W03004-QES

Quanterra
Environmental Services

0052748

Quanterra Incorporated
13715 Rider Trail North
Earth City, Missouri 63045

314 298-8566 Telephone
314 298-8757 Fax

CASE NARRATIVE

Bechtel Hanford Incorporated
3350 George Washington Way
Richland, Washington 99352

RECEIVED
MAR 20 2000
EDMC

JAN 2000

January 27, 2000

Attention: Joan Kessner

Quote Number	:	33985
SDG	:	W03004
Number of Samples	:	one (1)
Sample Matrix	:	Solid
Data Deliverable	:	Summary
Date SDG Closed	:	January 4, 2000

II. Introduction

On January 4, 2000, one (1) "soil" sample was received by Quanterra, Richland and transferred to Quanterra, St. Louis for chemical analysis. The samples were received at the St. Louis lab on 1/7/00 at 2 degrees C. See the attached Sample Summary for a listing of Client Ids and their associated Lab numbers.

III. Analytical Results/ Methodology

The analytical results for this report are presented by analytical test. Each set of data includes sample identification information, analytical results and the appropriate detection limits.

Analyses requested: ICP Metals - 6010A (TAL + add ons)
IC Anions - 300.0 (Cl,Fl,NO2,NO3,OPO4,SO4)
pH -9045

Deviation from Request: None

IV. Definitions

The following codes are used to denote laboratory quality control samples and can be found in the data summary section of this report:

QCBLK- Quality Control Blank, Method Blank
QCLCS- Quality Control Laboratory Control Sample, Blank Spike
MS- Matrix Spike.
MSD- Matrix Spike Duplicate.

V. Comments

General: The term "Detection Limit" used in the analytical data reports refers to either the lab's standard reporting limits or contractually required reporting limits, whichever is applicable.

Please refer to the attached cross-reference table for the standard preparation methods used at Quanterra, St. Louis.

Metals: A Laboratory Control Sample, Method Blank, Matrix Spike and Matrix Spike Duplicate were analyzed with each preparation batch per the protocol for this analysis.

There were no comments or non-conformances associated with this data.

Wet Chemistry: A Laboratory Control Sample, Method Blank, Matrix Spike and Matrix Duplicate were analyzed with each preparation batch per the protocol for this analysis. A duplicate was done with the pH analysis.

There were no comments or non-conformances associated with this data.

I certify that this Summary is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

Reviewed and approved:

Marti Ward

Marti Ward
St. Louis Project Manager

SAMPLE SUMMARY

F0A050178

WO #	SAMPLE#	CLIENT SAMPLE ID	DATE	TIME
D73V1	001	B0X4W6	01/04/00	08:00

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

METHODS SUMMARY

F0A050178

PARAMETER	ANALYTICAL METHOD	PREPARATION METHOD
pH Non-Aqueous	SW846 9045A	
Chloride	MCAWW 300.0A	MCAWW 300.0A
Fluoride	MCAWW 300.0A	MCAWW 300.0A
Inductively Coupled Plasma (ICP) Metals	SW846 6010B	SW846 3050B
Nitrate as N	MCAWW 300.0A	MCAWW 300.0A
Nitrite as N	MCAWW 300.0A	MCAWW 300.0A
Phosphate as P, Ortho	MCAWW 300.0A	MCAWW 300.0A
Sulfate	MCAWW 300.0A	MCAWW 300.0A

References:

MCAWW "Methods for Chemical Analysis of Water and Wastes", EPA-600/4-79-020, March 1983 and subsequent revisions.

SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 and its updates.

QUANTERRA INCORPORATED
CLIENT ANALYSIS SUMMARY
Quanterra - St. Louis

Run Date: 1/05/00
Time: 15:20:02
User Id.: WILSONS

CLIENT: 127642 BECHTEL HANFORD, INC.
PROJECT MANAGER: MARTI WARD
PROJECT #: 300-FF-1
REPORT TO: Bechtel Hanford, Inc.
P.O. NUMBER: MRC-SBB-A-19981
SITE: B00-011
AMOUNT REC"D: 20ML,3X60G
STORAGE LOC: T6A
LOT COMMENTS: 7 day TAT
MATRIX: SOLID
SAMPLE ID: B0X4W6
QC PACKAGE: Special Report - see checklist
SAMPLE COMMENTS:
RUN A DUPLICATE ON PH AND ANIONS.
Beginning Depth: .00 **Ending Depth:** .00

QUOTE/SAR #: 33985
LAB ID: F-0A050178-001
WORK ORDER: D73V1
RECEIVING DATE: 1/04/00
SAMPLING DATE: 1/04/00
ANALYTICAL DUE DATE: 1/11/00N
REPORT DUE DATE: 1/11/00
PRIORITY: 07
SAMPLING TIME: 8:00
RECEIVING TIME: 13:40
SDG# : W03004

