

3R - 86

REPORTS

DATE:

2/1/1998



February 1, 1998

Conoco, Inc., Mid-Continent Region
Attn.: Ms. Shirley Ebert, Field SHEAR Specialist
3314 Bloomfield Hwy.
Farmington, NM 87401

RECEIVED

RE: 1997 Annual Ground Water Report
Conoco Location: Farmington COM #1
Unit P, Sec. 11, T29N, R13W, NMPM, San Juan Co., NM

FEB 27 1998

Environmental Bureau
Oil Conservation Division

Dear Ms. Ebert:

The following report summarizes the ground water remediation and monitoring activities conducted by On Site Technologies Limited Partnership and/or others on behalf of Conoco, Inc., at the referenced oil and gas location. This report covered the prior calendar year of 1997, and follows the format outlined in the *Comprehensive Ground Water Remediation and Long-Term Monitoring Plan for Conoco Locations in the San Juan Basin, New Mexico*, submitted to the New Mexico Oil Conservation Division on October 15, 1997.

SUMMARY OF 1997 ACTIVITIES:

During April 1997, a site assessment was done at the Farmington Com #1 location. The purpose of the assessment was to determine the extent of soil and ground water contamination at the location. It was determined that an area of approximately 4,720 square feet needed to be excavated.

During December 1997, hydrocarbon contaminated soil was excavated from the Farmington Com #1 location. Approximately 1400 cubic yards of suspected hydrocarbon contaminated soil was excavated from the location. During excavation MW #1, installed in April 1997, was removed. A new monitoring well, MW #1, was placed in the area of a suspected former production pit. Results of the site assessment, soil excavation efforts and initial ground water sampling were previously documented in the following correspondence:

On Site Technologies, Ltd., April 16, 1997. letter to Mr. W. L. Brignon, Senior Council Conoco, Inc. Midland Division, regarding: *Site Assessment, Conoco Location, Farmington Com #1, Unit P, Sec. 11, T29N, R13W, NMPM, San Juan Co., NM.*

On Site Technologies, Ltd., January 16, 1998. letter to Mr. Neal Goates, Senior Environmental Specialist, Conoco, Inc. Midland Division, regarding: *Remediation Summary, Conoco Location, Farmington Com #1, Unit P, Sec. 11, T29N, R13W, NMPM, San Juan Co., NM.*

SAMPLING:

Following the approved Conoco plan, during each sampling event, water levels were measured on all monitoring wells prior to purging and sampling. Samples were collected in laboratory supplied containers, preserved as needed, and proper chain-of-custody protocol followed. The laboratory analyses ordered, followed the Conoco Ground Water Plan.

Table 1, summarizes the monitoring well data and water levels measured during each sampling event. Table 2, summarizes the laboratory results for BTEX compounds from all water sampling completed at the referenced site, including assessment data. Table 3, summarizes the laboratory results for RCRA metals and API water quality testing, as required by NMOCDD.

PO Box 2606
Farmington, NM
505-325-5667 FAX: 505-327-1496

Copies of all laboratory reports for the calendar year 1997, along with all laboratory QA/QC documentation and chains-of-custody, are attached with this report.

SUMMARY AND CONCLUSIONS:

The following conclusions are based on the 1997 ground water monitoring results and trends associated with a former production pit at the Framington Com #1 well location:

1. Except for contamination from BTEX constituents, there appears to have been no significant hydrocarbon impact to ground water above the New Mexico Water Quality Control Commission (NMWQCC) standards. The BTEX contamination appears to be limited to the immediate area of the former pit.
2. API water analysis indicates high TDS (i.e., 1,881 mg/L), with high sulfate concentrations. This water quality is typical for shallow ground water at similar sites along the Animas River and is not suspected to have been a result of the ongoing oil and gas production at the site.
3. RCRA metals analysis shows concentrations of barium, chromium and lead higher than NMWQCC standards.
4. RCRA metals analysis indicate barium, lead and chromium levels higher than NMWQCC standards. We suspect the metal contamination is not associated with the production of oil and gas. Additional sampling for these RCRA metals may be needed, to establish a possible source.

LIMITATIONS AND CLOSURE:

This annual groundwater report documents the results of ground water monitoring for the referenced Conoco well location during the calendar year 1997. This report follows the Conoco Ground Water Plan, dated October 15, 1997.

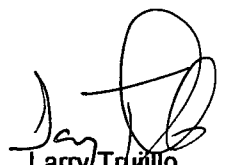
The scope of On Site Technologies' services consisted of project management, periodic water sampling and measurement of water levels, laboratory testing for ground water quality, and preparation of the annual report. All work has been performed in accordance with generally accepted professional practices in geotechnical, petroleum and environmental engineering, and hydrogeology.

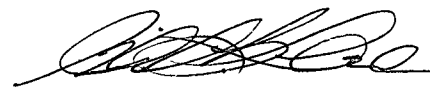
This document has been prepared by On Site Technologies for the exclusive use of Conoco Inc., as it pertains to the referenced well location operated by Conoco.

If there are any questions regarding this status report, please contact either Myke Lane or Larry Trujillo at On Site Technologies, (505) 325-5667. Thank you for your consideration.

Respectfully submitted,

Reviewed by:


Larry Trujillo
Project Manager


Michael K. Lane, P.E.
Senior Engineer

On Site Technologies, Limited Partnership

Attachments: Table 1: Monitoring Well Details and Ground Water Levels Summary
Table 2: Ground Water BTEX Analytical Summary
Table 3: Other Constituents Analytical Summary
Figure 1: Site Sketch
Figure 2: Ground Water Potentiometric Map (August, 1997)
Figure 3: Ground Water Potentiometric Map (December, 1997)
Boring Logs and Monitoring Well Diagrams
Laboratory Results, QA/QC, Chain of Custody

Acknowledgment:
CONOCO, Inc.

Shirley J. Ebert SHEAR Spec.
(Name/Title)

2/19/98
(Date)

MKL/mkl: 41372-97.doc

Unit P, Sec. 11, T29N, R13W

* BGS - approximate measurements taken as Below Ground Surface
BTOC - Below Top of Casing
NM - Not Measured

On Site Technologies

Table 2

BTEX Analytical Summary

Farmington COM #1

Unit P, Sec. 11, T29N, R13W

Sample Date	Sample ID#	Monitor Well	Remarks	BTEX per EPA 8020 (ppb)				
				Benzene	Toluene	Ethylbenzene	Total Xylene	Total BTEX
12/30/97	17250	MW #1	On Site Lab.	35.3	5.2	10.7	472.9	524.0
12/31/97	17253	MW #2	On Site Lab.	BDL	BDL	BDL	BDL	BDL
12/30/97		MW #3	No Measurable Water					
WQCC	ACTION	LEVELS		10.0	750.0	750.0	620.0	

BDL Below Detection Levels

On Site Technologies
Table 3

Other Constituent Analytical Summary
Farmington COM #1
Unit P, Sec. 11, T29N, R13W
API Results Monitoring Well #1

CATIONS				ANIONS			
PARAMETER	RESULTS	UNIT OF MEASURE	WQCC Standards	PARAMETER	RESULTS	UNIT OF MEASURE	WQCC Standards
Sodium	124.0	mg/L		Chloride	68.0	mg/L	250.0
Calcium	380.0	mg/L		Sulfate	1023.0	mg/L	600.0
Magnesium	59.2	mg/L		Carbonate	<1	mg/L	
Potassium	5.3	mg/L		Bicarbonate	210.0	mg/L	
				Hydroxide	<1	mg/L	
				Sulfide	NA		
				Iron	<0.05	mg/L	1.0
				Total Dissolved Solids	1881.0	mg/L	1000.0
				Total Naphthalene	BDL	mg/l	0.03
				benzo-a-pyrene	BDL	mg/L	0.0007
				pH	7.63		between 6 and 9
				Resistivity	4.9261		ohm-m
				Specific Gravity	1.0013		
				Total hardness of CaCO ₃	1193.0		mg/L

