N96095.AR.000062
NWIRP CALVERTON NY
5090.3a

HALLIBURTON NUS
Environmental Corporation

INTERNAL CORRESPONDENCE

C-49-2-1-244

TO: DAVE BRAYACK

DATE: JANUARY 16, 1992

FROM: NORMAN J. STRAUB

COPIES: D. A. SCHEIB

SUBJECT: INORGANIC DATA VALIDATION - TAL METALS AND CYANIDE
CALVERTON
SDG 2907CW

SAMPLES: 4/AQUEOUS/

MW04-FP MW05-FP MW11-FP MW16-FP

Introduction

Inorganic data from the Target Analyte List (TAL) metals and cyanide analysis of four (4) low level aqueous samples were evaluated using the following parameters:

* • Data completeness
* • Holding times
* • Calibrations
  • Laboratory control sample results
  • Laboratory blanks
  • Matrix spike analysis results
  • Laboratory duplicates
* • ICP interferences
* • Graphite furnace analysis results
* • Detection limits
* • Analyte quantitation

The symbol (*) indicates that all quality control criteria were met for this parameter. Documentation of compliance for these parameters is provided in Appendix C (Regional Worksheets). Problems affecting data quality are discussed below, and the data spreadsheets presented in Appendix A (Qualified Analytical Results) summarize the validation qualifications.

Overview

No field duplicate pairs or field quality control blanks were analyzed under this analytical data set.

The samples were collected by HALLIBURTON NUS Environmental Corporation on 07-16-91, 07-18-91, and 07-23-91, and analyzed by NET-Cambridge Division Laboratories under Naval Energy and Environmental Support Activity (NEESA) Level D QA/QC criteria. All analyses were conducted in accordance with the Contract Laboratory Program (CLP) Statement of Work (SOW) 7/88 analytical and reporting protocols.

Cyanide analyses were not performed as required by the chain-of-custody forms that accompanied the samples. Also, mercury analyses performed on samples MW11-FP and MW16-FP were not requested by the sampling team.

SUMMARY

The pH reported for samples MW04-FP and MW05-FP were greater than 2. Positive results and nondetects reported for all analytes are qualified as estimated, (J3) and (UJ2), respectively, in the affected samples.

Zinc was detected as a contaminant in the analysis of a laboratory preparation blank analyzed with this sample set in a maximum concentration of 35 µg/L. Positive sample results reported for this analyte at concentrations less than five times this maximum are qualified as undetected, (R2), because of blank contamination.

The Matrix Spike (MS) Percent Recovery (%R) for mercury was less than the 75% lower quality control limit. Nondetects reported for this analyte are qualified as estimated, (UJ1), in all samples.

The laboratory duplicate Relative Percent Difference (RPD) for lead exceeded the 50% quality control limit. Positive results for lead are qualifed as estimated, (J2), in all samples.

The %R reported for selenium in the Labortory Control Sample (LCS) analysis was reported as zero. All nondetects reported for this analyte are qualified as rejected, (R1).

ICP Serial Dilution was not performed for ICP analytes reported at concentrations greater than ten times the Instrument Detection Limit (IDL). Consequently, positive results reported for iron and calcium in samples MW04-FP and MW05-FP; and aluminum in sample MW04-FP are qualifed as estimated, (J1), because of detection at concentrations greater than ten times respective IDLs.

No other problems were noted.

The data for these analyses were reviewed with reference to the EPA "Functional Guidelines for Inorganic Data Validation" (7/88), as amended for use within EPA Region II, and the NEESA document "Sampling and Chemical Analysis Quality Assurance Requirements for the Navy Installation Restoration Program". **The text of this report has been formulated to address only those problem areas affecting data quality.**

"I attest that the data referenced herein was validated according to the agreed upon validation criteria as specified in the NEESA Guidelines and the Quality Assurrance Project Plan (QAPP)."

Norman J. Straub
HALLIBURTON NUS

Data Validator

Debra A. Scheib
HALLIBURTON NUS

Data Validation Quality
Assurance Officer

Attachments:

1. Appendix A - Qualified Analytical Results.
3. Appendix B - Results as Reported by the Laboratory.
4. Appendix C - Regional Worksheets.
5. Appendix D - Support Documentation.

APPENDIX A

QUALIFIED ANALYTICAL RESULTS

CALVERTON NAVAL BASE
SDG: 2907CW
LABORATORY: NET – CAMBRIDGE

INORGANIC AQUEOUS ANALYSES
ug/L

SAMPLE LOCATION:		MW04	MW05	MW11	MW16	
SAMPLE NUMBER:		MW04–FP	MW05–FP	MW11–FP	MW16–FP	
LABORATORY SAMPLE ID:		0482–12264	0482–12265	0474–12232	0474–12231	
ANALYTE	IDL					CRDL
Aluminum	20	690 J(1,3)	310 J(3)			200
Antimony	30	30 UJ(2)	30 UJ(2)			60
Arsenic	3	3 UJ(2)	3 UJ(2)			10
Barium	5	8.4 J(3)	7.6 J(3)			200
Beryllium	1	1 UJ(2)	1 UJ(2)			5
Cadmium	3	3 UJ(2)	3 UJ(2)			5
Calcium	20	300 J(1,3)	2500 J(1,3)			5000
Chromium	5	5 UJ(2)	5 UJ(2)			10
Cobalt	5	11 J(3)	11 J(3)			50
Copper	5	5 UJ(2)	11 J(3)			25
Iron	5	640 J(1,3)	4700 J(1,3)			100
Lead	2	65.5 J(2,3)	86.5 J(2,3)	218 J(2,3)	284 J(2,3)	3
Magnesium	50	58 J(3)	320 J(3)			5000
Manganese	1	9.4 J(3)	55 J(1,3)			15
Mercury	0.2	2 UJ(1,2)	2 UJ(1,2)	2 UJ(1,2)	2 UJ(1,2)	0.2
Nickel	5	15 J(3)	14 J(3)			40
Selenium	2	R(1)	R(1)			5
Silver	5	5 UJ(2)	5 UJ(2)			10
Sodium	100	100 UJ(2)	170 UJ(2)			5000
Thallium	2	2 UJ(2)	2 UJ(2)			10
Vanadium	5	5 UJ(2)	5 UJ(2)			50
Zinc	5	R(2)	R(2)			20
Cyanide						
DATE SAMPLED:		07/23/91	07/23/91	07/18/91	07/16/91	

U – Value is a nondetect as reported by the laboratory.
UJ(1) – Nondetect is biased low because of low MS %R.
UJ(2) – Nondetect is estimated because pH of sample was > 2.
J(1) – Value is estimated because result exceeds ten times IDL.
J(2) – Value is estimated due to laboratory duplicate RPD outside QC limits.
J(3) – Value is estimated because pH of sample was > 2.
R(1) – Nondetect is rejected due to very low LCS %R.
R(2) – Value is considered to be a false positive result because of blank contamination.

APPENDIX B

RESULTS AS REPORTED BY THE LABORATORY

20002A

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW5FP

Lab Name: NET-CAMBRIDGE DIVISION Contract:

Lab Code: CAMBRG Case No.: NUS SAS No.: SDG No.: 2907CW

Matrix (soil/water): WATER Lab Sample ID: 482-12265S

Level (low/med): LOW Date Received: 07/24/91

% Solids: 0.0

Concentration Units (ug/L or mg/Kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-41-7	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead	86.50		*	F
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	2.00	U	N	CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: YELLOW Clarity Before: CLOUDY Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

200021

NET Atlantic, Cambridge Division

ANALYTICAL REPORT

Report Date: 09/05/1991

Report To: HALLIBURTON NUS

NET Job No: 91.8482

Project: Calverton, NY NEESA

Date Rec'd: 07/24/1991

Sample ID: MW-5 FP Free Product "Commercial Analysis Data"

NET Sample No: 12265

Parameter		Result	Units
Aqueous Digestion	CLP AQ	08/01/1991	date
Aluminum (Al)	CLP ICP AQ	0.31	ug/L
Antimony (Sb)	CLP ICP AQ	<0.030	ug/L
Arsenic (As)	CLP GFAA AQ	<0.0030	ug/L
Barium (Ba)	CLP ICP AQ	0.0076	ug/L
Beryllium (Be)	CLP ICP AQ	<0.0010	ug/L
Cadmium (Cd)	CLP ICP AQ	<0.0030	ug/L
Calcium (Ca)	CLP ICP AQ	2.5	ug/L
Chromium (Cr)	CLP ICP AQ	<0.0050	ug/L
Cobalt (Co)	CLP ICP AQ	0.011	ug/L
Copper (Cu)	CLP ICP AQ	0.011	ug/L
Iron (Fe)	CLP ICP AQ	4.7	ug/L
Lead (Pb)	CLP GFAA AQ	see CLP	
Magnesium (Mg)	CLP ICP AQ	0.32	ug/L
Manganese (Mn)	CLP ICP AQ	0.055	ug/L
Mercury (Hg)	CLP CVAA AQ	see CLP	
Nickel (Ni)	CLP ICP AQ	0.014	ug/L
Selenium (Se)	CLP GFAA AQ	<0.10	ug/L
Silver (Ag)	CLP ICP AQ	<0.0050	ug/L
Sodium (Na)	CLP ICP AQ	0.17	ug/L
Thallium (Tl)	CLP GFAA AQ	<0.0020	mg/L
Vanadium (V)	CLP ICP AQ	<0.0050	ug/L
Zinc (Zn)	CLP ICP AQ	0.058	ug/L

