Columbia Analytical Services, Inc.
Sample Acceptance Check Form

Client: Battelle Work order: P0904014

Project: JPL-GW-4Q09

Sample(s) received on: 11/20/09 Date opened: 11/20/09 by: MZAMORA

Note: This form is used for all samples received by CAS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Container(s) **supplied by CAS**?	☒	☐	☐
3	Did **sample containers** arrive in good condition?	☒	☐	☐
4	Was a **chain-of-custody** provided?	☒	☐	☐
5	Was the **chain-of-custody** properly completed?	☒	☐	☐
6	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
7	Was **sample volume** received adequate for analysis?	☒	☐	☐
8	Are samples within specified holding times?	☒	☐	☐
9	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☒	☐	☐
	Cooler Temperature _____ °C Blank Temperature 4 °C			
10	Was a **trip blank** received?	☐	☐	☒
	Trip blank supplied by CAS: _____			
11	Were **custody seals** on outside of cooler/Box?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
	Were custody seals on outside of sample container?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
12	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☒	☐	☐
	Is there a client indication that the submitted samples are **pH** preserved?	☐	☐	☒
	Were **VOA vials** checked for presence/absence of air bubbles?	☐	☐	☒
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☐	☐	☒
13	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
	Do they contain moisture?	☐	☐	☒
14	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P0904014-001.01	125mL Plastic NP					

Explain any discrepancies: (include lab sample ID numbers): _____

*Required pH: Phenols/COD/NH3/TOC/TOX/NO3+NO2/TKN/T.PHOS, H2SO4 (pH<2); Metals, HNO3 (pH<2); CN (NaOH or NaOH/Asc Acid) (pH>12); Diss. Sulfide, NaOH (pH>12); T. Sulfide, NaOH/ZnAc (pH>12) RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

DIVIDER SHEET

ANALYTICAL DATA FOR

Hexavalent Chromium

ANALYSIS

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client : Battelle
Project Name : JPL-GW-4Q09
Project Number : NA
Sample Matrix : WATER

Service Request : P0904014
Date Collected : 11/20/09
Date Received : 11/20/09

Chromium, Hexavalent

Prep Method : None
Analysis Method : 7196A
Test Notes :

Units : mg/L (ppm)
Basis : NA

Sample Name	Lab Code	PQL	MDL	Dilution Factor	Date Extracted	Date/Time Analyzed	Result	Result Notes
MW-10	P0904014-001	0.010	0.003	1	NA	11/20/09 13:25	ND	
Method Blank	P0904014-MB	0.010	0.003	1	NA	11/20/09 13:25	ND	

Approved By Karen Ryfa Date : 11/20/09

Report By:SAnderson

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Battelle	**Service Request:**	P0904014
Project:	JPL-GW-4Q09	**Date Analyzed:**	11/20/09

Title: Initial and Continuing Calibration Blank (ICB and CCB) Summary
Analyte: Chromium, Hexavalent
Method: 7196A
Units: mg/L (ppm)

Sample Name	PQL	MDL	Result
ICB	0.010	0.003	ND
CCB1	0.010	0.003	ND

Approved By: Karen Ryan Date: 11/20/09

ICCBMDL/120594

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle
Project: JPL-GW-4Q09

Service Request: P0904014
Date Analyzed: 11/20/09

Title: Initial and Continuing Calibration Verification (ICV and CCV) Summary
Analyte: Chromium, Hexavalent
Method: 7196A
Units: mg/L (ppm)

Sample Name	True Value	Result	Percent Recovery	Acceptance Criteria
ICV	0.0579	0.0559	97	90-110
CCV1	0.0579	0.0559	97	90-110

Approved By: Karen Ryan Date: 11/20/09

CCV1A/120594

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client :	Battelle	**Service Request :**	P0904014
Project Name :	JPL-GW-4Q09	**Date Collected :**	NA
Project Number :	NA	**Date Received :**	NA
Sample Matrix :	WATER	**Date Extracted :**	NA
		Date Analyzed :	11/20/09

Laboratory Control Sample Summary
Inorganic Parameters

Sample Name :	Laboratory Control Sample	Units :	mg/L (ppm)
Lab Code :	P0904014-LCS	Basis :	NA
Test Notes :			

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Chromium, Hexavalent	None	7196A	0.0400	0.0395	99	86-114	

Approved By Karen Ryan Date : 11/20/09

Report By:SAnderson

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client : Battelle
Project Name : JPL-GW-4Q09
Project Number : NA
Sample Matrix : WATER

Service Request : P0904014
Date Collected : 11/20/09
Date Received : 11/20/09
Date Extracted : NA
Date Analyzed : 11/20/09

Matrix Spike/Duplicate Matrix Spike Summary

Sample Name : MW-10
Lab Code : P0904014-001MS P0904014-001DMS
Test Notes :

Units : mg/L (ppm)
Basis : NA

Analyte	Prep Method	Analysis Method	PQL	Spike Level MS	Spike Level DMS	Sample Result	Spike Result MS	Spike Result DMS	Spike Recovery MS	Spike Recovery DMS	CAS Acceptance Limits	Relative Percent Difference	Result Notes
Chromium, Hexavalent	None	7196A	0.010	0.0500	0.0500	ND	0.0498	0.0498	100	100	80-120	<1	

Approved By Karen Ryan Date : 11/20/09

Report By:SAnderson

CAS SR #P0904023

Table of Contents

Columbia Analytical Services™ 2655 Park Center Drive, Suite A | Simi Valley, CA 93065 | 805.526.7161 | 805.526.7270 fax | www.caslab.com

LABORATORY REPORT

November 25, 2009

David Conner
Battelle
3990 Old Town Ave., Suite C-205
San Diego, CA 92110

RE: JPL GW Mon 4Q09 / G486090

Dear David:

Enclosed are the results of the samples submitted to our laboratory on November 23, 2009. For your reference, these analyses have been assigned our service request number P0904023.

All analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.caslab.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein. Your report contains 26 pages.

Columbia Analytical Services, Inc. is certified by the California Department of Health Services, NELAP Laboratory Certificate No. 02115CA; Arizona Department of Health Services, Certificate No. AZ0694; Florida Department of Health, NELAP Certification E871020; New Jersey Department of Environmental Protection, NELAP Laboratory Certification ID #CA009; New York State Department of Health, NELAP NY Lab ID No: 11221; Oregon Environmental Laboratory Accreditation Program, NELAP ID: CA20007; The American Industrial Hygiene Association, Laboratory #101661; Department of the Navy (NFESC); Pennsylvania Registration No. 68-03307; TX Commission of Environmental Quality, NELAP ID T104704413-09-TX; Minnesota Department of Health, Certificate No. 11495AA. Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact me for information corresponding to a particular certification.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

Columbia Analytical Services, Inc.

Sue Anderson
Project Manager

Client: Battelle
Project: JPL GW Mon 4Q09 / G486090

CAS Project No: P0904023

CASE NARRATIVE

The samples were received intact under chain of custody on November 23, 2009 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Hexavalent Chromium by EPA 7196A

No anomalies were encountered during this analysis.

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for utilization of less than the complete report.

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
P0904023-001	MW-14-5	11/23/09	08:09
P0904023-002	MW-14-4	11/23/09	08:47
P0904023-003	MW-14-3	11/23/09	09:16
P0904023-004	MW-14-2	11/23/09	09:46
P0904023-005	MW-14-1	11/23/09	10:13
P0904023-006	EB-06-11/23/09	11/23/09	10:00

Acronyms

CA LUFT	California DHS LUFT Method
ASTM	American Society for Testing and Materials
BTEX	Benzene/Toluene/Ethylbenzene/Xylenes
CAS Number	Chemical Abstract Service Registry Number
CFC	Chlorofluorocarbon
CRDL	Contract Required Detection Limit
DLCS	Duplicate Laboratory Control Sample
DMS	Duplicate Matrix Spike
DOH or DHS	Department of Health Services
EPA	U.S. Environmental Protection Agency
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
IC	Ion Chromatography
ICB	Initial Calibration Blank
ICV	Initial Calibration Verification
LCS	Laboratory Control Sample
LUFT	Leaking Underground Fuel Tank
M	Modified Method
MDL	Method Detection Limit
MRL	Method Reporting Limit
MS	Matrix Spike
MTBE	Methyl *tert*-Butyl Ether
NA	Not Applicable
NC	Not Calculated
ND	None Detected at or above the Method Reporting/Detection Limit (MRL/MDL)
NTU	Nephelometric Turbidity Units
ppb	Parts Per Billion
ppm	Parts Per Million
PQL	Practical Quantitation Limit
QA/QC	Quality Assurance/Quality Control
RCRA	Resource Conservation and Recovery Act
RPD	Relative Percent Difference
SIM	Selected Ion Monitoring
SM	*Standard Methods for the Examination of Water and Wastewater*, 19th Ed., 1995.
SW	*Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*, SW-846, Third Edition, 1986 and as amended by Updates I, II, IIA, and IIB.
TDS	Total Dissolved Solids
TPH	Total Petroleum Hydrocarbons
TSS	Total Suspended Solids
TTLC	Total Threshold Limit Concentration
VOA	Volatile Organic Analyte(s)
VOC	Volatile Organic Compound(s)

Qualifiers

U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
J	The result is an estimated concentration that is less than the MRL (PQL), but greater than or equal to the MDL.
B	Analyte detected in the method blank above MRL (PQL).
E	Estimated; result based on response which exceeded the instrument calibration range.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
D	The reported result is from a dilution.
X	See case narrative.

Water & Soil - Chain of Custody Record & Analytical Service Request

Page 1 of 1

Columbia Analytical Services INC.
An Employee - Owned Company

2655 Park Center Drive, Suite A
Simi Valley, California 93065
Phone (805) 526-7161
Fax (805) 526-7270

Requested Turnaround Time in Business Days (Surcharges) please circle
1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10 Day - Standard

CAS Project No. 9090423

CAS Contact:

Company Name & Address (Reporting Information)	Project Name
BATTELLE 3990 OLD TOWN AVE., C-205 SAN DIEGO CA 92110	SPL GW MON 4Q09
Project Manager	**Project Number**
DAVID CANNON	G486090
Phone / **Fax**	**P.O. # / Billing Information**
(619) 726-7311	214319/BATTELLE ATTN: GERALD TOMPKINS 505 KING AVE. COLUMBUS OH 43201
Email Address for Result Reporting	**Sampler (Print & Sign)**

Analysis Method and/or Analytes

Preservative Code

Client Sample ID	Laboratory ID Number	Date Collected	Time Collected	Matrix	Number of Containers	Volatile Organics GC/MS 624 ☐ 8260B ☐ Oxygenates ☐ TPH Gas ☐	TPH Gas 8015B ☐ BTEX 8021B ☐ MTBE 8021B ☐	TPH Diesel 8015B ☐ (Subcontracted)	TPH Diesel Low Level 8015B ☐ (Subcontracted)	TPH FC ☐ 8015M (Subcontracted)	Semi-Volatile Organics GC/MS 625 ☐ 8270C ☐ (Subcontracted)	0 Cr VI (7196)											Remarks
MW-14-5		11/23/09	0809	W	1							X											
MW-14-4			0847		2							X											MS/MSD
MW-14-3			0916		1							X											
MW-14-2			0946		1							X											
MW-14-1			1013		1							X											LEVEL IV QC
EB-06-11/23/09		11/23/09	1000		1							X											EQUIPMENT BLANK

Preservative Key

0	None
1	HCL
2	HNO3
3	H2SO4
4	NaOH
5	Zn Acetate
6	Asc Acid
7	Other

Report Tier Levels - please select

Tier I - (Results/Default if not specified) ____
Tier II - (Results + QC) ____
Tier III - (Data Validation Package) 10% Surcharge ____
Tier V - (client specified) ____
MRL required Yes / No
MDL / PQL / J required Yes / No
EDD required Yes / No
Type: ____

Project Requirements (MRLs, QAPP)

Relinquished by: (Signature)		Date: 11/23/09	Time: 1200	Received by: (Signature)		Date: 11/23/09	Time: 1209
Relinquished by: (Signature)		Date: 11/23/09	Time: 1257	Received by: (Signature)		Date: 11/23/09	Time: 1257
Relinquished by: (Signature)		Date: 11/23/09	Time: 1250	Received by: (Signature)		Date: 11/23/09	Time: 1250

Cooler / Blank / Ice / No Ice
Temperature 3.0 °C

Columbia Analytical Services, Inc.
Chain of Custody Report

Client: Battelle
Project: JPL GW Mon 4Q09/G486090

Service Request: P0904023

Bottle ID	Tests	Date	Time	Sample Location / User	Disposed On
P0904023-001.01					
	7196A				
		11/23/09	1329	SMO / MZAMORA	
		11/23/09	1330	P-37 / MZAMORA	
		11/23/09	1343	In Lab / SANDERSON	
		11/23/09	1718	P-37 / SANDERSON	
P0904023-002.01					
	7196A				
		11/23/09	1329	SMO / MZAMORA	
		11/23/09	1330	P-37 / MZAMORA	
		11/23/09	1343	In Lab / SANDERSON	
		11/23/09	1718	P-37 / SANDERSON	
P0904023-002.02					
		11/23/09	1329	SMO / MZAMORA	
		11/23/09	1330	P-37 / MZAMORA	
		11/23/09	1343	In Lab / SANDERSON	
		11/23/09	1718	P-37 / SANDERSON	
P0904023-003.01					
	7196A				
		11/23/09	1329	SMO / MZAMORA	
		11/23/09	1330	P-37 / MZAMORA	
		11/23/09	1343	In Lab / SANDERSON	
		11/23/09	1718	P-37 / SANDERSON	
P0904023-004.01					
	7196A				
		11/23/09	1329	SMO / MZAMORA	
		11/23/09	1330	P-37 / MZAMORA	
		11/23/09	1343	In Lab / SANDERSON	
		11/23/09	1718	P-37 / SANDERSON	
P0904023-005.01					
	7196A				
		11/23/09	1329	SMO / MZAMORA	
		11/23/09	1330	P-37 / MZAMORA	
		11/23/09	1343	In Lab / SANDERSON	
		11/23/09	1718	P-37 / SANDERSON	
P0904023-006.01					
	7196A				
		11/23/09	1329	SMO / MZAMORA	
		11/23/09	1330	P-37 / MZAMORA	
		11/23/09	1343	In Lab / SANDERSON	
		11/23/09	1718	P-37 / SANDERSON	

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Columbia Analytical Services, Inc.
Sample Acceptance Check Form

Client: Battelle Work order: P0904023

Project: JPL GW Mon 4Q09 / G486090

Sample(s) received on: 11/23/09 Date opened: 11/23/09 by: MZAMORA

Note: This form is used for all samples received by CAS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Container(s) **supplied by CAS**?	☒	☐	☐
3	Did **sample containers** arrive in good condition?	☒	☐	☐
4	Was a **chain-of-custody** provided?	☒	☐	☐
5	Was the **chain-of-custody** properly completed?	☒	☐	☐
6	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
7	Was **sample volume** received adequate for analysis?	☒	☐	☐
8	Are samples within specified holding times?	☒	☐	☐
9	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☒	☐	☐
	Cooler Temperature _____ °C Blank Temperature 3 °C			
10	Was a **trip blank** received?	☐	☐	☒
	Trip blank supplied by CAS: _____			
11	Were **custody seals** on outside of cooler/Box?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
	Were custody seals on outside of sample container?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
12	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☒	☐	☐
	Is there a client indication that the submitted samples are **pH** preserved?	☐	☐	☒
	Were **VOA vials** checked for presence/absence of air bubbles?	☐	☐	☒
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☐	☐	☒
13	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
	Do they contain moisture?	☐	☐	☒
14	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P0904023-001.01	125mL Plastic NP					
P0904023-002.01	125mL Plastic NP					
P0904023-002.02	125mL Plastic NP					
P0904023-003.01	125mL Plastic NP					
P0904023-004.01	125mL Plastic NP					
P0904023-005.01	125mL Plastic NP					

Explain any discrepancies: (include lab sample ID numbers):

*Required pH: Phenols/COD/NH3/TOC/TOX/NO3+NO2/TKN/T.PHOS, H2SO4 (pH<2); Metals, HNO3 (pH<2); CN (NaOH or NaOH/Asc Acid) (pH>12); Diss. Sulfide, NaOH (pH>12); T. Sulfide, NaOH/ZnAc (pH>12) RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

Columbia Analytical Services, Inc.
Sample Acceptance Check Form

Client: Battelle Work order: P0904023

Project: JPL GW Mon 4Q09 / G486090

Sample(s) received on: 11/23/09 Date opened: 11/23/09 by: MZAMORA

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P0904023-006.01	125mL Plastic NP					

Explain any discrepancies: (include lab sample ID numbers):

*Required pH: Phenols/COD/NH3/TOC/TOX/NO3+NO2/TKN/T.PHOS, H2SO4 (pH<2); Metals, HNO3 (pH<2); CN (NaOH or NaOH/Asc Acid) (pH>12);
Diss. Sulfide, NaOH (pH>12); T. Sulfide, NaOH/ZnAc (pH>12) RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

DIVIDER SHEET

ANALYTICAL DATA FOR

Hexavalent Chromium

ANALYSIS

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client : Battelle
Project Name : JPL GW Mon 4Q09
Project Number : G486090
Sample Matrix : WATER

Service Request : P0904023
Date Collected : 11/23/09
Date Received : 11/23/09

Chromium, Hexavalent

Prep Method : None
Analysis Method : 7196A
Test Notes :

Units : mg/L (ppm)
Basis : NA

Sample Name	Lab Code	PQL	MDL	Dilution Factor	Date Extracted	Date/Time Analyzed	Result	Result Notes
MW-14-5	P0904023-001	0.010	0.003	1	NA	11/23/09 14:30	ND	
MW-14-4	P0904023-002	0.010	0.003	1	NA	11/23/09 14:30	ND	
MW-14-3	P0904023-003	0.010	0.003	1	NA	11/23/09 14:30	ND	
MW-14-2	P0904023-004	0.010	0.003	1	NA	11/23/09 14:30	ND	
MW-14-1	P0904023-005	0.010	0.003	1	NA	11/23/09 14:30	ND	
EB-06-11/23/09	P0904023-006	0.010	0.003	1	NA	11/23/09 14:30	ND	
Method Blank	P0904023-MB	0.010	0.003	1	NA	11/23/09 14:30	ND	

Approved By Karen Ryan Date : 11/24/09

Report By:SAnderson

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle
Project: JPL GW Mon 4Q09 / G486090

