

NM1 - 10

MONITORING REPORTS

YEAR(S):
2000-1992

QUARTERLY LANDFARM SUB-SURFACE TESTING REPORT

TIERRA ENVIRONMENTAL COMPANY, INC.

P.O. DRAWER 15250

FARMINGTON, NM 87401

Phone 505-334-8894 Fax 505-334-9024

E-mail teci@cyberport.com

Date: 7/25/2000

TPH Method – HNU 2000

BTEX Method – Thermo Environmental 580 B OVM

CELL	TPH	BTEX
1	0	0
2	0	0
3	0	0
4	0	0
5	0	0
6	0	0
7	0	0
8	0	0
9	0	0
10	0	0
11	0	0
12	0	0

Perf

QUARTERLY LANDFARM SUB-SURFACE TESTING REPORT

TIERRA ENVIRONMENTAL COMPANY, INC.

P.O. DRAWER 15250

FARMINGTON, NM 87401

Phone 505-334-8894 Fax 505-334-9024

E-mail teci@cyberport.com

Date: March 31, 2000

TPH Method - HNU 2000

BTEX Method - Thermo-Environmental 580 B OVM

CELL	TPH	BTEX
1	0	0
2	0	0
3	0	0
4	0	0
5	0	0
6	0	0
7	0	0
8	0	0
9	0	0
10	0	0
11	0	0
12	0	0

By: _____

PCN

QUARTERLY LANDFARM SUB-SURFACE TESTING REPORT

TIERRA ENVIRONMENTAL COMPANY, INC.

P.O. DRAWER 15250

FARMINGTON, NM 87401

Phone 505-334-8894 Fax 505-334-9024

E-mail teci@cyberport.com

Date: December 15, 1999

TPH Method - HNU 2000

BTEX Method - Thermo-Environmental 580 B OVM

CELL	TPH	BTEX
1	0	0
2	0	0
3	0	0
4	0	0
5	0	0
6	0	0
7	0	0
8	0	0
9	0	0
10	0	0
11	0	0
12	0	0

By: PCY

QUARTERLY LANDFARM SUB-SURFACE TESTING REPORT

TIERRA ENVIRONMENTAL COMPANY, INC.

P.O. DRAWER 15250

FARMINGTON, NM 87401

Phone 505-334-8894 Fax 505-334-9024

E-mail teci@cyberport.com

Date: September 21, 1999

TPH Method - HNU 2000

BTEX Method - Thermo-Environmental 580 B OVM

CELL	TPH	BTEX
1	0	0
2	0	0
3	0	0
4	0	0
5	0	0
6	0	0
7	0	0
8	0	0
9	0	0
10	0	0
11	0	0
12	0	0

By: 

QUARTERLY LANDFARM SUB-SURFACE TESTING REPORT

TIERRA ENVIRONMENTAL COMPANY, INC.

P.O. DRAWER 15250

FARMINGTON, NM 87401

Phone 505-334-8894 Fax 505-334-9024

E-mail teci@cyberport.com

Date: July 6, 1999

TPH Method - HNU 2000

BTEX Method - Thermo-Environmental 580 B OVM

CELL	TPH	BTEX
1	0	0
2	0	0
3	0	0
4	0	0
5	0	0
6	0	0
7	0	0
8	0	0
9	0	0
10	0	0
11	0	0
12	0	0

By: _____

Perd

QUARTERLY LANDFARM SUB-SURFACE TESTING REPORT

TIERRA ENVIRONMENTAL COMPANY, INC.

P.O. DRAWER 15250

FARMINGTON, NM 87401

Phone 505-334-8894 Fax 505-334-9024

E-mail teci@cyberport.com

Date: April 7, 1999

TPH Method - HNU 2000

BTEX Method - Thermo-Environmental 580 B OVM

CELL	TPH	BTEX
1	0	0
2	0	0
3	0	0
4	0	0
5	0	0
6	0	0
7	0	0
8	0	0
9	0	0
10	0	0
11	0	0
12	0	0

By: PCN

QUARTERLY LANDFARM SUB-SURFACE TESTING REPORT

TIERRA ENVIRONMENTAL COMPANY, INC.

P.O. DRAWER 15250

FARMINGTON, NM 87401

Phone 505-334-8894 Fax 505-334-9024

E-mail teci@cyberport.com

Date: January 5, 1999

TPH Method - HNU 2000

BTEX Method - Thermo-Environmental 580 B OVM

CELL	TPH	BTEX
1	0	0
2	0	0
3	0	0
4	0	0
5	0	0
6	0	0
7	0	0
8	0	0
9	0	0
10	0	0
11	0	0
12	0	0

By: DC

TIERRA ENVIRONMENTAL COMPANY Inc.

**420 COUNTY ROAD 3100
AZTEC, NEW MEXICO 87410**

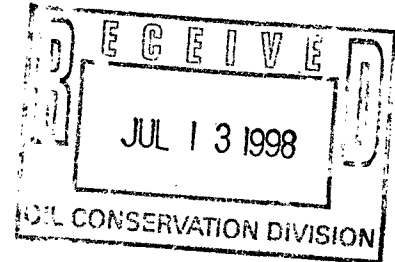


**P.O. DRAWER 15250
FARMINGTON, NEW MEXICO 87401-5250**

PHONE (505) 334-8894 FAX (505)334-9024

July 07, 1998

New Mexico Oil Conservation Division
2040 South Pacheco
Santa Fe, NM 87505
ATTN: Martyne J. Kieling



RE: ANNUAL SUB-SURFACE ANALYTICAL RESULTS

Ms. Kieling,

Enclosed, please find the analytical results from the Tierra Environmental Landfarm Facility located in San Juan County NM, S-2, T-29 N, R-12 W.

These are the required analytical results for the yearly operations under the NMOCD permit no. R-9772 for this landfarm. If you should have any questions or concerns please do not hesitate to contact us at 505-334-8894 or fax 505-334-9024.

Sincerely,

Blaine Williams
Environmental Specialist

6133

Client / Project Name			Project Location			ANALYSIS / PARAMETERS									
Sample: <u>11111</u>			Client No. <u>04074-03</u>			Remarks									
Sample No. / Identification	Sample Date	Sample Time	Lab Number	Sample Matrix	No. of Containers	BTEX	TPH	TOTAL METALS	GEN. CHEM.						
A-1	6-23		D464	Soil	1	✓	✓	✓	✓						
A-2	6-23		D465	"	1	✓	✓	✓	✓						
A-3	6-23		D466	"	1	✓	✓	✓	✓						
A-4	6-23		D467	"	1	✓	✓	✓	✓						
A-5	6-23		D468	"	1	✓	✓	✓	✓						
A-6	6-23		D469	"	1	✓	✓	✓	✓						
A-7	6-23		D470	"	1	✓	✓	✓	✓						
A-8	6-23		D471	"	1	✓	✓	✓	✓						
A-9	6-23		D472	"	1	✓	✓	✓	✓						
A-10	6-23		D473	"	1	✓	✓	✓	✓						
Relinquished by: (Signature) <u>[Signature]</u>			Date <u>6-23</u>	Time <u>4:25</u>	Received by: (Signature) <u>[Signature]</u>					Date <u>6-23-91</u>	Time <u>16:25</u>				
Relinquished by: (Signature)					Received by: (Signature)										
Relinquished by: (Signature)					Received by: (Signature)										

ENVIROTECH INC.

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

Sample Receipt

Y

N

N/A

Received Intact

✓

Cool - Ice/Blue Ice

✓

6134

Client / Project Name			Project Location			ANALYSIS / PARAMETERS						
Sample Identification			Client No.			No. of Containers		Remarks				
Sample No./ Identification	Sample Date	Sample Time	Lab Number	Sample Matrix								
A-11	6-23		D474	Soil	1	✓	✓	✓	✓			
A-12	6-23		D475	Soil	1	✓	✓	✓	✓			
A-13	6-23		D476	Soil	1	✓	✓	✓	✓			
A-14	6-23		D477	Soil	1	✓	✓	✓	✓			
Relinquished by: (Signature) <i>[Signature]</i> Date <i>6-23</i> Time <i>4:25</i> Received by: (Signature) <i>[Signature]</i> Date <i>6-23</i> Time <i>16:25</i>												
Relinquished by: (Signature) <i>[Signature]</i> Received by: (Signature) <i>[Signature]</i>												
Relinquished by: (Signature) Received by: (Signature)												

ENVIROTECH INC.

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

Sample Receipt
Received Intact ☒
Cool - Ice/Blue Ice ☒

70615 y.20 = TELP

Client:	Tierra	Project #:	04074-03
Sample ID:	A - 1	Date Reported:	06-29-98
Laboratory Number:	D464	Date Sampled:	06-23-98
Chain of Custody:	6133	Date Received:	06-23-98
Sample Matrix:	Soil	Date Analyzed:	06-26-98
Preservative:	Cool	Date Digested:	06-25-98
Condition:	Cool & Intact	Analysis Needed:	Trace Metals

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
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Arsenic	ND	0.0025
Barium	99.9 <i>20</i>	0.0025
Cadmium	ND	0.0025
Chromium	3.79	0.0025
Lead	12.1 <i>2.42</i>	0.0025
Mercury	ND	0.0025
Selenium	ND	0.0025
Silver	ND	0.0025

Reg Limit TELP

100 -

5.00

5.00

ND - Parameter not detected at the stated detection limit.

References: Method 3050B, Acid Digestion of Sediments, Sludges and Soils.
SW-846, USEPA, December 1996.

Methods 7060B, 7081, 7131A, 7191, 7470A, 7421, 7740, 7761 Analysis of Metals by
GFAA and Cold Vapor Techniques, SW-846, USEPA, December 1996.

Comments: **SJC.**

Debra L. Ojeda
Analyst

Stacy W. Sandler
Review

Client:	Tierra	Project #:	04074-03
Sample ID:	A - 2	Date Reported:	06-29-98
Laboratory Number:	D465	Date Sampled:	06-23-98
Chain of Custody:	6133	Date Received:	06-23-98
Sample Matrix:	Soil	Date Analyzed:	06-26-98
Preservative:	Cool	Date Digested:	06-25-98
Condition:	Cool & Intact	Analysis Needed:	Trace Metals

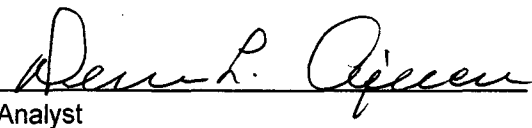
Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Arsenic	ND	0.0025
Barium	56.7	0.0025
Cadmium	ND	0.0025
Chromium	4.16	0.0025
Lead	8.67	0.0025
Mercury	ND	0.0025
Selenium	ND	0.0025
Silver	ND	0.0025

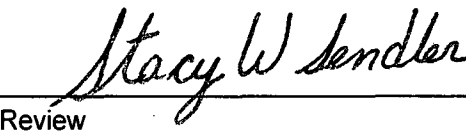
ND - Parameter not detected at the stated detection limit.

References: Method 3050B, Acid Digestion of Sediments, Sludges and Soils.
SW-846, USEPA, December 1996.

Methods 7060B, 7081, 7131A, 7191, 7470A, 7421, 7740, 7761 Analysis of Metals by
GFAA and Cold Vapor Techniques, SW-846, USEPA, December 1996.

Comments: SJC.


Analyst


Review

Client:	Tierra	Project #:	04074-03
Sample ID:	A - 3	Date Reported:	06-29-98
Laboratory Number:	D466	Date Sampled:	06-23-98
Chain of Custody:	6133	Date Received:	06-23-98
Sample Matrix:	Soil	Date Analyzed:	06-26-98
Preservative:	Cool	Date Digested:	06-25-98
Condition:	Cool & Intact	Analysis Needed:	Trace Metals

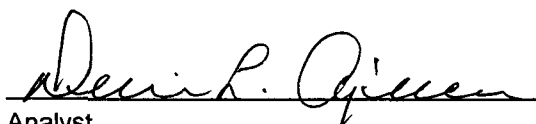
Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Arsenic	ND	0.0025
Barium	61.2	0.0025
Cadmium	ND	0.0025
Chromium	1.52	0.0025
Lead	13.2	0.0025
Mercury	ND	0.0025
Selenium	ND	0.0025
Silver	ND	0.0025

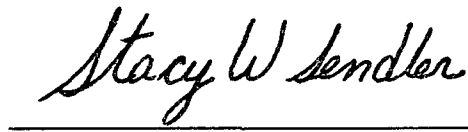
ND - Parameter not detected at the stated detection limit.

References: Method 3050B, Acid Digestion of Sediments, Sludges and Soils.
SW-846, USEPA, December 1996.

Methods 7060B, 7081, 7131A, 7191, 7470A, 7421, 7740, 7761 Analysis of Metals by
GFAA and Cold Vapor Techniques, SW-846, USEPA, December 1996.

Comments: **SJC.**


Analyst


Review

Client:	Tierra	Project #:	04074-03
Sample ID:	A - 4	Date Reported:	06-29-98
Laboratory Number:	D467	Date Sampled:	06-23-98
Chain of Custody:	6133	Date Received:	06-23-98
Sample Matrix:	Soil	Date Analyzed:	06-26-98
Preservative:	Cool	Date Digested:	06-25-98
Condition:	Cool & Intact	Analysis Needed:	Trace Metals

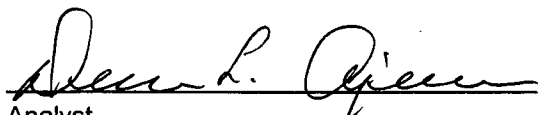
Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Arsenic	ND	0.0025
Barium	66.5	0.0025
Cadmium	ND	0.0025
Chromium	2.80	0.0025
Lead	7.19	0.0025
Mercury	ND	0.0025
Selenium	ND	0.0025
Silver	ND	0.0025

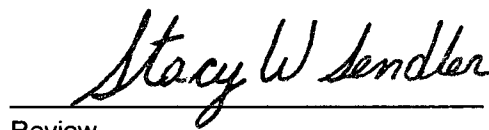
ND - Parameter not detected at the stated detection limit.

References: Method 3050B, Acid Digestion of Sediments, Sludges and Soils.
SW-846, USEPA, December 1996.

Methods 7060B, 7081, 7131A, 7191, 7470A, 7421, 7740, 7761 Analysis of Metals by
GFAA and Cold Vapor Techniques, SW-846, USEPA, December 1996.

Comments: SJC.


Analyst


Review

Client:	Tierra	Project #:	04074-03
Sample ID:	A - 5	Date Reported:	06-29-98
Laboratory Number:	D468	Date Sampled:	06-23-98
Chain of Custody:	6133	Date Received:	06-23-98
Sample Matrix:	Soil	Date Analyzed:	06-26-98
Preservative:	Cool	Date Digested:	06-25-98
Condition:	Cool & Intact	Analysis Needed:	Trace Metals

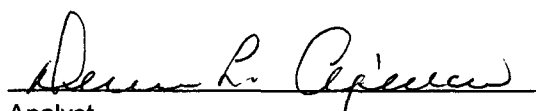
Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Arsenic	0.355	0.0025
Barium	31.4	0.0025
Cadmium	ND	0.0025
Chromium	1.05	0.0025
Lead	5.33	0.0025
Mercury	ND	0.0025
Selenium	ND	0.0025
Silver	ND	0.0025

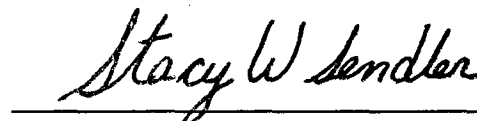
ND - Parameter not detected at the stated detection limit.

References: Method 3050B, Acid Digestion of Sediments, Sludges and Soils.
SW-846, USEPA, December 1996.

Methods 7060B, 7081, 7131A, 7191, 7470A, 7421, 7740, 7761 Analysis of Metals by
GFAA and Cold Vapor Techniques, SW-846, USEPA, December 1996.

Comments: **SJC.**


Analyst


Review

Client:	Tierra	Project #:	04074-03
Sample ID:	A - 6	Date Reported:	06-29-98
Laboratory Number:	D469	Date Sampled:	06-23-98
Chain of Custody:	6133	Date Received:	06-23-98
Sample Matrix:	Soil	Date Analyzed:	06-26-98
Preservative:	Cool	Date Digested:	06-25-98
Condition:	Cool & Intact	Analysis Needed:	Trace Metals

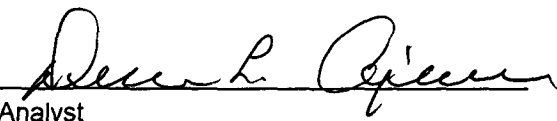
Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Arsenic	ND	0.0025
Barium	115	0.0025
Cadmium	ND	0.0025
Chromium	1.76	0.0025
Lead	5.70	0.0025
Mercury	ND	0.0025
Selenium	ND	0.0025
Silver	ND	0.0025

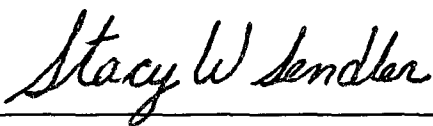
ND - Parameter not detected at the stated detection limit.

References: Method 3050B, Acid Digestion of Sediments, Sludges and Soils.
SW-846, USEPA, December 1996.

Methods 7060B, 7081, 7131A, 7191, 7470A, 7421, 7740, 7761 Analysis of Metals by
GFAA and Cold Vapor Techniques, SW-846, USEPA, December 1996.

Comments: **SJC.**


Analyst


Review

Client:	Tierra	Project #:	04074-03
Sample ID:	A - 7	Date Reported:	06-29-98
Laboratory Number:	D470	Date Sampled:	06-23-98
Chain of Custody:	6133	Date Received:	06-23-98
Sample Matrix:	Soil	Date Analyzed:	06-26-98
Preservative:	Cool	Date Digested:	06-25-98
Condition:	Cool & Intact	Analysis Needed:	Trace Metals

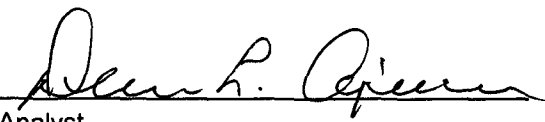
Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Arsenic	ND	0.0025
Barium	66.6	0.0025
Cadmium	ND	0.0025
Chromium	2.78	0.0025
Lead	9.09	0.0025
Mercury	ND	0.0025
Selenium	ND	0.0025
Silver	ND	0.0025

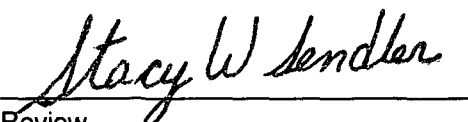
ND - Parameter not detected at the stated detection limit.

References: Method 3050B, Acid Digestion of Sediments, Sludges and Soils.
SW-846, USEPA, December 1996.

Methods 7060B, 7081, 7131A, 7191, 7470A, 7421, 7740, 7761 Analysis of Metals by
GFAA and Cold Vapor Techniques, SW-846, USEPA, December 1996.

Comments: SJC.


Analyst


Review

Client:	Tierra	Project #:	04074-03
Sample ID:	A - 8	Date Reported:	06-29-98
Laboratory Number:	D471	Date Sampled:	06-23-98
Chain of Custody:	6133	Date Received:	06-23-98
Sample Matrix:	Soil	Date Analyzed:	06-26-98
Preservative:	Cool	Date Digested:	06-25-98
Condition:	Cool & Intact	Analysis Needed:	Trace Metals

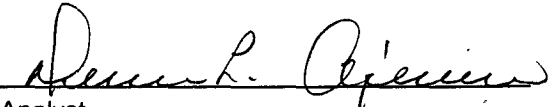
Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Arsenic	0.0250	0.0025
Barium	64.8	0.0025
Cadmium	ND	0.0025
Chromium	1.75	0.0025
Lead	9.68	0.0025
Mercury	ND	0.0025
Selenium	ND	0.0025
Silver	ND	0.0025

ND - Parameter not detected at the stated detection limit.

References: Method 3050B, Acid Digestion of Sediments, Sludges and Soils.
SW-846, USEPA, December 1996.

Methods 7060B, 7081, 7131A, 7191, 7470A, 7421, 7740, 7761 Analysis of Metals by
GFAA and Cold Vapor Techniques, SW-846, USEPA, December 1996.

Comments: SJC.


Analyst


Review

Client:	Tierra	Project #:	04074-03
Sample ID:	A - 9	Date Reported:	06-29-98
Laboratory Number:	D472	Date Sampled:	06-23-98
Chain of Custody:	6133	Date Received:	06-23-98
Sample Matrix:	Soil	Date Analyzed:	06-26-98
Preservative:	Cool	Date Digested:	06-25-98
Condition:	Cool & Intact	Analysis Needed:	Trace Metals

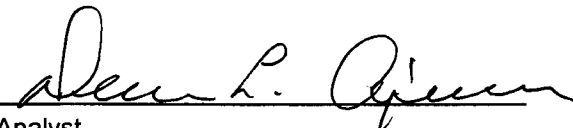
Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Arsenic	ND	0.0025
Barium	155	0.0025
Cadmium	ND	0.0025
Chromium	1.22	0.0025
Lead	5.11	0.0025
Mercury	ND	0.0025
Selenium	ND	0.0025
Silver	ND	0.0025

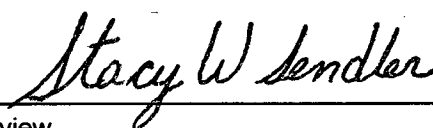
ND - Parameter not detected at the stated detection limit.

References: Method 3050B, Acid Digestion of Sediments, Sludges and Soils.
SW-846, USEPA, December 1996.

Methods 7060B, 7081, 7131A, 7191, 7470A, 7421, 7740, 7761 Analysis of Metals by
GFAA and Cold Vapor Techniques, SW-846, USEPA, December 1996.

