

COC No. A 30690

158 Starlite Drive
Marietta, OH 45750



Phone: 740-373-4071
Fax: 740-373-4835

CHAIN-OF-CUSTODY RECORD

Company Name: **Shaw / Zia**

Project Contact: **Mark Lyon**
Contact Phone #: **505-262-8900**

Turn Around Requirements: **NORMAL**
Location: **WSMR STP**

Project ID: **WSMR STP SWMU 82**

Sampler (print): **Allison Jenness**
Signature: *[Signature]*

Sample I.D. No.	Comp	Grab	Date	Time	Matrix*	NUMBER OF CONTAINERS	Metals - As, Pb, Cu, Ni, Zn, Cd, Hg, Sb, As, Ba, Bi, Cr, Mn, Ni, Se	TSS - TDS	Anions (Cl, F, SO ₄)	VOCs	CN (Total, Free, Amenable)	NH ₃ TOC, NO ₃ -NO ₂	Na, K, Ca, Mg, Mn	Cond., pH, PO ₄	Al, B, Fe, Mn, Mo	Alkalinity	Vanadium, Ra-226 Ra-228	PCBs	SVOCs	Total Phenols	TOTAL # (LAB USE)	Program	ADDITIONAL REQUIREMENTS
MPL4-0712-1		X	7-23-12	1155	W	20	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
MPL4-0712-MS		X	7-23-12	1155	W	20	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
MPL4-0712-MSB		X	7-23-12	1156	W	20	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
MPL1-0712-1		X	7-23-12	1558	W	19	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		Matrix Spike
MPL2-0712-1		X	7-24-12	1012	W	19	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
MPL3-0712-1		X	7-24-12	1232	W	19	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
MPL3-0712-2		X	7-24-12	1232	W	19	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
MPL3-0712-TB		X	7-24-12	1232	W	2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		trip blank

Relinquished by: **Brad T. Doss**
Signature: *[Signature]*
Date: **7-24-12**
Time: **1700**

Relinquished by: **Rosemary Scott**
Signature: *[Signature]*
Date: **07/25/2012**
Time: **11:12**

Microbac OVD
Received: 07/25/2012 11:12
By: ROSEMARY SCOTT
221000027089

*Water (W), Soil (S), Solid Waste (SD), Unknown (X)

DATA VALIDATION REPORT
MICROBAC LABORATORY SDG L12070803

Project / Site Name: Environmental Remediation Services at White Sands Missile Range (WSMR), NM; CCWS-62, Former STP Percolation Ditches

Project No.: 139791

Data Reviewer: M. Lyon, Shaw Environmental, Inc.

Review Date: August 30, 2012

Matrix: Groundwater; 4 groundwater samples, 1 field duplicate, and extra volume for MS/MSD

Parameters: Volatile Organic Compounds 8260B
Semivolatile Organic Compounds, Polycyclic Aromatic Hydrocarbons, 8270C
Polychlorinated Biphenyls 8082
Metals 6010B/6020/7470A
Anions 300.0
pH 9040C
Alkalinity 310.2
Cyanide 9014/9010C/SM4500-CN-C, G/SM4500-CN-I
Conductivity 120.1
Phenols 420.1
Ammonia-Nitrogen 350.1
Nitrate+Nitrite-Nitrogen 353.2
Orthophosphate SM4500-P-E-20th
Total Dissolved Solids 160.1/SM2540C
Total Organic Carbon 415.1
Total Suspended Solids 160.2
Uranium, Radium-226, Radium-228 (Subcontracted to GEL)

Validation Level: EPA Level III

Laboratory: Microbac Laboratories, Inc. Ohio Valley Division

Sample Delivery Group: L12070803

Sample Nos.: MPL4-0712-1 (MS/MSD requested), MPL2-0712-1, MPL3-0712-1, MPL3-0712-2 (Field Duplicate), MPL1-0712-1

Comments: MS/MSD requested on field sample MPL4-0712-1. Field duplicate submitted. A trip blank sample, MPL3-0712-TB, was submitted.

The data were reviewed and qualified according to the *Sampling and Analysis Plan/Quality Assurance Project Plan, Environmental Remediation Services, White Sands Missile Range, New Mexico October 2010*; *Department of Defense Quality Systems Manual for Environmental Laboratories, Final Version 4.2, 2010*; laboratory-specific statistical process control criteria, and the analytical method specific requirements.

