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Mr. Mark A. Buckmaster
Westinghouse Hanford Company
P.O. Box 1970, MSIN H4-55
Richland, WA 9932

Subject: Deliverable for 200-BP-1 Data Validation, Task Order S-92-19, WHC Contract No. MLW-SVV-073750

Dear Mr. Buckmaster:

Enclosed please find a copy of the Data Validation Summary Report for Data Package CLP632 produced under the referenced task order. This deliverable was prepared by a team of Golder Associates with support from SAIC under the direction of Mr. Kent Angelos.

Should you have any questions, please do not hesitate to contact the following: Mr. Kent Angelos, Golder Associates at (206) 883-0777, Mr. Mike Hoxie or myself at (509) 943-3133.

Sincerely yours,

SCIENCE APPLICATIONS INTERNATIONAL CORPORATION

P. K. Brockman
Program Manager

Enclosure
PKB/srj

w. enc.
R. Bechtold, WHC
LB/Task S-92-19 Deliv File

w/o enc.
M. Adams, WHC
D. Caldwell, Golder
D. Martin, Albq
D. Wilson, WHC

w/enc. including original data package
T. Tonning, WHC

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Report To

Westinghouse Hanford Company
Richland, Washington

Data Validation Report
200-BP-1 RI/FS
Data Package: 9109L632-WES-168
SDG No.: CLP632
Analysis Type: Volatiles/Metals/Wet Chemistry

Prepared By

Golder Associates Inc.
Redmond, Washington

Validated by: Kenney Louie
Kenney Louie
Staff Environmental Scientist

Reviewed by: Kent Angelos
Kent Angelos
Associate

April 28, 1992

913-1719

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1 Glossary of Data Qualifiers
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3 As-Qualified Data Summary
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1. INTRODUCTION

This report presents the results of data validation on case WEST and SDG: CLP632 consisting of two (2) water samples (trip blanks) for contract laboratory program target compound list (CLP/TCL) volatiles, eight (8) water samples for CLP target analyte list (TAL) metals (including bismuth and silicon) and total cyanide, and four (4) water samples for wet chemistry parameters. Sample identifications, locations and sample dates are provided in the tabular data summary in Attachment 3.

The samples were analyzed by the Weston - Lionville laboratory using the 2/88 SOW for organics and the 3/90 SOW for metals and cyanide. Bismuth and silicon were analyzed by ICP methods (APHA, 1989). Anions (chloride, fluoride, nitrate, nitrite, phosphate and sulfate) were analyzed by ion chromatography (IC) using EPA method 300.0 (EPA, 1984). Total organic carbon (TOC) was analyzed by method 505.B (APHA, 1985). Nitrate+nitrite-N, total dissolved solids (TDS), pH, and alkalinity were analyzed using EPA methods (EPA, 1979).

Data validation was conducted in accordance with the Westinghouse Hanford Company (WHC) statement of work (WHC 1991) and validation procedures (WHC 1992).

2. DATA QUALITY OBJECTIVES

The data package was complete for all requested analyses and met the data quality objectives of the work plan (DOE, 1989). Data quality objectives for the project specified the use of CLP methods for the TCL volatiles and TAL metals and cyanide, and the use of standard methods for the analysis of silicon, bismuth and wet chemistry parameters.

Sample quantitation limits were, in most samples, less than the contract required quantitation limits (CRQL) specified in the QAPjP (DOE, 1989) with the exception of bismuth and cyanide. Bismuth was reported to a quantitation limit of 200 µg/L and the estimated detection limit specified in method 3111A (APHA, 1989) is 60 µg/L. Cyanide was reported to a quantitation limit of 20 µg/L in samples B011L1 and B011F9 and the CRQL is 10 µg/L. However, all analyses were reported to within five times the CRQL.

With the exception of the deficiencies identified in Section 3, the precision and accuracy goals specified in the work plan and the analytical statement of work were met.

3. QUALIFIED DATA

This section presents a summary of the qualifications required based on validation of the subject data package.

3.1 MAJOR DEFICIENCIES

Nitrate+nitrite results determined by the hydrazine reduction method 353.1 (EPA, 1979) are rejected since they do not compare favorably with the IC data. Results for nitrate+nitrite are typically three times lower than the same results determined by IC. If the samples are

not pH adjusted to between 5 and 9 prior to analysis, reduction of nitrate to nitrite during application of the hydrazine reagent may be inhibited and as a consequence produce inaccurate results.

3.2 MINOR DEFICIENCIES

The following additional qualifications were required as a result of the validation. Attachment 2 provides a summary of the samples affected.

3.2.1 Volatile Organics

- The initial calibration percent relative standard deviation (%RSD) for acetone was greater than 30%. The associated samples were qualified as estimated (UJ for non-detects).

- The relative response factor (RRF) for 2-butanone was out of the control limits. The associated samples were qualified as unusable (R).

- Methylene chloride and acetone were detected in the laboratory method blank at concentrations of 7 and 4 µg/L, respectively. Sample concentrations for these compounds were less than 10 times the laboratory blank concentrations and have been qualified as undetected.

3.2.2 Metals

- Zinc was detected in the laboratory blank at a concentration of 9.1 µ/L. Sample concentrations less than 5 times the laboratory blank concentration and have been qualified as undetected (U).

- The spike sample recovery for selenium was less than the control limits of 75% - 125%. The associated sample results were qualified as estimated (J for detects, UJ for non-detects).

- Analytical spike recoveries for arsenic, lead and selenium were less than 85% for several samples (see Attachment 2). Associated samples results have been qualified as estimated (J for detects, UJ for non-detects).

3.2.3 Wet Chemistry

- Phosphate, nitrate, and nitrite analyses were performed outside the 48h holding times and associated results have been qualified as estimated (J for detects, UJ for non-detects).

4. CONCLUSION

Sections 1 through 3 present a summary of the data quality for the subject data package. The data as qualified are acceptable for use with the exception of the nitrate+nitrite data. The attachments provide supporting documentation and a tabular summary of the qualified data. The original, as-received data package is enclosed for submittal to the project QA record.

5. REFERENCES

APHA 1985, Standard Methods for the Examination of Water and Wastewater, 16th Edition. American Public Health Association, Washington, D.C.

EPA 1979, Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020. U.S. Environmental Protection Agency, Environmental Monitoring and Support Laboratory, Cincinnati, Ohio.

EPA 1984, Test Method: The Determination of Inorganic Anions in Water by Ion Chromatography - Method 300.0. U.S. Environmental Protection Agency, Environmental Monitoring and Support Laboratory, Cincinnati, Ohio.

APHA, 1989, Standard Methods for the Examination of Water and Wastewater, 17th Edition, American Public Health Association, Washington, D.C.

DOE, 1989, Remedial Investigation/Feasibility Study Work Plan for the 200-BP-1 Operable Unit Hanford Site, Richland, Washington, DOE/RL 88-32. United States Department of Energy, Richland, Washington.

WHC, 1991, Westinghouse Hanford Company, Validation of 200-BP-1 Data, Statement of Work, Revision A, November 1991. Westinghouse Hanford Company, Richland, Washington.

WHC, 1992, Westinghouse Hanford Company, Data Validation Procedures for Chemical Analyses, WHC-SD-EN-SPP-002, Rev. 2, April, 1992. Westinghouse Hanford Company, Richland, Washington.

ATTACHMENT 1

GLOSSARY OF DATA REPORTING QUALIFIERS

B - Indicates the compound or analyte was analyzed for and detected. The value reported is less than the contract required quantitation limit (CRQL) but greater than the instrument detection limit (IDL).

U - Indicates the compound or analyte was analyzed for and not detected. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory. The data are usable for decision making purposes.

UJ - Indicates the compound or analyte was analyzed for and not detected. Due to identified quality control deficiency identified during data validation the value reported may not accurately reflect the sample quantitation limit. The data are usable for decision making purposes.

J - Indicates the compound or analyte was analyzed for and detected. The associated value is estimated but the data are usable for decision making processes.

R - Indicates the compound or analyte was analyzed for and due to an identified quality control deficiency the data are unusable.

NJ - Indicates presumptive evidence of a compound at an estimated value.

N - Indicates presumptive evidence of a compound.

