Appendix G

Data Validation Reports

Part 1

Data Validation Memos for Conventionals, Metals and Semi-Volatile Organic Compounds King County Environmental Laboratory Data

King County

Technical Memorandum

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To: Debra Williston, King County Toxicology and Contaminant Assessment Group

From: Carly Greyell, King County Toxicology and Contaminant Assessment Group
Scott Mickelson, King County Marine and Sediment Assessment Group

Subject: Data Validation Review
Green River Watershed Suspended Solids – Sediment Traps

This technical memorandum summarizes a data validation review performed on 32 sediment trap samples collected in the Green River Watershed as part of a study on suspended solids characterization of the watershed. These samples were collected between February 4, 2013 to September 15, 2015 and assigned sample numbers L57305-1 through -6, L57986-1 through -6, L58785-1 through -6, L59454-1 through -7, L63466-1 through -7. These samples were analyzed for particle size distribution (PSD), total organic carbon (TOC), total solids, mercury, other metals and base/neutral/acid semivolatile organic compounds (BNAs), with the exception of sample L507305-2, which was not analyzed for BNAs. Samples L57305-1 through -6 and samples L57986-1 through -6 were analyzed for polychlorinated biphenyls (PCBs) as Aroclors and samples L57986-1 through -6 were analyzed for chlorinated pesticides 4,4'-DDT, 4,4'-DDE and 4,4'-DDD. All samples were collected and analyses performed by the King County Environmental Laboratory (KCEL).

1.0 Introduction

This data validation review has been based, in part, on guidance found in *USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review* (EPA 2008) and *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review* (EPA 2010), as well as the project SAP (King County 2013). Materials reviewed included Batch Reports and Analytical Quality Control (QC) Reports downloaded from the King County Laboratory Information Management System (LIMS) database are included in this memorandum as Attachment A. Also reviewed were data anomaly forms (DAFs), which are available upon request. The QC parameters reviewed during this data validation include; holding time, method blanks, spike blanks, matrix spikes, matrix spike duplicates, laboratory control samples, laboratory control sample duplicates, standard reference materials, laboratory replicates and surrogates, which are described below.

1.1 Holding Time

The analytical holding time is a method-specific timeframe, during which sample preparation and analysis should occur to provide valid data. All samples should be analyzed within this prescribed holding time.

1.2 Method Blank

A method blank is an aliquot of clean reference matrix that is generally processed through the entire analytical procedure. Please see the individual analytical sections for a description of the method blank for each analysis. Analysis of the method blank is used to evaluate the levels of contamination that might be associated with the processing and analysis of samples. All method blank results should be less than the method detection limit (MDL). Method blanks were included with all analyses except PSD.

1.3 Spike Blank

A spike blank is an aliquot of the clean reference matrix used for the method blank, to which a known concentration of target analyte(s) has been added. The spiked aliquot is processed through the entire analytical procedure. Analysis of the spike blank is used as an indicator of method accuracy. Spike blanks were used as part of the QC regimen for TOC, mercury, metals, BNA and PCB analyses. Spike blanks are not addressed in the *National Functional Guidelines*; however, King County has method-defined or empirically-derived control limits for spike blank analytes, which are shown on the attached QC reports. Spike blank results should be within these control limits.

1.4 Matrix Spike

A matrix spike is a sample aliquot fortified with a known concentration of a target analyte(s). The spiked sample is processed through the entire analytical procedure. Analysis of the matrix spike is used as an indicator of sample matrix effect on the recovery of target analyte(s). Matrix spikes were used as part of the QC regimen for TOC, mercury, metals, BNA and PCB analyses. Control limits for individual organic analytes and TOC are not addressed in the *National Functional Guidelines*; however, King County has program-defined (Ecology 2008) or empirically-derived control limits for percent recoveries of these matrix spike analytes, which are shown on the attached QC reports. Matrix spike recoveries should be within these control limits. Matrix spike recoveries for metals are addressed in the *National Functional* Guidelines and should be within 75 to 125% (EPA 2010).

1.5 Matrix Spike Duplicate

A matrix spike duplicate is a second sample aliquot fortified with a known concentration of a target analyte(s). The spiked sample is processed through the entire analytical procedure. Matrix spike duplicates were analyzed as part of the QC regimen for all mercury, BNA and PCB analyses. Analysis of the matrix spike duplicate is used as an additional indicator of sample matrix effect on the recovery of target analyte(s) as well as an indicator of method precision. The relative percent difference (RPD) between matrix spike and matrix spike duplicate results for trace organic analytes are not addressed in the *National Functional Guidelines*; however, King County uses program-defined (Ecology 2008) control limits for this QC analysis, which are

shown on the attached QC reports. The RPD for matrix spike/matrix spike duplicate results should be less than 20% for mercury analysis (EPA 2010).