Service Request: P0904023
Date Analyzed: 11/23/09

Title: Initial and Continuing Calibration Blank (ICB and CCB) Summary
Analyte: Chromium, Hexavalent
Method: 7196A
Units: mg/L (ppm)

Sample Name	PQL	MDL	Result
ICB	0.010	0.003	ND
CCB1	0.010	0.003	ND
CCB2	0.010	0.003	ND

Approved By: Karen Ryan Date: 11/24/09

ICCBMDL/120594

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle
Project: JPL GW Mon 4Q09 / G486090

Service Request: P0904023
Date Analyzed: 11/23/09

Title: Initial and Continuing Calibration Verification (ICV and CCV) Summary
Analyte: Chromium, Hexavalent
Method: 7196A
Units: mg/L (ppm)

Sample Name	True Value	Result	Percent Recovery	Acceptance Criteria
ICV	0.0579	0.0572	99	90-110
CCV1	0.0579	0.0572	99	90-110
CCV2	0.0579	0.0572	99	90-110

Approved By: Karen Ryan Date: 11/24/09

CCV1A/120594

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client :	Battelle	**Service Request :**	P0904023
Project Name :	JPL GW Mon 4Q09	**Date Collected :**	NA
Project Number :	G486090	**Date Received :**	NA
Sample Matrix :	WATER	**Date Extracted :**	NA
		Date Analyzed :	11/23/09

Laboratory Control Sample Summary
Inorganic Parameters

Sample Name :	Laboratory Control Sample	Units :	mg/L (ppm)
Lab Code :	P0904023-LCS	Basis :	NA
Test Notes :			

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Chromium, Hexavalent	None	7196A	0.0400	0.0374	94	86-114	

Approved By Karen Rya Date : 11/24/09

Report By:SAnderson

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client :	Battelle	**Service Request :**	P0904023
Project Name :	JPL GW Mon 4Q09	**Date Collected :**	11/23/09
Project Number :	G486090	**Date Received :**	11/23/09
Sample Matrix :	WATER	**Date Extracted :**	NA
		Date Analyzed :	11/23/09

Matrix Spike/Duplicate Matrix Spike Summary

Sample Name : MW-14-4
Lab Code : P0904023-002MS P0904023-002DMS
Test Notes :

Units : mg/L (ppm)
Basis : NA

Analyte	Prep Method	Analysis Method	PQL	Spike Level MS	Spike Level DMS	Sample Result	Spike Result MS	Spike Result DMS	Spike Recovery MS	Spike Recovery DMS	CAS Acceptance Limits	Relative Percent Difference	Result Notes
Chromium, Hexavalent	None	7196A	0.010	0.0500	0.0500	ND	0.0499	0.0499	100	100	80-120	<1	

Approved By Karen Ryan Date : 11/24/09

Report By:SAnderson

Columbia Analytical Services, Inc. 2655 Park Center Drive, Suite A | Simi Valley, CA 93065 | 805.526.7161 | 805.526.7270 fax | www.caslab.com

CAS SR #P0904048

Table of Contents

Columbia Analytical Services, Inc. 2655 Park Center Drive, Suite A | Simi Valley, CA 93065 | 805.526.7161 | 805.526.7270 fax | www.caslab.com

LABORATORY REPORT

November 25, 2009

David Conner
Battelle
3990 Old Town Ave., Suite C-205
San Diego, CA 92110

RE: JPL GW Mon 4Q09 / G486090

Dear David:

Enclosed are the results of the samples submitted to our laboratory on November 24, 2009. For your reference, these analyses have been assigned our service request number P0904048.

All analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.caslab.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein. Your report contains 26 pages.

Columbia Analytical Services, Inc. is certified by the California Department of Health Services, NELAP Laboratory Certificate No. 02115CA; Arizona Department of Health Services, Certificate No. AZ0694; Florida Department of Health, NELAP Certification E871020; New Jersey Department of Environmental Protection, NELAP Laboratory Certification ID #CA009; New York State Department of Health, NELAP NY Lab ID No: 11221; Oregon Environmental Laboratory Accreditation Program, NELAP ID: CA20007; The American Industrial Hygiene Association, Laboratory #101661; Department of the Navy (NFESC); Pennsylvania Registration No. 68-03307; TX Commission of Environmental Quality, NELAP ID T104704413-09-TX; Minnesota Department of Health, Certificate No. 11495AA. Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact me for information corresponding to a particular certification.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

Columbia Analytical Services, Inc.

Sue Anderson
Project Manager

Client: Battelle CAS Project No: P0904048
Project: JPL GW Mon 4Q09 / G486090

CASE NARRATIVE

The samples were received intact under chain of custody on November 24, 2009 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Hexavalent Chromium by EPA 7196A

No anomalies were encountered during this analysis.

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for utilization of less than the complete report.

Client: Battelle
Project: JPL GW Mon 4Q09/G486090

Service Request: P0904048

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
P0904048-001	MW-22-5	11/24/09	08:10
P0904048-002	MW-22-4	11/24/09	08:38
P0904048-003	MW-22-3	11/24/09	09:00
P0904048-004	MW-22-2	11/24/09	09:22
P0904048-005	MW-22-1	11/24/09	09:47
P0904048-006	DUPE-04-4Q09	11/24/09	00:00
P0904048-007	EB-07-11/24/09	11/24/09	09:37

Acronyms

CA LUFT	California DHS LUFT Method
ASTM	American Society for Testing and Materials
BTEX	Benzene/Toluene/Ethylbenzene/Xylenes
CAS Number	Chemical Abstract Service Registry Number
CFC	Chlorofluorocarbon
CRDL	Contract Required Detection Limit
DLCS	Duplicate Laboratory Control Sample
DMS	Duplicate Matrix Spike
DOH or DHS	Department of Health Services
EPA	U.S. Environmental Protection Agency
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
IC	Ion Chromatography
ICB	Initial Calibration Blank
ICV	Initial Calibration Verification
LCS	Laboratory Control Sample
LUFT	Leaking Underground Fuel Tank
M	Modified Method
MDL	Method Detection Limit
MRL	Method Reporting Limit
MS	Matrix Spike
MTBE	Methyl *tert*-Butyl Ether
NA	Not Applicable
NC	Not Calculated
ND	None Detected at or above the Method Reporting/Detection Limit (MRL/MDL)
NTU	Nephelometric Turbidity Units
ppb	Parts Per Billion
ppm	Parts Per Million
PQL	Practical Quantitation Limit
QA/QC	Quality Assurance/Quality Control
RCRA	Resource Conservation and Recovery Act
RPD	Relative Percent Difference
SIM	Selected Ion Monitoring
SM	*Standard Methods for the Examination of Water and Wastewater*, 19th Ed., 1995.
SW	*Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*, SW-846, Third Edition, 1986 and as amended by Updates I, II, IIA, and IIB.
TDS	Total Dissolved Solids
TPH	Total Petroleum Hydrocarbons
TSS	Total Suspended Solids
TTLC	Total Threshold Limit Concentration
VOA	Volatile Organic Analyte(s)
VOC	Volatile Organic Compound(s)

Qualifiers

U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
J	The result is an estimated concentration that is less than the MRL (PQL), but greater than or equal to the MDL.
B	Analyte detected in the method blank above MRL (PQL).
E	Estimated; result based on response which exceeded the instrument calibration range.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
D	The reported result is from a dilution.
X	See case narrative.

Water & Soil - Chain of Custody Record & Analytical Service Request

Page 1 of 1

Columbia Analytical Services INC.
An Employee - Owned Company

2655 Park Center Drive, Suite A
Simi Valley, California 93065
Phone (805) 526-7161
Fax (805) 526-7270

Requested Turnaround Time in Business Days (Surcharges) please circle
1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10 Day - Standard

CAS Project No: 109 04048

CAS Contact:

Company Name & Address (Reporting Information)
BATTELLE
3990 OLD TOWN AVE., C-205
SAN DIEGO CA 92110

Project Name: JPL GW MON 4Q09

Project Number: G486090

Project Manager: DAVID CONNER

P.O. # / Billing Information: 214319 / BATTELLE ATTN: GERALD TOMPKINS 505 KING AVE. COLUMBUS, OH 43201

Phone: (619) 726-7311

Fax:

Email Address for Result Reporting:

Sampler (Print & Sign):

Analysis Method and/or Analytes

Preservative Code

Client Sample ID	Laboratory ID Number	Date Collected	Time Collected	Matrix	Number of Containers	Volatile Organics GC/MS 624 ☐ 8260B ☐ Oxygenates ☐ TPH Gas ☐	TPH Gas 8015B ☐ BTEX 8021B ☐ MTBE 8021B ☐	TPH Diesel 8015B ☐ (Subcontracted) TPH Diesel Low Level 8015B ☐ (Subcontracted)	TPH FC ☐ 8015M (Subcontracted)	Semi-Volatile Organics GC/MS 625 ☐ 8270C ☐ (Subcontracted)	0 Cr VI (7196)	Remarks
MW-22-5	1	11/24/09	0810	W	1						X	
MW-22-4	2		0838		1						X	
MW-22-3	3		0900		1						X	
MW-22-2	4		0922		1						X	
MW-22-1	5		0947		1						X	
DUPE-04-4Q09	6	11/24/09	"		1						X	DUPLICATE
EB-07-11/24/09	7	11/24/09	0937		1						X	EQUIPMENT BLANK

Preservative Key

0	None
1	HCL
2	HNO3
3	H2SO4
4	NaOH
5	Zn Acetate
6	Asc Acid
7	Other

Report Tier Levels - please select

Tier I - (Results/Default if not specified) ____
Tier II - (Results + QC) ____
Tier III - (Data Validation Package) 10% Surcharge ____
Tier V - (client specified) ____

MRL required Yes / No
MDL / PQL / J required Yes / No

EDD required Yes / No
Type: _____

Project Requirements (MRLs, QAPP)

	Date	Time		Date	Time
Relinquished by: (Signature)	11/24/09	1130	Received by: (Signature)	11/24/09	1130
Relinquished by: (Signature)	11/24/09	1134	Received by: (Signature)	11/24/09	1134
Relinquished by: (Signature)	11/24/09	1221	Received by: (Signature)	11/24/09	1221

Cooler / Blank / Ice / No Ice

Temperature 2 °C

Columbia Analytical Services, Inc.
Chain of Custody Report

Client: Battelle
Project: JPL GW Mon 4Q09/G486090

Service Request: P0904048

Bottle ID	Tests	Date	Time	Sample Location / User	Disposed On
P0904048-001.01					
	7196A				
		11/24/09	1251	SMO / SSTAPLES	
		11/24/09	1251	P-37 / SSTAPLES	
		11/24/09	1259	P-37 / SSTAPLES	
		11/24/09	1312	In Lab / SANDERSON	
P0904048-002.01					
	7196A				
		11/24/09	1251	SMO / SSTAPLES	
		11/24/09	1251	P-37 / SSTAPLES	
		11/24/09	1259	P-37 / SSTAPLES	
		11/24/09	1312	In Lab / SANDERSON	
P0904048-003.01					
	7196A				
		11/24/09	1251	SMO / SSTAPLES	
		11/24/09	1251	P-37 / SSTAPLES	
		11/24/09	1259	P-37 / SSTAPLES	
		11/24/09	1312	In Lab / SANDERSON	
P0904048-004.01					
	7196A				
		11/24/09	1251	SMO / SSTAPLES	
		11/24/09	1251	P-37 / SSTAPLES	
		11/24/09	1259	P-37 / SSTAPLES	
		11/24/09	1312	In Lab / SANDERSON	
P0904048-005.01					
	7196A				
		11/24/09	1251	SMO / SSTAPLES	
		11/24/09	1251	P-37 / SSTAPLES	
		11/24/09	1259	P-37 / SSTAPLES	
		11/24/09	1312	In Lab / SANDERSON	
P0904048-006.01					
	7196A				
		11/24/09	1251	SMO / SSTAPLES	
		11/24/09	1251	P-37 / SSTAPLES	
		11/24/09	1259	P-37 / SSTAPLES	
		11/24/09	1312	In Lab / SANDERSON	
P0904048-007.01					
	7196A				
		11/24/09	1251	SMO / SSTAPLES	
		11/24/09	1251	P-37 / SSTAPLES	
		11/24/09	1259	P-37 / SSTAPLES	
		11/24/09	1312	In Lab / SANDERSON	

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Columbia Analytical Services, Inc.
Sample Acceptance Check Form

Client: Battelle Work order: P0904048

Project: JPL GW Mon 4Q09 / G486090

Sample(s) received on: 11/24/09 Date opened: 11/24/09 by: SSTAPLES

Note: This form is used for all samples received by CAS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Container(s) **supplied by CAS**?	☒	☐	☐
3	Did **sample containers** arrive in good condition?	☒	☐	☐
4	Was a **chain-of-custody** provided?	☒	☐	☐
5	Was the **chain-of-custody** properly completed?	☒	☐	☐
6	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
7	Was **sample volume** received adequate for analysis?	☒	☐	☐
8	Are samples within specified holding times?	☒	☐	☐
9	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☒	☐	☐
	Cooler Temperature _____ °C Blank Temperature 2 °C			
10	Was a **trip blank** received?	☐	☐	☒
	Trip blank supplied by CAS: _____			
11	Were **custody seals** on outside of cooler/Box?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
	Were custody seals on outside of sample container?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
12	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☒	☐	☐
	Is there a client indication that the submitted samples are **pH** preserved?	☐	☐	☒
	Were **VOA vials** checked for presence/absence of air bubbles?	☐	☐	☒
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☐	☐	☒
13	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
	Do they contain moisture?	☐	☐	☒
14	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P0904048-001.01	125mL Plastic NP					
P0904048-002.01	125mL Plastic NP					
P0904048-003.01	125mL Plastic NP					
P0904048-004.01	125mL Plastic NP					
P0904048-005.01	125mL Plastic NP					
P0904048-006.01	125mL Plastic NP					

Explain any discrepancies: (include lab sample ID numbers): _____

*Required pH: Phenols/COD/NH3/TOC/TOX/NO3+NO2/TKN/T.PHOS, H2SO4 (pH<2); Metals, HNO3 (pH<2); CN (NaOH or NaOH/Asc Acid) (pH>12); Diss. Sulfide, NaOH (pH>12); T. Sulfide, NaOH/ZnAc (pH>12) RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

Columbia Analytical Services, Inc.
Sample Acceptance Check Form

Client: Battelle Work order: P0904048

Project: JPL GW Mon 4Q09 / G486090

Sample(s) received on: 11/24/09 Date opened: 11/24/09 by: SSTAPLES

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P0904048-007.01	125mL Plastic NP					

Explain any discrepancies: (include lab sample ID numbers):

*Required pH: Phenols/COD/NH3/TOC/TOX/NO3+NO2/TKN/T.PHOS, H2SO4 (pH<2); Metals, HNO3 (pH<2); CN (NaOH or NaOH/Asc Acid) (pH>12); Diss. Sulfide, NaOH (pH>12); T. Sulfide, NaOH/ZnAc (pH>12) RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

DIVIDER SHEET

ANALYTICAL DATA FOR

Hexavalent Chromium

ANALYSIS

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client : Battelle
Project Name : JPL GW Mon 4Q09
Project Number : G486090
Sample Matrix : WATER

Service Request : P0904048
Date Collected : 11/24/09
Date Received : 11/24/09

Chromium, Hexavalent

Prep Method : None
Analysis Method : 7196A
Test Notes :

Units : mg/L (ppm)
Basis : NA

Sample Name	Lab Code	PQL	MDL	Dilution Factor	Date Extracted	Date/Time Analyzed	Result	Result Notes
MW-22-5	P0904048-001	0.010	0.003	1	NA	11/24/09 15:25	ND	
MW-22-4	P0904048-002	0.010	0.003	1	NA	11/24/09 15:25	ND	
MW-22-3	P0904048-003	0.010	0.003	1	NA	11/24/09 15:25	ND	
MW-22-2	P0904048-004	0.010	0.003	1	NA	11/24/09 15:25	ND	
MW-22-1	P0904048-005	0.010	0.003	1	NA	11/24/09 15:25	ND	
DUPE-04-4Q09	P0904048-006	0.010	0.003	1	NA	11/24/09 15:25	ND	
EB-07-11/24/09	P0904048-007	0.010	0.003	1	NA	11/24/09 15:25	ND	
Method Blank	P0904048-MB	0.010	0.003	1	NA	11/24/09 15:25	ND	

Approved By Karen Ryan Date : 11/25/09

Report By:SAnderson

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Battelle	**Service Request:**	P0904048
Project:	JPL GW Mon 4Q09 / G486090	**Date Analyzed:**	11/24/09

Title: Initial and Continuing Calibration Blank (ICB and CCB) Summary
Analyte: Chromium, Hexavalent
Method: 7196A
Units: mg/L (ppm)

Sample Name	PQL	MDL	Result
ICB	0.010	0.003	ND
CCB1	0.010	0.003	ND
CCB2	0.010	0.003	ND

Approved By: Karen Ryan Date: 11/25/09

ICCBMDL/120594

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle
Project: JPL GW Mon 4Q09 / G486090

Service Request: P0904048
Date Analyzed: 11/24/09

Title: Initial and Continuing Calibration Verification (ICV and CCV) Summary
Analyte: Chromium, Hexavalent
Method: 7196A
Units: mg/L (ppm)

Sample Name	True Value	Result	Percent Recovery	Acceptance Criteria
ICV	0.0579	0.0583	101	90-110
CCV1	0.0579	0.0583	101	90-110
CCV2	0.0579	0.0583	101	90-110

Approved By: Karen Ryan Date: 11/25/09

CCV1A/120594

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client :	Battelle	**Service Request :**	P0904048
Project Name :	JPL GW Mon 4Q09	**Date Collected :**	NA
Project Number :	G486090	**Date Received :**	NA
Sample Matrix :	WATER	**Date Extracted :**	NA
		Date Analyzed :	11/24/09

Laboratory Control Sample Summary
Inorganic Parameters

Sample Name :	Laboratory Control Sample	Units :	mg/L (ppm)
Lab Code :	P0904048-LCS	Basis :	NA

Test Notes :

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Chromium, Hexavalent	None	7196A	0.0400	0.0405	101	86-114	

Approved By Karen Rya Date : 11/25/09

Report By:SAnderson

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client :	Battelle	**Service Request :**	P0904048
Project Name :	JPL GW Mon 4Q09	**Date Collected :**	11/24/09
Project Number :	G486090	**Date Received :**	11/24/09
Sample Matrix :	WATER	**Date Extracted :**	NA
		Date Analyzed :	11/24/09

Matrix Spike/Duplicate Matrix Spike Summary

Sample Name : MW-22-5 Units : mg/L (ppm)
Lab Code : P0904048-001MS P0904048-001DMS Basis : NA
Test Notes :

Analyte	Prep Method	Analysis Method	PQL	Spike Level MS	Spike Level DMS	Sample Result	Spike Result MS	Spike Result DMS	Spike Recovery MS	Spike Recovery DMS	CAS Acceptance Limits	Relative Percent Difference	Result Notes
Chromium, Hexavalent	None	7196A	0.010	0.0500	0.0500	ND	0.0437	0.0437	87	87	80-120	<1	

Approved By Karen Ryan Date : 11/25/09

Report By:SAnderson

CAS SR #P0904091

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Columbia Analytical Services, Inc. 2655 Park Center Drive, Suite A | Simi Valley, CA 93065 | 805.526.7161 | 805.526.7270 fax | www.caslab.com

LABORATORY REPORT

December 1, 2009

David Conner
Battelle
3990 Old Town Ave., Suite C-205
San Diego, CA 92110

RE: JPL GW Mon 4Q09 / G486090

Dear David:

Enclosed are the results of the samples submitted to our laboratory on November 30, 2009. For your reference, these analyses have been assigned our service request number P0904091.

All analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.caslab.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein. Your report contains 27 pages.

Columbia Analytical Services, Inc. is certified by the California Department of Health Services, NELAP Laboratory Certificate No. 02115CA; Arizona Department of Health Services, Certificate No. AZ0694; Florida Department of Health, NELAP Certification E871020; New Jersey Department of Environmental Protection, NELAP Laboratory Certification ID #CA009; New York State Department of Health, NELAP NY Lab ID No: 11221; Oregon Environmental Laboratory Accreditation Program, NELAP ID: CA20007; The American Industrial Hygiene Association, Laboratory #101661; Department of the Navy (NFESC); Pennsylvania Registration No. 68-03307; TX Commission of Environmental Quality, NELAP ID T104704413-09-TX; Minnesota Department of Health, Certificate No. 11495AA. Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact me for information corresponding to a particular certification.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

Columbia Analytical Services, Inc.

Sue Anderson
Project Manager

Client: Battelle
Project: JPL GW Mon 4Q09 / G486090

CAS Project No: P0904091

CASE NARRATIVE

The samples were received intact under chain of custody on November 30, 2009 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Hexavalent Chromium by EPA 7196A

No anomalies were encountered during this analysis.

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for utilization of less than the complete report.

Client: Battelle
Project: JPL GW Mon 4Q09/G486090

Service Request: P0904091

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
P0904091-001	MW-4-5	11/30/09	08:31
P0904091-002	MW-4-4	11/30/09	08:56
P0904091-003	MW-4-3	11/30/09	09:28
P0904091-004	MW-4-2	11/30/09	09:57
P0904091-005	MW-4-1	11/30/09	10:38
P0904091-006	DUPE-05-4Q09	11/30/09	00:00
P0904091-007	EB-08-11/30/09	11/30/09	10:18

3

Acronyms

CA LUFT	California DHS LUFT Method
ASTM	American Society for Testing and Materials
BTEX	Benzene/Toluene/Ethylbenzene/Xylenes
CAS Number	Chemical Abstract Service Registry Number
CFC	Chlorofluorocarbon
CRDL	Contract Required Detection Limit
DLCS	Duplicate Laboratory Control Sample
DMS	Duplicate Matrix Spike
DOH or DHS	Department of Health Services
EPA	U.S. Environmental Protection Agency
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
IC	Ion Chromatography
ICB	Initial Calibration Blank
ICV	Initial Calibration Verification
LCS	Laboratory Control Sample
LUFT	Leaking Underground Fuel Tank
M	Modified Method
MDL	Method Detection Limit
MRL	Method Reporting Limit
MS	Matrix Spike
MTBE	Methyl *tert*-Butyl Ether
NA	Not Applicable
NC	Not Calculated
ND	None Detected at or above the Method Reporting/Detection Limit (MRL/MDL)
NTU	Nephelometric Turbidity Units
ppb	Parts Per Billion
ppm	Parts Per Million
PQL	Practical Quantitation Limit
QA/QC	Quality Assurance/Quality Control
RCRA	Resource Conservation and Recovery Act
RPD	Relative Percent Difference
SIM	Selected Ion Monitoring
SM	*Standard Methods for the Examination of Water and Wastewater*, 19th Ed., 1995.
SW	*Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*, SW-846, Third Edition, 1986 and as amended by Updates I, II, IIA, and IIB.
TDS	Total Dissolved Solids
TPH	Total Petroleum Hydrocarbons
TSS	Total Suspended Solids
TTLC	Total Threshold Limit Concentration
VOA	Volatile Organic Analyte(s)
VOC	Volatile Organic Compound(s)

Qualifiers

U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
J	The result is an estimated concentration that is less than the MRL (PQL), but greater than or equal to the MDL.
B	Analyte detected in the method blank above MRL (PQL).
E	Estimated; result based on response which exceeded the instrument calibration range.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
D	The reported result is from a dilution.
X	See case narrative.

Water & Soil - Chain of Custody Record & Analytical Service Request

Page 1 of 1

Columbia Analytical Services INC.
An Employee - Owned Company

2655 Park Center Drive, Suite A
Simi Valley, California 93065
Phone (805) 526-7161
Fax (805) 526-7270

Requested Turnaround Time in Business Days (Surcharges) please circle
1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10 Day - Standard

CAS Project No. 9090409 41

CAS Contact:

Company Name & Address (Reporting Information)	Project Name
BATTELLE 3990 OLD TOWN AVE. C-205 SAN DIEGO CA 92110	JPL GW MON 4Q09
Project Manager	**Project Number**
DAVID CONNER	64860 90
Phone / **Fax**	**P.O. # / Billing Information**
(619) 726-7311	214319 / BATTELLE ATTN: GERALD TOMPKINS 505 KING AVE. COLUMBUS OH 43201
Email Address for Result Reporting	**Sampler (Print & Sign)**

Analysis Method and/or Analytes

Preservative Code

Client Sample ID	Laboratory ID Number	Date Collected	Time Collected	Matrix	Number of Containers	Volatile Organics GC/MS 624 ☐ 8260B ☐ Oxygenates ☐ TPH Gas ☐	TPH Gas 8015B ☐ BTEX 8021B ☐ MTBE 8021B ☐	TPH Diesel 8015B ☐ (Subcontracted)	TPH Diesel Low Level 8015B ☐ (Subcontracted)	TPH FC ☐ 8015M (Subcontracted)	Semi-Volatile Organics GC/MS 625 ☐ 8270C ☐ (Subcontracted)	0												Remarks
												CrIII (4196)												
MW-4-5	1	11/30/09	0831	W	1							X												
MW-4-4	2	"	0856	"	1							X												QC LEVEL IV
MW-4-3	3	"	0928	"	1							X												
MW-4-2	4	"	0957	"	1							X												
MW-4-1	5	"	1038	"	2							X												MS/MSD
	6																							
DUPE-05-4Q09	7	"	—	"	1							X												DUPLICATE
EB-05-11/30/09	8	"	1018	"	1							X												EQUIPMENT BLANK

Preservative Key

0	None
1	HCL
2	HNO3
3	H2SO4
4	NaOH
5	Zn Acetate
6	Asc Acid
7	Other

Report Tier Levels - please select

Tier I - (Results/Default if not specified) ____
Tier II - (Results + QC) ____
Tier III - (Data Validation Package) 10% Surcharge ____
Tier V - (client specified) ____

MRL required Yes / No
MDL / PQL / J required Yes / No

EDD required Yes / No
Type: ____

Project Requirements (MRLs, QAPP)

Relinquished by: (Signature)	Date: 11/30/09	Time: 1200	Received by: (Signature)	Date: 12/2/09	Time: 1200
Relinquished by: (Signature)	Date: 12/2/09	Time: 1241	Received by: (Signature)	Date: 12/2/09	Time: 1245
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:

Cooler / Blank / Ice / No Ice

Temperature 3°C °C

Columbia Analytical Services, Inc.
Chain of Custody Report

Client: Battelle
Project: JPL GW Mon 4Q09/G486090

Service Request: P0904091

Bottle ID	Tests	Date	Time	Sample Location / User	Disposed On
P0904091-001.01					
	7196A				
		11/30/09	1249	SMO / MZAMORA	
		11/30/09	1250	P-04 / MZAMORA	
		11/30/09	1255	P-37 / MZAMORA	
		11/30/09	1319	In Lab / SANDERSON	
		12/1/09	0849	P-37 / SANDERSON	
P0904091-002.01					
	7196A				
		11/30/09	1249	SMO / MZAMORA	
		11/30/09	1250	P-04 / MZAMORA	
		11/30/09	1255	P-37 / MZAMORA	
		11/30/09	1319	In Lab / SANDERSON	
		12/1/09	0849	P-37 / SANDERSON	
P0904091-003.01					
	7196A				
		11/30/09	1249	SMO / MZAMORA	
		11/30/09	1250	P-04 / MZAMORA	
		11/30/09	1255	P-37 / MZAMORA	
		11/30/09	1319	In Lab / SANDERSON	
		12/1/09	0849	P-37 / SANDERSON	
P0904091-004.01					
	7196A				
		11/30/09	1249	SMO / MZAMORA	
		11/30/09	1250	P-04 / MZAMORA	
		11/30/09	1255	P-37 / MZAMORA	
		11/30/09	1319	In Lab / SANDERSON	
		12/1/09	0849	P-37 / SANDERSON	
P0904091-005.01					
	7196A				
		11/30/09	1249	SMO / MZAMORA	
		11/30/09	1250	P-04 / MZAMORA	
		11/30/09	1255	P-37 / MZAMORA	
		11/30/09	1319	In Lab / SANDERSON	
		12/1/09	0849	P-37 / SANDERSON	
P0904091-005.02					
		11/30/09	1249	SMO / MZAMORA	
		11/30/09	1250	P-04 / MZAMORA	
		11/30/09	1255	P-37 / MZAMORA	
		11/30/09	1319	In Lab / SANDERSON	
		12/1/09	0849	P-37 / SANDERSON	
P0904091-006.01					
	7196A				

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Columbia Analytical Services, Inc.
Chain of Custody Report

Client: Battelle
Project: JPL GW Mon 4Q09/G486090

Service Request: P0904091

Bottle ID	Tests	Date	Time	Sample Location / User	Disposed On
		11/30/09	1249	SMO / MZAMORA	
		11/30/09	1250	P-04 / MZAMORA	
		11/30/09	1255	P-37 / MZAMORA	
		11/30/09	1319	In Lab / SANDERSON	
		12/1/09	0849	P-37 / SANDERSON *	
P0904091-007.01					
	7196A				
		11/30/09	1249	SMO / MZAMORA	
		11/30/09	1250	P-04 / MZAMORA	
		11/30/09	1255	P-37 / MZAMORA	
		11/30/09	1319	In Lab / SANDERSON	
		12/1/09	0849	P-37 / SANDERSON *	

* NOTE: ALL BOTTLES PLACED IN P-37 11/30/09 @ 1600. COULD NOT SCAN IN LIMS DUE TO COMPUTER ISSUE. SM 12/1/09

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Columbia Analytical Services, Inc.
Sample Acceptance Check Form

Client: Battelle Work order: P0904091

Project: JPL GW Mon 4Q09 / G486090

Sample(s) received on: 11/30/09 Date opened: 11/30/09 by: MZAMORA

Note: This form is used for all samples received by CAS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Container(s) **supplied by CAS**?	☒	☐	☐
3	Did **sample containers** arrive in good condition?	☒	☐	☐
4	Was a **chain-of-custody** provided?	☒	☐	☐
5	Was the **chain-of-custody** properly completed?	☒	☐	☐
6	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
7	Was **sample volume** received adequate for analysis?	☒	☐	☐
8	Are samples within specified holding times?	☒	☐	☐
9	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☒	☐	☐
	Cooler Temperature _____ °C Blank Temperature 3 °C			
10	Was a **trip blank** received?	☐	☐	☒
	Trip blank supplied by CAS: _____			
11	Were **custody seals** on outside of cooler/Box?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
	Were custody seals on outside of sample container?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
12	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☒	☐	☐
	Is there a client indication that the submitted samples are **pH** preserved?	☐	☐	☒
	Were **VOA vials** checked for presence/absence of air bubbles?	☐	☐	☒
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☐	☐	☒
13	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
	Do they contain moisture?	☐	☐	☒
14	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P0904091-001.01	125mL Plastic NP					
P0904091-002.01	125mL Plastic NP					
P0904091-003.01	125mL Plastic NP					
P0904091-004.01	125mL Plastic NP					
P0904091-005.01	125mL Plastic NP					
P0904091-005.02	125mL Plastic NP					

Explain any discrepancies: (include lab sample ID numbers): _____

*Required pH: Phenols/COD/NH3/TOC/TOX/NO3+NO2/TKN/T.PHOS, H2SO4 (pH<2); Metals, HNO3 (pH<2); CN (NaOH or NaOH/Asc Acid) (pH>12); Diss. Sulfide NaOH (pH>12); T. Sulfide NaOH/ZnAc (pH>12) RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

Columbia Analytical Services, Inc.
Sample Acceptance Check Form

Client: Battelle Work order: P0904091

Project: JPL GW Mon 4Q09 / G486090

Sample(s) received on: 11/30/09 Date opened: 11/30/09 by: MZAMORA

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P0904091-006.01	125mL Plastic NP					
P0904091-007.01	125mL Plastic NP					

Explain any discrepancies: (include lab sample ID numbers):

*Required pH: Phenols/COD/NH3/TOC/TOX/NO3+NO2/TKN/T.PHOS, H2SO4 (pH<2); Metals, HNO3 (pH<2); CN (NaOH or NaOH/Asc Acid) (pH>12);
Diss. Sulfide, NaOH (pH>12); T. Sulfide, NaOH/ZnAc (pH>12) RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

DIVIDER SHEET

ANALYTICAL DATA FOR

Hexavalent Chromium

ANALYSIS

Analytical Report

Client : Battelle
Project Name : JPL GW Mon 4Q09
Project Number : G486090
Sample Matrix : WATER

Service Request : P0904091
Date Collected : 11/30/09
Date Received : 11/30/09

Chromium, Hexavalent

Prep Method : None
Analysis Method : 7196A
Test Notes :

Units : mg/L (ppm)
Basis : NA

Sample Name	Lab Code	PQL	MDL	Dilution Factor	Date Extracted	Date/Time Analyzed	Result	Result Notes
MW-4-5	P0904091-001	0.010	0.003	1	NA	11/30/09 15:00	ND	
MW-4-4	P0904091-002	0.010	0.003	1	NA	11/30/09 15:00	ND	
MW-4-3	P0904091-003	0.010	0.003	1	NA	11/30/09 15:00	ND	
MW-4-2	P0904091-004	0.010	0.003	1	NA	11/30/09 15:00	ND	
MW-4-1	P0904091-005	0.010	0.003	1	NA	11/30/09 15:00	ND	
DUPE-05-4Q09	P0904091-006	0.010	0.003	1	NA	11/30/09 15:00	ND	
EB-08-11/30/09	P0904091-007	0.010	0.003	1	NA	11/30/09 15:00	ND	
Method Blank	P0904091-MB	0.010	0.003	1	NA	11/30/09 15:00	ND	

Approved By Karen Ryan Date : 12/1/09

Report By:SAnderson

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle
Project: JPL GW Mon 4Q09 / G486090

Service Request: P0904091
Date Analyzed: 11/30/09

Title: Initial and Continuing Calibration Blank (ICB and CCB) Summary
Analyte: Chromium, Hexavalent
Method: 7196A
Units: mg/L (ppm)

Sample Name	PQL	MDL	Result
ICB	0.010	0.003	ND
CCB1	0.010	0.003	ND
CCB2	0.010	0.003	ND

Approved By: Karen Ryan Date: 12/1/09

ICCBMDL/120594

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle
Project: JPL GW Mon 4Q09 / G486090

Service Request: P0904091
Date Analyzed: 11/30/09

Title: Initial and Continuing Calibration Verification (ICV and CCV) Summary
Analyte: Chromium, Hexavalent
Method: 7196A
Units: mg/L (ppm)

Sample Name	True Value	Result	Percent Recovery	Acceptance Criteria
ICV	0.0579	0.0577	100	90-110
CCV1	0.0579	0.0587	101	90-110
CCV2	0.0579	0.0587	101	90-110

Approved By: Karen Ryan Date: 12/1/09

CCV1A/120594

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client :	Battelle	**Service Request :**	P0904091
Project Name :	JPL GW Mon 4Q09	**Date Collected :**	NA
Project Number :	G486090	**Date Received :**	NA
Sample Matrix :	WATER	**Date Extracted :**	NA
		Date Analyzed :	11/30/09

Laboratory Control Sample Summary
Inorganic Parameters

Sample Name :	Laboratory Control Sample	Units :	mg/L (ppm)
Lab Code :	P0904091-LCS	Basis :	NA
Test Notes :			

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Chromium, Hexavalent	None	7196A	0.0400	0.0400	100	86-114	

Approved By Karen Ryan Date : 12/1/09

Report By:SAnderson

QA/QC Report

Client :	Battelle	**Service Request :**	P0904091
Project Name :	JPL GW Mon 4Q09	**Date Collected :**	11/30/09
Project Number :	G486090	**Date Received :**	11/30/09
Sample Matrix :	WATER	**Date Extracted :**	NA
		Date Analyzed :	11/30/09

Matrix Spike/Duplicate Matrix Spike Summary

Sample Name : MW-4-1 Units : mg/L (ppm)
Lab Code : P0904091-005MS P0904091-005DMS Basis : NA
Test Notes :

Analyte	Prep Method	Analysis Method	PQL	Spike Level MS	Spike Level DMS	Sample Result	Spike Result MS	Spike Result DMS	Spike Recovery MS	Spike Recovery DMS	CAS Acceptance Limits	Relative Percent Difference	Result Notes
Chromium, Hexavalent	None	7196A	0.010	0.0500	0.0500	ND	0.0504	0.0504	101	101	80-120	<1	

Approved By Karen Ryan Date : 12/1/09

Report By:SAnderson

CAS SR #P0904110

Table of Contents

Columbia Analytical Services, Inc. 2655 Park Center Drive, Suite A | Simi Valley, CA 93065 | 805.526.7161 | 805.526.7270 fax | www.caslab.com

LABORATORY REPORT

December 4, 2009

David Conner
Battelle
3990 Old Town Ave., Suite C-205
San Diego, CA 92110

RE: JPL GW Mon 4Q09 / G486090

Dear David:

Enclosed are the results of the samples submitted to our laboratory on December 1, 2009. For your reference, these analyses have been assigned our service request number P0904110.

All analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.caslab.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein. Your report contains 26 pages.

Columbia Analytical Services, Inc. is certified by the California Department of Health Services, NELAP Laboratory Certificate No. 02115CA; Arizona Department of Health Services, Certificate No. AZ0694; Florida Department of Health, NELAP Certification E871020; New Jersey Department of Environmental Protection, NELAP Laboratory Certification ID #CA009; New York State Department of Health, NELAP NY Lab ID No: 11221; Oregon Environmental Laboratory Accreditation Program, NELAP ID: CA20007; The American Industrial Hygiene Association, Laboratory #101661; Department of the Navy (NFESC); Pennsylvania Registration No. 68-03307; TX Commission of Environmental Quality, NELAP ID T104704413-09-TX; Minnesota Department of Health, Certificate No. 11495AA. Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact me for information corresponding to a particular certification.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

Columbia Analytical Services, Inc.

Sue Anderson

Sue Anderson
Project Manager

Client: Battelle CAS Project No: P0904110
Project: JPL GW Mon 4Q09 / G486090

CASE NARRATIVE

The samples were received intact under chain of custody on December 1, 2009 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Hexavalent Chromium by EPA 7196A

No anomalies were encountered during this analysis.

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for utilization of less than the complete report.

Client: Battelle
Project: JPL GW Mon 4Q09/G486090

Service Request: P0904110

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
P0904110-001	MW-12-5	12/1/09	08:11
P0904110-002	MW-12-4	12/1/09	08:41
P0904110-003	MW-12-3	12/1/09	09:19
P0904110-004	MW-12-2	12/1/09	09:45
P0904110-005	MW-12-1	12/1/09	10:15
P0904110-006	DUPE-06-4Q09	12/1/09	00:00
P0904110-007	EB-09-12/01/09	12/1/09	10:01

Acronyms

CA LUFT	California DHS LUFT Method
ASTM	American Society for Testing and Materials
BTEX	Benzene/Toluene/Ethylbenzene/Xylenes
CAS Number	Chemical Abstract Service Registry Number
CFC	Chlorofluorocarbon
CRDL	Contract Required Detection Limit
DLCS	Duplicate Laboratory Control Sample
DMS	Duplicate Matrix Spike
DOH or DHS	Department of Health Services
EPA	U.S. Environmental Protection Agency
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
IC	Ion Chromatography
ICB	Initial Calibration Blank
ICV	Initial Calibration Verification
LCS	Laboratory Control Sample
LUFT	Leaking Underground Fuel Tank
M	Modified Method
MDL	Method Detection Limit
MRL	Method Reporting Limit
MS	Matrix Spike
MTBE	Methyl *tert*-Butyl Ether
NA	Not Applicable
NC	Not Calculated
ND	None Detected at or above the Method Reporting/Detection Limit (MRL/MDL)
NTU	Nephelometric Turbidity Units
ppb	Parts Per Billion
ppm	Parts Per Million
PQL	Practical Quantitation Limit
QA/QC	Quality Assurance/Quality Control
RCRA	Resource Conservation and Recovery Act
RPD	Relative Percent Difference
SIM	Selected Ion Monitoring
SM	*Standard Methods for the Examination of Water and Wastewater*, 19th Ed., 1995.
SW	*Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*, SW-846, Third Edition, 1986 and as amended by Updates I, II, IIA, and IIB.
TDS	Total Dissolved Solids
TPH	Total Petroleum Hydrocarbons
TSS	Total Suspended Solids
TTLC	Total Threshold Limit Concentration
VOA	Volatile Organic Analyte(s)
VOC	Volatile Organic Compound(s)

Qualifiers

U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
J	The result is an estimated concentration that is less than the MRL (PQL), but greater than or equal to the MDL.
B	Analyte detected in the method blank above MRL (PQL).
E	Estimated; result based on response which exceeded the instrument calibration range.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
D	The reported result is from a dilution.
X	See case narrative.

Water & Soil - Chain of Custody Record & Analytical Service Request

Page 1 of 1

Columbia Analytical Services INC.
An Employee - Owned Company

2655 Park Center Drive, Suite A
Simi Valley, California 93065
Phone (805) 526-7161
Fax (805) 526-7270

Requested Turnaround Time in Business Days (Surcharges) please circle
1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10 Day - Standard

CAS Project No. P090411O

CAS Contact:

Company Name & Address (Reporting Information)	Project Name
BATTELLE 3990 OLD TOWN AVE. C-205 SAN DIEGO CA 92110	JPL GW MON. 4209
Project Manager	**Project Number**
DAVID CONNER	G-486090
Phone / **Fax**	**P.O. # / Billing Information**
(619) 726-7311	214319 / BATTELLE ATTN: GERALD TOMPKINS 505 KING AVE. COLUMBUS OH 43201
Email Address for Result Reporting	**Sampler (Print & Sign)**

Analysis Method and/or Analytes

Preservative Code

Client Sample ID	Laboratory ID Number	Date Collected	Time Collected	Matrix	Number of Containers	Volatile Organics GC/MS 624 ☐ 8260B ☐ Oxygenates ☐ TPH Gas ☐	TPH Gas 8015B ☐ BTEX 8021B ☐ MTBE 8021B ☐	TPH Diesel 8015B ☐ (Subcontracted)	TPH Diesel Low Level 8015B ☐ (Subcontracted)	TPH FC ☐ 8015M (Subcontracted)	Semi-Volatile Organics GC/MS 625 ☐ 8270C ☐ (Subcontracted)	0 Cr III (7196)											Remarks
MW-12-5		12/01/09	0811	W	1							X											
MW-12-4			0841		1							X											
MW-12-3			0919		1							X											
MW-12-2			0945		1							X											
MW-12-1			1015		1							X											
DUPE-06-4209		12/01/09	—		1							X											DUPLICATE
EB-09-12/01/09		12/01/09	1001		1							X											EQUIPMENT BLANK

Preservative Key

0	None
1	HCL
2	HNO3
3	H2SO4
4	NaOH
5	Zn Acetate
6	Asc Acid
7	Other

Report Tier Levels - please select

Tier I - (Results/Default if not specified) ____
Tier II - (Results + QC) ____
Tier III - (Data Validation Package) 10% Surcharge ____
Tier V - (client specified) ____

MRL required Yes / No
MDL / PQL / 0 required Yes / No

EDD required Yes / No
Type: _____

Project Requirements (MRLs, QAPP)

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
	12/01/09	1200		12/1/09	1200
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
				12/1/09	1300
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:

Cooler / Blank / Ice / No Ice

Temperature 3.0 °C

Columbia Analytical Services, Inc.
Chain of Custody Report

Client: Battelle
Project: JPL GW Mon 4Q09/G486090

Service Request: P0904110

Bottle ID	Tests	Date	Time	Sample Location / User	Disposed On
P0904110-001.01					
	7196A				
		12/1/09	1301	SMO / MZAMORA	
		12/1/09	1301	P-37 / MZAMORA	
		12/1/09	1315	In Lab / SANDERSON	
		12/1/09	1448	P-37 / SANDERSON	
P0904110-002.01					
	7196A				
		12/1/09	1301	SMO / MZAMORA	
		12/1/09	1301	P-37 / MZAMORA	
		12/1/09	1315	In Lab / SANDERSON	
		12/1/09	1448	P-37 / SANDERSON	
P0904110-003.01					
	7196A				
		12/1/09	1301	SMO / MZAMORA	
		12/1/09	1301	P-37 / MZAMORA	
		12/1/09	1315	In Lab / SANDERSON	
		12/1/09	1448	P-37 / SANDERSON	
P0904110-004.01					
	7196A				
		12/1/09	1301	SMO / MZAMORA	
		12/1/09	1301	P-37 / MZAMORA	
		12/1/09	1315	In Lab / SANDERSON	
		12/1/09	1448	P-37 / SANDERSON	
P0904110-005.01					
	7196A				
		12/1/09	1301	SMO / MZAMORA	
		12/1/09	1301	P-37 / MZAMORA	
		12/1/09	1315	In Lab / SANDERSON	
		12/1/09	1448	P-37 / SANDERSON	
P0904110-006.01					
	7196A				
		12/1/09	1301	SMO / MZAMORA	
		12/1/09	1301	P-37 / MZAMORA	
		12/1/09	1315	In Lab / SANDERSON	
		12/1/09	1448	P-37 / SANDERSON	
P0904110-007.01					
	7196A				
		12/1/09	1301	SMO / MZAMORA	
		12/1/09	1301	P-37 / MZAMORA	
		12/1/09	1315	In Lab / SANDERSON	
		12/1/09	1448	P-37 / SANDERSON	

Columbia Analytical Services, Inc.
Sample Acceptance Check Form

Client: Battelle Work order: P0904110

Project: JPL GW Mon 4Q09 / G486090

Sample(s) received on: 12/01/09 Date opened: 12/01/09 by: MZAMORA

Note: This form is used for all samples received by CAS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Container(s) **supplied by CAS**?	☒	☐	☐
3	Did **sample containers** arrive in good condition?	☒	☐	☐
4	Was a **chain-of-custody** provided?	☒	☐	☐
5	Was the **chain-of-custody** properly completed?	☒	☐	☐
6	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
7	Was **sample volume** received adequate for analysis?	☒	☐	☐
8	Are samples within specified holding times?	☒	☐	☐
9	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☒	☐	☐
	Cooler Temperature _____ °C Blank Temperature 3 °C			
10	Was a **trip blank** received?	☐	☐	☒
	Trip blank supplied by CAS: _____			
11	Were **custody seals** on outside of cooler/Box?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
	Were custody seals on outside of sample container?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
12	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☒	☐	☐
	Is there a client indication that the submitted samples are **pH** preserved?	☐	☐	☒
	Were **VOA vials** checked for presence/absence of air bubbles?	☐	☐	☒
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☐	☐	☒
13	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
	Do they contain moisture?	☐	☐	☒
14	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P0904110-001.01	125mL Plastic NP					
P0904110-002.01	125mL Plastic NP					
P0904110-003.01	125mL Plastic NP					
P0904110-004.01	125mL Plastic NP					
P0904110-005.01	125mL Plastic NP					
P0904110-006.01	125mL Plastic NP					

Explain any discrepancies: (include lab sample ID numbers): _____

*Required pH: Phenols/COD/NH3/TOC/TOX/NO3+NO2/TKN/T.PHOS, H2SO4 (pH<2); Metals, HNO3 (pH<2); CN (NaOH or NaOH/Asc Acid) (pH>12); Diss. Sulfide, NaOH (pH>12); T. Sulfide, NaOH/ZnAc (pH>12) RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

Columbia Analytical Services, Inc.
Sample Acceptance Check Form

Client: Battelle Work order: P0904110

Project: JPL GW Mon 4Q09 / G486090

Sample(s) received on: 12/01/09 Date opened: 12/01/09 by: MZAMORA

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P0904110-007.01	125mL Plastic NP					

Explain any discrepancies: (include lab sample ID numbers):

*Required pH: Phenols/COD/NH3/TOC/TOX/NO3+NO2/TKN/T.PHOS, H2SO4 (pH<2); Metals, HNO3 (pH<2); CN (NaOH or NaOH/Asc Acid) (pH>12);
Diss. Sulfide, NaOH (pH>12); T. Sulfide, NaOH/ZnAc (pH>12) RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

DIVIDER SHEET

ANALYTICAL DATA FOR

Hexavalent Chromium

ANALYSIS

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client : Battelle
Project Name : JPL GW Mon 4Q09
Project Number : G486090
Sample Matrix : WATER

Service Request : P0904110
Date Collected : 12/01/09
Date Received : 12/01/09

Chromium, Hexavalent

Prep Method : None
Analysis Method : 7196A
Test Notes :

Units : mg/L (ppm)
Basis : NA

Sample Name	Lab Code	PQL	MDL	Dilution Factor	Date Extracted	Date/Time Analyzed	Result	Result Notes
MW-12-5	P0904110-001	0.010	0.003	1	NA	12/01/09 14:10	ND	
MW-12-4	P0904110-002	0.010	0.003	1	NA	12/01/09 14:10	ND	
MW-12-3	P0904110-003	0.010	0.003	1	NA	12/01/09 14:10	ND	
MW-12-2	P0904110-004	0.010	0.003	1	NA	12/01/09 14:10	ND	
MW-12-1	P0904110-005	0.010	0.003	1	NA	12/01/09 14:10	ND	
DUPE-06-4Q09	P0904110-006	0.010	0.003	1	NA	12/01/09 14:10	ND	
EB-09-12/01/09	P0904110-007	0.010	0.003	1	NA	12/01/09 14:10	ND	
Method Blank	P0904110-MB	0.010	0.003	1	NA	12/01/09 14:10	ND	

Approved By Karen Ryan Date : 12/2/09

Report By:SAnderson

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle
Project: JPL GW Mon 4Q09 / G486090

Service Request: P0904110
Date Analyzed: 12/01/09

Title: Initial and Continuing Calibration Blank (ICB and CCB) Summary
Analyte: Chromium, Hexavalent
Method: 7196A
Units: mg/L (ppm)

Sample Name	PQL	MDL	Result
ICB	0.010	0.003	ND
CCB1	0.010	0.003	ND
CCB2	0.010	0.003	ND

Approved By: Karen Rya Date: 12/2/09

ICCBMDL/120594

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle
Project: JPL GW Mon 4Q09 / G486090

Service Request: P0904110
Date Analyzed: 12/01/09

Title: Initial and Continuing Calibration Verification (ICV and CCV) Summary
Analyte: Chromium, Hexavalent
Method: 7196A
Units: mg/L (ppm)

Sample Name	True Value	Result	Percent Recovery	Acceptance Criteria
ICV	0.0579	0.0577	100	90-110
CCV1	0.0579	0.0577	100	90-110
CCV2	0.0579	0.0577	100	90-110

Approved By: Karen Ryan Date: 12/2/09

CCV1A/120594

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client :	Battelle	**Service Request :**	P0904110
Project Name :	JPL GW Mon 4Q09	**Date Collected :**	NA
Project Number :	G486090	**Date Received :**	NA
Sample Matrix :	WATER	**Date Extracted :**	NA
		Date Analyzed :	12/01/09

Laboratory Control Sample Summary
Inorganic Parameters

Sample Name :	Laboratory Control Sample	Units :	mg/L (ppm)
Lab Code :	P0904110-LCS	Basis :	NA
Test Notes :			

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Chromium, Hexavalent	None	7196A	0.0400	0.0390	98	86-114	

Approved By Karen Ryan Date : 12/2/09

Report By:SAnderson

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client :	Battelle	**Service Request :**	P0904110
Project Name :	JPL GW Mon 4Q09	**Date Collected :**	12/01/09
Project Number :	G486090	**Date Received :**	12/01/09
Sample Matrix :	WATER	**Date Extracted :**	NA
		Date Analyzed :	12/01/09

Matrix Spike/Duplicate Matrix Spike Summary

Sample Name : MW-12-5
Lab Code : P0904110-001MS P0904110-001DMS
Test Notes :

Units : mg/L (ppm)
Basis : NA

Analyte	Prep Method	Analysis Method	PQL	Spike Level MS	Spike Level DMS	Sample Result	Spike Result MS	Spike Result DMS	Spike Recovery MS	Spike Recovery DMS	CAS Acceptance Limits	Relative Percent Difference	Result Notes
Chromium, Hexavalent	None	7196A	0.010	0.0500	0.0500	ND	0.0514	0.0504	103	101	80-120	2	

Approved By Karen Ryan Date : 12/2/09

Report By:SAnderson

CAS SR #P0904124

Table of Contents

Columbia Analytical Services™ 2655 Park Center Drive, Suite A | Simi Valley, CA 93065 | 805.526.7161 | 805.526.7270 fax | www.caslab.com

LABORATORY REPORT

December 4, 2009

David Conner
Battelle
3990 Old Town Ave., Suite C-205
San Diego, CA 92110

RE: JPL GW Mon 4Q09 / G486090

Dear David:

Enclosed are the results of the samples submitted to our laboratory on December 2, 2009. For your reference, these analyses have been assigned our service request number P0904124.

All analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.caslab.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein. Your report contains 25 pages.

Columbia Analytical Services, Inc. is certified by the California Department of Health Services, NELAP Laboratory Certificate No. 02115CA; Arizona Department of Health Services, Certificate No. AZ0694; Florida Department of Health, NELAP Certification E871020; New Jersey Department of Environmental Protection, NELAP Laboratory Certification ID #CA009; New York State Department of Health, NELAP NY Lab ID No: 11221; Oregon Environmental Laboratory Accreditation Program, NELAP ID: CA20007; The American Industrial Hygiene Association, Laboratory #101661; Department of the Navy (NFESC); Pennsylvania Registration No. 68-03307; TX Commission of Environmental Quality, NELAP ID T104704413-09-TX; Minnesota Department of Health, Certificate No. 11495AA. Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact me for information corresponding to a particular certification.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

Columbia Analytical Services, Inc.

Sue Anderson
Project Manager

Client: Battelle
Project: JPL GW Mon 4Q09 / G486090

CAS Project No: P0904124

CASE NARRATIVE

The samples were received intact under chain of custody on December 2, 2009 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Hexavalent Chromium by EPA 7196A

No anomalies were encountered during this analysis.

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for utilization of less than the complete report.

Client: Battelle
Project: JPL GW Mon 4Q09/G486090

Service Request: P0904124

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
P0904124-001	MW-11-5	12/2/09	08:42
P0904124-002	MW-11-4	12/2/09	09:09
P0904124-003	MW-11-3	12/2/09	09:41
P0904124-004	MW-11-2	12/2/09	10:07
P0904124-005	MW-11-1	12/2/09	10:38
P0904124-006	EB-10-12/02/09	12/2/09	10:23

Acronyms

CA LUFT	California DHS LUFT Method
ASTM	American Society for Testing and Materials
BTEX	Benzene/Toluene/Ethylbenzene/Xylenes
CAS Number	Chemical Abstract Service Registry Number
CFC	Chlorofluorocarbon
CRDL	Contract Required Detection Limit
DLCS	Duplicate Laboratory Control Sample
DMS	Duplicate Matrix Spike
DOH or DHS	Department of Health Services
EPA	U.S. Environmental Protection Agency
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
IC	Ion Chromatography
ICB	Initial Calibration Blank
ICV	Initial Calibration Verification
LCS	Laboratory Control Sample
LUFT	Leaking Underground Fuel Tank
M	Modified Method
MDL	Method Detection Limit
MRL	Method Reporting Limit
MS	Matrix Spike
MTBE	Methyl *tert*-Butyl Ether
NA	Not Applicable
NC	Not Calculated
ND	None Detected at or above the Method Reporting/Detection Limit (MRL/MDL)
NTU	Nephelometric Turbidity Units
ppb	Parts Per Billion
ppm	Parts Per Million
PQL	Practical Quantitation Limit
QA/QC	Quality Assurance/Quality Control
RCRA	Resource Conservation and Recovery Act
RPD	Relative Percent Difference
SIM	Selected Ion Monitoring
SM	*Standard Methods for the Examination of Water and Wastewater*, 19th Ed., 1995.
SW	*Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*, SW-846, Third Edition, 1986 and as amended by Updates I, II, IIA, and IIB.
TDS	Total Dissolved Solids
TPH	Total Petroleum Hydrocarbons
TSS	Total Suspended Solids
TTLC	Total Threshold Limit Concentration
VOA	Volatile Organic Analyte(s)
VOC	Volatile Organic Compound(s)

Qualifiers

U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
J	The result is an estimated concentration that is less than the MRL (PQL), but greater than or equal to the MDL.
B	Analyte detected in the method blank above MRL (PQL).
E	Estimated; result based on response which exceeded the instrument calibration range.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
D	The reported result is from a dilution.
X	See case narrative.

