UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VI
HOUSTON BRANCH
6606 HORNWOOD DRIVE
HOUSTON, TEXAS 77074

Ref. Case No. 8016

Site Name South Cavalcade

Date: 10-29-87

Subject: CLP Data Review

From: Michael Daggett, Chief, Organic Lab Section; 6E-HL

To: Keith Bradley, Hazardous Waste Section; 6E-SH

A review of the laboratory raw data for the reference site has been completed by members of the Laboratory Section. Samples were:

INORGANIC: MFC321
MFC322
MFC494

ORGANIC:

The data was found:

(✓) Acceptable

( ) Provisional; use of data requires caution. Problems are noted in Review Summary.

( ) Unacceptable; data should not be used. Problems are noted in Review Summary.

Questions regarding the review can be addressed to me.

Attachments

cc: David Stockton, 6E-HL
Duane Geuder, WH-548A

1012327

004856

104

004856

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VI
HOUSTON BRANCH
6608 HORNWOOD DRIVE
HOUSTON, TEXAS 77074

INORGANIC QC CHECKLIST

Site: South Cavalcade Street
Contract No.: 68-01-7066
Case No.: 8016
Contractor: Accu-Labs Research
Reviewed By: R. Horne
Matrix: Water
Date: 10/28/87
Acct. #: 8TFAJN25-SF #TGRUF56

Sample No.:
- MFC-321
- MFC-322
- MFC-494

004857

COMMENTS (To be completed by EPA Personnel)

Data Completeness	✓ Acceptable	Provisional	Unacceptable
Instrument Calibration Tune	✓ Acceptable	Provisional	Unacceptable
Interference Check Sample	✓ Acceptable	Provisional	Unacceptable
Blank Analysis	✓ Acceptable	Provisional	Unacceptable
Matrix Spikes	✓ Acceptable	Provisional	Unacceptable
Duplicates	✓ Acceptable	Provisional	Unacceptable
Field Blanks	✓ Acceptable	Provisional	Unacceptable
Other	Acceptable	Provisional	Unacceptable

ADDITIONAL COMMENTS

Data packet is complete and found to be acceptable

1) Spike recoveries low for Sb, As, Pb, Se, Tl, V, CN^-.
Spike recovery high for Sn

2) Standard addition method had correlation coefficients outside window of 0.995 for As, Pb, V.

Accu-Labs Research, Inc.

F 7022 Rev. D

185-8016-6-0001

Case No. 8016

DOCUMENT INVENTORY

Document Control #*	Document Type	# pages
185-8016-6-0001	Case file document inventory	1
185-8016-6-0002	Transmittal Letter (F 7033)	1
185-8016-6-0003	Case Narrative	1
185-8016-6-0004	Shipping air or bill of laden	1
185-8016-6-0005	Sample tags	6
NA - -0006	S40 forms (SAS samples)	
185-8016-6-0007	Chain-of-Custody Forms	1
185-8016-6-0008	Sample traffic reports	3
185-8016-6-0009	Sample log-in sheets (F 7008)	1
185-8016-6-0010	Weekly progress reports	1
185-8016-6-0011	Analysis data summaries (86-515)	17
185-8016-6-0012	Work Orders (F 7017 and F 7002)	2
185-8016-6-0013	Flame AA data sheets (F 7005)	17
185-8016-6-0014	Furnace AA data sheets (F 7006)	10
185-8016-6-0015	Mercury data sheets (F 7009)	1
185-8016-6-0016	Cyanide data sheets (F 7007)	1
NA - -0017	Percent solids data sheets (F 7016)	
185-8016-6-0018	Digestion sheets (F 7011 and F 7001)	2
NA - -0019	Redigestion sheets (F 7004)	
NA - -0020	Analyst logbook pages	
185-8016-6-0021	HGA injection logs (F 7014)	20
NA - -0022	pH extremes log (F 7010)	
185-8016-6-0023	Internal Chain-of-Custody (F 7003)	2
185-8016-6-0024	Spiking data (3807200 pages 5 & 6)	1
185-8016-6-0025	AA printer readouts	16
185-8016-6-0026	Mercury strip charts	2
NA - -0027	Computer printouts	
185-8016-6-0028	Quality Control samples	1
NA - -0029	AA strip charts	
185-8016-6-0030	Analytical spikes - HGA (F 7019)	10
185-8016-6-0031	QC Report Number (F 7024)	1
185-8016-6-0032	Case Log (F 7023)	1
185-8016-6-0033	Reporting Schedule (F 7026)	1
185-8016-6-0034	MSA Data Sheets	

* This number is recorded on each set of documents.

004858

F 7033 Rev. A

Transmittal Letter

Case Number: 8016

Date Received: 9/12/87

Date Reported: 10/15/87

Approval: Cathy Shugarts
Cathy Shugarts
Project Manager

004859

3-6-0002

Case Narrative
Case 8029
QC 182

The analysis of Na, Mg, Ca, and K by flame AA require additions of LaCs for suppession of ionization. For this reason, the resulting sample has a 1.1 dilution factor following the addition. The reportable detection limit is the IDL multiplied by 1.1. These levels are still below the CRDL.

004860

182- 8029-L-0003

004861

FEDERAL EXPRESS

QUESTIONS? CALL 800-238-5355 TOLL FREE.

AIRBILL NUMBER 4668488775

7170H 4668488775

Date 09/11/87

1 From (Your Name) Please Print: ROGER SCHENK

Your Phone Number (Very Important): (512) 347-6651

Company: CAMP DRESSER & MCKEE

Department/Floor No.

Street Address: 9442 CAPITAL TX N ABRTN II 400

City: AUSTIN State: TX

ZIP Required For Correct Invoicing: 78759

2 To (Recipient's Name) Please Print: Catherine Cairns

Recipient's Phone Number (Very Important): (303) 423-2700

Company: Acu-Tech Research

Department/Floor No.

Exact Street Address (Use of P.O. Boxes or P.O. # Zip Codes Will Delay Delivery And Result In Extra Charge): 11485 W. 48th Ave

City: Wheat Ridge State: Co

ZIP Street Address Zip Required: 80033

3 YOUR BILLING REFERENCE INFORMATION (FIRST 24 CHARACTERS WILL APPEAR ON INVOICE): 7702-142-TT-SIEVL

PAYMENT: Bill Sender / Cash / Bill Recipient's FedEx Acct. No. / Bill 3rd Party FedEx Acct. No. / Bill Credit Card

4 SERVICES CHECK ONLY ONE BOX

1 PRIORITY 1 Overnight Delivery Using Our Packaging — 6 OVERNIGHT LETTER* (Our Packaging 9½" x 12½")

OVERNIGHT DELIVERY USING OUR PACKAGING

2 Courier-Pak Overnight Envelope* 12" x 15½"

3 Overnight Box 12½" x 17½" x 3" — A

4 Overnight Tube 38" x 6" x 6" — B

*Declared Value Limit $100.

STANDARD AIR

5 Delivery not later than second business day

SERVICE COMMITMENT

PRIORITY 1 - Deliver, to scheduled dock next business morning in most locations. It may take two to three business days if the destination is outside our primary service areas.

STANDARD AIR - Delivery is generally next business day or not later than second business day. It may take three or more business days if the destination is outside our primary service areas.

DELIVERY AND SPECIAL HANDLING CHECK SERVICES REQUIRED

1 HOLD FOR PICK-UP (File in Section 14 at right)

2 DELIVER WEEKDAY

3 DELIVER SATURDAY (Extra Charge)

4 DANGEROUS GOODS (P-1 and Standard Air Packages only. Extra charge)

5 CONSTANT SURVEILLANCE SERVICE (CSS) (Extra charge. Do not complete Section 5)

6 DRY ICE ____ Lbs.

7 OTHER SPECIAL SERVICE

8

9 SATURDAY PICK-UP (Extra charge)

10

PACKAGES	WEIGHT	YOUR DECLARED VALUE	OVER SIZE
1	27		
Total 1	Total 27	Total	

Received At: 1 ☐ Regular Stop 2 ☐ On-Call Stop 3 ☐ Drop Box 4 ☐ B.S.C. 5 ☐ Station

Federal Express Corp. Employee No. 32 3/2

Date/Time For Federal Express Use 9/11 1645

5 Sender authorizes Federal Express to deliver this shipment without obtaining a delivery signature and shall indemnify and hold harmless Federal Express from any claims resulting therefrom.

Release Signature: 185-8016-6-0004

HOLD FOR PICK-UP AT THIS FEDERAL EXPRESS LOCATION: Street Address (See Service Guide or Call 800-238-5355)

City State

ZIP Zip Code of Street Address Required

Emp. No. Date

☐ Cash Received

☐ Return Shipment ☐ Third Party ☐ Chg. To Dat ☐ Chg. To Hold

Street Address

City State Zip

Received By: X Connie Hewitt

Date/Time Received FedEx Employee Number 9/12/87 9:00

Federal Express Use

Base Charges

Declared Value Charge

Origin Agent Charge

Other

Total Charges

PART #106001 REV 5/87 PRINTED U.S.A. SRCE

007

RECIPIENT'S COPY

004861

004862

Project Code	Station No.	Month/Day/Year	Time	Designate: Comp	Designate: Grab
143	—	09/11/87	1225		X

Samplers (Signatures): Roger E. Schenk

Station Location: Field Blank

Preservative: Yes ☒ No ☐

ANALYSES	
BOD Anions Solids (TSS) (TDS) (SS)	
COD, TOC, Nutrients	
Phenolics	
Mercury	
Metals	
Cyanide	X
Oil and Grease	
Organics GC/MS	
Priority Pollutants	
Volatile Organics	
Pesticides	
Mutagenicity	
Bacteriology	

Remarks:

Tag No	Lab Sample No.
6-037705	MFC 494

Project Code	Station No.	Month/Day/Year	Time	Designate: Comp	Designate: Grab
143	SCK-MW08	09/11/87	1120		X

Samplers (Signatures): Roger E. Schenk

Station Location: SCK-MW08-001

Preservative: Yes ☒ No ☐

ANALYSES	
BOD Anions Solids (TSS) (TDS) (SS)	
COD, TOC, Nutrients	
Phenolics	
Mercury	
Metals	
Cyanide	X
Oil and Grease	
Organics GC/MS	
Priority Pollutants	
Volatile Organics	
Pesticides	
Mutagenicity	
Bacteriology	

Remarks:

Tag No.	Lab Sample No.
6-037703	MFC 322

Project Code	Station No	Month/Day/Year	Time	Designate: Comp	Designate: Grab
143	—	04/11/87	1225		X

Samplers (Signatures): Roger E. Schenk

Station Location: Field Blank

Preservative: Yes ☒ No ☐

ANALYSES	
BOD Anions Solids (TSS) (TDS) (SS)	
COD, TOC, Nutrients	
Phenolics	
Mercury	
Metals	X
Cyanide	
Oil and Grease	
Organics GC/MS	
Priority Pollutants	
Volatile Organics	
Pesticides	
Mutagenicity	
Bacteriology	

Remarks:

Tag No.	Lab Sample No.
6-037704	MFC 494

135-8016.6 0005

004863

Project Code	Station No.	Month/Day/Year	Time	Designate Comp.	Designate Grab	Samplers (Signatures)	Station Location	Preservative: Yes ☒ No ☐	Tag No.	Lab Sample No.
143	SCK-MW05	09/11/87	0915		X	Roger E. Schenk	SCK-MW05-001		6-037701	MFC 321

ANALYSES	
BOD Anions Solids (TSS) (TDS) (SS)	
COD, TOC, Nutrients	
Phenolics	
Mercury	
Metals	
Cyanide	X
Oil and Grease	
Organics GC/MS	
Priority Pollutants	
Volatile Organics	
Pesticides	
Mutagenicity	
Bacteriology	

Remarks:

Project Code	Station No	Month/Day/Year	Time	Designate Comp.	Designate Grab	Samplers (Signatures)	Station Location	Preservative: Yes ☒ No ☐	Tag No.	Lab Sample No.
143	SCK-MW05	09/11/87	0915		X	Roger E. Schenk	SCK-MW05-001		6-037700	MFC 321

ANALYSES	
BOD Anions Solids (TSS) (TDS) (SS)	
COD, TOC, Nutrients	
Phenolics	
Mercury	
Metals	X
Cyanide	
Oil and Grease	
Organics GC/MS	
Priority Pollutants	
Volatile Organics	
Pesticides	
Mutagenicity	
Bacteriology	

Remarks:

Project Code	Station No	Month/Day/Year	Time	Designate Comp	Designate Grab	Samplers (Signatures)	Station Location	Preservative: Yes ☒ No ☐	Tag No.	Lab Sample No.
143	SCK-MW08	09/11/87	1120		X	Roger E. Schenk	SCK-MW08-001		6-037702	MFC 322

ANALYSES	
BOD Anions Solids (TSS) (TDS) (SS)	
COD, TOC, Nutrients	
Phenolics	
Mercury	
Metals	X
Cyanide	
Oil and Grease	
Organics GC/MS	
Priority Pollutants	
Volatile Organics	
Pesticides	
Mutagenicity	
Bacteriology	

Remarks:

ENVIRONMENTAL PROTECTION AGENCY
Office of Enforcement

REGION 6
First International Bldg., 1201 Elm St.
Dallas, Texas 75270

CHAIN OF CUSTODY RECORD

PROJ. NO.: 143
PROJECT NAME: South Cavalcade Street Site
SAMPLERS: *(Signature)* Roger E. Schenk

STA. NO. SCK-	DATE 1987	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	1.0 Liter Metals		1.0 Liter Cyanide				REMARKS: TRAF. RPT. NO.	REMARKS: TAG NO.
MW05-001	09-11	0915		X	Monitor Well 05-001, MW05	2	1		1				MFC 321	6-037700,-01
MW08-001	09-11	1120		X	Monitor Well 08-001, MW08	2	1		1				MFC 322	6-037702,-03
—	09-11	1225		X	Field Blank	2	1		1				MFC 494	6-037704,-05

Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*
Roger E. Schenk	09-11 87 / 1630				
Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*
Relinquished by: *(Signature)*	Date / Time	Received for Laboratory by: *(Signature)* Connie Hewitt	Date / Time 9/12/87	Remarks	

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

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C ___ 7931

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U.S. ENVIRONMENTAL PROTECTION AGENCY · HWI Sample Management Office
P.O. Box 818, Alexandria, VA 22313 · 703/557-2490 · FTS/557-2490

INORGANICS TRAFFIC REPORT

Sample Number
MFC 321

① Case Number:
Sample Site Name/Code:

② SAMPLE CONCENTRATION
(Check One)
___ Low Concentration
___ Medium Concentration

③ SAMPLE MATRIX
(Check One)
___ Water
___ Soil/Sediment

④ Ship To:
Attn:
Transfer
Ship To:

⑤ Sampling Office:
Sampling Personnel:
(Name)
(Phone)
Sampling Date:
(Begin) (End)

⑥ Shipping Information:
Name Of Carrier:
Date Shipped:
Airbill Number:

⑨ ANALYSIS LAB:
Recd by:
Date Recd:

⑦ Sample Description:
(Check One)
___ Surface Water
___ Ground Water
___ Leachate
___ Mixed Media
___ Solids
___ Other ___
(specify)
MATCHES ORGANIC SAMPLE NO. ___

⑧ Mark Volume Level
On Sample Bottle
Check Analysis required
___ Total Metals
___ Cyanide

⑩ Sample Condition
On Receipt:
(eg. broken, leakage, chain of custody, etc.)

185-8016-6-0008

LAB FILE COPY

004865

U.S. ENVIRONMENTAL PROTECTION AGENCY · HWI Sample Management Office
P.O. Box 818, Alexandria, VA 22313 – 703/557-2490 · FTS 557-2490

INORGANICS TRAFFIC REPORT

Sample Number
MFC 322

(1) Case Number:
Sample Site Name/Code:

(2) SAMPLE CONCENTRATION
(Check One)
___ Low Concentration
___ Medium Concentration

(3) SAMPLE MATRIX
(Check One)
___ Water
___ Soil/Sediment

(4) Ship To:
Attn:
Transfer
Ship To:

(5) Sampling Office: 998 7 8C
Sampling Personnel:
(Name)
(Phone)
Sampling Date:
(Begin) (End)

(6) Shipping Information:
Name Of Carrier:
Date Shipped:
Airbill Number:

(9) ANALYSIS LAB:
Recd by:
Date Recd: 9-18-87

(7) Sample Description:
(Check One)
___ Surface Water
___ Ground Water
___ Leachate
___ Mixed Media
___ Solids
___ Other ___
(specify)
MATCHES ORGANIC SAMPLE NO. ___

(8) Mark Volume Level
On Sample Bottle
Check Analysis required
___ Total Metals
___ Cyanide

(10)
Sample Condition
On Receipt:
(eg. broken, leakage, chain of custody, etc.)

LAB FILE COPY

004866

U.S. ENVIRONMENTAL PROTECTION AGENCY · HWI Sample Management Office
P.O. Box 818, Alexandria, VA 22313 · 703/557-2490 · FTS 557-2490

INORGANICS TRAFFIC REPORT

Sample Number
MFC 494

(1) Case Number: _____
Sample Site Name/Code:

(2) SAMPLE CONCENTRATION
(Check One)
___ Low Concentration
___ Medium Concentration

(3) SAMPLE MATRIX
(Check One)
___ Water
___ Soil/Sediment

(4) Ship To:

Attn.

Transfer
Ship To:

L98V00

(5) Sampling Office: _____

Sampling Personnel:

(Name) _____

(Phone) _____

Sampling Date:

(Begin) _____ (End) _____

(6) Shipping Information:

Name Of Carrier:

Date Shipped: _____

Airbill Number: _____

(9) ANALYSIS LAB:

Recd by: _____

Date Recd: _____

(10) Sample Condition
On Receipt:

(eg. broken, leakage, chain of custody, etc.)

(7) Sample Description:
(Check One)
___ Surface Water
___ Ground Water
___ Leachate
___ Mixed Media
___ Solids
___ Other _____
(specify)

MATCHES ORGANIC SAMPLE NO. _____

(8) Mark Volume Level
On Sample Bottle
Check Analysis required
___ Total Metals
___ Cyanide

LAB FILE COPY

004867

Accu-Lab Research, Inc. 898700

F 7005 Rev. A

SAMPLE LOG-IN SHEET

DATE: 9/12/87

SAMPLE CUSTODIAN SIGNATURE: Connie Heitt

DOCUMENT CONTROL #

CIRCLE THE APPROPRIATE RESPONSE:

CASE NUMBER 8016

AIRBILL NUMBER 4668488775

1. Custody Seals on Shipping Containers — present/absent; intact/not intact
2. Chain-of-Custody — present/absent
3. Sample Tags — present/absent; tie-on/adhesive; Sample Tag Numbers listed/not listed on chain-of-custody
4. SMO Forms — present/absent
5. Bills of Lading — present/absent
6. Custody Seals on Sample Containers — present/absent; intact/not intact

DATE RECEIVED	TIME RECEIVED	CHAIN-OF-CUSTODY RECORD NUMBER	SMO SAMPLE NUMBERS	CORRESPONDING SAMPLE TAG NUMBERS	CORRESPONDING ASSIGNED LAB NUMBERS	DOES INFORMATION ON CUSTODY RECORDS, TRAFFIC REPORTS, AND SAMPLE TAGS AGREE?	REMARKS: CONDITION OF SAMPLE SHIPMENT, ETC.
9-12-87	9:00	6-7931	MFL-321	6-037700-01	185-8016-3-1	✓	✓
↓	↓	↓	322	6-037702-03	-2	✓	✓
↓	↓	↓	404	6-037704-05	-3	✓	✓

186-3016-6-0009

004868

LABORATORY WEEKLY REPORT
INORGANICS

Report No. 119

Laboratory Name ACCU-LABS RESEARCH
EPA Contract No. 68-01-7066
Date 9-14-87 (Monday) to 9-19-87 (Saturday)

Number of Samples Received this Week: 8

Case Number	Sample Number	Date Received	Discussion of Problems
8C 16	MFC 321 MFC 322 MFC 494	9-12-87	
SAS 2771Y	2771Y-47 50 48 51 49	9-12-87	

Narrative: When necessary, note problems in condition of sample, analysis of sample, sample identification, etc. (Use additional pages, if necessary.)

Cathy Shugarts
Project Manager

6-8016-6-0010

004869

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

Date 10/15/87

COVER PAGE
INORGANIC ANALYSES DATA PACKAGE

Lab Name Accu-Labs Research Case No. 8016

SOW No. 784 Q.C. Report No. 185

Sample Numbers

EPA No.	Lab ID No.	EPA No.	Lab ID No.
MFC 321	185-8016-3-1		
MFC 322	185-8016-3-2		
MFC 4191	185-8016-3-3		

Comments: Background correction is used during analysis for elements analyzed at wavelength less than 350 nm

ICP Interelement and background corrections applied? Yes ____ No ____.

If yes, corrections applied before _____ or after _____ generation of raw data.

Footnotes:

NR - not required by contract at this time

Form I:

Value - If the result is a value greater than or equal to the instrument detection limit but less than the contract required detection limit, report the value in brackets (i.e., [10]). Indicate the analytical method used with P (for ICP/Flame AA) or F (for furnace).

U - Indicates element was analyzed for but not detected. Report with the detection limit value (e.g., 10U).

E - Indicates a value estimated or not reported due to the presence of interference. Explanatory note included on cover page.

s - Indicates value determined by Method of Standard Addition.

R - Indicates spike sample recovery is not within control limits.

* - Indicates duplicate analysis is not within control limits.

\+ - Indicates the correlation coefficient for method of standard addition is less than 0.995

185-8016-6-0011

004870

004870

Form 1

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No. MFC 321

Date 10/15/87

INORGANIC ANALYSIS DATA SHEET

LAB NAME Accutest Research

CASE NO. 8016

SOW NO. 784

LAB SAMPLE ID. NO. 185-8016-3-1

QC REPORT NO. 185

Elements Identified and Measured

Concentration: Low Y Medium ____

Matrix: Water X Soil ____ Sludge ____ Other ____

ug/L or mg/kg dry weight (Circle One)

1.	Aluminum	63600 P 'R'	13.	Magnesium	39500 P
2.	Antimony	60UF 'R'	14.	Manganese	1130 P
3.	Arsenic	10UF 'R'	15.	Mercury	0.2U
4.	Barium	600 P	16.	Nickel	90 P
5.	Beryllium	5UP	17.	Potassium	7150P
6.	Cadmium	4UP	18.	Selenium	5UF 'R'
7.	Calcium	130000 P	19.	Silver	4UP
8.	Chromium	113 P	20.	Sodium	125000 P
9.	Cobalt	50UP	21.	Thallium	10UF 'R'
10.	Copper	32 P	22.	Tin	40UF 'R'
11.	Iron	38200 P	23.	Vanadium	50UF 'R'
12.	Lead	29 ~~5U~~ F 'R' + 'S'	24.	Zinc	84P

Cyanide 10U 'R'

Percent Solids (%)

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments:

Lab Manager [signature]

004871

004871

Form 1

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No. MFC 322

Date 10/15/87

INORGANIC ANALYSIS DATA SHEET

LAB NAME Accu-Labs Research

CASE NO. 8016

SOW NO. 784

LAB SAMPLE ID. NO. 185-8016-3 2

QC REPORT NO. 185

Elements Identified and Measured

Concentration: Low Y Medium ____

Matrix: Water Y Soil ____ Sludge ____ Other ____

ug/L or mg/kg dry weight (Circle One)

1.	Aluminum	113000 P'R'	13.	Magnesium	57500 P
2.	Antimony	60UF'R'	14.	Manganese	1620 P
3.	Arsenic	10UF'R'	15.	Mercury	0.2U
4.	Barium	800 P	16.	Nickel	190 P
5.	Beryllium	5U P	17.	Potassium	EH ~~17000P~~ 17000 P
6.	Cadmium	4U P	18.	Selenium	5UF'R'
7.	Calcium	107000 P	19.	Silver	EH 48U P
8.	Chromium	260 P	20.	Sodium	125000 P
9.	Cobalt	110 P	21.	Thallium	10UF'R'
10.	Copper	77 P	22.	Tin	40UF'R'
11.	Iron	111000 P	23.	Vanadium	53F R'
12.	Lead	38F'R'	24.	Zinc	240 P
Cyanide		10U'R'	Percent Solids (%)		

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments:

Lab Manager [signature]

004872

Form I

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No. MFC 494

Date 10/5/87

INORGANIC ANALYSIS DATA SHEET

LAB NAME Accu. Labs Research CASE NO. 8016

SOW NO. 794

LAB SAMPLE ID. NO. 135-8016-3-3 QC REPORT NO. 135

Elements Identified and Measured

Concentration: Low x Medium ____

Matrix: Water x Soil ____ Sludge ____ Other ____

ug/L or mg/kg dry weight (Circle One)

1.	Aluminum	190UPR'	13.	Magnesium	[667]P
2.	Antimony	60UFR'	14.	Manganese	6UP
3.	Arsenic	10UFR'	15.	Mercury	0.2U
4.	Barium	[100]P	16.	Nickel	30UP
5.	Beryllium	5UP	17.	Potassium	[110]P
6.	Cadmium	4UP	18.	Selenium	5UFR'
7.	Calcium	[550]P	19.	Silver	4UP
8.	Chromium	5UP	20.	Sodium	[1320]P
9.	Cobalt	[30]P	21.	Thallium	10UFR'
10.	Copper	[16]P	22.	Tin	40UFR'
11.	Iron	[40]P	23.	Vanadium	500UFR'
12.	Lead	5UFR'	24.	Zinc	[13]P
	Cyanide	10UR'		Percent Solids (%)	

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: ! Requested 10 x CRDL due to matrix interference.