ATTACHMENT 2

SUMMARY OF DATA QUALIFICATIONS

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: CLP632	REVIEWER: Klonie	DATE: 4/21/92	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
2-Butanone	R	ALL	RRF out of limits
Acetone	UJ	ALL	RSD out of limits
methylene chloride	U	ALL	Blank
Acetone	U	ALL	Adjust

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: CLP632	REVIEWER: SSchilde	DATE: 4/22/92	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Zn	U	all	Analyte found in blank
Se	J	B011L1, F9	Sample Spike Recovery
	UJ	B011L3, L4, L5, K8, K9, 60	<75%
~~As~~	~~J~~	~~B011F9, K9, K8~~	~~Analytical spike~~
~~Pb~~	~~UJ~~	~~B011L1, L2, L5, K9~~	~~Recovery <85% or~~
~~Se~~	~~already qualified~~		~~>115%~~
~~Tl~~	~~UJ~~	~~B011L1, L4, L2, L3, K9~~	↓
			~~MLA 4/23/92~~
As	J detects	~~B011K8~~, F9, K9	Analytical
	UJ nondetects		Spike Recovery
			<85% or >115%
Pb	UJ	B011L4, K8, L2, L5	↓
		K9, 60	
~~Se~~ MLA			
4/23/92			

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: CLP632	REVIEWER: Klonie	DATE: 4/20/92	PAGE___OF___
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Nitrite	J for Detect UJ for Non-detect	B0111, B0114 B0115, B0119	outside of holding time
Nitrate	↓		↓
~~Pb~~			
Phosphate			
Nitrate + Nitrite	R	all	Results disparity

4/23/92

SSS 4/23/92

Klonie 4/20/92

ATTACHMENT 3

AS QUALIFIED DATA SUMMARY

Laboratory	WESTON																				
Case West	SDG	CLP632																			
Sample Number		BO11R1		BO11R2																	
Location		Day Trip		Day Trip																	
Remarks		Blank		Blank																	
Sample Date		09/04/91		09/05/91																	
Analysis Date		09/14/91		09/14/91																	
Volatile Organic Compound	CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Chloromethane	10	10	U	10	U																
Bromomethane	10	10	U	10	U																
Vinyl Chloride	10	10	U	10	U																
Chloroethane	10	10	U	10	U																
Methylene Chloride	5	5	U	5	U																
Acetone	10	10	UJ	10	UJ																
Carbon Disulfide	5	5	U	5	U																
1,1-Dichloroethene	5	5	U	5	U																
1,1-Dichloroethane	5	5	U	5	U																
1,2-Dichloroethene (total)	5	5	U	5	U																
Chloroform	5	5	U	5	U																
1,2-Dichloroethane	5	5	U	5	U																
2-Butanone	10	10	R	10	R																
1,1,1-Trichloroethane	5	5	U	5	U																
Carbon Tetrachloride	5	5	U	5	U																
Vinyl Acetate	10	10	U	10	U																
Bromodichloromethane	5	5	U	5	U																
1,2-Dichloropropane	5	5	U	5	U																
cis-1,3-Dichloropropene	5	5	U	5	U																
Trichloroethene	5	5	U	5	U																
Dibromochloromethane	5	5	U	5	U																
1,1,2-Trichloroethane	5	5	U	5	U																
Benzene	5	5	U	5	U																
trans-1,3-Dichloropropene	5	5	U	5	U																
Bromoform	5	5	U	5	U																
4-Methyl-2-pentanone	10	10	U	10	U																
2-Hexanone	10	10	U	10	U																
Tetrachloroethene	5	5	U	5	U																
1,1,2,2-Tetrachloroethane	5	5	U	5	U																
Toluene	5	5	U	5	U																
Chlorobenzene	5	5	U	5	U																
Ethylbenzene	5	5	U	5	U																
Styrene	5	5	U	5	U																
Xylene (total)	5	5	U	5	U																

Project		200-BP-1															
Laboratory		WESTON															
Case West		SDG CLP 632															
Sample Number		BO11L1		BO11L2		BO11L4		BO11L5		BO11K8		BO11K9		BO11F9		BO11G0	
Location		2-33-18		2-33-18		2-33-13		2-33-13		2-33-15		2-33-15		2-33-1		2-33-1	
Remarks		Total		Diss.		Total		Diss.		Total		Diss.		Total		Diss.	
Sample Date		09/04/91		09/04/91		09/05/91		09/05/91		09/04/91		09/04/91		09/05/91		09/05/91	
Inorganic Analytes	CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Aluminum	200	91	U	91	U	91	U	91	U	91	U	91	U	91	U	91	U
Antimony	60	20	U	20	U	20	U	20	U	20	U	20	U	20	U	20	U
Arsenic	10	7.1	B	8.1	B	8.1	B	8.6	B	10.1		7.9	J	8.1	J	6.8	B
Barium	200	33.1	B	32.4	B	35.5	B	36.7	B	37.5	B	36.7	B	33.1	B	33.1	B
Beryllium	5	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Cadmium	5	3	U	3	U	3	U	3	U	3	U	3	U	3	U	3	U
Calcium	5000	35900		36300		42800		44200		40000		39000		42900		42900	
Chromium	10	14.9		13.9		7.1	B	6.7	B	6	U	6	U	8.7	B	6.1	B
Cobalt	50	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Copper	25	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Iron	100	127		46	U	46	U	46	U	46	U	46	U	64	B	46	U
Lead	3	2	U	2	UJ	2	UJ	2	UJ	2	UJ	2	UJ	2	U	2	UJ
Magnesium	5000	15300		15300		14900		15300		11900		11600		13500		13500	
Manganese	15	3.5	B	2	U	2	U	2	U	2	U	2	U	2	U	2	U
Mercury	0.2	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Nickel	40	11	U	11	U	11	U	11	U	11	U	11	U	11	U	11	U
Potassium	5000	5470		5660		5120		5180		5640		5470		5620		5350	
Selenium	5	2.1	J	2	UJ	2	UJ	2	UJ	2	UJ	2	UJ	2.2	J	2	UJ
Silver	10	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Sodium	5000	16200		16100		25800		26600		26600		26000		27400		27400	
Thallium	10	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
Vanadium	50	26.9	B	27	B	25.7	B	26.6	B	27.4	B	27.6	B	27.8	B	27	B
Zinc	20	11.4	U	8.4	U	6.1	U	6.9	U	8.4	U	11.4	U	12.2	U	13.2	U
Cyanide	10	20	U			16.8				10	U			20	U		
Bismuth	200	200	U	200	U	200	U	200	U	200	U	200	U	200	U	200	U
Silicon	100	13200		13300		13700		14100		13700		13500		13900		13800	
Alkalinity, mg/L	2	106				108				100				104			
Chloride By IC, mg/L	0.25	6.2				7.1				5.9				6.7			
Fluoride by IC, mg/L	0.25	0.37				0.39				0.36				0.37			
Nitrite By IC, mg/L	0.25	0.25	UJ			0.25	UJ			0.25	UJ			0.25	UJ		
Nitrate By IC, mg/L	0.25	59.4	J			81.8	J			73.7	J			83.7	J		
Phosphate By IC, mg/L	0.25	0.25	UJ			0.25	UJ			0.25	UJ			0.25	UJ		
Sulfate By IC, mg/L	0.25	32.8				37.9				33.3				36.1			
Nitrate+Nitrite, mg/L	1.2	12.8	R			18.3	R			16.2	R			17.9	R		
Total Organic Carbon, mg/L	0.5	2.6				1.4				0.54				4			
pH, std. units	±0.01	7.2				7.6				7.6				7.7			
Total Dissolved Solids, mg/L	5	265				314				293				313			

1A 0000020

VOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
Day Trip Blank
B011R1

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: WATER

Lab Sample ID: 9109L632-007

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: AK9E05

Level: (low/med) LOW

Date Received: 09/07/91

% Moisture: not dec. _____

Date Analyzed: 09/14/91

Column: (pack/cap) CAP

Dilution Factor: 1.00

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

CAS NO.	COMPOUND		
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	~~B~~ U
67-64-1	Acetone	10	~~U~~ UJ
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	~~U~~ R
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	Trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	5	U

FORM 1 V-1 12/88 Rev.

Klerie 11/20/91

1A 0000020

VOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
Day trip Blank
B011R1

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: WATER

Lab Sample ID: 9109L632-007

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: AK9E05

Level: (low/med) LOW

Date Received: 09/07/91

% Moisture: not dec. _____

Date Analyzed: 09/14/91

Column: (pack/cap) CAP

Dilution Factor: 1.00

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

CAS NO.	COMPOUND		
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	~~B~~ U
67-64-1	Acetone	10	~~B~~ UJ
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	~~B~~ U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	Trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	5	U

FORM 1 V-1 12/88 Rev.

Klonie 11/20/91

1E 0000021

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.
Day trip BLNK
B011R1

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: WATER

Lab Sample ID: 9109L632-007

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: AK9E05

Level: (low/med) LOW

Date Received: 09/07/91

% Moisture: not dec. _____

Date Analyzed: 09/14/91

Column: (pack/cap) CAP

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				

FORM 1 VOA-TIC 12/88 Rev.

