

3R - 92

REPORTS

DATE:

1997



February 1, 1998

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

RE: 1997 Annual Ground Water Report
Conoco Location: Salmon #1
Unit P, Sec. 30, T29N, R11W, NMPM, San Juan Co., NM

FEB 27 1998

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 May 1997, eighteen (18) test holes were advanced at the Salmon #1 location, to reassess and verify the extent of contamination at this location. This reassessment was necessary due to the change in surface use from range to rural residential. The reassessment determined that approximately 580 cubic yards of contaminated soil would have to be removed. Refer to attached site map.

During June 1997, excavation efforts were done at the Salmon #1 location. During excavation two (2) monitoring wells were placed in the excavated area and were designated DG #1 and DG #3. Approximately 496 cubic yard of suspected contaminated soil was excavated and transported off site to Envirotech's Landfarm Number Two.

During the September 1997, sampling event, while purging DG #2 the bailer became stuck in the well. Several attempts to recover the bailer have failed. This monitoring well is one (1) inch in diameter, making recovery of bailer impossible. Relative ground water elevations for December 22, 1998, sampling event was estimated.

Results of the excavation efforts, site assessment, and initial ground water sampling were previously documented in the following correspondence.

On Site Technologies, Ltd., May 12, 1997. letter to Mr. Neal Goates, Senior Environmental Specialist, Conoco, Inc. Midland Division, regarding: *Corrective Action Proposal, Conoco Location, Salmon #1, Unit P, Sec. 30, T29N, R11W, NMPM, San Juan Co., NM.*

On Site Technologies, Ltd., July 28, 1997. letter to Mr. Neal Goates, Senior Environmental Specialist, Conoco, Inc. Midland Division, regarding: *Salmon #1 Excavation Summary, Conoco Location, Salmon #1, Unit P, Sec. 30, T29N, R11W, NMPM, San Juan Co., NM.*

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

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. 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 NMOCD.

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 Salmon #1 well location:

1. During the two (2) sampling events conducted since the June 1997, excavation, indicate BTEX contamination levels in the ground water have fallen below NMWQCC standards.
2. API water analysis indicates high TDS (i.e., 2,120 mg/L) with high sulfate concentrations. This water quality is typical for shallow ground water at similar sites and is not suspected to have been a result of the ongoing oil and gas production at the site.
3. BTEX contamination of ground water has declined for all constituents and has been below NMWQCC standards for the last two sample events (i.e., August and December, 1997). If BTEX contamination remains below standards for six more quarters, the site should be considered closed and no further remedial actions will need to be taken.
4. The ground water during 1997 fluctuated seasonally with changes in irrigation and flow in the San Juan River. The ground water surface is relatively flat with a gradient of 0.013 to 0.0096 feet/foot to the North-northeast. Refer to the Ground Water Potentiometric Maps attached.

RECOMMENDATIONS:

1. If BTEX contamination levels remains below NMWQCC standards for two (2) more sampling events, monitoring wells should be plugged and abandon in accordance with appropriate regulations.
2. Upon completion ground water monitoring action, a Final Pit Closure Report will have to be submitted to NMOCD for approval.

LIMITATIONS AND CLOSURE:

This annual ground water report documents the results of ground water monitoring for the referenced Conoco well location during the calendar year 1997. This report following 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,



Larry Trujillo
Project Manager

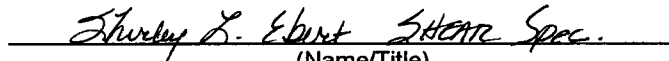


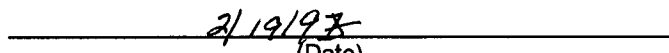
Michael K. Lane, P.E.
Senior Engineer

On Site Technologies, Limited Partnership

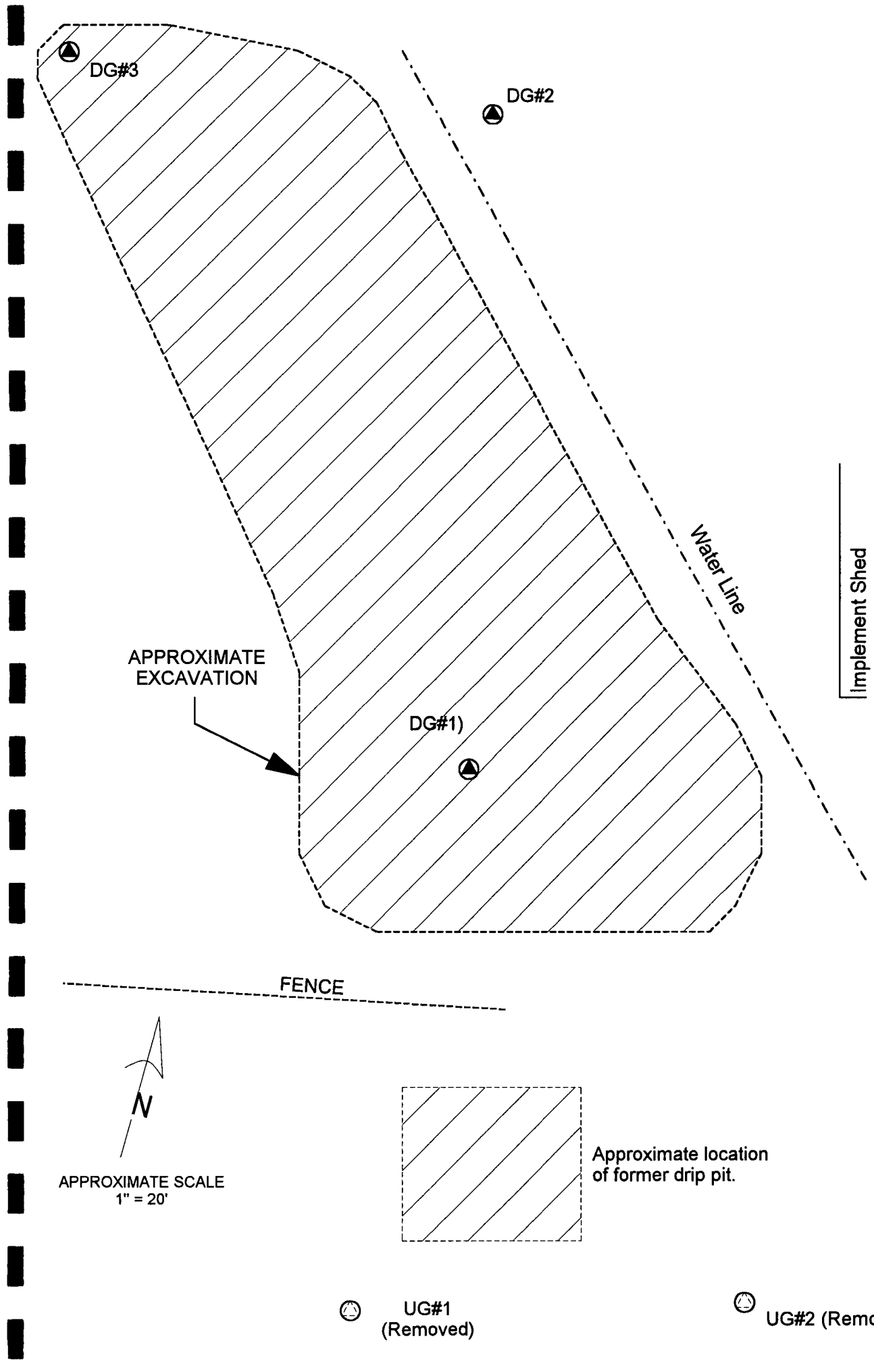
Attachments: Table 1: Monitoring Well Details and Ground Water Levels Summary
Table 2: Ground Water BTEX Analytical Summary
Table 3: Other Constituents Analytical Summary
Figure 1: Site Sketch
Figure 2: Ground Water Potentiometric Map (August, 1997)
Figure 3: Ground Water Potentiometric Map (December,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

Acknowledgment:
CONOCO, Inc.