Lab Manager [signature]

004873

004873

Form II-A

Q. C. Report No. 185

INITIAL AND CONTINUING CALIBRATION VERIFICATION[3]

LAB NAME ACCU-LABS RESEARCH

CASE NO. 8016

SOW NO. 784

DATE 10/5/87

UNITS µg/L

Compound	Initial Calib.[1]			Continuing Calibration[2]					
Metals[1]:	True Value	Found	%R	True Value	Found	%R	Found	%R	Method[4]
1. Aluminum	729	780	107	729	760	104			P
2. Antimony	109	109	100	109	110	101			F
3. Arsenic	49	46	94	49	46	94			F
4. Barium	1200	1200	100	1200	1300	108			P
5. Beryllium	100	106	106	100	108	108			P
6. Cadmium	489	515	105	489	511	105			P
7. Calcium	49800	52000	104	49800	52000	104			P
8. Chromium	100	106	106	100	96	96			P
9. Cobalt	100	90	90	100	100	100			P
10. Copper	100	93	93	100	99	99			P
11. Iron	100	110	110	100	110	110			P
12. Lead	98	98	100	98	102	104	106	108	F
13. Magnesium	5000	4680	96	5000	4690	94			P
14. Manganese	100	109	109	100	99	99			P
15. Mercury	5.2	5.7	110	5.2	5.5	106	5.4	104	
16. Nickel	100	110	110	100	110	110			P
17. Potassium	5000	4500	90	5000	4500	90			P
18. Selenium	50	46	92	50	48	96			F
19. Silver	28	28	100	28	26	93			P
20. Sodium	20000	19600	98	20000	19400	97			P
21. Thallium	97	98	101	97	94	97			F
22. Tin	50	55	110	50	55	110	52	104	F
23. Vanadium	510	460	90	510	550	108			F
24. Zinc	100	104	104	100	91	91			P
Other:									
Cyanide	60	61	102	60	61	102			

15 µg/25 ml

[1] Initial Calibration Source EPA [2] Continuing Calibration Source EPA

[3] Control Limits: Mercury and Tin 80-120; All Other Compounds 90-110

[4] Indicate Analytical Method Used: P - ICP/Flame AA; F - Furnace

004874

004874

Form II-B

Q. C. Report No. 186

INITIAL AND CONTINUING CALIBRATION VERIFICATION[3]

LAB NAME ACCU-LABS RESEARCH

CASE NO. 8016

SOW NO. 784

DATE 10/15/87

UNITS ug/L

Compound	Initial Calib.[1]			Continuing Calibration[2]					
Metals[1]:	True Value	Found	%R	True Value	Found	%R	Found	%R	Method[4]
1. Aluminum									
2. Antimony									
3. Arsenic									
4. Barium									
5. Beryllium									
6. Cadmium									
7. Calcium	49800	52000	104	49800	50000	100			P
8. Chromium									
9. Cobalt									
10. Copper									
11. Iron									
12. Lead									
13. Magnesium									
14. Manganese									
15. Mercury									
16. Nickel									
17. Potassium									
18. Selenium									
19. Silver									
20. Sodium									
21. Thallium									
22. Tin				50	54	108			F
23. Vanadium	510	490	96	510	490	96			F
24. Zinc									
Other:									
Cyanide									

[1] Initial Calibration Source EPA [2] Continuing Calibration Source EPA

[3] Control Limits: Mercury and Tin 80-120; All Other Compounds 90-110

[4] Indicate Analytical Method Used: P - ICP/Flame AA; F - Furnace

004877

004875

Form II-C

Q. C. Report No. 185

INITIAL AND CONTINUING CALIBRATION VERIFICATION[3] - analytical spike

LAB NAME ACCU-LABS RESEARCH

CASE NO. 8016

SOW NO. 784

DATE 10/15/87

UNITS µg/L

Compound	Initial Calib.[1]			Continuing Calibration[2]					
Metals[4]:	True Value	Found	%R	True Value	Found	%R	Found	%R	Method[4]
1. Aluminum									
2. Antimony	109	121	110	109	113	103	114	105	F
3. Arsenic	49	50	98	49	47	96	51	104	F
4. Barium									
5. Beryllium									
6. Cadmium									
7. Calcium									
8. Chromium									
9. Cobalt									
10. Copper									
11. Iron									
12. Lead	98	102	104	98	98	100	98	100	F
13. Magnesium									
14. Manganese									
15. Mercury									
16. Nickel									
17. Potassium									
18. Selenium	50	54	108	50	55	110	55	110	F
19. Silver									
20. Sodium									
21. Thallium	97	110	103	97	100	103			F
22. Tin	50	55	110	50	58	116	48	96	F
23. Vanadium	510	510	100	510	530	104	460	90	F
24. Zinc									
Other:									
Cyanide									

[1] Initial Calibration Source EPA [2] Continuing Calibration Source EPA

[3] Control Limits: Mercury and Tin 80-120; All Other Compounds 90-110

[4] Indicate Analytical Method Used: P - ICP/Flame AA; F - Furnace

004876

004876

Form II -D

Q. C. Report No. 185

INITIAL AND CONTINUING CALIBRATION VERIFICATION[3] - analytical spike

LAB NAME ACCU-LABS RESEARCH

CASE NO. 8016

SOW NO. 793

DATE 10/15/87

UNITS ug/L

Compound	Initial Calib.[1]			Continuing Calibration[2]					
Metals[4]:	True Value	Found	%R	True Value	Found	%R	Found	%R	Method[4]
1. Aluminum									
2. Antimony									
3. Arsenic									
4. Barium									
5. Beryllium									
6. Cadmium									
7. Calcium									
8. Chromium									
9. Cobalt									
10. Copper									
11. Iron									
12. Lead									
13. Magnesium									
14. Manganese									
15. Mercury									
16. Nickel									
17. Potassium									
18. Selenium									
19. Silver									
20. Sodium									
21. Thallium	97	98	101	97	94	97			F
22. Tin									
23. Vanadium	510	490	96	510	490	96			F
24. Zinc									
Other:									
Cyanide									

[1] Initial Calibration Source EPA [2] Continuing Calibration Source EPA

[3] Control Limits: Mercury and Tin 80-120; All Other Compounds 90-110

[4] Indicate Analytical Method Used: P - ICP/Flame AA; F - Furnace

004877

004877

Form II - E

Q. C. Report No. 185

INITIAL AND CONTINUING CALIBRATION VERIFICATION[3] . MSA

LAB NAME ACCU-LABS RESEARCH

CASE NO. 8016

SOW NO. 784

DATE 10/5/87

UNITS ug/L

Compound	Initial Calib.[1]			Continuing Calibration[2]					
Metals[4]:	True Value	Found	%R	True Value	Found	%R	Found	%R	Method[4]
1. Aluminum									
2. Antimony									
3. Arsenic	49	48	98	49	46	94	47	96	F
4. Barium									
5. Beryllium									
6. Cadmium									
7. Calcium									
8. Chromium									
9. Cobalt									
10. Copper									
11. Iron									
12. Lead	98	98	100	98	96	98			
13. Magnesium									
14. Manganese									
15. Mercury									
16. Nickel									
17. Potassium									
18. Selenium	50	51	102	50	48	96			F
19. Silver									
20. Sodium									
21. Thallium									
22. Tin									
23. Vanadium	510	510	100	510	510	100			F
24. Zinc									
Other:									
Cyanide									

[1] Initial Calibration Source EPA [2] Continuing Calibration Source EPA

[3] Control Limits: Mercury and Tin 80-120; All Other Compounds 90-110

[4] Indicate Analytical Method Used: P - ICP/Flame AA; F - Furnace

004878

004878

Form II - 3

Q. C. Report No. 185

INITIAL AND CONTINUING CALIBRATION VERIFICATION[3] - MSA

LAB NAME ACCU-LABS RESEARCH

CASE NO. 8016

SOW NO. 788

DATE 10/5/87

UNITS ug/L

Compound	Initial Calib.[1]			Continuing Calibration[2]					
Metals[4]:	True Value	Found	%R	True Value	Found	%R	Found	%R	Method[4]
1. Aluminum									
2. Antimony									
3. Arsenic									
4. Barium									
5. Beryllium									
6. Cadmium									
7. Calcium									
8. Chromium									
9. Cobalt									
10. Copper									
11. Iron									
12. Lead	98	100	102	98	96	98	104	106	F
13. Magnesium									
14. Manganese									
15. Mercury									
16. Nickel									
17. Potassium									
18. Selenium									
19. Silver									
20. Sodium									
21. Thallium									
22. Tin									
23. Vanadium	510	520	102	510	500	98			F
24. Zinc									
Other:									
Cyanide									

[1] Initial Calibration Source EPA [2] Continuing Calibration Source EPA

[3] Control Limits: Mercury and Tin 80-120; All Other Compounds 90-110

[4] Indicate Analytical Method Used: P - ICP/Flame AA; F - Furnace

004879

004879

Form III - A

Q. C. Report No. 185

BLANKS

LAB NAME ACCU-LABS RESEARCH

DATE 10/15/87

CASE NO. 8016

UNITS µg/l

Matrix WATER

Preparation Compound	Initial Calibration Blank Value	Continuing Calibration Blank Value 1	2	3	4	Preparation Blank 1	2
Metals:							
1. Aluminum	190U	190U				190U	
2. Antimony	3U	3U				3U	
3. Arsenic	1U	1U				1U	
4. Barium	100U	100U				100U	
5. Beryllium	5U	5U				5U	
6. Cadmium	4U	4U				4U	
7. Calcium	100U	100U	100U	100U		100U	[110]
8. Chromium	5U	5U				5U	
9. Cobalt	30U	30U				30U	
10. Copper	5U	5U				5U	
11. Iron	30U	30U				30U	
12. Lead	2U	2U	2U			2U	
13. Magnesium	50U	50U				55U	
14. Manganese	6U	6U				6U	
15. Mercury	0.1U	0.1U	0.1U			0.1U	
16. Nickel	30U	30U				30U	
17. Potassium	100U	100U				110U	
18. Selenium	2U	2U				2U	
19. Silver	4U	4U				4U	
20. Sodium	[100]U	[110]				[110]	
21. Thallium	4U	4U				4U	
22. Tin	8U	8U	8U	8U		8U	
23. Vanadium	9U	9U	9U	9U		9U	
24. Zinc	6U	6U				6U	
Other:							
Cyanide	10U	10U				10U	

004880

004880

Form III-B

Q. C. Report No. 185

BLANKS - analytical spike

LAB NAME ACCU-LABS RESEARCH

CASE NO. 8016

DATE 10/5/87

UNITS ug/l

Matrix water

Preparation Compound	Initial Calibration Blank Value	Continuing Calibration Blank Value 1	2	3	4	Preparation Blank 1	2
Metals:							
1. Aluminum							
2. Antimony	3u	3u	3u				
3. Arsenic	1u	[1]	[1]				
4. Barium							
5. Beryllium							
6. Cadmium							
7. Calcium							
8. Chromium							
9. Cobalt							
10. Copper							
11. Iron							
12. Lead	2u	2u	2u				
13. Magnesium							
14. Manganese							
15. Mercury							
16. Nickel							
17. Potassium							
18. Selenium	2u	2u	2u				
19. Silver							
20. Sodium							
21. Thallium	~~4u~~ 4u	4u	4u	4u			
22. Tin	8u	8u	8u				
23. Vanadium	9u	9u	9u	9u			
24. Zinc							
Other:							
Cyanide							

004881

004881

Form III-C

Q. C. Report No. 185

BLANKS - MSA

LAB NAME ACCU-LABS RESEARCH

DATE 10/15/87

CASE NO. 8016

UNITS µg/L

Matrix water

Preparation Compound	Initial Calibration Blank Value	Continuing Calibration Blank Value 1	2	3	4	Preparation Blank 1	2
Metals:							
1. Aluminum							
2. Antimony							
3. Arsenic	1U	1U	1U				
4. Barium							
5. Beryllium							
6. Cadmium							
7. Calcium							
8. Chromium							
9. Cobalt							
10. Copper							
11. Iron							
12. Lead	2U	2U	2U	2U	2U		
13. Magnesium							
14. Manganese							
15. Mercury							
16. Nickel							
17. Potassium							
18. Selenium	~~2U~~ [3]	[3]					
19. Silver							
20. Sodium							
21. Thallium							
22. Tin							
23. Vanadium	9U	9U	9U	9U			
24. Zinc							
Other:							
Cyanide							

004882

004882

Form V

Q. C. Report No. 185

SPIKE SAMPLE RECOVERY

LAB NAME ACCU-LABS RESEARCH

DATE [illegible]

CASE NO. 3016

EPA Sample No. MFC 322

Lab Sample ID No. [illegible]-3-2

Units ug/L

Matrix Water

Compound	Control Limit %	Spiked Sample Result (SSR)	Sample Result (SR)	Spiked Added (SA)	% R[1]	
Metals:						
1. Aluminum	75-125	98100	113000	2000	-7975	Sample >4x spike
2. Antimony	-	3U	3U	5	0	'R'
3. Arsenic	-	[5]	[5]	20	0	'R'
4. Barium	-	2500	800	2000	85	
5. Beryllium	-	46	5U	50	92	
6. Cadmium	-	43	4U	50	86	
7. Calcium	-	191000	107000	100000	84	
8. Chromium	-	432	260	200	86	
9. Cobalt	-	590	110	500	96	
10. Copper	-	334	77	250	103	
11. Iron	-	102000	111000	1000	-900	Sample >4x spike
12. Lead	-	45	~~44~~ 38s	20	35	'R'
13. Magnesium	-	106000	57500	50000	97	
14. Manganese	-	1750	1620	200	65	Sample >4x spike
15. Mercury	-	0.99	0.2U	1.0	99	
16. Nickel	-	570	190	400	95	
17. Potassium	-	58300	17000	50000	83	
18. Selenium	-	2U	2U	10	0	'R'
19. Silver	-	48	4U	50	96	
20. Sodium	-	224000	125000	100000	99	
21. Thallium	-	4U	4U	50	0	'R'
22. Tin	-	262	8U	200	131	'R'
23. Vanadium	-	60	53	50	14	'R'
24. Zinc	-	404	240	200	82	
Other:						
Cyanide	-	55	10U	100	55	'R'

[1] % R = [(SSR - SR)/SA] x 100

"R" - out of control

Comments:

004883

004883

Form VI

Q. C. Report No. 185

DUPLICATES

LAB NAME Accu-Labs Research

DATE 10/15/87

CASE NO. 8016

EPA Sample No. MFC 321

Lab Sample ID No. 185-8016-3-1

Units µg/L

Matrix Water

Compound	Control Limit[1]	Sample(S)	Duplicate(D)	RPD[2]
Metals:				
1. Aluminum		63600	54600	15
2. Antimony		60U	60U	NC
3. Arsenic		10U	10U	NC
4. Barium		600	700	15
5. Beryllium		5U	5U	NC
6. Cadmium		4U	4U	NC
7. Calcium		130000	131000	0.8
8. Chromium		113	105	7
9. Cobalt		30U	30U	NC
10. Copper		32	27	17
11. Iron		38200	34700	10
12. Lead		29s	25s	15
13. Magnesium		39500	38000	4
14. Manganese		1130	1120	0.9
15. Mercury		0.2U	0.2U	NC
16. Nickel		90	80	12
17. Potassium		~~8470~~ 7150	6350	11
18. Selenium		5U	5U	NC
19. Silver		4U	4U	NC
20. Sodium		125000	123000	2
21. Thallium		~~9.2~~ 10U	10U	NC
22. Tin		40U	40U	NC
23. Vanadium		50U	50U	NC
24. Zinc		84	78	7
Other:				
Cyanide		10U	10U	NC

* Out of Control

[1] To be added at a later date.

[2] RPD = [|S - D|/((S + D)/2)] x 100

NC - Not calculable RPD due to value(s) less than CRDL

004884

004884

Form VII

G.C. Report No. 185

INSTRUMENT DETECTION LIMITS AND

LABORATORY CONTROL SAMPLE

LAB NAME ACCU-LABS RESEARCH

DATE 10/15/87

CASE NO. 3016

LCS UNITS ug/l mg/kg

(Circle One)

Compound	Required Detection Limits (CRDL)-ug/l	Instrument Detection Limits (IDL)-ug/l ICP (22)	Furnace	Lab Control Sample True	Found	%	
Metals:							
1. Aluminum	200	190		1980	1900	96	
2. Antimony	60		3	109	116	73	5'
3. Arsenic	10		1	49	44	90	5 '+'
4. Barium	200	100		1980	1800	91	
5. Beryllium	5	5		431	470	98	
6. Cadmium	5	4		489	491	100	
7. Calcium	5000	100		49800	46200	93	
8. Chromium	10	5		506	492	97	
9. Cobalt	50	30		474	460	97	
10. Copper	25	5		542	515	95	
11. Iron	100	30		1990	2050	103	
12. Lead	5		2	98	90	92	
13. Magnesium	5000	50		25000	23900	96	
14. Manganese	15	6		513	499	97	
15. Mercury	0.2	0.1		5.2	5.2	100	
16. Nickel	40	30		496	480	97	
17. Potassium	5000	100		50300	43900	85	
18. Selenium	5		2	98	108	110	5'
19. Silver	10	7		509	514	101	
20. Sodium	5000	100		50700	44000	87	
21. Thallium	10		4	97	88	90	
22. Tin	40		8	50	55	110	
23. Vanadium	50		9	510	440	86	5
24. Zinc	20	6		3100	2880	93	
Other:							
Cyanide	10	5		224	225	100	

004885

004885

Form VIII

Q.C. Report No. 185

STANDARD ADDITION RESULTS

LAB NAME ACCU-LABS RESEARCH

DATE 10/15/87

CASE NO. 8016

UNITS ug/L

Sample #	Element	0 ADD ABS.	1 ADD CON./ABS.[1]	2 ADD CON./ABS.[1]	3 ADD CON./ABS.[1]	FINAL CON.[2]	r*	
RCS	Se	54	25/75	50/94	75/116	108	1.000	
RCS	As	25	25/32	50/72	75/96	36	0.971	RR
RCS	As	48	25/60	50/92	75/116	44	0.977	+
-1	Pb	34	15/48	30/58	45/67	35	0.994	RR
-2	Pb	38	15/43	30/58	45/68	38	1.000	
-1R	Pb	29	25/44	50/74	75/94	27	0.993	RR
-1	Pb	30	15/40	30/58	45/68	29	0.993	+
-1R	Pb	29	25/43	50/69	75/98	25	0.989	+
RCS	V	46	25/65	50/89	75/111	44	0.997	
185-1	V	38	20/60	40/77	60/86	41	0.984	RR
-1R	V	44	20/69	40/82	60/96	47	0.997	RR
185-1	V	38	20/57	40/75	60/92	38	1.000	
-1R	V	36	20/58	40/75	60/100	36	0.998	

[1] CON is the concentration added, ABS. is the instrument readout in absorbance or concentration.

[2] Concentration as determined by MSA

*"r" is the correlation coefficient.

+ - correlation coefficient is outside of control window of 0.995.

004886

Accu-Labs Research, Inc.

F 7002 Rev. A

EPA Metals Work Order

Date Received 9-12-87

Location V

Sample Type H_2O

Preservation and Volume [illegible]

ALR # 185 - 8016-3

Case # 8016

Extracts to AA Room: Analyst [illegible]

Date/Time 9/19/87 [illegible]

Extracts to Storage: Analyst

Date/Time

Digestion in progress

Date Digestion completed 9/14/87

Element	Completed	In Progress	Comments
Aluminum	9/30		
Antimony	10/14		
Arsenic	10/4		
Barium	9/30		
Beryllium	9/30		
Cadmium	9/30		
Calcium	9/23		
Chromium	9/24		
Cobalt	9/24		
Copper	9/30		
Iron	9/25		
Lead	10/5		
Magnesium	9/23		
Manganese	9/24		
Mercury	9/18/87		
due			
Nickel	9/25		
Potassium	9/23		
Selenium	10.6		
Silver	9/30		
Sodium	9/23		
Thallium	10/3		
Tin	9.25		
Vanadium	10/14		
Zinc	9.30		

DO NOT REPEAT OR SPIKE #3

004887

Redigestions

Extracts to AA Room			Extracts to Storage		
Date	Time	Analyst	Date	Time	Analyst

185-8016-1-0002

Accu-Labs Research, Inc.

F 7017 Rev. A

EPA Work Order
Cyanide and Percent Solids

Location 3

Sample Type H_2O

Preservation & Volume 3-L NaOH

ALR # 185 - 8016-3

Case # 8016

Date Received 9-12-87

Analysis	In Progress	Completed	Comments
✓ Cyanide	✓	9-23-87	DO NOT REPEAT OR SPIKE #3
due			
Percent Solids			

Chain of Custody
Cyanide Extracts

Extract Numbers	Refrigerated Date/Time	Analyst	Coloration Date/Time	Analyst	Removed to Storage Date/Time	Analyst
1,2,3 pH >12	9.22.87 / 4:30 PM	[illegible]	9-23-87 5:00pm			
1,2 pH >12	9-23-87 [illegible]	[illegible]				

004888

Accu-Labs Research, Inc.

Flame Atomic Absorption

F 7008 Rev. E

Element: Al
Wavelength: 309.3 nm
Matrix: 201
Water ✓ Soil ____ Other ____

Procedure No. 38072.23
BG 6D
PE 560 No. 82040

Date: 9 30 87 Time 3:25
Analyst: JP
I.D.L.: 0.19 (ppm)
Page 1 of 1

STANDARDS (ppm)

Date Prepared: 9.30.87 Prepared by: JP

	Initial		Recalibration
Calibration Blank	0.00		
Standard 1	5.00	abs = 0.025	
Standard 2	10.00		
Standard 3	20.00		

EPA No.	Sample Number	Aliquot	Dilution Factor	Reading	Concentration (ppm)
	Initial Calib.	x	x	x	x
	Calib. Verification	1.0	1.0	0.70	0.70 96%
	Calib. Blank			0.07	<0.19
	Reagent Blank			0.00	<0.19
	LCS			1.40	1.40 96%
MFE 755	184-E01A - 1		10	6.42	64.2
	1R			6.48	64.8
756	2			7.13	71.3
	2S			7.60	76.0
759	3			17.27	173
760	4			15.83	158
764	5			0.06	<0.19
757	184-E01B - 1		1.0	10.04	100
	Calib. Verification		10	0.74	0.74 107%
	Calib. Blank		1.0	0.07	49
758	184-E01B - 2		1.0	15.60	156
761	3		10	14.91	149
762	4			7.64	76.4
763	5			9.94	99.4
765	6			0.00	<0.19
MFC 321	185-E01A - 1		1.0	6.36	63.6
	1R		10	5.46	54.6 151.
322	2			11.30	113
	2S			9.91	99.1
444	3			0.00	<0.19
	Recalibration ✓	✓	1.0	0.70	0.70
	Calib. Verification	x	x	x	x
	Calib. Blank	1.0	1.0	0.74	0.74 104%
		1.0	1.0	0.05	<0.19

LCS and Calibration Verification: ICV-1 (0497) / 384-I#2 True Value: 1.98 / 0.729 (ppm)

CRDL: 200 (ppb)

Spike = 0.2 mL of 1000 mg/L std. in final volume of 100 mL = 2.0 mg/L spike

Comments:

Analyst Checked: JP Date: 10/1/87

Q.C. Approved: EoH Date: 10/8/87

135-8016-6-00038

004889

004889

Accu-Labs Research, Inc. F 7008 Rev. E

Flame Atomic Absorption

Element: Ba Procedure No. 3E072225 Date: 9.30.87 Time 3:00
Wavelength: 553.6 nm BG ____ PE 560 No. 82040 Analyst: JP
Matrix: KCl I.D.L.: 0.1 (ppm)
Water ✓ Soil ____ Other ____ Page 1 of 1

STANDARDS (ppm)

Date Prepared: 9.30.87 Prepared by: JP

	Initial	Recalibration
Calibration Blank	0.0	
Standard 1	1.0 abs = 0.011	JP
Standard 2	2.0	
Standard 3	10.0	

EPA No.	Sample Number	Aliquot	Dilution Factor	Reading	Concentration (ppm)
	Initial Calib.	X	X	X	X
	Calib. Verification	1.0	1.0	1.3	1.3 108%
	Calib. Blank		1.0	0.0	<0.1
	Reagent Blank		1.0	0.0	<0.1
	LCS			1.8	1.8 91%
MFE 755	161-E01R - 1			0.6	0.6
	1R			0.6	0.6 0%
756	2			0.5	0.5
	2S			2.4	2.4 95%
759	3			1.2	1.2
760	4			6.5	6.5
764	5		✓	0.1	0.1
757	184-E01R - 1			2.7	2.7
	Calib. Verification		1.0	1.2	1.2 100%
	Calib. Blank		1.0	0.0	<0.1
758	184-E01R - 2			2.5	2.5
761	3			2.2	2.2
762	4			1.9	1.9
763	5			2.9	2.9
765	6			0.1	0.1
MFC 321	185-E01R - 1			0.6	0.6
	1R			0.7	0.7
322	2			0.9	0.9
	2S			2.5	2.5 85%
4-9-1	3	✓	✓	0.1	0.1
	Recalibration #1	X	X	X	X
	Calib. Verification	1.0	1.0	1.3	1.3 108%
	Calib. Blank	1.0	1.0	0.0	<0.1

LCS and Calibration Verification: ICV-1 (0487) / 1183-III #1 True Value: 1.98 / 1.2 (ppm)

CRDL: 200 (ppb)

Spike = 0.2 mL of 1000 mg/L std. in final volume of 100 mL = 2.0 mg/L spike

Comments:

Analyst Checked: JP Date: 10.1.87

Q.C. Approved: [illegible] Date: 10/8/87

004890

Accu-Labs Research, Inc.

F 7008 Rev. E

Flame Atomic Absorption

Element: Be
Wavelength: 234.9 nm
Matrix:
Water ✓ Soil ____ Other ____

Procedure No. 380722%
BG 85 PE 560 No. 82040

Date: 9.30.87 Time 1:50
Analyst: JP
I.D.L.: 0.005 (ppm)
Page 1 of 1

STANDARDS (ppm)

Date Prepared: 9.30.87 Prepared by: JP

	Initial		Recalibration
Calibration Blank	0.000	JP	JP
Standard 1	0.500	abs = 0.0049	
Standard 2	1.000		
Standard 3	2.000		

EPA No.	Sample Number	Aliquot	Dilution Factor	Reading	Concentration (ppm)
	Initial Calib.	X	X	X	X
	Calib. Verification	1.0	1.0	0.101	0.101 101%
	Calib. Blank			0.000	<0.005
	Reagent Blank			0.000	<0.005
	LCS			0.470	0.470 98%
MFE 755	184-801A - 1			0.000	<0.005
	1R			0.004	<0.005 0%
756	2			0.004	<0.005
	2S			0.045	0.045 90%
759	3			0.012	0.012
760	4			0.009	0.009
764	5			0.003	<0.005
757	184-801A - 1			0.000	<0.005
	Calib. Verification			0.106	0.106 106%
	Calib. Blank			0.000	<0.005
758	184-801A - 2			0.011	0.011
761	3			0.011	0.011
762	4			0.020	0.020
763	5			0.027	0.027
765	6			0.000	<0.005
MFC 321	185-801C - 1			0.100	<0.005
	1R			0.100	<0.005 0%
322	2			0.004	<0.005
	2S			0.046	0.046 92%
324	3	✓	✓	0.000	<0.005
	~~Recalibration~~	X	X	X	X
	Calib. Verification	1.0	1.0	0.108	0.108 108%
	Calib. Blank	1.0	1.0	0.000	<0.005

LCS and Calibration Verification: ICV-110487/386-1 True Value: 0.481/0.100 (ppm)

CRDL: 5 (ppb)

Spike = 0.1 mL of 50 mg/L std. in final volume of 100 mL = 0.050 mg/L spike

Comments:

Analyst Checked: JP Date: 10.1.87

Q.C. Approved: EH Date: 10/3/87

004891

004891

Accu-Labs Research, Inc.

F 7008 Rev. E

Flame Atomic Absorption

Element: Cd
Wavelength: 228.8 nm
Matrix:
Water ✓ Soil ____ Other ____

Procedure No. 38072.27
BG BD PE 560 No. 82040

Date: 9.30.87 Time 11:20
Analyst: JP
I.D.L.: 0.004 (ppm)
Page 1 of 1

STANDARDS (ppm)

Date Prepared: 9.30.87 Prepared by: JP

	Initial		Recalibration
Calibration Blank	0.000		
Standard 1	0.500	abs = 0.057	JP
Standard 2	1.000		
Standard 3	2.000		

EPA No.	Sample Number	Aliquot	Dilution Factor	Reading	Concentration (ppm)
	Initial Calib.	X	X	X	X
	Calib. Verification	1.0	1.0	0.520	0.520 105%
	Calib. Blank			0.000	<0.004
	Reagent Blank			0.000	<0.004
	LCS			0.491	0.491 100%
MFE 755	181-801A - 1			0.000	<0.004
	1R			0.000	<0.004 0%
756	2			0.000	<0.004
	2S			0.044	0.044 85%
759	3			0.000	<0.004
760	4			0.000	<0.004
764	5			0.000	<0.004
757	184-801A - 1			0.000	<0.004
	Calib. Verification			0.515	0.515 105%
	Calib. Blank			0.000	<0.004
758	184-801A - 2			0.003	<0.004
761	3			0.003	<0.004
762	4			0.001	<0.004
763	5			0.001	<0.004
765	6			0.002	<0.004
MFC 331	185-801A - 1			0.001	<0.004
	1R			0.000	<0.004 0%
332	2			0.000	<0.004
	2S			0.043	0.043 84%
444	3	✓	✓	0.000	<0.004
	Recalibration JP	X	X	X	X
	Calib. Verification	1.0	1.0	0.511	0.511 105%
	Calib. Blank	1.0	1.0	0.000	<0.004

ICS and Calibration Verification: ICV-1(0487) JP JP True Value: 0.489 (ppm)

CRDL: 5 (ppb)

Spike = 0.1 mL of 50 mg/L std. in final volume of 100 mL = 0.050 mg/L spike

Comments:

Analyst Checked: JP Date: 10.1.87

Q.C. Approved: [illegible] Date: 10/8/87

004892

004892

Accu-Labs Research, Inc. F 7008 Rev. E

Flame Atomic Absorption

Element: Ca Procedure No. 3807251 Date: 9/23/87 Time 3.40
Wavelength: 4227 nm BG ____ PE 560 No. 82040 Analyst: JP
Matrix: LACS I.D.L.: 0.1 (ppm)
Water ✓ Soil ____ Other ____ Page 1 of 1

STANDARDS (ppm)

Date Prepared: 9/17/87 Prepared by: JP

	Initial		Recalibration
Calibration Blank	0.0		
Standard 1	5.0	abs = 0.021	
Standard 2	10.0		
Standard 3	25.0		

EPA No.	Sample Number	Aliquot	Dilution Factor	Reading	Concentration (ppm)
	Initial Calib.	x	x	x	x
	Calib. Verification	1.0	10.0	5.3	53.0 106%
	Calib. Blank		1.0	0.0	0.1
	Reagent Blank		1.1	0.0	0.1
	LCS		11	4.2	46.2 93%
MFE 755	181-8018- 1		11	4.6	50.6
	1R			4.6	50.6 0%
756	2			4.6	50.6
	2S			4.4	48.4
759	3			5.5	63.5
760	4			6.5	71.5
764	5		1.1	0.3	0.3
757	184-8018 - 1		11	4.4	48.4
	Calib. Verification		10.0	5.2	52.0 104%
	Calib. Blank		1.0	0.0	0.1
758	184-8018 - 2		11	4.0	44.0
761	3			11.1	122
762	4			11.0	121
763	5			11.3	124
765	6		1.1	0.3	0.3
MFC 321	185-8016 - 1		11	11.8	130
	1R			11.9	131 1%
322	2			9.7	107
	2S			9.5	105
444	3	✓	1.1	0.5	0.6
	Recalibration	x	x	x	x
	Calib. Verification	1.0	10.0	5.2	52.0 104%
	Calib. Blank	1.0	1.0	0.0	0.1

LCS and Calibration Verification: IV-1 True Value: ~~50~~ 49.8 (ppm)

CRDL: 5000 (ppb)

Spike = ____ mL of ____ mg/L std. in final volume of 100 mL = ____ mg/L spike

Comments:

Analyst Checked: JP Date: 9/25/87

Q.C. Approved: EW Date: 10/5/87

004893

004893

Accu-Labs Research, Inc. F 7008 Rev. E

Flame Atomic Absorption

Element: Ca Procedure No. 38072 S7 Date: 10-5-87 Time 12:10
Wavelength: 422.7 nm BG _____ PE 560 No. 82040 Analyst: JP
Matrix: Lacs I.D.L.: 0.1 (ppm)
Water ✓ Soil _____ Other _____ Page 1 of 1

STANDARDS (ppm)

Date Prepared: 10-5-87 Prepared by: JP

	Initial	Recalibration
Calibration Blank	0.0	
Standard 1	5.0 abs = 0.019	
Standard 2	10.0	
Standard 3	25.0	

EPA No.	Sample Number	Aliquot	Dilution Factor	Reading	Concentration (ppm)
	Initial Calib.	X	X	X	X
	Calib. Verification	1.0	10	5.2	52.0 104%
	Calib. Blank	1	1.0	0.0	<0.1
	Reagent Blank	1	1.1	0.1	0.1
	LCS	1	11	4.4	48.4 97%
	181-8010-25	1	11	12.7	140
	185-8010-25	1	11	17.4	191
	Calib. Verification	1.0	10	5.0	50.0 100%
	Calib. Blank	1.0	1.0	0.0	<0.1
	Recalibration	X	X	X	X
	Calib. Verification				
	Calib. Blank				

LCS and Calibration Verification: ICV-1 (0487) True Value: 49.8 (ppm)

CRDL: 5000 (ppb)

Spike = 10 mL of 1000 mg/L std. in final volume of 100 mL = 100 mg/L spike

Comments:

Analyst Checked: JP Date: 10/6/87

Q.C. Approved: EM Date: 10/8/87

004894

004894

Accu-Labs Research, Inc.

