

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

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)] and perchlorate were collected from monitoring wells MW-4 (Screen 1), MW-6, MW-8, MW-13, MW-15 and MW-16. Duplicate samples for chloride, sulfate, nitrate, nitrite and total orthophosphate were collected from monitoring wells MW-8, MW-13 and MW-16.

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).

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 1 of 11 equipment blanks. Methylene chloride was not detected in the equipment blanks. Two other VOCs were detected in equipment blank EB-1-8/21/07 as shown in Table 1-1. Detections in the equipment blank were compared to the sample results during the data validation process described below to determine the impact on the sample results.

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 shipment of groundwater samples. Trip blanks were used to help identify cross-contamination of groundwater samples during transport and sample handling procedures. No VOCs were detected in any of the sixteen trip blanks as shown in Table 1-1.

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. No source blank was collected during the March/April 2007 sampling event; however, the same source of water has been used in previous groundwater monitoring events and only very low levels of chromium and VOCs, if any, were detected.

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 August/September 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.

There was one exception to the analytical criteria as noted in the data validation reports and summarized below:

- Methylene chloride was detected in the method blank associated with equipment blank EB-2-8/22/07, resulting in the equipment blank being changed to a non-detect.

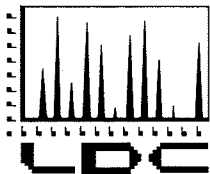
No analytical data were rejected during the data validation. Data validation reports can be found in Attachment 2.

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 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, California. 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

September 5, 2007

SUBJECT: NASA JPL, Data Validation

Dear Ms. Cutie,

Enclosed is the final validation report for the fraction listed below. This SDG was received on August 30, 2007. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project # 17350:

<u>SDG #</u>	<u>Fraction</u>
P0700763	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,

Erlinda T. Rauto
Operations Manager/Senior Chemist

**NASA JPL
Data Validation Reports
LDC# 17350**

Cr(VI)

LDC

**Laboratory Data Consultants, Inc.
Data Validation Report**

Project/Site Name: NASA JPL
Collection Date: August 21 through August 23, 2007
LDC Report Date: September 4, 2007
Matrix: Water
Parameters: Hexavalent Chromium
Validation Level: EPA Level III & IV
Laboratory: Columbia Analytical Services, Inc.
Sample Delivery Group (SDG): P0700763

Sample Identification

MW-21-5	MW-14-1MSD
MW-21-4	EB-3-08/23/07MS
MW-21-3	EB-3-08/23/07MSD
MW-21-2	MW-18-4MS
MW-21-1	MW-18-4MSD
EB-1-8/21/07	
MW-14-3**	
MW-14-2	
MW-14-1	
EB-2-8/22/07	
MW-17-4	
MW-17-3	
MW-17-2**	
EB-3-08/23/07	
MW-18-4	
MW-18-3	
MW-18-2	
MW-21-5MS	
MW-21-5MSD	
MW-14-1MS	

**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

No field duplicates were identified in this SDG.

X. Field Blanks

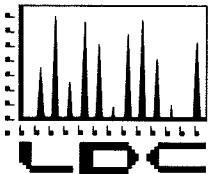
Samples EB-1-8/21/07, EB-2-8/22/07, and EB-3-08/23/07 were identified as equipment blanks. No hexavalent chromium contaminants were found in these blanks.

**NASA JPL
Hexavalent Chromium - Data Qualification Summary - SDG P0700763**

No Sample Data Qualified in this SDG

**NASA JPL
Hexavalent Chromium - Laboratory Blank Data Qualification Summary - SDG
P0700763**

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

October 8, 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 September 18, 2007. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project # 17456:

SDG #

Fraction

JPL54, JPL55, JPL56 Volatiles, Chromium, Perchlorate

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

**NASA JPL
Data Validation Reports
LDC# 17456**

Volatiles

LD C

**Laboratory Data Consultants, Inc.
Data Validation Report**

Project/Site Name: NASA JPL
Collection Date: August 21, 2007
LDC Report Date: October 4, 2007
Matrix: Water
Parameters: Volatiles
Validation Level: EPA Level III
Laboratory: Laucks Testing Laboratories
Sample Delivery Group (SDG): JPL54

Sample Identification

MW-21-5
MW-21-4
MW-21-3
MW-21-2
MW-21-1
EB-1-8/21/07
TB-1-8/21/07

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.

Cooler temperatures for samples in this SDG were reported at 7.1°C upon receipt by the laboratory.

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 with the following exceptions:

Date	Compound	%D	Associated Samples	Flag	A or P
8/24/07	Bromomethane	30.24	All samples in SDG JPL54	J (all detects) UJ (all non-detects)	A

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
B090107MVOWB1	9/1/07	Methylene chloride	3.1 ug/L	All samples in SDG JPL54

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.

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-1-8/21/07 was identified as a trip blank. No volatile contaminants were found in this blank.

Sample EB-1-8/21/07 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-1-8/21/07	m,p-Xylenes o-Xylene	0.80 0.25

**NASA JPL
Volatiles - Data Qualification Summary - SDG JPL54**

SDG	Sample	Compound	Flag	A or P	Reason
JPL54	MW-21-5 MW-21-4 MW-21-3 MW-21-2 MW-21-1 EB-1-8/21/07 TB-1-8/21/07	Bromomethane	J (all detects) UJ (all non-detects)	A	Continuing calibration (%D)

**NASA JPL
Volatiles - Laboratory Blank Data Qualification Summary - SDG JPL54**

No Sample Data Qualified in this SDG

**Laboratory Data Consultants, Inc.
Data Validation Report**

Project/Site Name: NASA JPL
Collection Date: August 22, 2007
LDC Report Date: October 4, 2007
Matrix: Water
Parameters: Volatiles
Validation Level: EPA Level III & IV
Laboratory: Laucks Testing Laboratories
Sample Delivery Group (SDG): JPL55

Sample Identification

MW-14-5
MW-14-4
MW-14-3**
MW-14-2
MW-14-1
EB-2-8/22/07
TB-2-8/22/07
MW-14-1MS
MW-14-1MSD

**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 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 with the following exceptions:

Date	Compound	%D	Associated Samples	Flag	A or P
8/24/07	Bromomethane	30.24	All samples in SDG JPL55	J (all detects) UJ (all non-detects)	A

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
B090207MVOWB1	9/2/07	Methylene chloride	3.0 ug/L	All samples in SDG JPL55

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

Sample	Compound TIC (RT in minutes)	Reported Concentration	Modified Final Concentration
EB-2-8/22/07	Methylene chloride	1.3 ug/L	1.3U 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) 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-2-8/22/07 was identified as a trip blank. No volatile contaminants were found in this blank.

Sample EB-2-8/22/07 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-2-8/22/07	Methylene chloride	1.3

**NASA JPL
Volatiles - Data Qualification Summary - SDG JPL55**

SDG	Sample	Compound	Flag	A or P	Reason
JPL55	MW-14-5 MW-14-4 MW-14-3** MW-14-2 MW-14-1 EB-2-8/22/07 TB-2-8/22/07	Bromomethane	J (all detects) UJ (all non-detects)	A	Continuing calibration (ICV %D)

**NASA JPL
Volatiles - Laboratory Blank Data Qualification Summary - SDG JPL55**

SDG	Sample	Compound TIC (RT in minutes)	Modified Final Concentration	A or P
JPL55	EB-2-8/22/07	Methylene chloride	1.3U ug/L	A

**Laboratory Data Consultants, Inc.
Data Validation Report**

Project/Site Name: NASA JPL
Collection Date: August 23, 2007
LDC Report Date: October 4, 2007
Matrix: Water
Parameters: Volatiles
Validation Level: EPA Level III & IV
Laboratory: Laucks Testing Laboratories
Sample Delivery Group (SDG): JPL56

Sample Identification

MW-17-4
MW-17-3
MW-17-2**
EB-3-8/23/07
TB-3-8/23/07
MW-18-5
MW-18-4
MW-18-3
MW-18-2

**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.

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 with the following exceptions:

Date	Compound	%D	Associated Samples	Flag	A or P
8/24/07	Bromomethane	30.24	All samples in SDG JPL56	J (all detects) UJ (all non-detects)	A

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
B090207MVOWB1	9/2/07	Methylene chloride	3.0 ug/L	All samples in SDG JPL56

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.

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-3-8/23/07 was identified as a trip blank. No volatile contaminants were found in this blank.

Sample EB-3-8/23/07 was identified as an equipment blank. No volatile contaminants were found in this blank.

**NASA JPL
Volatiles - Data Qualification Summary - SDG JPL56**

SDG	Sample	Compound	Flag	A or P	Reason
JPL56	MW-17-4 MW-17-3 MW-17-2** EB-3-8/23/07 TB-3-8/23/07 MW-18-5 MW-18-4 MW-18-3 MW-18-2	Bromomethane	J (all detects) UJ (all non-detects)	A	Continuing calibration (ICV %D)

**NASA JPL
Volatiles - Laboratory Blank Data Qualification Summary - SDG JPL56**

No Sample Data Qualified in this SDG

**NASA JPL
Data Validation Reports
LDC# 17456**

Chromium

LDC

**Laboratory Data Consultants, Inc.
Data Validation Report**

Project/Site Name: NASA JPL
Collection Date: August 21, 2007
LDC Report Date: September 26, 2007
Matrix: Water
Parameters: Chromium
Validation Level: EPA Level III
Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL54

Sample Identification

MW-21-5
MW-21-4
MW-21-3
MW-21-2
MW-21-1
EB-1-8/21/07
MW-21-4MS
MW-21-4MSD
EB-1-8/21/07MS
EB-1-8/21/07MSD

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 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 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

No field duplicates were identified in this SDG.