Sample Date: August 20, 1997

Cation-Anion Balance

Difference Cation-Anion me/L 2.46

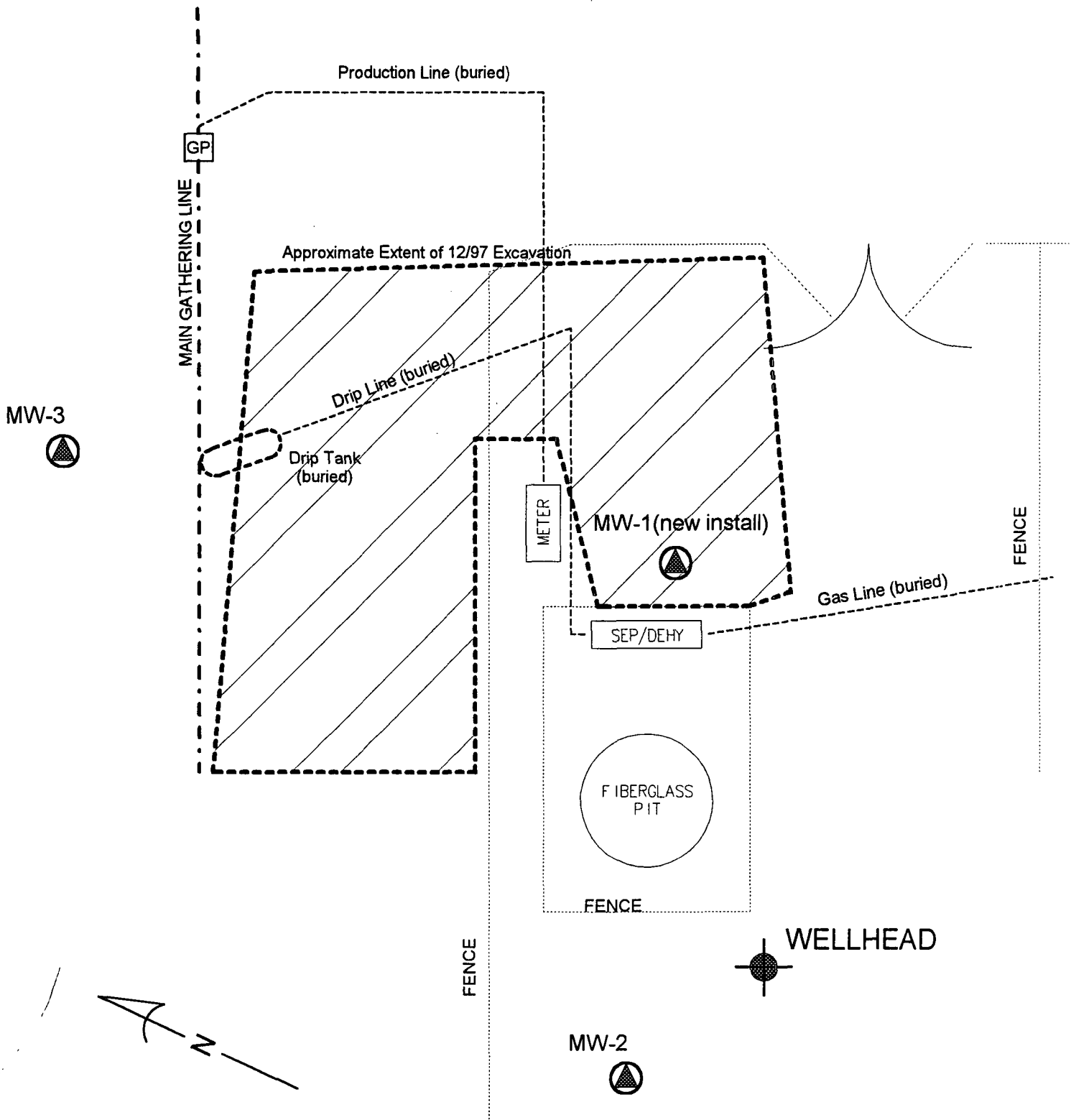
Total Cation-Anion me/L 56.26

Difference Cation-Anion % 4.4%

RCRA Metals

Test Method SW-846

PARAMETER	RESULTS	UNITS	WQCC	UNITS
Mercury by CVAA	<0.0005	mg/L	0.002	mg/L
Arsenic by ICP	<0.15	mg/L	0.1	mg/L
Barium by ICP	4.43	mg/L	1.0	mg/L
Cadmium by ICP	<0.020	mg/L	0.01	mg/L
Chromium by ICP	0.114	mg/L	0.05	mg/L
Lead by ICP	0.33	mg/L	0.05	mg/L
Selenium by ICP	<0.35	mg/L	0.05	mg/L
Silver by ICP	<0.030	mg/L	0.05	mg/L



Approximate Scale: 1" = 20'

File: 4790

Farmington COM #1 Unit P, Sec. 11, T29N, R13W, NMPM San Juan County, NM	SITE SKETCH		ON SITE TECHNOLOGIES, LTD. P.O. BOX 2606, FARMINGTON, NM 87499 (505) 325-5667
PROJECT: Site Remediation	DRWN: 01-16-98		
PROJECT NO: 4-1372	DRWN BY: MKL		
SHEET: 1	REVISED:		

MW-3
(est. 92.33)



GP

Approximate Extent of
12/97 Excavation

Approximate Scale: 1" = 20'

Ground water surface contour
measured 12/97. (0.01 ft)

METER

MW-1
(92.36)



SEP/DEHY

92.36

FIBERGLASS
PIT

92.35

FENCE

WELLHEAD

92.34

Gradient: 0.0006 ft/ft

FENCE

MW-2
(92.33)



92.33

Farmington COM #1 Unit P, Sec. 11, T29N, R13W, NMPM San Juan County, NM	Ground Water Potentiometric Map	ON SITE TECHNOLOGIES, LTD. P.O. BOX 2048, FARMINGTON, NM 87401 (505) 325-5607
PROJECT: 1997 Ground Water Report	DRWN: 01-15-98	
PROJECT NO: 4-1372	DRWN BY: MKL	
SHEET: 1	REVISED:	

OFF: (505) 325-5667



LAB: (505) 325-1556

ANALYTICAL REPORT

Attn: *Larry Trujillo*
Company: *On Site Technologies, Ltd. c/o Conoco, Inc.*
Address: *612 E. Murray Drive*
City, State: *Farmington, NM 87401*

Date: *6-Jan-98*
COC No.: *6788*
Sample No.: *17250*
Job No.: *4-1377*

Project Name: *Conoco, Inc. - Farmington Com #1*
Project Location: *MW #1*
Sampled by: *LT* Date: *30-Dec-97* Time: *13:39*
Analyzed by: *DC* Date: *5-Jan-98*
Sample Matrix: *Liquid*

Parameter	Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
<i>Benzene</i>	<i>35.3</i>	<i>ug/L</i>	<i>0.2</i>	<i>ug/L</i>
<i>Toluene</i>	<i>5.2</i>	<i>ug/L</i>	<i>0.2</i>	<i>ug/L</i>
<i>Ethylbenzene</i>	<i>10.7</i>	<i>ug/L</i>	<i>0.2</i>	<i>ug/L</i>
<i>m,p-Xylene</i>	<i>464</i>	<i>ug/L</i>	<i>1</i>	<i>ug/L</i>
<i>o-Xylene</i>	<i>8.9</i>	<i>ug/L</i>	<i>0.2</i>	<i>ug/L</i>
<i>TOTAL</i>	<i>524</i>	<i>ug/L</i>		

ND - Not Detected at Limit of Quantitation

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

Approved By: *[Signature]*
Date: *1/6/98*



ON SITE
TECHNOLOGIES, LTD.

QUALITY ASSURANCE REPORT

for EPA Method 8020

Internal QC No.: 0559-STD
Surrogate QC No.: 0567-STD
Reference Standard QC No.: 0529/30-QC

<i>Parameter</i>	<i>Result</i>	<i>Unit of Measure</i>
<i>Average Amount of All Analytes In Blank</i>	<0.2	ppb

<i>Parameter</i>	<i>Unit of Measure</i>	<i>True Value</i>	<i>Analyzed Value</i>	<i>RPD</i>	<i>Limit</i>
<i>Benzene</i>	ppb	20.0	20.2	1	15%
<i>Toluene</i>	ppb	20.0	21.1	5	15%
<i>Ethylbenzene</i>	ppb	20.0	21.3	6	15%
<i>m,p-Xylene</i>	ppb	40.0	41.1	3	15%
<i>o-Xylene</i>	ppb	20.0	21.1	5	15%

<i>Parameter</i>	<i>1 - Percent Recovered</i>	<i>2 - Percent Recovered</i>	<i>Limit</i>	<i>RPD</i>	<i>Limit</i>
<i>Benzene</i>	93	84	(39-150)	5	20%
<i>Toluene</i>	96	90	(46-148)	5	20%
<i>Ethylbenzene</i>	98	92	(32-160)	5	20%
<i>m,p-Xylene</i>	94	88	(35-145)	6	20%
<i>o-Xylene</i>	96	91	(35-145)	5	20%

	S1 Percent <i>Laboratory Identification</i>	S2 Percent <i>Laboratory Identification</i>	S1 Percent <i>Laboratory Identification</i>	S2 Percent <i>Laboratory Identification</i>
<i>Limit Percent Recovered</i>	(70-130)		<i>Limit Percent Recovered</i>	(70-130)
17250-6788	93			
			JHK 1/6/98	(m) 1/6/98

P.O. BOX 2606 • FARMINGTON, NM 87499
- TECHNOLOGY BLENDING INDUSTRY WITH THE ENVIRONMENT -

ON SITE

TECHNOLOGIES, LTD.

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

Date: _____

Page ____ of ____

[illegible]

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

Date: . . .

TECHNOLOGIES, LTD.