1.6 Laboratory Control Sample and Standard Reference Material

A laboratory control sample is a sample of known analyte concentration(s) that is prepared in the laboratory from a separate source of analyte(s) relative to the calibration standards. Since the laboratory control sample analysis should follow the entire analytical process, it should be stored and prepared following the same procedures as a field sample. A standard reference material is a commercially-prepared laboratory control sample. Analysis of a laboratory control sample or standard reference material is used as an indicator of method accuracy and long-term analytical precision. Laboratory control sample and/or standard reference material analysis was used as part of the QC regimen for TOC, mercury, trace metals, BNA and PCB analyses. King County uses laboratory control sample percent recovery control limits of 80 to 120% for TOC analysis. Percent recoveries for laboratory control samples/standard reference materials for trace metals analysis are addressed in *National Functional Guidelines*, which recommends results should be within control limits of 80 to 120% (EPA 2010). King County, however, also has empirically-derived control limits for selected trace metals, which are shown on the attached QC reports. King County also has empirically-derived control limits for trace organic standard reference material recoveries. For some methods, a duplicate laboratory control sample or standard reference material was tested to evaluate method precision.

1.7 Laboratory Replicate (Duplicate or Triplicate)

A laboratory replicate is a second (duplicate) or third (triplicate) aliquot of a sample, processed concurrently and in an identical manner with the original sample. Analysis of a laboratory replicate is used as an indicator of method precision and laboratory subsampling procedures. The laboratory replicate can also be used to provide information regarding the homogeneity of the sample matrix. QC results are reported as either a RPD between the sample and laboratory duplicate results or percent relative standard deviation (%RSD) between the sample and laboratory triplicate results. Laboratory duplicates were used during mercury and metals analyses and the RPD should be below 20% (EPA 2010). Laboratory duplicates were also used during analysis of BNAs, PCBs and pesticides; however, QC control limits for organics RPDs are not addressed in the *National Functional Guidelines*. King County used RPD control limits of 35% for BNA, chlorinated pesticide and PCB laboratory duplicate analyses (Ecology 2008). Laboratory duplicates/triplicates were used during PSD, TOC and total solids analyses; however, control limits for conventional analyses are also not addressed under the *National Functional Guidelines*. King County uses %RSD control limits of 20% for all conventional analyses (Ecology 2008). The %RSD for laboratory triplicate results should be below these control limits.

1.8 Surrogates

A surrogate is a known concentration of non-target analyte which is added to each sample (both analytical and QC samples) prior to extraction and analysis for BNAs and PCBs. Surrogate recovery is used as a sample-specific indication of method or matrix bias for target analytes. The surrogate is selected to behave in a similar manner to the target analytes. The KCEL used two surrogates, decachlorobiphenyl and 2,4,5,6-tetrachloro-m-xylene during chlorinated

pesticide and PCB analyses. *National Functional Guidelines* provides control limits for percent recoveries of these surrogate compounds and King County has empirically-derived control limits as well, which are shown in Table 1-1. Surrogate recoveries should be within these control limits.

Table 1-1
Surrogate Recovery QC Limits for PCB Analysis

Compound	King County Environmental Lab Recovery Limits	National Functional Guidelines Quality Control Recovery Limits
2,4,5,6-Tetrachloro-m-xylene	20 – 115 (PCB) / 20 to 134 (Pest)	30 – 150
Decachlorobiphenyl	55 – 120 (PCB) / 47 – 122 (Pest)	30 – 150

The King County Environmental Laboratory used seven surrogates during analysis of the full suite of BNAs. Four of these compounds are deuterated monitoring compounds (DMCs). Three of the DMCs are recommended in *National Functional Guidelines*. King County has empirically-derived laboratory QC control limits, which are shown in Table 1-2 and compared to the *National Functional Guidelines* recoveries for the three DMCs.

Table 1-2
Surrogate Recovery QC Limits for BNA Analysis

Compound	King County Environmental Lab Recovery Limits	National Functional Guidelines Quality Control Recovery Limits
2,4,6-Tribromophenol	45 – 150	--
2-Fluorobiphenyl	22 – 135	--
2-Flurophenol	20 – 136	--
d14-Terphenyl	25 – 150	--
d4-2-Chlorophenol	20 – 127	13 – 101
d5-Nitrobenzene	22 – 126	16 – 103
d5-Phenol	20 – 142	17 – 103

2.0 Conventional Analyses

Conventional analyses included particle size distribution (PSD), total organic carbon (TOC) and total solids.