Comments: **SJC.**


Analyst


Review

Client:	Tierra	Project #:	04074-03
Sample ID:	A - 10	Date Reported:	06-29-98
Laboratory Number:	D473	Date Sampled:	06-23-98
Chain of Custody:	6133	Date Received:	06-23-98
Sample Matrix:	Soil	Date Analyzed:	06-26-98
Preservative:	Cool	Date Digested:	06-25-98
Condition:	Cool & Intact	Analysis Needed:	Trace Metals

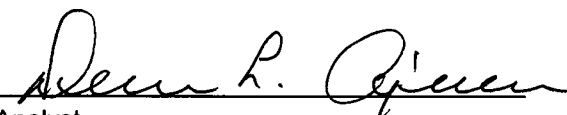
Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Arsenic	ND	0.0025
Barium	113	0.0025
Cadmium	ND	0.0025
Chromium	1.41	0.0025
Lead	6.55	0.0025
Mercury	ND	0.0025
Selenium	ND	0.0025
Silver	ND	0.0025

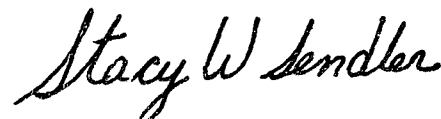
ND - Parameter not detected at the stated detection limit.

References: Method 3050B, Acid Digestion of Sediments, Sludges and Soils.
SW-846, USEPA, December 1996.

Methods 7060B, 7081, 7131A, 7191, 7470A, 7421, 7740, 7761 Analysis of Metals by
GFAA and Cold Vapor Techniques, SW-846, USEPA, December 1996.

Comments: **SJC.**


Analyst


Review

Client:	QA/QC	Project #:	N/A
Sample ID:	06-26-TM QA/QC	Date Reported:	06-29-98
Laboratory Number:	D464	Date Sampled:	N/A
Sample Matrix:	Soil	Date Received:	N/A
Analysis Requested:	Trace Metals	Date Analyzed:	06-26-98
Condition:	N/A	Date Digested:	06-25-98

Blank & Duplicate Conc. (mg/Kg)	Instrument Blank (mg/Kg)	Method Blank	Detection Limit	Sample	Duplicate	% Diff.	Acceptance Range
Arsenic	ND	ND	0.0025	ND	ND	0.0%	0% - 30%
Barium	ND	ND	0.0025	99.9	100	0.1%	0% - 30%
Cadmium	ND	ND	0.0025	ND	ND	0.0%	0% - 30%
Chromium	ND	ND	0.0025	3.79	3.80	0.3%	0% - 30%
Lead	ND	ND	0.0025	12.1	12.1	0.0%	0% - 30%
Mercury	ND	ND	0.0025	ND	ND	0.0%	0% - 30%
Selenium	ND	ND	0.0025	ND	ND	0.0%	0% - 30%
Silver	ND	ND	0.0025	ND	ND	0.0%	0% - 30%

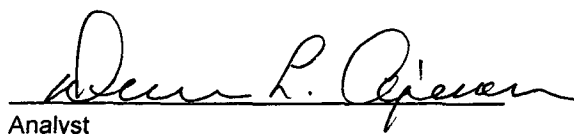
Spike Conc. (mg/Kg)	Spike Added	Sample	Spiked Sample	Percent Recovery	Acceptance Range
Arsenic	2.500	ND	2.493	100%	80% - 120%
Barium	25.0	99.9	125	100%	80% - 120%
Cadmium	1.250	ND	1.243	99%	80% - 120%
Chromium	1.250	3.790	5.030	100%	80% - 120%
Lead	2.500	12.100	14.600	100%	80% - 120%
Mercury	0.625	ND	0.623	100%	80% - 120%
Selenium	2.500	ND	2.490	100%	80% - 120%
Silver	1.250	ND	1.248	100%	80% - 120%

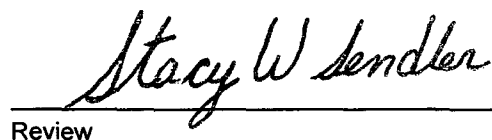
ND - Parameter not detected at the stated detection limit.

References: Method 3050B, Acid Digestion of Sediments, Sludges and Soils.
SW-846, USEPA, December 1996.

Methods 7060B, 7081, 7131A, 7191, 7470A, 7421, 7740, 7761 Analysis of Metals by
GFAA and Cold Vapor Techniques, SW-846, USEPA, December 1996.

Comments: QA/QC for samples D464 - D473.


Analyst


Review

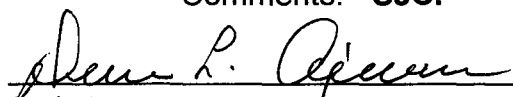
Client: Tierra
 Sample ID: A - 1
 Laboratory Number: D464
 Chain of Custody: 6133
 Sample Matrix: Soil
 Preservative: Cool
 Condition: Cool & Intact

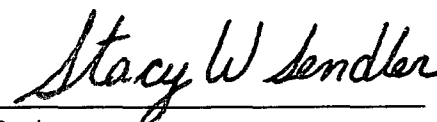
Project #: 04074-03
 Date Reported: 06-30-98
 Date Sampled: 06-23-98
 Date Received: 06-23-98
 Date Extracted: 06-25-98
 Date Analyzed: 06-26 - 06-29-98

Parameter	Analytical Result	Units	Units
pH	7.51	s.u.	
Conductivity @ 25° C	566	umhos/cm	
Total Dissolved Solids @ 180C	280	mg/L	
Total Dissolved Solids (Calc)	275	mg/L	
SAR	3.4	ratio	
Total Alkalinity as CaCO3	19.6	mg/L	
Total Hardness as CaCO3	61.0	mg/L	
Bicarbonate as HCO3	19.6	mg/L	0.32 meq/L
Carbonate as CO3	<1	mg/L	0.00 meq/L
Hydroxide as OH	<1	mg/L	0.00 meq/L
Nitrate Nitrogen	0.1	mg/L	0.00 meq/L
Nitrite Nitrogen	0.008	mg/L	0.00 meq/L
Chloride	6.3	mg/L	0.18 meq/L
Fluoride	1.01	mg/L	0.05 meq/L
Phosphate	1.5	mg/L	0.05 meq/L
Sulfate	164	mg/L	3.41 meq/L
Calcium	20.4	mg/L	1.02 meq/L
Magnesium	2.44	mg/L	0.20 meq/L
Potassium	6.0	mg/L	0.15 meq/L
Sodium	61.0	mg/L	2.65 meq/L
Cations			4.03 meq/L
Anions			4.02 meq/L
Cation/Anion Difference			0.25%

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

Comments: SJC.


 Analyst


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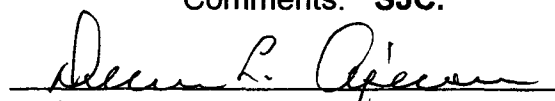
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Sample ID: A - 2
Laboratory Number: D465
Chain of Custody: 6133
Sample Matrix: Soil
Preservative: Cool
Condition: Cool & Intact

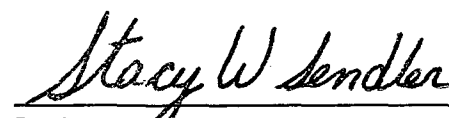
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Date Reported: 06-30-98
Date Sampled: 06-23-98
Date Received: 06-23-98
Date Extracted: 06-25-98
Date Analyzed: 06-26 - 06-29-98

Parameter	Analytical Result	Units	Units
pH	7.54	s.u.	
Conductivity @ 25° C	70.4	umhos/cm	
Total Dissolved Solids @ 180C	25.0	mg/L	
Total Dissolved Solids (Calc)	26.5	mg/L	
SAR	0.2	ratio	
Total Alkalinity as CaCO3	19.0	mg/L	
Total Hardness as CaCO3	18.9	mg/L	
Bicarbonate as HCO3	19.0	mg/L	0.31 meq/L
Carbonate as CO3	<1	mg/L	0.00 meq/L
Hydroxide as OH	<1	mg/L	0.00 meq/L
Nitrate Nitrogen	0.1	mg/L	0.00 meq/L
Nitrite Nitrogen	0.011	mg/L	0.00 meq/L
Chloride	3.8	mg/L	0.11 meq/L
Fluoride	0.56	mg/L	0.03 meq/L
Phosphate	1.2	mg/L	0.04 meq/L
Sulfate	<0.1	mg/L	0.00 meq/L
Calcium	5.08	mg/L	0.25 meq/L
Magnesium	1.51	mg/L	0.12 meq/L
Potassium	0.4	mg/L	0.01 meq/L
Sodium	2.3	mg/L	0.10 meq/L
Cations			0.49 meq/L
Anions			0.49 meq/L
Cation/Anion Difference			0.04%

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

Comments: SJC.


Analyst


Review

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

CATION / ANION ANALYSIS

Client: Tierra
Sample ID: A - 3
Laboratory Number: D466
Chain of Custody: 6133
Sample Matrix: Soil
Preservative: Cool
Condition: Cool & Intact

Project #: 04074-03
Date Reported: 06-30-98
Date Sampled: 06-23-98
Date Received: 06-23-98
Date Extracted: 06-25-98
Date Analyzed: 06-26 - 06-29-98

Parameter	Analytical Result	Units	Units
pH	6.90	s.u.	
Conductivity @ 25° C	359	umhos/cm	
Total Dissolved Solids @ 180C	180	mg/L	
Total Dissolved Solids (Calc)	177	mg/L	
SAR	0.0	ratio	
Total Alkalinity as CaCO3	3.3	mg/L	
Total Hardness as CaCO3	136	mg/L	

Bicarbonate as HCO3	3.3	mg/L	0.05	meq/L
Carbonate as CO3	<1	mg/L	0.00	meq/L
Hydroxide as OH	<1	mg/L	0.00	meq/L
Nitrate Nitrogen	0.1	mg/L	0.00	meq/L
Nitrite Nitrogen	0.004	mg/L	0.00	meq/L
Chloride	2.0	mg/L	0.06	meq/L
Fluoride	0.60	mg/L	0.03	meq/L
Phosphate	<0.1	mg/L	0.00	meq/L
Sulfate	120	mg/L	2.50	meq/L

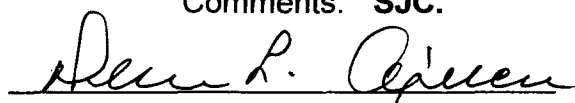
Calcium	46.8	mg/L	2.34	meq/L
Magnesium	4.50	mg/L	0.37	meq/L
Potassium	0.6	mg/L	0.02	meq/L
Sodium	<0.1	mg/L	0.00	meq/L

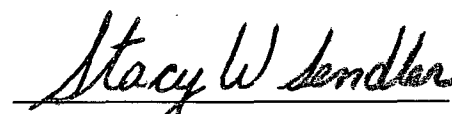
Cations	2.72	meq/L
Anions	2.64	meq/L

Cation/Anion Difference 2.98%

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

Comments: SJC.


Analyst

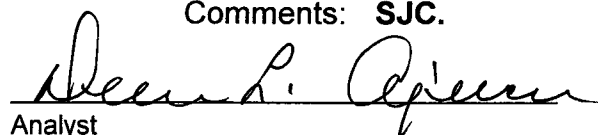

Review

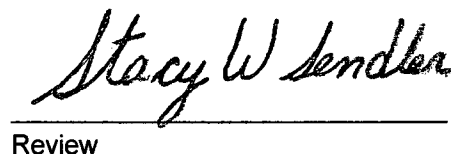
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Sample ID:	A - 4	Date Reported:	06-30-98
Laboratory Number:	D467	Date Sampled:	06-23-98
Chain of Custody:	6133	Date Received:	06-23-98
Sample Matrix:	Soil	Date Extracted:	06-25-98
Preservative:	Cool	Date Analyzed:	06-26 - 06-29-98
Condition:	Cool & Intact		

Parameter	Analytical Result	Units		Units
pH	7.44	s.u.		
Conductivity @ 25° C	39.1	umhos/cm		
Total Dissolved Solids @ 180C	16.0	mg/L		
Total Dissolved Solids (Calc)	15.3	mg/L		
SAR	0.8	ratio		
Total Alkalinity as CaCO3	9.0	mg/L		
Total Hardness as CaCO3	5.0	mg/L		
Bicarbonate as HCO3	9.0	mg/L	0.15	meq/L
Carbonate as CO3	<1	mg/L	0.00	meq/L
Hydroxide as OH	<1	mg/L	0.00	meq/L
Nitrate Nitrogen	0.2	mg/L	0.00	meq/L
Nitrite Nitrogen	0.004	mg/L	0.00	meq/L
Chloride	2.4	mg/L	0.07	meq/L
Fluoride	0.77	mg/L	0.04	meq/L
Phosphate	0.6	mg/L	0.02	meq/L
Sulfate	<0.1	mg/L	0.00	meq/L
Calcium	1.48	mg/L	0.07	meq/L
Magnesium	0.32	mg/L	0.03	meq/L
Potassium	0.1	mg/L	0.00	meq/L
Sodium	4.0	mg/L	0.17	meq/L
Cations			0.28	meq/L
Anions			0.28	meq/L
Cation/Anion Difference			0.46%	

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

Comments: **SJC.**


Analyst


Review

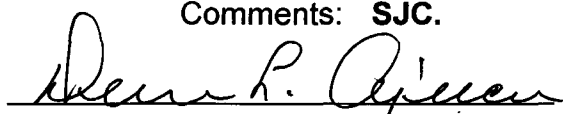
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 Sample ID: A - 5
 Laboratory Number: D468
 Chain of Custody: 6133
 Sample Matrix: Soil
 Preservative: Cool
 Condition: Cool & Intact

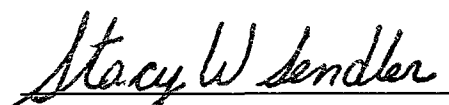
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 Date Reported: 06-30-98
 Date Sampled: 06-23-98
 Date Received: 06-23-98
 Date Extracted: 06-25-98
 Date Analyzed: 06-26 - 06-29-98

Parameter	Analytical Result	Units		Units
pH	7.30	s.u.		
Conductivity @ 25° C	145	umhos/cm		
Total Dissolved Solids @ 180C	70.0	mg/L		
Total Dissolved Solids (Calc)	68.9	mg/L		
SAR	1.0	ratio		
Total Alkalinity as CaCO3	3.9	mg/L		
Total Hardness as CaCO3	26.5	mg/L		
Bicarbonate as HCO3	3.9	mg/L	0.06	meq/L
Carbonate as CO3	<1	mg/L	0.00	meq/L
Hydroxide as OH	<1	mg/L	0.00	meq/L
Nitrate Nitrogen	0.2	mg/L	0.00	meq/L
Nitrite Nitrogen	0.003	mg/L	0.00	meq/L
Chloride	0.4	mg/L	0.01	meq/L
Fluoride	0.64	mg/L	0.03	meq/L
Phosphate	0.5	mg/L	0.02	meq/L
Sulfate	43.7	mg/L	0.91	meq/L
Calcium	7.20	mg/L	0.36	meq/L
Magnesium	2.08	mg/L	0.17	meq/L
Potassium	0.3	mg/L	0.01	meq/L
Sodium	11.5	mg/L	0.50	meq/L
Cations			1.04	meq/L
Anions			1.04	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
 Standard Methods For The Examination of Water And Waste Water", 18th ed., 1992.

Comments: **SJC.**


 Analyst


 Review

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

CATION / ANION ANALYSIS

Client: Tierra
Sample ID: A - 6
Laboratory Number: D469
Chain of Custody: 6133
Sample Matrix: Soil
Preservative: Cool
Condition: Cool & Intact

Project #: 04074-03
Date Reported: 06-30-98
Date Sampled: 06-23-98
Date Received: 06-23-98
Date Extracted: 06-25-98
Date Analyzed: 06-26 - 06-29-98

Parameter	Analytical Result	Units	Units
pH	6.99	s.u.	
Conductivity @ 25° C	845	umhos/cm	
Total Dissolved Solids @ 180C	420	mg/L	
Total Dissolved Solids (Calc)	411	mg/L	
SAR	0.0	ratio	
Total Alkalinity as CaCO3	6.6	mg/L	
Total Hardness as CaCO3	313	mg/L	
Bicarbonate as HCO3	6.6	mg/L	0.11 meq/L
Carbonate as CO3	<1	mg/L	0.00 meq/L
Hydroxide as OH	<1	mg/L	0.00 meq/L
Nitrate Nitrogen	<0.1	mg/L	0.00 meq/L
Nitrite Nitrogen	0.007	mg/L	0.00 meq/L
Chloride	5.7	mg/L	0.16 meq/L
Fluoride	1.01	mg/L	0.05 meq/L
Phosphate	0.3	mg/L	0.01 meq/L
Sulfate	284	mg/L	5.91 meq/L
Calcium	102	mg/L	5.09 meq/L
Magnesium	14.2	mg/L	1.17 meq/L
Potassium	<0.1	mg/L	0.00 meq/L
Sodium	<0.1	mg/L	0.00 meq/L
Cations			6.26 meq/L
Anions			6.24 meq/L
Cation/Anion Difference			0.17%

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

Comments: SJC.

Analyst

Review

Client: Tierra
Sample ID: A - 7
Laboratory Number: D470
Chain of Custody: 6133
Sample Matrix: Soil
Preservative: Cool
Condition: Cool & Intact

Project #: 04074-03
Date Reported: 06-30-98
Date Sampled: 06-23-98
Date Received: 06-23-98
Date Extracted: 06-25-98
Date Analyzed: 06-26 - 06-29-98

Parameter	Analytical Result	Units	Units
pH	7.31	s.u.	
Conductivity @ 25° C	171	umhos/cm	
Total Dissolved Solids @ 180C	80.0	mg/L	
Total Dissolved Solids (Calc)	74.9	mg/L	
SAR	0.1	ratio	
Total Alkalinity as CaCO3	7.0	mg/L	
Total Hardness as CaCO3	52.8	mg/L	
Bicarbonate as HCO3	7.0	mg/L	0.11 meq/L
Carbonate as CO3	<1	mg/L	0.00 meq/L
Hydroxide as OH	<1	mg/L	0.00 meq/L
Nitrate Nitrogen	0.3	mg/L	0.00 meq/L
Nitrite Nitrogen	0.012	mg/L	0.00 meq/L
Chloride	0.5	mg/L	0.01 meq/L
Fluoride	0.85	mg/L	0.04 meq/L
Phosphate	0.4	mg/L	0.01 meq/L
Sulfate	47.0	mg/L	0.98 meq/L
Calcium	15.3	mg/L	0.76 meq/L
Magnesium	3.54	mg/L	0.29 meq/L
Potassium	0.2	mg/L	0.01 meq/L
Sodium	2.5	mg/L	0.11 meq/L
Cations			1.17 meq/L
Anions			1.17 meq/L
Cation/Anion Difference			0.10%

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

Comments: SJC.

Analyst

Review

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

CATION / ANION ANALYSIS

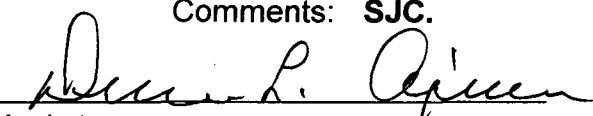
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Sample ID: A - 8
Laboratory Number: D471
Chain of Custody: 6133
Sample Matrix: Soil
Preservative: Cool
Condition: Cool & Intact

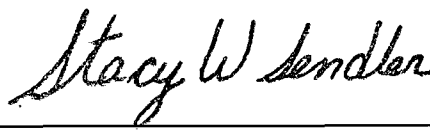
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Date Reported: 06-30-98
Date Sampled: 06-23-98
Date Received: 06-23-98
Date Extracted: 06-25-98
Date Analyzed: 06-26 - 06-29-98

Parameter	Analytical Result	Units	Units
pH	7.34	s.u.	
Conductivity @ 25° C	73.8	umhos/cm	
Total Dissolved Solids @ 180C	38.0	mg/L	
Total Dissolved Solids (Calc)	36.7	mg/L	
SAR	0.4	ratio	
Total Alkalinity as CaCO3	4.8	mg/L	
Total Hardness as CaCO3	19.1	mg/L	
Bicarbonate as HCO3	4.8	mg/L	0.08 meq/L
Carbonate as CO3	<1	mg/L	0.00 meq/L
Hydroxide as OH	<1	mg/L	0.00 meq/L
Nitrate Nitrogen	<0.1	mg/L	0.00 meq/L
Nitrite Nitrogen	0.008	mg/L	0.00 meq/L
Chloride	0.4	mg/L	0.01 meq/L
Fluoride	0.49	mg/L	0.03 meq/L
Phosphate	<0.1	mg/L	0.00 meq/L
Sulfate	21.2	mg/L	0.44 meq/L
Calcium	7.2	mg/L	0.36 meq/L
Magnesium	0.27	mg/L	0.02 meq/L
Potassium	0.2	mg/L	0.01 meq/L
Sodium	4.0	mg/L	0.17 meq/L
Cations			0.56 meq/L
Anions			0.56 meq/L
Cation/Anion Difference			0.56%

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

Comments: SJC.