XIV. Field Blanks

Sample EB-1-8/21/07 was identified as an equipment blank. No chromium was found in this blank with the following exceptions:

Equipment Blank ID	Analyte	Concentration (ug/L)
EB-1-8/21/07	Chromium	1.04

NASA JPL
Chromium - Data Qualification Summary - SDG JPL54

No Sample Data Qualified in this SDG

NASA JPL
Chromium - Laboratory Blank Data Qualification Summary - SDG JPL54

No Sample Data Qualified in this SDG

**Laboratory Data Consultants, Inc.
Data Validation Report**

Project/Site Name: NASA JPL
Collection Date: August 22, 2007
LDC Report Date: September 26, 2007
Matrix: Water
Parameters: Chromium
Validation Level: EPA Level III & IV
Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL55

Sample Identification

MW-14-3**
MW-14-2
MW-14-1
EB-2-8/22/07
MW-14-3MS
MW-14-3MSD
MW-14-1MS
MW-14-1MSD

**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 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 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. 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-2-8/22/07 was identified as an equipment blank. No chromium was found in this blank.

**NASA JPL
Chromium - Data Qualification Summary - SDG JPL55**

No Sample Data Qualified in this SDG

**NASA JPL
Chromium - Laboratory Blank Data Qualification Summary - SDG JPL55**

No Sample Data Qualified in this SDG

**Laboratory Data Consultants, Inc.
Data Validation Report**

Project/Site Name: NASA JPL
Collection Date: August 22, 2007
LDC Report Date: September 26, 2007
Matrix: Water
Parameters: Perchlorate
Validation Level: EPA Level III & IV
Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL55

Sample Identification

MW-14-5
MW-14-4
MW-14-3**
MW-14-2
MW-14-1
EB-2-8/22/07
MW-14-3MS
MW-14-3MSD
MW-14-1MS
MW-14-1MSD

**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 SW 846 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.
- UU 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 perchlorate 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) 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-2-8/22/07 was identified as an equipment blank. No perchlorate was found in this blank.

NASA JPL
Perchlorate - Data Qualification Summary - SDG JPL55

No Sample Data Qualified in this SDG

NASA JPL
Perchlorate - Laboratory Blank Data Qualification Summary - SDG JPL55

No Sample Data Qualified in this SDG

**NASA JPL
Data Validation Reports
LDC# 17456**

Perchlorate

100

**Laboratory Data Consultants, Inc.
Data Validation Report**

Project/Site Name: NASA JPL
Collection Date: August 23, 2007
LDC Report Date: September 26, 2007
Matrix: Water
Parameters: Chromium
Validation Level: EPA Level III & IV
Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL56

Sample Identification

MW-17-4
MW-17-3
MW-17-2**
EB-3-8/23/07
MW-18-4
MW-18-3
MW-18-2
MW-17-2MS
MW-17-2MSD

**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 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 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. 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-3-8/23/07 was identified as an equipment blank. No chromium was found in this blank.

**NASA JPL
Chromium - Data Qualification Summary - SDG JPL56**

No Sample Data Qualified in this SDG

**NASA JPL
Chromium - Laboratory Blank Data Qualification Summary - SDG JPL56**

No Sample Data Qualified in this SDG

**Laboratory Data Consultants, Inc.
Data Validation Report**

Project/Site Name: NASA JPL
Collection Date: August 21, 2007
LDC Report Date: September 26, 2007
Matrix: Water
Parameters: Perchlorate
Validation Level: EPA Level III
Laboratory: Laucks Testing Laboratories
Sample Delivery Group (SDG): JPL54

Sample Identification

MW-21-5
MW-21-4
MW-21-3
MW-21-2
MW-21-1
EB-1-8/21/07
MW-21-5MS
MW-21-5MSD

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 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 perchlorate 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

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-1-8/21/07 was identified as an equipment blank. No perchlorate was found in this blank.

**NASA JPL
Perchlorate - Data Qualification Summary - SDG JPL54**

No Sample Data Qualified in this SDG

**NASA JPL
Perchlorate - Laboratory Blank Data Qualification Summary - SDG JPL54**

No Sample Data Qualified in this SDG

**Laboratory Data Consultants, Inc.
Data Validation Report**

Project/Site Name: NASA JPL
Collection Date: August 23, 2007
LDC Report Date: September 26, 2007
Matrix: Water
Parameters: Perchlorate
Validation Level: EPA Level III & IV
Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL56

Sample Identification

MW-17-4
MW-17-3
MW-17-2**
EB-3-8/23/07
MW-18-5
MW-18-4
MW-18-3
MW-18-2
MW-17-2MS
MW-17-2MSD

**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 SW 846 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.
- UU 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 perchlorate 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) 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

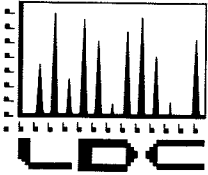
Sample EB-3-8/23/07 was identified as an equipment blank. No perchlorate was found in this blank.

**NASA JPL
Perchlorate - Data Qualification Summary - SDG JPL56**

No Sample Data Qualified in this SDG

**NASA JPL
Perchlorate - Laboratory Blank Data Qualification Summary - SDG JPL56**

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

September 27, 2007

SUBJECT: NASA JPL, Data Validation

Dear Ms. Cutie,

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

LDC Project # 17462:

<u>SDG #</u>	<u>Fraction</u>
P0700775	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,

Erlinda T. Rauto
Operations Manager/Senior Chemist

**NASA JPL
Data Validation Reports
LDC# 17462**

CrVI

LDC

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: NASA JPL
Collection Date: August 27 through August 31, 2007
LDC Report Date: September 26, 2007
Matrix: Water
Parameters: Hexavalent Chromium
Validation Level: EPA Level III & IV
Laboratory: Columbia Analytical Services
Sample Delivery Group (SDG): P0700775

Sample Identification

MW-20-5	MW-22-3	MW-12-3MSD
MW-20-4	MW-22-2**	
MW-20-3	MW-22-1	
MW-20-2	EB-8-8/30/07	
MW-20-1	MW-11-3	
EB-5-8/27/07	MW-11-2	
MW-4-3	MW-11-1	
MW-4-2	MW-12-3	
MW-4-1	MW-12-2	
DUPE-1-3Q07	MW-12-1	
EB-6-8/28/07	EB-9-8/31/07	
MW-3-4	MW-20-5MS	
MW-3-3	MW-20-5MSD	
MW-3-2**	MW-3-2MS	
MW-23-4	MW-3-2MSD	
MW-23-3	MW-23-4MS	
MW-23-2	MW-23-4MSD	
MW-23-1	MW-22-2MS	
DUPE-2-3Q07	MW-22-2MSD	
EB-7-8/29/07	MW-12-3MS	

**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 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 with the following exceptions:

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
MW-20-5MS/MSD (MW-20-5 MW-20-4 MW-20-3 MW-20-2 MW-20-1 EB-5-8/27/07)	Hexavalent chromium	75 (85-115)	80 (85-115)	-	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.

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-4-1 and DUPE-1-3Q07 and samples MW-23-2 and DUPE-2-3Q07 were identified as field duplicates. No hexavalent chromium was detected in any of the samples.

X. Field Blanks

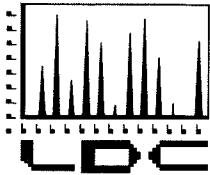
Samples EB-5-8/27/07, EB-6-8/28/07, EB-7-8/29/07, EB-8-8/30/07, and EB-9-8/31/07 were identified as an equipment blanks. No hexavalent chromium was found in these blanks.

**NASA JPL
Hexavalent Chromium - Data Qualification Summary - SDG P0700775**

No Sample Data Qualified in this SDG

**NASA JPL
Hexavalent Chromium - Laboratory Blank Data Qualification Summary - SDG
P0700775**

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

October 5, 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 September 20, 2007. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project # 17465:

<u>SDG #</u>	<u>Fraction</u>
JPL57	Volatiles, Chromium, Perchlorate

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

**NASA JPL
Data Validation Reports
LDC# 17465**

Volatiles

LDC

**Laboratory Data Consultants, Inc.
Data Validation Report**

Project/Site Name: NASA JPL
Collection Date: August 24 through August 27, 2007
LDC Report Date: October 4, 2007
Matrix: Water
Parameters: Volatiles
Validation Level: EPA Level III
Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL57

Sample Identification

MW-19-5
MW-19-4
MW-19-3
MW-19-2
MW-19-1
EB-4-8/24/07
TB-4-8/24/07
MW-20-5
MW-20-4
MW-20-3
MW-20-2
MW-20-1
EB-5-8/27/07
TB-5-8/27/07
MW-19-3MS
MW-19-3MSD

Introduction

This data review covers 16 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
9/9/07	Dichlorodifluoromethane Bromoform	33.00 32.80	MW-20-4 MW-20-3 MW-20-2 EB-5-8/27/07 B090907MVOWM2	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A
9/10/07	Dichlorodifluoromethane 2,2-Dichloropropane n-Butylbenzene	37.70 41.36 31.04	MW-20-1 B091007MVOWM1	J (all detects) UJ (all non-detects)	A

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 with the following exceptions:

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
MW-19-3MS/MSD (MW-19-3)	Dichlorodifluoromethane	-	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 with the following exceptions:

LCS ID	Compound	%R (Limits)	Associated Samples	Flag	A or P
S091107MVOWM1	Dichlorodifluoromethane	58 (60-140)	MW-20-1 B09107MVOWM1	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

No field duplicates were identified in this SDG.

XVII. Field Blanks

Samples TB-4-8/24/07 and TB-5-8/27/07 were identified as trip blanks. No volatile contaminants were found in these blanks.

Samples EB-4-8/24/07 and EB-5-8/27/07 were identified as equipment blanks. No volatile contaminants were found in these blanks.