2.1 Particle Size Distribution

PSD analysis was performed by a combination of sieve and hydrometer methods following ASTM Method D422 (ASTM 2002). For three samples, L57305-2, L57986-1 and L58785-1, there was limited sample material and so PSD analysis was performed by a combination of laser diffraction method following ISO 13320:2009, *Particle size analysis -- Laser diffraction methods* and ASTM Method D422/D3977 – 97 (ASTM 2002 and ASTM 2013). Associated QC samples included laboratory triplicates (LD/LT).

Table 2-1
PSD Workgroups and QC Samples

Workgroup	Method	Samples	LD/LT
WG126020	ASTM Method D422	L57305-1 through -6	✓
WG127119	ASTM Method D422	L57986-2 through -6	✓
WG129375	ASTM Method D422	L58785-2 through -6	✓
WG131042	ASTM Method D422	L59454-1 through -7	✓
WG126191	ISO 13320:2009	L57305-2	✓
WG127524	ISO 13320:2009	L57986-1	✓
WG129259	ISO 13320:2009	L58785-1	
WG126189	ASTM Method D422/D3977 – 97	L57305-2	✓
WG127522	ASTM Method D422/D3977 – 97	L57986-1	✓
WG129258	ASTM Method D422/D3977 – 97	L58785-1	
WG143688	ASTM Method D422	L63466-1 through -7	

2.1.1 Holding Time

All samples were analyzed within the prescribed 6-month holding time.

2.1.2 Laboratory Triplicate

There were no QC samples associated with workgroups WG129258, WG129259, and WG143688. Therefore, the PSD results for the samples associated with these workgroups, L58785-1, and L63466-1 through -7 should be qualified with a "J" flag and considered estimated with an unknown bias.

The RSD of 85% between results for the clay fraction of the laboratory triplicate associated with workgroup WG131042 exceeded the 20% QC limit. Results for the parameter "clay" in sample L59454-3 should be qualified with a "J" flag and considered estimated with an unknown bias. The individual phi sizes associated with the clay fraction should also be qualified with a "J" flag. These phi sizes include p+9.00, p+10.00 and p>+10.00. Since the fraction "clay" is part of the summed parameter "fines" (along with the parameter "silt,") the parameter "fines" for sample L59454-3 should be qualified with a "J" flag and considered estimated with an unknown bias.

All other RSD values for laboratory triplicates associated with these workgroups were below the 20% QC limit, ranging from 0 to 14%.

2.1.3 Other QC Concerns

The sum of all phi sizes for sample L57986-2 in workgroup WG127119 totaled 80%, which is outside the 90% to 110% acceptance limits set by the KCEL. Hydrometer data are susceptible to bias in situations where the sample specific gravity differs from the expected value typically used for the PSD calculation and/or the first time interval (30 seconds) is too large or small, which can cause uncertainty in the phi size captured during this interval and in turn, the sum. The specific gravity was determined, but the recalculated sum remained less than 90%. Reanalysis for PSD could not be performed due to limited sample availability. These results should be qualified with a "J" flag and considered estimated with an unknown bias. This QC issue is outlined in a DAF for WG127119.

The sum of all phi sizes for sample L58758-2 in workgroup WG129375 totaled 80.79%, which is outside the 90% to 110% acceptance limits set by the KCEL. The sum of all phi sizes for the lab duplicate and lab triplicate for this sample were 83.63% and 84.97%, respectively, which is also outside the QC limits. After the specific gravity was determined, the recalculated sums of all phi sizes were within the QC limits, but these results should be qualified with a "J" flag and considered estimated with an unknown bias, as prescribed in the DAF for WG129375.

The sum of all phi sizes for samples L59454-5 and -6 in workgroup WG131042 totaled <90%, outside the 90% to 110% acceptance limits set by the KCEL. After the specific gravity was determined and an adjusted first time interval included in the calculation, the recalculated sums of all phi sizes were within the QC limits, but these results should be qualified with a "J" flag and considered estimated with an unknown bias As prescribed in the DAF for WG131042.

