ATTACHMENT 1: QUALITY ASSURANCE/QUALITY CONTROL SUMMARY

This attachment contains a summary of the field quality assurance, laboratory quality assurance, data verification and data validation procedures utilized for the JPL groundwater monitoring program. Data validation was performed by an independent subcontractor, Laboratory Data Consultants, Inc., Carlsbad, California. Data verification and validation indicated that all of the sample results obtained from the 2nd Quarter 2007 sampling event were acceptable for their intended use of characterizing aquifer quality.

ATTACHMENT 1: QUALITY ASSURANCE/QUALITY CONTROL SUMMARY

A comprehensive QA/QC plan for groundwater monitoring is described in detail in the Quality Assurance Project Plan for the Groundwater Monitoring Plan (Ebasco, 1993). QC checks, including both field and laboratory, are the specific operational techniques and activities used to fulfill QA requirements. Proper sample acquisition and handling procedures were necessary to ensure the integrity of the analytical results.

FIELD QUALITY ASSURANCE/QUALITY CONTROL

The field QA/QC samples collected for JPL groundwater monitoring included duplicate samples, equipment rinsate blanks, trip blanks and a source blank. These QC sample results were used as part of a qualitative evaluation of the aquifer recovery.

Duplicate Field Samples. Duplicate samples were used to evaluate the precision of the laboratory analyses. Duplicate samples for volatile organic compounds (VOCs), total chromium, hexavalent chromium [Cr(VI)], perchlorate, lead, arsenic, major cations and anions, total dissolved solids (TDS), and pH were collected from monitoring wells MW-1, MW-3 (Screen 2), MW-7, MW-12 (Screen 1), MW-17 (Screen 3), MW-20 (Screen 1), MW-21 (Screen 2) and MW-25 (Screen 1). Duplicate samples for Nitrite (as N) were collected from monitoring wells MW-7, MW-12 (Screen 1) and MW-25 (Screen 1). A duplicate sample for Orthophosphate (as P) was collected from monitoring well MW-7.

The analytical results for the duplicate samples were comparable to the results of the original groundwater samples for VOCs (Table 1) and Metals (Table 2). There were a few minor variances between the duplicate and the monitoring well sample results for water quality parameters, specifically nitrite (Dupe-5-2Q07 and MW-25-1), nitrite (Dupe-6-2Q07 and MW-25-1) and total dissolved solids (Dupe-7-2Q07 and MW-1).

Table 1-1 presents a summary of contaminants detected in quality control samples collected during the June/July 2007 sampling event.

Equipment Rinsate Blanks. Equipment rinsate blanks were collected each day that non-dedicated sampling equipment was used. The equipment rinsate blanks, consisting of distilled water run through the sampling equipment after decontamination, were analyzed for all contaminants of concern to monitor possible cross-contamination of samples due to inadequate decontamination. Total Cr was detected in 7 of 14 equipment blanks. The chromium detections may indicate that the equipment decontamination process was insufficient in some cases. Methylene chloride was detected in 2 of 14 equipment blanks. Several VOCs were detected in equipment blank EB-12-6/28/07 as shown in Table 1-1. In all cases, the associated monitoring well sample results were flagged with "J" indicating that they are considered to be estimated concentrations.

Trip Blanks. Trip blanks, which consisted of reagent-grade water placed in a vial and transported with the sample bottles to and from the field, were submitted to the

laboratory with each daily shipment of groundwater samples. Trip blanks were used to help identify cross-contamination of groundwater samples during transport and/or deficiencies in the laboratory bottle cleaning and sample handling procedures. Methylene chloride was detected in 3 of 19 trip blanks. Several VOCs were detected in trip blank TB-18-7/11/07 as shown in Table 1-1. In all cases, the associated monitoring well sample results were flagged with "J" indicating that they are considered to be estimated concentrations.

Source Blank. A source blank consists of distilled water used by sampling personnel for equipment decontamination. The source blank is collected at the sampling site and preserved, as appropriate. This QC sample serves as a check on contamination present in the source water. The source blank (SB-1/7/2/07) had detections of Total Cr and one VOC (Trichloroethyene).

Detections in the source blank, equipment blanks and trip blanks were compared to the sample results during the data validation process described below to determine the impact on the sample results.

LABORATORY QUALITY ASSURANCE/QUALITY CONTROL

Laboratory QC samples included surrogate compounds (for VOC analyses), matrix spike samples, blank spike samples, and method blanks. The results of the laboratory QC samples were used by the laboratory to determine the accuracy and precision of the analytical techniques with respect to the JPL groundwater matrix, and to identify anomalous results due to laboratory contamination or instrument malfunction.

DATA VERIFICATION AND VALIDATION

The purpose of data verification and validation is to assure that the data collected meet the data quality objectives (DQOs) outlined in the Quality Assurance Project Plan of the Groundwater Monitoring Plan (Ebasco, 1993). Data verification and validation indicated that all of the sample results obtained from the June/July 2007 event were acceptable for their intended use of characterizing aquifer quality.

Data Verification. All data collected were subjected to data verification. Data verification is a review of the analytical data that includes confirming that the sample identification numbers on the laboratory reports match those on the chain-of-custody records. Data verification also includes a review of the analytical data reports to confirm that all samples were analyzed and all required analytes were quantified for each sample.

Data Validation. Data validation is a systematic review of the analytical data that is used to determine the compliance of the established method performance criteria and determine whether the data quality is sufficient to support the data quality objectives. Validation of a data package included review of the technical holding time requirements, review of sample preparation, review of the initial and continuing calibration data, review and recalculation of the laboratory QC sample data, review of the equipment performance, reconciliation of the raw data with the reduced results,

identification of data anomalies, and qualification of data to identify data usability limitations.

Data validation was performed by an independent subcontractor, Laboratory Data Consultants, Inc. (LDC) of Carlsbad, CA. One hundred percent of all data analyzed by the analytical laboratories, Laucks Testing Laboratory and Columbia Analytical Services, Inc. (CAS) were validated. Ninety percent of the data were subjected to Level III validation and ten percent of the data were subjected to Level IV validation in accordance with the EPA Contract Laboratory Program National Functional Guidelines for Organic/Inorganic Data Review (U.S. EPA, 1999; 2004). The data were evaluated to ensure suitability and usability for the purpose of the groundwater monitoring report.

Data Validation Qualifiers. Analytical data were qualified based on data validation. For chemical data, qualifiers were assigned in accordance with EPA guidelines. Data validation reports can be found in Attachment 2.

There were a several exceptions to the analytical criteria as noted in the data validation reports and summarized below:

- The holding times were exceeded for Nitrate samples from wells MW-4, MW-12, MW-21 and MW-25. The holding time requirement for nitrate was 48 hours and the samples were analyzed up to 16 days after collection.
- The holding times were exceeded for TDS samples from well MW-20. The holding time requirement for TDS was 7 days and the samples were analyzed up to 11 days after collection.
- The holding times were exceeded for pH samples from well MW-21. The holding time requirement for pH was 48 hours and the samples were analyzed in 49 – 52 hours after collection.
- The holding times were exceeded for alkalinity samples from well MW-3. The holding time requirement for alkalinity was 14 days and the samples were analyzed up to 27 days after collection.
- A few trip blanks (TB-14-7/2/07, TB-17-7/10/07 and TB-18-7/11/07) arrived at the laboratory with air bubbles greater than ¼ inches.

Exceptions to the analytical method performance criteria resulted in the assignment of "J" flags to the results, unless otherwise noted, by Laboratory Data Consultants, Inc. The "J" flag indicates that the result is an estimated value.

No analytical data were rejected for non-compliance with method requirements during the data validation.

REFERENCES

Ebasco. 1993. *Work Plan for Performing a Remedial Investigation/Feasibility Study*. National Aeronautics and Space Administration Jet Propulsion Laboratory, Pasadena, California. December.

U.S. EPA. 1999. *Contract Laboratory Program National Functional Guidelines for Organic Data Review*. February.

U.S. EPA. 2004. *Contract Laboratory Program National Functional Guidelines for Inorganic Data Review*. December.

ATTACHMENT 1
TABLE 1-1
SUMMARY OF CONTAMINANTS DETECTED IN QUALITY CONTROL SAMPLES
COLLECTED DURING THE June/July 2007 SAMPING EVENT

Blank Type	Sample ID Number	Sampling Location(s)	Total Chromium (µg/L)	Methylene Chloride (µg/L)	1,2,3-Trichloropropane (µg/L)	2-Butanone (µg/L)	Other Organic Compounds (µg/L)	
EQUIPMENT BLANK	EB-10-6/26/07	MW-12	**8.66 J**	0.5 U	0.5 U	5.0 U		
EQUIPMENT BLANK	EB-11-6/27/07	MW-23	**4.53 J**	0.5 U	0.5 U	5.0 U		
EQUIPMENT BLANK	EB-12-6/28/07	MW-24	1.0 U	0.5 U	0.5 U	5.0 U	**1,1-Dichloroethene**	**0.33 J**
							Carbon tetrachloride	**2**
							Bromodichloromethane	**0.98**
							hloro-1,2,2-trifluoroethane (F	**0.25 J**
							Chloroform	**2.2**
							Dibromochloromethane	**1.2**
							Bromoform	**0.89**
							Tetrachloroethene (PCE)	**2**
EQUIPMENT BLANK	EB-13-6/29/07	MW-11	**4.43**	0.5 U	0.5 U	5.0 U		
EQUIPMENT BLANK	EB-14-7/2/07	MW-25	**1.04**	0.5 U	0.5 U	5.0 U		
EQUIPMENT BLANK	EB-1-6/12/07	MW-21	1.0 U	0.5 U	0.5 U	5.0 U		
EQUIPMENT BLANK	EB-2-6/14/07	MW-19	1.0 U	0.5 U	0.5 U	5.0 U		
EQUIPMENT BLANK	EB-3-6/15/07	MW-18	1.0 U	0.5 U	0.5 U	5.0 U		
EQUIPMENT BLANK	EB-4-6/18/07	MW-20	1.0 U	0.5 U	0.5 U	5.0 U		
EQUIPMENT BLANK	EB-5-6/19/07	MW-17	1.0 U	0.5 U	0.5 U	5.0 U		
EQUIPMENT BLANK	EB-6-6/20/07	MW-22	1.0 U	**3.3 J**	0.5 U	5.0 U		
EQUIPMENT BLANK	EB-7-6/21/07	MW-3	**1.91 J**	**2.4 J**	0.5 U	5.0 U		
EQUIPMENT BLANK	EB-8-6/22/07	MW-14	**1.34**	0.5 U	0.5 U	5.0 U		
EQUIPMENT BLANK	EB-9-6/25/07	MW-4	**7.71 J**	0.5 U	0.5 U	5.0 U		
SOURCE BLANK	SB-1-7/2/07	NA	**1.28**	0.5 U	0.5 U	5.0 U	**Trichloroethene (TCE)**	**0.29 J**
TRIP BLANK	TB-10-6/26/07	MW-12	NA	0.5 U	0.5 U	5.0 U		
TRIP BLANK	TB-11-6/27/07	MW-23	NA	0.5 U	0.5 U	5.0 U		
TRIP BLANK	TB-12-6/28/07	MW-24	NA	0.5 U	0.5 U	5.0 U		
TRIP BLANK	TB-13-6/29/07	MW-11	NA	0.5 U	0.5 U	5.0 U		
TRIP BLANK	TB-14-7/2/07	MW-25	NA	0.5 U	0.5 U	5.0 U		
TRIP BLANK	TB-15-7/6/07	MW-1, MW-9, MW-15	NA	0.5 U	0.5 U	5.0 U		
TRIP BLANK	TB-1-6/12/07	MW-21	NA	**1.1 J**	0.5 U	5.0 U		
TRIP BLANK	TB-16-7/9/07	MW-7, MW-16	NA	0.5 U	0.5 U	5.0 U		
TRIP BLANK	TB-17-7/10/07	MW-13, MW-8	NA	0.5 U	0.5 U	5.0 U		
TRIP BLANK	TB-18-7/11/07	MW-26, MW-10	NA	0.5 U	0.5 U	5.0 U	**Trichlorofluoromethane**	**0.64**
							Toluene	**0.6**
							Chloroform	**0.31 J**
TRIP BLANK	TB-19-7/12/07	MW-5, MW-6	NA	0.5 U	0.5 U	5.0 U		
TRIP BLANK	TB-2-6/14/07	MW-19	NA	0.5 U	0.5 U	5.0 U		
TRIP BLANK	TB-3-6/15/07	MW-18	NA	0.5 U	0.5 U	5.0 U		
TRIP BLANK	TB-4-6/18/07	MW-20	NA	**0.95 J**	0.5 U	5.0 U		
TRIP BLANK	TB-5-6/19/07	MW-17	NA	0.5 U	0.5 U	5.0 U		
TRIP BLANK	TB-6-6/20/07	MW-22	NA	**4.8 J**	0.5 U	5.0 U		
TRIP BLANK	TB-7-6/21/07	MW-3	NA	0.5 U	0.5 U	5.0 U		
TRIP BLANK	TB-8-6/22/07	MW-14	NA	0.5 U	0.5 U	5.0 U		
TRIP BLANK	TB-9-6/25/07	MW-4	NA	0.5 U	0.5 U	5.0 U		

Notes

J	Indicates an estimated value.
µg/L	Micrograms per liter
U	Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
NA	Not Analyzed

ATTACHMENT 2: DATA VALIDATION REPORTS (SUMMARY SHEETS)

This attachment contains the summary sheets from the data validation performed by an independent subcontractor, Laboratory Data Consultants, Inc. (LDC), Carlsbad, CA. Complete data validation reports are available upon request.

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

Battelle
505 King Avenue, Room 10-1-170
Columbus, OH 43201
ATTN: Ms. Betsy Cutie

July 31, 2007

SUBJECT: NASA JPL, Data Validation

Dear Ms. Cutie,

Enclosed are the final validation reports for the fraction listed below. This SDG was received on July 9, 2007. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project # 17078:

SDG #	**Fraction**
JPL35	Volatiles, Metals, Wet Chemistry

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

- USEPA, Contract Laboratory Program National Functional Guidelines for Organic Data Review, October 1999
- USEPA, Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, October 2004
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998

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

Sincerely,

Erlinda T. Rauto
Operations Manager/Senior Chemist

V:\LOGIN\Battelle\JPL\17078COV.wpd

Attachment 1

PO 190288 10/90 (client select)

LDC #17078 (Battelle-San Diego / NASA JPL)

LDC	SDG#	DATE REC'D	(3) DATE DUE	VOA (524.2)		Metals (200.7 /200.8)		Alk. (310.1)		Cl,SO_4, NO_3 (300.0)		CLO_4 (314.0)		pH (150.1)		TDS (160.1)																					
Matrix:	Water/Soil			W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	JPL35	07/09/07	07/30/07	8	0	7	0	7	0	9	0	8	0	8	0	8	0																				
Total	B/LR			8	0	7	0	7	0	9	0	8	0	8	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	55

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

17078ST.wpd

NASA JPL
Data Validation Reports
LDC# 17078

Volatiles

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: June 12, 2007

LDC Report Date: July 20, 2007

Matrix: Water

Parameters: Volatiles

Validation Level: EPA Level III

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL35

Sample Identification

MW-21-5
MW-21-4
MW-21-3
MW-21-2
MW-21-1
DUPE-1-2Q07
EB-1-6/12/07
TB-1-6/12/07

Introduction

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

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

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

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

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

The following are definitions of the data qualifiers:

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

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 20.0% for selected compounds with the following exceptions:

Date	Compound	%RSD	Associated Samples	Flag	A or P
6/18/07	Methylene chloride	23.55	All samples in SDG JPL35	J (all detects) UJ (all non-detects)	P

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

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

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

The percent differences (%D) of the second source calibration standard were less than or equal to 30.0% for all compounds.

V. Blanks

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

VI. Surrogate Spikes

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

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were not required by the method.

VIII. Laboratory Control Samples (LCS)

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

LCS ID	Compound	%R (Limits)	Associated Samples	Flag	A or P
S061907MVOWM1	cis-1,3-Dichloropropene	126 (73-122)	All samples in SDG JPL35	J (all detects)	P

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

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

XI. Target Compound Identifications

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

XIII. Tentatively Identified Compounds (TICs)

Raw data were not reviewed for this SDG.

XIV. System Performance

Raw data were not reviewed for this SDG.

XV. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XVI. Field Duplicates

Samples MW-21-2 and DUPE-1-2Q07 were identified as field duplicates. No volatiles were detected in any of the samples with the following exceptions:

Compound	Concentration (ug/L)		RPD
	MW-21-2	DUPE-1-2Q07	
cis-1,2-Dichloroethene	1.4	1.4	0
Chloroform	2.0	1.9	5
Trichloroethene	0.76	0.74	3
Tetrachloroethene	6.5	6.3	3

XVII. Field Blanks

Sample TB-1-6/12/07 was identified as a trip blank. No volatile contaminants were found in this blank with the following exceptions:

Trip Blank ID	Compound	Concentration (ug/L)
TB-1-6/12/07	Methylene chloride	1.1

Sample EB-1-6/12/07 was identified as an equipment blank. No volatile contaminants were found in this blank.

NASA JPL
Volatiles - Data Qualification Summary - SDG JPL35

SDG	Sample	Compound	Flag	A or P	Reason
JPL35	MW-21-5 MW-21-4 MW-21-3 MW-21-2 MW-21-1 DUPE-1-2Q07 EB-1-6/12/07 TB-1-6/12/07	Methylene chloride	J (all detects) UJ (all non-detects)	P	Initial calibration (%RSD)
JPL35	MW-21-5 MW-21-4 MW-21-3 MW-21-2 MW-21-1 DUPE-1-2Q07 EB-1-6/12/07 TB-1-6/12/07	cis-1,3-Dichloropropene	J (all detects)	P	Laboratory control samples (%R)

NASA JPL
Volatiles - Laboratory Blank Data Qualification Summary - SDG JPL35

No Sample Data Qualified in this SDG

NASA JPL
Data Validation Reports
LDC# 17078

Metals

LDC Report# 17078A4

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: June 12, 2007

LDC Report Date: July 23, 2007

Matrix: Water

Parameters: Metals

Validation Level: EPA Level III

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL35

Sample Identification

MW-21-5
MW-21-4
MW-21-3
MW-21-2
MW-21-1
DUPE-1-2Q07
EB-1-6/12/07

Introduction

This data review covers 7 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 200.8 for Metals. The metals analyzed were Arsenic, Calcium, Chromium, Iron, Lead, Magnesium, Potassium, Sodium.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as there are no current guidelines for the method stated above.

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

Blanks are summarized in Section III.

Field duplicates are summarized in Section XIII.

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

The following are definitions of the data qualifiers:

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

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. Calibration

An initial calibration was performed.

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

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

IV. ICP Interference Check Sample (ICS) Analysis

The frequency of analysis was met.

The criteria for analysis were met.

V. Matrix Spike Analysis

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

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
MW-19-1MS/MSD (All samples in SDG JPL35)	Sodium	-	67.5 (70-130)	-	J (all detects) UJ (all non-detects)	A

VI. Duplicate Sample Analysis

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable.

VII. Laboratory Control Samples (LCS)

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

VIII. Internal Standards

Raw data were not reviewed for this SDG.

IX. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

X. ICP Serial Dilution

ICP serial dilution analysis was performed by the laboratory. The analysis criteria were met.

XI. Sample Result Verification

Raw data were not reviewed for this SDG.

XII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XIII. Field Duplicates

Samples MW-21-2 and DUPE-1-2Q07 were identified as field duplicates. No metals were detected in any of the samples with the following exceptions:

Analyte	Concentration (ug/L)		RPD
	MW-21-2	DUPE-1-2Q07	
Arsenic	1.25	1.37	9
Calcium	154000	158000	3
Chromium	12.9	12.4	4
Iron	486	483	1
Magnesium	51200	49800	3
Sodium	74300	72500	2

XIV. Field Blanks

Sample EB-1-6/12/07 was identified as an equipment blank. No metal contaminants were found in this blank.

NASA JPL
Metals - Data Qualification Summary - SDG JPL35

SDG	Sample	Analyte	Flag	A or P	Reason
JPL35	MW-21-5 MW-21-4 MW-21-3 MW-21-2 MW-21-1 DUPE-1-2Q07 EB-1-6/12/07	Sodium	J (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicates (%R)

NASA JPL
Metals - Laboratory Blank Data Qualification Summary - SDG JPL35

No Sample Data Qualified in this SDG

NASA JPL
Data Validation Reports
LDC# 17078

Wet Chemistry

LDC

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: June 12, 2007

LDC Report Date: July 20, 2007

Matrix: Water

Parameters: Wet Chemistry

Validation Level: EPA Level III

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL35

Sample Identification

MW-21-5
MW-21-4
MW-21-3
MW-21-2
MW-21-1
DUPE-1-2Q07
EB-1-6/12/07
MW-21-5MS
MW-21-5DUP
MW-21-2MS
MW-21-2MSD

Introduction

This data review covers 11 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 150.1 for pH, EPA Method 160.1 for Total Dissolved Solids, EPA Method 300.0 for Chloride, Nitrate as Nitrogen, and Sulfate, EPA Method 310.1 for Alkalinity, and EPA Method 314.0 for Perchlorate.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as there are no current guidelines for the methods stated above.

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

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

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

The following are definitions of the data qualifiers:

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

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Hours From Sample Collection Until Analysis	Required Holding Time (in Hours) From Sample Collection Until Analysis	Flag	A or P
MW-21-5 MW-21-5DUP	pH	51.5	48	J (all detects) UJ (all non-detects)	P
MW-21-4	pH	49.75	48	J (all detects) UJ (all non-detects)	P
MW-21-3	pH	49.25	48	J (all detects) UJ (all non-detects)	P
MW-21-2 DUPE-1-2Q07	pH	48.5	48	J (all detects) UJ (all non-detects)	P
MW-21-5 MW-21-2 MW-21-1 MW-21-3	Nitrate as N	57.25	48	J (all detects) UJ (all non-detects)	P
MW-21-4	Nitrate as N	57.5	48	J (all detects) UJ (all non-detects)	P
MW-21-2MS	Nitrate as N	57.75	48	J (all detects) UJ (all non-detects)	P
DUPE-1-2Q07	Nitrate as N	59.5	48	J (all detects) UJ (all non-detects)	P
EB-1-6/12/07	Nitrate as N	49.25	48	J (all detects) UJ (all non-detects)	P
MW-21-2MSD	Nitrate as N	58	48	J (all detects) UJ (all non-detects)	P

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

II. Calibration

a. Initial Calibration

All criteria for the initial calibration were met.

b. Calibration Verification

Calibration verification frequency and analysis criteria were met for each method when applicable.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

IV. Matrix Spike/Matrix Spike Duplicates

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

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
MW-21-2MS/MSD (All samples in SDG JPL35)	Sulfate	116 (90-110)	-	-	J (all detects)	A

V. Duplicates

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

VI. Laboratory Control Samples

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

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

Samples MW-21-2 and DUPE-1-2Q07 were identified as field duplicates. No contaminant concentrations were detected in any of the samples with the following exceptions:

Analyte	Concentration		RPD
	MW-21-2	DUPE-1-2Q07	
Alkalinity	280 mg/L	290 mg/L	4
Chloride	130 mg/L	130 mg/L	0
Nitrate as N	10 mg/L	10 mg/L	0
Sulfate	200 mg/L	200 mg/L	0
Total dissolved solids	870 mg/L	870 mg/L	0
pH	6.8 units	7.1 units	4

X. Field Blanks

Sample EB-1-6/12/07 was identified as an equipment blank. No contaminant concentrations were found in this blank with the following exceptions:

Equipment Blank ID	Analyte	Concentration
EB-1-6/12/07	pH Total dissolved solids	6.8 units 24 mg/L

NASA JPL
Wet Chemistry - Data Qualification Summary - SDG JPL35

SDG	Sample	Analyte	Flag	A or P	Reason
JPL35	MW-21-5 MW-21-4 MW-21-3 MW-21-2 DUPE-1-2Q07	pH	J (all detects) UJ (all non-detects)	P	Technical holding times
JPL35	MW-21-5 MW-21-2 MW-21-1 MW-21-4 MW-21-3 DUPE-1-2Q07 EB-1-6/12/07	Nitrate as N	J (all detects) UJ (all non-detects)	P	Technical holding times
JPL35	MW-21-5 MW-21-4 MW-21-3 MW-21-2 MW-21-1 DUPE-1-2Q07 EB-1-6/12/07	Sulfate	J (all detects)	A	Matrix spike/Matrix spike duplicates (%R)

NASA JPL
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG JPL35

No Sample Data Qualified in this SDG

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

Battelle
505 King Avenue, Room 10-1-170
Columbus, OH 43201
ATTN: Ms. Betsy Cutie

July 31, 2007

SUBJECT: NASA JPL, Data Validation

Dear Ms. Cutie,

Enclosed are the final validation reports for the fraction listed below. These SDGs were received on July 10, 2007. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project # 17083:

SDG #	Fraction
JPL36, JPL37	Volatiles, Metals, Wet Chemistry

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

- USEPA, Contract Laboratory Program National Functional Guidelines for Organic Data Review, October 1999
- USEPA, Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, October 2004
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998

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

Sincerely,

Erlinda T. Rauto
Operations Manager/Senior Chemist

V:\LOGIN\Battelle\JPL\17083COV.wpd

Attachment 1

PO 190288 **10/90 (client select)**

LDC #17083 (Battelle-San Diego / NASA JPL)

LDC	SDG#	DATE REC'D	(3) DATE DUE	VOA (524.2)		Metals (200.7 /200.8)		Alk. (310.1)		Cl,SO_4, NO_3 (300.0)		CLO_4 (314.0)		pH (150.1)		TDS (160.1)																					
Matrix:	Water/Soil			W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	JPL36	07/10/07	07/31/07	9	0	8	0	8	0	8	0	8	0	8	0	7	0																				
B	JPL37	07/10/07	07/31/07	7	0	6	0	6	0	8	0	8	0	7	0	6	0																				
Total	B/LR			16	0	14	0	14	0	16	0	16	0	15	0	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	104

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

17083ST.wpd

NASA JPL
Data Validation Reports
LDC# 17083

Volatiles

LDC

LDC Report# 17083A1

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: June 14, 2007

LDC Report Date: July 20, 2007

Matrix: Water

Parameters: Volatiles

Validation Level: EPA Level III

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL36

Sample Identification

MW-19-5
MW-19-4
MW-19-3
MW-19-2
MW-19-1
EB-2-6/14/07
TB-2-6/14/07
MW-19-1MS
MW-19-1MSD

Introduction

This data review covers 9 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 524.2 for Volatiles.

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

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

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

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

The following are definitions of the data qualifiers:

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

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 20.0% for selected compounds with the following exceptions:

Date	Compound	%RSD	Associated Samples	Flag	A or P
6/18/07	Methylene chloride	23.55	All samples in SDG JPL36	J (all detects) UJ (all non-detects)	P

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

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

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

Date	Compound	%D	Associated Samples	Flag	A or P
6/20/07	Dichlorodifluoromethane	52.43	MW-19-2 MW-19-1 EB-2-6/14/07 B062007MVOWM3	J (all detects) UJ (all non-detects)	P

The percent differences (%D) of the second source calibration standard were less than or equal to 30.0% for all compounds.

V. Blanks

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

VI. Surrogate Spikes

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

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were not within QC limits. Since there were no associated samples, no data were qualified.

VIII. Laboratory Control Samples (LCS)

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

LCS ID	Compound	%R (Limits)	Associated Samples	Flag	A or P
S062007MVOWM2	Dichlorodifluoromethane	141 (60-140)	MW-19-2 MW-19-1 EB-2-6/14/07 B062007MVOWM3	J (all detects)	P

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

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

XI. Target Compound Identifications

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

XIII. Tentatively Identified Compounds (TICs)

Raw data were not reviewed for this SDG.

XIV. System Performance

Raw data were not reviewed for this SDG.

XV. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XVI. Field Duplicates

No field duplicates were identified in this SDG.

XVII. Field Blanks

Sample TB-2-6/14/07 was identified as a trip blank. No volatile contaminants were found in this blank.

Sample EB-2-6/14/07 was identified as an equipment blank. No volatile contaminants were found in this blank.

