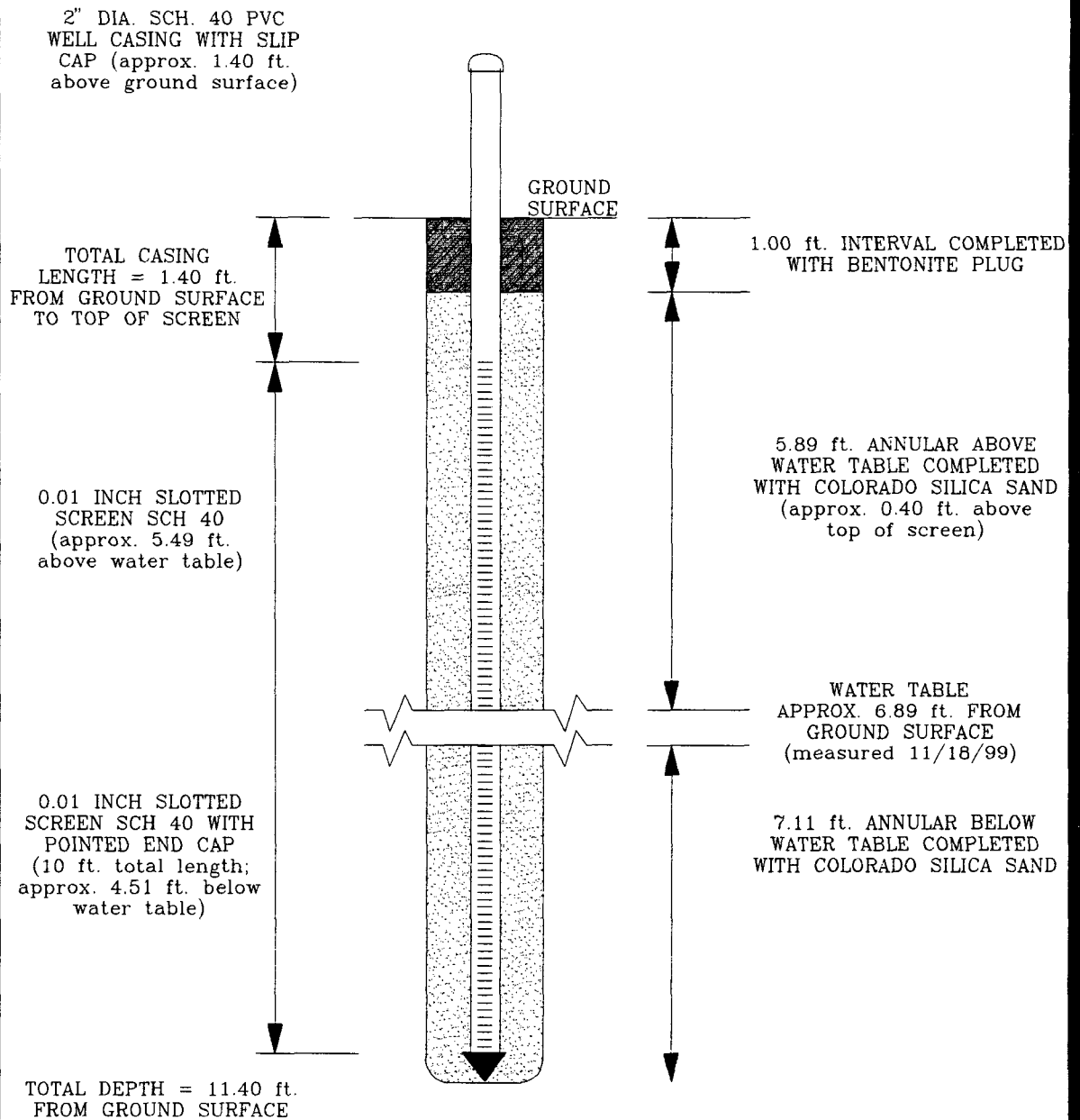
FILENAME:

MONITOR WELL #3

CROSS TIMBERS OIL COMPANY
PEARCE GC # 1E
MONITOR WELL CONSTRUCTION & COMPLETION
INSTALLED WITH MOBILE RIG

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

MONITOR WELL SCHEMATIC
DRAFTED BY: NJV
DATE: JAN. '00
FILENAME: MW-3



ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021 AROMATIC VOLATILE ORGANICS

Client:	Blagg / Cross Timbers	Project #:	403410
Sample ID:	MW # 1	Date Reported:	11-19-99
Chain of Custody:	7311	Date Sampled:	11-18-99
Laboratory Number:	G431	Date Received:	11-18-99
Sample Matrix:	Water	Date Analyzed:	11-19-99
Preservative:	HgCl ₂ & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		

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

ND - Parameter not detected at the stated detection limit.