***** ANALYSIS *****	WRK LOC	REQUEST DATE	EXTRACTION EXP DATE	ANALYSIS EXP DATE
Inductively Coupled Plasma (6010B)	06	1/05/00	0/00/00	7/02/00
METALS, TOTAL - Soils				
M6010_S AG,AL,AS,BA,BE,CA,CD,CO,CR,CU,FE,KX,MG,MN,NA,NI,PB,SB,SE,TL,VX,ZN				
(A-46-QO-01) D73V1 Protocol: A QC Program: STANDARD TEST SET				
Chloride (300.0, Ion Chromatography)	06	1/05/00	4/12/00	2/01/00
LEACHATE, DI (Routine)				
(A-82-CX-01) D73V1-1-27 Protocol: A QC Program: STANDARD TEST SET				
Fluoride (300.0, Ion Chromatography)	06	1/05/00	4/12/00	2/01/00
LEACHATE, DI (Routine)				
(A-82-C8-01) D73V1-1-2A Protocol: A QC Program: STANDARD TEST SET				
Nitrate as N (300.0, Ion Chromatography)	06	1/05/00	4/12/00	4/14/00
LEACHATE, DI (Routine)				
(A-82-C9-01) D73V1-1-2E Protocol: A QC Program: STANDARD TEST SET				
Nitrite as N (300.0, Ion Chromatography)	06	1/05/00	4/12/00	4/14/00
LEACHATE, DI (Routine)				
(A-82-GO-01) D73V1-1-2H Protocol: A QC Program: STANDARD TEST SET				
Phosphate as P, Ortho (300.0, Ion Chroma	06	1/05/00	4/12/00	4/14/00
LEACHATE, DI (Routine)				
(A-82-DO-01) D73V1-1-2L Protocol: A QC Program: STANDARD TEST SET				
Sulfate (300.0, Ion Chromatography)	06	1/05/00	4/12/00	2/01/00
LEACHATE, DI (Routine)				
(A-82-CY-01) D73V1-1-2P Protocol: A QC Program: STANDARD TEST SET				
pH (9045) - Non-Aqueous	06	1/05/00	0/00/00	1/06/00
LEACHATE, DI (Routine)				
(A-82-FK-01) D73V1-1-2T Protocol: A QC Program: STANDARD TEST SET				

QUANTERRA INCORPORATED
CLIENT ANALYSIS SUMMARY
Quanterra - St. Louis

Run Date: 1/05/00
Time: 15:20:02
User Id.: WILSONS

CLIENT: 127642 BECHTEL HANFORD, INC.
PROJECT MANAGER: MARTI WARD
PROJECT #: 300-FF-1
REPORT TO: Bechtel Hanford, Inc.
P.O. NUMBER: MRC-SBB-A-19981
SITE: B00-011
AMOUNT REC"D: 20ML,3X60G
STORAGE LOC: T6A
LOT COMMENTS: 7 day TAT
MATRIX: SOLID
SAMPLE ID: B0X4W6
QC PACKAGE: Special Report - see checklist
SAMPLE COMMENTS:
RUN A DUPLICATE ON PH AND ANIONS.
Beginning Depth: .00 **Ending Depth:** .00

QUOTE/SAR #: 33985
LAB ID: F-0A050178-001-D
WORK ORDER: D73V1 MSD
RECEIVING DATE: 1/04/00
SAMPLING DATE: 1/04/00
ANALYTICAL DUE DATE: 1/11/00N
REPORT DUE DATE: 1/11/00
PRIORITY: 07
SAMPLING TIME: 8:00
RECEIVING TIME: 13:40
SDG# : W03004

***** ANALYSIS *****	WRK LOC	REQUEST DATE	EXTRACTION EXP DATE	ANALYSIS EXP DATE
Inductively Coupled Plasma (6010B)	06	1/05/00	0/00/00	7/02/00

METALS, TOTAL - Soils
M6010_S AG,AL,AS,BA,BE,CA,CD,CO,CR,CU,FE,KX,MG,MN,NA,NI,PB,SB,SE,TL,VX,ZN
(A-46-QO-01) D73V1 Protocol: A QC Program: STANDARD TEST SET

QUANTERRA INCORPORATED
CLIENT ANALYSIS SUMMARY
Quanterra - St. Louis

Run Date: 1/05/00
Time: 15:20:02
User Id.: WILSONS

CLIENT: 127642 BECHTEL HANFORD, INC.
PROJECT MANAGER: MARTI WARD
PROJECT #: 300-FF-1
REPORT TO: Bechtel Hanford, Inc.
P.O. NUMBER: MRC-SBB-A-19981
SITE: B00-011
AMOUNT REC"D: 20ML,3X60G
STORAGE LOC: T6A
LOT COMMENTS: 7 day TAT
MATRIX: SOLID
SAMPLE ID: B0X4W6
QC PACKAGE: Special Report - see checklist
SAMPLE COMMENTS:
RUN A DUPLICATE ON PH AND ANIONS.
Beginning Depth: .00 **Ending Depth:** .00

QUOTE/SAR #: 33985
LAB ID: F-0A050178-001-S
WORK ORDER: D73V1 MS
RECEIVING DATE: 1/04/00
SAMPLING DATE: 1/04/00
ANALYTICAL DUE DATE: 1/11/00N
REPORT DUE DATE: 1/11/00
PRIORITY: 07
SAMPLING TIME: 8:00
RECEIVING TIME: 13:40
SDG# : W03004

