METHOD BLANKS AND ASSOCIATED SAMPLES:

B3K0011-BLK1:	AH03201, AH03202, AH03203, AH03205 and AH03206
B3K0013-BLK1:	AH03201, AH03202, AH03204, AH03207, AH03208, AH03209 and AH03211
B3K0016-BLK1:	AH03210, AH03212, AH03213, AH03214, AH03215, AH03216, AH03217 and AH03218
B3K0019-BLK1:	AH03217
B3K0009-BLK1:	AH03201, AH03202 and AH03203
B3K0015-BLK1:	AH03204, AH03205, AH03206, AH03207, AH03208, AH03209, AH03210 and AH03211
Storage Blank VHBLK1028:	AH03201, AH03202, AH03203, AH03204, AH03205, AH03206, AH03207, AH03208, AH03209, AH03211, AH03210, AH03212, AH03213, AH03214, AH03215, AH03216, AH03217 and AH03218
Storage Blank VHBLK1110:	AH03201, AH03202, AH03203, AH03204, AH03205, AH03206, AH03207, AH03208, AH03209, AH03211, AH03210, AH03212, AH03213, AH03214, AH03215, AH03216, AH03217 and AH03218

TABLES:

1A: Analytical Results with Qualifications
1B: Data Qualifier Definitions for Organic Data Review

TPO ACTION:

None.

TPO ATTENTION:

(1) The detected results for several target analytes are qualified as non-detected and estimated (U,J) due to contamination in method blank B3K0009-BLK1. (2) Several results are estimated (J) due to calibration problems.

SAMPLING ISSUES:

The detected results for three VOC target analytes and two SVOC target analytes are qualified as non-detected and estimated (U,J) due to contamination in field blank AH03203. The detected results for two VOC target analytes and one SVOC target analyte are qualified as non-detected and estimated (U,J) due to contamination in

field blank AH03205.

ADDITIONAL COMMENTS:

This report was prepared according to the laboratory SOPs (#354 and #315); and the documents "USEPA Contract Laboratory Program National Functional Guidelines for Low Level Organic Data Review," June, 2001; and "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review," October, 1999.

Quantitation limit (QL) standards were analyzed at the beginning of each analytical run. All compounds had recoveries between the QC limits of 50% and 150%, with the exception of hexachlorocyclopentadiene at 41% in the 11/13/03 at 13:57 QL standard.

II. Validation Summary

	VOCs Acceptable/Comment		SVOCs Acceptable/Comment	
HOLDING TIMES	[YES]	[ ]	[YES]	[ ]
GC/MS TUNE	[YES]	[ ]	[YES]	[ ]
CALIBRATIONS	[NO]	[E]	[YES]	[ ]
FIELD QC	[NO]	[C]	[NO]	[D]
LABORATORY BLANKS	[YES]	[ ]	[NO]	[B]
SURROGATES	[YES]	[ ]	[YES]	[ ]
LABORATORY CONTROL SPIKE/DUPLICATE	[NO]	[F]	[YES]	[G]
MATRIX SPIKE/DUPLICATE	[YES]	[ ]	[NO]	[H]
INTERNAL STANDARDS	[YES]	[ ]	[YES]	[ ]
COMPOUND IDENTIFICATION	[YES]	[ ]	[YES]	[ ]
COMPOUND QUANTITATION	[YES]	[A]	[YES]	[A]
SYSTEM PERFORMANCE	[YES]	[ ]	[YES]	[ ]

III. Validity and Comments

A. The following results, denoted with an "L" qualifier, are estimated and flagged "J" in Table 1A.

- All results below the laboratory quantitation limits

Results below the quantitation limits (QLs) are considered to be qualitatively acceptable, but quantitatively unreliable, due to the uncertainty in analytical precision near the limit of detection.

B. The following detected results are qualified as non-detected and estimated due to laboratory blank contamination. The results are flagged "U,J" in Table 1A.

- 1,4-Dioxane in samples AH03201, AH03202 and AH03203
- bis(2-Ethylhexyl)phthalate in samples AH03201, AH03202 and AH03203

1,4-Dioxane and bis(2-ethylhexyl)phthalate were found in laboratory method blank B3K0009-BLK1 at concentrations of 0.6 µg/L and 0.9 ug/L, respectively. The results for the samples listed above are considered non-detected and estimated (U,J) and the quantitation limit has been increased according to the blank qualification rules presented below.

No positive results are reported unless the concentration of the compound in

the sample exceeds 10 times the amount in any associated blank for the common laboratory contaminants or 5 times the amount for other compounds. If the sample result is greater than the QL, the quantitation limit is raised to the sample result (U,J). If the sample result is less than the QL, the result is reported as non-detected (U,J) at the QL.

A laboratory method blank is laboratory reagent water analyzed with all reagents, surrogates, and internal standards and carried through the same sample preparation and analytical procedures as the field samples. The laboratory method blank is used to determine the level of contamination introduced by the laboratory during extraction and analysis.

C. The following detected results are qualified as non-detected and estimated due to field blank contamination. The results are flagged "U,J" in Table 1A.