Analyst

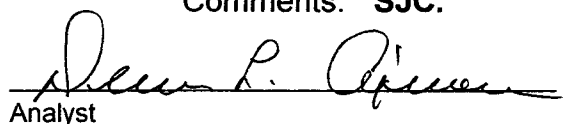

Review

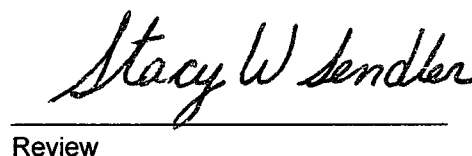
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Sample ID:	A - 9	Date Reported:	06-30-98
Laboratory Number:	D472	Date Sampled:	06-23-98
Chain of Custody:	6133	Date Received:	06-23-98
Sample Matrix:	Soil	Date Extracted:	06-25-98
Preservative:	Cool	Date Analyzed:	06-26 - 06-29-98
Condition:	Cool & Intact		

Parameter	Analytical Result	Units	Units
pH	7.79	s.u.	
Conductivity @ 25° C	134	umhos/cm	
Total Dissolved Solids @ 180C	65.0	mg/L	
Total Dissolved Solids (Calc)	63.6	mg/L	
SAR	1.4	ratio	
Total Alkalinity as CaCO3	6.3	mg/L	
Total Hardness as CaCO3	18.3	mg/L	
Bicarbonate as HCO3	6.3	mg/L	0.10 meq/L
Carbonate as CO3	<1	mg/L	0.00 meq/L
Hydroxide as OH	<1	mg/L	0.00 meq/L
Nitrate Nitrogen	<0.1	mg/L	0.00 meq/L
Nitrite Nitrogen	0.003	mg/L	0.00 meq/L
Chloride	0.5	mg/L	0.01 meq/L
Fluoride	1.69	mg/L	0.09 meq/L
Phosphate	1.0	mg/L	0.03 meq/L
Sulfate	35.6	mg/L	0.74 meq/L
Calcium	5.96	mg/L	0.30 meq/L
Magnesium	0.83	mg/L	0.07 meq/L
Potassium	0.2	mg/L	0.01 meq/L
Sodium	14.0	mg/L	0.61 meq/L
Cations			0.98 meq/L
Anions			0.98 meq/L
Cation/Anion Difference			0.07%

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

Comments: **SJC.**


Analyst


Review

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

CATION / ANION ANALYSIS

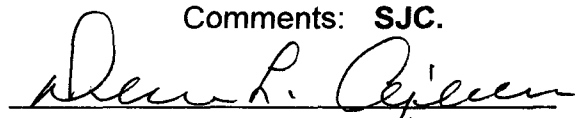
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Laboratory Number: D473
Chain of Custody: 6133
Sample Matrix: Soil
Preservative: Cool
Condition: Cool & Intact

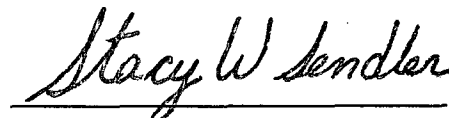
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Date Reported: 06-30-98
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Date Received: 06-23-98
Date Extracted: 06-25-98
Date Analyzed: 06-26 - 06-29-98

Parameter	Analytical Result	Units	Units
pH	7.69	s.u.	
Conductivity @ 25° C	103	umhos/cm	
Total Dissolved Solids @ 180C	50.0	mg/L	
Total Dissolved Solids (Calc)	49.4	mg/L	
SAR	0.6	ratio	
Total Alkalinity as CaCO3	7.3	mg/L	
Total Hardness as CaCO3	22.8	mg/L	
Bicarbonate as HCO3	7.3	mg/L	0.12 meq/L
Carbonate as CO3	<1	mg/L	0.00 meq/L
Hydroxide as OH	<1	mg/L	0.00 meq/L
Nitrate Nitrogen	<0.1	mg/L	0.00 meq/L
Nitrite Nitrogen	0.010	mg/L	0.00 meq/L
Chloride	1.2	mg/L	0.03 meq/L
Fluoride	0.40	mg/L	0.02 meq/L
Phosphate	0.9	mg/L	0.03 meq/L
Sulfate	26.6	mg/L	0.55 meq/L
Calcium	8.28	mg/L	0.41 meq/L
Magnesium	0.51	mg/L	0.04 meq/L
Potassium	0.3	mg/L	0.01 meq/L
Sodium	6.8	mg/L	0.30 meq/L
Cations			0.76 meq/L
Anions			0.76 meq/L
Cation/Anion Difference			0.23%

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

Comments: SJC.


Analyst


Review

CHAIN OF CUSTODY RECORD

6133

Client / Project Name			Project Location			ANALYSIS / PARAMETERS					
Client: <u>Lienna</u> Sample: <u>Blue</u> <u>W. L. Davis</u>			Client No. <u>04074-03</u> Lab Number <u>STC</u>			No. of Containers TPH Total Metals Gen Chem.					
Sample No./ Identification	Sample Date	Sample Time	Lab Number	Sample Matrix	No. of Containers	Remarks					
A-1	6-23		D464	So. L	1	✓	✓	✓	✓		
A-2	6-23		D465	"	1	✓	✓	✓	✓		
A-3	6-23		D466	"	1	✓	✓	✓	✓		
A-4	6-23		D467	"	1	✓	✓	✓	✓		
A-5	6-23		D468	"	1	✓	✓	✓	✓		
A-6	6-23		D469	"	1	✓	✓	✓	✓		
A-7	6-23		D470	"	1	✓	✓	✓	✓		
A-8	6-23		D471	"	1	✓	✓	✓	✓		
A-9	6-23		D472	"	1	✓	✓	✓	✓		
A-10	6-23		D473	"	1	✓	✓	✓	✓		
Relinquished by: (Signature) <u>[Signature]</u>			Date	Time	Received by: (Signature) <u>[Signature]</u>	Date	Time				
Relinquished by: (Signature) <u>[Signature]</u>			6-23	4:25	Received by: (Signature) <u>[Signature]</u>	6-23	9:16				
Relinquished by: (Signature)											
Received by: (Signature)											
ENVIROTECH INC. 5796 U.S. Highway 64 Farmington, New Mexico 87401 (505) 632-0615											
Sample Receipt											
Received Intact						Y N N/A					
Cool - Ice/Blue Ice						✓					

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

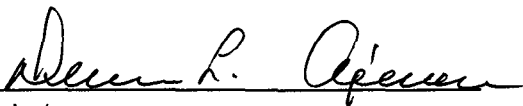
Client:	Tierra	Project #:	04074-03
Sample ID:	A - 1	Date Reported:	06-26-98
Laboratory Number:	D464	Date Sampled:	06-23-98
Chain of Custody No:	6133	Date Received:	06-23-98
Sample Matrix:	Soil	Date Extracted:	06-24-98
Preservative:	Cool	Date Analyzed:	06-25-98
Condition:	Cool and Intact	Analysis Requested:	8015 TPH

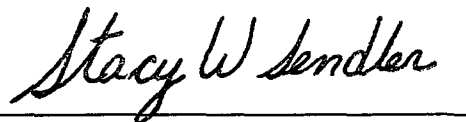
Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	ND	0.2
Diesel Range (C10 - C28)	ND	0.1
Total Petroleum Hydrocarbons	ND	0.2

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: **SJC.**


Analyst


Review

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

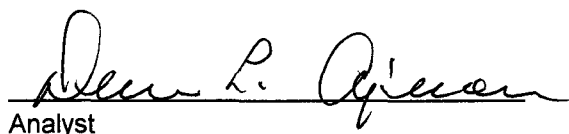
Client:	Tierra	Project #:	04074-03
Sample ID:	A - 2	Date Reported:	06-26-98
Laboratory Number:	D465	Date Sampled:	06-23-98
Chain of Custody No:	6133	Date Received:	06-23-98
Sample Matrix:	Soil	Date Extracted:	06-24-98
Preservative:	Cool	Date Analyzed:	06-25-98
Condition:	Cool and Intact	Analysis Requested:	8015 TPH

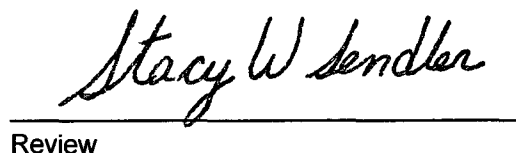
Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	1.0	0.2
Diesel Range (C10 - C28)	0.2	0.1
Total Petroleum Hydrocarbons	1.2	0.2

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: **SJC.**


Analyst


Review

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

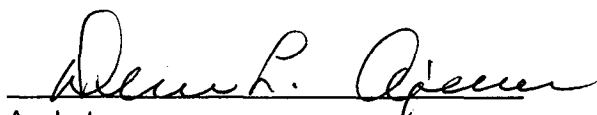
Client:	Tierra	Project #:	04074-03
Sample ID:	A - 3	Date Reported:	06-26-98
Laboratory Number:	D466	Date Sampled:	06-23-98
Chain of Custody No:	6133	Date Received:	06-23-98
Sample Matrix:	Soil	Date Extracted:	06-24-98
Preservative:	Cool	Date Analyzed:	06-25-98
Condition:	Cool and Intact	Analysis Requested:	8015 TPH

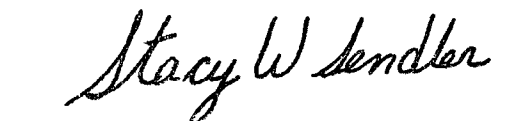
Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	ND	0.2
Diesel Range (C10 - C28)	0.3	0.1
Total Petroleum Hydrocarbons	0.3	0.2

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: **SJC.**


Analyst


Review

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

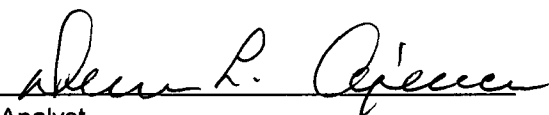
Client:	Tierra	Project #:	04074-03
Sample ID:	A - 4	Date Reported:	06-26-98
Laboratory Number:	D467	Date Sampled:	06-23-98
Chain of Custody No:	6133	Date Received:	06-23-98
Sample Matrix:	Soil	Date Extracted:	06-24-98
Preservative:	Cool	Date Analyzed:	06-25-98
Condition:	Cool and Intact	Analysis Requested:	8015 TPH

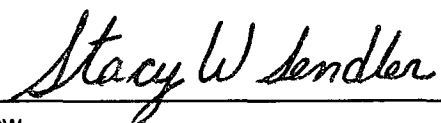
Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	ND	0.2
Diesel Range (C10 - C28)	ND	0.1
Total Petroleum Hydrocarbons	ND	0.2

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: **SJC.**


Analyst


Review

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

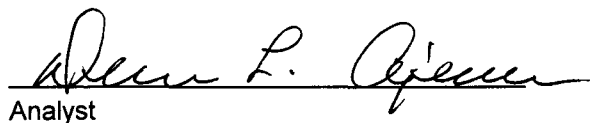
Client:	Tierra	Project #:	04074-03
Sample ID:	A - 5	Date Reported:	06-26-98
Laboratory Number:	D468	Date Sampled:	06-23-98
Chain of Custody No:	6133	Date Received:	06-23-98
Sample Matrix:	Soil	Date Extracted:	06-24-98
Preservative:	Cool	Date Analyzed:	06-25-98
Condition:	Cool and Intact	Analysis Requested:	8015 TPH

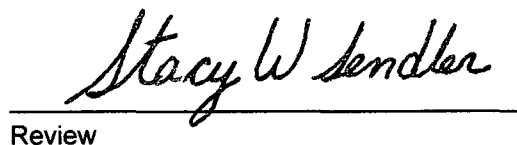
Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	ND	0.2
Diesel Range (C10 - C28)	0.5	0.1
Total Petroleum Hydrocarbons	0.5	0.2

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: **SJC.**


Analyst


Review

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

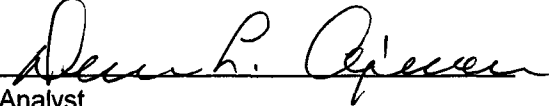
Client:	Tierra	Project #:	04074-03
Sample ID:	A - 6	Date Reported:	06-26-98
Laboratory Number:	D469	Date Sampled:	06-23-98
Chain of Custody No:	6133	Date Received:	06-23-98
Sample Matrix:	Soil	Date Extracted:	06-24-98
Preservative:	Cool	Date Analyzed:	06-25-98
Condition:	Cool and Intact	Analysis Requested:	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: **SJC.**


Analyst


Review

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

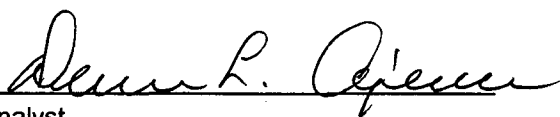
Client:	Tierra	Project #:	04074-03
Sample ID:	A - 7	Date Reported:	06-26-98
Laboratory Number:	D470	Date Sampled:	06-23-98
Chain of Custody No:	6133	Date Received:	06-23-98
Sample Matrix:	Soil	Date Extracted:	06-24-98
Preservative:	Cool	Date Analyzed:	06-25-98
Condition:	Cool and Intact	Analysis Requested:	8015 TPH

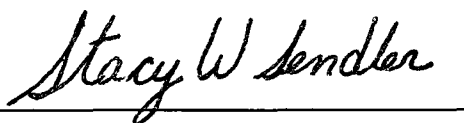
Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	ND	0.2
Diesel Range (C10 - C28)	0.7	0.1
Total Petroleum Hydrocarbons	0.7	0.2

ND - Parameter not detected at the stated detection limit.

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

Comments: **SJC.**


Analyst


Review

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

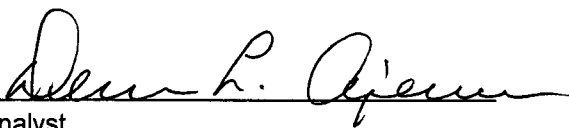
Client:	Tierra	Project #:	04074-03
Sample ID:	A - 8	Date Reported:	06-26-98
Laboratory Number:	D471	Date Sampled:	06-23-98
Chain of Custody No:	6133	Date Received:	06-23-98
Sample Matrix:	Soil	Date Extracted:	06-24-98
Preservative:	Cool	Date Analyzed:	06-25-98
Condition:	Cool and Intact	Analysis Requested:	8015 TPH

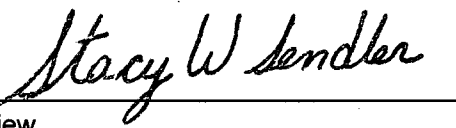
Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	ND	0.2
Diesel Range (C10 - C28)	1.2	0.1
Total Petroleum Hydrocarbons	1.2	0.2

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: **SJC.**


Analyst


Review

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

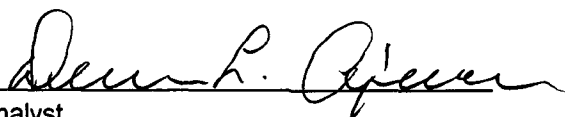
Client:	Tierra	Project #:	04074-03
Sample ID:	A - 9	Date Reported:	06-26-98
Laboratory Number:	D472	Date Sampled:	06-23-98
Chain of Custody No:	6133	Date Received:	06-23-98
Sample Matrix:	Soil	Date Extracted:	06-24-98
Preservative:	Cool	Date Analyzed:	06-25-98
Condition:	Cool and Intact	Analysis Requested:	8015 TPH

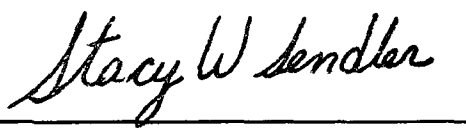
Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	ND	0.2
Diesel Range (C10 - C28)	0.8	0.1
Total Petroleum Hydrocarbons	0.8	0.2

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: **SJC.**


Analyst


Review

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

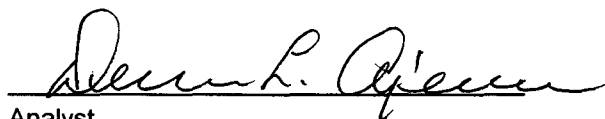
Client:	Tierra	Project #:	04074-03
Sample ID:	A - 10	Date Reported:	06-26-98
Laboratory Number:	D473	Date Sampled:	06-23-98
Chain of Custody No:	6133	Date Received:	06-23-98
Sample Matrix:	Soil	Date Extracted:	06-24-98
Preservative:	Cool	Date Analyzed:	06-25-98
Condition:	Cool and Intact	Analysis Requested:	8015 TPH

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	ND	0.2
Diesel Range (C10 - C28)	1.5	0.1
Total Petroleum Hydrocarbons	1.5	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: **SJC.**


Analyst

Review

EPA Method 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons

Quality Assurance Report

Client:	QA/QC	Project #:	N/A
Sample ID:	06-25-TPH QA/QC	Date Reported:	06-26-98
Laboratory Number:	D464	Date Sampled:	N/A
Sample Matrix:	Methylene Chloride	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	06-25-98
Condition:	N/A	Analysis Requested:	TPH

Calibration	I-Cal Date	I-Cal RF:	C-Cal RF:	% Difference	Accept. Range
Gasoline Range C5 - C10	04-28-98	2.3634E-02	2.2894E-02	3.13%	0 - 15%
Diesel Range C10 - C28	04-28-98	2.3141E-02	2.2411E-02	3.15%	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

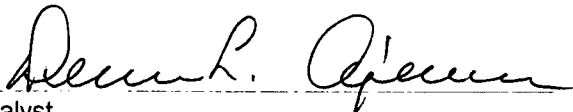
Duplicate Conc. (mg/Kg)	Sample	Duplicate	% Difference	Accept. Range
Gasoline Range C5 - C10	ND	ND	0.0%	0 - 30%
Diesel Range C10 - C28	ND	ND	0.0%	0 - 30%

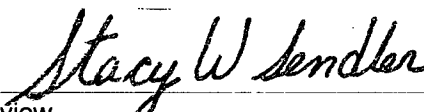
Spike Conc. (mg/Kg)	Sample	Spike Added	Spike Result	% Recovery	Accept. Range
Gasoline Range C5 - C10	ND	250	250	100%	75 - 125%
Diesel Range C10 - C28	ND	250	250	100%	75 - 125%

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 D464 - D473.


Analyst


Review

**EPA METHOD 8021
AROMATIC VOLATILE ORGANICS**

Client:	Tierra	Project #:	04074-03
Sample ID:	A - 1	Date Reported:	06-26-98
Laboratory Number:	D464	Date Sampled:	06-23-98
Chain of Custody:	6133	Date Received:	06-23-98
Sample Matrix:	Soil	Date Analyzed:	06-25-98
Preservative:	Cool	Date Extracted:	06-24-98
Condition:	Cool & Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	ND	8.8
Toluene	ND	8.4
Ethylbenzene	ND	7.6
p,m-Xylene	47.6	10.8
o-Xylene	ND	5.2
Total BTEX	47.6	

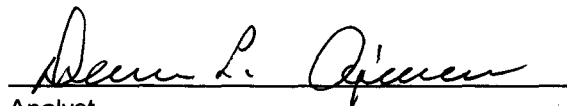
ND - Parameter not detected at the stated detection limit.

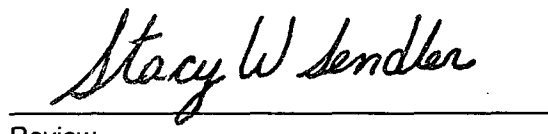
Surrogate Recoveries:	Parameter	Percent Recovery
	Trifluorotoluene	98 %
	Bromofluorobenzene	98 %

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

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

Comments: SJC.


Analyst


Review

EPA METHOD 8021 AROMATIC VOLATILE ORGANICS

Client:	Tierra	Project #:	04074-03
Sample ID:	A - 2	Date Reported:	06-26-98
Laboratory Number:	D465	Date Sampled:	06-23-98
Chain of Custody:	6133	Date Received:	06-23-98
Sample Matrix:	Soil	Date Analyzed:	06-25-98
Preservative:	Cool	Date Extracted:	06-24-98
Condition:	Cool & Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	619	8.8
Toluene	148	8.4
Ethylbenzene	84.0	7.6
p,m-Xylene	115	10.8
o-Xylene	55.5	5.2
Total BTEX	1,020	

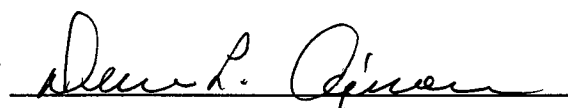
ND - Parameter not detected at the stated detection limit.

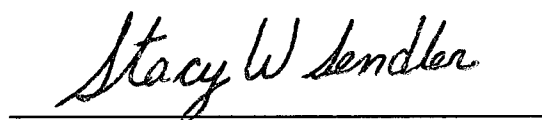
Surrogate Recoveries:	Parameter	Percent Recovery
	Trifluorotoluene	101 %
	Bromofluorobenzene	101 %

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

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

Comments: SJC.


Analyst


Review

EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Tierra	Project #:	04074-03
Sample ID:	A - 3	Date Reported:	06-26-98
Laboratory Number:	D466	Date Sampled:	06-23-98
Chain of Custody:	6133	Date Received:	06-23-98
Sample Matrix:	Soil	Date Analyzed:	06-25-98
Preservative:	Cool	Date Extracted:	06-24-98
Condition:	Cool & Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	27.4	8.8
Toluene	ND	8.4
Ethylbenzene	16.3	7.6
p,m-Xylene	67.5	10.8
o-Xylene	5.7	5.2
Total BTEX	117	

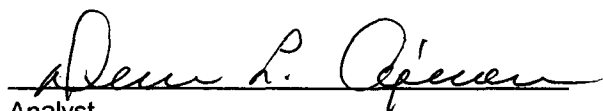
ND - Parameter not detected at the stated detection limit.

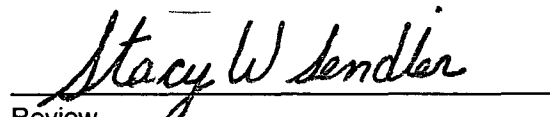
Surrogate Recoveries:	Parameter	Percent Recovery
	Trifluorotoluene	98 %
	Bromofluorobenzene	98 %

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

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

Comments: SJC.


Analyst


Review

**EPA METHOD 8021
AROMATIC VOLATILE ORGANICS**

Client:	Tierra	Project #:	04074-03
Sample ID:	A - 4	Date Reported:	06-26-98
Laboratory Number:	D467	Date Sampled:	06-23-98
Chain of Custody:	6133	Date Received:	06-23-98
Sample Matrix:	Soil	Date Analyzed:	06-25-98
Preservative:	Cool	Date Extracted:	06-24-98
Condition:	Cool & Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	30.5	8.8
Toluene	ND	8.4
Ethylbenzene	ND	7.6
p,m-Xylene	14.7	10.8
o-Xylene	7.0	5.2
Total BTEX	52.2	

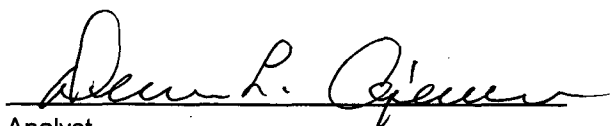
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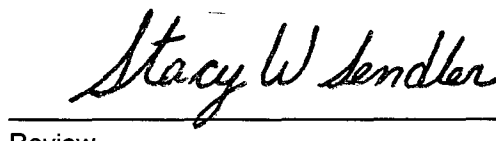
Surrogate Recoveries:	Parameter	Percent Recovery
	Trifluorotoluene	101 %
	Bromofluorobenzene	101 %

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

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

Comments: SJC.