U.S. EPA - CLP

20003 A

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW4FP

Lab Name: NET-CAMBRIDGE DIVISION Contract:

Lab Code: CAMBRG Case No.: NUS SAS No.: SDG No.: 2907CW

Matrix (soil/water): WATER Lab Sample ID: 482-12264S

Level (low/med): LOW Date Received: 07/24/91

% Solids: 0.0

Concentration Units (ug/L or mg/Kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-41-7	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead	65.50		*	F
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	2.00	U	N	CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color-Before: YELLOW Clarity Before: CLOUDY Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

2003

NET Atlantic, Cambridge Division

ANALYTICAL REPORT

Report Date: 09/05/1991

Report To: HALLIBURTON NUS

NET Job No: 91.8482

Project: Calverton, NY NEESA

Date Rec'd: 07/24/1991

Sample ID: MW-4 FP Free Product "Commercial Analysis Data"

NET Sample No: 12264

Parameter		Result	Units
Aqueous Digestion	CLP AQ	08/01/1991	date
Aluminum (Al)	CLP ICP AQ	0.69	ug/L
Antimony (Sb)	CLP ICP AQ	<0.030	ug/L
Arsenic (As)	CLP GFAA AQ	<0.0030	ug/L
Barium (Ba)	CLP ICP AQ	0.0084	ug/L
Beryllium (Be)	CLP ICP AQ	<0.0010	ug/L
Cadmium (Cd)	CLP ICP AQ	<0.0030	ug/L
Calcium (Ca)	CLP ICP AQ	0.30	ug/L
Chromium (Cr)	CLP ICP AQ	<0.0050	ug/L
Cobalt (Co)	CLP ICP AQ	0.011	ug/L
Copper (Cu)	CLP ICP AQ	<0.0050	ug/L
Iron (Fe)	CLP ICP AQ	0.64	ug/L
Lead (Pb)	CLP GFAA AQ	see CLP	
Magnesium (Mg)	CLP ICP AQ	0.058	ug/L
Manganese (Mn)	CLP ICP AQ	0.0094	ug/L
Mercury (Hg)	CLP CVAA AQ	see CLP	
Nickel (Ni)	CLP ICP AQ	0.015	ug/L
Selenium (Se)	CLP GFAA AQ	<0.10	ug/L
Silver (Ag)	CLP ICP AQ	<0.0050	ug/L
Sodium (Na)	CLP ICP AQ	<0.10	ug/L
Thallium (Tl)	CLP GFAA AQ	<0.0020	mg/L
Vanadium (V)	CLP ICP AQ	<0.0050	ug/L
Zinc (Zn)	CLP ICP AQ	0.070	ug/L

U.S. EPA - CLP

20004

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW16 FP

Lab Name: NET-CAMBRIDGE DIVISION Contract:

Lab Code: CAMBRG Case No.: NUS SAS No.: SDG No.: 2907CW

Matrix (soil/water): WATER Lab Sample ID: 474-12231S

Level (low/med): LOW Date Received: 07/17/91

% Solids: 0.0

Concentration Units (ug/L or mg/Kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-41-7	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead	284.00		S *	F
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	2.00	U	N	CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color Before: YELLOW Clarity Before: CLOUDY Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA - CLP

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW11 FP

Lab Name: NET-CAMBRIDGE DIVISION Contract:

Lab Code: CAMBRG Case No.: NUS SAS No.: SDG No.: 2907C

Matrix (soil/water): WATER Lab Sample ID: 74-12232S

Level (low/med): LOW Date Received: 07/17/91

% Solids: 0.0

Concentration Units (ug/L or mg/Kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-41-7	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead	218.00		S *	F
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury	2.00	U	N	CV
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR

Color-Before: YELLOW Clarity Before: OPAQUE Texture:

Color After: YELLOW Clarity After: CLEAR Artifacts:

Comments:

APPENDIX C

REGIONAL WORKSHEETS

SOP NO. HW-2

Evaluation of Metals Data for the Contract Laboratory Program (CLP)

based on

SOW. 7/88
REV. 2/89

(SOP Revision X)

PREPARED BY: Hanif Sheikh DATE: 2-16-90
Hanif Sheikh, Quality Assurance Chemist
Toxic and Hazardous Waste Section

CONCURRED BY: Louis Bevilacqua DATE: 2/16/90
Louis Bevilacqua, Section Chief
Toxic and Hazardous Waste Section

APPROVED BY: L. Bevilacqua for (GFM) DATE: 2/16/90
Gerard F. McKenna, Chief
Monitoring Management Branch

ANNOTATED FOR USE WITH NAVY CLEAN CONTRACT DATA

Title: Evaluation of Inorganic Data for the Contract Laboratory Program

Date: Feb. 1990
Number: HW-2
Revision: 10

1.0 Scope

1.1 This procedure is applicable to inorganic data obtained from contractor laboratories working for Hazardous Waste Site Contract Laboratory Program (CLP).

1.2 The data validation is based upon analytical and quality assurance requirements specified in Statement of Work (SOW) 7/88.

2.0 Responsibilities - Data reviewers will complete the following tasks as assigned by the Review Coordinator:

2.1. For a total review:

2.1.1 Data Assessment - "Total Review-Inorganics" Checklist Appendix (A.1). The reviewer must answer every question on the checklist.

2.1.2 Data Assessment - Data Assessment Narrative (Appendix A.2) The answer on the checklist must match the action in the narrative (appendix A.2) and on Form I's. Do not use pencil to write the narrative.

2.1.3 Contract Non-Compliance - SMO Report (Appendix A.3)

This section is not required to be completed, however, page 31 does bear the validator's signature.

~~This report is to be completed only when a serious contract violation is encountered, or upon the request of the Data Review Manager or Deputy Project Officer (DPO). Forward 5 copies: one each for internal files, appropriate Regional DPO, Sample Management Office (SMO) and take two addresses of Mailing List for Data Reviewers (Appendix A.4). In other cases, all contract violations should be appended to end of Data Assessment Narrative (Sec. A.2.2).~~

2.1.4 Data Summary Sheet - Summary of Inorganic Quality Control Data (Appendix A.5). ~~Enter in link on Data Summary Sheet required QC values from Forms I through IX. Ci all values that require data qualification "Action".~~

2.1.5 CLP Data Assessment Summary Forms

The qualifier key appearing on the analytical results data spreadsheets replace this section.

2.1.5.1 Appendix A.6

This section is for the management of CLP data and is non-applicable.

~~Fill in the total number of analytes analyzed by different analyses and the number of analytes rejected or flagged as estimated due to corresponding quality control criteria. Place an "X" in boxes where analyses were not performed, or criteria do not apply.~~

2.1.5.2 Appendix A.7

Data reviewer is also required to fill out Inorganic Regional Data Assessment form (Appendix A.7) provided by EPA Headquarters. Codes listed on the form will be used to describe the Data Assessment Summary.

Although this section pertains to CLP data management, this form has been completed as a courtesy in order to provide an at-a-glance summary of data quality.

2.1.6 Data Review Log: It is recommended that each data reviewer should maintain a l
reviews completed to include:
a. date of start of case review
b. date of completion of case review
c. site
d. case number
e. contract laboratory
f. number of samples
g. matrix
h. hours worked
i. reviewer's initials

Submission of this information is not a data validation deliverable requirement.

2.1.7 Telephone Record Log - the data reviewer should enter the bare facts of inquiry, before initiating any phone conversation with CLP laboratory. ~~After the case review has been completed, mail white copy of Telephone Record Log to the laboratory and pink copy to SMO. File yellow copy in the Telephone Record Log folder, and attach a xerox copy of the Telephone Record Log to the completed Data Assessment Narrative (Appendix A.2).~~ N/A

2.1.8 Forwarded Paperwork

~~2.1.8.1 Upon completion of review, the following are to be forwarded to the Regional Sample Control Center (RSCC) located in the Surveillance and Monitoring Branch:~~
~~a. data package~~
~~b. completed data assessment checklist (Appendix A.1,original)~~
~~c. SMO Contract Compliance Screening (CCS)~~
~~d. Data Summary Sheet (Appendix A.5) along with completed Data Assessment Narrative (Appendix A.2)~~
~~e. Record of Communication (copy)~~
~~f. CLP Reanalysis Request/Approval Record (original + 3 copies)~~
~~g. Appendix A.7 (original).~~

~~2.1.8.2 Forward 4 copies of completed Data Assessment Narrative (Appendix A.2) along with 2 copies of the Inorganic Data Assessment Form (Appendix A.7) and Telephone Record Log , if any,: one each for appropriate Regional DPO, Sample Management Office (SMO), and last two addressees of Mailing List for Data Reviewers (Appendix A.4) (the Inorganic Data Assessment form does not go to the last two addressees).~~

2.1.9 ~~Filed Paperwork~~ - Upon completion of review, the following are to be filed within M·B files:

N/A

a. Four copies of completed Data Assessment Narrative (Appendix A.2) each ca Appendix A.7.
b. Telephone Record Log (copy)
c. SMO Report (copy Appendix A-3)
d. CLP Data Assessment Summary Form (Appendix A.6).
e. CLP Reanalysis Request/Approval Record (copy)

3.0 Data Completeness - Contact laboratory for any missing data, Keeping phone logs or fax copies of all communications.

N/A

~~Indicate incomplete data package on the computer tracking sheet located in M·B of~~ Authorized contractor personnel may ~~contact the laboratory after~~ discovery of an inc data package. If a laboratory will not return phone calls or does not ~~respond to re~~ notify M·B coordinator of Region II for resolution.