DATA VALIDATION REQUIREMENTS

Level IV or Full Validation includes all parameters listed below. Level III Cursory Validation parameters are indicated by an asterisk (*).

Organic Parameters

- * Temperature
- * Holding times
- GC/MS instrument performance check
- * Initial and continuing calibrations
- * Blanks
- * Surrogate recoveries
- * Matrix spike/matrix spike duplicate
- * Laboratory control sample / blank spike
- * Field duplicate
- * Internal standard performance
- Target compound identification
- Tentatively identified compounds
- Compound quantitation
- Reported detection limits
- System performance
- * Overall data assessment

Inorganic and General Chemistry Parameters

- * Temperature
- * Holding times
- * Initial and continuing calibration
- * Blanks
- * Matrix spike/matrix spike duplicate
- * Laboratory control sample / blank spike
- * Field duplicate
- * Matrix duplicate
- ICP interference check sample
- CVAA / GFAA quality controls
- * ICP serial dilution
- Sample results verification
- Analyte quantitation
- Reported detection limits
- * Overall data assessment

DATA VALIDATION QUALIFIER DEFINITIONS

No qualifier indicates that the data are acceptable both qualitatively and quantitatively.

- U Not detected. The analyte was analyzed for but was not detected above the level of the associated value. The associated value is the Limit of Quantitation (LOQ).
- J Estimated. The analyte was detected and positively identified. The associated numerical value is the approximate concentration of the analyte in the sample and the bias is in determinable.
- J- Estimated. The analyte was detected and positively identified. The associated numerical value is the approximate concentration of the analyte in the sample and the bias is determined low due to associated quality control indicators.
- J+ Estimated. The analyte was detected and positively identified. The associated numerical value is the approximate concentration of the analyte in the sample and the bias is determined high due to associated quality control indicators.
- N Tentatively identified. The analysis indicates the presence of an analyte for which there is presumptive evidence to make a tentative identification.
- UN Tentatively not detected, the LOQ is estimated. The analyte was analyzed for but was not detected above the reported LOQ. However, the reported LOQ is an estimate and may not be accurate or precise.
- NJ Tentatively identified. The reported concentration is an estimate. The analysis indicates the presence of an analyte for which there is presumptive evidence to make a tentative identification and the associated numerical value represents the approximate concentration.
- R Rejected. The data are not usable. The presence or absence of the analyte cannot be confirmed.

DATA VALIDATION QUALIFIER REASON CODES

Reason Code	Data Quality Condition Resulting in Assigned Qualification
General Use	
FB	Field blank contamination
FD	Field duplicate evaluation criteria not met
HT	Holding time requirement was not met
PR	Preservation requirements not met
LCS	Laboratory control sample evaluation criteria not met
MB	Method blank or preparation blank contamination
RB	Rinsate blank contamination
TB	Trip blank contamination
SDL	Sample quantitation limit exceeds decision criteria and the analyte was not detected
Inorganic Methods	
CCB	Continuing calibration blank contamination
CCV	Continuing calibration verification evaluation criteria not met
D	Laboratory duplicate precision evaluation criteria not met
DL	Serial dilution results did not meet evaluation criteria
ICS	Interference check sample evaluation criteria not met
ICV	Initial calibration verification evaluation criteria not met
MS	Matrix spike recovery outside acceptance range
PDS	Post-digestion spike recovery outside acceptance range
MSA	Method of standard additions correlation coefficient < 0.995
PB	Preparation blank
Organic Methods	
CCAL	Continuing calibration evaluation criteria not met
ICAL	Initial calibration evaluation criteria not met
ID	Target compound identification criteria not met
IS	Internal standard evaluation criteria not met
MS/MSD	Matrix spike/matrix spike duplicate accuracy and/or precision criteria not met
SUR	Surrogate recovery outside acceptance range
TUNE	Instrument performance (tuning) criteria not met
P	The detected concentration difference between the primary and secondary column is greater than 25%.