F 7008 Rev. E

Flame Atomic Absorption

Element: Cr
Wavelength: 357.9 nm
Matrix:
Water ✓ Soil ____ Other ____

Procedure No. 3E07228
BG ____ PE 560 No. 82040

Date: 9.24.87 Time 12:50
Analyst: JP
I.D.L.: 0.005 (ppm)
Page 1 of 1

STANDARDS (ppm)

Date Prepared: 9.24.87 Prepared by: JP

	Initial	Recalibration
Calibration Blank	0.000	
Standard 1	0.500 abs = 0.018	
Standard 2	1.000	
Standard 3	2.000	

EPA No.	Sample Number	Aliquot	Dilution Factor	Reading	Concentration (ppm)
	Initial Calib.	X	X	X	X
	Calib. Verification	1.0	1.0	0.105	0.105 105%
	Calib. Blank			0.001	<0.005
	Reagent Blank			~~0.492~~ 0.009	0.009
	LCS			0.492	0.492 97%
MFE 755	181-E01R - 1			0.080	0.080
	1R			0.084	0.084 5%
756	2			0.084	0.084
	2S			0.312	0.312 114%
759	3			0.212	0.212
760	4			0.220	0.220
764	5			0.002	<0.005
757	184-E01R - 1			0.202	0.202
	Calib. Verification			0.106	0.106 106%
	Calib. Blank			0.001	<0.005
758	184-E01R - 2			0.193	0.193
761	3			0.233	0.233
762	4			0.663	0.663
763	5			0.305	0.305
765	6			0.008	0.008
MFC 321	185-E01R - 1			0.113	0.113
	1R			0.105	0.105 7%
322	2			0.260	0.260
	2S			0.432	0.432 83%
444	3	✓	✓	0.002	<0.005
	Recalibration	X	X	X	X
	Calib. Verification	1.0	1.0	0.096	0.096 96%
	Calib. Blank	1.0	1.0	0.000	<0.005

LCS and Calibration Verification: ICV-1 (0487) / 3E6-1 True Value: 0.506/0.100 (ppm)

CRDL: 10 (ppb)

Spike = ____ mL of ____ mg/L std. in final volume of 100 mL = 0.200 mg/L spike

Comments:

Analyst Checked: JP Date: 9/24/87

Q.C. Approved: EW Date: 10/3/87

004895

Accu-Labs Research, Inc.

F 7008 Rev. E

Flame Atomic Absorption

Element: Co
Wavelength: 240.7 nm
Matrix:
Water ✓ Soil ____ Other ____

Procedure No. 38072.29
BG BD PE 560 No. 82040

Date: 9.24.87 Time 1:40
Analyst: JP
I.D.L.: 0.04 (ppm)
Page 1 of 1

STANDARDS (ppm)

Date Prepared: 9.24.87 Prepared by: JP

	Initial	Recalibration
Calibration Blank	0.0	
Standard 1	0.50 abs = 0.014	
Standard 2	1.00	
Standard 3	2.00	

EPA No.	Sample Number	Aliquot	Dilution Factor	Reading	Concentration (ppm)
	Initial Calib.	x	x	x	x
	Calib. Verification	1.0	1.0	0.09	0.09 90%
	Calib. Blank			0.00	<0.03
	Reagent Blank			0.00	<0.03
	LCS			0.46	0.46 97%
MFE 755	184-E01R - 1			0.10	0.10
	1R			0.11	0.11 10%
756	2			0.13	0.13
	2S			0.62	0.62 98%
759	3			0.07	0.07
760	4			0.11	0.11
764	5			0.00	<0.03
757	184-E01R - 1			0.08	0.08
	Calib. Verification			0.09	0.09 90%
	Calib. Blank			0.00	<0.03
758	184-E01R - 2			0.07	0.07
761	3			0.11	0.11
762	4			0.13	0.13
763	5			0.19	0.19
765	6			0.00	<0.03
MFC 321	185-E01R - 1			0.02	<0.03
	1R			0.02	<0.03 0%
322	2			0.11	0.11
	2S			0.59	0.59 96%
494	3	✓	✓	0.03	0.03
	Recalibration	x	x	x	x
	Calib. Verification	1.0	1.0	0.10	0.10 100%
	Calib. Blank	1.0	1.0	0.00	<0.03

LCS and Calibration Verification: ICV-1 (0487) / 386-1 True Value: 0.474/0.10 (ppm)

CRDL: 50 (ppb)

Spike = ____ mL of ____ mg/L std. in final volume of 100 mL = 0.050 mg/L spike JP

Comments:

Analyst Checked: JP Date: 9/24/87

Q.C. Approved: EH Date: 10/8/87

004896

Accu-Labs Research, Inc.

F 7008 Rev. E

Flame Atomic Absorption

Element: Cu
Wavelength: 3247 nm
Matrix:
Water ✓ Soil ____ Other ____

Procedure No. 3807230
BG 60 PE 560 No. 82040

Date: 9-30-87 Time 12:20
Analyst: JP
I.D.L.: 0.005 (ppm)
Page 1 of 1

STANDARDS (ppm)

Date Prepared: 9-30-87 Prepared by: JP

	Initial		Recalibration
Calibration Blank	0.000		
Standard 1	0.500	abs = 0.015	
Standard 2	1.000		JP
Standard 3	2.000		

EPA No.	Sample Number	Aliquot	Dilution Factor	Reading	Concentration (ppm)
	Initial Calib.	X	X	X	X
	Calib. Verification	1.0	1.0	0.107	0.107 107%
	Calib. Blank			0.000	<0.005
	Reagent Blank			0.000	<0.005
	LCS			0.515	0.515 95%
MFE 755	184-8018 - 1			0.046	0.046
	1R			0.046	0.046 0%
756	2			0.043	0.043
	2S			0.269	0.269 4%
759	3			0.077	0.077
760	4			0.074	0.074
764	5			0.000	<0.005
757	184-8018 - 1			0.050	0.050
	Calib. Verification			0.043	0.043 93%
	Calib. Blank			0.000	<0.005
758	184-8018 - 2			0.076	0.076
761	3			0.123	0.123
762	4			0.083	0.083
763	5			0.120	0.120
765	6			0.000	<0.005
MFC 321	185-8016 - 1			0.032	0.032
	1R			0.027	0.027 17%
322	2			~~0.077~~	0.077
	2S			0.334	0.334 103%
444	3	✓	✓	0.016	0.016
	Recalibration - JP	X	X	X	X
	Calib. Verification	1.0	1.0	0.099	0.099 99%
	Calib. Blank	1.0	1.0	0.000	<0.005

LCS and Calibration Verification: ICV-1(0487)/3806-1 True Value: 0.542/0.100 (ppm)

CRDL: 25 (ppb)

Spike = 1.0 mL of 25 mg/L std. in final volume of 100 mL = 0.250 mg/L spike

Comments:

Analyst Checked: JP Date: 10-1-87

Q.C. Approved: SH Date: 10/5/87

004897

Accu-Labs Research, Inc. F 7008 Rev. E

Flame Atomic Absorption

Element: Fe Procedure No. 3807231 Date: 9.25.87 Time 3:25

Wavelength: 2968.3 nm BG BD PE 560 No. 82040 Analyst: JP

Matrix: I.D.L.: 0.03 (ppm)

Water ✓ Soil ____ Other ____ Page 1 of 1

STANDARDS (ppm)

Date Prepared: 9.24 87 Prepared by: JP

	Initial		Recalibration
Calibration Blank	0.00		
Standard 1	1.00	abs = 0.034	
Standard 2	5.00		
Standard 3	10.00		

EPA No.	Sample Number	Aliquot	Dilution Factor	Reading	Concentration (ppm)	
	Initial Calib.	x	x	x		x
	Calib. Verification	1.0	1.0	0.09	2.09	90%
	Calib. Blank			0.00	<0.03	
	Reagent Blank			0.03	0.03	
	LCS			2.05	2.05	103%
MFE 755	184-E018- 1		10	5.03		
	1R			4.97		
756	2			4.89		
	2S			5.24		
759	3			9.31		
760	4			7.66		
764	5		1.0	0.05		
757	184-E018 - 1		100	1.19		
	Calib. Verification		1.0	0.11	0.11	110%
	Calib. Blank		1.0	0.00	<0.03	
758	184-E018 - 2		100	1.05		
761	3		10	8.26		
762	4			6.10		
763	5			8.12		
765	6		1.0	0.03		
MFE 321	185-E016 - 1		10	3.52	38.2	
	1R		10	3.47	34.7	
322	2		100	1.11	11.1	
	2S		100	1.02	10.2	
444	3	✓	1.0	0.04	0.04	
	Recalibration	x	x	x		x
	Calib. Verification	1.0	1.0	0.11	0.11	110%
	Calib. Blank	1.0	1.0	0.00	<0.03	

LCS and Calibration Verification: JCV-1(0487)/3806-1 True Value: 1.99/0.10 (ppm)

CRDL: 100 (ppb)

Spike = ____ mL of ____ mg/L std. in final volume of 100 mL = ____ mg/L spike

Comments:

Analyst Checked: EH Date: 10/8/87

Q.C. Approved: EH Date: 10/9/87

004898

004898

Accu-Labs Research, Inc.

F 7008 Rev. E

Flame Atomic Absorption

Element: Mo Procedure No. 3E07252 Date: 9 13 87 Time 1210

Wavelength: 283.3 nm BG ____ PE 560 No. 82040 Analyst: JP

Matrix: Lacs I.D.L.: 0.05 (ppm)

Water ✓ Soil ____ Other ____ Page 1 of 1

STANDARDS (ppm)

Date Prepared: 9.17.87 Prepared by: JP

	Initial		Recalibration
Calibration Blank	0.00		
Standard 1	5.00	abs = 0.352	
Standard 2	10.00		
Standard 3	25.00		

EPA No.	Sample Number	Aliquot	Dilution Factor	Reading	Concentration (ppm)
	Initial Calib.	X	X	X	X
	Calib. Verification	1.0	1.0	4.65	4.66 94%
	Calib. Blank		1.0	0.01	<0.05
	Reagent Blank		1.1	0.01	<0.05
	LCS		1.1	21.70	23.9 96%
MFE 755	181-EC1E- 1		11	3.19	35.1
	1R			3.10	34.1 3%
756	2			3.09	34.0
	2S		✓	7.49	82.3 97%
759	3		1.1	2.47	27.2
760	4		11	3.89	42.8
764	5		1.1	0.03	<0.05
757	184-EC1E - 1		1.1	2.60	23.6
	Calib. Verification		1.0	4.61	4.61 96%
	Calib. Blank		1.0	0.02	<0.05
758	184-EC1E 2		1.1	23.35	25.7
761	3		11	6.31	69.4
762	4		11	8.32	91.5
763	5		11	8.57	94.3
765	6		1.1	0.04	<0.05
MFC 321	185-EC1E- 1		11	3.54	39.5
	1R		1	3.45	38.5 4%
322	2			5.13	57.5
	2S		11	9.[illegible]	106 97%
494	3	✓	1.1	0.06	0.07
	Recalibration	X	X	X	X
	Calib. Verification	1.0	1.0	4.[illegible]	4.69 94%
	Calib. Blank	1.0	1.0	0.02	<0.05

ICS and Calibration Verification: ICV-1 (0487) / 1185 True Value: 25.0 / 5.00 (ppm)

CRDL: 5000 (ppb)

Spike = ____ mL of ____ mg/L std. in final volume of 100 mL = ____ mg/L spike

Comments:

Analyst Checked: JP Date: 9/25/87

Q.C. Approved: [illegible] Date: 10/8/87

004899

Accu-Labs Research, Inc. F 7008 Rev. E

Flame Atomic Absorption

Element: Mn Procedure No. 3807233 Date: 9.24.87 Time 11:15
Wavelength: 279.5 nm BG D2 PE 560 No. 82040 Analyst: JP
Matrix: I.D.L.: 0.005 (ppm)
Water ✓ Soil ____ Other ____ Page 1 of 1

STANDARDS (ppm)

Date Prepared: 9.24.87 Prepared by: JP

	Initial	Recalibration
Calibration Blank	0.000	
Standard 1	0.500 abs = 0.034	
Standard 2	1.000	
Standard 3	2.000	

EPA No.	Sample Number	Aliquot	Dilution Factor	Reading	Concentration (ppm)
	Initial Calib.	X	X	X	X
	Calib. Verification	1.0	1.0	0.094	0.0940
	Calib. Blank			0.000	0.000
	Reagent Blank			0.000	0.000
	LCS			0.499	0.499 97%
MFE 755	184-801A - 1			1.316	1.316
	1R			1.272	1.272 3%
756	2			1.255	1.255
	2S			1.501	1.501 123%
759	3			1.193	1.193
760	4			0.403	0.403
754	5			0.000	0.000
757	184-801B - 1			1.105	1.105
	Calib. Verification			0.104	0.104 109%
	Calib. Blank			0.000	0.000
756	184-801A - 2			0.979	0.979
761	3			1.685	1.685
762	4			1.321	1.321
763	5			1.560	1.560
765	6			0.005	0.005
MFC 321	185-801C - 1			1.131	1.131
	1R			1.123	1.123 1%
322	2			1.623	1.623
	2S			1.749	1.749
494	3	↓	↓	0.004	0.004
	Recalibration	X	X	X	X
	Calib. Verification	1.0	1.0	0.094	0.094 97%
	Calib. Blank	1.0	1.0	0.000	0.000

LCS and Calibration Verification: JCV-1 (0487) / 3964 True Value: 0.513/0.100 (ppm)

CRDL: 15 (ppb)

Spike = ____ mL of ____ mg/L std. in final volume of 100 mL = 0.200 mg/L spike

Comments:

Analyst Checked: JP Date: 9.24.87

Q.C. Approved: EH Date: 10/3/87

004900

Accu-Labs Research, Inc. F 7008 Rev. E

Flame Atomic Absorption

Element: Ni Procedure No. 3807234 Date: 9-25-87 Time 1:35

Wavelength: 232.0 nm BG ZD PE 560 No. 82040 Analyst: JP

Matrix: I.D.L.: 0.03 (ppm)

Water ✓ Soil ____ Other ____ Page 1 of 1

STANDARDS (ppm)

Date Prepared: 9.24.87 Prepared by: JP

	Initial		Recalibration
Calibration Blank	0.00	10	
Standard 1	~~0.50~~ 0.50	abs = ~~0.034~~ 0.041	
Standard 2	~~1.00~~ 1.00		
Standard 3	~~2.00~~ 2.00		

EPA No.	Sample Number	Aliquot	Dilution Factor	Reading	Concentration (ppm)	
	Initial Calib.	X	X	X		X
	Calib. Verification	1.0	1.0	0.10	0.10	100%
	Calib. Blank			0.00	<0.03	
	Reagent Blank			0.00	<0.03	
	LCS			0.48	0.48	97%
MFE 755	184-E01R - 1			0.11		
	1R			0.12		
756	2			0.12		
	2S			0.57		
759	3			0.13		
760	4			0.34		
764	5			0.01		
757	184-E01R - 1			0.16		
	Calib. Verification			0.11	0.11	110%
	Calib. Blank			0.00	<0.03	
758	184-E01R - 2			0.13		
761	3			0.20		
762	4			0.29		
763	5			0.30		
765	6			0.00		
MFC 321	185-E01R - 1			0.09	0.09	
	1R			0.05	0.03	
322	2			0.19	0.19	
	2S			0.57	0.57	
444	3	✓	✓	0.00	<0.03	
	Recalibration	X	X	X		X
	Calib. Verification	1.0	1.0	0.11	0.11	110%
	Calib. Blank	1.0	1.0	0.00	<0.03	

LCS and Calibration Verification: ICV-1(0487) / 386-1 True Value: ~~0.49~~ 0.496 / 0.10 (ppm)

CRDL: 40 ~~30~~ ~~40~~ (ppb)

Spike = ____ mL of ____ mg/L std. in final volume of 100 mL = ____ mg/L spike

Comments:

Analyst Checked: EA Date: 10/8/87

Q.C. Approved: EA Date: 10/8/87

004901

004901

Accu-Labs Research, Inc.

Flame Atomic Absorption

F 7008 Rev. E

Element: K
Wavelength: 766.5 nm
Matrix: Leachate
Water ✓ Soil ____ Other ____

Procedure No. 3807253
BG ____ PE 560 No. 82040

Date: 9.17.87 Time 2:30
Analyst: JP
I.D.L.: 0.1 (ppm)
Page 1 of 1

STANDARDS (ppm)

Date Prepared: 9.17.87 Prepared by: JP

	Initial	Recalibration
Calibration Blank	[illegible]	
Standard 1	[illegible]	
Standard 2	[illegible] abs = [illegible]	
Standard 3	35.0	

EPA No.	Sample Number	Aliquot	Dilution Factor	Reading	Concentration (ppm)
	Initial Calib.	x	x	x	x
	Calib. Verification	1.0	[illegible]	4.5	4.5 90%
	Calib. Blank		[illegible]	0.0	<0.1
	Reagent Blank		[illegible]	[illegible]	<0.1
	LCS		[illegible]	[illegible]	<0.1
MFE 755	184-801A - 1		1	3.9	42.9 85%
	1R		1.1	14.8	16.3
756	2		1.1	14.9	16.4 1%
	2S		1.1	14.9	16.4
759	3		1.1	5.5	60.5 88%
760	4		1.1	6.4	7.0
764	5		1	10.0	11.0
757	184-801A - 1		✓	0.1	0.1
	Calib. Verification		1.0	11.3	11.3
	Calib. Blank		1.0	4.5	4.5 90%
758	184-801A - 2		1.0	0.0	<0.1
761	3		1.1	9.8	10.8
762	4		1	14.8	16.3
763	5		1	11.6	12.8
765	6		1	14.7	16.2
MFC 321	185-801A - 1		1	0.1	0.1
	1R		1	6.5	7.2
322	2		1	5.8	6.4 1%
	2S		✓	15.5	17.1
494	3		1	5.2	58.3
	Recalibration	✓	1.1	0.1	0.1
	Calib. Verification	x	x	x	x
	Calib. Blank	1.0	1.0	4.5	4.5 90%
		1.0	1.0	0.0	<0.1

LCS and Calibration Verification: I(V-110487) / 1185 True Value: 50.2 / 50.0 (ppm)

CRDL: 5000 (ppb)

Spike = ____ mL of ____ mg/L std. in final volume of 100 mL = ____ mg/L spike

Comments:

Analyst Checked: JP Date: 9/25/87

Q.C. Approved: EoH Date: 10/8/87

001902

004902

Accu-Labs Research, Inc. F 7008 Rev. E

Flame Atomic Absorption

Element: Ag Procedure No. 3807235 Date: 9.30.87 Time 1:00
Wavelength: 328.1 nm BG D2 PE 560 No. 82040 Analyst: GP
Matrix: I.D.L.: 0.002 (ppm)
Water ✓ Soil ____ Other ____ Page 1 of 1

STANDARDS (ppm)

Date Prepared: 9.30.87 Prepared by: JP

	Initial	Recalibration
Calibration Blank	0.000	
Standard 1	0.100 abs = 0.011	
Standard 2	0.500	
Standard 3	1.000	

EPA No.	Sample Number	Aliquot	Dilution Factor	Reading	Concentration (mg)
	Initial Calib.	X	X	X	X
	Calib. Verification	1.0	1.0	0.027	0.027 96%
	Calib. Blank			0.000	<0.004
	Reagent Blank			0.000	<0.004
	LCS			0.514	0.514 101%
MFE 755	181-E019- 1			0.000	<0.004
	1R			0.000	<0.005
756	2			0.002	<0.005
	2S			0.046	0.046 0%
759	3			0.002	<0.005
760	4			0.001	<0.005
764	5			0.000	<0.005
757	184-E01- 1			0.000	<0.005
	Calib. Verification			0.028	0.028 100%
	Calib. Blank			0.000	<0.005
758	184-E01A 2			0.000	<0.005
761	3			0.001	<0.005
762	4			0.000	<0.005
763	5			0.000	<0.005
765	6			0.000	<0.005
MFC 321	185-E01A- 1			0.000	<0.005
	1R			0.000	<0.005 0%
322	2			0.000	<0.005
	2S			0.046	0.046 96%
494	3	✓	✓	0.000	<0.005
	Recalibration JP	X	X	X	X
	Calib. Verification	1.0	1.0	0.036	0.036 93%
	Calib. Blank	1.0	1.0	0.000	<0.005

LCS and Calibration Verification: ICV-110487) 1378-2 True Value: 0.509/0.028 (ppm)

CRDL: 10 (ppb)

Spike = 0.1 mL of 50 mg/L std. in final volume of 100 mL = 0.050 mg/L spike

Comments:

Analyst Checked: JP Date: 10.1.87

Q.C. Approved: KeH Date: 10/3/87

004903

Accu-Labs Research, Inc. F 7008 Rev. E

Flame Atomic Absorption

Element: Na Procedure No. 3807254 Date: 9-23-87 Time 3:15
Wavelength: 589.0 nm BG _____ PE 560 No. 82040 Analyst: JP
Matrix: Lals I.D.L.: 0.1 (ppm)
Water ✓ Soil _____ Other _____ Page 1 of 1

STANDARDS (ppm)

Date Prepared: 9-17-87 Prepared by: JP

	Initial		Recalibration
Calibration Blank	0.0		
Standard 1	5.0	abs = 0.240	
Standard 2	10.0		
Standard 3	25.0		

EPA No.	Sample Number	Aliquot	Dilution Factor	Reading	Concentration (ppm)
	Initial Calib.	X	X	X	X
	Calib. Verification	1.0	1.0	19.4	19.4 97%
	Calib. Blank		1.0	0.1	0.1
	Reagent Blank		1.1	0.1	0.1
	LCS		11	4.0	44.0 97%
MFE 755	184-8018- 1			6.7	73.7
	1R			6.8	74.8 1%
756	2			6.6	72.6
	2S			14.8	163 93%
759	3			12.0	132
760	4			14.0	154
764	5		1.1	0.1	0.1
757	184-8018 - 1		11	6.4	70.4
	Calib. Verification		1.0	19.6	19.6 98%
	Calib. Blank		1.0	0.1	0.1
758	184-8018 - 2		11	6.7	73.7
761	3		11	10.1	111
762	4		110	3.5	385
763	5		110	3.2	352
765	6		1.1	0.3	0.3
MFC 321	185-8011- 1		11	11.4	125
	1R			11.2	123 2%
322	2			11.4	125
	2S			20.4	224 94%
494	3	✓	1.1	1.2	1.3
	Recalibration	X	X	X	X
	Calib. Verification	1.0	1.0	19.4	19.4 97%
	Calib. Blank	1.0	1.0	0.1	0.1

LCS and Calibration Verification: IV-1(0487) / 1185 True Value: 50.7 / 20.0 (ppm)

CRDL: 5000 (ppb)

Spike = _____ mL of _____ mg/L std. in final volume of 100 mL = _____ mg/L spike

Comments:

Analyst Checked: JP Date: 9/25/87

Q.C. Approved: EH Date: 10/8/87

004904

004904

Accu-Labs Research, Inc. F 7008 Rev. E

Flame Atomic Absorption

Element: Zn Procedure No. 3807239 Date: 9.30.87 Time 10:45
Wavelength: 213.9 nm BG D2 PE 560 No. 82040 Analyst: JP
Matrix: I.D.L.: 0.006 (ppm)
Water ✓ Soil ____ Other ____ Page 1 of 1

STANDARDS (ppm)

Date Prepared: 9.30.87 Prepared by: JP

	Initial	Recalibration
Calibration Blank	0.000	
Standard 1	0.50 abs = 0.093	JP ✓
Standard 2	1.000	✓
Standard 3	2.000	✓

EPA No.	Sample Number	Aliquot	Dilution Factor	Reading	Concentration (ppm)
	Initial Calib.	X	X	X	X
	Calib. Verification	1.0	1.0	0.093	0.093 93%
	Calib. Blank		1.0	0.000	<0.006
	Reagent Blank		1.0	0.004	<0.006
	LCS		10	0.268	2.68 93%
MFE 755	164-8014- 1		1.0	0.324	0.324
	1R			0.325	0.325 0%
756	2			0.325	0.325
	2S			0.563	0.563 119%
759	3			0.413	0.413
760	4			0.339	0.339
764	5			0.020	0.020
757	164-8015 - 1			0.469	0.469
	Calib. Verification			0.104	0.104 104%
	Calib. Blank			0.000	<0.006
758	164-8015 - 2			0.446	0.446
761	3			0.509	0.509
762	4			0.421	0.421
763	5			0.457	0.457
765	6			0.014	0.014
MFC 321	165-8016 - 1			0.064	0.064
	1R			0.074	0.074 7%
322	2			0.240	0.240
	2S			0.464	0.464 93%
444	3	✓	✓	0.014	0.014
	~~Recalibration~~ JP	X	X	X	X
	Calib. Verification	1.0	1.0	0.041	0.041 41%
	Calib. Blank	1.0	1.0	0.000	<0.006

LCS and Calibration Verification: ICV-1 (0407) | 3861 True Value: 3.10 / 0.100 (ppm)

CRDL: 20 (ppb)

Spike = 0.2 mL of 100 mg/L std. in final volume of 100 mL = 0.200 mg/L spike

Comments:

Analyst Checked: JP Date: 9/30/87

Q.C. Approved: SOH Date: 10/8/87

004905

Accu-Labs Research, Inc. F 7006 Rev. F

EGA Atomic Absorption

Element: Sb Procedure No. 3807204 Date: 10-13-87 Time 1.15

Wavelength: 217.6 nm BG ____ PE 5000 No. 82067 ✓ Analyst: JP

Matrix Modifier: ____ PE 603 No. 52034 ____ I.D.L.: 0.003 (ppm)

Water ✓ Soil ✓ Other ____ PE 5000Z No. 82143 ____ Page 1 of 1

STANDARDS (ppm)

Date Prepared: 10-13-87 Prepared by: JP

	Initial	Recalibration	Final
Calibration Blank	0.000		
Standard 1	0.100 abs = 0.161		
Standard 2	0.200		
Standard 3: (0.070)	0.076 % = 109	% =	% =

EPA No.	Sample Number	Aliquot	Dilution Factor	Reading 1	Reading 2	Avg. Conc. (ppm)
	Initial Calib.	X	X	X	X	X
	Calib. Verification	1.0	1.0	0.097	0.106	0.101 93%
	Calib. Blank			0.005	0.000	0.003
	Reagent Blank			0.001	0.001	<0.003
	LCS			0.114	0.117	0.114 106%
MFE 755	181-8018- 1			0.000	0.000	<0.003
	1R			0.000	0.000	<0.003 0%
756	2			0.000	0.000	<0.003
	Calib. Verification			0.107	0.116	0.111 103%
	Calib. Blank			0.002	0.000	<0.003
	181-8018- 2S			0.001	0.000	<0.003
759	3			0.000	0.000	<0.003
760	4			0.000	0.000	<0.003
764	5			0.000	0.000	<0.003
757	184-8018- 1			0.000	0.000	<0.003
	~~Recalibration~~ JP	X	X	X	X	X
	Calib. Verification	1.0	1.0	0.109	0.120	0.114 106%
	Calib. Blank			0.003	0.000	<0.003
758	184-8018- 2			0.000	0.000	<0.003
761	3			0.000	0.000	<0.003
762	4			0.000	0.000	<0.003
763	5			0.000	0.000	<0.003
765	6			0.000	0.000	<0.003
	Calib. Verification			0.104	0.108	0.109 100%
	Calib. Blank			0.002	0.000	<0.003
MFC 321	185-8016- 1			0.000	0.000	<0.003
	1R			0.000	0.000	<0.003 0%
322	2			0.000	0.000	<0.003
	2S			0.000	0.000	<0.003
494	3			0.000	0.000	<0.003
	Final Calibration	X	X	X	X	X
	Calib. Verification	1.0	1.0	0.115	0.116	0.116 106%
	Calib. Blank	1.0	1.0	0.000	0.000	<0.003

LCS and Calibration Verification: ICV-3 True Value: 0.109 (ppm)

CRDL: 60 (ppb)

Spike = ____ mL of ____ mg/L std. in final volume of ____ mL = ____ mg/L spike

Comments:

Analyst Checked: JP Date: 10-14-87

Q.C. Approved: EH Date: 10/15/87

185-8016-6-0014

004906

Accu-Labs Research, Inc.