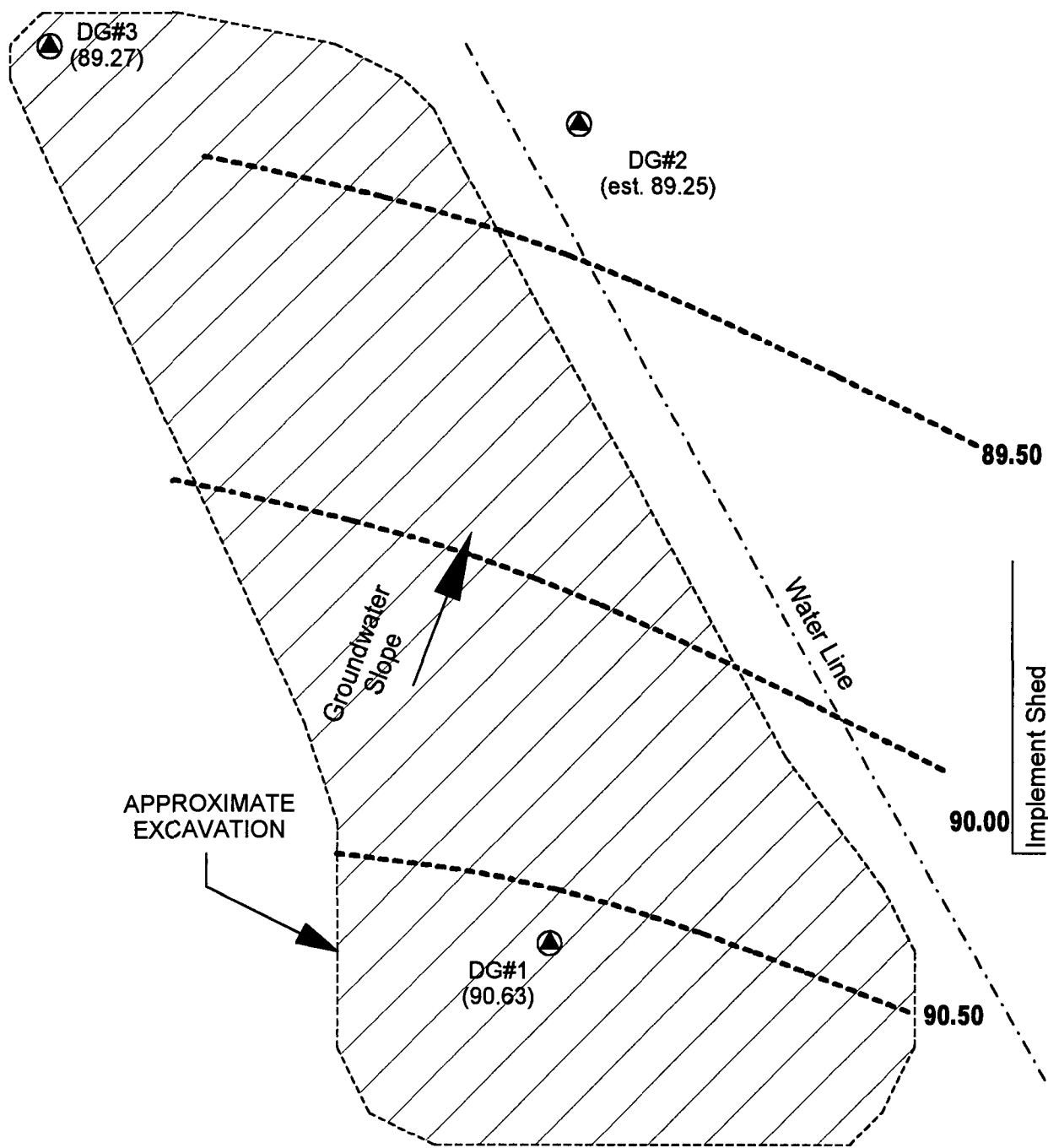

(Name/Title)


(Date)

MKL/mkl: 21377-97.doc



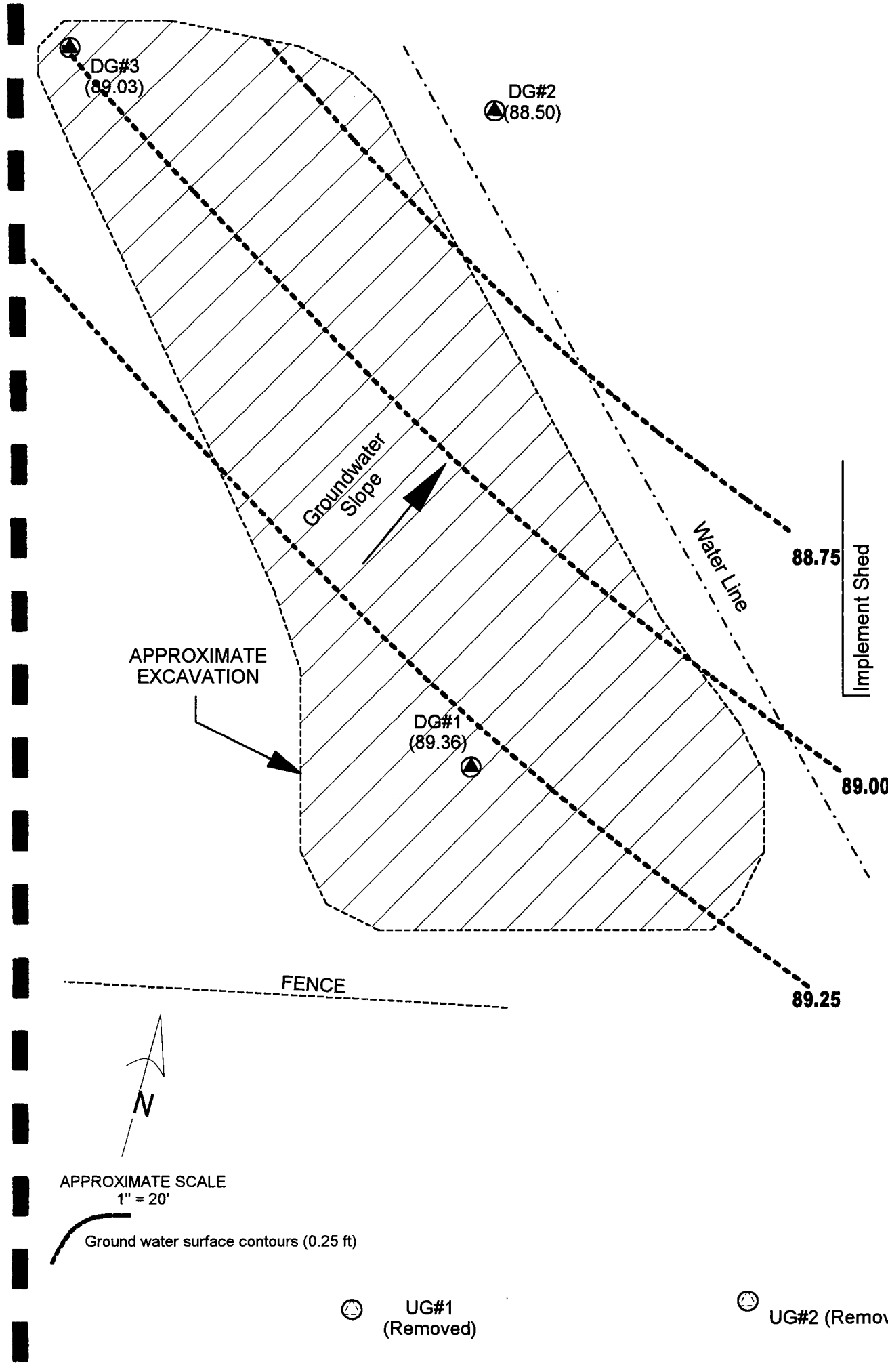
 ON SITE TECHNOLOGIES, LTD. P.O. BOX 2606, FARMINGTON, NM 87499 (505) 325-5667		Implement Shed	
CONOCO, INC. SALMON #1 SAN JUAN CO., NM	Site Sketch		
	PROJECT: 1997 Ground Water Report		DRWN: July 25, 97
	PROJECT NO: 2-1377		DRWN BY: MKL
	FIGURE: 1		REVISED: Feb. 10, 1998



CONOCO, INC. SALMON #1 SAN JUAN CO., NM	Ground Water Potentiometric Map December 22, 1997
PROJECT: 1997 Ground Water Report PROJECT NO: 2-1377	DRWN: July 25, 97 DRWN BY: MKL
FIGURE: 3	REVISED: Feb. 10, 1998

 UG#1
 (Removed)

 UG#2 (Removed)





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 (505) 325-5667

CONOCO, INC. SALMON #1 SAN JUAN CO., NM	Ground Water Potentiometric Map September 16, 1997
	DRWN: July 25, 97
	DRWN BY: MKL
	REVISED: Feb. 10, 1998
PROJECT: 1997 Ground Water Report	
PROJECT NO: 2-1377	
FIGURE: 2	

On Site Technologies
Table 1

Ground Water Level Summary
Salmon #1
Unit P, Sec. 30, T29N, R11W

Well Number	Top of Casing Elevation* (ft)	Total Depth of Well (ft)*	Well Type	Screen Interval (ft) (BGS) *	Sample Date	Depth to Groundwater (ft) (BTOC)*	Relative Groundwater Elevation (ft)
DG#1	93.64	9.2		4.2	9/16/97	2.86	89.36
					12/22/97	3.01	90.63
DG#2	92.45	8.60		3.30	9/16/97	3.95	88.50
					12/22/97	*	
DG#3	92.22	8.2		3.70	09/16/97	3.19	89.03
					12/22/97	2.95	89.27

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

* Bailer stuck in well unable to retrieve

On Site Technologies

Table 2

BTEX Analytical Summary

Salmon #1

Unit P, Sec. 30, T29N, R11W

Sample Date	Sample ID#	Monitor Well	Remarks	BTEX per EPA 8020 (ppb)					
				Benzene	Toluene	Ethylbenzene	Total Xylene	Total BTEX	
07/17/96	03696G01389	UPG#1	IML	BDL	BDL	BDL	BDL	BDL	BDL
07/17/96	03696G01388			BDL	BDL	BDL	BDL	BDL	BDL
07/17/96	0396G01390	DWG#1	IML	0.7	3.3	2.8	3.7	10.5	
03/13/97	13889	MW#1 NE	On Site Lab.	24.4	0.4	0.3	1.5	26.6	
03/26/97	14001			<0.2	<0.2	<0.2	0.3	0.3	
03/13/97	13890	MW#2 N	On Site Lab.	67.8	32.9	11.5	116.6	228.8	
03/20/97				40.7	11.9	8.6	74.2	135.4	
03/13/97	13891	MW#3 SW	On Site Lab.	<0.2	<0.2	<0.2	0.3	0.3	
03/13/97	13892	MW#4 SE	On Site Lab.	<0.2	<0.2	<0.2	0.2	0.2	
09/16/97	16203	DG#1	On Site Lab.	8.1	3.6	16.3	50.6	78.5	
12/22/97	17210			5.8	2.8	3.5	14.7	26.8	
09/16/97		DG#2	On Site Lab.	Not	Sampled	Bailer In	The Well		
12/22/97				"	"	"	"		
09/16/97	16204	DG#3	On Site Lab.	BDL	BDL	BDL	0.2	0.2	
12/22/97	17211			BDL	BDL	BDL	BDL	BDL	
WQCC	ACTION	LEVELS		10.0	750.0	750.0	620.0		