**NASA JPL
Volatiles - Data Qualification Summary - SDG JPL57**

SDG	Sample	Compound	Flag	A or P	Reason
JPL57	MW-20-4 MW-20-3 MW-20-2 EB-5-8/27/07	Dichlorodifluoromethane Bromoform	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A	Continuing calibration (%D)
JPL57	MW-20-1	Dichlorodifluoromethane 2,2-Dichloropropane n-Butylbenzene	J (all detects) UJ (all non-detects)	A	Continuing calibration (%D)
JPL57	MW-19-3	Dichlorodifluoromethane	J (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicates (%R)
JPL57	MW-20-1	Dichlorodifluoromethane	J (all detects) UJ (all non-detects)	P	Laboratory control samples (%R)

**NASA JPL
Volatiles - Laboratory Blank Data Qualification Summary - SDG JPL57**

No Sample Data Qualified in this SDG

**NASA JPL
Data Validation Reports
LDC# 17465**

Cromium

LDC

**Laboratory Data Consultants, Inc.
Data Validation Report**

Project/Site Name: NASA JPL
Collection Date: August 27, 2007
LDC Report Date: September 26, 2007
Matrix: Water
Parameters: Chromium
Validation Level: EPA Level III
Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL57

Sample Identification

MW-20-5
MW-20-4
MW-20-3
MW-20-2
MW-20-1
EB-5-8/27/07

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 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 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

No field duplicates were identified in this SDG.

XIV. Field Blanks

Sample EB-5-8/27/07 was identified as an equipment blank. No chromium was found in this blank.

**NASA JPL
Chromium - Data Qualification Summary - SDG JPL57**

No Sample Data Qualified in this SDG

**NASA JPL
Chromium - Laboratory Blank Data Qualification Summary - SDG JPL57**

No Sample Data Qualified in this SDG

**NASA JPL
Data Validation Reports
LDC# 17465**

Perchlorate

LDC

**Laboratory Data Consultants, Inc.
Data Validation Report**

Project/Site Name: NASA JPL
Collection Date: August 24 through August 27, 2007
LDC Report Date: September 26, 2007
Matrix: Water
Parameters: Perchlorate
Validation Level: EPA Level III
Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL57

Sample Identification

MW-19-5
MW-19-4
MW-19-3
MW-19-2
MW-19-1
EB-4-8/24/07
MW-20-5
MW-20-4
MW-20-3
MW-20-2
MW-20-1
EB-5-8/27/07
MW-19-3MS
MW-19-3MSD
MW-20-5MS
MW-20-5MSD

Introduction

This data review covers 16 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per 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.
- UU 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 perchlorate 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) 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

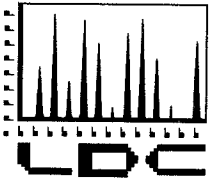
Samples EB-4-8/24/07 and EB-5-8/27/07 was identified as an equipment blank. No perchlorate was found in these blanks.

**NASA JPL
Perchlorate - Data Qualification Summary - SDG JPL57**

No Sample Data Qualified in this SDG

**NASA JPL
Perchlorate - Laboratory Blank Data Qualification Summary - SDG JPL57**

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

September 27, 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 September 24, 2007. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project # 17481:

<u>SDG #</u>	<u>Fraction</u>
P0700798, P0700818	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,

Erlinda T. Rauto
Operations Manager/Senior Chemist

**NASA JPL
Data Validation Reports
LDC# 17481**

CrVI

DDC

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: NASA JPL
Collection Date: September 4 through September 7, 2007
LDC Report Date: September 27, 2007
Matrix: Water
Parameters: Hexavalent Chromium
Validation Level: EPA Level III & IV
Laboratory: Columbia Analytical Services

Sample Delivery Group (SDG): P0700798

Sample Identification

MW-24-4	MW-26-1MSD
MW-24-3	MW-25-1MS
MW-24-2	MW-25-1MSD
MW-24-1**	MW-5MS
EB-10-9/4/07	MW-5MSD
MW-26-2	
MW-26-1**	
EB-11-9/5/07	
MW-25-5	
MW-25-4	
MW-25-3	
MW-25-2	
MW-25-1	
EB-12-9/6/07	
MW-5	
MW-15	
DUPE-3-3Q07	
MW-24-2MS	
MW-24-2MSD	
MW-26-1MS	

**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 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-15 and DUPE-3-3Q07 were identified as field duplicates. No hexavalent chromium was detected in any of the samples.

X. Field Blanks

Samples EB-10-9/4/07, EB-11-9/5/07, and EB-12-9/6/07 were identified as equipment blanks. No hexavalent chromium was found in these blanks.

**NASA JPL
Hexavalent Chromium - Data Qualification Summary - SDG P0700798**

No Sample Data Qualified in this SDG

**NASA JPL
Hexavalent Chromium - Laboratory Blank Data Qualification Summary - SDG
P0700798**

No Sample Data Qualified in this SDG

**Laboratory Data Consultants, Inc.
Data Validation Report**

Project/Site Name: NASA JPL
Collection Date: September 10 through September 13, 2007
LDC Report Date: September 27, 2007
Matrix: Water
Parameters: Hexavalent Chromium
Validation Level: EPA Level III & IV
Laboratory: Columbia Analytical Services
Sample Delivery Group (SDG): P0700818

Sample Identification

MW-6
DUPE-4-3Q07
MW-7
MW-16
DUPE-5-3Q07
MW-13**
MW-8
DUPE-6-3Q07
DUPE-7-3Q07
MW-10
MW-6MS
MW-6MSD
MW-7MS
MW-7MSD
MW-8MS
MW-8MSD
MW-10MS
MW-10MSD

**Indicates sample underwent EPA Level IV review

Introduction

This data review covers 18 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) 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-6 and DUPE-4-3Q07, samples MW-16 and DUPE-5-3Q07, samples MW-13** and DUPE-6-3Q07, and samples MW-8 and DUPE-7-3Q07 were identified as field duplicates. No hexavalent chromium was detected in any of the samples with the following exceptions:

Analyte	Concentration (mg/L)		RPD
	MW-13**	DUPE-6-3Q07	
Hexavalent chromium	0.07	0.06	15

X. Field Blanks

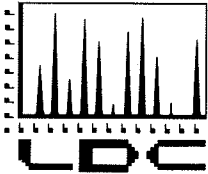
No field blanks were identified in this SDG.

**NASA JPL
Hexavalent Chromium - Data Qualification Summary - SDG P0700818**

No Sample Data Qualified in this SDG

**NASA JPL
Hexavalent Chromium - Laboratory Blank Data Qualification Summary - SDG
P0700818**

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

October 19, 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 September 28, 2007. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project # 17517:

SDG #

Fraction

JPL58, JPL59, JPL60 Volatiles, Chromium, 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

**NASA JPL
Data Validation Reports
LDC# 17517**

Volatiles

LDC

**Laboratory Data Consultants, Inc.
Data Validation Report**

Project/Site Name: NASA JPL
Collection Date: August 28, 2007
LDC Report Date: October 15, 2007
Matrix: Water
Parameters: Volatiles
Validation Level: EPA Level III & IV
Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL58

Sample Identification

MW-4-3
MW-4-2
MW-4-1
DUPE-1-3Q07
EB-6-8/28/07
TB-6-8/28/07
MW-3-4
MW-3-3
MW-3-2**
MW-3-2MS
MW-3-2MSD

**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 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 with the following exceptions:

Sample	Compound	Total Days From Sample Collection Until Analysis	Required Holding Time (in Days) From Sample Collection Until Analysis	Flag	A or P
MW-3-2MSD	All TCL compounds	17	14	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
9/9/07	Dichlorodifluoromethane	33.00	MW-4-3	J (all detects)	P
	Bromoform	32.80	MW-4-2	UJ (all non-detects)	
			MW-4-1	J (all detects)	
			B090907MVOWM2	UJ (all non-detects)	

Date	Compound	%D	Associated Samples	Flag	A or P
9/10/07	Dichlorodifluoromethane 2,2-Dichloropropane n-Butylbenzene	37.70 41.36 31.04	DUPE-1-3Q07 EB-6-8/28/07 TB-6-8/28/07 MW-3-4 MW-3-3 MW-3-2** MW-3-2MS B091007MVOWM1	J (all detects) UJ (all non-detects)	P
9/14/07	2,2-Dichloropropane	53.68	MW-3-2MSD B091407MVOWB1	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
9/5/07	Dichlorodifluoromethane	31.43	MW-3-2MSD B091407MVOWB1	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-3-2MS/MSD (MW-3-2**)	Dichlorodifluoromethane	-	42 (60-140)	46 (≤ 30)	J (all detects) UJ (all non-detects)	A
	Chloromethane	-	58 (60-140)	36 (≤ 30)		
	Vinyl chloride	-	-	38 (≤ 30)		
	Bromomethane	-	53 (60-140)	48 (≤ 30)		
	Chloroethane	-	-	43 (≤ 30)		
	Trichlorofluoromethane	-	-	35 (≤ 30)		
	2,2-Dichloropropane	-	13 (60-140)	155 (≤ 30)		
	cis-1,3-Dichloropropene	-	58 (60-140)	-		
	Styrene	-	52 (60-140)	42 (≤ 30)		
	1,3,5-Trimethylbenzene	-	-	39 (≤ 30)		
	1,2,4-Trimethylbenzene	-	-	43 (≤ 30)		
	sec-Butylbenzene	-	-	35 (≤ 30)		
	p-Isopropyltoluene	-	-	32 (≤ 30)		
	n-Butylbenzene	-	-	33 (≤ 30)		
Naphthalene	-	-	63 (≤ 30)			

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
S091007MVOWM1	Dichlorodifluoromethane	58 (60-140)	DUPE-1-3Q07 EB-6-8/28/07 TB-6-8/28/07 MW-3-4 MW-3-3 MW-3-2** B091007MVOWM1	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-4-1 and DUPE-1-3Q07 were identified as field duplicates. No volatiles were detected in any of the samples with the following exceptions:

Compound	Concentration (ug/L)		RPD
	MW-4-1	DUPE-1-3Q07	
Chloroform	0.95	0.90	5
Carbon tetrachloride	0.56	0.57	2
Trichloroethene	1.0	0.98	2

XVII. Field Blanks

Sample TB-6-8/28/07 was identified as a trip blank. No volatile contaminants were found in this blank.

Sample EB-6-8/28/07 was identified as an equipment blank. No volatile contaminants were found in this blank.