Water & Soil - Chain of Custody Record & Analytical Service Request

Columbia Analytical Services INC.
An Employee - Owned Company

2655 Park Center Drive, Suite A
Simi Valley, California 93065
Phone (805) 526-7161
Fax (805) 526-7270

Requested Turnaround Time in Business Days (Surcharges) please circle
1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10 Day - Standard

CAS Project No: P090412

CAS Contact:

Company Name & Address (Reporting Information)
BATTELLE
3990 OLD TOWN AVE. C-205
SAN DIEGO CA 92110

Project Name: JPL GW MON. 4Q09

Project Number: G486090

Project Manager: DAVID CONNER

P.O. # / Billing Information: 214319 / BATTELLE ATTN: GERALD TOMPKINS 505 KING AVE COLUMBUS OH. 43201

Phone: (619) 726-7311

Fax:

Email Address for Result Reporting:

Sampler (Print & Sign):

Analysis Method and/or Analytes

Preservative Code

Client Sample ID	Laboratory ID Number	Date Collected	Time Collected	Matrix	Number of Containers	Volatile Organics GC/MS 624 ☐ 8260B ☐ Oxygenates ☐ TPH Gas ☐	TPH Gas 8015B ☐ BTEX 8021B ☐ MTBE 8021B ☐	TPH Diesel 8015B ☐ (Subcontracted)	TPH Diesel Low Level 8015B ☐ (Subcontracted)	TPH FC ☐ 8015M (Subcontracted)	Semi-Volatile Organics GC/MS 625 ☐ 8270C ☐ (Subcontracted)	0												Remarks
												Or IA (7196)												
MW-11-5	(1)	12/02/09	0947	W	1							X												LEVEL IV QC
MW-11-4	(2)		0909		1							X												
MW-11-3	(3)		0941		1							X												LEVEL IV QC
MW-11-2	(4)		1007		1							X												
MW-11-1	(5)		1038		1							X												
EB-10-12/02/09	(6)		1023		1							X												EQUIPMENT BLANK

Preservative Key

0	None
1	HCL
2	HNO3
3	H2SO4
4	NaOH
5	Zn Acetate
6	Asc Acid
7	Other

Report Tier Levels - please select

Tier I - (Results/Default if not specified) ____
Tier II - (Results + QC) ____
Tier III - (Data Validation Package) 10% Surcharge ____
Tier V - (client specified) ____

MRL required Yes / No
MDL / PQL / J required Yes / No
EDD required Yes / No
Type: ____

Project Requirements (MRLs, QAPP)

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
	12/02/09	1200		12/4/09	12:00
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
	12/02/09	12:55		12/2/09	12:55
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:

Cooler / Blank / Ice / No Ice

Temperature °C

Columbia Analytical Services, Inc.
Chain of Custody Report

Client: Battelle
Project: JPL GW Mon 4Q09/G486090

Service Request: P0904124

Bottle ID	Tests	Date	Time	Sample Location / User	Disposed On
P0904124-001.01					
	7196A				
		12/2/09	1301	SMO / ADAVID	
		12/2/09	1302	P-37 / ADAVID	
		12/2/09	1356	In Lab / SANDERSON	
		12/2/09	1642	P-37 / SANDERSON	
P0904124-002.01					
	7196A				
		12/2/09	1301	SMO / ADAVID	
		12/2/09	1302	P-37 / ADAVID	
		12/2/09	1356	In Lab / SANDERSON	
		12/2/09	1642	P-37 / SANDERSON	
P0904124-003.01					
	7196A				
		12/2/09	1301	SMO / ADAVID	
		12/2/09	1302	P-37 / ADAVID	
		12/2/09	1356	In Lab / SANDERSON	
		12/2/09	1642	P-37 / SANDERSON	
P0904124-004.01					
	7196A				
		12/2/09	1301	SMO / ADAVID	
		12/2/09	1302	P-37 / ADAVID	
		12/2/09	1356	In Lab / SANDERSON	
		12/2/09	1642	P-37 / SANDERSON	
P0904124-005.01					
	7196A				
		12/2/09	1301	SMO / ADAVID	
		12/2/09	1302	P-37 / ADAVID	
		12/2/09	1356	In Lab / SANDERSON	
		12/2/09	1642	P-37 / SANDERSON	
P0904124-006.01					
	7196A				
		12/2/09	1301	SMO / ADAVID	
		12/2/09	1302	P-37 / ADAVID	
		12/2/09	1356	In Lab / SANDERSON	
		12/2/09	1642	P-37 / SANDERSON	

Columbia Analytical Services, Inc.
Sample Acceptance Check Form

Client: Battelle Work order: P0904124

Project: JPL GW Mon 4Q09 / G486090

Sample(s) received on: 12/02/09 Date opened: 12/02/09 by: ADAVID

Note: This form is used for all samples received by CAS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Container(s) **supplied by CAS**?	☒	☐	☐
3	Did **sample containers** arrive in good condition?	☒	☐	☐
4	Was a **chain-of-custody** provided?	☒	☐	☐
5	Was the **chain-of-custody** properly completed?	☒	☐	☐
6	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
7	Was **sample volume** received adequate for analysis?	☒	☐	☐
8	Are samples within specified holding times?	☒	☐	☐
9	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☒	☐	☐
	Cooler Temperature 3 °C Blank Temperature ____ °C			
10	Was a **trip blank** received?	☐	☐	☒
	Trip blank supplied by CAS: ____			
11	Were **custody seals** on outside of cooler/Box?	☐	☒	☐
	Location of seal(s)? ____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
	Were custody seals on outside of sample container?	☐	☒	☐
	Location of seal(s)? ____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
12	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☐	☐	☒
	Is there a client indication that the submitted samples are **pH** preserved?	☐	☐	☒
	Were **VOA vials** checked for presence/absence of air bubbles?	☐	☐	☒
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☐	☐	☒
13	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
	Do they contain moisture?	☐	☐	☒
14	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P0904124-001.01	125mL Plastic NP					
P0904124-002.01	125mL Plastic NP					
P0904124-003.01	125mL Plastic NP					
P0904124-004.01	125mL Plastic NP					
P0904124-005.01	125mL Plastic NP					
P0904124-006.01	125mL Plastic NP					

Explain any discrepancies: (include lab sample ID numbers): ____

*Required pH: Phenols/COD/NH3/TOC/TOX/NO3+NO2/TKN/T.PHOS, H2SO4 (pH<2); Metals, HNO3 (pH<2); CN (NaOH or NaOH/Asc Acid) (pH>12); Diss. Sulfide, NaOH (pH>12); T. Sulfide, NaOH/ZnAc (pH>12). RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

DIVIDER SHEET

ANALYTICAL DATA FOR

Hexavalent Chromium

ANALYSIS

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client : Battelle
Project Name : JPL GW Mon 4Q09
Project Number : G486090
Sample Matrix : WATER

Service Request : P0904124
Date Collected : 12/02/09
Date Received : 12/02/09

Chromium, Hexavalent

Prep Method : None
Analysis Method : 7196A
Test Notes :

Units : mg/L (ppm)
Basis : NA

Sample Name	Lab Code	PQL	MDL	Dilution Factor	Date Extracted	Date/Time Analyzed	Result	Result Notes
MW-11-5	P0904124-001	0.010	0.003	1	NA	12/02/09 15:45	ND	
MW-11-4	P0904124-002	0.010	0.003	1	NA	12/02/09 15:45	ND	
MW-11-3	P0904124-003	0.010	0.003	1	NA	12/02/09 15:45	ND	
MW-11-2	P0904124-004	0.010	0.003	1	NA	12/02/09 15:45	ND	
MW-11-1	P0904124-005	0.010	0.003	1	NA	12/02/09 15:45	ND	
EB-10-12/02/09	P0904124-006	0.010	0.003	1	NA	12/02/09 15:45	ND	
Method Blank	P0904124-MB	0.010	0.003	1	NA	12/02/09 15:45	ND	

Approved By Karen Ryan Date : 12/3/09

Report By:SAnderson

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle
Project: JPL GW Mon 4Q09 / G486090

Service Request: P0904124
Date Analyzed: 12/02/09

Title: Initial and Continuing Calibration Blank (ICB and CCB) Summary
Analyte: Chromium, Hexavalent
Method: 7196A
Units: mg/L (ppm)

Sample Name	PQL	MDL	Result
ICB	0.010	0.003	ND
CCB1	0.010	0.003	ND
CCB2	0.010	0.003	ND

Approved By: Karen Ryan Date: 12/3/09

ICCBMDL 120594

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle
Project: JPL GW Mon 4Q09 / G486090

Service Request: P0904124
Date Analyzed: 12/02/09

Title: Initial and Continuing Calibration Verification (ICV and CCV) Summary
Analyte: Chromium, Hexavalent
Method: 7196A
Units: mg/L (ppm)

Sample Name	True Value	Result	Percent Recovery	Acceptance Criteria
ICV	0.0579	0.0563	97	90-110
CCV1	0.0579	0.0563	97	90-110
CCV2	0.0579	0.0573	99	90-110

Approved By: Karen Ryan Date: 12/3/09

CCV1A/120594

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client :	Battelle	**Service Request :**	P0904124
Project Name :	JPL GW Mon 4Q09	**Date Collected :**	NA
Project Number :	G486090	**Date Received :**	NA
Sample Matrix :	WATER	**Date Extracted :**	NA
		Date Analyzed :	12/02/09

Laboratory Control Sample Summary
Inorganic Parameters

Sample Name :	Laboratory Control Sample	Units :	mg/L (ppm)
Lab Code :	P0904124-LCS	Basis :	NA
Test Notes :			

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Chromium, Hexavalent	None	7196A	0.0400	0.0403	101	86-114	

Approved By Karen Ryan Date : 12/3/09

Report By:SAnderson

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client :	Battelle	**Service Request :**	P0904124
Project Name :	JPL GW Mon 4Q09	**Date Collected :**	12/02/09
Project Number :	G486090	**Date Received :**	12/02/09
Sample Matrix :	WATER	**Date Extracted :**	NA
		Date Analyzed :	12/02/09

Matrix Spike/Duplicate Matrix Spike Summary

Sample Name : MW-11-5
Lab Code : P0904124-001MS P0904124-001DMS
Test Notes :

Units : mg/L (ppm)
Basis : NA

Analyte	Prep Method	Analysis Method	PQL	Spike Level MS	Spike Level DMS	Sample Result	Spike Result MS	Spike Result DMS	Spike Recovery MS	Spike Recovery DMS	CAS Acceptance Limits	Relative Percent Difference	Result Notes
Chromium, Hexavalent	None	7196A	0.010	0.0500	0.0500	ND	0.0433	0.0433	87	87	80-120	<1	

Approved By Karen Ryan Date : 12/3/09

Report By:SAnderson

CAS SR #P0904140

Table of Contents

Columbia Analytical Services™ 2655 Park Center Drive, Suite A | Simi Valley, CA 93065 | 805.526.7161 | 805.526.7270 fax | www.caslab.com

LABORATORY REPORT

December 8, 2009

David Conner
Battelle
3990 Old Town Ave., Suite C-205
San Diego, CA 92110

RE: JPL GW Mon 4Q09 / G486090

Dear David:

Enclosed are the results of the samples submitted to our laboratory on December 3, 2009. For your reference, these analyses have been assigned our service request number P0904140.

All analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.caslab.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein. Your report contains 25 pages.

Columbia Analytical Services, Inc. is certified by the California Department of Health Services, NELAP Laboratory Certificate No. 02115CA; Arizona Department of Health Services, Certificate No. AZ0694; Florida Department of Health, NELAP Certification E871020; New Jersey Department of Environmental Protection, NELAP Laboratory Certification ID #CA009; New York State Department of Health, NELAP NY Lab ID No: 11221; Oregon Environmental Laboratory Accreditation Program, NELAP ID: CA20007; The American Industrial Hygiene Association, Laboratory #101661; Department of the Navy (NFESC); Pennsylvania Registration No. 68-03307; TX Commission of Environmental Quality, NELAP ID T104704413-09-TX; Minnesota Department of Health, Certificate No. 11495AA. Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact me for information corresponding to a particular certification.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

Columbia Analytical Services, Inc.

Sue Anderson
Project Manager

Client: Battelle CAS Project No: P0904140
Project: JPL GW Mon 4Q09 / G486090

CASE NARRATIVE

The samples were received intact under chain of custody on December 3, 2009 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Hexavalent Chromium by EPA 7196A

No anomalies were encountered during this analysis.

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for utilization of less than the complete report.

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
P0904140-001	MW-24-5	12/3/09	08:17
P0904140-002	MW-24-4	12/3/09	08:49
P0904140-003	MW-24-3	12/3/09	09:17
P0904140-004	MW-24-2	12/3/09	09:40
P0904140-005	MW-24-1	12/3/09	10:11
P0904140-006	EB-11-12/03/09	12/3/09	09:59

Acronyms

CA LUFT	California DHS LUFT Method
ASTM	American Society for Testing and Materials
BTEX	Benzene/Toluene/Ethylbenzene/Xylenes
CAS Number	Chemical Abstract Service Registry Number
CFC	Chlorofluorocarbon
CRDL	Contract Required Detection Limit
DLCS	Duplicate Laboratory Control Sample
DMS	Duplicate Matrix Spike
DOH or DHS	Department of Health Services
EPA	U.S. Environmental Protection Agency
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
IC	Ion Chromatography
ICB	Initial Calibration Blank
ICV	Initial Calibration Verification
LCS	Laboratory Control Sample
LUFT	Leaking Underground Fuel Tank
M	Modified Method
MDL	Method Detection Limit
MRL	Method Reporting Limit
MS	Matrix Spike
MTBE	Methyl *tert*-Butyl Ether
NA	Not Applicable
NC	Not Calculated
ND	None Detected at or above the Method Reporting/Detection Limit (MRL/MDL)
NTU	Nephelometric Turbidity Units
ppb	Parts Per Billion
ppm	Parts Per Million
PQL	Practical Quantitation Limit
QA/QC	Quality Assurance/Quality Control
RCRA	Resource Conservation and Recovery Act
RPD	Relative Percent Difference
SIM	Selected Ion Monitoring
SM	*Standard Methods for the Examination of Water and Wastewater*, 19th Ed., 1995.
SW	*Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*, SW-846, Third Edition, 1986 and as amended by Updates I, II, IIA, and IIB.
TDS	Total Dissolved Solids
TPH	Total Petroleum Hydrocarbons
TSS	Total Suspended Solids
TTLC	Total Threshold Limit Concentration
VOA	Volatile Organic Analyte(s)
VOC	Volatile Organic Compound(s)

Qualifiers

U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
J	The result is an estimated concentration that is less than the MRL (PQL), but greater than or equal to the MDL.
B	Analyte detected in the method blank above MRL (PQL).
E	Estimated; result based on response which exceeded the instrument calibration range.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
D	The reported result is from a dilution.
X	See case narrative.

