APPENDIX D

LABORATORY DATA CONSULTANTS, INC.
7750 El Camino Real, Suite 2L Carlsbad, CA 92009 Phone: 760/634-0437 Fax: 760/634-0439

Geofon, Inc.
22632 Golden Springs Drive, Suite 270
Diamond Bar, CA 91765
ATTN: Mr. Leo Williamson

July 15, 2003

SUBJECT: NASA JPL, DO #01, Data Validation

Dear Mr. Williamson,

Enclosed are the final validation reports for the fractions listed below. These SDGs were received on July 7, 2003. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project # 10531:

SDG #	Fraction
03-2931, 03-3112, 03-3205, 03-3351, 03-3393	Volatiles, 1,4-Dioxane, Metals, NDMA, Wet Chemistry

The data validation was performed under EPA Level III guidelines. The analyses were validated using the following documents, as applicable to each method:

- USEPA, Contract Laboratory Program National Functional Guidelines for Organic Data Review, October 1999
- USEPA, Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, February 1994
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996

Please feel free to contact us if you have any questions.

Sincerely,

Erlinda T. Rauto
Operations Manager/Senior Chemist

Attachment 1

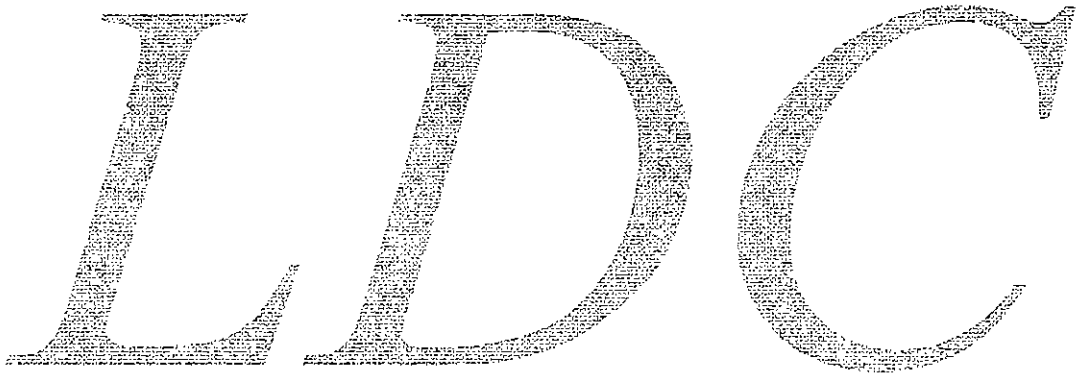
LDC #10531 (Geofon, Inc.-Diamond Bar / NASA Jet Propulsion Laboratory, DO#001)

LDC	SDG#	DATE REC'D	DATE DUE	VOA (524.2)		1,4-Dioxane (8270C-SIM)		(5) Metals (200.7/9)		Cr, Pb (200.8)		NDMA		Alk. (2320B)		pH (9040B)		TDS (160.1)		Cr(VI) (7196)		CLO4 (314.0)		Cl (300.0)		NO3-N (300.0)		SO4 (300.0)									
Matrix:	Water/Soil			W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	03-2931	7/7/03	7/28/03	-	-	-	-	-	-	42	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-								
B	03-3112	7/7/03	7/28/03	-	-	-	-	-	-	47	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-								
C	03-3205	7/7/03	7/28/03	8	0	-	-	10	0	-	-	-	-	7	0	8	0	7	0	9	0	7	0	7	0	7	0	7	0								
D	03-3351	7/7/03	7/28/03	-	-	6	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-								
E	03-3393	7/7/03	7/28/03	-	-	-	-	-	-	-	-	2	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-								
Total	B			8	0	6	0	10	0	89	0	2	0	7	0	8	0	7	0	9	0	7	0	7	0	7	0	7	0	0	0	0	0	0	0	0	0

Shaded cells indicate Level IV validation (all other cells are Level III validation).

NASA JPL
Data Validation Reports
LDC# 10531

Volatiles



Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: May 13, 2003

LDC Report Date: July 11, 2003

Matrix: Water

Parameters: Volatiles

Validation Level: EPA Level III

Laboratory: Applied P & Ch Laboratory

Sample Delivery Group (SDG): 03-3205

Sample Identification

DUPE-7-2Q03
EB-13-5/13/03
MW-18-1
MW-18-2
MW-18-3
MW-18-4
MW-18-5
TB-13-5/13/03

Introduction

This data review covers 8 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 524.2 for Volatiles.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) as there are no current guidelines for the method stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 20.0% for selected compounds.

A curve fit, based on the initial calibration, was established for quantitation for selected compounds. The coefficient of determination (r^2) was greater than or equal to 0.990 .

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were less than or equal to 30.0% .

V. Blanks

Method blanks were reviewed for each matrix as applicable. No volatile contaminants were found in the method blanks with the following exceptions:

Method Blank ID	Analysis Date	Compound TIC (RT in minutes)	Concentration	Associated Samples
03G2534-MB-01	5/19/03	Methylene chloride	4.7 ug/L	All samples in SDG 03-3205

Sample concentrations were compared to concentrations detected in the method blanks. The sample concentrations were either not detected or were significantly greater (>10X for common contaminants, >5X for other contaminants) than the concentrations found in the associated method blanks with the following exceptions:

Sample	Compound TIC (RT in minutes)	Reported Concentration	Modified Final Concentration
TB-13-5/13/03	Methylene chloride	3.9 ug/L	3.9U ug/L

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

All internal standard areas and retention times were within QC limits.

XI. Target Compound Identifications

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

XIII. Tentatively Identified Compounds (TICs)

Raw data were not reviewed for this SDG.

XIV. System Performance

Raw data were not reviewed for this SDG.

XV. Overall Assessment of Data

Data flags have been summarized at the end of the report.

XVI. Field Duplicates

Samples DUPE-7-2Q03 and MW-18-4 were identified as field duplicates. No volatiles were detected in any of the samples with the following exceptions:

Compound	Concentration (ug/L)		RPD
	DUPE-7-2Q03	MW-18-4	
Carbon tetrachloride	2.4	2.4	0
Chloroform	0.8	0.9	12
4-Methyl-2-pentanone	6	7	15
Tetrachloroethene	1.9	2.1	10
Trichloroethene	0.9	1.0	11

XVII. Field Blanks

Sample TB-13-5/13/03 was identified as a trip blank. No volatile contaminants were found in this blank with the following exceptions:

Trip Blank ID	Compound	Concentration (ug/L)
TB-13-5/13/03	4-Methyl-2-pentanone Methylene chloride	6 3.9

Sample EB-13-5/13/03 was identified as an equipment blank. No volatile contaminants were found in this blank with the following exceptions:

Equipment Blank ID	Compound	Concentration (ug/L)
EB-13-5/13/03	4-Methyl-2-pentanone	4

NASA JPL
Volatiles - Data Qualification Summary - SDG 03-3205

No Sample Data Qualified in this SDG

NASA JPL
Volatiles - Laboratory Blank Data Qualification Summary - SDG 03-3205

SDG	Sample	Compound TIC (RT in minutes)	Modified Final Concentration	A or P
03-3205	TB-13-5/13/03	Methylene chloride	3.9U ug/L	A

c1

Applied P & Ch Laboratory

Organic Analysis Results for Method 524.2

Client Name:	GEOFON, Inc.	Project No:	04-4428.10	Collection Date:	05/13/2003
Project ID:	JPL GW Mon-2Q03	Service ID:	33205	Collected by:	
		Lab Sample ID:	03-3205-1	Received Date:	05/13/2003
Sample ID:	**DUPE-7-2Q03**	Sample Matrix	Water	Moisture %:	–
Sample Type:	Field Sample	Prep. Method:	5030	Instrument ID:	GC/MS: G
Anal. Method:	524.2	Prep. Date:	05/20/03	Anal. Date:	05/20/03
Batch No:	03G2534	Prep. No:	–	Anal. Time:	00:32
Data File Name:	3205-01	Sample Amount:	25 mL	Dilution Factor:	1
Methanol Vol.	–				
Test Level:	Low	Sparge Size:	25 mL	Heated Purge: (Y/N)	N

#	Component Name	CAS No	Unit	RL	Result	Qualifier
1	BENZENE	71-43-2	µg/L	0.5	<0.5	U
2	BROMOBENZENE	108-86-1	µg/L	0.5	<0.5	U
3	BROMOCHLOROMETHANE	74-97-5	µg/L	0.5	<0.5	U
4	BROMODICHLOROMETHANE	75-27-4	µg/L	0.5	<0.5	U
5	BROMOFORM	75-25-2	µg/L	0.5	<0.5	U
6	BROMOMETHANE	74-83-9	µg/L	0.5	<0.5	U
7	2-BUTANONE	78-93-3	µg/L	10	<10	U
8	N-BUTYLBENZENE	104-51-8	µg/L	0.5	<0.5	U
9	SEC-BUTYLBENZENE	135-98-8	µg/L	0.5	<0.5	U
10	TERT-BUTYLBENZENE	98-06-6	µg/L	0.5	<0.5	U
11	CARBON TETRACHLORIDE	56-23-5	µg/L	0.5	2.4	
12	CHLOROBENZENE	108-90-7	µg/L	0.5	<0.5	U
13	CHLORODIBROMOMETHANE	124-48-1	µg/L	0.5	<0.5	U
14	CHLOROETHANE	75-00-3	µg/L	0.5	<0.5	U
15	CHLOROFORM	67-66-3	µg/L	0.5	0.8	
16	CHLOROMETHANE	74-87-3	µg/L	0.5	<0.5	U
17	2-CHLOROTOLUENE	95-49-8	µg/L	0.5	<0.5	U
18	4-CHLOROTOLUENE	106-43-4	µg/L	0.5	<0.5	U
19	1,2-DIBROMO-3-CHLOROPROPANE	96-12-8	µg/L	1.1 (a)	<1.1	U
20	1,2-DIBROMOETHANE (EDB)	106-93-4	µg/L	0.5	<0.5	U
21	DIBROMOMETHANE	74-95-3	µg/L	0.5	<0.5	U
22	1,2-DICHLOROBENZENE	95-50-1	µg/L	0.5	<0.5	U
23	1,3-DICHLOROBENZENE	541-73-1	µg/L	0.5	<0.5	U
24	1,4-DICHLOROBENZENE	106-46-7	µg/L	0.5	<0.5	U
25	DICHLORODIFLUOROMETHANE	75-71-8	µg/L	0.5	<0.5	U
26	1,1-DICHLOROETHANE	75-34-3	µg/L	0.5	<0.5	U
27	1,2-DICHLOROETHANE	107-06-2	µg/L	0.5	<0.5	U
28	1,1-DICHLOROETHENE	75-35-4	µg/L	0.5	<0.5	U
29	CIS-1,2-DICHLOROETHENE	156-59-2	µg/L	0.5	<0.5	U
30	TRANS-1,2-DICHLOROETHENE	156-60-5	µg/L	0.5	<0.5	U
31	1,2-DICHLOROPROPANE	78-87-5	µg/L	0.5	<0.5	U
32	1,3-DICHLOROPROPANE	142-28-9	µg/L	0.5	<0.5	U
33	2,2-DICHLOROPROPANE	594-20-7	µg/L	0.5	<0.5	U
34	1,1-DICHLOROPROPENE	563-58-6	µg/L	0.5	<0.5	U
35	CIS-1,3-DICHLOROPROPENE	10061-01-5	µg/L	0.5	<0.5	U
36	TRANS-1,3-DICHLOROPROPENE	10061-02-6	µg/L	0.5	<0.5	U
37	ETHYLBENZENE	100-41-4	µg/L	0.5	<0.5	U
38	HEXACHLOROBUTADIENE	87-68-3	µg/L	0.5	<0.5	U
39	ISOPROPYLBENZENE (CUMENE)	98-82-8	µg/L	0.5	<0.5	U

#	Component Name	CAS No	Unit	RL	Result	Qualifier
40	P-ISOPROPYLTOLUENE	99-87-6	µg/L	0.5	<0.5	U
41	4-METHYL-2-PENTANONE (MIBK)	108-10-1	µg/L	10	6	J
42	METHYLENE CHLORIDE	75-09-2	µg/L	1.8 [a]	<1.8	U
43	METHYL-T-BUTYL ETHER (MTBE)	1634-04-4	µg/L	1	<1	U
44	NAPHTHALENE	91-20-3	µg/L	0.5	<0.5	U
45	N-PROPYLBENZENE	103-65-1	µg/L	0.5	<0.5	U
46	STYRENE	100-42-5	µg/L	0.5	<0.5	U
47	1,1,1,2-TETRACHLOROETHANE	630-20-6	µg/L	0.5	<0.5	U
48	1,1,2,2-TETRACHLOROETHANE	79-34-5	µg/L	0.5	<0.5	U
49	TETRACHLOROETHENE	127-18-4	µg/L	0.5	1.9	
50	TOLUENE	108-88-3	µg/L	0.5	<0.5	U
51	1,2,3-TRICHLOROBENZENE	87-61-6	µg/L	0.5	<0.5	U
52	1,2,4-TRICHLOROBENZENE	120-82-1	µg/L	0.5	<0.5	U
53	1,1,1-TRICHLOROETHANE	71-55-6	µg/L	0.5	<0.5	U
54	1,1,2-TRICHLOROETHANE	79-00-5	µg/L	0.5	<0.5	U
55	TRICHLOROETHENE	79-01-6	µg/L	0.5	0.9	
56	TRICHLOROFLUOROMETHANE	75-69-4	µg/L	0.5	<0.5	U
57	1,2,3-TRICHLOROPROPANE	96-18-4	µg/L	0.5	<0.5	U
58	112TRICHLORO-122TRIFLUOROETHANE	76-13-1	µg/L	0.5	<0.5	U
59	1,2,4-TRIMETHYLBENZENE	95-63-6	µg/L	0.5	<0.5	U
60	1,3,5-TRIMETHYLBENZENE	108-67-8	µg/L	0.5	<0.5	U
61	VINYL CHLORIDE	75-01-4	µg/L	0.5	<0.5	U
62	O-XYLENE	95-47-6	µg/L	0.5	<0.5	U
63	M/P-XYLENE	108-38-3	µg/L	0.5	<0.5	U

Surrogates		Control Limit, %	Surro. Rec.%
1 1-BROMO-4-FLUOROBENZENE (4-BROMOFL	460-00-4	70-129	112
2 1,2-DICHLOROETHANE-D4	17060-07-0	70-129	99
3 DIBROMOFLUOROMETHANE	1868-53-7	70-122	107
4 TOLUENE-D8	2037-26-5	73-129	111
# of out-of-control			0

Internal Standard		Control Limit, %	IS Rec.%
1 CHLOROBENZENE-D5	3114-55-4	50-200	79
2 1,4-DICHLOROBENZENE-D4	3855-82-1	50-200	88
3 FLUOROBENZENE	462-06-6	50-200	89
# of out-of-control			0

Not Detected is shown as PQL, with dilution and moisture corrected if applicable.

[a] MDL reported.

Qualifier: U - Not Detected or less than MDL
J - Less than RL (PQL, EQL or CRDL), but greater than MDL, or an estimated result (e.g. for TIC)
E - Exceed calibration range
B - A positive value was found in the method blank
D - Diluted

7/14/03

Applied P & Ch Laboratory

Organic Analysis Results for Method 524.2

Client Name:	GEOFON, Inc.	Project No:	04-4428.10	Collection Date:	05/13/2003
Project ID:	JPL GW Mon-2Q03	Service ID:	33205	Collected by:	
Sample ID:	**EB-13-5/13/03**	Lab Sample ID:	03-3205-2	Received Date:	05/13/2003
Sample Type:	Field Sample	Sample Matrix	Water	Moisture %:	–
Anal. Method:	524.2	Prep. Method:	5030	Instrument ID:	GC/MS: G
Batch No:	03G2534	Prep. Date:	05/20/03	Anal. Date:	05/20/03
Data File Name:	3205-02	Prep. No:	–	Anal. Time:	01:02
Methanol Vol.	–	Sample Amount:	25 mL	Dilution Factor:	1
Test Level:	Low	Sparge Size:	25 mL	Heated Purge: (Y/N)	N

#	Component Name	CAS No	Unit	RL	Result	Qualifier
1	BENZENE	71-43-2	µg/L	0.5	<0.5	U
2	BROMOBENZENE	108-86-1	µg/L	0.5	<0.5	U
3	BROMOCHLOROMETHANE	74-97-5	µg/L	0.5	<0.5	U
4	BROMODICHLOROMETHANE	75-27-4	µg/L	0.5	<0.5	U
5	BROMOFORM	75-25-2	µg/L	0.5	<0.5	U
6	BROMOMETHANE	74-83-9	µg/L	0.5	<0.5	U
7	2-BUTANONE	78-93-3	µg/L	10	<10	U
8	N-BUTYLBENZENE	104-51-8	µg/L	0.5	<0.5	U
9	SEC-BUTYLBENZENE	135-98-8	µg/L	0.5	<0.5	U
10	TERT-BUTYLBENZENE	98-06-6	µg/L	0.5	<0.5	U
11	CARBON TETRACHLORIDE	56-23-5	µg/L	0.5	<0.5	U
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35	CIS-1,3-DICHLOROPROPENE	10061-01-5	µg/L	0.5	<0.5	U
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37	ETHYLBENZENE	100-41-4	µg/L	0.5	<0.5	U
38	HEXACHLOROBUTADIENE	87-68-3	µg/L	0.5	<0.5	U
39	ISOPROPYLBENZENE (CUMENE)	98-82-8	µg/L	0.5	<0.5	U

#	Component Name	CAS No	Unit	RL	Result	Qualifier
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41	4-METHYL-2-PENTANONE (MIBK)	108-10-1	µg/L	10	4	J
42	METHYLENE CHLORIDE	75-09-2	µg/L	1.8 [a]	< 1.8	U
43	METHYL-T-BUTYL ETHER (MTBE)	1634-04-4	µg/L	1	< 1	U
44	NAPHTHALENE	91-20-3	µg/L	0.5	< 0.5	U
45	N-PROPYLBENZENE	103-65-1	µg/L	0.5	< 0.5	U
46	STYRENE	100-42-5	µg/L	0.5	< 0.5	U
47	1,1,1,2-TETRACHLOROETHANE	630-20-6	µg/L	0.5	< 0.5	U
48	1,1,2,2-TETRACHLOROETHANE	79-34-5	µg/L	0.5	< 0.5	U
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51	1,2,3-TRICHLOROBENZENE	87-61-6	µg/L	0.5	< 0.5	U
52	1,2,4-TRICHLOROBENZENE	120-82-1	µg/L	0.5	< 0.5	U
53	1,1,1-TRICHLOROETHANE	71-55-6	µg/L	0.5	< 0.5	U
54	1,1,2-TRICHLOROETHANE	79-00-5	µg/L	0.5	< 0.5	U
55	TRICHLOROETHENE	79-01-6	µg/L	0.5	< 0.5	U
56	TRICHLOROFLUOROMETHANE	75-69-4	µg/L	0.5	< 0.5	U
57	1,2,3-TRICHLOROPROPANE	96-18-4	µg/L	0.5	< 0.5	U
58	112TRICHLORO-122TRIFLUOROETHANE	76-13-1	µg/L	0.5	< 0.5	U
59	1,2,4-TRIMETHYLBENZENE	95-63-6	µg/L	0.5	< 0.5	U
60	1,3,5-TRIMETHYLBENZENE	108-67-8	µg/L	0.5	< 0.5	U
61	VINYL CHLORIDE	75-01-4	µg/L	0.5	< 0.5	U
62	O-XYLENE	95-47-6	µg/L	0.5	< 0.5	U
63	M/P-XYLENE	108-38-3	µg/L	0.5	< 0.5	U

Surrogates		Control Limit, %	Surro. Rec.%
1 1-BROMO-4-FLUOROBENZENE (4-BROMOFL	460-00-4	70-129	102
2 1,2-DICHLOROETHANE-D4	17060-07-0	70-129	91
3 DIBROMOFLUOROMETHANE	1868-53-7	70-122	99
4 TOLUENE-D8	2037-26-5	73-129	105
# of out-of-control			0

Internal Standard		Control Limit, %	IS Rec.%
1 CHLOROBENZENE-D5	3114-55-4	50-200	89
2 1,4-DICHLOROBENZENE-D4	3855-82-1	50-200	100
3 FLUOROBENZENE	462-06-6	50-200	100
# of out-of-control			0

Not Detected is shown as PQL, with dilution and moisture corrected if applicable.