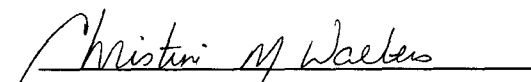
Surrogate Recoveries:	Parameter	Percent Recovery
	Trifluorotoluene	98 %
	Bromofluorobenzene	98 %

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: Pearce GC # 1 E.


Analyst


Review

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021 AROMATIC VOLATILE ORGANICS

Client:	Blagg / Cross Timbers	Project #:	403410
Sample ID:	MW # 2	Date Reported:	11-19-99
Chain of Custody:	7311	Date Sampled:	11-18-99
Laboratory Number:	G432	Date Received:	11-18-99
Sample Matrix:	Water	Date Analyzed:	11-19-99
Preservative:	HgCl ₂ & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		

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

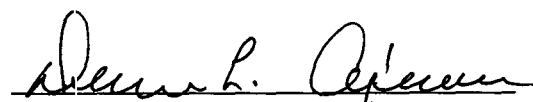
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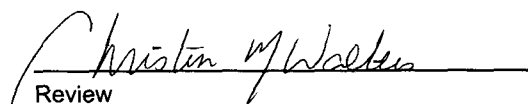
Surrogate Recoveries:	Parameter	Percent Recovery
	Trifluorotoluene	99 %
	Bromofluorobenzene	99 %

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: Pearce GC # 1 E.


Analyst


Review

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:	11-19-99
Chain of Custody:	7311	Date Sampled:	11-18-99
Laboratory Number:	G433	Date Received:	11-18-99
Sample Matrix:	Water	Date Analyzed:	11-19-99
Preservative:	HgCl2 & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		

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

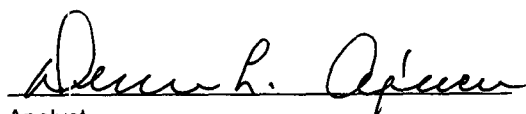
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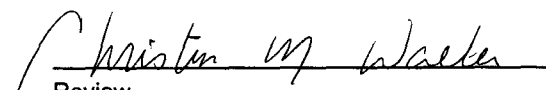
Surrogate Recoveries:	Parameter	Percent Recovery
	Trifluorotoluene	95 %
	Bromofluorobenzene	95 %

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: Pearce GC # 1 E.


Analyst


Review

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

CATION / ANION ANALYSIS

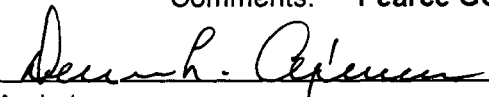
Client: Blagg / Cross Timbers
Sample ID: MW #1
Laboratory Number: G431
Chain of Custody: 7311
Sample Matrix: Water
Preservative: Cool
Condition: Cool & Intact

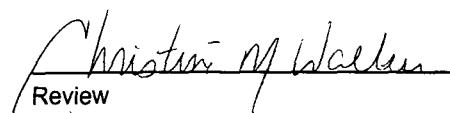
Project #: 403410
Date Reported: 11-19-99
Date Sampled: 11-18-99
Date Received: 11-18-99
Date Extracted: N/A
Date Analyzed: 11-19-99