[illegible]

Distribution:	White – On Site	Yellow – LAB	Pink – Sampler	Goldenrod – Client
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OFF: (505) 325-5667



LAB: (505) 325-1556

API WATER ANALYSIS

Attn: **Larry Trujillo**
 Company: **On Site Technologies, Ltd. c/o Conoco, Inc.**
 Address: **612 E. Murray Drive**
 City, State: **Farmington, NM 87401**

Date: **26-Jan-98**
 COC No.: **6790**
 Sample ID: **17252**
 Job No.: **4-1372**

Project Name: **Conoco, Inc. - Farmington Com #1**
 Project Location: **MW #1**
 Sampled by: **LT**
 Analyzed by: **HR**

Date: **31-Dec-97** Time: **8:05**
 Date: **26-Jan-98**

API RP-45 Laboratory Analysis

Parameter	Result	Unit of Measure		Result	Unit of Measure	
<u>Cations</u>						
Sodium Na	124	mg/L		5.39	me/L	
Calcium Ca	380	mg/L		18.96	me/L	
Magnesium Mg	59.2	mg/L		4.87	me/L	
Potassium K	5.3	mg/L		0.13	me/L	
<u>Anions</u>						
Chloride Cl	68	mg/L		1.91	me/L	
Sulfate SO4	1035	mg/L		21.55	me/L	
Carbonate CO3	< 1	mg/L		< 0.01	me/L	
Bicarbonate HCO3	210	mg/L		3.44	me/L	
Hydroxide OH	< 1	mg/L		< 0.01	me/L	
Sulfide S2	NA	mg/L		NA	me/L	
Iron Fe	< 0.05	mg/L		< 0.01	me/L	
Total Dissolved Solids			Cation-Anion Balance 2.46 Difference Cation-Anion, me/L 56.26 Total Cation-Anion, me/L 4.4 % Difference Cation-Anion Comments NA: Not Analyzed			
Calculated, Sum of Cation/Anion	1881	mg/L				
pH	7.63					
Resistivity	4.9261	ohm-m				
Specific Gravity	1.0013					
Total Hardness as CaCO3	1193	mg/L				

Approved by: *[Signature]*
 Date: **1/30/98**

P.O. BOX 2606 • FARMINGTON, NM 87499

- TECHNOLOGY BLENDING INDUSTRY WITH THE ENVIRONMENT -

OFF: (505) 325-5667



LAB: (505) 325-1556

QUALITY ASSURANCE REPORT

API RP-45 Water Analysis

Date: 26-Jan-98

Quality Control Sample

Parameter	Laboratory Identification	True Value	Analyzed Value	Unit of Measure	% Diff	Limit % Diff
Sodium, Na	0563-QC	2.60	2.58	mg/L	-1	10
Calcium, Ca	0465-QC	2.18	2.08	mg/L	-5	10
Magnesium, Mg	0573-QC	1.98	2.06	mg/L	4	10
Potassium, K	0563-QC	1.97	1.95	mg/L	-1	10
Chloride, Cl	0561-QC	85	91	mg/L	7	10
Sulfate, SO ₄	0561-QC	96	97	mg/L	1	10
Alkalinity	0561-QC	163	176	mg/L	8	10
Iron, Fe	0495-QC	1.00	1.01	mg/L	1	10
pH	0561-QC	9.14	9.14		0	10
Conductivity	0561-QC	900	905	uS/cm	1	15

Matrix Spike

Parameter	Laboratory Identification	Analyzed Value	Matrix Spike	Spike Value	Unit of Measure	Spike Recovery
Sodium, Na	17333-6807	0.71	0.50	1.20	mg/L	99%
Calcium, Ca	17333-6807	0.82	0.50	1.37	mg/L	104%
Magnesium, Mg	17365-6817	1.42	0.50	2.07	mg/L	108%
Potassium, K	17333-6807	0.95	0.50	1.42	mg/L	98%
Iron, Fe	17050-6759	0.00	0.50	0.50	mg/L	100%

Method Blank

Parameter	Laboratory Identification	Analyzed Value	Unit of Measure
Sodium, Na	LF-Blank	<0.2	mg/L
Calcium, Ca	LF-Blank	<0.05	mg/L
Magnesium, Mg	LF-Blank	<0.05	mg/L
Potassium, K	LF-Blank	<0.05	mg/L
Iron, Fe	LF-Blank	<0.05	mg/L
Chloride, Cl	LF-Blank	<3 X DL	mg/L
Sulfate, SO ₄	LF-Blank	<1	mg/L
Sulfide, SO ₂	LF-Blank	NA	mg/L
Conductivity	LF-Blank	<2	uS/cm

02 212
1/30/98 1/30/98

OFF: (505) 325-5667



LAB: (505) 325-1556

ANALYTICAL REPORT

Attn: *Larry Trujillo*
Company: *On Site Technologies, Ltd. c/o Conoco, Inc.*
Address: *612 E. Murray Drive*
City, State: *Farmington, NM 87401*

Date: *6-Jan-98*
COC No.: *6790*
Sample No.: *17253*
Job No.: *4-1372*

Project Name: *Conoco, Inc. - Farmington Com #1*
Project Location: *MW #2*
Sampled by: *LT* Date: *31-Dec-98* Time: *8:05*
Analyzed by: *DC* Date: *5-Jan-98*
Sample Matrix: *Liquid*

Parameter	Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
<i>Benzene</i>	ND	ug/L	0.2	ug/L
<i>Toluene</i>	ND	ug/L	0.2	ug/L
<i>Ethylbenzene</i>	ND	ug/L	0.2	ug/L
<i>m,p-Xylene</i>	ND	ug/L	0.2	ug/L
<i>o-Xylene</i>	ND	ug/L	0.2	ug/L
<i>TOTAL</i>	ND	ug/L		

ND - Not Detected at Limit of Quantitation

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

Approved By: *[Signature]*
Date: *1/6/98*

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ON SITE
TECHNOLOGIES, LTD.

QUALITY ASSURANCE REPORT *for EPA Method 8020*

Internal QC No.: 0559-STD
Surrogate QC No.: 0567-STD
Reference Standard QC No.: 0529/30-QC

Parameter	Result	Unit of Measure
Average Amount of All Analytes In Blank	<0.2	ppb

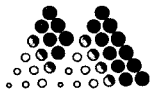
<i>Parameter</i>	<i>Unit of Measure</i>	<i>True Value</i>	<i>Analyzed Value</i>	<i>RPD</i>	<i>Limit</i>
<i>Benzene</i>	ppb	20.0	20.2	1	15%
<i>Toluene</i>	ppb	20.0	21.1	5	15%
<i>Ethylbenzene</i>	ppb	20.0	21.3	6	15%
<i>m,p-Xylene</i>	ppb	40.0	41.1	3	15%
<i>o-Xylene</i>	ppb	20.0	21.1	5	15%

<i>Parameter</i>	<i>1 - Percent Recovered</i>	<i>2 - Percent Recovered</i>	<i>Limit</i>	<i>RPD</i>	<i>Limit</i>
<i>Benzene</i>	93	84	(39-150)	5	20%
<i>Toluene</i>	96	90	(46-148)	5	20%
<i>Ethylbenzene</i>	98	92	(32-160)	5	20%
<i>m,p-Xylene</i>	94	88	(35-145)	6	20%
<i>o-Xylene</i>	96	91	(35-145)	5	20%

	S1 Percent <i>Laboratory Identification</i> <i>Recovered</i>	S2 Percent <i>Laboratory Identification</i> <i>Recovered</i>		S1 Percent <i>Laboratory Identification</i> <i>Recovered</i>	S2 Percent <i>Laboratory Identification</i> <i>Recovered</i>
<i>Limit Percent Recovered</i>	(70-130)		<i>Limit Percent Recovered</i>	(70-130)	
17253-6790	96				
				JHK 1/6/98	(JHK) 1/6/98

P.O. BOX 2606 • FARMINGTON, NM 87499
- *TECHNOLOGY BLENDING INDUSTRY WITH THE ENVIRONMENT* -

RECEIVED JAN 26 1998



Mountain States Analytical, Inc.

The Quality Solution

January 20, 1998

Mr. David Cox
On Site Technologies, Ltd.
612 E Murray Drive
Farmington, NM 87401

Reference:

Project: Farmington Com. #1 MW #1
MSAI Group: 19246

Dear Mr. Cox:

Enclosed are the analytical results for your project referenced above. The following sample is included in the report.

17252-6790

All holding times were met for the tests performed on these samples.

If the report is acceptable, please approve the enclosed invoice and forward it for payment.

Thank you for selecting Mountain States Analytical, Inc. to serve as your analytical laboratory on this project. If you have any questions concerning these results, please feel free to contact me at any time.

We look forward to working with you on future projects.

With Regards,

Rolf E. Larsen
Project Manager

10
Years of
Quality
Service

Corporate Office
1645 West 2200 South, Salt Lake City, Utah 84119
801-973-0050 • 1-800-973-6724 (MSAI) • FAX 801-972-6278
e-mail: service@msailabs.com

Southwest States Region
6223 Bayonne, Spring, Texas 77389
281-320-2842 • FAX 281-320-0989
e-mail: gbrewer@msailabs.com





Mountain States Analytical, Inc.