- Acetone in samples AH03201, AH03202 and AH03206
- 2-Butanone in sample AH03202
- 1,2-Dichloroethane in samples AH03201, AH03202 and AH03204

Acetone, 2-butanone and 1,2-dichloroethane were found field blank AH03203 at concentrations of 7.8 ug/L, 38, ug/L and 0.3 ug/L, respectively. Acetone and 1,2-dichloroethane were found field blank AH03205 at concentrations of 9.3 ug/L and 2.1 ug/L, respectively. The results for the samples listed above are considered non-detected and estimated (U,J) and the quantitation limits have been increased according to the blank qualification rules presented below.

Although chloromethane was found field blank AH03203 at a concentration of 0.6 µg/L, data was not qualified because chloromethane was not found in any of the samples associated with this field blank.

Although chloromethane, chloroethane, dichloromethane and 2-butanone were found field blank AH03205 at concentrations of 7.6 µg/L, 1.4 ug/L, 0.5 ug/L and 39 ug/L, respectively, no data are qualified because these compounds were not found in any of the samples associated with this field blank.

Although acetone and 2-butanone were found equipment blank AH03209 at concentrations of 4.9 µg/L and 37 ug/L, respectively and in equipment blank AH03216 at concentrations of 5.4 ug/L and 80 ug/L, respectively, no data are qualified because these compounds were not found in any of the samples associated with these equipment blanks.

No positive results are reported unless the concentration of the compound in the sample exceeds 10 times the amount in any associated blank for the common laboratory contaminants or 5 times the amount for other compounds. If the sample result is greater than the QL, the quantitation limit is raised to the sample result (U,J). If the sample result is less than the QL, the result is reported as non-detected (U,J) at the QL.

A field blank is clean water prepared as a sample in the field by the sampler and shipped to the laboratory with the samples. A field blank is intended to detect contaminants that may have been introduced in the field, although any laboratory introduced contamination will also be present. Contaminants that are found in the field blank which are absent in the laboratory method blank could be indicative of a field QC problem, a deficiency in the bottle preparation procedure, a difference in preparation of the laboratory and field blanks, or other indeterminate error.

An equipment blank is clean water that has been collected as a sample using decontaminated sampling equipment. The intent of an equipment blank is to monitor for contamination introduced by the sampling activity, although any laboratory introduced contamination will also be present.

D. The following detected results are qualified as non-detected and estimated due to field blank contamination. The results are flagged "U,J" in Table 1A.

- 1,4-Dioxane in samples AH03201 and AH03202
- bis(2-Ethylhexyl)phthalate in samples AH03201, AH03202 and AH03206

1,4-dioxane and bis(2-ethylhexyl)phthalate were found in field blank AH03203 at concentrations of 0.5 ug/L and 0.8 ug/L, respectively. Bis(2-ethylhexyl)phthalate was found in field blank AH03205 at a concentration of 0.5 ug/L. The results for the samples listed above are considered non-detected and estimated (U,J) and the quantitation limits have been increased according to the blank qualification rules presented below.

It should be noted that field blank samples AH03201 and AH03202 were previously qualified as non-detected and estimated due to method blank contamination for 1,4-dioxane and bis(2-ethylhexyl)phthalate.

No positive results are reported unless the concentration of the compound in the sample exceeds 10 times the amount in any associated blank for the common laboratory contaminants or 5 times the amount for other compounds. If the sample result is greater than the QL, the quantitation limit

is raised to the sample result (U,J). If the sample result is less than the QL, the result is reported as non-detected (U,J) at the QL.

A field blank is clean water prepared as a sample in the field by the sampler and shipped to the laboratory with the samples. A field blank is intended to detect contaminants that may have been introduced in the field, although any laboratory introduced contamination will also be present. Contaminants that are found in the field blank which are absent in the laboratory method blank could be indicative of a field QC problem, a deficiency in the bottle preparation procedure, a difference in preparation of the laboratory and field blanks, or other indeterminate error.

E. The detected results and quantitation limits for the following analytes are estimated due to large percent differences (%Ds) in the continuing calibrations. The results are flagged "J" in Table 1A.

- Acetone in samples AH03201, AH03202, AH03203, AH03205, AH03206, AH03210, AH03212, AH03213, AH03214, AH03215, AH03216, AH03217, AH03218, method blank B3K0011-BLK1 and method blank B3K0016-BLK1
- tert-Butyl alcohol in samples AH03210, AH03212, AH03213, AH03214, AH03215, AH03216, AH03217, method blank B3K0011-BLK1 and method blank B3K0016-BLK1
- Bromoform in samples AH03210, AH03212, AH03213, AH03214, AH03215, AH03216, AH03217, method blank B3K0011-BLK1 and method blank B3K0016-BLK1

A percent difference of +62% was observed for acetone in the continuing calibration analyzed on November 6, 2003. Percent differences of +76%, -32% and +35% were observed for acetone, tert-butyl alcohol and bromoform, respectively, in the continuing calibration analyzed on November 10, 2003. These values exceed the ±30.0% QC advisory validation criterion.

The continuing calibration checks the instrument performance daily.

F. The following results are estimated because of aqueous laboratory control sample (LCS) results outside laboratory QC limits. The results are flagged "J" in Table 1A.

- Acetone in samples AH03203, AH03205 and AH03209

The results obtained in the analysis of the aqueous LCS for acetone did not meet

the criteria for accuracy specified in the laboratory SOP. The percent recoveries for acetone are presented below.