**SAMPLE DELIVERY GROUP L12070803
LEVEL III DATA VALIDATION SUMMARY**

Analysis / Method	Temperature	Holding Times	Calibration	Blanks	MS/MSD	LCS	Duplicate	Serial Dilution	Other
Volatile Organics 8260B	✓	✓	✓	✓	✓	✓	✓	NA	✓
PAH 8270C	✓	✓	✓	✓	10	10	✓	NA	✓
PCB 8082	✓	✓	✓	✓	✓	✓	✓	NA	✓
Metals 6010B	✓	✓	✓	✓	✓	✓	✓	✓	✓
Metals 6020	✓	✓	✓	✓	14	✓	✓	✓	✓
Mercury 7470A	✓	✓	✓	✓	✓	✓	✓	NA	✓
Anions 300.0	✓	✓	✓	✓	✓	✓	✓	NA	✓
pH 9040C	✓	✓	✓	NA	NA	✓	✓	NA	✓
Alkalinity 310.2/SM2320B	✓	✓	✓	NA	✓	✓	✓	NA	✓
Cyanide; Total, Amenable, Dissociable 9014-9010C/SM4500-CN	✓	✓	✓	✓	✓	✓	✓	NA	✓
Conductivity 120.1	✓	✓	NA	NA	NA	✓	✓	NA	NA
Phenols 420.1	✓	✓	✓	✓	✓	✓	✓	NA	NA
Ammonia-N 350.1	✓	✓	✓	✓	22	✓	✓	NA	✓
Nitrate+Nitrite-N 353.2	✓	✓	✓	✓	NA	✓	✓	NA	✓
Orthophosphate SM4500-P	✓	✓	✓	✓	✓	✓	✓	NA	✓
Total Dissolved Solids 160.1	✓	✓	NA	✓	✓	✓	✓	NA	✓

Total Organic Carbon 415.1	✓	✓	✓	✓	✓	✓	✓	✓	NA	✓
Total Suspended Solids 160.2	✓	✓	NA	✓	✓	✓	✓	✓	NA	✓

Notes:

✓ Indicates that all quality control criteria were met for the parameter(s)

N/A Indicates the validation criteria is not applicable to the analysis

If validation criteria were not met and the data were qualified, then details can be found at the page number indicated in the table.

DATA ASSESSMENT

Volatile Organic Compounds (Method 8260B)

I. Temperature

A. Shipping coolers temperatures were measured between 0°C and 2°C upon receipt at the laboratory. Sample temperatures were in compliance.

II. Holding Times

A. The analysis holding times were reviewed and found to be in compliance.

III. Calibration

A. Instrument tune, initial calibration verification (ICV), second source check, and continuing calibration verification (CCV), were reviewed and found to be in compliance with exceptions. Bromomethane was out of percent difference compliance in one alternate source check and vinyl acetate was out of compliance in one CCV. Validation qualifiers were not assigned. The compounds were not detected in any samples.

IV. Blanks

A. Initial calibration blank (ICB), continuing calibration blank (CCB), and method blank analysis results were reviewed and found to be in compliance.

V. Surrogate Recoveries

A. Surrogate spike recoveries were reviewed and found to be in compliance.

VI. Matrix Spike / Matrix Spike Duplicate (MS/MSD)

A. MS/MSD analyses were performed on WSMR groundwater sample MPL4-0712-1. Matrix spike percent recoveries and duplicate relative percent difference were found to be in compliance.

VII. Laboratory Control Sample (LCS)

A. The LCS results were reviewed and found to be in compliance. Four compounds recovered greater than the upper acceptance limit in the LCS analyzed July 27, 2012. All compounds were non-detect in the field samples. Validation qualifiers were not assigned.

VIII. Duplicate

A. A field duplicate sample, MPL3-0712-2 was submitted for this SDG. Compounds were not detected at concentrations greater than the applicable LOQ. Precision could not be evaluated.

IX. Other

A. Internal standard areas and retention times met criteria.

**Semi-volatile Organic Compounds Polycyclic Aromatic Hydrocarbons (PAH)
(Method 8270C)**

I. Temperature

A. Shipping coolers temperatures were measured between 0°C and 2°C upon receipt at the laboratory. Sample temperatures were in compliance.