BDL Below Detection Levels

On Site Technologies
Table

Other Constituent Analytical Summary

Salmon #1

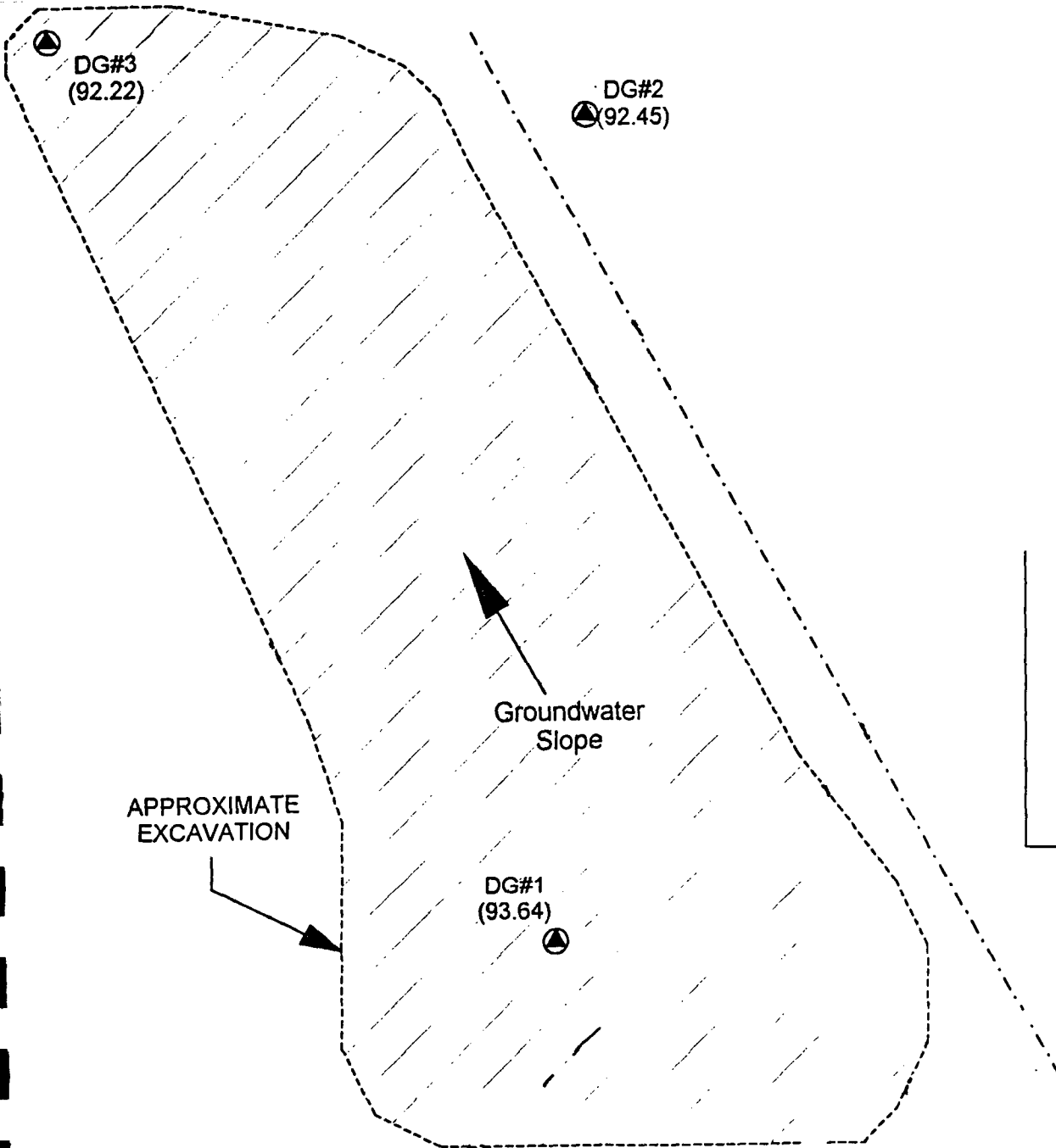
Unit P, Sec. 30, T29N, R11W

API Results

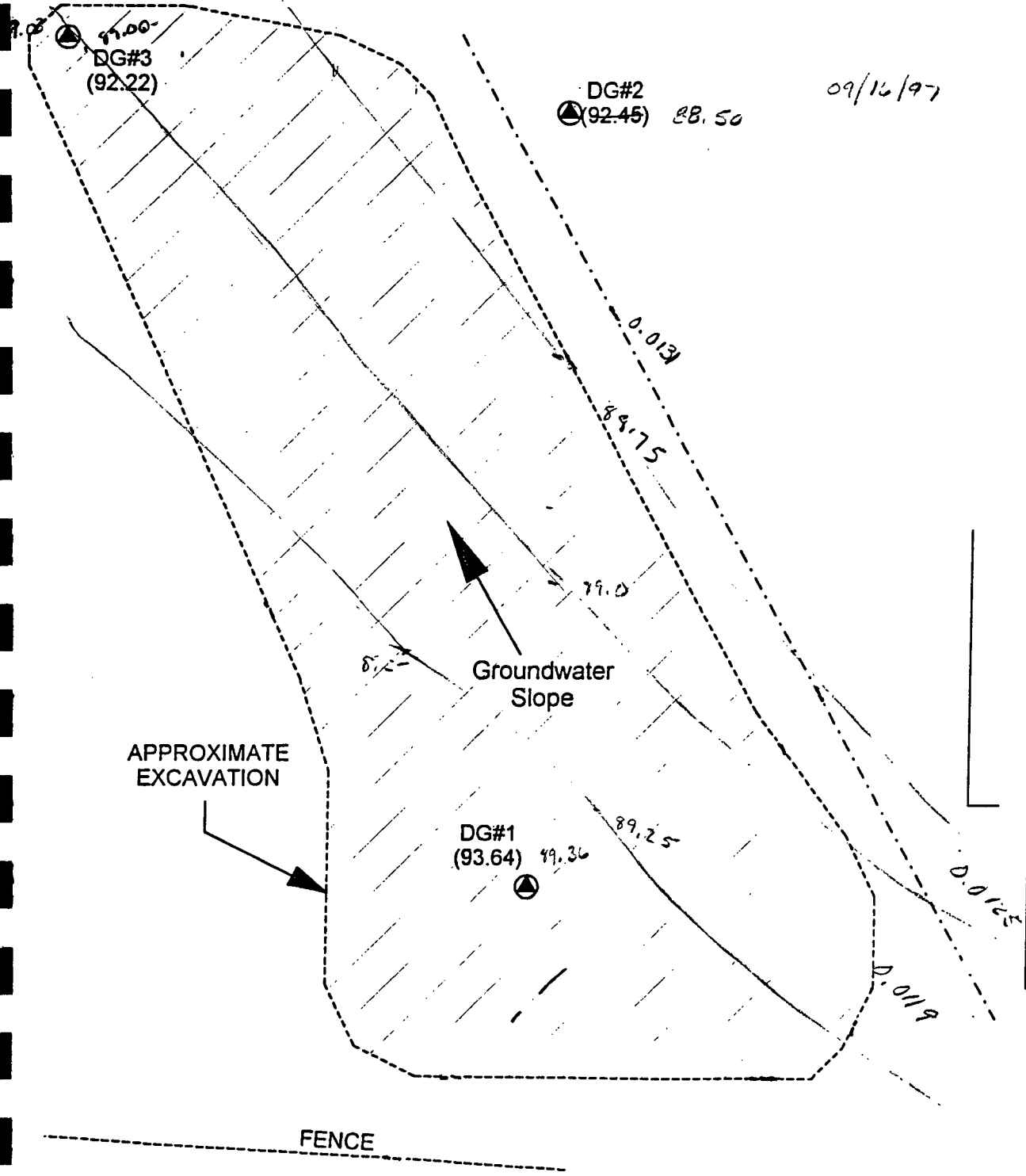
CATIONS				ANIONS			
PARAMETER	RESULTS	UNIT OF MEASURE	WQCC Standards	PARAMETER	RESULTS	UNIT OF MEASURE	WQCC Standards
Sodium	Na	336	mg/L	Chloride	Cl	35	mg/L
Calcium	Ca	224	mg/L	Sulfate	SO ₄	1100	mg/L
Magnesium	Mg	24.0	mg/L	Carbonate	CO ₃	<1	mg/L
Potassium	K	8.8	mg/L	Bicarbonate	HCO ₃	392	mg/L
Sample Date: September 16, 1997				Hydroxide	HO	<1	mg/L
				Sulfide	S ₂	NA	
				Iron	Fe	<0.05	mg/L
				Total Dissolved Solids		2120	mg/L
				pH		7.54	between 6 and 9
Cation-Anion Balance		2.33		Resistivity		3.9370	ohm-m
Difference Cation-Anion me/L		58.31		Specific Gravity		1.0021	
Total Cation-Anion me/L		4.0%		Total hardness of CaCO ₃		658	mg/L

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	0.14	mg/L	1.0	mg/L
Cadmium by ICP	<0.020	mg/L	0.01	mg/L
Chromium by ICP	<0.050	mg/L	0.05	mg/L
Lead by ICP	<0.20	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