Klonie 9/20/91

1A
VOLATILE ORGANICS ANALYSIS SHEET

0000026

CLIENT SAMPLE NO.
Day trip Blk

B011R2

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: WATER

Lab Sample ID: 9109L632-010

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: AK9E08

Level: (low/med) LOW

Date Received: 09/07/91

% Moisture: not dec. _____

Date Analyzed: 09/14/91

Column: (pack/cap) CAP

Dilution Factor: 1.00

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

CAS NO.	COMPOUND		
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	~~4~~ 5	~~JB~~ U
67-64-1	Acetone	10	~~B~~ U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
~~78-93-3~~	~~2-Butanone~~	~~10~~	~~U~~ R
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	Trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	5	U

Not 4/23/92

Klonie 9/20/9

1E 0000027

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.
Day trip BLNK

B011R2

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: WATER

Lab Sample ID: 9109L632-010

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: AK9E08

Level: (low/med) LOW

Date Received: 09/07/91

% Moisture: not dec. _____

Date Analyzed: 09/14/91

Column: (pack/cap) CAP

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				

FORM 1 VOA-TIC 12/88 Rev.

Flonie
4/20/92

0000028

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.
2-33-18

B011L1

Lab Name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP632

Matrix (soil/water): WATER Lab Sample ID: 910963201

Level (low/med): LOW Date Received: 9/07/91

% 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	91.00	U		P	
7440-36-0	Antimony	20.00	U		P	
7440-38-2	Arsenic	7.10	~~B~~		F	~~B~~ sss 4/22/92 B
7440-39-3	Barium	33.10	B		P	
7440-41-7	Beryllium	1.00	U		P	
7440-43-9	Cadmium	3.00	U		P	
7440-70-2	Calcium	35900.00			P	
7440-47-3	Chromium	14.90			P	
7440-48-4	Cobalt	10.00	U		P	
7440-50-8	Copper	10.00	U		P	
7439-89-6	Iron	127.00			P	
7439-92-1	Lead	2.00	~~U~~		F	~~U~~ U
7439-95-4	Magnesium	15300.00			P	
7439-96-5	Manganese	3.50	B		P	
7439-97-6	Mercury	.20	U		CV	
7440-02-0	Nickel	11.00	U		P	
7440-09-7	Potassium	5470.00			P	
7782-49-2	Selenium	2.10	~~B~~	NW	F	J
7440-22-4	Silver	10.00	U		P	
7440-23-5	Sodium	16200.00			P	
7440-28-0	Thallium	2.00	~~U~~		F	~~U~~ U
7440-62-2	Vanadium	26.90	B		P	
7440-66-6	Zinc	11.40	~~B~~		P	U ~~B~~ sss 4/22/92
	Cyanide	20.00	U		C	
7440-69-9	Bismuth	200	U			
7440-21-3	Silicon	13200				

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

FORM I - IN 03/90

4/23/92

Klowe 4/21/92

0000029

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

2-33-18

B011L2

Lab Name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP632

Matrix (soil/water): WATER Lab Sample ID: 910963202

Level (low/med): LOW Date Received: 9/07/91

% 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	91.00	U		P	
7440-36-0	Antimony	20.00	U		P	
7440-38-2	Arsenic	8.10	~~B~~		F	~~B~~ SJS 4/22/92 B
7440-39-3	Barium	32.40	B		P	
7440-41-7	Beryllium	1.00	U		P	
7440-43-9	Cadmium	3.00	U		P	
7440-70-2	Calcium	36300.00			P	
7440-47-3	Chromium	13.90			P	
7440-48-4	Cobalt	10.00	U		P	
7440-50-8	Copper	10.00	U		P	
7439-89-6	Iron	46.00	U		P	
7439-92-1	Lead	2.00	~~U~~	W	F	UJ
7439-95-4	Magnesium	15300.00			P	
7439-96-5	Manganese	2.00	U		P	
7439-97-6	Mercury	.20	U		CV	
7440-02-0	Nickel	11.00	U		P	
7440-09-7	Potassium	5660.00			P	
7782-49-2	Selenium	2.00	~~U~~	N	F	UJ
7440-22-4	Silver	10.00	U		P	
7440-23-5	Sodium	16100.00			P	
7440-28-0	Thallium	2.00	~~U~~		F	~~UJ~~ U
7440-62-2	Vanadium	27.00	B		P	
7440-66-6	Zinc	8.40	~~B~~		P	U ~~B~~ SJS 4/22/92
	Cyanide				NR	
7440-69-9	Bismuth	200	U			
7440-21-3	Silicon	13300				

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

FORM I - IN 4/22/92 03/90

K Lowie 4/21/92

U.S. EPA - CLP 0000030

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO. 2-33-13

B011L4

Lab Name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP632

Matrix (soil/water): WATER Lab Sample ID: 910963203

Level (low/med): LOW Date Received: 9/07/91

% 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	91.00	U		P	
7440-36-0	Antimony	20.00	U		P	
7440-38-2	Arsenic	8.10	~~B~~		F	~~J~~ SSS 4/22/92 13
7440-39-3	Barium	35.50	B		P	
7440-41-7	Beryllium	1.00	U		P	
7440-43-9	Cadmium	3.00	U		P	
7440-70-2	Calcium	42800.00			P	
7440-47-3	Chromium	7.10	B		P	
7440-48-4	Cobalt	10.00	U		P	
7440-50-8	Copper	10.00	U		P	
7439-89-6	Iron	46.00	U		P	
7439-92-1	Lead	2.00	~~U~~	W	F	UJ
7439-95-4	Magnesium	14900.00			P	
7439-96-5	Manganese	2.00	U		P	
7439-97-6	Mercury	.20	U		CV	
7440-02-0	Nickel	11.00	U		P	
7440-09-7	Potassium	5120.00			P	
7782-49-2	Selenium	2.00	~~U~~	N	F	UJ
7440-22-4	Silver	10.00	U		P	
7440-23-5	Sodium	25800.00			P	
7440-28-0	Thallium	2.00	~~U~~		F	~~UJ~~ U
7440-62-2	Vanadium	25.70	B		P	
7440-66-6	Zinc	6.10	~~B~~		P	U ~~J~~ SSS 4/22/92
	Cyanide	16.80			C	
7440-69-9	Bismuth	200	U			
7440-21-3	Silicon	13700				

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

FORM I - IN 4/23/92 03/90

Klonie 4/21/92

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.
2-33-13

B011L5

Lab Name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP632

Matrix (soil/water): WATER Lab Sample ID: 910963204

Level (low/med): LOW Date Received: 9/07/91

% 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	91.00	U		P	
7440-36-0	Antimony	20.00	U		P	
7440-38-2	Arsenic	8.60	~~B~~		F	~~B~~ sss 4/22/92 B
7440-39-3	Barium	36.70	B		P	
7440-41-7	Beryllium	1.00	U		P	
7440-43-9	Cadmium	3.00	U		P	
7440-70-2	Calcium	44200.00			P	
7440-47-3	Chromium	6.70	B		P	
7440-48-4	Cobalt	10.00	U		P	
7440-50-8	Copper	10.00	U		P	
7439-89-6	Iron	46.00	U		P	
7439-92-1	Lead	2.00	~~U~~	W	F	UJ
7439-95-4	Magnesium	15300.00			P	
7439-96-5	Manganese	2.00	U		P	
7439-97-6	Mercury	.20	U		CV	
7440-02-0	Nickel	11.00	U		P	
7440-09-7	Potassium	5180.00			P	
7782-49-2	Selenium	2.00	~~U~~	N	F	UJ
7440-22-4	Silver	10.00	U		P	
7440-23-5	Sodium	26600.00			P	
7440-28-0	Thallium	2.00	~~U~~		F	~~UJ~~ U
7440-62-2	Vanadium	26.60	B		P	
7440-66-6	Zinc	6.90	~~B~~		P	U ~~B~~ sss 4/22/92
	Cyanide				NR	
7440-69-9	Bismuth	200	U			
7440-21-3	Silicon	14100				

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

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Klowie 4/21/92

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

2-33-15

B011K8

Lab Name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP632

Matrix (soil/water): WATER Lab Sample ID: 910963205

Level (low/med): LOW Date Received: 9/07/91

% 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	91.00	U		P	
7440-36-0	Antimony	20.00	U		P	
7440-38-2	Arsenic	10.10		S	F	~~J~~ SSS 4/22/92
7440-39-3	Barium	37.50	B		P	
7440-41-7	Beryllium	1.00	U		P	
7440-43-9	Cadmium	3.00	U		P	
7440-70-2	Calcium	40000.00			P	
7440-47-3	Chromium	6.00	U		P	
7440-48-4	Cobalt	10.00	U		P	
7440-50-8	Copper	10.00	U		P	
7439-89-6	Iron	46.00	U		P	
7439-92-1	Lead	2.00	~~U~~	W	F	UJ
7439-95-4	Magnesium	11900.00			P	
7439-96-5	Manganese	2.00	U		P	
7439-97-6	Mercury	.20	U		CV	
7440-02-0	Nickel	11.00	U		P	
7440-09-7	Potassium	5640.00			P	
7782-49-2	Selenium	2.00	~~U~~	N	F	~~J~~ UJ
7440-22-4	Silver	10.00	U		P	
7440-23-5	Sodium	26600.00			P	
7440-28-0	Thallium	2.00	U		F	
7440-62-2	Vanadium	27.40	B		P	
7440-66-6	Zinc	8.40	~~B~~		P	UJ ~~J~~ SSS 4/22/92
	Cyanide	10.00	U		C	
7440-69-9	Bismuth	200	U			
7440-21-3	Silicon	13700				