On Site Technologies, Ltd.

The Quality Solution

Page 2

MSAI Sample: 73770
MSAI Group: 19246

Sample ID: 17252-6790

ND - Not detected at the limit of quantitation

This report consists of the following items: A cover letter, a signed analytical report for each sample specified on the cover letter, and if applicable, an inorganic quality control summary. Organic sample reports contain footnotes which describe any quality control anomalies which may have occurred.

Respectfully Submitted,
Reviewed and Approved by:

Rolf E. Larsen
Project Manager

10
Years of
Quality
Service

Corporate Office
1645 West 2200 South, Salt Lake City, Utah 84119
801-973-0050 • 1-800-973-6724(MSAI) • FAX 801-972-6278
e-mail: service@msailabs.com

Southwest States Region
6223 Bayonne, Spring, Texas 77389
281-320-2842 • FAX 281-320-0989
e-mail: gbrewer@msailabs.com





Mountain States Analytical, Inc.

The Quality Solution

On Site Technologies, Ltd.
612 E Murray Drive
Farmington, NM 87401

Attn: Mr. David Cox
Project: Farmington Com. #1 MW #1

Sample ID: 17252-6790
Matrix: Waste Water

MSAI Sample: 73770
MSAI Group: 19246
Date Reported: 01/20/98
Discard Date: 02/19/98
Date Submitted: 01/06/98
Date Sampled: 12/31/97
Collected by: LT
Purchase Order: 6790
Project No.:

Test Analysis	Results as Received	Units	Limit of Quantitation
0259B Mercury by CVAA, w/ww, 7470 Method: SW-846 7470	0.0006	mg/l	0.0005
0392I Flame/ICP Prep, w/ww, 3005A Method: SW-846 3005A	Batch. w995		
0392M Mercury Prep CVAA, w/ww, 7470 Method: SW-846 7470	Batch. w991		
7245 Arsenic by ICP, w/ww, 6010A Method: SW-846 6010A	ND	mg/l	0.18
7246 Barium by ICP, w/ww, 6010A Method: SW-846 6010A	4.43	mg/l	0.02
7249 Cadmium by ICP, w/ww, 6010A Method: SW-846 6010A	ND	mg/l	0.020
7251 Chromium by ICP, w/ww, 6010A Method: SW-846 6010A	0.114	mg/l	0.050
7255 Lead by ICP, w/ww, 6010A Method: SW-846 6010A	0.33	mg/l	0.25
7264 Selenium by ICP, w/ww, 6010A Method: SW-846 6010A	ND	mg/l	0.30
7266 Silver by ICP, w/ww, 6010A Method: SW-846 6010A	ND	mg/l	0.020

Mountain States Analytical, Inc.
Daily QC Batching Data
Data Released for Reporting

01/20/98
15:56:46
Group: 19246

Analysis Batch Number: 0259T-01/09/98-107 -1

Test Identification : 0259T-Mercury by CVAA, TCLP, 7470

Sequence : 0259T-1

Number of Samples : 16

Batch Data-Date/Time : 01/09/98 / 14:11:46

BLANK#	ANALYTE	CONC FOUND #	CONC LIMIT
PBW1-991	Mercury	0.0100	0.1000
PBW1-994-2	Mercury	-0.0100	0.1000
PBW2-994-3	Mercury	ND	0.1000

SAMPLE#	ANALYTE	CONC ADDED	CONC SAMPLE	CONC SPIKE	% REC #	QC LIMITS	
						LOWER	UPPER
19235-73745	Mercury	2.0000	45.4000	47.2000	90.0	80.0	115.0
19235-73744-2	Mercury	25.0000	0.0500	25.4000	101.4	80.0	115.0
19235-73744-3	Mercury	25.0000	0.0500	25.2500	100.8	80.0	115.0
19245-73767-4	Mercury	25.0000	0.0300	27.1500	108.5	80.0	115.0

SAMPLE#	ANALYTE	CONC ADDED	CONC SAMPLE	RESULT 2	%REC2 #	QC LIMITS			
						LOWER	UPPER	RPD #	LIMIT
19235-73745	Mercury	2.0000	45.4000	46.5000	55.0(2k)	80.0	115.0	1.5	20.0
19235-73744-2	Mercury	25.0000	0.0500	25.2500	100.8	80.0	115.0	0.6	20.0

SAMPLE#	ANALYTE	RESULT 1	RESULT 2	RPD #	LIMIT	DILUTION
19235-73745	Mercury	45.4000	45.9000	1.1	20.0	10.00
19235-73744-2	Mercury	0.0500	0.0300	50.0(11)	20.0	1.00

SAMPLE#	ANALYTE	CONC FOUND	CONC KNOWN	% REC #	QC LIMITS	
					LOWER	UPPER
CSW-991	Mercury	2.4900	2.5000	99.6	80.0	115.0
LCSW-994-2	Mercury	2.4700	2.5000	98.8	80.0	115.0

ICV #	ANALYTE	TRUE VALUE	BATCH READ	% REC #	QC LIMITS	
					LOWER	UPPER
ICV-	Mercury	3.0000	2.9500	98.3	90.0	110.0
ICV--2	Mercury	5.0000	4.9900	99.8	80.0	120.0
ICV--3	Mercury	5.0000	5.0500	101.0	80.0	120.0
ICV--4	Mercury	5.0000	4.9500	99.0	80.0	120.0
ICV--5	Mercury	5.0000	5.0200	100.4	80.0	120.0
ICV--6	Mercury	5.0000	5.0100	100.2	80.0	120.0
ICV--7	Mercury	5.0000	5.0300	100.6	80.0	120.0

ICB#	ANALYTE	CONC FOUND #	CONC LIMIT
ICB-	Mercury	0.0300	0.1000
ICB-	Mercury	0.0200	0.1000
ICB-	Mercury	0.0200	0.1000
ICB-	Mercury	0.0300	0.1000
ICB-	Mercury	0.0200	0.1000
ICB-	Mercury	0.0300	0.1000
ICB-	Mercury	0.0300	0.1000

----- Result Footnotes -----

(2k) - Sample concentration >4X spk added. Serial dillution was recovered within 10% limits.

(11) - The duplicate results cannot be evaluated because both results are <MDL.

Analysis Batch Number: 0259T-01/09/98-107 -1

Test Identification : 0259T-Mercury by CVAA, TCLP, 7470

Sequence : 0259T-1

Number of Samples : 16

Batch Data-Date/Time : 01/09/98 / 14:11:46

Groups & Samples

18969-72539	18969-72540	18969-72541	18969-72542	19235-73744	19235-73745	19235-73746	19241-73758
19245-73767	19245-73768	19245-73769	19246-73770	19252-73784	19252-73785	19263-73833	19275-73876

Analysis Batch Number: ICPWA-01/19/98-001 -1

Test Identification : ICPWA-*Metals by ICP

Sequence : DATA019

Number of Samples : 27

Batch Data-Date/Time : 01/19/98 / 13:45:39

BLANK#	ANALYTE	CONC FOUND #	CONC LIMIT
PBW1-995	Silver	ND	0.0060
	Aluminum	0.0675(A2)	0.0500
	Arsenic	ND	0.0300
	Boron	0.0016	0.0400
	Barium	0.0007	0.0030
	Calcium	0.3228	0.4000
	Cadmium	ND	0.0040
	Chromium	0.0001	0.0100
	Copper	0.0064	0.0100
	Iron	0.0429	0.2000
	Potassium	ND	0.1000
	Magnesium	0.0323	0.0500
	Manganese	0.0019	0.0020
	Molybdenum	ND	0.0300
	Sodium	0.2100(A2)	0.2000
	Lead	0.0021	0.0400
	Selenium	0.0104	0.0700
	Zinc	0.0241	0.0300
PBW2-995-2	Silver	ND	0.0060
	Aluminum	0.0120	0.0500
	Arsenic	ND	0.0300
	Boron	0.0118	0.0400
	Barium	0.0008	0.0030
	Calcium	0.0654	0.4000
	Cadmium	ND	0.0040
	Chromium	ND	0.0100
	Copper	0.0021	0.0100
	Iron	0.0791	0.2000
	Potassium	ND	0.1000
	Magnesium	ND	0.0500
	Manganese	0.0006	0.0020
	Molybdenum	ND	0.0300
	Sodium	0.1312	0.2000
	Lead	ND	0.0400
	Selenium	ND	0.0700
	Zinc	0.0240	0.0300