[a]MDL reported.

Qualifier: U - Not Detected or less than MDL
J - Less than RL (PQL, EQL or CRDL), but greater than MDL, or an estimated result (e.g. for TIC)
E - Exceed calibration range
B - A positive value was found in the method blank
D - Diluted

Applied P & Ch Laboratory

Organic Analysis Results for Method 524.2

Client Name:	GEOFON, Inc.	Project No:	04-4428.10	Collection Date:	05/13/2003
Project ID:	JPL GW Mon-2Q03	Service ID:	33205	Collected by:	
Sample ID:	**MW-18-1**	Lab Sample ID:	03-3205-3	Received Date:	05/13/2003
Sample Type:	Field Sample	Sample Matrix	Water	Moisture %:	–
Anal. Method:	524.2	Prep. Method:	5030	Instrument ID:	GC/MS: G
Batch No:	03G2534	Prep. Date:	05/20/03	Anal. Date:	05/20/03
Data File Name:	3205-03	Prep. No:	–	Anal. Time:	01:31
Methanol Vol.	–	Sample Amount:	25 mL	Dilution Factor:	1
Test Level:	Low	Sparge Size:	25 mL	Heated Purge: (Y/N)	N

#	Component Name	CAS No	Unit	RL	Result	Qualifier
1	BENZENE	71-43-2	µg/L	0.5	<0.5	U
2	BROMOBENZENE	108-86-1	µg/L	0.5	<0.5	U
3	BROMOCHLOROMETHANE	74-97-5	µg/L	0.5	<0.5	U
4	BROMODICHLOROMETHANE	75-27-4	µg/L	0.5	<0.5	U
5	BROMOFORM	75-25-2	µg/L	0.5	<0.5	U
6	BROMOMETHANE	74-83-9	µg/L	0.5	<0.5	U
7	2-BUTANONE	78-93-3	µg/L	10	<10	U
8	N-BUTYLBENZENE	104-51-8	µg/L	0.5	<0.5	U
9	SEC-BUTYLBENZENE	135-98-8	µg/L	0.5	<0.5	U
10	TERT-BUTYLBENZENE	98-06-6	µg/L	0.5	<0.5	U
11	CARBON TETRACHLORIDE	56-23-5	µg/L	0.5	<0.5	U
12	CHLOROBENZENE	108-90-7	µg/L	0.5	<0.5	U
13	CHLORODIBROMOMETHANE	124-48-1	µg/L	0.5	<0.5	U
14	CHLOROETHANE	75-00-3	µg/L	0.5	<0.5	U
15	CHLOROFORM	67-66-3	µg/L	0.5	<0.5	U
16	CHLOROMETHANE	74-87-3	µg/L	0.5	<0.5	U
17	2-CHLOROTOLUENE	95-49-8	µg/L	0.5	<0.5	U
18	4-CHLOROTOLUENE	106-43-4	µg/L	0.5	<0.5	U
19	1,2-DIBROMO-3-CHLOROPROPANE	96-12-8	µg/L	1.1 (a)	<1.1	U
20	1,2-DIBROMOETHANE (EDB)	106-93-4	µg/L	0.5	<0.5	U
21	DIBROMOMETHANE	74-95-3	µg/L	0.5	<0.5	U
22	1,2-DICHLOROBENZENE	95-50-1	µg/L	0.5	<0.5	U
23	1,3-DICHLOROBENZENE	541-73-1	µg/L	0.5	<0.5	U
24	1,4-DICHLOROBENZENE	106-46-7	µg/L	0.5	<0.5	U
25	DICHLORODIFLUOROMETHANE	75-71-8	µg/L	0.5	<0.5	U
26	1,1-DICHLOROETHANE	75-34-3	µg/L	0.5	<0.5	U
27	1,2-DICHLOROETHANE	107-06-2	µg/L	0.5	<0.5	U
28	1,1-DICHLOROETHENE	75-35-4	µg/L	0.5	<0.5	U
29	CIS-1,2-DICHLOROETHENE	156-59-2	µg/L	0.5	<0.5	U
30	TRANS-1,2-DICHLOROETHENE	156-60-5	µg/L	0.5	<0.5	U
31	1,2-DICHLOROPROPANE	78-87-5	µg/L	0.5	<0.5	U
32	1,3-DICHLOROPROPANE	142-28-9	µg/L	0.5	<0.5	U
33	2,2-DICHLOROPROPANE	594-20-7	µg/L	0.5	<0.5	U
34	1,1-DICHLOROPROPENE	563-58-6	µg/L	0.5	<0.5	U
35	CIS-1,3-DICHLOROPROPENE	10061-01-5	µg/L	0.5	<0.5	U
36	TRANS-1,3-DICHLOROPROPENE	10061-02-6	µg/L	0.5	<0.5	U
37	ETHYLBENZENE	100-41-4	µg/L	0.5	<0.5	U
38	HEXACHLOROBUTADIENE	87-68-3	µg/L	0.5	<0.5	U
39	ISOPROPYLBENZENE (CUMENE)	98-82-8	µg/L	0.5	<0.5	U

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#	Component Name	CAS No	Unit	RL	Result	Qualifier
40	P-ISOPROPYLTOLUENE	99-87-6	µg/L	0.5	<0.5	U
41	4-METHYL-2-PENTANONE (MIBK)	108-10-1	µg/L	10	4	J
42	METHYLENE CHLORIDE	75-09-2	µg/L	1.8 (a)	<1.8	U
43	METHYL-T-BUTYL ETHER (MTBE)	1634-04-4	µg/L	1	<1	U
44	NAPHTHALENE	91-20-3	µg/L	0.5	<0.5	U
45	N-PROPYLBENZENE	103-65-1	µg/L	0.5	<0.5	U
46	STYRENE	100-42-5	µg/L	0.5	<0.5	U
47	1,1,1,2-TETRACHLOROETHANE	630-20-6	µg/L	0.5	<0.5	U
48	1,1,2,2-TETRACHLOROETHANE	79-34-5	µg/L	0.5	<0.5	U
49	TETRACHLOROETHENE	127-18-4	µg/L	0.5	<0.5	U
50	TOLUENE	108-88-3	µg/L	0.5	<0.5	U
51	1,2,3-TRICHLOROBENZENE	87-61-6	µg/L	0.5	<0.5	U
52	1,2,4-TRICHLOROBENZENE	120-82-1	µg/L	0.5	<0.5	U
53	1,1,1-TRICHLOROETHANE	71-55-6	µg/L	0.5	<0.5	U
54	1,1,2-TRICHLOROETHANE	79-00-5	µg/L	0.5	<0.5	U
55	TRICHLOROETHENE	79-01-6	µg/L	0.5	<0.5	U
56	TRICHLOROFLUOROMETHANE	75-69-4	µg/L	0.5	<0.5	U
57	1,2,3-TRICHLOROPROPANE	96-18-4	µg/L	0.5	<0.5	U
58	112TRICHLORO-122TRIFLUOROETHANE	76-13-1	µg/L	0.5	<0.5	U
59	1,2,4-TRIMETHYLBENZENE	95-63-6	µg/L	0.5	<0.5	U
60	1,3,5-TRIMETHYLBENZENE	108-67-8	µg/L	0.5	<0.5	U
61	VINYL CHLORIDE	75-01-4	µg/L	0.5	<0.5	U
62	O-XYLENE	95-47-6	µg/L	0.5	<0.5	U
63	M/P-XYLENE	108-38-3	µg/L	0.5	<0.5	U

Surrogates		Control Limit, %	Surro. Rec.%
1 1-BROMO-4-FLUOROBENZENE (4-BROMOFL	460-00-4	70-129	97
2 1,2-DICHLOROETHANE-D4	17060-07-0	70-129	82
3 DIBROMOFLUOROMETHANE	1868-53-7	70-122	93
4 TOLUENE-D8	2037-26-5	73-129	98
# of out-of-control			0

Internal Standard		Control Limit, %	IS Rec.%
1 CHLOROBENZENE-D5	3114-55-4	50-200	100
2 1,4-DICHLOROBENZENE-D4	3855-82-1	50-200	108
3 FLUOROBENZENE	462-06-6	50-200	111
# of out-of-control			0

Not Detected is shown as PQL, with dilution and moisture corrected if applicable.

(a) MDL reported.

Qualifier: U - Not Detected or less than MDL
J - Less than RL (PQL, EQL or CRDL), but greater than MDL, or an estimated result (e.g. for TIC)
E - Exceed calibration range
B - A positive value was found in the method blank
D - Diluted

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Organic Analysis Results for Method 524.2

Client Name:	GEOFON, Inc.	Project No:	04-4428.10	Collection Date:	05/13/2003
Project ID:	JPL GW Mon-2Q03	Service ID:	33205	Collected by:	
Sample ID:	**MW-18-2**	Lab Sample ID:	03-3205-4	Received Date:	05/13/2003
Sample Type:	Field Sample	Sample Matrix	Water	Moisture %:	–
Anal. Method:	524.2	Prep. Method:	5030	Instrument ID:	GC/MS: G
Batch No:	03G2534	Prep. Date:	05/20/03	Anal. Date:	05/20/03
Data File Name:	3205-04	Prep. No:	–	Anal. Time:	02:01
Methanol Vol.	–	Sample Amount:	25 mL	Dilution Factor:	1
Test Level:	Low	Sparge Size:	25 mL	Heated Purge: (Y/N)	N

#	Component Name	CAS No	Unit	RL	Result	Qualifier
1	BENZENE	71-43-2	µg/L	0.5	<0.5	U
2	BROMOBENZENE	108-86-1	µg/L	0.5	<0.5	U
3	BROMOCHLOROMETHANE	74-97-5	µg/L	0.5	<0.5	U
4	BROMODICHLOROMETHANE	75-27-4	µg/L	0.5	<0.5	U
5	BROMOFORM	75-25-2	µg/L	0.5	<0.5	U
6	BROMOMETHANE	74-83-9	µg/L	0.5	<0.5	U
7	2-BUTANONE	78-93-3	µg/L	10	<10	U
8	N-BUTYLBENZENE	104-51-8	µg/L	0.5	<0.5	U
9	SEC-BUTYLBENZENE	135-98-8	µg/L	0.5	<0.5	U
10	TERT-BUTYLBENZENE	98-06-6	µg/L	0.5	<0.5	U
11	CARBON TETRACHLORIDE	56-23-5	µg/L	0.5	<0.5	U
12	CHLOROBENZENE	108-90-7	µg/L	0.5	<0.5	U
13	CHLORODIBROMOMETHANE	124-48-1	µg/L	0.5	<0.5	U
14	CHLOROETHANE	75-00-3	µg/L	0.5	<0.5	U
15	CHLOROFORM	67-66-3	µg/L	0.5	<0.5	U
16	CHLOROMETHANE	74-87-3	µg/L	0.5	<0.5	U
17	2-CHLOROTOLUENE	95-49-8	µg/L	0.5	<0.5	U
18	4-CHLOROTOLUENE	106-43-4	µg/L	0.5	<0.5	U
19	1,2-DIBROMO-3-CHLOROPROPANE	96-12-8	µg/L	1.1 (a)	<1.1	U
20	1,2-DIBROMOETHANE (EDB)	106-93-4	µg/L	0.5	<0.5	U
21	DIBROMOMETHANE	74-95-3	µg/L	0.5	<0.5	U
22	1,2-DICHLOROBENZENE	95-50-1	µg/L	0.5	<0.5	U
23	1,3-DICHLOROBENZENE	541-73-1	µg/L	0.5	<0.5	U
24	1,4-DICHLOROBENZENE	106-46-7	µg/L	0.5	<0.5	U
25	DICHLORODIFLUOROMETHANE	75-71-8	µg/L	0.5	<0.5	U
26	1,1-DICHLOROETHANE	75-34-3	µg/L	0.5	<0.5	U
27	1,2-DICHLOROETHANE	107-06-2	µg/L	0.5	<0.5	U
28	1,1-DICHLOROETHENE	75-35-4	µg/L	0.5	<0.5	U
29	CIS-1,2-DICHLOROETHENE	156-59-2	µg/L	0.5	<0.5	U
30	TRANS-1,2-DICHLOROETHENE	156-60-5	µg/L	0.5	<0.5	U
31	1,2-DICHLOROPROPANE	78-87-5	µg/L	0.5	<0.5	U
32	1,3-DICHLOROPROPANE	142-28-9	µg/L	0.5	<0.5	U
33	2,2-DICHLOROPROPANE	594-20-7	µg/L	0.5	<0.5	U
34	1,1-DICHLOROPROPENE	563-58-6	µg/L	0.5	<0.5	U
35	CIS-1,3-DICHLOROPROPENE	10061-01-5	µg/L	0.5	<0.5	U
36	TRANS-1,3-DICHLOROPROPENE	10061-02-6	µg/L	0.5	<0.5	U
37	ETHYLBENZENE	100-41-4	µg/L	0.5	<0.5	U
38	HEXACHLOROBUTADIENE	87-68-3	µg/L	0.5	<0.5	U
39	ISOPROPYLBENZENE (CUMENE)	98-82-8	µg/L	0.5	<0.5	U

#	Component Name	CAS No	Unit	RL	Result	Qualifier
40	P-ISOPROPYLTOLUENE	99-87-6	µg/L	0.5	<0.5	U
41	4-METHYL-2-PENTANONE (MIBK)	108-10-1	µg/L	10	4	J
42	METHYLENE CHLORIDE	75-09-2	µg/L	1.8 [a]	<1.8	U
43	METHYL-T-BUTYL ETHER (MTBE)	1634-04-4	µg/L	1	<1	U
44	NAPHTHALENE	91-20-3	µg/L	0.5	<0.5	U
45	N-PROPYLBENZENE	103-65-1	µg/L	0.5	<0.5	U
46	STYRENE	100-42-5	µg/L	0.5	<0.5	U
47	1,1,1,2-TETRACHLOROETHANE	630-20-6	µg/L	0.5	<0.5	U
48	1,1,2,2-TETRACHLOROETHANE	79-34-5	µg/L	0.5	<0.5	U
49	TETRACHLOROETHENE	127-18-4	µg/L	0.5	<0.5	U
50	TOLUENE	108-88-3	µg/L	0.5	<0.5	U
51	1,2,3-TRICHLOROBENZENE	87-61-6	µg/L	0.5	<0.5	U
52	1,2,4-TRICHLOROBENZENE	120-82-1	µg/L	0.5	<0.5	U
53	1,1,1-TRICHLOROETHANE	71-55-6	µg/L	0.5	<0.5	U
54	1,1,2-TRICHLOROETHANE	79-00-5	µg/L	0.5	<0.5	U
55	TRICHLOROETHENE	79-01-6	µg/L	0.5	<0.5	U
56	TRICHLOROFLUOROMETHANE	75-69-4	µg/L	0.5	<0.5	U
57	1,2,3-TRICHLOROPROPANE	96-18-4	µg/L	0.5	<0.5	U
58	112TRICHLORO-122TRIFLUOROETHANE	76-13-1	µg/L	0.5	<0.5	U
59	1,2,4-TRIMETHYLBENZENE	95-63-6	µg/L	0.5	<0.5	U
60	1,3,5-TRIMETHYLBENZENE	108-67-8	µg/L	0.5	<0.5	U
61	VINYL CHLORIDE	75-01-4	µg/L	0.5	<0.5	U
62	O-XYLENE	95-47-6	µg/L	0.5	<0.5	U
63	M/P-XYLENE	108-38-3	µg/L	0.5	<0.5	U

Surrogates		Control Limit, %	Surro. Rec.%
1 1-BROMO-4-FLUOROBENZENE (4-BROMOFL	460-00-4	70-129	100
2 1,2-DICHLOROETHANE-D4	17060-07-0	70-129	89
3 DIBROMOFLUOROMETHANE	1868-53-7	70-122	96
4 TOLUENE-D8	2037-26-5	73-129	100
# of out-of-control			0

Internal Standard		Control Limit, %	IS Rec.%
1 CHLOROBENZENE-D5	3114-55-4	50-200	99
2 1,4-DICHLOROBENZENE-D4	3855-82-1	50-200	109
3 FLUOROBENZENE	462-06-6	50-200	112
# of out-of-control			0

Not Detected is shown as PQL, with dilution and moisture corrected if applicable.

[a]MDL reported.

Qualifier: U - Not Detected or less than MDL
J - Less than RL (PQL, EQL or CRDL), but greater than MDL, or an estimated result (e.g. for TIC)
E - Exceed calibration range
B - A positive value was found in the method blank
D - Diluted

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Applied P & Ch Laboratory

Organic Analysis Results for Method 524.2

Client Name:	GEOFON, Inc.	Project No:	04-4428.10	Collection Date:	05/13/2003
Project ID:	JPL GW Mon-2Q03	Service ID:	33205	Collected by:	
Sample ID:	MW-18-3	Lab Sample ID:	03-3205-5	Received Date:	05/13/2003
Sample Type:	Field Sample	Sample Matrix	Water	Moisture %:	–
Anal. Method:	524.2	Prep. Method:	5030	Instrument ID:	GC/MS: G
Batch No:	03G2534	Prep. Date:	05/20/03	Anal. Date:	05/20/03
Data File Name:	3205-05	Prep. No:	–	Anal. Time:	02:31
Methanol Vol.	–	Sample Amount:	25 mL	Dilution Factor:	1
Test Level:	Low	Sparge Size:	25 mL	Heated Purge: (Y/N)	N

#	Component Name	CAS No	Unit	RL	Result	Qualifier
1	BENZENE	71-43-2	µg/L	0.5	<0.5	U
2	BROMOBENZENE	108-86-1	µg/L	0.5	<0.5	U
3	BROMOCHLOROMETHANE	74-97-5	µg/L	0.5	<0.5	U
4	BROMODICHLOROMETHANE	75-27-4	µg/L	0.5	<0.5	U
5	BROMOFORM	75-25-2	µg/L	0.5	<0.5	U
6	BROMOMETHANE	74-83-9	µg/L	0.5	<0.5	U
7	2-BUTANONE	78-93-3	µg/L	10	<10	U
8	N-BUTYLBENZENE	104-51-8	µg/L	0.5	<0.5	U
9	SEC-BUTYLBENZENE	135-98-8	µg/L	0.5	<0.5	U
10	TERT-BUTYLBENZENE	98-06-6	µg/L	0.5	<0.5	U
11	CARBON TETRACHLORIDE	56-23-5	µg/L	0.5	<0.5	U
12	CHLOROBENZENE	108-90-7	µg/L	0.5	<0.5	U
13	CHLORODIBROMOMETHANE	124-48-1	µg/L	0.5	<0.5	U
14	CHLOROETHANE	75-00-3	µg/L	0.5	<0.5	U
15	CHLOROFORM	67-66-3	µg/L	0.5	1.2	
16	CHLOROMETHANE	74-87-3	µg/L	0.5	<0.5	U
17	2-CHLOROTOLUENE	95-49-8	µg/L	0.5	<0.5	U
18	4-CHLOROTOLUENE	106-43-4	µg/L	0.5	<0.5	U
19	1,2-DIBROMO-3-CHLOROPROPANE	96-12-8	µg/L	1.1 (a)	<1.1	U
20	1,2-DIBROMOETHANE (EDB)	106-93-4	µg/L	0.5	<0.5	U
21	DIBROMOMETHANE	74-95-3	µg/L	0.5	<0.5	U
22	1,2-DICHLOROBENZENE	95-50-1	µg/L	0.5	<0.5	U
23	1,3-DICHLOROBENZENE	541-73-1	µg/L	0.5	<0.5	U
24	1,4-DICHLOROBENZENE	106-46-7	µg/L	0.5	<0.5	U
25	DICHLORODIFLUOROMETHANE	75-71-8	µg/L	0.5	<0.5	U
26	1,1-DICHLOROETHANE	75-34-3	µg/L	0.5	<0.5	U
27	1,2-DICHLOROETHANE	107-06-2	µg/L	0.5	<0.5	U
28	1,1-DICHLOROETHENE	75-35-4	µg/L	0.5	<0.5	U
29	CIS-1,2-DICHLOROETHENE	156-59-2	µg/L	0.5	<0.5	U
30	TRANS-1,2-DICHLOROETHENE	156-60-5	µg/L	0.5	<0.5	U
31	1,2-DICHLOROPROPANE	78-87-5	µg/L	0.5	<0.5	U
32	1,3-DICHLOROPROPANE	142-28-9	µg/L	0.5	<0.5	U
33	2,2-DICHLOROPROPANE	594-20-7	µg/L	0.5	<0.5	U
34	1,1-DICHLOROPROPENE	563-58-6	µg/L	0.5	<0.5	U
35	CIS-1,3-DICHLOROPROPENE	10061-01-5	µg/L	0.5	<0.5	U
36	TRANS-1,3-DICHLOROPROPENE	10061-02-6	µg/L	0.5	<0.5	U
37	ETHYLBENZENE	100-41-4	µg/L	0.5	<0.5	U
38	HEXACHLOROBUTADIENE	87-68-3	µg/L	0.5	<0.5	U
39	ISOPROPYLBENZENE (CUMENE)	98-82-8	µg/L	0.5	<0.5	U