Parameter	Analytical Result	Units		Units
pH	7.00	s.u.		
Conductivity @ 25° C	7,020	umhos/cm		
Total Dissolved Solids @ 180C	3,500	mg/L		
Total Dissolved Solids (Calc)	3,430	mg/L		
SAR	5.8	ratio		
Total Alkalinity as CaCO3	246	mg/L		
Total Hardness as CaCO3	1,424	mg/L		
Bicarbonate as HCO3	246	mg/L	4.03	meq/L
Carbonate as CO3	<.01	mg/L	0.00	meq/L
Hydroxide as OH	<0.1	mg/L	0.00	meq/L
Nitrate Nitrogen	0.2	mg/L	0.00	meq/L
Nitrite Nitrogen	0.046	mg/L	0.00	meq/L
Chloride	5.0	mg/L	0.14	meq/L
Fluoride	1.25	mg/L	0.07	meq/L
Phosphate	0.2	mg/L	0.01	meq/L
Sulfate	2,230	mg/L	46.43	meq/L
Iron	2.56	mg/L		
Calcium	477	mg/L	23.79	meq/L
Magnesium	56.6	mg/L	4.66	meq/L
Potassium	7.5	mg/L	0.19	meq/L
Sodium	506	mg/L	22.01	meq/L
Cations			50.65	meq/L
Anions			50.68	meq/L
Cation/Anion Difference			0.05%	

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: Pearce GC # 1E.


Analyst


Review

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

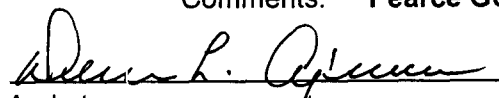
CATION / ANION ANALYSIS

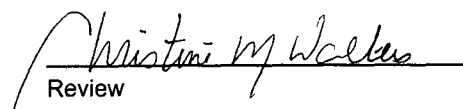
Client:	Blagg / Cross Timbers	Project #:	403410
Sample ID:	MW #2	Date Reported:	11-19-99
Laboratory Number:	G432	Date Sampled:	11-18-99
Chain of Custody:	7311	Date Received:	11-18-99
Sample Matrix:	Water	Date Extracted:	N/A
Preservative:	Cool	Date Analyzed:	11-19-99
Condition:	Cool & Intact		

Parameter	Analytical Result	Units		Units
pH	7.18	s.u.		
Conductivity @ 25° C	8,630	umhos/cm		
Total Dissolved Solids @ 180C	4,310	mg/L		
Total Dissolved Solids (Calc)	4,270	mg/L		
SAR	9.1	ratio		
Total Alkalinity as CaCO3	284	mg/L		
Total Hardness as CaCO3	1,416	mg/L		
Bicarbonate as HCO3	284	mg/L	4.65	meq/L
Carbonate as CO3	<.01	mg/L	0.00	meq/L
Hydroxide as OH	<0.1	mg/L	0.00	meq/L
Nitrate Nitrogen	0.8	mg/L	0.01	meq/L
Nitrite Nitrogen	0.048	mg/L	0.00	meq/L
Chloride	27.2	mg/L	0.77	meq/L
Fluoride	1.25	mg/L	0.07	meq/L
Phosphate	2.0	mg/L	0.06	meq/L
Sulfate	2,760	mg/L	57.46	meq/L
Iron	0.132	mg/L		
Calcium	413	mg/L	20.60	meq/L
Magnesium	93.8	mg/L	7.72	meq/L
Potassium	12.0	mg/L	0.31	meq/L
Sodium	790	mg/L	34.37	meq/L
Cations			62.99	meq/L
Anions			63.03	meq/L
Cation/Anion Difference			0.06%	

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: Pearce GC # 1E.


Analyst


Review

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

CATION / ANION ANALYSIS

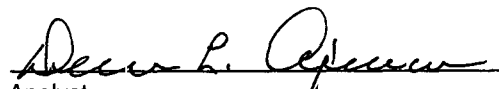
Client: Blagg / Cross Timbers
Sample ID: MW #3
Laboratory Number: G433
Chain of Custody: 7311
Sample Matrix: Water
Preservative: Cool
Condition: Cool & Intact

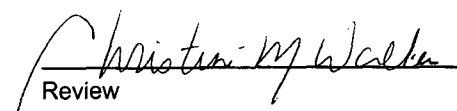
Project #: 403410
Date Reported: 11-19-99
Date Sampled: 11-18-99
Date Received: 11-18-99
Date Extracted: N/A
Date Analyzed: 11-19-99