SPIKE						QC LIMITS	
SAMPLE#	ANALYTE	CONC ADDED	CONC SAMPLE	CONC SPIKE	% REC #	LOWER	UPPER
9256-73809	Silver	0.0500	0.0000	0.0569	113.8	80.0	120.0
	Aluminum	2.0000	-0.1085	1.5946	85.2	80.0	120.0
	Arsenic	2.0000	-0.0250	1.6508	83.8	80.0	120.0
	Boron	0.5000	1.3747	1.5013	25.3(2f)	80.0	120.0
	Barium	2.0000	1.1479	2.4212	63.7(2f)	80.0	120.0
	Calcium	2.0000	30.5738	26.1393	-221.7(2k)	80.0	120.0
	Cadmium	0.0500	-0.0055	0.0444	99.8	80.0	120.0
	Chromium	0.2000	0.0018	0.1985	98.4	80.0	120.0
	Copper	0.2500	0.0018	0.2326	92.3	80.0	120.0
	Iron	1.0000	0.0614	0.8619	80.1	80.0	120.0
	Potassium	10.0000	8.2913	15.3366	70.5(2g)	80.0	120.0

Mountain States Analytical, Inc.
Daily QC Batching Data
Data Released for Reporting

01/20/98
15:56:58
Group: 19246

Analysis Batch Number: ICPWA-01/19/98-001 -1

Test Identification : ICPWA-*Metals by ICP

Sequence : DATA019

Number of Samples : 27

Batch Date/Time : 01/19/98 / 13:45:39

						QC LIMITS	
SAMPLE#	ANALYTE	CONC ADDED	CONC SAMPLE	CONC SPIKE	% REC #	LOWER	UPPER
19256-73809	Magnesium	2.0000	38.1253	30.6121	-375.7(2k)	80.0	120.0
	Manganese	0.5000	0.1291	0.5138	76.9(2f)	80.0	120.0
	Molybdenum	0.5000	-0.0044	0.4393	88.7	80.0	120.0
	Sodium	3.0000	542.1000	422.5931	***** (2k)	80.0	120.0
	Lead	0.5000	-0.0383	0.4547	98.6	80.0	120.0
	Selenium	2.0000	0.0000	1.5721	78.6(2c)	80.0	120.0
	Zinc	0.5000	0.0091	0.4460	87.4	80.0	120.0

						QC LIMITS			
SAMPLE#	ANALYTE	CONC ADDED	CONC SAMPLE	RESULT 2	%REC2 #	LOWER	UPPER	RPD #	LIMIT
19256-73809	Silver	0.0500	-0.0051	0.0328	75.8(2f)	80.0	120.0	53.7(2f)	20.0
	Aluminum	2.0000	-0.1085	1.4417	77.5(2f)	80.0	120.0	10.1	20.0
	Arsenic	2.0000	-0.0250	1.4522	73.9(2f)	80.0	120.0	12.8	20.0
	Boron	0.5000	1.3747	1.3658	-1.8(2f)	80.0	120.0	9.5	20.0
	Barium	2.0000	1.1479	2.2184	53.5(2f)	80.0	120.0	8.7	20.0
	Calcium	2.0000	30.5738	23.5706	-350.2(2k)	80.0	120.0	10.3	20.0
	Cadmium	0.0500	-0.0055	0.0375	86.0	80.0	120.0	16.8	20.0
	Chromium	0.2000	0.0018	0.1596	78.9(2f)	80.0	120.0	21.7(2f)	20.0
	Copper	0.2500	0.0018	0.1983	78.6(2f)	80.0	120.0	15.9	20.0
	Iron	1.0000	0.0614	0.7718	71.0(2f)	80.0	120.0	11.0	20.0
	Potassium	10.0000	8.2913	13.9984	57.1(2g)	80.0	120.0	9.1	20.0
	Magnesium	2.0000	38.1253	27.8319	-514.7(2k)	80.0	120.0	9.5	20.0
	Manganese	0.5000	0.1291	0.4583	65.8(2f)	80.0	120.0	11.4	20.0
	Molybdenum	0.5000	-0.0044	0.3668	74.2(2f)	80.0	120.0	18.0	20.0
	Sodium	3.0000	542.1000	396.1757	***** (2k)	80.0	120.0	6.5	20.0
	Lead	0.5000	-0.0383	0.3873	85.1	80.0	120.0	16.0	20.0
	Selenium	2.0000	-0.0052	1.4374	72.1(2c)	80.0	120.0	9.0	20.0
	Zinc	0.5000	0.0091	0.4519	88.6	80.0	120.0	1.3	20.0

DUPLICATE						
SAMPLE#	ANALYTE	RESULT 1	RESULT 2	RPD #	LIMIT	DILUTION
19256-73809	Silver	-0.0051	0.0048	6600.0(11)	20.0	1.00
	Aluminum	-0.1085	0.0000	200.0(11)	20.0	1.00
	Arsenic	-0.0250	0.0000	200.0(11)	20.0	1.00
	Boron	1.3747	1.3298	3.3	20.0	1.00
	Barium	1.1479	1.0917	5.0	20.0	1.00
	Calcium	30.5738	29.8476	2.4	20.0	1.00
	Cadmium	-0.0055	0.0000	200.0(11)	20.0	1.00
	Chromium	0.0018	0.0110	143.8(5a)	20.0	1.00
	Copper	0.0018	0.0103	140.5(5a)	20.0	1.00
	Iron	0.0614	0.0556	9.9	20.0	1.00
	Potassium	8.2913	8.1143	2.2	20.0	1.00
	Magnesium	38.1253	36.6260	4.0	20.0	1.00
	Manganese	0.1291	0.1260	2.4	20.0	1.00
	Molybdenum	-0.0044	0.0203	310.7(11)	20.0	1.00
	Sodium	542.1000	514.2013	5.3	20.0	1.00
	Lead	-0.0383	0.0000	200.0(11)	20.0	1.00
	Selenium	-0.0052	0.0024	542.9(11)	20.0	1.00
	Zinc	0.0091	0.0154	51.4(11)	20.0	1.00

Mountain States Analytical, Inc.
Daily QC Batching Data
Data Released for Reporting

01/20/98
15:57:00
Group: 19246

Analysis Batch Number: ICPWA-01/19/98-001 -1

Test Identification : ICPWA-*Metals by ICP

Sequence : DATA019

Number of Samples : 27

Batch Data/Date/Time : 01/19/98 / 13:45:39

DUPLICATE

SAMPLE#	ANALYTE	RESULT 1	RESULT 2	RPD #	LIMIT	DILUTION
19256-73809-2	Silver	-0.0233	0.0000	200.0(11)	20.0	10.00
	Aluminum	0.1313	0.0501	89.5(5a)	20.0	10.00
	Arsenic	-0.0560	0.0280	600.0(11)	20.0	10.00
	Boron	1.3180	1.2868	2.4	20.0	10.00
	Barium	1.0964	1.0900	0.6	20.0	10.00
	Calcium	28.6316	29.1466	1.8	20.0	10.00
	Cadmium	-0.0255	0.0025	243.5(11)	20.0	10.00
	Chromium	0.0843	0.0000	200.0(5a)	20.0	10.00
	Copper	0.0433	0.0146	99.1(5a)	20.0	10.00
	Iron	-0.1913	0.2263	2386.3(5a)	20.0	10.00
	Potassium	7.9881	8.3520	4.5	20.0	10.00
	Magnesium	34.5691	35.0723	1.4	20.0	10.00
	Manganese	0.1363	0.1474	7.8	20.0	10.00
	Molybdenum	0.0487	0.0000	200.0(5a)	20.0	10.00
	Sodium	576.0800	570.3219	1.0	20.0	10.00
	Lead	-0.0382	0.0000	200.0(11)	20.0	10.00
	Selenium	0.1125	0.0000	200.0(5a)	20.0	10.00
	Zinc	0.2239	0.2202	1.7	20.0	10.00

CONTROL

SAMPLE#	ANALYTE	CONC FOUND	CONC KNOWN	% REC #	QC LIMITS	
					LOWER	UPPER
CSW-995	Silver	0.0438	0.0500	87.6	80.0	120.0
	Aluminum	1.9114	2.0000	95.6	80.0	120.0
	Arsenic	1.9025	2.0000	95.1	80.0	120.0
	Boron	0.5109	0.5000	102.2	80.0	120.0
	Barium	1.9115	2.0000	95.6	80.0	120.0
	Calcium	2.1504	2.0000	107.5	80.0	120.0
	Cadmium	0.0513	0.0500	102.6	80.0	120.0
	Chromium	0.1983	0.2000	99.1	80.0	120.0
	Copper	0.2537	0.2500	101.5	80.0	120.0
	Iron	0.9918	1.0000	99.2	80.0	120.0
	Potassium	10.3693	10.0000	103.7	80.0	120.0
	Magnesium	2.0374	2.0000	101.9	80.0	120.0
	Manganese	0.4890	0.5000	97.8	80.0	120.0
	Molybdenum	0.4824	0.5000	96.5	80.0	120.0
	Sodium	3.2036	3.0000	106.8	80.0	120.0
	Lead	0.5082	0.5000	101.6	80.0	120.0
	Selenium	1.9860	2.0000	99.3	80.0	120.0
	Zinc	0.5732	0.5000	114.6	80.0	120.0