NASA JPL
Volatiles - Data Qualification Summary - SDG JPL58

SDG	Sample	Compound	Flag	A or P	Reason
JPL58	MW-4-3 MW-4-2 MW-4-1	Dichlorodifluoromethane Bromoform	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	P	Continuing calibration (%D)
JPL58	DUPE-1-3Q07 EB-6-8/28/07 TB-6-8/28/07 MW-3-4 MW-3-3 MW-3-2**	Dichlorodifluoromethane 2,2-Dichloropropane n-Butylbenzene	J (all detects) UJ (all non-detects)	P	Continuing calibration (%D)
JPL58	MW-3-2**	Dichlorodifluoromethane Chloromethane Bromomethane 2,2-Dichloropropane Styrene	J (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicates (%R) (RPD)
JPL58	MW-3-2**	cis-1,3-Dichloropropene	J (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicates (%R)
JPL58	MW-3-2**	Vinyl chloride Chloroethane Trichlorofluoromethane 1,3,5-Trimethylbenzene 1,2,4-Trimethylbenzene sec-Butylbenzene p-Isopropyltoluene n-Butylbenzene Naphthalene	J (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicates (RPD)
JPL58	DUPE-1-3Q07 EB-6-8/28/07 TB-6-8/28/07 MW-3-4 MW-3-3 MW-3-2**	Dichlorodifluoromethane	J (all detects) UJ (all non-detects)	P	Laboratory control samples (%R)

NASA JPL
Volatiles - Laboratory Blank Data Qualification Summary - SDG JPL58

No Sample Data Qualified in this SDG

**Laboratory Data Consultants, Inc.
Data Validation Report**

Project/Site Name: NASA JPL
Collection Date: August 29, 2007
LDC Report Date: October 15, 2007
Matrix: Water
Parameters: Volatiles
Validation Level: EPA Level III
Laboratory: Laucks Testing Laboratories
Sample Delivery Group (SDG): JPL59

Sample Identification

MW-23-3
MW-23-2
MW-23-1
DUPE-2-3Q07
EB-7-8/29/07
TB-7-8/29/07

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 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
9/12/07	Dichlorodifluoromethane	30.34	All samples in SDG JPL59	J (all detects)	P
	2,2-Dichloropropane	37.47		UJ (all non-detects)	
				J (all detects)	
				UJ (all non-detects)	

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
9/5/07	Dichlorodifluoromethane	31.43	All samples in SDG JPL59	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

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
S091207MVOWB1	2,2-Dichloropropane	152 (60-140)	All samples in SDG JPL59	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-23-2 and DUPE-2-3Q07 were identified as field duplicates. No volatiles were detected in any of the samples with the following exceptions:

Compound	Concentration (ug/L)		RPD
	MW-23-2	DUPE-2-3Q07	
Chloroform	0.42	0.46	9
Trichloroethene	0.46	0.48	4
Chloromethane	0.39	0.36	8

XVII. Field Blanks

Sample TB-7-8/29/07 was identified as a trip blank. No volatile contaminants were found in this blank.

Sample EB-7-8/29/07 was identified as an equipment blank. No volatile contaminants were found in this blank.

**NASA JPL
Volatiles - Data Qualification Summary - SDG JPL59**

SDG	Sample	Compound	Flag	A or P	Reason
JPL59	MW-23-3 MW-23-2 MW-23-1 DUPE-2-3Q07 EB-7-8/29/07 TB-7-8/29/07	Dichlorodifluoromethane 2,2-Dichloropropane	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	P	Continuing calibration (%D)
JPL59	MW-23-3 MW-23-2 MW-23-1 DUPE-2-3Q07 EB-7-8/29/07 TB-7-8/29/07	Dichlorodifluoromethane	J (all detects) UJ (all non-detects)	P	Continuing calibration (ICV %D)
JPL59	MW-23-3 MW-23-2 MW-23-1 DUPE-2-3Q07 EB-7-8/29/07 TB-7-8/29/07	2,2-Dichloropropane	J (all detects)	P	Laboratory control samples (%R)

**NASA JPL
Volatiles - Laboratory Blank Data Qualification Summary - SDG JPL59**

No Sample Data Qualified in this SDG

**Laboratory Data Consultants, Inc.
Data Validation Report**

Project/Site Name: NASA JPL
Collection Date: August 30, 2007
LDC Report Date: October 15, 2007
Matrix: Water
Parameters: Volatiles
Validation Level: EPA Level III & IV
Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL60

Sample Identification

MW-11-4
MW-11-3
MW-11-2
MW-11-1
MW-22-3
MW-22-2**
MW-22-1
EB-8-8/30/07
TB-8-8/30/07

**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.
 - UU 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
9/12/07	Dichlorodifluoromethane 2,2-Dichloropropane	30.34 37.47	MW-11-4 MW-11-3 MW-11-2 B091207MVOWB1	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	P
9/13/07	Dichlorodifluoromethane 2,2-Dichloropropane	37.91 45.14	MW-11-1 MW-22-3 MW-22-2** MW-22-1 EB-8-8/30/07 TB-8-8/30/07 B091307MVOWB1	J (all detects) UJ (all non-detects) 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
9/5/07	Dichlorodifluoromethane	31.43	All samples in SDG JPL60	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

The laboratory has indicated that there was insufficient sample volume for analysis of the matrix spike and matrix spike duplicate.

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
S091207MVOWB1	2,2-Dichloropropane	152 (60-140)	MW-11-4 MW-11-3 MW-11-2 B091207MVOWB1	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-8-8/30/07 was identified as a trip blank. No volatile contaminants were found in this blank.

Sample EB-8-8/30/07 was identified as an equipment blank. No volatile contaminants were found in this blank.

NASA JPL

Volatiles - Data Qualification Summary - SDG JPL60

SDG	Sample	Compound	Flag	A or P	Reason
JPL60	MW-11-4 MW-11-3 MW-11-2 MW-11-1 MW-22-3 MW-22-2** MW-22-1 EB-8-8/30/07 TB-8-8/30/07	Dichlorodifluoromethane 2,2-Dichloropropane	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	P	Continuing calibration (%D)
JPL60	MW-11-4 MW-11-3 MW-11-2 MW-11-1 MW-22-3 MW-22-2** MW-22-1 EB-8-8/30/07 TB-8-8/30/07	Dichlorodifluoromethane	J (all detects) UJ (all non-detects)	P	Continuing calibration (ICV %D)
JPL60	MW-11-4 MW-11-3 MW-11-2	2,2-Dichloropropane	J (all detects)	P	Laboratory control samples (%R)

NASA JPL

Volatiles - Laboratory Blank Data Qualification Summary - SDG JPL60

No Sample Data Qualified in this SDG

**NASA JPL
Data Validation Reports
LDC# 17517**

Chromium

LDC

**Laboratory Data Consultants, Inc.
Data Validation Report**

Project/Site Name: NASA JPL
Collection Date: August 28, 2007
LDC Report Date: October 5, 2007
Matrix: Water
Parameters: Chromium
Validation Level: EPA Level III & IV
Laboratory: Laucks Testing Laboratories
Sample Delivery Group (SDG): JPL58

Sample Identification

MW-4-3
MW-4-2
MW-4-1
DUPE-1-3Q07
EB-6-8/28/07
MW-3-4
MW-3-3
MW-3-2**
MW-4-1MS
MW-4-1MSD
MW-3-2MS
MW-3-2MSD

**Indicates sample underwent EPA Level IV review

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 200.8 for 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 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.
- UU 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 chromium was 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-4-1 and DUPE-1-3Q07 were identified as field duplicates. No chromium was detected in any of the samples with the following exceptions:

Analyte	Concentration (ug/L)		RPD
	MW-4-1	DUPE-1-3Q07	
Chromium	2.98	2.59	14

XIV. Field Blanks

Sample EB-6-8/28/07 was identified as an equipment blank. No chromium was detected in this blank.

**NASA JPL
Chromium - Data Qualification Summary - SDG JPL58**

No Sample Data Qualified in this SDG

**NASA JPL
Chromium - Laboratory Blank Data Qualification Summary - SDG JPL58**

No Sample Data Qualified in this SDG

**Laboratory Data Consultants, Inc.
Data Validation Report**

Project/Site Name: NASA JPL
Collection Date: August 29, 2007
LDC Report Date: October 5, 2007
Matrix: Water
Parameters: Chromium
Validation Level: EPA Level III
Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL59

Sample Identification

MW23-4
MW-23-3
MW-23-2
MW-23-1
DUPE-2-3Q07
EB-7-8/29/07

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 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 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-23-2 and DUPE-2-3Q07 were identified as field duplicates. No chromium was detected in any of the samples with the following exceptions:

Analyte	Concentration (ug/L)		RPD
	MW-23-2	DUPE-2-3Q07	
Chromium	14.6	14.7	1

XIV. Field Blanks

Sample EB-7-8/29/07 was identified as an equipment blank. No chromium was found in this blank.

NASA JPL
Chromium - Data Qualification Summary - SDG JPL59

No Sample Data Qualified in this SDG

NASA JPL
Chromium - Laboratory Blank Data Qualification Summary - SDG JPL59

No Sample Data Qualified in this SDG

**Laboratory Data Consultants, Inc.
Data Validation Report**

Project/Site Name: NASA JPL
Collection Date: August 30, 2007
LDC Report Date: October 5, 2007
Matrix: Water
Parameters: Chromium
Validation Level: EPA Level III & IV
Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL60

Sample Identification

MW-11-3
MW-11-2
MW-11-1
MW-22-3
MW-22-2**
MW-22-1
EB-8-8/30/07
MW-22-2MS
MW-22-2MSD

**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 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 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 chromium was 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-8-8/30/07 was identified as an equipment blank. No chromium was detected in this blank.