4.0 Rejection of Data - All values determined to be unacceptable on the Inorganic Analys Sheet (Form I) must ~~be lined over with a red pencil~~ qualified as unreliable, R. As soon as any review criteria data to be rejected, that data can be eliminated from any further review or consider

5.0 Acceptance Criteria - In order that reviews be consistent among reviewers, accepta criteria as stated in Appendix A.1 (pages 4-25) should be used. Additional guidan be found in the National Inorganic Functional Guidelines of October 1, 1989.

6.0 ~~SMO Contract Compliance Screening (CCS)~~ - This is intended to aid reviewer in locati problems, both corrected and uncorrected. ~~However, the validation~~ should be carri even if CCS is not present. Resubmittals received from laboratory in ~~response to CC~~ be used by the reviewer.

N/A

7.0 Request for Reanalysis - Data reviewers must note all items of contract non-complia within Data Assessment Narrative. If holding times and sample storage times have not exceeded, DPO may request reanalysis if items of non-compliance are critical to da assessment. Requests are to be made on "CLP Re-Analysis Request/Approval Record".

8.0 ~~Record of Communication~~ - Provided by the Regional Sample Control Center (RSCC to indicate which data packages have been received and are ready ~~to be reviewed.~~

9.0 Rounding off numbers - The data reviewer will follow the standard practice.

	YES	NO	N
A.1.1 Contract Compliance Screening Report (CCS) - Present?	[__]	__	
ACTION: If no, contact RSCC.			
A.1.2 Record of Communication (from RSCC) - Present?	[__]	__	
ACTION: If no, request from RSCC.			
A.1.3 Trip Report - Present and complete?	[__]	__	
ACTION: If no, contact RSCC for trip report.			
A.1.4 ~~Sample Traffic Report~~ Chain-of-Custody Reports - Present or on file?	[✓]	__	
Legible?	[✓]	__	
ACTION: If no, request from Regional Sample Control Center (RSCC). N/A			
A.1.5 Cover Page - Present?	[__]	__	✓
Is cover page properly filled in and signed by the lab manager or the manager's designee?	[__]	__	✓
ACTION: If no, prepare Telephone Record Log, and contact laboratory.			
~~Do numbers of samples correspond to numbers on Record of Communication?~~ Do the sample identifications on the Chain-of-Custody reports agree with the sample identifications throughout the data package?	[✓]	__	
~~Do sample numbers on cover page agree with sample numbers on:~~			
~~(a) Traffic Report Sheet?~~	[__]	__	✓
~~(b) Form I's?~~	[__]	__	✓
~~ACTION: If no for any of the above, contact RSCC for clarification.~~			

	YES	NO	N/A
A.1.6 Form I (Final Data) - Are all Form I's present and complete?	[✓]		
ACTION: If no, prepare telephone record log and contact laboratory for submittal.			
Are correct units (ug/l for waters and mg/kg for soils) indicated on Form I's? and TCLP extracts	[ ]	✓	
Are soil sample results for each parameter corrected for percent solids?	[ ]		✓
~~Are EPA sample # s and corresponding laboratory sample ID # s the same as on the Cover Page, Form I's and in the raw data?~~	[ ]		✓
Are computation/transcription errors less than 10% of reported values?	[✓]		
Are all "less than IDL" values properly coded with "U"?	[✓]		
Was a brief physical description of samples given on Form I's?	[✓]		
Were the result qualifiers used correctly with final data?	[✓]		
ACTION: If no for any of the above, prepare Telephone Record Log, and contract laboratory for corrected data.			
Were any samples diluted beyond requirements of contract?		[✓]	
If yes, were dilutions noted on Form I's? N/A for inorganics	[ ]		✓
ACTION: If ~~no~~ note under Contract-Problem/Non-Compliance of the "Data Assessment Narrative".			

A.1.7 Holding Times - (aqueous and soil samples)

(Examine sample traffic reports and digestion/distillation logs.)

Mercury analysis (28 days). . . . . exceeded?		[✓]	
Cyanide distillation (14 days). . . . . exceeded?		[ ]	✓

	YES	NO	N
Other Metals analysis (6 months). . . . exceeded?	—	[✓]	—

NOTE: Prepare a list of all samples and analytes for which holding times have been exceeded. Specify the number of days from date of collection to the date of preparation (from raw data). Attach to checklist.

ACTION: If yes, ~~reject (red line) values less than Instrument Detection Limit (IDL)~~ and flag as estimated (J) the values above IDL even though sample(s) was preserved properly. flag non detects "R"

A.1.8 Raw Data

A.1.8.1 Digestion Log* for flame AA/ICP (Form XIII) present?	[✓]	—	—
Digestion Log for furnace AA Form XIII present?	[✓]	—	—
Distillation Log for mercury Form XIII present?	[✓]	—	—
Distillation Log for cyanides Form XIII present?	[__]	—	✓
Are pH values (pH<2 for all metals, pH>12 for cyanide) present? Note: pHs are not applicable to solid matrix samples.	[__]	✓	—
*Weights, dilutions and volumes used to obtain values.			
Percent solids calculation present for soils/sediments?	[__]	—	✓
Are preparation dates present on Digestion Log?	[✓]	—	—
A.1.8.2 Measurement read out record present? ICP	[✓]	—	—
Flame AA	[__]	—	✓
Furnace AA	[✓]	—	—
Mercury	[✓]	—	—
Cyanides	[__]	—	✓

Note: This information is not required in NEESA Level C analyses.

		YES	NO
A.1.8.3	Are all raw data to support all sample analyses and QC operations present?		
	Legible?	[✓]	—
	Properly Labeled?	[✓]	—
		[✓]	—

Note: This information is not required on NEESA Level C analyses.

ACTION: If no for any of the above, write Telephone Record Log and contact laboratory. Flag metal data as estimated if pH of sample is greater than 2. Flag cyanide data as estimated if pH sample is less than 12.

A.1.9 Data Validation and Verification

A.1.9.1 Calibration

A.1.9.1.1	Is record of at least 2 point calibration present for ICP analysis?	[✓]	—	—
	Is record of 5 point calibration present for Hg analysis?	[✓]	—	—

ACTION: If no for any of the above, write in the Contract Problem/Non-Compliance section of the "Data Assessment Narrative".

A.1.9.1.2	Is record of 4 point calibration present for:			
	Flame AA?	[__]	—	✓
	Furnace AA?	[✓]	—	—
	Cyanides?	[__]	—	✓

NOTE:
1. If less than 4 standards are measured in absorbance mode, then the remaining standards in concentration mode must be run immediately after calibration and be within ±10% of true value.
2. For all AA (except Hg) and Cyanide analyses, one calibration standard is at CRDL level. If not, write in the Contract-Problem/Non-Compliance section of the "Data Assessment Narrative".

	YES	NO	N/A
ACTION: Flag associated data as estimated if standards are not within ±10% of true values (except CRDL calibration standard). Do not flag the data as estimated in linear range indicated by good recovery of standard.			
A.1.9.1.3 Is correlation *coefficient less than 0.995 for:			
Mercury Analysis?	___	[✓]	___
Cyanide Analysis? N/A if CN is analyzed titrimetrically	___	[___]	✓
Atomic Absorption Analysis?	___	[___]	✓
ACTION: If yes, flag the associated data as estimated.			
A.1.9.2 Form II A (Initial and Continuing Calibration Verification)-			
A.1.9.2.1 Present and complete for every metal and cyanide?	[___]	✓	___
Present and complete for AA and ICP when both are used for same analyte?	[___]	___	✓
ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory.			
A.1.9.2.2 Circle all values on data summary sheet that are outside contract windows. Are all calibration standards (initial and continuing) within control limits?			
Metals 90-110%	[✓]	___	___
Hg - 80-120%	[✓]	___	___
Cyanides 85-115%	[___]	___	✓

* The reviewer will calculate correlation coefficient.