NASA JPL
Volatiles - Data Qualification Summary - SDG JPL36

SDG	Sample	Compound	Flag	A or P	Reason
JPL36	MW-19-5 MW-19-4 MW-19-3 MW-19-2 MW-19-1 EB-2-6/14/07 TB-2-6/14/07	Methylene chloride	J (all detects) UJ (all non-detects)	P	Initial calibration (%RSD)
JPL36	MW-19-2 MW-19-1 EB-2-6/14/07	Dichlorodifluoromethane	J (all detects) UJ (all non-detects)	P	Continuing calibration (%D)
JPL36	MW-19-2 MW-19-1 EB-2-6/14/07	Dichlorodifluoromethane	J (all detects)	P	Laboratory control samples (%R)

NASA JPL
Volatiles - Laboratory Blank Data Qualification Summary - SDG JPL36

No Sample Data Qualified in this SDG

LDC Report# 17083B1

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: June 15, 2007

LDC Report Date: July 20, 2007

Matrix: Water

Parameters: Volatiles

Validation Level: EPA Level III

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL37

Sample Identification

MW-18-5
MW-18-4
MW-18-3
MW-18-2
MW-18-1
EB-3-6/15/07
TB-3-6/15/07

Introduction

This data review covers 7 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 524.2 for Volatiles.

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

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

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

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

The following are definitions of the data qualifiers:

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

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 20.0% for selected compounds with the following exceptions:

Date	Compound	%RSD	Associated Samples	Flag	A or P
6/18/07	Methylene chloride	23.55	All samples in SDG JPL37	J (all detects) UJ (all non-detects)	P

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

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

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

Date	Compound	%D	Associated Samples	Flag	A or P
6/20/07	Dichlorodifluoromethane	52.43	All samples in SDG JPL37	J (all detects) UJ (all non-detects)	P

The percent differences (%D) of the second source calibration standard were less than or equal to 30.0% for all compounds.

V. Blanks

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

VI. Surrogate Spikes

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

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were not required by the method.

VIII. Laboratory Control Samples (LCS)

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

LCS ID	Compound	%R (Limits)	Associated Samples	Flag	A or P
S062007MVOWM2	Dichlorodifluoromethane	141 (60-140)	All samples in SDG JPL37	J (all detects)	P

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

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

XI. Target Compound Identifications

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

XIII. Tentatively Identified Compounds (TICs)

Raw data were not reviewed for this SDG.

XIV. System Performance

Raw data were not reviewed for this SDG.

XV. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XVI. Field Duplicates

No field duplicates were identified in this SDG.

XVII. Field Blanks

Sample TB-3-6/15/07 was identified as a trip blank. No volatile contaminants were found in this blank.

Sample EB-3-6/15/07 was identified as an equipment blank. No volatile contaminants were found in this blank.

NASA JPL
Volatiles - Data Qualification Summary - SDG JPL37

SDG	Sample	Compound	Flag	A or P	Reason
JPL37	MW-18-5 MW-18-4 MW-18-3 MW-18-2 MW-18-1 EB-3-6/15/07 TB-3-6/15/07	Methylene chloride	J (all detects) UJ (all non-detects)	P	Initial calibration (%RSD)
JPL37	MW-18-5 MW-18-4 MW-18-3 MW-18-2 MW-18-1 EB-3-6/15/07 TB-3-6/15/07	Dichlorodifluoromethane	J (all detects) UJ (all non-detects)	P	Continuing calibration (%D)
JPL37	MW-18-5 MW-18-4 MW-18-3 MW-18-2 MW-18-1 EB-3-6/15/07 TB-3-6/15/07	Dichlorodifluoromethane	J (all detects)	P	Laboratory control samples (%R)

NASA JPL
Volatiles - Laboratory Blank Data Qualification Summary - SDG JPL37

No Sample Data Qualified in this SDG

NASA JPL
Data Validation Reports
LDC# 17083

Metals

LDC

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: June 14, 2007

LDC Report Date: July 23, 2007

Matrix: Water

Parameters: Metals

Validation Level: EPA Level III

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL36

Sample Identification

MW-19-5
MW-19-4
MW-19-3
MW-19-2
MW-19-1
EB-2-6/14/07
MW-19-1MS
MW-19-1MSD

Introduction

This data review covers 8 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 200.8 for Metals. The metals analyzed were Arsenic, Calcium, Chromium, Iron, Lead, Magnesium, Potassium, Sodium.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as there are no current guidelines for the method stated above.

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

Blanks are summarized in Section III.

Field duplicates are summarized in Section XIII.

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

The following are definitions of the data qualifiers:

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

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. Calibration

An initial calibration was performed.

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

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

IV. ICP Interference Check Sample (ICS) Analysis

The frequency of analysis was met.

The criteria for analysis were met.

V. Matrix Spike Analysis

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

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
MW-19-1MS/MSD (All samples in SDG JPL36)	Sodium	-	67.5 (70-130)	-	J (all detects) UJ (all non-detects)	A

VI. Duplicate Sample Analysis

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable.

VII. Laboratory Control Samples (LCS)

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

VIII. Internal Standards

Raw data were not reviewed for this SDG.

IX. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

X. ICP Serial Dilution

ICP serial dilution analysis was performed by the laboratory. The analysis criteria were met.

XI. Sample Result Verification

Raw data were not reviewed for this SDG.

XII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XIII. Field Duplicates

No field duplicates were identified in this SDG.

XIV. Field Blanks

Sample EB-2-6/14/07 was identified as an equipment blank. No metal contaminants were found in this blank.

NASA JPL
Metals - Data Qualification Summary - SDG JPL36

SDG	Sample	Analyte	Flag	A or P	Reason
JPL36	MW-19-5 MW-19-4 MW-19-3 MW-19-2 MW-19-1 EB-2-6/14/07	Sodium	J (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicates (%R)

NASA JPL
Metals - Laboratory Blank Data Qualification Summary - SDG JPL36

No Sample Data Qualified in this SDG

LDC Report# 17083B4

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: June 15, 2007

LDC Report Date: July 23, 2007

Matrix: Water

Parameters: Metals

Validation Level: EPA Level III

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL37

Sample Identification

MW-18-5
MW-18-4
MW-18-3
MW-18-2
MW-18-1
EB-3-6/15/07

Introduction

This data review covers 6 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 200.8 for Metals. The metals analyzed were Arsenic, Calcium, Chromium, Iron, Lead, Magnesium, Potassium, Sodium.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as there are no current guidelines for the method stated above.

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

Blanks are summarized in Section III.

Field duplicates are summarized in Section XIII.

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

The following are definitions of the data qualifiers:

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

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. Calibration

An initial calibration was performed.

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

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

IV. ICP Interference Check Sample (ICS) Analysis

The frequency of analysis was met.

The criteria for analysis were met.

V. Matrix Spike Analysis

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

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
MW-19-1MS/MSD (All samples in SDG JPL37)	Sodium	-	67.5 (70-130)	-	J (all detects) UJ (all non-detects)	A

VI. Duplicate Sample Analysis

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable.

VII. Laboratory Control Samples (LCS)

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

VIII. Internal Standards

Raw data were not reviewed for this SDG.

IX. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

X. ICP Serial Dilution

ICP serial dilution analysis was performed by the laboratory. The analysis criteria were met.

XI. Sample Result Verification

Raw data were not reviewed for this SDG.

XII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XIII. Field Duplicates

No field duplicates were identified in this SDG.

XIV. Field Blanks

Sample EB-3-6/15/07 was identified as an equipment blank. No metal contaminants were found in this blank.

NASA JPL
Metals - Data Qualification Summary - SDG JPL37

SDG	Sample	Analyte	Flag	A or P	Reason
JPL37	MW-18-5 MW-18-4 MW-18-3 MW-18-2 MW-18-1 EB-3-6/15/07	Sodium	J (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicates (%R)

NASA JPL
Metals - Laboratory Blank Data Qualification Summary - SDG JPL37

No Sample Data Qualified in this SDG

NASA JPL
Data Validation Reports
LDC# 17083

Wet Chemistry

LDC

LDC Report# 17083A6

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: June 14, 2007

LDC Report Date: July 23, 2007

Matrix: Water

Parameters: Wet Chemistry

Validation Level: EPA Level III

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL36

Sample Identification

MW-19-5
MW-19-4
MW-19-3
MW-19-2
MW-19-1
EB-2-6/14/07
MW-19-3DUP
MW-19-1MS
MW-19-1MSD
MW-19-1DUP
EB-2-6/14/07DUP

Introduction

This data review covers 11 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 150.1 for pH, EPA Method 160.1 for Total Dissolved Solids, EPA Method 300.0 for Chloride, Nitrate as Nitrogen, and Sulfate, EPA Method 310.1 for Alkalinity, and EPA Method 314.0 for Perchlorate.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as there are no current guidelines for the methods stated above.

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

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

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

The following are definitions of the data qualifiers:

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

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. Calibration

a. Initial Calibration

All criteria for the initial calibration were met.

b. Calibration Verification

Calibration verification frequency and analysis criteria were met for each method when applicable.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

IV. Matrix Spike/Matrix Spike Duplicates

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

V. Duplicates

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

VI. Laboratory Control Samples

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

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Field Blanks

Sample EB-2-6/14/07 was identified as an equipment blank. No contaminant concentrations were found in this blank with the following exceptions:

Equipment Blank ID	Analyte	Concentration
EB-2-6/14/07	pH Total dissolved solids	6.7 units 32 mg/L

NASA JPL
Wet Chemistry - Data Qualification Summary - SDG JPL36

No Sample Data Qualified in this SDG

NASA JPL
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG JPL36

No Sample Data Qualified in this SDG

LDC Report# 17083B6

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: June 15, 2007

LDC Report Date: July 23, 2007

Matrix: Water

Parameters: Wet Chemistry

Validation Level: EPA Level III

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL37

Sample Identification

MW-18-5
MW-18-4
MW-18-3
MW-18-2
MW-18-1
EB-3-6/15/07
MW-18-5MS
MW-18-5MSD
MW-18-2MS
MW-18-2MSD
EB-3-6/15/07DUP

Introduction

This data review covers 11 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 150.1 for pH, EPA Method 160.1 for Total Dissolved Solids, EPA Method 300.0 for Chloride, Nitrate as Nitrogen, and Sulfate, EPA Method 310.1 for Alkalinity, and EPA Method 314.0 for Perchlorate.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as there are no current guidelines for the methods stated above.

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

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

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

The following are definitions of the data qualifiers:

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

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. Calibration

a. Initial Calibration

All criteria for the initial calibration were met.

b. Calibration Verification

Calibration verification frequency and analysis criteria were met for each method when applicable.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

IV. Matrix Spike/Matrix Spike Duplicates

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

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
MW-18-2MS/MSD (All samples in SDG JPL37)	Sulfate	89 (90-110)	-	-	J (all detects) UJ (all non-detects)	A

V. Duplicates

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

VI. Laboratory Control Samples

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

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Field Blanks

Sample EB-3-6/15/07 was identified as an equipment blank. No contaminant concentrations were found in this blank with the following exceptions:

Equipment Blank ID	Analyte	Concentration
EB-3-6/15/07	pH Total dissolved solids	7.0 units 20 mg/L

NASA JPL
Wet Chemistry - Data Qualification Summary - SDG JPL37

SDG	Sample	Analyte	Flag	A or P	Reason
JPL37	MW-18-5 MW-18-4 MW-18-3 MW-18-2 MW-18-1 EB-3-6/15/07	Sulfate	J (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicates (%R)

NASA JPL
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG JPL37

No Sample Data Qualified in this SDG

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

Battelle
505 King Avenue, Room 10-1-170
Columbus, OH 43201
ATTN: Ms. Betsy Cutie

July 20, 2007

SUBJECT: NASA JPL, Data Validation

Dear Ms. Cutie,

Enclosed are the final validation reports for the fraction listed below. This SDG was received on July 13, 2007. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project # 17117:

SDG #	Fraction
P0700619	Hexavalent Chromium

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

- USEPA, Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, October 2004
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998

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

Sincerely,

ERauto

Erlinda T. Rauto
Operations Manager/Senior Chemist

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Attachment 1

PO 190288 **10/90 (client select)**

LDC #17117 (Battelle-San Diego / NASA JPL)

LDC	SDG#	DATE REC'D	(3) DATE DUE	Cr(VI) (7196A)																																	
Matrix:	Water/Soil			W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	P0700619	07/13/07	08/03/07	13	0																																
A	P0700619	07/13/07	08/03/07	1	0																																
Total	B/LR			14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14

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

17117ST.wpd

NASA JPL
Data Validation Reports
LDC# 17117

Hexavalent Chromium

LDC

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: July 2 through July 6, 2007

LDC Report Date: July 18, 2007

Matrix: Water

Parameters: Hexavalent Chromium

Validation Level: EPA Level III & IV

Laboratory: Columbia Analytical Services, Inc.

Sample Delivery Group (SDG): P0700619

Sample Identification

MW-25-5
MW-25-4
MW-25-3
MW-25-2**
MW-25-1
DUPE-6-2Q07
SB-1-7/2/07
EB-14-7/2/07
MW-5
MW-6
MW-25-4MS
MW-25-4MSD
MW-5MS
MW-5MSD

**Indicates sample underwent EPA Level IV review

Introduction

This data review covers 14 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 7196A for Hexavalent Chromium.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as there are no current guidelines for the methods stated above.

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

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Samples indicated by a double asterisk on the front cover underwent a EPA Level IV review. A EPA Level III review was performed on all of the other samples. Raw data were not evaluated for the samples reviewed by Level III criteria since this review is based on QC data.

The following are definitions of the data qualifiers:

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

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. Calibration

a. Initial Calibration

All criteria for the initial calibration were met.

b. Calibration Verification

Calibration verification frequency and analysis criteria were met for each method when applicable.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No hexavalent chromium was found in the initial, continuing and preparation blanks.

IV. Matrix Spike/Matrix Spike Duplicates

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

V. Duplicates

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable.

VI. Laboratory Control Samples

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

VII. Sample Result Verification

All sample result verifications were acceptable for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

Samples MW-25-1 and DUPE-6-2Q07 were identified as a field duplicates. No hexavalent chromium was detected in any of the samples.

X. Field Blanks

Sample EB-14-7/2/07 was identified as an equipment blank. No hexavalent chromium was found in this blank.

Sample SB-1-7/2/07 was identified as a source blank. No hexavalent chromium was found in this blank.

NASA JPL
Hexavalent Chromium - Data Qualification Summary - SDG P0700619

No Sample Data Qualified in this SDG

NASA JPL
Hexavalent Chromium - Laboratory Blank Data Qualification Summary - SDG P0700619

No Sample Data Qualified in this SDG

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

Battelle
505 King Avenue, Room 10-1-170
Columbus, OH 43201
ATTN: Ms. Betsy Cutie

July 31, 2007

SUBJECT: NASA JPL, Data Validation

Dear Ms. Cutie,

Enclosed are the final validation reports for the fraction listed below. These SDGs were received on July 13, 2007. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project # 17119:

SDG #	Fraction
JPL38, JPL39, JPL40	Volatiles, 1,4-Dioxane, Metals, Wet Chemistry

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

- USEPA, Contract Laboratory Program National Functional Guidelines for Organic Data Review, October 1999
- USEPA, Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, October 2004
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998

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

Sincerely,

Erlinda T. Rauto
Operations Manager/Senior Chemist

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Attachment 1

PO 190288 **10/90 (client select)**

LDC #17119 (Battelle-San Diego / NASA JPL)

LDC	SDG#	DATE REC'D	(3) DATE DUE	VOA (524.2)		1,4-Dioxane (8270C)		Metals (200.7 /200.8)		Alk. (310.1)		Cl,SO_4, NO_3 (300.0)		CLO_4 (314.0)		pH (150.1)		TDS (160.1)																			
Matrix:	Water/Soil			W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	JPL38	07/13/07	08/03/07	8	0	-	-	7	0	7	0	9	0	9	0	8	0	8	0																		
B	JPL39	07/13/07	08/03/07	8	0	1	0	7	0	8	0	9	0	9	0	8	0	8	0																		
C	JPL40	07/13/07	08/03/07	7	0	-	-	8	0	7	0	8	0	8	0	7	0	7	0																		
Total	B/LR			23	0	1	0	22	0	22	0	26	0	26	0	23	0	23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	166

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

17119ST.wpd

NASA JPL
Data Validation Reports
LDC# 17119

Volatiles

LDC Report# 17119A1

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: June 18, 2007

LDC Report Date: July 20, 2007

Matrix: Water

Parameters: Volatiles

Validation Level: EPA Level III

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL38

Sample Identification

MW-20-5
MW-20-4
MW-20-3
MW-20-2
MW-20-1
DUPE-2-2Q07
EB-4-6/18/07
TB-4-6/18/07

Introduction

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

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

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

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

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

The following are definitions of the data qualifiers:

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

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 20.0% for selected compounds with the following exceptions:

Date	Compound	%RSD	Associated Samples	Flag	A or P
6/18/07	Methylene chloride	23.55	All samples in SDG JPL38	J (all detects) UJ (all non-detects)	P

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

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

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

Date	Compound	%D	Associated Samples	Flag	A or P
6/20/07	Dichlorodifluoromethane	52.43	MW-20-5 MW-20-4 MW-20-3 TB-4-6/18/07 B062007MVOWM3	J (all detects) UJ (all non-detects)	P

The percent differences (%D) of the second source calibration standard were less than or equal to 30.0% for all compounds.

V. Blanks

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

VI. Surrogate Spikes

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

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were not required by the method.

VIII. Laboratory Control Samples (LCS)

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

LCS ID	Compound	%R (Limits)	Associated Samples	Flag	A or P
S062007MVOWM2	Dichlorodifluoromethane	141 (60-140)	MW-20-5 MW-20-4 MW-20-3 TB-4-6/18/07 B062007MVOWM3	J (all detects)	P

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

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

XI. Target Compound Identifications

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

XIII. Tentatively Identified Compounds (TICs)

Raw data were not reviewed for this SDG.

XIV. System Performance

Raw data were not reviewed for this SDG.

XV. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XVI. Field Duplicates

Samples MW-20-1 and DUPE-2-2Q07 were identified as field duplicates. No volatiles were detected in any of the samples.

XVII. Field Blanks

Sample TB-4-6/18/07 was identified as a trip blank. No volatile contaminants were found in this blank with the following exceptions:

Trip Blank ID	Compound	Concentration (ug/L)
TB-4-6/18/07	Methylene chloride	0.95

Sample EB-4-6/18/07 was identified as an equipment blank. No volatile contaminants were found in this blank.

NASA JPL
Volatiles - Data Qualification Summary - SDG JPL38

SDG	Sample	Compound	Flag	A or P	Reason
JPL38	MW-20-5 MW-20-4 MW-20-3 MW-20-2 MW-20-1 DUPE-2-2Q07 EB-4-6/18/07 TB-4-6/18/07	Methylene chloride	J (all detects) UJ (all non-detects)	P	Initial calibration (%RSD)
JPL38	MW-20-5 MW-20-4 MW-20-3 TB-4-6/18/07	Dichlorodifluoromethane	J (all detects) UJ (all non-detects)	P	Continuing calibration (%D)
JPL38	MW-20-5 MW-20-4 MW-20-3 TB-4-6/18/07	Dichlorodifluoromethane	J (all detects)	P	Laboratory control samples (%R)

NASA JPL
Volatiles - Laboratory Blank Data Qualification Summary - SDG JPL38

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: June 19, 2007

LDC Report Date: July 20, 2007

Matrix: Water

Parameters: Volatiles

Validation Level: EPA Level III

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL39

Sample Identification

MW-17-5
MW-17-4
MW-17-3
MW-17-2
MW-17-1
DUPE-3-2Q07
EB-5-6/19/07
TB-5-6/19/07

Introduction

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

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

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

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

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

The following are definitions of the data qualifiers:

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

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 20.0% for selected compounds with the following exceptions:

Date	Compound	%RSD	Associated Samples	Flag	A or P
6/18/07	Methylene chloride	23.55	All samples in SDG JPL39	J (all detects) UJ (all non-detects)	P

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

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

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

The percent differences (%D) of the second source calibration standard were less than or equal to 30.0% for all compounds.

V. Blanks

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

VI. Surrogate Spikes

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

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were not required by the method.

VIII. Laboratory Control Samples (LCS)

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

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

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

XI. Target Compound Identifications

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

XIII. Tentatively Identified Compounds (TICs)

Raw data were not reviewed for this SDG.

XIV. System Performance

Raw data were not reviewed for this SDG.

XV. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XVI. Field Duplicates

Samples MW-17-3 and DUPE-3-2Q07 were identified as field duplicates. No volatiles were detected in any of the samples with the following exceptions:

Compound	Concentration (ug/L)		RPD
	MW-17-3	DUPE-3-2Q07	
Chloroform	0.80	0.82	2

Compound	Concentration (ug/L)		RPD
	MW-17-3	DUPE-3-2Q07	
Carbon tetrachloride	1.5	1.6	6
Trichloroethene	0.90	1.0	11

XVII. Field Blanks

Sample TB-5-6/19/07 was identified as a trip blank. No volatile contaminants were found in this blank.

Sample EB-5-6/19/07 was identified as an equipment blank. No volatile contaminants were found in this blank.

NASA JPL
Volatiles - Data Qualification Summary - SDG JPL39

SDG	Sample	Compound	Flag	A or P	Reason
JPL39	MW-17-5 MW-17-4 MW-17-3 MW-17-2 MW-17-1 DUPE-3-2Q07 EB-5-6/19/07 TB-5-6/19/07	Methylene chloride	J (all detects) UJ (all non-detects)	P	Initial calibration (%RSD)

NASA JPL
Volatiles - Laboratory Blank Data Qualification Summary - SDG JPL39

No Sample Data Qualified in this SDG

LDC Report# 17119C1

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: June 20, 2007

LDC Report Date: July 20, 2007

Matrix: Water

Parameters: Volatiles

Validation Level: EPA Level III

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL40

Sample Identification

MW-22-5
MW-22-4
MW-22-3
MW-22-2
MW-22-1
EB-6-6/20/07
TB-6-6/20/07

Introduction

This data review covers 7 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 524.2 for Volatiles.

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

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

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

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

The following are definitions of the data qualifiers:

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

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 20.0% for selected compounds with the following exceptions:

Date	Compound	%RSD	Associated Samples	Flag	A or P
6/18/07	Methylene chloride	23.55	All samples in SDG JPL40	J (all detects) UJ (all non-detects)	P

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

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

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

The percent differences (%D) of the second source calibration standard were less than or equal to 30.0% for all compounds.

V. Blanks

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

VI. Surrogate Spikes

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

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were not required by the method.

VIII. Laboratory Control Samples (LCS)

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

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

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

XI. Target Compound Identifications

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

XIII. Tentatively Identified Compounds (TICs)

Raw data were not reviewed for this SDG.

XIV. System Performance

Raw data were not reviewed for this SDG.

XV. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XVI. Field Duplicates

No field duplicates were identified in this SDG.

XVII. Field Blanks

Sample TB-6-6/20/07 was identified as a trip blank. No volatile contaminants were found in this blank with the following exceptions:

Trip Blank ID	Compound	Concentration (ug/L)
TB-6-6/20/07	Methylene chloride	4.8

Sample EB-6-6/20/07 was identified as an equipment blank. No volatile contaminants were found in this blank with the following exceptions:

Equipment Blank ID	Compound	Concentration (ug/L)
EB-6-6/20/07	Methylene chloride	3.3

NASA JPL
Volatiles - Data Qualification Summary - SDG JPL40

SDG	Sample	Compound	Flag	A or P	Reason
JPL40	MW-22-5 MW-22-4 MW-22-3 MW-22-2 MW-22-1 EB-6-6/20/07 TB-6-6/20/07	Methylene chloride	J (all detects) UJ (all non-detects)	P	Initial calibration (%RSD)

NASA JPL
Volatiles - Laboratory Blank Data Qualification Summary - SDG JPL40

No Sample Data Qualified in this SDG

NASA JPL
Data Validation Reports
LDC# 17119

1,4-Dioxane

LDC Report# 17119B2

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: June 19, 2007

LDC Report Date: July 20, 2007

Matrix: Water

Parameters: 1,4-Dioxane

Validation Level: EPA Level III

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL39

Sample Identification

MW-17-4

Introduction

This data review covers one water sample listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8270C for 1,4-Dioxane.

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

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

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

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

The following are definitions of the data qualifiers:

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

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

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

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were less than or equal to 25.0% .

V. Blanks

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

VI. Surrogate Spikes

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

VII. Matrix Spike/Matrix Spike Duplicates

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

VIII. Laboratory Control Samples (LCS)

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

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

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

XI. Target Compound Identifications

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

XIII. Tentatively Identified Compounds (TICs)

Raw data were not reviewed for this SDG.

XIV. System Performance

Raw data were not reviewed for this SDG.

XV. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XVI. Field Duplicates

No field duplicates were identified in this SDG.

XVII. Field Blanks

No field blanks were identified in this SDG.

NASA JPL
1,4-Dioxane - Data Qualification Summary - SDG JPL39

No Sample Data Qualified in this SDG

NASA JPL
1,4-Dioxane - Laboratory Blank Data Qualification Summary - SDG JPL39

No Sample Data Qualified in this SDG

NASA JPL
Data Validation Reports
LDC# 17119

Metals

LDC

LDC Report# 17119A4

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: June 18, 2007

LDC Report Date: July 23, 2007

Matrix: Water

Parameters: Metals

Validation Level: EPA Level III

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL38

Sample Identification

MW-20-5
MW-20-4
MW-20-3
MW-20-2
MW-20-1
DUPE-2-2Q07
EB-4-6/18/07

Introduction

This data review covers 7 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 200.8 for Metals. The metals analyzed were Arsenic, Calcium, Chromium, Iron, Lead, Magnesium, Potassium, Sodium.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as there are no current guidelines for the method stated above.

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

Blanks are summarized in Section III.

Field duplicates are summarized in Section XIII.

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

The following are definitions of the data qualifiers:

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

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. Calibration

An initial calibration was performed.

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

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

IV. ICP Interference Check Sample (ICS) Analysis

The frequency of analysis was met.

The criteria for analysis were met.

V. Matrix Spike Analysis

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

VI. Duplicate Sample Analysis

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable.

VII. Laboratory Control Samples (LCS)

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

VIII. Internal Standards

Raw data were not reviewed for this SDG.

IX. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

X. ICP Serial Dilution

ICP serial dilution analysis was performed by the laboratory. The analysis criteria were met.

XI. Sample Result Verification

Raw data were not reviewed for this SDG.

XII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XIII. Field Duplicates

Samples MW-20-1 and DUPE-2-2Q07 were identified as field duplicates. No metals were detected in any of the samples with the following exceptions:

Analyte	Concentration (ug/L)		RPD
	MW-20-1	DUPE-2-2Q07	
Calcium	113000	123000	8
Chromium	7.44	7.71	4
Iron	378	434	14
Magnesium	35100	32600	7
Sodium	25600	30100	16

XIV. Field Blanks

Sample EB-4-6/18/07 was identified as an equipment blank. No metal contaminants were found in this blank.

NASA JPL
Metals - Data Qualification Summary - SDG JPL38

No Sample Data Qualified in this SDG

NASA JPL
Metals - Laboratory Blank Data Qualification Summary - SDG JPL38

No Sample Data Qualified in this SDG

LDC Report# 17119B4

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: June 19, 2007

LDC Report Date: July 23, 2007

Matrix: Water

Parameters: Metals

Validation Level: EPA Level III

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL39

Sample Identification

MW-17-5
MW-17-4
MW-17-3
MW-17-2
MW-17-1
DUPE-3-2Q07
EB-5-6/19/07

Introduction

This data review covers 7 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 200.8 for Metals. The metals analyzed were Arsenic, Calcium, Chromium, Iron, Lead, Magnesium, Potassium, Sodium.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as there are no current guidelines for the method stated above.

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

Blanks are summarized in Section III.

Field duplicates are summarized in Section XIII.

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

The following are definitions of the data qualifiers:

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

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. Calibration

An initial calibration was performed.

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

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

IV. ICP Interference Check Sample (ICS) Analysis

The frequency of analysis was met.

The criteria for analysis were met.

V. Matrix Spike Analysis

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

VI. Duplicate Sample Analysis

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable.

VII. Laboratory Control Samples (LCS)

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

VIII. Internal Standards

Raw data were not reviewed for this SDG.

IX. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

X. ICP Serial Dilution

ICP serial dilution analysis was performed by the laboratory. The analysis criteria were met.

XI. Sample Result Verification

Raw data were not reviewed for this SDG.

XII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XIII. Field Duplicates

Samples MW-17-3 and DUPE-3-2Q07 were identified as field duplicates. No metals were detected in any of the samples with the following exceptions:

Analyte	Concentration (ug/L)		RPD
	MW-17-3	DUPE-3-2Q07	
Arsenic	1.97	2.29	15
Calcium	85700	85400	0
Chromium	9.17	9.14	0
Iron	1840	2360	25
Magnesium	32000	31800	1
Sodium	26700	26500	1

XIV. Field Blanks

Sample EB-5-6/19/07 was identified as an equipment blank. No metal contaminants were found in this blank.