B3K0011-BS1	LCS
Analyte	% Recovery
Acetone	165%

B3K0013-BS1	LCS
Analyte	% Recovery
Acetone	155%

QC limits: %Recovery
60%-140%

The results reported for acetone in the samples listed above are considered quantitatively uncertain and may be biased high.

It should be noted that the results for acetone in samples AH03201, AH03202 and AH03206 were changed to non-detect due to field blank contamination. Qualification was not required for non-detected results associated with high-failing LCS recoveries.

The purpose of the LCS is to serve as a monitor of the overall performance of all steps in the analysis, including sample preparation under ideal conditions.

G. The result obtained in the analysis of the aqueous LCS for 2,4-dinitrotoluene did not meet the criteria for accuracy specified in the laboratory SOP. The percent recovery for 2,4-dinitrotoluene is presented below.

B3K0009-BS1	LCS
Analyte	% Recovery
2,4-Dinitrotoluene	111%

QC limits: %Recovery
24%-100%

Since this recovery is above the QC limits and the sample results for this analyte are non-detected, no adverse effect on the quality of the data is expected.

H. The matrix spike and matrix spike duplicate results for 2,4-dinitrotoluene in QC samples AH03204 MS/MSD did not meet the criteria for accuracy specified in the laboratory SOP. The percent recoveries for 2,4-dinitrotoluene are presented below.

AH03204	MS	MSD	
Analyte	%Recovery	%Recovery	RPD
2,4-Dinitrotoluene	101%	110%	10% (okay)
QC limits:	%Recovery	RPD	
	24%-100%	38%	

Since these recoveries are above the QC limits and the sample results for this analyte are non-detected, no adverse effect on the quality of the data is expected.

Matrix spike sample analysis provides information about the effect of the sample matrix on sample preparation and measurement.

FIELD DUPLICATES

	YES	NO
Are original/field duplicate pairs identifiable?	X	
%RPD within project acceptance limits?	X	

RPD CALCULATION CHECK

IF sample result is ND, enter "0". RPD is automatically calculated

Original Sample ID	Original Lab ID	Matrix	Element	Orig. Results	Duplicate Sample ID	Duplicate Lab ID	Dup. Results	RPD	Absolute Difference	RL	Meets Criteria?
AH03201	0311002-01	Water	Aluminum	ND	AH03202	0311002-02	ND	NA	NA		YES
AH03201	0311002-01	Water	Antimony	ND	AH03202	0311002-02	ND	NA	NA		YES
AH03201	0311002-01	Water	Arsenic	0.85	AH03202	0311002-02	0.94	-9.57%	0.09		YES
AH03201	0311002-01	Water	Barium	99	AH03202	0311002-02	97	2.06%	2		YES
AH03201	0311002-01	Water	Beryllium	ND	AH03202	0311002-02	ND	NA	NA		YES
AH03201	0311002-01	Water	Boron	120	AH03202	0311002-02	120	0.00%	0		YES
AH03201	0311002-01	Water	Cadmium	ND	AH03202	0311002-02	ND	NA	NA		YES
AH03201	0311002-01	Water	Calcium	98000	AH03202	0311002-02	96000	2.08%	2000		YES
AH03201	0311002-01	Water	Chromium	3.4	AH03202	0311002-02	3.3	3.03%	0.1		YES
AH03201	0311002-01	Water	Cobalt	ND	AH03202	0311002-02	ND	NA	NA		YES
AH03201	0311002-01	Water	Copper	1.2	AH03202	0311002-02	ND	NC	NC	2	YES
AH03201	0311002-01	Water	Iron	160	AH03202	0311002-02	160	0.00%	0		YES
AH03201	0311002-01	Water	Lead	ND	AH03202	0311002-02	ND	NA	NA		YES
AH03201	0311002-01	Water	Magnesium	36000	AH03202	0311002-02	36000	0.00%	0		YES
AH03201	0311002-01	Water	Manganese	10	AH03202	0311002-02	11	-9.52%	1		YES
AH03201	0311002-01	Water	Mercury	ND	AH03202	0311002-02	ND	NA	NA		YES
AH03201	0311002-01	Water	Molybdenum	8.9	AH03202	0311002-02	9.1	-2.22%	0.2		YES
AH03201	0311002-01	Water	Nickel	3.7	AH03202	0311002-02	3.8	-2.67%	0.1		YES
AH03201	0311002-01	Water	Potassium	ND	AH03202	0311002-02	2900	NC	NC	5000	YES
AH03201	0311002-01	Water	Selenium	2.3	AH03202	0311002-02	2.4	-4.26%	0.1		YES
AH03201	0311002-01	Water	Silver	ND	AH03202	0311002-02	ND	NA	NA		YES
AH03201	0311002-01	Water	Sodium	75000	AH03202	0311002-02	76000	-1.32%	1000		YES
AH03201	0311002-01	Water	Thallium	ND	AH03202	0311002-02	ND	NA	NA		YES
AH03201	0311002-01	Water	Vanadium	ND	AH03202	0311002-02	ND	NA	NA		YES
AH03201	0311002-01	Water	Zinc	11	AH03202	0311002-02	7.2	41.76%	3.8	5	YES

ACCEPTANCE CRITERIA REFERENCE: EPA Region 9 Laboratory SOPs 505, 507, 515

ACCEPTANCE LIMITS:	20%
CRITERIA FOR AQUEOUS RESULTS AT OR NEAR THE RL	+/- 1 X RL
CRITERIA FOR SOIL RESULTS AT OR NEAR THE RL	+/- 2 X RL

LIST ALL RPD OUTSIDE PROJECT LIMITS (DO NOT INCLUDE VALUES < RL)

Original Sample ID	Original Lab ID	Element	RPD	Comments
				None

Recommended Actions

X **No action required**

NC: Not calculated. The absolute difference between the sample result and the duplicate sample result is less than the reporting limit.
N/A: Not analyzed
NA: Not applicable. Calculation of the relative percent difference between the sample result and the duplicate sample result is not applicable.