II. Holding Times

A. The analysis holding times were reviewed and found to be in compliance.

III. Calibration

A. Calibration linearity, initial calibration verification (ICV), and continuing calibration verification (CCV), were reviewed and found to be in compliance.

IV. Blanks

A. Initial calibration blank (ICB), continuing calibration blank (CCB), and method blank analysis results were reviewed and found to be in compliance.

V. Surrogate Recoveries

A. Surrogate spike recoveries were reviewed and found to be in compliance.

VI. Matrix Spike / Matrix Spike Duplicate (MS/MSD)

A. MS/MSD analyses were performed on WSMR groundwater sample MPL4-0712-1. Matrix spike percent recoveries and duplicate relative percent difference (RPD) were in compliance with minor exceptions. Naphthalene precision slightly exceeded the RPD criteria. Naphthalene was not detected in the field samples. Those results are qualified with “UN” reason code MS/MSD.

VII. Laboratory Control Sample (LCS)

A. The LCS results were reviewed and found to be in compliance with exceptions. Naphthalene, Acenaphthylene, and 2-Methylnaphthalene recovered less than the lower acceptance limit in the LCS on July 28, 2012. The compounds were not detected in the field samples and results are qualified with “UN” for estimated detection level, reason code “LCS.” All field samples were re-extracted outside hold times and re-analyzed. The original results were confirmed and are reported.

VIII. Duplicate

A. A field duplicate sample, MPL3-0712-2 was submitted for this (SDG). There were no compounds detected at concentrations greater than the applicable LOQ.

IX. Internal Standards Performance

A. Internal standards retention times were reviewed and found to be in compliance.

Polychlorinated Biphenyls (PCB) (Method 8082A)

I. Temperature

A. Shipping coolers temperatures were measured between 0°C and 2°C upon receipt at the laboratory. Sample temperatures were in compliance.

II. Holding Times

A. The analysis holding times were reviewed and found to be in compliance.

III. Calibration

A. Calibration linearity, initial calibration verification (ICV), and continuing calibration verification (CCV), were reviewed and found to be in compliance.

IV. Blanks

A. Initial calibration blank (ICB), continuing calibration blank (CCB), and method blank analysis results were reviewed and found to be in compliance.

V. Surrogate Recoveries

A. Surrogate spike recoveries were reviewed and found to be in compliance.

VI. Matrix Spike / Matrix Spike Duplicate (MS/MSD)

A. MS/MSD analyses were performed on WSMR groundwater sample MPL4-0712-1. Matrix spike percent recoveries and duplicate relative percent difference were found to be in compliance.

VII. Laboratory Control Sample (LCS)

A. The LCS results were reviewed and found to be in compliance.

VIII. Duplicate

A. A field duplicate sample, MPL3-0712-2 was submitted for this SDG. There were no compounds detected at concentrations greater than the applicable LOQ.

METALS (Method 6010B)

I. Temperature

A. Shipping coolers temperatures were measured between 0°C and 2°C upon receipt at the laboratory. Sample temperatures were in compliance.

II. Holding Times

A. The analysis holding times were reviewed and found to be in compliance.

III. Calibration

A. Calibration linearity, initial calibration verification (ICV), and continuing calibration verification (CCV), were reviewed and found to be in compliance.

IV. Blanks

A. Initial calibration blank (ICB), continuing calibration blank (CCB), and method blank analysis results were reviewed and found to be in compliance.

V. Matrix Spike / Matrix Spike Duplicate (MS/MSD)

A. MS/MSD analyses were performed in the applicable analytical batch on WSMR groundwater sample MPL4-0712-1. Matrix spike percent recoveries were found to be in compliance. MSD recoveries for magnesium and sodium were slightly greater than the 120 percent upper limit. Calcium concentrations in the parent sample exceeded 5-times the spike level making the spike invalid. Data validation qualifiers were not assigned.

VI. Laboratory Control Sample (LCS)

A. The LCS results were reviewed and found to be in compliance.

VII. Duplicate

A. A field duplicate sample, MPL3-0712-2, was submitted for this SDG. Field duplicate precision was compliant for analytes detected greater than the LOQ.

VIII. Serial Dilution

A. Serial dilution results were reviewed and found to be in compliance.

IX. Other

A. Limits of Quantitation (LOQ) were reviewed and found compliant.

METALS (Method 6020)

I. Temperature

A. Shipping coolers temperatures were measured between 0°C and 2°C upon receipt at the laboratory. Sample temperatures were in compliance.