Analyst


Review

**EPA METHOD 8021
AROMATIC VOLATILE ORGANICS**

Client:	Tierra	Project #:	04074-03
Sample ID:	A - 5	Date Reported:	06-26-98
Laboratory Number:	D468	Date Sampled:	06-23-98
Chain of Custody:	6133	Date Received:	06-23-98
Sample Matrix:	Soil	Date Analyzed:	06-25-98
Preservative:	Cool	Date Extracted:	06-24-98
Condition:	Cool & Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	29.9	8.8
Toluene	ND	8.4
Ethylbenzene	ND	7.6
p,m-Xylene	ND	10.8
o-Xylene	6.1	5.2
Total BTEX	36.0	

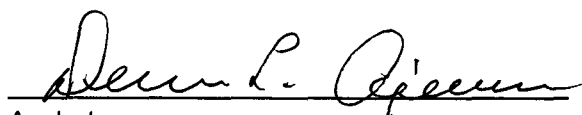
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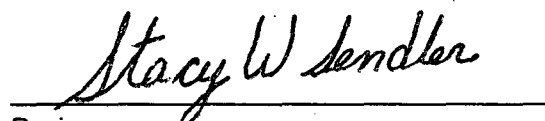
Surrogate Recoveries:	Parameter	Percent Recovery
	Trifluorotoluene	98 %
	Bromofluorobenzene	98 %

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

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

Comments: SJC.


Analyst


Review

**EPA METHOD 8021
AROMATIC VOLATILE ORGANICS**

Client:	Tierra	Project #:	04074-03
Sample ID:	A - 6	Date Reported:	06-26-98
Laboratory Number:	D469	Date Sampled:	06-23-98
Chain of Custody:	6133	Date Received:	06-23-98
Sample Matrix:	Soil	Date Analyzed:	06-25-98
Preservative:	Cool	Date Extracted:	06-24-98
Condition:	Cool & Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	ND	8.8
Toluene	ND	8.4
Ethylbenzene	ND	7.6
p,m-Xylene	ND	10.8
o-Xylene	5.5	5.2
Total BTEX	5.5	

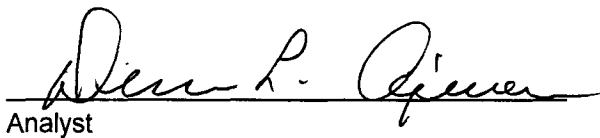
ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Trifluorotoluene	101 %
	Bromofluorobenzene	101 %

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

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

Comments: SJC.


Analyst


Review

**EPA METHOD 8021
AROMATIC VOLATILE ORGANICS**

Client:	Tierra	Project #:	04074-03
Sample ID:	A - 7	Date Reported:	06-26-98
Laboratory Number:	D470	Date Sampled:	06-23-98
Chain of Custody:	6133	Date Received:	06-23-98
Sample Matrix:	Soil	Date Analyzed:	06-25-98
Preservative:	Cool	Date Extracted:	06-24-98
Condition:	Cool & Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	ND	8.8
Toluene	ND	8.4
Ethylbenzene	ND	7.6
p,m-Xylene	ND	10.8
o-Xylene	ND	5.2
Total BTEX	ND	

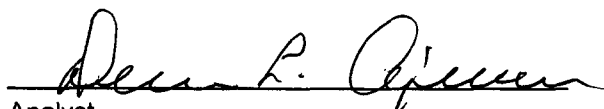
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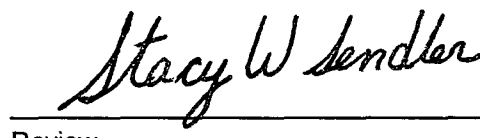
Surrogate Recoveries:	Parameter	Percent Recovery
	Trifluorotoluene	97 %
	Bromofluorobenzene	97 %

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

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

Comments: SJC.


Analyst


Review

EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Tierra	Project #:	04074-03
Sample ID:	A - 8	Date Reported:	06-26-98
Laboratory Number:	D471	Date Sampled:	06-23-98
Chain of Custody:	6133	Date Received:	06-23-98
Sample Matrix:	Soil	Date Analyzed:	06-25-98
Preservative:	Cool	Date Extracted:	06-24-98
Condition:	Cool & Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	71.0	8.8
Toluene	ND	8.4
Ethylbenzene	ND	7.6
p,m-Xylene	ND	10.8
o-Xylene	ND	5.2
Total BTEX	71.0	

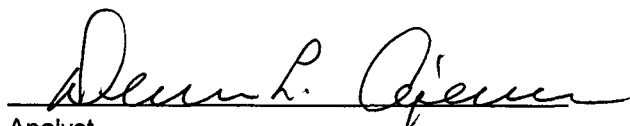
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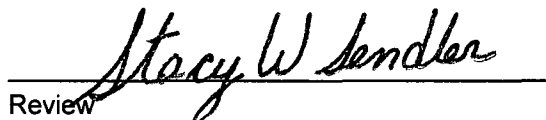
Surrogate Recoveries:	Parameter	Percent Recovery
	Trifluorotoluene	100 %
	Bromofluorobenzene	100 %

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

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

Comments: SJC.


Analyst


Review

EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Tierra	Project #:	04074-03
Sample ID:	A - 9	Date Reported:	06-26-98
Laboratory Number:	D472	Date Sampled:	06-23-98
Chain of Custody:	6133	Date Received:	06-23-98
Sample Matrix:	Soil	Date Analyzed:	06-25-98
Preservative:	Cool	Date Extracted:	06-24-98
Condition:	Cool & Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	44.0	8.8
Toluene	ND	8.4
Ethylbenzene	ND	7.6
p,m-Xylene	28.5	10.8
o-Xylene	5.9	5.2
Total BTEX	78.4	

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

Comments: SJC.


Analyst


Review

**EPA METHOD 8021
AROMATIC VOLATILE ORGANICS**

Client:	Tierra	Project #:	04074-03
Sample ID:	A - 10	Date Reported:	06-26-98
Laboratory Number:	D473	Date Sampled:	06-23-98
Chain of Custody:	6133	Date Received:	06-23-98
Sample Matrix:	Soil	Date Analyzed:	06-25-98
Preservative:	Cool	Date Extracted:	06-24-98
Condition:	Cool & Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	49.9	8.8
Toluene	ND	8.4
Ethylbenzene	ND	7.6
p,m-Xylene	ND	10.8
o-Xylene	ND	5.2
Total BTEX	49.9	

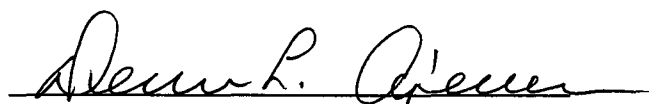
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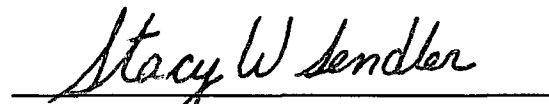
Surrogate Recoveries:	Parameter	Percent Recovery
	Trifluorotoluene	100 %
	Bromofluorobenzene	100 %

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

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

Comments: SJC.


Analyst


Review

EPA METHOD 8021
AROMATIC VOLATILE ORGANICS
QUALITY ASSURANCE REPORT

Client:	N/A	Project #:	N/A
Sample ID:	06-25-BTEX QA/QC	Date Reported:	06-26-98
Laboratory Number:	D464	Date Sampled:	N/A
Sample Matrix:	Soil	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	06-25-98
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	2.4176E-01	2.4224E-01	0.2%	ND	0.2
Toluene	4.9646E-02	4.9795E-02	0.3%	ND	0.2
Ethylbenzene	4.1020E-02	4.1259E-02	0.6%	ND	0.2
p,m-Xylene	2.6433E-02	2.6620E-02	0.7%	ND	0.2
o-Xylene	3.0648E-02	3.0771E-02	0.4%	ND	0.1

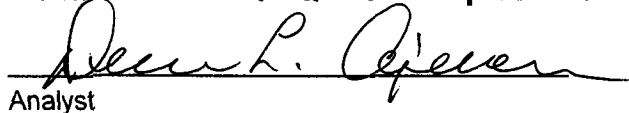
Duplicate Conc. (ug/Kg)	Sample	Duplicate	%Diff.	Accept Range	Detect. Limit
Benzene	ND	ND	0.0%	0 - 30%	8.8
Toluene	ND	ND	0.0%	0 - 30%	8.4
Ethylbenzene	ND	ND	0.0%	0 - 30%	7.6
p,m-Xylene	47.6	45.6	4.2%	0 - 30%	10.8
o-Xylene	ND	ND	0.0%	0 - 30%	5.2

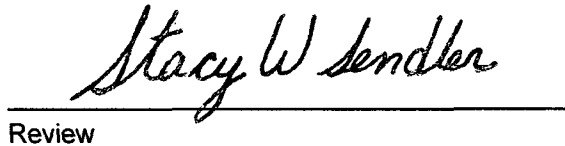
Spike Conc. (ug/Kg)	Sample	Amount Spiked	Spiked Sample	% Recovery	Accept Range
Benzene	ND	50.0	49.5	99%	39 - 150
Toluene	ND	50.0	49.9	100%	46 - 148
Ethylbenzene	ND	50.0	49.6	99%	32 - 160
p,m-Xylene	47.6	100.0	147	100%	46 - 148
o-Xylene	ND	50.0	49.9	100%	46 - 148

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 D464 - D473.


Analyst


Review

Totals

Client:	Tierra	Project #:	04074-03
Sample ID:	A - 11	Date Reported:	06-29-98
Laboratory Number:	D474	Date Sampled:	06-23-98
Chain of Custody:	6134	Date Received:	06-23-98
Sample Matrix:	Soil	Date Analyzed:	06-26-98
Preservative:	Cool	Date Digested:	06-25-98
Condition:	Cool & Intact	Analysis Needed:	Trace Metals

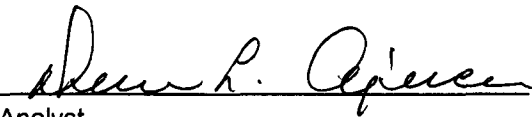
Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Arsenic	ND	0.0025
Barium	58.0	0.0025
Cadmium	ND	0.0025
Chromium	2.08	0.0025
Lead	9.35	0.0025
Mercury	ND	0.0025
Selenium	ND	0.0025
Silver	ND	0.0025

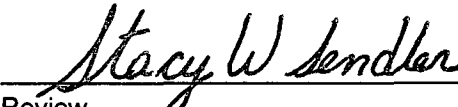
ND - Parameter not detected at the stated detection limit.

References: Method 3050B, Acid Digestion of Sediments, Sludges and Soils.
SW-846, USEPA, December 1996.

Methods 7060B, 7081, 7131A, 7191, 7470A, 7421, 7740, 7761 Analysis of Metals by
GFAA and Cold Vapor Techniques, SW-846, USEPA, December 1996.

Comments: **SJC.**


Analyst


Review

Client:	Tierra	Project #:	04074-03
Sample ID:	A - 12	Date Reported:	06-29-98
Laboratory Number:	D475	Date Sampled:	06-23-98
Chain of Custody:	6134	Date Received:	06-23-98
Sample Matrix:	Soil	Date Analyzed:	06-26-98
Preservative:	Cool	Date Digested:	06-25-98
Condition:	Cool & Intact	Analysis Needed:	Trace Metals

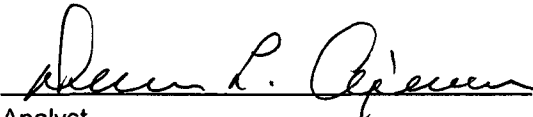
Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Arsenic	ND	0.0025
Barium	37.3	0.0025
Cadmium	ND	0.0025
Chromium	2.46	0.0025
Lead	8.87	0.0025
Mercury	ND	0.0025
Selenium	ND	0.0025
Silver	ND	0.0025

ND - Parameter not detected at the stated detection limit.

References: Method 3050B, Acid Digestion of Sediments, Sludges and Soils.
SW-846, USEPA, December 1996.

Methods 7060B, 7081, 7131A, 7191, 7470A, 7421, 7740, 7761 Analysis of Metals by
GFAA and Cold Vapor Techniques, SW-846, USEPA, December 1996.

Comments: **SJC.**


Analyst


Review

Client:	Tierra	Project #:	04074-03
Sample ID:	A - 13	Date Reported:	06-29-98
Laboratory Number:	D476	Date Sampled:	06-23-98
Chain of Custody:	6134	Date Received:	06-23-98
Sample Matrix:	Soil	Date Analyzed:	06-26-98
Preservative:	Cool	Date Digested:	06-25-98
Condition:	Cool & Intact	Analysis Needed:	Trace Metals

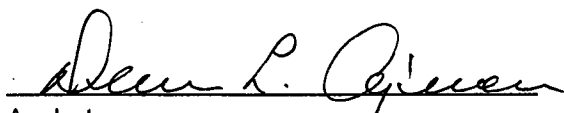
Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Arsenic	ND	0.0025
Barium	8.14	0.0025
Cadmium	ND	0.0025
Chromium	2.50	0.0025
Lead	6.88	0.0025
Mercury	ND	0.0025
Selenium	ND	0.0025
Silver	ND	0.0025

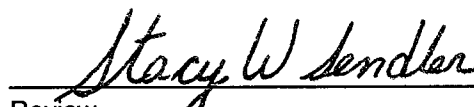
ND - Parameter not detected at the stated detection limit.

References: Method 3050B, Acid Digestion of Sediments, Sludges and Soils.
SW-846, USEPA, December 1996.

Methods 7060B, 7081, 7131A, 7191, 7470A, 7421, 7740, 7761 Analysis of Metals by
GFAA and Cold Vapor Techniques, SW-846, USEPA, December 1996.

Comments: **SJC.**


Analyst


Review

Client:	Tierra	Project #:	04074-03
Sample ID:	A - 14	Date Reported:	06-29-98
Laboratory Number:	D477	Date Sampled:	06-23-98
Chain of Custody:	6134	Date Received:	06-23-98
Sample Matrix:	Soil	Date Analyzed:	06-26-98
Preservative:	Cool	Date Digested:	06-25-98
Condition:	Cool & Intact	Analysis Needed:	Trace Metals

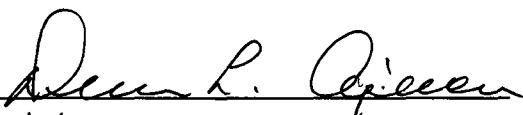
Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Arsenic	ND	0.0025
Barium	13.7	0.0025
Cadmium	ND	0.0025
Chromium	1.88	0.0025
Lead	6.37	0.0025
Mercury	ND	0.0025
Selenium	ND	0.0025
Silver	ND	0.0025

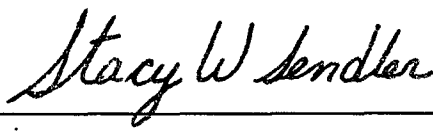
ND - Parameter not detected at the stated detection limit.

References: Method 3050B, Acid Digestion of Sediments, Sludges and Soils.
SW-846, USEPA, December 1996.

Methods 7060B, 7081, 7131A, 7191, 7470A, 7421, 7740, 7761 Analysis of Metals by
GFAA and Cold Vapor Techniques, SW-846, USEPA, December 1996.

Comments: SJC.


Analyst


Review

TRACE METAL ANALYSIS
Quality Control /
Quality Assurance Report

Client:	QA/QC	Project #:	N/A
Sample ID:	06-26-a-TM QA/QC	Date Reported:	06-29-98
Laboratory Number:	D474	Date Sampled:	N/A
Sample Matrix:	Soil	Date Received:	N/A
Analysis Requested:	Trace Metals	Date Analyzed:	06-26-98
Condition:	N/A	Date Digested:	06-25-98

Blank & Duplicate Conc. (mg/Kg)	Instrument Blank (mg/Kg)	Method Blank	Detection Limit	Sample	Duplicate	% Diff.	Acceptance Range
Arsenic	ND	ND	0.0025	ND	ND	0.0%	0% - 30%
Barium	ND	ND	0.0025	58.0	57.9	0.2%	0% - 30%
Cadmium	ND	ND	0.0025	ND	ND	0.0%	0% - 30%
Chromium	ND	ND	0.0025	2.08	2.07	0.5%	0% - 30%
Lead	ND	ND	0.0025	9.35	9.36	0.1%	0% - 30%
Mercury	ND	ND	0.0025	ND	ND	0.0%	0% - 30%
Selenium	ND	ND	0.0025	ND	ND	0.0%	0% - 30%
Silver	ND	ND	0.0025	ND	ND	0.0%	0% - 30%

Spike Conc. (mg/Kg)	Spike Added	Sample	Spiked Sample	Percent Recovery	Acceptance Range
Arsenic	2.500	ND	2.49	100%	80% - 120%
Barium	25.0	58.0	83.1	100%	80% - 120%
Cadmium	1.250	ND	1.24	99%	80% - 120%
Chromium	1.250	2.08	3.32	100%	80% - 120%
Lead	2.500	9.35	11.8	100%	80% - 120%
Mercury	0.625	ND	0.620	99%	80% - 120%
Selenium	2.500	ND	2.50	100%	80% - 120%
Silver	1.250	ND	1.24	99%	80% - 120%

ND - Parameter not detected at the stated detection limit.

References: Method 3050B, Acid Digestion of Sediments, Sludges and Soils.
SW-846, USEPA, December 1996.

Methods 7060B, 7081, 7131A, 7191, 7470A, 7421, 7740, 7761 Analysis of Metals by
GFAA and Cold Vapor Techniques, SW-846, USEPA, December 1996.

Comments: **QA/QC for samples D474 - D477 and D483 - D484.**


Analyst


Review

Client: Tierra
 Sample ID: A - 11
 Laboratory Number: D474
 Chain of Custody: 6134
 Sample Matrix: Soil
 Preservative: Cool
 Condition: Cool & Intact

Project #: 04074-03
 Date Reported: 06-30-98
 Date Sampled: 06-23-98
 Date Received: 06-23-98
 Date Extracted: 06-25-98
 Date Analyzed: 06-26 - 06-29-98

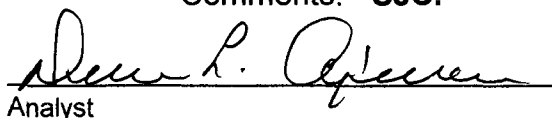
Parameter	Analytical Result	Units	Units
pH	7.78	s.u.	
Conductivity @ 25° C	13.1	umhos/cm	
Total Dissolved Solids @ 180C	5.0	mg/L	
Total Dissolved Solids (Calc)	4.5	mg/L	
SAR	0.0	ratio	
Total Alkalinity as CaCO3	3.2	mg/L	
Total Hardness as CaCO3	1.7	mg/L	
Bicarbonate as HCO3	3.2	mg/L	0.05 meq/L
Carbonate as CO3	<1	mg/L	0.00 meq/L
Hydroxide as OH	<1	mg/L	0.00 meq/L
Nitrate Nitrogen	<0.1	mg/L	0.00 meq/L
Nitrite Nitrogen	0.004	mg/L	0.00 meq/L
Chloride	0.1	mg/L	0.00 meq/L
Fluoride	0.64	mg/L	0.03 meq/L
Phosphate	<0.1	mg/L	0.00 meq/L
Sulfate	<0.1	mg/L	0.00 meq/L
Calcium	1.7	mg/L	0.09 meq/L
Magnesium	<0.01	mg/L	0.00 meq/L
Potassium	0.1	mg/L	0.00 meq/L
Sodium	<0.1	mg/L	0.00 meq/L
Cations			0.09 meq/L
Anions			0.09 meq/L

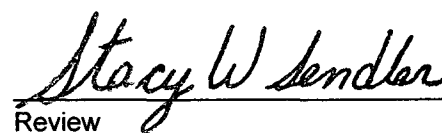
Cation/Anion Difference

0.74%

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

Comments: SJC.


 Analyst


 Review

Client: Tierra
 Sample ID: A - 12
 Laboratory Number: D475
 Chain of Custody: 6134
 Sample Matrix: Soil
 Preservative: Cool
 Condition: Cool & Intact

Project #: 04074-03
 Date Reported: 06-30-98
 Date Sampled: 06-23-98
 Date Received: 06-23-98
 Date Extracted: 06-25-98
 Date Analyzed: 06-26 - 06-29-98

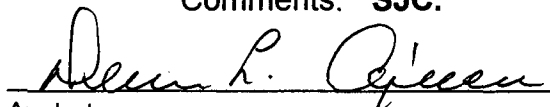
Parameter	Analytical Result	Units		Units
pH	7.70	s.u.		
Conductivity @ 25° C	16.4	umhos/cm		
Total Dissolved Solids @ 180C	7.5	mg/L		
Total Dissolved Solids (Calc)	7.3	mg/L		
SAR	0.1	ratio		
Total Alkalinity as CaCO3	4.6	mg/L		
Total Hardness as CaCO3	5.8	mg/L		
Bicarbonate as HCO3	4.6	mg/L	0.08	meq/L
Carbonate as CO3	<1	mg/L	0.00	meq/L
Hydroxide as OH	<1	mg/L	0.00	meq/L
Nitrate Nitrogen	<0.1	mg/L	0.00	meq/L
Nitrite Nitrogen	0.005	mg/L	0.00	meq/L
Chloride	0.1	mg/L	0.00	meq/L
Fluoride	1.33	mg/L	0.07	meq/L
Phosphate	<0.1	mg/L	0.00	meq/L
Sulfate	<0.1	mg/L	0.00	meq/L
Calcium	2.1	mg/L	0.11	meq/L
Magnesium	0.12	mg/L	0.01	meq/L
Potassium	0.1	mg/L	0.00	meq/L
Sodium	0.7	mg/L	0.03	meq/L
Cations			0.15	meq/L
Anions			0.15	meq/L

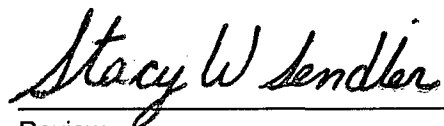
Cation/Anion Difference

0.34%

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

Comments: SJC.