Parameter	Analytical Result	Units	Units
pH	7.16	s.u.	
Conductivity @ 25° C	6,990	umhos/cm	
Total Dissolved Solids @ 180C	3,480	mg/L	
Total Dissolved Solids (Calc)	3,450	mg/L	
SAR	6.3	ratio	
Total Alkalinity as CaCO3	268	mg/L	
Total Hardness as CaCO3	1,376	mg/L	
Bicarbonate as HCO3	268	mg/L	4.39 meq/L
Carbonate as CO3	<.01	mg/L	0.00 meq/L
Hydroxide as OH	<0.1	mg/L	0.00 meq/L
Nitrate Nitrogen	0.4	mg/L	0.01 meq/L
Nitrite Nitrogen	0.017	mg/L	0.00 meq/L
Chloride	5.2	mg/L	0.15 meq/L
Fluoride	1.41	mg/L	0.07 meq/L
Phosphate	0.2	mg/L	0.01 meq/L
Sulfate	2,230	mg/L	46.43 meq/L
Iron	0.007	mg/L	
Calcium	435	mg/L	21.72 meq/L
Magnesium	70.3	mg/L	5.78 meq/L
Potassium	7.0	mg/L	0.18 meq/L
Sodium	538	mg/L	23.40 meq/L
Cations			51.08 meq/L
Anions			51.06 meq/L
Cation/Anion Difference			0.06%

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: Pearce GC # 1E.


Analyst


Review

7311

ENVIROTECH INC.

5796 U.S. Highway 64
Farmington, New Mexico 87401
(505) 622-0615

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021 AROMATIC VOLATILE ORGANICS QUALITY ASSURANCE REPORT

Client:	N/A	Project #:	N/A
Sample ID:	11-19-BTEX QA/QC	Date Reported:	11-19-99
Laboratory Number:	G441	Date Sampled:	N/A
Sample Matrix:	Water	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	11-19-99
Condition:	N/A	Analysis:	BTEX

Calibration and Detection Limits (ug/L)	I-Cal RF:	C-Cal RF:	%Diff.	Blank Conc	Detect. Limit
		Accept. Range 0 - 15%			
Benzene	3.8834E-001	3.8959E-001	0.32%	ND	0.2
Toluene	5.9617E-001	5.9629E-001	0.02%	ND	0.2
Ethylbenzene	2.1810E+000	2.1836E+000	0.12%	ND	0.2
p,m-Xylene	1.5049E+000	1.5052E+000	0.02%	ND	0.2
o-Xylene	9.8352E-002	9.8648E-002	0.30%	ND	0.1

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

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

ND - Parameter not detected at the stated detection limit.

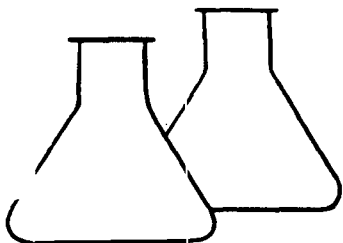
* - Administrative level set at 80 - 120.

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

Comments: QA/QC for samples G431 - G436.

Analyst

Review



ENVIROTECH LABS

5796 US HIGHWAY 64-3014 • FARMINGTON, NEW MEXICO 87401

PHONE: (505) 632-0615 • FAX: (505) 632-1865

EPA METHOD 418.1 TOTAL PETROLEUM HYDROCARBONS

Client: AMOCO
Sample ID: T-3 @ 4'
Laboratory Number: 0771
Sample Matrix: Soil
Preservative: Cool
Condition: Cool & Intact

Project #: 92140
Date Reported: 06-15-92
Date Sampled: 05-20-92
Date Received: NA
Date Analyzed: 06-11-92
Analysis Needed: TPH

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
-----	-----	-----
Total Petroleum Hydrocarbons	20.7	5.0

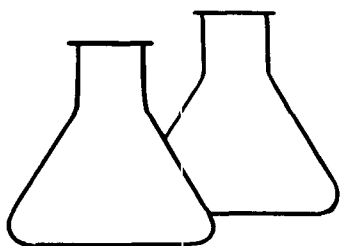
Method: Method 418.1, Petroleum Hydrocarbons, Total
Recoverable, Chemical Analysis of Water and
Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Pearce 1E Blow Pit 94177