3.2.7 PSD Data Usability

As a general data reporting format, sample results that are reported as "<MDL" by KCEL should be assigned a "U" flag in all cases. Sample results that are reported as "less than or equal to the reporting detection limit" (<RDL, RDL) should be assigned a "J" flag and considered estimated in all cases. PSD analytical results for the 32 analytical samples included in this dataset may be used as reported, without qualification with the exceptions summarized in Table 2-2. LIMS Batch and QC reports are provided as Attachment A.

Table 2-2
PSD Qualifications

Workgroup	Parameter	QC Issue	Qualification Outcomes
WG129258; WG129259; WG163466	All PSD parameters	No QC samples	All detected associated results in samples L58785-1, and L63466-1 through -7 should be "J" flagged and considered estimated with an unknown bias. All non-detect results should be flagged "UJ" and considered estimated non-detects with unknown bias.
WG131042	Clay and associated PSD parameters	LD/LT RSD 85%	All associated results in sample L59454-3 should be "J" flagged and considered estimated with an unknown bias.
WG127119	All PSD parameters	Sum of phi sizes <90%	All associated results in sample L57986-2 should be "J" flagged and considered estimated with an unknown bias.
WG129375	All PSD parameters	Sum of phi sizes <90%	All associated results in sample L58758-2 should be "J" flagged and considered estimated with an unknown bias.
WG131042	All PSD parameters	Sum of phi sizes <90%	All associated results in samples L59454-3 and -4 should be "J" flagged and considered estimated with an unknown bias.

2.2 Total Organic Carbon

TOC analysis was performed using high-temperature combustion and infrared spectroscopy following EPA Method 9060 – SW846 (EPA 2007). Associated QC samples included method blanks (MB), spike blanks (SB), matrix spikes (MS), laboratory triplicates, laboratory control samples (LCS) and standard reference materials (SRM).

Table 2-2
TOC Workgroups and QC Samples

Workgroup	Samples	MB	SB	MS	LD/LT	LCS	SRM
WG125621	L57305-1 through -6	✓	✓	✓	✓		✓
WG127207	L57986-1 through -6	✓	✓	✓	✓		✓
WG129299	L58785-1 through -6	✓	✓	✓	✓	✓	
WG130885	L59454-1 through -7	✓	✓	✓	✓	✓	
WG143336	L63466-1 through -7	✓	✓	✓	✓	✓	

2.2.1 Holding Time

All 32 samples were analyzed within the prescribed 6-month holding time.

2.2.2 Method Blank

A TOC method blank consists of a conditioned sample cup containing quartz wool that is submitted to the entire analytical procedure. TOC results in the method blanks were all less than the MDL, indicating that laboratory contamination was not an issue during analysis of the samples included in these workgroups.

2.2.3 Spike Blank

All TOC spike blank recoveries were within the 80 to 120% QC limits, ranging from 97 to 104%.

2.2.4 Matrix Spike

All TOC matrix spike recoveries were within the 70 to 130% QC limits ranging from 99 to 103%.

2.2.5 Laboratory Triplicate

All RSDs between TOC laboratory triplicate results were below the 20% QC limit, ranging from 3 to 13%.

2.2.6 Standard Reference Material and Laboratory Control Sample

All TOC recoveries in either SRM or LCS samples were within the 80 to 120% QC limits, ranging from 84 to 113%.

3.2.7 TOC Data Usability

As a general data reporting format, sample results that are reported as "<MDL" by KCEL should be assigned a "U" flag in all cases. Sample results that are reported as "less than or equal to the reporting detection limit" (<RDL, RDL) should be assigned a "J" flag and considered estimated in all cases. Total organic carbon analytical results for the 32 analytical samples included in this dataset may be used as reported, without qualification. LIMS Batch and QC reports are provided as Attachment A.

2.3 Total Solids

Total (percent) solids analysis was performed using a gravimetric determination following Standard Method SM2540-G (APHA 1998). Associated QC samples included method blanks, laboratory replicates.

Table 2-3
Total Solids Workgroups and QC Samples

Workgroup	Samples	MB	LD/LT
WG125508	L57305-3 through -6	✓	✓
WG125612	L57305-1 through -2	✓	✓
WG127120	L57986-1 through -6	✓	✓
WG129699	L58785-1 through -6	✓	✓
WG130726	L59454-1 through -7	✓	✓
WG143238	L63466-1 through -7	✓	✓

2.3.1 Holding Time

All 32samples were analyzed within the prescribed 6-month holding time.

2.3.2 Method Blank

A total solids method blank consists of a conditioned sample cup that is submitted to the entire analytical procedure. All total solids method blank results were less than the MDL, indicating acceptable balance and method performance.