 Analyst


 Review

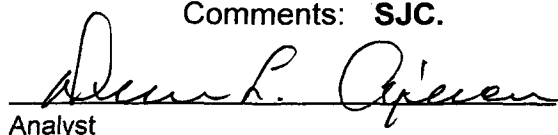
Client: Tierra
 Sample ID: A - 13
 Laboratory Number: D476
 Chain of Custody: 6134
 Sample Matrix: Soil
 Preservative: Cool
 Condition: Cool & Intact

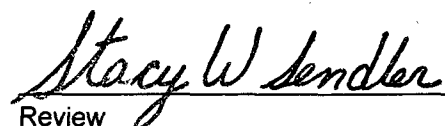
Project #: 04074-03
 Date Reported: 06-30-98
 Date Sampled: 06-23-98
 Date Received: 06-23-98
 Date Extracted: 06-25-98
 Date Analyzed: 06-26 - 06-29-98

Parameter	Analytical Result	Units		Units
pH	7.53	s.u.		
Conductivity @ 25° C	148	umhos/cm		
Total Dissolved Solids @ 180C	70.0	mg/L		
Total Dissolved Solids (Calc)	67.8	mg/L		
SAR	4.1	ratio		
Total Alkalinity as CaCO3	1.0	mg/L		
Total Hardness as CaCO3	4.5	mg/L		
Bicarbonate as HCO3	1.0	mg/L	0.02	meq/L
Carbonate as CO3	<1	mg/L	0.00	meq/L
Hydroxide as OH	<1	mg/L	0.00	meq/L
Nitrate Nitrogen	0.1	mg/L	0.00	meq/L
Nitrite Nitrogen	0.083	mg/L	0.00	meq/L
Chloride	8.8	mg/L	0.25	meq/L
Fluoride	<0.01	mg/L	0.00	meq/L
Phosphate	6.2	mg/L	0.20	meq/L
Sulfate	27.7	mg/L	0.58	meq/L
Calcium	1.36	mg/L	0.07	meq/L
Magnesium	0.27	mg/L	0.02	meq/L
Potassium	2.5	mg/L	0.06	meq/L
Sodium	20.2	mg/L	0.88	meq/L
Cations			1.03	meq/L
Anions			1.04	meq/L
Cation/Anion Difference			0.77%	

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

Comments: SJC.


 Analyst


 Review

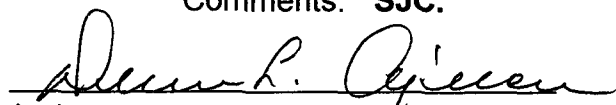
Client: Tierra
Sample ID: A - 14
Laboratory Number: D477
Chain of Custody: 6134
Sample Matrix: Soil
Preservative: Cool
Condition: Cool & Intact

Project #: 04074-03
Date Reported: 06-30-98
Date Sampled: 06-23-98
Date Received: 06-23-98
Date Extracted: 06-25-98
Date Analyzed: 06-26 - 06-29-98

Parameter	Analytical Result	Units	Units
pH	7.34	s.u.	
Conductivity @ 25° C	283	umhos/cm	
Total Dissolved Solids @ 180C	140	mg/L	
Total Dissolved Solids (Calc)	138	mg/L	
SAR	0.2	ratio	
Total Alkalinity as CaCO3	9.2	mg/L	
Total Hardness as CaCO3	91.2	mg/L	
Bicarbonate as HCO3	9.2	mg/L	0.15 meq/L
Carbonate as CO3	<1	mg/L	0.00 meq/L
Hydroxide as OH	<1	mg/L	0.00 meq/L
Nitrate Nitrogen	0.3	mg/L	0.00 meq/L
Nitrite Nitrogen	0.005	mg/L	0.00 meq/L
Chloride	1.1	mg/L	0.03 meq/L
Fluoride	0.82	mg/L	0.04 meq/L
Phosphate	<0.1	mg/L	0.00 meq/L
Sulfate	89.0	mg/L	1.85 meq/L
Calcium	31.4	mg/L	1.56 meq/L
Magnesium	3.13	mg/L	0.26 meq/L
Potassium	1.4	mg/L	0.04 meq/L
Sodium	5.2	mg/L	0.23 meq/L
Cations			2.08 meq/L
Anions			2.08 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
Standard Methods For The Examination of Water And Waste Water", 18th ed., 1992.

Comments: SJC.


Analyst


Review

6134

[illegible]

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

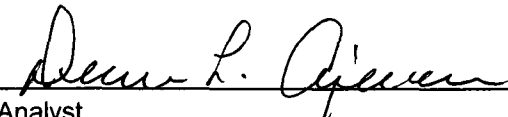
Client:	Tierra	Project #:	04074-03
Sample ID:	A - 11	Date Reported:	06-25-98
Laboratory Number:	D474	Date Sampled:	06-23-98
Chain of Custody No:	6134	Date Received:	06-23-98
Sample Matrix:	Soil	Date Extracted:	06-24-98
Preservative:	Cool	Date Analyzed:	06-24-98
Condition:	Cool and Intact	Analysis Requested:	8015 TPH

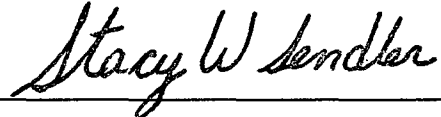
Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	0.3	0.2
Diesel Range (C10 - C28)	ND	0.1
Total Petroleum Hydrocarbons	0.3	0.2

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: **SJC.**


Analyst


Review

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

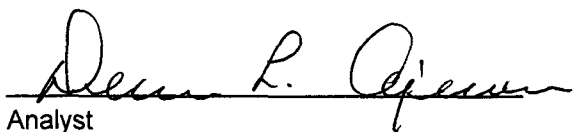
Client:	Tierra	Project #:	04074-03
Sample ID:	A - 12	Date Reported:	06-25-98
Laboratory Number:	D475	Date Sampled:	06-23-98
Chain of Custody No:	6134	Date Received:	06-23-98
Sample Matrix:	Soil	Date Extracted:	06-24-98
Preservative:	Cool	Date Analyzed:	06-24-98
Condition:	Cool and Intact	Analysis Requested:	8015 TPH

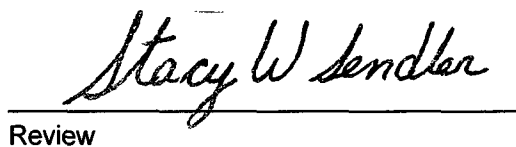
Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	ND	0.2
Diesel Range (C10 - C28)	0.5	0.1
Total Petroleum Hydrocarbons	0.5	0.2

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: **SJC.**


Analyst


Review

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

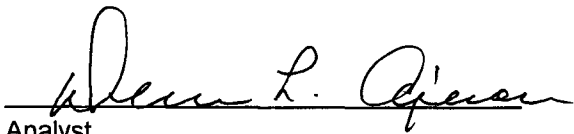
Client:	Tierra	Project #:	04074-03
Sample ID:	A - 13	Date Reported:	06-25-98
Laboratory Number:	D476	Date Sampled:	06-23-98
Chain of Custody No:	6134	Date Received:	06-23-98
Sample Matrix:	Soil	Date Extracted:	06-24-98
Preservative:	Cool	Date Analyzed:	06-24-98
Condition:	Cool and Intact	Analysis Requested:	8015 TPH

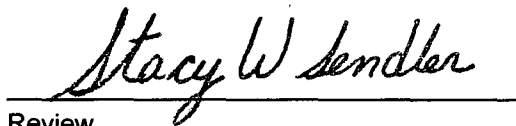
Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	0.6	0.2
Diesel Range (C10 - C28)	ND	0.1
Total Petroleum Hydrocarbons	0.6	0.2

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: **SJC.**


Analyst


Review

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

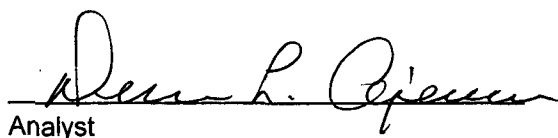
Client:	Tierra	Project #:	04074-03
Sample ID:	A - 14	Date Reported:	06-25-98
Laboratory Number:	D477	Date Sampled:	06-23-98
Chain of Custody No:	6134	Date Received:	06-23-98
Sample Matrix:	Soil	Date Extracted:	06-24-98
Preservative:	Cool	Date Analyzed:	06-24-98
Condition:	Cool and Intact	Analysis Requested:	8015 TPH

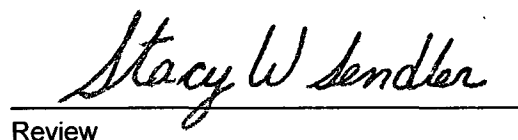
Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	ND	0.2
Diesel Range (C10 - C28)	0.6	0.1
Total Petroleum Hydrocarbons	0.6	0.2

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: **SJC.**


Analyst


Review

EPA Method 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons

Quality Assurance Report

Client:	QA/QC	Project #:	N/A
Sample ID:	06-24-TPH QA/QC	Date Reported:	06-25-98
Laboratory Number:	D482	Date Sampled:	N/A
Sample Matrix:	Methylene Chloride	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	06-24-98
Condition:	N/A	Analysis Requested:	TPH

Calibration	I-Cal Date	I-Cal RF	C-Cal RF	% Difference	Accept. Range
Gasoline Range C5 - C10	04-28-98	2.3634E-02	2.2938E-02	2.94%	0 - 15%
Diesel Range C10 - C28	04-28-98	2.3141E-02	2.2455E-02	2.96%	0 - 15%

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

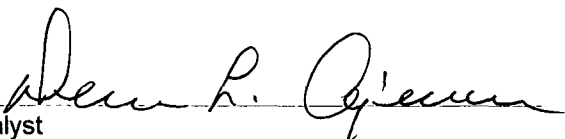
Duplicate Conc. (mg/Kg)	Sample	Duplicate	% Difference	Accept. Range
Gasoline Range C5 - C10	0.9	0.9	0.0%	0 - 30%
Diesel Range C10 - C28	13.5	13.3	1.8%	0 - 30%

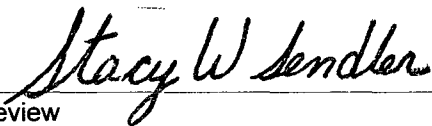
Spike Conc. (mg/Kg)	Sample	Spike Added	Spike Result	% Recovery	Accept. Range
Gasoline Range C5 - C10	0.9	250	250	100%	75 - 125%
Diesel Range C10 - C28	13.5	250	263	100%	75 - 125%

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 D474 - D477 and D482 - D485..


Analyst


Review

EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Tierra	Project #:	04074-03
Sample ID:	A - 11	Date Reported:	06-25-98
Laboratory Number:	D474	Date Sampled:	06-23-98
Chain of Custody:	6134	Date Received:	06-23-98
Sample Matrix:	Soil	Date Analyzed:	06-24-98
Preservative:	Cool	Date Extracted:	06-24-98
Condition:	Cool & Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	ND	8.8
Toluene	ND	8.4
Ethylbenzene	ND	7.6
p,m-Xylene	330	10.8
o-Xylene	ND	5.2
Total BTEX	330	

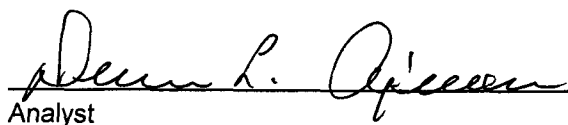
ND - Parameter not detected at the stated detection limit.

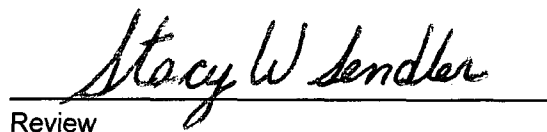
Surrogate Recoveries:	Parameter	Percent Recovery
	Trifluorotoluene	97 %
	Bromofluorobenzene	97 %

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

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

Comments: SJC.


Analyst


Review

EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Tierra	Project #:	04074-03
Sample ID:	A - 12	Date Reported:	06-25-98
Laboratory Number:	D475	Date Sampled:	06-23-98
Chain of Custody:	6134	Date Received:	06-23-98
Sample Matrix:	Soil	Date Analyzed:	06-24-98
Preservative:	Cool	Date Extracted:	06-24-98
Condition:	Cool & Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	ND	8.8
Toluene	ND	8.4
Ethylbenzene	ND	7.6
p,m-Xylene	ND	10.8
o-Xylene	ND	5.2
Total BTEX	ND	

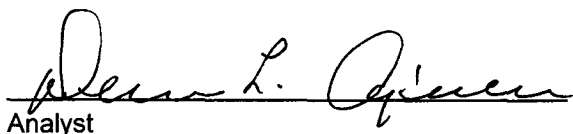
ND - Parameter not detected at the stated detection limit.

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

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

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

Comments: SJC.


Analyst


Review

EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Tierra	Project #:	04074-03
Sample ID:	A - 13	Date Reported:	06-25-98
Laboratory Number:	D476	Date Sampled:	06-23-98
Chain of Custody:	6134	Date Received:	06-23-98
Sample Matrix:	Soil	Date Analyzed:	06-24-98
Preservative:	Cool	Date Extracted:	06-24-98
Condition:	Cool & Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	ND	8.8
Toluene	ND	8.4
Ethylbenzene	56.4	7.6
p,m-Xylene	344	10.8
o-Xylene	108	5.2
Total BTEX	508	

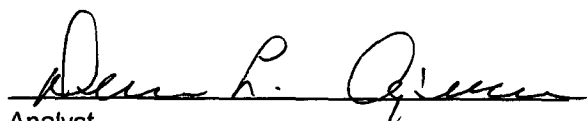
ND - Parameter not detected at the stated detection limit.

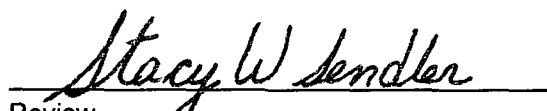
Surrogate Recoveries:	Parameter	Percent Recovery
	Trifluorotoluene	97 %
	Bromofluorobenzene	97 %

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

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

Comments: SJC.


Analyst


Review

EPA METHOD 8021 AROMATIC VOLATILE ORGANICS

Client:	Tierra	Project #:	04074-03
Sample ID:	A - 14	Date Reported:	06-25-98
Laboratory Number:	D477	Date Sampled:	06-23-98
Chain of Custody:	6134	Date Received:	06-23-98
Sample Matrix:	Soil	Date Analyzed:	06-24-98
Preservative:	Cool	Date Extracted:	06-24-98
Condition:	Cool & Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	ND	8.8
Toluene	ND	8.4
Ethylbenzene	ND	7.6
p,m-Xylene	46.6	10.8
o-Xylene	ND	5.2
Total BTEX	46.6	

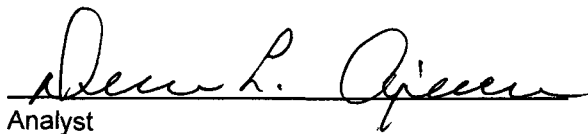
ND - Parameter not detected at the stated detection limit.

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

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

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

Comments: SJC.


Analyst


Review

EPA METHOD 8021 AROMATIC VOLATILE ORGANICS QUALITY ASSURANCE REPORT

Client:	N/A	Project #:	N/A
Sample ID:	06-24-BTEX QA/QC	Date Reported:	06-25-98
Laboratory Number:	D474	Date Sampled:	N/A
Sample Matrix:	Soil	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	06-24-98
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	2.4176E-01	2.4224E-01	0.2%	ND	0.2
Toluene	4.9646E-02	4.9795E-02	0.3%	ND	0.2
Ethylbenzene	4.1020E-02	4.1259E-02	0.6%	ND	0.2
p,m-Xylene	2.6433E-02	2.6620E-02	0.7%	ND	0.2
o-Xylene	3.0648E-02	3.0771E-02	0.4%	ND	0.1

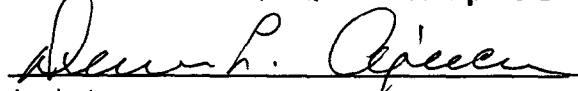
Duplicate Conc. (ug/Kg)	Sample	Duplicate	%Diff.	Accept Range	Detect. Limit
Benzene	ND	ND	0.0%	0 - 30%	8.8
Toluene	ND	ND	0.0%	0 - 30%	8.4
Ethylbenzene	ND	ND	0.0%	0 - 30%	7.6
p,m-Xylene	330	332	0.6%	0 - 30%	10.8
o-Xylene	ND	ND	0.0%	0 - 30%	5.2

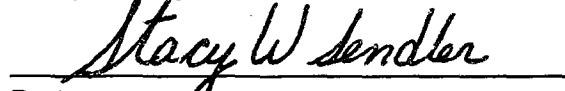
Spike Conc. (ug/Kg)	Sample	Amount Spiked	Spiked Sample	% Recovery	Accept Range
Benzene	ND	50.0	49.5	99%	39 - 150
Toluene	ND	50.0	49.9	100%	46 - 148
Ethylbenzene	ND	50.0	49.6	99%	32 - 160
p,m-Xylene	330	100.0	429	100%	46 - 148
o-Xylene	ND	50.0	49.9	100%	46 - 148

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 D474 - D477 and D482 - D485.


Analyst


Review

TIERRA ENVIRONMENTAL COMPANY Inc.

**420 COUNTY ROAD 3100
AZTEC, NEW MEXICO 87410**



**P.O. DRAWER 15250
FARMINGTON, NEW MEXICO 87401-5250**

RECEIVED
ENVIRONMENTAL DIVISION

July 17, 1996 **PHONE (505) 334-8894 FAX (505)334-9024**

Chris Eustice
NMOCD
2040 S. Pacheco
Santa Fe, New Mexico 87505

Dear Mr. Eustice,

The following is a report from Tierra's annual subsurface testing of cells located on the Crouch Mesa Landfarm containing contaminated soils as required by our permit.

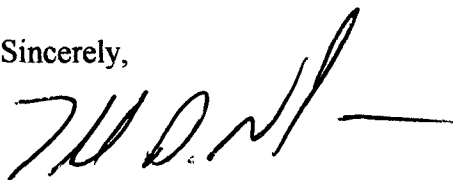
<u>Cell #</u>	<u>TPH mg/kg</u>	<u>BTEX ug/kg</u>
1	ND	ND
2	ND	ND
3	586	32.8 (TOLUENE)
3 (re-sample)	ND	ND
4	ND	ND
5	ND	ND
6	ND	ND
7	ND	28.3 (TOLUENE)
8	ND	ND
9	ND	ND
10	ND	ND
11	ND	ND
12	28.4	ND

The first sample taken in Cell #3 was taken very close to a telephone pole and it was determined that the TPH results were probably as result of creosote from the pole, therefore another sample was taken which came back clean. The toluene levels shown in cells three and seven, although within acceptable parameters, are attributed to laboratory error as there were no headspace readings from these samples prior to laboratory analysis.

All samples were taken from a depth of two feet below the surface in each cell. Enclosed are the lab results of the testing along with the chains of custody.

If you should have any further questions, please don't hesitate to call me at (505) 334-8894.

Sincerely,

A handwritten signature in black ink, appearing to read "Todd D. Nobis", followed by a horizontal line.

Todd D. Nobis
Tierra Environmental Company Inc.

xc: OCD - Aztec Office
 Landfarm File

TOTAL PETROLEUM HYDROCARBONS
EPA Method 418.1**Tierra Environmental Company, Inc.**

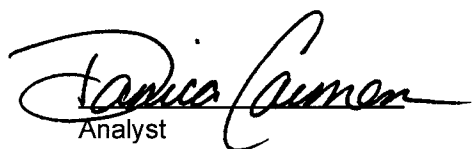
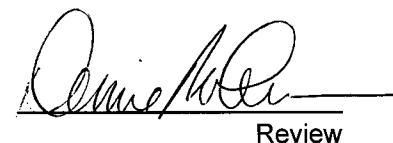
Project ID: Tierra SS
Sample Matrix: Soil
Preservative: Cool
Condition: Intact

Report Date: 07/15/96
Date Sampled: 7/8,9/96
Date Received: 07/09/96
Date Extracted: 07/09/96
Date Analyzed: 07/09/96

Sample ID	Lab ID	Concentration (mg/kg)	Detection Limit (mg/kg)
Cell 1	4211	ND	17.1
Cell 2	4212	ND	21.3
Cell 3	4213	586	36.6
Cell 4	4214	ND	22.6
Cell 5	4215	ND	19.3
Cell 6	4216	ND	21.9

ND- Analyte not detected at the stated detection limit.

Reference: Method 3550 - Sonication Extraction; Test Methods for Evaluating Solid Waste, SW-846, United States Environmental Protection Agency, September, 1986;
Method 418.1 - Petroleum Hydrocarbons, Total Recoverable; Chemical Analysis of Water and Waste, United States Environmental Protection Agency, 1978.

Comments:
Analyst
Review

TOTAL PETROLEUM HYDROCARBONS
EPA Method 418.1**Tierra Environmental Company, Inc.**

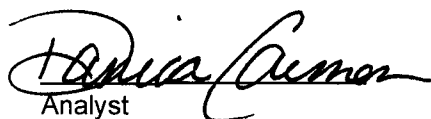
Project ID: Tierra SS
Sample Matrix: Soil
Preservative: Cool
Condition: Intact

Report Date: 07/15/96
Date Sampled: 7/8,9/96
Date Received: 07/09/96
Date Extracted: 07/09/96
Date Analyzed: 07/09/96

Sample ID	Lab ID	Concentration (mg/kg)	Detection Limit (mg/kg)
Cell 7	4217	ND	21.7
Cell 8	4218	ND	21.0
Cell 9	4219	ND	20.7
Cell 10	4220	ND	22.9
Cell 11	4221	ND	22.7
Cell 12	4222	28.4	22.9

ND- Analyte not detected at the stated detection limit.

Reference: Method 3550 - Sonication Extraction; Test Methods for Evaluating Solid Waste, SW-846, United States Environmental Protection Agency, September, 1986;
Method 418.1 - Petroleum Hydrocarbons, Total Recoverable; Chemical Analysis of Water and Waste, United States Environmental Protection Agency, 1978.

Comments:
Analyst
Review

Quality Control Report
TOTAL PETROLEUM HYDROCARBONS
EPA Method 418.1

Matrix Spike Analysis

Project ID: Tierra SS
Sample Matrix: Soil

Report Date: 07/15/96
Date Extracted: 07/09/96
Date Analyzed: 07/09/96

Lab ID	Spiked Sample Conc. (mg/kg)	Unspiked Sample Conc. (mg/kg)	Spike Added (mg/kg)	Percent Recovery
MBSPK35255	51.9	ND	50.0	104%

Acceptance Limits: 89 - 113%

ND- Analyte not detected at the stated detection limit.

Reference: Method 3550 - Sonication Extraction; Test Methods for Evaluating Solid Waste, SW-846, United States Environmental Protection Agency, September, 1986;
Method 418.1 - Petroleum Hydrocarbons, Total Recoverable; Chemical Analysis of Water and Waste, United States Environmental Protection Agency, 1978.