It seems obvious from the data for metals analyses that Field Duplicate sample AH03202 (0311002-02) was switched with Field Blank sample AH03205 (0311007-02). Sample AH03205 (0311007-02) had hits that matched Field Duplicate sample AH03201 (0311002-01); sample AH03202 (0311002-02) was clean, with the exception of a low level result for zinc. In order to evaluate field blank and field duplicate data herein the results for sample AH03202 will be used in place of the results for sample AH03205, and the results for sample AH03205 will be used in place of the results for sample AH03202. This will be noted in the final report.

ICP INTERFERENCE CHECK SAMPLE

	YES	NO	N/A
Form present?		X	
Analyzed at beginning and end of each sample analysis run and every 20 analytical samples for ICP-AES or the beginning of each run for ICP/MS?		X	
All recoveries meet acceptance criteria?			X

ACCEPTANCE CRITERIA REFERENCE:

ACCEPTANCE LIMITS: %R 80-120

LIST ALL PERCENT RECOVERIES THAT DO NOT MEET ACCEPTANCE CRITERIA

Run Date	Run Time	Instrument ID	Element	% Recovery	Comments

% RECOVERY CALCULATION CHECK
% Recoveries are automatically calculated.

Element	Run Date	Instrument ID	Nominal Value or (Sol A)	Sol AB	% Rec	Agree?	Comments
					#DIV/0!		
					#DIV/0!		
					#DIV/0!		
					#DIV/0!		

List of Anomalies/Recommended Actions

No action required

INTERFERENCE CHECK SAMPLES WERE NOT ANALYZED WITH ICP ANALYSES.

"SIC" SOLUTIONS WERE ANALYZED AT THE BEGINNING OF THE RUN BY METHOD 200.7.

ICP SERIAL DILUTION

	YES	NO	N/A
Form present?		X	
ICP Serial Dilution one per similar matrix or SDG (whichever is more frequent)?		X	
%D meet acceptance criteria for sample concentrations > 50X IDL?			X

ACCEPTANCE CRITERIA REFERENCE:

ACCEPTANCE LIMITS: %D 10

LIST ALL PERCENT DIFFERENCE THAT DO NOT MEET ACCEPTANCE CRITERIA

Sample ID	Element	Analysis Date	% D	IDL (mg/L)	50X IDL	Comments	QC Batch
					0		
					0		
					0		
					0		

Sample ID	Element	Analysis Date	% D	MDL (mg/kg)	50X MDL	Comments	QC Batch
					0		
					0		
					0		
					0		

% D CALCULATION CHECK
% D are automatically calculated.

Sample ID	Element	Analysis Date	Initial Result	Dilution Result	% D	Agree?	Comments
					#DIV/0!		
					#DIV/0!		
					#DIV/0!		
					#DIV/0!		

List of Anomalies/Recommended Actions

☐ **No action required**

SERIAL DILUTIONS WERE NOT PERFORMED FOR ICP ANALYSES.

DataVal, Inc.
27 Commercial Blvd., Suite P
Novato, CA 94949
(415)883-2780

REPORTING LIMITS

	YES	NO
Are the project-specified reporting limits (RLs) met for all project samples?	X	
Are the RLs for all soil samples raised by dry weight correction?	NA	
Are the RLs raised due to sample dilutions?	X	
Was dilution required due to matrix interference?	X	
Was dilution required due to high levels of TARGET analytes?	X	
Are any samples non-detect at a raised RL? (if so, list below)	X	

REPORTING LIMITS REFERENCE: EPA Region 9 Laboratory SOPs 505, 507, 515

If NO, then list:

Element	Samples Affected	Lab RL	Project RL	Comment
Aluminum	0311002-01, -0311007-01, -02, 0311016-01			**ND at 4X dilution**

ANALYTE LIST

	YES	NO
Does the reported target analyte list match the project required list?	X	

ANALYTE LIST REFERENCE: EPA Region 9 Laboratory SOPs 505, 507, 515

If NO, then list extra or missing analytes:

Element	Missing?	Extra?	Comment
			None

ICP/MS INSTRUMENT PERFORMANCE CHECK (LEVEL IV)

	YES	NO
Performed daily at instrument setup?	X	
Performance check solution analyzed at least 5 times consecutively?	(1)	
Peak widths ≤ 0.75 amu at 5% peak height (or ≤ 0.80 amu at 10% peak height)?	X	
Mass calibrations ± 0.1 amu from true values?	X	
RSD ≤ 5% for all tuning isotopes?	X	

List of Anomalies/Recommended Actions

X **No action required**

(1) THE RUN LOG DOES NOT SHOW THE PERFORMANCE CHECK RUNS.