2.3.3 Laboratory Triplicate

All RSDs between total solids laboratory duplicate and triplicate results were below the 20% QC limit, ranging from 0 to 4%.

3.3.4 Total Solids Data Usability

Total solids analytical results for the analytical samples included in this dataset may be used as reported, without qualification. LIMS Batch and QC reports are provided as Attachment A.

3.0 Trace Metals Analyses

Trace metals analyses included total mercury and total arsenic, cadmium, chromium, copper, lead, nickel, silver, vanadium and zinc.

3.1 Total Mercury

Total mercury analysis was performed by cold-vapor atomic absorption spectroscopy (CVAA) following EPA Method 7471B – SW846 (EPA 2007). Associated QC samples included method blanks, spike blanks, matrix spikes, matrix spike duplicates (MSD), laboratory duplicates and laboratory control samples (analyzed in duplicate - LCSD).

Table 3-1
Total Mercury Workgroups and QC Samples

Workgroup	Samples	MB	SB	MS/MSD	LD	LCS/LCSD
WG125551	L57305-1 through -6	✓	✓	✓	✓	✓
WG128375	L57986-1 through -6	✓	✓	✓	✓	✓
WG129257	L58785-1, -2 and -6	✓	✓	✓	✓	✓
WG129628	L58785-3 through -5	✓	✓	✓	✓	✓
WG130733	L59454-1 through -7	✓	✓	✓	✓	✓
WG142099	L63446-1 through -7	✓	✓	✓	✓	✓

3.1.1 Holding Time

Samples in workgroup WG128375 (L57986-1 through -6), and sample L63466-5 in workgroup WG142099 were analyzed for mercury after the 28-day holding time for mercury by 69 days and one month, respectively . Total mercury was detected in all samples, and these results should be qualified with a "J" flag and considered estimated with a low bias per the recommendations of the *National Functional Guidelines*. All other samples were digested and analyzed within the prescribed 28-day holding time.

3.1.2 Method Blank

A mercury method blank consists of an aliquot of reagent water that is digested and then analyzed. All mercury method blank results were less than the MDL, indicating that laboratory contamination was not an issue during analysis of the samples included in these workgroups.

3.1.3 Spike Blank

All mercury spike blank recoveries were within 85 to 115% QC limits, ranging from 90 to 104%.

3.1.4 Matrix Spike and Matrix Spike Duplicate

Mercury recoveries in the matrix spikes and matrix spike duplicates associated with all workgroups were within the 75 to 125% QC limits, ranging from 93 to 115%. The RPDs between matrix spike and matrix spike duplicate results were all less than the 20% QC limit, ranging from 0 to 8%.

3.1.5 Laboratory Duplicate

The RPD between the sample result and laboratory duplicate for workgroup WG142099 met the QC limit of 20%. In all other samples with which laboratory duplicates were analyzed, total mercury concentrations were below the RDL and RPDs between the sample and laboratory duplicates were not calculated. Total mercury results for these samples will already be qualified with a "J" flag and considered estimated with an unknown bias because concentrations are less than the RDL.

3.1.6 Laboratory Control Samples

Laboratory control samples were analyzed in duplicate. All mercury laboratory control sample recoveries were within the 80 to 120% QC limits, ranging from 82 to 110%. RPDs between mercury laboratory control sample results were both below the 20% QC limit, ranging from 1 to 8%.

3.1.7 Total Mercury Data Usability

As a general data reporting format, sample results that are reported as "<MDL" by KCEL should be assigned a "U" flag in all cases. Sample results that are reported as "less than or equal to the reporting detection limit" (<RDL, RDL) should be assigned a "J" flag and considered estimated in all cases. Total mercury analytical results for the 32 analytical samples included in this dataset may be used as reported, without qualification with the exceptions of samples L57986-1 through -6, and L63466-5 that were "J" qualified due to holding time exceedances. LIMS Batch and QC reports are provided as Attachment A.

3.2 ICP-MS Metals

Total metals analysis was performed by inductively-coupled plasma mass spectroscopy (ICP-MS) following EPA Method 3050B/6020A – SW846 (EPA 2007). Target analytes included arsenic, cadmium, chromium, copper, lead, nickel, silver, vanadium and zinc. Associated QC samples included method blanks, spike blanks, matrix spikes, laboratory duplicates and laboratory control samples (in duplicate).