**NASA JPL
Chromium - Data Qualification Summary - SDG JPL60**

No Sample Data Qualified in this SDG

**NASA JPL
Chromium - Laboratory Blank Data Qualification Summary - SDG JPL60**

No Sample Data Qualified in this SDG

**NASA JPL
Data Validation Reports
LDC# 17517**

Wet Chemistry

LDC

**Laboratory Data Consultants, Inc.
Data Validation Report**

Project/Site Name: NASA JPL
Collection Date: August 28, 2007
LDC Report Date: October 16, 2007
Matrix: Water
Parameters: Perchlorate
Validation Level: EPA Level III & IV
Laboratory: Laucks Testing Laboratories
Sample Delivery Group (SDG): JPL58

Sample Identification

MW-4-3
MW-4-2
MW-4-1
DUPE-1-3Q07
EB-6-8/28/07
MW-3-4
MW-3-3
MW-3-2**
MW-3-2MS
MW-3-2MSD

**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 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 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 perchlorate 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) 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-4-1 and DUPE-1-3Q07 were identified as field duplicates. No perchlorate was detected in any of the samples with the following exceptions:

Analyte	Concentration (ug/L)		RPD
	MW-4-1	DUPE-1-3Q07	
Perchlorate	530	530	0

X. Field Blanks

Sample EB-6-8/28/07 was identified as an equipment blank. No perchlorate was found in this blank.

NASA JPL

Perchlorate - Data Qualification Summary - SDG JPL58

No Sample Data Qualified in this SDG

NASA JPL

Perchlorate - Laboratory Blank Data Qualification Summary - SDG JPL58

No Sample Data Qualified in this SDG

**Laboratory Data Consultants, Inc.
Data Validation Report**

Project/Site Name: NASA JPL
Collection Date: August 29, 2007
LDC Report Date: October 16, 2007
Matrix: Water
Parameters: Perchlorate
Validation Level: EPA Level III
Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL59

Sample Identification

MW-23-3
MW-23-2
MW-23-1
DUPE-2-3Q07
EB-7-8/29/07
MW-23-1MS
MW-23-1MSD

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 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 perchlorate 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) 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-23-2 and DUPE-2-3Q07 were identified as field duplicates. No perchlorate was detected in any of the samples.

X. Field Blanks

Sample EB-7-8/29/07 was identified as an equipment blank. No perchlorate was found in this blank.

NASA JPL
Perchlorate - Data Qualification Summary - SDG JPL59

No Sample Data Qualified in this SDG

NASA JPL
Perchlorate - Laboratory Blank Data Qualification Summary - SDG JPL59

No Sample Data Qualified in this SDG

**Laboratory Data Consultants, Inc.
Data Validation Report**

Project/Site Name: NASA JPL
Collection Date: August 30, 2007
LDC Report Date: October 16, 2007
Matrix: Water
Parameters: Wet Chemistry
Validation Level: EPA Level III & IV
Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL60

Sample Identification

MW-11-4
MW-11-3
MW-11-2
MW-11-1
MW-22-3
MW-22-2**
MW-22-1
EB-8-8/30/07
MW-11-1MS
MW-11-1MSD
MW-22-2MS
MW-22-2MSD

**Indicates sample underwent EPA Level IV review

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 300.0 for Chloride, Nitrate as Nitrogen, Nitrite as Nitrogen, and Sulfate, EPA Method 314.0 for Perchlorate, 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.

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-11-1MS/MSD (MW-11-1)	Chloride Sulfate	111 (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.

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

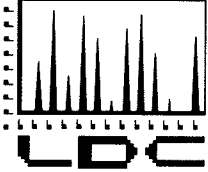
Sample EB-8-8/30/07 was identified as an equipment blank. No contaminant concentrations were found in this blank.

**NASA JPL
Wet Chemistry - Data Qualification Summary - SDG JPL60**

SDG	Sample	Analyte	Flag	A or P	Reason
JPL60	MW-11-1	Chloride Sulfate	J (all detects) J (all detects)	A	Matrix spike/Matrix spike duplicates (%R)

**NASA JPL
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG JPL60**

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

October 16, 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 October 2, 2007. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project # 17534:

<u>SDG #</u>	<u>Fraction</u>
JPL61	Volatiles, Chromium, 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

Attachment 1

PO 210787 10/90 (client select) LDC #17534 (Battelle-San Diego / NASA JPL)

LDC	SDG#	DATE REC'D	(3) DATE DUE	VOA (524.2)		Cr (200.8)		Cl ₂ SO ₄ O-PO ₄ (300.0)		NO ₃ -N NO ₂ -N (300.0)		CLO ₄ (314.0)		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				
	Matrix: Water/Soil																																				
A	JPL61	10/02/07	10/23/07	13	0	12	0	2	0	2	0	13	0																								
A	JPL61	10/02/07	10/23/07	1	0	1	0	1	0	1	0	1	0																								
Total	B/LR			14	0	13	0	3	0	3	0	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	47		

**NASA JPL
Data Validation Reports
LDC# 17534**

Volatiles

LDC

**Laboratory Data Consultants, Inc.
Data Validation Report**

Project/Site Name: NASA JPL
Collection Date: August 31 through September 4, 2007
LDC Report Date: October 15, 2007
Matrix: Water
Parameters: Volatiles
Validation Level: EPA Level III & IV
Laboratory: Laucks Testing Laboratories
Sample Delivery Group (SDG): JPL61

Sample Identification

MW-12-5
MW-12-4
MW-12-3
MW-12-2
MW-12-1
EB-9-8/31/07
TB-9-8/31/07
MW-24-3
MW-24-2
MW-24-1**
EB-10-9/4/07
TB-10-9/4/07
MW-24-2MS
MW-24-2MSD

**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 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.
- UU 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
9/14/07	2,2-Dichloropropane	53.68	MW-12-5 MW-12-4 MW-12-3 MW-12-2 MW-12-1 EB-9-8/31/07 TB-9-8/31/07 MW-24-3 MW-24-2 MW-24-1** EB-10-9/4/07 MW-24-2MS MW-24-2MSD B091407MVOWB1	J (all detects) UJ (all non-detects)	P

Date	Compound	%D	Associated Samples	Flag	A or P
9/17/07	2,2-Dichloropropane	55.54	TB-10-9/4/07 B091707MVOWB1	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
9/5/07	Dichlorodifluoromethane	31.43	All samples in SDG JPL61	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
B091407MVOWB1	9/14/07	Methylene chloride	1.0 ug/L	MW-12-5 MW-12-4 MW-12-3 MW-12-2 MW-12-1 EB-9-8/31/07 TB-9-8/31/07 MW-24-3 MW-24-2 MW-24-1** EB-10-9/4/07

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.

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
S091407MVOWB2	2,2-Dichloropropane	157 (60-140)	MW-12-5 MW-12-4 MW-12-3 MW-12-2 MW-12-1 EB-9-8/31/07 TB-9-8/31/07 MW-24-3 MW-24-2 MW-24-1** EB-10-9/4/07 B091407MVOWB1	J (all detects)	P
S091707MVOWB1	2,2-Dichloropropane	157 (60-140)	TB-10-9/4/07 B091707MVOWB1	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

Samples TB-9-8/31/07 and TB-10-9/4/07 were identified as trip blanks. No volatile contaminants were found in these blanks.

Samples TB-9-8/31/07 and EB-10-9/4/07 were identified as equipment blanks. No volatile contaminants were found in these blanks.

NASA JPL
Volatiles - Data Qualification Summary - SDG JPL61

SDG	Sample	Compound	Flag	A or P	Reason
JPL61	MW-12-5 MW-12-4 MW-12-3 MW-12-2 MW-12-1 EB-9-8/31/07 TB-9-8/31/07 MW-24-3 MW-24-2 MW-24-1** EB-10-9/4/07 TB-10-9/4/07	2,2-Dichloropropane	J (all detects) UJ (all non-detects)	P	Continuing calibration (%D)
JPL61	MW-12-5 MW-12-4 MW-12-3 MW-12-2 MW-12-1 EB-9-8/31/07 TB-9-8/31/07 MW-24-3 MW-24-2 MW-24-1** EB-10-9/4/07 TB-10-9/4/07	Dichlorodifluoromethane	J (all detects) UJ (all non-detects)	P	Continuing calibration (ICV %D)
JPL61	MW-12-5 MW-12-4 MW-12-3 MW-12-2 MW-12-1 EB-9-8/31/07 TB-9-8/31/07 MW-24-3 MW-24-2 MW-24-1** EB-10-9/4/07 TB-10-9/4/07	2,2-Dichloropropane	J (all detects)	P	Laboratory control samples (%R)

NASA JPL
Volatiles - Laboratory Blank Data Qualification Summary - SDG JPL61

No Sample Data Qualified in this SDG

**NASA JPL
Data Validation Reports
LDC# 17534**

Chromium

LDC

**Laboratory Data Consultants, Inc.
Data Validation Report**

Project/Site Name: NASA JPL
Collection Date: August 31 through September 4, 2007
LDC Report Date: October 8, 2007
Matrix: Water
Parameters: Chromium
Validation Level: EPA Level III & IV
Laboratory: Laucks Testing Laboratories
Sample Delivery Group (SDG): JPL61

Sample Identification

MW-12-3
MW-12-2
MW-12-1
EB-9-8/31/07
MW-24-4
MW-24-3
MW-24-2
MW-24-1**
EB-10-9/4/07
MW-24-2MS
MW-24-2MSD
MW-24-1MS
MW-24-1MSD

**Indicates sample underwent EPA Level IV review

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 200.8 for 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 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 chromium was 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

Samples EB-9-8/31/07 and EB-10-9/4/07 were identified as equipment blanks. No chromium was detected in these blanks.