#	Component Name	CAS No	Unit	RL	Result	Qualifier
40	P-ISOPROPYLTOLUENE	99-87-6	µg/L	0.5	<0.5	U
41	4-METHYL-2-PENTANONE (MIBK)	108-10-1	µg/L	10	4	J
42	METHYLENE CHLORIDE	75-09-2	µg/L	1.8 [a]	<1.8	U
43	METHYL-T-BUTYL ETHER (MTBE)	1634-04-4	µg/L	1	<1	U
44	NAPHTHALENE	91-20-3	µg/L	0.5	<0.5	U
45	N-PROPYLBENZENE	103-65-1	µg/L	0.5	<0.5	U
46	STYRENE	100-42-5	µg/L	0.5	<0.5	U
47	1,1,1,2-TETRACHLOROETHANE	630-20-6	µg/L	0.5	<0.5	U
48	1,1,2,2-TETRACHLOROETHANE	79-34-5	µg/L	0.5	<0.5	U
49	TETRACHLOROETHENE	127-18-4	µg/L	0.5	<0.5	U
50	TOLUENE	108-88-3	µg/L	0.5	<0.5	U
51	1,2,3-TRICHLOROBENZENE	87-61-6	µg/L	0.5	<0.5	U
52	1,2,4-TRICHLOROBENZENE	120-82-1	µg/L	0.5	<0.5	U
53	1,1,1-TRICHLOROETHANE	71-55-6	µg/L	0.5	<0.5	U
54	1,1,2-TRICHLOROETHANE	79-00-5	µg/L	0.5	<0.5	U
55	TRICHLOROETHENE	79-01-6	µg/L	0.5	0.4	J
56	TRICHLOROFLUOROMETHANE	75-69-4	µg/L	0.5	<0.5	U
57	1,2,3-TRICHLOROPROPANE	96-18-4	µg/L	0.5	<0.5	U
58	112TRICHLORO-122TRIFLUOROETHANE	76-13-1	µg/L	0.5	<0.5	U
59	1,2,4-TRIMETHYLBENZENE	95-63-6	µg/L	0.5	<0.5	U
60	1,3,5-TRIMETHYLBENZENE	108-67-8	µg/L	0.5	<0.5	U
61	VINYL CHLORIDE	75-01-4	µg/L	0.5	<0.5	U
62	O-XYLENE	95-47-6	µg/L	0.5	<0.5	U
63	M/P-XYLENE	108-38-3	µg/L	0.5	<0.5	U

Surrogates		Control Limit, %	Surro. Rec.%
1 1-BROMO-4-FLUOROBENZENE (4-BROMOFL	460-00-4	70-129	103
2 1,2-DICHLOROETHANE-D4	17060-07-0	70-129	95
3 DIBROMOFLUOROMETHANE	1868-53-7	70-122	100
4 TOLUENE-D8	2037-26-5	73-129	106
# of out-of-control			0

Internal Standard		Control Limit, %	IS Rec.%
1 CHLOROBENZENE-D5	3114-55-4	50-200	99
2 1,4-DICHLOROBENZENE-D4	3855-82-1	50-200	109
3 FLUOROBENZENE	462-06-6	50-200	109
# of out-of-control			0

Not Detected is shown as PQL, with dilution and moisture corrected if applicable.

[a] MDL reported.

Qualifier: U - Not Detected or less than MDL
J - Less than RL (PQL, EQL or CRDL), but greater than MDL, or an estimated result (e.g. for TIC)
E - Exceed calibration range
B - A positive value was found in the method blank
D - Diluted

7/19/07

Applied P & Ch Laboratory

Organic Analysis Results for Method 524.2

Client Name:	GEOFON, Inc.	Project No:	04-4428.10	Collection Date:	05/13/2003
Project ID:	JPL GW Mon-2Q03	Service ID:	33205	Collected by:	
Sample ID:	**MW-18-4**	Lab Sample ID:	03-3205-6	Received Date:	05/13/2003
Sample Type:	Field Sample	Sample Matrix	Water	Moisture %:	–
Anal. Method:	524.2	Prep. Method:	5030	Instrument ID:	GC/MS: G
Batch No:	03G2534	Prep. Date:	05/20/03	Anal. Date:	05/20/03
Data File Name:	3205-06	Prep. No:	–	Anal. Time:	03:00
Methanol Vol.	–	Sample Amount:	25 mL	Dilution Factor:	1
Test Level:	Low	Sparge Size:	25 mL	Heated Purge: (Y/N)	N

#	Component Name	CAS No	Unit	RL	Result	Qualifier
1	BENZENE	71-43-2	µg/L	0.5	<0.5	U
2	BROMOBENZENE	108-86-1	µg/L	0.5	<0.5	U
3	BROMOCHLOROMETHANE	74-97-5	µg/L	0.5	<0.5	U
4	BROMODICHLOROMETHANE	75-27-4	µg/L	0.5	<0.5	U
5	BROMOFORM	75-25-2	µg/L	0.5	<0.5	U
6	BROMOMETHANE	74-83-9	µg/L	0.5	<0.5	U
7	2-BUTANONE	78-93-3	µg/L	10	<10	U
8	N-BUTYLBENZENE	104-51-8	µg/L	0.5	<0.5	U
9	SEC-BUTYLBENZENE	135-98-8	µg/L	0.5	<0.5	U
10	TERT-BUTYLBENZENE	98-06-6	µg/L	0.5	<0.5	U
11	CARBON TETRACHLORIDE	56-23-5	µg/L	0.5	2.4	
12	CHLOROBENZENE	108-90-7	µg/L	0.5	<0.5	U
13	CHLORODIBROMOMETHANE	124-48-1	µg/L	0.5	<0.5	U
14	CHLOROETHANE	75-00-3	µg/L	0.5	<0.5	U
15	CHLOROFORM	67-66-3	µg/L	0.5	0.9	
16	CHLOROMETHANE	74-87-3	µg/L	0.5	<0.5	U
17	2-CHLOROTOLUENE	95-49-8	µg/L	0.5	<0.5	U
18	4-CHLOROTOLUENE	106-43-4	µg/L	0.5	<0.5	U
19	1,2-DIBROMO-3-CHLOROPROPANE	96-12-8	µg/L	1.1 (a)	<1.1	U
20	1,2-DIBROMOETHANE (EDB)	106-93-4	µg/L	0.5	<0.5	U
21	DIBROMOMETHANE	74-95-3	µg/L	0.5	<0.5	U
22	1,2-DICHLOROBENZENE	95-50-1	µg/L	0.5	<0.5	U
23	1,3-DICHLOROBENZENE	541-73-1	µg/L	0.5	<0.5	U
24	1,4-DICHLOROBENZENE	106-46-7	µg/L	0.5	<0.5	U
25	DICHLORODIFLUOROMETHANE	75-71-8	µg/L	0.5	<0.5	U
26	1,1-DICHLOROETHANE	75-34-3	µg/L	0.5	<0.5	U
27	1,2-DICHLOROETHANE	107-06-2	µg/L	0.5	<0.5	U
28	1,1-DICHLOROETHENE	75-35-4	µg/L	0.5	<0.5	U
29	CIS-1,2-DICHLOROETHENE	156-59-2	µg/L	0.5	<0.5	U
30	TRANS-1,2-DICHLOROETHENE	156-60-5	µg/L	0.5	<0.5	U
31	1,2-DICHLOROPROPANE	78-87-5	µg/L	0.5	<0.5	U
32	1,3-DICHLOROPROPANE	142-28-9	µg/L	0.5	<0.5	U
33	2,2-DICHLOROPROPANE	594-20-7	µg/L	0.5	<0.5	U
34	1,1-DICHLOROPROPENE	563-58-6	µg/L	0.5	<0.5	U
35	CIS-1,3-DICHLOROPROPENE	10061-01-5	µg/L	0.5	<0.5	U
36	TRANS-1,3-DICHLOROPROPENE	10061-02-6	µg/L	0.5	<0.5	U
37	ETHYLBENZENE	100-41-4	µg/L	0.5	<0.5	U
38	HEXACHLOROBUTADIENE	87-68-3	µg/L	0.5	<0.5	U
39	ISOPROPYLBENZENE (CUMENE)	98-82-8	µg/L	0.5	<0.5	U

#	Component Name	CAS No	Unit	RL	Result	Qualifier
40	P-ISOPROPYLTOLUENE	99-87-6	µg/L	0.5	<0.5	U
41	4-METHYL-2-PENTANONE (MIBK)	108-10-1	µg/L	10	7	J
42	METHYLENE CHLORIDE	75-09-2	µg/L	1.8 [a]	<1.8	U
43	METHYL-T-BUTYL ETHER (MTBE)	1634-04-4	µg/L	1	<1	U
44	NAPHTHALENE	91-20-3	µg/L	0.5	<0.5	U
45	N-PROPYLBENZENE	103-65-1	µg/L	0.5	<0.5	U
46	STYRENE	100-42-5	µg/L	0.5	<0.5	U
47	1,1,1,2-TETRACHLOROETHANE	630-20-6	µg/L	0.5	<0.5	U
48	1,1,2,2-TETRACHLOROETHANE	79-34-5	µg/L	0.5	<0.5	U
49	TETRACHLOROETHENE	127-18-4	µg/L	0.5	2.1	
50	TOLUENE	108-88-3	µg/L	0.5	<0.5	U
51	1,2,3-TRICHLOROBENZENE	87-61-6	µg/L	0.5	<0.5	U
52	1,2,4-TRICHLOROBENZENE	120-82-1	µg/L	0.5	<0.5	U
53	1,1,1-TRICHLOROETHANE	71-55-6	µg/L	0.5	<0.5	U
54	1,1,2-TRICHLOROETHANE	79-00-5	µg/L	0.5	<0.5	U
55	TRICHLOROETHENE	79-01-6	µg/L	0.5	1.0	
56	TRICHLOROFLUOROMETHANE	75-69-4	µg/L	0.5	<0.5	U
57	1,2,3-TRICHLOROPROPANE	96-18-4	µg/L	0.5	<0.5	U
58	112TRICHLORO-122TRIFLUOROETHANE	76-13-1	µg/L	0.5	<0.5	U
59	1,2,4-TRIMETHYLBENZENE	95-63-6	µg/L	0.5	<0.5	U
60	1,3,5-TRIMETHYLBENZENE	108-67-8	µg/L	0.5	<0.5	U
61	VINYL CHLORIDE	75-01-4	µg/L	0.5	<0.5	U
62	O-XYLENE	95-47-6	µg/L	0.5	<0.5	U
63	M/P-XYLENE	108-38-3	µg/L	0.5	<0.5	U

Surrogates		Control Limit, %	Surro. Rec.%
1 1-BROMO-4-FLUOROBENZENE (4-BROMOFL	460-00-4	70-129	99
2 1,2-DICHLOROETHANE-D4	17060-07-0	70-129	94
3 DIBROMOFLUOROMETHANE	1868-53-7	70-122	102
4 TOLUENE-D8	2037-26-5	73-129	107
# of out-of-control			0

Internal Standard		Control Limit, %	IS Rec.%
1 CHLOROBENZENE-D5	3114-55-4	50-200	94
2 1,4-DICHLOROBENZENE-D4	3855-82-1	50-200	108
3 FLUOROBENZENE	462-06-6	50-200	103
# of out-of-control			0

Not Detected is shown as PQL, with dilution and moisture corrected if applicable.

[a] MDL reported.

Qualifier: U - Not Detected or less than MDL
J - Less than RL (PQL, EQL or CRDL), but greater than MDL, or an estimated result (e.g. for TIC)
E - Exceed calibration range
B - A positive value was found in the method blank
D - Diluted

7/14/03

Applied P & Ch Laboratory

Organic Analysis Results for Method 524.2

Client Name:	GEOFON, Inc.	Project No:	04-4428.10	Collection Date:	05/13/2003
Project ID:	JPL GW Mon-2Q03	Service ID:	33205	Collected by:	
Sample ID:	**MW-18-5**	Lab Sample ID:	03-3205-7	Received Date:	05/13/2003
Sample Type:	Field Sample	Sample Matrix	Water	Moisture %:	–
Anal. Method:	524.2	Prep. Method:	5030	Instrument ID:	GC/MS: G
Batch No:	03G2534	Prep. Date:	05/20/03	Anal. Date:	05/20/03
Data File Name:	3205-07	Prep. No:	–	Anal. Time:	03:29
Methanol Vol.	–	Sample Amount:	25 mL	Dilution Factor:	1
Test Level:	Low	Sparge Size:	25 mL	Heated Purge: (Y/N)	N

#	Component Name	CAS No	Unit	RL	Result	Qualifier
1	BENZENE	71-43-2	µg/L	0.5	<0.5	U
2	BROMOBENZENE	108-86-1	µg/L	0.5	<0.5	U
3	BROMOCHLOROMETHANE	74-97-5	µg/L	0.5	<0.5	U
4	BROMODICHLOROMETHANE	75-27-4	µg/L	0.5	<0.5	U
5	BROMOFORM	75-25-2	µg/L	0.5	<0.5	U
6	BROMOMETHANE	74-83-9	µg/L	0.5	<0.5	U
7	2-BUTANONE	78-93-3	µg/L	10	<10	U
8	N-BUTYLBENZENE	104-51-8	µg/L	0.5	<0.5	U
9	SEC-BUTYLBENZENE	135-98-8	µg/L	0.5	<0.5	U
10	TERT-BUTYLBENZENE	98-06-6	µg/L	0.5	<0.5	U
11	CARBON TETRACHLORIDE	56-23-5	µg/L	0.5	<0.5	U
12	CHLOROBENZENE	108-90-7	µg/L	0.5	<0.5	U
13	CHLORODIBROMOMETHANE	124-48-1	µg/L	0.5	<0.5	U
14	CHLOROETHANE	75-00-3	µg/L	0.5	<0.5	U
15	CHLOROFORM	67-66-3	µg/L	0.5	<0.5	U
16	CHLOROMETHANE	74-87-3	µg/L	0.5	<0.5	U
17	2-CHLOROTOLUENE	95-49-8	µg/L	0.5	<0.5	U
18	4-CHLOROTOLUENE	106-43-4	µg/L	0.5	<0.5	U
19	1,2-DIBROMO-3-CHLOROPROPANE	96-12-8	µg/L	1.1 [a]	<1.1	U
20	1,2-DIBROMOETHANE (EDB)	106-93-4	µg/L	0.5	<0.5	U
21	DIBROMOMETHANE	74-95-3	µg/L	0.5	<0.5	U
22	1,2-DICHLOROBENZENE	95-50-1	µg/L	0.5	<0.5	U
23	1,3-DICHLOROBENZENE	541-73-1	µg/L	0.5	<0.5	U
24	1,4-DICHLOROBENZENE	106-46-7	µg/L	0.5	<0.5	U
25	DICHLORODIFLUOROMETHANE	75-71-8	µg/L	0.5	<0.5	U
26	1,1-DICHLOROETHANE	75-34-3	µg/L	0.5	<0.5	U
27	1,2-DICHLOROETHANE	107-06-2	µg/L	0.5	<0.5	U
28	1,1-DICHLOROETHENE	75-35-4	µg/L	0.5	<0.5	U
29	CIS-1,2-DICHLOROETHENE	156-59-2	µg/L	0.5	<0.5	U
30	TRANS-1,2-DICHLOROETHENE	156-60-5	µg/L	0.5	<0.5	U
31	1,2-DICHLOROPROPANE	78-87-5	µg/L	0.5	<0.5	U
32	1,3-DICHLOROPROPANE	142-28-9	µg/L	0.5	<0.5	U
33	2,2-DICHLOROPROPANE	594-20-7	µg/L	0.5	<0.5	U
34	1,1-DICHLOROPROPENE	563-58-6	µg/L	0.5	<0.5	U
35	CIS-1,3-DICHLOROPROPENE	10061-01-5	µg/L	0.5	<0.5	U
36	TRANS-1,3-DICHLOROPROPENE	10061-02-6	µg/L	0.5	<0.5	U
37	ETHYLBENZENE	100-41-4	µg/L	0.5	<0.5	U
38	HEXACHLOROBUTADIENE	87-68-3	µg/L	0.5	<0.5	U
39	ISOPROPYLBENZENE (CUMENE)	98-82-8	µg/L	0.5	<0.5	U

#	Component Name	CAS No	Unit	RL	Result	Qualifier
40	P-ISOPROPYLTOLUENE	99-87-6	µg/L	0.5	<0.5	U
41	4-METHYL-2-PENTANONE (MIBK)	108-10-1	µg/L	10	5	J
42	METHYLENE CHLORIDE	75-09-2	µg/L	1.8 [a]	<1.8	U
43	METHYL-T-BUTYL ETHER (MTBE)	1634-04-4	µg/L	1	<1	U
44	NAPHTHALENE	91-20-3	µg/L	0.5	<0.5	U
45	N-PROPYLBENZENE	103-65-1	µg/L	0.5	<0.5	U
46	STYRENE	100-42-5	µg/L	0.5	<0.5	U
47	1,1,1,2-TETRACHLOROETHANE	630-20-6	µg/L	0.5	<0.5	U
48	1,1,2,2-TETRACHLOROETHANE	79-34-5	µg/L	0.5	<0.5	U
49	TETRACHLOROETHENE	127-18-4	µg/L	0.5	<0.5	U
50	TOLUENE	108-88-3	µg/L	0.5	<0.5	U
51	1,2,3-TRICHLOROBENZENE	87-61-6	µg/L	0.5	<0.5	U
52	1,2,4-TRICHLOROBENZENE	120-82-1	µg/L	0.5	<0.5	U
53	1,1,1-TRICHLOROETHANE	71-55-6	µg/L	0.5	<0.5	U
54	1,1,2-TRICHLOROETHANE	79-00-5	µg/L	0.5	<0.5	U
55	TRICHLOROETHENE	79-01-6	µg/L	0.5	<0.5	U
56	TRICHLOROFLUOROMETHANE	75-69-4	µg/L	0.5	<0.5	U
57	1,2,3-TRICHLOROPROPANE	96-18-4	µg/L	0.5	<0.5	U
58	112TRICHLORO-122TRIFLUOROETHANE	76-13-1	µg/L	0.5	<0.5	U
59	1,2,4-TRIMETHYLBENZENE	95-63-6	µg/L	0.5	<0.5	U
60	1,3,5-TRIMETHYLBENZENE	108-67-8	µg/L	0.5	<0.5	U
61	VINYL CHLORIDE	75-01-4	µg/L	0.5	<0.5	U
62	O-XYLENE	95-47-6	µg/L	0.5	<0.5	U
63	M/P-XYLENE	108-38-3	µg/L	0.5	<0.5	U

Surrogates		Control Limit, %	Surro. Rec.%
1 1-BROMO-4-FLUOROBENZENE (4-BROMOFL	460-00-4	70-129	108
2 1,2-DICHLOROETHANE-D4	17060-07-0	70-129	101
3 DIBROMOFLUOROMETHANE	1868-53-7	70-122	109
4 TOLUENE-D8	2037-26-5	73-129	113
# of out-of-control			0

Internal Standard		Control Limit, %	IS Rec.%
1 CHLOROBENZENE-D5	3114-55-4	50-200	92
2 1,4-DICHLOROBENZENE-D4	3855-82-1	50-200	101
3 FLUOROBENZENE	462-06-6	50-200	100
# of out-of-control			0

Not Detected is shown as PQL, with dilution and moisture corrected if applicable.

[a] MDL reported.