Table 3-2
Total ICP-MS Metals Workgroups and QC Samples

Workgroup	Samples	MB	SB	MS	LD	LCS/LCSD
WG126014	L57305-1 through -6	✓	✓	✓	✓	✓
WG127460	L57986-1 through -6 (arsenic only)	✓	✓	✓	✓	✓
WG128370	L57986-1 through -6 (other metals)	✓	✓	✓	✓	✓
WG129766	L58785-1 through -6	✓	✓	✓	✓	✓
WG130834	L59454-1 through -7	✓	✓	✓	✓	✓
WG143629	L63466-1 through -7	✓	✓	✓	✓	✓

3.3.1 Holding Time

All 32 samples were digested and analyzed within the prescribed 6-month holding time.

3.2.2 Method Blank

Results for all target metals in the method blanks associated with all workgroups were less than the MDL, indicating that laboratory contamination was not an issue during analysis of the samples included in these workgroups.

3.2.3 Spike Blank

Spike blank recoveries for all target metals in all workgroups were within the 85 to 115% laboratory QC limits, ranging from 91 to 114%.

3.2.4 Matrix Spike

The recoveries for chromium, nickel, vanadium and zinc in the matrix spikes associated with workgroups WG126014 and WG129766 could not be properly assessed from a QC standpoint due to the low spike-to-sample concentration ratio, which did not meet the “4X” rule for evaluating matrix spike recoveries (EPA 2010). This was also true for vanadium and zinc in workgroup WG130834, as well vanadium, copper and zinc in workgroup WG143629. Because the spike blank results can be used to evaluate accuracy for metals in these workgroups, these results may be used as reported without additional qualifiers based on the matrix spike results.

All other matrix spike recoveries were within the QC limits of 75 to 125%, ranging from 80 to 106%.

3.2.5 Laboratory Duplicate

RPDs between all laboratory duplicate results were below the 20% QC limit, ranging from 0 to 18%.

3.2.6 Laboratory Control Sample

One to two laboratory control samples were analyzed with each workgroup, with at least one laboratory control sample analyzed in duplicate. Recoveries for all target metals in each laboratory control sample were within the empirically-derived laboratory QC limits shown on the attached QC report. RPDs between all duplicate laboratory control sample results were less than the 20% QC limit, ranging from 0 to 12%.

3.2.7 Total ICP-MS Metals Data Usability

As a general data reporting format, sample results that are reported as "<MDL" by KCEL should be assigned a "U" flag in all cases. Sample results that are reported as "less than or equal to the reporting detection limit" (<RDL, RDL) should be assigned a "J" flag and considered estimated in all cases. Total ICP-MS metals analytical results for the 32 analytical samples included in this dataset may be used as reported, without qualification. LIMS Batch and QC reports are provided as Attachment A.

4.0 Trace Organics Analyses

Trace organics analyses included base/neutral/acid semivolatile organic compounds (BNAs), chlorinated pesticides and polychlorinated biphenyls (PCBs).

4.1 BNAs

BNA analysis was performed by gas chromatography/mass spectroscopy (GC/MS) following EPA Methods 3550B/8270D – SW846 (EPA 2007). Target analytes included 36 BNA compounds, shown on the attached LIMS analytical QC report. Associated QC samples in each workgroup included a method blank, one to two spike blanks (low and high concentrations), a matrix spike and matrix spike duplicate, standard reference material run in duplicate (SRMD), a laboratory duplicate and surrogates. Sample L57305-2 was not analyzed for BNAs.

Table 4-1
BNAs Workgroups and QC Samples

Workgroup	Samples	MB	SB	MS/MSD	SRM/SRMD	LD	Surrogates
WG125614	L57305-1 and -3 through -6	✓	✓	✓	✓	✓	✓
WG127162	L57986-1 through -6	✓	✓	✓	✓	✓	✓
WG129288	L58785-1 through -6	✓	✓	✓	✓	✓	✓
WG130715	L59454-1 through -7	✓	✓	✓	✓	✓	✓
WG143702	L63466-1 through -7	✓	✓	✓	✓	✓	✓

4.1.1 Holding Time

All 31 samples were extracted and analyzed within the prescribed frozen holding time of 1 year until extraction and, then, 40 days to analysis.

4.1.2 Method Blank

A BNA method blank consists of an aliquot of anhydrous sodium sulfate/hydro matrix to which surrogates are added. The method blank is then extracted and analyzed following the same

protocols as sample analysis. Results for all BNA compounds in all method blanks were all less than the MDL.