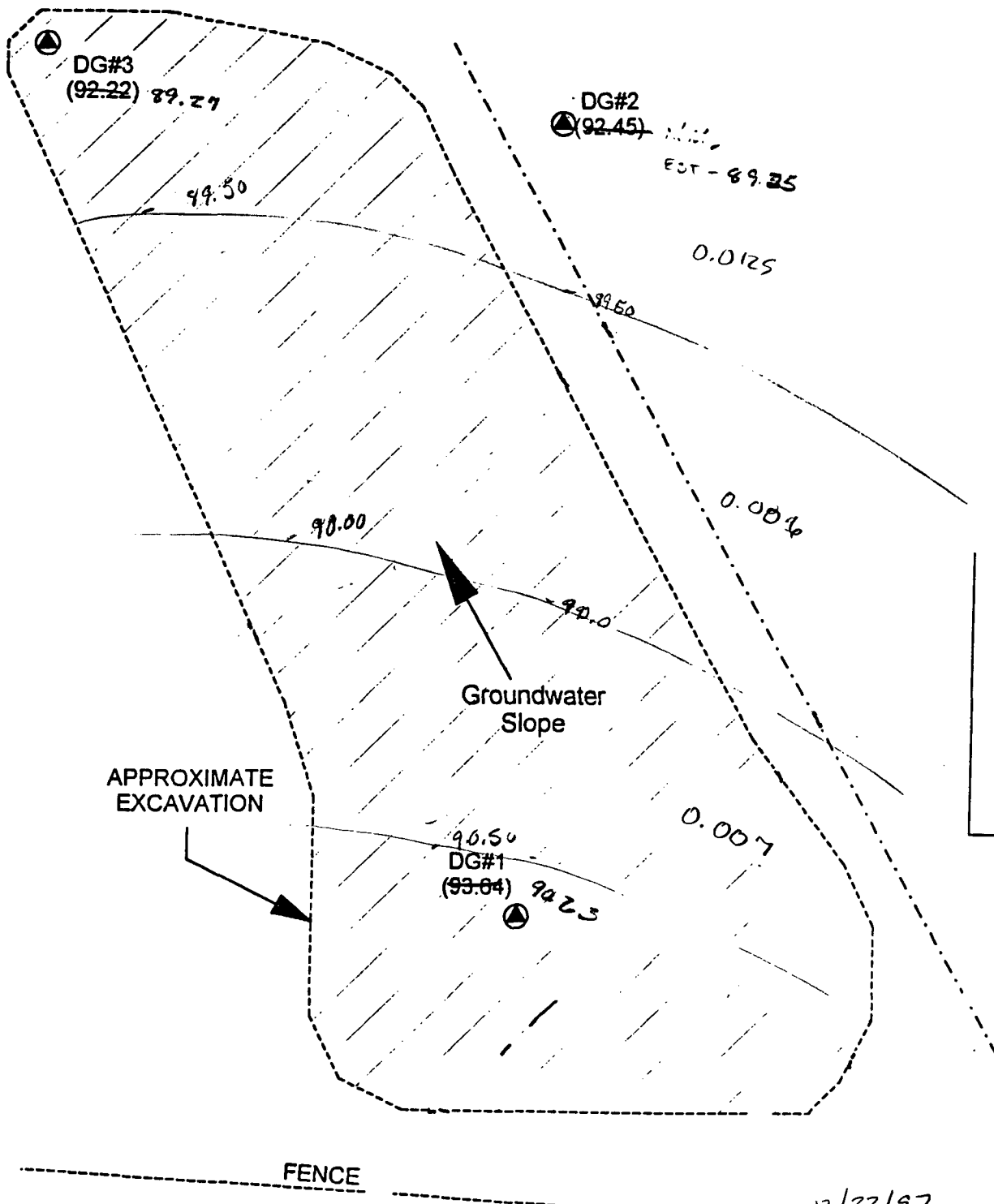


		ON SITE TECHNOLOGIES, LTD. P.O. BOX 1606, FARMINGTON, NM 87499 (505) 323-3467	
CONOCO, INC. SALMON #1 SAN JUAN CO., NM	SITE SKETCH Groundwater Surface		
	PROJECT: ASSESSMENT	DRWN: July 25, 97	
	PROJECT NO: 2-1377	DRWN BY: MKL	
		REVISION:	



 ON SITE TECHNOLOGIES, LTD. P.O. BOX 1404, FARMINGTON, NM 87409 (505) 325-1447		SITE SKETCH Groundwater Surface	
CONOCO, INC. SALMON #1 SAN JUAN CO., NM		PROJECT: ASSESSMENT	DRWN: July 25, 97
PROJECT NO: 2-1377		DRWN BY: NIKI	REVISED:
SHEET 2			

APPROXIMATE SCALE
1" = 20'



APPROXIMATE SCALE
1" = 20'

 ON SITE TECHNOLOGIES, LTD. P.O. BOX 3404, FARMINGTON, NM 87409 (505) 323-1443		SITE SKETCH Groundwater Surface	
CONOCO, INC. SALMON #1 SAN JUAN CO., NM	PROJECT: ASSESSMENT PROJECT NO: 2-1377 SHEET: 2	DRWN: July 25, 97 DRWN BY: MKJ. REVISED:	

OFF: (505) 325-5667



LAB: (505) 325-1556

ANALYTICAL REPORT

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

Date: *30-Dec-97*
COC No.: *6782*
Sample No.: *17210*
Job No.: *4-1377*

Project Name: *Conoco, Inc. - Salmon #1*
Project Location: *MW #1*
Sampled by: *LT*
Analyzed by: *HR*
Sample Matrix: *Liquid*

Date: *22-Dec-97* Time: *11:00*
Date: *26-Dec-97*

Parameter	Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
<i>Benzene</i>	<i>5.8</i>	<i>ug/L</i>	<i>0.2</i>	<i>ug/L</i>
<i>Toluene</i>	<i>2.8</i>	<i>ug/L</i>	<i>0.2</i>	<i>ug/L</i>
<i>Ethylbenzene</i>	<i>3.5</i>	<i>ug/L</i>	<i>0.2</i>	<i>ug/L</i>
<i>m,p-Xylene</i>	<i>14.4</i>	<i>ug/L</i>	<i>0.2</i>	<i>ug/L</i>
<i>o-Xylene</i>	<i>0.3</i>	<i>ug/L</i>	<i>0.2</i>	<i>ug/L</i>
<i>TOTAL</i>	<i>26.8</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: *12/30/97*

OFF: (505) 325-5667



LAB: (505) 325-1556

ANALYTICAL REPORT

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

Date: *30-Dec-97*
COC No.: *6782*
Sample No.: *17211*
Job No.: *4-1377*

Project Name: *Conoco, Inc. - Salmon #1*
Project Location: *MW #3*
Sampled by: *LT*
Analyzed by: *HR*
Sample Matrix: *Liquid*

Date: *22-Dec-97* Time: *11:00*
Date: *26-Dec-97*

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: *12/30/97*

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

REPORT RESULTS TO

[illegible]

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

Date:

Distribution:	White – On Site	Yellow – LAB	Pink – Sampler	Goldenrod – Client
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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: *26-Sep-97*
COC No.: *6477*
Sample No.: *16204*
Job No.: *4-1377*

Project Name: *Conoco, Inc. - Salmon #1*
Project Location: *4-1377-MW#3*
Sampled by: *LT*
Analyzed by: *DC*
Sample Matrix: *Liquid*

Date: *16-Sep-97* Time: *9:53*
Date: *18-Sep-97*

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>	0.2	ug/L	0.2	ug/L
<i>o-Xylene</i>	ND	ug/L	0.2	ug/L
<i>TOTAL</i>	0.2	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: *9/29/97*

P.O. BOX 2606 • FARMINGTON, NM 87499

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ON SITE
TECHNOLOGIES, LTD.

QUALITY ASSURANCE REPORT *for EPA Method 8020*

Internal QC No.: 0527-STD
Surrogate QC No.: 0528-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	19.4	3	15%
<i>Toluene</i>	ppb	20.0	20.1	0	15%
<i>Ethylbenzene</i>	ppb	20.0	20.2	1	15%
<i>m,p-Xylene</i>	ppb	40.0	39.1	2	15%
<i>o-Xylene</i>	ppb	20.0	20.1	0	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>	91	89	(39-150)	2	20%
<i>Toluene</i>	97	95	(46-148)	2	20%
<i>Ethylbenzene</i>	95	93	(32-160)	2	20%
<i>m,p-Xylene</i>	90	84	(35-145)	1	20%
<i>o-Xylene</i>	92	90	(35-145)	2	20%

	S1 Percent Recovered	S2 Percent Recovered		S1 Percent Recovered	S2 Percent Recovered
Laboratory Identification			Laboratory Identification		
Limit Percent Recovered	(70-130)		Limit Percent Recovered	(70-130)	
16203-6477	88				
16204-6477	95				
				JHR 10/16/97	(pc) 9/29/97

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OFF: (505) 325-5667



LAB: (505) 325-1556

QUALITY ASSURANCE REPORT

API RP-45 Water Analysis

Date: 25-Sep-97

Quality Control Sample

Parameter	Laboratory Identification	True Value	Analyzed Value	Unit of Measure	% Diff	Limit % Diff
Sodium, Na	0541-QC	2.32	2.22	mg/L	-4	10
Calcium, Ca	0465-QC	2.18	2.03	mg/L	-7	10
Magnesium, Mg	0465-QC	1.14	1.22	mg/L	7	10
Potassium, K	0541-QC	1.33	1.30	mg/L	-2	10
Chloride, Cl	0538-QC	66	70	mg/L	5	10
Sulfate, SO ₄	0538-QC	78	79	mg/L	2	10
Alkalinity	0538-QC	159	156	mg/L	-2	10
Iron, Fe	0495-QC	1.00	0.98	mg/L	-2	10
pH	0538-QC	9.13	9.30		2	10
Conductivity	0541-QC	740	738	uS/cm	0	15

Matrix Spike

Parameter	Laboratory Identification	Analyzed Value	Matrix Spike	Spike Value	Unit of Measure	Spike Recovery
Sodium, Na	16203-6477	0.84	0.50	1.38	mg/L	103%
Calcium, Ca	16208-6478	1.28	0.50	1.75	mg/L	98%
Magnesium, Mg	16208-6478	1.95	0.50	2.45	mg/L	100%
Potassium, K	16203-6477	0.88	0.50	1.36	mg/L	99%
Iron, Fe	16308-6500	0.04	0.50	0.50	mg/L	93%

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

10/15/97 10/16/97

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: *26-Sep-97*
COC No.: *6477*
Sample No.: *16203*
Job No.: *4-1377*

Project Name: *Conoco, Inc. - Salmon #1*
Project Location: *4-1377-MW#1*
Sampled by: *LT*
Analyzed by: *DC*
Sample Matrix: *Liquid*

Date: *16-Sep-97* Time: *9:44*
Date: *18-Sep-97*

Parameter	Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
<i>Benzene</i>	<i>8.1</i>	<i>ug/L</i>	<i>0.2</i>	<i>ug/L</i>
<i>Toluene</i>	<i>3.6</i>	<i>ug/L</i>	<i>0.2</i>	<i>ug/L</i>
<i>Ethylbenzene</i>	<i>16.3</i>	<i>ug/L</i>	<i>0.2</i>	<i>ug/L</i>
<i>m,p-Xylene</i>	<i>49.3</i>	<i>ug/L</i>	<i>0.2</i>	<i>ug/L</i>
<i>o-Xylene</i>	<i>1.3</i>	<i>ug/L</i>	<i>0.2</i>	<i>ug/L</i>
<i>TOTAL</i>	<i>78.5</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: *9/29/97*