**NASA JPL
Chromium - Data Qualification Summary - SDG JPL61**

No Sample Data Qualified in this SDG

**NASA JPL
Chromium - Laboratory Blank Data Qualification Summary - SDG JPL61**

No Sample Data Qualified in this SDG

**NASA JPL
Data Validation Reports
LDC# 17534**

Wet Chemistry

LDC

**Laboratory Data Consultants, Inc.
Data Validation Report**

Project/Site Name: NASA JPL
Collection Date: August 31 through September 4, 2007
LDC Report Date: October 8, 2007
Matrix: Water
Parameters: Wet Chemistry
Validation Level: EPA Level III & IV
Laboratory: Laucks Testing Laboratories
Sample Delivery Group (SDG): JPL61

Sample Identification

MW-12-5
MW-12-4
MW-12-3
MW-12-2
MW-12-1
EB-9-8/31/07
MW-24-3
MW-24-2
MW-24-1**
EB-10-9/4/07
MW-24-2MS
MW-24-2MSD
MW-24-1MS
MW-24-1MSD

**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 300.0 for Chloride, Nitrate as Nitrogen, Nitrite as Nitrogen, Orthophosphate, and Sulfate 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 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) 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

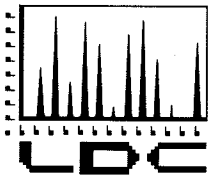
Samples EB-9-8/31/07 and EB-10-9/4/07 were identified as equipment blanks. No contaminant concentrations were found in these blanks.

**NASA JPL
Wet Chemistry - Data Qualification Summary - SDG JPL61**

No Sample Data Qualified in this SDG

**NASA JPL
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG JPL61**

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

November 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 October 31, 2007. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project # 17725:

<u>SDG #</u>	<u>Fraction</u>
JPL62, JPL63, JPL64, JPL65, JPL66, JPL67	Volatiles, Chromium, 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

**NASA JPL
Data Validation Reports
LDC# 17725**

Volatiles

LDC

**Laboratory Data Consultants, Inc.
Data Validation Report**

Project/Site Name: NASA JPL
Collection Date: September 5, 2007
LDC Report Date: November 14, 2007
Matrix: Water
Parameters: Volatiles
Validation Level: EPA Level III & IV
Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL62

Sample Identification

MW-26-2
MW-26-1**
EB-11-9/5/07
TB-11-9/5/07

**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.
- UU Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

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

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

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

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

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

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

Date	Compound	%D	Associated Samples	Flag	A or P
9/5/07	Dichlorodifluoromethane	31.43	All samples in SDG JPL62	J (all detects) UJ (all non-detects)	P
9/14/07	2,2-Dichloropropane	53.68	All samples in SDG JPL62	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 with the following exceptions:

Method Blank ID	Analysis Date	Compound TIC (RT in minutes)	Concentration	Associated Samples
B091407MVOWB1	9/14/07	Methylene chloride	1.0 ug/L	All samples in SDG JPL62

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
S091407MVOWB2	2,2-Dichloropropane	157 (60-140)	All samples in SDG JPL62	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-11-9/5/07 was identified as a trip blank. No volatile contaminants were found in this blank.

Sample EB-11-9/5/07 was identified as an equipment blank. No volatile contaminants were found in this blank.

NASA JPL
Volatiles - Data Qualification Summary - SDG JPL62

SDG	Sample	Compound	Flag	A or P	Reason
JPL62	MW-26-2 MW-26-1** EB-11-9/5/07 TB-11-9/5/07	Dichlorodifluoromethane 2,2-Dichloropropane	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	P	Continuing calibration (%D)
JPL62	MW-26-2 MW-26-1** EB-11-9/5/07 TB-11-9/5/07	2,2-Dichloropropane	J (all detects)	P	Laboratory control samples (%R)

NASA JPL
Volatiles - Laboratory Blank Data Qualification Summary - SDG JPL62

No Sample Data Qualified in this SDG

**Laboratory Data Consultants, Inc.
Data Validation Report**

Project/Site Name: NASA JPL
Collection Date: September 6, 2007
LDC Report Date: November 14, 2007
Matrix: Water
Parameters: Volatiles
Validation Level: EPA Level III
Laboratory: Laucks Testing Laboratories
Sample Delivery Group (SDG): JPL63

Sample Identification

MW-25-5
MW-25-4
MW-25-3
MW-25-2
MW-25-1
EB-12-9/6/07
TB-12-9/6/07
MW-25-1MS
MW-25-1MSD

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.

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
9/5/07	Dichlorodifluoromethane	31.43	All samples in SDG JPL63	J (all detects) UJ (all non-detects)	P
9/17/07	2,2-Dichloropropane	55.54	All samples in SDG JPL63	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-25-1MS/MSD (MW-25-1)	2,2-Dichloropropane	144 (60-140)	147 (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
S091707MVOWB1	2,2-Dichloropropane	157 (60-140)	All samples in SDG JPL63	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-12-9/6/07 was identified as a trip blank. No volatile contaminants were found in this blank.

Sample EB-12-9/6/07 was identified as an equipment blank. No volatile contaminants were found in this blank.

**NASA JPL
Volatiles - Data Qualification Summary - SDG JPL63**

SDG	Sample	Compound	Flag	A or P	Reason
JPL63	MW-25-5 MW-25-4 MW-25-3 MW-25-2 MW-25-1 EB-12-9/6/07 TB-12-9/6/07	Dichlorodifluoromethane 2,2-Dichloropropane	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	P	Continuing calibration (%D)
JPL63	MW-25-1	2,2-Dichloropropane	J (all detects)	A	Matrix spike/Matrix spike duplicates (%R)
JPL63	MW-25-5 MW-25-4 MW-25-3 MW-25-2 MW-25-1 EB-12-9/6/07 TB-12-9/6/07	2,2-Dichloropropane	J (all detects)	P	Laboratory control samples (%R)

**NASA JPL
Volatiles - Laboratory Blank Data Qualification Summary - SDG JPL63**

No Sample Data Qualified in this SDG

**Laboratory Data Consultants, Inc.
Data Validation Report**

Project/Site Name: NASA JPL
Collection Date: September 11, 2007
LDC Report Date: November 14, 2007
Matrix: Water
Parameters: Volatiles
Validation Level: EPA Level III
Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL64

Sample Identification

MW-7
MW-16
DUPE-5-3607
TB-14-9/11/07

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.

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

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

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

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

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

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

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

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

Date	Compound	%D	Associated Samples	Flag	A or P
9/5/07	Dichlorodifluoromethane	31.43	All samples in SDG JPL64	J (all detects) UJ (all non-detects)	P
9/19/07	2,2-Dichloropropane	59.45	All samples in SDG JPL64	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
B091907MVOWB2	9/19/07	Methylene chloride	0.50	All samples in SDG JPL64

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
S01907MVOWB1	Dichlorodifluoromethane	58 (60-140)	All samples in SDG JPL64	J (all detects) UJ (all non-detects)	P
S01907MVOWB1	2,2-Dichloropropane	150 (60-140)	All samples in SDG JPL64	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-16 and DUPE-5-3607 were identified as field duplicates. No volatiles were detected in any of the samples with the following exceptions:

Compound	Concentration (ug/L)		RPD
	MW-16	DUPE-5-3607	
1,1-Dichloroethene	2.4	2.1	13
Chloroform	22	21	5
Carbon tetrachloride	5.1	5.1	0
Toluene	0.53	0.61	14
Tetrachloroethene	1.5	1.4	7
Trichloroethene	0.50U	0.32	200

XVII. Field Blanks

Sample TB-14-9/11/07 was identified as a trip blank. No volatile contaminants were found in this blank.

**NASA JPL
Volatiles - Data Qualification Summary - SDG JPL64**

SDG	Sample	Compound	Flag	A or P	Reason
JPL64	MW-7 MW-16 DUPE-5-3607 TB-14-9/11/07	Dichlorodifluoromethane 2,2-Dichloropropane	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	P	Continuing calibration (%D)
JPL64	MW-7 MW-16 DUPE-5-3607 TB-14-9/11/07	Dichlorodifluoromethane	J (all detects) UJ (all non-detects)	P	Laboratory control samples (%R)
JPL64	MW-7 MW-16 DUPE-5-3607 TB-14-9/11/07	2,2-Dichloropropane	J (all detects)	P	Laboratory control samples (%R)

**NASA JPL
Volatiles - Laboratory Blank Data Qualification Summary - SDG JPL64**

No Sample Data Qualified in this SDG

**Laboratory Data Consultants, Inc.
Data Validation Report**

Project/Site Name: NASA JPL
Collection Date: September 7 through September 10, 2007
LDC Report Date: November 15, 2007
Matrix: Water
Parameters: Volatiles
Validation Level: EPA Level III
Laboratory: Laucks Testing Laboratories
Sample Delivery Group (SDG): JPL65

Sample Identification

MW-5
TB-13-9/7/07
MW-6
DUPE-4-3Q07
MW-5MS
MW-5MSD

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 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 .

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
9/5/07	Dichlorodifluoromethane	31.43	All samples in SDG JPL65	J (all detects) UJ (all non-detects)	P
9/19/07	2,2-Dichloropropane	59.45	TB-13-9/7/07 MW-6 B091907MVOWB2	J (all detects) UJ (all non-detects)	P
9/20/07	2,2-Dichloropropane	49.28	MW-5 DUPE-4-3Q07 B092007MVOWB1	J (all detects) UJ (all non-detects)	P
9/21/07	2,2-Dichloropropane Bromoform Hexachlorobutadiene	51.49 37.15 33.38	MW-5MS MW-5MSD B092107MVOWB1	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
B091907MVOWB2	9/19/07	Methylene chloride	0.50	TB-13-9/7/07 MW-6

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

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-5MS/MSD (MW-5)	1,2,4-Trichlorobenzene	59 (60-140)	-	-	J (all detects) UJ (all non-detects)	A
	Hexachlorobutadiene	55 (60-140)	59 (60-140)	-	J (all detects) UJ (all non-detects)	

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
S091907MVOWB1	Dichlorodifluoromethane	58 (60-140)	TB-13-9/7/07 MW-6 S091907MVOWB2	J (all detects) UJ (all non-detects)	P
S091907MVOWB1	2,2-Dichloropropane	150 (60-140)	TB-13-9/7/07 MW-6 S091907MVOWB2	J (all detects)	A
S092007MVPWB2	2,2-Dichloropropane	170 (60-140)	MW-5 DUPE-4-3Q07 B092007MVOWB1	J (all detects)	A
S092107MVOWB1	2,2-Dichloropropane	149 (60-140)	B092107MVOWB1	J (all detects)	A

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-6 and DUPE-4-3Q07 were identified as field duplicates. No volatiles were detected in any of the samples with the following exceptions:

Compound	Concentration (ug/L)		RPD
	MW-6	DUPE-4-3Q07	
1,1-Dichloroethene	0.79	0.85	7
1,1-Dichloroethane	0.69	0.65	6
Chloroform	0.63	0.53	17
Trichloroethene	1.5	1.5	0
Tetrachloroethene	1.4	1.4	0

XVII. Field Blanks

Sample TB-13-9/7/07 was identified as a trip blank. No volatile contaminants were found in this blank.