***** ANALYSIS *****	WRK LOC	REQUEST DATE	EXTRACTION EXP DATE	ANALYSIS EXP DATE
Inductively Coupled Plasma (6010B)	06	1/05/00	0/00/00	7/02/00
METALS, TOTAL - Soils				
M6010_S AG,AL,AS,BA,BE,CA,CD,CO,CR,CU,FE,KX,MG,MN,NA,NI,PB,SB,SE,TL,VX,ZN				
(A-46-QO-01) D73V1 Protocol: A QC Program: STANDARD TEST SET				
Chloride (300.0, Ion Chromatography)	06	1/05/00	4/12/00	2/01/00
LEACHATE, DI (Routine)				
(A-82-CX-01) D73V1-1-28 Protocol: A QC Program: STANDARD TEST SET				
Fluoride (300.0, Ion Chromatography)	06	1/05/00	4/12/00	2/01/00
LEACHATE, DI (Routine)				
(A-82-C8-01) D73V1-1-2C Protocol: A QC Program: STANDARD TEST SET				
Nitrate as N (300.0, Ion Chromatography)	06	1/05/00	4/12/00	4/14/00
LEACHATE, DI (Routine)				
(A-82-C9-01) D73V1-1-2F Protocol: A QC Program: STANDARD TEST SET				
Nitrite as N (300.0, Ion Chromatography)	06	1/05/00	4/12/00	4/14/00
LEACHATE, DI (Routine)				
(A-82-GO-01) D73V1-1-2J Protocol: A QC Program: STANDARD TEST SET				
Phosphate as P, Ortho (300.0, Ion Chroma	06	1/05/00	4/12/00	4/14/00
LEACHATE, DI (Routine)				
(A-82-DO-01) D73V1-1-2M Protocol: A QC Program: STANDARD TEST SET				
Sulfate (300.0, Ion Chromatography)	06	1/05/00	4/12/00	2/01/00
LEACHATE, DI (Routine)				
(A-82-CY-01) D73V1-1-2Q Protocol: A QC Program: STANDARD TEST SET				

CUR #020567 α

A 10 1-4-00

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B00-011-01	Page 1 of 1

Collector: Doug Bowers	Company Contact: Jeff Learch	Telephone No.: 373-5904	Project Coordinator: TRENT, SJ
Price Code: 2 D	Data Turnaround: 7 Days	Air Quality ☐	
Project Designation: 300-FF-1 Landfill 1B Cleanup	Sampling Location: 300 FF-1 land fill 1B	SAF No.: B00-011	
Ice Chest No.: ERC 96-087	Field Logbook No.: EL 1395-2	COA: RNDF1B2600	Method of Shipment: Gov Vehicle — airborne 4012584015
Shipped To: Quanterra Incorporated	Offsite Property No.		Bill of Lading/Air Bill No.: SW 01-05-00

POSSIBLE SAMPLE HAZARDS/REMARKS

W03004

Special Handling and/or Storage

SAMPLE ANALYSIS												
Preservation				None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None	None	None	None
Type of Container				P	aG	aG	aG	aG	aG	aG	aG	aG	aG
No. of Container(s)				1	1	1	1	1	1	1	1	1	1
Volume				20mL	60mL	60mL	60mL	60mL	60mL	60mL	60mL	60mL	60mL
				Activity Scan	See item (1) in Special Instructions.	Sulfides - 9030	Total Cyanide - 9010	VOA - 8260A (TCL)	Gross Alpha; Gross Beta	See item (2) in Special Instructions.	Isotopic Uranium	Mercury - 7471 - (CV)	pH (Soil) - 9045
Sample No.	Matrix *	Sample Date	Sample Time										
DOX4W6	Other ~~Soil~~ Soil:A AS 10 1-4-00	1-4-00	0800	X	X					X			X
				100% full	100% full					100% full			100% full

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers	Date/Time: 1-4-00 1340	Received By: K. Dellinger	Date/Time: 1-4-00 1340
Relinquished By: K. Dellinger	Date/Time: 1-4-00 1600	Received By: Jason Lemanne	Date/Time: 01-05-00 0830
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

** Friability shall be described in the WSCF case narrative.

** COC Note– The ERC Contractor acknowledges the 48-hour holding time for nitrate, nitrite, and phosphate is not likely achievable.

(1) ICP Metals - 6010A (TAL); ICP Metals - 6010A (Add-on) (Arsenic, Beryllium, Lead, Selenium, Thallium)
(2) IC Anions - 300.0 (Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Phosphate, Sulfate)

Matrix *
S=Soil
SE=Sediment
SO=Solid
S =Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (10/99)

000008

Figure 1

SAMPLE CHECK-IN LIST

Date/Time Received: 01-04-00 1340 SG#: _____

Work Order Number: _____ SAF #: B00-011

Shipping Container ID: ERC 96-082 Chain of Custody # _____

1. Custody Seals on shipping container intact? Yes [] No [✓]
2. Custody Seals dated and signed? Yes [✓] No []
3. Chain-of-Custody record present? Yes [✓] No []
4. Cooler temperature 4 °C
5. Vermiculite/packing materials is Wet [] Dry [✓]
6. Number of samples in shipping container: 4
7. Sample holding times exceeded? Yes [] No [✓]

8. Samples have:
   - ✓ tape
   - ✓ custody seals
   - ____ hazard labels
   - ____ appropriate sample labels

9. Samples are:
   - ✓ in good condition
   - ____ broken
   - ____ leaking
   - ____ have air bubbles

10. Where any anomalies identified in sample receipt? Yes [] No [✓]
11. Description of anomalies (include sample numbers): _____

Sample Custodian/Laboratory: K. DeDerley Date: 01-04-00

Telephoned To: _____ On ✓ By _____

Quanterra Environmental Services

020569

Login No.: F0A050178
W03004

Condition Upon Receipt Variance Report
St. Louis Laboratory

Client: Hanford
Date: 01-05-00 Time: 0830
Project No: 33985
Initiated by: Jason Tiemann
Shipper/No: Airborne/4012584015
RFA/COC Numbers: B00-011