EGA Atomic Absorption

F 7006 Rev. F

Element: As
Wavelength: 193.7 nm
Matrix Modifier: Ni, Na
Water ✓ Soil ____ Other ____

Procedure No. 38072
EG ____ PE 5000 No. 82067 ____
PE 603 No. 82034 ____
PE 5000Z No. 82143 ✓

Date: 10/5/87 Time 1000Am
Analyst: CK
I.D.L.: 0.001 (ppm)
Page 1 of 1

STANDARDS (ppm)

Date Prepared: 10.5.87 Prepared by: CK

	Initial	Recalibration	Final
Calibration Blank	0.000		
Standard 1 0.050	abs = 0.3331		
Standard 2 0.100	0.090		
Standard 3: (0.020)	% = 0.0371	% =	% =

EPA No.	Sample Number	Aliquot	Dilution Factor	Reading 1	Reading 2	Avg. Conc. (ppm)
	Initial Calib.	X	X	X	X	X
	Calib. Verification	1.0	1.0	0.052	0.052	0.052
	Calib. Blank			0.000	0.000	<0.001
	Reagent Blank			0.000	0.000	<0.001
	LCS			0.052	0.054	0.053
MFE 755	181-EQIR- 1			0.005	0.004	0.004
	1R			0.004	0.004	0.004
756	2			0.004	0.004	0.004
	Calib. Verification			0.047	0.046	0.046
	Calib. Blank			0.000	0.000	0.000
	181-EQIR- 2S			0.004	0.004	0.004
759	3			0.013	0.014	0.013
760	4			0.008	0.008	0.008
764	5			0.000	0.000	<0.001
767	184-EQ-R- 1			0.006	0.006	0.006
	Recalibration	✓	✓	X	X	X
	Calib. Verification	X	X	0.049	0.049	0.049
	Calib. Blank	1.0	1.0	0.000	0.000	<0.001
758	184-EQ15- 2			0.006	0.006	0.006
761	3			0.015	0.015	0.015
762	4			0.008	0.008	0.008
763	5			0.012	0.012	0.012
765	6			0.000	0.000	<0.001
	Calib. Verification			0.046	0.046	0.046
	Calib. Blank			0.000	0.000	<0.001
MFC 321	185-EQ16- 1			0.003	0.003	0.003
	1R			0.002	0.002	0.002
322	2			0.005	0.005	0.005
	2S			0.005	0.005	0.005
494	3			0.000	0.000	<0.001
	Final Calibration	✓	✓	X	X	X
	Calib. Verification	X	X	0.047	0.046	0.046
	Calib. Blank	1.0	1.0	0.000	0.001	<0.001

LCS and Calibration Verification: 10/10.2
MDL: 10 (ppb) True Value: 0.049 (ppm)
Spike = 0.1 mL of 20 mg/L std. in final volume of 100 mL = 0.020 mg/L spike
Comments:

Analyst Checked: CK Date: 10/6/87
Q.C. Approved: [illegible] Date: 10/12/87

004907

004907

Accu-Labs Research, Inc.

EGA Atomic Absorption

F 7006 Rev. F

Element: Pb
Wavelength: 283.3 nm
Matrix Modifier: $NH_4H_2PO_4$ - $Mg(NO_3)_2$
Water ✓ Soil ____ Other ____

Procedure No. ____
EG 3
PE 5000 No. 82067
PE 603 No. 82034
PE 5000Z No. 82143

Date: 9.30.87 Time 6:00 PM
Analyst: JLC
I.D.L.: 0.002 (ppm)
Page 1 of 2

STANDARDS (ppm)

Date Prepared: 9.30.87 pm Prepared by: JLC

	Initial	Recalibration	Final
Calibration Blank	0.000		
Standard 1	0.050 abs #247		
Standard 2	0.100		
Standard 3: (0.090)	0.091 % = 101	% =	% =

EPA No.	Sample Number	Aliquot	Dilution Factor	Reading 1	Reading 2	Avg. Conc. (ppm)
	Initial Calib.	X	X	X	X	X
	Calib. Verification	1.0	2.0	0.048	0.049	0.095
	Calib. Blank		1.0	0.001	0.000	<0.002
	Reagent Blank			0.000	0.000	<0.002
	LCS			0.119	0.119	0.119
MFE 355	191-8019-1			0.029	0.029	0.029
	10			0.030	0.030	0.030
356	2			0.029	0.028	0.028
	Calib. Verification		2.0	0.050	0.050	0.100
	Calib. Blank		1.0	0.001	0.001	<0.002
	191-8019-2C			0.029	0.029	0.029
359	3			0.045	0.045	0.045
360	4			0.058	0.058	0.058
361	5			0.001	0.000	<0.002
357	184-8019-1			0.056	0.056	0.056
	Recalibration	X	X	X	X	X
	Calib. Verification	1.0	2.0	0.045	0.045	0.090
	Calib. Blank		1.0	0.001	0.000	<0.002
359	184-8019-2			0.053	0.051	0.053
361	3			0.045	0.045	0.045
362	4			0.057	0.058	0.057 reanalyzed
363	5			0.053	0.051	0.053
365	6			0.001	0.000	<0.002
	Calib. Verification		2.0	0.044	0.045	0.044 low
	Calib. Blank		1.0	0.001	0.000	<0.002
	Final Calibration	X	X	X	X	X
	Calib. Verification					
	Calib. Blank					

LCS and Calibration Verification: ICV-4 True Value: 0.0979 (ppm)
CRDL: 5 (ppb)
Spike = 0.1 mL of ~~0.0979~~ 20 mg/L std. in final volume of 500 mL = 0.020 mg/L spike
Comments:

Analyst Checked: CK Date: 10/9/87
Q.C. Approved: [illegible] Date: 10/21/87

004908

Accu-Labs Research, Inc. F 7006 Rev. F

EGA Atomic Absorption

Element: Pb Procedure No. _____ Date: 9.30.87 Time 600 Pm
Wavelength: 283.3 nm BG ☒ PE 5000 No. 82067 _____ Analyst: [illegible]
Matrix Modifier: [illegible] PE 603 No. 82034 _____ I.D.L.: [illegible] (ppm)
Water ✓ Soil _____ Other _____ PE 5300C No. 82143 ✓ Page 2 of 2

STANDARDS (ppm)

Date Prepared: 9.30.87 pm Prepared by: [illegible]

	Initial	Recalibration	Final
Calibration Blank	0.000		
Standard 1	0.050 abs =		
Standard 2	0.100		
Standard 3: (0.07)	0.071 % = 101	% =	% =

EGA No.	Sample Number	Aliquot	Dilution Factor	Reading 1	Reading 2	Avg. Conc. (ppm)
	Initial Calib.	X	X	X	X	X
	Calib. Verification	1.0	2.0	0.050	0.050	0.100
	Calib. Blank		1.0	0.001	0.000	<0.002
	Reagent Blank (64-6[illegible]-2)		1	0.050	0.050	0.050
	[illegible] 3		1	0.053	0.053	0.053
	4		1	0.064	0.063	0.063
	5		1	0.060	0.050	0.060
	10		1	0.001	0.000	<0.002
	Calib. Verification	1	2.0	0.049	0.049	0.098
	Calib. Blank		1.0	0.001	0.000	<0.002
	155-8014-A2 1		1	0.024	0.032	0.028
	[illegible] 10		1	0.032	0.032	0.032
	2		1	0.044	0.044	0.044
	25		1	0.045	0.045	0.045
	3		1	0.001	0.001	<0.002
	Recalibration	X	X	X	X	X
	Calib. Verification	1.0	2.0	0.051	0.051	0.102
	Calib. Blank	1.0	1.0	0.001	0.000	<0.002
	LCS	1.0	2.0	0.045	0.045	0.090
	Calib. Verification	1.0	2.0	0.053	0.053	0.106
	Calib. Blank	1.0	1.0	0.001	0.001	<0.002
	Final Calibration	X	X	X	X	X
	Calib. Verification					
	Calib. Blank					

LCS and Calibration Verification: KV 4 True Value: 0.0499 (ppm)
CRDL: 5 (ppb)
Spike = 0.1 mL of 20 mg/L std. in final volume of 100 mL = 0.020 mg/L spike
Comments: Analyst Checked: GE Date: 10/2/87
Q.C. Approved: EH Date: 10/12/87

004909

004909

Accu-Labs Research, Inc. F 7006 Rev. F

EGA Atomic Absorption

Element: Se Procedure No. 3807216 Date: 10/2/87 Time 2:00 pm
Wavelength: 196.0 nm EG _____ PE 5000 No. 82067 _____ Analyst: ATN/TP
Matrix Modifier: Ni(NO3) PE 603 No. 82034 _____ I.D.L.: 0.002 (ppm)
Water ✓ Soil _____ Other _____ PE 5000Z No. 82143 _____ Page 1 of 1

STANDARDS (ppm)
Date Prepared: 10.2.87 Prepared by: ATN./TP

	Initial	Recalibration	Final
Calibration Blank	0.000		
Standard 1 0.050	abs = 0.174		
Standard 2 0.100	0.341		
Standard 3: (0.200)	% = 0.671	% =	% =

EPA No.	Sample Number	Aliquot	Dilution Factor	Reading 1	Reading 2	Avg. Conc. (ppm)	
	Initial Calib.	X	X	X	X	X	
	Calib. Verification	1.0	1.0	0.047	0.047	0.047	94%
	Calib. Blank		1	0.000	0.001	<0.002	
	Reagent Blank		1	0.000	-0.000	<0.002	
	LCS		1	0.103	0.104	0.103	105%
MFE 755	181-EC15- 1		1	0.001	0.001	<0.002	
	1R		1	0.001	0.000	<0.002	
756	2		1	0.001	0.001	<0.002	
	Calib. Verification		1.0	0.047	0.046	0.046	0.096
	Calib. Blank		1	0.001	0.001	<0.002	
	181-EC1R- 2S		1.0	0.000	0.000	<0.002	0%
759	3		1	0.001	0.001	<0.002	
760	4		1	0.000	0.000	<0.002	
761	5		1	0.000	0.000	<0.002	
757	184-EC1R- 1	✓	1	0.000	0.000	<0.002	
	Recalibration	X	X	X	X	X	
	Calib. Verification	1.0	1.0	0.045	0.046	0.046	92%
	Calib. Blank		1	0.000	0.000	<0.002	
758	184-EC1R- 2		1	0.000	0.000	<0.002	
761	3		1	0.000	0.000	<0.002	
762	4		1	0.000	0.000	<0.002	
763	5		1	0.000	0.000	<0.002	
765	6		1	0.000	0.000	<0.002	
	Calib. Verification		1	0.047	0.046	0.046	92%
	Calib. Blank		1	0.001	0.000	<0.002	
MFE 321	185-EC1R- 1		1	0.001	0.000	<0.002	
	1R		1	0.000	0.000	<0.002	
322	2		1	0.000	0.000	<0.002	
	2S		1	0.001	0.000	<0.002	0%
494	3	✓	1	0.000	0.000	<0.002	
	Final Calibration	X	X	X	X	X	
	Calib. Verification	1.0	1.0	0.045	0.049	0.045	96%
	Calib. Blank	1.0	1.0	0.000	0.000	<0.002	

LCS and Calibration Verification: 3916-1 True Value: 0.050 (ppm)
CRDL: 5 (ppb)
Spike = 0.1 mL of 10 mg/L std. in final volume of 100 mL = 0.010 mg/L spike
Comments: Analyst Checked: [illegible] Date: 10.4.87
Q.C. Approved: [illegible] Date: 10/13/87

0049 00

Accu-Labs Research, Inc.

EGA Atomic Absorption

F 7006 Rev. F

Element: Tl

Wavelength: [illegible] nm

Procedure No. 38072:8

EG T

Date: [illegible] Time [illegible] PM

Matrix Modifier: [illegible]

PE 5000 No. 82067 ✓

PE 603 No. 82034

PE 5000C No. 82143

Analyst: [illegible]

I.D.L.: [illegible] (ppm)

Water ✓ Soil ____ Other ____

Page 1 of 7

STANDARDS (ppm)

Date Prepared: [illegible] PM

Prepared by: [illegible]

	Initial	Recalibration	Final
Calibration Blank	[illegible]		
Standard 1	[illegible] abs = [illegible]		
Standard 2	[illegible]		
Standard 3: ([illegible])	[illegible] % = [illegible]	% =	% =

EPA No.	Sample Number	Aliquot	Dilution Factor	Reading 1	Reading 2	Avg. Conc. (ppm)	
	Initial Calib.	X	X	X	X	X	
	Calib. Verification	1.0	2.0	[illegible]	[illegible]	[illegible]	109%
	Calib. Blank		1.0	[illegible]	[illegible]	[illegible]	
	Reagent Blank			[illegible]	[illegible]	[illegible]	
	LCS			[illegible]	[illegible]	[illegible]	
MFE 755	161-EC1R- 1			[illegible]	[illegible]	[illegible]	0%
	1R			[illegible]	[illegible]	[illegible]	
756	2			[illegible]	[illegible]	[illegible]	
	Calib. Verification			[illegible]	[illegible]	[illegible]	
	Calib. Blank		2.0	[illegible]	[illegible]	[illegible]	95%
	161-EC1R- 2S		1.0	[illegible]	[illegible]	[illegible]	
759	3			[illegible]	[illegible]	[illegible]	0%
760	4			[illegible]	[illegible]	[illegible]	
764	5			[illegible]	[illegible]	[illegible]	
757	184-EC1R- 1	✓		[illegible]	[illegible]	[illegible]	
	Recalibration			[illegible]	[illegible]	[illegible]	
	Calib. Verification	X	X	X	X	X	
	Calib. Blank	1.0	2.0	[illegible]	[illegible]	[illegible]	97%
759	184-EC1R- 2		1.0	[illegible]	[illegible]	[illegible]	
761	3			[illegible]	[illegible]	[illegible]	
762	4			[illegible]	[illegible]	[illegible]	
763	5			[illegible]	[illegible]	[illegible]	
765	6			[illegible]	[illegible]	[illegible]	
	Calib. Verification			[illegible]	[illegible]	[illegible]	
	Calib. Blank		2.0	[illegible]	[illegible]	[illegible]	101%
MFE 321	185-EC1R- 1		1.0	[illegible]	[illegible]	[illegible]	
	1R			[illegible]	[illegible]	[illegible]	
322	2			[illegible]	[illegible]	[illegible]	
	2S			[illegible]	[illegible]	[illegible]	
494	3	✓	✓	[illegible]	[illegible]	[illegible]	0%
	Final Calibration	X	X	X	X	X	
	Calib. Verification	1.0	2.0	[illegible]	[illegible]	[illegible]	99%
	Calib. Blank	1.0	1.0	[illegible]	[illegible]	[illegible]	

LCS and Calibration Verification: LCV. 1 True Value: 0.0933 (ppm)

MDL: 10 (ppb)

Spike = [illegible] mL of [illegible] mg/L std. in final volume of 100 mL = 0.050 mg/L spike

Comments:

Analyst Checked: [illegible] Date: 10.7.87

Q.C. Approved: [illegible] Date: 10/13/87

004911

004911

Accu-Labs Research, Inc.

F 7006 Rev. F

EGA Atomic Absorption

Element: Sn
Wavelength: 224.6 nm
Matrix Modifier: –
Water ✓ Soil ____ Other ____

Procedure No. 3809319
BG D
PE 5000 No. 82067 ✓
PE 603 No. 82034
PE 5000Z No. 82143

Date: 9.25.97 Time 1030 AM
Analyst: JP
I.D.L.: 0.005 (ppm)
Page 1 of 3

STANDARDS (ppm)

Date Prepared: 9.25.97 Prepared by: JP

	Initial	Recalibration	Final
Calibration Blank:	0.000		
Standard 1	0.100 abs = 0.101		
Standard 2	0.200		
Standard 3: (0.150)	0.155 % = 103	% =	% =

EPA No.	Sample Number	Aliquot	Dilution Factor	Reading 1	Reading 2	Avg. Conc. (mg/L)	
	Initial Calib.	X	X	X	X	X	
	Calib. Verification	1.0	1.0	0.059	0.058	0.059	118%
	Calib. Blank			0.000	-0.002	<0.003	
	Reagent Blank (HNO)			0.006	-0.002	<0.003	
	LCS (HNO)			0.054	0.055	0.055	110%
	191-8019-1			0.000	-0.005	<0.008	
	1R			-0.001	-0.004	<0.004	
	2			-0.003	-0.003	<0.008	
	Calib. Verification			0.052	0.062	0.057	114%
	Calib. Blank			-0.006	-0.005	<0.005	
	191-8019-2S			0.096	0.092	0.093	
	3			-0.003	-0.005	<0.008	
	4			-0.004	-0.008	<0.008	
	5			-0.009	-0.001	<0.008	
	194-8019-1			-0.003	-0.004	<0.008	
	Recalibration	X	X	X	X	X	
	Calib. Verification	1.0	1.0	0.056	0.053	0.055	110%
	Calib. Blank			-0.006	-0.006	<0.007	
	197-8019-2			-0.006	-0.010	<0.008	
	3			-0.011	-0.009	<0.009	
	4			-0.003	-0.008	<0.008	
	5			-0.009	-0.007	<0.008	
	6			-0.012	-0.010	<0.009	
	Calib. Verification			0.057	0.053	0.055	110%
	Calib. Blank			~~-0.009~~	-0.012	-0.009	
	195-8016-1			-0.010	-0.007	<0.008	
	1R			-0.010	-0.013	<0.008	
	2			-0.009	-0.010	<0.009	
	2S			0.194	0.207	0.223	RT OK Sample Prep dev
	3			-0.010	-0.006	-0.008	
	Final Calibration	X	X	X	X	X	
	Calib. Verification	1.0	1.0	0.055	0.054	0.055	110%
	Calib. Blank	1.0	1.0	-0.009	-0.010	<0.009	

LCS and Calibration Verification: Sn Certification True Value: 0.050 (ppm)
CRDL: 40 (ppb)
Spike = 0.2mL of 100 mg/L std. in final volume of 100 mL = 0.200 mg/L spike
Comments:

Analyst Checked: JP Date: 9.25.97
Q.C. Approved: SLT Date: 10/8/97

004912

Accu-Labs Research, Inc. F 7006 Rev. F

EGA Atomic Absorption

Element: Sn Procedure No. 3807219 Date: 9.25.87 Time 1030 AM
Wavelength: 224.6 nm BG D_2 PE 5000 No. 82067 Analyst: JP
Matrix Modifier: – PE 603 No. 82034 I.D.L.: 0.015 (ppm)
Water ✓ Soil ✓ Other PE 5000 No. 82143 Page 2 of 3

STANDARDS (ppm)
Date Prepared: 9.25.87 Prepared by: JP

	Initial	Recalibration	Final
Calibration Blank	0.000		
Standard 1	0.100 abs = 0.101		
Standard 2	0.200		
Standard 3: (0.157)	0.164 % = 103	% =	% =

EGA No.	Sample Number	Aliquot	Dilution Factor	Reading 1	Reading 2	Avg. Conc. (ppm)	
	Initial Calib.	X	X	X	X	X	
	Calib. Verification	1.0	1.0	0.055	0.054	0.055	110%
	Calib. Blank	1	1	-0.005	-0.010	<0.005	
	Reagent Blank (soil)	1	1	-0.009	-0.009	<0.009	
	LCS (soil)	↓	1	0.045	0.047	0.045	90%
	192-8029-1	1.0g/500mL	1	-0.005	-0.006	<4.0	
	1R	1.0g/500mL	1	-0.011	-0.002	<4.0	
	2	1.0g/500mL	1	-0.006	-0.006	<4.0	
	Calib. Verification	1.0	1	0.055	0.050	0.052	104%
	Calib. Blank	1.0	1	-0.008	-0.012	<0.008	
	192-8029-2S	1.0g/500mL	↓	0.171	0.195	~~0.173~~ 86.41	89%
	195-8016-2S	1.0	1.0	0.263	0.274	0.269	~ on scale
	195-8016-2S	1.0	2.0	0.130	0.133	0.262	131%
	Recalibration	X	X	X	X	X	
	Calib. Verification	1.0	1.0	0.055	0.053	0.054	105%
	Calib. Blank	1.0	1.0	-0.013	-0.016	<0.008	
	Calib. Verification						
	Calib. Blank						
	Final Calibration	X	X	X	X	X	
	Calib. Verification						
	Calib. Blank						

LCS and Calibration Verification: Sn Certification True Value: 0.050 (ppm)
CRDL: 4 (ppb)
Spike = ____ mL of ____ mg/L std. in final volume of ____ mL = ____ mg/L spike
Comments:
Analyst Checked: EH Date: 10/8/87
Q.C. Approved: EH Date: 10/8/87

004913

004913

Accu-Labs Research, Inc. F 7006 Rev. F

EGA Atomic Absorption

Element: V Procedure No. 3807220 Date: 10/9/87 Time 3:00pm
Wavelength: 318.4 nm BG BD PE 5000 No. 82067 Analyst: EH 10/9/87
Matrix Modifier: PE 603 No. 82034 ✓ I.D.L.: 0.009 (ppm)
Water ✓ Soil Other PE 5000Z No. 82143 Page 1 of 1

STANDARDS (ppm)

Date Prepared: 10/9/87 Prepared by: JP

	Initial	Recalibration	Final
Calibration Blank	10.000		
Standard 1	10.050 abs = 0.068		
Standard 2	10.100		
Standard 3: (0.010)	10.071 % = 101	% =	% =

EPA No.	Sample Number	Aliquot	Dilution Factor	Reading 1	Reading 2	Avg. Conc. (ppm)
	Initial Calib.	X	X	X	X	X
	Calib. Verification	1.0	10	0.050	0.051	0.510 102%
	Calib. Blank	1	1	0.005	0.003	<0.009
	Reagent Blank	1	1	0.001	0.001	<0.009
	LCS	1	10	0.046	0.048	0.470 92%
MFC 755	184-8018- 1	1	1	0.019	0.019	0.019
	1R	1	1	0.027	0.025	0.026
756	2	1	1	0.020	0.020	0.020
	Calib. Verification	1	10	0.048	0.050	~~0.047~~ 0.49 96%
	Calib. Blank	1	1	0.006	0.004	<0.009
	184-8018- 2S	1	1	0.022	0.026	0.024
759	3	1	1	0.079	0.077	0.078
760	4	1	1	0.039	0.045	0.042
764	5	1	1	0.006	0.005	<0.009
757	184-8018- 1	✓	1	0.048	0.052	0.050
	Recalibration	X	X	X	X	X
	Calib. Verification	1.0	10	0.052	0.052	0.52 102%
	Calib. Blank	1	1	0.008	0.007	<0.009
758	184-8018- 2	1	1	0.052	0.055	0.054
761	3	1	1	0.060	0.062	0.061
762	4	1	1	0.040	0.042	0.041
763	5	1	1	0.065	0.061	0.063
765	6	1	1	0.005	0.004	<0.009
	Calib. Verification	1	10	0.046	0.046	0.46 90%
	Calib. Blank	1	1	0.004	0.003	<0.009
MFC 321	185-8018- 1	1	1	0.045	0.042	0.044
	1R	1	1	0.041	0.042	0.042
322	2	1	1	0.054	0.052	0.053
	2S	1	1	0.053	0.067	0.060
494	3	✓	1	0.001	0.000	<0.009
	Final Calibration	X	X	X	X	X
	Calib. Verification	1.0	10	0.055	0.055	0.55 103
	Calib. Blank	1.0	1	0.000	0.000	<0.009

LCS and Calibration Verification: ICV-1 True Value: 0.51 (ppm)
CRDL: 50 (ppb)
Spike = ____ mL of ____ mg/L std. in final volume of ____ mL = ____ mg/L spike
Comments: Analyst Checked: EH Date: 10/12/87
Q.C. Approved: EH Date: 10/15/87

004914

004914

Accu-Labs Research, Inc. F 7006 Rev. F

HGA Atomic Absorption

Element: V Procedure No. 3807.120 Date: 10/13/87 Time 10:00am
Wavelength: 318.4 nm BG BD PE 5000 No. 82067 Analyst: EH
Matrix Modifier: PE 603 No. 82034 ✓ I.D.L.: 0.009 (ppm)
Water ✓ Soil Other PE 5000Z No. 82143 Page 1 of 1

STANDARDS (ppm)
Date Prepared: 10/13/87 Prepared by: EH

	Initial	Recalibration	Final
Calibration Blank	0.000		
Standard 1	0.050 abs =		
Standard 2	0.100		
Standard 3: (0.070)	0.071 % = 101	% =	% =

EPA No.	Sample Number	Aliquot	Dilution Factor	Reading 1	Reading 2	Avg. Conc. (ppm)
	Initial Calib.	X	X	X	X	X
	Calib. Verification	1.0	~~10~~ 10	0.051	0.047	0.49 98%
	Calib. Blank	1.0	10	0.003	0.001	<0.009
	~~EH Reagent Blank~~ 18-801603	1.0	10	0.001	0.001	<0.009
	EH ~~LCS~~					
	Calib. Verification	1.0	10	0.048	0.049	0.49 96%
	Calib. Blank	1.0	10	0.003	0.001	<0.009
	Recalibration	X	X	X	X	X
	Calib. Verification					
	Calib. Blank					
	Calib. Verification					
	Calib. Blank					
	Final Calibration	X	X	X	X	X
	Calib. Verification					
	Calib. Blank					

LCS and Calibration Verification: ICV-I True Value: 0.51 (ppm)
CRDL: 50 (ppb)
Spike = mL of mg/L std. in final volume of mL = mg/L spike
Comments:
Analyst Checked: EH Date: 10/13/87
Q.C. Approved: EH Date: 10/15/87

004915

004915

Accu-Labs Research, Inc.

F 7009 Rev. F

Mercury - Cold Vapor Method

Wavelength: 253.6 nm

Procedure No. 3807240
PE 503 No. 82066

Date: 9.18.87 Time: 7:00
Analyst: [illegible]
I.D.L.: 0.0001 (ppm)
Page 4 of 4

Water ✓ Soil ✓ Other ____
Samples Digested and transferred to AA room:
Date/Time 9 18 87 7:00 Analyst [illegible]

STANDARDS

Date Prepared: 9.18.1987

Prepared by: [illegible]

STD A	Concentration (ppm)	Initial (mv)	Recalibration (mv)	Avg. (mv)
Calibration Blank	0.0000	22.5		
Standard 1	0.003	225		
Standard 2	0.002	159		
Standard 3	0.001	92		
Standard 4	0.0005	58		
Standard 5	0.0002	35		
Standard 6				

r = 0.9999

EPA No.	Sample Number	Bottle Number	Aliquot	Dilution Factor	Reading (mv)	Concentration (ppm)	
	Initial Calib.	X	X	X	X	X	
	Calib. Verification	70	100 mls	5.0	100	0.0057	109%
	Reagent Blank	71	100 mls	1.0	24	<0.0001	
	LCS — [illegible]						
H_2O	184-8018-3	72	100 mls	1.0	—	Hi	RR 10 mls [illegible]
	4	73	100 mls	1.0	—	Hi	
	5	74	100 mls	1.0	49	0.0004	
	5S	75	100 mls	1.0	78	0.0006	
	6	76	100 mls	1.0	23	<0.0001	
H_2O	185-8016-1	77	100 mls	1.0	27	<0.0002	>OK
	1R	78	100 mls	1.0	27	<0.0002	>89%
	1S	79	100 mls	1.0	90	0.0010	
	Calib. Verification	80	100 mls	5.0	98	0.0055	106%
	Calib. Blank	81	100 mls	1.0	23	<0.0001	
	2	82	100 mls	1.0	27	<0.0002	
	3	83	100 mls	1.0	24	<0.0002	
	LCS	84	100 mls	5.0	93	0.0052	99%
	~~LCS~~ RB	85	100 mls	1.0	22.5	<0.0001	
	Recalibration	X	X	X	X	X	
	Calib. Verification	86	100 mls	5.0	96	0.0054	104%

LCS and Calibration Verification: ICV-5 True Value: 0.0052 (ppm)
CRDL: 0.2 (ppb)

Spike = 1.0 ml of 0.1 mg/L std. in final volume of 100 ml = 0.001 mg/L spike

Comments:

Analyst Checked: [illegible] Date: 9.18.1987
Q.C. Approved: [illegible] Date: 10/8/87

185-8016-6-0015

004916

004916

Accu-Labs Research, Inc.

P 7007 Rev. E

CYANIDE

Procedure No. 3807λ45
Wavelength: 578 nm
Water ✓ Soil ____ Other ____

B & L Spec No. 42017
Date: 9 23 97 Time: 500 PM
Analyst: [illegible]
I.D.L.: 0.005 (ppm)
Page 1 of 1

STANDARDS

Date Prepared: 9 23 97

Prepared by: [illegible]

	Concentration ( )	Initial Absorbance	Recalibration Absorbance	Average Absorbance
Calibration Blank	0	0.100	0.100	0.100
Standard 1	2.5	0.124	0.124	0.124
Standard 2	5.0	0.146	0.145	0.145
Standard 3	10.0	0.154	0.154	0.154
Standard 4	25.0	0.325	0.322	0.324
Standard 5	50.0	0.535	0.536	0.535

Y-int = 0.5313

EPA No.	Sample Number	Aliquot	Dilution Factor	Absorbance	Concentration ( )	
	Initial Calib.	X	X	X	X	
	Calib. Verification	250	1.0	0.235	0.0004	102%
	Calib. Blank		1	0.100	<0.005	
	Reagent Blank	500		0.102	<0.005	
	LCS	100		0.297	0.2253	101%
	181-8018- 1	500		0.101	<0.005	
	2	500		0.103	<0.005	
	3	500		0.106	<0.005	
	4	500		0.101	<0.005	
	5	~~250~~ 500		0.100	<0.005	
5	48 EP	250		0.100	<0.005	
6	49 CS	250		0.106	<0.005	RERUN
	49 6	500		0.102	<0.005	0%
	Calib. Verification			0.234	0.0100	102%
	Calib. Blank			0.100	<0.005	
7.22.97	181-8018-55	250		0.303	0.093	93%
	185-8016- 1	500		0.102	<0.005	
	10	250		0.103	<0.005	
	2	500		0.101	<0.005	
	~~25~~	~~[illegible]~~		~~0.155~~	~~[illegible]~~	
	3	500		0.103	<0.005	
	185-8016- 25	100		0.222	0.139	55%
	Recalibration	X	X	X	X	
	Calib. Verification	250		0.234	0.0099	102%
	Calib. Blank		✓	0.100	<0.005	

Calibration Verification: 15 std ~~[illegible]~~ mg/L True Value: 0.015 (ppm)
LCS: 179-5 True Value: 0.224 (ppm)
CRDL: ____ ( )

Spike = 5 mL of 5 mg/L std. in final volume of ~~250~~ 500 mL = 0.050 mg/L spike

Comments:

Analyst Checked: [illegible] Date: 9 23 97
Q.C. Approved: [illegible] Date: 10/7/97

004917

185-8016-6-0016

F 7001 Rev. A

EPA Total Metals Digestion Sheet
Procedure Number 3307200

Date [illegible] Time [illegible]
Analyst [illegible]

Sample Number	Initial Volume (ml)	Final Volume (ml)	Acid Added (ml)	Metals to be Run
Reagent Blank				H.M., Group I & II, Pb/Ag, Al/Ba, V, As/Se, Be, Sb, Tl, Sn
LCS				H.M., Group I & II, Pb/Ag, Al/Ba, V, As/Se, Be, Sb, Tl, Sn
[illegible]				H.M., Group I & II, Pb/Ag, Al/Ba, V, As/Se, Be, Sb, Tl, Sn
				H.M., Group I & II, Pb/Ag, Al/Ba, V, As/Se, Be, Sb, Tl, Sn
				H.M., Group I & II, Pb/Ag, Al/Ba, V, As/Se, Be, Sb, Tl, Sn
				H.M., Group I & II, Pb/Ag, Al/Ba, V, As/Se, Be, Sb, Tl, Sn
				H.M., Group I & II, Pb/Ag, Al/Ba, V, As/Se, Be, Sb, Tl, Sn
				H.M., Group I & II, Pb/Ag, Al/Ba, V, As/Se, Be, Sb, Tl, Sn
				H.M., Group I & II, Pb/Ag, Al/Ba, V, As/Se, Be, Sb, Tl, Sn

Spike Data:

LR Number	Sample Volume (ml)	Standard Spike Used 1	2	3	4	5	6	7	8	9	10	11	12	13	14	Comments
[illegible]	[illegible]	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	

Alkali Metals and Al/Ba Split Yes (✓) No ( )

Digestion Comments on Reverse Side.