LIST ALL INSTRUMENT PERFORMANCE CHECK INJECTIONS

Date	Instrument ID	Injection Time	Criteria Check (Level IV only)	Associated Samples
24-Nov-03	ICPMS1	1039	OK	0311002-01 thru -03, 0311007-01 thru -03, 0311010-01 thru -04, 0311016-01
25-Nov-03	ICPMS1	1220	OK	0311007-02, -03, 0311016-01

LIST ALL INSTRUMENT PERFORMANCE CHECKS OUTSIDE CRITERIA

Date	Instrument ID	Injection Time	Parameter outside criteria	Isotope	Comments
					None

ICP/MS INSTRUMENT PERFORMANCE CHECK (LEVEL IV)

Date: 11/24/3
Injection Time: 10:39
Instrument ID: ICPMS1

Element	Exact Mass	Measured Mass	Difference
Be	9.012	8.977	0.035
Mg	23.985	23.979	0.006
Co	58.933	58.928	0.005
Ar2	75.93	75.928	0.002
In	114.904	114.928	-0.024
Ce	139.905	139.878	0.027
Pb	207.977	207.929	0.048
Th	232.038	231.977	0.061

CALCULATED VALUES MATCH REPORTED VALUES?
LABORATORY DOES NOT REPORT DIFFERENCE VALUES.

YES	NO
NA	

INITIAL CALIBRATION

	YES	NO	NA
Performed before sample analysis?	X		
Calibration for each instrument?	X		
Correlation Coefficient meets acceptance criteria?	X		
Blank and a high standard were used for ICP calibration?	X(1)		

List of Anomalies/Recommended A

X No action required

(1) ICP-AES ONLY.

ACCEPTANCE CRITERIA REFERENCE: NFG Ing., October 2004

ACCEPTANCE LIMITS: CORR COEF (r) 0.995

LIST ALL CORRELATION COEFFICIENTS THAT DO NOT MEET ACCEPTANCE CRITERIA:

Calibration Date	Instrument ID	Matrix	Element	Corr Coefficient (r)	Comment
					None

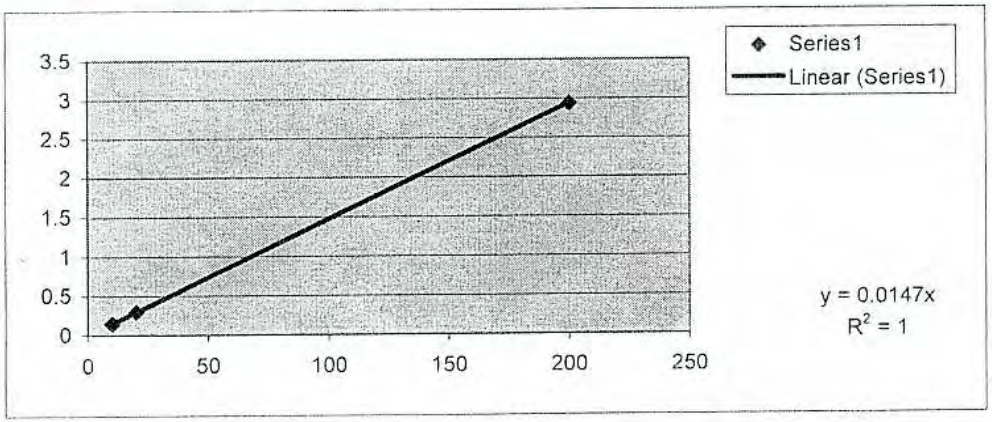
LIST ALL ICAL AND ASSOCIATED SAMPLES

Calibration Date	Instrument ID	Matrix	Element	Associated Samples
14-Nov-03	TJA ICAP 61E	Water	B, Ca, Fe, Mg, K, Na, V	Calibrated at start of each run; see ICV/CCV workbook pages for associated samples.
24-Nov-03	ICPMS1	Water	Al, Sb, As, Ba, Be, Cd, Cr, Co, Cu, Pb, Mn, Mo, Ni, Se, Ag, Tl, Zn	"
24-Nov-03	ICPMS1	Water	Al	"
25-Nov-03	ICPMS1	Water	Al	"
13-Nov-03	Cetac M-6000A	Water	Hg	"

INITIAL CALIBRATION - LINEAR CURVE

Enter Calibration date (mo/day/year), instrument ID, element, standard responses and standard concentrations
R, R squared, slope and intercept are calculated automatically

Calibration Date	24-Nov-03								
Inst. ID	ICPMS1								
Element	Copper							X	Y
Std Resp2	126699	IS Resp2	841168	Std Amt2	10	IS Amt2	1	0.150623	10
Std Resp3	249909	IS Resp3	833231	Std Amt3	20	IS Amt3	1	0.299928	20
Std Resp4	2526383	IS Resp4	859774	Std Amt4	200	IS Amt4	1	2.938427	200



Y	X
10	0.150623
20	0.299928
200	2.938427

Curve is forced thru zero;
X and Y axes are switched.