Condition/Variance (Check all that apply):

1. ☐ Sample received broken/leaking.
2. ☐ Sample received without proper preservative.
   - ☐ Cooler temperature not within 4°C ± 2°C
     Record temperature: _____
   - ☐ pH _____
   - ☐ other: _____
3. ☐ Sample received in improper container.
4. ☐ Sample received without proper paperwork. Explain: _____
5. ☐ Paperwork received without sample.
6. ☐ No sample ID on sample container.
7. ☐ Custody tape disturbed/broken/missing.
8. ☐ Sample ID on container does not match sample ID on paperwork. Explain: _____
9. ☐ All coolers on airbill not received with shipment.
10. ☐ Other (explain below): _____

☒ No variances were noted during sample receipt. Cooler Temperature Upon Receipt: 2°

Temperature Variance Does Not Affect the Following Analyses: _____

Notes: _____

Corrective Action:

☐ Client's Name: _____ Informed verbally on: _____ By: _____

☐ Client's Name: _____ Informed in writing on: _____ By: _____

☐ Sample(s) processed "as is". _____

Comments:

☐ Sample(s) on hold until: _____ If released, notify: _____

Sample Control Supervisor Review: Jason Tiemann (or designate) Date: 01-05-00

Project Management Review: Mulard Date: 1-5-00

SIGNED ORIGINAL MUST BE RETAINED IN THE PROJECT FILE

SL-ADMIN-0004, Revised 12/12/98

BECHTEL HANFORD, INC.

Client Sample ID: B0X4W6

TOTAL Metals

Lot-Sample #...: F0A050178-001 Matrix.....: SOLID
Date Sampled...: 01/04/00 Date Received..: 01/04/00

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 0007336						
Aluminum	**215000**	**200**	**mg/kg**	**SW846 6010B**	**01/07-01/10/00**	**D73V1101**
		Dilution Factor: 10				
Antimony	ND	6.0	mg/kg	SW846 6010B	01/07-01/10/00	D73V1104
		Dilution Factor: 1				
Barium	**8.4 B**	**20.0**	**mg/kg**	**SW846 6010B**	**01/07-01/10/00**	**D73V1107**
		Dilution Factor: 1				
Beryllium	**0.33 B**	**0.50**	**mg/kg**	**SW846 6010B**	**01/07-01/10/00**	**D73V110A**
		Dilution Factor: 1				
Cadmium	**0.23 B**	**0.50**	**mg/kg**	**SW846 6010B**	**01/07-01/10/00**	**D73V110E**
		Dilution Factor: 1				
Calcium	**858**	**500**	**mg/kg**	**SW846 6010B**	**01/07-01/10/00**	**D73V110H**
		Dilution Factor: 1				
Chromium	**0.64 B**	**1.0**	**mg/kg**	**SW846 6010B**	**01/07-01/10/00**	**D73V110L**
		Dilution Factor: 1				
Cobalt	ND	5.0	mg/kg	SW846 6010B	01/07-01/10/00	D73V110P
		Dilution Factor: 1				
Copper	**1.4 B**	**2.5**	**mg/kg**	**SW846 6010B**	**01/07-01/10/00**	**D73V110T**
		Dilution Factor: 1				
Iron	**743**	**100**	**mg/kg**	**SW846 6010B**	**01/07-01/10/00**	**D73V110W**
		Dilution Factor: 10				
Magnesium	**197 B**	**5000**	**mg/kg**	**SW846 6010B**	**01/07-01/10/00**	**D73V1111**
		Dilution Factor: 10				
Manganese	**11.1**	**1.5**	**mg/kg**	**SW846 6010B**	**01/07-01/10/00**	**D73V1114**
		Dilution Factor: 1				
Nickel	**1.8 B**	**4.0**	**mg/kg**	**SW846 6010B**	**01/07-01/10/00**	**D73V1117**
		Dilution Factor: 1				
Potassium	ND	5000	mg/kg	SW846 6010B	01/07-01/10/00	D73V111A
		Dilution Factor: 10				

(Continued on next page)

BECHTEL HANFORD, INC.

Client Sample ID: B0X4W6

TOTAL Metals

Lot-Sample #...: F0A050178-001 Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Silver	ND	1.0	mg/kg	SW846 6010B	01/07-01/10/00	D73V111E
		Dilution Factor: 1				
Arsenic	ND	30.0	mg/kg	SW846 6010B	01/07-01/10/00	D73V111H
		Dilution Factor: 1				
Sodium	**49.2 B**	**500**	**mg/kg**	**SW846 6010B**	**01/07-01/10/00**	**D73V111L**
		Dilution Factor: 1				
Vanadium	**2.2 B**	**5.0**	**mg/kg**	**SW846 6010B**	**01/07-01/10/00**	**D73V111P**
		Dilution Factor: 1				
Zinc	**23.3**	**2.0**	**mg/kg**	**SW846 6010B**	**01/07-01/10/00**	**D73V111T**
		Dilution Factor: 1				
Lead	ND	10.0	mg/kg	SW846 6010B	01/07-01/10/00	D73V111W
		Dilution Factor: 1				
Selenium	ND	25.0	mg/kg	SW846 6010B	01/07-01/10/00	D73V1121
		Dilution Factor: 1				
Thallium	ND	200	mg/kg	SW846 6010B	01/07-01/10/00	D73V1124
		Dilution Factor: 1				

NOTE(S):

B Estimated result. Result is less than RL.