NASA JPL
Metals - Data Qualification Summary - SDG JPL39

No Sample Data Qualified in this SDG

NASA JPL
Metals - Laboratory Blank Data Qualification Summary - SDG JPL39

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: June 20, 2007

LDC Report Date: July 23, 2007

Matrix: Water

Parameters: Metals

Validation Level: EPA Level III

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL40

Sample Identification

MW-22-5
MW-22-4
MW-22-3
MW-22-2
MW-22-1
EB-6-6/20/07
MW-22-5MS
MW-22-5MSD

Introduction

This data review covers 8 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 200.8 for Metals. The metals analyzed were Arsenic, Calcium, Chromium, Iron, Lead, Magnesium, Potassium, Sodium.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as there are no current guidelines for the method stated above.

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

Blanks are summarized in Section III.

Field duplicates are summarized in Section XIII.

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

The following are definitions of the data qualifiers:

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

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. Calibration

An initial calibration was performed.

The frequency and analysis criteria of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met with the following exceptions:

Date	Lab. Reference/ID	Analyte	%R (Limits)	Associated Samples	Flag	A or P
6/27/07	CCV17	Magnesium	111.6 (90-110)	MW-22-4 MW-22-2 EB-6-6/20/07	J (all detects)	P
6/27/07	CCV17	Potassium Chromium	111.3 (90-110) 112.2 (90-110)	MW-22-4 MW-22-3 MW-22-2 MW-22-1 EB-6-6/20/07	J (all detects) J (all detects)	P

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

IV. ICP Interference Check Sample (ICS) Analysis

The frequency of analysis was met.

The criteria for analysis were met.

V. Matrix Spike Analysis

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

VI. Duplicate Sample Analysis

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable.

VII. Laboratory Control Samples (LCS)

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

VIII. Internal Standards

Raw data were not reviewed for this SDG.

IX. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

X. ICP Serial Dilution

ICP serial dilution analysis was performed by the laboratory. The analysis criteria were met.

XI. Sample Result Verification

Raw data were not reviewed for this SDG.

XII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XIII. Field Duplicates

No field duplicates were identified in this SDG.

XIV. Field Blanks

Sample EB-6-6/20/07 was identified as an equipment blank. No metal contaminants were found in this blank.

NASA JPL
Metals - Data Qualification Summary - SDG JPL40

SDG	Sample	Analyte	Flag	A or P	Reason
JPL40	MW-22-4 MW-22-2 EB-6-6/20/07	Magnesium	J (all detects)	P	Calibration (%R)
JPL40	MW-22-4 MW-22-3 MW-22-2 MW-22-1 EB-6-6/20/07	Potassium Chromium	J (all detects) J (all detects)	P	Calibration (%R)

NASA JPL
Metals - Laboratory Blank Data Qualification Summary - SDG JPL40

No Sample Data Qualified in this SDG

NASA JPL
Data Validation Reports
LDC# 17119

Wet Chemistry

LDC

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: June 18, 2007

LDC Report Date: July 23, 2007

Matrix: Water

Parameters: Wet Chemistry

Validation Level: EPA Level III

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL38

Sample Identification

MW-20-5
MW-20-4
MW-20-3
MW-20-2
MW-20-1
DUPE-2-2Q07
EB-4-6/18/07
MW-20-5MS
MW-20-5MSD
MW-20-5DUP
DUPE-2-2Q07DUP

Introduction

This data review covers 11 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 150.1 for pH, EPA Method 160.1 for Total Dissolved Solids, EPA Method 300.0 for Chloride, Nitrate as Nitrogen, and Sulfate, EPA Method 310.1 for Alkalinity, and EPA Method 314.0 for Perchlorate.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as there are no current guidelines for the methods stated above.

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

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

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

The following are definitions of the data qualifiers:

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

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
MW-20-5 MW-20-4 MW-20-3 MW-20-2 MW-20-1 DUPE-2-2Q07 EB-4-6/18/07 MW-20-5DUP	Total dissolved solids	11 days	7 days	J (all detects) UJ (all non-detects)	A
DUPE-2-2Q07	Nitrate as N	77.75 hours	48 hours	J (all detects) UJ (all non-detects)	P
EB-4-6/18/07	Nitrate as N	54.25 hours	48 hours	J (all detects) UJ (all non-detects)	P

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

II. Calibration

a. Initial Calibration

All criteria for the initial calibration were met.

b. Calibration Verification

Calibration verification frequency and analysis criteria were met for each method when applicable.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

IV. Matrix Spike/Matrix Spike Duplicates

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

V. Duplicates

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

VI. Laboratory Control Samples

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

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

Samples MW-20-1 and DUPE-2-2Q07 were identified as field duplicates. No contaminant concentrations were detected in any of the samples with the following exceptions:

Analyte	Concentration		RPD
	MW-20-1	DUPE-2-2Q07	
Alkalinity	160 mg/L	160 mg/L	0
Chloride	51 mg/L	50 mg/L	2
Nitrate as N	9.4 mg/L	10 mg/L	6
Sulfate	140 mg/L	140 mg/L	0
Total dissolved solids	520 mg/L	490 mg/L	6
pH	7.1 units	7.4 units	4

X. Field Blanks

Sample EB-4-6/18/07 was identified as an equipment blank. No contaminant concentrations were found in this blank with the following exceptions:

Equipment Blank ID	Analyte	Concentration
EB-4-6/18/07	pH Total dissolved solids	7.6 units 22 mg/L

NASA JPL
Wet Chemistry - Data Qualification Summary - SDG JPL38

SDG	Sample	Analyte	Flag	A or P	Reason
JPL38	MW-20-5 MW-20-4 MW-20-3 MW-20-2 MW-20-1 DUPE-2-2Q07 EB-4-6/18/07 MW-20-5DUP	Total dissolved solids	J (all detects) UJ (all non-detects)	A	Technical holding times
JPL38	DUPE-2-2Q07 EB-4-6/18/07	Nitrate as N	J (all detects) UJ (all non-detects)	P	Technical holding times

NASA JPL
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG JPL38

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: June 19, 2007

LDC Report Date: July 20, 2007

Matrix: Water

Parameters: Wet Chemistry

Validation Level: EPA Level III

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL39

Sample Identification

MW-17-5
MW-17-4
MW-17-3
MW-17-2
MW-17-1
DUPE-3-2Q07
EB-5-6/19/07
MW-17-5MS
MW-17-5MSD
MW-17-5DUP
MW-17-4MS
MW-17-4MSD
MW-17-3DUP
DUPE-3-2Q07MS
DUPE-3-2Q07MSD

Introduction

This data review covers 15 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 150.1 for pH, EPA Method 160.1 for Total Dissolved Solids, EPA Method 300.0 for Chloride, Nitrate as Nitrogen, and Sulfate, EPA Method 310.1 for Alkalinity, and EPA Method 314.0 for Perchlorate.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as there are no current guidelines for the methods stated above.

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

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

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

The following are definitions of the data qualifiers:

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

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Days From Sample Collection Until Analysis	Required Holding Time (in Days) From Sample Collection Until Analysis	Flag	A or P
MW-17-5 MW-17-4 MW-17-3 MW-17-2 MW-17-1 DUPE-3-2Q07 EB-5-6/19/07 MW-17-5DUP	Total dissolved solids	10	7	J (all detects) UJ (all non-detects)	A

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

II. Calibration

a. Initial Calibration

All criteria for the initial calibration were met.

b. Calibration Verification

Calibration verification frequency and analysis criteria were met for each method when applicable with the following exceptions:

Date	Lab. Reference/ID	Analyte	%R (Limits)	Associated Samples	Flag	A or P
6/20/07	CCV (21:42)	Chloride	129.8 (90-110)	EB-5-6/19/07	J (all detects)	P

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

IV. Matrix Spike/Matrix Spike Duplicates

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

V. Duplicates

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

VI. Laboratory Control Samples

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

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

Samples MW-17-3 and DUPE-3-2Q07 were identified as field duplicates. No contaminant concentrations were detected in any of the samples with the following exceptions:

Analyte	Concentration		RPD
	MW-17-3	DUPE-3-2Q07	
Alkalinity	180 mg/L	180 mg/L	0
Chloride	59 mg/L	59 mg/L	0
Nitrate as N	7.1 mg/L	8.2 mg/L	14
Sulfate	69 mg/L	70 mg/L	1
Total dissolved solids	450 mg/L	470 mg/L	4
pH	7.6 units	7.7 units	1
Perchlorate	46 ug/L	46 ug/L	0

X. Field Blanks

Sample EB-5-6/19/07 was identified as an equipment blank. No contaminant concentrations were found in this blank with the following exceptions:

Equipment Blank ID	Analyte	Concentration
EB-5-6/19/07	pH Total dissolved solids	8.4 units 10 mg/L

NASA JPL
Wet Chemistry - Data Qualification Summary - SDG JPL39

SDG	Sample	Analyte	Flag	A or P	Reason
JPL39	MW-17-5 MW-17-4 MW-17-3 MW-17-2 MW-17-1 DUPE-3-2Q07 EB-5-6/19/07	Total dissolved solids	J (all detects) UJ (all non-detects)	A	Technical holding times
JPL39	EB-5-6/19/07	Chloride	J (all detects)	P	Calibration (%R)

NASA JPL
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG JPL39

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: June 20, 2007

LDC Report Date: July 20, 2007

Matrix: Water

Parameters: Wet Chemistry

Validation Level: EPA Level III

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL40

Sample Identification

MW-22-5
MW-22-4
MW-22-3
MW-22-2
MW-22-1
EB-6-6/20/07
MW-22-5MS
MW-22-5MSD
MW-22-3MS
MW-22-3MSD
MW-22-1DUP
EB-6-6/20/07DUP

Introduction

This data review covers 12 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 150.1 for pH, EPA Method 160.1 for Total Dissolved Solids, EPA Method 300.0 for Chloride, Nitrate as Nitrogen, and Sulfate, EPA Method 310.1 for Alkalinity, and EPA Method 314.0 for Perchlorate.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as there are no current guidelines for the methods stated above.

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

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

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

The following are definitions of the data qualifiers:

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

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Hours From Sample Collection Until Analysis	Required Holding Time (in Hours) From Sample Collection Until Analysis	Flag	A or P
MW-22-5 MW-22-4 MW-22-3	Nitrate as N	56.25	48	J (all detects) UJ (all non-detects)	P
MW-22-3MS	Nitrate as N	57	48	J (all detects) UJ (all non-detects)	P
MW-22-3MSD MW-22-2 MW-22-1	Nitrate as N	57.25	48	J (all detects) UJ (all non-detects)	P
EB-6-6/20/07	Nitrate as N	57.75	48	J (all detects) UJ (all non-detects)	P

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

II. Calibration

a. Initial Calibration

All criteria for the initial calibration were met.

b. Calibration Verification

Calibration verification frequency and analysis criteria were met for each method when applicable.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

IV. Matrix Spike/Matrix Spike Duplicates

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

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
MW-22-3MS/MSD (All samples in SDG JPL40)	Nitrate as N Sulfate	115 (90-110) 112 (90-110)	- -	- -	J (all detects) J (all detects)	A

V. Duplicates

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

VI. Laboratory Control Samples

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

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Field Blanks

Sample EB-6-6/20/07 was identified as an equipment blank. No contaminant concentrations were found in this blank with the following exceptions:

Equipment Blank ID	Analyte	Concentration
EB-6-6/20/07	pH Total dissolved solids	7.7 units 4 mg/L

NASA JPL
Wet Chemistry - Data Qualification Summary - SDG JPL40

SDG	Sample	Analyte	Flag	A or P	Reason
JPL40	MW-22-5 MW-22-4 MW-22-3 MW-22-2 MW-22-1 EB-6-6/20/07	Nitrate as N	J (all detects) UJ (all non-detects)	P	Technical holding times
JPL40	MW-22-5 MW-22-4 MW-22-3 MW-22-2 MW-22-1 EB-6-6/20/07	Nitrate as N Sulfate	J (all detects) J (all detects)	A	Matrix spike/Matrix spike duplicates (%R)

NASA JPL
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG JPL40

No Sample Data Qualified in this SDG

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

Battelle
505 King Avenue, Room 10-1-170
Columbus, OH 43201
ATTN: Ms. Betsy Cutie

July 31, 2007

SUBJECT: NASA JPL, Data Validation

Dear Ms. Cutie,

Enclosed are the final validation reports for the fraction listed below. This SDG was received on July 19, 2007. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project # 17154:

SDG #	Fraction
JPL41	Volatiles, Metals, Wet Chemistry

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

- USEPA, Contract Laboratory Program National Functional Guidelines for Organic Data Review, October 1999
- USEPA, Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, October 2004
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998

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

Sincerely,

Erlinda T. Rauto
Operations Manager/Senior Chemist

V:\LOGIN\Battelle\JPL\17154COV.wpd

Attachment 1

PO 190288 **10/90 (client select)**

LDC #17154 (Battelle-San Diego / NASA JPL)

LDC	SDG#	DATE REC'D	(3) DATE DUE	VOA (524.2)		Metals (200.7 /200.8)		Alk. (310.1)		Cl, SO_4, NO_3 (300.0)		CLO_4 (314.0)		pH (150.1)		TDS (160.1)																					
Matrix:	Water/Soil			W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	JPL41	07/19/07	08/09/07	9	0	8	0	8	0	8	0	8	0	7	0	7	0																				
A	JPL41	07/19/07	08/09/07	1	0	1	0	1	0	1	0	1	0	1	0	1	0																				
Total	B/LR			10	0	9	0	9	0	9	0	9	0	8	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	62

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

17154ST.wpd

NASA JPL
Data Validation Reports
LDC# 17154

Volatiles

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: June 21, 2007

LDC Report Date: July 23, 2007

Matrix: Water

Parameters: Volatiles

Validation Level: EPA Level III & IV

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL41

Sample Identification

MW-3-5
MW-3-4
MW-3-3**
MW-3-2
MW-3-1
DUPE-4-2Q07
EB-7-06/21/07
TB-7-06/21/07
MW-3-3MS
MW-3-3MSD

**Indicates sample underwent EPA Level IV review

Introduction

This data review covers 10 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 524.2 for Volatiles.

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

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

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

Samples indicated by a double asterisk on the front cover underwent a EPA Level IV review. A EPA Level III review was performed on all of the other samples. Raw data were not evaluated for the samples reviewed by Level III criteria since this review is based on QC data.

The following are definitions of the data qualifiers:

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

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 20.0% for selected compounds with the following exceptions:

Date	Compound	%RSD	Associated Samples	Flag	A or P
6/18/07	Methylene chloride	23.55	All samples in SDG JPL41	J (all detects) UJ (all non-detects)	P

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

Average relative response factors (RRF) for all volatile target compounds and system performance check compounds (SPCCs) were within method and validation criteria.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

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

Date	Compound	%D	Associated Samples	Flag	A or P
6/27/07	Hexachlorobutadiene	35.39	All samples in SDG JPL41	J (all detects) UJ (all non-detects)	P

The percent differences (%D) of the second source calibration standard were less than or equal to 30.0% for all compounds.

All of the continuing calibration RRF values were within method and validation criteria.

V. Blanks

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

VI. Surrogate Spikes

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

VII. Matrix Spike/Matrix Spike Duplicates

Although matrix spike (MS) and matrix spike duplicate (MSD) samples were not required by the method, MS and MSD samples were reported by the laboratory. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
MW-3-3MS/MSD (MW-3-3**)	Hexachlorobutadiene	56 (60-140)	58 (60-140)	-	J (all detects) UJ (all non-detects)	A

VIII. Laboratory Control Samples (LCS)

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

LCS ID	Compound	%R (Limits)	Associated Samples	Flag	A or P
S062707MVOWM2	Hexachlorobutadiene	56 (60-140)	All samples in SDG JPL41	J (all detects) UJ (all non-detects)	P

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

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

XI. Target Compound Identifications

All target compound identifications were within validation criteria for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

XII. Compound Quantitation and CRQLs

All compound quantitation and CRQLs were within validation criteria for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

XIII. Tentatively Identified Compounds (TICs)

All tentatively identified compounds were within validation criteria for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

XIV. System Performance

The system performance was within validation criteria for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

XV. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XVI. Field Duplicates

Samples MW-3-2 and DUPE-4-2Q07 was identified as field duplicates. No volatiles were detected in any of the samples with the following exceptions:

Compound	Concentration (ug/L)		RPD
	MW-3-2	DUPE-4-2Q07	
Methylene chloride	3.2	3.4	6

XVII. Field Blanks

Sample TB-7-06/21/07 was identified as a trip blank. No volatile contaminants were found in this blanks

Sample EB-7-06/21/07 was identified as an equipment blank. No volatile contaminants were found in this blank with the following exceptions:

Equipment Blank ID	Compound	Concentration (ug/L)
EB-7-06/21/07	Methylene chloride	2.4

NASA JPL
Volatiles - Data Qualification Summary - SDG JPL41

SDG	Sample	Compound	Flag	A or P	Reason
JPL41	MW-3-5 MW-3-4 MW-3-3** MW-3-2 MW-3-1 DUPE-4-2Q07 EB-7-06/21/07 TB-7-06/21/07	Methylene chloride	J (all detects) UJ (all non-detects)	P	Initial calibration (%RSD)
JPL41	MW-3-5 MW-3-4 MW-3-3** MW-3-2 MW-3-1 DUPE-4-2Q07 EB-7-06/21/07 TB-7-06/21/07	Hexachlorobutadiene	J (all detects) UJ (all non-detects)	P	Continuing calibration (%D)
JPL41	MW-3-3**	Hexachlorobutadiene	J (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicates (%R)

NASA JPL
Volatiles - Laboratory Blank Data Qualification Summary - SDG JPL41

No Sample Data Qualified in this SDG

NASA JPL
Data Validation Reports
LDC# 17154

Metals

LDC Report# 17154A4

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: June 21, 2007

LDC Report Date: July 30, 2007

Matrix: Water

Parameters: Metals

Validation Level: EPA Level III & IV

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL41

Sample Identification

MW-3-5
MW-3-4
MW-3-3**
MW-3-2
MW-3-1
DUPE-4-2Q07
EB-7-06/21/07
MW-3-3MS
MW-3-3MSD

**Indicates sample underwent EPA Level IV review

Introduction

This data review covers 9 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 200.8 for Metals. The metals analyzed were Arsenic, Calcium, Chromium, Iron, Lead, Magnesium, Potassium, and Sodium.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as there are no current guidelines for the method stated above.

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

Blanks are summarized in Section III.

Field duplicates are summarized in Section XIII.

Samples indicated by a double asterisk on the front cover underwent a EPA Level IV review. A EPA Level III review was performed on all of the other samples. Raw data were not evaluated for the samples reviewed by Level III criteria since this review is based on QC data.

The following are definitions of the data qualifiers:

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

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. Calibration

An initial calibration was performed.

The frequency and analysis criteria of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met with the following exceptions:

Date	Lab. Reference/ID	Analyte	%R (Limits)	Associated Samples	Flag	A or P
7/3/07	CCV 11	Chromium	111.4 (90-110)	MW-3-1 DUPE-4-2Q07 EB-7-06/21/07	J (all detects)	P

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

IV. ICP Interference Check Sample (ICS) Analysis

The frequency of analysis was met.

The criteria for analysis were met.

V. Matrix Spike Analysis

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

VI. Duplicate Sample Analysis

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable.

VII. Laboratory Control Samples (LCS)

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

VIII. Internal Standards

All internal standard percent recoveries (%R) were within QC limits for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

IX. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

X. ICP Serial Dilution

ICP serial dilution analysis was performed by the laboratory. The analysis criteria were met.

XI. Sample Result Verification

All sample result verifications were acceptable for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

XII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XIII. Field Duplicates

Samples MW-3-2 and DUPE-4-2Q07 were identified as field duplicates. No chromium was detected in any of the samples with the following exceptions:

Analyte	Concentration (ug/L)		RPD
	MW-3-2	DUPE-4-2Q07	
Calcium	58700	53500	9
Chromium	2.10	1.94	8
Iron	305	318	4
Magnesium	19000	19600	3
Sodium	26100	20500	24

XIV. Field Blanks

Sample EB-7-06/21/07 was identified as an equipment blank. No metals were detected in these blanks with the following exceptions:

Equipment Blank ID	Analyte	Concentration (ug/L)
EB-7-06/21/07	Chromium	1.91

NASA JPL
Metals - Data Qualification Summary - SDG JPL41

SDG	Sample	Analyte	Flag	A or P	Reason
JPL41	MW-3-1 DUPE-4-2Q07 EB-7-06/21/07	Chromium	J (all detects)	P	Calibration (%R)

NASA JPL
Metals - Laboratory Blank Data Qualification Summary - SDG JPL41

No Sample Data Qualified in this SDG

NASA JPL
Data Validation Reports
LDC# 17154

Wet Chemistry

LDC Report# 17154A6

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: June 21, 2007

LDC Report Date: July 30, 2007

Matrix: Water

Parameters: Wet Chemistry

Validation Level: EPA Level III & IV

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL41

Sample Identification

MW-3-5
MW-3-4
MW-3-3**
MW-3-2
MW-3-1
DUPE-4-2Q07
EB-7-06/21/07
MW-3-3MS
MW-3-3MSD
MW-3-3DUP
MW-3-2DUP

**Indicates sample underwent EPA Level IV review

Introduction

This data review covers 11 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 150.1 for pH, EPA Method 160.1 for Total Dissolved Solids, EPA Method 300.0 for Chloride, Nitrate, and Sulfate, EPA Method 310.1 for Alkalinity, and EPA Method 314.0 for Perchlorate.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as there are no current guidelines for the methods stated above.

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

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Samples indicated by a double asterisk on the front cover underwent a EPA Level IV review. A EPA Level III review was performed on all of the other samples. Raw data were not evaluated for the samples reviewed by Level III criteria since this review is based on QC data.

The following are definitions of the data qualifiers:

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

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
MW-3-2 MW-3-2DUP	Alkalinity	27 days	14 days	J (all detects) UJ (all non-detects)	P

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

II. Calibration

a. Initial Calibration

All criteria for the initial calibration were met.

b. Calibration Verification

Calibration verification frequency and analysis criteria were met for each method when applicable.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

IV. Matrix Spike/Matrix Spike Duplicates

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

V. Duplicates

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

VI. Laboratory Control Samples

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

VII. Sample Result Verification

All sample result verifications were acceptable for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

Samples MW-3-2 and DUPE-4-2Q07 were identified as field duplicates. No contaminant concentrations were detected in any of the samples with the following exceptions:

Analyte	Concentration		RPD
	MW-3-2	DUPE-4-2Q07	
Alkalinity	160 mg/L	150 mg/L	6
Chloride	21 mg/L	21 mg/L	0
Nitrate as N	2.2 mg/L	2.1 mg/L	5
Sulfate	43 mg/L	42 mg/L	2
Total dissolved solids	290 mg/L	270 mg/L	7
pH	7.6 units	7.9 units	4
Perchlorate	78 ug/L	71 ug/L	9

X. Field Blanks

Sample EB-7-06/21/07 was identified as an equipment blank. No contaminant concentrations were found in this blank with the following exceptions:

Equipment Blank ID	Analyte	Concentration (units)
EB-7-06/21/07	pH	7.9

NASA JPL
Wet Chemistry - Data Qualification Summary - SDG JPL41

SDG	Sample	Analyte	Flag	A or P	Reason
JPL41	MW-3-2	Alkalinity	J (all detects) UJ (all non-detects)	P	Technical holding times

NASA JPL
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG JPL41

No Sample Data Qualified in this SDG

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

Battelle
505 King Avenue, Room 10-1-170
Columbus, OH 43201
ATTN: Ms. Betsy Cutie

August 7, 2007

SUBJECT: NASA JPL, Data Validation

Dear Ms. Cutie,

Enclosed are the final validation reports for the fractions listed below. These SDGs were received on July 23, 2007. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project # 17164:

SDG #	Fraction
JPL42, JPL43	Volatiles, 1,4-Dioxane, Metals, Wet Chemistry

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

- Methods for the Determination of Organic Compounds in Drinking Water, Supplement III, August 1995.
- USEPA, Contract Laboratory Program National Functional Guidelines for Organic Data Review, October 1999
- USEPA, Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, October 2004
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998

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

Sincerely,

ERauto

Erlinda T. Rauto
Operations Manager/Senior Chemist

V:\LOGIN\Battelle\JPL\17164COV.wpd

Attachment 1

PO 190288 **10/90 (client select)**

LDC #17164 (Battelle-San Diego / NASA JPL)

LDC	SDG#	DATE REC'D	(3) DATE DUE	VOA (524.2)		1,4-Dioxane (8270C)		Metals (200.7 /200.8)		Alk. (310.1)		Cl,SO_4, NO_3 (300.0)		NO_3-N (353.2)		NO_3/ NO_2-N (353.2)		NO_2-N (354.1)		CLO_4 (314.0)		pH (150.1)		TDS (160.1)													
Matrix:	Water/Soil			W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	JPL42	07/23/07	08/13/07	6	0	1	0	7	0	6	0	7	0	5	0	7	0	7	0	5	0	6	0	6	0												
A	JPL42	07/23/07	08/13/07	1	0	0	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0												
B	JPL43	07/23/07	08/13/07	8	0	-	-	7	0	7	0	9	0	7	0	7	0	9	0	9	0	8	0	8	0												
Total	B/LR			15	0	1	0	15	0	14	0	17	0	13	0	15	0	17	0	15	0	15	0	15	0	0	0	0	0	0	0	0	0	0	0	0	152

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

17164ST.wpd

NASA JPL
Data Validation Reports
LDC# 17164

Volatiles

LDC

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: June 25, 2007

LDC Report Date: July 27, 2007

Matrix: Water

Parameters: Volatiles

Validation Level: EPA Level III & IV

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL42

Sample Identification

MW-4-5
MW-4-4
MW-4-3
MW-4-2**
MW-4-1
EB-9-6/25/07
TB-9-6/25/07

**Indicates sample underwent EPA Level IV review

Introduction

This data review covers 7 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 524.2 for Volatiles.

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

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

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

Samples indicated by a double asterisk on the front cover underwent a EPA Level IV review. A EPA Level III review was performed on all of the other samples. Raw data were not evaluated for the samples reviewed by Level III criteria since this review is based on QC data.

The following are definitions of the data qualifiers:

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

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 20.0% for selected compounds with the following exceptions:

Date	Compound	%RSD	Associated Samples	Flag	A or P
6/18/07	Methylene chloride	23.55	All samples in SDG JPL42	J (all detects) UJ (all non-detects)	P

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

Average relative response factors (RRF) for all volatile target compounds and system performance check compounds (SPCCs) were within method and validation criteria.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

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

Date	Compound	%D	Associated Samples	Flag	A or P
6/28/07	Hexachlorobutadiene 1,2,3-Trichlorobenzene	39.61 35.36	MW-4-5 MW-4-4 MW-4-3 MW-4-2** MW-4-1 EB-9-6/25/07 B062807MVOWM1	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	P
6/27/07	Hexachlorobutadiene	35.39	TB-9-6/25/07 B062707MVOWM2	J (all detects) UJ (all non-detects)	P

All of the continuing calibration RRF values were within method and validation criteria.

V. Blanks

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

VI. Surrogate Spikes

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

VII. Matrix Spike/Matrix Spike Duplicates

Although matrix spike (MS) and matrix spike duplicate (MSD) samples were not required by the method, MS and MSD samples were reported by the laboratory. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VIII. Laboratory Control Samples (LCS)

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

LCS ID	Compound	%R (Limits)	Associated Samples	Flag	A or P
S062707MVOWM2	Hexachlorobutadiene	56 (60-140)	TB-9-6/25/07 B062707MVOWM2	J (all detects) UJ (all non-detects)	P
S062807MVOWM2	Dichlorodifluoromethane	59 (60-140)	MW-4-5 MW-4-4 MW-4-3 MW-4-2** MW-4-1 EB-9-6/25/07 B062807MVOWM1	J (all detects) UJ (all non-detects)	P

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

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

XI. Target Compound Identifications

All target compound identifications were within validation criteria for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

XII. Compound Quantitation and CRQLs

All compound quantitation and CRQLs were within validation criteria for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

XIII. Tentatively Identified Compounds (TICs)

All tentatively identified compounds were within validation criteria for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

XIV. System Performance

The system performance was within validation criteria for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

XV. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XVI. Field Duplicates

No field duplicates were identified in this SDG.

XVII. Field Blanks

Sample TB-9-6/25/07 was identified as a trip blank. No volatile contaminants were found in this blank.

Sample EB-9-6/25/07 was identified as an equipment blank. No volatile contaminants were found in this blank.