II. Holding Times

A. The analysis holding times were reviewed and found to be in compliance.

III. Calibration

A. Calibration linearity, ICV, low-level calibration check, and CCV were compliant.

IV. Blanks

A. ICB, CCB, and method blank analysis results were reviewed and found to be in compliance with one exception. Antimony detected in multiple CCB greater than the detection limit but less than quantitation limit. Antimony was not detected in the field samples. The laboratory flagged the non-detect antimony results with “B.” No validation qualifiers assigned.

V. MS/MSD

A. MS/MSD analyses were performed in the applicable analytical batch on WSMR groundwater sample MPL4-0712-1. Matrix spike percent recoveries and duplicate relative percent difference were found to be in compliance except for selenium and silver. Selenium results are qualified “J+” reason code MS for recovery greater than the upper acceptance limit. Silver non-detect results are qualified “UN” reason code MS for low recovery of the MSD and MSD precision exceeding criteria.

VI. LCS

A. The LCS results were reviewed and found to be in compliance.

VII. Duplicate

A. A field duplicate sample, MPL3-0712-2, was submitted for this SDG. Field duplicate precision was acceptable

VIII. Serial Dilution

A. Serial dilution results were reviewed and found to be in compliance.

IX. Other

A. LOQ were reviewed and found compliant.

MERCURY (Method 7470A)

I. Temperature

A. Shipping coolers temperatures were measured between 0°C and 2°C upon receipt at the laboratory. Sample temperatures were in compliance.

II. Holding Times

A. The analysis holding times were reviewed and found to be in compliance.

III. Calibration

A. Calibration linearity, ICV, and CCV were reviewed and found to be in compliance.

IV. Blanks

A. ICB, CCB, and method blank analysis results were reviewed and found to be in compliance.

V. MS/MSD

A. MS/MSD analyses were performed in the applicable analytical batch on WSMR groundwater sample MPL4-0712-1. Matrix spike percent recoveries and duplicate relative percent difference were found to be in compliance.

VI. LCS

A. The LCS results were reviewed and found to be in compliance.

VII. Duplicate

A. A field duplicate sample, MPL3-0712-2 was submitted for this SDG. Mercury was not detected at concentrations greater than the applicable LOQ.

VIII. Other

A. LOQ were reviewed and found compliant

ANIONS (Method 300.0 [9056])

I. Temperature

A. Shipping coolers temperatures were measured between 0°C and 2°C upon receipt at the laboratory. Sample temperatures were in compliance.

II. Holding Times

A. The analysis holding times were reviewed and found to be in compliance.

III. Calibration

A. Calibration coefficient of determination, alternate source calibration verification, and CCV, were reviewed and found compliant.

IV. Blanks

A. Method blank and CCB analysis results were reviewed and found to be in compliance.

V. MS/MSD

A. MS/MSD analyses were performed in the applicable analytical batch on WSMR groundwater sample MPL4-0712-1. Chloride in the parent sample was greater than 4-times the spike level negating evaluation of chloride recovery. Validation qualifiers were not assigned.

VI. LCS

A. The LCS results were reviewed and found to be in compliance.

VII. Duplicate

A. The field duplicate sample, MPL3-0712-2, was submitted for this SDG. Field duplicate precision was compliant when both sample and duplicate sample results were greater than the LOQ.

pH (Method 9040C)

I. Temperature

A. Shipping coolers temperatures were measured between 0°C and 2°C upon receipt at the laboratory. Sample temperatures were in compliance.

II. Holding Times

A. Hydrogen ion activities (pH) were measured in the field at the time of sample collection and again at the laboratory. Field and laboratory measurements showed good agreement, generally.

III. Calibration

A. pH meter calibration at the laboratory was documented using buffer solutions pH 4, 7, and 12.45.

IV. LCS

A. The LCS sample pH was measured at the laboratory and the results were acceptable.

V. Duplicate

A. A field duplicate sample, MPL3-0712-2, was submitted for this SDG. Field duplicate precision was compliant.

ALKALINITY (Methods 310.2 / SM2320B)

I. Temperature

A. Shipping coolers temperatures were measured between 0°C and 2°C upon receipt at the laboratory. Sample temperatures were in compliance.