**NASA JPL
Volatiles - Data Qualification Summary - SDG JPL65**

SDG	Sample	Compound	Flag	A or P	Reason
JPL65	MW-5 TB-13-9/7/07 MW-6 DUPE-4-3Q07	Dichlorodifluoromethane	J (all detects) UJ (all non-detects)	P	Continuing calibration (%D)
JPL65	TB-13-9/7/07 MW-6 MW-5 DUPE-4-3Q07	2,2-Dichloropropane	J (all detects) UJ (all non-detects)	P	Continuing calibration (%D)
JPL65	MW-5	1,2,4-Trichlorobenzene Hexachlorobutadiene	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicates (%R)
JPL65	TB-13-9/7/07 MW-6	Dichlorodifluoromethane	J (all detects) UJ (all non-detects)	P	Laboratory control samples (%R)
JPL65	TB-13-9/7/07 MW-6 MW-5 DUPE-4-3Q07	2,2-Dichloropropane	J (all detects)	A	Laboratory control samples (%R)

**NASA JPL
Volatiles - Laboratory Blank Data Qualification Summary - SDG JPL65**

No Sample Data Qualified in this SDG

**Laboratory Data Consultants, Inc.
Data Validation Report**

Project/Site Name: NASA JPL
Collection Date: September 12, 2007
LDC Report Date: November 15, 2007
Matrix: Water
Parameters: Volatiles
Validation Level: EPA Level III & IV
Laboratory: Laucks Testing Laboratories
Sample Delivery Group (SDG): JPL66

Sample Identification

MW-13**
MW-8
DUPE-6-3Q07
DUPE-7-3Q07
TB-15-9/12/07
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 .

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
9/5/07	Dichlorodifluoromethane	31.43	All samples in SDG JPL66	J (all detects) UJ (all non-detects)	P
9/21/07	2,2-Dichloropropane Bromoform Hexachlorobutadiene	51.49 37.15 33.38	All samples in SDG JPL66	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.

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
S092107MVOWB1	2,2-Dichloropropane	149 (60-140)	All samples in SDG JPL66	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-13** and DUPE-6-3Q07 and samples MW-8 and DUPE-7-3Q07 were identified as field duplicates. No volatiles were detected in any of the samples with the following exceptions:

Compound	Concentration (ug/L)		RPD
	MW-13**	DUPE-6-3Q07	
Chloroform	0.75	0.76	1
Trichloroethene	0.83	0.83	0
Toluene	0.44	0.38	15
Tetrachloroethene	0.42	0.43	2

Compound	Concentration (ug/L)		RPD
	MW-8	DUPE-7-3Q07	
Trichlorofluoromethane	1.1	0.85	26
Chloroform	0.51	0.48	6
Bromodichloromethane	0.49	0.50	2
Toluene	0.30	0.29	3

Compound	Concentration (ug/L)		RPD
	MW-8	DUPE-7-3Q07	
Dibromochloromethane	0.59	0.58	2

XVII. Field Blanks

Sample TB-15-9/12/07 was identified as a trip blank. No volatile contaminants were found in this blank.

**NASA JPL
Volatiles - Data Qualification Summary - SDG JPL66**

SDG	Sample	Compound	Flag	A or P	Reason
JPL66	MW-13** MW-8 DUPE-6-3Q07 DUPE-7-3Q07 TB-15-9/12/07	Dichlorodifluoromethane	J (all detects) UJ (all non-detects)	P	Continuing calibration (%D)
JPL66	MW-13** MW-8 DUPE-6-3Q07 DUPE-7-3Q07 TB-15-9/12/07	2,2-Dichloropropane Bromoform Hexachlorobutadiene	J (all detects) UJ (all non-detects)	P	Continuing calibration (%D)
JPL66	MW-13** MW-8 DUPE-6-3Q07 DUPE-7-3Q07 TB-15-9/12/07	2,2-Dichloropropane	J (all detects)	P	Laboratory control samples (%R)

**NASA JPL
Volatiles - Laboratory Blank Data Qualification Summary - SDG JPL66**

No Sample Data Qualified in this SDG

**Laboratory Data Consultants, Inc.
Data Validation Report**

Project/Site Name: NASA JPL
Collection Date: September 13, 2007
LDC Report Date: November 15, 2007
Matrix: Water
Parameters: Volatiles
Validation Level: EPA Level III
Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL67

Sample Identification

MW-10
TB-16-9/13/07

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 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 .

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
9/5/07	Dichlorodifluoromethane	31.43	All samples in SDG JPL67	J (all detects) UJ (all non-detects)	P
9/21/07	2,2-Dichloropropane Bromoform Hexachlorobutadiene	51.49 37.15 33.38	All samples in SDG JPL67	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
S092107MVOWB1	2,2-Dichloropropane	149 (60-140)	All samples in SDG JPL67	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-16-9/13/07 was identified as a trip blank. No volatile contaminants were found in this blank.

**NASA JPL
Volatiles - Data Qualification Summary - SDG JPL67**

SDG	Sample	Compound	Flag	A or P	Reason
JPL67	MW-10 TB-16-9/13/07	Dichlorodifluoromethane	J (all detects) UJ (all non-detects)	P	Continuing calibration (%D)
JPL67	MW-10 TB-16-9/13/07	2,2-Dichloropropane Bromoform Hexachlorobutadiene	J (all detects) UJ (all non-detects)	P	Continuing calibration (%D)
JPL67	MW-10 TB-16-9/13/07	2,2-Dichloropropane	J (all detects)	P	Laboratory control samples (%R)

**NASA JPL
Volatiles - Laboratory Blank Data Qualification Summary - SDG JPL67**

No Sample Data Qualified in this SDG

**NASA JPL
Data Validation Reports
LDC# 17725**

Chromium

LDC

**Laboratory Data Consultants, Inc.
Data Validation Report**

Project/Site Name: NASA JPL
Collection Date: September 5, 2007
LDC Report Date: November 14, 2007
Matrix: Water
Parameters: Chromium
Validation Level: EPA Level III & IV
Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL62

Sample Identification

MW-26-2
MW-26-1**
EB-11-9/5/07
MW-26-1MS
MW-26-1MSD

**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 200.8 for 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 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 chromium was 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-11-9/5/07 was identified as an equipment blank. No chromium was found in this blank.

NASA JPL
Chromium - Data Qualification Summary - SDG JPL62

No Sample Data Qualified in this SDG

NASA JPL
Chromium - Laboratory Blank Data Qualification Summary - SDG JPL62

No Sample Data Qualified in this SDG

**Laboratory Data Consultants, Inc.
Data Validation Report**

Project/Site Name: NASA JPL
Collection Date: September 6, 2007
LDC Report Date: November 14, 2007
Matrix: Water
Parameters: Chromium
Validation Level: EPA Level III
Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL63

Sample Identification

MW-25-5
MW-25-4
MW-25-3
MW-25-2
MW-25-1
EB-12-9/6/07
MW-25-2MS
MW-25-2MSD
MW-25-1MS
MW-25-1MSD

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 200.8 for 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 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 chromium was 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-12-9/6/07 was identified as an equipment blank. No chromium was found in this blank.

**NASA JPL
Chromium - Data Qualification Summary - SDG JPL63**

No Sample Data Qualified in this SDG

**NASA JPL
Chromium - Laboratory Blank Data Qualification Summary - SDG JPL63**

No Sample Data Qualified in this SDG

**Laboratory Data Consultants, Inc.
Data Validation Report**

Project/Site Name: NASA JPL
Collection Date: September 11, 2007
LDC Report Date: November 14, 2007
Matrix: Water
Parameters: Chromium
Validation Level: EPA Level III
Laboratory: Laucks Testing Laboratories
Sample Delivery Group (SDG): JPL64

Sample Identification

MW-7
MW-16
DUPE-5-3Q07

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 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 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 chromium was 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-16 and DUPE-5-3Q07 were identified as field duplicates. No chromium was detected in any of the samples with the following exceptions:

Analyte	Concentration (ug/L)		RPD
	MW-16	DUPE-5-3Q07	
Chromium	12.7	13.0	2

XIV. Field Blanks

No field blanks were identified in this SDG.

**NASA JPL
Chromium - Data Qualification Summary - SDG JPL64**

No Sample Data Qualified in this SDG

**NASA JPL
Chromium - Laboratory Blank Data Qualification Summary - SDG JPL64**

No Sample Data Qualified in this SDG

**Laboratory Data Consultants, Inc.
Data Validation Report**

Project/Site Name: NASA JPL
Collection Date: September 7 through September 10, 2007
LDC Report Date: November 14, 2007
Matrix: Water
Parameters: Chromium
Validation Level: EPA Level III
Laboratory: Laucks Testing Laboratories
Sample Delivery Group (SDG): JPL65

Sample Identification

MW-5
MW-15
DUPE-3-3Q07
MW-6
DUPE-4-3Q07
MW-5MS
MW-5MSD

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 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 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 chromium was 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-15 and DUPE-3-3Q07 and samples MW-6 and DUPE-4-3Q07 were identified as field duplicates. No chromium was detected in any of the samples with the following exceptions:

Analyte	Concentration (ug/L)		RPD
	MW-15	DUPE-3-3Q07	
Chromium	11.7	12.3	5

Analyte	Concentration (ug/L)		RPD
	MW-6	DUPE-4-3Q07	
Chromium	15.1	15.9	5

XIV. Field Blanks

No field blanks were identified in this SDG.