NASA JPL
Volatiles - Data Qualification Summary - SDG JPL42

SDG	Sample	Compound	Flag	A or P	Reason
JPL42	MW-4-5 MW-4-4 MW-4-3 MW-4-2** MW-4-1 EB-9-6/25/07 TB-9-6/25/07	Methylene chloride	J (all detects) UJ (all non-detects)	P	Initial calibration (%RSD)
JPL42	MW-4-5 MW-4-4 MW-4-3 MW-4-2** MW-4-1 EB-9-6/25/07	Hexachlorobutadiene 1,2,3-Trichlorobenzene	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	P	Continuing calibration (%D)
JPL42	TB-9-6/25/07	Hexachlorobutadiene	J (all detects) UJ (all non-detects)	P	Continuing calibration (%D)
JPL42	TB-9-6/25/07	Hexachlorobutadiene	J (all detects) UJ (all non-detects)	P	Laboratory control samples (%R)
JPL42	MW-4-5 MW-4-4 MW-4-3 MW-4-2** MW-4-1 EB-9-6/25/07	Dichlorodifluoromethane	J (all detects) UJ (all non-detects)	P	Laboratory control samples (%R)

NASA JPL
Volatiles - Laboratory Blank Data Qualification Summary - SDG JPL42

No Sample Data Qualified in this SDG

LDC Report# 17164B1

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: June 26, 2007

LDC Report Date: August 3, 2007

Matrix: Water

Parameters: Volatiles

Validation Level: EPA Level III

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL43

Sample Identification

MW-12-5
MW-12-4
MW-12-3
MW-12-2
MW-12-1
DUPE-5-2Q07
EB-10-6/26/07
TB-10-6/26/07

Introduction

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

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

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

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

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

The following are definitions of the data qualifiers:

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

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 20.0% for selected compounds with the following exceptions:

Date	Compound	%RSD	Associated Samples	Flag	A or P
6/18/07	Methylene chloride	23.55	All samples in SDG JPL43	J (all detects) UJ (all non-detects)	P

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

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

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

Date	Compound	%D	Associated Samples	Flag	A or P
6/28/07	1,2,3-Trichlorobenzene	35.36	All samples in SDG JPL43	J (all detects) UJ (all non-detects)	P
	Hexachlorobutadiene	39.61		J (all detects) UJ (all non-detects)	

V. Blanks

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

VI. Surrogate Spikes

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

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were not required by the method.

VIII. Laboratory Control Samples (LCS)

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

LCS ID	Compound	%R (Limits)	Associated Samples	Flag	A or P
S062807MVOWM2	Dichlorodifluoromethane	59 (60-140)	All samples in SDG JPL43	J (all detects) UJ (all non-detects)	P

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

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

XI. Target Compound Identifications

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

XIII. Tentatively Identified Compounds (TICs)

Raw data were not reviewed for this SDG.

XIV. System Performance

Raw data were not reviewed for this SDG.

XV. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XVI. Field Duplicates

Samples MW-12-1 and DUPE-5-2Q07 were identified as field duplicates. No volatiles were detected in any of the samples.

XVII. Field Blanks

Sample TB-10-6/26/07 was identified as a trip blank. No volatile contaminants were found in this blank.

Sample EB-10-6/26/07 was identified as an equipment blank. No volatile contaminants were found in this blank.

NASA JPL
Volatiles - Data Qualification Summary - SDG JPL43

SDG	Sample	Compound	Flag	A or P	Reason
JPL43	MW-12-5 MW-12-4 MW-12-3 MW-12-2 MW-12-1 DUPE-5-2Q07 EB-10-6/26/07 TB-10-6/26/07	Methylene chloride	J (all detects) UJ (all non-detects)	P	Initial calibration (%RSD)
JPL43	MW-12-5 MW-12-4 MW-12-3 MW-12-2 MW-12-1 DUPE-5-2Q07 EB-10-6/26/07 TB-10-6/26/07	1,2,3-Trichlorobenzene Hexachlorobutadiene	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	P	Continuing calibration (%D)
JPL43	MW-12-5 MW-12-4 MW-12-3 MW-12-2 MW-12-1 DUPE-5-2Q07 EB-10-6/26/07 TB-10-6/26/07	Dichlorodifluoromethane	J (all detects) UJ (all non-detects)	P	Laboratory control samples (%R)

NASA JPL
Volatiles - Laboratory Blank Data Qualification Summary - SDG JPL43

No Sample Data Qualified in this SDG

NASA JPL
Data Validation Reports
LDC# 17164

1,4-Dioxane

LDC

LDC Report# 17164A2

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: June 25, 2007

LDC Report Date: July 27, 2007

Matrix: Water

Parameters: 1,4-Dioxane

Validation Level: EPA Level III

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL42

Sample Identification

MW-4-1

Introduction

This data review covers one water sample listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8270C for 1,4-Dioxane.

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

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

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

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

The following are definitions of the data qualifiers:

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

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

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

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were less than or equal to 25.0% .

V. Blanks

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

VI. Surrogate Spikes

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

VII. Matrix Spike/Matrix Spike Duplicates

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

VIII. Laboratory Control Samples (LCS)

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

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

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

XI. Target Compound Identifications

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

XIII. Tentatively Identified Compounds (TICs)

Raw data were not reviewed for this SDG.

XIV. System Performance

Raw data were not reviewed for this SDG.

XV. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XVI. Field Duplicates

No field duplicates were identified in this SDG.

XVII. Field Blanks

No field blanks were identified in this SDG.

NASA JPL
1,4-Dioxane - Data Qualification Summary - SDG JPL42

No Sample Data Qualified in this SDG

NASA JPL
1,4-Dioxane - Laboratory Blank Data Qualification Summary - SDG JPL42`

No Sample Data Qualified in this SDG

NASA JPL
Data Validation Reports
LDC# 17164

Metals

LDC

LDC Report# 17164A4

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: June 25, 2007

LDC Report Date: July 30, 2007

Matrix: Water

Parameters: Metals

Validation Level: EPA Level III & IV

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL42

Sample Identification

MW-4-5
MW-4-4
MW-4-3
MW-4-2**
MW-4-1
EB-9-6/25/07
MW-4-2MS
MW-4-2MSD

**Indicates sample underwent EPA Level IV review

Introduction

This data review covers 8 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 200.8 for Metals. The metals analyzed were Arsenic, Calcium, Chromium, Iron, Lead, Magnesium, Potassium, and Sodium.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as there are no current guidelines for the method stated above.

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

Blanks are summarized in Section III.

Field duplicates are summarized in Section XIII.

Samples indicated by a double asterisk on the front cover underwent a EPA Level IV review. A EPA Level III review was performed on all of the other samples. Raw data were not evaluated for the samples reviewed by Level III criteria since this review is based on QC data.

The following are definitions of the data qualifiers:

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

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. Calibration

An initial calibration was performed.

The frequency and analysis criteria of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met with the following exceptions:

Date	Lab. Reference/ID	Analyte	%R (Limits)	Associated Samples	Flag	A or P
7/3/07	CCV 11	Chromium	111.4 (90-110)	MW-4-5 MW-4-4 MW-4-2** EB-9-6/25/07 MW-4-2MS MW-4-2MSD	J (all detects)	P

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

IV. ICP Interference Check Sample (ICS) Analysis

The frequency of analysis was met.

The criteria for analysis were met.

V. Matrix Spike Analysis

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

VI. Duplicate Sample Analysis

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable.

VII. Laboratory Control Samples (LCS)

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

VIII. Internal Standards

All internal standard percent recoveries (%R) were within QC limits for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

IX. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

X. ICP Serial Dilution

ICP serial dilution analysis was performed by the laboratory. The analysis criteria were met.

XI. Sample Result Verification

All sample result verifications were acceptable for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

XII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XIII. Field Duplicates

No field duplicates were identified in this SDG.

XIV. Field Blanks

Sample EB-9-6/25/07 was identified as an equipment blank. No metals were detected in this blank with the following exceptions:

Equipment Blank ID	Analyte	Concentration (ug/L)
EB-9-6/25/07	Chromium	7.71

NASA JPL
Metals - Data Qualification Summary - SDG JPL42

SDG	Sample	Analyte	Flag	A or P	Reason
JPL42	MW-4-5 MW-4-4 MW-4-2** EB-9-6/25/07	Chromium	J (all detects)	P	Calibration (%R)

NASA JPL
Metals - Laboratory Blank Data Qualification Summary - SDG JPL42

No Sample Data Qualified in this SDG

LDC Report# 17164B4

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: June 26, 2007

LDC Report Date: July 30, 2007

Matrix: Water

Parameters: Metals

Validation Level: EPA Level III

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL43

Sample Identification

MW-12-5
MW-12-4
MW-12-3
MW-12-2
MW-12-1
DUPE-5-2Q07
EB-10-6/26/07

Introduction

This data review covers 7 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 200.8 for Metals. The metals analyzed were Arsenic, Calcium, Chromium, Iron, Lead, Magnesium, Potassium, and Sodium.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as there are no current guidelines for the method stated above.

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

Blanks are summarized in Section III.

Field duplicates are summarized in Section XIII.

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

The following are definitions of the data qualifiers:

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

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. Calibration

An initial calibration was performed.

The frequency and analysis criteria of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met with the following exceptions:

Date	Lab. Reference/ID	Analyte	%R (Limits)	Associated Samples	Flag	A or P
7/3/07	CCV 11	Chromium	111.4 (90-110)	MW-12-4 MW-12-3 MW-12-2 MW-12-1 DUPE-5-2Q07 EB-10-6/26/07	J (all detects)	P

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

IV. ICP Interference Check Sample (ICS) Analysis

The frequency of analysis was met.

The criteria for analysis were met.

V. Matrix Spike Analysis

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

VI. Duplicate Sample Analysis

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable.

VII. Laboratory Control Samples (LCS)

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

VIII. Internal Standards

Raw data were not reviewed for this SDG.

IX. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

X. ICP Serial Dilution

ICP serial dilution analysis was performed by the laboratory. The analysis criteria were met.

XI. Sample Result Verification

Raw data were not reviewed for this SDG.

XII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XIII. Field Duplicates

Samples MW-12-1 and DUPE-5-2Q07 were identified as field duplicates. No metals were detected in any of the samples with the following exceptions:

Analyte	Concentration (ug/L)		RPD
	MW-12-1	DUPE-5-2Q07	
Calcium	54100	54400	1
Chromium	5.24	5.41	3
Iron	311	286	8
Magnesium	18400	18500	1
Potassium	5010	5100	2
Sodium	27700	27300	1

XIV. Field Blanks

Sample EB-10-6/26/07 was identified as an equipment blank. No metals were detected in this blank with the following exceptions:

Equipment Blank ID	Analyte	Concentration (ug/L)
EB-10-6/26/07	Chromium	8.66

NASA JPL
Metals - Data Qualification Summary - SDG JPL43

SDG	Sample	Analyte	Flag	A or P	Reason
JPL43	MW-12-4 MW-12-3 MW-12-2 MW-12-1 DUPE-5-2Q07 EB-10-6/26/07	Chromium	J (all detects)	P	Calibration (%R)

NASA JPL
Metals - Laboratory Blank Data Qualification Summary - SDG JPL43

No Sample Data Qualified in this SDG

NASA JPL
Data Validation Reports
LDC# 17164

Wet Chemistry

LDC

LDC Report# 17164A6

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: June 25, 2007

LDC Report Date: July 31, 2007

Matrix: Water

Parameters: Wet Chemistry

Validation Level: EPA Level III & IV

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL42

Sample Identification

MW-4-5
MW-4-4
MW-4-3
MW-4-2**
MW-4-1
EB-9-6/25/07
MW-4-5MS
MW-4-5MSD
MW-4-2MS
MW-4-2MSD
MW-4-2DUP

**Indicates sample underwent EPA Level IV review

Introduction

This data review covers 11 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 150.1 for pH, EPA Method 160.1 for Total Dissolved Solids, EPA Method 300.0 for Chloride, Nitrate as Nitrogen, and Sulfate, EPA Method 310.1 for Alkalinity, EPA Method 314.0 for Perchlorate, EPA Method 353.2 for Nitrate as Nitrogen, and Nitrate/Nitrite as Nitrogen, and EPA Method 354.1 for Nitrite as Nitrogen.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as there are no current guidelines for the methods stated above.

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

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Samples indicated by a double asterisk on the front cover underwent a EPA Level IV review. A EPA Level III review was performed on all of the other samples. Raw data were not evaluated for the samples reviewed by Level III criteria since this review is based on QC data.

The following are definitions of the data qualifiers:

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

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
MW-4-5 MW-4-4 MW-4-3 MW-4-2** MW-4-1 EB-9-6/25/07 MW-4-2MS MW-4-2MSD	Nitrate as N (EPA Method 300.0)	16 days	48 hours	J (all detects) R (all non-detects)	P

Non-detected sample concentrations were qualified as unusable (R) due to a gross exceedance (>2X) of holding time.

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

II. Calibration

a. Initial Calibration

All criteria for the initial calibration were met.

b. Calibration Verification

Calibration verification frequency and analysis criteria were met for each method when applicable.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

IV. Matrix Spike/Matrix Spike Duplicates

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

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
MW-4-2MS/MSD (All samples in SDG JPL42)	Chloride	89 (90-110)	-	-	J (all detects) UJ (all non-detects)	A

V. Duplicates

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

VI. Laboratory Control Samples

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

LCS ID (Associated Samples)	Analyte	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Flag	A or P
LCS/LCSD (MW-4-1 EB-9-6/25/07)	Perchlorate	-	66 (85-115)	32 (≤20)	J (all detects) UJ (all non-detects)	P

VII. Sample Result Verification

All sample result verifications were acceptable for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Field Blanks

Sample EB-9-6/25/07 was identified as an equipment blank. No contaminant concentrations were found in this blank with the following exceptions:

Equipment Blank ID	Analyte	Concentration
EB-9-6/25/07	pH Total dissolved solids Nitrate/Nitrite as N	8.8 units 17 mg/L 0.15 mg/L

NASA JPL
Wet Chemistry - Data Qualification Summary - SDG JPL42

SDG	Sample	Analyte	Flag	A or P	Reason
JPL42	MW-4-5 MW-4-4 MW-4-3 MW-4-2** MW-4-1 EB-9-6/25/07	Nitrate as N (EPA Method 300.0)	J (all detects) R (all non-detects)	P	Technical holding times
JPL42	MW-4-5 MW-4-4 MW-4-3 MW-4-2** MW-4-1 EB-9-6/25/07	Chloride	J (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicates (%R)
JPL42	MW-4-1 EB-9-6/25/07	Perchlorate	J (all detects) UJ (all non-detects)	P	Laboratory control samples (%R)(RPD)

NASA JPL
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG JPL42

No Sample Data Qualified in this SDG

LDC Report# 17164B6

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: June 26, 2007

LDC Report Date: August 2, 2007

Matrix: Water

Parameters: Wet Chemistry

Validation Level: EPA Level III

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL43

Sample Identification

MW-12-5
MW-12-4
MW-12-3
MW-12-2
MW-12-1
DUPE-5-2Q07
EB-10-6/26/07
MW-12-5MS
MW-12-5MSD
MW-12-5DUP
DUPE-5-2Q07MS
DUPE-5-2Q07MSD
DUPE-5-2Q07DUP

Introduction

This data review covers 13 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 150.1 for pH, EPA Method 160.1 for Total Dissolved Solids, EPA Method 300.0 for Chloride, Nitrate as Nitrogen, and Sulfate, EPA Method 310.1 for Alkalinity, and EPA Method 314.0 for Perchlorate., EPA Method 353.2 for Nitrate as Nitrogen, and Nitrate/Nitrite as Nitrogen, and EPA Method 354.1 for Nitrite as Nitrogen.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as there are no current guidelines for the methods stated above.

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

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

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

The following are definitions of the data qualifiers:

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

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
MW-12-5 MW-12-4 MW-12-3 MW-12-2 MW-12-1 DUPE-5-2Q07 EB-10-6/26/07 DUPE-5-2Q07MS DUPE-5-2Q07MSD	Nitrate as N (EPA Method 300.0)	11 days	48 hours	J (all detects) R (all non-detects)	P

Non-detected sample concentrations were qualified as unusable (R) due to a gross exceedance (>2X) of holding time.

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

II. Calibration

a. Initial Calibration

All criteria for the initial calibration were met.

b. Calibration Verification

Calibration verification frequency and analysis criteria were met for each method when applicable.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

IV. Matrix Spike/Matrix Spike Duplicates

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

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
MW-12-5MS/MSD (All samples in SDG JPL43)	Nitrite as N	61 (71-109)	59 (71-109)	-	J (all detects) UJ (all non-detects)	A

V. Duplicates

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

VI. Laboratory Control Samples

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

LCS ID (Associated Samples)	Analyte	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Flag	A or P
LCS/LCSD (All samples in SDG IPL43)	Perchlorate	-	66 (85-115)	32 (≤20)	J (all detects) UJ (all non-detects)	P

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

Samples MW-12-1 and DUPE-5-2Q07 were identified as field duplicates. No contaminant concentrations were detected in any of the samples with the following exceptions:

Analyte	Concentration		RPD
	MW-12-1	DUPE-5-2Q07	
Alkalinity	170 mg/L	180 mg/L	6
Chloride	19 mg/L	19 mg/L	0

Analyte	Concentration		RPD
	MW-12-1	DUPE-5-2Q07	
Nitrate as N (EPA Method 300.0)	0.98 mg/L	0.96 mg/L	2
Sulfate	41 mg/L	39 mg/L	5
Nitrate as N (EPA Method 353.2)	0.9 mg/L	1 mg/L	11
Nitrate/Nitrite as N	0.92 mg/L	1.1 mg/L	18
Nitrite as N	0.012 mg/L	0.065 mg/L	138
Total dissolved solids	280 mg/L	280 mg/L	0
pH	7.6 units	7.8 units	3

X. Field Blanks

Sample EB-10-6/26/07 was identified as an equipment blank. No contaminant concentrations were found in this blank with the following exceptions:

Equipment Blank ID	Analyte	Concentration
EB-10-6/26/07	pH Nitrate/Nitrite as N	7.7 units 0.15 mg/L

NASA JPL
Wet Chemistry - Data Qualification Summary - SDG JPL43

SDG	Sample	Analyte	Flag	A or P	Reason
JPL43	MW-12-5 MW-12-4 MW-12-3 MW-12-2 MW-12-1 DUPE-5-2Q07 EB-10-6/26/07	Nitrate as N (EPA Method 300.0)	J (all detects) R (all non-detects)	P	Technical holding times
JPL43	MW-12-5 MW-12-4 MW-12-3 MW-12-2 MW-12-1 DUPE-5-2Q07 EB-10-6/26/07	Nitrite as N	J (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicates (%R)
JPL43	MW-12-5 MW-12-4 MW-12-3 MW-12-2 MW-12-1 DUPE-5-2Q07 EB-10-6/26/07	Perchlorate	J (all detects) UJ (all non-detects)	P	Laboratory control samples (%R)(RPD)

NASA JPL
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG JPL43

No Sample Data Qualified in this SDG

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

Battelle
505 King Avenue, Room 10-1-170
Columbus, OH 43201
ATTN: Ms. Betsy Cutie

August 7, 2007

SUBJECT: NASA JPL, Data Validation

Dear Ms. Cutie,

Enclosed are the final validation reports for the fractions listed below. These SDGs were received on July 25, 2007. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project # 17176:

SDG #	Fraction
P0700590, P0700602	Hexavalent Chromium, N-Nitrosodimethylamine

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

- USEPA, Contract Laboratory Program National Functional Guidelines for Organic Data Review, October 1999
- USEPA, Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, October 2004
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998

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

Sincerely,

ERauto

Erlinda T. Rauto
Operations Manager/Senior Chemist

V:\LOGIN\Battelle\JPL\17176COV.wpd

Attachment 1

PO 190288 **10/90 (client select)**

LDC #17176 (Battelle-San Diego / NASA JPL)

LDC	SDG#	DATE REC'D	(3) DATE DUE	Nitro-samines (521)		Cr(VI) (7196A)																																	
Matrix:	Water/Soil			W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	P0700590	07/25/07	08/15/07	1	0	42	0																																
A	P0700590	07/25/07	08/15/07	0	0	1	0																																
B	P0700602	07/25/07	08/15/07	3	0	39	0																																
B	P0700602	07/25/07	08/15/07	1	0	2	0																																
Total	B/LR			5	0	84	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	89

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

17176ST.wpd

NASA JPL
Data Validation Reports
LDC# 17176

Hexavalent Chromium

LDC

LDC Report# 17176A6

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: June 18 through June 22, 2007

LDC Report Date: August 7, 2007

Matrix: Water

Parameters: Hexavalent Chromium

Validation Level: EPA Level III & IV

Laboratory: Columbia Analytical Services, Inc.

Sample Delivery Group (SDG): P0700590

Sample Identification

MW-20-5	MW-3-5	MW-3-3MSD
MW-20-4	MW-3-4	MW-14-5MS
MW-20-3	MW-3-3**	MW-14-5MSD
MW-20-2	MW-3-2	
MW-20-1	MW-3-1	
DUPE-2-2Q07	DUPE-4-2Q07	
EB-4-6/18/07	EB-7-06/21-07	
MW-17-5	MW-14-5	
MW-17-4	MW-14-4	
MW-17-3	MW-14-3	
MW-17-2	MW-14-2	
MW-17-1	MW-14-1	
DUPE-3-2Q07	EB-8-06/22/07	
EB-5-6/19/07	MW-20-5MS	
MW-22-5	MW-20-5MSD	
MW-22-4	MW-17-4MS	
MW-22-3	MW-17-4MSD	
MW-22-2	MW-22-5MS	
MW-22-1	MW-22-5MSD	
EB-6-6/20/07	MW-3-3MS	

**Indicates sample underwent EPA Level IV review

Introduction

This data review covers 43 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 7196A for Hexavalent Chromium.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as there are no current guidelines for the methods stated above.

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

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Samples indicated by a double asterisk on the front cover underwent a EPA Level IV review. A EPA Level III review was performed on all of the other samples. Raw data were not evaluated for the samples reviewed by Level III criteria since this review is based on QC data.

The following are definitions of the data qualifiers:

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

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. Calibration

a. Initial Calibration

All criteria for the initial calibration were met.

b. Calibration Verification

Calibration verification frequency and analysis criteria were met for each method when applicable.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

IV. Matrix Spike/Matrix Spike Duplicates

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

V. Duplicates

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable.

VI. Laboratory Control Samples

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

VII. Sample Result Verification

All sample result verifications were acceptable for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

Samples MW-20-1 and DUPE-2-2Q07, samples MW-17-3 and DUPE-3-2Q07, and samples MW-3-2 and DUPE-4-2Q07 were identified as field duplicates. No contaminant concentrations were detected in any of the samples with the following exceptions:

Analyte	Concentration (mg/L)		RPD
	MW-20-1	DUPE-2-2Q07	
Hexavalent chromium	0.006	0.01U	200

X. Field Blanks

Samples EB-4-6/18/07, EB-5-6/19/07, EB-6-6/20/07, EB-7-06/21-07, and EB-8-06/22/07 were identified as equipment blanks. No hexavalent chromium contaminants were found in these blanks.

NASA JPL
Hexavalent Chromium - Data Qualification Summary - SDG P0700590

No Sample Data Qualified in this SDG

NASA JPL
Hexavalent Chromium - Laboratory Blank Data Qualification Summary - SDG P0700590

No Sample Data Qualified in this SDG

LDC Report# 17176B6

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: June 25 through June 29, 2007

LDC Report Date: August 1, 2007

Matrix: Water

Parameters: Hexavalent Chromium

Validation Level: EPA Level III & IV

Laboratory: Columbia Analytical Services, Inc.

Sample Delivery Group (SDG): P0700602

Sample Identification

MW-4-5	MW-24-4	MW-11-5MSD
MW-4-4	MW-24-3	
MW-4-3	MW-24-2	
MW-4-2**	MW-24-1**	
MW-4-1	EB-12-6/28/07	
EB-9-6/25/07	MW-11-5	
MW-12-5	MW-11-4	
MW-12-4	MW-11-3	
MW-12-3	MW-11-2	
MW-12-2	MW-11-1	
MW-12-1	EB-13-6/29/07	
DUPE-5-2Q07	MW-4-5MS	
EB-10-6/26/07	MW-4-5MSD	
MW-23-5	MW-12-5MS	
MW-23-4	MW-12-5MSD	
MW-23-3	MW-23-1MS	
MW-23-2	MW-23-1MSD	
MW-23-1	MW-24-5MS	
EB-11-6/27/07	MW-24-5MSD	
MW-24-5	MW-11-5MS	

**Indicates sample underwent EPA Level IV review

Introduction

This data review covers 41 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 7196A for Hexavalent Chromium.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as there are no current guidelines for the methods stated above.

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

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Samples indicated by a double asterisk on the front cover underwent a EPA Level IV review. A EPA Level III review was performed on all of the other samples. Raw data were not evaluated for the samples reviewed by Level III criteria since this review is based on QC data.

The following are definitions of the data qualifiers:

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

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. Calibration

a. Initial Calibration

All criteria for the initial calibration were met.

b. Calibration Verification

Calibration verification frequency and analysis criteria were met for each method when applicable.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

IV. Matrix Spike/Matrix Spike Duplicates

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

V. Duplicates

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable.

VI. Laboratory Control Samples

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

VII. Sample Result Verification

All sample result verifications were acceptable for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

Samples MW-12-1 and DUPE-5-2Q07 were identified as field duplicates. No contaminant concentrations were detected in any of the samples.

X. Field Blanks

Samples EB-9-6/25/07, EB-10-6/26/07, EB-11-6/27/07, EB-12-6/28/07, and sample EB-13-6/29/07 were identified as equipment blanks. No hexavalent chromium contaminants were found in these blanks.

NASA JPL
Hexavalent Chromium - Data Qualification Summary - SDG P0700602

No Sample Data Qualified in this SDG

NASA JPL
Hexavalent Chromium - Laboratory Blank Data Qualification Summary - SDG P0700602

No Sample Data Qualified in this SDG

NASA JPL
Data Validation Reports
LDC# 17176

N-Nitrosodimethylamine

LDC

LDC Report# 17176A44

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: June 19, 2007

LDC Report Date: August 3, 2007

Matrix: Water

Parameters: N-Nitrosodimethylamine

Validation Level: EPA Level III

Laboratory: Columbia Analytical Services, Inc.

Sample Delivery Group (SDG): P0700590

Sample Identification

MW-17-4

Introduction

This data review covers one water sample listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 521 for N-Nitrosodimethylamine.

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

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

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

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

The following are definitions of the data qualifiers:

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

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. GC/MS Instrument Performance Check

Instrument performance was reviewed as applicable.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

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

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

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

The percent differences (%D) of the second source calibration standard were less than or equal to 30.0% for all compounds.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No N-Nitrosodimethylamine was found in the method blanks.

VI. Surrogate Spikes

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

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were not required by the method.

VIII. Laboratory Control Samples (LCS)

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

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

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

XI. Target Compound Identifications

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

XIII. Tentatively Identified Compounds (TICs)

Raw data were not reviewed for this SDG.

XIV. System Performance

Raw data were not reviewed for this SDG.

XV. Overall Assessment

Data flags have been summarized at the end of the report if data has been qualified.

XVI. Field Duplicates

No field duplicates were identified in this SDG.

XVII. Field Blanks

No field blanks were identified in this SDG.

NASA JPL
N-Nitrosodimethylamine - Data Qualification Summary - SDG P0700590

No Sample Data Qualified in this SDG

NASA JPL
N-Nitrosodimethylamine - Laboratory Blank Data Qualification Summary - SDG P0700590

No Sample Data Qualified in this SDG

LDC Report# 17176B44

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: June 25 through June 28, 2007

LDC Report Date: August 3, 2007

Matrix: Water

Parameters: N-Nitrosodimethylamine

Validation Level: EPA Level III & IV

Laboratory: Columbia Analytical Services, Inc.

Sample Delivery Group (SDG): P0700602

Sample Identification

MW-4-1
MW-24-1**
MW-24-1MS
MW-24-1MSD

** Indicates sample underwent EPA Level IV review

Introduction

This data review covers 4 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 521 for N-Nitrosodimethylamine.

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

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

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

Samples indicated by a double asterisk on the front cover underwent EPA Level IV review. EPA Level III review was performed on all of the other samples. Raw data were not evaluated for the samples reviewed by EPA Level III criteria since this review is based on QC data.

The following are definitions of the data qualifiers:

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

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. GC/MS Instrument Performance Check

Instrument performance was reviewed as applicable.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

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

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

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

The percent differences (%D) of the second source calibration standard were less than or equal to 30.0% for all compounds.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No N-Nitrosodimethylamine was found in the method blanks with the following exceptions:

Method Blank ID	Date	Compound TIC (RT in minutes)	Concentration	Associated Samples
KWG0707389-4	7/17/07	N-Nitrosodimethylamine	2.1 ng/L	MW-4-1 MW-24-1**

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

Sample	Compound	Reported Concentration	Modified Final Concentration
MW-24-1**	N-Nitrosodimethylamine	2.0 ng/L	2.0U ng/L

VI. Surrogate Spikes

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

VII. Matrix Spike/Matrix Spike Duplicates

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

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
MW-24-1MS/MSD (MW-24-1**)	N-Nitrosodimethylamine	65 (70-130)	-	-	J (all detects) UJ (all non-detects)	A

VIII. Laboratory Control Samples (LCS)

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

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

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

XI. Target Compound Identifications

All target compound identifications were within validation criteria for samples on which EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by EPA Level III criteria.