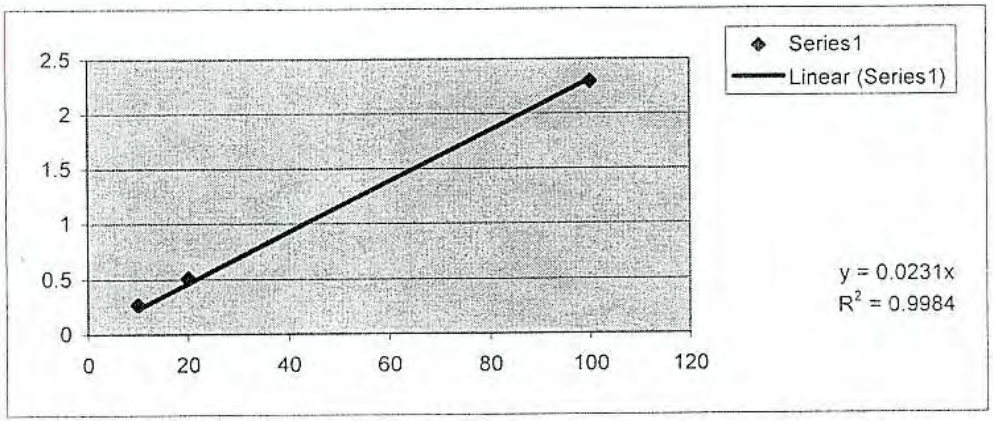
	YES	NO
CALCULATED VALUES MATCH REPORTED VALUES?	X	

It appears the laboratory set the internal standard amounts to "one" in the initial calibrations.

INITIAL CALIBRATION - LINEAR CURVE

Enter Calibration date (mo/day/year), instrument ID, element, standard responses and standard concentrations
R, R squared, slope and intercept are calculated automatically

Calibration Date	25-Nov-03								
Inst. ID	ICPMS1								
Element	Aluminum							X	Y
Std Resp2	226502	IS Resp2	841168	Std Amt2	10	IS Amt2	1	0.269271	10
Std Resp3	424677	IS Resp3	833231	Std Amt3	20	IS Amt3	1	0.509675	20
Std Resp4	1970349	IS Resp4	857754	Std Amt4	100	IS Amt4	1	2.297103	100



Y	X
10	0.269271
20	0.509675
100	2.297103

Curve is forced thru zero;
X and Y axes are switched.

	YES	NO
CALCULATED VALUES MATCH REPORTED VALUES?	X	

It appears the laboratory set the internal standard amounts to "one" in the initial calibrations.

INITIAL CALIBRATION - LINEAR CURVE

Enter Calibration date (mo/day/year), instrument ID, element, standard responses and standard concentrations
R, R squared, slope and intercept are calculated automatically

Calibration Date	13-Nov-03				
Instrument ID	Cetac M-6000A				
Element	Mercury				
Std Resp1	202	Std Conc1	0	CORR (r)	0.99997
Std Resp2	461	Std Conc2	30	r Squared	0.99994
Std Resp3	614	Std Conc3	50	Slope	8.48524
Std Resp4	1020	Std Conc4	100	Intercept	193.40674
Std Resp5	4440	Std Conc5	500	1/Slope	0.11785

CALCULATED VALUES MATCH REPORTED VALUES?	YES	NO
	X	

CRI/CRA STANDARD

	YES	NO	N/A
CRI/CRA standard analyzed?	X		
CRI/CRA standard at correct concentration(s)?	X		
All recoveries meet acceptance criteria?	X		

List of Anomalies/Recommended Actions

X **No action required**

% RECOVERY CALCULATION CHECK
Enter Date (mo/day/year), Instrument ID, element, actual value and found value.
% Recovery calculated automatically.

Calibration Date	Instrument ID	Element	True Value (mg/L)*	Found Value	% Rec	Agree with Lab?	
14-Nov-03	TJA ICAP 61E	Boron	0.1	0.095	95.00%	**NA**	13:58
24-Nov-03	ICPMS1	Lead	1	1.1109	111.09%	**NA**	12:27
24-Nov-03	ICPMS1	Aluminum	10	10.182	101.82%	**NA**	16:21
25-Nov-03	ICPMS1	Aluminum	10	10.341	103.41%	**NA**	12:56
13-Nov-03	Cetac M-6000A	Mercury	0.03	0.0329	109.67%	**YES**	15:21

* **UNITS FOR MERCURY ARE PPT.**

ACCEPTANCE CRITERIA REFERENCE: EPA Region 9 Laboratory SOPs 505, 507, 515

ACCEPTANCE LIMITS: %R 50-150

LIST ALL PERCENT RECOVERY THAT DO NOT MEET ACCEPTANCE CRITERIA

Calibration Date	Instrument ID	Element	% Recovery	Comments
				None

DAILY CALIBRATION CHECK

RUN LOGS

	YES	NO	N/A
Run logs present in data package?	X		
All samples located on run logs?	X		
All dilutions located on run logs?	X		
Are anomalies noted by the analyst?	X(1)		

PREP LOGS

	YES	NO	N/A
Prep logs present in data package?	X		
All samples located on prep logs?	X		
Are anomalies noted by the analyst?		X	

INITIAL AND CONTINUING CALIBRATION VERIFICATION

	YES	NO	N/A
Performed before sample analysis?	X		
Performed for each day of analysis?	X		
Performed for each instrument?	X		
Performed for every 10 samples?	X		
Raw data agree with forms? (Level IV only)	X		