**NASA JPL
Chromium - Data Qualification Summary - SDG JPL65**

No Sample Data Qualified in this SDG

**NASA JPL
Chromium - Laboratory Blank Data Qualification Summary - SDG JPL65**

No Sample Data Qualified in this SDG

**Laboratory Data Consultants, Inc.
Data Validation Report**

Project/Site Name: NASA JPL
Collection Date: September 12, 2007
LDC Report Date: November 14, 2007
Matrix: Water
Parameters: Chromium
Validation Level: EPA Level III & IV
Laboratory: Laucks Testing Laboratories
Sample Delivery Group (SDG): JPL66

Sample Identification

MW-13**
MW-8
DUPE-6-3Q07
DUPE-7-3Q07
MW-13MS
MW-13MSD
MW-8MS
MW-8MSD

**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 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 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 chromium was 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-13** and DUPE-6-3Q07 and samples MW-8 and DUPE-7-3Q07 were identified as field duplicates. No contaminant chromium was detected in any of the samples with the following exceptions:

Analyte	Concentration (ug/L)		RPD
	MW-13**	DUPE-6-3Q07	
Chromium	83.2	85.7	3

Analyte	Concentration (ug/L)		RPD
	MW-8	DUPE-7-3Q07	
Chromium	18.4	16.8	9

XIV. Field Blanks

No field blanks were identified in this SDG.

**NASA JPL
Chromium - Data Qualification Summary - SDG JPL66**

No Sample Data Qualified in this SDG

**NASA JPL
Chromium - Laboratory Blank Data Qualification Summary - SDG JPL66**

No Sample Data Qualified in this SDG

**Laboratory Data Consultants, Inc.
Data Validation Report**

Project/Site Name: NASA JPL
Collection Date: September 13, 2007
LDC Report Date: November 14, 2007
Matrix: Water
Parameters: Chromium
Validation Level: EPA Level III
Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL67

Sample Identification

MW-10
MW-10MS
MW-10MSD

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 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 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 chromium was 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

No field blanks were identified in this SDG.

NASA JPL

Chromium - Data Qualification Summary - SDG JPL67

No Sample Data Qualified in this SDG

NASA JPL

Chromium - Laboratory Blank Data Qualification Summary - SDG JPL67

No Sample Data Qualified in this SDG

**NASA JPL
Data Validation Reports
LDC# 17725**

Wet Chemistry

LDC

**Laboratory Data Consultants, Inc.
Data Validation Report**

Project/Site Name: NASA JPL
Collection Date: September 5, 2007
LDC Report Date: November 13, 2007
Matrix: Water
Parameters: Perchlorate
Validation Level: EPA Level III & IV
Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL62

Sample Identification

MW-26-2
MW-26-1**
EB-11-9/5/07
MW-26-1MS
MW-26-1MSD

**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 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 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 perchlorate 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) 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-11-9/5/07 was identified as an equipment blank. No perchlorate was found in this blank.

**NASA JPL
Perchlorate - Data Qualification Summary - SDG JPL62**

No Sample Data Qualified in this SDG

**NASA JPL
Perchlorate - Laboratory Blank Data Qualification Summary - SDG JPL62**

No Sample Data Qualified in this SDG

**Laboratory Data Consultants, Inc.
Data Validation Report**

Project/Site Name: NASA JPL
Collection Date: September 6, 2007
LDC Report Date: November 13, 2007
Matrix: Water
Parameters: Perchlorate
Validation Level: EPA Level III
Laboratory: Laucks Testing Laboratories
Sample Delivery Group (SDG): JPL63

Sample Identification

MW-25-5
MW-25-4
MW-25-3
MW-25-2
MW-25-1
EB-12-9/6/07
MW-25-1MS
MW-25-1MSD

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 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.
- UU 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 perchlorate 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) 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-12-9/6/07 was identified as an equipment blank. No perchlorate was found in this blank.

**NASA JPL
Perchlorate - Data Qualification Summary - SDG JPL63**

No Sample Data Qualified in this SDG

**NASA JPL
Perchlorate - Laboratory Blank Data Qualification Summary - SDG JPL63**

No Sample Data Qualified in this SDG

**Laboratory Data Consultants, Inc.
Data Validation Report**

Project/Site Name: NASA JPL
Collection Date: September 11, 2007
LDC Report Date: November 14, 2007
Matrix: Water
Parameters: Wet Chemistry
Validation Level: EPA Level III
Laboratory: Laucks Testing Laboratories
Sample Delivery Group (SDG): JPL64

Sample Identification

MW-7
MW-16
DUPE-5-3Q07
MW-7MS
MW-7MSD
DUPE-5-3Q07MS
DUPE-5-3Q07MSD

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 300.0 for Chloride, Nitrate as Nitrogen, Nitrite as Nitrogen, Orthophosphate, and Sulfate, and EPA Method 314.0 for Wet Chemistry.

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) 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 (All samples in SDG JPL64)	Nitrite as N	111 (90-110)	-	-	J (all 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-16 and DUPE-5-3Q07 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-16	DUPE-5-3Q07	
Chloride	35	35	0
Nitrate as N	4.4	4.4	0
Sulfate	27	27	0

Analyte	Concentration (ug/L)		RPD
	MW-16	DUPE-5-3Q07	
Perchlorate	2000	2000	0

X. Field Blanks

No field blanks were identified in this SDG.

**NASA JPL
Wet Chemistry - Data Qualification Summary - SDG JPL64**

SDG	Sample	Analyte	Flag	A or P	Reason
JPL64	MW-7 MW-16 DUPE-5-3Q07	Nitrite as N	J (all detects)	P	Laboratory control samples (%R)

**NASA JPL
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG JPL64**

No Sample Data Qualified in this SDG

**Laboratory Data Consultants, Inc.
Data Validation Report**

Project/Site Name: NASA JPL
Collection Date: September 7 through September 10, 2007
LDC Report Date: November 14, 2007
Matrix: Water
Parameters: Perchlorate
Validation Level: EPA Level III
Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL65

Sample Identification

MW-5
MW-6
DUPE-4-3Q07
MW-5MS
MW-5MSD

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 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 perchlorate 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) 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-6 and DUPE-4-3Q07 were identified as field duplicates. No perchlorate was detected in any of the samples.

X. Field Blanks

No field blanks were identified in this SDG.

**NASA JPL
Perchlorate - Data Qualification Summary - SDG JPL65**

No Sample Data Qualified in this SDG

**NASA JPL
Perchlorate - Laboratory Blank Data Qualification Summary - SDG JPL65**

No Sample Data Qualified in this SDG

**Laboratory Data Consultants, Inc.
Data Validation Report**

Project/Site Name: NASA JPL
Collection Date: September 12, 2007
LDC Report Date: November 14, 2007
Matrix: Water
Parameters: Wet Chemistry
Validation Level: EPA Level III & IV
Laboratory: Laucks Testing Laboratories

Sample Delivery Group (SDG): JPL66

Sample Identification

MW-13**
MW-8
DUPE-6-3Q07
DUPE-7-3Q07
MW-13MS
MW-13MSD
MW-8MS
MW-8MSD

**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 300.0 for Chloride, Nitrate as Nitrogen, Nitrite as Nitrogen, Orthophosphate, and Sulfate, 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 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-13MS/MSD (MW-13** DUPE-6-3Q07)	Chloride	120 (90-110)	112 (90-110)	-	J (all detects)	A
	Nitrate as N	115 (90-110)	112 (90-110)	-	J (all detects)	
	Sulfate	123 (90-110)	112 (90-110)	-	J (all detects)	

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 with the following exceptions:

LCS ID (Associated Samples)	Analyte	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Flag	A or P
LCS (All samples in SDG JPL66)	Nitrite as N	111 (90-110)	-	-	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-13** and DUPE-6-3Q07, and samples MW-8 and DUPE-7-3Q07 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-13**	DUPE-6-3Q07	
Chloride	38	38	0
Nitrate as N	7.0	7.2	3
Sulfate	67	68	1

Analyte	Concentration (ug/L)		RPD
	MW-13**	DUPE-6-3Q07	
Perchlorate	160	160	0

Analyte	Concentration (mg/L)		RPD
	MW-8	DUPE-7-3Q07	
Chloride	31	31	0
Nitrate as N	3.5	3.5	0

Analyte	Concentration (mg/L)		RPD
	MW-8	DUPE-7-3Q07	
Sulfate	53	53	0

Analyte	Concentration (ug/L)		RPD
	MW-8	DUPE-7-3Q07	
Perchlorate	210	200	5

X. Field Blanks

No field blanks were identified in this SDG.

**NASA JPL
Wet Chemistry - Data Qualification Summary - SDG JPL66**

SDG	Sample	Analyte	Flag	A or P	Reason
JPL66	MW-13** DUPE-6-3Q07	Chloride Nitrate as N Sulfate	J (all detects) J (all detects) J (all detects)	A	Matrix spike/Matrix spike duplicates (%R)
JPL66	MW-13** MW-8 DUPE-6-3Q07 DUPE-7-3Q07	Nitrite as N	J (all detects)	P	Laboratory control samples (%R)

**NASA JPL
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG JPL66**

No Sample Data Qualified in this SDG

**Laboratory Data Consultants, Inc.
Data Validation Report**

Project/Site Name: NASA JPL
Collection Date: September 13, 2007
LDC Report Date: November 13, 2007
Matrix: Water
Parameters: Perchlorate
Validation Level: EPA Level III
Laboratory: Laucks Testing Laboratories
Sample Delivery Group (SDG): JPL67

Sample Identification

MW-10
MW-10MS
MW-10MSD

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 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 perchlorate 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) 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

No field blanks were identified in this SDG.

**NASA JPL
Perchlorate - Data Qualification Summary - SDG JPL67**

No Sample Data Qualified in this SDG

**NASA JPL
Perchlorate - Laboratory Blank Data Qualification Summary - SDG JPL67**

No Sample Data Qualified in this SDG