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- TECHNOLOGY BLENDING INDUSTRY WITH THE ENVIRONMENT -

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: **10-Oct-97**
 COC No.: **6477**
 Sample ID: **16203**
 Job No.: **4-1377**

Project Name: **Conoco Inc. - Salmon #1**
 Project Location: **4-1377; MW#1**
 Sampled by: **LT**
 Analyzed by: **HR**

Date: **16-Sep-97** Time: **9:40**
 Date: **25-Sep-97**

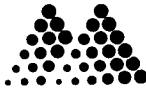
API RP-45 Laboratory Analysis

Parameter	Result	Unit of Measure	Result	Unit of Measure
<u>Cations</u>				
Sodium Na	336	mg/L	14.62	me/L
Calcium Ca	224	mg/L	11.18	me/L
Magnesium Mg	24.0	mg/L	1.97	me/L
Potassium K	8.8	mg/L	0.23	me/L
<u>Anions</u>				
Chloride Cl	35	mg/L	0.99	me/L
Sulfate SO4	1100	mg/L	22.90	me/L
Carbonate CO3	< 1	mg/L	< 0.01	me/L
Bicarbonate HCO3	392	mg/L	6.42	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			<u>Cation-Anion Balance</u>	
Calculated, Sum of Cation/Anion	2120	mg/L	2.33	Difference Cation-Anion, me/L
			58.31	Total Cation-Anion, me/L
			4.0	% Difference Cation-Anion
pH	7.54		<u>Comments</u>	
Resistivity	3.9370	ohm-m	NA: Not Analyzed	
Specific Gravity	1.0021			
Total Hardness as CaCO3	658	mg/L		

Approved by: *[Signature]*
 Date: *10/15/97*

P.O. BOX 2606 • FARMINGTON, NM 87499

- TECHNOLOGY BLENDING INDUSTRY WITH THE ENVIRONMENT -



Mountain States Analytical, Inc.

The Quality Solution

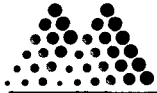
On Site Technologies, Ltd.
612 E Murray Drive
Farmington, NM 87401

Attn: Mr. David Cox
Project: Salmon #1

Sample ID: 16203-6477
Matrix: Waste Water

MSAI Sample: 68591
MSAI Group: 17958
Date Reported: 10/09/97
Discard Date: 11/08/97
Date Submitted: 09/23/97
Date Sampled: 09/16/97
Collected by: DC
Purchase Order:
Project No.:

Test Analysis	Results as Received	Units	Limit of Quantitation
0259B Mercury by CVAA, w/ww, 7470 Method: SW-846 7470	ND	mg/l	0.0005
0392I Flame/ICP Prep, w/ww, 3005A Method: SW-846 3005A	Complete		
0392M Mercury Prep CVAA, w/ww, 7470 Method: SW-846 7470	W 0		
7245 Arsenic by ICP, w/ww, 6010A Method: SW-846 6010A	ND	mg/l	0.15
7246 Barium by ICP, w/ww, 6010A Method: SW-846 6010A	0.14	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	ND	mg/l	0.050
7255 Lead by ICP, w/ww, 6010A Method: SW-846 6010A	ND	mg/l	0.20
7264 Selenium by ICP, w/ww, 6010A Method: SW-846 6010A	ND	mg/l	0.35
7266 Silver by ICP, w/ww, 6010A Method: SW-846 6010A	ND	mg/l	0.030



Mountain States Analytical, Inc.

October 9, 1997

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

Reference:

Project: Salmon #1
MSAI Group: 17958

Dear Mr. Cox:

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

16203-6477

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

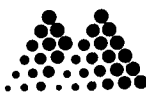
If the report is acceptable, please approve the enclosed invoice and forward it for payment.

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



Mountain States Analytical, Inc.

On Site Technologies, Ltd.

The Quality Solution

Page 2

Sample ID: 16203-6477

MSAI Sample: 68591

MSAI Group: 17958

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

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

10/09/97
15:19:45
Group: 17958

Analysis Batch Number: 0259B-10/07/97-107 -1

Test Identification : 0259B-Mercury by CVAA, w/ww, 7470

Sequence : 0259B-1

Number of Samples : 8

Batch Data-Date/Time : 10/08/97 / 13:18:09

BLANK#	ANALYTE	CONC FOUND #	CONC LIMIT
1BW1-698	Mercury	-0.0900	0.1000

SPIKE						QC LIMITS	
SAMPLE#	ANALYTE	CONC ADDED	CONC SAMPLE	CONC SPIKE	% REC #	LOWER	UPPER
17959-68592	Mercury	2.0000	0.1200	1.7800	83.0	80.0	120.0

SD						QC LIMITS			
SAMPLE#	ANALYTE	CONC ADDED	CONC SAMPLE	RESULT 2	%REC2 #	LOWER	UPPER	RPD #	LIMIT
17959-68592	Mercury	2.0000	0.1200	1.8200	85.0	80.0	120.0	2.2	20.0

DUPLICATE							
SAMPLE#	ANALYTE	RESULT 1	RESULT 2	RPD #	LIMIT	DILUTION	
17958-68591	Mercury	0.0200	-0.0400	600.0(11)	20.0	1.00	

CONTROL						QC LIMITS	
SAMPLE#	ANALYTE	CONC FOUND	CONC KNOWN	% REC #	LOWER	UPPER	
1CSW-698	Mercury	2.3700	2.5000	94.8	80.0	120.0	

		QC LIMITS				
CV #	ANALYTE	TRUE VALUE	BATCH READ	% REC #	LOWER	UPPER
1CV-	Mercury	3.0000	2.8600	95.3	90.0	110.0
CCV--2	Mercury	5.0000	5.0500	101.0	80.0	120.0
1CV--3	Mercury	5.0000	5.1700	103.4	80.0	120.0
1CV--4	Mercury	5.0000	5.2100	104.2	80.0	120.0

CCB#	ANALYTE	CONC FOUND #	CONC LIMIT
1CB-	Mercury	0.0300	0.1000
1CB-	Mercury	0.0900	0.1000
1CB-	Mercury	0.0300	0.1000
1CB-	Mercury	0.0500	0.1000

----- Result Footnotes -----
(11) - Both Duplicate results are less than the MDL.

Groups & Samples

17956-68588 17956-68589 17957-68590 17958-68591 17959-68592 17961-68594 17961-68595 17962-68596

Analysis Batch Number: ICPWA-10/02/97-118 -1

Test Identification : ICPWA-*Metals by ICP

Sequence : DATB275

Number of Samples : 18

Batch Data-Date/Time : 10/03/97 / 12:21:19

ANK#	ANALYTE	CONC FOUND #	CONC LIMIT
PBW1-670	Silver	ND	0.0060
	Aluminum	0.0193	0.0500
	Arsenic	0.0064	0.0300
	Barium	0.0013	0.0030
	Beryllium	ND	0.0002
	Calcium	0.1138	0.4000
	Cadmium	0.0005	0.0040
	Chromium	0.0014	0.0100
	Copper	0.0050	0.0100
	Iron	0.0380	0.2000
	Potassium	0.0292	0.1000
	Magnesium	0.0206	0.0500
	Manganese	0.0016	0.0020
	Molybdenum	0.0152	0.0300
	Sodium	0.0604	0.2000
	Nickel	0.0050	0.0300
	Lead	ND	0.0400
	Antimony	ND	0.1000
	Selenium	ND	0.0700
	Silicon	0.0459	0.2000
	Thallium	0.0054	0.1000
	Vanadium	ND	0.0030
PBW2-670-2	Zinc	0.0296	0.0300
	Silver	ND	0.0060
	Aluminum	0.0054	0.0500
	Arsenic	ND	0.0300
	Barium	0.0002	0.0030
	Beryllium	ND	0.0002
	Calcium	0.0586	0.4000
	Cadmium	ND	0.0040
	Chromium	0.0001	0.0100
	Copper	0.0045	0.0100
	Iron	0.0121	0.2000
	Potassium	0.0038	0.1000
	Magnesium	0.0106	0.0500
	Manganese	0.0009	0.0020
	Molybdenum	0.0111	0.0300
	Sodium	0.0070	0.2000
	Nickel	ND	0.0300
	Lead	0.0001	0.0400
	Antimony	0.0197	0.1000
	Selenium	ND	0.0700
	Silicon	0.0927	0.2000
	Thallium	ND	0.1000
	Vanadium	ND	0.0030
	Zinc	0.0027	0.0300

Analysis Batch Number: ICPWA-10/02/97-118 -1

Test Identification : ICPWA-*Metals by ICP

Sequence : DATB275

Number of Samples : 18

Batch Data-Date/Time : 10/03/97 / 12:21:19

SPIKE

SAMPLE#	ANALYTE					QC LIMITS	
		CONC ADDED	CONC SAMPLE	CONC SPIKE	% REC #	LOWER	UPPER
17956-68588	Silver	0.0500	-0.0010	0.0442	90.4	80.0	120.0
	Aluminum	2.0000	9.8158	15.4624	282.3(2a)	80.0	120.0
	Arsenic	2.0000	0.0163	1.8581	92.1	80.0	120.0
	Barium	2.0000	0.1714	1.8801	85.4	80.0	120.0
	Beryllium	0.0500	0.0017	0.0455	87.6	80.0	120.0
	Calcium	2.0000	624.8877	628.1472	163.0(2a)	80.0	120.0
	Cadmium	0.0500	0.0007	0.0473	93.2	80.0	120.0
	Chromium	0.2000	0.0072	0.1861	89.4	80.0	120.0
	Copper	0.2500	0.0514	0.2654	85.6	80.0	120.0
	Iron	1.0000	21.0847	23.5782	249.3(2a)	80.0	120.0
	Potassium	10.0000	14.4180	24.4076	99.9	80.0	120.0
	Magnesium	2.0000	55.4827	57.8857	120.1(2a)	80.0	120.0
	Manganese	0.5000	20.3162	20.8274	102.2	80.0	120.0
	Molybdenum	0.5000	0.0247	0.4674	88.5	80.0	120.0
	Sodium	3.0000	164.0427	167.3475	110.2	80.0	120.0
	Nickel	0.5000	0.0378	0.4738	87.2	80.0	120.0
	Lead	0.5000	0.0191	0.4421	84.6	80.0	120.0
	Antimony	0.5000	0.0000	0.3993	79.9(A1)	80.0	120.0
	Selenium	2.0000	-0.0525	1.8224	93.7	80.0	120.0
	Silicon	2.0000	26.0226	33.8212	389.9(2a)	80.0	120.0
	Thallium	2.0000	0.0911	1.8017	85.5	80.0	120.0
	Vanadium	0.5000	0.0235	0.4729	89.9	80.0	120.0
	Zinc	0.5000	0.0973	0.5342	87.4	80.0	120.0