Qualifier: U - Not Detected or less than MDL
J - Less than RL (PQL, EQL or CRDL), but greater than MDL, or an estimated result (e.g. for TIC)
E - Exceed calibration range
B - A positive value was found in the method blank
D - Diluted

Applied P & Ch Laboratory

Organic Analysis Results for Method 524.2

Client Name:	GEOFON, Inc.	Project No:	04-4428.10	Collection Date:	05/13/2003
Project ID:	JPL GW Mon-2Q03	Service ID:	33205	Collected by:	
Sample ID:	**TB-13-5/13/03**	Lab Sample ID:	03-3205-8	Received Date:	05/13/2003
Sample Type:	Field Sample	Sample Matrix	Water	Moisture %:	–
Anal. Method:	524.2	Prep. Method:	5030	Instrument ID:	GC/MS: G
Batch No:	03G2534	Prep. Date:	05/20/03	Anal. Date:	05/20/03
Data File Name:	3205-08	Prep. No:	–	Anal. Time:	03:59
Methanol Vol.	–	Sample Amount:	25 mL	Dilution Factor:	1
Test Level:	Low	Sparge Size:	25 mL	Heated Purge: (Y/N)	N

#	Component Name	CAS No	Unit	RL	Result	Qualifier
1	BENZENE	71-43-2	µg/L	0.5	<0.5	U
2	BROMOBENZENE	108-86-1	µg/L	0.5	<0.5	U
3	BROMOCHLOROMETHANE	74-97-5	µg/L	0.5	<0.5	U
4	BROMODICHLOROMETHANE	75-27-4	µg/L	0.5	<0.5	U
5	BROMOFORM	75-25-2	µg/L	0.5	<0.5	U
6	BROMOMETHANE	74-83-9	µg/L	0.5	<0.5	U
7	2-BUTANONE	78-93-3	µg/L	10	<10	U
8	N-BUTYLBENZENE	104-51-8	µg/L	0.5	<0.5	U
9	SEC-BUTYLBENZENE	135-98-8	µg/L	0.5	<0.5	U
10	TERT-BUTYLBENZENE	98-06-6	µg/L	0.5	<0.5	U
11	CARBON TETRACHLORIDE	56-23-5	µg/L	0.5	<0.5	U
12	CHLOROBENZENE	108-90-7	µg/L	0.5	<0.5	U
13	CHLORODIBROMOMETHANE	124-48-1	µg/L	0.5	<0.5	U
14	CHLOROETHANE	75-00-3	µg/L	0.5	<0.5	U
15	CHLOROFORM	67-66-3	µg/L	0.5	<0.5	U
16	CHLOROMETHANE	74-87-3	µg/L	0.5	<0.5	U
17	2-CHLOROTOLUENE	95-49-8	µg/L	0.5	<0.5	U
18	4-CHLOROTOLUENE	106-43-4	µg/L	0.5	<0.5	U
19	1,2-DIBROMO-3-CHLOROPROPANE	96-12-8	µg/L	1.1 [a]	<1.1	U
20	1,2-DIBROMOETHANE (EDB)	106-93-4	µg/L	0.5	<0.5	U
21	DIBROMOMETHANE	74-95-3	µg/L	0.5	<0.5	U
22	1,2-DICHLOROBENZENE	95-50-1	µg/L	0.5	<0.5	U
23	1,3-DICHLOROBENZENE	541-73-1	µg/L	0.5	<0.5	U
24	1,4-DICHLOROBENZENE	106-46-7	µg/L	0.5	<0.5	U
25	DICHLORODIFLUOROMETHANE	75-71-8	µg/L	0.5	<0.5	U
26	1,1-DICHLOROETHANE	75-34-3	µg/L	0.5	<0.5	U
27	1,2-DICHLOROETHANE	107-06-2	µg/L	0.5	<0.5	U
28	1,1-DICHLOROETHENE	75-35-4	µg/L	0.5	<0.5	U
29	CIS-1,2-DICHLOROETHENE	156-59-2	µg/L	0.5	<0.5	U
30	TRANS-1,2-DICHLOROETHENE	156-60-5	µg/L	0.5	<0.5	U
31	1,2-DICHLOROPROPANE	78-87-5	µg/L	0.5	<0.5	U
32	1,3-DICHLOROPROPANE	142-28-9	µg/L	0.5	<0.5	U
33	2,2-DICHLOROPROPANE	594-20-7	µg/L	0.5	<0.5	U
34	1,1-DICHLOROPROPENE	563-58-6	µg/L	0.5	<0.5	U
35	CIS-1,3-DICHLOROPROPENE	10061-01-5	µg/L	0.5	<0.5	U
36	TRANS-1,3-DICHLOROPROPENE	10061-02-6	µg/L	0.5	<0.5	U
37	ETHYLBENZENE	100-41-4	µg/L	0.5	<0.5	U
38	HEXACHLOROBUTADIENE	87-68-3	µg/L	0.5	<0.5	U
39	ISOPROPYLBENZENE (CUMENE)	98-82-8	µg/L	0.5	<0.5	U

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#	Component Name	CAS No	Unit	RL	Result	Qualifier
40	P-ISOPROPYLTOLUENE	99-87-6	µg/L	0.5	<0.5	U
41	4-METHYL-2-PENTANONE (MIBK)	108-10-1	µg/L	10	6	J
42	METHYLENE CHLORIDE	75-09-2	µg/L	1.8 [a]	3.9 U	B
43	METHYL-T-BUTYL ETHER (MTBE)	1634-04-4	µg/L	1	<1	U
44	NAPHTHALENE	91-20-3	µg/L	0.5	<0.5	U
45	N-PROPYLBENZENE	103-65-1	µg/L	0.5	<0.5	U
46	STYRENE	100-42-5	µg/L	0.5	<0.5	U
47	1,1,1,2-TETRACHLOROETHANE	630-20-6	µg/L	0.5	<0.5	U
48	1,1,2,2-TETRACHLOROETHANE	79-34-5	µg/L	0.5	<0.5	U
49	TETRACHLOROETHENE	127-18-4	µg/L	0.5	<0.5	U
50	TOLUENE	108-88-3	µg/L	0.5	<0.5	U
51	1,2,3-TRICHLOROBENZENE	87-61-6	µg/L	0.5	<0.5	U
52	1,2,4-TRICHLOROBENZENE	120-82-1	µg/L	0.5	<0.5	U
53	1,1,1-TRICHLOROETHANE	71-55-6	µg/L	0.5	<0.5	U
54	1,1,2-TRICHLOROETHANE	79-00-5	µg/L	0.5	<0.5	U
55	TRICHLOROETHENE	79-01-6	µg/L	0.5	<0.5	U
56	TRICHLOROFLUOROMETHANE	75-69-4	µg/L	0.5	<0.5	U
57	1,2,3-TRICHLOROPROPANE	96-18-4	µg/L	0.5	<0.5	U
58	112TRICHLORO-122TRIFLUOROETHANE	76-13-1	µg/L	0.5	<0.5	U
59	1,2,4-TRIMETHYLBENZENE	95-63-6	µg/L	0.5	<0.5	U
60	1,3,5-TRIMETHYLBENZENE	108-67-8	µg/L	0.5	<0.5	U
61	VINYL CHLORIDE	75-01-4	µg/L	0.5	<0.5	U
62	O-XYLENE	95-47-6	µg/L	0.5	<0.5	U
63	M/P-XYLENE	108-38-3	µg/L	0.5	<0.5	U

Surrogates		Control Limit, %	Surro. Rec.%
1 1-BROMO-4-FLUOROBENZENE (4-BROMOFL	460-00-4	70-129	105
2 1,2-DICHLOROETHANE-D4	17060-07-0	70-129	91
3 DIBROMOFLUOROMETHANE	1868-53-7	70-122	99
4 TOLUENE-D8	2037-26-5	73-129	106
# of out-of-control			0

Internal Standard		Control Limit, %	IS Rec.%
1 CHLOROBENZENE-D5	3114-55-4	50-200	96
2 1,4-DICHLOROBENZENE-D4	3855-82-1	50-200	106
3 FLUOROBENZENE	462-06-6	50-200	110
# of out-of-control			0

Not Detected is shown as PQL, with dilution and moisture corrected if applicable.

[a]MDL reported.

Qualifier: U - Not Detected or less than MDL
J - Less than RL (PQL, EQL or CRDL), but greater than MDL, or an estimated result (e.g. for TIC)
E - Exceed calibration range
B - A positive value was found in the method blank
D - Diluted

7/14/03

LDC #: 10531C1 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/9/03
SDG #: 03-3205 Level III Page: 1 of 1
Laboratory: Applied P & Ch Laboratory Reviewer: KZ
2nd Reviewer:

METHOD: GC/MS Volatiles (EPA Method 524.2)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 5/13/03
II.	GC/MS Instrument performance check		
III.	Initial calibration	A	%RSD ≤ 20%, r^2 ≥ 0.990
IV.	Continuing calibration	A	%D ≤ 30%
V.	Blanks	SW	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	N	client specified
VIII.	Laboratory control samples	A	LCS
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	A	
XI.	Target compound identification	N	
XII.	Compound quantitation/CRQLs	N	
XIII.	Tentatively identified compounds (TICs)	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	
XVI.	Field duplicates	SW	1 & 6
XVII.	Field blanks	SW	EB = 2 TB = 8

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples:

water

1	DUPE-7-2Q03 D	11		21		31	
2	EB-13-5/13/03	12		22		32	
3	MW-18-1	13		23		33	
4	MW-18-2	14		24		34	
5	MW-18-3	15		25		35	
6	MW-18-4 D	16		26		36	
7	MW-18-5	17		27		37	
8	TB-13-5/13/03	18		28		38	
9	03G2534-MB-01	19		29		39	
10		20		30		40	

TARGET COMPOUND WORKSHEET

METHOD: VOA (EPA Method 524.2)

A. Chloromethane	Q. 1,2-Dichloropropane	GG. Xylenes, total	WW. Bromobenzene	MMM. Naphthalene
B. Bromomethane	R. cis-1,3-Dichloropropene	HH. Vinyl acetate	XX. 1,2,3-Trichloropropane	NNN. 1,2,3-Trichlorobenzene
C. Vinyl choride	S. Trichloroethene	II. 2-Chloroethylvinyl ether	YY. n-Propylbenzene	OOO. 1,3,5-Trichlorobenzene
D. Chloroethane	T. Dibromochloromethane	JJ. Dichlorodifluoromethane	ZZ. 2-Chlorotoluene	PPP. trans-1,2-Dichloroethene
E. Methylene chloride	U. 1,1,2-Trichloroethane	KK. Trichlorofluoromethane	AAA. 1,3,5-Trimethylbenzene	QQQ. cis-1,2-Dichloroethene
F. Acetone	V. Benzene	LL. Methyl-tert-butyl ether	BBB. 4-Chlorotoluene	RRR. m,p-Xylenes
G. Carbon disulfide	W. trans-1,3-Dichloropropene	MM. 1,2-Dibromo-3-chloropropane	CCC. tert-Butylbenzene	SSS. o-Xylene
H. 1,1-Dichloroethene	X. Bromoform	NN. Diethyl ether	DDD. 1,2,4-Trimethylbenzene	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane
I. 1,1-Dichloroethane	Y. 4-Methyl-2-pentanone	OO. 2,2-Dichloropropane	EEE. sec-Butylbenzene	UUU. Benzyl chloride
J. 1,2-Dichloroethene, total	Z. 2-Hexanone	PP. Bromochloromethane	FFF. 1,3-Dichlorobenzene	VVV. 4-Ethyltoluene
K. Chloroform	AA. Tetrachloroethene	QQ. 1,1-Dichloropropene	GGG. p-Isopropyltoluene	WWW. Ethanol
L. 1,2-Dichloroethane	BB. 1,1,2,2-Tetrachloroethane	RR. Dibromomethane	HHH. 1,4-Dichlorobenzene	XXX. Ethyl ether
M. 2-Butanone	CC. Toluene	SS. 1,3-Dichloropropane	III. n-Butylbenzene	
N. 1,1,1-Trichloroethane	DD. Chlorobenzene	TT. 1,2-Dibromoethane	JJJ. 1,2-Dichlorobenzene	
O. Carbon tetrachloride	EE. Ethylbenzene	UU. 1,1,1,2-Tetrachloroethane	KKK. 1,2,4-Trichlorobenzene	
P. Bromodichloromethane	FF. Styrene	VV. Isopropylbenzene	LLL. Hexachlorobutadiene	

Notes:_____

LDC #: 10531C1
SDG #: 03-3205

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: EZ
2nd Reviewer:

METHOD: GC/MS VOA (EPA Method 524.2)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a method blank associated with every sample in this SDG?
Y N N/A Was a method blank analyzed at least once every 12 hours for each matrix and concentration?
Y N N/A Was there contamination in the method blanks? If yes, please see the qualifications below.

Blank analysis date: 5/19/03
Conc. units: ug/L Associated Samples: all

Compound	Blank ID	Sample Identification								
	03G2534-MB-01	8								
Methylene chloride	4.7		3.9/U							
~~Acetone~~										
CRQL										

Blank analysis date:
Conc. units: Associated Samples:

Compound	Blank ID	Sample Identification								
Methylene chloride										
Acetone										
CRQL										

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:

Note: Common contaminants such as Methylene chloride, Acetone, 2-Butanone, Carbon disulfide and TICs that were detected in samples within ten times the associated method blank concentration were qualified as not detected, "U". Other contaminants within five times the method blank concentration were also qualified as not detected, "U".

LDC #: 10531C1
SDG #: 03-3205

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Page: 1 of 1
Reviewer: FJ
2nd reviewer: K

METHOD: GC/MS VOA (EPA Method 524.2)

Y N N/A Were field duplicate pairs identified in this SDG?
Y N N/A Were target compounds detected in the field duplicate pairs?

Compound	Concentration (ug/L)		RPD
	1	6	
O	2.4	2.4	0
K	0.8	0.9	12
Y	6	7	15
AA	1.9	2.1	10
S	0.9	1.0	11

Compound	Concentration ( )		RPD

Compound	Concentration ( )		RPD

LDC #: 105310 1
SDG #: 03-3205

VALIDATION FINDINGS WORKSHEET
Field Blanks

Page: 1 of 1
Reviewer: F1
2nd reviewer: [signature]

Method 524.2

METHOD: GC/MS VOA (EPA ~~SW 846 Method 8260B~~)

Y N N/A Were field blanks identified in this SDG?
Y N N/A Were target compounds detected in the field blanks?

Sample: 2 Field Blank / Trip Blank / Rinsate / Other EB (circle one)

Compound	Concentration Units (ug/L)
Y	4

Sample: 8 Field Blank / Trip Blank / Rinsate / Other_____ (circle one)

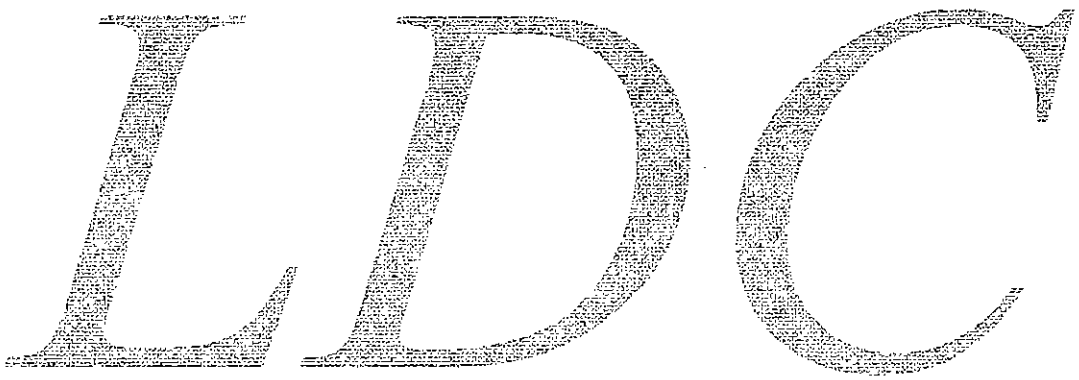
Compound	Concentration Units (ug/L)
Y	6
E	3.9

Sample: _____ Field Blank / Trip Blank / Rinsate / Other_____ (circle one)

Compound	Concentration Units ( )

NASA JPL
Data Validation Reports
LDC# 10531

1,4-Dioxane



Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: May 22, 2003

LDC Report Date: July 11, 2003

Matrix: Water

Parameters: 1,4-Dioxane

Validation Level: EPA Level III

Laboratory: Applied P & Ch Laboratory

Sample Delivery Group (SDG): 03-3351

Sample Identification

DUPE-8-2Q03
EB-14-5/22/03
MW-4-2
MW-4-3
MW-4-4
MW-4-5

Introduction

This data review covers 6 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8270C using Selected Ion Monitoring (SIM) for 1,4-Dioxane.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) as there are no current guidelines for the method stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 30.0% for all compounds.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

Percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were within the method criteria of less than or equal to 25.0% for all compounds.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No 1,4-Dioxane contaminants were found in the method blanks.

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

All internal standard areas and retention times were within QC limits.

XI. Target Compound Identifications

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

XIII. Tentatively Identified Compounds (TICs)

Raw data were not reviewed for this SDG.

XIV. System Performance

Raw data were not reviewed for this SDG.

XV. Overall Assessment

Data flags have been summarized at the end of the report.

XVI. Field Duplicates

Samples DUPE-8-2Q03 and MW-4-2 were identified as field duplicates. No 1,4-Dioxane was detected in any of the samples with the following exceptions:

Compound	Concentration (ug/L)		RPD
	DUPE-8-2Q03	MW-4-2	
1,4-Dioxane	1	1	0

XVII. Field Blanks

Sample EB-14-5/22/03 was identified as an equipment blank. No 1,4-Dioxane was found in this blank.

NASA JPL
1,4-Dioxane - Data Qualification Summary - SDG 03-3351

No Sample Data Qualified in this SDG

NASA JPL
1,4-Dioxane - Laboratory Blank Data Qualification Summary - SDG 03-3351

No Sample Data Qualified in this SDG

Applied P & Ch Laboratory

Organic Analysis Results for Method 8270-SIM

Client Name:	GEOFON, Inc.	Project No:	04-4428.10	Collection Date:	05/22/2003
Project ID:	JPL GW-Mon. 2Q03.	Service ID:	33351	Collected by:	
		Lab Sample ID:	03-3351-1	Received Date:	05/22/2003
Sample ID:	**DUPE-8-2Q03**	Sample Matrix	Water	Moisture %:	-
Sample Type:	Field Sample	Prep. Method:	3520	Instrument ID:	GC/MS: M
Anal. Method:	8270-SIM	Prep. Date:	05/22/03	Anal. Date:	05/23/03
Batch No:	03G2623	Prep. No:	1 of 1	Anal. Time:	21:45
Data File Name:	3351-01	Sample Amount:	1000 mL	Dilution Factor:	1
Extract Vol.	1.0 mL				

#	Component Name	CAS No	Unit	RL	Result	Qualifier
1	1,4-DIOXANE	123-91-1	µg/L	1	1	
Internal Standard				Control Limit, %	IS Rec.%	
1	1,4-DIOXANE-D8	17647-74-4		50-200	95	
# of out-of-control					0	

Qualifier: U - Not Detected or less than MDL
J - Less than RL (PQL, EQL or CRDL), but greater than MDL, or an estimated result (e.g. for TIC)
E - Exceed calibration range
B - A positive value was found in the method blank
D - Diluted

7/14/03

Applied P & Ch Laboratory

Organic Analysis Results for Method 8270-SIM

Client Name:	GEOFON, Inc.	Project No:	04-4428.10	Collection Date:	05/22/2003
Project ID:	JPL GW-Mon. 2Q03.	Service ID:	33351	Collected by:	
		Lab Sample ID:	03-3351-2	Received Date:	05/22/2003
Sample ID:	**EB-14-5/22/03**	Sample Matrix	Water	Moisture %:	–
Sample Type:	Field Sample	Prep. Method:	3520	Instrument ID:	GC/MS: M
Anal. Method:	8270-SIM	Prep. Date:	05/22/03	Anal. Date:	05/23/03
Batch No:	03G2623	Prep. No:	1 of 1	Anal. Time:	22:05
Data File Name:	3351-02	Sample Amount:	1000 mL	Dilution Factor:	1
Extract Vol.	1.0 mL				

#	Component Name	CAS No	Unit	RL	Result	Qualifier
1	1,4-DIOXANE	123-91-1	µg/L	1	<1	U

Internal Standard			Control Limit, %	IS Rec.%
1	1,4-DIOXANE-D8	17647-74-4	50-200	93
# of out-of-control				0

Not Detected is shown as PQL, with dilution and moisture corrected if applicable.