II. Holding Times

A. The analysis holding times were reviewed and found to be in compliance.

III. Calibration

A. Calibration coefficient of determination, alternate source calibration verification, and CCV, were reviewed and found compliant.

IV. Blanks

A. Method blank results were reviewed and found to be in compliance.

V. MS/MSD

A. The MS/MSD showed total alkalinity recoveries less than the lower acceptance limit. Data validation qualifiers were not assigned.

VI. LCS

A. The LCS results were reviewed and found to be in compliance.

VII. Duplicate

A. A field duplicate sample, MPL3-0712-2, was submitted for this SDG. Field duplicate precision was compliant.

CYANIDE (Methods 9014-9010C / SM4500-CN-C)

I. Temperature

A. Shipping coolers temperatures were measured between 0°C and 2°C upon receipt at the laboratory. Sample temperatures were in compliance.

II. Holding Times

A. The analysis holding times were reviewed and found to be in compliance.

III. Calibration

A. Calibration coefficient of correlation was reviewed and found compliant.

IV. Blanks

A. Method blanks were reviewed and found to be in compliance.

V. MS/MSD

A. The MS/MSD was performed on field sample MPL4-0712-1. Recoveries and precision results were reviewed and found to be in compliance.

VI. LCS

A. The LCS results were reviewed and found to be in compliance. Cyanide amenable to chlorination is a difference measurement which the LCS calculation accounts for inversely.

VII. Duplicate

A. A field duplicate sample, MPL3-0712-2, was submitted for this SDG. Field duplicate precision was compliant.

VIII. Other

A. LOQ was reviewed and found compliant.

CONDUCTIVITY (Method 120.1)

I. Temperature

A. Shipping coolers temperatures were measured between 0°C and 2°C upon receipt at the laboratory. Sample temperatures were in compliance.

II. Holding Times

A. The analysis holding times were reviewed and found to be in compliance.

III. Blanks

A. Method blank results were reviewed and found to be in compliance.

IV. LCS

A. The LCS results were reviewed and found to be in compliance.

V. Duplicate

A. A field duplicate sample, MPL3-0712-2, was submitted for this SDG. Field duplicate precision was compliant.

VI. Other

A. LOQ was reviewed and found compliant.

PHENOLS (Method 420.1)

I. Temperature

A. Shipping coolers temperatures were measured between 0°C and 2°C upon receipt at the laboratory. Sample temperatures were in compliance.

III. Calibration

A. Calibration coefficient of correlation was reviewed and found compliant.

III. Holding Times

A. The analysis holding times were reviewed and found to be in compliance.

IV. Blanks

A. Method blank results were reviewed and found to be in compliance.

V. MS/MSD

A. The MS/MSD results were reviewed and found to be in compliance.

V. LCS

A. The LCS results were reviewed and found to be in compliance.

VI. Duplicate

A. A field duplicate sample, MPL3-0712-2, was submitted for this SDG. The analyte was not detected in either sample.

VI. Other

A. LOQ was reviewed and found compliant.

AMMONIA AS NITROGEN (Method 350.1)

I. Temperature

A. Shipping coolers temperatures were measured between 0°C and 2°C upon receipt at the laboratory. Sample temperatures were in compliance.

II. Holding Times

A. The analysis holding times were reviewed and found to be in compliance.

III. Calibration

A. Calibration coefficient of correlation was reviewed and found compliant.

IV. Blanks

A. Method blank was reviewed and found to be in compliance.

V. MS/MSD

A. The MS/MSD results in sample MPL4-0712-1 showed recoveries slightly less than the lower acceptance limit. The analyte was not detected and those results are qualified “UN” reason code “MS.”

VI. LCS

A. The LCS results were reviewed and found to be in compliance.

VII. Duplicate

A. A field duplicate sample, MPL3-0712-2, was submitted for this SDG. The analyte was not detected in either sample.

VIII. Other

A. LOQ was reviewed and found compliant

NITRATE + NITRITE AS NITROGEN (Method 353.2)

I. Temperature

A. Shipping coolers temperatures were measured between 0°C and 2°C upon receipt at the laboratory. Sample temperatures were in compliance.