Tony Tristano
Analyst

Harold Karsens
Review



ENVIROTECH LABS

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

EPA METHOD 8020 AROMATIC VOLATILE ORGANICS HEADSPACE EXTRACTION

Client:	Amoco	Project #:	92140
Sample ID:	T3 @ 4'	Date Reported:	09-03-92
Laboratory Number:	0770	Date Sampled:	05-20-92
Sample Matrix:	Soil	Date Received:	05-20-92
Preservative:	NA	Date Analyzed:	07-22-92
Condition:	Cool & Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	ND	1.6
Toluene	ND	1.6
Ethylbenzene	ND	1.6
p,m-Xylene	85	13.6
o-Xylene	41.4	1.6

Method: Method 3810, Headspace, Test Methods for Evaluating
Solid Waste, SW-846, USEPA, Sept. 1986

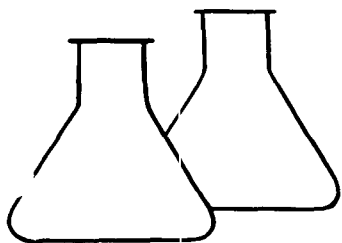
Method 8020, Aromatic Volatile Organics, Test Methods for
Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments: Pearce GC 1E----Blow Pit---94177

Al. Chahar
Analyst

Marvin Young
Review



ENVIROTECH LABS

5796 US HIGHWAY 64-3014 • FARMINGTON, NEW MEXICO 87401

PHONE: (505) 632-0615 • FAX: (505) 632-1865

EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Amoco	Project #:	92140
Sample ID:	T3 @ GW	Date Reported:	09-01-92
Laboratory Number:	0772	Date Sampled:	05-20-92
Sample Matrix:	Water	Date Received:	05-20-92
Preservative:	HgCl & Cool	Date Analyzed:	07-01-92
Condition:	Cool & Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	86	60
Toluene	98	65
Ethylbenzene	84	55
p,m-Xylene	86	55
o-Xylene	89	60

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	92.7 %
	Bromfluorobenzene	123.5 %

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

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

ND - Parameter not detected at the stated detection limit.

Comments: Pearce GC 1E---Blow Pit---94177

Robert M. Young
Analyst

Marian D. Young
Review

District I
P.O. Box 1980, Hobbs, NM
District II
O. Drawer DD, Artesia, NM 88211
District III
1000 Rio Brazos Rd, Aztec, NM 87410

State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION
P.O. Box 2088
Santa Fe, New Mexico 87504-2088

SUBMIT 1 COPY TO
APPROPRIATE
DISTRICT OFFICE
AND 1 COPY TO
SANTA FE OFFICE

PIT REMEDIATION AND CLOSURE REPORT

Operator: Amoco Production Company Telephone: (505) - 326-9200
Address: 200 Amoco Court, Farmington, New Mexico 87401
Facility Or: PEARCE GC #1E
Well Name
Location: Unit or Qtr/Qtr Sec T Sec 23 T 29N R 11W County SAN JUAN
Pit Type: Separator Dehydrator Other BLOW
Land Type: BLM , State , Fee , Other FEE

Pit Location: Pit dimensions: length 35', width 40', depth 4'
(attach diagram) Reference: wellhead X, other
Footage from reference: 195'
Direction from reference: 23 Degrees X East North X
of
West South

Depth To Ground Water: Less than 50 feet (20 points)
(Vertical distance from 50 feet to 99 feet (10 points)
contaminants to seasonal Greater than 100 feet (0 Points) 20
high water elevation of ground water)

Wellhead Protection Area: Yes (20 points)
(Less than 200 feet from a private No (0 points) 0
domestic water source, or; less than
1000 feet from all other water sources)

Distance To Surface Water: Less than 200 feet (20 points)
(Horizontal distance to perennial 200 feet to 1000 feet (10 points)
lakes, ponds, rivers, streams, creeks, Greater than 1000 feet (0 points) 10
irrigation canals and ditches)

RANKING SCORE (TOTAL POINTS): 30

Date Remediation Started: _____ Date Completed: 12/9/93

Remediation Method: Excavation ☒ Approx. cubic yards 200
(Check all appropriate sections) Landfarmed ☒ Insitu Bioremediation _____
Other _____