ACCEPTANCE CRITERIA REFERENCE: EPA Region 9 Laboratory SOPs 505, 507, 515

ACCEPTANCE LIMITS:

%R	95-105	ICV (ICP-AES & Mercury)
%R	90-110	ICV (ICP-MS), CCV (All)

LIST ALL %RECOVERY THAT DO NOT MEET ACCEPTANCE CRITERIA:

Calibration Date	Time	Instrument ID	Element	% Recovery	Comments
24-Nov-03	1510	ICPMS1	Aluminum	130	(1)
24-Nov-03	1510	ICPMS1	Beryllium	112	Samples ND; no qual
24-Nov-03	1510	ICPMS1	Copper	111	J+ 006
24-Nov-03	1546	ICPMS1	Aluminum	130	(2)
24-Nov-03	1546	ICPMS1	Beryllium	113	(2)
24-Nov-03	1546	ICPMS1	Copper	111	(2)

List of Anomalies/Recommended Actions

X No action required

(1) ANALYST NOTED FAILING INTERNAL STANDARDS; SAMPLES WERE RE-RUN.

(1) ALUMINUM REPORTED FROM LATER IN THIS RUN OR FROM A LATER RUN.

QUALIFY COPPER J+ 006 FOR SAMPLES 0311002-01, 0311007-01, -03.

(2) CLOSING CCV FOR BARIUM REPORTED VALUE ONLY.

CONTINUED

DAILY CALIBRATION CHECK CONTINUED

LIST ALL PRECEEDING ICV/CCV AND ASSOCIATED SAMPLES

Calibration Date	Time	Instrument ID	Matrix	Element	Associated Samples
14-Nov-03	1348	TJA ICAP 61E	Water	B, Ca, Fe, Mg, K, Na, V	ICV
14-Nov-03	1540	TJA ICAP 61E	Water	B, Ca, Fe, Mg, K, Na, V	0311002-01 thru -03, 0311007-01 thru -03
14-Nov-03	1622	TJA ICAP 61E	Water	B, Ca, Fe, Mg, K, Na, V	0311010-01 thru -04, 0311016-01
14-Nov-03	1655	TJA ICAP 61E	Water	B, Ca, Fe, Mg, K, Na, V	Closing
24-Nov-03	1205	ICPMS1	Water	Al, Sb, As, Ba, Be, Cd, Cr, Co, Cu, Pb, Mn, Mo, Ni, Se, Ag, Tl, Zn	ICV, 0311002-02, -03, 0311010-03
24-Nov-03	1311	ICPMS1	Water	"	0311010-01, -02, -04
24-Nov-03	1348	ICPMS1	Water	"	0311002-01, 0311007-01 thru -03, 0311016-01
24-Nov-03	1510	ICPMS1	Water	"	0311007-02 (Barium only)
24-Nov-03	1546	ICPMS1	Water	"	Closing
24-Nov-03	1612	ICPMS1	Water	Al	ICV, 0311002-01, 0311007-01
24-Nov-03	1647	ICPMS1	Water	Al	Closing
25-Nov-03	1247	ICPMS1	Water	Al	ICV, 0311007-02, 0311016-01
25-Nov-03	1314	ICPMS1	Water	Al	0311007-03
25-Nov-03	1333	ICPMS1	Water	Al	Closing
13-Nov-03	1510	Cetac M-6000A	Water	Hg	ICV, 0311002-01 thru -03, 0311007-01
13-Nov-03	1553	Cetac M-6000A	Water	Hg	0311007-02, -03, 0311010-01 thru -04, 0311016-01
13-Nov-03	1633	Cetac M-6000A	Water	Hg	Closing

INTERNAL STANDARDS (LEVEL IV)

	YES	NO	N/A
At least 5 bracketing internal standards added to all project samples?	X(1)		
At least 5 bracketing internal standards added to all calibrations and QC samples?	X(1)		
Same internal standards monitored throughout entire analytical run?	X		
Percent relative intensity (%RI) in the sample meets criteria?	X(2)		
Results agree with raw data?	X		

ACCEPTANCE CRITERIA REFERENCE: NFG Ing., October 2004

ACCEPTANCE LIMITS: %RI 60-125 (of the response in the calibration blank)

LIST ALL RESPONSES OUTSIDE PROJECT LIMITS

Sample ID	Internal Standard	Internal Standard Response	IS Out Low	IS Out High	Comments
					None (2)

LIST ALL PRECEEDING INTERNAL STANDARDS AND ASSOCIATED SAMPLES

Calibration Date	Cal. blank injection time	Instrument ID	Matrix	Associated Samples
24-Nov-03	1128	ICPMS1	Water	AH03201, AH03202, AH03203, AH03204, AH03205, AH03206, AH03207, AH03208, AH03209, AH03211 and AH03210
24-Nov-03	1600	ICPMS1	Water	0311002-01, 0311007-01
25-Nov-03	1235	ICPMS1	Water	0311007-02, -03, 0311016-01

ACCEPTANCE LIMITS:
(LIST INTERNAL STANDARDS SPIKED)

	Cal blank response	60%	125%
Lithium	241688	145012.8	302110
Scandium	845280	507168	1056600
Yttrium	1313625	788175	1642031
Indium	882565	529539	1103206
Terbium	1118259	670955.4	1397824
Gallium	637100	382260	796375
Rhodium	1365538	819322.8	1706923

Calibration Date	Time	Instrument ID
24-Nov-03	1128	ICPMS1

List of Anomalies/Recommended Actions

X **No action required**

(1) THE 11/25/03 RUN WAS FOR ALUMINUM ONLY; ONLY THE ASSOCIATED INTERNAL STANDARD WAS REPORTED FOR THAT RUN.