XII. Compound Quantitation and CRQLs

All compound quantitation and CRQLs were within validation criteria for samples on which EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by EPA Level III criteria.

XIII. Tentatively Identified Compounds (TICs)

Tentatively identified compounds were not reported by the laboratory.

XIV. System Performance

The system performance was acceptable for samples on which EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by EPA Level III criteria.

XV. Overall Assessment

Data flags have been summarized at the end of the report if data has been qualified.

XVI. Field Duplicates

No field duplicates were identified in this SDG.

XVII. Field Blanks

No field blanks were identified in this SDG.

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

Battelle
505 King Avenue, Room 10-1-170
Columbus, OH 43201
ATTN: Ms. Betsy Cutie

August 13, 2007

SUBJECT: NASA JPL, Data Validation

Dear Ms. Cutie,

Enclosed are the final validation reports for the fractions listed below. These SDGs were received on July 25, 2007. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project # 17178:

SDG #	Fraction
JPL44, JPL45, JPL46	Volatiles, 1,4-Dioxane, Metals, Wet Chemistry

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

- Methods for the Determination of Organic Compounds in Drinking Water, Supplement III, August 1995.
- USEPA, Contract Laboratory Program National Functional Guidelines for Organic Data Review, October 1999
- USEPA, Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, October 2004
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998

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

Sincerely,

ERauto

Erlinda T. Rauto
Operations Manager/Senior Chemist

V:\LOGIN\Battelle\JPL\17178COV.wpd

Attachment 1

PO 190288 **10/90 (client select)**

LDC #17178 (Battelle-San Diego / NASA JPL)

LDC	SDG#	DATE REC'D	(3) DATE DUE	VOA (524.2)		1,4-Dioxane (8270C)		Metals (200.7 /200.8)		Alk. (310.1)		Cl,SO_4, NO_3 (300.0)		NO_3-N (353.2)		NO_3/ NO_2-N (353.2)		NO_2-N (354.1)		CLO_4 (314.0)		pH (150.1)		TDS (160.1)		O-PO_4 (300.0)		O-PO_4 as P (365.2)									
Matrix:	Water/Soil			W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	JPL44	07/25/07	08/15/07	7	0	-	-	6	0	6	0	6	0	-	-	-	-	-	-	6	0	6	0	6	0	-	-	-	-								
B	JPL45	07/25/07	08/15/07	6	0	0	0	5	0	5	0	5	0	5	0	5	0	5	0	5	0	5	0	5	0	0	0	0	0								
B	JPL45	07/25/07	08/15/07	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0								
C	JPL46	07/25/07	08/15/07	7	0	-	-	6	0	6	0	6	0	6	0	6	0	6	0	6	0	6	0	6	0	1	0	1	0								
Total	B/LR			21	0	1	0	18	0	18	0	18	0	12	0	12	0	12	0	18	0	18	0	18	0	2	0	2	0	0	0	0	0	0	0	0	170

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

17178ST.wpd

NASA JPL
Data Validation Reports
LDC# 17178

Volatiles

LDC

LDC Report# 17178A1

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: June 27, 2007

LDC Report Date: August 3, 2007

Matrix: Water

Parameters: Volatiles

Validation Level: EPA Level III

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL44

Sample Identification

MW-23-5
MW-23-4
MW-23-3
MW-23-2
MW-23-1
EB-11-6/27/07
TB-11-6/27/07
MW-23-1MS
MW-23-1MSD

Introduction

This data review covers 9 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 524.2 for Volatiles.

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

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

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

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

The following are definitions of the data qualifiers:

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

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 20.0% for selected compounds with the following exceptions:

Date	Compound	%RSD	Associated Samples	Flag	A or P
6/18/07	Methylene chloride	23.55	All samples in SDG JPL44	J (all detects) UJ (all non-detects)	P

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

Average relative response factors (RRF) for all volatile target compounds and system performance check compounds (SPCCs) were within method and validation criteria.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

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

Date	Compound	%D	Associated Samples	Flag	A or P
7/2/07	Hexachlorobutadiene	30.04	All samples in SDG JPL44	J (all detects) UJ (all non-detects)	P

All of the continuing calibration RRF values were within method and validation criteria.

V. Blanks

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

VI. Surrogate Spikes

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

VII. Matrix Spike/Matrix Spike Duplicates

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

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
MW-23-1MS/MSD (MW-23-1)	Hexachlorobutadiene	59 (60-140)	-	-	J (all detects) UJ (all non-detects)	A

VIII. Laboratory Control Samples (LCS)

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

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

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

XI. Target Compound Identifications

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

XIII. Tentatively Identified Compounds (TICs)

Raw data were not reviewed for this SDG.

XIV. System Performance

Raw data were not reviewed for this SDG.

XV. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XVI. Field Duplicates

No field duplicates were identified in this SDG.

XVII. Field Blanks

Sample TB-11-6/27/07 was identified as a trip blank. No volatile contaminants were found in this blank.

Sample EB-11-6/27/07 was identified as an equipment blank. No volatile contaminants were found in this blank.

NASA JPL
Volatiles - Data Qualification Summary - SDG JPL44

SDG	Sample	Compound	Flag	A or P	Reason
JPL44	MW-23-5 MW-23-4 MW-23-3 MW-23-2 MW-23-1 EB-11-6/27/07 TB-11-6/27/07	Methylene chloride	J (all detects) UJ (all non-detects)	P	Initial calibration (%RSD)
JPL44	MW-23-5 MW-23-4 MW-23-3 MW-23-2 MW-23-1 EB-11-6/27/07 TB-11-6/27/07	Hexachlorobutadiene	J (all detects) UJ (all non-detects)	A	Continuing calibration (%D)
JPL44	MW-23-1	Hexachlorobutadiene	J (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicates (%R)

NASA JPL
Volatiles - Laboratory Blank Data Qualification Summary - SDG JPL44

No Sample Data Qualified in this SDG

LDC Report# 17178B1

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: June 28, 2007

LDC Report Date: August 3, 2007

Matrix: Water

Parameters: Volatiles

Validation Level: EPA Level III & IV

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL45

Sample Identification

MW-24-5
MW-24-4
MW-24-3
MW-24-2
MW-24-1**
EB-12-6/28/07
TB-12-6/28/07

**Indicates sample underwent EPA Level IV review

Introduction

This data review covers 7 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 524.2 for Volatiles.

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

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

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

Samples indicated by a double asterisk on the front cover underwent a EPA Level IV review. A EPA Level III review was performed on all of the other samples. Raw data were not evaluated for the samples reviewed by Level III criteria since this review is based on QC data.

The following are definitions of the data qualifiers:

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

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

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

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

Average relative response factors (RRF) for all volatile target compounds and system performance check compounds (SPCCs) were within method and validation criteria.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

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

Date	Compound	%D	Associated Samples	Flag	A or P
7/10/07	2-Butanone 4-Methyl-2-pentanone	33.69 32.92	All samples in SDG JPL45	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	P
6/28/07	Dichlorodifluoromethane	45.78	All samples in SDG JPL45	J (all detects) UJ (all non-detects)	P

All of the continuing calibration RRF values were within method and validation criteria.

V. Blanks

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

Method Blank ID	Analysis Date	Compound	Concentration	Associated Samples
B071007MVOWY1	7/10/07	Methylene chloride	2.5 ug/L	All samples in SDG JPL45

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

Sample	Compound	Reported Concentration	Modified Final Concentration
MW-24-5	Methylene chloride	0.84 ug/L	1.0U ug/L

VI. Surrogate Spikes

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

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were not required by the method.

VIII. Laboratory Control Samples (LCS)

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

LCS ID	Compound	%R (Limits)	Associated Samples	Flag	A or P
S071007MVOWM1	2-Butanone 4-Methyl-2-pentanone	151 (60-140) 147 (60-140)	All samples in SDG JPL45	J (all detects) J (all detects)	P

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

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

XI. Target Compound Identifications

All target compound identifications were within validation criteria for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

XII. Compound Quantitation and CRQLs

All compound quantitation and CRQLs were within validation criteria for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

XIII. Tentatively Identified Compounds (TICs)

All tentatively identified compounds were within validation criteria for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

XIV. System Performance

The system performance was within validation criteria for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

XV. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XVI. Field Duplicates

No field duplicates were identified in this SDG.

XVII. Field Blanks

Sample TB-12-6/28/07 was identified as a trip blank. No volatile contaminants were found in this blank.

Sample EB-12-6/28/07 was identified as an equipment blank. No volatile contaminants were found in this blank with the following exceptions:

Equipment Blank ID	Compound	Concentration (ug/L)
EB-12-6/28/07	1,1-Dichloroethene	0.33
	1,1,2-Trichloro-1,2,2-trifluoroethane	0.25
	Chloroform	2.2
	Carbon tetrachloride	2.0
	Bromodichloromethane	0.98
	Tetrachloroethene	2.0
	Dibromochloromethane	1.2
	Bromoform	0.89

NASA JPL
Volatiles - Data Qualification Summary - SDG JPL45

SDG	Sample	Compound	Flag	A or P	Reason
JPL45	MW-24-5 MW-24-4 MW-24-3 MW-24-2 MW-24-1** EB-12-6/28/07 TB-12-6/28/07	2-Butanone 4-Methyl-2-pentanone Dichlorodifluoromethane	J (all detects) UJ (all non-detects)	P	Continuing calibration (%D)
JPL45	MW-24-5 MW-24-4 MW-24-3 MW-24-2 MW-24-1** EB-12-6/28/07 TB-12-6/28/07	2-Butanone 4-Methyl-2-pentanone	J (all detects) J (all detects)	P	Laboratory control samples (%R)

NASA JPL
Volatiles - Laboratory Blank Data Qualification Summary - SDG JPL45

SDG	Sample	Compound	Modified Final Concentration	A or P
JPL45	MW-24-5	Methylene chloride	1.0U ug/L	A

LDC Report# 17178C1

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: June 20, 2007

LDC Report Date: August 3, 2007

Matrix: Water

Parameters: Volatiles

Validation Level: EPA Level III

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL46

Sample Identification

MW-11-5
MW-11-4
MW-11-3
MW-11-2
MW-11-1
EB-13-6/29/07
TB-13-6/29/07

Introduction

This data review covers 7 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 524.2 for Volatiles.

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

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

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

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

The following are definitions of the data qualifiers:

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

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

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

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

Average relative response factors (RRF) for all volatile target compounds and system performance check compounds (SPCCs) were within method and validation criteria.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

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

Date	Compound	%D	Associated Samples	Flag	A or P
7/10/07	2-Butanone 4-Methyl-2-pentanone	33.69 32.92	All samples in SDG JPL46	J (all detects) UJ (all non-detects)	P
6/28/07	Dichlorodifluoromethane	45.78	All samples in SDG JPL46	J (all detects) UJ (all non-detects)	P

All of the continuing calibration RRF values were within method and validation criteria.

V. Blanks

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

Method Blank ID	Analysis Date	Compound TIC (RT in minutes)	Concentration	Associated Samples
B071007MVOWY1	7/10/07	Methylene chloride	2.5 ug/L	All samples in SDG JPL46

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

VI. Surrogate Spikes

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

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were not required by the method.

VIII. Laboratory Control Samples (LCS)

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

LCS ID (Associated Samples)	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Flag	A or P
S071007MVOWY1 (All samples in SDG JPL46)	2-Butanone 4-Methyl-2-pentanone	151 (60-140) 147 (60-140)	- -	- -	J (all detects) J (all detects)	P

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

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

XI. Target Compound Identifications

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

XIII. Tentatively Identified Compounds (TICs)

Raw data were not reviewed for this SDG.

XIV. System Performance

Raw data were not reviewed for this SDG.

XV. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XVI. Field Duplicates

No field duplicates were identified in this SDG.

XVII. Field Blanks

Sample TB-13-6/29/07 was identified as a trip blank. No volatile contaminants were found in this blank.

Sample EB-13-6/29/07 was identified as an equipment blank. No volatile contaminants were found in this blank.

NASA JPL
Volatiles - Data Qualification Summary - SDG JPL46

SDG	Sample	Compound	Flag	A or P	Reason
JPL46	MW-11-5 MW-11-4 MW-11-3 MW-11-2 MW-11-1 EB-13-6/29/07 TB-13-6/29/07	2-Butanone 4-Methyl-2-pentanone Dichlorodifluoromethane	J (all detects) UJ (all non-detects)	P	Continuing calibration (%D)
JPL46	MW-11-5 MW-11-4 MW-11-3 MW-11-2 MW-11-1 EB-13-6/29/07 TB-13-6/29/07	2-Butanone 4-Methyl-2-pentanone	J (all detects) J (all detects)	P	Laboratory control samples (%R)

NASA JPL
Volatiles - Laboratory Blank Data Qualification Summary - SDG JPL46

No Sample Data Qualified in this SDG

NASA JPL
Data Validation Reports
LDC# 17178

1,4-Dioxane

LDC

LDC Report# 17178B2

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: June 28, 2007

LDC Report Date: August 3, 2007

Matrix: Water

Parameters: 1,4-Dioxane

Validation Level: EPA Level IV

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL45

Sample Identification

MW-24-1

Introduction

This data review covers one water sample listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8270C for 1,4-Dioxane.

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

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

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

The following are definitions of the data qualifiers:

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

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

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

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were less than or equal to 25.0% .

The percent difference (%D) of the second source calibration standard were less than or equal to 25.0% for all compounds.

V. Blanks

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

VI. Surrogate Spikes

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

VII. Matrix Spike/Matrix Spike Duplicates

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

VIII. Laboratory Control Samples (LCS)

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

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

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

XI. Target Compound Identifications

All target compound identifications were within validation criteria.

XII. Compound Quantitation and CRQLs

All compound quantitation and CRQLs were within validation criteria.

XIII. Tentatively Identified Compounds (TICs)

Tentatively identified compounds were not reported by the laboratory.

XIV. System Performance

The system performance was acceptable.

XV. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XVI. Field Duplicates

No field duplicates were identified in this SDG.

XVII. Field Blanks

No field blanks were identified in this SDG.

NASA JPL
1,4-Dioxane - Data Qualification Summary - SDG JPL45

No Sample Data Qualified in this SDG

NASA JPL
1,4-Dioxane - Laboratory Blank Data Qualification Summary - SDG JPL45

No Sample Data Qualified in this SDG

NASA JPL
Data Validation Reports
LDC# 17178

Metals

LDC Report# 17178A4

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: June 27, 2007

LDC Report Date: July 31, 2007

Matrix: Water

Parameters: Metals

Validation Level: EPA Level III

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL44

Sample Identification

MW-23-5
MW-23-4
MW-23-3
MW-23-2
MW-23-1
EB-11-6/27/07
MW-23-1MS
MW-23-1MSD

Introduction

This data review covers 8 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 200.8 for Metals. The metals analyzed were Arsenic, Calcium, Chromium, Iron, Lead, Magnesium, Potassium, and Sodium.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as there are no current guidelines for the method stated above.

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

Blanks are summarized in Section III.

Field duplicates are summarized in Section XIII.

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

The following are definitions of the data qualifiers:

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

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. Calibration

An initial calibration was performed.

The frequency and analysis criteria of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met with the following exceptions:

Date	Lab. Reference/ID	Analyte	%R (Limits)	Associated Samples	Flag	A or P
7/17/07	CCV 8	Chromium	111.1 (90-110)	MW-23-5 MW-23-4 MW-23-3 MW-23-2 MW-23-1 EB-11-6/27/07 MW-23-1MS MW-23-1MSD	J (all detects)	P

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

IV. ICP Interference Check Sample (ICS) Analysis

The frequency of analysis was met.

The criteria for analysis were met.

V. Matrix Spike Analysis

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

VI. Duplicate Sample Analysis

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable.

VII. Laboratory Control Samples (LCS)

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

VIII. Internal Standards

Raw data were not reviewed for this SDG.

IX. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not performed for this SDG.

X. ICP Serial Dilution

ICP serial dilution analysis was performed by the laboratory. The analysis criteria were met.

XI. Sample Result Verification

Raw data were not reviewed for this SDG.

XII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XIII. Field Duplicates

No field duplicates were identified in this SDG.

XIV. Field Blanks

Sample EB-11-6/27/07 was identified as an equipment blank. No metals were detected in this blank with the following exceptions:

Equipment Blank ID	Analyte	Concentration (ug/L)
EB-11-6/27/07	Chromium	4.53

NASA JPL
Metals - Data Qualification Summary - SDG JPL44

SDG	Sample	Analyte	Flag	A or P	Reason
JPL44	MW-23-5 MW-23-4 MW-23-3 MW-23-2 MW-23-1 EB-11-6/27/07	Chromium	J (all detects)	P	Calibration (%R)

NASA JPL
Metals - Laboratory Blank Data Qualification Summary - SDG JPL44

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: June 28, 2007

LDC Report Date: August 7, 2007

Matrix: Water

Parameters: Metals

Validation Level: EPA Level III & IV

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL45

Sample Identification

MW-24-5
MW-24-4
MW-24-3
MW-24-2
MW-24-1**
EB-12-6/28/07

**Indicates sample underwent EPA Level IV review

Introduction

This data review covers 6 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 200.8 for Metals. The metals analyzed were Arsenic, Calcium, Chromium, Iron, Lead, Magnesium, Potassium, and Sodium.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as there are no current guidelines for the method stated above.

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

Blanks are summarized in Section III.

Field duplicates are summarized in Section XIII.

Samples indicated by a double asterisk on the front cover underwent a EPA Level IV review. A EPA Level III review was performed on all of the other samples. Raw data were not evaluated for the samples reviewed by Level III criteria since this review is based on QC data.

The following are definitions of the data qualifiers:

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

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. Calibration

An initial calibration was performed.

The frequency and analysis criteria of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met with the following exceptions:

Date	Lab. Reference/ID	Analyte	%R (Limits)	Associated Samples	Flag	A or P
7/17/07	CCV 8	Chromium	111.1 (85-115)	MW-24-5 MW-24-4 MW-24-3 MW-24-2 MW-24-1** EB-12-6/28/07	J (all detects)	P

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

IV. ICP Interference Check Sample (ICS) Analysis

The frequency of analysis was met.

The criteria for analysis were met.

V. Matrix Spike Analysis

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

VI. Duplicate Sample Analysis

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable.

VII. Laboratory Control Samples (LCS)

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

VIII. Internal Standards

All internal standard percent recoveries (%R) were within QC limits for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

IX. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

X. ICP Serial Dilution

ICP serial dilution analysis was performed by the laboratory. The analysis criteria were met.

XI. Sample Result Verification

All sample result verifications were acceptable for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

XII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XIII. Field Duplicates

No field duplicates were identified in this SDG.

XIV. Field Blanks

Sample EB-12-6/28/07 was identified as an equipment blank. No metals were detected in this blank.

NASA JPL
Metals - Data Qualification Summary - SDG JPL45

SDG	Sample	Analyte	Flag	A or P	Reason
JPL45	MW-24-5 MW-24-4 MW-24-3 MW-24-2 MW-24-1** EB-12-6/28/07	Chromium	J (all detects)	P	Calibration (%R)

NASA JPL
Metals - Laboratory Blank Data Qualification Summary - SDG JPL45

No Sample Data Qualified in this SDG

LDC Report# 17178C4

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: June 29, 2007

LDC Report Date: July 31, 2007

Matrix: Water

Parameters: Metals

Validation Level: EPA Level III

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL46

Sample Identification

MW-11-5
MW-11-4
MW-11-3
MW-11-2
MW-11-1
EB-13-6/29/07

Introduction

This data review covers 6 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 200.8 for Metals. The metals analyzed were Arsenic, Calcium, Chromium, Iron, Lead, Magnesium, Potassium, and Sodium.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as there are no current guidelines for the method stated above.

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

Blanks are summarized in Section III.

Field duplicates are summarized in Section XIII.

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

The following are definitions of the data qualifiers:

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

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. Calibration

An initial calibration was performed.

The frequency and analysis criteria of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met with the following exceptions:

Date	Lab. Reference/ID	Analyte	%R (Limits)	Associated Samples	Flag	A or P
7/17/07	CCV 8	Chromium	111.1 (90-110)	MW-11-5 MW-11-4 MW-11-3	J (all detects)	P

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

IV. ICP Interference Check Sample (ICS) Analysis

The frequency of analysis was met.

The criteria for analysis were met.

V. Matrix Spike Analysis

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

VI. Duplicate Sample Analysis

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable.

VII. Laboratory Control Samples (LCS)

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

VIII. Internal Standards

Raw data were not reviewed for this SDG.

IX. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

X. ICP Serial Dilution

ICP serial dilution analysis was performed by the laboratory. The analysis criteria were met.

XI. Sample Result Verification

Raw data were not reviewed for this SDG.

XII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XIII. Field Duplicates

No field duplicates were identified in this SDG.

XIV. Field Blanks

Sample EB-13-6/29/07 was identified as an equipment blank. No metals were detected in this blank with the following exceptions:

Equipment Blank ID	Analyte	Concentration (ug/L)
EB-13-6/29/07	Chromium	4.43

NASA JPL
Metals - Data Qualification Summary - SDG JPL46

SDG	Sample	Analyte	Flag	A or P	Reason
JPL46	MW-11-5 MW-11-4 MW-11-3	Chromium	J (all detects)	P	Calibration (%R)

NASA JPL
Metals - Laboratory Blank Data Qualification Summary - SDG JPL46

No Sample Data Qualified in this SDG

NASA JPL
Data Validation Reports
LDC# 17178

Wet Chemistry

LDC

LDC Report# 17178A6

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: June 27, 2007

LDC Report Date: July 31, 2007

Matrix: Water

Parameters: Wet Chemistry

Validation Level: EPA Level III

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL44

Sample Identification

MW-23-5
MW-23-4
MW-23-3
MW-23-2
MW-23-1
EB-11-6/27/07
MW-23-5DUP
MW-23-1MS
MW-23-1MSD
MW-23-1DUP
EB-11-6/27/07DUP
MW-23-1DLMS
MW-23-1DLMSD

Introduction

This data review covers 13 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 150.1 for pH, EPA Method 160.1 for Total Dissolved Solids, EPA Method 300.0 for Chloride, Nitrate as Nitrogen, and Sulfate, EPA Method 310.1 for Alkalinity, and EPA Method 314.0 for Perchlorate.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as there are no current guidelines for the methods stated above.

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

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

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

The following are definitions of the data qualifiers:

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

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. Calibration

a. Initial Calibration

All criteria for the initial calibration were met.

b. Calibration Verification

Calibration verification frequency and analysis criteria were met for each method when applicable.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

IV. Matrix Spike/Matrix Spike Duplicates

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

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
MW-23-1MS/MSD (MW-23-5 MW-23-4 MW-23-3 MW-23-2 EB-11-6/27/07)	Chloride	64 (90-110)	71 (90-110)	-	J (all detects) UJ (all non-detects)	A
MW-23-1DLMS/MSD (MW-23-1)	Chloride	-	87 (90-110)	-	J (all detects) UJ (all non-detects)	A

V. Duplicates

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

VI. Laboratory Control Samples

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

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Field Blanks

Sample EB-11-6/27/07 was identified as an equipment blank. No contaminant concentrations were found in this blank with the following exceptions:

Equipment Blank ID	Analyte	Concentration
EB-11-6/27/07	pH	6.6 units

NASA JPL
Wet Chemistry - Data Qualification Summary - SDG JPL44

SDG	Sample	Analyte	Flag	A or P	Reason
JPL44	MW-23-5 MW-23-4 MW-23-3 MW-23-2 EB-11-6/27/07 MW-23-1	Chloride	J (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicates (%R)

NASA JPL
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG JPL44

No Sample Data Qualified in this SDG

LDC Report# 17178B6

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: June 28, 2007

LDC Report Date: August 13, 2007

Matrix: Water

Parameters: Wet Chemistry

Validation Level: EPA Level III & IV

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL45

Sample Identification

MW-24-5
MW-24-4
MW-24-3
MW-24-2
MW-24-1**
EB-12-6/28/07
MW-24-5DUP
MW-24-1MS
MW-24-1MSD

**Indicates sample underwent EPA Level IV review

Introduction

This data review covers 9 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 150.1 for pH, EPA Method 160.1 for Total Dissolved Solids, EPA Method 300.0 for Chloride, Nitrate as Nitrogen, Orthophosphate and Sulfate, EPA Method 310.1 for Alkalinity, EPA Method 314.0 for Perchlorate, EPA Method 353.2 for Nitrate as Nitrogen, and Nitrate/Nitrite as Nitrogen, EPA Method 354.1 for Nitrite as Nitrogen, and EPA Method 365.2 for Orthophosphate as Phosphorus.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as there are no current guidelines for the methods stated above.

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

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Samples indicated by a double asterisk on the front cover underwent a EPA Level IV review. A EPA Level III review was performed on all of the other samples. Raw data were not evaluated for the samples reviewed by Level III criteria since this review is based on QC data.

The following are definitions of the data qualifiers:

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

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
MW-24-5 MW-24-4 MW-24-3 MW-24-2 MW-24-1** EB-12-6/28/07 MW-24-1MS MW-24-1MSD	Nitrate as N (300.0)	9 days	48 hours	J (all detects) R (all non-detects)	P
MW-24-1** MW-24-1MS MW-24-1MSD	Orthophosphate as P (300.0) Nitrite as N (300.0)	9 days	48 hours	J (all detects) R (all non-detects)	P

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

II. Calibration

a. Initial Calibration

All criteria for the initial calibration were met.

b. Calibration Verification

Calibration verification frequency and analysis criteria were met for each method when applicable.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

IV. Matrix Spike/Matrix Spike Duplicates

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

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
MW-24-1MS/MSD (All samples in SDG JPL45)	Chloride	-	87 (90-120)	-	J (all detects) UJ (all non-detects)	A

V. Duplicates

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable.

VI. Laboratory Control Samples

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

VII. Sample Result Verification

All sample result verifications were acceptable for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Field Blanks

Sample EB-12-6/28/07 was identified as an equipment blank. No contaminant concentrations were detected in this blank with the following exceptions:

Equipment Blank ID	Analyte	Concentration
EB-12-6/28/07	pH Total dissolved solids Alkalinity Perchlorate Nitrate/Nitrite as N	6.0 (unit) 14 (mg/L) 2 (mg/L) 1.3 (ug/L) 0.055 mg/L)

NASA JPL
Wet Chemistry - Data Qualification Summary - SDG JPL45

SDG	Sample	Analyte	Flag	A or P	Reason
JPL45	MW-24-5 MW-24-4 MW-24-3 MW-24-2 MW-24-1** EB-12-6/28/07	Nitrate as N (300.0)	J (all detects) R (all non-detects)	P	Technical holding times
JPL45	MW-24-1**	Orthophosphate as P (300.0) Nitrite as N (300.0)	J (all detects) R (all non-detects)	P	Technical holding times
JPL45	MW-24-5 MW-24-4 MW-24-3 MW-24-2 MW-24-1** EB-12-6/28/07	Chloride	J (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicates (%R)

NASA JPL
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG JPL45

No Sample Data Qualified in this SDG

LDC Report# 17178C6

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: June 29, 2007

LDC Report Date: August 7, 2007

Matrix: Water

Parameters: Wet Chemistry

Validation Level: EPA Level III

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL46

Sample Identification

MW-11-5
MW-11-4
MW-11-3
MW-11-2
MW-11-1
EB-13-6/29/07
MW-11-5MS
MW-11-5MSD
MW-11-5DUP
MW-11-4MS
MW-11-4MSD
MW-11-2DUP
MW-11-1MS
MW-11-1MSD
EB-13-6/29/07DUP

Introduction

This data review covers 15 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 150.1 for pH, EPA Method 160.1 for Total Dissolved Solids, EPA Method 300.0 for Chloride, Nitrate as Nitrogen, Nitrite as Nitrogen, Orthophosphate, and Sulfate, EPA Method 310.1 for Alkalinity, EPA Method 314.0 for Perchlorate, EPA Method 353.2 for Nitrate as Nitrogen, and Nitrate/Nitrite as Nitrogen, EPA Method 354.1 for Nitrite as Nitrogen, and EPA Method 365.2 for Orthophosphate as Phosphorus.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as there are no current guidelines for the methods stated above.

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

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

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

The following are definitions of the data qualifiers:

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

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
MW-11-5 MW-11-4 MW-11-3 MW-11-2 MW-11-1 EB-13-6/29/07 MW-11-5MS MW-11-5MSD	Nitrate as N (EPA 300.0)	8 days	48 hours	J (all detects) R (all non-detects)	P
MW-11-1	Nitrite as N (EPA 300.0) Orthophosphate (EPA 300.0)	8 days	48 hours	J (all detects) R (all non-detects) J (all detects) R (all non-detects)	P
MW-11-5 MW-11-4 MW-11-3 MW-11-2 MW-11-1 EB-13-6/29/07 EB-13-6/29/07DUP	pH	4 days	48 hours	J (all detects) UJ (all non-detects)	P

Non-detected sample concentrations were qualified as unusable (R) due to a gross exceedance (>2X) of holding time.