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

FORM I - IN 4/22/92 03/90

Klonie 4/21/92

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U.S. EPA - CLP

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.
2-33-15

B011K9

Lab Name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP632

Matrix (soil/water): WATER Lab Sample ID: 910963206

Level (low/med): LOW Date Received: 9/07/91

% 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	91.00	U		P	
7440-36-0	Antimony	20.00	U		P	
7440-38-2	Arsenic	7.90	~~B~~	W	F	J
7440-39-3	Barium	36.70	B		P	
7440-41-7	Beryllium	1.00	U		P	
7440-43-9	Cadmium	3.00	U		P	
7440-70-2	Calcium	39000.00			P	
7440-47-3	Chromium	6.00	U		P	
7440-48-4	Cobalt	10.00	U		P	
7440-50-8	Copper	10.00	U		P	
7439-89-6	Iron	46.00	U		P	
7439-92-1	Lead	2.00	~~U~~	W	F	UJ
7439-95-4	Magnesium	11600.00			P	
7439-96-5	Manganese	2.00	U		P	
7439-97-6	Mercury	.20	U		CV	
7440-02-0	Nickel	11.00	U		P	
7440-09-7	Potassium	5470.00			P	
7782-49-2	Selenium	2.00	~~U~~	N	F	UJ
7440-22-4	Silver	10.00	U		P	
7440-23-5	Sodium	26000.00			P	
7440-28-0	Thallium	2.00	~~U~~		F	~~UJ~~ U
7440-62-2	Vanadium	27.60	B		P	
7440-66-6	Zinc	11.40	~~B~~		P	UJ SEG 4/22/92
	Cyanide				NR	
~~7440-69-9~~	Bismuth	200	U			
7440-21-3	Silicon	13500				

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

4/23/92

FORM I - IN 03/90

Klowe 4/21/92

U.S. EPA - CLP 0000037

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.
2-33-1

B011F9

Lab Name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP632

Matrix (soil/water): WATER Lab Sample ID: 910963208

Level (low/med): LOW Date Received: 9/07/91

% 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	91.00	U		P	
7440-36-0	Antimony	20.00	U		P	
7440-38-2	Arsenic	8.10	~~B~~		F	J
7440-39-3	Barium	33.10	B		P	
7440-41-7	Beryllium	1.00	U		P	
7440-43-9	Cadmium	3.00	U		P	
7440-70-2	Calcium	42900.00			P	
7440-47-3	Chromium	8.70	B		P	
7440-48-4	Cobalt	10.00	U		P	
7440-50-8	Copper	10.00	U		P	
7439-89-6	Iron	64.00	B		P	
7439-92-1	Lead	2.00	U		F	
7439-95-4	Magnesium	13500.00			P	
7439-96-5	Manganese	2.00	U		P	
7439-97-6	Mercury	.20	U		CV	
7440-02-0	Nickel	11.00	U		P	
7440-09-7	Potassium	5620.00			P	
7782-49-2	Selenium	2.20	~~B~~	NW -	F	J
7440-22-4	Silver	10.00	U		P	
7440-23-5	Sodium	27400.00			P	
7440-28-0	Thallium	2.00	U		F	
7440-62-2	Vanadium	27.80	B		P	
7440-66-6	Zinc	12.20	~~B~~		P	u
	Cyanide	20.00	U		C	
7440-69-9	Bismuth	200	u			
7440-21-3	Silicon	13900				

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

4/23/92

FORM I - IN 03/90

Klowe 4/21/92

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.
2-33-1
B011G0

Lab Name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP632

Matrix (soil/water): WATER Lab Sample ID: 910963209

Level (low/med): LOW Date Received: 9/07/91

% 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	91.00	U		P	
7440-36-0	Antimony	20.00	U		P	
7440-38-2	Arsenic	6.80	~~B~~		F	~~B~~ 4/22/92 B
7440-39-3	Barium	33.10	B		P	
7440-41-7	Beryllium	1.00	U		P	
7440-43-9	Cadmium	3.00	U		P	
7440-70-2	Calcium	42900.00			P	
7440-47-3	Chromium	6.10	B		P	
7440-48-4	Cobalt	10.00	U		P	
7440-50-8	Copper	10.00	U		P	
7439-89-6	Iron	46.00	U		P	
7439-92-1	Lead	2.00	~~U~~	W	F	UJ
7439-95-4	Magnesium	13500.00			P	
7439-96-5	Manganese	2.00	U		P	
7439-97-6	Mercury	.20	U		CV	
7440-02-0	Nickel	11.00	U		P	
7440-09-7	Potassium	5350.00			P	
7782-49-2	Selenium	2.00	~~U~~	N	F	UJ
7440-22-4	Silver	10.00	U		P	
7440-23-5	Sodium	27400.00			P	
7440-28-0	Thallium	2.00	U		F	
7440-62-2	Vanadium	27.00	B		P	
7440-66-6	Zinc	13.20	~~B~~		P	U
	Cyanide				NR	
7440-69-9	Bismuth	200	U			
7440-21-3	Silicon	13800				

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

Klowe 4/22/92

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 10/31/91

CLIENT: WESTINGHOUSE HANFORD
WORK ORDER: 6168-02-01-0000

WESTON BATCH #: 9109L632

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT
-001	B011L1	Alkalinity	106	MG/L	2.0
	2-33-18	Chloride by IC	6.2	MG/L	0.25
		Fluoride by IC	0.37	MG/L	0.25
		Nitrite by IC	0.25 u	MG/L UJ	0.25
		Nitrate by IC	59.4	MG/L J	0.25
		Cyanide, Total	20.0 u	UG/L	20.0
		Phosphate by IC	0.25 u	MG/L UJ	0.25
		Sulfate by IC	32.8	MG/L	0.25
		~~Nitrate Nitrite~~	~~12.8~~	~~MG/L~~	~~1.2~~ R 5/4
		Total Organic Carbon	2.6	MG/L	0.50
		pH	7.2	PH UNITS J	0.010
		Total Dissolved Solids	265	MG/L	5.0
-003	B011L4	Alkalinity	108	MG/L	2.0
	2-33-13	Chloride by IC	7.1	MG/L	0.25
		Fluoride by IC	0.39	MG/L	0.25
		Nitrite by IC	0.25 u	MG/L UJ	0.25
		Nitrate by IC	81.8	MG/L J	0.25
		Cyanide, Total	16.8	UG/L	10.0
		Phosphate by IC	0.25 u	MG/L UJ	0.25
		Sulfate by IC	37.9	MG/L	0.25
		~~Nitrate Nitrite~~	~~18.3~~	~~MG/L~~	~~1.0~~ R 5/4
		Total Organic Carbon	1.4	MG/L	0.50
		pH	7.6	PH UNITS J	0.010
		Total Dissolved Solids	314	MG/L	5.0

4/23/92

Klovie 4/20/92

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 10/31/91

CLIENT: WESTINGHOUSE HANFORD
WORK ORDER: 6168-02-01-0000

WESTON BATCH #: 9109L632

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT
-005	B011K8	Alkalinity	100	MG/L	2.0
	2-33-15	Chloride by IC	5.9	MG/L	0.25
		Fluoride by IC	0.36	MG/L	0.25
		Nitrite by IC	0.25 u	MG/L UJ	0.25
		Nitrate by IC	73.7	MG/L J	0.25
		Cyanide, Total	10.0 u	UG/L	10.0
		Phosphate by IC	0.25 u	MG/L UJ	0.25
		Sulfate by IC	33.3	MG/L	0.25
		~~Nitrate Nitrite~~	~~16.2~~	~~MG/L~~	~~1.0~~ R SS 4/7
		Total Organic Carbon	0.54	MG/L	0.50
		pH	7.6	PH UNITS J	0.010
		Total Dissolved Solids	293	MG/L	5.0
-008	B011F9	Alkalinity	104	MG/L	2.0
	2-33-1	Chloride by IC	6.7	MG/L	0.25
		Fluoride by IC	0.37	MG/L	0.25
		Nitrite by IC	0.25 u	MG/L UJ	0.25
		Nitrate by IC	83.7	MG/L J	0.25
		Cyanide, Total	20.0 u	UG/L	20.0
		Phosphate by IC	0.25 u	MG/L UJ	0.25
		Sulfate by IC	36.1	MG/L	0.25
		~~Nitrate Nitrite~~	~~17.9~~	~~MG/L~~	~~1.0~~ R SS 4/7
		Total Organic Carbon	4.0	MG/L	0.50
		pH	7.7	PH UNITS J	0.010
		Total Dissolved Solids	313	MG/L	5.0

4/23/92

Klovie 4/20/92

ATTACHMENT 4

DATA REVIEW SUPPORTING DOCUMENTATION

VOLATILE ORGANIC DATA VALIDATION CHECKLIST - FORM A-1

PROJECT: 200-BP-1	REVIEWER: Kenny Prine	DATE: 4/20/92
LABORATORY: Weston	CASE: 91091632	SDG: CLP632
SAMPLES/MATRIX: B0JR1, B0JR2 / Water		

1. DATA PACKAGE COMPLETENESS

Review the data package for completeness and check off the items below. If any data review elements are missing contact the laboratory for submittal.