Qualifier: U - Not Detected or less than MDL
J - Less than RL (PQL, EQL or CRDL), but greater than MDL, or an estimated result (e.g. for TIC)
E - Exceed calibration range
B - A positive value was found in the method blank
D - Diluted

Applied P & Ch Laboratory

Organic Analysis Results for Method 8270-SIM

Client Name:	GEOFON, Inc.	Project No:	04-4428.10	Collection Date:	05/22/2003
Project ID:	JPL GW-Mon. 2Q03.	Service ID:	33351	Collected by:	
		Lab Sample ID:	03-3351-3	Received Date:	05/22/2003
Sample ID:	MW-4-2	Sample Matrix	Water	Moisture %:	-
Sample Type:	Field Sample	Prep. Method:	3520	Instrument ID:	GC/MS: M
Anal. Method:	8270-SIM	Prep. Date:	05/22/03	Anal. Date:	05/23/03
Batch No:	03G2623	Prep. No:	1 of 1	Anal. Time:	22:26
Data File Name:	3351-03	Sample Amount:	1000 mL	Dilution Factor:	1
Extract Vol.	1.0 mL				

#	Component Name	CAS No	Unit	RL	Result	Qualifier
1	1,4-DIOXANE	123-91-1	µg/L	1	1	

Internal Standard			Control Limit, %	IS Rec.%
1	1,4-DIOXANE-D8	17647-74-4	50-200	93
# of out-of-control				0

Qualifier: U - Not Detected or less than MDL
J - Less than RL (PQL, EQL or CRDL), but greater than MDL, or an estimated result (e.g. for TIC)
E - Exceed calibration range
B - A positive value was found in the method blank
D - Diluted

7/14/03

Applied P & Ch Laboratory

Organic Analysis Results for Method 8270-SIM

Client Name:	GEOFON, Inc.	Project No:	04-4428.10	Collection Date:	05/22/2003
Project ID:	JPL GW-Mon. 2Q03.	Service ID:	33351	Collected by:	
		Lab Sample ID:	03-3351-4	Received Date:	05/22/2003
Sample ID:	**MW-4-3**	Sample Matrix	Water	Moisture %:	-
Sample Type:	Field Sample	Prep. Method:	3520	Instrument ID:	GC/MS: M
Anal. Method:	8270-SIM	Prep. Date:	05/22/03	Anal. Date:	05/23/03
Batch No:	03G2623	Prep. No:	1 of 1	Anal. Time:	22:47
Data File Name:	3351-04	Sample Amount:	1000 mL	Dilution Factor:	1
Extract Vol.	1.0 mL				

#	Component Name	CAS No	Unit	RL	Result	Qualifier
1	1,4-DIOXANE	123-91-1	μg/L	1	0.4	J
Internal Standard				Control Limit, %	IS Rec.%	
1	1,4-DIOXANE-D8	17647-74-4		50-200	85	
# of out-of-control					0	

Qualifier: U - Not Detected or less than MDL
J - Less than RL (PQL, EQL or CRDL), but greater than MDL, or an estimated result (e.g. for TIC)
E - Exceed calibration range
B - A positive value was found in the method blank
D - Diluted

7/14/03

Applied P & Ch Laboratory

Organic Analysis Results for Method 8270-SIM

Client Name:	GEOFON, Inc.	Project No:	04-4428.10	Collection Date:	05/22/2003
Project ID:	JPL GW-Mon. 2Q03.	Service ID:	33351	Collected by:	
		Lab Sample ID:	03-3351-5	Received Date:	05/22/2003
Sample ID:	MW-4-4	Sample Matrix	Water	Moisture %:	–
Sample Type:	Field Sample	Prep. Method:	3520	Instrument ID:	GC/MS: M
Anal. Method:	8270-SIM	Prep. Date:	05/22/03	Anal. Date:	05/23/03
Batch No:	03G2623	Prep. No:	1 of 1	Anal. Time:	23:08
Data File Name:	3351-05	Sample Amount:	1000 mL	Dilution Factor:	1
Extract Vol.	1.0 mL				

#	Component Name	CAS No	Unit	RL	Result	Qualifier
1	1,4-DIOXANE	123-91-1	µg/L	1	<1	U

Internal Standard			Control Limit, %	IS Rec.%
1	1,4-DIOXANE-D8	17647-74-4	50-200	96
# of out-of-control				0

Not Detected is shown as PQL, with dilution and moisture corrected if applicable.

Qualifier: U - Not Detected or less than MDL
J - Less than RL (PQL, EQL or CRDL), but greater than MDL, or an estimated result (e.g. for TIC)
E - Exceed calibration range
B - A positive value was found in the method blank
D - Diluted

7/19/03

Applied P & Ch Laboratory

Organic Analysis Results for Method 8270-SIM

Client Name:	GEOFON, Inc.	Project No:	04-4428.10	Collection Date:	05/22/2003
Project ID:	JPL GW-Mon. 2Q03.	Service ID:	33351	Collected by:	
		Lab Sample ID:	03-3351-6	Received Date:	05/22/2003
Sample ID:	MW-4-5	Sample Matrix	Water	Moisture %:	-
Sample Type:	Field Sample	Prep. Method:	3520	Instrument ID:	GC/MS: M
Anal. Method:	8270-SIM	Prep. Date:	05/22/03	Anal. Date:	05/23/03
Batch No:	03G2623	Prep. No:	1 of 1	Anal. Time:	23:29
Data File Name:	3351-06	Sample Amount:	1000 mL	Dilution Factor:	1
Extract Vol.	1.0 mL				

#	Component Name	CAS No	Unit	RL	Result	Qualifier
1	1,4-DIOXANE	123-91-1	µg/L	1	<1	U
Internal Standard				Control Limit, %	IS Rec.%	
1	1,4-DIOXANE-D8	17647-74-4		50-200	99	
# of out-of-control					0	

Not Detected is shown as PQL, with dilution and moisture corrected if applicable.

Qualifier: U - Not Detected or less than MDL
J - Less than RL (PQL, EQL or CRDL), but greater than MDL, or an estimated result (e.g. for TIC)
E - Exceed calibration range
B - A positive value was found in the method blank
D - Diluted

7/14/03

LDC #: 10531D2 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/10/03
SDG #: 03-3351 Level III Page: 1 of 1
Laboratory: Applied P & Ch Laboratory Reviewer: E
2nd Reviewer:

METHOD: GC/MS 1,4-Dioxane (EPA SW 846 Method 8270C-SIM)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 5/22/03
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	none ccc/spcc %RSD ≤ 30
IV.	Continuing calibration	A	↓ %D ≤ 25
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	N	client specified
VIII.	Laboratory control samples	A	LCS/D
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	A	
XI.	Target compound identification	N	
XII.	Compound quantitation/CRQLs	N	
XIII.	Tentatively identified compounds (TICs)	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	
XVI.	Field duplicates	SW	D = 1, 3
XVII.	Field blanks	ND	EB = 2

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples: water

1	DUPE-8-2Q03 D	11		21		31	
2	EB-14-5/22/03	12		22		32	
3	MW-4-2 D	13		23		33	
4	MW-4-3	14		24		34	
5	MW-4-4	15		25		35	
6	MW-4-5	16		26		36	
7	03G2623-MB-01	17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

LDC #: 10531D2
SDG #: 03-3351

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: FJ
2nd reviewer:

METHOD: GC/MS BNA (EPA SW 846 Method 8270C-SIM)

Y N N/A Were field duplicate pairs identified in this SDG?
Y N N/A Were target compounds identified in the field duplicate pairs?

Compound	Concentration (ug/L)		RPD
	1	3	
1,4-Dioxane	1	1	0

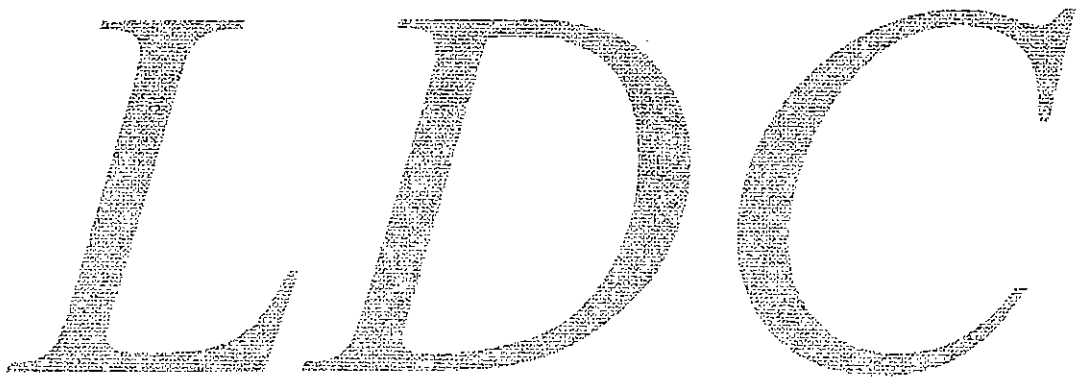
Compound	Concentration ( )		RPD

Compound	Concentration ( )		RPD

Compound	Concentration ( )		RPD

NASA JPL
Data Validation Reports
LDC# 10531

Metals



Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: April 17 through April 24,2003

LDC Report Date: July 11, 2003

Matrix: Water

Parameters: Chromium & Lead

Validation Level: EPA Level III

Laboratory: Applied P & Ch Laboratory/Advanced Technology Laboratories

Sample Delivery Group (SDG): 03-2931/062725

Sample Identification

MW-4-5	Dupe-2-2Q03	Dupe-2-2Q03DUP
MW-4-4	MW-20-5	EB-1-4/17/03
MW-4-3	MW-20-4	
MW-4-2	MW-20-3	
MW-4-1	MW-20-2	
EB-2-4/21/03	MW-20-1	
Dupe-1-2Q03	EB-5-4/24/03	
Source-2Q03	Dupe-3-2Q03	
MW-19-5	MW-21-5	
MW-19-4	MW-21-4	
MW-19-3	MW-21-3	
MW-19-2	MW-21-2	
MW-19-1	MW-21-1	
EB-3-4/22/03	EB-1-4/17/03	
MW-14-5	MW-4-2MS	
MW-14-4	MW-4-2MSD	
MW-14-3	MW-4-2DUP	
MW-14-2	MW-19-2MS	
MW-14-1	MW-19-2MSD	
EB-4-4/23/03	MW-19-2DUP	

Introduction

This data review covers 42 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 200.8 for Chromium & Lead.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (February 1994) as there are no current guidelines for the methods stated above.

A table summarizing all data qualification flags is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from specified protocols or is of technical advisory nature.

Blanks are summarized in Section III.

Field duplicates are summarized in Section XIII.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

An initial calibration was performed.

The frequency and analysis criteria of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met.

III. Blanks

Method blanks were reviewed for each matrix as applicable.

Data qualification by the initial, continuing and preparation blanks (ICB/CCB/PBs) was based on the maximum contaminant concentration in the ICB/CCB/PBs in the analysis of each analyte. No contaminant concentrations were found in the initial, continuing and preparation blanks with the following exceptions:

Method Blank ID	Analyte	Maximum Concentration	Associated Samples
PB1 (prep blank)	Chromium	0.115 ug/L	MW-4-5 MW-4-4 MW-4-3 MW-4-2 MW-4-1 EB-2-4/21/03 Dupe-1-2Q03 Source-2Q03 MW-19-5 MW-19-4 MW-19-3 MW-19-1 EB-3-4/22/03 MW-14-5 MW-14-4 MW-14-3 MW-14-2 MW-14-1 EB-4-4/23/03 Dupe-2-2Q03

Method Blank ID	Analyte	Maximum Concentration	Associated Samples
PB2 (prep blank)	Chromium	0.209 ug/L	MW-19-2 MW-20-5 MW-20-4 MW-20-3 MW-20-2 MW-20-1 EB-5-4/24/03 Dupe-3-2Q03 MW-21-5 MW-21-4 MW-21-3 MW-21-2 MW-21-1 EB-1-4/17/03
ICB/CCB1	Chromium	0.291 ug/L	All samples in SDG 03-2931/062725

Sample concentrations were compared to the maximum contaminant concentrations detected in the ICB/CCB/PBs. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated method blanks.

IV. ICP Interference Check Sample (ICS) Analysis

ICP interference check was not required by the method.

V. Matrix Spike Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
MW-4-2MS/MSD (MW-4-5 MW-4-4 MW-4-3 MW-4-2 MW-4-1 EB-2-4/21/03 Dupe-1-2Q03 Source-2Q03 MW-19-5 MW-19-4 MW-19-3 MW-19-1 EB-3-4/22/03 MW-14-5 MW-14-4 MW-14-3 MW-14-2 MW-14-1 EB-4-4/23/03 Dupe-2-2Q03)	Chromium	75.8 (80-120)	73.6 (80-120)	-	J (all detects) UJ (all non-detects)	A
MW-19-2MS/MSD (MW-19-2 MW-20-5 MW-20-4 MW-20-3 MW-20-2 MW-20-1 EB-5-4/24/03 Dupe-3-2Q03 MW-21-5 MW-21-4 MW-21-3 MW-21-2 MW-21-1 EB-1-4/17/03)	Chromium	75.4 (80-120)	75.1 (80-120)	-	J (all detects) UJ (all non-detects)	A

VI. Duplicate Sample Analysis

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Results were within QC limits.

VII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

VIII. Internal Standards (ICP-MS)

Raw data were not reviewed for this SDG.

IX. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

X. ICP Serial Dilution

ICP serial dilution was not required by the method.

XI. Sample Result Verification

Raw data were not reviewed for this SDG.

XII. Overall Assessment of Data

Data flags have been summarized at the end of this report.

XIII. Field Duplicates

Samples MW-4-4 and Dupe-1-2Q03, samples MW-14-3 and Dupe-2-2Q03, and samples MW-20-1 and Dupe-3-2Q03 were identified as field duplicates. No chromium or lead was detected in any of the samples with the following exceptions:

Analyte	Concentration (ug/L)		RPD
	MW-4-4	Dupe-1-2Q03	
Chromium	3.5	2.8	22

Analyte	Concentration (ug/L)		RPD
	MW-14-3	Dupe-2-2Q03	
Chromium	3.2	2.6	21

Analyte	Concentration (ug/L)		RPD
	MW-20-1	Dupe-3-2Q03	
Chromium	2.4	2.1	13

XIV. Field Blanks

Samples EB-2-4/21/03, EB-3-4/22/03, EB-4-4/23/03, EB-5-4/24/03 and EB-1-4/17/03 were identified as equipment blanks. No chromium or lead contaminants were found in these blanks.

Sample Source-2Q03 was identified as a source blank. No chromium or lead contaminants were found in this blank.

NASA JPL
Chromium & Lead - Data Qualification Summary - SDG 03-2931/062725

SDG	Sample	Analyte	Flag	A or P	Reason
03-2931/062725	MW-4-5 MW-4-4 MW-4-3 MW-4-2 MW-4-1 EB-2-4/21/03 Dupe-1-2Q03 Source-2Q03 MW-19-5 MW-19-4 MW-19-3 MW-19-1 EB-3-4/22/03 MW-14-5 MW-14-4 MW-14-3 MW-14-2 MW-14-1 EB-4-4/23/03 Dupe-2-2Q03 MW-19-2 MW-20-5 MW-20-4 MW-20-3 MW-20-2 MW-20-1 EB-5-4/24/03 Dupe-3-2Q03 MW-21-5 MW-21-4 MW-21-3 MW-21-2 MW-21-1 EB-1-4/17/03	Chromium	J (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicates (%R)

NASA JPL
Chromium & Lead - Laboratory Blank Data Qualification Summary - SDG 03-2931/062725

No Sample Data Qualified in this SDG

Advanced Technology Laboratories

Date: *16-May-03*

CLIENT: Applied P & Ch Laboratories
Project: #2931, JPL
Lab Order: 062725

Lab ID: 062725-001
Client Sample ID: MW-4-5
Collection Date: 4/21/2003 8:10:00 AM
Matrix: WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
ICP-MS METALS						
		EPA 200.8				
RunID: ICP4_030512A	QC Batch: R27306			PrepDate:		Analyst: **NS**
Chromium	3.0	1.0	J	µg/L	1	5/12/2003
Lead	ND	1.0		µg/L	1	5/12/2003

Lab ID: 062725-002
Client Sample ID: MW-4-4
Collection Date: 4/21/2003 9:30:00 AM
Matrix: WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
ICP-MS METALS						
		EPA 200.8				
RunID: ICP4_030512A	QC Batch: R27306			PrepDate:		Analyst: **NS**
Chromium	3.5	1.0	J	µg/L	1	5/12/2003
Lead	ND	1.0		µg/L	1	5/12/2003

Lab ID: 062725-003
Client Sample ID: MW-4-3
Collection Date: 4/21/2003 10:15:00 AM
Matrix: WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
ICP-MS METALS						
		EPA 200.8				
RunID: ICP4_030512A	QC Batch: R27306			PrepDate:		Analyst: **NS**
Chromium	3.8	1.0	J	µg/L	1	5/12/2003
Lead	ND	1.0		µg/L	1	5/12/2003

Qualifiers:

- ND - Not Detected at the Reporting Limit
- J - Analyte detected below quantitation limits
- B - Analyte detected in the associated Method Blank
- * - Value exceeds Maximum Contaminant Level
- S - Spike Recovery outside accepted recovery limits
- R - RPD outside accepted recovery limits
- E - Value above quantitation range
- H-Sample exceding holding time

Results are wet unless othewise specified

5/14/03

015

Advanced Technology Laboratories
3275 Walnut Avenue Signal Hill, CA 90807 Tel: 562 989-4045 Fax: 562 989-4040

Advanced Technology Laboratories

Date: *16-May-03*

CLIENT: Applied P & Ch Laboratories
Project: #2931, JPL
Lab Order: 062725

Lab ID: 062725-004
Client Sample ID: MW-4-2
Collection Date: 4/21/2003 11:40:00 AM
Matrix: WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
ICP-MS METALS						
		EPA 200.8				
RunID: ICP4_030512A	QC Batch: R27306			PrepDate:		Analyst: **NS**
Chromium	6.4	1.0	J	µg/L	1	5/12/2003
Lead	ND	1.0		µg/L	1	5/12/2003

Lab ID: 062725-005
Client Sample ID: MW-4-1
Collection Date: 4/21/2003 1:30:00 PM
Matrix: WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
ICP-MS METALS						
		EPA 200.8				
RunID: ICP4_030512A	QC Batch: R27306			PrepDate:		Analyst: **NS**
Chromium	3.4	1.0	J	µg/L	1	5/12/2003
Lead	ND	1.0		µg/L	1	5/12/2003

Lab ID: 062725-006
Client Sample ID: EB-2-4/21/03
Collection Date: 4/21/2003
Matrix: WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
ICP-MS METALS						
		EPA 200.8				
RunID: ICP4_030512A	QC Batch: R27306			PrepDate:		Analyst: **NS**
Chromium	ND	1.0	UJ	µg/L	1	5/12/2003
Lead	ND	1.0		µg/L	1	5/12/2003

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
H-Sample exceding holding time

Results are wet unless othewise specified

5/19/03

016

Advanced Technology Laboratories 3275 Walnut Avenue Signal Hill, CA 90807 Tel: 562 989-4045 Fax: 562 989-4040

Advanced Technology Laboratories

Date: *16-May-03*

CLIENT: Applied P & Ch Laboratories
Project: #2931, JPL
Lab Order: 062725

Lab ID: 062725-007
Client Sample ID: Dupe-1-2Q03
Collection Date: 4/21/2003
Matrix: WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
ICP-MS METALS						
EPA 200.8						
RunID: ICP4_030512A	QC Batch: R27306			PrepDate:		Analyst: NS
Chromium	2.8 J	1.0		µg/L	1	5/12/2003
Lead	ND	1.0		µg/L	1	5/12/2003

Lab ID: 062725-008
Client Sample ID: Source-2Q03
Collection Date: 4/21/2003 2:05:00 PM
Matrix: WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
ICP-MS METALS						
EPA 200.8						
RunID: ICP4_030512A	QC Batch: R27306			PrepDate:		Analyst: NS
Chromium	ND UJ	1.0		µg/L	1	5/12/2003
Lead	ND	1.0		µg/L	1	5/12/2003