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

II. Calibration

a. Initial Calibration

All criteria for the initial calibration were met.

b. Calibration Verification

Calibration verification frequency and analysis criteria were met for each method when applicable.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

IV. Matrix Spike/Matrix Spike Duplicates

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

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Affected Analyte	Flag	A or P
MW-11-5MS/MSD (All samples in SDG JPL46)	Sulfate	112 (90-110)	-	-	Sulfate	J (all detects)	A
MW-11-4MS/MSD (MW-11-4 MW-11-2 MW-11-1)	Nitrate/Nitrite as N (EPA 353.2)	116 (90-110)	114 (90-110)	-	Nitrate/Nitrite as N (EPA 353.2) Nitrate as N (EPA 353.2)	J (all detects) J (all detects)	A
MW-11-1MS/MSD (All samples in SDG JPL46)	Nitrite as N (EPA 354.1)	-	-	11 (≤10)	Nitrate as N (EPA 353.2) Nitrite as N (EPA 354.1)	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A

V. Duplicates

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

VI. Laboratory Control Samples

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

LCS ID (Associated Samples)	Analyte	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Flag	A or P
LCS/LCSD (MW-11-1)	Nitrite as N (EPA 300.0)	89 (90-110)	-	-	J (all detects) UJ (all non-detects)	P

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Field Blanks

Sample EB-13-6/29/07 was identified as an equipment blank. No contaminant concentrations were found in this blank with the following exceptions:

Equipment Blank ID	Analyte	Concentration
EB-13-6/29/07	pH Total dissolved solids Bicarbonate alkalinity Nitrate/Nitrite as N	6.9 units 4 mg/L 2 mg/L 0.19 mg/L

NASA JPL
Wet Chemistry - Data Qualification Summary - SDG JPL46

SDG	Sample	Analyte	Flag	A or P	Reason
JPL46	MW-11-5 MW-11-4 MW-11-3 MW-11-2 MW-11-1 EB-13-6/29/07	Nitrate as N (EPA 300.0)	J (all detects) R (all non-detects)	P	Technical holding times
JPL46	MW-11-1	Nitrite as N (EPA 300.0) Orthophosphate (EPA 300.0)	J (all detects) R (all non-detects) J (all detects) R (all non-detects)	P	Technical holding times
JPL46	MW-11-5 MW-11-4 MW-11-3 MW-11-2 MW-11-1 EB-13-6/29/07	pH	J (all detects) UJ (all non-detects)	P	Technical holding times
JPL46	MW-11-5 MW-11-4 MW-11-3 MW-11-2 MW-11-1 EB-13-6/29/07	Sulfate	J (all detects)	A	Matrix spike/Matrix spike duplicates (%R)
JPL46	MW-11-4 MW-11-2 MW-11-1	Nitrate/Nitrite as N (EPA 353.2) Nitrate as N (EPA 353.2)	J (all detects) J (all detects)	A	Matrix spike/Matrix spike duplicates (%R)
JPL46	MW-11-5 MW-11-4 MW-11-3 MW-11-2 MW-11-1 EB-13-6/29/07	Nitrate as N (EPA 353.2) Nitrite as N (EPA 354.1)	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicates (RPD)
JPL46	MW-11-1	Nitrite as N (EPA 300.0)	J (all detects) UJ (all non-detects)	P	Laboratory control samples (%R)

NASA JPL
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG JPL46

No Sample Data Qualified in this SDG

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

Battelle
505 King Avenue, Room 10-1-170
Columbus, OH 43201
ATTN: Ms. Betsy Cutie

August 13, 2007

SUBJECT: NASA JPL, Data Validation

Dear Ms. Cutie,

Enclosed are the final validation reports for the fractions listed below. This SDG was received on July 27, 2007. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project # 17191:

SDG #	Fraction
P0700624	Hexavalent Chromium, N-Nitrosodimethylamine

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

- USEPA, Contract Laboratory Program National Functional Guidelines for Organic Data Review, October 1999
- USEPA, Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, October 2004
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998

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

Sincerely,

ERauto

Erlinda T. Rauto
Operations Manager/Senior Chemist

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Attachment 1

PO 190288 **10/90 (client select)**

LDC #17191 (Battelle-San Diego / NASA JPL)

LDC	SDG#	DATE REC'D	(3) DATE DUE	Nitro-samines (521)		Cr(VI) (7196A)																																	
Matrix:	Water/Soil			W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	P0700624	07/27/07	08/17/07	0	0	21	0																																
A	P0700624	07/27/07	08/17/07	6	0	4	0																																
Total	B/LR			6	0	25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	31

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

17191ST.wpd

NASA JPL
Data Validation Reports
LDC# 17191

Hexavalent Chromium

LDC Report# 17191A6

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: July 9 through July 12, 2007

LDC Report Date: August 1, 2007

Matrix: Water

Parameters: Hexavalent Chromium

Validation Level: EPA Level III & IV

Laboratory: Columbia Analytical Services, Inc.

Sample Delivery Group (SDG): P0700624

Sample Identification

MW-1	MW-13MSD
MW-9	MW-8MS
MW-15	MW-8MSD
DUPE-7-2Q07	MW-10MS
MW-7**	MW-10MSD
MW-16**	
DUPE-8-2Q07	
MW-13**	
MW-8	
MW-26-2	
MW-26-1**	
EB-15-7/12/07	
MW-10	
MW-9MS	
MW-9MSD	
MW-15MS	
MW-15MSD	
MW-16MS	
MW-16MSD	
MW-13MS	

**Indicates sample underwent EPA Level IV review

Introduction

This data review covers 25 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 7196A for Hexavalent Chromium.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as there are no current guidelines for the methods stated above.

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

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Samples indicated by a double asterisk on the front cover underwent a EPA Level IV review. A EPA Level III review was performed on all of the other samples. Raw data were not evaluated for the samples reviewed by Level III criteria since this review is based on QC data.

The following are definitions of the data qualifiers:

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

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. Calibration

a. Initial Calibration

All criteria for the initial calibration were met.

b. Calibration Verification

Calibration verification frequency and analysis criteria were met for each method when applicable.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

IV. Matrix Spike/Matrix Spike Duplicates

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

V. Duplicates

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable.

VI. Laboratory Control Samples

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

VII. Sample Result Verification

All sample result verifications were acceptable for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

Samples MW-1 and DUPE-7-2Q07 and samples MW-7** and DUPE-8-2Q07 were identified as field duplicates. No contaminant concentrations were detected in any of the samples with the following exceptions:

Analyte	Concentration (mg/L)		RPD
	MW-7**	DUPE-8-2Q07	
Hexavalent chromium	0.006	0.009	40

X. Field Blanks

Sample EB-15-7/12/07 was identified as an equipment blank. No hexavalent chromium contaminants were found in this blank.

NASA JPL
Hexavalent Chromium - Data Qualification Summary - SDG P0700624

No Sample Data Qualified in this SDG

NASA JPL
Hexavalent Chromium - Laboratory Blank Data Qualification Summary - SDG P0700624

No Sample Data Qualified in this SDG

NASA JPL
Data Validation Reports
LDC# 17191

N-Nitrosodimethylamine

LDC

LDC Report# 17191A44

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: July 10, 2007

LDC Report Date: August 3, 2007

Matrix: Water

Parameters: N-Nitrosodimethylamine

Validation Level: EPA Level IV

Laboratory: Columbia Analytical Services, Inc.

Sample Delivery Group (SDG): P0700624

Sample Identification

MW-16
MW-13
MW-16MS
MW-16MSD
MW-13MS
MW-13MSD

Introduction

This data review covers 6 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 521 for N-Nitrosodimethylamine.

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

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

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

The following are definitions of the data qualifiers:

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

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. GC/MS Instrument Performance Check

Instrument performance was reviewed as applicable.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

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

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

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

The percent differences (%D) of the second source calibration standard were less than or equal to 30.0% for all compounds.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No N-Nitrosodimethylamine was found in the method blanks.

VI. Surrogate Spikes

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

VII. Matrix Spike/Matrix Spike Duplicates

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

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
MW-13MS/MSD (MW-13)	N-Nitrosodimethylamine	63 (70-130)	-	-	J (all detects) UJ (all non-detects)	A

VIII. Laboratory Control Samples (LCS)

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

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

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

XI. Target Compound Identifications

All target compound identifications were within validation criteria.

XII. Compound Quantitation and CRQLs

All compound quantitation and CRQLs were within validation criteria.

XIII. Tentatively Identified Compounds (TICs)

Tentatively identified compounds were not reported by the laboratory.

XIV. System Performance

The system performance was acceptable for samples.

XV. Overall Assessment

Data flags have been summarized at the end of the report if data has been qualified.

XVI. Field Duplicates

No field duplicates were identified in this SDG.

XVII. Field Blanks

No field blanks were identified in this SDG.

NASA JPL
N-Nitrosodimethylamine - Data Qualification Summary - SDG P0700624

SDG	Sample	Compound	Flag	A or P	Reason
P0700624	MW-13	N-Nitrosodimethylamine	J (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicates (%R)

NASA JPL
N-Nitrosodimethylamine - Laboratory Blank Data Qualification Summary - SDG P0700624

No Sample Data Qualified in this SDG

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

Battelle
505 King Avenue, Room 10-1-170
Columbus, OH 43201
ATTN: Ms. Betsy Cutie

August 13, 2007

SUBJECT: NASA JPL, Data Validation

Dear Ms. Cutie,

Enclosed are the final validation reports for the fractions listed below. These SDGs were received on August 1, 2007. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project # 17209:

SDG #	Fraction
JPL48, JPL49, P0700571	Volatiles, Metals, Wet Chemistry

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

- Methods for the Determination of Organic Compounds in Drinking Water, Supplement III, August 1995.
- USEPA, Contract Laboratory Program National Functional Guidelines for Organic Data Review, October 1999
- USEPA, Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, October 2004
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998

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

Sincerely,

Erlinda T. Rauto
Operations Manager/Senior Chemist

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Attachment 1

PO 190288 **10/90 (client select)**

LDC #17209 (Battelle-San Diego / NASA JPL)

LDC	SDG#	DATE REC'D	(3) DATE DUE	VOA (524.2)		Metals (200.7 /200.8)		Alk. (310.1)		Cl,SO_4, NO_3 (300.0)		CLO_4 (314.0)		pH (150.1)		TDS (160.1)		Cr(VI) (7196A)																			
Matrix:	Water/Soil			W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	JPL48	08/01/07	08/22/07	7	0	6	0	6	0	8	0	8	0	8	0	7	0	-	-																		
B	JPL49	08/01/07	08/22/07	9	0	8	0	5	0	8	0	8	0	6	0	6	0	-	-																		
C	P0700571	08/01/07	08/22/07	-	-	-	-	-	-	-	-	-	-	-	-	-	-	25	0																		
Total	B/LR			16	0	14	0	11	0	16	0	16	0	14	0	13	0	25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	125

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

17209ST.wpd

NASA JPL
Data Validation Reports
LDC# 17209

Volatiles

LDC Report# 17209A1

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: July 5, 2007

LDC Report Date: August 9, 2007

Matrix: Water

Parameters: Volatiles

Validation Level: EPA Level III

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL48

Sample Identification

MW-14-5
MW-14-4
MW-14-3
MW-14-2
MW-14-1
EB-8-06/22/07
TB-8-6/22/07

Introduction

This data review covers 7 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 524.2 for Volatiles.

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

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

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

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

The following are definitions of the data qualifiers:

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

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

All samples were received in good condition with the following exceptions:

Sample	Compound	Finding	Criteria	Flag	A or P
TB-8-6/22/07	All TCL compounds	Air bubbles were apparent in the sample containers.	There should be no air bubbles in the sample containers.	J (all detects) UJ (all non-detects)	A

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

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

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

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

Average relative response factors (RRF) for all volatile target compounds and system performance check compounds (SPCCs) were within method and validation criteria.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

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

Date	Compound	%D	Associated Samples	Flag	A or P
6/28/07	Dichlorodifluoromethane	45.78	All samples in SDG JPL48	J (all detects) UJ (all non-detects)	P

Date	Compound	%D	Associated Samples	Flag	A or P
7/11/07	1,2-Dibromo-3-chloropropane	37.60	All samples in SDG JPL48	J (all detects) UJ (all non-detects)	P

All of the continuing calibration RRF values were within method and validation criteria.

V. Blanks

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

Method Blank ID	Analysis Date	Compound TIC (RT in minutes)	Concentration	Associated Samples
B071107MV0WY1	7/11/07	Methylene chloride	0.85 ug/L	All samples in SDG JPL48

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

VI. Surrogate Spikes

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

VII. Matrix Spike/Matrix Spike Duplicates

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

VIII. Laboratory Control Samples (LCS)

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

LCS ID	Compound	%R (Limits)	Associated Samples	Flag	A or P
S071107MV0WY2	2-Butanone 4-Methyl-2-pentanone	144 (60-140) 148 (60-140)	All samples in SDG JPL48	J (all detects)	P

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

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

XI. Target Compound Identifications

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

XIII. Tentatively Identified Compounds (TICs)

Raw data were not reviewed for this SDG.

XIV. System Performance

Raw data were not reviewed for this SDG.

XV. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XVI. Field Duplicates

No field duplicates were identified in this SDG.

XVII. Field Blanks

Sample TB-8-6/22/07 was identified as a trip blank. No volatile contaminants were found in this blank.

Sample EB-8-06/22/07 was identified as an equipment blank. No volatile contaminants were found in this blank.

NASA JPL
Volatiles - Data Qualification Summary - SDG JPL48

SDG	Sample	Compound	Flag	A or P	Reason
JPL48	TB-8-6/22/07	All TCL compounds	J (all detects) UJ (all non-detects)	A	Sample condition
JPL48	MW-14-5 MW-14-4 MW-14-3 MW-14-2 MW-14-1 EB-8-06/22/07 TB-8-6/22/07	Dichlorodifluoromethane 1,2-Dibromo-3-chloropropane	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	P	Continuing calibration (%D)
JPL48	MW-14-5 MW-14-4 MW-14-3 MW-14-2 MW-14-1 EB-8-06/22/07 TB-8-6/22/07	2-Butanone 4-Methyl-2-pentanone	J (all detects) J (all detects)	P	Laboratory control samples (%R)

NASA JPL
Volatiles - Laboratory Blank Data Qualification Summary - SDG JPL48

No Sample Data Qualified in this SDG

LDC Report# 17209B1

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: July 9, 2007

LDC Report Date: August 9, 2007

Matrix: Water

Parameters: Volatiles

Validation Level: EPA Level III

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL49

Sample Identification

MW-1
MW-9
MW-15
DUPE-7-2Q07
TB-16-7/9/07
MW-9MS
MW-9MSD
MW-15MS
MW-15MSD

Introduction

This data review covers 9 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 524.2 for Volatiles.

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

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

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

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

The following are definitions of the data qualifiers:

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

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

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

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

Average relative response factors (RRF) for all volatile target compounds and system performance check compounds (SPCCs) were within method and validation criteria.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

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

Date	Compound	%D	Associated Samples	Flag	A or P
6/28/07	Dichlorodifluoromethane	45.78	All samples in SDG JPL49	J (all detects) UJ (all non-detects)	P
7/16/07	4-Methyl-2-pentanone	32.77	TB-16-7/9/07 MW-15MSD B071607MV0WY1	J (all detects) UJ (all non-detects)	P

All of the continuing calibration RRF values were within method and validation criteria.

V. Blanks

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

Method Blank ID	Analysis Date	Compound TIC (RT in minutes)	Concentration	Associated Samples
B071607MV0WY1	7/16/07	Methylene chloride	1.6 ug/L	TB-16-7/9/07

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

VI. Surrogate Spikes

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

VII. Matrix Spike/Matrix Spike Duplicates

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

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
MW-15MS/MSD (MW-15)	cis-1,3-Dichloropropene	143 (60-140)	-	-	J (all detects)	A

VIII. Laboratory Control Samples (LCS)

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

LCS ID	Compound	%R (Limits)	Associated Samples	Flag	A or P
S071607MV0WY1	cis-1,3-Dichloropropene	141 (60-140)	TB-16-7/9/07 B071607MV0WY1	J (all detects)	P

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

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

XI. Target Compound Identifications

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

XIII. Tentatively Identified Compounds (TICs)

Raw data were not reviewed for this SDG.

XIV. System Performance

Raw data were not reviewed for this SDG.

XV. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XVI. Field Duplicates

Samples MW-1 and DUPE-7-2Q07 were identified as field duplicates. No volatiles were detected in any of the samples.

XVII. Field Blanks

Sample TB-16-7/9/07 was identified as a trip blank. No volatile contaminants were found in this blank.

NASA JPL
Volatiles - Data Qualification Summary - SDG JPL49

SDG	Sample	Compound	Flag	A or P	Reason
JPL49	MW-1 MW-9 MW-15 DUPE-7-2Q07 TB-16-7/9/07	Dichlorodifluoromethane	J (all detects) UJ (all non-detects)	P	Continuing calibration (%D)
JPL49	TB-16-7/9/07	4-Methyl-2-pentanone	J (all detects) UJ (all non-detects)	P	Continuing calibration (%D)
JPL49	MW-15	cis-1,3-Dichloropropene	J (all detects)	A	Matrix spike/Matrix spike duplicates (%R)
JPL49	TB-16-7/9/07	cis-1,3-Dichloropropene	J (all detects)	P	Laboratory control samples (%R)

NASA JPL
Volatiles - Laboratory Blank Data Qualification Summary - SDG JPL49

No Sample Data Qualified in this SDG

NASA JPL
Data Validation Reports
LDC# 17209

Metals

LDC

LDC Report# 17209A4

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: July 5, 2007

LDC Report Date: August 7, 2007

Matrix: Water

Parameters: Metals

Validation Level: EPA Level III

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL48

Sample Identification

MW-14-5
MW-14-4
MW-14-3
MW-14-2
MW-14-1
EB-8-06/22/07

Introduction

This data review covers 6 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 200.8 for Metals. The metals analyzed were Arsenic, Calcium, Chromium, Iron, Lead, Magnesium, Potassium, and Sodium.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as there are no current guidelines for the method stated above.

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

Blanks are summarized in Section III.

Field duplicates are summarized in Section XIII.

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

The following are definitions of the data qualifiers:

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

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. Calibration

An initial calibration was performed.

The frequency and analysis criteria of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met with the following exceptions:

Date	Lab. Reference/ID	Analyte	%R (Limits)	Associated Samples	Flag	A or P
7/26/07	CCV 9	Magnesium	114.7 (85-115)	MW-14-4 MW-14-3 MW-14-2 MW-14-1	J (all detects)	P
7/26/07	CCV 9	Sodium	113.3 (85-115)	MW-14-5 MW-14-4 MW-14-3 MW-14-2 MW-14-1	J (all detects)	P

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

IV. ICP Interference Check Sample (ICS) Analysis

The frequency of analysis was met.

The criteria for analysis were met.

V. Matrix Spike Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable.

Recalculated results confirm the reported results with the following exceptions:

Spike ID (Associated Samples)	Analyte	Reported (RPD)	Recalculated (RPD)	Flag	A or P
MW-9 (All samples in SDG JPL48)	Magnesium Sodium	30.8 (70-130) 37.3 (70-130)	9.3 (70-130) 8.8 (70-130)	None	P
MW-15 (All samples in SDG JPL48)	Magnesium	24.3 (70-130)	6.1 (70-130)	None	P

Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
MW-9 (All samples in SDG JPL48)	Magnesium Sodium	- -	68.9 (70-130) 65.4 (70-130)	- -	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A
MW-15 (All samples in SDG JPL48)	Magnesium Sodium	65.4 (70-130) 67.5 (70-130)	- -	- -	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	

VI. Duplicate Sample Analysis

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable.

VII. Laboratory Control Samples (LCS)

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

VIII. Internal Standards

Raw data were not reviewed for this SDG.

IX. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized for this SDG.

X. ICP Serial Dilution

ICP serial dilution analysis was performed by the laboratory. The analysis criteria were met.

XI. Sample Result Verification

Raw data were not reviewed for this SDG.

XII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XIII. Field Duplicates

No field duplicates were identified in this SDG.

XIV. Field Blanks

Sample EB-8-06/22/07 was identified as an equipment blank. No metals were detected in this blank with the following exceptions:

Equipment Blank ID	Analyte	Concentration (ug/L)
EB-8-06/22/07	Chromium	1.34

NASA JPL
Metals - Data Qualification Summary - SDG JPL48

SDG	Sample	Analyte	Flag	A or P	Reason
JPL48	MW-14-4 MW-14-3 MW-14-2 MW-14-1	Magnesium	J (all detects)	P	Calibration (%R)
JPL48	MW-14-5 MW-14-4 MW-14-3 MW-14-2 MW-14-1	Sodium	J (all detects)	P	Calibration (%R)
JPL48	MW-14-5 MW-14-4 MW-14-3 MW-14-2 MW-14-1 EB-8-06/22/07	Magnesium Sodium	None None	P	Matrix spike/Matrix spike duplicates (Recalculated RPD)
JPL48	MW-14-5 MW-14-4 MW-14-3 MW-14-2 MW-14-1 EB-8-06/22/07	Magnesium Sodium	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicates (%R)

NASA JPL
Metals - Laboratory Blank Data Qualification Summary - SDG JPL48

No Sample Data Qualified in this SDG

LDC Report# 17209B4

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: July 9, 2007

LDC Report Date: August 8, 2007

Matrix: Water

Parameters: Metals

Validation Level: EPA Level III

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL49

Sample Identification

MW-1
MW-9
MW-15
DUPE-7-2Q07
MW-9MS
MW-9MSD
MW-15MS
MW-15MSD

Introduction

This data review covers 8 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 200.8 for Metals. The metals analyzed were Arsenic, Calcium, Chromium, Iron, Lead, Magnesium, Potassium, and Sodium.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as there are no current guidelines for the method stated above.

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

Blanks are summarized in Section III.

Field duplicates are summarized in Section XIII.

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

The following are definitions of the data qualifiers:

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

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. Calibration

An initial calibration was performed.

The frequency and analysis criteria of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met with the following exceptions:

Date	Lab. Reference/ID	Analyte	%R (Limits)	Associated Samples	Flag	A or P
7/25/07	CCV 5	Lead	122.4 (85-115)	MW-1 MW-9 MW-15 DUPE-7-2Q07 MW-9MS MW-9MSD MW-15MS MW-15MSD	J (all detects)	P
7/25/07	CCV 6	Lead	111.4 (85-115)	MW-1 MW-9 MW-15 DUPE-7-2Q07 MW-9MS MW-9MSD MW-15MS MW-15MSD	J (all detects)	P

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

IV. ICP Interference Check Sample (ICS) Analysis

The frequency of analysis was met.

The criteria for analysis were met.

V. Matrix Spike Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable.

Recalculated results confirm the reported results with the following exceptions:

Spike ID (Associated Samples)	Analyte	Reported (RPD)	Recalculated (RPD)	Flag	A or P
MW-9 (All samples in SDG JPL49)	Magnesium Sodium	30.8 (70-130) 37.3 (70-130)	9.3 (70-130) 8.8 (70-130)	None	P
MW-15 (All samples in SDG JPL49)	Magnesium	24.3 (70-130)	6.1 (70-130)	None	P

Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
MW-9 (All samples in SDG JPL49)	Magnesium Sodium	- -	68.9 (70-130) 65.4 (70-130)	- -	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A
MW-15 (All samples in SDG JPL49)	Magnesium Sodium	65.4 (70-130) 67.5 (70-130)	- -	- -	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	

VI. Duplicate Sample Analysis

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable.

VII. Laboratory Control Samples (LCS)

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

VIII. Internal Standards

Raw data were not reviewed for this SDG.

IX. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized for this SDG.

X. ICP Serial Dilution

ICP serial dilution analysis was performed by the laboratory. The analysis criteria were met.

XI. Sample Result Verification

Raw data were not reviewed for this SDG.

XII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XIII. Field Duplicates

Samples MW-1 and DUPE-7-2Q07 were identified as field duplicates. No metals were detected in any of the samples with the following exceptions:

Analyte	Concentration (ug/L)		RPD
	MW-1	DUPE-7-2Q07	
Arsenic	1.09	1.02	7
Calcium	51600	51200	1
Chromium	4.36	2.84	42
Iron	193	163	17
Magnesium	17100	14900	14
Sodium	28200	27500	3

XIV. Field Blanks

No field blanks were identified in this SDG.

NASA JPL
Metals - Data Qualification Summary - SDG JPL49

SDG	Sample	Analyte	Flag	A or P	Reason
JPL49	MW-1 MW-9 MW-15 DUPE-7-2Q07	Lead	J (all detects)	P	Calibration (%R)
JPL49	MW-1 MW-9 MW-15 DUPE-7-2Q07	Magnesium Sodium	None None	P	Matrix spike/Matrix spike duplicates (Recalculated RPD)
JPL49	MW-1 MW-9 MW-15 DUPE-7-2Q07	Magnesium Sodium	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicates (%R)

NASA JPL
Metals - Laboratory Blank Data Qualification Summary - SDG JPL49

No Sample Data Qualified in this SDG

NASA JPL
Data Validation Reports
LDC# 17209

Wet Chemistry

LDC

LDC Report# 17209A6

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: July 5, 2007

LDC Report Date: August 8, 2007

Matrix: Water

Parameters: Wet Chemistry

Validation Level: EPA Level III

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL48

Sample Identification

MW-14-5
MW-14-4
MW-14-3
MW-14-2
MW-14-1
EB-8-06/22/07
MW-14-5MS
MW-14-5MSD
MW-14-5DUP
MW-14-3MS
MW-14-3MSD
MW-14-1DUP
EB-8-06/22/07DUP

Introduction

This data review covers 13 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 150.1 for pH, EPA Method 160.1 for Total Dissolved Solids, EPA Method 300.0 for Chloride, Nitrate as Nitrogen, and Sulfate, EPA Method 310.1 for Alkalinity, and EPA Method 314.0 for Perchlorate.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as there are no current guidelines for the methods stated above.

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

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

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

The following are definitions of the data qualifiers:

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

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. Calibration

a. Initial Calibration

All criteria for the initial calibration were met.

b. Calibration Verification

Calibration verification frequency and analysis criteria were met for each method when applicable.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

IV. Matrix Spike/Matrix Spike Duplicates

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

V. Duplicates

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

VI. Laboratory Control Samples

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

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Field Blanks

Sample EB-8-06/22/07 was identified as an equipment blank. No contaminant concentrations were found in this blank with the following exceptions:

Equipment Blank ID	Analyte	Concentration
EB-8-06/22/07	pH Bicarbonate alkalinity	7.1 units 2 mg/L

NASA JPL
Wet Chemistry - Data Qualification Summary - SDG JPL48

No Sample Data Qualified in this SDG

NASA JPL
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG JPL48

No Sample Data Qualified in this SDG

LDC Report# 17209B6

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: July 9, 2007

LDC Report Date: August 8, 2007

Matrix: Water

Parameters: Wet Chemistry

Validation Level: EPA Level III

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL49

Sample Identification

MW-1
MW-9
MW-15
DUPE-7-2Q07
MW-9MS
MW-9MSD
MW-9DUP
MW-15MS
MW-15MSD
MW-15DUP

Introduction

This data review covers 10 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 150.1 for pH, EPA Method 160.1 for Total Dissolved Solids, EPA Method 300.0 for Chloride, Nitrate as Nitrogen, and Sulfate, EPA Method 310.1 for Alkalinity, and EPA Method 314.0 for Perchlorate.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as there are no current guidelines for the methods stated above.

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

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

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

The following are definitions of the data qualifiers:

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

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. Calibration

a. Initial Calibration

All criteria for the initial calibration were met.

b. Calibration Verification

Calibration verification frequency and analysis criteria were met for each method when applicable.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

IV. Matrix Spike/Matrix Spike Duplicates

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

V. Duplicates

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

VI. Laboratory Control Samples

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

LCS ID (Associated Samples)	Analyte	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Flag	A or P
LCS/LCSD (All samples in SDG JPL49)	Perchlorate	80 (85-115)	-	-	J (all detects) UJ (all non-detects)	P

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

Samples MW-1 and DUPE-7-2Q07 were identified as field duplicates. No contaminant concentrations were detected in any of the samples with the following exceptions:

Analyte	Concentration (mg/L)		RPD
	MW-1	DUPE-7-2Q07	
Alkalinity	170	180	6
Chloride	16	17	6
Nitrate as N	0.70	0.71	1
Sulfate	35	36	3
Total dissolved solids	260	2U	200

Analyte	Concentration (units)		RPD
	MW-1	DUPE-7-2Q07	
pH (units)	7.3	7.2	1

X. Field Blanks

No field blanks were identified in this SDG.