II. Holding Times

A. The analysis holding times were reviewed and found to be in compliance.

III. Calibration

A. Calibration coefficient of correlation was reviewed and found compliant.

IV. Blanks

A. Method blank was reviewed and found to be in compliance.

V. MS/MSD

A. The MS/MSD was performed on sample MPL4-0712-1. Analyte concentration in the parent sample was greater than 4-times the spike level. Recoveries were not evaluated and qualifiers were not assigned.

VI. LCS

A. The LCS results were reviewed and found to be in compliance.

VII. Duplicate

A. A field duplicate sample, MPL3-0712-2, was submitted for this SDG. Field duplicate precision was compliant.

VIII. Other

A. LOQ was reviewed and found compliant.

ORTHOPHOSPHATE AS PHOSPHOROUS (Method SM4500-P)

I. Temperature

A. Shipping coolers temperatures were measured between 0°C and 2°C upon receipt at the laboratory. Sample temperatures were in compliance.

II. Holding Times

A. The analysis holding times were reviewed and found to be in compliance.

III. Calibration

A. Calibration coefficient of correlation was reviewed and found compliant.

IV. Blanks

A. Method blank was reviewed and found to be in compliance.

V. MS/MSD

A. The MS/MSD was performed on sample MPL4-0712-1. MS/MSD recoveries and precision were compliant.

VI. LCS

A. The LCS results were reviewed and found to be in compliance.

VII. Duplicate

A. A field duplicate sample, MPL3-0712-2, was submitted for this SDG. Field duplicate precision was compliant.

VIII. Other

A. LOQ was reviewed and found compliant.

TOTAL DISSOLVED SOLIDS (Method 160.1)

I. Temperature

A. Shipping coolers temperatures were measured between 0°C and 2°C upon receipt at the laboratory. Sample temperatures were in compliance.

II. Holding Times

A. The analysis holding times were reviewed and found to be in compliance.

III. Blanks

A. Method blank results were reviewed and found to be in compliance.

IV. MS/MSD

A. The MS/MSD was performed on sample MPL4-0712-1. MS/MSD recoveries and precision were compliant.

V. LCS

A. The LCS results were reviewed and found to be in compliance.

VI. Duplicate

A. A field duplicate sample, MPL3-0712-2, was submitted for this SDG. Field duplicate precision was compliant and the RPD was calculated for the reported results. A LCS duplicate was also analyzed and results found to be in compliance.

VII. Other

A. LOQ was reviewed and found compliant.

TOTAL ORGANIC CARBON (Method 415.1)

I. Temperature

A. Shipping coolers temperatures were measured between 0°C and 2°C upon receipt at the laboratory. Sample temperatures were in compliance.

II. Holding Times

A. The analysis holding times were reviewed and found to be in compliance.

III. Calibration

A. Calibration coefficient of correlation and ICV were reviewed and found compliant.

IV. Blanks

A. Method blank was reviewed and found to be in compliance.

V. MS/MSD

A. The MS/MSD was performed on sample MPL4-0712-1. MS/MSD recoveries and precision were compliant.

VI. LCS

A. The LCS results were reviewed and found to be in compliance.

VII. Duplicate

A. A field duplicate sample, MPL3-0712-2, was submitted for this SDG. Field sample and duplicate results were less than the quantitation limit. The LCS duplicate MSD analyzed were found in compliance.

VIII. Other

A. LOQ was reviewed and found compliant.

TOTAL SUSPENDED SOLIDS (Method 160.2)

I. Temperature

A. Shipping coolers temperatures were measured between 0°C and 2°C upon receipt at the laboratory. Sample temperatures were in compliance.

II. Holding Times

A. The analysis holding times were reviewed and found to be in compliance.

III. Blanks

A. Method blank results were reviewed and found to be in compliance.

IV. MS/MSD

A. The MS/MSD was performed on sample MPL4-0712-1. MS/MSD recoveries and precision were compliant.

V. LCS

A. The LCS results were reviewed and found to be in compliance.

VI. Duplicate

A. A field duplicate sample, MPL3-0712-2, was submitted for this SDG. Field precision could not be calculated as both the parent sample and duplicate results were less than the quantitation limit. A LCS duplicate was also analyzed and results found to be in compliance.