4.1.3 Spike Blank

Both lower- and higher-concentration spike blanks were analyzed with each workgroup, except workgroup WG143702, which included only one spike blank. Spike blank recoveries ranged from 0 to 4%, below the 20% lower QC limit, for benzoic acid in both the lower- and higher-concentration spike blanks associated with all workgroups, except workgroup WG143702 for which the recovery was within the QC limits at 38%. Benzoic acid, however, is a known poor performed in spike blanks and this compound returned acceptable recoveries in both the matrix spikes and matrix spike duplicates associated with all workgroups. As a result, associated benzoic acid sample data will not be qualified based on spike blank recoveries.

Recoveries for 2,4-dimethylphenol were recorded as 2 and 14%, respectively, in the lower- and higher-concentration spike blanks associated with workgroup WG127162, both of which were below the 20% lower QC limit. Since 2,4-dimethylphenol was not detected in any of the associated samples, all 2,4-dimethylphenol in this workgroup should be qualified with a "UJ" flag with bias considered low.

The recovery of 52% for fluorene in the lower-concentration spike blank associated with workgroup WG127162 was below the 57% lower QC limit. Since fluorene was not detected in any of the associated samples, all fluorene results in this workgroup should be qualified with a "UJ" flag with bias considered low.

The recovery of 144% for n-nitrosodiphenylamine in the higher-concentration spike blank associated with workgroup WG129288 exceeded the 136% upper QC limit. Since this compound was not detected in any of the 24 samples, no n-nitrosodiphenylamine data will be qualified based on spike blank recoveries.

All other spike blank recoveries in all workgroups were within their respective empirically-derived QC limits.

Table 4-2
BNAs Qualifications Due to Spike Blank Results

Workgroup	Compound	SB % Recovery	Qualification Outcomes
WG127162	2,4-dimethylphenol	2% (low); 14% (high)	All associated results should be "UJ" flagged with a low bias.
	Fluorene	52% (low)	All associated results should be "UJ" flagged with a low bias.

4.1.4 Matrix Spike and Matrix Spike Duplicate

Recoveries of 148 and 147% were reported for n-nitrosodiphenylamine, respectively, in the matrix spike and matrix spike duplicate associated with workgroup WG129288, which were both exceeding the upper QC limit of 140%. This compound was not detected in the sample on which the matrix spike and matrix spike duplicate were performed so associated sample data will not be qualified based on these QC results.

In workgroup WG143702, the recoveries for di-n-octyl phthalate in the matrix spike and matrix spike duplicates could not be properly assessed from a QC standpoint due to the low spike-to-sample concentration ratio, which did not meet the "4X" rule for evaluating matrix spike recoveries (EPA 2010). Since di-n-octyl phthalate performed well in the spike blank, no qualifications are recommended based on matrix spike results.
In workgroup WG143702, the recoveries of 24% and 25% for dibenzo(a,h)anthracene in the matrix spike and matrix spike duplicate, respectively, were below the lower QC limit of 39%. This compound was not detected in the sample on which the matrix spike and matrix spike duplicate were performed, and so the associated sample result should be qualified with a "UJ" flag and considered an estimated non-detect with low bias.

All other matrix spike and matrix spike duplicate recoveries in all workgroups were within their respective empirically-derived QC limits. All RPDs between duplicate results were below the 35% QC limit, ranging from 0 to 25%.

Table 4-3
BNAs Qualifications Due to Matrix Spike Results

Workgroup	Compound	MS/MSD % Recovery	Qualification Outcomes
WG143702	Dibenzo(a,h)anthracene	24% (MS); 25% (MSD)	All associated results should be "UJ" flagged with a low bias.

4.1.5 Standard Reference Material and Standard Reference Material Duplicate

The standard reference material analyzed in association with BNA analysis includes a partial list of target analytes – a total of 10 compounds – all of which are polycyclic aromatic hydrocarbons (PAHs). Standard reference materials were analyzed in duplicate for all workgroups. All standard reference material recoveries were within their respective empirically-derived QC limits. RPDs between duplicate results were all below the 35% QC limit, ranging from 0 to 24%.

4.1.6 Laboratory Duplicate

The RPD between the duplicate results for benzoic acid in sample L59454-6 exceeded the 35% QC limit. The benzoic acid result in this sample should be qualified with a "J" flag and considered estimated with an unknown bias. All other RPDs between duplicate results greater than the RDL for BNA compounds associated with all workgroups were less than the 35% QC limit, ranging from 1 to 33%.