	YES	NO	N.A
ACTION: Flag as estimated (J) all positive data (not flagged with a "U") analyzed between a calibration standard with %R between 75-89% (65-79% for Hg; 70-84% for CN) or 111-125% (121-135% for Hg; 116-130% for CN) recovery and nearest good calibration standard. Qualify results <IDL as estimated (UJ), if the ICV or CCV %R is 75-89% (CN, 70-84% ; HG, 65-79%). Reject (red-line) as unacceptable data if recovery of the ICV or CCV is outside the range 75-125% (CN, 70-130%; Hg, 65-135%). Qualify five samples on either side of verification standard out of control limits.			
Was continuing calibration performed every 10 samples or every 2 hours?	[✓]		
ACTION: If no, flag the excess samples (eleventh and up) data as estimated (J).			
Was ICV for cyanides distilled?	[__]		
ACTION: If no, write in the Contract-Problem/Non-Compliance section of the "Data Assessment Narrative".			
A.1.9.3 Form II B (CRDL Standards for AA and ICP) -			
A.1.9.3.1 Was a CRDL standard (CRA) analyzed after initial calibration for all AA metals (except Hg)?	[✓]		
*Was a mid-range calib. verification standard distilled and analyzed for cyanide analysis?	[__]		✓
Was a 2xCRDL (or 2xIDL when IDL>CRDL) analyzed (CRI) for each ICP run? (Note: CRI for AL,Ba,Ca,Fe,Mg,Na,or K is not required.)	[✓]		

ACTION: If no for any of the above, flag as estimated all data falling within the affected ranges. The affected ranges are:

AA Analysis - **True Value ± CRDL
ICP Analysis - **True Value ± 2CRDL
CN Analysis - **True Value ± 0.5 x True Value.

* Find the results of mid-range standard in the raw data.
**True value of CRA, CRI or mid-range standard. Substitute IDL for CRDL when IDL > CRDL.

		YES	NO	N/A
A.1.9.3.2	Was CRI analyzed after ICV/ICB and before the final CCV/CCB, and for every four hours of ICP run?	[✓]		
	ACTION: If no, write in Contract Problem/Non-Compliance Section of the "Data Assessment Narrative".			
A.1.9.3.3	Circle all values on summary sheet that are outside acceptance windows.			
	Are CRA and CRI standards within control limits: Metals 80 - 120%R?	[__]	✓	
	Is mid-range standard within control limits: Cyanide 80 - 120%R?	[__]		✓
	ACTION: Flag as estimated all data within the affected ranges if the recovery of the standard is between 50-79%; flag only positive data if the recovery is between 121-150%; reject (quality R) (~~sublime~~) all data if the recovery is less than 50%; reject only positive data if the recovery is greater than 150%.			
A.1.9.4	Form III (Initial and Continuing Calibration Blanks)			
A.1.9.4.1	Present and complete?	[__]	✓	
	For both AA and ICP when both are used for same analyte?	[__]		✓
	Was an initial calibration blank analyzed?	[✓]		
	Was a continuing calibration blank analyzed after every 10 samples or every 2 hours (whichever is more frequent)?	[✓]		
	ACTION: If no, prepare Telephone Record Log, contact laboratory and write in the contract-problems/non-compliance section of the Data Assessment Narrative.			

		YES	NO
A.1.9.4.2	Circle all calibration blank values on Data Summary Sheet that are above CRDL (or 2 x IDL when IDL > CRDL). Are all calibration blanks (when IDL<CRDL) less than or equal to Contract Required Detection Limits (CRDL)?	[✓]	___
	Are all calibration blanks less than two times Instrument Detection Limit (when IDL>CRDL)?	[___]	___

ACTION: If no for any of the above, flag as estimated (J) all positive data less than or equal to calibration blank values analyzed between calibration blank with value over CRDL (or 2xIDL) and nearest good calibration blank. Flag five samples on either side of the calibration blank.

A.1.9.5 FORM III (Preparation Blank) -

(Note: The preparation blank for mercury is the same as the calibration blank.)

A.1.9.5.1	Was one prep. blank analyzed for: each 20 samples?	[✓]	___
	each batch?	[✓]	___
	each matrix type?	[✓]	___
	both AA and ICP when both are used for same analyte?	[___]	___

ACTION: If no for any of the above, flag as estimated (J) all associated positive data <10 x IDLs for which prep. blank was not analyzed.

NOTE: If only one blank was analyzed for more than 20 samples, then first 20 samples analyzed do not have to be flagged as estimated (J).

A.1.9.5.2	Is concentration of prep. blank greater than CRDL when IDL is less than or equal to CRDL?	✓	[___]
	If yes, is the concentration of the sample with the least concentrated analyte less than 10 times the prep. blank value?	✓	[___]

		YES	NO	N/A
	ACTION: If yes, reject ~~(red-line)~~ qualify R all associated data greater than CRDL concentration but less than ten times the prep. blank value found in the raw data.			
A.1.9.5.3	Do concentrations of prep. blank fall below two times IDL when IDL is greater than CRDL?	[ ]		
	ACTION: If no, reject ~~(red-line)~~ qualify R all positive data that has a concentration less than 10 times the prep. blank value in the raw data.			
A.1.9.5.4	Is concentration of prep. blank below the negative CRDL?		[✓]	
	ACTION: If yes, reject ~~(red-line)~~ qualify R all associated data that has a concentration less than 10xCRDL.			
A.1.9.6	Form IV (ICP Interference Check Sample)			
A.1.9.6.1	Present and complete?	[ ]	✓	
	(NOTE: Not required for furnace AA, flame AA, mercury, cyanide and Ca, Mg, K and Na.)			
	Was ICS analyzed at beginning and end of run (or at least twice every 8 hours)?	[✓]		
	ACTION: If no, flag as estimated (J) all samples for which AL, Ca, Fe, or Mg is higher than in ICS.			
A.1.8.6.2	Circle all values on Data Summary Sheet that are more than + 20% of true or established mean value. Are all Interference Check Sample results inside of control limits (+ 20%)?	[✓]		
	If no, is concentration of Al, Ca, Fe, or Mg lower than in ICS?	[ ]		✓
	ACTION: If no, flag as estimated (J) those positive results for which ICS recovery is between 121-150%; flag all sample results as estimated if ICS recovery falls within 50-79%; reject ~~(red-line)~~ qualify R those sample results for which ICS recovery is less than 50%; if ICS recovery is above 150%, reject positive results only (not flagged with a "J").			

		YES	NO	N/A
A.1.9.7	**Form V A (Spiked Sample Recovery - Pre-Digestion/Pre-Distillation)**- (Note: Not required for Ca, Mg, K, and Na (both matrices), Al, and Fe (soil only.)			
A.1.9.7.1	Present and complete for: each 20 samples?	[✓]		
	each matrix type?	[✓]		
	each conc. range (i.e. low, med., high)?	[✓]		
	For both AA and ICP when both are used for same analyte?	[ ]		✓
	ACTION: If no for any of the above, flag as estimated (J) all positive data less than four times spiking level for which spiked sample was not analyzed.			
	NOTE: If one spiked sample was analyzed for more than 20 samples, then first 20 samples analyzed do not have to be flagged as estimated (J).			
A.1.9.7.2	Was field blank used for spiked sample?		[✓]	
	ACTION: If yes, flag all positive data less than 4 x spike added as estimated (J) for which field blank was used as spiked sample.			
	NOTE: Matrix spike analysis should be performed on a field blank when it is the only aqueous sample in SDG.			
A.1.9.7.3	Circle all values on Data Summary Sheet that are outside control limits (75% to 125%). Are all recoveries within control limits?	[ ]	✓	
	If no, is sample concentration greater than or equal to four times spike concentration?	[ ]	✓	
	ACTION: If yes, disregard spike recoveries for analytes whose concentrations are greater than or equal to four times spike added. If no, circle those analytes on Form V for which sample concentration is less than four times the spike concentration.			

	YES	NO	N/A
Are results outside the control limits (75-125%) flagged with "N" on Form I's and Form VA?	[✓]		

ACTION: If no, write in the Contract - Problem/Non - Compliance section of "Data Assessment Narrative".

A.1.9.7.4 Aqueous

Are any spike recoveries:

(a) less than 30%?		[✓]	
(b) between 30-74%?	✓	[ ]	
(c) between 126-150%?		[✓]	
(d) greater than 150%?		[✓]	

ACTION: If less than 30%, reject all associated aqueous data; if between 30-74%, flag all associated aqueous data as estimated (J); if between 126-150%, flag as estimated (J) all associated aqueous data not flagged with a "U"; if greater than 150%, reject ~~(red-line)~~ all associated aqueous data not flagged with a "U".

quality "R"

A.1.9.7.5 Soil/Sediment

Are any spike recoveries:

(a) less than 10%?		[ ]	✓
(b) between 10-74%?		[ ]	✓
(c) between 126-200%?		[ ]	✓
(d) greater than 200%?		[ ]	✓

ACTION: If less than 10%, reject all associated data; if between 10-74%, flag all associated data as estimated; if between 126-200%, flag as estimated all associated data was not flagged with a "U"; if greater than 200%, reject all associated data not flagged with a "U".

		YES	NO	N/A
A.1.9.8	Form VI (Lab Duplicates)			
A.1.9.8.1	Present and complete for: each 20 samples?	[✓]		
	each matrix type?	[✓]		
	each concentration range (i.e. low, med., high)?	[✓]		
	both AA and ICP when both are used for same analyte?	[ ]		✓

ACTION: If no for any the above, flag as estimated (J) all data >CRDL* for which duplicate sample was not analyzed.