MSD

SAMPLE#	ANALYTE					QC LIMITS			
		CONC ADDED	CONC SAMPLE	RESULT 2	%REC2 #	LOWER	UPPER	RPD #	LIMIT
17956-68588	Silver	0.0500	-0.0010	0.0489	99.8	80.0	120.0	10.1	20.0
	Aluminum	2.0000	9.8158	15.5592	287.2(2a)	80.0	120.0	0.6	20.0
	Arsenic	2.0000	0.0163	1.8846	93.4	80.0	120.0	1.4	20.0
	Barium	2.0000	0.1714	1.9214	87.5	80.0	120.0	2.2	20.0
	Beryllium	0.0500	0.0017	0.0463	89.2	80.0	120.0	1.7	20.0
	Calcium	2.0000	624.8877	615.1779	-485.5(2a)	80.0	120.0	2.1(2a)	20.0
	Cadmium	0.0500	0.0007	0.0474	93.4	80.0	120.0	0.2	20.0
	Chromium	0.2000	0.0072	0.1921	92.4	80.0	120.0	3.2	20.0
	Copper	0.2500	0.0514	0.2714	88.0	80.0	120.0	2.2	20.0
	Iron	1.0000	21.0847	23.7541	266.9(2a)	80.0	120.0	0.7	20.0
	Potassium	10.0000	14.4180	24.7133	103.0	80.0	120.0	1.2	20.0
	Magnesium	2.0000	55.4827	57.0179	76.8(2a)	80.0	120.0	1.5(2a)	20.0
	Manganese	0.5000	20.3162	20.5152	39.8(2a)	80.0	120.0	1.5(2a)	20.0
	Molybdenum	0.5000	0.0247	0.4775	90.6	80.0	120.0	2.1	20.0
	Sodium	3.0000	164.0427	164.3913	11.6(2a)	80.0	120.0	1.8(2a)	20.0
	Nickel	0.5000	0.0378	0.4666	85.8	80.0	120.0	1.5	20.0
	Lead	0.5000	0.0191	0.4537	86.9	80.0	120.0	2.6	20.0
	Antimony	0.5000	0.0809	0.4267	69.2(A1)	80.0	120.0	6.6	20.0
	Selenium	2.0000	-0.0525	1.8262	93.9	80.0	120.0	0.2	20.0
	Silicon	2.0000	26.0226	35.0630	452.0(2a)	80.0	120.0	3.6	20.0
	Thallium	2.0000	0.0911	1.8211	86.5	80.0	120.0	1.1	20.0
	Vanadium	0.5000	0.0235	0.4806	91.4	80.0	120.0	1.6	20.0
	Zinc	0.5000	0.0973	0.5424	89.0	80.0	120.0	1.5	20.0

Analysis Batch Number: ICPWA-10/02/97-118 -1

Test Identification : ICPWA-*Metals by ICP

Sequence : DATB275

Number of Samples : 18

Batch Data-Date/Time : 10/03/97 / 12:21:19

DUPLICATE

SAMPLE#	ANALYTE	RESULT 1	RESULT 2	RPD #	LIMIT	DILUTION
17956-68588	Silver	-0.0010	0.0023	507.7(11)	20.0	1.00
	Aluminum	9.8158	8.1057	19.1	20.0	1.00
	Arsenic	0.0163	0.0113	36.2(11)	20.0	1.00
	Barium	0.1714	0.1518	12.1	20.0	1.00
	Beryllium	0.0017	0.0017	0.0	20.0	1.00
	Calcium	624.8877	610.9565	2.3	20.0	1.00
	Cadmium	0.0007	0.0029	122.2(11)	20.0	1.00
	Chromium	0.0072	0.0086	17.7	20.0	1.00
	Copper	0.0514	0.0502	2.4	20.0	1.00
	Iron	21.0847	19.6861	6.9	20.0	1.00
	Potassium	14.4180	13.6026	5.8	20.0	1.00
	Magnesium	55.4827	53.6734	3.3	20.0	1.00
	Manganese	20.3162	19.8042	2.6	20.0	1.00
	Molybdenum	0.0247	0.0164	40.4(11)	20.0	1.00
	Sodium	164.0427	156.4015	4.8	20.0	1.00
	Nickel	0.0378	0.0344	9.4	20.0	1.00
	Lead	0.0191	0.0151	23.4(11)	20.0	1.00
	Antimony	0.0809	0.0479	51.2(11)	20.0	1.00
	Selenium	-0.0525	0.0000	200.0(11)	20.0	1.00
	Silicon	26.0226	23.5304	10.1	20.0	1.00
	Thallium	0.0911	0.0537	51.7(11)	20.0	1.00
	Vanadium	0.0235	0.0214	9.4	20.0	1.00
	Zinc	0.0973	0.0877	10.4	20.0	1.00

CONTROL

SAMPLE#	ANALYTE	CONC FOUND	CONC KNOWN	% REC #	QC LIMITS	
CSW-670	Silver	0.0450	0.0500	90.0	80.0	120.0
	Aluminum	1.9110	2.0000	95.6	80.0	120.0
	Arsenic	1.9465	2.0000	97.3	80.0	120.0
	Barium	1.8681	2.0000	93.4	80.0	120.0
	Beryllium	0.0478	0.0500	95.6	80.0	120.0
	Calcium	2.0468	2.0000	102.3	80.0	120.0
	Cadmium	0.0491	0.0500	98.2	80.0	120.0
	Chromium	0.1977	0.2000	98.9	80.0	120.0
	Copper	0.2360	0.2500	94.4	80.0	120.0
	Iron	0.9697	1.0000	97.0	80.0	120.0
	Potassium	9.6682	10.0000	96.7	80.0	120.0
	Magnesium	1.9609	2.0000	98.0	80.0	120.0
	Manganese	0.4854	0.5000	97.1	80.0	120.0
	Molybdenum	0.4946	0.5000	98.9	80.0	120.0
	Sodium	2.9941	3.0000	99.8	80.0	120.0
	Nickel	0.4869	0.5000	97.4	80.0	120.0
	Lead	0.4985	0.5000	99.7	80.0	120.0
	Antimony	0.4445	0.5000	88.9	80.0	120.0
	Selenium	1.9148	2.0000	95.7	80.0	120.0
	Silicon	1.9804	2.0000	99.0	80.0	120.0
	Thallium	1.9557	2.0000	97.8	80.0	120.0
	Vanadium	0.4870	0.5000	97.4	80.0	120.0
	Zinc	0.4834	0.5000	96.7	80.0	120.0

Analysis Batch Number: ICPWA-10/02/97-118 -1

Test Identification : ICPWA-*Metals by ICP

Sequence : DATB275

Number of Samples : 18

Batch Data-Date/Time : 10/03/97 / 12:21:19

CV #	ANALYTE	TRUE VALUE	BATCH READ	QC LIMITS		
				% REC #	LOWER	UPPER
ICV-	Silver	0.4000	0.3964	99.1	90.0	110.0
	Aluminum	20.0000	19.1585	95.8	90.0	110.0
	Arsenic	1.6000	1.5872	99.2	90.0	110.0
	Barium	4.0000	3.8304	95.8	90.0	110.0
	Beryllium	0.4000	0.3901	97.5	90.0	110.0
	Calcium	40.0000	40.1705	100.4	90.0	110.0
	Cadmium	4.0000	3.9535	98.8	90.0	110.0
	Chromium	4.0000	4.1066	102.7	90.0	110.0
	Copper	4.0000	3.8662	96.7	90.0	110.0
	Iron	4.0000	4.0692	101.7	90.0	110.0
	Potassium	40.0000	38.0531	95.1	90.0	110.0
	Magnesium	20.0000	19.3594	96.8	90.0	110.0
	Manganese	4.0000	3.9836	99.6	90.0	110.0
	Molybdenum	20.0000	20.3030	101.5	90.0	110.0
	Sodium	40.0000	37.2168	93.0	90.0	110.0
	Nickel	8.0000	7.9838	99.8	90.0	110.0
	Lead	20.0000	20.1874	100.9	90.0	110.0
	Antimony	4.0000	4.0015	100.0	90.0	110.0
	Selenium	1.6000	1.5349	95.9	90.0	110.0
	Silicon	1.6000	1.6574	103.6	90.0	110.0
	Thallium	4.0000	3.9596	99.0	90.0	110.0
	Vanadium	1.6000	1.5553	97.2	90.0	110.0
	Zinc	4.0000	3.9384	98.5	90.0	110.0
ICV1--2	Silver	0.4000	0.3955	98.9	90.0	110.0
	Aluminum	20.0000	19.4301	97.2	90.0	110.0
	Arsenic	1.6000	1.5657	97.9	90.0	110.0
	Barium	4.0000	3.8164	95.4	90.0	110.0
	Beryllium	0.4000	0.3840	96.0	90.0	110.0
	Calcium	40.0000	39.6588	99.1	90.0	110.0
	Cadmium	4.0000	3.8962	97.4	90.0	110.0
	Chromium	4.0000	4.0424	101.1	90.0	110.0
	Copper	4.0000	3.8584	96.5	90.0	110.0
	Iron	4.0000	4.0902	102.3	90.0	110.0
	Potassium	40.0000	37.8083	94.5	90.0	110.0
	Magnesium	20.0000	19.3860	96.9	90.0	110.0
	Manganese	4.0000	3.9478	98.7	90.0	110.0
	Molybdenum	20.0000	20.0684	100.3	90.0	110.0
	Sodium	40.0000	37.5082	93.8	90.0	110.0
	Nickel	8.0000	7.8509	98.1	90.0	110.0
	Lead	20.0000	20.0413	100.2	90.0	110.0
	Antimony	4.0000	3.8553	96.4	90.0	110.0
	Selenium	1.6000	1.5364	96.0	90.0	110.0
	Silicon	1.6000	1.6484	103.0	90.0	110.0
	Thallium	4.0000	3.8984	97.5	90.0	110.0
	Vanadium	1.6000	1.5437	96.5	90.0	110.0
	Zinc	4.0000	3.8874	97.2	90.0	110.0
ICV3--3	Silver	0.4000	0.4031	100.8	90.0	110.0
	Aluminum	20.0000	19.8229	99.1	90.0	110.0
	Arsenic	1.6000	1.6116	100.7	90.0	110.0