Results and reporting limits have been adjusted for dry weight.

METHOD BLANK REPORT

TOTAL Metals

Client Lot #...: F0A050178 **Matrix.....:** SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MB Lot-Sample #: F0A070000-336 **Prep Batch #...:** 0007336						
Aluminum	**4.275 B**	**20.0**	**mg/kg**	**SW846 6010B**	**01/07-01/10/00**	**D7791108**
		Dilution Factor: 1				
Antimony	ND	6.0	mg/kg	SW846 6010B	01/07-01/09/00	D7791109
		Dilution Factor: 1				
Barium	ND B	20.0	mg/kg	SW846 6010B	01/07-01/09/00	D779110A
		Dilution Factor: 1				
Beryllium	ND	0.50	mg/kg	SW846 6010B	01/07-01/09/00	D7791101
		Dilution Factor: 1				
Cadmium	ND	0.50	mg/kg	SW846 6010B	01/07-01/09/00	D7791102
		Dilution Factor: 1				
Calcium	**18.917 B**	**500**	**mg/kg**	**SW846 6010B**	**01/07-01/10/00**	**D7791103**
		Dilution Factor: 1				
Chromium	**0.070 B**	**1.0**	**mg/kg**	**SW846 6010B**	**01/07-01/09/00**	**D7791104**
		Dilution Factor: 1				
Cobalt	ND	5.0	mg/kg	SW846 6010B	01/07-01/09/00	D7791105
		Dilution Factor: 1				
Copper	ND	2.5	mg/kg	SW846 6010B	01/07-01/09/00	D7791106
		Dilution Factor: 1				
Iron	**3.413 B**	**10.0**	**mg/kg**	**SW846 6010B**	**01/07-01/10/00**	**D7791107**
		Dilution Factor: 1				
Magnesium	ND	500	mg/kg	SW846 6010B	01/07-01/10/00	D779110K
		Dilution Factor: 1				
Manganese	ND	1.5	mg/kg	SW846 6010B	01/07-01/09/00	D779110L
		Dilution Factor: 1				
Nickel	ND	4.0	mg/kg	SW846 6010B	01/07-01/09/00	D779110M
		Dilution Factor: 1				
Potassium	ND	500	mg/kg	SW846 6010B	01/07-01/10/00	D779110C
		Dilution Factor: 1				
Arsenic	ND	30.0	mg/kg	SW846 6010B	01/07-01/09/00	D779110E
		Dilution Factor: 1				

(Continued on next page)

METHOD BLANK REPORT

TOTAL Metals

Client Lot #...: F0A050178 **Matrix.....:** SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Silver	ND	1.0	mg/kg	SW846 6010B	01/07-01/09/00	D779110D
		Dilution Factor: 1				
Sodium	**25.293 B**	**500**	**mg/kg**	**SW846 6010B**	**01/07-01/10/00**	**D779110F**
		Dilution Factor: 1				
Vanadium	ND	5.0	mg/kg	SW846 6010B	01/07-01/09/00	D779110G
		Dilution Factor: 1				
Zinc	**1.286 B**	**2.0**	**mg/kg**	**SW846 6010B**	**01/07-01/09/00**	**D779110H**
		Dilution Factor: 1				
Lead	**0.068 B**	**10.0**	**mg/kg**	**SW846 6010B**	**01/07-01/09/00**	**D779110J**
		Dilution Factor: 1				
Selenium	**0.163 B**	**25.0**	**mg/kg**	**SW846 6010B**	**01/07-01/09/00**	**D779110N**
		Dilution Factor: 1				
Thallium	ND	200	mg/kg	SW846 6010B	01/07-01/09/00	D779110P
		Dilution Factor: 1				

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

B Estimated result. Result is less than RL.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: F0A050178 **Matrix.....:** SOLID

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
LCS Lot-Sample#: F0A070000-336 **Prep Batch #...:** 0007336					
Aluminum	83	(60 - 140)	SW846 6010B Dilution Factor: 1	01/07-01/10/00	D7791110
Antimony	118	(18 - 182)	SW846 6010B Dilution Factor: 1	01/07-01/09/00	D7791111
Barium	101	(77 - 123)	SW846 6010B Dilution Factor: 1	01/07-01/09/00	D7791112
Beryllium	109	(78 - 122)	SW846 6010B Dilution Factor: 1	01/07-01/09/00	D779110Q
Cadmium	104	(77 - 123)	SW846 6010B Dilution Factor: 1	01/07-01/09/00	D779110R
Calcium	101	(75 - 125)	SW846 6010B Dilution Factor: 1	01/07-01/10/00	D779110T
Chromium	105	(77 - 123)	SW846 6010B Dilution Factor: 1	01/07-01/09/00	D779110U
Cobalt	100	(80 - 121)	SW846 6010B Dilution Factor: 1	01/07-01/09/00	D779110V
Copper	109	(82 - 118)	SW846 6010B Dilution Factor: 1	01/07-01/09/00	D779110W
Iron	113	(58 - 142)	SW846 6010B Dilution Factor: 1	01/07-01/10/00	D779110X
Magnesium	98	(81 - 119)	SW846 6010B Dilution Factor: 1	01/07-01/10/00	D779111A
Manganese	107	(77 - 123)	SW846 6010B Dilution Factor: 1	01/07-01/09/00	D779111C
Nickel	103	(78 - 122)	SW846 6010B Dilution Factor: 1	01/07-01/09/00	D779111D
Potassium	94	(74 - 132)	SW846 6010B Dilution Factor: 1	01/07-01/10/00	D7791113