Remediation Location: Onsite ☒ Offsite _____
(ie. landfarmed onsite,
name and location of
offsite facility) _____

General Description Of Remedial Action: _____

Excavation, GROUNDWATER IMPACT

Ground Water Encountered: No _____ Yes ☒ Depth 4'

Final Pit: Sample location see Attached Documents
Closure Sampling: MULTIPLE SAMPLES
(if multiple samples,
attach sample results
and diagram of sample
locations and depths)

Sample depth _____

Sample date _____ Sample time _____

Sample Results

Benzene (ppm) _____

Total BTEX (ppm) _____

Field headspace (ppm) _____

TPH _____

Ground Water Sample: Yes ☒ No _____ (If yes, attach sample results)

I HEREBY CERTIFY THAT THE INFORMATION ABOVE IS TRUE AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF

DATE 2/14/00 ⁹⁵SIGNATURE B. ShawPRINTED NAME
AND TITLEBuddy D. Shaw
Environmental Coordinator

DID NOT RECOMMEND CLOSING FIRE.

J.C. Rios 11/23/93

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

94176

JOB No: 92140
PAGE No: 1 of 1

LOCATION: LEASE: FEARCE Gls Com WELL: 1E QD: NW/4 SE/4 25
SEC: 23 TWP: 29N RNG: 11W BM: NM CNTY: SJ ST: NM PIT: S/S/BLVD
CONTRACTOR: _____
EQUIPMENT USED: _____

DATE STARTED: 11-17-98
DATE FINISHED: 11-17-98

ENVIRONMENTAL
SPECIALIST: *2012*

SOIL REMEDIATION: QUANTITY: _____
DISPOSAL FACILITY: _____
LAND USE: _____
SURFACE CONDITIONS: Open Range to SWAMP

FIELD NOTES & REMARKS: PIT LOCATED APPROXIMATELY 50 YARDS NNW FROM WELLHEAD.

DEPTH TO GROUNDWATER: WATER IN PIT, approximately 2' below ground surface
NEAREST WATER SOURCE:
NEAREST SURFACE WATER:

- SKIPPED WATER IN PIT - }
- SUBMIT FOR PTEX TESTING - } LABELED AS "SEP PIT WATER"
COC # 3199

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

[illegible]

0

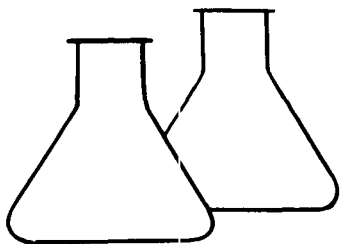
FEET
PIT PERIMETER

OVM RESULTS

[illegible]

PIT PROFILE

TRAVEL NOTES: CALLOUT: 0900 4/17/93 ONSITE: 1345 4/17/93
1400 4/17/93



ENVIROTECH LABS

5796 US HIGHWAY 64-3014 • FARMINGTON, NEW MEXICO 87401

PHONE: (505) 632-0615 • FAX: (505) 632-1865

EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Amoco	Project #:	92140
Sample ID:	<i>See Sep</i> Pit Water	Date Reported:	11-18-93
Laboratory Number:	6517	Date Sampled:	11-17-93
Sample Matrix:	Water	Date Received:	11-17-93
Preservative:	HgCl and Cool	Date Analyzed:	11-18-93
Condition:	Cool and Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	10.3	1.0
Toluene	36.6	2.5
Ethylbenzene	2.1	1.0
p,m-Xylene	396	2.5
o-Xylene	162	2.5

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	100 %
	Bromofluorobenzene	97 %

Method: Method 5030A, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, July 1992

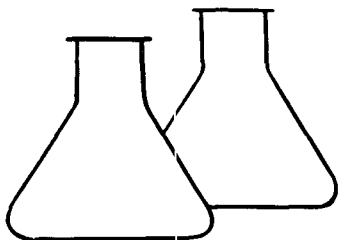
Method 8020, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, Sept. 1986

ND - Parameter not detected at the stated detection limit.