Lab ID: 062725-009
Client Sample ID: MW-19-5
Collection Date: 4/22/2003 9:20:00 AM
Matrix: WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
ICP-MS METALS						
EPA 200.8						
RunID: ICP4_030512A	QC Batch: R27306			PrepDate:		Analyst: NS
Chromium	2.5 J	1.0		µg/L	1	5/12/2003
Lead	ND	1.0		µg/L	1	5/12/2003

Qualifiers:

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- B - Analyte detected in the associated Method Blank
- * - Value exceeds Maximum Contaminant Level
- S - Spike Recovery outside accepted recovery limits
- R - RPD outside accepted recovery limits
- E - Value above quantitation range
- H-Sample exceding holding time

Results are wet unless othewise specified

5/14/03

Advanced Technology Laboratories 3275 Walnut Avenue Signal Hill, CA 90807 Tel: 562 989-4045 Fax: 562 989-4040

Advanced Technology Laboratories

Date: *16-May-03*

CLIENT: Applied P & Ch Laboratories
Project: #2931, JPL
Lab Order: 062725

Lab ID: 062725-010
Client Sample ID: MW-19-4
Collection Date: 4/22/2003 10:25:00 AM
Matrix: WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
ICP-MS METALS						
EPA 200.8						
RunID: ICP4_030512A	QC Batch: R27306			PrepDate:		Analyst: NS
Chromium	2.4	1.0	J	µg/L	1	5/12/2003
Lead	ND	1.0		µg/L	1	5/12/2003

Lab ID: 062725-011
Client Sample ID: MW-19-3
Collection Date: 4/22/2003 11:30:00 AM
Matrix: WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
ICP-MS METALS						
EPA 200.8						
RunID: ICP4_030512A	QC Batch: R27306			PrepDate:		Analyst: NS
Chromium	5.0	1.0	J	µg/L	1	5/12/2003
Lead	ND	1.0		µg/L	1	5/12/2003

Lab ID: 062725-012
Client Sample ID: MW-19-2
Collection Date: 4/22/2003 1:00:00 PM
Matrix: WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
ICP-MS METALS						
EPA 200.8						
RunID: ICP4_030512B	QC Batch: R27309			PrepDate:		Analyst: NS
Chromium	4.2	1.0	J	µg/L	1	5/12/2003
Lead	ND	1.0		µg/L	1	5/12/2003

Qualifiers:

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- J - Analyte detected below quantitation limits
- B - Analyte detected in the associated Method Blank
- * - Value exceeds Maximum Contaminant Level
- S - Spike Recovery outside accepted recovery limits
- R - RPD outside accepted recovery limits
- E - Value above quantitation range
- H-Sample exceding holding time

Results are wet unless othewise specified

5/14/03

Advanced Technology Laboratories 3275 Walnut Avenue Signal Hill, CA 90807 Tel: 562 989-4045 Fax: 562 989-4040

Advanced Technology Laboratories

Date: *16-May-03*

CLIENT: Applied P & Ch Laboratories
Project: #2931, JPL
Lab Order: 062725

Lab ID: 062725-013
Client Sample ID: MW-19-1
Collection Date: 4/22/2003 2:10:00 PM
Matrix: WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
ICP-MS METALS						
		EPA 200.8				
RunID: ICP4_030512A	QC Batch: R27306			PrepDate:		Analyst: **NS**
Chromium	1.7 J	1.0		µg/L	1	5/12/2003
Lead	ND	1.0		µg/L	1	5/12/2003

Lab ID: 062725-014
Client Sample ID: EB-3-4/22/03
Collection Date: 4/22/2003 11:40:00 AM
Matrix: WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
ICP-MS METALS						
		EPA 200.8				
RunID: ICP4_030512A	QC Batch: R27306			PrepDate:		Analyst: **NS**
Chromium	ND UJ	1.0		µg/L	1	5/12/2003
Lead	ND	1.0		µg/L	1	5/12/2003

Lab ID: 062725-015
Client Sample ID: MW-14-5
Collection Date: 4/23/2003 8:35:00 AM
Matrix: WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
ICP-MS METALS						
		EPA 200.8				
RunID: ICP4_030512A	QC Batch: R27306			PrepDate:		Analyst: **NS**
Chromium	2.1 J	1.0		µg/L	1	5/12/2003
Lead	ND	1.0		µg/L	1	5/12/2003

Qualifiers:

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- B - Analyte detected in the associated Method Blank
- * - Value exceeds Maximum Contaminant Level
- S - Spike Recovery outside accepted recovery limits
- R - RPD outside accepted recovery limits
- E - Value above quantitation range
- H-Sample exceding holding time

Results are wet unless othewise specified

5/14/03

Advanced Technology Laboratories 3275 Walnut Avenue Signal Hill, CA 90807 Tel: 562 989-4045 Fax: 562 989-4040

Advanced Technology Laboratories

Date: *16-May-03*

CLIENT: Applied P & Ch Laboratories
Project: #2931, JPL
Lab Order: 062725

Lab ID: 062725-016
Client Sample ID: MW-14-4
Collection Date: 4/23/2003 9:35:00 AM
Matrix: WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
ICP-MS METALS						
		EPA 200.8				
RunID: ICP4_030512A	QC Batch: R27306			PrepDate:		Analyst: NS
Chromium	3.8	1.0	J	µg/L	1	5/12/2003
Lead	ND	1.0		µg/L	1	5/12/2003

Lab ID: 062725-017
Client Sample ID: MW-14-3
Collection Date: 4/23/2003 11:10:00 AM
Matrix: WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
ICP-MS METALS						
		EPA 200.8				
RunID: ICP4_030512A	QC Batch: R27306			PrepDate:		Analyst: NS
Chromium	3.2	1.0	J	µg/L	1	5/12/2003
Lead	ND	1.0		µg/L	1	5/12/2003

Lab ID: 062725-018
Client Sample ID: MW-14-2
Collection Date: 4/23/2003 12:20:00 PM
Matrix: WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
ICP-MS METALS						
		EPA 200.8				
RunID: ICP4_030512A	QC Batch: R27306			PrepDate:		Analyst: NS
Chromium	4.4	1.0	J	µg/L	1	5/12/2003
Lead	ND	1.0		µg/L	1	5/12/2003

Qualifiers:

- ND - Not Detected at the Reporting Limit
- J - Analyte detected below quantitation limits
- B - Analyte detected in the associated Method Blank
- * - Value exceeds Maximum Contaminant Level
- S - Spike Recovery outside accepted recovery limits
- R - RPD outside accepted recovery limits
- E - Value above quantitation range
- H-Sample exceding holding time

Results are wet unless othewise specified

7/14/03

020

Advanced Technology Laboratories
3275 Walnut Avenue Signal Hill, CA 90807 Tel: 562 989-4045 Fax: 562 989-4040

Advanced Technology Laboratories

Date: *16-May-03*

CLIENT: Applied P & Ch Laboratories
Project: #2931, JPL
Lab Order: 062725

Lab ID: 062725-019
Client Sample ID: MW-14-1
Collection Date: 4/23/2003 1:20:00 PM
Matrix: WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
ICP-MS METALS						
		EPA 200.8				
RunID: ICP4_030512A	QC Batch: R27306			PrepDate:		Analyst: **NS**
Chromium	4.6	1.0	J	µg/L	1	5/12/2003
Lead	ND	1.0		µg/L	1	5/12/2003

Lab ID: 062725-020
Client Sample ID: EB-4-4/23/03
Collection Date: 4/23/2003 11:25:00 AM
Matrix: WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
ICP-MS METALS						
		EPA 200.8				
RunID: ICP4_030512A	QC Batch: R27306			PrepDate:		Analyst: **NS**
Chromium	ND	1.0	UJ	µg/L	1	5/12/2003
Lead	ND	1.0		µg/L	1	5/12/2003

Lab ID: 062725-021
Client Sample ID: Dupe-2-2Q03
Collection Date: 4/23/2003
Matrix: WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
ICP-MS METALS						
		EPA 200.8				
RunID: ICP4_030512A	QC Batch: R27306			PrepDate:		Analyst: **NS**
Chromium	2.6	1.0	J	µg/L	1	5/12/2003
Lead	ND	1.0		µg/L	1	5/12/2003

Qualifiers:

- ND - Not Detected at the Reporting Limit
- J - Analyte detected below quantitation limits
- B - Analyte detected in the associated Method Blank
- * - Value exceeds Maximum Contaminant Level
- S - Spike Recovery outside accepted recovery limits
- R - RPD outside accepted recovery limits
- E - Value above quantitation range
- H-Sample exceding holding time

Results are wet unless othewise specified

5/14/03

Advanced Technology Laboratories 3275 Walnut Avenue Signal Hill, CA 90807 Tel: 562 989-4045 Fax: 562 989-4040

Advanced Technology Laboratories

Date: *16-May-03*

CLIENT: Applied P & Ch Laboratories
Project: #2931, JPL
Lab Order: 062725

Lab ID: 062725-022
Client Sample ID: MW-20-5
Collection Date: 4/24/2003 8:05:00 AM
Matrix: WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
ICP-MS METALS						
EPA 200.8						
RunID: ICP4_030512B	QC Batch: R27309			PrepDate:		Analyst: NS
Chromium	1.7	1.0	J	µg/L	1	5/12/2003
Lead	ND	1.0		µg/L	1	5/12/2003

Lab ID: 062725-023
Client Sample ID: MW-20-4
Collection Date: 4/24/2003 8:50:00 AM
Matrix: WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
ICP-MS METALS						
EPA 200.8						
RunID: ICP4_030512B	QC Batch: R27309			PrepDate:		Analyst: NS
Chromium	2.2	1.0	J	µg/L	1	5/12/2003
Lead	ND	1.0		µg/L	1	5/12/2003

Lab ID: 062725-024
Client Sample ID: MW-20-3
Collection Date: 4/24/2003 10:00:00 AM
Matrix: WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
ICP-MS METALS						
EPA 200.8						
RunID: ICP4_030512B	QC Batch: R27309			PrepDate:		Analyst: NS
Chromium	4.2	1.0	J	µg/L	1	5/12/2003
Lead	ND	1.0		µg/L	1	5/12/2003

Qualifiers:

- ND - Not Detected at the Reporting Limit
- J - Analyte detected below quantitation limits
- B - Analyte detected in the associated Method Blank
- * - Value exceeds Maximum Contaminant Level
- S - Spike Recovery outside accepted recovery limits
- R - RPD outside accepted recovery limits
- E - Value above quantitation range
- H-Sample exceding holding time

Results are wet unless othewise specified

5/14/03

022

Advanced Technology Laboratories 3275 Walnut Avenue Signal Hill, CA 90807 Tel: 562 989-4045 Fax: 562 989-4040

Advanced Technology Laboratories

Date: *16-May-03*

CLIENT: Applied P & Ch Laboratories
Project: #2931, JPL
Lab Order: 062725

Lab ID: 062725-025
Client Sample ID: MW-20-2
Collection Date: 4/24/2003 10:40:00 AM
Matrix: WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
ICP-MS METALS						
		EPA 200.8				
RunID: ICP4_030512B	QC Batch: R27309			PrepDate:		Analyst: **NS**
Chromium	2.1	1.0	J	µg/L	1	5/12/2003
Lead	ND	1.0		µg/L	1	5/12/2003

Lab ID: 062725-026
Client Sample ID: MW-20-1
Collection Date: 4/24/2003 11:45:00 AM
Matrix: WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
ICP-MS METALS						
		EPA 200.8				
RunID: ICP4_030512B	QC Batch: R27309			PrepDate:		Analyst: **NS**
Chromium	2.4	1.0	J	µg/L	1	5/12/2003
Lead	ND	1.0		µg/L	1	5/12/2003

Lab ID: 062725-027
Client Sample ID: EB-5-4/24/03
Collection Date: 4/24/2003 9:05:00 AM
Matrix: WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
ICP-MS METALS						
		EPA 200.8				
RunID: ICP4_030512B	QC Batch: R27309			PrepDate:		Analyst: **NS**
Chromium	ND	1.0	UJ	µg/L	1	5/12/2003
Lead	ND	1.0		µg/L	1	5/12/2003

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
H-Sample exceding holding time

Results are wet unless othewise specified

7/14/03

Advanced Technology Laboratories 3275 Walnut Avenue Signal Hill, CA 90807 Tel: 562 989-4045 Fax: 562 989-4040

Advanced Technology Laboratories

Date: *16-May-03*

CLIENT: Applied P & Ch Laboratories
Project: #2931, JPL
Lab Order: 062725

Lab ID: 062725-028
Client Sample ID: Dupe-3-2Q03
Collection Date: 4/24/2003
Matrix: WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
ICP-MS METALS						
		EPA 200.8				
RunID: ICP4_030512B	QC Batch: R27309			PrepDate:		Analyst: **NS**
Chromium	2.1 J	1.0		µg/L	1	5/12/2003
Lead	ND	1.0		µg/L	1	5/12/2003

Lab ID: 062725-029
Client Sample ID: MW-21-5
Collection Date: 4/17/2003 9:00:00 AM
Matrix: WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
ICP-MS METALS						
		EPA 200.8				
RunID: ICP4_030512B	QC Batch: R27309			PrepDate:		Analyst: **NS**
Chromium	2.7 J	1.0		µg/L	1	5/12/2003
Lead	ND	1.0		µg/L	1	5/12/2003

Lab ID: 062725-030
Client Sample ID: MW-21-4
Collection Date: 4/17/2003 10:00:00 AM
Matrix: WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
ICP-MS METALS						
		EPA 200.8				
RunID: ICP4_030512B	QC Batch: R27309			PrepDate:		Analyst: **NS**
Chromium	3.8 J	1.0		µg/L	1	5/12/2003
Lead	ND	1.0		µg/L	1	5/12/2003

Qualifiers:

- ND - Not Detected at the Reporting Limit
- J - Analyte detected below quantitation limits
- B - Analyte detected in the associated Method Blank
- * - Value exceeds Maximum Contaminant Level
- S - Spike Recovery outside accepted recovery limits
- R - RPD outside accepted recovery limits
- E - Value above quantitation range
- H-Sample exceding holding time

Results are wet unless othewise specified

5/19/03

024

Advanced Technology Laboratories 3275 Walnut Avenue Signal Hill, CA 90807 Tel: 562 989-4045 Fax: 562 989-4040

Advanced Technology Laboratories

Date: *16-May-03*

CLIENT: Applied P & Ch Laboratories
Project: #2931, JPL
Lab Order: 062725

Lab ID: 062725-031
Client Sample ID: MW-21-3
Collection Date: 4/17/2003 11:10:00 AM
Matrix: WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
ICP-MS METALS						
		EPA 200.8				
RunID: ICP4_030512B	QC Batch: R27309			PrepDate:		Analyst: **NS**
Chromium	3.7	1.0	J	µg/L	1	5/12/2003
Lead	ND	1.0		µg/L	1	5/12/2003

Lab ID: 062725-032
Client Sample ID: MW-21-2
Collection Date: 4/17/2003 12:05:00 PM
Matrix: WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
ICP-MS METALS						
		EPA 200.8				
RunID: ICP4_030512B	QC Batch: R27309			PrepDate:		Analyst: **NS**
Chromium	4.8	1.0	J	µg/L	1	5/12/2003
Lead	ND	1.0		µg/L	1	5/12/2003

Lab ID: 062725-033
Client Sample ID: MW-21-1
Collection Date: 4/17/2003 12:50:00 PM
Matrix: WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
ICP-MS METALS						
		EPA 200.8				
RunID: ICP4_030512B	QC Batch: R27309			PrepDate:		Analyst: **NS**
Chromium	3.5	1.0	J	µg/L	1	5/12/2003
Lead	ND	1.0		µg/L	1	5/12/2003

Qualifiers:

- ND - Not Detected at the Reporting Limit
- J - Analyte detected below quantitation limits
- B - Analyte detected in the associated Method Blank
- * - Value exceeds Maximum Contaminant Level
- S - Spike Recovery outside accepted recovery limits
- R - RPD outside accepted recovery limits
- E - Value above quantitation range
- H-Sample exceding holding time

Results are wet unless othewise specified

5/14/03

025

Advanced Technology Laboratories 3275 Walnut Avenue Signal Hill, CA 90807 Tel: 562 989-4045 Fax: 562 989-4040

Advanced Technology Laboratories

Date: *16-May-03*

CLIENT: Applied P & Ch Laboratories
Project: #2931, JPL
Lab Order: 062725

Lab ID: 062725-034
Client Sample ID: EB-1-4/17/03
Collection Date: 4/17/2003 12:15:00 PM
Matrix: WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
ICP-MS METALS						
		EPA 200.8				
RunID: ICP4_030512B	QC Batch: R27309			PrepDate:		Analyst: **NS**
Chromium	ND UJ	1.0		µg/L	1	5/12/2003
Lead	ND	1.0		µg/L	1	5/12/2003

Qualifiers:

- ND - Not Detected at the Reporting Limit
- J - Analyte detected below quantitation limits
- B - Analyte detected in the associated Method Blank
- * - Value exceeds Maximum Contaminant Level
- S - Spike Recovery outside accepted recovery limits
- R - RPD outside accepted recovery limits
- E - Value above quantitation range
- H-Sample exceding holding time

Results are wet unless othewise specified

7/14/03

026

Advanced Technology Laboratories
3275 Walnut Avenue Signal Hill, CA 90807 Tel: 562 989-4045 Fax: 562 989-4040

LDC #: 10531A4 7 **VALIDATION COMPLETENESS WORKSHEET** Date: 7-9-03

only SDG #: 03-2931/062425 Level III Page: 1 of 1

Laboratory: Applied P & Ch Laboratory/Advanced Technology Laboratories Reviewer: MG

2nd Reviewer: ~~MG~~

METHOD: Chromium & Lead (EPA Method 200.8)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 4-17-03 through 4-24-03
II.	Calibration	A	
III.	Blanks	SW	
IV.	ICP Interference Check Sample (ICS) Analysis	N	Not required
V.	Matrix Spike Analysis	SW	
VI.	Duplicate Sample Analysis	A	
VII.	Laboratory Control Samples (LCS)	A	LCS
VIII.	Internal Standard (ICP-MS)	N	Not reviewed
IX.	Furnace Atomic Absorption QC	N	Not utilized
X.	ICP Serial Dilution	N	Not required
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	SW	D= 2+7, D=17+21, D=26+28
XIV.	Field Blanks	ND	EB= 6, 14, 20, 27, 34 SB= 8

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples:

1	MW-4-5	W	11	MW-19-3	W	21	Dupe-2-2Q03	W	31 2	MW-21-3	W	41	Dupe-2-2Q03DUP W
2	MW-4-4		12 2	MW-19-2		22 2	MW-20-5		32 2	MW-21-2		42 2	EB-1-4/17/03DUP
3	MW-4-3		13	MW-19-1		23 2	MW-20-4		33 2	MW-21-1		43	PBW1
4	MW-4-2		14	EB-3-4/22/03		24 2	MW-20-3		34 2	EB-1-4/17/03		44 2	PBW2
5	MW-4-1		15	MW-14-5		25 2	MW-20-2		35	MW-4-2MS		45	
6	EB-2-4/21/03		16	MW-14-4		26 2	MW-20-1		36	MW-4-2MSD		46	
7	Dupe-1-2Q03		17	MW-14-3		27 2	EB-5-4/24/03		37	MW-4-2DUP		47	
8	Source-2Q03		18	MW-14-2		28 2	Dupe-3-2Q03		38 2	MW-19-2MS		48	
9	MW-19-5		19	MW-14-1		29 2	MW-21-5		39 2	MW-19-2MSD		49	
10	MW-19-4		20	EB-4-4/23/03		30 2	MW-21-4		40 2	MW-19-2DUP		50	

Notes: _____

OMH-

LDC #: 10531A4 7
SDG #: 03-2931 / 062425

VALIDATION FINDINGS WORKSHEET
Sample Specific Element Reference

Page: 1 of 1
Reviewer: MG
2nd reviewer: MH

All circled elements are applicable to each sample.