Comments:


Analyst


Review

Quality Control Report
TOTAL PETROLEUM HYDROCARBONS
EPA Method 418.1

Method Blank Analysis

Project ID: Tierra SS
Sample Matrix: Soil

Report Date: 07/15/96
Date Extracted: 07/09/96
Date Analyzed: 07/09/96

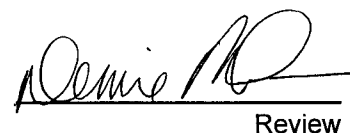
Lab ID	Concentration (mg/kg)	Detection Limit (mg/kg)
MB35255	ND	5.00

ND- Analyte not detected at the stated detection limit.

Reference: Method 3550 - Sonication Extraction; Test Methods for Evaluating Solid Waste, SW-846, United States Environmental Protection Agency, September, 1986;
Method 418.1 - Petroleum Hydrocarbons, Total Recoverable; Chemical Analysis of Water and Waste, United States Environmental Protection Agency, 1978.

Comments:


Analyst


Review

Quality Control Report
TOTAL PETROLEUM HYDROCARBONS
EPA Method 418.1

Duplicate Analysis

Project ID: Tierra SS
Sample ID: Cell 3
Sample Matrix: Soil

Report Date: 07/15/96
Date Extracted: 07/09/96
Date Analyzed: 07/09/96

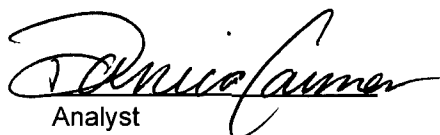
Lab ID	Duplicate Conc. (mg/kg)	Sample Conc. (mg/kg)	Percent Difference	Acceptance Limit
4213Dup	651	586	10%	< 22

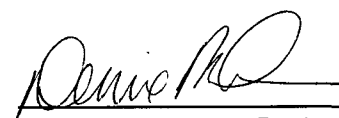
ND - Analyte not detected at the stated detection limit.

NA - Not calculated.

Reference: Method 3550 - Sonication Extraction; Test Methods for Evaluating Solid Waste, SW-846, United States Environmental Protection Agency, September, 1986;
Method 418.1 - Petroleum Hydrocarbons, Total Recoverable; Chemical Analysis of Water and Waste, United States Environmental Protection Agency, 1978.

Comments:


Analyst


Review

TOTAL PETROLEUM HYDROCARBONS
EPA Method 418.1Tierra Environmental Company, Inc.

Project ID: Tierra SS
Sample Matrix: Soil
Preservative: Cool
Condition: Intact

Report Date: 07/15/96
Date Sampled: 07/10/96
Date Received: 07/10/96
Date Extracted: 07/12/96
Date Analyzed: 07/12/96

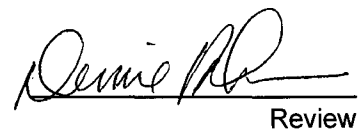
Sample ID	Lab ID	Concentration (mg/kg)	Detection Limit (mg/kg)
Cell 3 - Resample	4242	ND	23.8

ND- Analyte not detected at the stated detection limit.

Reference: Method 3550 - Sonication Extraction; Test Methods for Evaluating Solid Waste, SW-846, United States Environmental Protection Agency, September, 1986;
Method 418.1 - Petroleum Hydrocarbons, Total Recoverable; Chemical Analysis of Water and Waste, United States Environmental Protection Agency, 1978.

Comments:


Analyst


Review

Quality Control Report
TOTAL PETROLEUM HYDROCARBONS
EPA Method 418.1

Matrix Spike Analysis

Project ID: Tierra SS
Sample Matrix: Soil

Report Date: 07/15/96
Date Extracted: 07/12/96
Date Analyzed: 07/12/96

Lab ID	Spiked Sample Conc. (mg/kg)	Unspiked Sample Conc. (mg/kg)	Spike Added (mg/kg)	Percent Recovery
MBSPK35258	51.0	ND	50.0	102%

Acceptance Limits: 89 - 113%

ND- Analyte not detected at the stated detection limit.

Reference: Method 3550 - Sonication Extraction; Test Methods for Evaluating Solid Waste, SW-846, United States Environmental Protection Agency, September, 1986;
Method 418.1 - Petroleum Hydrocarbons, Total Recoverable; Chemical Analysis of Water and Waste, United States Environmental Protection Agency, 1978.

Comments:


Analyst


Review

Quality Control Report
TOTAL PETROLEUM HYDROCARBONS
EPA Method 418.1

Method Blank Analysis

Project ID: Tierra SS
Sample Matrix: Soil

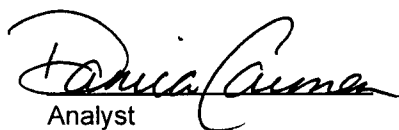
Report Date: 07/15/96
Date Extracted: 07/12/96
Date Analyzed: 07/12/96

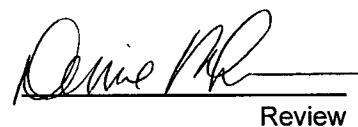
Lab ID	Concentration (mg/kg)	Detection Limit (mg/kg)
MB35258	ND	5.00

ND- Analyte not detected at the stated detection limit.

Reference: Method 3550 - Sonication Extraction; Test Methods for Evaluating Solid Waste, SW-846, United States Environmental Protection Agency, September, 1986;
Method 418.1 - Petroleum Hydrocarbons, Total Recoverable; Chemical Analysis of Water and Waste, United States Environmental Protection Agency, 1978.

Comments:


Analyst


Review

VOLATILE AROMATIC HYDROCARBONS

Tierra Environmental Company, Inc.

Project ID: Tierra SS
Sample ID: Cell 1
Lab ID: 4211
Sample Matrix: Soil
Preservative: Cool
Condition: Intact

Report Date: 07/15/96
Date Sampled: 07/08/96
Date Received: 07/09/96
Date Extracted: 07/12/96
Date Analyzed: 07/12/96

Target Analyte	Concentration (ug/kg)	Detection Limit (ug/kg)
Benzene	ND	26.7
Toluene	ND	26.7
Ethylbenzene	ND	26.7
m,p-Xylenes	ND	53.4
o-Xylene	ND	26.7

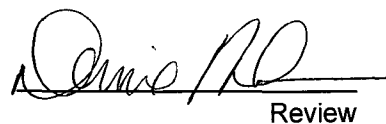
ND - Analyte not detected at the stated detection limit.

Quality Control:	<u>Surrogate</u>	<u>Percent Recovery</u>	<u>Acceptance Limits</u>
	Trifluorotoluene	102	81 -117%
	Bromofluorobenzen	99	74 -121%

Reference: Method 5030, Purge and Trap; Method 8020, Aromatic Volatile Organics;
Test Methods for Evaluating Solid Wastes, SW-846, United States
Environmental Protection Agency, Final Update I, July, 1992.

Comments:


Analyst


Review

VOLATILE AROMATIC HYDROCARBONS

Tierra Environmental Company, Inc.

Project ID:	Tierra SS	Report Date:	07/15/96
Sample ID:	Cell 2	Date Sampled:	07/08/96
Lab ID:	4212	Date Received:	07/09/96
Sample Matrix:	Soil	Date Extracted:	07/12/96
Preservative:	Cool	Date Analyzed:	07/12/96
Condition:	Intact		

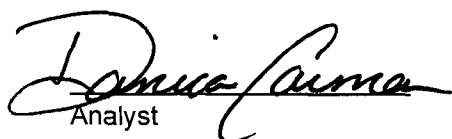
Target Analyte	Concentration (ug/kg)	Detection Limit (ug/kg)
Benzene	ND	29.1
Toluene	ND	29.1
Ethylbenzene	ND	29.1
m,p-Xylenes	ND	58.3
o-Xylene	ND	29.1

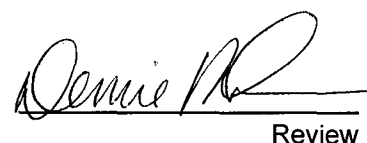
ND - Analyte not detected at the stated detection limit.

Quality Control:	<u>Surrogate</u>	<u>Percent Recovery</u>	<u>Acceptance Limits</u>
	Trifluorotoluene	101	81 -117%
	Bromofluorobenzen	102	74 -121%

Reference: Method 5030, Purge and Trap; Method 8020, Aromatic Volatile Organics;
Test Methods for Evaluating Solid Wastes, SW-846, United States
Environmental Protection Agency, Final Update I, July, 1992.

Comments:


Analyst


Review

VOLATILE AROMATIC HYDROCARBONS**Tierra Environmental Company, Inc.**

Project ID: Tierra SS
Sample ID: Cell 3
Lab ID: 4213
Sample Matrix: Soil
Preservative: Cool
Condition: Intact

Report Date: 07/15/96
Date Sampled: 07/08/96
Date Received: 07/09/96
Date Extracted: 07/12/96
Date Analyzed: 07/12/96

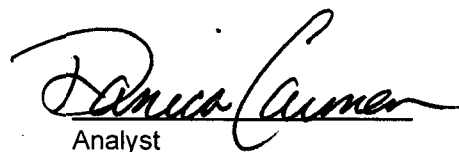
Target Analyte	Concentration (ug/kg)	Detection Limit (ug/kg)
Benzene	ND	29.9
Toluene	32.8	29.9
Ethylbenzene	ND	29.9
m,p-Xylenes	ND	59.9
o-Xylene	ND	29.9

ND - Analyte not detected at the stated detection limit.

Quality Control:	<u>Surrogate</u>	<u>Percent Recovery</u>	<u>Acceptance Limits</u>
	Trifluorotoluene	104	81 -117%
	Bromofluorobenzen	100	74 -121%

Reference: Method 5030, Purge and Trap; Method 8020, Aromatic Volatile Organics;
Test Methods for Evaluating Solid Wastes, SW-846, United States
Environmental Protection Agency, Final Update I, July, 1992.

Comments:


Analyst


Review

VOLATILE AROMATIC HYDROCARBONS**Tierra Environmental Company, Inc.**

Project ID: Tierra SS
Sample ID: Cell 3/ Resample
Lab ID: 4242
Sample Matrix: Soil
Preservative: Cool
Condition: Intact

Report Date: 07/15/96
Date Sampled: 07/10/96
Date Received: 07/09/96
Date Extracted: 07/12/96
Date Analyzed: 07/12/96

Target Analyte	Concentration (ug/kg)	Detection Limit (ug/kg)
Benzene	ND	25.3
Toluene	ND	25.3
Ethylbenzene	ND	25.3
m,p-Xylenes	ND	50.7
o-Xylene	ND	25.3

ND - Analyte not detected at the stated detection limit.

Quality Control:	<u>Surrogate</u>	<u>Percent Recovery</u>	<u>Acceptance Limits</u>
	Trifluorotoluene	96	81 -117%
	Bromofluorobenzen	98	74 -121%

Reference: Method 5030, Purge and Trap; Method 8020, Aromatic Volatile Organics;
Test Methods for Evaluating Solid Wastes, SW-846, United States
Environmental Protection Agency, Final Update I, July, 1992.

Comments:


Analyst


Review

VOLATILE AROMATIC HYDROCARBONS**Tierra Environmental Company, Inc.**

Project ID: Tierra SS
Sample ID: Cell 4
Lab ID: 4214
Sample Matrix: Soil
Preservative: Cool
Condition: Intact

Report Date: 07/15/96
Date Sampled: 07/08/96
Date Received: 07/09/96
Date Extracted: 07/12/96
Date Analyzed: 07/12/96

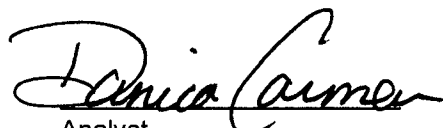
Target Analyte	Concentration (ug/kg)	Detection Limit (ug/kg)
Benzene	ND	27.7
Toluene	ND	27.7
Ethylbenzene	ND	27.7
m,p-Xylenes	ND	55.4
o-Xylene	ND	27.7

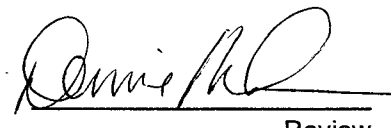
ND - Analyte not detected at the stated detection limit.

Quality Control:	<u>Surrogate</u>	<u>Percent Recovery</u>	<u>Acceptance Limits</u>
	Trifluorotoluene	98	81 -117%
	Bromofluorobenzen	98	74 -121%

Reference: Method 5030, Purge and Trap; Method 8020, Aromatic Volatile Organics;
Test Methods for Evaluating Solid Wastes, SW-846, United States
Environmental Protection Agency, Final Update I, July, 1992.

Comments:


Analyst


Review

VOLATILE AROMATIC HYDROCARBONS**Tierra Environmental Company, Inc.**

Project ID: Tierra SS
Sample ID: Cell 5
Lab ID: 4215
Sample Matrix: Soil
Preservative: Cool
Condition: Intact

Report Date: 07/15/96
Date Sampled: 07/08/96
Date Received: 07/09/96
Date Extracted: 07/12/96
Date Analyzed: 07/12/96

Target Analyte	Concentration (ug/kg)	Detection Limit (ug/kg)
Benzene	ND	27.5
Toluene	ND	27.5
Ethylbenzene	ND	27.5
m,p-Xylenes	ND	54.9
o-Xylene	ND	27.5

ND - Analyte not detected at the stated detection limit.

Quality Control:	<u>Surrogate</u>	<u>Percent Recovery</u>	<u>Acceptance Limits</u>
	Trifluorotoluene	100	81 -117%
	Bromofluorobenzen	99	74 -121%

Reference: Method 5030, Purge and Trap; Method 8020, Aromatic Volatile Organics;
Test Methods for Evaluating Solid Wastes, SW-846, United States
Environmental Protection Agency, Final Update I, July, 1992.

Comments:


Analyst


Review

VOLATILE AROMATIC HYDROCARBONS**Tierra Environmental Company, Inc.**

Project ID: Tierra SS
Sample ID: Cell 6
Lab ID: 4216
Sample Matrix: Soil
Preservative: Cool
Condition: Intact

Report Date: 07/15/96
Date Sampled: 07/08/96
Date Received: 07/09/96
Date Extracted: 07/12/96
Date Analyzed: 07/12/96

Target Analyte	Concentration (ug/kg)	Detection Limit (ug/kg)
Benzene	ND	26.4
Toluene	ND	26.4
Ethylbenzene	ND	26.4
m,p-Xylenes	ND	52.8
o-Xylene	ND	26.4

ND - Analyte not detected at the stated detection limit.

Quality Control:	<u>Surrogate</u>	<u>Percent Recovery</u>	<u>Acceptance Limits</u>
	Trifluorotoluene	95	81 -117%
	Bromofluorobenzen	96	74 -121%

Reference: Method 5030, Purge and Trap; Method 8020, Aromatic Volatile Organics;
Test Methods for Evaluating Solid Wastes, SW-846, United States
Environmental Protection Agency, Final Update I, July, 1992.

Comments:


Analyst


Review

VOLATILE AROMATIC HYDROCARBONS**Tierra Environmental Company, Inc.**

Project ID: Tierra SS
Sample ID: Cell 7
Lab ID: 4217
Sample Matrix: Soil
Preservative: Cool
Condition: Intact

Report Date: 07/15/96
Date Sampled: 07/08/96
Date Received: 07/09/96
Date Extracted: 07/12/96
Date Analyzed: 07/12/96

Target Analyte	Concentration (ug/kg)	Detection Limit (ug/kg)
Benzene	ND	27.4
Toluene	28.3	27.4
Ethylbenzene	ND	27.4
m,p-Xylenes	ND	54.8
o-Xylene	ND	27.4

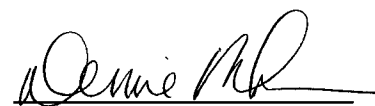
ND - Analyte not detected at the stated detection limit.

Quality Control:	<u>Surrogate</u>	<u>Percent Recovery</u>	<u>Acceptance Limits</u>
	Trifluorotoluene	101	81 -117%
	Bromofluorobenzen	100	74 -121%

Reference: Method 5030, Purge and Trap; Method 8020, Aromatic Volatile Organics;
Test Methods for Evaluating Solid Wastes, SW-846, United States
Environmental Protection Agency, Final Update I, July, 1992.

Comments:


Analyst


Review

VOLATILE AROMATIC HYDROCARBONS**Tierra Environmental Company, Inc.**

Project ID: Tierra SS
Sample ID: Cell 8
Lab ID: 4218
Sample Matrix: Soil
Preservative: Cool
Condition: Intact

Report Date: 07/15/96
Date Sampled: 07/08/96
Date Received: 07/09/96
Date Extracted: 07/12/96
Date Analyzed: 07/12/96

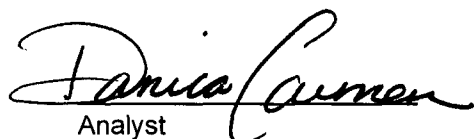
Target Analyte	Concentration (ug/kg)	Detection Limit (ug/kg)
Benzene	ND	25.7
Toluene	ND	25.7
Ethylbenzene	ND	25.7
m,p-Xylenes	ND	51.4
o-Xylene	ND	25.7

ND - Analyte not detected at the stated detection limit.

Quality Control:	<u>Surrogate</u>	<u>Percent Recovery</u>	<u>Acceptance Limits</u>
	Trifluorotoluene	101	81 -117%
	Bromofluorobenzen	101	74 -121%

Reference: Method 5030, Purge and Trap; Method 8020, Aromatic Volatile Organics;
Test Methods for Evaluating Solid Wastes, SW-846, United States
Environmental Protection Agency, Final Update I, July, 1992.

Comments:


Analyst


Review

VOLATILE AROMATIC HYDROCARBONS

Tierra Environmental Company, Inc.

Project ID:	Tierra SS	Report Date:	07/15/96
Sample ID:	Cell 9	Date Sampled:	07/09/96
Lab ID:	4219	Date Received:	07/09/96
Sample Matrix:	Soil	Date Extracted:	07/12/96
Preservative:	Cool	Date Analyzed:	07/12/96
Condition:	Intact		

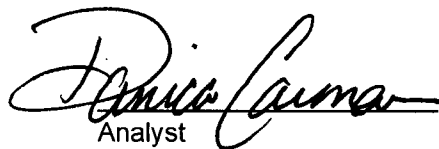
Target Analyte	Concentration (ug/kg)	Detection Limit (ug/kg)
Benzene	ND	23.1
Toluene	ND	23.1
Ethylbenzene	ND	23.1
m,p-Xylenes	ND	46.2
o-Xylene	ND	23.1

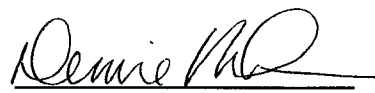
ND - Analyte not detected at the stated detection limit.

Quality Control:	Surrogate	Percent Recovery	Acceptance Limits
	Trifluorotoluene	100	81 -117%
	Bromofluorobenzen	95	74 -121%

Reference: Method 5030, Purge and Trap; Method 8020, Aromatic Volatile Organics;
Test Methods for Evaluating Solid Wastes, SW-846, United States
Environmental Protection Agency, Final Update I, July, 1992.

Comments:


Analyst


Review

VOLATILE AROMATIC HYDROCARBONS**Tierra Environmental Company, Inc.**

Project ID: Tierra SS
Sample ID: Cell 10
Lab ID: 4220
Sample Matrix: Soil
Preservative: Cool
Condition: Intact

Report Date: 07/15/96
Date Sampled: 07/09/96
Date Received: 07/09/96
Date Extracted: 07/12/96
Date Analyzed: 07/12/96

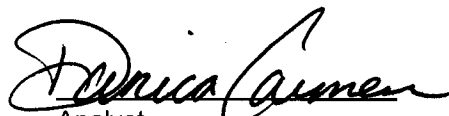
Target Analyte	Concentration (ug/kg)	Detection Limit (ug/kg)
Benzene	ND	24.7
Toluene	ND	24.7
Ethylbenzene	ND	24.7
m,p-Xylenes	ND	49.4
o-Xylene	ND	24.7

ND - Analyte not detected at the stated detection limit.

Quality Control:	<u>Surrogate</u>	<u>Percent Recovery</u>	<u>Acceptance Limits</u>
	Trifluorotoluene	101	81 -117%
	Bromofluorobenzen	102	74 -121%

Reference: Method 5030, Purge and Trap; Method 8020, Aromatic Volatile Organics;
Test Methods for Evaluating Solid Wastes, SW-846, United States
Environmental Protection Agency, Final Update I, July, 1992.

Comments:


Analyst


Review

VOLATILE AROMATIC HYDROCARBONS**Tierra Environmental Company, Inc.**

Project ID: Tierra SS
Sample ID: Cell 11
Lab ID: 4221
Sample Matrix: Soil
Preservative: Cool
Condition: Intact

Report Date: 07/15/96
Date Sampled: 07/09/96
Date Received: 07/09/96
Date Extracted: 07/12/96
Date Analyzed: 07/12/96

Target Analyte	Concentration (ug/kg)	Detection Limit (ug/kg)
Benzene	ND	23.1
Toluene	ND	23.1
Ethylbenzene	ND	23.1
m,p-Xylenes	ND	46.2
o-Xylene	ND	23.1

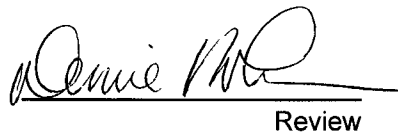
ND - Analyte not detected at the stated detection limit.

Quality Control:	<u>Surrogate</u>	<u>Percent Recovery</u>	<u>Acceptance Limits</u>
	Trifluorotoluene	99	81 -117%
	Bromofluorobenzen	100	74 -121%

Reference: Method 5030, Purge and Trap; Method 8020, Aromatic Volatile Organics;
Test Methods for Evaluating Solid Wastes, SW-846, United States
Environmental Protection Agency, Final Update I, July, 1992.

Comments:


Analyst


Review

VOLATILE AROMATIC HYDROCARBONS**Tierra Environmental Company, Inc.**

Project ID: Tierra SS
Sample ID: Cell 12
Lab ID: 4222
Sample Matrix: Soil
Preservative: Cool
Condition: Intact

Report Date: 07/15/96
Date Sampled: 07/09/96
Date Received: 07/09/96
Date Extracted: 07/12/96
Date Analyzed: 07/12/96

Target Analyte	Concentration (ug/kg)	Detection Limit (ug/kg)
Benzene	ND	28.4
Toluene	ND	28.4
Ethylbenzene	ND	28.4
m,p-Xylenes	ND	56.8
o-Xylene	ND	28.4

ND - Analyte not detected at the stated detection limit.