Comments: Pearce Gas Com 1E TH ~~Separator~~ Pit C4176
Blow

Kevin L. Jensen
Analyst

Kevin D. Young
Review



ENVIROTECH LABS

5796 US HIGHWAY 64-3014 • FARMINGTON, NEW MEXICO 87401

PHONE: (505) 632-0615 • FAX: (505) 632-1865

EPA METHOD 8020 AROMATIC VOLATILE ORGANICS

Client:	Amoco	Project #:	92140
Sample ID:	Pit Water (4')	Date Reported:	12-09-93
Laboratory Number:	6649	Date Sampled:	12-08-93
Sample Matrix:	Water	Date Received:	12-08-93
Preservative:	HgCl and Cool	Date Analyzed:	12-09-93
Condition:	Cool and Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/L)	Det. Limit (ug/L)
Benzene	0.4	0.2
Toluene	2.2	0.6
Ethylbenzene	0.5	0.3
p,m-Xylene	8.4	0.4
o-Xylene	1.4	0.3

SURROGATE RECOVERIES:	Parameter	Percent Recovery
	Trifluorotoluene	97 %
	Bromofluorobenzene	102 %

Method: Method 5030A, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, July 1992

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

ND - Parameter not detected at the stated detection limit.

Comments: Pearce GC #1E Blow Pit C4177

Dennis L. Ciesner
Analyst

Tony Tristano
Review

[illegible]**ENVIROTECH INC.**

5796 U.S. Highway 64-3014

Farmington, New Mexico 87401

(505) 632-0615

04177

[illegible]

5796 U.S. Highway 64-3014

(505) 632-0615

CLIENT: AMOCOBLAGG ENGINEERING, INC.
P.O. BOX 87, BLOOMFIELD, NM 87413
(505) 632-1199LOCATION NO: C4176C.D.C. NO: 5640

FIELD REPORT: LANDFARM/COMPOST PILE CLOSURE VERIFICATION

LOCATION: NAME: PEARLE GC WELL #: 1E PITS: BLOWDATE STARTED: 12-4-97QUAD/UNIT: (J) SEC: 23 TWP: 29N RNG: 11W PM: N CNTY: SS ST: NM

DATE FINISHED: _____

QTP/FOOTAGE: NW 1/4 SE 1/4CONTRACTOR: P & SENVIRONMENTAL
SPECIALIST: NV/EP

SOIL REMEDIATION:

REMEDICATION SYSTEM: LANDFARMAPPROX. CUBIC YARDAGE: 207LAND USE: TRANSITELIFT DEPTH (ft): NA

FIELD NOTES & REMARKS:

DEPTH TO GROUNDWATER: < 50' NEAREST WATER SOURCE: > 1000' NEAREST SURFACE WATER: < 1000'NMOCED RANKING SCORE: 30 NMOCED TPH CLOSURE STD: 100 PPMSOIL IS A DRY DARK YELLOW W/LIGHT BROWN SILTY SAND.
NO STAIN OR HC ODOR

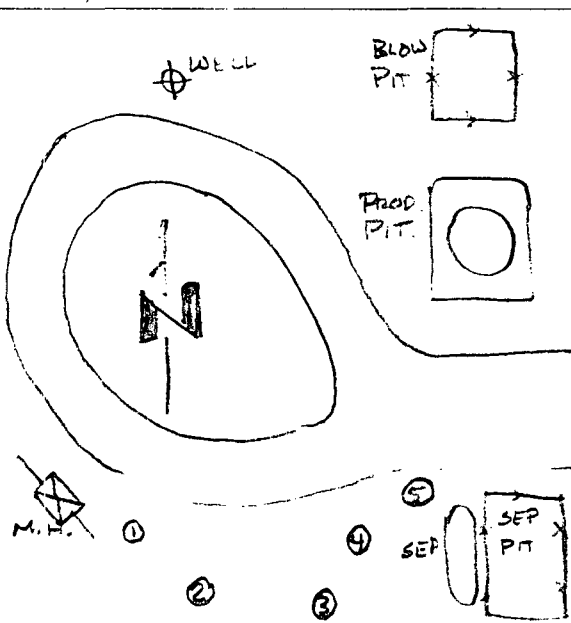
TOOK 5 PT COMPOSITE FOR LAB ANALYSIS

NO ACTUAL LANDFARM OBSERVED ON WELL SITE.