Analysis Batch Number: ICPWA-10/02/97-118 -1

Test Identification : ICPWA-*Metals by ICP

Sequence : DATB275

Number of Samples : 18

Batch Data-Date/Time : 10/03/97 / 12:21:19

CV #	ANALYTE	QC LIMITS			
		TRUE VALUE	BATCH READ	% REC #	LOWER UPPER
CCV3--3	Barium	4.0000	3.7625	94.1	90.0 110.0
	Beryllium	0.4000	0.3929	98.2	90.0 110.0
	Calcium	40.0000	40.5814	101.5	90.0 110.0
	Cadmium	4.0000	3.9254	98.1	90.0 110.0
	Chromium	4.0000	4.0540	101.4	90.0 110.0
	Copper	4.0000	3.7990	95.0	90.0 110.0
	Iron	4.0000	3.9559	98.9	90.0 110.0
	Potassium	40.0000	39.4701	98.7	90.0 110.0
	Magnesium	20.0000	19.9198	99.6	90.0 110.0
	Manganese	4.0000	3.9365	98.4	90.0 110.0
	Molybdenum	20.0000	19.9715	99.9	90.0 110.0
	Sodium	40.0000	39.4913	98.7	90.0 110.0
	Nickel	8.0000	7.8848	98.6	90.0 110.0
	Lead	20.0000	20.0248	100.1	90.0 110.0
	Antimony	4.0000	3.9634	99.1	90.0 110.0
	Selenium	1.6000	1.5651	97.8	90.0 110.0
	Silicon	1.6000	1.6585	103.7	90.0 110.0
	Thallium	4.0000	3.9366	98.4	90.0 110.0
	Vanadium	1.6000	1.5663	97.9	90.0 110.0
	Zinc	4.0000	3.9044	97.6	90.0 110.0
CCV4--4	Silver	0.4000	0.4034	100.9	90.0 110.0
	Aluminum	20.0000	19.7115	98.6	90.0 110.0
	Arsenic	1.6000	1.6084	100.5	90.0 110.0
	Barium	4.0000	3.7167	92.9	90.0 110.0
	Beryllium	0.4000	0.3944	98.6	90.0 110.0
	Calcium	40.0000	41.0179	102.5	90.0 110.0
	Cadmium	4.0000	3.9885	99.7	90.0 110.0
	Chromium	4.0000	4.0841	102.1	90.0 110.0
	Copper	4.0000	3.7672	94.2	90.0 110.0
	Iron	4.0000	4.0335	100.8	90.0 110.0
	Potassium	40.0000	39.3301	98.3	90.0 110.0
	Magnesium	20.0000	19.8714	99.4	90.0 110.0
	Manganese	4.0000	3.9529	98.8	90.0 110.0
	Molybdenum	20.0000	20.1712	100.9	90.0 110.0
	Sodium	40.0000	38.6626	96.7	90.0 110.0
	Nickel	8.0000	7.9696	99.6	90.0 110.0
	Lead	20.0000	20.4132	102.1	90.0 110.0
	Antimony	4.0000	4.0318	100.8	90.0 110.0
	Selenium	1.6000	1.5555	97.2	90.0 110.0
	Silicon	1.6000	1.6630	103.9	90.0 110.0
CCV5--5	Thallium	4.0000	4.0951	102.4	90.0 110.0
	Vanadium	1.6000	1.5737	98.4	90.0 110.0
	Zinc	4.0000	3.9076	97.7	90.0 110.0
	Silver	0.4000	0.4048	101.2	90.0 110.0
	Aluminum	20.0000	19.9291	99.6	90.0 110.0
	Arsenic	1.6000	1.6115	100.7	90.0 110.0
	Barium	4.0000	3.7499	93.7	90.0 110.0
	Beryllium	0.4000	0.3969	99.2	90.0 110.0
	Calcium	40.0000	41.0726	102.7	90.0 110.0

Analysis Batch Number: ICPWA-10/02/97-118 -1

Test Identification : ICPWA-*Metals by ICP

Sequence : DAT8275

Number of Samples : 18

Batch Data-Date/Time : 10/03/97 / 12:21:19

CV #	ANALYTE	QC LIMITS			
		TRUE VALUE	BATCH READ	% REC #	LOWER UPPER
CCV5--5	Cadmium	4.0000	3.9626	99.1	90.0 110.0
	Chromium	4.0000	4.0761	101.9	90.0 110.0
	Copper	4.0000	3.7917	94.8	90.0 110.0
	Iron	4.0000	4.0093	100.2	90.0 110.0
	Potassium	40.0000	39.4128	98.5	90.0 110.0
	Magnesium	20.0000	19.8925	99.5	90.0 110.0
	Manganese	4.0000	3.9714	99.3	90.0 110.0
	Molybdenum	20.0000	20.2328	101.2	90.0 110.0
	Sodium	40.0000	38.7226	96.8	90.0 110.0
	Nickel	8.0000	7.9312	99.1	90.0 110.0
	Lead	20.0000	20.2610	101.3	90.0 110.0
	Antimony	4.0000	4.0479	101.2	90.0 110.0
	Selenium	1.6000	1.5589	97.4	90.0 110.0
	Silicon	1.6000	1.6940	105.9	90.0 110.0
	Thallium	4.0000	3.9805	99.5	90.0 110.0
	Vanadium	1.6000	1.5753	98.5	90.0 110.0
	Zinc	4.0000	3.9067	97.7	90.0 110.0
CCV6--6	Silver	0.4000	0.4064	101.6	90.0 110.0
	Aluminum	20.0000	20.0266	100.1	90.0 110.0
	Arsenic	1.6000	1.6059	100.4	90.0 110.0
	Barium	4.0000	3.8215	95.5	90.0 110.0
	Beryllium	0.4000	0.3964	99.1	90.0 110.0
	Calcium	40.0000	40.2553	100.6	90.0 110.0
	Cadmium	4.0000	3.8681	96.7	90.0 110.0
	Chromium	4.0000	4.0367	100.9	90.0 110.0
	Copper	4.0000	3.8576	96.4	90.0 110.0
	Iron	4.0000	4.0279	100.7	90.0 110.0
	Potassium	40.0000	39.8829	99.7	90.0 110.0
	Magnesium	20.0000	19.8221	99.1	90.0 110.0
	Manganese	4.0000	3.9359	98.4	90.0 110.0
	Molybdenum	20.0000	19.9920	100.0	90.0 110.0
	Sodium	40.0000	39.7069	99.3	90.0 110.0
	Nickel	8.0000	7.8587	98.2	90.0 110.0
	Lead	20.0000	19.8836	99.4	90.0 110.0
	Antimony	4.0000	4.1087	102.7	90.0 110.0
	Selenium	1.6000	1.6033	100.2	90.0 110.0
	Silicon	1.6000	1.6775	104.8	90.0 110.0
CCV7--7	Thallium	4.0000	3.9228	98.1	90.0 110.0
	Vanadium	1.6000	1.5851	99.1	90.0 110.0
	Zinc	4.0000	3.8934	97.3	90.0 110.0
	Silver	0.4000	0.3996	99.9	90.0 110.0
	Aluminum	20.0000	19.6809	98.4	90.0 110.0
	Arsenic	1.6000	1.5787	98.7	90.0 110.0
	Barium	4.0000	3.7522	93.8	90.0 110.0
	Beryllium	0.4000	0.3945	98.6	90.0 110.0
	Calcium	40.0000	40.2471	100.6	90.0 110.0
	Cadmium	4.0000	3.8827	97.1	90.0 110.0
	Chromium	4.0000	4.0237	100.6	90.0 110.0
	Copper	4.0000	3.7722	94.3	90.0 110.0

Analysis Batch Number: ICPWA-10/02/97-118 -1

Test Identification : ICPWA-*Metals by ICP

Sequence : DATB275

Number of Samples : 18

Batch Data-Date/Time : 10/03/97 / 12:21:19

		QC LIMITS			
SCV #	ANALYTE	TRUE VALUE	BATCH READ	% REC #	LOWER UPPER
CCV7--7	Iron	4.0000	3.9816	99.5	90.0 110.0
	Potassium	40.0000	39.1539	97.9	90.0 110.0
	Magnesium	20.0000	19.6912	98.5	90.0 110.0
	Manganese	4.0000	3.9101	97.8	90.0 110.0
	Molybdenum	20.0000	19.9909	100.0	90.0 110.0
	Sodium	40.0000	38.6078	96.5	90.0 110.0
	Nickel	8.0000	7.8442	98.1	90.0 110.0
	Lead	20.0000	19.9819	99.9	90.0 110.0
	Antimony	4.0000	4.0704	101.8	90.0 110.0
	Selenium	1.6000	1.5951	99.7	90.0 110.0
	Silicon	1.6000	1.6592	103.7	90.0 110.0
	Thallium	4.0000	4.0553	101.4	90.0 110.0
	Vanadium	1.6000	1.5741	98.4	90.0 110.0
	Zinc	4.0000	3.8924	97.3	90.0 110.0
CCV8--8	Silver	0.4000	0.4009	100.2	90.0 110.0
	Aluminum	20.0000	20.4039	102.0	90.0 110.0
	Arsenic	1.6000	1.5744	98.4	90.0 110.0
	Barium	4.0000	3.9083	97.7	90.0 110.0
	Beryllium	0.4000	0.4050	101.3	90.0 110.0
	Calcium	40.0000	40.5777	101.4	90.0 110.0
	Cadmium	4.0000	3.8634	96.6	90.0 110.0
	Chromium	4.0000	4.0972	102.4	90.0 110.0
	Copper	4.0000	3.9155	97.9	90.0 110.0
	Iron	4.0000	4.1504	103.8	90.0 110.0
	Potassium	40.0000	40.8615	102.2	90.0 110.0
	Magnesium	20.0000	20.5928	103.0	90.0 110.0
	Manganese	4.0000	3.9379	98.4	90.0 110.0
	Molybdenum	20.0000	19.8151	99.1	90.0 110.0
	Sodium	40.0000	40.2360	100.6	90.0 110.0
	Nickel	8.0000	7.8717	98.4	90.0 110.0
	Lead	20.0000	20.0637	100.3	90.0 110.0
	Antimony	4.0000	4.2415	106.0	90.0 110.0
	Selenium	1.6000	1.5689	98.1	90.0 110.0
	Silicon	1.6000	1.6552	103.5	90.0 110.0
	Thallium	4.0000	3.9026	97.6	90.0 110.0
	Vanadium	1.6000	1.5921	99.5	90.0 110.0
	Zinc	4.0000	3.9489	98.7	90.0 110.0