N/A

Some SOGs being rev. contain < 20 samples ∴ not all SOGs con lab duplicate analyses.

Note: 1. If one duplicate sample was analyzed for more than 20 samples, then first 20 samples do not have to be flagged as estimated.
2. If percent solids for soil sample and its duplicate differ by more than 1%, prepare a Form VI for each duplicate pair, report concentrations in Mg/L on wet weight basis and calculate RPD or Difference for each analyte.

A.1.9.8.2	Was field blank used for duplicate analysis?		[✓]	

ACTION: If yes, flag all data >CRDL* as estimated (J) for which field blank was used as duplicate.

NOTE: Duplicate analysis should be performed on a field blank when it is the only aqueous sample in SDG.

A.1.9.8.3	Are all values within control limits (RPD 20% water & 35% solid matrix or difference < ±CRDL)?	[ ]	✓	
	If no, are all results outside the control limits flagged with an * on Form I's and VI?	[✓]		

ACTION: If no, write in the Contract - Problems/Non-Compliance section of "Data Assessment Narrative".

NOTE: 1. RPD is not calculable for an analyte of the sample - duplicate pair when both values are less than IDL.

* Substitute IDL for CRDL when IDL > CRDL.

		YES	NO	N/A
	2. If lab duplicate result is rejectable due to coefficient of correlation of MSA, analytical spike recovery, or duplicate injections criteria, do not apply precision criteria.			
A.1.9.8.4	Is any value for sample duplicate pair less than CRDL* and other value greater than or equal to 10 x *CRDL?		[✓]	
	ACTION: If yes, flag the associated data as estimated (J).			
A.1.9.8.5	Aqueous Circle all values on Data Summary Sheet that are: RPD > 50%, or Difference > ± CRDL*			
	Is any RPD greater than 50% where sample and duplicate are both greater than or equal to 5 times *CRDL?	✓	[ ]	
	Is any **difference between sample and duplicate greater than *CRDL where sample and/or duplicate is less than 5 times *CRDL?		[✓]	
	ACTION: If yes, flag the associated data as estimated.			
A.1.9.8.6	Soil/Sediment Circle all values on Data Summary Sheet that are: RPD > 100%, or Difference > 2 x CRDL*			
	Is any RPD (where sample and duplicate are both greater than or equal to 5 times *CRDL) : > 100%?		[ ]	✓
	Is any **difference between sample and duplicate (where sample and/or duplicate is less than 5x*CRDL) : > 2x*CRDL?		[ ]	✓

* Substitute IDL for CRDL when IDL > CRDL.
** Use absolute values of sample and duplicate to calculate the difference.

	YES	NO	N/A
ACTION: If yes, flag the associated data as estimated.			
A.1.9.9 Field Duplicates			
A.1.9.9.1 Were field duplicates analyzed?	[ ]	✓	
ACTION: If yes, prepare a Form VI for each aqueous field duplicate pair. Prepare a Form VI for each soil duplicate pair, if percent solids for sample and its duplicate differ by more than 1%; report concentrations of soils in ug/l on wet weight basis and calculate RPDs or Difference for each analyte.			
NOTE: 1. Do not calculate RPD when both values are less than IDL. 2. Flag all associated data only for field duplicate pair.			
A.1.9.9.2 Is any value for sample duplicate pair less than *CRDL and other value greater than or equal to 10 x *CRDL?		[ ]	✓
ACTION: If yes, flag the associated data as estimated.			
A.1.9.9.3 Aqueous			
Circle all values on Form VI for field duplicates that are: RPD > 50%, or Difference > ± CRDL*			
Is any RPD greater than 50% where sample and duplicate are both greater than or equal to 5 times *CRDL?		[ ]	✓
Is any **difference between sample and duplicate greater than *CRDL where sample and/or duplicate is less than 5 times *CRDL?		[ ]	✓
ACTION: If yes, flag the associated data as estimated.			

* Substitute IDL for CRDL when IDL > CRDL.

** Use absolute values of sample and duplicate to calculate the difference.

	YES	NO	N/A
A.1.9.9.4 Soil/Sediment			
Circle all values on Form VI for field duplicates that are: RPD >100%, or Difference > 2 x CRDL*			
Is any RPD (where sample and duplicate are both greater than 5 times *CRDL) : >100%?	[ ]	[ ]	[✓]
Is any **difference between sample and duplicate (where sample and/or duplicate is less than 5x *CRDL): >2x *CRDL?	[ ]	[ ]	[✓]

ACTION: If yes, flag the associated data as estimated.

A.1.9.10 Form VII (Laboratory Control Sample) (Note: LCS - not required for aqueous Hg and cyanide analyses.)

	YES	NO	N/A
A.1.9.10.1 Was one LCS prepared and analyzed for: every 20 water samples?	[✓]	[ ]	[ ]
every 20 solid samples?	[ ]	[ ]	[✓]
both AA and ICP when both are used for same analyte?	[ ]	[ ]	[✓]

ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory for submittal of results of LCS. Flag as estimated (J) all data for which LCS was not analyzed.

NOTE: If only one LCS was analyzed for more than 20 samples, then first 20 samples close to LCS do not have to be flagged as estimated.

* Substitute IDL for CRDL when IDL > CRDL.

**Use absolute values of sample and duplicate to calculate the difference.

	YES	NO
A.1.9.10.2 Aqueous LCS		
Circle all LCS values outside control limits (80 - 120%- except aqueous Ag and Sb).		
Is any LCS recovery: less than 50%?	✓	[ ]
between 50% and 79%?		[✓]
between 121% and 150%?		[✓]
greater than 150%?		[✓]

ACTION: Less than 50%, reject ~~(red-line)~~ qualify "R" all data; between 50% and 79%, flag all associated data as estimated (J); between 121% and 150%, flag all positive (not flagged with a "U") results as estimated; greater than 150%, reject all positive results.

A.1.9.10.3 Solid LCS

NOTE: 1. If "Found" value of LCS is rejectable due to duplicate injections or analytical spike recovery criteria, regardless of LCS recovery, flag the associated data as estimated (J).

2. If IDL of an analyte is equal to or greater than true value of LCS, disregard the "Action" below even though LCS is out of control limits.

	YES	NO
Is LCS "Found" value higher than the control limits on Form VII?		
ACTION: If yes, qualify all associated positive data as estimated.	[ ]	✓
Is LCS "Found" value lower than the Control limits on Form VII?		
ACTION: If yes, qualify all associated data as estimated.	[ ]	✓

		YES	NO	N/A
A.1.9.11	Form IX (ICP Serial Dilution) -			
	NOTE: Serial dilution analysis is required only for initial concentrations equal to or greater than 10 x IDL.			
A.1.9.11.1	Was Serial Dilution analysis performed for:			
	each 20 samples?	[ ]	✓	
	each matrix type?	[ ]	✓	
	each concentration range (i.e. low, med.)?	[ ]	✓	
	ACTION: ~~If no for any of the above, flag all positive data greater than or equal to 10xIDLs as estimated (J) for which Serial Dilution Analysis was not performed, and summarize the deficiency on the DPO report.~~ N/A Some soils being reported contain < 20 samples required frequency of analysis 1/20.			
A.1.9.11.2	Was field blank(s) used for Serial Dilution Analysis?		[✓]	
	ACTION: If yes, flag all associated data ≥ 10 x IDL as estimated (J).			
	NOTE: Serial dilution analysis should be performed on a field blank when it is the only aqueous sample in SDG.			
A.1.9.11.3	Are results outside control limit flagged with an "E" on Form I's and Form IX when initial concentration on Form IX is equal to 50 times IDL or greater.	[ ]	✓	
	ACTION: If no, write in the contract-problem/non-compliance section of the "Data Assessment Narrative".			
A.1.9.11.4	Circle all values on Data Summary Sheet that are outside control limit for initial concentrations equal to or greater than 10 x IDLs only. Are any % difference values:			
	> 10%?		[ ]	✓
	≥ 100%?		[ ]	✓

		YES	NO	N/A
	ACTION: Flag as estimated (J) all associated equal to or greater than 10xIDLs for which percent difference is greater than 10% but less than 100%. Reject (~~red-line~~) all associated sample results equal to or greater than 10xIDLs for which PD is greater than or equal to 100%. qualify "R"			
A.1.9.12	Furnace Atomic Absorbtion (AA) QC Analysis			
A.1.9.12.1	Are duplicate injections present in furnace raw data (except during full Method of Standard Addition) for each sample analyzed by GFAA?	[✓]		
	ACTION: If no, reject the data on Form I's for which duplicate injections were not performed.			
A.1.9.12.2	Do the duplicate injection readings agree within 20% Relative Standard Deviation (RSD) or Coefficient of Variation (CV) for concentration greater than CRDL?	[✓]		
	Was a dilution analyzed for sample with post digestion spike recovery less than 40%?	[✓]		
	ACTION: If no for any of the above, flag all the associated data as estimated (J).			
A.1.9.12.3	Is *post digestion spike recovery less than 10% or greater than 150% for any result?			[✓]
	ACTION: If yes, reject (~~red-line~~) the affected data if recovery is <10%; reject data not flagged with "U" if spike recovery is >150%. qualify "R"			
	NOTE: Reject the data only if the affected sample was not subsequently analyzed by Method of Standard Addition.			