Data Package Item	Present?: Yes	No	N/A
Case Narrative	✓		
Data Summary	✓		
Chain-of-Custody	✓		
QC Summary			
Surrogate report	✓		
MS/MSD report	✓		
Blank summary report	✓		
GC/MS tuning report	✓		
Internal standard summary report	✓		
Sample Data			
Sample reports	✓		
TIC reports for each sample			✓
RIC reports for all samples	✓		
Raw and corrected spectra for all detected results	✓		
Raw and corrected library search data for all reported TIC			✓
Quantitation and calculation data for all TIC			✓
Standards Data			
Initial calibration report	✓		
RIC and quantitation reports for initial calibration	✓		
Continuing calibration reports	✓		
RIC and quantitation reports for cont. calibrations	✓		
Internal standard summary report	✓		
Raw QC Data			
Tuning report, spectra and mass lists	✓		
Blank analysis reports	✓		
TIC reports for all blanks			✓
RIC and quantitation reports for blanks	✓		
Raw and corrected spectra for all detected results in blanks	✓		
Raw and corrected library search data for all reported TIC			✓

Kenny 4/20/9

Data Package Item	Present?: Yes	No	N/A
Quantitation and calculation data for all TIC			✓
MS/MSD report forms	✓		
RIC and quantitation reports for MS/MSD	✓		
Additional Data			
Moisture/% solids data sheets	✓		
Reduction formulae		✓	
Instrument time logs		✓	
Chemist notebook pages		✓	
Sample preparation sheets	✓		

2. HOLDING TIMES

Complete the holding time summary form listing all samples and dates of collection and analysis.

Were all samples analyzed within holding time? (Yes) No N/A

ACTION: If any holding times were exceeded, but not by greater than a factor of two, qualify associated samples as estimated (J for detects or UJ for nondetects), otherwise reject all nondetects (R) and qualify all associated detects as estimated (J).

3. INSTRUMENT CALIBRATION, TUNING AND PERFORMANCE CHECKS

3.1 GC/MS TUNING AND PERFORMANCE CHECKS

Is a bromofluorobenzene tune report present for each applicable 12-h period? (Yes) No N/A

Do all tunes on all instruments meet the tuning criteria? (Yes) No N/A

Do all tunes on all instruments meet the expanded criteria? (Yes) No N/A

Has the laboratory made any calculation or transciption errors? Yes (No) N/A

Have the proper significant figures been reported? (Yes) ~~No~~ Klm 4/20/92 N/A

ACTION: If the mass calibration is out of specification but within the expanded criteria, qualify associated data as estimated (J for detects or UJ for nondetects). If all tuning criteria are missed, qualify all associated data as unusable (R).

3.2 INITIAL CALIBRATION

Is an initial calibration report provided for all instruments? (Yes) No N/A

Are all RSD values ≤30% (2/88 SOW)? Yes (No) N/A

Are all RRF values ≥0.05 (2/88 SOW)? Yes (No) N/A

Klm 4/20/92

Are all applicable RSD values ≤20.5% (3/90 SOW)?	Yes	No	N/A
Are all applicable RSD values ≤40% (3/90 SOW)?	Yes	No	N/A
Are all applicable RRF values within SOW limits (3/90 SOW)?	Yes	No	N/A
Are all erratic performance compound RRF values ≥0.01 (3/90 SOW)?	Yes	No	N/A

ACTION: With the exception of compounds that exhibit erratic performance and making allowances for up to two TCL compounds, if any RRF value is out of specification qualify all detected results for the particular compound as estimated (J) and all nondetects as unusable (R). Making allowances for up to two TCL compounds, if any RSD value is out of specification qualify all associated data as estimated (J for detects or UJ for nondetects).

3.3. CONTINUING CALIBRATION

Is a continuing calibration report present for all 12-h periods in which associated samples were analyzed?	Yes	No	N/A
Are all RRF values ≥0.05 (2/88 SOW)?	Yes	No	N/A
Are all %D values ≤25% (2/88 or 3/90 SOW)?	Yes	No	N/A
Are all %D values ≤40% (3/90 SOW)?	Yes	No	N/A
Are all RRF values within SOW limits (3/90 SOW)?	Yes	No	N/A
Are all erratic performance compound RRF values ≥0.01 (3/90 SOW)?	Yes	No	N/A

ACTION: With the exception of compounds that exhibit erratic performance and making allowances for up to two TCL compounds, if any RRF value is out of specification qualify all associated detected results as estimated and all nondetects as unusable (R). Making allowances for up to two TCL compounds, if any %D is out of specification, qualify all associated results as estimated (J for detects or UJ for nondetects).

4. BLANKS

4.1 LABORATORY BLANKS

Has the laboratory conducted a method blank analysis per matrix for every 12-h period in which samples were analyzed?	Yes	No	N/A
Are TCL compounds present in the laboratory blanks?	Yes	No	N/A

ACTION: Qualify all sample results ≤10 time the highest blank concentration for the common laboratory contaminants, as nondetects (U) or at the SQL if the result is <CRQL. Qualify all remaining sample results ≤5 times the blank concentration in similar fashion.

Klonie 4/20/

4.2. FIELD BLANKS

Are TCL compounds present in the field blanks? Yes No N/A

ACTION: Qualify all detected sample results ≤5 times the amount in any valid field blank as nondetects (U) and note the field blank results in the validation narrative.

5. ACCURACY

5.1 SURROGATE/SYSTEM MONITORING COMPOUND RECOVERY

Are any surrogate recoveries out of specification? Yes No N/A

Are any surrogate recoveries <10%? Yes No N/A

Are any method blank surrogate recoveries out of specification? Yes No N/A

ACTION: Qualify all associated sample results as estimated (J for detects or UJ for nondetects) for surrogates out of specification but >10%. Qualify all associated positive sample results as estimated (J) and all nondetect results as unusable (R) for all surrogates below 10%. If method blank surrogates are out of specification and the associated sample surrogates are acceptable no qualification is necessary, however, the laboratory should be contacted for an explanation.

5.2 MATRIX SPIKE RECOVERY

Has an MS/MSD analysis been conducted per matrix in the sample group? Yes No N/A

Are MS/MSD recoveries within specification? Yes No N/A

Are there any calculation errors? Yes No N/A

ACTION: If an MS/MSD analysis has not been conducted contact the laboratory for an explanation. Review the MS/MSD recoveries in conjunction with other QC data such as surrogate recoveries and note the results in the validation narrative. If MS/MSD recoveries are out of specification and sample concentration is >5 times the spike concentration, no qualification is required, otherwise qualify results as follows: Qualify positive results for the specific class of compound (aromatics and non-aromatics) as estimated (J) in all samples if associated surrogates are also out of specification. The qualification shall only be done on samples of similar matrix as the MS/MSD samples. If it is determined from the review that only the spiked samples are affected by low recoveries, qualify only the results for the spiked sample as described above. If it is determined from the review that out of specification MS/MSD recoveries are indicative of systematic problems in the laboratory such as sample preparation or sample-specific matrix interferences this must be noted in the validation narrative along with the potential affect on the sample results.

Klonie 4/20/

5.3 PERFORMANCE AUDIT SAMPLES

Are the performance audit sample results within the acceptance limits? Yes No N/A

ACTION: Note the results of the performance audit sample in the validation narrative.

6. PRECISION

6.1 MATRIX SPIKE/MATRIX SPIKE DUPLICATES

Are RPD values within specification? Yes No N/A

Are there any calculation errors? Yes No N/A

ACTION: Review the MS/MSD results in conjunction with other QC data such as field duplicates and note the results in the validation narrative. If MS/MSD RPDs are out of specification and sample results are >5xCRQL qualify positive results for the specific class of compound (aromatics and non-aromatics) as estimated (J). If it is determined from the review that out of specification MS/MSD results are indicative of systematic problems in the laboratory such as sample preparation or sample-specific matrix interferences this must be noted in the validation narrative along with the potential affect on the sample results.