CCV #	ANALYTE	TRUE VALUE	BATCH READ	% REC #	QC LIMITS	
					LOWER	UPPER
CV-	Silver	0.4000	0.3839	96.0	90.0	110.0
	Aluminum	20.0000	18.7795	93.9	90.0	110.0
	Arsenic	1.6000	1.5648	97.8	90.0	110.0
	Boron	0.8000	0.7957	99.5	90.0	110.0
	Barium	4.0000	3.6946	92.4	90.0	110.0
	Calcium	40.0000	40.7142	101.8	90.0	110.0
	Cadmium	4.0000	4.0106	100.3	90.0	110.0

Analysis Batch Number: ICPWA-01/19/98-001 -1

Test Identification : ICPWA-*Metals by ICP

Sequence : DATA019

Number of Samples : 27

Batch Data-Date/Time : 01/19/98 / 13:45:39

QC LIMITS

CCV #	ANALYTE	TRUE VALUE	BATCH READ	% REC #	LOWER	UPPER
ICV-	Chromium	4.0000	3.9704	99.3	90.0	110.0
	Copper	4.0000	3.8030	95.1	90.0	110.0
	Iron	4.0000	3.9702	99.3	90.0	110.0
	Potassium	40.0000	38.4145	96.0	90.0	110.0
	Magnesium	20.0000	19.9608	99.8	90.0	110.0
	Manganese	4.0000	3.8772	96.9	90.0	110.0
	Molybdenum	20.0000	19.2737	96.4	90.0	110.0
	Sodium	40.0000	38.1218	95.3	90.0	110.0
	Lead	20.0000	19.8258	99.1	90.0	110.0
	Selenium	1.6000	1.5849	99.1	90.0	110.0
CCV1--2	Zinc	4.0000	4.0570	101.4	90.0	110.0
	Silver	0.4000	0.3758	94.0	90.0	110.0
	Aluminum	20.0000	18.5093	92.5	90.0	110.0
	Arsenic	1.6000	1.5136	94.6	90.0	110.0
	Boron	0.8000	0.7764	97.1	90.0	110.0
	Barium	4.0000	3.6396	91.0	90.0	110.0
	Calcium	40.0000	39.6131	99.0	90.0	110.0
	Cadmium	4.0000	3.9049	97.6	90.0	110.0
	Chromium	4.0000	3.8863	97.2	90.0	110.0
	Copper	4.0000	3.7529	93.8	90.0	110.0
CV2--3	Iron	4.0000	3.8795	97.0	90.0	110.0
	Potassium	40.0000	38.7581	96.9	90.0	110.0
	Magnesium	20.0000	19.5878	97.9	90.0	110.0
	Manganese	4.0000	3.7917	94.8	90.0	110.0
	Molybdenum	20.0000	18.8923	94.5	90.0	110.0
	Sodium	40.0000	38.0473	95.1	90.0	110.0
	Lead	20.0000	19.3749	96.9	90.0	110.0
	Selenium	1.6000	1.5356	96.0	90.0	110.0
	Zinc	4.0000	3.9825	99.6	90.0	110.0
	Silver	0.4000	0.3809	95.2	90.0	110.0
CV2--3	Aluminum	20.0000	18.8864	94.4	90.0	110.0
	Arsenic	1.6000	1.5349	95.9	90.0	110.0
	Boron	0.8000	0.8012	100.2	90.0	110.0
	Barium	4.0000	3.7323	93.3	90.0	110.0
	Calcium	40.0000	40.1360	100.3	90.0	110.0
	Cadmium	4.0000	3.9453	98.6	90.0	110.0
	Chromium	4.0000	3.9359	98.4	90.0	110.0
	Copper	4.0000	3.8436	96.1	90.0	110.0
	Iron	4.0000	3.9437	98.6	90.0	110.0
	Potassium	40.0000	39.1070	97.8	90.0	110.0
CCV3--4	Magnesium	20.0000	19.8647	99.3	90.0	110.0
	Manganese	4.0000	3.8527	96.3	90.0	110.0
	Molybdenum	20.0000	19.1195	95.6	90.0	110.0
	Sodium	40.0000	38.8306	97.1	90.0	110.0
	Lead	20.0000	19.6625	98.3	90.0	110.0
	Selenium	1.6000	1.5515	97.0	90.0	110.0
	Zinc	4.0000	3.9981	100.0	90.0	110.0
	Silver	0.4000	0.3768	94.2	90.0	110.0
	Aluminum	20.0000	18.9909	95.0	90.0	110.0

Analysis Batch Number: ICPWA-01/19/98-001 -1

Test Identification : ICPWA-*Metals by ICP

Sequence : DATA019

Number of Samples : 27

Batch Data-Date/Time : 01/19/98 / 13:45:39

		QC LIMITS			
CCV #	ANALYTE	TRUE VALUE	BATCH READ	% REC #	LOWER UPPER
CCV3--4	Arsenic	1.6000	1.5097	94.4	90.0 110.0
	Boron	0.8000	0.7914	98.9	90.0 110.0
	Barium	4.0000	3.7329	93.3	90.0 110.0
	Calcium	40.0000	39.1963	98.0	90.0 110.0
	Cadmium	4.0000	3.8497	96.2	90.0 110.0
	Chromium	4.0000	3.8654	96.6	90.0 110.0
	Copper	4.0000	3.8386	96.0	90.0 110.0
	Iron	4.0000	3.8410	96.0	90.0 110.0
	Potassium	40.0000	40.8200	102.1	90.0 110.0
	Magnesium	20.0000	19.7818	98.9	90.0 110.0
	Manganese	4.0000	3.7961	94.9	90.0 110.0
	Molybdenum	20.0000	18.7574	93.8	90.0 110.0
	Sodium	40.0000	39.9445	99.9	90.0 110.0
	Lead	20.0000	19.1383	95.7	90.0 110.0
	Selenium	1.6000	1.5092	94.3	90.0 110.0
CCV4--5	Zinc	4.0000	3.9391	98.5	90.0 110.0
	Silver	0.4000	0.3856	96.4	90.0 110.0
	Aluminum	20.0000	19.3083	96.5	90.0 110.0
	Arsenic	1.6000	1.5335	95.8	90.0 110.0
	Boron	0.8000	0.7916	98.9	90.0 110.0
	Barium	4.0000	3.7888	94.7	90.0 110.0
	Calcium	40.0000	39.7251	99.3	90.0 110.0
	Cadmium	4.0000	3.9134	97.8	90.0 110.0
	Chromium	4.0000	3.9053	97.6	90.0 110.0
	Copper	4.0000	3.8974	97.4	90.0 110.0
	Iron	4.0000	3.9078	97.7	90.0 110.0
	Potassium	40.0000	41.9239	104.8	90.0 110.0
	Magnesium	20.0000	20.0057	100.0	90.0 110.0
	Manganese	4.0000	3.8569	96.4	90.0 110.0
	Molybdenum	20.0000	19.0232	95.1	90.0 110.0
CCV5--6	Sodium	40.0000	40.2083	100.5	90.0 110.0
	Lead	20.0000	19.4014	97.0	90.0 110.0
	Selenium	1.6000	1.5578	97.4	90.0 110.0
	Zinc	4.0000	3.9846	99.6	90.0 110.0
	Silver	0.4000	0.3887	97.2	90.0 110.0
	Aluminum	20.0000	19.5531	97.8	90.0 110.0
	Arsenic	1.6000	1.5598	97.5	90.0 110.0
	Boron	0.8000	0.8226	102.8	90.0 110.0
	Barium	4.0000	3.8360	95.9	90.0 110.0
	Calcium	40.0000	40.5704	101.4	90.0 110.0
	Cadmium	4.0000	3.9905	99.8	90.0 110.0
	Chromium	4.0000	3.9671	99.2	90.0 110.0
	Copper	4.0000	3.9265	98.2	90.0 110.0
	Iron	4.0000	3.9963	99.9	90.0 110.0
	Potassium	40.0000	42.0958	105.2	90.0 110.0
	Magnesium	20.0000	20.2509	101.3	90.0 110.0
	Manganese	4.0000	3.9271	98.2	90.0 110.0
	Molybdenum	20.0000	19.4393	97.2	90.0 110.0
	Sodium	40.0000	41.4547	103.6	90.0 110.0