CB#	ANALYTE	CONC FOUND #	CONC LIMIT
CB-	Silver	ND	0.0060
	Aluminum	0.0106	0.0500
	Arsenic	ND	0.0300
	Barium	ND	0.0030
	Beryllium	ND	0.0002
	Calcium	ND	0.4000
	Cadmium	0.0014	0.0040
	Chromium	0.0008	0.0100
	Copper	ND	0.0100
	Iron	0.0244	0.2000

Analysis Batch Number: ICPWA-10/02/97-118 -1

Test Identification : ICPWA-*Metals by ICP

Sequence : DATB275

Number of Samples : 18

Batch Data-Date/Time : 10/03/97 / 12:21:19

CB#	ANALYTE	CONC FOUND #	CONC LIMIT
CB-	Potassium	0.0083	0.1000
	Magnesium	ND	0.0500
	Manganese	0.0010	0.0020
	Molybdenum	0.0178	0.0300
	Sodium	0.0370	0.2000
	Nickel	0.0064	0.0300
	Lead	ND	0.0400
	Antimony	0.0014	0.1000
	Selenium	ND	0.0700
	Silicon	0.0060	0.2000
	Thallium	ND	0.1000
	Vanadium	ND	0.0030
	Zinc	0.0014	0.0300
CB1-	Silver	0.0012	0.0060
	Aluminum	0.0150	0.0500
	Arsenic	0.0023	0.0300
	Barium	0.0006	0.0030
	Beryllium	ND	0.0002
	Calcium	0.0109	0.4000
	Cadmium	0.0009	0.0040
	Chromium	0.0013	0.0100
	Copper	0.0002	0.0100
	Iron	0.0561	0.2000
	Potassium	ND	0.1000
	Magnesium	0.0236	0.0500
	Manganese	0.0008	0.0020
	Molybdenum	0.0182	0.0300
	Sodium	0.1052	0.2000
	Nickel	0.0014	0.0300
	Lead	0.0049	0.0400
	Antimony	ND	0.1000
	Selenium	ND	0.0700
	Silicon	ND	0.2000
CB3-	Thallium	0.0491	0.1000
	Vanadium	ND	0.0030
	Zinc	0.0027	0.0300
	Silver	ND	0.0060
	Aluminum	0.0006	0.0500
	Arsenic	0.0049	0.0300
	Barium	0.0002	0.0030
	Beryllium	ND	0.0002
	Calcium	0.0056	0.4000
	Cadmium	ND	0.0040
	Chromium	0.0004	0.0100
	Copper	0.0008	0.0100
	Iron	ND	0.2000
	Potassium	0.0229	0.1000
	Magnesium	ND	0.0500
	Manganese	0.0005	0.0020
	Molybdenum	0.0185	0.0300

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CB#	ANALYTE	CONC FOUND #	CONC LIMIT
CB3-	Sodium	0.0604	0.2000
	Nickel	0.0087	0.0300
	Lead	ND	0.0400
	Antimony	ND	0.1000
	Selenium	ND	0.0700
	Silicon	ND	0.2000
	Thallium	ND	0.1000
	Vanadium	ND	0.0030
	Zinc	ND	0.0300
CB4-	Silver	ND	0.0060
	Aluminum	ND	0.0500
	Arsenic	0.0042	0.0300
	Barium	0.0003	0.0030
	Beryllium	ND	0.0002
	Calcium	0.0087	0.4000
	Cadmium	0.0002	0.0040
	Chromium	ND	0.0100
	Copper	ND	0.0100
	Iron	ND	0.2000
	Potassium	0.0229	0.1000
	Magnesium	ND	0.0500
	Manganese	0.0004	0.0020
	Molybdenum	0.0092	0.0300
	Sodium	0.0986	0.2000
	Nickel	ND	0.0300
	Lead	ND	0.0400
	Antimony	0.0518	0.1000
	Selenium	ND	0.0700
	Silicon	ND	0.2000
	Thallium	0.0125	0.1000
	Vanadium	ND	0.0030
	Zinc	ND	0.0300
CB5-	Silver	ND	0.0060
	Aluminum	ND	0.0500
	Arsenic	0.0041	0.0300
	Barium	ND	0.0030
	Beryllium	ND	0.0002
	Calcium	0.0136	0.4000
	Cadmium	0.0002	0.0040
	Chromium	ND	0.0100
	Copper	ND	0.0100
	Iron	ND	0.2000
	Potassium	0.0420	0.1000
	Magnesium	ND	0.0500
	Manganese	0.0007	0.0020
	Molybdenum	0.0209	0.0300
	Sodium	0.0976	0.2000
	Nickel	ND	0.0300
	Lead	ND	0.0400
	Antimony	ND	0.1000

Analysis Batch Number: ICPWA-10/02/97-118 -1

Test Identification : ICPWA-*Metals by ICP

Sequence : DATB275

Number of Samples : 18

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CB#	ANALYTE	CONC FOUND #	CONC LIMIT
CB5-	Selenium	ND	0.0700
	Silicon	0.0095	0.2000
	Thallium	ND	0.1000
	Vanadium	ND	0.0030
	Zinc	ND	0.0300
CCB6-	Silver	0.0020	0.0060
	Aluminum	0.0025	0.0500
	Arsenic	0.0149	0.0300
	Barium	0.0005	0.0030
	Beryllium	ND	0.0002
	Calcium	0.0058	0.4000
	Cadmium	0.0008	0.0040
	Chromium	0.0031	0.0100
	Copper	0.0023	0.0100
	Iron	ND	0.2000
	Potassium	0.0236	0.1000
	Magnesium	0.0112	0.0500
	Manganese	0.0013	0.0020
	Molybdenum	0.0063	0.0300
	Sodium	ND	0.2000
	Nickel	0.0007	0.0300
	Lead	ND	0.0400
	Antimony	0.0792	0.1000
	Selenium	ND	0.0700
	Silicon	0.0033	0.2000
	Thallium	ND	0.1000
	Vanadium	0.0003	0.0030
	Zinc	0.0015	0.0300
CCB7-	Silver	0.0004	0.0060
	Aluminum	0.0107	0.0500
	Arsenic	0.0039	0.0300
	Barium	0.0001	0.0030
	Beryllium	ND	0.0002
	Calcium	0.0062	0.4000
	Cadmium	ND	0.0040
	Chromium	0.0016	0.0100
	Copper	0.0018	0.0100
	Iron	0.0521	0.2000
	Potassium	0.0236	0.1000
	Magnesium	0.0094	0.0500
	Manganese	0.0009	0.0020
	Molybdenum	0.0052	0.0300
	Sodium	ND	0.2000
	Nickel	ND	0.0300
	Lead	ND	0.0400
	Antimony	ND	0.1000
	Selenium	0.0143	0.0700
	Silicon	0.0119	0.2000
	Thallium	ND	0.1000
	Vanadium	ND	0.0030

Analysis Batch Number: ICPWA-10/02/97-118 -1

Test Identification : ICPWA-*Metals by ICP

Sequence : DATB275

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Batch Data-Date/Time : 10/03/97 / 12:21:19

CB#	ANALYTE	CONC FOUND #	CONC LIMIT
CB7-	Zinc	0.0003	0.0300
CCB8-	Silver	0.0013	0.0060
	Aluminum	0.0414	0.0500
	Arsenic	0.0071	0.0300
	Barium	0.0006	0.0030
	Beryllium	ND	0.0002
	Calcium	0.0248	0.4000
	Cadmium	ND	0.0040
	Chromium	0.0039	0.0100
	Copper	0.0050	0.0100
	Iron	0.0602	0.2000
	Potassium	0.0893	0.1000
	Magnesium	0.0270	0.0500
	Manganese	0.0011	0.0020
	Molybdenum	0.0029	0.0300
	Sodium	ND	0.2000
	Nickel	0.0056	0.0300
	Lead	ND	0.0400
	Antimony	ND	0.1000
	Selenium	0.0292	0.0700
	Silicon	0.0061	0.2000
	Thallium	ND	0.1000
	Vanadium	0.0014	0.0030
	Zinc	0.0006	0.0300

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

2a) - Recovery is insignificant because sample conc. is >4x spike added.

A1) - Matrix Interference with regard to digestion

(11) - Both Duplicate results are less than the MDL.

----- Batch Notes -----

Serial dilutions were recovered within acceptance limits of +/- 10% for aluminum, calcium, iron, magnesium, manganese, silicon. A post digestion spike was recovered within acceptance limits of +/- 25% for antimony.

jdb

Groups & Samples

17956-68588	17956-68589	17957-68590	17958-68591	17959-68592	17960-68593	17961-68594	17961-68595
17962-68596	17989-68678	17989-68679	18004-68720	18004-68721	18004-68722	18004-68723	18004-68726
18004-68728	18004-68729						

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 _____

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

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