VII. Other

A. LOQ was reviewed and found compliant.

DATA QUALIFICATION SUMMARY

CCWS-62, Former STP Percolation Ditches, Main Post Landfill Wells, four field samples MPL1-0712-1, MPL2-0712-1, MPL3-0712-1, MPL4-0712-1, and one field duplicate MPL3-0712-2. Extra sample volume was collected at MPL4 for MS/MSD.

Organic Compounds; VOC, PAH, and PCB – Data Qualification Summary

In the semi-volatile organic compound analysis for PAH naphthalene was non-detect and qualified as estimated due to matrix spike recovery outside of criteria.

Metals – Data Qualification Summary

Selenium and silver results were qualified J+ and UN respectively, for matrix spike recoveries exceeding criteria.

Anions – Data Qualification Summary

No sample data were qualified in this SDG.

Cyanide – Data Qualification Summary

No sample data were qualified in this SDG.

Phenolics – Data Qualification Summary

No sample data were qualified in this SDG.

General and Wet Chemistry – Data Qualification Summary

No sample data were qualified in this SDG.

OVERALL ASSESSMENT OF DATA

I. Compliance with method and project requirements

A. All analyses were performed within the analytical methods specifications and project requirements.

II. Usability

A. Based on the quality control criteria reviewed, all unqualified and qualified data are usable for project purposes. No data results were rejected as unusable. Data qualifiers assigned by the laboratory in the analytical report include the “J” and “UJ” qualifiers. Estimated results are usable for limited purposes.

III. Field Duplicate Precision

A. Field duplicate precision for the paired samples from MPL3 well are shown in the table below. RPD is only calculated when both sample results exceed the LOQ.

Method	Parameter	MPL3-0712-1		MPL3-0712-2		RPD
6010B	Aluminum	0.272		0.257		5.7%
6010B	Beryllium	0.002	U	0.002	U	NC
6010B	Boron	0.1	U	0.1	U	NC
6010B	Calcium	85.4		80		6.5%
6010B	Iron	0.395		0.373		5.7%
6010B	Magnesium	15.5		14.3		8.1%
6010B	Molybdenum	0.01	U	0.01	U	NC
6010B	Potassium	3.03		2.79		8.2%
6010B	Sodium	37.7		35.5		6.0%
6010B	Tin	0.5	U	0.5	U	NC
6010B	Vanadium	0.0115		0.011		4.4%
6010B	Zinc	0.0256		0.0289		12.1%
6020	Antimony	0.001	U	0.001	U	NC
6020	Arsenic	0.00489		0.00394		21.5%
6020	Barium	0.0465		0.0453		2.6%
6020	Cadmium	0.0006	U	0.0006	U	NC
6020	Chromium	0.00214		0.00215		0.5%
6020	Cobalt	0.001	U	0.001	U	NC
6020	Copper	0.002	U	0.002	U	NC
6020	Lead	0.001	U	0.001	U	NC
6020	Manganese	0.00888		0.00809		9.3%
6020	Nickel	0.00333	J	0.00303	J	NC
6020	Selenium	0.0236		0.0186		23.7%

6020	Silver	0.001	U	0.001	U	NC
6020	Thallium	0.0002	U	0.000121	J	NC
7470A	Mercury	0.0002	U	0.0002	U	NC
300.0	Chloride	58.3		57.6		1.2%
300.0	Fluoride	0.173	J	0.158	J	NC
300.0	Sulfate	110		109		0.9%
9040	pH	7.64		7.71		0.9%
310.2	Alkalinity, total	103		102		1.0%
9014	Cyanide	0.341		0.376		9.8%
120.1	Conductivity	648		662		2.1%
420.1	Phenols	0.00556	U	0.00556	U	NC
350.1	Ammonia, as N	0.100	U	0.100	U	NC
353.2	Nitrate-Nitrite, as N	7.48		7.49		0.1%
SM4500-P-E-20th	Orthophosphate	0.130		0.122		6.3%
160.1	Total Dissolved Solids	438		396		10.1%
415.1	Total Organic Carbon	0.684	J	0.691	J	NC
160.2	Total Suspended Solids	5.0	U	5.0	U	NC