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LABORATORY CONTROL SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: F0A050178 **Matrix.....:** SOLID

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Silver	110	(75 - 126)	SW846 6010B	01/07-01/09/00	D7791114
		Dilution Factor: 1			
Arsenic	110	(74 - 126)	SW846 6010B	01/07-01/09/00	D7791115
		Dilution Factor: 1			
Sodium	89	(63 - 137)	SW846 6010B	01/07-01/10/00	D7791116
		Dilution Factor: 1			
Vanadium	103	(68 - 132)	SW846 6010B	01/07-01/09/00	D7791117
		Dilution Factor: 1			
Zinc	102	(77 - 123)	SW846 6010B	01/07-01/09/00	D7791118
		Dilution Factor: 1			
Lead	96	(76 - 124)	SW846 6010B	01/07-01/09/00	D7791119
		Dilution Factor: 1			
Selenium	108	(74 - 126)	SW846 6010B	01/07-01/09/00	D779111E
		Dilution Factor: 1			
Thallium	111	(51 - 149)	SW846 6010B	01/07-01/09/00	D779111F
		Dilution Factor: 1			

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

MATRIX SPIKE SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: F0A050178 **Matrix.....:** SOLID
Date Sampled...: 01/04/00 **Date Received..:** 01/04/00

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MS Lot-Sample #: F0A050178-001 **Prep Batch #...:** 0007336							
Aluminum	373 N	(75 - 125)			SW846 6010B	01/07-01/10/00	D73V1102
	434 N	(75 - 125)	1.9	(0-20)	SW846 6010B	01/07-01/10/00	D73V1103
		Dilution Factor: 10					
Antimony	90	(75 - 125)			SW846 6010B	01/07-01/10/00	D73V1105
	90	(75 - 125)	0.44	(0-20)	SW846 6010B	01/07-01/10/00	D73V1106
		Dilution Factor: 1					
Barium	95	(75 - 125)			SW846 6010B	01/07-01/10/00	D73V1108
	95	(75 - 125)	0.05	(0-20)	SW846 6010B	01/07-01/10/00	D73V1109
		Dilution Factor: 1					
Beryllium	100	(75 - 125)			SW846 6010B	01/07-01/10/00	D73V110C
	100	(75 - 125)	0.32	(0-20)	SW846 6010B	01/07-01/10/00	D73V110D
		Dilution Factor: 1					
Cadmium	88	(75 - 125)			SW846 6010B	01/07-01/10/00	D73V110F
	88	(75 - 125)	0.38	(0-20)	SW846 6010B	01/07-01/10/00	D73V110G
		Dilution Factor: 1					
Calcium	123	(75 - 125)			SW846 6010B	01/07-01/10/00	D73V110J
	124	(75 - 125)	0.76	(0-20)	SW846 6010B	01/07-01/10/00	D73V110K
		Dilution Factor: 10					
Chromium	91	(75 - 125)			SW846 6010B	01/07-01/10/00	D73V110M
	90	(75 - 125)	0.57	(0-20)	SW846 6010B	01/07-01/10/00	D73V110N
		Dilution Factor: 1					
Cobalt	90	(75 - 125)			SW846 6010B	01/07-01/10/00	D73V110Q
	89	(75 - 125)	0.50	(0-20)	SW846 6010B	01/07-01/10/00	D73V110R
		Dilution Factor: 1					
Copper	102	(75 - 125)			SW846 6010B	01/07-01/10/00	D73V110U
	102	(75 - 125)	0.09	(0-20)	SW846 6010B	01/07-01/10/00	D73V110V
		Dilution Factor: 1					
Iron	974 N	(75 - 125)			SW846 6010B	01/07-01/10/00	D73V110X
	848 N	(75 - 125)	13	(0-20)	SW846 6010B	01/07-01/10/00	D73V1110
		Dilution Factor: 10					
Magnesium	112	(75 - 125)			SW846 6010B	01/07-01/10/00	D73V1112
	112	(75 - 125)	0.03	(0-20)	SW846 6010B	01/07-01/10/00	D73V1113
		Dilution Factor: 10					

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MATRIX SPIKE SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: F0A050178 **Matrix.....:** SOLID
Date Sampled...: 01/04/00 **Date Received..:** 01/04/00