* Post digestion spike is not required on the pre-digestion spiked sample.

		YES	NO	N
A.1.9.13	Form VIII (Method of Standard Addition Results)			
A.1.9.13.1	Present?	[✓]	—	—
	If no, is any Form I result coded with "S" or a "+"?	—	[—]	✓
	ACTION: If yes, write request on Telephone Record Log and contact laboratory for submittal of Form VIII.			
A.1.9.13.2	Is coefficient of correlation for MSA less than 0.990 for any sample?	—	[✓]	—
	ACTION: If yes, reject (red-line) affected data.			
A.1.9.13.3	Was *MSA required for any sample but not performed?	—	[✓]	—
	Is coefficient of correlation for MSA less than 0.995?	—	[✓]	—
	Are MSA calculations outside the linear range of the calibration curve generated at the beginning of the analytical run?	—	[✓]	—
	ACTION: If yes for any of the above, flag all the associated data as estimated (J).			
A.1.9.13.4	Was proper quantitation procedure followed correctly as outlined in the SOW on page E-16 through E-17?	[✓]	—	—
	ACTION: If no, note exception under contract problem/non-compliance of data assessment narrative, or prepare a separate list.			
A.1.9.14	Dissolved/Total or Inorganic/Total Analytes -			
A.1.9.14.1	Were any analyses performed for dissolved as well as total analytes on the same sample(s). aliquot	—	[✓]	—
	Were any analyses performed for inorganic as well as total (organic + inorganic) analytes on the same sample(s)? aliquot	—	[✓]	—

* MSA is not required on LCS and prep. blank.

NOTE: 1. If yes, prepare a list comparing differences between all dissolved (or inorganic) and total analytes. Compute the differences as a percent of the total analyte only when dissolved concentration is greater than CRDL as well as total concentration.
2. Apply the following questions only if inorganic (or dissolved) results are (i) above CRDL, and (ii) greater than total constituents.
3. At least one preparation blank, ICS, and LCS should be analyzed in each analytical run.

	YES	NO
A.1.9.14.2 Is the concentration of any dissolved (or inorganic) analyte greater than its total concentration by more than 10%?	—	[✓]
A.1.9.14.3 Is the concentration of any dissolved (or inorganic) analyte greater than its total concentration by more than 50%?	—	[✓]

ACTION: If more than 10%, flag both dissolved (or inorganic) and total values as estimated (J); if more than 50%, reject (red-line) the data for both values.

A.1.9.15 Form I to IX

A.1.9.15.1 Are all the Form I through Form IX labeled with:

Laboratory name?	[✓]	--
Case/SAS number?	[ ]	--
EPA sample No.?	[✓]	--
SDG No.?	[✓]	--
Contract No.?	[ ]	—
Correct units?	[ ]	✓
Matrix?	[✓]	--

ACTION: If no for any of the above, note under contract problem/non-compliance section of the "Data Assessment Narrative".

	YES	NO	N/A
A.1.9.15.2 Do any computation/transcription errors exceed 10% of reported values on Forms I-IX for:			
(NOTE: Check all forms against raw data.)			
(a) all analytes analyzed by ICP?	___	[✓]	___
(b) all analytes analyzed by GFAA?	___	[✓]	___
(c) all analytes analyzed by AA Flame?	___	[___]	✓
(d) Mercury?	___	[✓]	___
(e) Cyanide?	___	[___]	✓

ACTION: If yes, prepare Telephone Log, contact laboratory for corrected data and correct errors with red pencil and initial.

A.1.9.16 Form I (Field Blank) -

~~Circle all field blank values on Data Summary Sheet that are greater than CRDL, 2 x IDL when IDL > CRDL.~~ N/A

Do concentrations of field blank(s) fall below CRDL (or 2 x IDL when IDL > CRDL) for all parameters of associated aqueous and soil samples?	[___]	___	✓
If no, was field blank value already rejected due to other QC criteria?	[___]	___	✓

ACTION: If no, reject (except field blank results) all associated positive sample data less than or equal to five times the field blank value.

	YES	NO	N/A
A.1.9.17 Form X, XI, XII (Verification of Instrumental Parameters).			
A.1.9.17.1 Is verification report present for:			
Instrument Detection Limits (quarterly)?	[✓]	—	—
ICP Interelement Correction Factors (annually)?	[✓]	—	—
ICP Linear Ranges (quarterly)?	[✓]	—	—
ACTION: If no, contact DPO of the lab.			
A.1.9.17.2 Form X (Instrument Detection Limits) - (Note: IDL is not required for Cyanide.)			
Are IDLs present for: all the analytes?	[✓]	—	—
all the instruments used?	[✓]	—	—
For both AA and ICP when both are used for same analyte?	[__]	—	✓
ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory.			
Is IDL greater than CRDL for any analyte?	—	[✓]	—
If yes, is the concentration on Form I of the sample analyzed on the instrument whose IDL exceeds CRDL, greater than 5 x IDL?	[__]	—	✓
ACTION: If no, flag as estimated all values less than five times IDL of the instrument whose IDL exceeds CRDL.			

	YES	NO	N/A
A.1.9.17.3 Form XI (Linear Ranges)			
Was any sample result higher than high linear range of ICP.	___	[✓]	___
Was any sample result higher than the highest calibration standard for non-ICP parameters?	___	[✓]	___
If yes for any of the above, was the sample diluted to obtain the result on Form I?	[___]	___	✓
ACTION: If no, flag the result reported on Form I as estimated(J).			
A.1.9.18 Percent Solids of Sediments			
Is soil content in sediment(s) less than 50%?	___	[___]	✓
ACTION: If yes, qualify as estimated all data not previously rejected or flagged due to other QC criteria.			

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.2: Data Assessment Narrative

Date: Feb. 1990
Number: HW-2
Revision: 10

Case# NUS Site CALVERTON Matrix: Soil ____

SDG# 2907CW Lab NET-CAMBRIDGE Water X

Contractor HALLIBURTON NUS Reviewer NORMAN STRAUB Other ____

A.2.1 The case description and exceptions, if any, are noted below with reason(s) for rejection or qualification as estimated value(s) J.

- SEVERAL BLANK CONTAMINANTS WERE DETECTED IN PREPARAT INITIAL CALIBRATION, and CONTINUING CALIBRATION BLANK ANALYSES; POSITIVE RESULTS REPORTED FOR BLANK CONTAMINANTS AT CONCENTRATIONS LESS THAN ESTABLISHED ACTION LEVELS ARE QUALIFIED, "B".
- NONDETECTS REPORTED FOR MERCURY ARE QUALIFIED AS ESTIMATED, "UJ", IN ALL SAMPLES BECAUSE of MATRIX SPIKE RECOVERY BELOW 74%.
- POSITIVE LEAD RESULTS ESTIMATED, "J", IN ALL SAMPLES BECAUSE of LABORATORY DUPLICATE RPD > 20%.
- NONDETECTS REPORTED FOR SELENIUM REJECTED, "R", BECAUSE of 0% RECOVERY IN ANALYSIS of LCS.
- NONDETECT REPORTED FOR ARSENIC IN SAMPLE MW-5FP ESTIMATED, "UJ", BECAUSE of PDS %R < 80.
- POSITIVE RESULTS REPORTED FOR IRON, CALCIUM, and MANGANESE IN MW-5FP and IRON RESULT IN MW-4FP ARE ESTIMATED, "J", BECAUSE ICP SERIAL DILUTION ANALYSES WERE NOT PERFORMED FOR THESE RESULTS REPORTED AT CONCENTRATIONS GREATER THAN 50X THE RESPECTIVE IDLS.

A.2.1 (continuation)

A.2.1 (continuation)

A.2.2 Contract-Problems/Non-Compliance

M/B Reviewer: _____ Date: _____
Signature

Contractor Reviewer: _____ Date: _____
Signature

Verified by: _____ Date: _____

CONTRACT NON-COMPLIANCE
(SMD REPORT)

Regional Review of Uncontrolled Hazardous Waste
Site Contract Laboratory Data Package

CASE NO. NUS SDG 2

The hardcopied (laboratory name) NET - CAMBRIDGE DIVISION Inorganic data package received at Region II has been reviewed and the quality assurance performance data summarized. The data reviewed included:

SMD Sample No.: _____

Conc. & Matrix: AQUEOUS METALS

Contract No. WA87-K025,K026,K027(SOW787) requires that specific analytical work be done a that associated reports be provided by the contractor to the Regions, EMSL-LV, and SMD. general criteria used to determine the performance were based on an examination of:

- Data Completeness
- Matrix Spike Results
- Calibration Standards Results
- Duplicate Analysis Results
- Blank Analysis Results
- MSA Results

Items of non-compliance with the above contract are described below.