185-8016-6-0018

004916

F 7001 Rev. A

EPA Total Metals Digestion Sheet
Procedure Number 3307200

Date [illegible] Time [illegible]
Analyst [illegible]

Sample Number	Initial Volume (ml)	Final Volume (ml)	Acid Added (ml)	Metals to be Run
Reagent Blank	[illegible]	[illegible]	[illegible]	H.M., Group I & II, Pb/Ag, Al/Ba, V, As/Se, Be, Sb, Tl, Sn
LCS			1	H.M., Group I & II, Pb/Ag, Al/Ba, V, As/Se, Be, Sb, Tl, Sn
[illegible]	[illegible]	[illegible]	1	H.M., Group I & II, Pb/Ag, Al/Ba, V, As/Se, Be, Sb, Tl, Sn
[illegible]			1	H.M., Group I & II, Pb/Ag, Al/Ba, V, As/Se, Be, Sb, Tl, Sn
[illegible]				H.M., Group I & II, Pb/Ag, Al/Ba, V, As/Se, Be, Sb, Tl, Sn
[illegible]	[illegible]	[illegible]	[illegible]	H.M., Group I & II, Pb/Ag, Al/Ba, V, As/Se, Be, Sb, Tl, Sn
				H.M., Group I & II, Pb/Ag, Al/Ba, V, As/Se, Be, Sb, Tl, Sn
				H.M., Group I & II, Pb/Ag, Al/Ba, V, As/Se, Be, Sb, Tl, Sn
				H.M., Group I & II, Pb/Ag, Al/Ba, V, As/Se, Be, Sb, Tl, Sn

Spike Data:

LR Number	Sample Volume (mL)	Standard Spike Used 1	2	3	4	5	6	7	8	9	10	11	12	13	14	Comments
[illegible]	[illegible]							[illegible]	[illegible]							

Alkali Metals and Al/Ba Split Yes ( ) No ( )

Digestion Comments on Reverse Side.

004919

Acme-Labs Research, Inc.

F 7014 Rev. D

EPA ECA Injection Log

Element: Sb

Analyst: JP

Date: 10-13-87 Time: 1K

FE 5000 No. 82067 ✓ FE 50000 No. 82142

FE 600 No. 82034

Date: 10-13-87 Time: 1000 PM

1	Std	1	S2 analytical spikes
2	CV	2	CV
3	CB	3	CB
4	RB	4	LCS (spiked then x2)
5	LCS	5	184-8019-1
6	184-8019-1	6	1R
7	1R	7	2
8	2	8	3
9	CV	9	CV
10	CB	10	CB
11	184-8019-2S	11	184-8019-4
12	3	12	5 JP
13	4	13	184-8019-1
14	5	14	2
15	184-8019-1	15	3
16	CV	16	CV
17	CB	17	CB
18	184-8019-2	18	184-8019-4
19	3	19	5
20	4	20	6
21	5	21	185-8016-1
22	6	22	1R
23	CV	23	CV
24	CB	24	CB
25	185-8016-1	25	185-8016-2
26	1R	26	3
27	2	27	1
28	2S	28	CV
29	CV ZJP	29	
30	CB	30	
31	~~184~~ 185-8016-3	31	
32	CV	32	
33	CB	33	
34		34	
35		35	

Comments:

185-8016-6-0021

004920

Hewlett-Packard Laboratory, Inc.

EPA ZGA Injection Log

F 7014 Rev. D

Element: Sb

Analyst: JP

Date: 10-14-87 Time: 8:00

FE 5000 No. 82087 FE 5000B No. 82140

FE 600 No. 82034

Date: 10-14-87 Time: 11:30

1	Std	1	Std
2	CV	2	CV
3	CB	3	CB
4	181-8018-4	4	RB
5	5	5	LCS-2x
6	184-8015-1	6	182-8029-1
7	2	7	1R
8	3	8	2
9	CV	9	CV
10	CB	10	CB
11	184-8018-4	11	182-8029-2S
12	5	12	
13	6	13	
14	185-8016-1	14	
15	1R	15	
16	CV	16	
17	CB	17	
18	185-8016-2	18	
19	3	19	
20	LCS-soil 2x then spk	20	
21	182-8029-1	21	
22	1R	22	
23	CV	23	
24	CB	24	
25	182-8029-2	25	
26	CV	26	
27	CB	27	
28		28	
29		29	
30		30	
31		31	
32		32	
33		33	
34		34	
35		35	

analytical spikes count

Comments:

004921

[redacted]-Lab Research, Inc. F 7014 Rev. D

EPA ERA Injection Log

[redacted]: As FE 5000 No. 82067 ____ FE 50000 No. 82140 ✓

[redacted]: gK FE 600 No. 82024 ____

[redacted]: 10/5/87 Time: 1000 AM Date: ____ Time: ____

[redacted]	SB	1	SB
[redacted]	CV	2	CV
[redacted]	CB	3	CB
[redacted]	RB (water)	4	LCS
[redacted]	LCS	5	181-8018-1
[redacted]	181-8018-1	6	1R
[redacted]	1R	7	2
[redacted]	2	8	3
[redacted]	CV	9	CV
[redacted]	CB	10	CB
[redacted]	181-8018-2s	11	181-8018-4
[redacted]	3	12	5
[redacted]	4	13	184-8018-1
[redacted]	5	14	2
[redacted]	184-8018-1	15	3
[redacted]	CV	16	CV
[redacted]	CB	17	CB
[redacted]	184-8018-2	18	184-8018-4
[redacted]	3	19	5
[redacted]	4	20	6
[redacted]	5	21	185-8016-1
[redacted]	6	22	1R
[redacted]	CV	23	CV
[redacted]	CB	24	CB
[redacted]	185-8016-1	25	185-8016-2
[redacted]	1R	26	3
[redacted]	2	27	
[redacted]	2s	28	
[redacted]	3	29	
[redacted]	CV	30	
[redacted]	CB	31	
[redacted]		32	
[redacted]		33	
[redacted]		34	
[redacted]		35	

[redacted]Comments:

004922

[redacted]-Labs Research, Inc.

GFA ECA Injection Log

F 7014 Rev. D

Element: As

Analyst: JK / AW

FE 5000 No. E2087 ____ FE 50000 No. E2142 ✓

FE 600 No. E2034 ____

Date: 10/9/87 Time: ~~1100 AM~~ 700 PM

Date: 10/9/87 Time: 100 pm

1	53	
2	CV	
3	CB	
4	RB	
5	LCS	
6	182-8029-1	
7	1,2	
8	2	
9	CV	
10	CB	
11	182-8029-2s	
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		
28		
29		
30		
31		
32		
33		
34		
35		

1	53	
2	CV	
3	CB	
4	LCS (H_2O)	
5	181-8018-1	
6	1,2	
7	2	
8	3	
9	CV	
10	CB	
11	181-8018-4	
12	5	
13	184-8018-1	
14	2	
15	3	
16	CV	~~4~~ OK
17	CB	
18	184-8018-4	
19	5	
20	6	
21	185-8016-1	
22	1,2	
23	CV	
24	CB	
25	185-8016-2 OK	
26	~~CV LCS~~ 185-8016-3	
27	182-8029-1	
28	1,2	
29	CV	
30	CB	
31	182-2	
32	~~CV~~ & LCS (soil)	
33	~~CB~~ CV	
34	CB	
35		

Analytical Spikes

Comments:

004923

004923

Nuclear Data Research, Inc.

F 7014 Rev. D

Element: As + MSA

Analyst: CK

Date: 10/1/7 Time: 7:30 AM

EPA ECA Injection Log

FE 5000 No. 82087 ____ FE 50000 No. 82142 ✓

FE 602 No. 82024 ____

Date: ____ Time: ____

1	53	1	LCS
2	CV	2	+50%
3	CB	3	+100% /x2 (+0.050)
4	LCS /x2	4	+150% /x2
5	+50%	5	184-8018-3
6	+100% /x2 (+0.050)	6	+50%
7	+150% /x2	7	+100% (+0.010)
8	181-8018-3	8	+150%
9	+50%	9	
10	+100% (+0.010)	10	
11	+150%	11	
12	181-8018-4	12	
13	+50%	13	
14	+100% (+0.010)	14	
15	+150%	15	
16	184-8018-3	16	
17	+50%	17	
18	+100% (+0.010)	18	
19	+150%	19	
20	184-8018-5	20	
21	+50%	21	
22	+100% (+0.010)	22	
23	+150%	23	
24	CV	24	
25	CB	25	
26	182-8029-1	26	
27	+50%	27	
28	+100% (+0.010)	28	
29	+150%	29	
30	LCS (sol'n) /x2	30	
31	+50%	31	
32	+100% /x2 (+0.050)	32	
33	+150% /x2	33	
34	CV	34	
35	CB	35	

Comments:

004924

[redacted]-Labs Research, Inc.

F 7014 Rev. D

EPA EDX Injection Log

[redacted]ent: Pb

[redacted]ysts: Jiw

[redacted]: 9.30.87 Time: 600 PM

FE 5000 No. 82067 _____ FE 50000 No. 82143 ✓

FE 603 No. 82034 _____

Date: 10.1.87 Time: 600 PM

[redacted]		1	152
[redacted]CU		2	CU
[redacted]CB		3	CB
4 CB	>HE	4	CB >soil
[redacted]CC		5	905
6 151-8015-1		6	182-8029-1
[redacted]	1R	7	1R
[redacted]	2	8	2
9 CU		9	CU
[redacted]CB		10	CB
11 151-8015-25		11	152-8029-25
[redacted]	3	12	2 x 10 bad deviation
13	4	13	25 x 100
[redacted]	5	14	2 x 10
15 184-8018-1		15	CU
16 CU		16	CB
[redacted]CB		17	
18 184-8015-2		18	
[redacted]	3	19	
[redacted]	4	20	
21	5	21	
[redacted]	6	22	
23 CU		23	
[redacted]CB		24	
25 155-8016-1		25	
[redacted]	1R	26	
[redacted]	2	27	
28	25	28	
[redacted]	3	29	
30 CU		30	
[redacted]CB		31	
32 1/5 x 2		32	
33 CU		33	
[redacted]CB		34	
35		35	

[redacted]mments:

004925

004925

[redacted]-Labs Research, Inc.

F 7014 Rev. D

EPA EDX Injection Log

[redacted]ent: Pb

[redacted]yst: AW

[redacted]: 10.1.97 Time: 700 pm

FE 5000 No. 82067 FE 5000D No. 82143

FE 603 No. 82024

Date: Time:

[redacted]53		1
[redacted] CW		2
[redacted] CB		3
[redacted] LCS (H_2O)	(2x then spike)	4
[redacted] 181-8018-1		5
[redacted] 1R		6
7 [redacted] 2		7
[redacted] 3		8
9 CW		9
[redacted] CB		10
[redacted] 181-8015-4		11
[redacted] 5		12
[redacted] 184-8018-1		13
14 [redacted] 2		14
[redacted] 3		15
16 CW		16
[redacted] CB		17
[redacted] 184-8018-4		18
19 [redacted] 5		19
[redacted] 6		20
21 185-8016-1		21
[redacted] 1R		22
[redacted] CW		23
[redacted] CB		24
[redacted] 185-8016-2		25
26 [redacted] 3		25
[redacted] LCS (soil)	(spike then 2x)	27
[redacted] 182-8029-1		28
[redacted] 1R		29
[redacted] CW		30
[redacted] CB		31
[redacted] 182-8029-2 (x10)		32
33		33
[redacted]		34
35		35

Comments:

[redacted]nalytical spikes.

004926

Chem-Lab Research, Inc. F 7014 Rev. D

EPA ECA Injection Log

Client: Pb- MISA FE 5000 No. 82087 ____ FE 5000Z No. 82143 ✓

Analyst: ASN/CK FE 602 No. 82034 ____

Date: 10/8/87 Time: 1000Am Date: ____ Time: ____

1	105-8016-1R	1
2	+50%	2
3	+100%/x2 (+0.050)	3
4	+150%/x2	4
5	Cu/x2	5
6	CR	6
7		7
8		8
9		9
10		10
11		11
12		12
13		13
14		14
15		15
16		16
17		17
18		18
19		19
20		20
21		21
22		22
23		23
24		24
25		25
26		26
27		27
28		28
29		29
30		30
31		31
32		32
33		33
34		34
35		35

Comments:

004927

004927

[redacted]-Labs Research, Inc. T 7014 Rev. D

ZEX EZX Injection Log

[redacted]ent: Pb FE 5000 No. 82067 ____ FE 5000C No. 82143 ✓

[redacted]lyte: ASN/TK FE 603 No. 82024 ____

[redacted]: 10/7/87 Time: ~~500~~ 600 PM Date: 10/8/87 Time: 730 AM

[redacted]53		1 53	
[redacted] CU/x2	386-I	2 CU/x2	386-I
[redacted] CB		3 CB	
[redacted] 181-8018-1R		4 185-8016-~~2~~ 1R	
[redacted] +50 %		5 +50%	
[redacted] +100 %	(+0.030)	6 +100% /x2	(+0.050)
[redacted] +150 %		7 +150% /x2	
[redacted] 181-8018-3 /x2		8 LCS/x2	
9 +50% /x2		9 +50%	PF
[redacted] +100% /x2	(+0.050)	10 +100% /x2	(+0.050)
[redacted] +150% /x2		11 +150% /x2	
[redacted] 181-8018-4		12 182-8029-1R	
[redacted] +50%		13 +50%	
14 +100% /x2	(+0.050)	14 +100% /x2	~~(+0.050)~~ (+0.050)
[redacted] +150% /x2		15 +150% /x2	
16 184-8018-2		16 181-8018-4	
[redacted] +50%		17 +50%	
[redacted] +100% /x2	(+0.050)	18 +100% /x2	(+0.050)
19 +150% /x2		19 +150% /x2	
[redacted] 184-8018-3		20 184-8018-3	
21 +50%		21 +50%	
[redacted] +100%	(+0.050)	22 +100% /x2	(+0.050)
23 +150% /x2		23 +150% /x2	
24 CU/x2		24 CU/x2	
[redacted] CB		25 CB	
26 185-8016-1		26 185-8016-1	
[redacted] +50%		27 +50%	
28 +100%	(+0.030)	28 +100% /x2	(+0.030)
[redacted] +150%		29 +150% /x2	CU/x2
[redacted] 185-8016-2		30 soil LCS	CB
31 +50%		31 +50%	
[redacted] +100%	(+0.030)	32 +100%	(+0.050)
33 +150%		33 +150%	
[redacted] CU/x2		34	
35 CB		35	

[redacted]ments: con't next page

004928

004928

Element: Se

EPA ICP Injection Log

T 7014 Rev. D

Analyst:

PE 5000 No. 82067 ____ PE 5000C No. 82143 ✓

Date: 10.2.87 Time: 2:00

PE 603 No. 82034 ____

Date: ____ Time: 700 PM

1	Std	1	SB
2	CV 3% -1 = 0.050	2	CW
3	CB	3	CB
4	RB	4	LCS (x2 then spk)
5	LCS = ICU-2 = 0.096	5	181-8018-1
6	181-8018-1	6	1R
7	1R	7	2
8	2	8	3
9	CV	9	CW
10	CB	10	CB
11	181-8018-2S	11	181-8018-4
12	3	12	5
13	4	13	184-8018-1
14	5	14	2
15	184-8018-1	15	3
16	CW	16	CW
17	CB	17	CB
18	184-8018-2	18	184-8018-4
19	3	19	5
20	4	20	6
21	5	21	185-8016-1
22	6	22	1R
23	CV	23	CW
24	CB	24	CB
25	185-8016-1	25	185-8016-2
26	1R	26	3
27	2	27	
28	2S	28	
29	3	29	
30	CV	30	
31	CB	31	
32	LCS · 2x	32	
33		33	
34		34	
35		35	

Comments:

004929

[redacted]ntal Research, Inc.

F 7014 Rev. D

EPA ESA Injection Log

[redacted]ment: Se

Analyst: QK

[redacted]te: 10/3/87 Time: 900 AM

FE 5000 No. 82067 FE 5000? No. 82143 ✓

FE 603 No. 82024

Date: 10/3/87 Time: 1100 AM

(Analytical Spikes)

[redacted]	53	1	53
[redacted]	CV (386-7) TV: 0.050	2	CV
[redacted]	CB	3	CB
4	RB (soil)	4	LCS
[redacted]	LCS (soil)	5	182-8029-1 spike then dilute
6	182-8029-1	6	1R
[redacted]	1R	7	2
[redacted]	2	8	CV
9	CV	9	CB
[redacted]	CB	10	
11	182-8029-2s	11	
[redacted]	~~Lcsat~~ CV	12	
13	CB	13	
14		14	
[redacted]		15	
16		16	
[redacted]		17	
18		18	
[redacted]		19	
20		20	
21		21	
[redacted]		22	
23		23	
[redacted]		24	
25		25	
[redacted]		26	
[redacted]		27	
28		28	
[redacted]		29	
30		30	
[redacted]		31	
32		32	
[redacted]		33	
[redacted]		34	
35		35	

[redacted]Comments:

004930

004930

Acme-Labs Research, Inc.

F 7014 Rev. D

GC/MS Injection Log

Element: Se. MSA

Analyst: GK

Date: 10/5/87 Time: 730 AM

FE 5000 No. 82067 ____ FE 5000M No. 82143 ✓

FE 603 No. 82034 ____

Date: ____ Time: ____

1 .53	1
2 CV 386-I	2
3 CB	3
4 1 CS (soil) /x2	4
5 +50% /x2	5
6 +100% /x2	6
7 +150% /x2	7
8 1 CS (H_2O) /x2	8
9 +50% /x2	9
10 +100% /x2	10
11 +150% /x2	11
12	12
13	13
14	14
15	15
16	16
17	17
18	18
19	19
20	20
21	21
22	22
23	23
24	24
25	25
26	26
27	27
28	28
29	29
30	30
31	31
32	32
33	33
34	34
35	35

Comments:

004931

[redacted]ulabs Research, Inc.

F 7014 Rev. D

EPA RCA Injection Log

Element: Se

Analyst: AW

Date: 10.6.87 Time: 900 PM

FE 5000 No. 82067 _____ FE 5000C No. 82143 _____

FE 600 No. 82034 _____

Date: _____ Time: _____

S3	1
CV	2
CB	3
4 RI-SCIS-1 (A)	4
CV	5
6 CB	6
	7
	8
9	9
	10
11	11
	12
13	13
14	14
15	15
16	16
17	17
18	18
19	19
20	20
21	21
22	22
23	23
24	24
25	25
26	26
27	27
28	28
29	29
30	30
31	31
32	32
33	33
34	34
35	35

Comments:

[redacted]-Labs Research, Inc.

[redacted]ment: TI

[redacted]lyst: AW

[redacted]te: 10.7.87 [redacted]me: 630 PM

[redacted] C3

EPA GC/MS Injection Log

F 7014 Rev. D

FE 5000 No. 82067 ✓ FE 50000 No. 82143

FE 603 No. 82034

Date: 10 8 87 Time: 830

2 CV		1	Air
[redacted] CC		2	CV
4 CE		3	CE 3CV-4 2x
[redacted] CC		4	~~PRB~~ LCS - WATER spk, filter 2x
[redacted] 181-C[illegible]		5	~~SRCS~~ 181-8018-1
7 [redacted] C		6	181-8018-1R
[redacted] E		7	2
9 CV		8	3
[redacted] CC		9	CV
11 181-8018-2C		10	CB
[redacted] 3		11	181-8018-4
[redacted] 4		12	5
14 5		13	184-8018-1
[redacted] 184-8018-1		14	2
16 CV		15	3
[redacted] CB		16	CV
18 184-8018-2		17	CB
19 3		18	184-8018-4
[redacted] 4		19	5
21 5		20	6
[redacted] 6		21	185-8016-1
23 CV		22	1R
[redacted] CC		23	CV
25 185-8016-1		24	CB
[redacted] 1R		25	185-8016-2
[redacted] 2		26	3
28 CV		27	LCS - SOIL
[redacted] 5		28	182-8029-1
30 CV		29	1R
[redacted] CB		30	CV
32		31	CB
[redacted]		32	182-8029-2
35		33	CV
[redacted]mments:		34	CB
		35	

004933

004933

[redacted]-Labs Research, Inc.

F 7014 Rev. D

EPA ECA Injection Log

[redacted]ement: Sn

[redacted]Analyst: JP

[redacted]te: 9.25.87 [redacted]Time: 10:30

FE 5000 No. 82067 ✓ FE 50000 No. 82143

FE 600 No. 82034

Date: Time:

[redacted]	Std	1	182-8029-2 Continued
[redacted]	CV	2	CV
[redacted]	CB	3	CB
4	RB - water	4	182-8029-2S
[redacted]	LCS - water	5	185-8016-2S
[redacted]	181-8018-1	6	185-8016-2S -2x
7	1R	7	CV
[redacted]	2	8	CB
9	CV	9	
[redacted]	CB	10	
11	181-8018-2S	11	
[redacted]	3	12	
[redacted]	4	13	
14	5	14	
[redacted]	184-8018-1	15	
16	CV	16	
[redacted]	CB	17	
18	184-8018-2	18	
[redacted]	3	19	
20	4	20	
21	5	21	
[redacted]	6	22	
23	CV	23	
[redacted]	CB	24	
25	185-8016-1	25	
26	1R	26	
27	2	27	
28	2S	28	
[redacted]	3	29	
30	CV	30	
31	CB	31	
32	RB - SOIL	32	
33	LCS - SOIL	33	
34	182-8029-1	34	
35	1R	35	

[redacted]Comments:

004934

[redacted]-Labs Research, Inc.

[redacted]ment: Sn

Analyst: [redacted]

[redacted]: 9.25.97 Time: 400 PM

EPA ECA Injection Log

F 7014 Rev. D

FE 5000 No. 82067 V FE 50002 No. 82142

FE 603 No. 82034

Date: 9.25.97 Time: 500 PM

[redacted]	std	1	SS
[redacted]	CV	2	CV
[redacted]	CB	3	CB
[redacted]	LCS-water	4	184-8018-5 AIC
[redacted]	181-8018-1	5	-5 AIC (AS)
[redacted]	1R	6	CV
[redacted]	2	7	CB
[redacted]	3	8	
9	CV	9	
[redacted]	CB	10	
11	181-8018-4	11	
[redacted]	5	12	
[redacted]	184-8018-1	13	
14	2	14	
[redacted]	3	15	
16	CV	16	
[redacted]	CB	17	
18	184-8018-4	18	
[redacted]	5	19	
[redacted]	6	20	
21	185-8016-1	21	
[redacted]	1R	22	
23	CV	23	
[redacted]	CB	24	
[redacted]	185-8016-2	25	
[redacted]	3	26	
[redacted]	LCS-SOIL	27	
28	182-8029-1	28	
[redacted]	1R	29	
30	CV	30	
[redacted]	CB	31	
[redacted]	182-8029-2	32	
33		33	
[redacted]		34	
35		35	

[redacted]ments:

004935

004935

Accu-Labs Research, Inc. F 7014 Rev. B

EPA ECA Injection Log

Element: V FE 5000 No. 82067 ✓ FE 50000 No. 82142 ____

Analyst: g JP FE 602 No. 82034 ____

Date: 10/8/87 Time: ~~2:30~~ Date: 10-12-87 Time: 10:00

1	Std	1	Std
2	CV ICV-1 10x +V=0.511	2	CV all at 2x
3	CB	3	CB
4	RB	4	LCS-water
5	LCS 10x	5	181-8018-1
6	181-8018-1	6	1R
7	1R	7	2
8	2	8	3
9	CV	9	CV
10	CB	10	CB
11	181-8018-2S	11	181-8018-4
12	3	12	5
13	4	13	184-8018 1
14	5	14	2
15	184-8018-1	15	3
16	CV	16	CV
17	CB	17	CB
18	184-8018-2	18	184-8018-4
19	3	19	5
20	4	20	6
21	5	21	185-8016-1
22	6	22	1R
23	CV	23	CV
24	CB	24	CB
25	185-8016-1	25	185-8016-2
26	1R	26	3
27	2	27	LCS-soil
28	2S	28	182-8029-1
29	3	29	1R -2x +soil
30		30	CV
31		31	CB
32		32	182-8029-2
33		33	
34		34	
35		35	

Comments:

004936

Nova-Labs Research, Inc.

F 7014 Rev. D

EPA ECA Injection Log

Element: V

Analyst: [illegible]

Date: [illegible] Time: [illegible]

FE 5000 No. 82067 _____ FE 5000D No. 82143 _____

FE 600 No. 82034 ✓

Date: 10-10-87 Time: 10:00 am

1	[illegible]	1	Std
2	[illegible]	2	CV
3	[illegible]	3	CB
4	[illegible]	4	182-8029-1R -2x
5	[illegible]	5	25 -2x
6	[illegible]	6	IV
7	1R	7	CB
8	2	8	
9	[illegible]	9	
10	[illegible]	10	
11	[illegible]	11	
12	[illegible]	12	
13	[illegible]	13	
14		14	
15		15	
16		16	
17		17	
18		18	
19		19	
20		20	
21		21	
22		22	
23		23	
24		24	
25		25	
26		26	
27		27	
28		28	
29		29	
30		30	
31		31	
32		32	
33		33	
34		34	
35		35	

Comments:

004937

Acme-Lab Research, Inc.

Element: V

Analyst: EH

Date: 10/13/87 Time: 11:00am

ZZ ZZX Injection Log

F 7014 Rev. D

ZZ 5000 No. 82067

ZZ 603 No. 82024 ✓

ZZ 5000 No. 82142

1	std		
2	CV		
3	CB		
4	185-8018-3 10x		
5	3 · 10x Gmasek		
6	CV		
7	CB		
8			
9			
10			
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15			
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35			

Comments:

Date: 10/13/87 Time: 11:00am

1	std		
2	CV		
3	CB		
4	LCS		
5	+50%		-0.047
6	+100%		(+0.025)
7	+150%		(+0.050)
8	181-8018-3		(+0.075) /2x
9	+50%		-0.078
10	+100%		(+0.040) /2x
11	+150%		(+0.080) /2x
12	184-8018-3		(+0.120) /2x
13	+50%		-0.061
14	+100%		(+0.030)
15	+150%		(+0.060)/2x
16	184-8018-4		(0.090)/2x
17	+50%		0.041
18	+100%		(0.020)
19	+150%		(+0.040)
20	184-8018-5		(+0.060)/2x
21	+50%		0.063
22	+100%		(+0.030)
23	+150%		(+0.060)/2x
24	CV		(0.090)/2x
25	CB		
26	185-8018-1		0.043
27	+50%		(+0.020)
28	+100%		(+0.040)
29	+150%		(+0.060)/2x
30	185-8018-1R		0.042
31	+50%		(+0.020)
32	+100%		(+0.040)
33	+150%		(+0.060)/2x
34	Cont next Tracy		
35			

004938

Nuclear-Data Research, Inc.