NASA JPL
Wet Chemistry - Data Qualification Summary - SDG JPL49

SDG	Sample	Analyte	Flag	A or P	Reason
JPL49	MW-1 MW-9 MW-15 DUPE-7-2Q07	Perchlorate	J (all detects) UJ (all non-detects)	P	Laboratory control samples (%R)

NASA JPL
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG JPL49

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: June 12 through June 15, 2007

LDC Report Date: August 9, 2007

Matrix: Water

Parameters: Hexavalent Chromium

Validation Level: EPA Level III

Laboratory: Columbia Analytical Services, Inc.

Sample Delivery Group (SDG): P0700571

Sample Identification

MW-21-5	MW-21-5MSD
MW-21-4	MW-19-5MS
MW-21-3	MW-19-5MSD
MW-21-2	MW-18-5MS
MW-21-1	MW-18-5MSD
DUPE-1-2Q07	
EB-1-6/12/07	
MW-19-5	
MW-19-4	
MW-19-3	
MW-19-2	
MW-19-1	
EB-2-6/14/07	
MW-18-5	
MW-18-4	
MW-18-3	
MW-18-2	
MW-18-1	
EB-3-6/15/07	
MW-21-5MS	

Introduction

This data review covers 25 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 7196A for Hexavalent Chromium.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as there are no current guidelines for the methods stated above.

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

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

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

The following are definitions of the data qualifiers:

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

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. Calibration

a. Initial Calibration

All criteria for the initial calibration were met.

b. Calibration Verification

Calibration verification frequency and analysis criteria were met for each method when applicable.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

IV. Matrix Spike/Matrix Spike Duplicates

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

V. Duplicates

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable.

VI. Laboratory Control Samples

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

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

Samples MW-21-2 and DUPE-1-2Q07 were identified as field duplicates. No hexavalent chromium was detected in any of the samples.

X. Field Blanks

Samples EB-1-6/12/07, EB-2-6/14/07, and EB-3-6/15/07 were identified as equipment blanks. No hexavalent chromium was found in these blanks.

NASA JPL
Wet Chemistry - Data Qualification Summary - SDG P0700571

No Sample Data Qualified in this SDG

NASA JPL
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG P0700571

No Sample Data Qualified in this SDG

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

Battelle
505 King Avenue, Room 10-1-170
Columbus, OH 43201
ATTN: Ms. Betsy Cutie

August 16, 2007

SUBJECT: NASA JPL, Data Validation

Dear Ms. Cutie,

Enclosed are the final validation reports for the fractions listed below. These SDGs were received on August 3, 2007. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project # 17223:

SDG #	Fraction
JPL47, JPL50	Volatiles, 1,4-Dioxane, Metals, Wet Chemistry

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

- Methods for the Determination of Organic Compounds in Drinking Water, Supplement III, August 1995.
- USEPA, Contract Laboratory Program National Functional Guidelines for Organic Data Review, October 1999
- USEPA, Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, October 2004
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998

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

Sincerely,

Erlinda T. Rauto
Operations Manager/Senior Chemist

V:\LOGIN\Battelle\JPL\17223COV.wpd

Attachment 1

PO 190288 **10/90 (client select)**

LDC #17223 (Battelle-San Diego / NASA JPL)

LDC	SDG#	DATE REC'D	(3) DATE DUE	VOA (524.2)		1,4-Dioxane (8270C)		Metals (200.7 /200.8)		Alk. (310.1)		Cl,SO_4, NO_3 (300.0)		NO_3-N (353.2)		NO_3/ NO_2-N (353.2)		NO_2-N (354.1)		CLO_4 (314.0)		pH (150.1)		TDS (160.1)		NO_2 O-PO_4 (300.0)											
Matrix:	Water/Soil			W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	JPL47	08/03/07	08/24/07	8	0	-	-	7	0	7	0	9	0	7	0	7	0	9	0	9	0	8	0	8	0	-	-										
A	JPL47	08/03/07	08/24/07	1	0	-	-	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	-	-										
B	JPL50	08/03/07	08/24/07	2	0	0	0	2	0	2	0	4	0	-	-	-	-	-	-	4	0	3	0	3	0	4	0										
B	JPL50	08/03/07	08/24/07	2	0	1	0	1	0	1	0	1	0	-	-	-	-	-	-	1	0	1	0	1	0	1	0										
Total	B/LR			12	0	1	0	11	0	11	0	15	0	8	0	8	0	10	0	15	0	13	0	13	0	5	0	0	0	0	0	0	0	0	0	0	122

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

17223ST.wpd

NASA JPL
Data Validation Reports
LDC# 17223

Volatiles

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: June 2, 2007

LDC Report Date: August 15, 2007

Matrix: Water

Parameters: Volatiles

Validation Level: EPA Level III & IV

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL47

Sample Identification

MW-25-5
MW-25-4
MW-25-3
MW-25-2**
MW-25-1
DUPE-6-2Q07
SB-1-7/2/07
EB-14-7/2/07
TB-14-7/2/07

**Indicates sample underwent EPA Level IV review

Introduction

This data review covers 9 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 524.2 for Volatiles.

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

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

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

Samples indicated by a double asterisk on the front cover underwent a EPA Level IV review. A EPA Level III review was performed on all of the other samples. Raw data were not evaluated for the samples reviewed by Level III criteria since this review is based on QC data.

The following are definitions of the data qualifiers:

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

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

All samples were received in good condition with the following exceptions:

Sample	Compound	Finding	Criteria	Flag	A or P
TB-14-7/2/07	All TCL compounds	Air bubbles were apparent in the sample containers.	There should be no air bubbles in the sample containers.	J (all detects) UJ (all non-detects)	A

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

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

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

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

Average relative response factors (RRF) for all volatile target compounds and system performance check compounds (SPCCs) were within method and validation criteria.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

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

Date	Compound	%D	Associated Samples	Flag	A or P
7/10/07 (Y0710009.D)	2-Butanone 4-Methyl-2-pentanone	33.69 32.92	MW-25-5 MW-25-4 MW-25-3 MW-25-2** MW-25-1 DUPE-6-2Q07 B071007MVOWY1	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	P
7/11/07 (Y0711009)	1,2-Dibromo-3-chloropropane	37.60	SB-1-7/2/07 EB-14-7/2/07 TB-14-7/2/07 B071107MVOWY1	J (all detects) UJ (all non-detects)	P

The percent differences (%D) of the second source calibration standard were less than or equal to 30.0% for all compounds with the following exceptions:

Date	Compound	%D	Associated Samples	Flag	A or P
6/28/07	Dichlorodifluoromethane	45.78	All samples in SDG JPL47	J (all detects) UJ (all non-detects)	P

All of the continuing calibration RRF values were within method and validation criteria.

V. Blanks

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

Method Blank ID	Analysis Date	Compound TIC (RT in minutes)	Concentration	Associated Samples
B071007MVOWY1	7/10/07	Methylene chloride	2.5 ug/L	MW-25-5 MW-25-4 MW-25-3 MW-25-2** MW-25-1 DUPE-6-2Q07
B071107MVOWY1	7/11/07	Methylene chloride	0.85 ug/L	SB-1-7/2/07 EB-14-7/2/07 TB-14-7/2/07

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

VI. Surrogate Spikes

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

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were not required by the method.

VIII. Laboratory Control Samples (LCS)

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

LCS ID	Compound	%R (Limits)	Associated Samples	Flag	A or P
S071007MVOWY1	2-Butanone 4-Methyl-2-pentanone	151 (60-140) 147 (60-140)	MW-25-5 MW-25-4 MW-25-3 MW-25-2** MW-25-1 DUPE-6-2Q07 B071007MVOWY1	J (all detects) J (all detects)	P
S071107MVOWY2	2-Butanone 4-Methyl-2-pentanone	144 (60-140) 148 (60-140)	SB-1-7/2/07 EB-14-7/2/07 TB-14-7/2/07 B071107MVOWY1	J (all detects) J (all detects)	P

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

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

XI. Target Compound Identifications

All target compound identifications were within validation criteria for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

XII. Compound Quantitation and CRQLs

All compound quantitation and CRQLs were within validation criteria for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

XIII. Tentatively Identified Compounds (TICs)

All tentatively identified compounds were within validation criteria for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

XIV. System Performance

The system performance was within validation criteria for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

XV. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XVI. Field Duplicates

Samples MW-25-1 and DUPE-6-2Q07 were identified as field duplicates. No volatiles were detected in any of the samples.

XVII. Field Blanks

Sample TB-14-7/2/07 was identified as a trip blank. No volatile contaminants were found in this blank.

Sample EB-14-7/2/07 was identified as an equipment blank. No volatile contaminants were found in this blank.

Sample SB-1-7/2/07 was identified as a source blank. No volatile contaminants were found in this blank with the following exceptions:

Source Blank ID	Compound	Concentration (ug/L)
SB-1-7/2/07	Trichloroethene	0.29

NASA JPL
Volatiles - Data Qualification Summary - SDG JPL47

SDG	Sample	Compound	Flag	A or P	Reason
JPL47	TB-14-7/2/07	All TCL compounds	J (all detects) UJ (all non-detects)	A	Sample condition
JPL47	MW-25-5 MW-25-4 MW-25-3 MW-25-2** MW-25-1 DUPE-6-2Q07	2-Butanone 4-Methyl-2-pentanone	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	P	Continuing calibration (%D)
JPL47	SB-1-7/2/07 EB-14-7/2/07 TB-14-7/2/07	1,2-Dibromo-3-chloropropane	J (all detects) UJ (all non-detects)	P	Continuing calibration (%D)
JPL47	MW-25-5 MW-25-4 MW-25-3 MW-25-2** MW-25-1 DUPE-6-2Q07 SB-1-7/2/07 EB-14-7/2/07 TB-14-7/2/07	Dichlorodifluoromethane	J (all detects) UJ (all non-detects)	P	Continuing calibration (ICV %D)
JPL47	MW-25-5 MW-25-4 MW-25-3 MW-25-2** MW-25-1 DUPE-6-2Q07 SB-1-7/2/07 EB-14-7/2/07 TB-14-7/2/07	2-Butanone 4-Methyl-2-pentanone	J (all detects) J (all detects)	P	Laboratory control samples (%R)

NASA JPL
Volatiles - Laboratory Blank Data Qualification Summary - SDG JPL47

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: June 12, 2007

LDC Report Date: August 15, 2007

Matrix: Water

Parameters: Volatiles

Validation Level: EPA Level III & IV

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL50

Sample Identification

MW-7**
MW-16**
DUPE-8-2Q07
TB-17-07/10/07

**Indicates sample underwent EPA Level IV review

Introduction

This data review covers 4 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 524.2 for Volatiles.

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

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

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

Samples indicated by a double asterisk on the front cover underwent a EPA Level IV review. A EPA Level III review was performed on all of the other samples. Raw data were not evaluated for the samples reviewed by Level III criteria since this review is based on QC data.

The following are definitions of the data qualifiers:

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

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

All samples were received in good condition with the following exceptions:

Sample	Compound	Finding	Criteria	Flag	A or P
TB-17-07/10/07	All TCL compounds	Air bubbles were apparent in the sample containers.	There should be no air bubbles in the sample containers.	J (all detects) UJ (all non-detects)	A

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

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

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

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

Average relative response factors (RRF) for all volatile target compounds and system performance check compounds (SPCCs) were within method and validation criteria.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

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

Date	Compound	%D	Associated Samples	Flag	A or P
7/16/07 (Y0716007)	4-Methyl-2-pentanone	32.77	All samples in SDG JPL50	J (all detects) UJ (all non-detects)	P

The percent differences (%D) of the second source calibration standard were less than or equal to 30.0% for all compounds with the following exceptions:

Date	Compound	%D	Associated Samples	Flag	A or P
6/28/07	Dichlorodifluoromethane	45.78	All samples in SDG JPL50	J (all detects) UJ (all non-detects)	P

All of the continuing calibration RRF values were within method and validation criteria.

V. Blanks

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

Method Blank ID	Analysis Date	Compound TIC (RT in minutes)	Concentration	Associated Samples
B071607MVOWY1	7/16/07	Methylene chloride	1.6 ug/L	All samples in SDG JPL50

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

VI. Surrogate Spikes

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

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were not required by the method.

VIII. Laboratory Control Samples (LCS)

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

LCS ID	Compound	%R (Limits)	Associated Samples	Flag	A or P
S071607MVOWY1	cis-1,3-Dichloropropene	141 (60-140)	All samples in SDG JPL50	J (all detects)	P

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

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

XI. Target Compound Identifications

All target compound identifications were within validation criteria for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

XII. Compound Quantitation and CRQLs

All compound quantitation and CRQLs were within validation criteria for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

XIII. Tentatively Identified Compounds (TICs)

All tentatively identified compounds were within validation criteria for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

XIV. System Performance

The system performance was within validation criteria for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

XV. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XVI. Field Duplicates

Samples MW-7** and DUPE-8-2Q07 were identified as field duplicates. No volatiles were detected in any of the samples with the following exceptions:

Compound	Concentration (ug/L)		RPD
	MW-7**	DUPE-8-2Q07	
Chloroform	2.9	2.9	0

Compound	Concentration (ug/L)		RPD
	MW-7**	DUPE-8-2Q07	
Bromodichloromethane	5.7	5.9	3
Dibromochloromethane	9.9	9.7	2
Bromoform	8.0	8.2	3

XVII. Field Blanks

Sample TB-17-07/10/07 was identified as a trip blank. No volatile contaminants were found in this blank.

NASA JPL
Volatiles - Data Qualification Summary - SDG JPL50

SDG	Sample	Compound	Flag	A or P	Reason
JPL50	TB-17-07/10/07	All TCL compounds	J (all detects) UJ (all non-detects)	A	Sample condition
JPL50	MW-7** MW-16** DUPE-8-2Q07 TB-17-07/10/07	4-Methyl-2-pentanone	J (all detects) UJ (all non-detects)	P	Continuing calibration (%D)
JPL50	MW-7** MW-16** DUPE-8-2Q07 TB-17-07/10/07	Dichlorodifluoromethane	J (all detects) UJ (all non-detects)	P	Continuing calibration (ICV %D)
JPL50	MW-7** MW-16** DUPE-8-2Q07 TB-17-07/10/07	cis-1,3-Dichloropropene	J (all detects)	P	Laboratory control samples (%R)

NASA JPL
Volatiles - Laboratory Blank Data Qualification Summary - SDG JPL50

No Sample Data Qualified in this SDG

NASA JPL
Data Validation Reports
LDC# 17223

1,4-Dioxane

LDC

LDC Report# 17223B2

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: July 12, 2006

LDC Report Date: August 14, 2007

Matrix: Water

Parameters: 1,4-Dioxane

Validation Level: EPA Level IV

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL50

Sample Identification

MW-16

Introduction

This data review covers one water sample listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8270C for 1,4-Dioxane.

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

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

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

The following are definitions of the data qualifiers:

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

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. GC/MS Instrument Performance Check

Instrument performance was not required by the method.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

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

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

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

The percent difference (%D) of the second source calibration standard were less than or equal to 30.0% for all compounds.

V. Blanks

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

VI. Surrogate Spikes

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

VII. Matrix Spike/Matrix Spike Duplicates

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

VIII. Laboratory Control Samples (LCS)

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

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

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

XI. Target Compound Identifications

All target compound identifications were within validation criteria.

XII. Compound Quantitation and CRQLs

All compound quantitation and CRQLs were within validation criteria.

XIII. Tentatively Identified Compounds (TICs)

Tentatively identified compounds were not reported by the laboratory.

XIV. System Performance

The system performance was acceptable.

XV. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XVI. Field Duplicates

No field duplicates were identified in this SDG.

XVII. Field Blanks

No field blanks were identified in this SDG.

NASA JPL
1,4-Dioxane - Data Qualification Summary - SDG JPL50

No Sample Data Qualified in this SDG

NASA JPL
1,4-Dioxane - Laboratory Blank Data Qualification Summary - SDG JPL50

No Sample Data Qualified in this SDG

NASA JPL
Data Validation Reports
LDC# 17223

Metals

LDC Report# 17223A4

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: July 2, 2007

LDC Report Date: August 14, 2007

Matrix: Water

Parameters: Metals

Validation Level: EPA Level III & IV

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL47

Sample Identification

MW-25-5
MW-25-4
MW-25-3
MW-25-2**
MW-25-1
DUPE-6-2Q07
SB-1-7/2/07
EB-14-7/2/07

**Indicates sample underwent EPA Level IV review

Introduction

This data review covers 8 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 200.8 for Metals. The metals analyzed were Arsenic, Calcium, Chromium, Iron, Lead, Magnesium, Potassium, and Sodium.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as there are no current guidelines for the method stated above.

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

Blanks are summarized in Section III.

Field duplicates are summarized in Section XIII.

Samples indicated by a double asterisk on the front cover underwent a EPA Level IV review. A EPA Level III review was performed on all of the other samples. Raw data were not evaluated for the samples reviewed by Level III criteria since this review is based on QC data.

The following are definitions of the data qualifiers:

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

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. Calibration

An initial calibration was performed.

The frequency and analysis criteria of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met with the following exceptions:

Date	Lab. Reference/ID	Analyte	%R (Limits)	Associated Samples	Flag	A or P
7/26/07	CCV 7	Lead	117.6 (90-110)	MW-25-5 MW-25-4 MW-25-3 MW-25-2** SB-1-7/2/07 EB-14-7/2/07	J (all detects)	P

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

IV. ICP Interference Check Sample (ICS) Analysis

The frequency of analysis was met.

The criteria for analysis were met.

V. Matrix Spike Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable.

Recalculated results confirm the reported results with the following exceptions:

Spike ID (Associated Samples)	Analyte	Reported (RPD)	Recalculated (RPD)	Flag	A or P
MW-9 (MW-25-5 MW-25-4 MW-25-3 MW-25-2** SB-1-7/2/07 EB-14-7/2/07)	Magnesium Sodium	30.8 37.3	9.3 8.8	None None	P
MW-15 (MW-25-5 MW-25-4 MW-25-3 MW-25-2** SB-1-7/2/07 EB-14-7/2/07)	Magnesium	24.3	6.1	None	P

Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
MW-9 (MW-25-5 MW-25-4 MW-25-3 MW-25-2** SB-1-7/2/07 EB-14-7/2/07)	Magnesium Sodium	- -	68.9 (70-130) 65.4 (70-130)	- -	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A
MW-15 (MW-25-5 MW-25-4 MW-25-3 MW-25-2** SB-1-7/2/07 EB-14-7/2/07)	Magnesium Sodium	65.4 (70-130) 67.5 (70-130)	- -	- -	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A

VI. Duplicate Sample Analysis

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable.

VII. Laboratory Control Samples (LCS)

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

VIII. Internal Standards

All internal standard percent recoveries (%R) were within QC limits for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

IX. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

X. ICP Serial Dilution

ICP serial dilution analysis was performed by the laboratory. The analysis criteria were met.

XI. Sample Result Verification

All sample result verifications were acceptable for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

XII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XIII. Field Duplicates

Samples MW-25-1 and DUPE-6-2Q07 were identified as field duplicates. No metals were detected in any of the samples with the following exceptions:

Analyte	Concentration (ug/L)		RPD
	MW-25-1	DUPE-6-2Q07	
Calcium	116000	116000	0
Chromium	1.70	1.70	0
Iron	1110	1500	30
Magnesium	35300	34500	2
Sodium	32500	31700	2

XIV. Field Blanks

Sample EB-14-7/2/07 was identified as an equipment blank. No metals were detected in this blank with the following exceptions:

Equipment Blank ID	Analyte	Concentration (ug/L)
EB-14-7/2/07	Chromium	1.04

Sample SB-1-7/2/07 was identified as an source blank. No metals were detected in this blank with the following exceptions:

Equipment Blank ID	Analyte	Concentration (ug/L)
SB-1-7/2/07	Chromium	1.28

NASA JPL
Metals - Data Qualification Summary - SDG JPL47

SDG	Sample	Analyte	Flag	A or P	Reason
JPL47	MW-25-5 MW-25-4 MW-25-3 MW-25-2** SB-1-7/2/07 EB-14-7/2/07	Lead	J (all detects)	P	Calibration (%R)
JPL47	MW-25-5 MW-25-4 MW-25-3 MW-25-2** SB-1-7/2/07 EB-14-7/2/07	Magnesium Sodium	None None	P	Matrix spike/Matrix spike duplicates (RPD recalculation)
JPL47	MW-25-5 MW-25-4 MW-25-3 MW-25-2** SB-1-7/2/07 EB-14-7/2/07	Magnesium Sodium	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicates (%R)

NASA JPL
Metals - Laboratory Blank Data Qualification Summary - SDG JPL47

No Sample Data Qualified in this SDG

LDC Report# 17223B4

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: July 10, 2007

LDC Report Date: August 14, 2007

Matrix: Water

Parameters: Metals

Validation Level: EPA Level III & IV

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL50

Sample Identification

MW-7**
MW-16**
DUPE-8-2Q07

**Indicates sample underwent EPA Level IV review

Introduction

This data review covers 3 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 200.8 for Metals. The metals analyzed were Arsenic, Calcium, Chromium, Iron, Lead, Magnesium, Potassium, and Sodium.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as there are no current guidelines for the method stated above.

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

Blanks are summarized in Section III.

Field duplicates are summarized in Section XIII.

Samples indicated by a double asterisk on the front cover underwent a EPA Level IV review. A EPA Level III review was performed on all of the other samples. Raw data were not evaluated for the samples reviewed by Level III criteria since this review is based on QC data.

The following are definitions of the data qualifiers:

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

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. Calibration

An initial calibration was performed.

The frequency and analysis criteria of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met with the following exceptions:

Date	Lab. Reference/ID	Analyte	%R (Limits)	Associated Samples	Flag	A or P
7/26/07	CCV 12	Lead	114.4 (90-110)	MW-7** MW-16** DUPE-8-2Q07	J (all detects)	P

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

IV. ICP Interference Check Sample (ICS) Analysis

The frequency of analysis was met.

The criteria for analysis were met.

V. Matrix Spike Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable.

Recalculated results confirm the reported results with the following exceptions:

Spike ID (Associated Samples)	Analyte	Reported (RPD)	Recalculated (RPD)	Flag	A or P
MW-9 (All samples in SDG JPL50)	Magnesium Sodium	30.8 37.3	9.3 8.8	None None	P

MW-15 (All samples in SDG JPL50)	Magnesium	24.3	6.1	None	P

Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
MW-9 (All samples in SDG JPL50)	Magnesium	-	68.9 (70-130)	-	J (all detects) UJ (all non-detects)	A
	Sodium	-	65.4 (70-130)	-	J (all detects) UJ (all non-detects)	
MW-15 (All samples in SDG JPL50)	Magnesium	65.4 (70-130)	-	-	J (all detects) UJ (all non-detects)	A
	Sodium	67.5 (70-130)	-	-	J (all detects) UJ (all non-detects)	

VI. Duplicate Sample Analysis

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable.

VII. Laboratory Control Samples (LCS)

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

VIII. Internal Standards

All internal standard percent recoveries (%R) were within QC limits for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

IX. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

X. ICP Serial Dilution

ICP serial dilution analysis was performed by the laboratory. The analysis criteria were met.

XI. Sample Result Verification

All sample result verifications were acceptable for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

XII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XIII. Field Duplicates

Samples MW-7** and DUPE-8-2Q07 were identified as field duplicates. No metals were detected in any of the samples with the following exceptions:

Analyte	Concentration (ug/L)		RPD
	MW-7**	DUPE-8-2Q07	
Calcium	54900	54100	1
Chromium	11.3	10.6	6
Iron	1070	351	101
Lead	1.70	2.45	36
Magnesium	16600	17600	6
Sodium	23400	21900	7

XIV. Field Blanks

No field blanks were identified in this SDG.

NASA JPL
Metals - Data Qualification Summary - SDG JPL50

SDG	Sample	Analyte	Flag	A or P	Reason
JPL50	MW-7** MW-16** DUPE-8-2Q07	Lead	J (all detects)	P	Calibration (%R)
JPL50	MW-7** MW-16** DUPE-8-2Q07	Magnesium Sodium	None None	P	Matrix spike/Matrix spike duplicates (RPD recalculation)
JPL50	MW-7** MW-16** DUPE-8-2Q07	Magnesium Sodium	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicates (%R)

NASA JPL
Metals - Laboratory Blank Data Qualification Summary - SDG JPL50

No Sample Data Qualified in this SDG

NASA JPL
Data Validation Reports
LDC# 17223

Wet Chemistry

LDC Report# 17223A6

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: July 2, 2007

LDC Report Date: August 14, 2007

Matrix: Water

Parameters: Wet Chemistry

Validation Level: EPA Level III & IV

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL47

Sample Identification

MW-25-5
MW-25-4
MW-25-3
MW-25-2**
MW-25-1
DUPE-6-2Q07
SB-1-7/2/07
EB-14-7/2/07
MW-25-5MS
MW-25-5MSD
MW-25-5DUP
MW-25-3MS
MW-25-3MSD
SB-1-7/2/07DUP

**Indicates sample underwent EPA Level IV review

Introduction

This data review covers 14 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 150.1 for pH, EPA Method 160.1 for Total Dissolved Solids, EPA Method 300.0 for Chloride, Nitrate as Nitrogen, and Sulfate, EPA Method 310.1 for Alkalinity, EPA Method 314.0 for Perchlorate, EPA Method 353.2 for Nitrate as Nitrogen, and Nitrate/Nitrite as Nitrogen, and EPA Method 354.1 for Nitrite as Nitrogen.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as there are no current guidelines for the methods stated above.

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

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Samples indicated by a double asterisk on the front cover underwent a EPA Level IV review. A EPA Level III review was performed on all of the other samples. Raw data were not evaluated for the samples reviewed by Level III criteria since this review is based on QC data.

The following are definitions of the data qualifiers:

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

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
MW-25-5	Nitrate as N (300.0)	15 days	48 hours	J (all detects) R (all non-detects)	P
MW-25-4 MW-25-3 MW-25-2** MW-25-1 DUPE-6-2Q07 SB-1-7/2/07 EB-14-7/2/07 MW-25-3MS MW-25-3MSD	Nitrate as N (300.0)	16 days	48 hours	J (all detects) R (all non-detects)	P

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

II. Calibration

a. Initial Calibration

All criteria for the initial calibration were met.

b. Calibration Verification

Calibration verification frequency and analysis criteria were met for each method when applicable.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

IV. Matrix Spike/Matrix Spike Duplicates

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

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
MW-25-5MS/MSD (MW-25-5 MW-25-4 MW-25-3)	Perchlorate	-	-	19 (≤15)	J (all detects) UJ (all non-detects)	A

V. Duplicates

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable.

VI. Laboratory Control Samples

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

Percent recoveries (%R) of the standard reference material were within QC limits.

VII. Sample Result Verification

All sample result verifications were acceptable for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

Samples MW-25-1 and DUPE-6-2Q07 were identified as field duplicates. No contaminant concentrations were detected in any of the samples with the following exceptions:

Analyte	Concentration (mg/L)		RPD
	MW-25-1	DUPE-6-2Q07	
Alkalinity	160	160	0
Chloride	74	74	0
Nitrate as N (300.0)	9.9	9.9	0
Sulfate	150	150	0
Nitrate as N (353.2)	12	12	0

Analyte	Concentration (mg/L)		RPD
	MW-25-1	DUPE-6-2Q07	
Total Nitrate/Nitrite as N	12	12	0
Nitrite as N	0.033	0.0073	128
Total dissolved solids	590	580	2

Analyte	Concentration (units)		RPD
	MW-25-1	DUPE-6-2Q07	
pH	7.2	7.0	3

Analyte	Concentration (ug/L)		RPD
	MW-25-1	DUPE-6-2Q07	
Perchlorate (ug/L)	5.5	4.0U	200

X. Field Blanks

Sample EB-14-7/2/07 was identified as an equipment blank. No contaminant concentrations were detected in this blank with the following exceptions:

Equipment Blank ID	Analyte	Concentration
EB-14-7/2/07	pH Total dissolved solids Bicarbonate Alkalinity Total Nitrate as N/Nitrite as N	7.0 (unit) 17 (mg/L) 2 (mg/L) 0.088 mg/L)

Sample SB-1-7/2/07 was identified as an source blank. No contaminant concentrations were detected in this blank with the following exceptions:

Equipment Blank ID	Analyte	Concentration
SB-1-7/2/07	pH Total dissolved solids Bicarbonate Alkalinity Total Nitrate as N/Nitrite as N	8.1 (unit) 14 (mg/L) 2 (mg/L) 0.081 mg/L)

NASA JPL
Wet Chemistry - Data Qualification Summary - SDG JPL47

SDG	Sample	Analyte	Flag	A or P	Reason
JPL47	MW-25-5 MW-25-4 MW-25-3 MW-25-2** MW-25-1 DUPE-6-2Q07 SB-1-7/2/07 EB-14-7/2/07	Nitrate as N (300.0)	J (all detects) R (all non-detects)	P	Technical holding times
JPL47	MW-25-5 MW-25-4 MW-25-3	Perchlorate	J (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicates (RPD)

NASA JPL
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG JPL47

No Sample Data Qualified in this SDG

LDC Report# 17223B6

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: July 10, 2007

LDC Report Date: August 14, 2007

Matrix: Water

Parameters: Wet Chemistry

Validation Level: EPA Level III & IV

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL50

Sample Identification

MW-7**
MW-16**
DUPE-8-2Q07
MW-16DUP
DUPE-8-2Q07MS
DUPE-8-2Q07MSD

**Indicates sample underwent EPA Level IV review

Introduction

This data review covers 6 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 150.1 for pH, EPA Method 160.1 for Total Dissolved Solids, EPA Method 300.0 for Chloride, Nitrate as Nitrogen, Nitrite as Nitrogen, Orthophosphate, and Sulfate, EPA Method 310.1 for Alkalinity, and EPA Method 314.0 for Perchlorate.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as there are no current guidelines for the methods stated above.