FIELD 418.1 CALCULATIONS

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

SKETCH/SAMPLE LOCATIONS



OVM RESULTS

LAB SAMPLES

SAMPLE ID	FIELD HEADSPACE PID (ppm)	SAMPLE ID	ANALYSIS	TIME	RESULTS
LF-1	0.0	LF-1	8015	0745	ND

SCALE

0 1 FT

TRAVEL NOTES:

CALLOUT: N/AONSITE: 12-4-97 0745

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8015 Modified Nonhalogenated Volatile Organics Total Petroleum Hydrocarbons

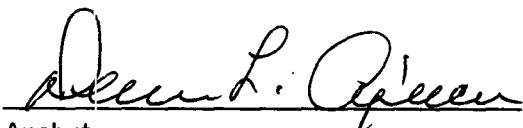
Client:	Blagg / AMOCO	Project #:	04034-10
Sample ID:	LF - 1	Date Reported:	12-09-97
Laboratory Number:	C644	Date Sampled:	12-04-97
Chain of Custody No:	5640	Date Received:	12-05-97
Sample Matrix:	Soil	Date Extracted:	12-08-97
Preservative:	Cool	Date Analyzed:	12-08-97
Condition:	Cool and Intact	Analysis Requested:	8015 TPH

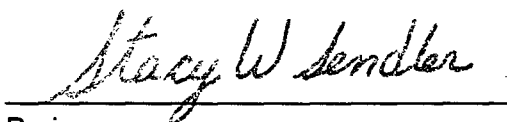
Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	ND	0.2
Diesel Range (C10 - C28)	ND	0.1
Total Petroleum Hydrocarbons	ND	0.2

ND - Parameter not detected at the stated detection limit.

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

Comments: Pearce GC #1E Landfarm. 5 Pt. Composite.


Analyst


Review

Rep doc's 5638-5647

ENVIROTECH INC.

5796 U.S. Highway 64-3014

Farmington, New Mexico 87401

(505) 632-0615

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA Method 8015 Modified Nonhalogenated Volatile Organics Total Petroleum Hydrocarbons

Quality Assurance Report

Client:	QA/QC	Project #:	N/A
Sample ID:	12-08-TPH QA/QC	Date Reported:	12-09-97
Laboratory Number:	C640	Date Sampled:	N/A
Sample Matrix:	Methylene Chloride	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	12-08-97
Condition:	N/A	Analysis Requested:	TPH

Calibration	I-Cal Date	I-Cal RF	C-Cal RF	% Difference	Accept Range
Gasoline Range C5 - C10	10-28-97	2.9715E-04	3.0698E-04	3.31%	0 - 15%
Diesel Range C10 - C28	10-28-97	2.9167E-04	3.0288E-04	3.84%	0 - 15%

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

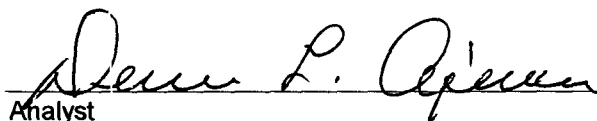
Duplicate Conc. (mg/Kg)	Sample	Duplicate	% Difference	Accept Range
Gasoline Range C5 - C10	1,384	1,315	5.0%	0 - 30%
Diesel Range C10 - C28	388	369	5.0%	0 - 30%

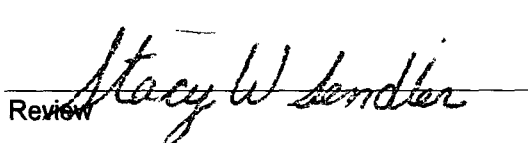
Spike Conc. (mg/Kg)	Sample	Spike Added	Spike Result	% Recovery	Accept Range
Gasoline Range C5 - C10	1,384	250	1,629	100%	75 - 125%
Diesel Range C10 - C28	388	250	637	100%	75 - 125%

ND - Parameter not detected at the stated detection limit.

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

Comments: QA/QC for samples C640 and C642 - C648.


Analyst


Review