Quality Control:	<u>Surrogate</u>	<u>Percent Recovery</u>	<u>Acceptance Limits</u>
	Trifluorotoluene	103	81 -117%
	Bromofluorobenzen	101	74 -121%

Reference: Method 5030, Purge and Trap; Method 8020, Aromatic Volatile Organics;
Test Methods for Evaluating Solid Wastes, SW-846, United States
Environmental Protection Agency, Final Update I, July, 1992.

Comments:


Analyst


Review

**VOLATILE AROMATIC HYDROCARBONS
QUALITY CONTROL REPORT**

Method Blank Analysis

Sample Matrix: Soil
Lab ID: MB35258

Report Date: 07/15/96
Date Extracted: 07/12/96
Date Analyzed: 07/12/96

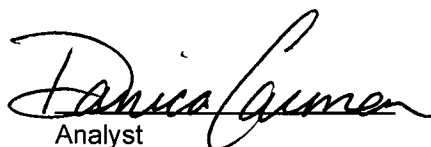
Target Analyte	Concentration (ug/kg)	Detection Limit (ug/kg)
Benzene	ND	30.0
Toluene	ND	30.0
Ethylbenzene	ND	30.0
m,p-Xylenes	ND	60.0
o-Xylene	ND	30.0

ND - Analyte not detected at the stated detection limit.

Quality Control:	<u>Surrogate</u>	<u>Percent Recovery</u>	<u>Acceptance Limits</u>
	Trifluorotoluene	96	81-117%
	Bromofluorobenzen	96	74-121%

Reference: Method 5030, Purge and Trap; Method 8020, Aromatic Volatile Organics;
Test Methods for Evaluating Solid Wastes, SW-846, United States
Environmental Protection Agency, Final Update I, July 1992.

Comments:


Analyst


Review

VOLATILE AROMATIC HYDROCARBONS

Duplicate Analysis

Lab ID: 4218
Sample Matrix: Soil
Preservative: Cool
Condition: Intact

Report Date: 07/15/96
Date Sampled: 07/08/96
Date Received: 07/09/96
Date Extracted: 07/12/96
Date Analyzed: 07/12/96

Target Analyte	Original Conc. (ug/kg)	Duplicate Conc. (ug/kg)	Acceptance Range (ug/kg)
Benzene	ND	ND	NA
Toluene	ND	ND	NA
Ethylbenzene	ND	ND	NA
m,p-Xylenes	ND	ND	NE
o-Xylene	ND	ND	NE

ND - Analyte not detected at the stated detection limit.

NA - Not applicable or not calculated.

NE - Duplicate acceptance range not established by the EPA.

Quality Control	Surrogate	% Recovery	Acceptance Limits
	Trifluorotoluene	99	81 - 117%
	Bromofluorobenzene	100	74 - 121%

Reference: Method 5030, Purge and Trap; Method 8020, Aromatic Volatile Organics; Test Methods for Evaluating Solid Wastes, SW-846, United States Environmental Protection Agency, Final Update I, July, 1992.

Comments:


Analyst


Review

VOLATILE AROMATIC HYDROCARBONS

Matrix Spike Analysis

Lab ID: MB35258Spk
Sample Matrix: Soil
Preservative: NA
Condition: NA

Report Date: 07/15/96
Date Sampled: NA
Date Received: NA
Date Extracted: 07/12/96
Date Analyzed: 07/12/96

Target Analyte	Spike Added. (mg/kg)	Original Conc. (mg/kg)	Spiked Sample Conc. (mg/kg)	% Recovery	Acceptance Limits (%)
Benzene	200	0.00	180	90%	39-150
Toluene	200	0.02	211	105%	32-160
Ethylbenzene	200	0.00	185	93%	46-148
m,p-Xylenes	400	0.03	373	93%	NE
o-Xylene	200	0.01	183	91%	NE

ND - Analyte not detected at the stated detection limit.

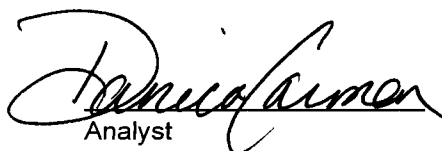
NA - Not applicable or not calculated.

NE - Spike acceptance range not established by the EPA.

Quality Control	Surrogate	% Recovery	Acceptance Limits
	Trifluorotoluene	106	81 - 117%
	Bromofluorobenzene	97	74 - 121%

Reference: Method 5030, Purge and Trap; Method 8020, Aromatic Volatile Organics; Test Methods for Evaluating Solid Wastes, SW-846, United States Environmental Protection Agency, September 1986.

Comments:


Analyst


Review



OIL CONSERVATION DIVISION
RECEIVED

TIERRA
ENVIRONMENTAL CORPORATION 8 52

CORPORATE OFFICE
P. O. Drawer 15250
Farmington, NM 87401
(505) 325-0924

May 11, 1995

Mr. Chris Eustice, Environmental Geologist
New Mexico Oil Conservation Division
2040 South Pacheco
Santa Fe, New Mexico 87505

RE: MONTHLY TESTING REPORT FOR TANK BOTTOM REMEDIATION
PROJECT TIERRA CROUCH MESA LANDFARM:

Dear Mr. Eustice:

Enclosed herewith are the analyses from samples taken two feet below the surface of the tank bottom remediation project at the Crouch Mesa Landfarm. Our permit requires monthly sampling for a period of six months.

As you will see from the analyses, the TPH is well below the regulatory limit.

Call me if you have any questions.

Sincerely,

Phillip C. Nobis by *CD*
Phillip C. Nobis
President / CEO

OFF: (505) 325-8786



LAB: (505) 325-5667

TOTAL PETROLEUM HYDROCARBONS

Attn: *Phil Nobis*
Company: *Tierra Environmental*
Address: *P.O. Box 15250*
City, State: *Farmington, NM 87499*

Date: *5/3/95*
COC No. *3021*
Sample No. *6196*
Job No. *2-1000*

Project Name: *Landfarm (Crouch Mesa)*
Project Location: *94094 - 395*
Sampled by: *CD*
Analyzed by: *BV*
Type of Sample: *Soil*

Date: *5/3/95* Time: *11:00*
Date: *5/3/95*

Laboratory Analysis

Laboratory Identification	Sample Identification	Total Petroleum Hydrocarbons
<i>6196-3021</i>	<i>Landfarm (Crouch Mesa) 94094 - 395</i>	<i>40 mg/kg</i>

Method - EPA Method 418.1 Total Petroleum Hydrocarbons

Approved by: *De 4*
Date: *5/3/95*

P. O. BOX 2606 • FARMINGTON, NM 87499

- TECHNOLOGY BLENDING INDUSTRY WITH THE ENVIRONMENT -

OFF: (505) 325-8786



LAB: (505) 325-5667

TOTAL PETROLEUM HYDROCARBONS

Attn: *Phil Nobis*
Company: *Tierra Environmental*
Address: *P.O. Box 15250*
City, State: *Farmington, NM 87499*

Date: *5/3/95*
COC No. *3021*
Sample No. *6197*
Job No. *2-1000*

Project Name: *Landfarm (Crouch Mesa)*
Project Location: *94094*
Sampled by: *CD*
Analyzed by: *BV*
Type of Sample: *Soil*

Date: *5/3/95* Time: *11:00*
Date: *5/3/95*

Laboratory Analysis

Laboratory Identification	Sample Identification	Total Petroleum Hydrocarbons
<i>6197-3021</i>	<i>Landfarm (Crouch Mesa) 94094</i>	<i>22 mg/kg</i>

Method - EPA Method 418.1 Total Petroleum Hydrocarbons

Approved by: *Da 4*
Date: *5/3/95*

P. O. BOX 2606 • FARMINGTON, NM 87499

— TECHNOLOGY BLENDING INDUSTRY WITH THE ENVIRONMENT —



3021

Date: 5/2/92

Page 1 of 1

657 W. Maple • P. O. Box 2606 • Farmington NM 87499
LAB: (505) 325-5667 • FAX: (505) 325-6256

[illegible]

Distribution: White – On Site Yellow – LAB Pink – Sampler Goldenrod – Client

State of New Mexico
ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT
Santa Fe, New Mexico 87505



February 14, 1995

CERTIFIED MAIL
RETURN RECEIPT NO.P-176-012-112

Dr. Dan Hoover
Tierra Environmental Corporation
909 W. Apache
Farmington, New Mexico 87401

Re: TPH Analysis of Soil Below Tank Bottom Sludge Experimental Plot
Crouch Mesa Landfarm
San Juan County, New Mexico

Dear Dr. Hoover:

The Oil Conservation Division (OCD) has received your report, dated February 2, 1995 indicating the Total Petroleum Hydrocarbon concentration for the area two feet below the tank bottom sludge and rinsate experimental plot. Your report is pursuant to the conditions of approval for the experimental plot approved January 18, 1995.

If you have any questions, please do not hesitate to call me at (505) 827-7153.

Sincerely,

A handwritten signature in cursive script, appearing to read "Chris E. Eustice".

Chris E. Eustice
Environmental Geologist

xc: OCD Aztec Office

VILLAGRA BUILDING - 408 Galisteo

Forestry and Resources Conservation Division
P.O. Box 1948 87504-1948
827-5830

Park and Recreation Division
P.O. Box 1147 87504-1147
827-7465

2040 South Pacheco

Office of the Secretary
827-5950

Administrative Services
827-5925

Energy Conservation & Management
827-5900

Mining and Minerals
827-5970

Oil Conservation
827-7131



TIERRA
ENVIRONMENTAL CORPORATION

CORPORATE OFFICE
P. O. Drawer 15250
Farmington, NM 87401
(505) 325-0924

February 2, 1995

Mr. Chris Eustice, Environmental Geologist
New Mexico Oil Conservation Division
2040 South Pacheco
Santa Fe, New Mexico 87505

OIL CONSERVATION DIVISION
RECEIVED
'95 FEB 6 AM 8 52
RECEIVED
FEB 07 1995
Environmental Bureau
Oil Conservation Division

RE: TOTAL PETROLEUM HYDROCARBON ANALYSIS OF SOIL BELOW
TANK BOTTOM SLUDGE AND RINSATE EXPERIMENTAL PLOT
AT TIERRA CROUCH MESA LANDFARM

Dear Chris:

On December 19, 1994, 580 bbls. of tank bottom sludge and rinsate was spread over a 60 X 175 ft. area on the Tierra Crouch Mesa Landfarm. The area utilized was in Cell 3 and the Tierra job number is 94092 - Meridian Oil, McGrath #4 water injection well.

The area utilized was covered with a 6 inch lift of remediated soil. A 2 inch layer of TEC SORB-1 was placed over this soil prior to addition of the sludge/rinsate.

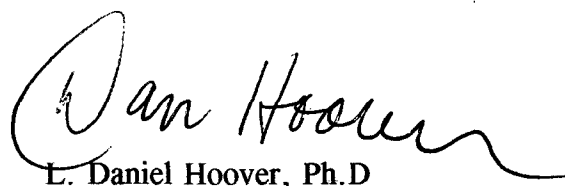
On January 26, 1995, a sample of soil - 2 feet below the area containing the sludge/rinsate was obtained for TPH analysis.

The TPH analysis on the soil was conducted on January 27, 1995. (Soil stored @ 34°F with a Buck Model 404 I.R.)

The results indicate the soil 2 feet below the area of concern contained <5.0 mg/kg of Total Petroleum Hydrocarbons.

Sincerely,

TIERRA ENVIRONMENTAL CORPORATION


L. Daniel Hoover, Ph.D.
Director of Research

xc: File
Phil Nobis

We received

OIL CONSERVATION DIVISION
OFF: (505) 325-8786
RECEIVED

'95 AUG 14 AM 8 52



LAB: (505) 325-5667

TOTAL PETROLEUM HYDROCARBONS

Attn: *Phil Nobis*
Company: *Tierra Environmental*
Address: *P.O. Box 15250*
City, State: *Farmington, NM 87499*

Date: 9-Aug-95
COC No.: 3229
Sample No. 7697
Job No. 2-1000

Project Name: *Tierra Environmental*
Project Location: *3 Landfarm TBP*
Sampled by: PN
Analyzed by: DC
Type of Sample: *Soil*

Date: 8-Aug-95 Time: 15:10
Date: 9-Aug-95

Laboratory Analysis

Laboratory Identification	Sample Identification	Total Petroleum Hydrocarbons
7697-3229	<i>Tierra Environmental</i> <i>3 Landfarm TBP</i>	< 25 mg/kg

Method - EPA Method 418.1 Total Petroleum Hydrocarbons

Approved by: *Ja G*
Date: *8/9/95*



OFF: (505) 325-8786

LAB: (505) 325-5667

TOTAL PETROLEUM HYDROCARBONS

Attn: *Phil Nobis*
Company: *Tierra Environmental*
Address: *P.O. Box 15250*
City, State: *Farmington, NM 87499*

Date: *9-Aug-95*
COC No.: *3229*
Sample No. *7698*
Job No. *2-1000*

Project Name: *Tierra Environmental*
Project Location: *4 Landfarm TBP*
Sampled by: *PN*
Analyzed by: *DC*
Type of Sample: *Soil*

Date: *8-Aug-95* Time: *15:15*
Date: *9-Aug-95*

Laboratory Analysis

Laboratory Identification	Sample Identification	Total Petroleum Hydrocarbons
<i>7698-3229</i>	<i>Tierra Environmental</i> <i>4 Landfarm TBP</i>	<i><25 mg/kg</i>

Method - EPA Method 418.1 Total Petroleum Hydrocarbons

Approved by:
Date:

JaG
8/9/95



OFF: (505) 325-8786

LAB: (505) 325-5667

TOTAL PETROLEUM HYDROCARBONS

Attn: *Phil Nobis*
Company: *Tierra Environmental*
Address: *P.O. Box 15250*
City, State: *Farmington, NM 87499*

Date: *9-Aug-95*
COC No.: *3229*
Sample No. *7696*
Job No. *2-1000*

Project Name: *Tierra Environmental*
Project Location: *2 Landfarm TBP*
Sampled by: *PN*
Analyzed by: *DC*
Type of Sample: *Soil*

Date: *8-Aug-95* Time: *15:05*
Date: *9-Aug-95*

Laboratory Analysis

Laboratory Identification	Sample Identification	Total Petroleum Hydrocarbons
<i>7696-3229</i>	<i>Tierra Environmental 2 Landfarm TBP</i>	<i>30 mg/kg</i>

Method - EPA Method 418.1 Total Petroleum Hydrocarbons

Approved by:
Date:

Ja G
8/9/95



OFF: (505) 325-8786

LAB: (505) 325-5667

TOTAL PETROLEUM HYDROCARBONS

Attn: *Phil Nobis*
Company: *Tierra Environmental*
Address: *P.O. Box 15250*
City, State: *Farmington, NM 87499*

Date: *9-Aug-95*
COC No.: *3229*
Sample No. *7695*
Job No. *2-1000*

Project Name: *Tierra Environmental*
Project Location: *1 Landfarm TBP*
Sampled by: *PN*
Analyzed by: *DC*
Type of Sample: *Soil*

Date: *8-Aug-95* Time: *15:00*
Date: *9-Aug-95*

Laboratory Analysis

Laboratory Identification	Sample Identification	Total Petroleum Hydrocarbons
<i>7695-3229</i>	<i>Tierra Environmental 1 Landfarm TBP</i>	<i><25 mg/kg</i>

Method - EPA Method 418.1 Total Petroleum Hydrocarbons

Approved by: *Ja G*

Date: *8/9/95*



3229

5/3/3

Page

.of_

TECHNOLOGIES, LTD.

[illegible]

Distribution:	White – On Site	Yellow – LAB	Pink – Sampler	Goldenrod – Client
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Any pooling w/in 6 hrs
the process will cease

PROJECT MANAGER:
Anaitas Lab I.D.:

Company:
Address:

Phone:
Fax:

Bill To:
Company:
Address:

CHAIN OF CUSTODY

ORGANIC ANALYSES				WATER ANALYSES				METALS		COMMENTS																				
Petroleum Hydrocarbons (418.1)	Gasoline / Diesel (mod. 8015)	Gasoline (GRO)	Aromatic HCs BTEX/M/TBE (602 / 8020)	Chlorinated Hydrocarbons (8010)	SDWA Volatiles (502.1 / 503.1)	Chlorinated Pesticides / PCBs (608 / 8080)	Herbicides (615 / 8150)	Volatiles GC/MS (624 / 8240 / 8260)	Base / Neutral / Acid GC/MS (625 / 8270)		Polynuclear Aromatic Hydrocarbons (8100)	TCLP Extraction	Other (specify):	Cation / Anion	Specific Cations (specify):	Specific Anions (specify):	BOD / Fecal / Total Coliform	Solids: TDS / TSS / SS	Nutrients: NH4+ / NO2- / NO3- / TKN	Oil and Grease	Other (specify):	Priority Pollutants	RCRA Metals (Total)	RCRA Metals TCLP (1311)	Other (specify):					
X	X	X	X	X	X	X	X	X	X	X	X																			
X	X	X	X	X	X	X	X	X	X	X	X																			
X	X	X	X	X	X	X	X	X	X	X	X																			
X	X	X	X	X	X	X	X	X	X	X	X																			
X	X	X	X	X	X	X	X	X	X	X	X																			
X	X	X	X	X	X	X	X	X	X	X	X																			

Sampled By:		Relinquished By:		Relinquished By:	
Signature	Date:	Signature	Date:	Signature	Date:

Sample Receipt		Required Turnaround Time (Prior Authorization Required for Rush)	
Project Information	No. Containers:	Signature	Date:
Proj. #: TIER 1	Custody Seals: Y / N / NA		
P. O. No:	Received Intact:		
Shipped Via:	Received Cold:		

Please Fill Out Thoroughly.

Shaded areas
for lab use only.

White/Yellow: Anaitas
Pink: Client

CHAIN OF CUSTODY

PROJECT INFORMATION				Sample Receipt		ANALYSES										COMMENTS		
Project Information		Sample Receipt		Matrix		Lab ID		ANALYSES										COMMENTS
Proj. #:	No. Containers:	Date	Time	Matrix	Lab ID	ANALYSES										COMMENTS		
Proj. Name:	Custody Seals: Y / N / NA	Date		Time	Matrix	ANALYSES										COMMENTS		
P. O. No:	Received Intact:	Date		Time	Matrix	ANALYSES										COMMENTS		
Shipped Via:	Received Cold:	Date		Time	Matrix	ANALYSES										COMMENTS		
Required Turnaround Time (Prior Authorization Required for Rush)		Date		Time	Matrix	ANALYSES										COMMENTS		
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Company		Company		Company		ANALYSES										COMMENTS		
Date		Date		Date		ANALYSES										COMMENTS		
Time		Time																



TIERRA

ENVIRONMENTAL CORPORATION

OIL CONSERVATION DIVISION
RECEIVED

'94 JUN 27 AM 8 50

CORPORATE OFFICE
12205 E. Skelley Drive
Tulsa, OK 74128
918-437-6200

OPERATIONS OFFICE
909 W. Apache
Farmington, NM 87401
505-325-0924

June 21, 1994

Mr. Denny Foust
New Mexico Oil Conservation Division
1000 Rio Brazos Road
Aztec, New Mexico 87410

Dear Denny:

This is the annual report of analysis on soils from the Tierra Environmental Corporation Crouch Mesa Landfarm. The farm is located in the NW/4 SE/4, Section 2, Township 29 North, Range 12 West, N.M.P.M., San Juan County, New Mexico.

The NMOCD Rule 711 monitoring requirement includes an annual analysis for Total Petroleum Hydrocarbons (TPH) and Volatile Aromatic Organics (BTEX) on soil at a depth of two and one-half (2 1/2) feet at the center of each cell - designated in the original permit.

The samples were obtained by Tierra on June 17, 1994, refrigerated until analysis by Cardinal Laboratories on June 20, 1994. The results indicate the BTEX and TPH levels are within the limits set by the NMOCD.

Sincerely,

TIERRA ENVIRONMENTAL CORPORATION

L. Daniel Hoover, Ph.D
Director of Research

LDH/lp

cc: Roger Anderson, NMOCD, Santa Fe
Phil Nobis
File

429 P01

JUN 21 '94 10:50



CARDINAL LABORATORIES

FINAL

PHONE (815) 679-7001 • 2111 BEECHWOOD • ABILENE, TX 79603
 PHONE (505) 383-2328 • 101 E. MARLAND • HOBBS, NM 88240
 PHONE (505) 328-4669 • 118 S. COMMERCIAL AVE. • FARMINGTON, NM 87401

ANALYSIS REPORT

Company: Tierra Environmental
 Address: 909 W. Apache
 City, State: Farmington, NM 87401

Date: 6/21/94
 Lab #: SJ1059

Project Name: Land Farm Cells

Location: Crouch Mesa

Sampled by: DH

Date: 6/17/94

Time: 1200

Analyzed by: SW

Date: 6/20/94

Time: 1018

Sample Type: Soil

Sample Condition: DRY

Units: mg/kg

Sample #	Field Code	TPHC	BENZENE	TOLUENE	ETHYL BENZENE	PARA-XYLENE	META-XYLENE	ORTHO-XYLENE	MTBE
1	Cell 1	28.1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
2	Cell 2	27.2	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
3	Cell 3	11.8	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
4	Cell 4	8.3	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
5	Cell 5	14.6	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001

GC Recovery	52.3	0.762	0.772	0.853	0.688	0.832	0.798	0.709
GC Spike	57.8	0.858	0.858	0.848	0.828	0.828	0.748	0.698
Accuracy	98.5%	89.7%	98.8%	101.5%	83.0%	101.5%	107.8%	102.8%
Air Blank	***	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001

Methods - AUTOMATED HEADSPACE GC; INFRARED SPECTROSCOPY
 - EPA 8W-846; EPA METHODS 8020, 418.1, 3546 OR 3510

Sharon Williams
 Sharon Williams

6/21/94
 Date

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analysis. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above-stated theories or otherwise.