Water & Soil - Chain of Custody Record & Analytical Service Request

Page 1 of 1

Columbia Analytical Services INC.
An Employee - Owned Company

2655 Park Center Drive, Suite A
Simi Valley, California 93065
Phone (805) 526-7161
Fax (805) 526-7270

Requested Turnaround Time in Business Days (Surcharges) please circle
1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10 Day - Standard

CAS Project No.: P090414O

CAS Contact:

Company Name & Address (Reporting Information): BATTELLE 3990 OLD TOWN AVE., C-205 SAN DIEGO CA 92110	Project Name: JPL GW MON 4809 Project Number: 04486090
Project Manager: DAVID CONNER	P.O. # / Billing Information: 214319/BATTELLE ATTN: GERALD TOMPKINS 505 KING AVE. COLUMBUS, OH 43201
Phone: (619) 726-7311	Fax:
Email Address for Result Reporting:	Sampler (Print & Sign):

Analysis Method and/or Analytes

Preservative Code

Preservative Key

0	None
1	HCL
2	HNO3
3	H2SO4
4	NaOH
5	Zn Acetate
6	Asc Acid
7	Other

Client Sample ID	Laboratory ID Number	Date Collected	Time Collected	Matrix	Number of Containers	Volatile Organics GC/MS 624 ☐ 8260B ☐ Oxygenates ☐ TPH Gas ☐	TPH Gas 8015B ☐ BTEX 8021B ☐ MTBE 8021B ☐	TPH Diesel 8015B ☐ (Subcontracted)	TPH Diesel Low Level 8015B ☐ (Subcontracted)	TPH FC ☐ 8015M (Subcontracted)	Semi-Volatile Organics GC/MS 625 ☐ 8270C ☐ (Subcontracted)	0	Cr VI (7196)	Remarks
MW-24-5		12/03/09	0817	W	1							X		
MW-24-4			0849									X		
MW-24-3			0917									X		
MW-24-2			0940									X		
MW-24-1			1011									X		
EB-11-12/03/09		12/03/09	0959									X		EQUIPMENT BLANK

Report Tier Levels - please select

Tier I - (Results/Default if not specified) ____
Tier II - (Results + QC) ____
Tier III - (Data Validation Package) 10% Surcharge ____
Tier V - (client specified) ____

MRL required Yes / No
MDL / PQL / J required Yes / No

EDD required Yes / No
Type: _____

Project Requirements (MRLs, QAPP)

Relinquished by: (Signature)	Date: 12/3/09	Time: 1200	Received by: (Signature)		Date: 12/4/09	Time: 1200
Relinquished by: (Signature)	Date: 12/3/09	Time: 1210	Received by: (Signature)		Date: 12/4/09	Time: 1250
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)		Date:	Time:

Cooler / Blank / Ice / No Ice

Temperature 3° C °C

Columbia Analytical Services, Inc.
Chain of Custody Report

Client: Battelle
Project: JPL GW Mon 4Q09/G486090

Service Request: P0904140

Bottle ID	Tests	Date	Time	Sample Location / User	Disposed On
P0904140-001.01					
	7196A				
		12/3/09	1255	SMO / MZAMORA	
		12/3/09	1255	P-37 / MZAMORA	
		12/3/09	1321	In Lab / SANDERSON	
		12/4/09	0753	P-37 / SANDERSON	
P0904140-002.01					
	7196A				
		12/3/09	1255	SMO / MZAMORA	
		12/3/09	1255	P-37 / MZAMORA	
		12/3/09	1321	In Lab / SANDERSON	
		12/4/09	0753	P-37 / SANDERSON	
P0904140-003.01					
	7196A				
		12/3/09	1255	SMO / MZAMORA	
		12/3/09	1255	P-37 / MZAMORA	
		12/3/09	1321	In Lab / SANDERSON	
		12/4/09	0753	P-37 / SANDERSON	
P0904140-004.01					
	7196A				
		12/3/09	1255	SMO / MZAMORA	
		12/3/09	1255	P-37 / MZAMORA	
		12/3/09	1321	In Lab / SANDERSON	
		12/4/09	0753	P-37 / SANDERSON	
P0904140-005.01					
	7196A				
		12/3/09	1255	SMO / MZAMORA	
		12/3/09	1255	P-37 / MZAMORA	
		12/3/09	1321	In Lab / SANDERSON	
		12/4/09	0753	P-37 / SANDERSON	
P0904140-006.01					
	7196A				
		12/3/09	1255	SMO / MZAMORA	
		12/3/09	1255	P-37 / MZAMORA	
		12/3/09	1321	In Lab / SANDERSON	
		12/4/09	0753	P-37 / SANDERSON	

Columbia Analytical Services, Inc.
Sample Acceptance Check Form

Client: Battelle Work order: P0904140

Project: JPL GW Mon 4Q09 / G486090

Sample(s) received on: 12/03/09 Date opened: 12/03/09 by: MZAMORA

Note: This form is used for all samples received by CAS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Container(s) **supplied by CAS**?	☒	☐	☐
3	Did **sample containers** arrive in good condition?	☒	☐	☐
4	Was a **chain-of-custody** provided?	☒	☐	☐
5	Was the **chain-of-custody** properly completed?	☒	☐	☐
6	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
7	Was **sample volume** received adequate for analysis?	☒	☐	☐
8	Are samples within specified holding times?	☒	☐	☐
9	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☒	☐	☐
	Cooler Temperature _____ °C Blank Temperature 3 °C			
10	Was a **trip blank** received?	☐	☐	☒
	Trip blank supplied by CAS: _____			
11	Were **custody seals** on outside of cooler/Box?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
	Were custody seals on outside of sample container?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
12	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☒	☐	☐
	Is there a client indication that the submitted samples are **pH** preserved?	☐	☐	☒
	Were **VOA vials** checked for presence/absence of air bubbles?	☐	☐	☒
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☐	☐	☒
13	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
	Do they contain moisture?	☐	☐	☒
14	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P0904140-001.01	125mL Plastic NP					
P0904140-002.01	125mL Plastic NP					
P0904140-003.01	125mL Plastic NP					
P0904140-004.01	125mL Plastic NP					
P0904140-005.01	125mL Plastic NP					
P0904140-006.01	125mL Plastic NP					

Explain any discrepancies: (include lab sample ID numbers): _____

*Required pH: Phenols/COD/NH3/TOC/TOX/NO3+NO2/TKN/T.PHOS, H2SO4 (pH<2); Metals, HNO3 (pH<2); CN (NaOH or NaOH/Asc Acid) (pH>12); Diss. Sulfide, NaOH (pH>12); T. Sulfide, NaOH/ZnAc (pH>12) RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

DIVIDER SHEET

ANALYTICAL DATA FOR

Hexavalent Chromium

ANALYSIS

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client : Battelle
Project Name : JPL GW Mon 4Q09
Project Number : G486090
Sample Matrix : WATER

Service Request : P0904140
Date Collected : 12/03/09
Date Received : 12/03/09

Chromium, Hexavalent

Prep Method : None
Analysis Method : 7196A
Test Notes :

Units : mg/L (ppm)
Basis : NA

Sample Name	Lab Code	PQL	MDL	Dilution Factor	Date Extracted	Date/Time Analyzed	Result	Result Notes
MW-24-5	P0904140-001	0.010	0.003	1	NA	12/03/09 15:45	ND	
MW-24-4	P0904140-002	0.010	0.003	1	NA	12/03/09 15:45	ND	
MW-24-3	P0904140-003	0.010	0.003	1	NA	12/03/09 15:45	ND	
MW-24-2	P0904140-004	0.010	0.003	1	NA	12/03/09 15:45	ND	
MW-24-1	P0904140-005	0.010	0.003	1	NA	12/03/09 15:45	ND	
EB-11-12/03/09	P0904140-006	0.010	0.003	1	NA	12/03/09 15:45	ND	
Method Blank	P0904140-MB	0.010	0.003	1	NA	12/03/09 15:45	ND	

Approved By Karen Ryan Date : 12/4/09

Report By:SAnderson

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle
Project: JPL GW Mon 4Q09 / G486090

Service Request: P0904140
Date Analyzed: 12/03/09

Title: Initial and Continuing Calibration Blank (ICB and CCB) Summary
Analyte: Chromium, Hexavalent
Method: 7196A
Units: mg/L (ppm)

Sample Name	PQL	MDL	Result
ICB	0.010	0.003	ND
CCB1	0.010	0.003	ND
CCB2	0.010	0.003	ND

Approved By: Karen Ryan Date: 12/4/09

ICCBMDL/120594

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle
Project: JPL GW Mon 4Q09 / G486090

Service Request: P0904140
Date Analyzed: 12/03/09

Title: Initial and Continuing Calibration Verification (ICV and CCV) Summary
Analyte: Chromium, Hexavalent
Method: 7196A
Units: mg/L (ppm)

Sample Name	True Value	Result	Percent Recovery	Acceptance Criteria
ICV	0.0579	0.0584	101	90-110
CCV1	0.0579	0.0574	99	90-110
CCV2	0.0579	0.0574	99	90-110

Approved By: Karen Ryan Date: 12/4/09

CCV1A/120594

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client :	Battelle	**Service Request :**	P0904140
Project Name :	JPL GW Mon 4Q09	**Date Collected :**	NA
Project Number :	G486090	**Date Received :**	NA
Sample Matrix :	WATER	**Date Extracted :**	NA
		Date Analyzed :	12/03/09

Laboratory Control Sample Summary
Inorganic Parameters

Sample Name :	Laboratory Control Sample	Units :	mg/L (ppm)
Lab Code :	P0904140-LCS	Basis :	NA
Test Notes :			

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Chromium, Hexavalent	None	7196A	0.0400	0.0387	97	86-114	

Approved By Karen Ryan Date : 12/4/09

Report By:SAnderson

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client :	Battelle	**Service Request :**	P0904140
Project Name :	JPL GW Mon 4Q09	**Date Collected :**	12/03/09
Project Number :	G486090	**Date Received :**	12/03/09
Sample Matrix :	WATER	**Date Extracted :**	NA
		Date Analyzed :	12/03/09

Matrix Spike/Duplicate Matrix Spike Summary

Sample Name : MW-24-5
Lab Code : P0904140-001MS P0904140-001DMS
Test Notes :

Units : mg/L (ppm)
Basis : NA

Analyte	Prep Method	Analysis Method	PQL	Spike Level MS	Spike Level DMS	Sample Result	Spike Result MS	Spike Result DMS	Spike Recovery MS	Spike Recovery DMS	CAS Acceptance Limits	Relative Percent Difference	Result Notes
Chromium, Hexavalent	None	7196A	0.010	0.0500	0.0500	ND	0.0520	0.0510	104	102	80-120	2	

Approved By Karen Ryan Date : 12/4/09

Report By:SAnderson

CAS SR #P0904161

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Columbia Analytical Services, Inc. 2655 Park Center Drive, Suite A | Simi Valley, CA 93065 | 805.526.7161 | 805.526.7270 fax | www.caslab.com

LABORATORY REPORT

December 8, 2009

David Conner
Battelle
3990 Old Town Ave., Suite C-205
San Diego, CA 92110

RE: JPL GW Mon 4Q09 / G486090

Dear David:

Enclosed are the results of the samples submitted to our laboratory on December 4, 2009. For your reference, these analyses have been assigned our service request number P0904161.

All analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.caslab.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein. Your report contains 25 pages.

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If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

Columbia Analytical Services, Inc.

Sue Anderson
Project Manager

Client: Battelle
Project: JPL GW Mon 4Q09 / G486090

CAS Project No: P0904161

CASE NARRATIVE

The samples were received intact under chain of custody on December 4, 2009 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Hexavalent Chromium by EPA 7196A

No anomalies were encountered during this analysis.

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for utilization of less than the complete report.

Client: Battelle
Project: JPL GW Mon 4Q09/G486090

Service Request: P0904161

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
P0904161-001	MW-23-5	12/4/09	08:39
P0904161-002	MW-23-4	12/4/09	09:08
P0904161-003	MW-23-3	12/4/09	09:59
P0904161-004	MW-23-2	12/4/09	10:03
P0904161-005	MW-23-1	12/4/09	10:34
P0904161-006	EB-12-12/04/09	12/4/09	10:11

Acronyms

CA LUFT	California DHS LUFT Method
ASTM	American Society for Testing and Materials
BTEX	Benzene/Toluene/Ethylbenzene/Xylenes
CAS Number	Chemical Abstract Service Registry Number
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CRDL	Contract Required Detection Limit
DLCS	Duplicate Laboratory Control Sample
DMS	Duplicate Matrix Spike
DOH or DHS	Department of Health Services
EPA	U.S. Environmental Protection Agency
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
IC	Ion Chromatography
ICB	Initial Calibration Blank
ICV	Initial Calibration Verification
LCS	Laboratory Control Sample
LUFT	Leaking Underground Fuel Tank
M	Modified Method
MDL	Method Detection Limit
MRL	Method Reporting Limit
MS	Matrix Spike
MTBE	Methyl *tert*-Butyl Ether
NA	Not Applicable
NC	Not Calculated
ND	None Detected at or above the Method Reporting/Detection Limit (MRL/MDL)
NTU	Nephelometric Turbidity Units
ppb	Parts Per Billion
ppm	Parts Per Million
PQL	Practical Quantitation Limit
QA/QC	Quality Assurance/Quality Control
RCRA	Resource Conservation and Recovery Act
RPD	Relative Percent Difference
SIM	Selected Ion Monitoring
SM	*Standard Methods for the Examination of Water and Wastewater*, 19th Ed., 1995.
SW	*Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*, SW-846, Third Edition, 1986 and as amended by Updates I, II, IIA, and IIB.
TDS	Total Dissolved Solids
TPH	Total Petroleum Hydrocarbons
TSS	Total Suspended Solids
TTLC	Total Threshold Limit Concentration
VOA	Volatile Organic Analyte(s)
VOC	Volatile Organic Compound(s)

Qualifiers

U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
J	The result is an estimated concentration that is less than the MRL (PQL), but greater than or equal to the MDL.
B	Analyte detected in the method blank above MRL (PQL).
E	Estimated; result based on response which exceeded the instrument calibration range.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
D	The reported result is from a dilution.
X	See case narrative.

Water & Soil - Chain of Custody Record & Analytical Service Request

Page 1 of 1

Columbia Analytical Services INC.
An Employee - Owned Company

2655 Park Center Drive, Suite A
Simi Valley, California 93065
Phone (805) 526-7161
Fax (805) 526-7270

Requested Turnaround Time in Business Days (Surcharges) please circle
1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10 Day - Standard

CAS Project No. P0904161

CAS Contact:

Company Name & Address (Reporting Information)	Project Name
BATTELLE 3990 OLD TOWN AVE., C-205 SAN DIEGO CA 92110	SPL GW MON 4Q09 Project Number G-486090
Project Manager	**P.O. # / Billing Information**
DAVID CONNER	214319/BATTELLE ATTN: GENNIE TOMPKINS 505 KING AVE. COLUMBUS, OH 43201
Phone (619) 726-7311	**Fax**
Email Address for Result Reporting	**Sampler (Print & Sign)**

Analysis Method and/or Analytes

Preservative Code

Client Sample ID	Laboratory ID Number	Date Collected	Time Collected	Matrix	Number of Containers	Volatile Organics GC/MS 624 ☐ 8260B ☐ Oxygenates ☐ TPH Gas ☐	TPH Gas 8015B ☐ BTEX 8021B ☐ MTBE 8021B ☐	TPH Diesel 8015B ☐ (Subcontracted) TPH Diesel Low Level 8015B ☐ (Subcontracted)	TPH FC ☐ 8015M (Subcontracted)	Semi-Volatile Organics GC/MS 625 ☐ 8270C ☐ (Subcontracted)	0 Cr VI (7196)	Remarks
MW-23-5	1	12/04/09	0839	W	1						X	
MW-23-4	2		0908		1						X	
MW-23-3	3		0939		1						X	
MW-23-2	4		1003		1						X	
MW-23-1	5		1034		1						X	
EB-12-12/04/09	6		1011		1						X	EQUIPMENT BLANK

Preservative Key

0	None
1	HCL
2	HNO3
3	H2SO4
4	NaOH
5	Zn Acetate
6	Asc Acid
7	Other

Report Tier Levels - please select

Tier I - (Results/Default if not specified) ____
Tier II - (Results + QC) ____
Tier III - (Data Validation Package) 10% Surcharge ____
Tier V - (client specified) ____

MRL required Yes / No
MDL / PQL / J required Yes / No

EDD required Yes / No
Type: ____

Project Requirements (MRLs, QAPP)

Relinquished by: (Signature)		Date: 12/04/09	Time: 1200	Received by: (Signature)		Date:	Time:
Relinquished by: (Signature)		Date: 12/4/09	Time: 1752	Received by: (Signature)		Date: 12/4/09	Time: 1825
Relinquished by: (Signature)		Date:	Time:	Received by: (Signature)		Date:	Time:

Cooler / Blank / Ice / No Ice

Temperature 3°C °C

Columbia Analytical Services, Inc.
Chain of Custody Report

Client: Battelle
Project: JPL GW Mon 4Q09/G486090

Service Request: P0904161

Bottle ID	Tests	Date	Time	Sample Location / User	Disposed On
P0904161-001.01					
	7196A				
		12/4/09	1337	SMO / MZAMORA	
		12/4/09	1338	P-37 / MZAMORA	
		12/4/09	1346	In Lab / SANDERSON	
		12/7/09	0819	P-37 / SANDERSON	
P0904161-002.01					
	7196A				
		12/4/09	1337	SMO / MZAMORA	
		12/4/09	1338	P-37 / MZAMORA	
		12/4/09	1346	In Lab / SANDERSON	
		12/7/09	0819	P-37 / SANDERSON	
P0904161-003.01					
	7196A				
		12/4/09	1337	SMO / MZAMORA	
		12/4/09	1338	P-37 / MZAMORA	
		12/4/09	1346	In Lab / SANDERSON	
		12/7/09	0819	P-37 / SANDERSON	
P0904161-004.01					
	7196A				
		12/4/09	1337	SMO / MZAMORA	
		12/4/09	1338	P-37 / MZAMORA	
		12/4/09	1346	In Lab / SANDERSON	
		12/7/09	0819	P-37 / SANDERSON	
P0904161-005.01					
	7196A				
		12/4/09	1337	SMO / MZAMORA	
		12/4/09	1338	P-37 / MZAMORA	
		12/4/09	1346	In Lab / SANDERSON	
		12/7/09	0819	P-37 / SANDERSON	
P0904161-006.01					
	7196A				
		12/4/09	1337	SMO / MZAMORA	
		12/4/09	1338	P-37 / MZAMORA	
		12/4/09	1346	In Lab / SANDERSON	
		12/7/09	0819	P-37 / SANDERSON	

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Columbia Analytical Services, Inc.
Sample Acceptance Check Form

Client: Battelle Work order: P0904161

Project: JPL GW Mon 4Q09 / G486090

Sample(s) received on: 12/04/09 Date opened: 12/04/09 by: MZAMORA

Note: This form is used for all samples received by CAS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Container(s) **supplied by CAS**?	☒	☐	☐
3	Did **sample containers** arrive in good condition?	☒	☐	☐
4	Was a **chain-of-custody** provided?	☒	☐	☐
5	Was the **chain-of-custody** properly completed?	☒	☐	☐
6	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
7	Was **sample volume** received adequate for analysis?	☒	☐	☐
8	Are samples within specified holding times?	☒	☐	☐
9	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☒	☐	☐
	Cooler Temperature _____ °C Blank Temperature 3 °C			
10	Was a **trip blank** received?	☐	☐	☒
	Trip blank supplied by CAS: _____			
11	Were **custody seals** on outside of cooler/Box?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
	Were custody seals on outside of sample container?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
12	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☒	☐	☐
	Is there a client indication that the submitted samples are **pH** preserved?	☐	☐	☒
	Were **VOA vials** checked for presence/absence of air bubbles?	☐	☐	☒
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☐	☐	☒
13	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
	Do they contain moisture?	☐	☐	☒
14	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P0904161-001.01	125mL Plastic NP					
P0904161-002.01	125mL Plastic NP					
P0904161-003.01	125mL Plastic NP					
P0904161-004.01	125mL Plastic NP					
P0904161-005.01	125mL Plastic NP					
P0904161-006.01	125mL Plastic NP					

Explain any discrepancies: (include lab sample ID numbers): _____

*Required pH: Phenols/COD/NH3/TOC/TOX/NO3+NO2/TKN/T.PHOS, H2SO4 (pH<2); Metals, HNO3 (pH<2); CN (NaOH or NaOH/Asc Acid) (pH>12); Diss. Sulfide, NaOH (pH>12); T. Sulfide, NaOH/ZnAc (pH>12) RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

DIVIDER SHEET

ANALYTICAL DATA FOR

Hexavalent Chromium

ANALYSIS

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client : Battelle
Project Name : JPL GW Mon 4Q09
Project Number : G486090
Sample Matrix : WATER

Service Request : P0904161
Date Collected : 12/04/09
Date Received : 12/04/09

Chromium, Hexavalent

Prep Method : None
Analysis Method : 7196A
Test Notes :