6.2 FIELD DUPLICATE SAMPLES

Are field duplicate RPD values acceptable? Yes No N/A

ACTION: Note the results of the field duplicate samples in the validation narrative.

6.3 FIELD SPLIT SAMPLES

Are field split RPD values acceptable? Yes No N/A

ACTION: Note the results of the field split samples in the validation narrative.

7. SYSTEM PERFORMANCE

7.1 INTERNAL STANDARDS PERFORMANCE

Are any internal standard area counts outside the acceptance limits? Yes No N/A

Are retention times for any internal standard outside the ±30 second windows established by the most recent calibration check? Yes No N/A

ACTION: If the area counts are outside the acceptance limits qualify all associated results as estimated (J for detects or UJ for nondetects). If it is determined from the review that out of specification area counts and relative retention times are indicative of systematic problems within the laboratory the reviewer may consider rejection of all affected sample data (R).

Klowie 4/20/

8. COMPOUND IDENTIFICATION AND QUANTITATION

8.1 COMPOUND IDENTIFICATION

Are detected compounds within ±0.06 relative retention time units of the associated calibration standard?	Yes	No	N/A
Are all ions at a relative intensity of ≥10% in the standard spectra present in the sample spectra?	Yes	No	N/A
Do the relative intensities between the standard and sample spectra agree within 20%?	Yes	No	N/A
Have all ions > 10% in the sample spectra that are not present in the standard spectra been reviewed for possible background contamination?	Yes	No	N/A
Are molecular ions present in the reference specrum present in the sample spectrum?	Yes	No	N/A

ACTION: If compound identification is in error and retention time and mass spectral criteria are exceeded qualify all affected positive results as unusable (R). If cross-contamination between analyses is suspected, qualify affected data as unusable (R). Note the results in the validation narrative.

8.2 REPORTED RESULTS AND QUANTITATION LIMITS

Has the laboratory used the correct RRF values and internal standard(s) for quantitation?	Yes	No	N/A
Are results and quantitation limits calculated properly?	Yes	No	N/A
Has the laboratory reported the sample quantitation limits within 5xCRQL values?	Yes	No	N/A

ACTION: If the results and quantitation limits are in error contact the laboratory for clarification and note in the validation narrative.

8.3 TENTATIVELY IDENTIFIED COMPOUNDS (TIC)

Has the laboratory conducted a spectral library search on all candidate TIC peaks in accordance with the analytical SOW?	Yes	No	N/A
Has the laboratory properly identified and coded all TIC?	Yes	No	N/A

ACTION: If the laboratory has failed to search the minimum number of TIC peaks in the chromatogram contact the laboratory for submittal of the required data. Qualify as nondetects (U) all TIC compounds present in samples and blanks using the review criteria specified in the validation requirements. If TIC identification is in error sample results should be qualified as nondetects (U) or unusable (R). If TIC identifications are judged valid, qualify the results as presumptive and estimated (JN).

Klonie 4/201

9. OVERALL ASSESSMENT AND SUMMARY

Has the laboratory conducted the analysis in accordance with the analytical SOW?	Yes	No	N/A
Were project specific data quality objectives met for this analysis?	Yes	No	N/A

ACTION: Summarize all the data qualifications recommended in the foregoing sections, and complete the data validation narrative according to the requirements of Section 10.0 of the data validation requirements.

Klowie 4/20/9

COMMENTS (attach additional sheets as necessary):

Klonie 4/20/9

HOLDING TIME SUMMARY - FORM B-1

SDG: CP1632	REVIEWER: Kenney Lewis	DATE: 4/20/92	PAGE 1 OF 1
COMMENTS:			

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B011R1	VOA	9/4/91		9/14/91		10	NONE
B011R2	VOA	9/5/91		9/14/91		9	↓

Kenney 4/20/92

BLANK AND SAMPLE DATA SUMMARY - FORM B-3

SDG: CLP653 REVIEWER: Kennyjonic DATE: 4/20/92 PAGE 1 OF 1

COMMENTS:

SAMPLE ID	COMPOUND	RESULT	Q	RT	UNITS	5X RESULT	10X RESULT	SAMPLES AFFECTED	QUALIFIER
	meclz	7			ug/L		70	B0111R1/B0111R2	U
	Acetone	4	J		ug/L		40	↓	U

Klonic 4/20/92

CALIBRATION DATA SUMMARY - FORM B-2

SDG: CLP632	REVIEWER: Kenney/Louie	DATE: 4/20/92	PAGE 1 OF 1		
COMMENTS:					
CALIB. TYPE:	(INITIAL) CONTINUING	INSTRUMENT:			
CALIB. DATE	COMPOUND	RF	(RSD)/%D/%R	SAMPLES AFFECTED	QUALIFIER
	2-Butanone	.044	~~RRF~~ SSS 4/22/92	Boll21/Boll22	~~UJ~~ Klouie R
	Acetone		~~RSD~~ SSS 4/22/92 33.6%		UJ

Klouie 4/22/

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST - FORM A-6

PROJECT: 2CC-BP-1	REVIEWER: Kenny Jones	DATE: 4/21/92
LABORATORY: Weston	CASE: 91096632	SDG: CLP 632
SAMPLES/MATRIX: B0LL1, B0LL2, B0LL4, B0LL5, B0LK8 B0LK9, B0LF9 and B0LF0		

1. COMPLETENESS AND CONTRACT COMPLIANCE

Review the data package for completeness and check off the items below. If any data review elements are missing contact the laboratory for submittal of the omitted data.

Data Package Item	Present?: Yes	No	N/A
Case Narrative	✓		
Cover Page	✓		
Traffic Reports	✓		
Sample Data			
Inorganic Analysis Data Sheets	✓		
Standards Data			
Initial and Continuing Calibration Verification	✓		
CRDL Standard for AA and ICP	✓		
QC Summary			
Blanks	✓		
ICP Interference Check Summary	✓		
Spike Sample Recovery	✗		✗ 4/22/92
Post-Digestion Spike Sample Recovery	✓		
Duplicate	✓		
Laboratory Control Sample	✓		
Standard Addition Results	✓		
ICP Serial Dilutions	✓		
Instrument Detection Limits	✓		
ICP Interelement Correction Factors	✓		
ICP Linear Ranges	✓		
Preparation Log	✓		
Analysis Run Log	✓		
Raw Data			
ICP Raw Data	✓		
Furnace AA Raw Data	✓		
Mercury Raw Data	✓		
Cyanide Raw Data	✓		
Additional Data			
Internal laboratory chain-of-custody	✓		
Laboratory Sample Preparation Records	✓		

Klowe 4/21/92

Data Package Item	Present?: Yes	No	N/A
Percent Solids Analysis Records	✓		
Reduction Formulae		✓	
Instrument Run Logs		✓	
Chemist Notebook Pages		✓	

2. HOLDING TIMES

Have all samples been analyzed within holding times? **Yes** No N/A

ACTION: If any holding times have been exceeded qualify all affected results as estimated (J for detects and UJ for nondetects).

3. INITIAL CALIBRATIONS

Were all instruments calibrated daily, each set-up time and were the proper number of standards used? **Yes** No N/A

Are the correlation coefficients ≥0.995? **Yes** No N/A

Was a midrange cyanide standard distilled? **Yes** No N/A

ACTION: Qualify all data as unusable if reported from an analysis in which an instrument was not calibrated or was calibrated with less than the minimum number of standards. Qualify associated sample results >IDL as estimated (J) and results <IDL as estimated (UJ), if the correlation coefficient is <0.995 or the laboratory did not distill the midrange cyanide standard.

4. INITIAL AND CONTINUING CALIBRATION VERIFICATION

Are ICV and CCV percent recoveries within control? **Yes** No N/A

Are there calculation errors? Yes **No** N/A

ACTION: Qualify all affected data in accordance with Section 8.3 of the validation requirements. If calculation errors are noted, contact the laboratory for clarification.

5. ICP INTERFERENCE CHECK SAMPLE

Has an ICS sample been analyzed at the proper frequency? **Yes** No N/A

Are the AB solution %R values within control? **Yes** No N/A

Are there calculation errors? Yes **No** N/A

ACTION: Qualify all affected data in accordance with Section 8.3 of the validation requirements. If calculation errors are noted, contact the laboratory for clarification.