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Manganese	99	(75 - 125)			SW846 6010B	01/07-01/10/00	D73V1115
	98	(75 - 125)	0.79	(0-20)	SW846 6010B	01/07-01/10/00	D73V1116
		Dilution Factor: 1					
Nickel	88	(75 - 125)			SW846 6010B	01/07-01/10/00	D73V1118
	87	(75 - 125)	0.60	(0-20)	SW846 6010B	01/07-01/10/00	D73V1119
		Dilution Factor: 1					
Potassium	103	(75 - 125)			SW846 6010B	01/07-01/10/00	D73V111C
	107	(75 - 125)	3.4	(0-20)	SW846 6010B	01/07-01/10/00	D73V111D
		Dilution Factor: 10					
Arsenic	98	(75 - 125)			SW846 6010B	01/07-01/10/00	D73V111J
	98	(75 - 125)	0.22	(0-20)	SW846 6010B	01/07-01/10/00	D73V111K
		Dilution Factor: 1					
Silver	97	(75 - 125)			SW846 6010B	01/07-01/10/00	D73V111F
	98	(75 - 125)	0.63	(0-20)	SW846 6010B	01/07-01/10/00	D73V111G
		Dilution Factor: 1					
Sodium	108	(75 - 125)			SW846 6010B	01/07-01/10/00	D73V111M
	104	(75 - 125)	3.0	(0-20)	SW846 6010B	01/07-01/10/00	D73V111N
		Dilution Factor: 10					
Vanadium	93	(75 - 125)			SW846 6010B	01/07-01/10/00	D73V111Q
	92	(75 - 125)	1.2	(0-20)	SW846 6010B	01/07-01/10/00	D73V111R
		Dilution Factor: 1					
Zinc	89	(75 - 125)			SW846 6010B	01/07-01/10/00	D73V111U
	122 *	(75 - 125)	22	(0-20)	SW846 6010B	01/07-01/10/00	D73V111V
		Dilution Factor: 1					
Lead	88	(75 - 125)			SW846 6010B	01/07-01/10/00	D73V111X
	87	(75 - 125)	0.83	(0-20)	SW846 6010B	01/07-01/10/00	D73V1120
		Dilution Factor: 1					
Selenium	93	(75 - 125)			SW846 6010B	01/07-01/10/00	D73V1122
	93	(75 - 125)	0.20	(0-20)	SW846 6010B	01/07-01/10/00	D73V1123
		Dilution Factor: 1					
Thallium	88	(75 - 125)			SW846 6010B	01/07-01/10/00	D73V1125
	89	(75 - 125)	0.12	(0-20)	SW846 6010B	01/07-01/10/00	D73V1126
		Dilution Factor: 1					

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

N Spiked analyte recovery is outside stated control limits.

* Relative percent difference (RPD) is outside stated control limits.

BECHTEL HANFORD, INC.

Client Sample ID: B0X4W6

General Chemistry

Lot-Sample #...: F0A050178-001 **Work Order #...:** D73V1 **Matrix.....:** SOLID
Date Sampled...: 01/04/00 **Date Received..:** 01/04/00

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Phosphate as P, Ortho	ND	5.0	mg/kg	MCAWW 300.0A	01/11/00	0014296
		Dilution Factor: 1				
pH (solid)	**12.2**		**No Units**	**SW846 9045A**	**01/13/00**	**0013323**
		Dilution Factor: 1				
Chloride	ND	2.0	mg/kg	MCAWW 300.0A	01/11/00	0014288
		Dilution Factor: 1				
Fluoride	**1.5**	**1.0**	**mg/kg**	**MCAWW 300.0A**	**01/11/00**	**0014285**
		Dilution Factor: 1				
Nitrogen, Nitrate	**0.21**	**0.20**	**mg/kg**	**MCAWW 300.0A**	**01/11/00**	**0014294**
		Dilution Factor: 1				
Nitrogen, Nitrite	ND	0.20	mg/kg	MCAWW 300.0A	01/11/00	0014292
		Dilution Factor: 1				
Sulfate	**7.6**	**5.0**	**mg/kg**	**MCAWW 300.0A**	**01/11/00**	**0014297**
		Dilution Factor: 1				

METHOD BLANK REPORT

General Chemistry

Client Lot #...: F0A050178 **Matrix.....:** SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
pH (solid)		Work Order #: D7DWQ101		MB Lot-Sample #:	F0A130000-323	
	5.6		**No Units**	**SW846 9045A**	**01/13/00**	**0013323**
		Dilution Factor: 1				
Chloride		Work Order #: D7FL0101		MB Lot-Sample #:	F0A140000-288	
	ND	2.0	mg/kg	MCAWW 300.0A	01/11/00	0014288
		Dilution Factor: 1				
Fluoride		Work Order #: D7FKN101		MB Lot-Sample #:	F0A140000-285	
	ND	1.0	mg/kg	MCAWW 300.0A	01/11/00	0014285
		Dilution Factor: 1				
Nitrogen, Nitrate		Work Order #: D7FLD101		MB Lot-Sample #:	F0A140000-294	
	ND	0.20	mg/kg	MCAWW 300.0A	01/11/00	0014294
		Dilution Factor: 1				
Nitrogen, Nitrite		Work Order #: D7FL6101		MB Lot-Sample #:	F0A140000-292	
	ND	0.20	mg/kg	MCAWW 300.0A	01/11/00	0014292
		Dilution Factor: 1				
Phosphate as P, Ortho		Work Order #: D7FLK101		MB Lot-Sample #:	F0A140000-296	
	ND	5.0	mg/kg	MCAWW 300.0A	01/11/00	0014296
		Dilution Factor: 1				
Sulfate		Work Order #: D7FLM101		MB Lot-Sample #:	F0A140000-297	
	ND	5.0	mg/kg	MCAWW 300.0A	01/11/00	0014297
		Dilution Factor: 1				