Sample ID	Matrix	Target Analyte List (TAL)
1 → 34	W	Al, Sb, As, Ba, Be, Cd, Ca, (Cr) Co, Cu, Fe, (Pb) Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
QC 35→42	↓	Al, Sb, As, Ba, Be, Cd, Ca, (Cr) Co, Cu, Fe, (Pb) Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
Analysis Method		
ICP		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
ICP Trace		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
ICP-MS	W	Al, Sb, As, Ba, Be, Cd, Ca, (Cr) Co, Cu, Fe, (Pb) Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
GFAA		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___

Comments: Mercury by CVAA if performed

LDC #: 10531A4
SDG #: 03-2931 / 062725

VALIDATION FINDINGS WORKSHEET
PB/ICB/CCB QUALIFIED SAMPLES

Page: 1 of 1
Reviewer: MG
2nd Reviewer: MG

METHOD: Trace Metals (EPA SW 846 Method 6010/7000) Soil preparation factor applied: NA
Sample Concentration units, unless otherwise noted: ug/L Associated Samples: all (PBW1 for # 1→11, 13→21) (PBW2 for # 12, 22→34)

Analyte ug/L	PBW1 Maximum PB* (mg/Kg)	PBW2 Maximum PB* (ug/L)	Maximum ICB/CCB* (ug/L)	Blank Action Limit	Sample Identification										
								(No findings)							
Al															Al
Sb															Sb
As															As
Ba															Ba
Be															Be
Cd															Cd
Ca															Ca
Cr	0.115	0.209	0.291	1.455											Cr
Co															Co
Cu															Cu
Fe															Fe
Pb															Pb
Mg															Mg
Mn															Mn
Hg															Hg
Ni															Ni
K															K
Se															Se
Ag															Ag
Na															Na
Tl															Tl
V															V
Zn															Zn
B															B
Mo															Mo
Sr															Sr

Samples with analyte concentrations within five times the associated ICB, CCB or PB concentration are listed above with the identifications from the Validation Completeness Worksheet. These sample results were qualified as not detected, "U".
Note : a - The listed analyte concentration is the highest ICB, CCB, or PB detected in the analysis of each element.

LDC #: 10531A4
SDG #: 03-2931/062725

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Reviewer: MG
2nd Reviewer: MG

METHOD: Trace metals (EPA SW 846 Method 6010/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Was a matrix spike analyzed for each matrix in this SDG?

Y (N) N/A Were matrix spike percent recoveries (%R) within the control limits of 75-125? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.

(Y) N N/A Were all duplicate sample relative percent differences (RPD) ≤ 20% for water samples and ≤35% for soil samples?

LEVEL IV ONLY:

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	MS/MSD ID	Matrix	Analyte	MS %Recovery	MSD %Recovery	RPD (Limits)	Associated Samples	Qualifications
1	35/36	water	Cr	75.8 (80-120)	73.6 (80-120)		1→11, 13→21	J/UJ/A
2	38/39	water	Cr	75.4 (80-120)	75.1 (80-120)		12, 22→34	

Comments:

LDC #: 10531A4 7
SDG #: 03-2931/062425

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: MG
2nd reviewer: MM

METHOD: Inorganics, Method 200.8

(Y) N N/A Were field duplicate pairs identified in this SDG?
(Y) N N/A Were target analytes detected in the field duplicate pairs?

Analyte	Concentration (µg/L)		RPD (Limits)	Qualifier
	2	7		
Cr	3.5	2.8	22	

Analyte	Concentration (µg/L)		RPD (Limits)	Qualifier
	17	21		
Cr	3.2	2.6	21	

Analyte	Concentration (µg/L)		RPD (Limits)	Qualifier
	26	28		
Cr	2.4	2.1	13	

Analyte	Concentration ( )		RPD (Limits)	Qualifier

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: April 28 through May 7, 2003

LDC Report Date: July 11, 2003

Matrix: Water

Parameters: Chromium & Lead

Validation Level: EPA Level III

Laboratory: Applied P & Ch Laboratory/Advanced Technology Laboratories

Sample Delivery Group (SDG): 03-3112/062913

Sample Identification

MW-17-5	MW-3-3	MW-17-2MSD
MW-17-4	MW-3-2	MW-17-2DUP
MW-17-3	MW-3-1	MW-23-5DUP
MW-17-2	EB-9-5/1/03	MW-11-3MS
MW-17-1	DUPE-5-2Q03	MW-11-3MSD
EB-6-4/28/03	MW-11-5	MW-11-3DUP
MW-24-5	MW-11-4	MW-24-4DUP
MW-24-3	MW-11-3	
MW-24-2	MW-11-2	
MW-24-1	MW-11-1	
EB-7-4/29/03	EB-10-5/6/03	
DUPE-4-2Q03	MW-12-5	
MW-23-5	MW-12-4	
MW-23-4	MW-12-3	
MW-23-3	MW-12-2	
MW-23-2	MW-12-1	
MW-23-1	EB-11-5/7/03	
EB-8-4/30/03	DUPE-6-2Q03	
MW-3-5	MW-24-4	
MW-3-4	MW-17-2MS	

Introduction

This data review covers 47 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 200.8 for Chromium & Lead.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (February 1994) as there are no current guidelines for the methods stated above.

A table summarizing all data qualification flags is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from specified protocols or is of technical advisory nature.

Blanks are summarized in Section III.

Field duplicates are summarized in Section XIII.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

An initial calibration was performed.

The frequency and analysis criteria of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met.

III. Blanks

Method blanks were reviewed for each matrix as applicable.

Data qualification by the initial, continuing and preparation blanks (ICB/CCB/PBs) was based on the maximum contaminant concentration in the ICB/CCB/PBs in the analysis of each analyte. No contaminant concentrations were found in the initial, continuing and preparation blanks with the following exceptions:

Method Blank ID	Analyte	Maximum Concentration	Associated Samples
PB1 (prep blank)	Chromium	0.128 ug/L	MW-17-5 MW-17-4 MW-17-3 MW-17-2 MW-17-1 EB-6-4/28/03 MW-24-5 MW-24-3 MW-24-2 MW-24-1 EB-7-4/29/03 DUPE-4-2Q03 MW-23-5 MW-23-4 MW-23-3 MW-23-2 MW-23-1 EB-8-4/30/03 MW-3-5 MW-3-4

Method Blank ID	Analyte	Maximum Concentration	Associated Samples
ICB/CCB1	Chromium	0.279 ug/L	MW-17-5 MW-17-4 MW-17-3 MW-17-2 MW-17-1 EB-6-4/28/03 MW-24-5 MW-24-3 MW-24-2 MW-24-1 EB-7-4/29/03 DUPE-4-2Q03 MW-23-5 MW-23-4 MW-23-3 MW-23-2 MW-23-1 EB-8-4/30/03 MW-3-5 MW-3-4
PB2 (prep blank)	Chromium	0.138 ug/L	MW-3-3 MW-3-2 MW-3-1 EB-9-5/1/03 DUPE-5-2Q03 MW-11-5 MW-11-4 MW-11-3 MW-11-2 MW-11-1 EB-10-5/6/03 MW-12-5 MW-12-4 MW-12-3 MW-12-2 MW-12-1 EB-11-5/7/03 DUPE-6-2Q03 MW-24-4
ICB/CCB2	Chromium	0.127 ug/L	MW-3-3 MW-3-2 MW-3-1 EB-9-5/1/03 DUPE-5-2Q03 MW-11-5 MW-11-4 MW-11-3 MW-11-2 MW-11-1 EB-10-5/6/03 MW-12-5 MW-12-4 MW-12-3 MW-12-2 MW-12-1 EB-11-5/7/03 DUPE-6-2Q03 MW-24-4

Sample concentrations were compared to the maximum contaminant concentrations detected in the ICB/CCB/PBs. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated method blanks.

IV. ICP Interference Check Sample (ICS) Analysis

ICP interference check was not required by the method.

V. Matrix Spike Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VI. Duplicate Sample Analysis

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Results were within QC limits.

VII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

VIII. Internal Standards (ICP-MS)

Raw data were not reviewed for this SDG.

IX. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

X. ICP Serial Dilution

ICP serial dilution was not required by the method.

XI. Sample Result Verification

Raw data were not reviewed for this SDG.

XII. Overall Assessment of Data

Data flags have been summarized at the end of this report.

XIII. Field Duplicates

Samples MW-24-2 and DUPE-4-2Q03, samples MW-3-2 and DUPE-5-2Q03 and samples MW-12-3 and DUPE-6-2Q03 were identified as field duplicates. No chromium or lead was detected in any of the samples with the following exceptions:

Analyte	Concentration (ug/L)		RPD
	MW-24-2	DUPE-4-2Q03	
Chromium	2.3	2.0	14

Analyte	Concentration (ug/L)		RPD
	MW-3-2	DUPE-5-2Q03	
Chromium	1.6	1.9	17

Analyte	Concentration (ug/L)		RPD
	MW-12-3	DUPE-6-2Q03	
Chromium	1.3	1.3	0

XIV. Field Blanks

Samples EB-6-4/28/03, EB-7-4/29/03, EB-8-4/30/03, EB-9-5/1/03, EB-10-5/6/03 and EB-11-5/7/03 were identified as equipment blanks. No chromium or lead contaminants were found in these blanks with the following exceptions:

Equipment Blank ID	Analyte	Concentration (ug/L)
EB-10-5/6/03	Chromium	2.1

NASA JPL
Chromium & Lead - Data Qualification Summary - SDG 03-3112/062913

No Sample Data Qualified in this SDG

NASA JPL
Chromium & Lead - Laboratory Blank Data Qualification Summary - SDG 03-3112/062913

No Sample Data Qualified in this SDG

Advanced Technology Laboratories

Date: *29-May-03*

CLIENT: Applied P & Ch Laboratories
Project: #3112, JPL
Lab Order: 062913

Lab ID: 062913-001
Client Sample ID: MW-17-5
Collection Date: 4/28/2003 8:00:00 AM
Matrix: WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
ICP-MS METALS						
		EPA 200.8				
RunID: ICP4_030523A	QC Batch: R27659			PrepDate:		Analyst: **NS**
Chromium	1.6	1.0		µg/L	1	5/23/2003
Lead	ND	1.0		µg/L	1	5/23/2003

Lab ID: 062913-002
Client Sample ID: MW-17-4
Collection Date: 4/28/2003 9:50:00 AM
Matrix: WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
ICP-MS METALS						
		EPA 200.8				
RunID: ICP4_030523A	QC Batch: R27659			PrepDate:		Analyst: **NS**
Chromium	2.2	1.0		µg/L	1	5/23/2003
Lead	ND	1.0		µg/L	1	5/23/2003

Lab ID: 062913-003
Client Sample ID: MW-17-3
Collection Date: 4/28/2003 10:35:00 AM
Matrix: WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
ICP-MS METALS						
		EPA 200.8				
RunID: ICP4_030523A	QC Batch: R27659			PrepDate:		Analyst: **NS**
Chromium	3.0	1.0		µg/L	1	5/23/2003
Lead	ND	1.0		µg/L	1	5/23/2003

Qualifiers:

- ND - Not Detected at the Reporting Limit
- J - Analyte detected below quantitation limits
- B - Analyte detected in the associated Method Blank
- * - Value exceeds Maximum Contaminant Level
- S - Spike Recovery outside accepted recovery limits
- R - RPD outside accepted recovery limits
- E - Value above quantitation range
- H-Sample exceding holding time

Results are wet unless othewise specified

5/14/03

Advanced Technology Laboratories
3275 Walnut Avenue · Signal Hill, CA 90807 Tel: 562 989-4045 Fax: 562 989-4040

Advanced Technology Laboratories

Date: *29-May-03*

CLIENT: Applied P & Ch Laboratories
Project: #3112, JPL
Lab Order: 062913

Lab ID: 062913-004
Client Sample ID: MW-17-2
Collection Date: 4/28/2003 11:50:00 AM
Matrix: WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
ICP-MS METALS						
		EPA 200.8				
RunID: ICP4_030523A	QC Batch: R27659			PrepDate:		Analyst: **NS**
Chromium	2.0	1.0		µg/L	1	5/23/2003
Lead	ND	1.0		µg/L	1	5/23/2003

Lab ID: 062913-005
Client Sample ID: MW-17-1
Collection Date: 4/28/2003 12:30:00 PM
Matrix: WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
ICP-MS METALS						
		EPA 200.8				
RunID: ICP4_030523A	QC Batch: R27659			PrepDate:		Analyst: **NS**
Chromium	2.9	1.0		µg/L	1	5/23/2003
Lead	ND	1.0		µg/L	1	5/23/2003

Lab ID: 062913-006
Client Sample ID: EB-6-4/28/03
Collection Date: 4/28/2003 10:50:00 AM
Matrix: WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
ICP-MS METALS						
		EPA 200.8				
RunID: ICP4_030523A	QC Batch: R27659			PrepDate:		Analyst: **NS**
Chromium	ND	1.0		µg/L	1	5/23/2003
Lead	ND	1.0		µg/L	1	5/23/2003

Qualifiers:

- ND - Not Detected at the Reporting Limit
- J - Analyte detected below quantitation limits
- B - Analyte detected in the associated Method Blank
- * - Value exceeds Maximum Contaminant Level
- S - Spike Recovery outside accepted recovery limits
- R - RPD outside accepted recovery limits
- E - Value above quantitation range
- H-Sample exceding holding time

Results are wet unless othewise specified

7/14/03

012

Advanced Technology Laboratories

Date: *29-May-03*

CLIENT: Applied P & Ch Laboratories
Project: #3112, JPL
Lab Order: 062913

Lab ID: 062913-007
Client Sample ID: MW-24-5
Collection Date: 4/29/2003 8:40:00 AM
Matrix: WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
ICP-MS METALS						
		EPA 200.8				
RunID: ICP4_030523A	QC Batch: R27659			PrepDate:		Analyst: **NS**
Chromium	4.1	1.0		µg/L	1	5/23/2003
Lead	ND	1.0		µg/L	1	5/23/2003

Lab ID: 062913-008
Client Sample ID: MW-24-3
Collection Date: 4/29/2003 10:40:00 AM
Matrix: WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
ICP-MS METALS						
		EPA 200.8				
RunID: ICP4_030523A	QC Batch: R27659			PrepDate:		Analyst: **NS**
Chromium	2.2	1.0		µg/L	1	5/23/2003
Lead	ND	1.0		µg/L	1	5/23/2003

Lab ID: 062913-009
Client Sample ID: MW-24-2
Collection Date: 4/29/2003 12:10:00 PM
Matrix: WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
ICP-MS METALS						
		EPA 200.8				
RunID: ICP4_030523A	QC Batch: R27659			PrepDate:		Analyst: **NS**
Chromium	2.3	1.0		µg/L	1	5/23/2003
Lead	ND	1.0		µg/L	1	5/23/2003

Qualifiers:

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- B - Analyte detected in the associated Method Blank
- * - Value exceeds Maximum Contaminant Level
- S - Spike Recovery outside accepted recovery limits
- R - RPD outside accepted recovery limits
- E - Value above quantitation range
- H-Sample exceding holding time

Results are wet unless othewise specified

5/14/03

Advanced Technology Laboratories 3275 Walnut Avenue Signal Hill, CA 90807 Tel: 562 989-4045 Fax: 562 989-4040

Advanced Technology Laboratories

Date: *29-May-03*

CLIENT: Applied P & Ch Laboratories
Project: #3112, JPL
Lab Order: 062913

Lab ID: 062913-010
Client Sample ID: MW-24-1
Collection Date: 4/29/2003 2:00:00 PM
Matrix: WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
ICP-MS METALS						
		EPA 200.8				
RunID: ICP4_030523A	QC Batch: R27659			PrepDate:		Analyst: **NS**
Chromium	5.7	1.0		µg/L	1	5/23/2003
Lead	ND	1.0		µg/L	1	5/23/2003

Lab ID: 062913-011
Client Sample ID: EB-7-4/29/03
Collection Date: 4/29/2003 9:55:00 AM
Matrix: WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
ICP-MS METALS						
		EPA 200.8				
RunID: ICP4_030523A	QC Batch: R27659			PrepDate:		Analyst: **NS**
Chromium	ND	1.0		µg/L	1	5/23/2003
Lead	ND	1.0		µg/L	1	5/23/2003

Lab ID: 062913-012
Client Sample ID: DUPE-4-2Q03
Collection Date: 4/29/2003
Matrix: WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
ICP-MS METALS						
		EPA 200.8				
RunID: ICP4_030523A	QC Batch: R27659			PrepDate:		Analyst: **NS**
Chromium	2.0	1.0		µg/L	1	5/23/2003
Lead	ND	1.0		µg/L	1	5/23/2003

Qualifiers:

- ND - Not Detected at the Reporting Limit
- J - Analyte detected below quantitation limits
- B - Analyte detected in the associated Method Blank
- * - Value exceeds Maximum Contaminant Level
- S - Spike Recovery outside accepted recovery limits
- R - RPD outside accepted recovery limits
- E - Value above quantitation range
- H-Sample exceding holding time

Results are wet unless othewise specified

5/19/03

014

Advanced Technology Laboratories

Date: *29-May-03*

CLIENT: Applied P & Ch Laboratories
Project: #3112, JPL
Lab Order: 062913

Lab ID: 062913-013
Client Sample ID: MW-23-5
Collection Date: 4/30/2003 8:20:00 AM
Matrix: WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
ICP-MS METALS						
		EPA 200.8				
RunID: ICP4_030523A	QC Batch: R27659			PrepDate:		Analyst: **NS**
Chromium	1.7	1.0		µg/L	1	5/23/2003
Lead	ND	1.0		µg/L	1	5/23/2003

Lab ID: 062913-014
Client Sample ID: MW-23-4
Collection Date: 4/30/2003 9:00:00 AM
Matrix: WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
ICP-MS METALS						
		EPA 200.8				
RunID: ICP4_030523A	QC Batch: R27659			PrepDate:		Analyst: **NS**
Chromium	2.2	1.0		µg/L	1	5/23/2003
Lead	ND	1.0		µg/L	1	5/23/2003

Lab ID: 062913-015
Client Sample ID: MW-23-3
Collection Date: 4/30/2003 9:40:00 AM
Matrix: WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
ICP-MS METALS						
		EPA 200.8				
RunID: ICP4_030523A	QC Batch: R27659			PrepDate:		Analyst: **NS**
Chromium	3.7	1.0		µg/L	1	5/23/2003
Lead	ND	1.0		µg/L	1	5/23/2003

Qualifiers:

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- J - Analyte detected below quantitation limits
- B - Analyte detected in the associated Method Blank
- * - Value exceeds Maximum Contaminant Level
- S - Spike Recovery outside accepted recovery limits
- R - RPD outside accepted recovery limits
- E - Value above quantitation range
- H-Sample exceding holding time

Results are wet unless othewise specified

5/14/03

Advanced Technology Laboratories 3275 Walnut Avenue Signal Hill, CA 90807 Tel: 562 989-4045 Fax: 562 989-4040

Advanced Technology Laboratories

Date: *29-May-03*

CLIENT: Applied P & Ch Laboratories
Project: #3112, JPL
Lab Order: 062913

Lab ID: 062913-016
Client Sample ID: MW-23-2
Collection Date: 4/30/2003 10:25:00 AM
Matrix: WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
ICP-MS METALS						
		EPA 200.8				
RunID: ICP4_030523A	QC Batch: R27659			PrepDate:		Analyst: **NS**
Chromium	2.9	1.0		µg/L	1	5/23/2003
Lead	ND	1.0		µg/L	1	5/23/2003

Lab ID: 062913-017
Client Sample ID: MW-23-1
Collection Date: 4/30/2003 11:00:00 AM
Matrix: WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
ICP-MS METALS						
		EPA 200.8				
RunID: ICP4_030523A	QC Batch: R27659			PrepDate:		Analyst: **NS**
Chromium	4.4	1.0		µg/L	1	5/23/2003
Lead	ND	1.0		µg/L	1	5/23/2003

Lab ID: 062913-018
Client Sample ID: EB-8-4/30/03
Collection Date: 4/30/2003 8:35:00 AM
Matrix: WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
ICP-MS METALS						
		EPA 200.8				
RunID: ICP4_030523A	QC Batch: R27659			PrepDate:		Analyst: **NS**
Chromium	ND	1.0		µg/L	1	5/23/2003
Lead	ND	1.0		µg/L	1	5/23/2003

Qualifiers:

- ND - Not Detected at the Reporting Limit
- J - Analyte detected below quantitation limits
- B - Analyte detected in the associated Method Blank
- * - Value exceeds Maximum Contaminant Level
- S - Spike Recovery outside accepted recovery limits
- R - RPD outside accepted recovery limits
- E - Value above quantitation range
- H-Sample exceding holding time

Results are wet unless othewise specified

5/19/03

Advanced Technology Laboratories 3275 Walnut Avenue Signal Hill, CA 90807 Tel: 562 989-4045 Fax: 562 989-4040

Advanced Technology Laboratories

Date: *29-May-03*

CLIENT: Applied P & Ch Laboratories
Project: #3112, JPL
Lab Order: 062913

Lab ID: 062913-019
Client Sample ID: MW-3-5
Collection Date: 5/1/2003 7:50:00 AM
Matrix: WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
ICP-MS METALS						
		EPA 200.8				
RunID: ICP4_030523A	QC Batch: R27659			PrepDate:		Analyst: **NS**
Chromium	ND	1.0		µg/L	1	5/23/2003
Lead	ND	1.0		µg/L	1	5/23/2003

Lab ID: 062913-020
Client Sample ID: MW-3-4
Collection Date: 5/1/2003 9:45:00 AM
Matrix: WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
ICP-MS METALS						
		EPA 200.8				
RunID: ICP4_030523A	QC Batch: R27659			PrepDate:		Analyst: **NS**
Chromium	1.7	1.0		µg/L	1	5/23/2003
Lead	ND	1.0		µg/L	1	5/23/2003

Lab ID: 062913-021
Client Sample ID: MW-3-3
Collection Date: 5/1/2003 9:25:00 AM
Matrix: WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
ICP-MS METALS						
		EPA 200.8				
RunID: ICP4_030527A	QC Batch: R27686			PrepDate:		Analyst: **NS**
Chromium	ND	1.0		µg/L	1	5/27/2003
Lead	ND	1.0		µg/L	1	5/27/2003

Qualifiers:

- ND - Not Detected at the Reporting Limit
- J - Analyte detected below quantitation limits
- B - Analyte detected in the associated Method Blank
- * - Value exceeds Maximum Contaminant Level
- S - Spike Recovery outside accepted recovery limits
- R - RPD outside accepted recovery limits
- E - Value above quantitation range
- H-Sample exceding holding time

Results are wet unless othewise specified

5/19/03

017

Advanced Technology Laboratories

Date: *29-May-03*

CLIENT: Applied P & Ch Laboratories
Project: #3112, JPL
Lab Order: 062913

Lab ID: 062913-022
Client Sample ID: MW-3-2
Collection Date: 5/1/2003 10:50:00 AM
Matrix: WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
ICP-MS METALS						
		EPA 200.8				
RunID: ICP4_030527A	QC Batch: R27686			PrepDate:		Analyst: **NS**
Chromium	1.6	1.0		µg/L	1	5/27/2003
Lead	ND	1.0		µg/L	1	5/27/2003

Lab ID: 062913-023
Client Sample ID: MW-3-1
Collection Date: 5/1/2003 11:30:00 AM
Matrix: WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
ICP-MS METALS						
		EPA 200.8				
RunID: ICP4_030527A	QC Batch: R27686			PrepDate:		Analyst: **NS**
Chromium	2.1	1.0		µg/L	1	5/27/2003
Lead	ND	1.0		µg/L	1	5/27/2003

Lab ID: 062913-024
Client Sample ID: EB-9-5/1/03
Collection Date: 5/1/2003 8:05:00 AM
Matrix: WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
ICP-MS METALS						
		EPA 200.8				
RunID: ICP4_030527A	QC Batch: R27686			PrepDate:		Analyst: **NS**
Chromium	ND	1.0		µg/L	1	5/27/2003
Lead	ND	1.0		µg/L	1	5/27/2003

Qualifiers:

- ND - Not Detected at the Reporting Limit
- J - Analyte detected below quantitation limits
- B - Analyte detected in the associated Method Blank
- * - Value exceeds Maximum Contaminant Level
- S - Spike Recovery outside accepted recovery limits
- R - RPD outside accepted recovery limits
- E - Value above quantitation range
- H-Sample exceding holding time

Results are wet unless othewise specified

5/14/03

Advanced Technology Laboratories
3275 Walnut Avenue · Signal Hill, CA 90807 Tel: 562 989-4045 Fax: 562 989-4040

Advanced Technology Laboratories

Date: *29-May-03*

CLIENT: Applied P & Ch Laboratories
Project: #3112, JPL
Lab Order: 062913

Lab ID: 062913-025
Client Sample ID: DUPE-52Q03
Collection Date: 5/1/2003
Matrix: WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
ICP-MS METALS						
EPA 200.8						
RunID: ICP4_030527A	QC Batch: R27686			PrepDate:		Analyst: NS
Chromium	1.9	1.0		µg/L	1	5/27/2003
Lead	ND	1.0		µg/L	1	5/27/2003

Lab ID: 062913-026
Client Sample ID: MW-11-5
Collection Date: 5/6/2003 7:55:00 AM
Matrix: WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
ICP-MS METALS						
EPA 200.8						
RunID: ICP4_030527A	QC Batch: R27686			PrepDate:		Analyst: NS
Chromium	1.1	1.0		µg/L	1	5/27/2003
Lead	ND	1.0		µg/L	1	5/27/2003

Lab ID: 062913-027
Client Sample ID: MW-11-4
Collection Date: 5/6/2003 8:40:00 AM
Matrix: WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
ICP-MS METALS						
EPA 200.8						
RunID: ICP4_030527A	QC Batch: R27686			PrepDate:		Analyst: NS
Chromium	ND	1.0		µg/L	1	5/27/2003
Lead	ND	1.0		µg/L	1	5/27/2003

Qualifiers:

- ND - Not Detected at the Reporting Limit
- J - Analyte detected below quantitation limits
- B - Analyte detected in the associated Method Blank
- * - Value exceeds Maximum Contaminant Level
- S - Spike Recovery outside accepted recovery limits
- R - RPD outside accepted recovery limits
- E - Value above quantitation range
- H-Sample exceding holding time

Results are wet unless othewise specified

6/14/03

019

Advanced Technology Laboratories

Date: *29-May-03*

CLIENT: Applied P & Ch Laboratories
Project: #3112, JPL
Lab Order: 062913

Lab ID: 062913-028
Client Sample ID: MW-11-3
Collection Date: 5/6/2003 9:50:00 AM
Matrix: WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
ICP-MS METALS						
		EPA 200.8				
RunID: ICP4_030527A	QC Batch: R27686			PrepDate:		Analyst: **NS**
Chromium	1.5	1.0		µg/L	1	5/27/2003
Lead	ND	1.0		µg/L	1	5/27/2003

Lab ID: 062913-029
Client Sample ID: MW-11-2
Collection Date: 5/6/2003 10:30:00 AM
Matrix: WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
ICP-MS METALS						
		EPA 200.8				
RunID: ICP4_030527A	QC Batch: R27686			PrepDate:		Analyst: **NS**
Chromium	ND	1.0		µg/L	1	5/27/2003
Lead	ND	1.0		µg/L	1	5/27/2003

Lab ID: 062913-030
Client Sample ID: MW-11-1
Collection Date: 5/6/2003 11:05:00 AM
Matrix: WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
ICP-MS METALS						
		EPA 200.8				
RunID: ICP4_030527A	QC Batch: R27686			PrepDate:		Analyst: **NS**
Chromium	1.3	1.0		µg/L	1	5/27/2003
Lead	ND	1.0		µg/L	1	5/27/2003

Qualifiers:

- ND - Not Detected at the Reporting Limit
- J - Analyte detected below quantitation limits
- B - Analyte detected in the associated Method Blank
- * - Value exceeds Maximum Contaminant Level
- S - Spike Recovery outside accepted recovery limits
- R - RPD outside accepted recovery limits
- E - Value above quantitation range
- H-Sample exceding holding time

Results are wet unless othewise specified

5/14/03

020

Advanced Technology Laboratories

Date: *29-May-03*

CLIENT: Applied P & Ch Laboratories
Project: #3112, JPL
Lab Order: 062913

Lab ID: 062913-031
Client Sample ID: EB-10-5/6/03
Collection Date: 5/6/2003 8:55:00 AM
Matrix: WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
ICP-MS METALS						
		EPA 200.8				
RunID: ICP4_030527A	QC Batch: R27686			PrepDate:		Analyst: **NS**
Chromium	2.1	1.0		µg/L	1	5/27/2003
Lead	ND	1.0		µg/L	1	5/27/2003

Lab ID: 062913-032
Client Sample ID: MW-12-5
Collection Date: 5/7/2003 7:50:00 AM
Matrix: WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
ICP-MS METALS						
		EPA 200.8				
RunID: ICP4_030527A	QC Batch: R27686			PrepDate:		Analyst: **NS**
Chromium	1.2	1.0		µg/L	1	5/27/2003
Lead	ND	1.0		µg/L	1	5/27/2003

Lab ID: 062913-033
Client Sample ID: MW-12-4
Collection Date: 5/7/2003 8:30:00 AM
Matrix: WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
ICP-MS METALS						
		EPA 200.8				
RunID: ICP4_030527A	QC Batch: R27686			PrepDate:		Analyst: **NS**
Chromium	1.3	1.0		µg/L	1	5/27/2003
Lead	ND	1.0		µg/L	1	5/27/2003

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
H-Sample exceding holding time

Results are wet unless othewise specified

5/19/03

021

Advanced Technology Laboratories

Date: *29-May-03*

CLIENT: Applied P & Ch Laboratories
Project: #3112, JPL
Lab Order: 062913

Lab ID: 062913-034
Client Sample ID: MW-12-3
Collection Date: 5/7/2003 9:40:00 AM
Matrix: WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
ICP-MS METALS						
		EPA 200.8				
RunID: ICP4_030527A	QC Batch: R27686			PrepDate:		Analyst: **NS**
Chromium	1.3	1.0		µg/L	1	5/27/2003
Lead	ND	1.0		µg/L	1	5/27/2003

Lab ID: 062913-035
Client Sample ID: MW-12-2
Collection Date: 5/7/2003 10:20:00 AM
Matrix: WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
ICP-MS METALS						
		EPA 200.8				
RunID: ICP4_030527A	QC Batch: R27686			PrepDate:		Analyst: **NS**
Chromium	2.9	1.0		µg/L	1	5/27/2003
Lead	ND	1.0		µg/L	1	5/27/2003

Lab ID: 062913-036
Client Sample ID: MW-12-1
Collection Date: 5/7/2003 11:00:00 AM
Matrix: WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
ICP-MS METALS						
		EPA 200.8				
RunID: ICP4_030527A	QC Batch: R27686			PrepDate:		Analyst: **NS**
Chromium	9.7	1.0		µg/L	1	5/27/2003
Lead	ND	1.0		µg/L	1	5/27/2003

Qualifiers:

- ND - Not Detected at the Reporting Limit
- J - Analyte detected below quantitation limits
- B - Analyte detected in the associated Method Blank
- * - Value exceeds Maximum Contaminant Level
- S - Spike Recovery outside accepted recovery limits
- R - RPD outside accepted recovery limits
- E - Value above quantitation range
- H-Sample exceding holding time

Results are wet unless othewise specified

5/14/03

022

Advanced Technology Laboratories 3275 Walnut Avenue Signal Hill, CA 90807 Tel: 562 989-4045 Fax: 562 989-4040

Advanced Technology Laboratories

Date: *29-May-03*

CLIENT: Applied P & Ch Laboratories
Project: #3112, JPL
Lab Order: 062913

Lab ID: 062913-037
Client Sample ID: EB-11-5/7/03
Collection Date: 5/7/2003 8:50:00 AM
Matrix: WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
ICP-MS METALS						
		EPA 200.8				
RunID: ICP4_030527A	QC Batch: R27686			PrepDate:		Analyst: **NS**
Chromium	ND	1.0		µg/L	1	5/27/2003
Lead	ND	1.0		µg/L	1	5/27/2003

Lab ID: 062913-038
Client Sample ID: DUPE-6-2Q03
Collection Date: 5/7/2003
Matrix: WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
ICP-MS METALS						
		EPA 200.8				
RunID: ICP4_030527A	QC Batch: R27686			PrepDate:		Analyst: **NS**
Chromium	1.3	1.0		µg/L	1	5/27/2003
Lead	ND	1.0		µg/L	1	5/27/2003

Lab ID: 062913-039
Client Sample ID: MW-24-4
Collection Date: 4/29/2003 9:35:00 AM
Matrix: WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
ICP-MS METALS						
		EPA 200.8				
RunID: ICP4_030527A	QC Batch: R27686			PrepDate:		Analyst: **NS**
Chromium	ND	1.0		µg/L	1	5/27/2003
Lead	ND	1.0		µg/L	1	5/27/2003

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
H-Sample exceding holding time

Results are wet unless othewise specified

5/14/03

023

Advanced Technology Laboratories
3275 Walnut Avenue Signal Hill, CA 90807 Tel: 562 989-4045 Fax: 562 989-4040

LDC #: 10531B4 **VALIDATION COMPLETENESS WORKSHEET** Date: 7-9-03

SDG #: 03-3112/062913 Level III Page: 1 of 1

Laboratory: Applied P & Ch Laboratory/Advanced Technology Laboratories Reviewer: MG

2nd Reviewer: MM

METHOD: Chromium & Lead (EPA Method 200.8)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 4-28-03 through 5-7-03
II.	Calibration	A	
III.	Blanks	SW	
IV.	ICP Interference Check Sample (ICS) Analysis	N	Not required
V.	Matrix Spike Analysis	A	
VI.	Duplicate Sample Analysis	A	
VII.	Laboratory Control Samples (LCS)	A	LCS
VIII.	Internal Standard (ICP-MS)	N	Not reviewed
IX.	Furnace Atomic Absorption QC	N	Not utilized
X.	ICP Serial Dilution	N	Not required
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	SW	D=9+12, D=22+25, D=34+38
XIV.	Field Blanks	SW	EB= 6*, 11*, 18*, 24*, 31, 37*

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; * = N.D.

Validated Samples:

1	1	MW-17-5	W	11	1	EB-7-4/29/03	W	21	2	MW-3-3	W	31	2	EB-10-5/6/03	W	41	1	MW-17-2MSD	W
2	1	MW-17-4		12	1	DUPE-4-2Q03		22	2	MW-3-2		32	2	MW-12-5		42	1	MW-17-2DUP	
3	1	MW-17-3		13	1	MW-23-5		23	2	MW-3-1		33	2	MW-12-4		43	1	MW-23-5DUP	
4	1	MW-17-2		14	1	MW-23-4		24	2	EB-9-5/1/03		34	2	MW-12-3		44	2	MW-11-3MS	
5	1	MW-17-1		15	1	MW-23-3		25	2	DUPE-5-2Q03		35	2	MW-12-2		45	2	MW-11-3MSD	
6	1	EB-6-4/28/03		16	1	MW-23-2		26	2	MW-11-5		36	2	MW-12-1		46	2	MW-11-3DUP	
7	1	MW-24-5		17	1	MW-23-1		27	2	MW-11-4		37	2	EB-11-5/7/03		47	2	MW-24-4DUP	
8	1	MW-24-3		18	1	EB-8-4/30/03		28	2	MW-11-3		38	2	DUPE-6-2Q03		48	1	PBW1	
9	1	MW-24-2		19	1	MW-3-5		29	2	MW-11-2		39	2	MW-24-4		49	2	PBW2	
10	1	MW-24-1		20	1	MW-3-4		30	2	MW-11-1		40	1	MW-17-2MS		50			

Notes:

LDC #: 105313H
SDG #: 03-3112/062913

VALIDATION FINDINGS WORKSHEET
Sample Specific Element Reference

Reviewer: MG
2nd reviewer: MM

All circled elements are applicable to each sample.

Sample ID	Matrix	Target Analyte List (TAL)
1→39	W	Al, Sb, As, Ba, Be, Cd, Ca, (Cr) Co, Cu, Fe, (Pb) Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN, ___ ___
QC 40→47	↓	Al, Sb, As, Ba, Be, Cd, Ca, (Cr) Co, Cu, Fe, (Pb) Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN, ___ ___
Analysis Method		
ICP		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN, ___ ___
ICP Trace		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN, ___ ___
ICP-MS	W	Al, Sb, As, Ba, Be, Cd, Ca, (Cr) Co, Cu, Fe, (Pb) Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN, ___ ___
GFAA		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN, ___

Comments: Mercury by CVAA if performed

LDC #: 105314

SDG #: 03-3112/062913

METHOD: Trace Metals (EPA SW 846 Method 6010/7000) Soil preparation factor applied: NA

Sample Concentration units, unless otherwise noted: ug/L Associated Samples: 1 → 20 (No findings)

VALIDATION FINDINGS WORKSHEET
PB/ICB/CCB QUALIFIED SAMPLES

Reviewer: MG

2nd Reviewer: MG

Analyte	Maximum PB[a] (mg/Kg)	Maximum PB[a] (ug/L)	Maximum ICB/CCB[a] (ug/L)	Blank Action Limit	Sample Identification										
Al															Al
Sb															Sb
As															As
Ba															Ba
Be															Be
Cd															Cd
Ca															Ca
Cr		0.128	0.279	1.395											Cr
Co															Co
Cu															Cu
Fe															Fe
Pb															Pb
Mg															Mg
Mn															Mn
Hg															Hg
Ni															Ni
K															K
Se															Se
Ag															Ag
Na															Na
Tl															Tl
V															V
Zn															Zn
B															B
Mo															Mo
Sr															Sr

Samples with analyte concentrations within five times the associated ICB, CCB or PB concentration are listed above with the identifications from the Validation Completeness Worksheet. These sample results were qualified as not detected, "U".

Note : a - The listed analyte concentration is the highest ICB, CCB, or PB detected in the analysis of each element.

LDC #: 10531B4
SDG #: 03-3112/062913

VALIDATION FINDINGS WORKSHEET
PB/ICB/CCB QUALIFIED SAMPLES

Reviewer: MG
2nd Reviewer: MM

METHOD: Trace Metals (EPA SW 846 Method 6010/7000) Soil preparation factor applied: NA
Sample Concentration units, unless otherwise noted: µg/L Associated Samples: 21→39 (No findings)

Analyte	Maximum PB* (mg/Kg)	Maximum PB* (ug/L)	Maximum ICB/CCB* (ug/L)	Blank Action Limit	Sample Identification										
Al															Al
Sb															Sb
As															As
Ba															Ba
Be															Be
Cd															Cd
Ca															Ca
Cr		0.138	0.127	0.690											Cr
Co															Co
Cu															Cu
Fe															Fe
Pb															Pb
Mg															Mg
Mn															Mn
Hg															Hg
Ni															Ni
K															K
Se															Se
Ag															Ag
Na															Na
Tl															Tl
V															V
Zn															Zn
B															B
Mo															Mo
Sr															Sr

Samples with analyte concentrations within five times the associated ICB, CCB or PB concentration are listed above with the identifications from the Validation Completeness Worksheet. These sample results were qualified as not detected, "U".
Note : a - The listed analyte concentration is the highest ICB, CCB, or PB detected in the analysis of each element.

LDC #: 105318H
SDG #: 03-3112/062913

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: MG
2nd reviewer: MM

METHOD: Inorganics, Method 200.8

(Y) N N/A Were field duplicate pairs identified in this SDG?
(Y) N N/A Were target analytes detected in the field duplicate pairs?

Analyte	Concentration (µg/L)		RPD (Limits)	Qualifier
	9	12		
Cr	2.3	2.0	14	

Analyte	Concentration (µg/L)		RPD (Limits)	Qualifier
	22	25		
Cr	1.6	1.9	17	

Analyte	Concentration (µg/L)		RPD (Limits)	Qualifier
	34	38		
Cr	1.3	1.3	0	

Analyte	Concentration ( )		RPD (Limits)	Qualifier

LDC #: 105318H
SDG #: 03-3112/062913

VALIDATION FINDINGS WORKSHEET
Field Blanks

Reviewer: MG
2nd reviewer: MG

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

(Y) N N/A Were field blanks identified in this SDG?
(Y) N N/A Were target analytes detected in the field blanks?

Sample: 31 Field Blank / Trip Blank / Rinsate / (Other) EB (circle one)

Analyte	Concentration Units (µg/L)
Cr	2.1

Sample: _____ Field Blank / Trip Blank / Rinsate / Other_____ (circle one)

Analyte	Concentration Units ( )