Klowi 4/21/9

6. LABORATORY BLANKS

Are target analytes present in the laboratory blanks? Yes No N/A

ACTION: Qualify all associated sample results for any analyte <5 times the amount in any laboratory blank as nondetected (U). If analyte concentrations in the blank are >CRDL or below the negative CRDL, verify the laboratory has redigested and reanalyzed associated samples with analyte concentrations <10 times the blank concentration. If the laboratory has not redigested and reanalyzed the samples, note in the validation narrative.

7. FIELD BLANKS

Are target analytes present in the field blanks? Yes No N/A

ACTION: Qualify all sample results for any analyte <5 times the amount in any valid field blank as nondetected (U).

8. MATRIX SPIKE SAMPLE ANALYSIS

Are spike recoveries within the control limits? Yes No N/A

ACTION: Qualify the affected sample data according to the following requirements:

If spike recovery is >125% and sample results are <IDL no qualification is required. If spike recovery is >125% or <75% qualify all positive results as estimated (J). If spike recovery is 30% to 74% qualify all nondetects as estimated (UJ). If spike recovery is <30%, reject all nondetects (R). If the field blank has been used for spike analysis, note in the validation narrative.

9. LABORATORY CONTROL SAMPLE

Are percent recoveries within the acceptance limits? Yes No N/A

Are there calculation errors? Yes No N/A

ACTION: Qualify the sample data according to the following requirements:

AQUEOUS LCS - Qualify as estimated (J), all sample results >IDL, for which the LCS %R falls within the range 50-79% or >120%. Qualify as estimated (UJ), all sample results <IDL, for which the LCS falls within the range of 50-79%. Qualify as unusable (R) all sample results, for which the LCS %R <50%.

SOLID LCS - Qualify as estimated (J), all sample results >IDL for which the LCS result is outside the established control limits. Qualify as estimated (UJ), all sample results <IDL for which the LCS %R are lower than the established control limits.

Klaus 4/21/92

10. PERFORMANCE AUDIT ANALYSES

Are the performance audit sample results within the acceptance limits? Yes No N/A

ACTION: Note the results of the performance audit sample analyses in the data validation narrative.

11. DUPLICATE SAMPLE ANALYSIS

Are RPD values acceptable? Yes No N/A

ACTION: Qualify the results for all associated samples of the same matrix as estimated (J) if the RPD results fall outside the appropriate control limits. If field blanks were used for laboratory duplicates, note in the validation narrative.

12. ICP SERIAL DILUTION

Are the serial dilution results acceptable? Yes No N/A

Is there evidence of negative interference? Yes No N/A

ACTION: Qualify the associated data as estimated (J) for those analytes in which the %D is outside the control limits. If evidence of negative interference is found, use professional judgment to qualify the data.

13. FIELD DUPLICATE SAMPLES

Do the RPD values exceed the control limits? Yes No N/A

ACTION: Note the results of the field duplicate samples in the validation narrative.

14. FIELD SPLIT SAMPLES

Do the RPD values exceed the control limits? Yes No N/A

ACTION: Note the results of the field split samples in the validation narrative.

1516. FURNACE ATOMIC ABSORPTION QUALITY CONTROL

Do all applicable analyses have duplicate injections? Yes No N/A

Are applicable duplicate injection RSD values within control? Yes No N/A

If no, were samples rerun once as required? Yes No N/A

Does the RSD for the rerun fall within the control limits? Yes No N/A

Were analytical spike recoveries within the control limits? Yes No N/A

If no, were MSA analyses performed when required? Yes No N/A

Are MSA correlation coefficients ≥0.995? Yes No N/A

If no, was a second MSA analysis performed? Yes No N/A

ACTION: If duplicate injections are outside the acceptance limits and the sample has not been reanalyzed or the reanalysis is outside the acceptance limits, qualify the associated data as estimated (J for detects and UJ for nondetects). If the analytical spike recovery is <40% qualify detects as estimated (J). If the analytical spike recovery is ≥10% but <40%, qualify all nondetects as estimated (UJ) and if the analytical spike recovery is <10%, reject all nondetects (R). If the sample absorbance is <50% of the analytical spike absorbance and the analytical spike recovery is <85% or >115%, qualify all results as estimated (J for detects and UJ for nondetects). If method of standard additions (MSA) was required but was not performed, the MSA samples were spiked incorrectly, or the MSA correllation coefficient was <0.995, qualify the associated detected results as estimated (J).

17. ANALYTE QUANTITATION AND DETECTION LIMITS

Have results been reported and calculated correctly? Yes No N/A

Are results within the calibrated range of the instruments and within the linear range of the ICP? Yes No N/A

Are all detection limits below the CRQL? Yes No N/A

Action: If analyte quantitation is in error, contact the laboratory for explanation. If errors or deficiencies can not be resolved with the laboratory, qualify associated data as unusable (R).

18. OVERALL ASSESSMENT AND SUMMARY

Has the laboratory conducted the analysis in accordance with the analytical SOW? Yes No N/A

Were project specific data quality objectives met for this analysis? Yes No N/A

ACTION: Summarize all the data qualifications and complete the data validation narrative as specified in Section 10.0 of the data validation requirements.

Klowe 4/21/92

COMMENTS (attach additional sheets as necessary):

1 Requalify zn for Blanks
2. Requalify Duplicate Sample
3. MS outside of limits
4. AA Spike Recovery out of Limits
MSA was Done

5. No Requalifying on ICP Serial Dilution
Since Sample Results is less than 50x the
IDL ~~out on~~ Klowi Per SOW.

Klowi
4/21/9

HOLDING TIME SUMMARY - FORM B-1

SDG: 632	REVIEWER: Kennedy Lowe	DATE: 4/22/92	PAGE 1 OF 3
COMMENTS: Metals / ICP			

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B0LL1	ICP	9/4/91	9/11/91	10/22/91	7	48	NONE
B0LL2					7		
B0LL4		9/5/91			6	47	
B0LL5					6		
B0LK8		9/4/91			7	48	
B0LK9					7		
B0LF9		9/5/91			6	47	
B0LG0					6		

Klowe 4/21/92

HOLDING TIME SUMMARY - FORM B-1

SDG: 632	REVIEWER: Kennylaine	DATE: 4/21/92	PAGE 2 OF 3
COMMENTS:	Metals / GFAA - As, Pb, Tl, Se		

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B011L1	GFAA - As, Pb, Se, Tl	9/4/91	9/11/91	9/17/91	7	13	None
B011L2				As - 11/01/91 Pb, Se, Tl 9/17/91	7	27 13	
B011L4		9/5/91			6	13	
B011L5				9/17/91	6		
B011K8		9/4/91			7		
B011K9				9/17/91	7		
B011F9		9/5/91			6		
B011G0					6		None

Klaine 4/21/

HOLDING TIME SUMMARY - FORM B-1

SDG: 632	REVIEWER: K. Lowe	DATE: 4/21/92	PAGE 3 OF 3
COMMENTS: Metals / CVAA-Hg			

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B0LL1	CVAA-Hg	9/4/91	9/10/91	9/11/91	6	7	None
B0LL2				9/12/91	6	7	
B0LL4		9/5/91		9/11/91	5	6	
B0LL5				9/12/91	5	6	
B0LK8		9/4/91		9/11/91	6	7	
B0LK9				9/12/91	6	7	
B0LF9		9/5/91		9/11/91	5	6	
B0LG0			9/10/91	9/12/91	5	6	

K. Lowe 4/21/92

BLANK AND SAMPLE DATA SUMMARY - FORM B-3

SDG: UP632 REVIEWER: Kenny/Ozie DATE: 9/21/92 PAGE 1 OF 1

COMMENTS: Inorganics

SAMPLE ID	COMPOUND	RESULT	Q	RT	UNITS	5X RESULT	10X RESULT	SAMPLES AFFECTED	QUALIFIER
	Zinc	9.1			ug/L	45		All Samples	U

Klow 9/21/92

ACCURACY DATA SUMMARY - FORM B-4

SDG: CLP632	REVIEWER: S Schulobt	DATE: 4/22/92	PAGE 1 OF 1	
COMMENTS: Inorganic ~~Matrix~~ Sample 033 Spike Recovery				
SAMPLE ID	COMPOUND	% RECOVERY	SAMPLE(S) AFFECTED	QUALIFIER REQUIRED
B011L1S	Selenium	71.0	B011L1, F9	J
			B011L2, L4, L5, K8, K9, G0	UJ

Verified 4/22/92

ACCURACY DATA SUMMARY - FORM B-4

SDG: CLP 632	REVIEWER: S Schildt	DATE: 4/22/92	PAGE 1 OF 2	
COMMENTS: GFAA Analytical Spike Recovery				
SAMPLE ID	COMPOUND	% RECOVERY	SAMPLE(S) AFFECTED	QUALIFIER REQUIRED
B011F9	Arsenic	84.8		J
~~B00~~ B011K9	↓	83.0		J
~~B011L1~~	~~Lead~~	~~84.6~~		~~UJ~~
B011L2		81.3		UJ
B011L5		82.5		UJ
B011K9	↓	83.8		UJ
B011L1	Selenium	76.1		none needed
B011L4		70.7		
B011K8		73.2		
B011F9		72.4		
B011L2		77.0		
B011L5		77.0		
B011K9		78.8		
B011G0	↓	75.3		↓
~~B011L1~~	~~Thallium~~	~~119.8~~		~~UJ~~
~~B011L4~~		~~137.1~~		
~~B011L2~~	↓	~~118.7~~		↓