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

General Chemistry

Client Lot #...: F0A050178 **Matrix.....:** SOLID

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Chloride		Work Order #: D7FL0102	LCS Lot-Sample#: F0A140000-288		
	95	(80 - 120)	MCAWW 300.0A	01/11/00	0014288
		Dilution Factor: 1			
Fluoride		Work Order #: D7FKN102	LCS Lot-Sample#: F0A140000-285		
	101	(80 - 120)	MCAWW 300.0A	01/11/00	0014285
		Dilution Factor: 1			
Nitrogen, Nitrate		Work Order #: D7FLD102	LCS Lot-Sample#: F0A140000-294		
	100	(80 - 120)	MCAWW 300.0A	01/11/00	0014294
		Dilution Factor: 1			
Nitrogen, Nitrite		Work Order #: D7FL6102	LCS Lot-Sample#: F0A140000-292		
	96	(80 - 120)	MCAWW 300.0A	01/11/00	0014292
		Dilution Factor: 1			
Phosphate as P, Ortho		Work Order #: D7FLK102	LCS Lot-Sample#: F0A140000-296		
	101	(80 - 120)	MCAWW 300.0A	01/11/00	0014296
		Dilution Factor: 1			
Sulfate		Work Order #: D7FLM102	LCS Lot-Sample#: F0A140000-297		
	97	(80 - 120)	MCAWW 300.0A	01/11/00	0014297
		Dilution Factor: 1			

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

MATRIX SPIKE SAMPLE EVALUATION REPORT

General Chemistry

Client Lot #...: F0A050178 **Matrix.....:** SOLID
Date Sampled...: 01/04/00 **Date Received..:** 01/04/00

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
ortho-Phosphate		Work Order #...: D73V112M		MS Lot-Sample #: F0A050178-001	
	0.0	(75 - 125)	MCAWW 300.0A	01/11/00	0014296
		Dilution Factor: 1			
Chloride		Work Order #...: D73V1128		MS Lot-Sample #: F0A050178-001	
	108	(75 - 125)	MCAWW 300.0A	01/11/00	0014288
		Dilution Factor: 1			
Fluoride		Work Order #...: D73V112C		MS Lot-Sample #: F0A050178-001	
	88	(75 - 125)	MCAWW 300.0A	01/11/00	0014285
		Dilution Factor: 1			
Nitrogen, Nitrate		Work Order #...: D73V112F		MS Lot-Sample #: F0A050178-001	
	144 N	(75 - 125)	MCAWW 300.0A	01/11/00	0014294
		Dilution Factor: 1			
Nitrogen, Nitrite		Work Order #...: D73V112J		MS Lot-Sample #: F0A050178-001	
	117	(75 - 125)	MCAWW 300.0A	01/11/00	0014292
		Dilution Factor: 1			
Sulfate		Work Order #...: D73V112Q		MS Lot-Sample #: F0A050178-001	
	97	(75 - 125)	MCAWW 300.0A	01/11/00	0014297
		Dilution Factor: 1			

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

N Spiked analyte recovery is outside stated control limits.

Results and reporting limits have been adjusted for dry weight.

SAMPLE DUPLICATE EVALUATION REPORT

General Chemistry

Client Lot #...: F0A050178 **Work Order #...:** D73V1-SMP D73V1-DUP **Matrix.....:** SOLID

Date Sampled...: 01/04/00 **Date Received..:** 01/04/00

PARAM	RESULT	DUPLICATE RESULT	UNITS	RPD	RPD LIMIT	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Chloride						SD Lot-Sample #:	F0A050178-001	
	ND	ND	mg/kg	0	(0-20)	MCAWW 300.0A	01/11/00	0014288
			Dilution Factor: 1					
Fluoride						SD Lot-Sample #:	F0A050178-001	
	1.5	1.6	mg/kg	0.65	(0-35)	MCAWW 300.0A	01/11/00	0014285
			Dilution Factor: 1					
Nitrogen, Nitrate						SD Lot-Sample #:	F0A050178-001	
	0.21	0.19	mg/kg	10	(0-0.0)	MCAWW 300.0A	01/11/00	0014294
			Dilution Factor: 1					
Nitrogen, Nitrite						SD Lot-Sample #:	F0A050178-001	
	ND	ND	mg/kg	0	(0-0.0)	MCAWW 300.0A	01/11/00	0014292
			Dilution Factor: 1					
Phosphate as P, Ortho						SD Lot-Sample #:	F0A050178-001	
	ND	ND	mg/kg	0	(0-35)	MCAWW 300.0A	01/11/00	0014296
			Dilution Factor: 1					
Sulfate						SD Lot-Sample #:	F0A050178-001	
	7.6	5.4	mg/kg	35	(0-35)	MCAWW 300.0A	01/11/00	0014297
			Dilution Factor: 1					
pH (solid)						SD Lot-Sample #:	F0A050178-001	
	12.2	12.2	No Units	0.16	(0-20)	SW846 9045A	01/13/00	0013323
			Dilution Factor: 1					

SAMPLE DUPLICATE EVALUATION REPORT

General Chemistry

Client Lot #...: F0A050178 **Work Order #...:** D76J7-SMP D76J7-DUP **Matrix.....:** SOLID

Date Sampled...: 01/05/00 **Date Received..:** 01/06/00

PARAM	RESULT	DUPLICATE RESULT	UNITS	RPD	RPD LIMIT	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
pH (solid)						SD Lot-Sample #:	F0A070144-001	
	7.8	7.8	No Units	0.13	(0-20)	SW846 9045A	01/13/00	0013323

Dilution Factor: 1