(2) SOME INTERNAL STANDARD RESPONSES FAILED IN SOME SAMPLES; IN THOSE CASES THE ANALYST NOTED THE FAILURES AND REANALYZED THE SAMPLES. THOSE FAILURES ARE NOT NOTED HEREIN.

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METHOD COMPLIANCE

COMPLIANCE CRITERIA REFERENCE: **EPA SW-846 METHOD 200.8**

INTERNAL STANDARDS

IS responses in cal check stds/blanks within ± 20% of the initial calibration blank?

YES	NO
	X(1)

List of Anomalies/Recommended Actions

☐ **No action required**

(1) SOME INTERNAL STANDARDS HAD RESPONSES < 80% OF THAT OF THE INITIAL CALIBRATION BLANK IN THE FOLLOWING CCVs: 11/24/03 AT 15:10, 11/24/03 AT 15:46. SOME INTERNAL STANDARDS HAD RESPONSES < 80% IN THE FOLLOWING CCBs: 11/24/03 AT 15:16, 11/24/03 AT 15:52.

MDL STUDY

	YES	NO	N/A
MDL values present in the package?		X	
Is MDL study provided?		X	
Study performed within 1 year of sample analysis?			X
MDLs support laboratory reporting limits? (If no, list)			X

Element	Comments
	RL < 3X MDL
	RL < 3X MDL
	RL < 3X MDL
	RL < 3X MDL

RESULT CALCULATION - WATER

Sample ID: AH03210
Laboratory ID: 0311016-01
mg/L=PPM*Vt**DF/Vi

Initial Volume (L):	0.05
Final Volume (L):	0.05
Digestion Factor (L/L):	1.000

Element	ug/L Raw Result	DF	ug/L Sample Result	Reported Value (ug/L)
Boron	72.71	1	72.71	73
Calcium	71398	1	71398	71000
Iron	-13.17	1	-13.17	ND< 100
Magnesium	21545	1	21545	22000
Potassium	2876	1	2876	2900
Sodium	29308	1	29308	29000
Vanadium	4.06	1	4.06	ND< 20
Aluminum	0.9636	4	3.8544	ND< 40
Antimony	0.1055	1	0.1055	ND< 1.0
Arsenic	0.6878	1	0.6878	0.69
Barium	55.34	1	55.34	55
Beryllium	-0.00095	1	-0.00095	ND< 0.50
Cadmium	-0.0397	1	-0.0397	ND< 1.0
Chromium	5.252	1	5.252	5.3
Cobalt	0.0863	1	0.0863	ND< 0.50
Copper	0.8529	1	0.8529	ND< 2.0
Lead	0.0749	1	0.0749	ND< 1.0
Manganese	0.9609	1	0.9609	0.96
Molybdenum	5.261	1	5.261	5.3
Nickel	2.498	1	2.498	2.5
Selenium	0.6099	1	0.6099	0.61
Silver	0.00079	1	0.00079	ND< 0.50
Thallium	-0.065	1	-0.065	ND< 1.0
Zinc	51.8	1	51.8	52

Sample ID: AH03204
Laboratory ID: 0311007-01
mg/L=PPM*Vt**DF/Vi

Initial Volume (L):	0.02
Final Volume (L):	0.02
Digestion Factor (L/L):	1.000

Element	ug/L Raw Result	DF	ug/L Sample Result	Reported Value (ug/L)
Mercury	0.0322	1	0.0322	0.032

CALCULATED VALUES MATCH REPORTED VALUES?	YES	NO
	X	

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IDENTIFICATION AND QUANTITATION

For Level IV calculate the results of all detects for project samples.
Use the worksheet labeled "calculation."

☐ **Qualifications from QuikVal reports are included herein (reason codes 001, 009 and 010)**
☐ **Qualifications were not indicated in QuikVal reports.**

List all samples requiring qualification here:

Sample ID	Lab ID	Element	Result	Lab Qualifier	Calc Check	Qualifier	Reason Code
AH03201	0311002-01	Copper	1.2	J	OK	J+	006
AH03204	0311007-01	Copper	1.1	J	OK	J+	006
AH03204	0311007-01	Zinc	4.6	J		U	002 (FB)
AH03206	0311007-03	Copper	1.5	J	OK	J+	006
AH03206	0311007-03	Zinc	6.3			U	002 (FB)

☒ **All Level IV sample results were re-calculated and verified to be correctly reported by the laboratory.**

It seems obvious from the data for metals analyses that Field Duplicate sample AH03202 (0311002-02) was switched with Field Blank sample AH03205 (0311007-02). Sample AH03205 (0311007-02) had hits that matched Field Duplicate sample AH03201 (0311002-01); sample AH03202 (0311002-02) was clean, with the exception of a low level result for zinc. In order to evaluate field blank and field duplicate data herein the results for sample AH03202 will be used in place of the results for sample AH03205, and the results for sample AH03205 will be used in place of the results for sample AH03202. This will be noted in the final report.

CONTINUED