Analysis Batch Number: ICPWA-01/19/98-001 -1

Test Identification : ICPWA-*Metals by ICP

Sequence : DATA019

Number of Samples : 27

Batch Data/Date/Time : 01/19/98 / 13:45:39

QC LIMITS

CCV #	ANALYTE	TRUE VALUE	BATCH READ	% REC #	LOWER	UPPER
CCV5--6	Lead	20.0000	19.8050	99.0	90.0	110.0
	Selenium	1.6000	1.5320	95.8	90.0	110.0
	Zinc	4.0000	4.0574	101.4	90.0	110.0
CCV6--7	Silver	0.4000	0.3756	93.9	90.0	110.0
	Aluminum	20.0000	18.4950	92.5	90.0	110.0
	Arsenic	1.6000	1.5086	94.3	90.0	110.0
	Boron	0.8000	0.7694	96.2	90.0	110.0
	Barium	4.0000	3.5656	89.1(A2)	90.0	110.0
	Calcium	40.0000	39.3186	98.3	90.0	110.0
	Cadmium	4.0000	3.8539	96.3	90.0	110.0
	Chromium	4.0000	3.8034	95.1	90.0	110.0
	Copper	4.0000	3.6692	91.7	90.0	110.0
	Iron	4.0000	3.8209	95.5	90.0	110.0
	Potassium	40.0000	40.5909	101.5	90.0	110.0
	Magnesium	20.0000	19.3020	96.5	90.0	110.0
	Manganese	4.0000	3.7692	94.2	90.0	110.0
	Molybdenum	20.0000	18.6655	93.3	90.0	110.0
	Sodium	40.0000	38.5198	96.3	90.0	110.0
	Lead	20.0000	19.1917	96.0	90.0	110.0
	Selenium	1.6000	1.4557	91.0	90.0	110.0
	Zinc	4.0000	3.9014	97.5	90.0	110.0

ICB#	ANALYTE	CONC FOUND #	CONC LIMIT
ICB-	Silver	ND	0.0060
	Aluminum	0.0187	0.0500
	Arsenic	ND	0.0300
	Boron	ND	0.0400
	Barium	0.0009	0.0030
	Calcium	0.0101	0.4000
	Cadmium	ND	0.0040
	Chromium	0.0008	0.0100
	Copper	0.0010	0.0100
	Iron	0.0002	0.2000
	Potassium	ND	0.1000
	Magnesium	ND	0.0500
	Manganese	0.0011	0.0020
	Molybdenum	0.0253	0.0300
	Sodium	0.0087	0.2000
	Lead	ND	0.0400
	Selenium	ND	0.0700
	Zinc	ND	0.0300
ICB1-	Silver	ND	0.0060
	Aluminum	0.0043	0.0500
	Arsenic	ND	0.0300
	Boron	ND	0.0400
	Barium	ND	0.0030
	Calcium	0.0025	0.4000
	Cadmium	ND	0.0040
	Chromium	ND	0.0100

Analysis Batch Number: ICPWA-01/19/98-001 -1

Test Identification : ICPWA-*Metals by ICP

Sequence : DATA019

Number of Samples : 27

Batch Data-Date/Time : 01/19/98 / 13:45:39

CCB#	ANALYTE	CONC FOUND #	CONC LIMIT
CCB1-	Copper	0.0001	0.0100
	Iron	ND	0.2000
	Potassium	ND	0.1000
	Magnesium	ND	0.0500
	Manganese	ND	0.0020
	Molybdenum	0.0118	0.0300
	Sodium	0.0103	0.2000
	Lead	ND	0.0400
	Selenium	ND	0.0700
	Zinc	ND	0.0300
CCB2-	Silver	ND	0.0060
	Aluminum	0.0153	0.0500
	Arsenic	ND	0.0300
	Boron	0.0023	0.0400
	Barium	ND	0.0030
	Calcium	0.0032	0.4000
	Cadmium	0.0017	0.0040
	Chromium	ND	0.0100
	Copper	ND	0.0100
	Iron	ND	0.2000
	Potassium	ND	0.1000
	Magnesium	ND	0.0500
	Manganese	ND	0.0020
	Molybdenum	0.0146	0.0300
	Sodium	0.0129	0.2000
	Lead	0.0045	0.0400
	Selenium	ND	0.0700
	Zinc	ND	0.0300
CCB3-	Silver	ND	0.0060
	Aluminum	0.0069	0.0500
	Arsenic	ND	0.0300
	Boron	ND	0.0400
	Barium	0.0001	0.0030
	Calcium	0.0042	0.4000
	Cadmium	ND	0.0040
	Chromium	0.0010	0.0100
	Copper	ND	0.0100
	Iron	0.0026	0.2000
	Potassium	ND	0.1000
	Magnesium	0.0020	0.0500
	Manganese	0.0003	0.0020
	Molybdenum	0.0248	0.0300
	Sodium	0.0139	0.2000
	Lead	0.0116	0.0400
	Selenium	0.0082	0.0700
	Zinc	ND	0.0300
CCB4-	Silver	ND	0.0060
	Aluminum	0.0036	0.0500
	Arsenic	ND	0.0300
	Boron	ND	0.0400

Analysis Batch Number: ICPWA-01/19/98-001 -1

Test Identification : ICPWA-*Metals by ICP

Sequence : DATA019

Number of Samples : 27

Batch Data-Date/Time : 01/19/98 / 13:45:39

CB#	ANALYTE	CONC FOUND #	CONC LIMIT
CCB4-	Barium	0.0001	0.0030
	Calcium	0.0053	0.4000
	Cadmium	0.0001	0.0040
	Chromium	0.0007	0.0100
	Copper	0.0013	0.0100
	Iron	0.0048	0.2000
	Potassium	ND	0.1000
	Magnesium	ND	0.0500
	Manganese	ND	0.0020
	Molybdenum	0.0084	0.0300
	Sodium	0.0433	0.2000
	Lead	0.0064	0.0400
	Selenium	0.0038	0.0700
	Zinc	ND	0.0300
CCB5-	Silver	ND	0.0060
	Aluminum	0.0142	0.0500
	Arsenic	0.0025	0.0300
	Boron	ND	0.0400
	Barium	0.0005	0.0030
	Calcium	0.0096	0.4000
	Cadmium	ND	0.0040
	Chromium	0.0019	0.0100
	Copper	0.0010	0.0100
	Iron	0.0040	0.2000
	Potassium	ND	0.1000
	Magnesium	ND	0.0500
	Manganese	0.0008	0.0020
	Molybdenum	0.0160	0.0300
CCB6-	Sodium	0.0396	0.2000
	Lead	ND	0.0400
	Selenium	ND	0.0700
	Zinc	ND	0.0300
	Silver	ND	0.0060
	Aluminum	0.0093	0.0500
	Arsenic	ND	0.0300
	Boron	ND	0.0400
	Barium	ND	0.0030
	Calcium	0.0085	0.4000
	Cadmium	ND	0.0040
	Chromium	0.0004	0.0100
	Copper	ND	0.0100
	Iron	0.0032	0.2000
	Potassium	ND	0.1000
	Magnesium	ND	0.0500
	Manganese	0.0006	0.0020
	Molybdenum	0.0219	0.0300
	Sodium	ND	0.2000
	Lead	0.0068	0.0400
	Selenium	ND	0.0700
	Zinc	ND	0.0300

Analysis Batch Number: ICPWA-01/19/98-001 -1

Test Identification : ICPWA-*Metals by ICP

Sequence : DATA019

Number of Samples : 27

Batch Data-Date/Time : 01/19/98 / 13:45:39

----- Result Footnotes -----

- (A2) - Parameters associated with this QC were not reported.
- (2f) - Spike result outside limits. SD is within acceptance limits.
- (2k) - Sample concentration >4X spk added. Serial dillution was recovered within 10% limits.
- (2g) - Spike result outside limits. SD is outside acceptance limits.
- (2c) - Spike result outside limits. PDS is within acceptance limits.
- (11) - The duplicate results cannot be evaluated because both results are <MDL.
- (5a) - Duplicates not evaluated: Results are <10x detection limit

Groups & Samples

19239-73756	19246-73770	19252-73784	19252-73785	19256-73798	19256-73799	19256-73800	19256-73801
19256-73802	19256-73803	19256-73804	19256-73805	19256-73806	19256-73807	19256-73808	19256-73809
19256-73810	19256-73811	19256-73812	19256-73813				

ON SITE

TECHNOLOGIES, LTD.

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

CHAIN OF CUSTODY RECORD

Date: 12/26/99

Page 1 of 1

Purchase Order No.:		Job No. 44-13702		Name Larry Taylor		Title	
SEND INVOICE TO		Name Larry Taylor		Company		Company	
		Address		Mailing Address			
		City, State, Zip		City, State, Zip		Telephone No.	
		City, State, Zip		Telephone No.		Telefax No.	
Sampling Location: Farmington NM				ANALYSIS REQUESTED			
Sampler: Larry Taylor				LAB ID			
SAMPLE IDENTIFICATION				LAB ID			
DATE				DATE			
TIME				TIME			
MATRIX				MATRIX			
PRES.				PRES.			
Number of Containers				Number of Containers			
REPORT RESULTS TO				REPORT RESULTS TO			
Received by: [Signature]				Received by: [Signature]			
Date/Time 12/26/99				Date/Time 12/26/99			
Relinquished by: [Signature]				Relinquished by: [Signature]			
Date/Time				Date/Time			
Relinquished by: [Signature]				Relinquished by: [Signature]			
Date/Time				Date/Time			
Relinquished by: [Signature]				Relinquished by: [Signature]			
Date/Time				Date/Time			
Method of Shipment:				Special Instructions:			
Authorized by: [Signature]				Authorized by: [Signature]			
(Client Signature Must Accompany Request)				(Client Signature Must Accompany Request)			
Date				Date			
Distribution: White - On Site				Distribution: Yellow - LAB			
Pink - Sampler				Goldenrod - Client			

ON SITE

Page _____ of _____

TECHNOLOGIES, LTD.