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

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Samples indicated by a double asterisk on the front cover underwent a EPA Level IV review. A EPA Level III review was performed on all of the other samples. Raw data were not evaluated for the samples reviewed by Level III criteria since this review is based on QC data.

The following are definitions of the data qualifiers:

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

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. Calibration

a. Initial Calibration

Initial calibration raw data for 300.0 were not provided therefore not recalculated.

b. Calibration Verification

Calibration verification frequency and analysis criteria were met for each method when applicable with the following exceptions:

Date	Lab. Reference/ID	Analyte	%R (Limits)	Associated Samples	Flag	A or P
7/11/07	ICV	Nitrite as N	128.6 (90-110)	All samples in SDG JPL50	J (all detects)	P

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

IV. Matrix Spike/Matrix Spike Duplicates

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

V. Duplicates

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

VI. Laboratory Control Samples

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

LCS ID (Associated Samples)	Analyte	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Flag	A or P
LCS/LCSD (All samples in SDG JPL50)	Perchlorate	76 (85-115)	-	-	J (all detects) UJ (all non-detects)	P

All results for the standard reference material were within QC limits with the following exceptions:

SRM ID	Compound	Concentration (Limits)	Associated Samples	Flag	A or P
SRM	Nitrite as N	39.1 mg/L (27.4-33.5)	All samples in SDG JPL50	J (all detects)	P

VII. Sample Result Verification

All sample result verifications were acceptable for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

Samples MW-7** and DUPE-8-2Q07 were identified as field duplicates. No contaminant concentrations were detected in any of the samples with the following exceptions:

Analyte	Concentration (mg/L)		RPD
	MW-7**	DUPE-8-2Q07	
Alkalinity	150	150	0
Chloride	41	41	0
Nitrate as N	0.60	0.60	0
Sulfate	40	40	0
Total dissolved solids	320	310	3

Analyte	Concentration (units)		RPD
	MW-7**	DUPE-8-2Q07	
pH	7.1	7.0	1

Analyte	Concentration (ug/L)		RPD
	MW-7**	DUPE-8-2Q07	
Perchlorate (ug/L)	3.9	4.7	19

X. Field Blanks

No field blanks were identified in this SDG.

NASA JPL
Wet Chemistry - Data Qualification Summary - SDG JPL50

SDG	Sample	Analyte	Flag	A or P	Reason
JPL50	MW-7** MW-16** DUPE-8-2Q07	Nitrite as N	J (all detects)	P	Calibration verification (%D)
JPL50	MW-7** MW-16** DUPE-8-2Q07	Perchlorate	J (all detects) UJ (all non-detects)	P	Laboratory control samples (%R)
JPL50	MW-7** MW-16** DUPE-8-2Q07	Nitrite as N	J (all detects)	P	Standard reference material (Concentration))

NASA JPL
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG JPL50

No Sample Data Qualified in this SDG

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

Battelle
505 King Avenue, Room 10-1-170
Columbus, OH 43201
ATTN: Ms. Betsy Cutie

August 22, 2007

SUBJECT: NASA JPL, Data Validation

Dear Ms. Cutie,

Enclosed are the final validation reports for the fractions listed below. These SDGs were received on August 13, 2007. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project # 17270:

SDG #	Fraction
JPL51, JPL52, JPL53	Volatiles, 1,4-Dioxane, Metals, Wet Chemistry

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

- Methods for the Determination of Organic Compounds in Drinking Water, Supplement III, August 1995.
- USEPA, Contract Laboratory Program National Functional Guidelines for Organic Data Review, October 1999
- USEPA, Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, October 2004
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998

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

Sincerely,

Erlinda T. Rauto
Operations Manager/Senior Chemist

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Attachment 1

PO 210787 **10/90 (client select)**

LDC #17270 (Battelle-San Diego / NASA JPL)

LDC	SDG#	DATE REC'D	(3) DATE DUE	VOA (524.2)		1,4-Dioxane (8270C)		Metals (200.7 /200.8)		Alk. (310.1)		Cl,SO_4, NO_3 (300.0)		NO_2 O-PO_4 (300.0)		CLO_4 (314.0)		pH (150.1)		TDS (160.1)																			
Matrix:	Water/Soil			W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	JPL51	08/13/07	08/27/07	6	0	0	0	5	0	1	0	5	0	5	0	5	0	3	0	2	0																		
A	JPL51	08/13/07	08/27/07	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0																		
B	JPL52	08/13/07	08/27/07	4	0	-	-	3	0	3	0	5	0	-	-	5	0	5	0	4	0																		
B	JPL52	08/13/07	08/27/07	1	0	-	-	1	0	1	0	1	0	-	-	1	0	1	0	1	0																		
C	JPL53	08/13/07	08/27/07	3	0	-	-	2	0	3	0	4	0	-	-	4	0	3	0	3	0																		
Total	B/LR			15	0	1	0	12	0	9	0	16	0	6	0	16	0	13	0	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	99

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

17270ST.wpd

NASA JPL
Data Validation Reports
LDC# 17270

Volatiles

LDC

LDC Report# 17270A1

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: July 11, 2007

LDC Report Date: August 21, 2007

Matrix: Water

Parameters: Volatiles

Validation Level: EPA Level III & IV

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL51

Sample Identification

MW-13**
MW-8
TB-18-7/11/07
MW-13MS
MW-13MSD
MW-8MS
MW-8MSD

**Indicates sample underwent EPA Level IV review

Introduction

This data review covers 7 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 524.2 for Volatiles.

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

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

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

Samples indicated by a double asterisk on the front cover underwent a EPA Level IV review. A EPA Level III review was performed on all of the other samples. Raw data were not evaluated for the samples reviewed by Level III criteria since this review is based on QC data.

The following are definitions of the data qualifiers:

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

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

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

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

Average relative response factors (RRF) for all volatile target compounds and system performance check compounds (SPCCs) were within method and validation criteria.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

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

The percent differences (%D) of the second source calibration standard were less than or equal to 30.0% for all compounds.

All of the continuing calibration RRF values were within method and validation criteria.

V. Blanks

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

VI. Surrogate Spikes

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

VII. Matrix Spike/Matrix Spike Duplicates

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

VIII. Laboratory Control Samples (LCS)

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

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

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

XI. Target Compound Identifications

All target compound identifications were within validation criteria for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

XII. Compound Quantitation and CRQLs

All compound quantitation and CRQLs were within validation criteria for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

XIII. Tentatively Identified Compounds (TICs)

All tentatively identified compounds were within validation criteria for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

XIV. System Performance

The system performance was within validation criteria for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

XV. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XVI. Field Duplicates

No field duplicates were identified in this SDG.

XVII. Field Blanks

Sample TB-18-7/11/07 was identified as a trip blank. No volatile contaminants were found in this blank with the following exceptions:

Trip Blank ID	Compound	Concentration (ug/L)
TB-18-7/11/07	Trichlorofluoromethane Chloroform Toluene	0.64 0.31 0.60

NASA JPL
Volatiles - Data Qualification Summary - SDG JPL51

No Sample Data Qualified in this SDG

NASA JPL
Volatiles - Laboratory Blank Data Qualification Summary - SDG JPL51

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: July 12, 2007

LDC Report Date: August 21, 2007

Matrix: Water

Parameters: Volatiles

Validation Level: EPA Level III & IV

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL52

Sample Identification

MW-26-2
MW-26-1**
EB-15-7/12/07
TB-19-7/12/07
MW-10

**Indicates sample underwent EPA Level IV review

Introduction

This data review covers 5 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 524.2 for Volatiles.

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

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

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

Samples indicated by a double asterisk on the front cover underwent a EPA Level IV review. A EPA Level III review was performed on all of the other samples. Raw data were not evaluated for the samples reviewed by Level III criteria since this review is based on QC data.

The following are definitions of the data qualifiers:

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

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

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

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

Average relative response factors (RRF) for all volatile target compounds and system performance check compounds (SPCCs) were within method and validation criteria.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

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

The percent differences (%D) of the second source calibration standard were less than or equal to 30.0% for all compounds.

All of the continuing calibration RRF values were within method and validation criteria.

V. Blanks

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

VI. Surrogate Spikes

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

VII. Matrix Spike/Matrix Spike Duplicates

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

VIII. Laboratory Control Samples (LCS)

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

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

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

XI. Target Compound Identifications

All target compound identifications were within validation criteria for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

XII. Compound Quantitation and CRQLs

All compound quantitation and CRQLs were within validation criteria for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

XIII. Tentatively Identified Compounds (TICs)

Tentatively identified compounds were not reported by the laboratory.

XIV. System Performance

The system performance was within validation criteria for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

XV. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XVI. Field Duplicates

No field duplicates were identified in this SDG.

XVII. Field Blanks

Sample TB-19-7/12/07 was identified as a trip blank. No volatile contaminants were found in this blank.

Sample EB-15-7/12/07 was identified as an equipment blank. No volatile contaminants were found in this blank.

NASA JPL
Volatiles - Data Qualification Summary - SDG JPL52

No Sample Data Qualified in this SDG

NASA JPL
Volatiles - Laboratory Blank Data Qualification Summary - SDG JPL52

No Sample Data Qualified in this SDG

LDC Report# 17270C1

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: July 13, 2007

LDC Report Date: August 21, 2007

Matrix: Water

Parameters: Volatiles

Validation Level: EPA Level III

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL53

Sample Identification

MW-5
MW-6
TB-15-7/6/07

Introduction

This data review covers 3 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 524.2 for Volatiles.

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

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

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

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

The following are definitions of the data qualifiers:

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

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

All samples were received in good condition with the following exceptions:

Sample	Compound	Finding	Criteria	Flag	A or P
TB-15-7/6/07	All TCL compounds	Air bubbles were apparent in the sample containers.	There should be no air bubbles in the sample containers.	J (all detects) UJ (all non-detects)	A

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

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

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

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

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

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

The percent differences (%D) of the second source calibration standard were less than or equal to 30.0% for all compounds.

V. Blanks

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

VI. Surrogate Spikes

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

VII. Matrix Spike/Matrix Spike Duplicates

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

VIII. Laboratory Control Samples (LCS)

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

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

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

XI. Target Compound Identifications

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

XIII. Tentatively Identified Compounds (TICs)

Raw data were not reviewed for this SDG.

XIV. System Performance

Raw data were not reviewed for this SDG.

XV. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XVI. Field Duplicates

No field duplicates were identified in this SDG.

XVII. Field Blanks

Sample TB-15-7/6/07 was identified as a trip blank. No volatile contaminants were found in this blank.

NASA JPL
Volatiles - Data Qualification Summary - SDG JPL53

SDG	Sample	Compound	Flag	A or P	Reason
JPL53	TB-15-7/6/07	All TCL compounds	J (all detects) UJ (all non-detects)	A	Sample condition

NASA JPL
Volatiles - Laboratory Blank Data Qualification Summary - SDG JPL53

No Sample Data Qualified in this SDG

NASA JPL
Data Validation Reports
LDC# 17270

1,4-Dioxane

LDC

LDC Report# 17270A2

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: July 11, 2006

LDC Report Date: August 21, 2007

Matrix: Water

Parameters: 1,4-Dioxane

Validation Level: EPA Level IV

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL51

Sample Identification

MW-13

Introduction

This data review covers one water sample listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8270C for 1,4-Dioxane.

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

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

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

The following are definitions of the data qualifiers:

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

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. GC/MS Instrument Performance Check

Instrument performance was not required by the method.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

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

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were less than or equal to 25.0% .

The percent difference (%D) of the second source calibration standard were less than or equal to 25.0% for all compounds.

V. Blanks

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

VI. Surrogate Spikes

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

VII. Matrix Spike/Matrix Spike Duplicates

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

VIII. Laboratory Control Samples (LCS)

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

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

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

XI. Target Compound Identifications

All target compound identifications were within validation criteria.

XII. Compound Quantitation and CRQLs

All compound quantitation and CRQLs were within validation criteria.

XIII. Tentatively Identified Compounds (TICs)

Tentatively identified compounds were not reported by the laboratory.

XIV. System Performance

The system performance was acceptable.

XV. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XVI. Field Duplicates

No field duplicates were identified in this SDG.

XVII. Field Blanks

No field blanks were identified in this SDG.

NASA JPL
1,4-Dioxane - Data Qualification Summary - SDG JPL51

No Sample Data Qualified in this SDG

NASA JPL
1,4-Dioxane - Laboratory Blank Data Qualification Summary - SDG JPL51

No Sample Data Qualified in this SDG

NASA JPL
Data Validation Reports
LDC# 17270

Metals

LDC

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: July 11, 2007

LDC Report Date: August 20, 2007

Matrix: Water

Parameters: Metals

Validation Level: EPA Level III & IV

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL51

Sample Identification

MW-13**
MW-8
MW-13MS
MW-13MSD
MW-8MS
MW-8MSD

**Indicates sample underwent EPA Level IV review

Introduction

This data review covers 6 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 200.8 for Metals. The metals analyzed were Arsenic, Calcium, Chromium, Iron, Lead, Magnesium, Potassium, and Sodium.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as there are no current guidelines for the method stated above.

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

Blanks are summarized in Section III.

Field duplicates are summarized in Section XIII.

Samples indicated by a double asterisk on the front cover underwent a EPA Level IV review. A EPA Level III review was performed on all of the other samples. Raw data were not evaluated for the samples reviewed by Level III criteria since this review is based on QC data.

The following are definitions of the data qualifiers:

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

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. Calibration

An initial calibration was performed.

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

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

IV. ICP Interference Check Sample (ICS) Analysis

The frequency of analysis was met.

The criteria for analysis were met.

V. Matrix Spike Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable.

Recalculated results confirm the reported results with the following exceptions:

Spike ID (Associated Samples)	Analyte	Reported (RPD)	Recalculated (RPD)	Flag	A or P
MW-13 (All samples in SDG JPL51)	Calcium Magnesium Sodium	87.6 35.7 34.8	4.0 6.3 5.0	None None None	P
MW-8 (All samples in SDG JPL51)	Calcium Magnesium	37.2 22.4	2.5 4.3	None None	P

Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VI. Duplicate Sample Analysis

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable.

VII. Laboratory Control Samples (LCS)

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

VIII. Internal Standards

All internal standard percent recoveries (%R) were within QC limits for samples on which a EPA Level IV review was performed with the following exceptions:

Sample	Internal Standard	%R (Limits)	Analyte	Flag	A or P
MW-13**	Scandium-45 (1) Germanium-72 (1) Scandium-45 (2) Germanium-72 (2)	160.9 (60-125) 127.9 (60-125) 134.8 (60-125) 133.8 (60-125)	Sodium Magnesium Calcium Iron Potassium Chromium Arsenic	J (all detects) UJ (all non-detects)	P

Raw data were not evaluated for the samples reviewed by Level III criteria.

IX. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

X. ICP Serial Dilution

ICP serial dilution analysis was performed by the laboratory. The analysis criteria were met.

XI. Sample Result Verification

All sample result verifications were acceptable for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

XII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XIII. Field Duplicates

No field duplicates were identified in this SDG.

XIV. Field Blanks

No field blanks were identified in this SDG.

NASA JPL
Metals - Data Qualification Summary - SDG JPL51

SDG	Sample	Analyte	Flag	A or P	Reason
JPL51	MW-13** MW-8	Calcium Magnesium Sodium	None None None	P	Matrix spike/Matrix spike duplicates (RPD recalculation)
JPL51	MW-13**	Sodium Magnesium Calcium Iron Potassium Chromium Arsenic	J (all detects) UJ (all non-detects)	P	Internal standards (%R)

NASA JPL
Metals - Laboratory Blank Data Qualification Summary - SDG JPL51

No Sample Data Qualified in this SDG

LDC Report# 17270B4

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: July 12, 2007

LDC Report Date: August 20, 2007

Matrix: Water

Parameters: Metals

Validation Level: EPA Level III & IV

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL52

Sample Identification

MW-26-2
MW-26-1**
EB-15-7/12/07
MW-10

**Indicates sample underwent EPA Level IV review

Introduction

This data review covers 4 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 200.8 for Metals. The metals analyzed were Arsenic, Calcium, Chromium, Iron, Lead, Magnesium, Potassium, and Sodium.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as there are no current guidelines for the method stated above.

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

Blanks are summarized in Section III.

Field duplicates are summarized in Section XIII.

Samples indicated by a double asterisk on the front cover underwent a EPA Level IV review. A EPA Level III review was performed on all of the other samples. Raw data were not evaluated for the samples reviewed by Level III criteria since this review is based on QC data.

The following are definitions of the data qualifiers:

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

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. Calibration

An initial calibration was performed.

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

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

IV. ICP Interference Check Sample (ICS) Analysis

The frequency of analysis was met.

The criteria for analysis were met.

V. Matrix Spike Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable.

Recalculated results confirm the reported results with the following exceptions:

Spike ID (Associated Samples)	Analyte	Reported (RPD)	Recalculated (RPD)	Flag	A or P
MW-13 (All samples in SDG JPL52)	Calcium Magnesium Sodium	87.6 35.7 34.8	4.0 6.3 5.0	None None None	P
MW-8 (All samples in SDG JPL52)	Calcium Magnesium	37.2 22.4	2.5 4.3	None None	P

Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VI. Duplicate Sample Analysis

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable.

VII. Laboratory Control Samples (LCS)

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

VIII. Internal Standards

All internal standard percent recoveries (%R) were within QC limits for samples on which a EPA Level IV review was performed with the following exceptions:

Sample	Internal Standard	%R (Limits)	Analyte	Flag	A or P
MW-26-1**	Scandium-45 Germanium-72	178.2 (60-125) 129.7 (60-125)	Sodium Magnesium Calcium Iron Potassium	J (all detects) UJ (all non-detects)	P

Raw data were not evaluated for the samples reviewed by Level III criteria.

IX. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

X. ICP Serial Dilution

ICP serial dilution analysis was performed by the laboratory. The analysis criteria were met.

XI. Sample Result Verification

All sample result verifications were acceptable for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

XII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XIII. Field Duplicates

No field duplicates were identified in this SDG.

XIV. Field Blanks

Sample EB-15-7/12/07 was identified as an equipment blank. No metals were detected in this blank.

NASA JPL
Metals - Data Qualification Summary - SDG JPL52

SDG	Sample	Analyte	Flag	A or P	Reason
JPL52	MW-26-2 MW-26-1** EB-15-7/12/07 MW-10	Calcium Magnesium Sodium	None None None	P	Matrix spike/Matrix spike duplicates (RPD recalculation)
JPL52	MW-26-1**	Sodium Magnesium Calcium Iron Potassium	J (all detects) UJ (all non-detects)	P	Internal standards (%R)

NASA JPL
Metals - Laboratory Blank Data Qualification Summary - SDG JPL52

No Sample Data Qualified in this SDG

LDC Report# 17270C4

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: July 13, 2007

LDC Report Date: August 20, 2007

Matrix: Water

Parameters: Metals

Validation Level: EPA Level III

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL53

Sample Identification

MW-5
MW-6

Introduction

This data review covers 2 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 200.8 for Metals. The metals analyzed were Arsenic, Calcium, Chromium, Iron, Lead, Magnesium, Potassium, and Sodium.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as there are no current guidelines for the method stated above.

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

Blanks are summarized in Section III.

Field duplicates are summarized in Section XIII.

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

The following are definitions of the data qualifiers:

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

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. Calibration

An initial calibration was performed.

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

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

IV. ICP Interference Check Sample (ICS) Analysis

The frequency of analysis was met.

The criteria for analysis were met.

V. Matrix Spike Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable.

Recalculated results confirm the reported results with the following exceptions:

Spike ID (Associated Samples)	Analyte	Reported (RPD)	Recalculated (RPD)	Flag	A or P
MW-8 (All samples in SDG JPL53)	Calcium Magnesium	37.2 22.4	2.5 4.3	None None	P

Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VI. Duplicate Sample Analysis

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable.

VII. Laboratory Control Samples (LCS)

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

VIII. Internal Standards

Raw data were not reviewed for this SDG.

IX. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized for this SDG.

X. ICP Serial Dilution

ICP serial dilution analysis was performed by the laboratory. The analysis criteria were met.

XI. Sample Result Verification

Raw data were not reviewed for this SDG.

XII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XIII. Field Duplicates

No field duplicates were identified in this SDG.

XIV. Field Blanks

No field blanks were identified in this SDG.

NASA JPL
Metals - Data Qualification Summary - SDG JPL53

SDG	Sample	Analyte	Flag	A or P	Reason
JPL53	MW-5 MW-6	Calcium Magnesium	None None	P	Matrix spike/Matrix spike duplicates (Recalculated RPD)

NASA JPL
Metals - Laboratory Blank Data Qualification Summary - SDG JPL53

No Sample Data Qualified in this SDG

NASA JPL
Data Validation Reports
LDC# 17270

Wet Chemistry

LDC Report# 17270A6

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: July 11, 2007

LDC Report Date: August 17, 2007

Matrix: Water

Parameters: Wet Chemistry

Validation Level: EPA Level III & IV

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL51

Sample Identification

MW-13**
MW-8
MW-13MS
MW-13MSD
MW-13DUP
MW-8MS
MW-8MSD
MW-8DUP

**Indicates sample underwent EPA Level IV review

Introduction

This data review covers 8 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 150.1 for pH, EPA Method 160.1 for Total Dissolved Solids, EPA Method 300.0 for Chloride, Nitrate as Nitrogen, Nitrite as Nitrogen, Orthophosphate, and Sulfate, EPA Method 310.1 for Alkalinity, and EPA Method 314.0 for Perchlorate.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as there are no current guidelines for the methods stated above.

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

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Samples indicated by a double asterisk on the front cover underwent a EPA Level IV review. A EPA Level III review was performed on all of the other samples. Raw data were not evaluated for the samples reviewed by Level III criteria since this review is based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

All criteria for the initial calibration of each method were met.

b. Calibration Verification

Calibration verification frequency and analysis criteria were met for each method when applicable with the following exceptions:

Date	Lab. Reference/ID	Analyte	%R (Limits)	Associated Samples	Flag	A or P
7/12/07	ICV	Nitrite as N	126.2 (90-110)	MW-13** MW-8 MW-13MS MW-13MSD MW-8MS MW-8MSD MB	J (all detects)	P

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

IV. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
MW-13MS/MSD (MW-13**)	Nitrite as N	87 (90-110)	86 (90-110)	-	J (all detects) UJ (all non-detects)	A

V. Duplicates

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Results were within QC limits.

VI. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

LCS ID (Associated Samples)	Analyte	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Flag	A or P
LCS/LCSD (All samples in SDG JPL51)	Perchlorate	76 (85-115)	-	-	J (all detects) UJ (all non-detects)	P

All results for the standard reference material were within QC limits with the following exceptions:

SRM ID	Compound	Concentration (Limits)	Associated Samples	Flag	A or P
SRM	Nitrite as N	38.4 mg/L (27.4-33.5)	All samples in SDG JPL51	J (all detects)	P

VII. Sample Result Verification

All sample result verifications were acceptable for samples on which a EPA Level IV review was performed.

Initial calibration raw data for method 300.0 were not provided therefore results were not recalculated.

Raw data were not evaluated for the samples reviewed by Level III criteria.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Field Blanks

No field blanks were identified in this SDG.

NASA JPL
Wet Chemistry - Data Qualification Summary - SDG JPL51

SDG	Sample	Analyte	Flag	A or P	Reason
JPL51	MW-13** MW-8	Nitrite as N	J (all detects)	P	Calibration (ICV %R)
JPL51	MW-13**	Nitrite as N	J (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicates (%R)
JPL51	MW-13** MW-8	Perchlorate	J (all detects) UJ (all non-detects)	P	Laboratory control samples (%R)
JPL51	MW-13** MW-8	Nitrite as N	J (all detects)	P	Standard reference material (Concentration))

NASA JPL
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG JPL51

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: July 12, 2007

LDC Report Date: August 17, 2007

Matrix: Water

Parameters: Wet Chemistry

Validation Level: EPA Level III & IV

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL52

Sample Identification

MW-26-2
MW-26-1**
EB-15-7/12/07
MW-10
MW-26-2MS
MW-26-2MSD
MW-26-2DUP
MW-26-1DUP
EB-15-7/12/07DUP
MW-10MS
MW-10MSD

**Indicates sample underwent EPA Level IV review

Introduction

This data review covers 11 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 150.1 for pH, EPA Method 160.1 for Total Dissolved Solids, EPA Method 300.0 for Chloride, Nitrate as Nitrogen, and Sulfate, EPA Method 310.1 for Alkalinity, and EPA Method 314.0 for Perchlorate.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical or advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Samples indicated by a double asterisk on the front cover underwent a EPA Level IV review. A EPA Level III review was performed on all of the other samples. Raw data were not evaluated for the samples reviewed by Level III criteria since this review is based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

All criteria for the initial calibration of each method were met.

b. Calibration Verification

Calibration verification frequency and analysis criteria were met for each method when applicable.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

IV. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

V. Duplicates

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Results were within QC limits.

VI. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

LCS ID (Associated Samples)	Analyte	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Flag	A or P
LCS/LCSD (All samples in SDG JPL52)	Perchlorate	76 (85-115)	-	-	J (all detects) UJ (all non-detects)	P

All results for the standard reference material were within QC limits.

VII. Sample Result Verification

All sample result verifications were acceptable for samples on which a EPA Level IV review was performed.

Initial calibration raw data for method 300.0 were not provided therefore results were not recalculated.

Raw data were not evaluated for the samples reviewed by Level III criteria.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Field Blanks

Sample EB-15-7/12/07 was identified as an equipment blank. No contaminant concentrations were found in this blank with the following exceptions:

Equipment Blank ID	Analyte	Concentration
EB-15-7/12/07	pH Total dissolved solids	7.8 units 21 mg/L

NASA JPL
Wet Chemistry - Data Qualification Summary - SDG JPL52

SDG	Sample	Analyte	Flag	A or P	Reason
JPL52	MW-26-2 MW-26-1** EB-15-7/12/07 MW-10	Perchlorate	J (all detects) UJ (all non-detects)	P	Laboratory control samples (%R)

NASA JPL
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG JPL52

No Sample Data Qualified in this SDG

LDC Report# 17270C6

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: July 13, 2007

LDC Report Date: August 20, 2007

Matrix: Water

Parameters: Wet Chemistry

Validation Level: EPA Level III

Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL53

Sample Identification

MW-5
MW-6
MW-5MS
MW-5MSD
MW-5DUP
MW-6DUP

Introduction

This data review covers 6 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 150.1 for pH, EPA Method 160.1 for Total Dissolved Solids, EPA Method 300.0 for Chloride, Nitrate as Nitrogen, and Sulfate, EPA Method 310.1 for Alkalinity, and EPA Method 314.0 for Perchlorate.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical or advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

All criteria for the initial calibration were met.

b. Calibration Verification

Calibration verification frequency and analysis criteria were met for each method when applicable.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

IV. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

V. Duplicates

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Results were within QC limits.

VI. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

LCS ID (Associated Samples)	Analyte	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Flag	A or P
LCS/LCSD (All samples in SDG JPL53)	Perchlorate	76 (85-115)	-	-	J (all detects) UJ (all non-detects)	P

Standard reference material (SRM) percent recoveries (%R) were within QC limits.

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Field Blanks

No field blanks were identified in this SDG.

NASA JPL
Wet Chemistry - Data Qualification Summary - SDG JPL53

SDG	Sample	Analyte	Flag	A or P	Reason
JPL53	MW-5 MW-6	Perchlorate	J (all detects) UJ (all non-detects)	P	Laboratory control samples (%R)

NASA JPL
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG JPL53

No Sample Data Qualified in this SDG