Units : mg/L (ppm)
Basis : NA

Sample Name	Lab Code	PQL	MDL	Dilution Factor	Date Extracted	Date/Time Analyzed	Result	Result Notes
MW-23-5	P0904161-001	0.010	0.003	1	NA	12/04/09 14:55	ND	
MW-23-4	P0904161-002	0.010	0.003	1	NA	12/04/09 14:55	ND	
MW-23-3	P0904161-003	0.010	0.003	1	NA	12/04/09 14:55	ND	
MW-23-2	P0904161-004	0.010	0.003	1	NA	12/04/09 14:55	ND	
MW-23-1	P0904161-005	0.010	0.003	1	NA	12/04/09 14:55	ND	
EB-12-12/04/09	P0904161-006	0.010	0.003	1	NA	12/04/09 14:55	ND	
Method Blank	P0904161-MB	0.010	0.003	1	NA	12/04/09 14:55	ND	

Approved By Karen Ryan Date : 12/4/09

Report By:SAnderson

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle
Project: JPL GW Mon 4Q09 / G486090

Service Request: P0904161
Date Analyzed: 12/04/09

Title: Initial and Continuing Calibration Blank (ICB and CCB) Summary
Analyte: Chromium, Hexavalent
Method: 7196A
Units: mg/L (ppm)

Sample Name	PQL	MDL	Result
ICB	0.010	0.003	ND
CCB1	0.010	0.003	ND
CCB2	0.010	0.003	ND

Approved By: Karen Rya Date: 12/4/09

ICCBMDL/120594

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle
Project: JPL GW Mon 4Q09 / G486090

Service Request: P0904161
Date Analyzed: 12/04/09

Title: Initial and Continuing Calibration Verification (ICV and CCV) Summary
Analyte: Chromium, Hexavalent
Method: 7196A
Units: mg/L (ppm)

Sample Name	True Value	Result	Percent Recovery	Acceptance Criteria
ICV	0.0579	0.0599	103	90-110
CCV1	0.0579	0.0589	102	90-110
CCV2	0.0579	0.0589	102	90-110

Approved By: Karen Ryan Date: 12/4/09

CCV1A/120594

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client :	Battelle	**Service Request :**	P0904161
Project Name :	JPL GW Mon 4Q09	**Date Collected :**	NA
Project Number :	G486090	**Date Received :**	NA
Sample Matrix :	WATER	**Date Extracted :**	NA
		Date Analyzed :	12/04/09

Laboratory Control Sample Summary
Inorganic Parameters

Sample Name :	Laboratory Control Sample	Units :	mg/L (ppm)
Lab Code :	P0904161-LCS	Basis :	NA
Test Notes :			

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Chromium, Hexavalent	None	7196A	0.0400	0.0382	96	86-114	

Approved By Karen Ryan Date : 12/4/09

Report By:SAnderson

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client :	Battelle	**Service Request :**	P0904161
Project Name :	JPL GW Mon 4Q09	**Date Collected :**	12/04/09
Project Number :	G486090	**Date Received :**	12/04/09
Sample Matrix :	WATER	**Date Extracted :**	NA
		Date Analyzed :	12/04/09

Matrix Spike/Duplicate Matrix Spike Summary

Sample Name : MW-23-5 Units : mg/L (ppm)
Lab Code : P0904161-001MS P0904161-001DMS Basis : NA
Test Notes :

Analyte	Prep Method	Analysis Method	PQL	Spike Level MS	Spike Level DMS	Sample Result	Spike Result MS	Spike Result DMS	Spike Recovery MS	Spike Recovery DMS	CAS Acceptance Limits	Relative Percent Difference	Result Notes
Chromium, Hexavalent	None	7196A	0.010	0.0500	0.0500	ND	0.0444	0.0444	89	89	80-120	<1	

Approved By Karen Ryan Date : 12/4/09

Report By:SAnderson

CAS SR #P0904197

Table of Contents

Columbia Analytical Services™ 2655 Park Center Drive, Suite A | Simi Valley, CA 93065 | 805.526.7161 | 805.526.7270 fax | www.caslab.com

LABORATORY REPORT

December 11, 2009

David Conner
Battelle
3990 Old Town Ave., Suite C-205
San Diego, CA 92110

RE: JPL GW Mon 4Q09 / G486090

Dear David:

Enclosed are the results of the samples submitted to our laboratory on December 8, 2009. For your reference, these analyses have been assigned our service request number P0904197.

All analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.caslab.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein. Your report contains 28 pages.

Columbia Analytical Services, Inc. is certified by the California Department of Health Services, NELAP Laboratory Certificate No. 02115CA; Arizona Department of Health Services, Certificate No. AZ0694; Florida Department of Health, NELAP Certification E871020; New Jersey Department of Environmental Protection, NELAP Laboratory Certification ID #CA009; New York State Department of Health, NELAP NY Lab ID No: 11221; Oregon Environmental Laboratory Accreditation Program, NELAP ID: CA20007; The American Industrial Hygiene Association, Laboratory #101661; Department of the Navy (NFESC); Pennsylvania Registration No. 68-03307; TX Commission of Environmental Quality, NELAP ID T104704413-09-TX; Minnesota Department of Health, Certificate No. 11495AA. Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact me for information corresponding to a particular certification.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

Columbia Analytical Services, Inc.

Sue Anderson
Project Manager

Client: Battelle
Project: JPL GW Mon 4Q09 / G486090

CAS Project No: P0904197

CASE NARRATIVE

The samples were received intact under chain of custody on December 8, 2009 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Hexavalent Chromium by EPA 7196A

No anomalies were encountered during this analysis.

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for utilization of less than the complete report.

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
P0904197-001	MW-25-5	12/8/09	08:58
P0904197-002	MW-25-4	12/8/09	09:44
P0904197-003	MW-25-3	12/8/09	10:42
P0904197-004	MW-25-2	12/8/09	11:09
P0904197-005	MW-25-1	12/8/09	11:40
P0904197-006	DUPE-07-4Q09	12/8/09	00:00
P0904197-007	EB-13-12/08/09	12/8/09	11:24
P0904197-008	MW-26-2	12/8/09	12:52
P0904197-009	MW-26-1	12/8/09	13:29

Acronyms

CA LUFT	California DHS LUFT Method
ASTM	American Society for Testing and Materials
BTEX	Benzene/Toluene/Ethylbenzene/Xylenes
CAS Number	Chemical Abstract Service Registry Number
CFC	Chlorofluorocarbon
CRDL	Contract Required Detection Limit
DLCS	Duplicate Laboratory Control Sample
DMS	Duplicate Matrix Spike
DOH or DHS	Department of Health Services
EPA	U.S. Environmental Protection Agency
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
IC	Ion Chromatography
ICB	Initial Calibration Blank
ICV	Initial Calibration Verification
LCS	Laboratory Control Sample
LUFT	Leaking Underground Fuel Tank
M	Modified Method
MDL	Method Detection Limit
MRL	Method Reporting Limit
MS	Matrix Spike
MTBE	Methyl *tert*-Butyl Ether
NA	Not Applicable
NC	Not Calculated
ND	None Detected at or above the Method Reporting/Detection Limit (MRL/MDL)
NTU	Nephelometric Turbidity Units
ppb	Parts Per Billion
ppm	Parts Per Million
PQL	Practical Quantitation Limit
QA/QC	Quality Assurance/Quality Control
RCRA	Resource Conservation and Recovery Act
RPD	Relative Percent Difference
SIM	Selected Ion Monitoring
SM	*Standard Methods for the Examination of Water and Wastewater*, 19th Ed., 1995.
SW	*Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*, SW-846, Third Edition, 1986 and as amended by Updates I, II, IIA, and IIB.
TDS	Total Dissolved Solids
TPH	Total Petroleum Hydrocarbons
TSS	Total Suspended Solids
TTLC	Total Threshold Limit Concentration
VOA	Volatile Organic Analyte(s)
VOC	Volatile Organic Compound(s)

Qualifiers

U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
J	The result is an estimated concentration that is less than the MRL (PQL), but greater than or equal to the MDL.
B	Analyte detected in the method blank above MRL (PQL).
E	Estimated; result based on response which exceeded the instrument calibration range.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
D	The reported result is from a dilution.
X	See case narrative.

Water & Soil - Chain of Custody Record & Analytical Service Request

Page 1 of 1

Columbia Analytical Services INC.
An Employee - Owned Company

2655 Park Center Drive, Suite A
Simi Valley, California 93065
Phone (805) 526-7161
Fax (805) 526-7270

Requested Turnaround Time in Business Days (Surcharges) please circle
1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10 Day - Standard

CAS Project No. 10904197

CAS Contact:

Company Name & Address (Reporting Information)	Project Name
BATTELLE 3990 OLD TOWN AVE. C-205 SANDIEGO CA 92110	SPL GW MON 4209
	Project Number: 648090
Project Manager: DAVID CONNER	P.O. # / Billing Information: 214319 / BATTELLE ATTN: GERALD TOMKINS 505 KING AVE. COLUMBUS OH 43201
Phone: (619) 726-7311	Fax:
Email Address for Result Reporting	Sampler (Print & Sign)

Analysis Method and/or Analytes

Preservative Code

Client Sample ID	Laboratory ID Number	Date Collected	Time Collected	Matrix	Number of Containers	Volatile Organics GC/MS 624 ☐ 8260B ☐ Oxygenates ☐ TPH Gas ☐	TPH Gas 8015B ☐ BTEX 8021B ☐ MTBE 8021B ☐	TPH Diesel 8015B ☐ (Subcontracted)	TPH Diesel Low Level 8015B ☐ (Subcontracted)	TPH FC ☐ 8015M (Subcontracted)	Semi-Volatile Organics GC/MS 625 ☐ 8270C ☐ (Subcontracted)	0	Cr VI (7196)	Remarks
MW-25-5		12/08/09	0858	W	1							X		LEVEL IV QC
MW-25-4			0944		1							X		
MW-25-3			1042		1							X		
MW-25-2			1109		1							X		
MW-25-1		12/08/09	1140		1							X		
DUPE-07-4209		12/08/09	--		1							X		DUPLICATE
EB-13-12/08/09		12/08/09	1124		1							X		EQUIPMENT BLANK
MW-26-2		12/08/09	1252		1							X		
MW-26-1		12/08/09	1329		1							X		

Preservative Key

0	None
1	HCL
2	HNO3
3	H2SO4
4	NaOH
5	Zn Acetate
6	Asc Acid
7	Other

Report Tier Levels - please select

Tier I - (Results/Default if not specified) ____
Tier II - (Results + QC) ____
Tier III - (Data Validation Package) 10% Surcharge ____
Tier V - (client specified) ____

MRL required Yes / No
MDL / PQL / J required Yes / No

EDD required Yes / No
Type: ____

Project Requirements (MRLs, QAPP)

Relinquished by: (Signature)		Date: 12/08/09	Time: 1400	Received by: (Signature)		Date: 12/8/09	Time: 1400
Relinquished by: (Signature)		Date: 12/8/09	Time: 1741	Received by: (Signature)		Date: 12/8/09	Time: 1945
Relinquished by: (Signature)		Date:	Time:	Received by: (Signature)		Date:	Time:

Cooler / Blank / Ice / No Ice
Temperature 3 °C

Columbia Analytical Services, Inc.
Chain of Custody Report

Client: Battelle
Project: JPL GW Mon 4Q09/G486090

Service Request: P0904197

Bottle ID	Tests	Date	Time	Sample Location / User	Disposed On
P0904197-001.01					
	7196A				
		12/8/09	1453	SMO / MZAMORA	
		12/8/09	1454	P-37 / MZAMORA	
		12/8/09	1546	In Lab / SANDERSON	
		12/8/09	1659	P-37 / SANDERSON	
P0904197-002.01					
	7196A				
		12/8/09	1453	SMO / MZAMORA	
		12/8/09	1454	P-37 / MZAMORA	
		12/8/09	1547	In Lab / SANDERSON	
		12/8/09	1659	P-37 / SANDERSON	
P0904197-003.01					
	7196A				
		12/8/09	1453	SMO / MZAMORA	
		12/8/09	1454	P-37 / MZAMORA	
		12/8/09	1546	In Lab / SANDERSON	
		12/8/09	1659	P-37 / SANDERSON	
P0904197-004.01					
	7196A				
		12/8/09	1453	SMO / MZAMORA	
		12/8/09	1454	P-37 / MZAMORA	
		12/8/09	1546	In Lab / SANDERSON	
		12/8/09	1659	P-37 / SANDERSON	
P0904197-005.01					
	7196A				
		12/8/09	1453	SMO / MZAMORA	
		12/8/09	1454	P-37 / MZAMORA	
		12/8/09	1547	In Lab / SANDERSON	
		12/8/09	1659	P-37 / SANDERSON	
P0904197-006.01					
	7196A				
		12/8/09	1453	SMO / MZAMORA	
		12/8/09	1454	P-37 / MZAMORA	
		12/8/09	1547	In Lab / SANDERSON	
		12/8/09	1659	P-37 / SANDERSON	
P0904197-007.01					
	7196A				
		12/8/09	1453	SMO / MZAMORA	
		12/8/09	1454	P-37 / MZAMORA	
		12/8/09	1546	In Lab / SANDERSON	
		12/8/09	1659	P-37 / SANDERSON	
P0904197-008.01					

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Columbia Analytical Services, Inc.
Chain of Custody Report

Client: Battelle
Project: JPL GW Mon 4Q09/G486090

Service Request: P0904197

Bottle ID	Tests	Date	Time	Sample Location / User	Disposed On
	7196A				
		12/8/09	1453	SMO / MZAMORA	
		12/8/09	1454	P-37 / MZAMORA	
		12/8/09	1546	In Lab / SANDERSON	
		12/8/09	1659	P-37 / SANDERSON	
P0904197-009.01					
	7196A				
		12/8/09	1453	SMO / MZAMORA	
		12/8/09	1454	P-37 / MZAMORA	
		12/8/09	1546	In Lab / SANDERSON	
		12/8/09	1659	P-37 / SANDERSON	

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Columbia Analytical Services, Inc.
Sample Acceptance Check Form

Client: Battelle Work order: P0904197

Project: JPL GW Mon 4Q09 / G486090

Sample(s) received on: 12/08/09 Date opened: 12/08/09 by: MZAMORA

Note: This form is used for all samples received by CAS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Container(s) **supplied by CAS**?	☒	☐	☐
3	Did **sample containers** arrive in good condition?	☒	☐	☐
4	Was a **chain-of-custody** provided?	☒	☐	☐
5	Was the **chain-of-custody** properly completed?	☒	☐	☐
6	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
7	Was **sample volume** received adequate for analysis?	☒	☐	☐
8	Are samples within specified holding times?	☒	☐	☐
9	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☒	☐	☐
	Cooler Temperature _____ °C Blank Temperature 3 °C			
10	Was a **trip blank** received?	☐	☐	☒
	Trip blank supplied by CAS: _____			
11	Were **custody seals** on outside of cooler/Box?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
	Were custody seals on outside of sample container?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
12	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☒	☐	☐
	Is there a client indication that the submitted samples are **pH** preserved?	☐	☐	☒
	Were **VOA vials** checked for presence/absence of air bubbles?	☐	☐	☒
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☐	☐	☒
13	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
	Do they contain moisture?	☐	☐	☒
14	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P0904197-001.01	125mL Plastic NP					
P0904197-002.01	125mL Plastic NP					
P0904197-003.01	125mL Plastic NP					
P0904197-004.01	125mL Plastic NP					
P0904197-005.01	125mL Plastic NP					
P0904197-006.01	125mL Plastic NP					

Explain any discrepancies: (include lab sample ID numbers): _____

*Required pH: Phenols/COD/NH3/TOC/TOX/NO3+NO2/TKN/T.PHOS, H2SO4 (pH<2); Metals, HNO3 (pH<2); CN (NaOH or NaOH/Asc Acid) (pH>12); Diss. Sulfide, NaOH (pH>12); T. Sulfide, NaOH/ZnAc (pH>12) RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

Columbia Analytical Services, Inc.
Sample Acceptance Check Form

Client: Battelle Work order: P0904197

Project: JPL GW Mon 4Q09 / G486090

Sample(s) received on: 12/08/09 Date opened: 12/08/09 by: MZAMORA

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P0904197-007.01	125mL Plastic NP					
P0904197-008.01	125mL Plastic NP					
P0904197-009.01	125mL Plastic NP					

Explain any discrepancies: (include lab sample ID numbers):

*Required pH: Phenols/COD/NH3/TOC/TOX/NO3+NO2/TKN/T.PHOS, H2SO4 (pH<2); Metals, HNO3 (pH<2); CN (NaOH or NaOH/Asc Acid) (pH>12); Diss. Sulfide, NaOH (pH>12); T. Sulfide, NaOH/ZnAc (pH>12) RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

DIVIDER SHEET

ANALYTICAL DATA FOR

Hexavalent Chromium

ANALYSIS

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client : Battelle
Project Name : JPL GW Mon 4Q09
Project Number : G486090
Sample Matrix : WATER

Service Request : P0904197
Date Collected : 12/08/09
Date Received : 12/08/09

Chromium, Hexavalent

Prep Method : None
Analysis Method : 7196A
Test Notes :

Units : mg/L (ppm)
Basis : NA

Sample Name	Lab Code	PQL	MDL	Dilution Factor	Date Extracted	Date/Time Analyzed	Result	Result Notes
MW-25-5	P0904197-001	0.010	0.003	1	NA	12/08/09 16:55	ND	
MW-25-4	P0904197-002	0.010	0.003	1	NA	12/08/09 16:55	ND	
MW-25-3	P0904197-003	0.010	0.003	1	NA	12/08/09 16:55	ND	
MW-25-2	P0904197-004	0.010	0.003	1	NA	12/08/09 16:55	ND	
MW-25-1	P0904197-005	0.010	0.003	1	NA	12/08/09 16:55	ND	
DUPE-07-4Q09	P0904197-006	0.010	0.003	1	NA	12/08/09 16:55	ND	
EB-13-12/08/09	P0904197-007	0.010	0.003	1	NA	12/08/09 16:55	ND	
MW-26-2	P0904197-008	0.010	0.003	1	NA	12/08/09 16:55	ND	
MW-26-1	P0904197-009	0.010	0.003	1	NA	12/08/09 16:55	ND	
Method Blank	P0904197-MB	0.010	0.003	1	NA	12/08/09 16:55	ND	

Approved By Karen Ryan Date : 12/9/09

Report By:SAnderson

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Battelle	**Service Request:**	P0904197
Project:	JPL GW Mon 4Q09 / G486090	**Date Analyzed:**	12/08/09