T 7014 Rev. B

EPA ECA Injection Log

Element: V

Analyst: EH

FE 5000 No. 82067 _____ FE 50000 No. 82142 _____

FE 601 No. 82034 ✓

Date: 10/13/87 Time: 4:00pm cont

Date: 10/14/87 Time: 9:00am

1	182-8029-1	0.016 /2x	1	std	
2		+0.025 /2x	2	PV	
3		+0.050 /2x	3	CB	
4		+0.075 /2x	4	184-8018-3	0.061
5	182-8029-2	0.032 /2x	5		+0.030 /2x
6		+0.020	6		+0.060 /2x
7		+0.040	7		+0.090 /2x
8		+0.060 /2x	8	184-8018-5	0.069
9	181-8018-3	0.072	9		+0.030 /2x
10		+0.040 /2x	10		+0.060 /2x
11		+0.080 /2x	11		+0.090 /2x
12		+0.120 /2x	12	185-8016-1	0.043
13	PV		13		+0.020
14	CB		14		+0.040
15			15		+0.060 /2x
16			16	185-8016-1R	0.042
17			17		+0.020
18			18		+0.040
19			19		+0.060 /2x
20			20	182-8029-1	0.096 /2x
21			21		+0.025
22			22		+0.050 /2x
23			23		+0.075 /2x
24			24	PV	
25			25	CB	
26			26	182-8029-2	0.032 /2x
27			27		+0.020
28			28		+0.040
29			29		+0.060
30			30	PV	
31			31	CB	
32			32		
33			33		
34			34		
35			35		

Comments:

004939

Accu-Labs Research, Inc.

F 7003 Rev. B

Internal Chain of Custody
Original Sample

Case Number 8016

ALR Number 185-8016-3

Log-in Date 9-14-87

Location ✓

Log-in Time 1:00

Sample Type H_2O

Sample Custodian ck

Preservation and Volume 3-L HNO_3

Comments:

Date	Time Out	Analyst	Time In	Analyst	Analysis Performed	Comments
9.18.87	7:45	DA	8:00	DA	Hg	
9/18/87	11:00	[illegible]	12:30	[illegible]	digestion	
9/21/87	830	DK	845	DK	digestions	#2

185-8016-6-0043

004940

Accu-Labs Research, Inc.

F 7003 Rev. B

Internal Chain of Custody
Original Sample

Case Number 8016

ALR Number 185-8016-3

Log-in Date 9-14-87

Log-in Time 1:00

Sample Custodian ch

Location 3

Sample Type H_2O

Preservation and Volume 3-L NaOH

Comments:

Date	Time Out	Analyst	Time In	Analyst	Analysis Performed	Comments
9.18.87	7:45	JH	8:00	JH	Hg	
9-23-87	8:55	[illegible]	9:05	[illegible]	dN	#2

004941

Water - Flame Digestion Spikes

	Element	Spk. Sol. Conc. (ppm)	Spike Vol. (ml)	Final Vol. (ml)	Spike Conc. (ppm)
Std. 1	Cr	20	1.0	100	0.200
	Cu	25			0.250
	Pb	50			0.500
	Co	50			0.500
	Fe	100			1.0
Std. 2	Zn	100	0.2	100	0.200
	Mn	100			0.200
Std. 3	Ni	100	0.4	100	0.400
Std. 4	Be	50	0.1	100	0.050
Std. 5	Sn*	100	0.2	100	0.200
	Sb*	25			0.050
Std. 6	Cd	50	0.10	100	0.050
	Ag	50			0.050
Std. 9	Na	1000	10	100	100
Std. 10	Ca	1000	10	100	100
Std. 11	K	1000	5	100	50
Std. 12	Mg	1000	5	100	50
Std. 13	Al	1000	0.2	100	2.0
Std. 14	Ba	1000	0.2	100	2.0

Water - Furnace Digestion Spikes

	Element	Spk. Sol. Conc. (ppm)	Spike Vol. (ml)	Final Vol. (ml)	Spike Conc. (ppm)
Std. 7	As	20	0.1	100	0.020
	Pb	20			0.020
Std. 8	Tl	50	0.1	100	0.050
	Cd	5			0.005
	Se	10			0.010
	V	50			0.050

* HCl/HNO_3 digestion analyzed by furnace atomic absorption.

WRITTEN E.L. DATE [illegible] QA TJB DATE 2-6-86

APPROVED CC

185-8016 [illegible]

004942

004942

St
10.13.87
1:15 PM
TT

-0.276	C	
-0.278	C	
-0.276	AV	
0.000	AZ	
0.163	C	
0.156	C	
0.161	AV	
0.100	S1	
0.202	C	
0.204	C	
0.203	AV	
0.200	S2	
0.076		
0.076	std	
0.076	AV	
0.097	CW	
0.106		
0.101	AV	
0.005	CB	
0.000		
0.003	AV	
0.001	RB	
0.001		
0.001	AV	
0.114		
0.117	CS	
0.116	AV	
-0.001		
-0.001	1	
-0.001	AV	
-0.002		
-0.002	1P	
-0.002	AV	
-0.001		
-0.001	2	
-0.001	AV	
0.107		
0.116	CW	
0.111	AV	
0.002		
-0.001	CB	
0.001	AV	
0.001		
-0.001	2S	
-0.000	AV	
-0.003		
-0.002	3	
-0.002	AV	
-0.002		
-0.001	4	
-0.002	AV	
-0.002		
-0.001	5	
-0.002	AV	
-0.003		
-0.002	1	
-0.003	AV	
0.109		
0.120	CW	
0.114	AV	
0.003		
-0.001	CB	
0.001	AV	

185-8012-6-0025

St cont.

-0.004		
-0.003	2	
-0.003	AV	
-0.004		
-0.003	3	
-0.003	AV	
-0.004		
-0.002	4	
-0.003	AV	
-0.003	5	
-0.004		
-0.003	AV	
-0.002		
-0.003	6	
-0.002	AV	
0.109		
0.108	CW	
0.109	AV	
0.002		
-0.001	CB	
0.000	AV	
-0.002		
-0.003	1	
-0.003	AV	
-0.004		
-0.003	1R	
-0.003	AV	
-0.003		
-0.003	2	
-0.003	AV	
-0.003		
-0.003	2S	
-0.003	AV	
0.110		
0.122	BCV	
0.116	AV	
0.788	CCV	
0.797	mixing solution	
0.792	AV	
0.048		
0.001	CB	
0.023	AV	
-0.003	RERUN	
-0.004	CB	
-0.004	AV	

St cont.

-0.290		
-0.291		
-0.290	AV	
0.000	AZ	
0.173		
0.189		
0.161	AV	
0.100	S1	
0.185	C	
0.184	C	
0.185	AV	
0.200	S2	
0.112		
0.115	CW	
0.113	AV	
0.000		
-0.001	CB	
-0.000	AV	
-0.000	1S	
-0.001	3	
-0.000	AV	
0.115		
0.116	CW	
0.116	AV	
0.000		
-0.001	CB	
-0.000	AV	

004943

Sb
10.13.87
100 ppm
for analytical spikes

-0.294	
-0.293	
-0.294	AV
0.000	AZ
0.269	
0.267	
0.268	AV
0.100	S1
0.182	C
0.182	C
0.182	AV
0.200	S2
0.067	
0.067	S3
0.067	AV
0.106	
0.109	CW
0.107	AV
0.000	
-0.000	CB
0.000	AV
0.116	
0.117	LCS
0.117	AV
0.103	
0.102	1
0.102	AV
0.103	IR
0.104	
0.104	AV
0.102	
0.106	2
0.104	AV
0.102	3
0.105	
0.103	AV
0.117	
0.116	CW
0.117	AV
0.000	
-0.000	CB
0.000	AV
0.107	
0.106	4
0.106	AV
0.133	
0.133	5
0.133	AV
0.119	1
0.117	
0.118	AV
0.115	7
0.114	
0.114	AV
0.112	
0.112	3
0.112	AV
0.124	
0.122	CW
0.123	AV
0.000	CB
-0.000	
0.000	AV

reanalyze

Sb
10.14.87
8:00
50 ppb
analytical spikes

-0.379	
-0.383	
-0.381	AV
0.000	AZ
0.229	
0.233	
0.231	AV
0.100	S1
0.192	C
0.192	C
0.192	AV
0.200	S2
0.069	
0.067	std
0.066	AV
0.078	
0.065	std
0.069	AV
0.112	
0.127	CW
0.120	AV
0.000	
-0.001	CB
-0.000	AV
0.101	
0.100	4
0.101	AV
0.111	
0.101	5
0.106	AV
0.104	1
0.104	
0.104	AV
0.102	
0.104	2
0.103	AV
0.103	3
0.096	
0.100	AV
0.120	
0.122	CW
0.121	AV
-0.001	
-0.001	CB
-0.001	AV
0.101	
0.103	4
0.102	AV
0.105	5
0.105	
0.105	AV
0.098	
0.105	6
0.102	AV
0.100	1
0.095	
0.098	AV
0.111	
0.100	IR
0.106	AV
0.128	
0.126	CV
0.125	AV

reanalyze

Sb analytical Spikes cont

-0.384	
-0.386	
-0.385	AV
0.000	AZ
0.235	
0.242	
0.239	AV
0.100	S1
0.189	C
0.192	C
0.190	AV
0.200	S2
0.071	
0.069	std
0.070	AV
0.106	
0.115	CV
0.110	AV
0.004	
0.000	CB
0.002	AV
0.091	
0.087	4
0.089	AV
0.099	
0.093	5
0.096	AV
0.103	
0.105	6
0.104	AV
0.084	
0.086	1
0.085	AV
0.092	
0.092	IR
0.092	AV
0.115	
0.121	CV
0.118	AV
0.004	
-0.001	CB
0.002	AV
0.081	2
0.082	
0.082	AV
0.115	
0.113	3
0.114	AV
0.144	
0.146	LCS
0.145	AV
0.103	
0.101	1
0.102	AV
0.103	
0.100	IR
0.101	AV
0.111	CV
0.118	
0.114	AV
0.003	
-0.001	CB
0.001	AV

Sb analytical Spks cont.

0.096	
0.096	2
0.097	AV
0.110	
0.116	CV
0.114	AV
0.005	
-0.000	CB
0.003	AV

004944

As 10/5/87 ok

	-0.004	
	-0.003	
208	-0.004	AV
	0.000	AZ
	0.233	
	0.233	
209	0.233	AV
	0.050	S1
	0.097	C
	0.099	S2
210	0.098	AV
	0.100	S2
	0.071	
	0.071	S3
211	0.071	AV
	0.052	
	0.052	CV
212	0.052	[illegible]
	-0.000	
	-0.000	CB
213	-0.000	[illegible]
	-0.000	
	-0.000	CB
214	-0.000	[illegible]
	0.052	
	0.054	LCS
215	0.053	[illegible]
	0.005	1
	0.004	
216	0.004	[illegible]
	0.004	
	0.004	1R
217	0.004	[illegible]
	0.004	
	0.004	2
218	0.004	[illegible]
	0.047	
	0.049	CV
219	0.048	[illegible]
	0.000	
	0.000	CB
220	0.000	[illegible]
	0.004	
	0.004	2S
221	0.004	[illegible]
	0.013	
	0.014	3
222	0.013	AV
	0.008	
	0.008	4
223	0.008	AV
	-0.000	
	-0.000	5
224	-0.000	AV
	0.006	
	0.006	1
225	0.006	AV
	0.048	
	0.049	CV
226	0.048	AV
	0.000	CB
	-0.000	
227	-0.000	AV

As cont 10/6/87

	0.006	
	0.006	2
228	0.006	AV
	0.015	
	0.015	3
229	0.015	AV
	0.008	
	0.008	4
230	0.008	AV
	0.012	
	0.012	5
231	0.012	AV
	0.000	
	0.000	6
232	0.000	AV
	0.046	
	0.046	CV
233	0.046	AV
	0.000	
	0.000	CB
234	0.000	AV
	0.002	
	0.002	1
235	0.002	AV
	0.002	
	0.002	1R
236	0.002	AV
	0.005	
	0.005	2
237	0.005	AV
	0.005	
	0.005	2S
238	0.005	AV
	0.000	
	-0.000	3
239	-0.000	AV
	0.047	
	0.046	CV
240	0.046	AV
	-0.000	
	0.001	CB
241	0.000	A

As 10/5/87 MS4 9004m ok

269	0.007	
	0.000	AZ
270	0.211	
	0.050	S1
271	0.095	C
	0.100	S2
272	0.074	[illegible]
273	0.048	CV
274	-0.000	CB
275	0.025	
276	0.032	
277	0.036	LCS
278	0.048	
279	0.014	
280	0.017	1R [illegible] .3
281	0.021	
282	0.024	
283	0.007	
284	0.011	1R [illegible] .4
285	0.015	
286	0.019	
287	0.015	
288	0.019	1R [illegible]
289	0.021	3
290	0.025	
291	0.012	
292	0.015	1R [illegible]
293	0.019	5
294	0.022	
295	0.046	CV
296	0.000	CB
297	0.012	
298	0.016	1R [illegible]
299	0.020	.1
300	0.023	
301	0.023	
302	0.047	
303	0.036	LCS [illegible]
304	0.045	
305	0.048	CV
306	0.000	CB
307	0.048	
308	0.060	LCS [illegible]
309	0.046	
310	0.058	
311	0.015	
312	0.016	1R
313	0.020	3
314	0.021	
315	0.047	
316	-0.001	

004945

As 10.5.87 700 PM

	0.012	
	0.013	
269	0.013	AV
	0.000	AZ
	0.198	
	0.206	
270	0.202	AV
	0.050	S1
	0.097	C
	0.099	C
271	0.098	AV
	0.100	S2
	0.071	
	0.072	S3
272	0.071	AV
	0.051	
	0.050	W
273	0.051	AV
	0.001	
	0.000	CB
274	0.001	AV
	-0.000	
	-0.000	RG
275	-0.000	AV
	0.053	
	0.053	LCS
276	0.053	AV
	0.014	
	0.013	1
277	0.014	AV
	0.012	
	0.012	IR
278	0.012	AV
	0.013	
	0.013	2
279	0.013	AV
	0.049	
	0.050	W
280	0.049	AV
	-0.000	
	-0.000	CB
281	-0.000	AV
	0.050	
	0.040	25
282	0.045	AV
	0.050	
	0.051	W
283	0.051	AV
	0.001	
	0.000	CB
284	0.000	AV

As 10.8.87 100 PM

	0.008	C
	0.007	C
	0.007	AV
	0.000	AZ
	0.223	C
	0.227	C
270	0.225	AV
	0.050	S1
	0.099	C
	0.099	C
271	0.099	AV
	0.100	S2
	0.067	
	0.069	S3
272	0.068	AV
	0.052	
	0.052	W
273	0.052	AV
	0.001	
	0.000	CB
274	0.000	AV
	0.065	
	0.068	LCS
275	0.066	AV
	0.020	
	0.020	1
276	0.020	AV
	0.021	
	0.021	IR
277	0.021	AV
	0.020	
	0.019	2
278	0.019	AV
	0.029	
	0.029	3
279	0.029	AV
	0.051	
	0.051	W
280	0.051	AV
	0.001	
	0.000	CB
281	0.000	AV
	0.024	
	0.024	4
282	0.024	AV
	0.019	
	0.019	5
283	0.019	AV
	0.023	
	0.024	1
284	0.024	AV
	0.024	
	0.024	2
285	0.024	AV
	0.030	
	0.030	3
286	0.030	AV
	0.050	
	0.050	W
287	0.050	AV
	0.001	
	0.000	CB
288	0.000	AV

As cont

	0.025	4
289	0.025	AV
	0.028	
	0.028	5
290	0.028	AV
	0.017	
	0.017	6
291	0.017	AV
	0.019	
	0.018	1
292	0.018	AV
	0.018	
	0.018	IR
293	0.018	AV
	0.046	
	0.048	W
294	0.047	AV
	0.001	
	0.001	CB
295	0.001	AV
	0.022	
	0.021	2
296	0.022	AV
	0.019	
	0.019	3
297	0.019	AV
	0.030	1B2
	0.030	1
298	0.030	AV
	0.029	
	0.030	IR B2
299	0.029	AV
	0.050	
	0.051	W
300	0.051	AV
	0.001	CB
	0.001	
301	0.001	AV
	0.030	1B2
	0.029	2
302	0.030	AV
	0.064	SOL
	0.066	LCS
303	0.065	AV
	0.049	W
	0.048	
304	0.048	AV
	0.001	
	0.001	CB
305	0.001	AV

004946

Pb 10/1/87 600 PW

	-0.157	
	-0.159	
208	-0.158	AV
	0.000	AZ
	0.233	
	0.240	
209	0.237	AV
	0.050	S1
	0.089	C
	0.089	C
210	0.089	AV
	0.100	S2
	0.075	
	0.074	S3
211	0.075	AV
	0.051	
	0.051	CW
212	0.051	AV
	0.001	
	-0.001	CB
213	0.000	AV
	-0.001	
	-0.002	CB
214	-0.001	AV
	0.095	
	0.100	LCS
215	0.097	AV
	0.052	
	0.048	1
216	0.050	AV
	0.050	
	0.049	1R
217	0.050	AV
	0.156	C
	0.199	C 2
218	0.195	AV
	0.052	
	0.050	CW
219	0.051	AV
	-0.001	
	-0.002	CB
220	-0.001	AV
	2.806	C
	6.329	C
221	3.936	AV
	0.038	
bad rev	0.025	2(x)
222	0.032	AV
	0.017	SS(x)
	0.016	
223	0.017	AV
	0.020	2(x)
	0.020	
224	0.020	AV
	0.052	
	0.053	CW
225	0.052	AV
	-0.002	
	-0.003	CB
226	-0.002	AV

Soils

Pb 10.1.87

	-0.150	
	-0.159	
208	-0.155	AV
	0.000	AZ
	0.250	
	0.261	
209	0.256	AV
	0.050	S1
	0.089	C
	0.088	C
210	0.089	AV
	0.100	S2
	0.072	
	0.072	S3
211	0.072	AV
	0.048	
	0.049	CW
212	0.048	AV
	0.000	
	0.000	CB
213	0.000	AV
	0.054	
	0.055	LCS
214	0.055	AV
	0.038	
	0.037	1
215	0.038	AV
	0.038	
	0.038	1R
216	0.038	AV
	0.038	
	0.038	2
217	0.038	AV
	0.053	
	0.053	3
218	0.053	AV
	0.050	
	0.052	CW
219	0.051	AV
	-0.000	
	-0.001	CB
220	-0.000	AV
	0.066	
	0.066	4
221	0.066	AV
	0.009	
	0.009	5
222	0.009	AV
	0.065	
	0.065	1
223	0.065	AV
	0.064	
	0.064	2
224	0.064	AV
	0.060	
	0.059	3
225	0.059	AV
	0.051	
	0.052	CW
226	0.051	AV
	-0.000	
	-0.001	CB
227	-0.000	AV

	0.063	
	0.064	4
	0.064	AV
	0.062	
	0.061	5
	0.061	AV
	0.009	
	0.008	6
	0.008	AV
	0.038	
	0.039	1
	0.038	AV
	0.038	
	0.038	1R
	0.038	AV
	0.049	
	0.049	CW
	0.049	AV
	-0.000	
	-0.000	CB
	-0.000	AV
	0.047	2
	0.048	
	0.048	AV
	0.009	
	0.009	3
	0.009	AV
	0.055	
	0.055	LCS
	0.055	AV
	0.053	1
	0.052	
	0.053	AV
	0.055	
	0.054	1R
	0.055	AV
	0.049	
	0.049	CW
	0.049	AV
	0.001	
	-0.000	CB
	0.000	AV
	0.030	
	0.029	2(x10)
	0.030	AV
	0.049	
	0.050	CW
	0.050	AV
	0.000	
	-0.000	
	0.000	AV

Spikes for HC and soil

004947

Pb
9.30.87
600 PM
AJN

	-0.111	
	-0.108	
206	-0.109	AV
	0.000	AZ
	0.247	
	0.247	
207	0.247	AV
	0.050	S1
	0.085	C
	0.084	C
208	0.085	AV
	0.100	S2
	0.071	
	0.071	S3
209	0.071	AV
	0.048	W
	0.049	
210	0.049	AV
	0.001	
	0.000	CB
211	0.001	AV
	0.000	
	0.000	fb
212	0.000	AV
	0.119	C
	0.115	C LCS
213	0.119	AV
	0.029	
	0.029	1
214	0.029	AV
	0.030	
	0.030	IR
215	0.030	AV
	0.028	
	0.028	2
216	0.028	AV
	0.050	
	0.050	W
217	0.050	AV
	0.001	
	0.001	CB
218	0.001	AV
	0.028	
	0.028	2S
219	0.028	AV
	0.045	
	0.045	3
220	0.045	AV
	0.058	
	0.058	4
221	0.058	AV
	0.001	
	0.000	5
222	0.000	AV
	0.057	
	0.056	1
223	0.056	AV
	0.045	
	0.045	W
224	0.045	AV
	0.001	
	0.000	CB
225	0.001	AV

Percent

	0.053	
	0.054	2
226	0.053	AV
	0.048	
	0.048	3
227	0.048	AV
	0.057	
	0.058	4
228	0.057	AV
	0.053	
	0.054	5
229	0.053	AV
	0.001	
	0.000	6
230	0.001	AV
	0.044	
low	0.045	W
231	0.044	AV
	0.001	
	0.000	CB
232	0.001	AV
	0.000	
	0.000	
235	0.000	AV
	0.000	AZ
	0.044	
	0.045	
236	0.044	AV
	0.050	S1
	0.087	C
	0.087	C
237	0.087	AV
	0.100	S2
	0.050	
	0.050	W
238	0.050	AV
	0.001	
	0.001	CB
239	0.001	AV
	0.058	
	0.060	2
240	0.059	AV
	0.053	
	0.053	3
241	0.053	AV
	0.064	
	0.063	4
242	0.063	AV
	0.060	
	0.059	5
243	0.060	AV
	0.001	
	0.000	6
244	0.000	AV
	0.049	
	0.043	W
245	0.049	AV
	0.001	
	0.000	CB
246	0.001	AV

	0.034	
	0.033	1
247	0.034	AV
	0.032	
	0.032	IR
248	0.032	AV
	0.044	
	0.044	2
249	0.044	AV
	0.045	
	0.045	2S
250	0.045	AV
	0.001	
	0.001	3
251	0.001	AV
	0.051	
	0.051	W
252	0.051	AV
	0.001	
	0.000	CB
253	0.001	AV
	0.045	
	0.045	LCS (4+2)
254	0.045	AV x 2
	0.053	
	0.053	W
255	0.053	AV
	0.001	
	0.001	CB
256	0.001	AV

waters

004948

Pb
10.7.87
600PM

211	-0.177	C	
	0.000	AZ	
212	0.267	C	
	0.050	S1	
213	0.090	C	
	0.100	S2	
214	0.067	S3	
215	0.045	CW	
216	-0.000	CB	
217	0.033		
218	0.045		181-
219	0.058		1F
220	0.067		
221	0.026		
222	0.039		181-
223	0.048		3
224	0.058		
225	0.062		
226	0.078		181-
227	0.055		4
228	0.064		
229	0.061		
230	0.082		184-
231	0.055		2
232	0.065		
233	0.049		
234	0.070		184-
235	0.086		3
236	0.061		
237	0.049	CW	
238	-0.000	CB	
239	0.034		
240	0.048		185-
241	0.056		1
242	0.067		
243	0.038		
244	0.048		185-
245	0.058		2
246	0.066		
247	0.048	CW	
248	-0.000	CB	

211	-0.057	
		Pb-MS4
211	-0.146	10/6/87
		730 4m gk
211	-0.150	
	0.000	AZ
212	0.312	
	0.050	S1
213	0.085	C
214	0.085	C
	0.100	S2
215	0.072	S3
216	0.058	CW
217	-0.001	CB
218	0.029	185-8016
219	0.044	1F
220	0.037	
221	0.047	
222	0.097	
223	0.115	C soil LCS
224	0.070	RR
225	0.084	
226	0.046	
227	0.082	182-1R
228	0.068	
229	0.088	
230	0.055	
231	0.065	184-4
232	0.049	
233	0.060	
234	0.043	
235	0.054	184-3
236	0.043	
237	0.051	
238	0.048	CW
239	-0.001	CB

Pb-MS4 10/6/87 1100 4m gk

240	0.030	185-8016-1
241	0.040	
242	0.029	
243	0.034	
244	0.049	CW
245	-0.000	CB
246	0.096	
247	0.059	soil LCS
248	0.072	
249	0.082	
250	0.029	
251	0.043	185-1R
252	0.069	
253	0.098	
254	0.052	CW
255	-0.000	CB

004949

Se
10.2.87
200PM
JP/AJN

0.018
0.018
0.018 AV
0.000 AZ
0.136
0.135
0.136 AV
0.050 S1
0.059 C
0.100 C
0.099 AV
0.100 S2
0.071
0.071 std
0.071 AV
0.047
0.047 CW
0.047 AV
0.000
0.001 CB
0.001 AV
0.000
0.000 RB
0.000 AV
0.103
0.104 LCS
0.103 AV
0.001
0.001 1
0.001 AV
0.001
0.000 IR
0.000 AV
0.001
0.001 2
0.001 AV
0.046
0.046 CW
0.046 AV
0.001
0.000 CB
0.001 AV
0.000
0.000 2S
0.000 AV
0.001
0.001 3
0.001 AV
0.000 4
0.000
0.000 AV
0.000
0.000 5
0.000 AV
0.000 1
0.000
0.000 AV
0.045
0.046 CW
0.046 AV
0.000
0.000 CB
0.000 AV

Se cont

0.000 2
0.000 AV
0.000
0.000 3
0.000 AV
0.000
0.000 4
0.000 AV
0.000
0.000 5
0.000 AV
0.000
0.000 6
0.000 AV
0.047
0.046 CW
0.046 AV
0.001
0.000 CB
0.000 AV
0.001
0.000 1
0.000 AV
-0.000
0.000 IR
0.000 AV
-0.000
0.000 2
-0.000 AV
-0.001
-0.000 2S
-0.000 AV
0.000
-0.000 3
0.000 AV
0.048
0.048 CW
0.048 AV
0.000
0.000 CB
0.000 AV
0.053
0.053 LCS CW
0.053 AV
0.050
0.051 CW
0.050 AV
0.000
0.000 CB
0.000 AV

Se
10.2.87
200PM
AJN

0.008
0.009
0.009 AV
0.000 AZ
0.131
0.129
0.130 AV
0.050 S1
0.105 C
0.103 C
0.106 AV
0.100 S2
0.076
0.074 S3
0.075 AV
0.050
0.049 CW
0.050 AV
0.002
0.002 CB
0.002 AV
0.067
0.068 LCS
0.067 AV
0.018
0.009 1
0.014 AV
0.007
0.007 IR
0.007 AV
0.007
0.007 2
0.007 AV
0.006
0.006 3
0.006 AV
0.054
0.054 CW
0.054 AV
0.001
0.001 CB
0.001 AV
0.007
0.007 4
0.007 AV
0.012
0.012 5
0.012 AV
0.008
0.007 1
0.007 AV
0.007
0.006 2
0.007 AV
0.005
0.004 3
0.005 AV
0.054
0.053 CW
0.054 AV
0.002
0.001 CB
0.001 AV

Se cont

0.005
0.006 4
0.006 AV
0.008
0.008 5
0.008 AV
0.012
0.012 6
0.012 AV
0.010
0.011 1
0.010 AV
0.010
0.010 IR
0.010 AV
0.054
0.056 CW
0.055 AV
0.001
0.001 CB
0.001 AV
0.007
0.008 2
0.008 AV
0.012
0.012 3
0.012 AV
0.056
0.055 CW
0.055 AV
0.001
0.000 CB
0.001 AV

Se
10.6.87
700PM
AJN

0.014
0.015
0.014 AV
0.000 AZ
0.102
0.101
0.102 AV
0.050 S1
0.101 C
0.100 C
0.100 AV
0.100 S2
0.070
0.073 S3
0.071 AV
0.048
0.049 CW
0.048 AV
0.000
-0.000 CB
0.000 AV
0.008 1S1
0.008 1 (AS)
0.008 AV
0.050
0.049 CW
0.049 AV
0.000
-0.000 CB
0.000 AV

004950

Se 10/5/87 100ppm GK

0.012
0.012
0.012 AV
0.000 AZ
0.100
0.108
0.104 AV
0.050 S1
0.106 C
0.108 C
0.107 AV
0.100 S2
0.078
0.076
0.077 AV S3
0.055
0.056 CV
0.055 AV
0.000
0.000 CB
0.000 AV
0.000 RB
0.000
0.000 AV
0.057
0.058 LCS
0.058 AV
0.002 I
0.002
0.002 AV
0.002 IR
0.002
0.002 AV
0.001 2
0.001
0.001 AV
0.054
0.055 CV
0.055 AV
0.001
0.001 CB
0.001 AV
0.015
0.016 LS
0.015 AV
0.051
0.051 CV
0.051 AV
0.000
-0.000 CB
-0.000 AV

Se Anal. Sykes 10/3/87 20ppm GK

0.014 C
0.013 C
0.014 AV
0.000 AZ
0.103 C
0.105 C
0.104 AV
0.050 S1
0.101 C
0.100 C
0.100 AV
0.100 S2
0.075
0.074 S3
0.075 AV
0.054
0.053 CV
0.053 AV
-0.000
-0.000 CB
-0.000 AV
0.114 C
0.115 C LCS
0.115 AV
0.014
0.013 I
0.014 AV
0.013
0.012 IR
0.012 AV
0.012
0.012 2
0.012 AV
0.052
0.052 CV
0.052 AV
0.001
-0.001 CB
-0.000 AV
-0.001
-0.001 Empty cup
-0.001 AV
0.058
0.060 LCS
0.059 AV
0.054
0.055 CV
0.055 AV
0.000
0.001 CB
0.000 AV

Se - MS4 10/5/87 800.4nm GK

208	0.014	
208	0.007	
209	0.123	
	0.050 S1	
210	0.091 C	
	0.100 S2	
211	0.074 S3	
212	0.051 CV	
213	0.003 CB	
214	0.053	LCS (soil)
215	0.076	
216	0.106 C	
217	0.125 C	
218	0.054	
219	0.075	LCS (H_2O)
220	0.105 C	
221	0.118 C	
222	0.049 CV	
223	0.004 CB	
224	0.048 +100%	LCS (soil)
225	0.058 +150%	
226	0.047 +100%	LCS (H_2O)
227	0.058 +150%	
228	0.048 CV	
229	0.003 CB	

004951

TP
K.1.97
1:30 PM

-0.294		
-0.294		
-0.294	AV	
0.000	AZ	
0.362		
0.361		
0.372	AV	
0.053	S1	
0.126	C	
0.127	C	
0.127	AV	
0.100	S2	
0.072		
0.074	S3	
0.073	AV	
0.054		
0.053	CW	
0.053	AV	
-0.001		
-0.001	CB	
-0.001	AV	
-0.002	FB	
-0.001		
-0.001	AV	
0.087		
0.089	ICS	
0.088	AV	
-0.001		
-0.002	1	
-0.001	AV	
-0.002		
-0.002	IR	
-0.002	AV	
-0.002		
-0.002	2	
-0.002	AV	
0.045		
0.046	CW	
0.046	AV	
-0.001		
-0.001	CB	
-0.001	AV	
-0.002		
-0.002	2S	
-0.002	AV	
-0.002		
-0.002	3	
-0.002	AV	
-0.002		
-0.002	4	
-0.002	AV	
-0.001	5	
-0.002		
-0.002	AV	
-0.002		
-0.001	1	
-0.002	AV	
0.047		
0.045	CW	
0.047	AV	
-0.001		
-0.001	CB	
-0.001	AV	

T.S. cont.