Comments: CLP DELIVERABLE IN ACCORDANCE WITH NEESA LEVEL C DAT WAS NOT PROVIDED. CYANIDE ANALYSES WERE NOT PERFORMED.

MHS
Reviewer's Initial

01-10-92
Date

MAILING LIST FOR DATA REVIEWERS

1. USEPA Region I (ESD)
60 Westview Street
Lexington, MA 02173
Deb Szaro
(617) 861-6312
CT, ME, MA, NH, RI, VT
CAA, Resource Analysts, York, EJI, Skinner, DPA

2. USEPA Region II (ESD)
Woodbridge Avenue
Edison, New Jersey 08837
Lisa Gatten Vidulich
(201) 321-6676
NJ, NY, PR, VI
Century, Chemtech, US Test, Nanco, ETC, Gadson, EMS, Galson, ICM

3. USEPA Region III (CRL)
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DE, MD, PA, VA, WV, DC
Centec, Hitman, JTC, MACK, VERSAR, ITAS, Weston, MMES, EA Engineering Subject Tech., Key PA

4. USEPA Region IV (ESD)
Analytical Support Branch
College Station Road
Athens, GA 30613
Tom Bennett, Jr.
(404) 546-3112
AL, FL, GA, KY, MS, NC, SC, TN
Compuchem, EPS, ESE, PASAT, Triangle Labs

5. USEPA Region V (ESD)
536 South Clark Street
Tenth Floor, CRL
Chicago, IL 60605
Pat Churilla
312-353-9087
IL, IN, MI, MN, OH, WI
NLE, TAI/ERG

6. USEPA Region VI (ESD)
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David Stockton
(713) 953-3425
AR, LA, NM, TX, OK
ANACON, RADIAN, SPECS, EIS, Glocher Research, Inc., SPL Inc., SwRI, Allied, Key TX, EIRA

7. USEPA Region VII Laboratory
25 Funston Road
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Debra Morey
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Wilson, Kansas City Scientific Enterprises, Eagle Pitcher

8. USEPA Region VIII Laboratory
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Denver Federal Center
Lakewood, CO 80225
Eva Hoffman
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CO, ND, SD, UT, WY, MT
ACCL, CEMSI, RMAL, Data Chem, Centef

9. USEPA Region IX (ESD)
QA Management Section
215 Fremont Street
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AZ, CA, HI, NV, American Samoa, Guam Trust Territories of Pacific Islands, Wake Island
ALI, CAL Weston, S-Cubed, IT-CA, Vegas

10. USEPA Region X Laboratory
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Manchester, WA 98353
Gerald Muth
(206) 442-0370
AK, ID, OR, WA
Lauchs Testing Labs, Century Testing Labs (For VOA Only), Weyerhauser Co. Columbia Testing, Silver Valley

11. Carla Dempsey - (OS-230)
USEPA
401 "M" Street, S.W.
Washington, DC 20460
FTS 382-5746

12. Edward Kantor
USEPA
EMSL-LV
944 E. Harmon Avenue
BOX 93478
Las Vegas, NV 89119

13. Sample Management Office
Viar and Company
P.O. BOX 818
Alexandria, VA 22313

APPENDIX A.5 SUMMARY OF INORGANICS QUALITY CONTROL DATA

LABORATORY: NET-CAMBRIDGE CASE NO. NOS SOW NO. 7/88 SAMPLE TYPE/SDG: AQUEOUS/2907

SITE/STUDY DESCRIPTION: CALVERTON SAMPLE NOS: MW-4FP, MW-5FP, MW-11FP, MW-16

FIELD DUP. #'S: NONE LAB DUP. #'S: MW-16FP, MW-11FP Field Blank NONE MATRIX SPIKE #:

SERIAL DILUTION SAMPLE NO. NONE COMPLETION DATE: 01-10-92 REVIEWERS INITIALS: NJS

X			I	IIA				IIB		III						IV		V	VI	VII	IX
ara-eter	Detection Limits UG/L CRDL	IDL	Field Blank	Calib. Ver. %R Init	Continued 1	2	3	CRDL Std Ver. % R Init	Fin	Calibration Blanks Init	Continued 1	2	3	PREP BLANK		ICP ICS % R Init	Fin	Matrix Spike %	Lab Dup RPD Diff	LCS % R	Ser Dil % D
Al	200	20	NONE	100.9	97.5											96.7	95.0				
Sb	60	30																			
As	10	3																			
Ba	200	5																			
Be	5	1																			
Cd	5	3																			
Ca	5000	20																			
Cr	10	5																			
Co	50	5																			
Cu	25	5																			
Fe	100	5																			
Pb	3	2																			
Mg	5000	50																			
Mn	15	1																			
Hg	0.2	0.2																			
Ni	40	5																			
K	5000	400																			
Se	5	2																			
Ag	10	5																			
Na	5000	100																			
Tl	10	2																			
V	50	5																			
Zn	20	5																			
CN	10	NA																			

CLP DATA ASSESSMENT SUMMARY FORM (INORGANICS)

Type of Review: _____ Date: _____ Case #: 2907CW

Site: CALVERTON Lab Name: NET - CAMBRIDGE DIVISION

Reviewer's Initials: NS Number of Samples: 2/Pb and Hg ONLY; 2/TOTAL METAL

Analytes Rejected Due to Exceeding Review Criteria:*

	Holding Times	Calibration	Prep Blank	Field Blank	Inter-ferences	Spike Recovery	Duplicates Lab	Duplicates Field	Detection Limits	LCS	Serial Dilution	MSA	Total Analytes	Rejection
ICP														
Flame AA														
Furnace AA										1			1	2
Mercury														
Total														
Other														

Analytes Flagged as Estimated (J) Due to Exceeding Criteria For:*

ICP											3		3	6
Flame AA														
Furnace AA						1	1						2	4
Mercury						1							1	2
Total														
Other														

Note:
Asterisk (*) Indicates additional exceedances of review criteria.

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.7: CLP Data Assessment Checklist
Inorganic Analysis

Date: Feb. 1990
Number: HW-2
Revision: 10

INORGANIC REGIONAL DATA ASSESSMENT

Region II

CASE NO. NUS

SITE CALVERTON

LABORATORY NET - CAMBRIDGE DIVISION

NO. OF SAMPLES/ MATRIX 4 / WATER

SDG# 2907CW

REVIEWER (IF NOT ESD) HALLIBURTON NUS

SOW# 7/88

REVIEWER'S NAME NORMAN STRAUB

DPO: ACTION _____ FYI ✓

COMPLETION DATE 01-10-92

DATA ASSESSMENT SUMMARY

		ICP	AA	Hg	CYANIDE
1.	HOLDING TIMES	O	O	O	NA
2.	CALIBRATIONS	O	O	O	
3.	BLANKS	M[1]	O	O	
4.	ICS	O			
5.	LCS	O	M[2]		
6.	DUPLICATE ANALYSIS	O	O[1]		
7.	MATRIX SPIKE	O	X[2]	O[2]	
8.	MSA	O[3]	O		
9.	SERIAL DILUTION	O	O	O	
10.	SAMPLE VERIFICATION	O[4]	O[4]	O[4]	
11.	OTHER QC	O	O	O	
12.	OVERALL ASSESSMENT				

O = Data has no problems/or qualified due to minor problems.
M = Data qualified due to major problems.
Z = Data unacceptable.
X = Problems, but do not affect data.

ACTION ITEMS: N/A

O[1] - LAB DUPLICATE RPD > 50 FOR Pb. ALL POSITIVE RESULTS ESTIMATED.

O[2] - MS %R < 75 FOR Hg. ALL NONDETECTS ESTIMATED.

AREAS OF CONCERN: O[3] - ICP SERIAL DILUTION NOT PERFORMED. ICP RESULTS > 10X IDL ESTIMAT

O[4] - SAMPLE pH > 2. ALL RESULTS FOR ALL ANALYTES ESTIMATED.

M[1] - ZINC DETECTED AS BLANK CONTAMINANT. POSITIVE RESULTS < A.L. REJECTED.

M[2] - LCS %R FOR SELENIUM EQUAL TO ZERO. ALL NONDETECTS REJECTED.

APPENDIX D

SUPPORT DOCUMENTATION

AQUEOUS DIGESTION LOG

CLP or Comm

PAGE 07
SUPV. [illegible]

Sample Identification		Anal. JK		Anal.		Anal. KT		
		FURN DATE 8/1/91		KAP DATE		HG DATE 8/6/91		Ph
CLIENT	NET-ID	Initial Volume (ml)	Final Volume (ml)	Initial Volume (ml)	Final Volume (ml)	Initial Volume (ml)		62 ✓
Halliburton NUS	91.0474-12231	10	100			10		7
	-12231S2							7
	-12231DS							7
	91.0474-12232							7
	-12232DS							7
	-12232S2							7
	91.0482-12264					10		7
	-12265	10				10		
	PBW	100	100			10		
	LCSW	100	100					

labels Batch #9 20150

data qualified as estimated, J, UJ

modified CLP AQ. method - see narrative.