Title: Initial and Continuing Calibration Blank (ICB and CCB) Summary
Analyte: Chromium, Hexavalent
Method: 7196A
Units: mg/L (ppm)

Sample Name	PQL	MDL	Result
ICB	0.010	0.003	ND
CCB1	0.010	0.003	ND
CCB2	0.010	0.003	ND

Approved By: _____ Date: 12/9/09

ICCBMDL/120594

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Battelle	**Service Request:**	P0904197
Project:	JPL GW Mon 4Q09 / G486090	**Date Analyzed:**	12/08/09

Title: Initial and Continuing Calibration Verification (ICV and CCV) Summary
Analyte: Chromium, Hexavalent
Method: 7196A
Units: mg/L (ppm)

Sample Name	True Value	Result	Percent Recovery	Acceptance Criteria
ICV	0.0579	0.0580	100	90-110
CCV1	0.0579	0.0569	98	90-110
CCV2	0.0579	0.0580	100	90-110

Approved By: Karen Ryan Date: 12/9/09

CCV1A/120594

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client :	Battelle	**Service Request :**	P0904197
Project Name :	JPL GW Mon 4Q09	**Date Collected :**	NA
Project Number :	G486090	**Date Received :**	NA
Sample Matrix :	WATER	**Date Extracted :**	NA
		Date Analyzed :	12/08/09

Laboratory Control Sample Summary
Inorganic Parameters

Sample Name :	Laboratory Control Sample	Units :	mg/L (ppm)
Lab Code :	P0904197-LCS	Basis :	NA
Test Notes :			

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Chromium, Hexavalent	None	7196A	0.0400	0.0389	97	86-114	

Approved By Karen Ryan Date : 12/9/09

Report By:SAnderson

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client :	Battelle	**Service Request :**	P0904197
Project Name :	JPL GW Mon 4Q09	**Date Collected :**	12/08/09
Project Number :	G486090	**Date Received :**	12/08/09
Sample Matrix :	WATER	**Date Extracted :**	NA
		Date Analyzed :	12/08/09

Matrix Spike/Duplicate Matrix Spike Summary

Sample Name : MW-25-5
Lab Code : P0904197-001MS P0904197-001DMS
Test Notes :

Units : mg/L (ppm)
Basis : NA

Analyte	Prep Method	Analysis Method	PQL	Spike Level MS	Spike Level DMS	Sample Result	Spike Result MS	Spike Result DMS	Spike Recovery MS	Spike Recovery DMS	CAS Acceptance Limits	Relative Percent Difference	Result Notes
Chromium, Hexavalent	None	7196A	0.010	0.0500	0.0500	ND	0.0463	0.0442	93	88	80-120	5	

Approved By Karen Ryan Date : 12/9/09

Report By:SAnderson

Columbia Analytical Services™ 2655 Park Center Drive, Suite A | Simi Valley, CA 93065 | 805.526.7161 | 805.526.7270 fax | www.caslab.com

CAS SR #P0904214

Table of Contents

Columbia Analytical Services™ 2655 Park Center Drive, Suite A | Simi Valley, CA 93065 | 805.526.7161 | 805.526.7270 fax | www.caslab.com

LABORATORY REPORT

December 11, 2009

David Conner
Battelle
3990 Old Town Ave., Suite C-205
San Diego, CA 92110

RE: JPL GW MON 4Q09 / G486090

Dear David:

Enclosed are the results of the samples submitted to our laboratory on December 9, 2009. For your reference, these analyses have been assigned our service request number P0904214.

All analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.caslab.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein. Your report contains 26 pages.

Columbia Analytical Services, Inc. is certified by the California Department of Health Services, NELAP Laboratory Certificate No. 02115CA; Arizona Department of Health Services, Certificate No. AZ0694; Florida Department of Health, NELAP Certification E871020; New Jersey Department of Environmental Protection, NELAP Laboratory Certification ID #CA009; New York State Department of Health, NELAP NY Lab ID No: 11221; Oregon Environmental Laboratory Accreditation Program, NELAP ID: CA20007; The American Industrial Hygiene Association, Laboratory #101661; Department of the Navy (NFESC); Pennsylvania Registration No. 68-03307; TX Commission of Environmental Quality, NELAP ID T104704413-09-TX; Minnesota Department of Health, Certificate No. 11495AA. Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact me for information corresponding to a particular certification.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

Columbia Analytical Services, Inc.

Sue Anderson

Sue Anderson
Project Manager

Client: Battelle
Project: JPL GW MON 4Q09 / G486090

CAS Project No: P0904214

CASE NARRATIVE

The samples were received intact under chain of custody on December 9, 2009 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Hexavalent Chromium by EPA 7196A

No anomalies were encountered during this analysis.

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for utilization of less than the complete report.

Client: Battelle
Project: JPL GW MON 4Q09/G486090

Service Request: P0904214

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
P0904214-001	MW-18-5	12/9/09	08:53
P0904214-002	MW-18-4	12/9/09	09:22
P0904214-003	MW-18-3	12/9/09	10:22
P0904214-004	MW-18-2	12/9/09	10:50
P0904214-005	MW-18-1	12/9/09	11:18
P0904214-006	EB-14-12/09/09	12/9/09	11:07

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Acronyms

CA LUFT	California DHS LUFT Method
ASTM	American Society for Testing and Materials
BTEX	Benzene/Toluene/Ethylbenzene/Xylenes
CAS Number	Chemical Abstract Service Registry Number
CFC	Chlorofluorocarbon
CRDL	Contract Required Detection Limit
DLCS	Duplicate Laboratory Control Sample
DMS	Duplicate Matrix Spike
DOH or DHS	Department of Health Services
EPA	U.S. Environmental Protection Agency
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
IC	Ion Chromatography
ICB	Initial Calibration Blank
ICV	Initial Calibration Verification
LCS	Laboratory Control Sample
LUFT	Leaking Underground Fuel Tank
M	Modified Method
MDL	Method Detection Limit
MRL	Method Reporting Limit
MS	Matrix Spike
MTBE	Methyl *tert*-Butyl Ether
NA	Not Applicable
NC	Not Calculated
ND	None Detected at or above the Method Reporting/Detection Limit (MRL/MDL)
NTU	Nephelometric Turbidity Units
ppb	Parts Per Billion
ppm	Parts Per Million
PQL	Practical Quantitation Limit
QA/QC	Quality Assurance/Quality Control
RCRA	Resource Conservation and Recovery Act
RPD	Relative Percent Difference
SIM	Selected Ion Monitoring
SM	*Standard Methods for the Examination of Water and Wastewater*, 19th Ed., 1995.
SW	*Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*, SW-846, Third Edition, 1986 and as amended by Updates I, II, IIA, and IIB.
TDS	Total Dissolved Solids
TPH	Total Petroleum Hydrocarbons
TSS	Total Suspended Solids
TTLC	Total Threshold Limit Concentration
VOA	Volatile Organic Analyte(s)
VOC	Volatile Organic Compound(s)

Qualifiers

U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
J	The result is an estimated concentration that is less than the MRL (PQL), but greater than or equal to the MDL.
B	Analyte detected in the method blank above MRL (PQL).
E	Estimated; result based on response which exceeded the instrument calibration range.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
D	The reported result is from a dilution.
X	See case narrative.

Water & Soil - Chain of Custody Record & Analytical Service Request

Columbia Analytical Services INC.
An Employee - Owned Company

2655 Park Center Drive, Suite A
Simi Valley, California 93065
Phone (805) 526-7161
Fax (805) 526-7270

Requested Turnaround Time in Business Days (Surcharges) please circle
1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10 Day - Standard

CAS Project No: ~~F0904214~~

CAS Contact:

Company Name & Address (Reporting Information)	Project Name
BATTELLE 3990 OLD TOWN AVE., C-205 SAN DIEGO CA 92110	JPL GW MON 4209
Project Manager DAVID CONNER	**Project Number** G486090
Phone (619) 726-7311	**Fax**
Email Address for Result Reporting	**Sampler (Print & Sign)**
	P.O. # / Billing Information 21439 / BATTELLE ATTN: GERALD TOMPKINS 505 KING AVE. COLUMBUS OH 43201

Analysis Method and/or Analytes

Preservative Code

Client Sample ID	Laboratory ID Number	Date Collected	Time Collected	Matrix	Number of Containers	Volatile Organics GC/MS 624 ☐ 8260B ☐ Oxygenates ☐ TPH Gas ☐	TPH Gas 8015B ☐ BTEX 8021B ☐ MTBE 8021B ☐	TPH Diesel 8015B ☐ (Subcontracted)	TPH Diesel Low Level 8015B ☐ (Subcontracted)	TPH FC ☐ 8015M (Subcontracted)	Semi-Volatile Organics GC/MS 625 ☐ 8270C ☐ (Subcontracted)	0	Cr VI (7196)	Remarks
MW-18-5	1	12/9/09	0853	W	1							X		
MW-18-4	2		0922		1							X		
MW-18-3	3		1022		2							X		MS/MSD
MW-18-2	4		1050		1							X		
MW-18-1	5		1118		1							X		LEVEL IV QC
EB-14-12/09/09	6	12/9/09	1107		1							X		EQUIPMENT BLANK

Preservative Key

0	None
1	HCL
2	HNO3
3	H2SO4
4	NaOH
5	Zn Acetate
6	Asc Acid
7	Other

Report Tier Levels - please select

Tier I - (Results/Default if not specified) ____
Tier II - (Results + QC) ____
Tier III - (Data Validation Package) 10% Surcharge ____
Tier V - (client specified) ____

MRL required Yes / No
MDL / PQL / J required Yes / No
EDD required Yes / No
Type: ____

Project Requirements (MRLs, QAPP)

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
	12/09/09	1230			
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
	12/9/09	13:15		12/9/09	1315
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:

Cooler / Blank / Ice / No Ice

Temperature ____ °C

Columbia Analytical Services, Inc.
Chain of Custody Report

Client: Battelle
Project: JPL GW MON 4Q09/G486090

Service Request: P0904214

Bottle ID	Tests	Date	Time	Sample Location / User	Disposed On
P0904214-001.01					
	7196A				
		12/9/09	1325	SMO / ADAVID	
		12/9/09	1326	P-37 / ADAVID	
		12/9/09	1333	In Lab / SANDERSON	
		12/9/09	1533	P-37 / SANDERSON	
P0904214-002.01					
	7196A				
		12/9/09	1325	SMO / ADAVID	
		12/9/09	1326	P-37 / ADAVID	
		12/9/09	1333	In Lab / SANDERSON	
		12/9/09	1533	P-37 / SANDERSON	
P0904214-003.01					
	7196A				
		12/9/09	1325	SMO / ADAVID	
		12/9/09	1326	P-37 / ADAVID	
		12/9/09	1333	In Lab / SANDERSON	
		12/9/09	1533	P-37 / SANDERSON	
P0904214-003.02					
		12/9/09	1331	SMO / ADAVID	
		12/9/09	1333	In Lab / SANDERSON	
		12/9/09	1533	P-37 / SANDERSON	
P0904214-004.01					
	7196A				
		12/9/09	1325	SMO / ADAVID	
		12/9/09	1326	P-37 / ADAVID	
		12/9/09	1333	In Lab / SANDERSON	
		12/9/09	1533	P-37 / SANDERSON	
P0904214-005.01					
	7196A				
		12/9/09	1325	SMO / ADAVID	
		12/9/09	1326	P-37 / ADAVID	
		12/9/09	1333	In Lab / SANDERSON	
		12/9/09	1533	P-37 / SANDERSON	
P0904214-006.01					
	7196A				
		12/9/09	1325	SMO / ADAVID	
		12/9/09	1326	P-37 / ADAVID	
		12/9/09	1333	In Lab / SANDERSON	
		12/9/09	1533	P-37 / SANDERSON	

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Columbia Analytical Services, Inc.
Sample Acceptance Check Form

Client: Battelle Work order: P0904214

Project: JPL GW MON 4Q09 / G486090

Sample(s) received on: 12/09/09 Date opened: 12/09/09 by: ADAVID

Note: This form is used for all samples received by CAS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Container(s) **supplied by CAS**?	☒	☐	☐
3	Did **sample containers** arrive in good condition?	☒	☐	☐
4	Was a **chain-of-custody** provided?	☒	☐	☐
5	Was the **chain-of-custody** properly completed?	☒	☐	☐
6	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
7	Was **sample volume** received adequate for analysis?	☒	☐	☐
8	Are samples within specified holding times?	☒	☐	☐
9	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☒	☐	☐
	Cooler Temperature _____ °C Blank Temperature 2 °C			
10	Was a **trip blank** received?	☐	☐	☒
	Trip blank supplied by CAS: _____			
11	Were **custody seals** on outside of cooler/Box?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
	Were custody seals on outside of sample container?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
12	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☒	☐	☐
	Is there a client indication that the submitted samples are **pH** preserved?	☐	☐	☒
	Were **VOA vials** checked for presence/absence of air bubbles?	☐	☐	☒
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☐	☐	☒
13	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
	Do they contain moisture?	☐	☐	☒
14	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P0904214-001.01	125mL Plastic NP					
P0904214-002.01	125mL Plastic NP					
P0904214-003.01	125mL Plastic NP					
P0904214-003.02	125mL Plastic NP					
P0904214-004.01	125mL Plastic NP					
P0904214-005.01	125mL Plastic NP					

Explain any discrepancies: (include lab sample ID numbers): _____

*Required pH: Phenols/COD/NH3/TOC/TOX/NO3+NO2/TKN/T.PHOS, H2SO4 (pH<2); Metals, HNO3 (pH<2); CN (NaOH or NaOH/Asc Acid) (pH>12); Diss. Sulfide, NaOH (pH>12); T. Sulfide, NaOH/ZnAc (pH>12) RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

Columbia Analytical Services, Inc.
Sample Acceptance Check Form

Client: Battelle Work order: P0904214

Project: JPL GW MON 4Q09 / G486090

Sample(s) received on: 12/09/09 Date opened: 12/09/09 by: ADAVID

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P0904214-006.01	125mL Plastic NP					

Explain any discrepancies: (include lab sample ID numbers):

*Required pH: Phenols/COD/NH3/TOC/TOX/NO3+NO2/TKN/T.PHOS, H2SO4 (pH<2); Metals, HNO3 (pH<2); CN (NaOH or NaOH/Asc Acid) (pH>12):
Diss. Sulfide, NaOH (pH>12); T. Sulfide, NaOH/ZnAc (pH>12) RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

DIVIDER SHEET

ANALYTICAL DATA FOR

Hexavalent Chromium

ANALYSIS

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client : Battelle
Project Name : JPL GW MON 4Q09
Project Number : G486090
Sample Matrix : WATER

Service Request : P0904214
Date Collected : 12/09/09
Date Received : 12/09/09

Chromium, Hexavalent

Prep Method : None
Analysis Method : 7196A
Test Notes :

Units : mg/L (ppm)
Basis : NA

Sample Name	Lab Code	PQL	MDL	Dilution Factor	Date Extracted	Date/Time Analyzed	Result	Result Notes
MW-18-5	P0904214-001	0.010	0.003	1	NA	12/09/09 14:15	ND	
MW-18-4	P0904214-002	0.010	0.003	1	NA	12/09/09 14:15	ND	
MW-18-3	P0904214-003	0.010	0.003	1	NA	12/09/09 14:15	ND	
MW-18-2	P0904214-004	0.010	0.003	1	NA	12/09/09 14:15	ND	
MW-18-1	P0904214-005	0.010	0.003	1	NA	12/09/09 14:15	ND	
EB-14-12/09/09	P0904214-006	0.010	0.003	1	NA	12/09/09 14:15	ND	
Method Blank	P0904214-MB	0.010	0.003	1	NA	12/09/09 14:15	ND	

Approved By Karen Ryan Date : 12/10/09

Report By:SAnderson

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Battelle	**Service Request:**	P0904214
Project:	JPL GW Mon 4Q09 / G486090	**Date Analyzed:**	12/09/09

Title: Initial and Continuing Calibration Blank (ICB and CCB) Summary
Analyte: Chromium, Hexavalent
Method: 7196A
Units: mg/L (ppm)

Sample Name	PQL	MDL	Result
ICB2	0.010	0.003	ND
CCB1-2	0.010	0.003	ND
CCB2	0.010	0.003	ND

Approved By: Karen Ryan Date: 12/10/09

ICCBMDL/120594

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Battelle	**Service Request:**	P0904214
Project:	JPL GW Mon 4Q09 / G486090	**Date Analyzed:**	12/09/09

Title: Initial and Continuing Calibration Verification (ICV and CCV) Summary
Analyte: Chromium, Hexavalent
Method: 7196A
Units: mg/L (ppm)

Sample Name	True Value	Result	Percent Recovery	Acceptance Criteria
ICV2	0.0579	0.0553	96	90-110
CCV1-2	0.0579	0.0543	94	90-110
CCV2	0.0579	0.0543	94	90-110

Approved By: Karen Rya Date: 12/10/09

CCV1A/120594

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client :	Battelle	**Service Request :**	P0904214
Project Name :	JPL GW MON 4Q09	**Date Collected :**	NA
Project Number :	G486090	**Date Received :**	NA
Sample Matrix :	WATER	**Date Extracted :**	NA
		Date Analyzed :	12/09/09

Laboratory Control Sample Summary
Inorganic Parameters

Sample Name :	Laboratory Control Sample	Units :	mg/L (ppm)
Lab Code :	P0904214-LCS	Basis :	NA
Test Notes :			

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Chromium, Hexavalent	Non1	7196A	0.0400	0.0382	96	86-114	

Approved By Karen Ryan Date : 12/10/09

Report By:SAnderson

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client :	Battelle	**Service Request :**	P0904214
Project Name :	JPL GW MON 4Q09	**Date Collected :**	12/09/09
Project Number :	G486090	**Date Received :**	12/09/09
Sample Matrix :	WATER	**Date Extracted :**	NA
		Date Analyzed :	12/09/09

Matrix Spike/Duplicate Matrix Spike Summary

Sample Name : MW-18-3
Lab Code : P0904214-003MS P0904214-003DMS
Test Notes :

Units : mg/L (ppm)
Basis : NA

Analyte	Prep Method	Analysis Method	PQL	Spike Level MS	Spike Level DMS	Sample Result	Spike Result MS	Spike Result DMS	Spike Recovery MS	Spike Recovery DMS	CAS Acceptance Limits	Relative Percent Difference	Result Notes
Chromium, Hexavalent	None	7196A	0.010	0.0500	0.0500	ND	0.0463	0.0463	93	93	80-120	<1	

Approved By Karen Ryan Date : 12/10/09

Report By:SAnderson