-0.002		
-0.002	2	
-0.002	AV	
-0.002		
-0.002	2	
-0.002	AV	
-0.002		
-0.003	4	
-0.002	AV	
-0.003	6	
-0.002		
-0.003	AV	
-0.003		
-0.003	6	
-0.003	AV	
0.049		
0.049	CW	
0.049	AV	
-0.003		
-0.003	CB	
-0.003	AV	
-0.003		
-0.002	1	
-0.002	AV	
-0.002		
-0.002	IT	
-0.002	AV	
-0.003	1	
-0.003		
-0.003	AV	
-0.003		
-0.002	2S	
-0.003	AV	
-0.003		
-0.003	3	
-0.003	AV	
0.049		
0.046	CW	
0.047	AV	
-0.003		
-0.003	CB	
-0.003	AV	

004952

TQ
Calibrated Space
10:57
9:00 AM

-0.200
-0.201
-0.203 AV
0.000 AZ
0.000
0.313
0.310 AV
0.050 S1
0.105 C
0.100 C
0.103 AV
0.100 S2
0.069
0.071 SO
0.070 AV
0.040
0.041 CV
0.040 AV
-0.001
-0.001 CB
-0.001 AV
0.052
0.053 LCS
0.053 AV
0.011
0.011 1
0.011 AV
0.011
0.010 12
0.011 AV
0.010
0.011 2
0.011 AV
0.013
0.012 3
0.013 AV
0.050
0.049 CV
0.049 AV
-0.001
-0.002 CB
-0.001 AV
0.008
0.008 4
0.008 AV
0.015
0.016 5
0.016 AV
0.013
0.014 1
0.013 AV
0.014
0.013 2
0.013 AV
0.012
0.011 3
0.012 AV
0.050
0.051 CV
0.050 AV
-0.001
-0.001 CB
-0.001 AV

TQ
cont

0.005
0.005 4
0.005 AV
0.006
0.005 5
0.005 AV
0.017
0.018 6
0.017 AV
0.009
0.009 1
0.009 AV
0.008
0.009 1R
0.009 AV
0.049
0.051 CV
0.050 AV
-0.001
-0.001 CB
-0.001 AV

discontinuity due to equipment repair

TQ
10:9:57
2:00 PM
Sgw

0.002
0.001
0.001 AV
0.000 AZ
0.046
0.050
0.048 AV
0.050 S1
0.101 C
0.099 C
0.100 AV
0.100 S2
0.050
0.048 SO
0.049 AV
0.002
0.001 LCS
0.001 AV
0.016
0.021 CV
0.019 AV
0.016
0.020 3R
0.019 AV
0.050 SO
0.052 LCS
0.051 AV
0.020
0.021 1
0.020 AV
0.021 1R
0.019
0.020 AV
0.047
0.046 CV
0.047 AV
0.002
0.001 CB
0.002 AV
0.022
0.021 2
0.022 AV
0.001
0.002 empty cup
0.001 AV
0.052
0.049 CV
0.051 AV
0.001
0.001 CB
0.001 AV

004953

4.25.87
10:30
JP

-0.275	AV
0.000	AZ
0.099	
0.102	
0.101	AV
0.100	S1
0.216	C
0.214	C
0.215	AV
0.200	S2
0.157	
0.154	std
0.155	AV
0.059	
0.059	CV
0.059	AV
0.000	
-0.002	CB
-0.001	AV
0.006	RB
-0.002	
0.002	AV
0.054	
0.055	LCS
0.055	AV
-0.000	
-0.005	1
-0.003	AV
-0.001	
-0.004	IR
-0.003	AV
-0.003	2
-0.007	
-0.005	AV
~~0.062~~	
~~0.060~~	CV
~~0.061~~	AV
0.052	
0.062	CV
0.057	AV
-0.006	
-0.008	CB
-0.007	AV
0.086	
0.090	2S
0.086	AV
-0.003	3
-0.009	
-0.006	AV
-0.004	
-0.008	4
-0.006	AV
-0.008	
-0.004	5
-0.006	AV
-0.003	
-0.004	1
-0.004	AV
0.056	
0.053	CV
0.055	AV
-0.010	
-0.006	CB
-0.008	AV

repair

cont

-0.008	AV
-0.011	
-0.009	3
-0.010	AV
-0.003	
-0.008	4
-0.006	AV
-0.009	
-0.007	5
-0.008	AV
-0.012	
-0.010	6
-0.011	AV
0.056	
0.053	CV
0.055	AV
-0.009	
-0.012	CB
-0.011	AV
-0.010	
-0.007	1
-0.008	AV
-0.010	
-0.013	IR
-0.011	AV
-0.009	
-0.010	2
-0.009	AV
~~0.194~~	
~~0.251~~	C 2S
~~0.223~~	AV
-0.010	
-0.006	3
-0.008	AV
0.055	
0.054	CV
0.055	AV
-0.008	CB
-0.010	
-0.009	AV
-0.009	RB
-0.009	
-0.009	AV
0.046	
0.047	LCS
0.046	AV
-0.005	1
-0.009	
-0.007	AV
0.001	
-0.002	IR
-0.001	AV
-0.009	
-0.009	2
-0.009	AV
~~0.059~~	CV
~~0.047~~	
~~0.053~~	AV
-0.008	
-0.012	CB
-0.010	AV
0.055	
0.050	CV
0.052	AV

poor injection

poor std dev

Sn cont

0.185	2S
0.176	AV
0.263	C 1S
0.274	C 2S
0.269	AV
~~0.132~~	
~~0.201~~	
~~0.069~~	AV
0.130	1S
0.133	2S-2x
0.131	AV
0.055	
0.053	CV
0.054	AV
-0.013	
-0.016	CB
-0.015	AV

poor injection

004954

Sn
9.25.87
400 PM
Agu

-0.223	
-0.222	AV
0.000	AZ
0.105	
0.097	
0.101	AV
0.100	S1
0.196	C
0.200	C
0.198	AV
0.200	S2
0.146	
0.152	S3
0.149	AV
0.053	
0.050	CU
0.051	AV
-0.005	
-0.001	CB
-0.003	AV
0.132	
0.137	VCS
0.134	AV
0.097	
0.100	1
0.098	AV
0.103	
0.102	IR
0.103	AV
0.103	
0.104	2
0.103	AV
0.105	
0.104	3
0.105	AV
0.056	
0.057	CU
0.057	AV
0.000	
0.000	CB
0.000	AV
0.148	
0.148	4
0.148	AV
0.082	
0.073	5
0.076	AV
0.145	
0.161	1
0.153	AV
0.155	2
0.153	
0.154	AV
0.084	
0.082	3
0.083	AV
0.059	
0.051	CU
0.055	AV
-0.002	
-0.001	CB
-0.001	AV

Sn
Cont.

0.036	4
0.038	AV
0.018	5
0.015	5
0.017	AV
0.082	6
0.084	
0.063	AV
0.111	1
0.105	
0.108	AV
0.099	
0.098	IR
0.098	AV
0.062	
0.055	CU
0.056	AV
0.003	
-0.002	CB
0.001	AV
0.140	
0.131	2
0.135	AV
0.088	3
0.083	
0.085	AV
0.138	
0.132	VCS
0.135	AV
0.089	1
0.087	
0.088	AV
0.097	
0.097	IR
0.097	AV
0.052	
0.044	CU
0.048	AV
-0.002	
-0.003	CB
-0.002	AV
0.082	2
0.086	
0.085	AV
0.048	
0.052	CU
0.050	AV
0.002	
0.001	CB
0.002	AV

Sn
9.25.87
Agu
530 PM

-0.205	
-0.206	
-0.206	AV
0.000	AZ
0.124	
0.149	
0.136	AV
0.100	S1
0.200	C
0.203	C
0.201	AV
0.200	S2
0.156	
0.155	S3
0.157	AV
0.049	
0.050	CU
0.049	AV
-0.003	
-0.003	CB
-0.003	AV
-0.004	184-5
-0.005	X10
-0.004	AV
0.016	184-5
0.015	X10 +AS
0.016	AV
0.050	CU
0.048	
0.049	AV
-0.005	
-0.004	CB
-0.004	AV

004955

V
10-7-87
3.00pm

0.000
-0.006
0.000
0.066
0.067
0.050 I
~~0.066~~ C
0.105 C
0.107 C
0.100 II
0.071
0.072 SLE
0.050
0.051 CU
0.005
0.003 CB
0.001
0.001 CB
0.046
0.046 CB
0.019
0.019 1
0.027
0.025 2
0.020
0.022 3
0.048 CU
0.050
0.006 CB
0.004
0.022 25
0.026
0.079
0.077 3
0.039
0.045 4
0.006
0.005 5
0.048
0.052
0.052
0.052 CU
0.006
0.007 CB
0.052
0.055 2
0.000
0.062 3
0.040
0.042 4
0.005
0.001 5
0.005
0.004 6
0.046
0.046 CU
0.004
0.003 CB

0.045
0.042
0.041
0.042 IR
0.054
0.052 2
0.053 25
0.067
0.001
-0.000 3
0.055
0.055 CU
-0.000
-0.002 CB

V
10-9-87
6:00pm Ajil

-0.000
-0.002
0.000
0.056
0.055
0.050 I
0.091 C
0.099 C
0.100 II
0.077
0.074 SS
0.050
0.047 CU
0.003
0.001 6
-0.001
-0.002 KS
0.045
0.046 25
0.095
0.097 1
0.136 C
0.118 C IR
0.078
0.085 2
0.049
0.048 CU
0.001
-0.001 CB
RR
0.157 C
0.159 C 25
0.044
0.045 CU

V
10-10-87
10:00 am
AP

0.252 C
0.146 C
0.000
-0.000
0.000
0.013
0.011
0.000
0.108
0.111
0.050 I
0.091 C
0.067 C
0.100 II
0.068 SLE
0.070
0.055 CU
0.054
0.001 CB
0.000
0.070 IR 24
0.072
0.077 25
0.074 24
0.046
0.050 CU
0.001
0.001 CB

004956

V
Ama spk
10/12/87
10:00 am
Est/dP

0.000		
0.000		
0.000		
0.051		
0.052		
0.050	I	
0.101	C	
0.102	C	
0.100	II	
0.069		
0.073	Std	
0.051		
0.054	CV	
0.006		
-0.001	CB	
0.057	LCS	
0.057		
0.062		
0.064	1	
0.062		
0.063	1R	
0.062		
0.059	2	
0.095		
0.100	3	
0.050		
0.051	CV	
0.001		
-0.002	CB	
0.066		
0.062	4	
0.041		
0.041	5	
0.078		
0.079	6	
0.076		
0.081	7	
0.072		
0.071	8	
0.051		
0.050	CV	
0.001		
-0.002	CB	
0.060	9	
0.059		
0.070		
0.070	10	
0.044		
0.041	11	
0.054		
0.060	12	
0.058		
0.054		
0.052		
0.054	CV	
0.003		
-0.001	CB	

0.070		
0.070	2	
0.040	3	
0.041		
0.075		
0.078	4	
0.088		
0.087		
0.062	5	
0.064		
0.045	CV	
0.046		
0.002	CB	
0.001		
0.078	2	
0.095		
0.047	CV	
0.046		
0.002	CB	
0.000		

0.002		
0.001		
0.000		
0.048		
0.050		
0.050	I	
0.095	C	
0.096	C	
0.100	II	
0.072	Std	
0.069		
0.051	CV	
0.047		
0.003	CB	
0.001		
0.001	1B6-3	
0.002		
0.10	1B6-3	
0.100	Spk	
0.043		
0.049	CV	
0.003		
0.001	CB	

004957

MSA 10/13/87 1:00pm EH

-0.006
0.000
0.099
0.050 I
0.098 C
0.100 II
0.069
0.054
-0.002
0.046
ACS 0.065
0.059
0.058
0.077
184-3 0.051
0.078
0.100
0.062
184-3 0.091
0.054
0.071
0.043
184-4 0.065
0.054
0.049
0.066
184-3 0.105
0.066
0.063
0.056
-0.001
0.038
185-1 0.060
0.077
0.043
0.048
184 1C 0.069
0.032
0.045
0.053
182 1 0.060
0.048
0.054
0.049
182 1R 0.061
0.075
0.040
0.067
181-3 0.044
0.056
0.064
0.051
-0.006

MSA 10/14/87 9:00am EH

0.539
0.000
0.062
0.050 I
0.112 C
0.100 II
0.071
0.052
-0.009
0.061
184-3 0.044
0.062
0.064
0.073
184-3 0.039
0.062
0.079
0.038
185-1 0.057
0.075
0.046
0.030
185 1R 0.056
0.075
0.050
0.067
182-1 0.093
0.061
0.065
0.050
-0.001
0.056
182 1R 0.067
0.090
0.050
-0.010
0.046

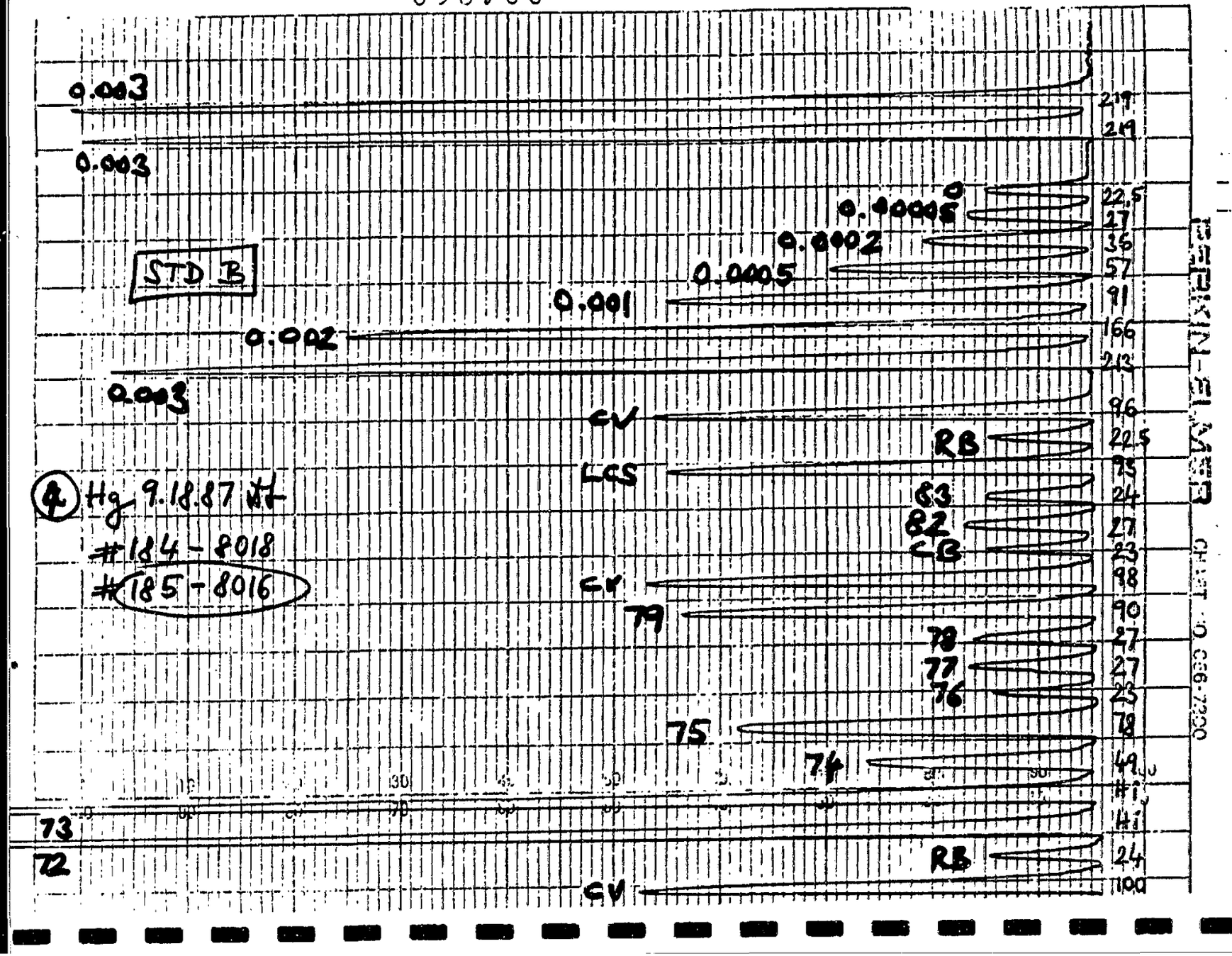
004958

(1.) Hg 9.18.1987 ~~24~~

#175 - 7935
#176 - 7934
#177 - 8000
#182 - 829
#181 - 8018
#184 - 8018
#185 - 8016

STD A

CV	49
23	27
22	42
21	23
20	28
19	27
18	96
17	25
16	30
15	27
14	27
CB	21
CV	97
11	25
10	26
9	101
8	27
7	30
6	23
5	27
4	27
LCS	97
RB	22
CV	95
0	22.5
0.00005	24
0.0002	55
0.0005	58
0.001	92
0.002	159
0.003	225


0.003
0.003
STD B
0.001
0.002
0.003
CV
LCS
Hg 9.18.87
#184-8018
#185-8016
CV
79
75
74
73
72
RB
CV
0.00005
0.0002
0.0005
219
219
22.5
27
36
57
91
166
213
96
22.5
95
24
27
23
98
90
27
27
23
78
49
RB
24
100
PERKIN-ELMER CHART NO 036-7200

NO. 3807108 REV. 8

QUALITY CONTROL SAMPLES

1) NBS 1643b
2) Trace Metal 3 - WP581
3) Trace Metal 3 - WP475
4) Minerals 2 - WP882
5) EP Extract Metals - WP283
6) Trace Metal 2 - WP481
7) Municipal Digested Sludge - 976
8) Trace Metal III - WP581
9) Tin Standard; 1000 ppm - American Scientific Products
10) EP Extract Metals 3 - WP 283 at 10 dilution
11) Trace Metals 1 - WP 284 - I
12) Trace Metals 2 - WP 284 - I
13) Trace Metals 2 - WP 1183-2
14) Trace Metals - WP 378-13
15) Trace Metals - WP 1183 - III #1
16) Trace Metals - WP 386 - 1
17) Trace Metals - WP 1185
18) Trace Metals - WP 378-2
19) Trace Metals - WP 1183 - II

004961

WRITTEN [illegible] DATE [illegible] QA TJB DATE 12-12-85

APPROVED [illegible]

PAGE 1 OF 1

185-8016-[illegible]-0022

Accu-Labs Research, Inc.

F 7019 Rev. F

EGA Analytical Spikes

Element: Sb Procedure No. 3807204 Date: 10-13-87 Time 10:00
Wavelength: 217.6 nm EG ____ PE 5000 No. 82067 ✓ Analyst: AJM
Matrix Modifier: ____ PE 603 No. 82034 ____ I.D.L.: 0.003 (ppm)
Water ____ ✓Soil ____ Other ____ PE 5000Z No. 82143 ____ Page 1 of 2

STANDARDS (ppm)

Date Prepared: 10.13.87 Prepared by: JP

	Initial	Recalibration	Final
Calibration Blank	0.000		
Standard 1	0.172 abs = 0.265		
Standard 2	0.200		
Standard 3: (0.070)	0.067 % = 96	% =	% =

Sample Number	Sample Dilution	Sample Conc. (ppm)	Dilution Factor	Reading 1	Reading 2	Avg. Conc. (ppm)	% Rec.
Initial Calib.	X	X	X	X	X	X	X
Calib. Verification	X	X	1.0	0.106	0.104	0.107	96
Calib. Blank	X	✓	1.0	0.000	0.000	<0.003	
LCS	1.0	0.116	2.0	0.116	0.117	0.117	98
161-8018-1		<0.003	1.0	0.163	0.102	0.102	85
1R		<0.003		0.103	0.104	0.104	87
2		<0.003		0.102	0.106	0.104	87
3	✓	<0.003		0.102	0.105	0.103	86
Calib. Blank	X	X		0.000	0.000	<0.003	
Calib. Verification	X	X	✓	0.117	0.116	0.117	107
Recalibration	X	X	X	X	X	X	X
Calib. Verification							
Calib. Blank							
Calib. Blank							
Calib. Verification							
Final Calibration	X	X	X	X	X	X	X
Calib. Verification							
Calib. Blank							

LCS and Calibration Verification: ICV-3 True Value: 0.109 (ppm)

CRDL: 60 (ppb) Spike = 2 x CRDL

Comments:

Analyst Checked: JP Date: 10/14/87
Q.C. Approved: [illegible] Date: 10/14/87

185-8016-6-0030

004962

004962

Accu-Labs Research, Inc. F 7019 Rev. F

EGA Analytical Spikes

Element: Sb Procedure No. 3E007204 Date: 10.14.87 Time 8:00
Wavelength: 217.6 nm BG ____ PE 5000 No. 82067 ✓ Analyst: JP
Matrix Modifier: ____ PE 603 No. 82034 ____ I.D.L.: 0.003 (ppm)
Water ✓ Soil ✓ Other ____ PE 5000S No. 82143 ____ Page 2 of 2

STANDARDS (ppm)

Date Prepared: 10.14.87 Prepared by: JP

	Initial	Recalibration	Final
Calibration Blank	0.000		
Standard 1	0.110 abs = 0.231		
Standard 2	0.200		
Standard 3: (0.070)	0.068 % = 97	% =	% =

Sample Number	Sample Dilution	Sample Conc. (ppm)	Dilution Factor	Reading 1	Reading 2	Avg. Conc. (ppm)	% Rec.
Initial Calib.	x	x	x	x	x	x	x
Calib. Verification	X	X	1.0	0.112	0.127	0.120	110
Calib. Blank	X	X		0.000	0.000	<0.003	
JP ~~LCS~~ 181-8016 - 4	1.0	<0.003		JP 0.101	0.100	0.101	84
5		<0.003		0.11	0.101	0.106	88
184-8018 - 1		<0.003		0.104	0.104	0.104	87
2		<0.003		0.102	0.104	0.103	86
3		<0.003		0.103	0.096	0.100	83
Calib. Blank	X	X		0.000	0.000	<0.003	
Calib. Verification	X	X		0.120	0.122	0.121	111.0
184-8018 - 4	1.0	<0.003		0.091	0.087	0.089	74
5		<0.003		0.044	0.093	0.096	80
6		<0.003		0.103	0.105	0.104	87
185-8016 - 1		<0.003		0.084	0.086	0.085	71
1R		<0.003		0.092	0.092	0.092	77
Recalibration	x	x	x	x	x	x	x
Calib. Verification	X	X	1.0	0.115	0.121	0.118	108
Calib. Blank	X	X		0.084	0.000	<0.003	
185-8016 - 2	1.0	<0.003		0.081	0.082	0.082	68
3	1.0	<0.003		0.115	0.113	0.114	95
LCS - SOIL	2	0.048	2	0.144	0.146	0.145	81 ASA
182-8029 - 1	1.0	<0.003	1.0	0.103	0.101	0.102	85
1R	1.0	<0.003		0.103	0.100	0.101	84
Calib. Blank	X	X		0.003	0.000	<0.003	
Calib. Verification	X	X		0.111	0.118	0.114	105
182-8029 - 2	1.0	<0.003		0.098	0.096	0.097	81
Final Calibration	x	x	x	x	x	x	x
Calib. Verification	X	X	1.0	0.110	0.119	0.114	105
Calib. Blank	X	X	1.0	0.005	0.000	0.003	

ICS and Calibration Verification: IV-3 True Value: 0.109 (ppm)

CRDL: 60 (ppb) Spike = 2 x CRDL

Comments:

Analyst Checked: JP Date: 10/14/87
Q.C. Approved: SH Date: 10/15/87

004963

004963

Accu-Labs Research, Inc.

F 7019 Rev. F

EGA Analytical Spikes

Element: As Procedure No. 39072. Date: 10/8/87 time 1000am
Wavelength: 1937 nm EG ____ PE 5000 No. 82067 ____ Analyst: OK
Matrix Modifier: Ni(NO3) PE 603 No. 82034 ____ I.D.L.: 0.001 (ppm)
Water ✓ Soil ✓ Other ____ PE 5000Z No. 82143 ✓ Page ____ of ____

STANDARDS (ppm)

Date Prepared: 10-8-87 Prepared by: OK

	Initial	Recalibration	Final
Calibration Blank			
Standard 1 0.050	abs = 0.224		
Standard 2 0.100	0.040		
Standard 3: (0.050)	% = 0.066	% =	% =

Sample Number	Sample Dilution	Sample Conc. (ppm)	Dilution Factor	Reading 1	Reading 2	Avg. Conc. (ppm)	% Rec.	
Initial Calib.	X	X	X	X	X	X	X	
Calib. Verification	1.0	0.052	1.0	0.052	0.052	0.052		
Calib. Blank		<0.001		0.001	0.000	<0.001		
LCS		0.053		0.065	0.068	0.066	105	RR ms4
181-8012-1		0.004		0.020	0.020	0.020	90	~~RR~~ ms4
10		0.004		0.021	0.021	0.021	95	
2		0.004		0.020	0.019	0.019	75	~~RR~~ ms4
3		0.013		0.029	0.029	0.029	90	RR
Calib. Blank		<0.001		0.001	0.000	<0.001		
Calib. Verification		0.049		0.051	0.051	0.051	104	
184-8018-4		0.009		0.024	0.024	0.024	80	RR.
5		<0.001		0.019	0.019	0.019	95	
184-8018-1		0.006		0.023	0.024	0.024	90	
2		0.006		0.024	0.024	0.024	90	
3	✓	0.015	✓	0.030	0.030	0.030	75	RR
Recalibration	X	X	X	X	X	X	X	
Calib. Verification	1.0	0.049	1.0	0.050	0.050	0.050		
Calib. Blank		<0.001		0.001	0.000	<0.001		
184-8018-4		0.009		0.025	0.025	0.025	85	
5		0.013		0.029	0.029	0.029	90	RR
6		<0.001		0.017	0.017	0.017	85	
185-8016-1		0.003		0.019	0.019	0.019	90	~~RR~~ ms4
1R		0.003		0.018	0.018	0.018	80	~~RR~~ ms4
Calib. Blank		<0.001		0.001	0.001	0.001		
Calib. Verification		0.046		0.046	0.047	0.047		
185-8016-2		0.005		0.022	0.021	0.022	85	
3		<0.001		0.019	0.019	0.019	95	
~~30H-LCS-HW~~		~~[illegible]~~						
182-8029-1		0.014		0.030	0.030	0.030	90	RR
1R	✓	0.012	✓	0.029	0.030	0.029	85	
Final Calibration	X	X	X	X	X	X	X	
Calib. Verification	1.0	0.049	1.0	0.050	0.051	0.051		
Calib. Blank	1.0	<0.001	1.0	0.001	0.001	0.001		

LCS and Calibration Verification: NIST-2 True Value: 0.049 (ppm)

CRDL: 10 (ppb) Spike = 2 x CRDL

Comments:

Analyst Checked: OK Date: 10/8/87
Q.C. Approved: [illegible] Date: 10/12/87

004964

Accu-Labs Research, Inc.