[illegible]

Distribution:	White – On Site	Yellow – LAB	Pink – Sampler	Goldenrod – Client
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HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

January 19, 1998

RECEIVED JAN 26 1998

Mr. David Cox
ON SITE TECHNOLOGIES
612 East Murray
Farmington, NM 87401

The following report contains analytical results for the sample received at Southern Petroleum Laboratories (SPL) on January 6, 1998. The sample was assigned to Certificate of Analysis No.(s) 9801110 and analyzed for all parameters as listed on the chain of custody.

Any data flag or quality control exception associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s).

If you have any questions or comments pertaining to this data report, please do not hesitate to contact me. Please reference the above Certificate of Analysis No. during any inquiries.

Again, SPL is pleased to be of service to you. We anticipate working with you in fulfilling all your current and future analytical needs.

Southern Petroleum Laboratories



Sonia West
Client Services Representative



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Southern Petroleum Laboratories, Inc.

Certificate of Analysis Number: 98-01-110

Approved for Release by:

Sonia West

Sonia West, Client Services Representative

1-19-98

Date

Greg Grandits
Laboratory Director

Idelis Williams
Quality Assurance Officer

The attached analytical data package may not be reproduced except in full without the express written approval of this laboratory.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9801110-01

On Site Technologies
612 East Murray
Farmington, NM 87401
ATTN: David Cox

P.O.#
6790
01/19/98

PROJECT: PAH Analysis
SITE: Farmington, NM
SAMPLED BY: On Site Technologies, LTD.
SAMPLE ID: Farmington COM#1 MW#1

PROJECT NO: 17252-6790
MATRIX: WATER
DATE SAMPLED: 12/31/97 08:10:00
DATE RECEIVED: 01/06/98

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Naphthalene	ND	2.00	ug/L
Acenaphthylene	ND	2.00	ug/L
Acenaphthene	ND	6.00	ug/L
Fluorene	ND	60.0	ug/L
Phenanthrene	49	20.0	ug/L
Anthracene	ND	2.00	ug/L
Fluoranthene	ND	2.00	ug/L
Pyrene	ND	2.00	ug/L
Chrysene	ND	2.00	ug/L
Benzo (a) anthracene	19	2.00	ug/L
Benzo (b) fluoranthene	ND	2.00	ug/L
Benzo (k) fluoranthene	ND	2.00	ug/L
Benzo (a) pyrene	ND	2.00	ug/L
Dibenzo (a,h) anthracene	ND	2.00	ug/L
Benzo (g,h,i) perylene	ND	2.00	ug/L
Indeno (1,2,3-cd) pyrene	ND	2.00	ug/L

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
1-Fluoronaphthalene	6.6 ug/L	D	50	150
Phenanthrene d-10	6.6 ug/L	D	50	150

ANALYZED BY: KA DATE/TIME: 01/16/98 10:39:18
EXTRACTED BY: PC DATE/TIME: 01/07/98 08:00:00
METHOD: 8310 Polynuclear Aromatic Hydrocarbons
NOTES: * - Practical Quantitation Limit ND - Not Detected
NA - Not Analyzed
D - Diluted, control limits not applicable.

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.

QUALITY CONTROL
DOCUMENTATION



** SPL BATCH QUALITY CONTROL REPORT **
Method 8310 ***

PAGE

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Batch Id: 2980113220130

Units: ug/L

BLANK SPIKES

S P I K E C O M P O U N D S	Sample Results <2>	Spike Added <3>	Matrix Spike		Matrix Spike Duplicate		MS/MSD Relative % Difference	QC Limits(**) (Advisory)	
			Result	Recovery	Result	Recovery		RPD	Recovery Range
			<1>	<4>	<1>	<5>		Max.	
NAPHTHALENE	ND	0.50	0.37	74.0	0.49	98.0	27.9	30	33 - 122
ACENAPHTHYLENE	ND	0.50	0.36	72.0	0.41	82.0	13.0	30	42 - 138
ACENAPHTHENE	ND	0.50	0.39	78.0	0.45	90.0	14.3	30	25 - 123
FLUORENE	ND	0.50	0.40	80.0	0.47	94.0	16.1	30	19 - 142
PHENANTHRENE	ND	0.50	0.42	84.0	0.50	100	17.4	30	40 - 121
ANTHRACENE	ND	0.50	0.39	78.0	0.44	88.0	12.0	30	32 - 121
FLUORANTHENE	ND	0.50	0.44	88.0	0.49	98.0	10.8	30	51 - 115
PYRENE	ND	0.50	0.44	88.0	0.48	96.0	8.70	30	45 - 117
CHRYSENE	ND	0.50	0.45	90.0	0.51	102	12.5	30	44 - 122
BENZO (A) ANTHRACENE	ND	0.50	0.44	88.0	0.50	100	12.8	30	57 - 118
BENZO (B) FLUORANTHENE	ND	0.50	0.47	94.0	0.53	106	12.0	30	62 - 121
BENZO (K) FLUORANTHENE	ND	0.50	0.46	92.0	0.53	106	14.1	30	63 - 117
BENZO (A) PYRENE	ND	0.50	0.48	96.0	0.54	108	11.8	30	42 - 120
DIBENZO (A,H) ANTHRACENE	ND	0.50	0.43	86.0	0.48	96.0	11.0	30	53 - 118
BENZO (G,H,I) PERYLENE	ND	0.50	0.44	88.0	0.50	100	12.8	30	51 - 116
INDENO (1,2,3-CD) PYRENE	ND	0.50	0.48	96.0	0.55	110	13.6	30	60 - 116

Analyst: KA

Sequence Date: 01/14/98

Method Blank File ID:

Sample File ID:

Blank Spike File ID: 980114B\006-0601

Matrix Spike File ID:

Matrix Spike Duplicate File ID:

* = Values Outside QC Range. * = Data outside Method Specification limits.

NC = Not Calculated (Sample exceeds spike by factor of 4 or more)

ND = Not Detected/Below Detection Limit

% Recovery = $\left(\frac{<1> - <2>}{<3>} \right) \times 100$

Relative Percent Difference = $\left| \frac{<4> - <5>}{\left(\frac{<4> + <5>}{2} \right)} \right| \times 100$

(**) = Source: SPL Temporary Limits

SAMPLES IN BATCH(SPL ID):

9801110-01A

CHAIN OF CUSTODY
AND
SAMPLE RECEIPT CHECKLIST

SPL Houston Environmental Laboratory

Sample Login Checklist

Date: 1/6/98	Time: 1100
--------------	------------

SPL Sample ID: 9801110

		Yes	No
1	Chain-of-Custody (COC) form is present.	✓	
2	COC is properly completed.	✓	
3	If no, Non-Conformance Worksheet has been completed.		
4	Custody seals are present on the shipping container.	✓	
5	If yes, custody seals are intact.	✓	
6	All samples are tagged or labeled.	✓	
7	If no, Non-Conformance Worksheet has been completed.		
8	Sample containers arrived intact	✓	
9	Temperature of samples upon arrival:	4	C
10	Method of sample delivery to SPL:	SPL Delivery	
		Client Delivery	
		FedEx Delivery (airbill #)	
		Other: UPS	585 011000 6269
11	Method of sample disposal:	SPL Disposal	✓
		HOLD	
		Return to Client	

Name: Ruben EAL	Date: 1/6/98
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CHAIN OF CUSTODY RECORD

6790

ON SITE

Date: 12/31/97

Page 1 of 1

TECHNOLOGIES, LTD.

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

Purchase Order No.:		Job No. 4-137Z		Name Lacey Teylllo		Title	
SEND INVOICE TO		Company Conoco		Company Conoco			
Address		Dept.		Mailing Address			
City, State, Zip				City, State, Zip		Telephone No.	
Sampling Location: FMTN CON #1				Telephone No.		Telefax No.	
Sampler: Lacey Teylllo				ANALYSIS REQUESTED			
REPORT TO		RESULTS TO		Number of Containers		LAB ID	
PAH, API, Metals		4		PAH, API, Metals, BTEX		17252-6790	
MUS #2 BTEX		4		MUS #2 BTEX		17253-1	
SAMPLE IDENTIFICATION		SAMPLE DATE		TIME		PRES.	
12/31/97		12/31/97		0805		HCl	
Date/Time 12/31/97 0848		Received by: [Signature]		Date/Time 12/31/97 0848			
Relinquished by: [Signature]		Received by:		Date/Time			
Relinquished by:		Received by:		Date/Time			
Method of Shipment:		Rush		24-48 Hours		10 Working Days	
Authorized by:		(Client Signature Must Accompany Request)		Date			
Distribution: White - On Site		Yellow - LAB		Pink - Sampler		Goldenrod - Client	