TIERRA
ENVIRONMENTAL CORPORATION

CORPORATE OFFICE
6846 S. Canton, Suite 100
Tulsa, OK 74136
918-496-3200

REGIONAL OFFICE
909 W. Apache
Farmington, NM 87401
505-325-0924

July 30, 1993

Kathy Brown, Geologist
New Mexico Oil Conservation Division
P.O. Box 2088
Santa Fe, New Mexico 87504

RE: SIX MONTH REPORTING REQUIREMENT-TIERRA CROUCH MESA
LANDFARM FACILITY, SAN JUAN COUNTY, NEW MEXICO:

Dear Ms. Brown:

According to our permit, Tierra is required to report to OCD testing results from an established monitoring zone at least two (2) feet beneath the landfarm surface, six (6) months after the first contaminated soils have been received at the facility.

The first contaminated soils were received at the landfarm on March 3, 1993. The landfarm was opened officially on February 15, 1993. Therefore, I may be a little early in submitting the report. However, we were anxious to see the results from a laboratory and what effect, if any, our watering program had with regard to driving the contaminants into the sub-surface. As you will be glad to see, the sub-surface is clean.

Call me at (505) 325-0924 if you have any questions.

We appreciate all of the cooperation we have received.

Sincerely,

TIERRA ENVIRONMENTAL CORPORATION

Phillip C. Nobis
Vice President

PCN/lp

OIL CONSERVATION DIVISION
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'93 AUG 2 AM 8 49

**ON SITE
TECHNOLOGIES, LTD.**

TOTAL PETROLEUM HYDROCARBONS

Attn: *Dan Hoover, Ph.D.*
Company: *Tierra Environmental Corporation*
Address: *909 W Apache*
City, State: *Farmington, NM 87401*

Date: *7/23/93*
Lab ID: *1191*

Project Name: *Tierra Landfarm*
Project Location: *Samples from CELL 1 - CELL 5*
Sampled by: *LH/CJ* Date: *7/21/93* Time:
Analyzed by: *TW* Date: *7/23/93*
Type of Sample: *Soil*

Laboratory Analysis

Laboratory Identification	Sample Identification	Total Petroleum Hydrocarbons
<i>0410-1191</i>	<i>Tierra Landfarm CELL 1; Two foot sample</i>	<i>12 ppm wt.</i>
<i>0411-1191</i>	<i>Tierra Landfarm CELL 2; Two foot sample</i>	<i>9 ppm wt.</i>
<i>0412-1191</i>	<i>Tierra Landfarm CELL 3; Two foot sample</i>	<i>9 ppm wt.</i>
<i>0413-1191</i>	<i>Tierra Landfarm CELL 4; Two foot sample</i>	<i>8 ppm wt.</i>
<i>0414-1191</i>	<i>Tierra Landfarm CELL 5; Two foot sample</i>	<i>13 ppm wt.</i>

Method - EPA 418.1 Total Petroleum Hydrocarbons

Approved by: *[Signature]*
Date: *7/23/93*



PRIORITY POLLUTANTS / AROMATIC VOLATILE ORGANICS

Attn: *Dan Hoover, Ph.D.*
Company: *Tierra Environmental Corporation*
Address: *909 W Apache*
City, State: *Farmington, NM 87401*

Date: *7/23/93*
Lab ID: *1191*
Sample ID: *#0410*

Project Name: *Tierra Landfarm*
Project Location: *CELL 1; Two foot sample*
Sampled by: *LH/CJ* Date: *7/21/93*
Analyzed by: *DC* Date: *7/23/93*
Sample Matrix: *Soil*

Time:

Aromatic Volatile Organics

Component	**Measured Concentration ug/L
<i>Benzene</i>	<i>ND</i>
<i>Toluene</i>	<i>ND</i>
<i>Chlorobenzene</i>	<i>ND</i>
<i>Ethylbenzene</i>	<i>ND</i>
<i>m,p-Xylene</i>	<i>ND</i>
<i>o-Xylene</i>	<i>ND</i>
<i>1,3-Dichlorobenzene</i>	<i>ND</i>
<i>1,4-Dichlorobenzene</i>	<i>ND</i>
<i>1,2-Dichlorobenzene</i>	<i>ND</i>
TOTAL	0

ND - Not Detectable

*** - Method Detection Limit, 4.0 ug/L*

**Method - SW-846 EPA Method 8020 Aromatic Volatile Organics by
Gas Chromatography**

Approved by: *[Signature]*
Date: *7/23/93*



ON SITE TECHNOLOGIES, LTD.

PRIORITY POLLUTANTS / AROMATIC VOLATILE ORGANICS

Attn: *Dan Hoover, Ph.D.*
Company: *Tierra Environmental Corporation*
Address: *909 W Apache*
City, State: *Farmington, NM 87401*

Date: *7/23/93*
Lab ID: *1191*
Sample ID: *#0411*

Project Name: *Tierra Landfarm*
Project Location: *CELL 2; Two foot sample*
Sampled by: *LH/CJ* Date: *7/21/93*
Analyzed by: *DC* Date: *7/23/93*
Sample Matrix: *Soil*

Time:

Aromatic Volatile Organics

Component	**Measured Concentration ug/L
Benzene	ND
Toluene	ND
Chlorobenzene	ND
Ethylbenzene	ND
m,p-Xylene	ND
o-Xylene	ND
1,3-Dichlorobenzene	ND
1,4-Dichlorobenzene	ND
1,2-Dichlorobenzene	ND
TOTAL	0

ND - Not Detectable

** - Method Detection Limit, 4.0 ug/L

Method - SW-846 EPA Method 8020 Aromatic Volatile Organics by
Gas Chromatography

Approved by: *[Signature]*

Date: *7/23/93*



PRIORITY POLLUTANTS / AROMATIC VOLATILE ORGANICS

Attn: *Dan Hoover, Ph.D.*
Company: *Tierra Environmental Corporation*
Address: *909 W Apache*
City, State: *Farmington, NM 87401*

Date: *7/23/93*
Lab ID: *1191*
Sample ID: *#0412*

Project Name: *Tierra Landfarm*
Project Location: *CELL 3; Two foot sample*
Sampled by: *LH/CJ* Date: *7/21/93* Time:
Analyzed by: *DC* Date: *7/23/93*
Sample Matrix: *Soil*

Aromatic Volatile Organics

Component	**Measured Concentration ug/L
<i>Benzene</i>	<i>ND</i>
<i>Toluene</i>	<i>ND</i>
<i>Chlorobenzene</i>	<i>ND</i>
<i>Ethylbenzene</i>	<i>ND</i>
<i>m,p-Xylene</i>	<i>ND</i>
<i>o-Xylene</i>	<i>ND</i>
<i>1,3-Dichlorobenzene</i>	<i>ND</i>
<i>1,4-Dichlorobenzene</i>	<i>ND</i>
<i>1,2-Dichlorobenzene</i>	<i>ND</i>
TOTAL	0

ND - Not Detectable

*** - Method Detection Limit, 4.0 ug/L*

**Method - SW-846 EPA Method 8020 Aromatic Volatile Organics by
Gas Chromatography**

Approved by: *[Signature]*

Date: *7/23/93*



PRIORITY POLLUTANTS / AROMATIC VOLATILE ORGANICS

Attn: *Dan Hoover, Ph.D.*
Company: *Tierra Environmental Corporation*
Address: *909 W Apache*
City, State: *Farmington, NM 87401*

Date: *7/23/93*
Lab ID: *1191*
Sample ID: *#0413*

Project Name: *Tierra Landfarm*
Project Location: *CELL 4; Two foot sample*
Sampled by: *LH/CJ* Date: *7/21/93*
Analyzed by: *DC* Date: *7/23/93*
Sample Matrix: *Soil*

Time:

Aromatic Volatile Organics

Component	**Measured Concentration ug/L
<i>Benzene</i>	<i>ND</i>
<i>Toluene</i>	<i>ND</i>
<i>Chlorobenzene</i>	<i>ND</i>
<i>Ethylbenzene</i>	<i>ND</i>
<i>m,p-Xylene</i>	<i>ND</i>
<i>o-Xylene</i>	<i>ND</i>
<i>1,3-Dichlorobenzene</i>	<i>ND</i>
<i>1,4-Dichlorobenzene</i>	<i>ND</i>
<i>1,2-Dichlorobenzene</i>	<i>ND</i>
TOTAL	0

ND - Not Detectable

*** - Method Detection Limit, 4.0 ug/L*

**Method - SW-846 EPA Method 8020 Aromatic Volatile Organics by
Gas Chromatography**

Approved by: *[Signature]*
Date: *7/23/93*



ON SITE TECHNOLOGIES, LTD.

PRIORITY POLLUTANTS / AROMATIC VOLATILE ORGANICS

Attn: *Dan Hoover, Ph.D.*
Company: *Tierra Environmental Corporation*
Address: *909 W Apache*
City, State: *Farmington, NM 87401*

Date: *7/23/93*
Lab ID: *1191*
Sample ID: *#0414*

Project Name: *Tierra Landfarm*
Project Location: *CELL 5; Two foot sample*
Sampled by: *LH/CJ* Date: *7/21/93*
Analyzed by: *DC* Date: *7/23/93*
Sample Matrix: *Soil*

Time:

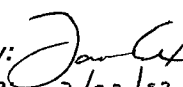
Aromatic Volatile Organics

Component	**Measured Concentration ug/L
Benzene	ND
Toluene	ND
Chlorobenzene	ND
Ethylbenzene	ND
m,p-Xylene	ND
o-Xylene	ND
1,3-Dichlorobenzene	ND
1,4-Dichlorobenzene	ND
1,2-Dichlorobenzene	ND
TOTAL	0

ND - Not Detectable

** - Method Detection Limit, 4.0 ug/L

Method - SW-846 EPA Method 8020 Aromatic Volatile Organics by
Gas Chromatography

Approved by: 

Date: *7/23/93*

OIL CONSERVATION DIVISION
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Tierra Environmental

Case Narrative

On October 22, 1992, a set of five soil samples was received by Inter-Mountain Laboratories - Farmington, NM for analysis. The samples were received cool and intact. Analysis for Total Petroleum Hydrocarbons (TPH) was performed as per the accompanying chain of custody form.

Extraction of the samples was performed using Method 3550, "Sonication Extraction", with 1,1,2,2-trichlorotrifluoroethane (Freon) as the extraction solvent. Analysis was by Method 418.1, "Total Recoverable Petroleum Hydrocarbons", using a Beckman Acculab 10 Infrared Spectrophotometer. Petroleum hydrocarbons were not detected in any of the samples at levels above the stated detection limits, as indicated in the enclosed report.

It is the policy of this laboratory to employ, whenever possible, preparatory and analytical methods which have been approved by regulatory agencies. The methods used in the analysis of the sample reported here are found in Test Methods for Evaluation of Solid Waste, SW-846, USEPA, 1986 and Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020, USEPA, 1983.

Quality control reports have been included for your information. These reports appear at the end of the analytical package and may be identified by title. If there are any questions regarding the information presented in this package, please feel free to call at your convenience.

Sincerely,



Dr. Denise A. Bohemier,
Organic Lab Supervisor

Kathy
here is the
additional
info you
requested

TOTAL PETROLEUM HYDROCARBONS

EPA Method 418.1

Tierra Environmental

Project ID: Crouch Mesa
Sample Matrix: Soil
Preservative: Cool
Condition: Intact

Report Date: 10/28/92
Date Sampled: 10/22/92
Date Received: 10/23/92
Date Extracted: 10/28/92
Date Analyzed: 10/28/92

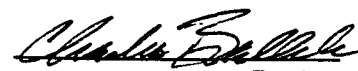
Sample ID	Lab ID	Concentration (mg/kg)	Detection Limit (mg/kg)
Cell #1 CMLF	1112	ND	12
Cell #2 CMLF	1113	ND	12
Cell #3 CMLF	1114	ND	12
Cell #4 CMLF	1115	ND	12
Cell #5 CMLF	1116	ND	12

ND- Analyte not detected at the stated detection limit.

Reference: Method 3550 - Sonication Extraction; Test Methods for Evaluating Solid Waste, SW-846, United States Environmental Protection Agency, September, 1986;
Method 418.1 - Petroleum Hydrocarbons, Total Recoverable; Chemical Analysis of Water and Waste, United States Environmental Protection Agency, 1978.

Comments:

Analyst



Review

Quality Control Report
Total Recoverable Petroleum HydrocarbonsMethod Blank Analysis

Client: Metric Corporation Report Date: 10/28/92
Project ID: Crouch Mesa Date Analyzed: 10/28/92

Lab Number	Concentration (mg/kg)	Detection Limit (mg/kg)
MB	ND	2.50

ND- Analyte not detected at stated detection limit

Reference: Method 418.1 - Petroleum Hydrocarbons, Total Recoverable
Chemical Analysis of Water and Waste, United States
Environmental Protection Agency, 1978.

Extraction by Method 3550 - Sonication Extraction
Test Methods for Evaluating Solid Waste, SW-846,
USEPA, November 1986.

Comments:


Analyst


Review

Quality Control Report
Total Recoverable Petroleum HydrocarbonsMatrix Spike Analysis

Client:	Tierra Environmental	Report Date:	10/28/92
Project ID:	Crouch Mesa	Date Sampled:	NA
Sample ID:	NA	Date Received:	NA
Lab ID:	NA	Date Extracted:	10/28/92
Matrix:	Soil	Date Analyzed:	10/28/92

Sample ID	Spiked Sample Concentration (mg/kg)	Unspiked Sample Concentration (mg/kg)	Spike Added (mg/kg)	Percent Recovery
MBSPK	11.2	ND	10.0	112%

ND- Analyte Not Detected at stated detection limit

Spike recovery acceptance limit: 42-125%

Reference:

Method 418.1 - Petroleum Hydrocarbons, Total Recoverable
Chemical Analysis of Water and Waste, United States
Environmental Protection Agency, 1978.Extraction by Method 3550 - Sonication Extraction
Test Methods for Evaluating Solid Waste, SW-846,
USEPA, November 1986.

Comments:


Analyst
Review

Quality Control Report
Total Recoverable Petroleum HydrocarbonsMatrix Spike Duplicate Analysis

Client:	Tierra Environmental	Report Date:	10/28/92
Project ID:	Crouch Mesa	Date Sampled:	NA
Sample ID:	NA	Date Received:	NA
Lab ID:	NA	Date Extracted:	10/28/92
Matrix:	Soil	Date Analyzed:	10/28/92

Spike Added (mg/kg): 10

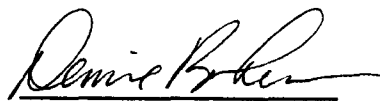
Sample ID	Duplicate Concentration (mg/kg)	Spiked Concentration (mg/kg)	Percent Difference	Acceptance Limit
MBSPKDUP	10.4	11.2	7.3%	<30%

ND- Analyte Not Detected at stated detection limit
NA- Value not calculated.

Reference:

Method 418.1 - Petroleum Hydrocarbons, Total Recoverable
Chemical Analysis of Water and Waste, United States
Environmental Protection Agency, 1978.Extraction by Method 3550 - Sonication Extraction
Test Methods for Evaluating Solid Waste, SW-846,
USEPA, November 1986.

Comments:


Analyst
Review



Project Location

ANALYSES / PARAMETERS

Chain of Custody Tape No.

No. of Containers	Lot
1	101
2	102
3	103
4	104
5	105
6	106
7	107
8	108
9	109
10	110
11	111
12	112
13	113
14	114
15	115
16	116
17	117
18	118
19	119
20	120
21	121
22	122
23	123
24	124
25	125
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27	127
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89	189
90	190
91	191
92	192
93	193
94	194
95	195
96	196
97	197
98	198
99	199
100	200

Remarks

Sample No./ Identification	Date	Time	Lab Number	Matrix	No. of Containers	HP
Cell #1 CMLF	10/26/92	3:55pm		Soil	1	✓
Cell #2 CMLF	"	3:45pm		Soil	1	✓
Cell #3 CMLF	"	3:30pm		Soil	1	✓
Cell #4 CMLF	"	4:00pm		Soil	1	✓
Cell #5 CMLF	"	4:15pm		Soil	1	✓

Received by: (Signature)

Time

Date _____

Time

Received by: (Signature)

Time

Date _____

Time

Received by laboratory: (Signature)

Time

Date

Time

Inter-Mountain Laboratories, Inc.

☐ 3304 Longmire Drive
College Station, TX 77845
Telephone (409) 774-4999

04379



Construction
Industries Division
STATE OF NEW MEXICO
Environment
Department

PERMIT
TO INSTALL OR MODIFY
AN INDIVIDUAL LIQUID WASTE SYSTEM

NMED Permit Number FA920267
CID Permit Number

DIRECTIONS: All sections must be filled out completely. You must obtain NMED and CID/MHD approval prior to installing a system.

SYSTEM OWNER'S NAME - Last, First and Middle TIERRA ENVIRONMENTAL COMPANY INC		HOME PHONE	BUSINESS PHONE 325-0924
MAILING ADDRESS - Street/P.O. Box, City, State and Zip Code 909 W. APACHE FARMINGTON NM 87401			
LOCATION OF SYSTEM - Street Address, and directions to site (attach map if needed) NW 1/4 SE 1/4 SEC 2 T29N R12W			COUNTY SAN JUAN
SUBDIVISION, Block and lot # 420 Rd 3100		TOWNSHIP-RANGE-SECTION T29N R12W S2	
INSTALLER'S NAME AND FIRM K. S. LARSON			PHONE
MAILING ADDRESS-Street/P.O. Box, City, State and Zip Code PO BOX 4112 FARMINGTON NM			
C.I.D. License Number and Certification 021662	MM-1 ☐	MM-98 ☐	MS-1 ☐
			MS-3 ☐
			HOMEOWNER ☐

I. PERMIT APPLICATION

- A. Application for: ☒ new system ☐ modification/replacement mobile home: ☐ yes ☐ no
- B. System is: ☒ conventional ☐ alternative ☐ holding tank (vault) ☐ other _____
- C. Includes: ☐ verification of plat date ☐ variance application ☐ plans with engineer seal ☐ other _____

II. WASTEWATER SOURCES AND DESIGN FLOWS IN GALLONS PER DAY (GPD)

A. Proposed liquid waste system use and design flow:

- ☐ single family: number of bedrooms _____
- ☐ multiple family: number of units _____ number bedrooms per unit _____
- ☒ other (type **12 OFFICE**) flow sizing units **4 EMPLOYEES**

GPD **80**

B. Are there existing liquid waste sources on property and flows: **NO**

- ☐ single family: number of bedrooms _____
- ☐ multiple family: number of units _____ number bedrooms per unit _____
- ☐ other (type _____) flow sizing units _____

GPD _____

C. Are there any other wastewater sources, not listed in A or B, on property:

NO

GPD _____

D. Total Design Flow on Property (Total A + B + C =)

GPD **80**

III. SITE INFORMATION

- A. Lot size **82** acres or _____ square feet. Date of record (plat date) _____

- B. Is there room for a replacement system or additional leaching area? Number of square feet **80 ACRES**

C. Check all of the following which appear on the property:

- ☐ surface water ☐ rock outcrops ☐ irrigation ☐ over 15% slope ☐ caliche ☐ wells

D. Depth from the ground surface to:

Top of Seasonal High Water Table **100'**

Bedrock, Caliche, or Tight Clay **10'**

Gravel, Cobbles, or Highly Permeable Soils **10'**

E. Soil type: (see instructions under III Site Information on back of page)

- ☐ coarse sand or gravel: give percolation rate _____ (min./in.)
- ☐ fine sand
- ☒ sandy loam or sandy clay
- ☐ clay with considerable sand or gravel
- ☐ clay with small amount of sand or gravel
- ☐ other: give percolation rate **24** (min./in.)

F. Water source for the lot?

☒ Off-site or ☐ On-site

☒ Public or ☐ Private ☐ Shared ☐ Other _____

IV. SYSTEM DESIGN

A. Treatment unit:

☒ septic tank

☐ other - specify _____

Size 450/1000
(capacity in gallons)

Manufacturer PRE-CAST

B. Leaching area: ☒ trench ☐ bed ☐ seepage pit ☐ other (specify) _____

Trench or bed dimensions: 450/200 width 2 x [length 100 (ft.) + 6 (ft.) + 6 (ft.)]
(square feet)

Other (seepage pit, etc.) dimensions: _____ = _____
(square feet) (measurements)

C. Depth of gravel below drain pipe 12" Distance from ground surface to bottom of leaching area 3 1/2'
in. or ft. in. or ft.

D. Site Plan: Follow instructions on top of page 3.

V. APPLICATION. The foregoing information is correct and true to the best of my knowledge. I understand that the issuing of the permit does not relieve me from the responsibility of complying with all applicable provisions of the New Mexico Uniform Plumbing Code and the New Mexico Liquid Waste Disposal Regulations. Obtaining this permit does not relieve me from the responsibility of obtaining any permit required by state, city or county regulations or ordinances or other requirements of state or federal law.

☒ OWNER

☐ CONTRACTOR

Signature [Signature]

Date 11/20/92

VI. NMED PERMIT. A permit for construction of the liquid waste disposal system described herein is hereby:

☒ granted

☐ granted subject to conditions (cite regulations)

☐ denied (cite regulations)

NMED Signature David A. Tomlin

Date 11/25/92

☐ Reasons for Denial or ☐ Conditions. Failure to meet the conditions of this section invalidates the permit, and is subject to enforcement.

* Call for an installation inspection by NMED prior to system cover-up if this box is checked ☐. Phone No. _____

Type of inspection done: ☐ pre-permit

☐ during installation/after installation

VII. CID PERMIT. There is a fee for a CID permit. A permit for construction of the liquid waste disposal system described herein is hereby:

☒ granted

☐ granted subject to conditions

☐ denied

CID/MHD Signature Leo E. Ramirez

Date 1 Dec 92

Conditions. Failure to meet the conditions of this section invalidates the permit, and is subject to enforcement

INSPECTION. The private sewage disposal system described herein ☐ meets ☐ does not meet the design and construction requirement of the Construction Industries Commission's New Mexico Uniform Plumbing Code.

CID/MHD Signature Leo E. Ramirez

Title Inspector

Date 1 Dec 92