4/27/92

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ACCURACY DATA SUMMARY - FORM B-4

SDG: CLP632	REVIEWER: S Schildt	DATE: 4/22/92	PAGE 2 OF 2	
COMMENTS: GFAA Analytical Spike Recovery				
SAMPLE ID	COMPOUND	% RECOVERY	SAMPLE(S) AFFECTED	QUALIFIER REQUIRED
~~B011L5~~	~~Thallium~~	~~133.3~~		~~UJ~~
~~B011K9~~	↓	~~123.2~~		↓
B011L4	Lead	78.5	B011L4	UJ
B011K8	↓	83.5	B011K8	UJ
B011G0	↓	83.5	B011G0	UJ

NLT 4/27/92

K Lorri 4/27/92

WET CHEMISTRY DATA VALIDATION CHECKLIST - FORM A-7

PROJECT: 200-BP-1	REVIEWER: Klonie	DATE: 4/20/92
LABORATORY: Weston	CASE: 91091632	SDG: CLP632
SAMPLES/MATRIX: B0LL1, B0LL4, B0LL8 and B0LF9 / water		

1. DATA PACKAGE COMPLETENESS

Review the data package for completeness and check off the items below. If any data review elements are missing contact the laboratory for submittal of the omitted data.

Data Package Item	Present?: Yes	No	N/A
Case Narrative	✓	—	—
Cover Page	✓	—	—
Traffic Reports/Chain-of-Custody	✓	—	—
Sample Analysis Data Report Forms	✓	—	—
Standards Data	✓	—	—
QC Summary			
Blanks Summary Report Forms	✓	—	—
Spike Sample Recovery Report Forms	✓	—	—
Duplicate Sample Analysis Report Forms	✓	—	✓ Klonie 4/20/92
Laboratory Control Sample Report Forms	✓	—	—
Raw Data			
Ion Chromatograph Chromatograms	✓	—	—
TOC and TOX Instrument Printouts	—	—	✓
Laboratory Bench Sheets	✓	—	—
Additional Data			
Laboratory Sample Preparation Logs	—	—	—
Instrument Run Logs	—	—	—
Internal Laboratory Chain-of-Custory	✓	—	—
Percent Solids Analysis Records	—	—	—
Reduction Formulae	—	✓	—
Chemist Notebook Pages	✓	—	—

2. HOLDING TIMES

Were all samples analyzed within holding times? Yes **(No)** N/A

Action: If any holding times were exceeded qualify all affected results as estimated (J for detects and UJ for nondetects).

Klonie 4/20/92

3. INITIAL CALIBRATIONS

Were all instruments calibrated daily, each set-up time and were the proper number of standards used?	Yes	No	N/A
Are the correlation coefficients ≥0.995?	Yes	No	N/A
Was a balance check conducted prior to the TDS analysis?	Yes	No	N/A
Was the titrant normality checked?	Yes	No	N/A

ACTION: Qualify all data as unusable (R) if reported from an analysis in which the above criteria were not met.

4. INITIAL AND CONTINUING CALIBRATION VERIFICATION

Have ICV and CCV been analyzed at the proper frequency?	Yes	No	N/A
Are ICV and CCV percent recoveries within control?	Yes	No	N/A
Are there calculation errors?	Yes	No	N/A

ACTION: Qualify all affected data in accordance with the validation requirements.

5. LABORATORY BLANKS

Are target analytes present in the laboratory blanks?	Yes	No	N/A

ACTION: Qualify all associated sample results for any analyte <5 times the amount in any laboratory blank as nondetected (U) and list the affected samples and analytes below.

6. FIELD BLANKS

Are target analytes present in the field blanks?	Yes	No	N/A

ACTION: Qualify all sample results for any analyte <5 times the amount in any valid field blank as nondetected (U).

7. MATRIX SPIKE SAMPLE ANALYSIS

Are spike recoveries within the acceptance limits?	Yes	No	N/A

ACTION: If the sample concentration exceeds the spike concentration by a factor of 4 or more, and spike recoveries are outside the acceptance limits, no qualification is necessary. If spike recovery is outside the control limits and the sample results are >CRQL, qualify the data as estimated (J). If the spike recovery is <30% and the sample results are less then the IDL qualify the data as unusable (R).

KLowe 4/20/9

8. LABORATORY CONTROL SAMPLE

Are percent recoveries within the acceptance limits? Yes No N/A

Are there calculation errors? Yes No N/A

ACTION: Qualify the affected results according to the following requirements:

AQUEOUS LCS - Qualify as estimated (J), all sample results >IDL, for which the LCS %R falls within the range 50-79% or >120%. Qualify as estimated (UJ), all sample results <IDL, for which the LCS falls within the range of 50-79%. Qualify as unusable (R) all sample results, for which the LCS %R <50%.

SOLID LCS - Qualify as estimated (J), all sample results >IDL for which the LCS %R is outside the established control limits. Qualify as estimated (UJ), all sample results <IDL for which the LCS %R are lower than the established control limits.

9. PERFORMANCE AUDIT ANALYSES

Are the performance audit sample results within the acceptance limits? Yes No N/A

ACTION: Note the results of the performance audit samples in the validation narrative.

10. DUPLICATE SAMPLE ANALYSIS

Are RPD values within the acceptance limits? Yes No N/A

Action: Qualify the results for all associated samples of the same matrix as estimated (J) if the RPD falls outside the acceptance limits.

11. FIELD DUPLICATE SAMPLES

Do RPD values exceed the acceptance limits? Yes No N/A

ACTION: Note the results of the field duplicate samples in the validation narrative.

12. FIELD SPLIT SAMPLES

Do RPD values exceed the acceptance limits? Yes No N/A

ACTION: Note the results of the field split samples in the validation narrative.

KLorie 4/20/

13. ANALYTE QUANTITATION AND DETECTION LIMITS

Have results been reported and calculated correctly? Yes No N/A

Are instrument detection limits below the CRDL? Yes No N/A

Action: If analyte quantitation is in error, contact the laboratory for explanation. If errors or deficiencies can not be resolved with the laboratory, qualify associated data as unusable (R).

14. OVERALL ASSESSMENT AND SUMMARY

Has the laboratory conducted the analysis in accordance with the analytical SOW? Yes No N/A

Were project specific data quality objectives met for this analysis? Yes No N/A

ACTION: Summarize all the data qualifications and complete the data validation narrative as specified in Section 10.0 of the data validation requirements.

Klonie 4/20/92

COMMENTS (attach additional sheets as necessary):

1 Requality Nitrate By IC, Nitrite By IC
ph and ~~[illegible]~~ outside of holding Time

Klonie
4/20/92

HOLDING TIME SUMMARY - FORM B-1

SDG: 9100632 REVIEWER: S Schulodt DATE: 4/22/92 PAGE 1 OF 1

COMMENTS: Wet chemistry

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B011L4,F9	Alk	9/5/91	—	9/11/91	—	6	none
	Cl		—	9/19/91	—	14	
	F		—		—		
	NO_2		—		—		UJ
	NO_3		—		—		J
	CN		9/16/91	9/18/91	~~13~~ 9 SS 4/22/92	13	none
	PO_4		—	9/19/91	—	14	UJ
	SO_4		—		—		none
	NO_2+NO_3		—	9/11/91	—	6	
	TOC		—	9/26/91	—	21	
	pH		—	9/9/91	—	4	
	TDS		—	9/10/91	—	10	

K Kraus 4/22/92

HOLDING TIME SUMMARY - FORM B-1

SDG: 91091632	REVIEWER: S Schuldt	DATE: 4/22/92	PAGE 2 OF 2
COMMENTS: Wet chemistry			

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B01121, ~~E4~~ B01K8, ~~F9~~	Alk	9/4/91	—	9/11/91	—	7	none
	Cl		—	9/19/91	—	15	none
	F		—	9/19/91	—	15	none
	NO_2		—		—		UJ
	NO_3		—		—		J
	CN		9/10/91	9/18/91	12	14	none
	PO_4		—	9/19/91	—	15	UJ
	SO_4		—		—		none
	NO_2+NO_3		—	9/11/91	—	7	
	TOC		—	9/26/91	—	22	
	pH		—	9/9/91	—	5	
	TDS		—	9/10/91	—	6	

Klaus 4/22