EGA Analytical Spikes

F 7019 Rev. F

Element: Pb
Wavelength: 283.3 nm
Matrix Modifier: $NH_4H_2PO_4$ - $Mg(NO_3)_2$
Water ✓ Soil ____ Other ____

Procedure No. ____
EG ✓ PE 5000 No. 82067
PE 603 No. 82034
PE 5000Z No. 82143 ✓

Date: 10.1.87 Time 900 PM
Analyst: Alu
I.D.L.: 0.002 (ppm)
Page 1 of ____

STANDARDS (ppm)

Date Prepared: 10.1.87 pm Prepared by: Alu

	Initial	Recalibration	Final
Calibration Blank	0.000		
Standard 1	0.050 abs = 0.250		
Standard 2	0.100		
Standard 3: (0.090)	0.092 % = 103	% =	% =

Sample Number	Sample Dilution	Sample Conc. (ppm)	Dilution Factor	Reading 1	Reading 2	Avg. Conc. (ppm)	% Rec.	
Initial Calib.	X	X	X	X	X	X	X	
Calib. Verification	✓	✓	2.0	0.046	0.046	0.092	92	
Calib. Blank	✓	✓	1.0	0.000	0.000	<0.002	-	
LCS	2	0.045	2.0	0.054	0.055	0.055	100	
191-8018-1	1.0	0.029	1.0	0.038	0.037	0.038	90	
1R		0.030	1.0	0.035	0.035	0.035	80	vr MSA
2		0.028	1.0	0.035	0.035	0.035	100	
3	✓	0.045	1.0	0.053	0.053	0.053	90	vr MSA
Calib. Blank	✓	✓	1.0	-0.000	-0.001	<0.002	-	
Calib. Verification	✓	✓	2.0	0.050	0.052	0.102	104	
191-8018-4	1.0	0.055	1.0	0.066	0.066	0.066	80	vr MSA
5		<0.002	1.0	0.009	0.009	0.009	90	
194-8019-1		0.056	1.0	0.065	0.065	0.065	90	
2		0.059	1.0	0.064	0.064	0.064	150	vr MSA
3	✓	0.053	1.0	0.060	0.059	0.059	60	vr MSA
Recalibration	X	X	X	X	X	X	X	
Calib. Verification	✓	✓	2.0	0.051	0.052	0.102	104	
Calib. Blank	✓	✓	1.0	-0.000	-0.001	<0.002	-	
194-8019-4	1.0	0.063	1	0.063	0.064	0.064	10%	vr 10x
5		0.060	1	0.062	0.061	0.061	11%	vr 10x
6		<0.002	1	0.009	0.009	0.009	80%	
195-8016-1		0.024	1	0.039	0.039	0.039	40%	vr MSA
1R	✓	0.022	1	0.039	0.039	0.039	60%	vr MSA
Calib. Blank	✓	✓	✓	-0.000	-0.000	<0.002	-	
Calib. Verification	✓	✓	2.0	0.049	0.049	0.098	100%	
195-8016-2	1.0	0.044	1.0	0.049	0.048	0.048	40%	vr MSA
2		<0.002	1.0	0.009	0.009	0.009	90%	

Final Calibration	X	X	X	X	X	X	X
Calib. Verification	✓	✓	2.0	0.049	0.049	0.098	100%
Calib. Blank	✓	✓	1.0	0.001	-0.000	<0.002	-

LCS and Calibration Verification: NCV 4 True Value: ____ ( )

CRDL: 5 (ppb) Spike = 2 x CRDL

Comments:

Analyst Checked: Alu Date: 10.6.87
Q.C. Approved: [illegible] Date: 10/11/87

004965

Accu-Labs Research, Inc.

EGR Analytical Spikes

F 7019 Rev. F

Element: Se
Wavelength: 196.0 nm
Matrix Modifier: $Mg(NO_3)_2$
Water ✓ Soil ____ Other ____

Procedure No. 38072116
BG 2
FE 5000 No. 82067
FE 603 No. 82034
FE 50002 No. 82143 ✓

Date: 10.2.97 Time 7:00 PM
Analyst: AW
I.D.L.: 0.002 (ppm)
Page 1 of 2

STANDARDS (ppm)

Date Prepared: 9.2.97
Prepared by: YP

	Initial		Recalibration		Final	
Calibration Blank	0.000					
Standard 1	0.050	abs = 0.130				
Standard 2	0.100					
Standard 3: (0.070)	0.075	% = 107		% =		% =

Sample Number	Sample Dilution	Sample Conc. (ppm)	Dilution Factor	Reading 1	Reading 2	Avg. Conc. (ppm)	% Rec.	
Initial Calib.	X	X	X	X	X	X	X	
Calib. Verification	✓	✓	1.0	0.050	0.049	0.050	100%	
Calib. Blank	✓	✓	1.0	0.002	0.002	0.002	-	
LCS	2.0	0.053	2.0	0.067	0.068	0.067	140%	cc MSA
191-8018-1	1.0	<0.002	1.0	0.015	0.009	0.019		cc bad dev
1R		<0.002		0.007	0.007	0.007	70%	
2		<0.002		0.007	0.007	0.007	70%	
3	✓	<0.002		0.006	0.006	0.006	60%	
Calib. Blank	✓	✓		0.001	0.001	<0.002		
Calib. Verification	✓	✓		0.054	0.054	0.054	109%	
191-8018-4	1.0	<0.002		0.007	0.007	0.007	70%	
5		<0.002		0.012	0.012	0.012	120%	
194-8018-1		<0.002		0.008	0.007	0.007	70%	
2		<0.002		0.007	0.006	0.007	70%	
3	✓	<0.002	✓	0.005	0.004	0.005	50%	
Recalibration	X	X	X	X	X	X	X	
Calib. Verification	✓	✓	1.0	0.054	0.053	0.054	108%	
Calib. Blank	✓	✓		0.002	0.001	<0.002	-	
194-8018-4	1.0	<0.002		0.005	0.006	0.006	60%	
5		<0.002		0.008	0.008	0.008	80%	
6		<0.002		0.012	0.012	0.012	120%	
195-8016-1		<0.002		0.010	0.011	0.010	100%	
1R	✓	<0.002		0.010	0.010	0.010	100%	
Calib. Blank	✓	✓		0.001	0.001	<0.002	-	
Calib. Verification	✓	✓		0.056	0.055	0.055	110%	
195-8016-2	1.0	<0.002		0.007	0.008	0.008	80%	
3	1.0	<0.002	✓	0.012	0.012	0.012	120%	
Final Calibration	X	X	X	X	X	X	X	
Calib. Verification	✓	✓	1.0	0.056	0.055	0.055	110%	
Calib. Blank	✓	✓	1.0	0.001	0.000	<0.002	-	

LCS and Calibration Verification: 386-1

CRDL: 5 (ppb) Spike = 2 x CRDL

True Value: 0.050 (ppm)

Comments:

Analyst Checked: AW Date: 10.5.97
Q.C. Approved: KH Date: 10/8/97

004966

Accu-Labs Research, Inc.

F 7019 Rev. F

EGA Analytical Spikes

Element: Tl
Wavelength: 2[illegible] nm
Matrix Modifier: [illegible]
Water ✓ Soil ____ Other ____

Procedure No. 3[illegible]
EG [illegible]
PE 5000 No. 82067
PE 603 No. 82034
PE 5000Z No. 82143

Date: [illegible] Time [illegible] am
Analyst: [illegible]
I.D.L.: [illegible] (ppm)
Page ____ of 2

STANDARDS (ppm)

Date Prepared: [illegible] Prepared by: [illegible]

	Initial	Recalibration	Final
Calibration Blank	[illegible]		
Standard 1	[illegible] abs = [illegible]		
Standard 2	[illegible]		
Standard 3: ([illegible])	[illegible] % = [illegible]	% =	% =

Sample Number	Sample Dilution	Sample Conc. (ppm)	Dilution Factor	Reading 1	Reading 2	Avg. Conc. (ppm)	% Rec.
Initial Calib.	X	X	X	X	X	X	X
Calib. Verification	X	X	2.0	[illegible]	[illegible]	[illegible]	95
Calib. Blank	X	X	1.0	[illegible]	[illegible]	<[illegible]	-
LCS	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	96
191-[illegible]-1		[illegible]		[illegible]	[illegible]	[illegible]	[illegible]
2				[illegible]	[illegible]	[illegible]	[illegible]
3				[illegible]	[illegible]	[illegible]	[illegible]
Calib. Blank	✓	✓		0.013	0.012	0.013	[illegible]
Calib. Verification	✓	✓		[illegible]	[illegible]	<[illegible]	-
191-[illegible]-4	✓	✓	2.0	[illegible]	[illegible]	[illegible]	101
5	[illegible]	<[illegible]	1.0	[illegible]	[illegible]	[illegible]	96
194-[illegible]-1				[illegible]	[illegible]	[illegible]	80
2				[illegible]	[illegible]	[illegible]	[illegible]
3	✓	✓	✓	[illegible]	[illegible]	[illegible]	[illegible]
Recalibration	X	X	X	X	X	X	X
Calib. Verification	✓	✓	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Calib. Blank	✓	✓	[illegible]	[illegible]	[illegible]	<[illegible]	-
194-[illegible]-4	[illegible]	<[illegible]		[illegible]	[illegible]	<[illegible]	25 ~~[illegible]~~ 10X
5				[illegible]	[illegible]	[illegible]	25 ~~[illegible]~~ 10X
6				[illegible]	[illegible]	[illegible]	[illegible]
195-[illegible]-1				[illegible]	[illegible]	[illegible]	[illegible]
2	✓	✓		[illegible]	[illegible]	[illegible]	45
Calib. Blank	✓	✓		[illegible]	[illegible]	[illegible]	45
Calib. Verification	✓	✓	✓	[illegible]	[illegible]	<[illegible]	-
191-[illegible]-[illegible]	✓	✓	2.0	[illegible]	[illegible]	[illegible]	103
[illegible]	[illegible]	<[illegible]	[illegible]				
Final Calibration	X	X	X	X	X	X	X
Calib. Verification	✓	✓	2.0				
Calib. Blank	✓	✓					

LCS and Calibration Verification: LCS 4 True Value: [illegible] (ppm)

CRDL: [illegible] (ppb) Spike = 2 x CRDL

Comments:

Analyst Checked: [illegible] Date: [illegible]
Q.C. Approved: [illegible] Date: [illegible]

004967

004967

Accu-Labs Research, Inc.

EGA Analytical Spikes

F 7019 Rev. F

Element: Tl

Wavelength: 276.8 nm

Matrix Modifier: 1% H_2O_2

Water ✓ Soil ✓ Other

Procedure No. 380928

EG Tl

PE 5000 No. 82067 ✓

PE 603 No. 82034

PE 5000C No. 82143

Date: 10.1.87 Time 4:00 PM

Analyst: [illegible]

I.D.L.: [illegible] (ppm)

Page 2 of 3

STANDARDS (ppm)

Date Prepared: [illegible] Prepared by: [illegible]

	Initial	Recalibration	Final
Calibration Blank	0.002		
Standard 1	0.25 abs =		
Standard 2	100		
Standard 3: (0.500)	% =	% =	% =

Sample Number	Sample Dilution	Sample Conc. ( )	Dilution Factor	Reading 1	Reading 2	Avg. Conc. (ppm)	% Rec.
Initial Calib.	X	X	X	X	X	X	X
Calib. Verification	✓	✓	2.0	0.152	0.148	0.076	101
Calib. Blank	✓	✓	1.0	0.002	0.001	<0.004	-
~~ICSA~~ 188-8116-2	1.0	<0.004		0.015	0.021	0.019	105
3		<0.004	✓	0.015	0.020	0.019	105
Lab (001)		0.019	2.0	0.050	0.050	0.100	105
188-8029-1		<0.004	1.0	0.021	0.021	0.021	105
1R	✓	<0.004	✓	0.021	0.019	0.020	100
Calib. Blank	✓	✓	✓	0.002	0.001	<0.004	-
Calib. Verification	✓	✓	2.0	0.047	0.046	0.094	93
188-8029-2	1.0		1.0	0.022	0.021	0.022	105
Recalibration							
Calib. Verification	X	X	X	X	X	X	X
Calib. Blank	✓	✓	2.0	0.050	0.049	0.100	105
	X	✓	1.0	0.001	0.001	<0.004	
Calib. Blank							
Calib. Verification							
Final Calibration							
Calib. Verification	X	X	X	X	X	X	X
Calib. Blank							

ICS and Calibration Verification: TW-4 True Value: 0.0993 (ppm)

CRDL: 10 (ppb) Spike = 2 x CRDL

Comments:

Analyst Checked: [illegible] Date: 10.13.87

Q.C. Approved: [illegible] Date: 10/13/87

004968

Accu-Labs Research, Inc. F 7019 Rev. F

EGA Analytical Spikes

Element: Se | Procedure No. 3804219 | Date: 9.25.87 | Time 400 PM
Wavelength: 224.6 nm | BG D_2 | PE 5000 No. 82067 ✓ | Analyst: JP/MK
Matrix Modifier: — | PE 603 No. 82034 | I.D.L.: 0.003 (ppm)
Water ✓ Soil ✓ Other | PE 5000Z No. 82143 | Page 1 of 9

STANDARDS (ppm)

Date Prepared: 9.25.87 Prepared by: JP

	Initial	Recalibration	Final
Calibration Blank	0.000		
Standard 1	0.100 abs = 0.101		
Standard 2	0.200		
Standard 3: (0.150)	0.149 % = 99	% =	% =

Sample Number	Sample Dilution	Sample Conc. (ppm)	Dilution Factor	Reading 1	Reading 2	Avg. Conc. (ppm)	% Rec.
Initial Calib.	X	X	X	X	X	X	X
Calib. Verification	X	X	1.0	0.150	0.151	0.151	102
Calib. Blank	X	X		-0.015	-0.001	-0.008	-
LCS (H_2O)	1.0	0.055		0.132	0.137	0.134	99 ✓
191-8018-1		<0.009		0.097	0.100	0.095	123
1R				0.163	0.162	0.163	129
2				0.163	0.164	0.163	129
3				0.165	0.164	0.165	131
Calib. Blank	X	X		0.000	0.000	<0.001	-
Calib. Verification	X	X		0.056	0.057	0.057	114
191-8018-4	1.0	<0.009		0.145	0.145	0.145	185
5				0.092	0.093	0.093	117
194-8018-1				0.145	0.161	0.153	191
2				0.155	0.153	0.154	192
3				0.094	0.092	0.093	103
Recalibration	X	X	X	X	X	X	X
Calib. Verification	X	X	1.0	0.059	0.051	0.055	110
Calib. Blank	X	X		-0.002	-0.001	<0.001	-
194-8018-4	1.0	<0.009		0.037	0.035	0.035	147
5				0.015	0.015	0.017	121 rr at 10x
6				0.092	0.094	0.093	109
195-8016-1				0.111	0.105	0.108	135
1R				0.099	0.098	0.098	122
Calib. Blank	X	X		0.003	-0.002	<0.001	-
Calib. Verification	X	X		0.062	0.055	0.058	116
195-8016-2	1.0	<0.009		0.140	0.131	0.135	169
3		<0.009		0.093	0.093	0.093	116
LCS (soil)		0.098		0.138	0.132	0.135	169
192-8029-1		<0.009		0.089	0.087	0.088	110
1R		<0.009		0.097	0.097	0.097	121
Final Calibration	X	X	X	X	X	X	X
Calib. Verification	X	X	1.0	0.052	0.044	0.048	96
Calib. Blank	X	X	1.0	-0.002	-0.003	<0.001	

LCS and Calibration Verification: American Scientific True Value: 0.050 (ppm)

CRDL: .10 (ppb) Spike = 2 x CRDL

Comments:

Analyst Checked: EH Date: 10/2/87
Q.C. Approved: EH Date: 10/8/87

004969

Accu-Labs Research, Inc.

EPA Analytical Spikes

F 7019 Rev. F

Element: V
Wavelength: 318.4 nm
Matrix Modifier:
Water ✓ Soil ____ Other ____

Procedure No. 3005320
EG BD
PE 5000 No. 82067
PE 603 No. 82034
PE 5000Z No. 82142

Date: 10/12/87 Time 10:00am
Analyst: EH/JP
M.D.L.: 0.009 (ppm)
Page 1 of 1

STANDARDS (ppm)

Date Prepared: 10/12/87 Prepared by: JP

	Initial	Recalibration	Final
Calibration Blank	0.000		
Standard 1	0.050 abs =		
Standard 2	0.100		
Standard 3: (0.070)	0.071 % = 101	% =	% =

Sample Number	Sample Dilution	Sample Conc. (ppm)	Dilution Factor	Reading 1	Reading 2	Avg. Conc. (ppm)	% Rec.
Initial Calib.	x	x	x	x	x	x	x
Calib. Verification	x	x	10	0.051	0.054	0.53	106
Calib. Blank	x	x	1	0.000	0.000	<0.009	
ICS	10	0.047	20	0.057	0.057	0.114	67 RR MSA
181-8018-1	1.0	0.019	2	0.062	0.064	0.126	107
-1R	1.0	0.026	2	0.062	0.063	0.125	99
-3	1.0	0.021	2	0.062	0.059	0.121	100
-3	1.0	0.078	2	0.095	0.100	0.195	117 RR MSA
Calib. Blank Verification	x	x	10	0.050	0.051	0.51	100
Calib. Verification 61E	x	x	1	0.001	0.000	<0.009	
181-8018-4	1.0	0.042	2	0.066	0.062	0.129	86
-5	1.0	<0.009	2	0.041	0.041	0.082	82
184-8018-1	1.0	0.050	2	0.078	0.079	0.157	107
-2	1.0	0.053	2	0.076	0.081	0.157	104
-3	1.0	0.061	2	0.072	0.071	0.143	82 RR MSA
Recalibration	x	x	x	x	x	x	x
Calib. Verification	x	x	10	0.051	0.050	0.51	100
Calib. Blank	x	x	1	0.001	0.000	<0.009	
184-8018-4	1.0	0.041	2	0.060	0.059	0.119	78 RR MSA
-5	1.0	0.063	2	0.070	0.070	0.140	77 RR MSA
-6	1.0	<0.009	2	0.044	0.041	0.085	85
185-8018-1	1.0	0.043	2	0.054	0.060	0.114	71 RR MSA
-12	1.0	0.042	2	0.058	0.054	0.112	70 RR MSA
Calib. Blank	x	x	1	0.003	0.000	<0.009	
Calib. Verification	x	x	10	0.052	0.054	0.53	104
185-8018-3	1.0	0.053	2	0.070	0.070	0.140	87
3	1.0	0.060	2	0.040	0.041	0.081	21 RR MSA
ICS (Spike)	10	0.046	20	0.075	0.078	0.153	107
185-8054-1	1.0	0.096	2	0.088	0.087	0.175	79 RR MSA
1-1R	2	0.071	2	0.062	0.064	0.126	91
Final Calibration	x	x	x	x	x	x	x
Calib. Verification	x	x	10	0.045	0.046	0.46	90
Calib. Blank	x	x	1	0.002	0.001	<0.009	

ICS and Calibration Verification: ICVI True Value: 0.51 (ppm)

CRDL: 50 (ppb) Spike = 2 x CRDL

Comments: * Sample dil by 2 then spiked with D.I then dil. again by 2

Analyst Checked: EH Date: 10/12/87
Q.C. Approved: EH Date: 10/15/87

004970

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Accu-Labs Research, Inc. F 7019 Rev. F

EGA Analytical Spikes

Element: V Procedure No. 3307220 Date: 10/13/87 Time 10:00am
Wavelength: 318.4 nm BG BD PE 5000 No. 82067 Analyst: EH
Matrix Modifier: PE 603 No. 82034 ✓ I.D.L.: 0.009 (ppm)
Water Soil Other PE 5000Z No. 82143 Page 1 of 1

STANDARDS (ppm)

Date Prepared: 10/13/87 Prepared by: EH

	Initial	Recalibration	Final
Calibration Blank	0.000		
Standard 1	0.050 abs =		
Standard 2	0.100		
Standard 3: (0.070)	0.071 % = 101	% =	% =

Sample Number	Sample Dilution	Sample Conc. (ppm)	Dilution Factor	Reading 1	Reading 2	Avg. Conc. (ppm)	% Rec.
Initial Calib.	X	X	X	X	X	X	X
Calib. Verification	?	x	10	0.051	0.047	0.49	96
Calib. Blank	x	x	1.0	0.003	0.001	<0.009	
~~LCS~~ 185-8018-3	10	<0.009	1.0	0.100	0.100	0.100	100
Calib. Blank	x	x	1.0	0.003	0.001	<0.009	
Calib. Verification	x	x	10	0.048	0.049	0.49	96%
Recalibration	X	X	X	X	X	X	X
Calib. Verification							
Calib. Blank							
Calib. Blank							
Calib. Verification							
Final Calibration	X	X	X	X	X	X	X
Calib. Verification							
Calib. Blank							

LCS and Calibration Verification: ICV:I True Value: ~~0.051~~ 0.51 EH (ppm)

CRDL: 50 (ppb) Spike = 2 x CRDL

Comments:

Analyst Checked: EH Date: 10/13/87
Q.C. Approved: EH Date: 10/13/87

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F 7024 Rev. A

QUALITY CONTROL REPORT NUMBER

Number	Date In	Case No.	Number of Samples	Sample Custodian
181	9/10/87	8018	5 H_2O	ch
182	9/10/87	8029	2 Soils	ch
183	9/10/87	3224H (SO)	1 soil	ch
184	9/11/87	8018	6 H_2O	DH
185	9/12/87	8016	3 H_2O	ch
186	9/12/87	2771Y(SAS)RC	5 H_2O	ch
187	9/17/87	3225H(SO)	1 Soil	ch
188	9/17/87	8068	10 H_2O, 12 Soil	ch
189	9/21/87	3225H (SO)	1 Soil	ch
190	9/25/87	8095	7 Soils	ch
191	9/25/87	8097	10 Soils	ch
192	9/26/87	8100	5 H_2O	ch
193	9/26/87	8102	2 Soils	ch
194	9/30/87	3329E (SAS)	2 H_2O	ch
195	9/30/87	8149	4 Soils, 1 H_2O	ch
196	10/1/87	3329E	12 H_2O	ch
197	10/1/87	3225H	2 Soils	ch
198	10/2/87	3329E	6 H_2O	ch
199	10/2/87	3225H	1 Soil	ch
200	10/3/87	3329E	1 H_2O	ch
201	10/3/87	8150	1 H_2O, 3 Soil	ch
202	10/6/87	3225H	1 soil.	ch
203	10/6/87	8213	6 soil	ch
204	10/7/87	SAS 3324C	8 H_2O, 6 Soil	ch
205	10/8/87	SAS 3324C	7 H_2O, 7 Soil	ch
206	10/8/87	3225H	1 Soil	ch
207	10/8/87	8213	4 Soils	ch

004972

185-8016-6-0031

Accu-Labs Research, Inc.

F 7023 Rev. A

CASE LOG

Case Number: 8016

Date Received	QC Report Number	Number of Samples	ALR Designation	EPA Designation	Sample Custodian
9/12/87	185	3	185-8016-3-1	MFC 321	cw
			-2	322	
			-3	494	

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185-8016-6-0032

185-8016-6-0043

Accu-Labs Research, Inc.

REPORTING SCHEDULE

F 7026 Rev. A

Date Received	Number of Samples	QC Report No.	Case No.	Weekly Report (SMO)	Sample Traffic Report (SMO)	Data Package (SMO)	Data Package (LV)	Data Package (Region)	Chain of Custody (NEIC)
9/12/87	3	185	HP 8016	(119) 9/18/87	9/18/87 U.S. Mail				
9/18/87	21	188	8068	(120) 9/25/87	9/25/87 U.S. Mail				
9/25/87	7	190	8095	(120) 9/25/87	9/25/87 U.S. Mail				
9/25/87	10	191	8097	(121) 10/2/87	10/2/87 U.S. Mail				
9/26/87	5	192	8100	(121) 10/2/87	10/2/87 U.S. Mail				
9/26/87	2	193	8102	(121) 10/2/87	10/2/87 U.S. Mail				

004974

Accu-Labs Research, Inc.

F 7021 Rev. B

METHOD OF STANDARD ADDITION
Procedure No. 3807259

Element As
Wavelength 193.7

Date 10/4/87 Time 1000 AM
Analyst GL
D.L. 2.00 ppm
Page 1 of 1

Standards (ppm)

Date Prepared ~~10/4/87~~ 10/4/87 Prepared By GK

Sample Number	0% Add Conc. (ppb)	50% Add Conc. (ppb)	100% Add Conc. (ppb)	150% Add Conc. (ppb)	Final Conc. (ppb)	Coeff. Corr.	Slope	Intercept
LCS	25	25 / 33	50 / 72	75 / 96	36	0.9712	1.012	18.3
184-8018-3	14	5 / 17	10 / 21	15 / 24	14	0.9983	0.680	13.9
184-8018-4	7	5 / 11	10 / 15	15 / 19	7	1.000	0.500	7.0
184-8018-3	15	5 / 19	10 / 21	15 / 25	15	0.992	0.440	15.2
184-8018-5	12	5 / 15	10 / 19	15 / 22	12	0.9983	0.680	11.9
182-8039-1	12	5 / 16	10 / 20	15 / 23	12	0.9978	0.740	12.2
LCS (50:1)	23	25 / 47	50 / 72	75 / 96	48	0.9976	0.900	24.1
LCS (H_2O)	48	25 / 60	50 / 92	75 / 114	44	0.9965	0.940	43.6
184-8018-3	15	5 / 16	10 / 20	15 / 21	15	0.9948	0.440	14.7

Comments:

Analyst Checked GK Date 10/9/87

QC Checked EW Date 10/12/87

185-8016-6-0034

004975

Accu-Labs Research, Inc.

METHOD OF STANDARD ADDITION
Procedure No. 3807259

F 7021 Rev. B

Element Pb
Wavelength 283.3

Date 10.7.87 Time 6:00PM
Analyst [illegible]
D.L. 0.002
Page 1 of

Standards (ppm)

Date Prepared 10.7.87 Prepared By [illegible]

Sample Number	0% Add Conc. (ppb)	50% Add Conc. (ppb)	100% Add Conc. (ppb)	150% Add Conc. (ppb)	Final Conc. (ppb)	Coeff. Corr.	Slope	Intercept
181-8018-1R	0/33	15/45	30/58	45/67	33.5	0.9974	0.77	33.5
~~3~~	~~0/26~~	~~25/39~~	~~50/45~~	~~75/58~~				
4	0/62	25/78	50/110	75/128	–	0.9914	0.52	60.0
184-8019-2	0/61	25/82	50/~~185~~ 110	75/130	60.5	0.9979	0.94	60.5
3	0/49	25/70	50/86	75/122	–	0.9845	0.94	46.5
185-8016-1	0/24	15/48	30/58	45/67	35	0.9944	0.73	35.40
2	0/30	15/48	30/58	45/68	38.0	1.0000	0.67	38.0
181-8018-3	0/52	25/78	50/96	75/116	54.0	0.9968	0.84	54.0
185-8016-1R	0/29	25/44	50/74	75/94	27	0.9927	0.90	26.5
soil LCS	0/96	25/118	50/144	75/164	96	0.9989	0.920	46.0
187-8029-1R	0/46	25/82	50/136	75/176	43	0.9972	1.78	43.4
181-8018-4	0/55	25/65	50/98	75/120	50	0.982	0.912	50.3
184-8018-3	0/43	25/54	50/86	75/102	40	0.9833	0.836	39.9
185-8016-1	0/30	15/40	30/58	45/68	29	0.9927	0.880	29.2
185-8016-1R	0/29	25/~~45~~ 43	50/69	75/98	25	0.9891	0.9320	24.8

Comments:

Analyst Checked [illegible] Date 10/8/87

QC Checked [illegible] Date 10/12/87

004976

004976

Accu-Labs Research, Inc.

F 7021 Rev. B

METHOD OF STANDARD ADDITION
Procedure No. 3807259

Element Se
Wavelength 196.0

Date 10/5/87 Time 800AM
Analyst QK
D.L. 0.003 ppm
Page 1 of 1

Standards (ppm)

Date Prepared 10/5/87 Prepared By QK

Sample Number	0% Add Conc. (ppb)	50% Add Conc. (ppb)	100% Add Conc. (ppb)	150% Add Conc. (ppb)	Final Conc. (ppb)	Coeff. Corr.	Slope	Intercept
205 (soil)	53	25/76	50/96	75/116	108	0.9995	0.926	53.9
205 (H2O)	50	25/75	50/90	75/116	109	0.9996 ~~0.9969~~	0.920	54.0

Comments:

Analyst Checked QK Date 10/5/87

QC Checked EW Date 10/8/87

004977

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Accu-Labs Research, Inc.

F 7021 Rev. 8

METHOD OF STANDARD ADDITION
Procedure No. 3807259

Element V
Wavelength 313.4

Date 10/13/87 Time 1:00pm
Analyst EH
D.L. 0.009 ppm
Page 1 of 1

Standards (ppm)

Date Prepared 10/13/87 Prepared By EH

Sample Number	0% Add Conc. (ppb)	50% Add Conc. (ppb)	100% Add Conc. (ppb)	150% Add Conc. (ppb)	Final Conc. (ppb)	Coeff. Corr.	Slope	Intercept	
OCS	46	25/65	50/89	75/116	44	0.997	0.936	43.9	
181-8018-3	77	40/102	80/156	120/200	69	0.985	1.06	69.0	RR
184-8018-3	62	30/91	60/108	90/142	62	0.993	0.857	62.2	RR
184-8018-4	43	20/65	40/84	60/98	45	0.995	0.920	44.9	
184-8018-5	68	30/105	60/132	90/166	70	0.998	1.07	69.6	
185-8018-1	38	20/60	40/77	60/86	41	0.984	0.805	41.1	RR
185-8018-1R	44	20/69	40/82	60/96	47	0.987	0.845	47.4	RR
182-8029-1	53	25/66	50/96	75/108	103 52 EH	0.954	0.780	51.5	
182-8029-2	49	25/61	50/75	75/80	100 50 EH	0.984	0.428	50.2	
183-8018-3	87	40/89	80/112	120/128	82	0.955	0.368	81.7	'+'
184-8018-3	61	30/88	60/124	90/128	65	0.964	0.790	64.7	'+'
184-8018-5	73	30/78	60/124	90/158	63	0.963	1.003	63.1	'+'
185-8018-1	38	20/57	40/75	60/92	38	1.000	0.900	38.5	
185-8018-2	36	20/53	40/75	60/100	36	0.998	1.045	35.9	
182-8029-1	67	25/93	50/122	75/130	141 70 EH	0.978	0.872	70.3	'+'
182-8029-1R	56	20/67	40/90	60/100	110 55 EH	0.987	0.775	55.0	'+'

Comments:
182-8029-1 + 1R were dil by 2 then spiked.

Analyst Checked EH Date 10/14/87
QC Checked EH Date 10/15/87

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