20094

2907cw

PREP BATCH

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5A

SPIKE SAMPLE RECOVERY

20015

EPA SAMPLE NO.

MW11S

Lab Name: NET-CAMBRIDGE DIVISION Contract:

Lab Code: CAMBRG Case No.: NUS SAS No.: SDG No.: 2907CW

Matrix: WATER Level (low/med): LOW

% Solids for Sample: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q
Aluminum								
Antimony								
Arsenic								
Barium								
Beryllium								
Cadmium								
Calcium								
Chromium								
Cobalt								
Copper								
Iron								
Lead	74-125	285.5000		218.0000		20.0	337.5	
Magnesium								
Manganese								
Mercury	74-125	2.9209		2.0000	U	5.00	58.4	N
Nickel								
Potassium								
Selenium								
Silver								
Sodium								
Thallium								
Vanadium								
Zinc								
Cyanide								

Comments:

Pb: sample value >4x the spike added.

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20016

5A

SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

MW16FPS

Lab Name: NET-CAMBRIDGE DIVISION Contract:

Lab Code: CAMBRG Case No.: NUS SAS No.: SDG No.: 2907CW

Matrix: WATER Level (low/med): LOW

% Solids for Sample: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Aluminum									NR
Antimony									NR
Arsenic									NR
Barium									NR
Beryllium									NR
Cadmium									NR
Calcium									NR
Chromium									NR
Cobalt									NR
Copper									NR
Iron									NR
Lead	74-125	202.5000		284.0000		20.00	-407.5		F
Magnesium									NR
Manganese									NR
Mercury	74-125	3.7914		2.0000	U	5.00	75.8		CV
Nickel									NR
Potassium									NR
Selenium									NR
Silver									NR
Sodium									NR
Thallium									NR
Vanadium									NR
Zinc									NR
Cyanide									NR

Comments:

Pb: sample value >4X spike added.

2010

QC SUMMARY FOR INORGANICS REPORT: LAB CONTROL STANDARDS

NET-CAMBRIDGE DIVISION
Date of report: 08/23/91

Work ID:
SDG/ Batch: 91.0482
Page: 5

Standard: LCSHN03 2901CW (Liquid

Element	True	Found	Units	% R
Ag				
Al				
As	0.020	0.018	mg/L	90
Ba				
Be				
Ca				
Cd				
Cn				
Co				
Cr				
Cu				
Fe				
Hg				
K				
Mg				
Mn				
Na				
Ni				
Pb				
Sb				
* Se	0.010	<0.10	mg/L	0
Tl	0.050	0.049	mg/L	98
V				
Zn				

* LCS - lost during digestion - or matrix interference

ICP LCS NOT performed.

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20026

ANALYSIS RUN LOG

Lab Name: NET-CAMBRIDGE DIVISION Contract: _____

Lab Code: CAMBRG Case No.: _____ SAS No.: _____ SDG No.: 2907CU

Instrument ID Number: P5 Method: _____

Start Date: 08-15-91 End Date: 08-15-91

EPA Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
MW11A	1.00	1224	80.75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11S	1.00	1229		-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-
MW11D	1.00	1233		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11DA	1.00	1237		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW4FP	1.00	1242		-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-
MW4FPA	1.00	1246	98.50	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-
MW5FP	1.00	1251		-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-
MW5FPA	1.00	1255	103.50	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-
CCV	1.00	1300		-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-
CCB	1.00	1304		-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-
PBW	1.00	1309		-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-
PBWA	1.00	1313	105.25	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-
MW11	10.00	1318		-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-
MW11A	10.00	1322	97.75	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-
CCV	1.00	1327		-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-
CCB	1.00	1331		-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-
22222	1.00	1336		-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-
22222	1.00	1340		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22222	1.00	1345		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22222	1.00	1350		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22222	1.00	1356		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22222	1.00	1400		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22222	1.00	1405		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22222	1.00	1409		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22222	1.00	1414		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22222	1.00	1419		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CCV	1.00	1422	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-
CCB	1.00	1427		-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-
MW16	1.00	1431		-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-
MW16A	1.00	1436	70.50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW110	1.00	1438		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW111	1.00	1440		-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-
MW112	1.00	1443		-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-

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20020

8

STANDARD ADDITION RESULTS

Lab Name: NET-CAMBRIDGE DIVISION Contract:

Lab Code: CAMBRG Case No.: NUS SAS No.: SDG No.: 2907CW

Concentration Units: ug/L

EPA Sample No.	An	0 ADD ABS	1 ADD CON	1 ADD ABS	2 ADD CON	2 ADD ABS	3 ADD CON	3 ADD ABS	Final Conc.	r	Q
MW11	PB	0.087	10.00	0.128	20.00	0.169	40.00	0.248	21.8	0.9999	
MW16	PB	0.111	10.00	0.148	20.00	0.183	40.00	0.265	28.4	0.9994	
~~RNSTS~~	~~PB~~	~~0.011~~	~~5.00~~	~~0.024~~	~~10.00~~	~~0.051~~	~~20.00~~	~~0.091~~	~~3.1~~	~~0.9991~~	

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DUPLICATES

20018

EPA SAMPLE NO.

MW11FPD

Lab Name: NET-CAMBRIDGE DIVISION Contract:

Lab Code: CAMBRG Case No.: NUS SAS No.: SDG No.: 2907CW

Matrix (soil/water): WATER Level (low/med): LOW

% Solids for Sample: 0.0 % Solids for Duplicate: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Aluminum								NR
Antimony								NR
Arsenic								NR
Barium								NR
Beryllium								NR
Cadmium								NR
Calcium								NR
Chromium								NR
Cobalt								NR
Copper								NR
Iron								NR
Lead		218.0000		5355.0000		184.9	*	F
Magnesium								NR
Manganese								NR
Mercury				2.0000	U			CV
Nickel								NR
Potassium								NR
Selenium								NR
Silver								NR
Sodium								NR
Thallium								NR
Vanadium								NR
Zinc								NR
Cyanide								NR

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6
DUPLICATES

EPA SAMPLE NO.

MW16D

Lab Name: NET-CAMBRIDGE DIVISION Contract:

Lab Code: CAMBRG Case No.: NUS SAS No.: SDG No.: 2907CW

Matrix (soil/water): WATER Level (low/med): LOW

% Solids for Sample: 0.0 % Solids for Duplicate: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Aluminum								NR
Antimony								NR
Arsenic								NR
Barium								NR
Beryllium								NR
Cadmium								NR
Calcium								NR
Chromium								NR
Cobalt								NR
Copper								NR
Iron								NR
Lead	30.0	284.0000		125.5000		77.4	*	F
Magnesium								NR
Manganese								NR
Mercury		2.0000	U	2.0000	U			CV
Nickel								NR
Potassium								NR
Selenium								NR
Silver								NR
Sodium								NR
Thallium								NR
Vanadium								NR
Zinc								NR
Cyanide								NR

QC SUMMARY FOR INORGANICS REPORT: DIGESTION BLANKS

NET-CAMBRIDGE DIVISION
Date of report: 08/23/91

Work ID:
SDG/ Batch: 91.0482
Page: 3

Blank: 290QCW
Found, mg/L

Element	
Ag	<0.0050
Al	<0.020
As	<0.0030
Ba	<0.0050
Be	<0.0010
Ca	0.36
Cd	<0.003
Cn	<
Co	0.012
Cr	<0.005
Cu	<0.0050
Fe	0.024
	<
K	<0.40
Mg	<0.050
Mn	0.0023
Na	<0.10
Ni	0.015
Sb	0.13
Se	<0.1
Tl	<0.0020
V	<0.0050
Zn	0.036

C L P METALS 3.00e

2907CW

Run id: I9 9123901
JOBIN YVON MODEL 50 ICP
Analytical method: P
Element: Zn

Acquired: 08/27/91 by CE
Crunched: 08/27/91 by CE
Time: 1418
Processing protocol: CDMM

INSTRUMENT RUN QC REPORT

CALIBRATION VERIFICATIONS

Position	Sample ID	Code	True Value	Found Value	% Recovery
3	ICAF7	ICV	0.0000	1.6200	----- U
1	ICV1A	ICV	2500.0000	2611.6000	104.5
2	ICV2A	ICV	0.0000	1.2600	----- U
39	ASAP	CCV	0.0000	8.6300	----- B
38	STD1	CCV	10000.0000	10872.0000	108.7
40	STD2	CCV	0.0000	1.4200	----- U

CALIBRATION BLANKS

Position	Sample ID	Code	CRDL	Found Value	Flag
4	CALB	ICB	20.0000	0.3000	U
37	CALB	CCB	20.0000	2.8000	U

CRDL STANDARDS

Position	Sample ID	Code	True Value	Found Value	% Recovery
9	2XCRDLAB	CRIO	40.0000	50.0600	125.2

Positives qualifie as estimate J

INTERFERENCE CHECK STANDARDS

Position	Sample ID	Code	True Value	Found Value	% Recovery
7	ICSA	ICSAO	0.0000	39.0000	-----
8	ICSAB	ICSABO	1000.0000	964.0000	96.4

no actions taken
no positives report
Not addressed in letter