Table 4-4
BNAs Qualifications Due to Laboratory Duplicate Results

Workgroup	Compound	RPD	Qualification Outcomes
WG130715	Benzoic Acid	83%	L59454-6 result should be "J" flagged with an unknown bias.

4.1.7 Surrogates

The surrogate recoveries of d5-nitrobenzene in the standard reference material analysis associated with workgroup WG127162 was below the 22% lower QC limit, at 18%. This surrogate is one of three used to measure sample-specific performance of the base/neutral fraction of the BNA analysis. The other two surrogate recoveries, 2-fluorobiphenyl and d4-

terphenyl, were within their respective QC limits in all samples, so sample data for workgroup WG127162 will not be qualified based on these surrogate recovery QC exceedences.

The surrogate recovery of 2,4,6-tribromophenol in the method blank associated with workgroups WG129288 and WG143702 were below the 45% lower QC limit, at 30% and 33%, respectively. This surrogate is one of four used to measure sample-specific performance of the acid fraction of the BNA analysis. The other three surrogates, d5-phenol, 2-fluorphenol and d4-2-chlorophenol, were within their respective QC limits in all samples, so sample data for workgroups WG129288 and WG143702 will not be qualified based on these surrogate recovery QC exceedences.

4.1.8 BNAs Data Usability

As a general data reporting format, sample results that are reported as "<MDL" by KCEL should be assigned a "U" flag in all cases. Sample results that are reported as "less than or equal to the reporting detection limit" (<RDL, RDL) should be assigned a "J" flag and considered estimated in all cases. BNAs analytical results for the 31 analytical samples included in this dataset may be used as reported, without qualification with the exceptions summarized in Tables 4-2, 4-3, and 4-4. LIMS Batch and QC reports are provided as Attachment A.

4.2 PCBs

PCB Aroclors were analyzed by gas chromatography with electron capture detector (GC/ECD), following EPA Method 3550B/8082A – SW846 (EPA 2007). Associated QC samples included method blanks, spike blanks, matrix spikes and matrix spike duplicates, standard reference material (analyzed in duplicate), laboratory duplicates and surrogates.

Table 4-5
PCBs Workgroups and QC Samples

Workgroup	Samples	MB	SB	MS/MSD	SRM/SRMD	LD	Surrogates
WG125613	L57305-1 through -6	✓	✓	✓	✓	✓	✓
WG127132	L57986-1 through -6	✓	✓	✓	✓	✓	✓

4.2.1 Holding Time

All twelve samples were extracted and analyzed within the prescribed frozen holding time of 1 year until extraction and, then, 40 days to analysis.

4.2.2 Method Blanks

Results for all seven Aroclors in both method blanks were less than the MDL, indicating that laboratory contamination was not an issue during analysis of the samples included in these workgroups.

4.2.3 Spike Blank

Two Aroclors, 1242 and 1260, were used in both spike blanks as well as matrix spikes (see Section 4.2.4). Recoveries for both Aroclors were within the empirically-derived QC limits shown on the attached LIMS analytical QC report for the spike blanks associated with both workgroups.

4.2.4 Matrix Spikes and Matrix Spike Duplicates

Matrix spike recoveries for both Aroclors in both the matrix spike and matrix spike duplicate were within the empirically-derived laboratory QC limits in both workgroups. The RPDs for both Aroclor results between the matrix spikes and matrix spike duplicates were less than the laboratory QC limit of 35%, ranging from 0 to 7%.

4.2.5 Standard Reference Material and Standard Reference Material Duplicate

Aroclor 1260 is used as the target PCB analyte during standard reference material analysis. Recoveries of Aroclor 1260 in both the standard reference material and standard reference material duplicate were within the empirically-derived laboratory QC limits in both workgroups. The RPDs between standard reference material and standard reference material duplicate results were below the 35% laboratory QC limit in both workgroups, at 21 and 33%.

4.2.6 Laboratory Duplicate

PCB results for all seven Aroclors in both samples upon with laboratory duplicate analysis was performed were less than the MDL.

4.2.7 Surrogates

Recoveries for both surrogates in all 12 analytical samples and all 14 QC samples were within the empirically-derived laboratory QC limits. Recovery of decachlorobiphenyl was also within the control limits recommended in *National Functional Guidelines* QC limits for all analytical and QC samples, while recovery of 2,4,5,6-tetrachloro-m-xylene was within the control limits recommended in *National Functional Guidelines* QC limits for all 12 analytical and 11 of 14 QC samples. Data will not be qualified based on these surrogate recovery QC exceedences.

4.2.8 PCB Data Usability

As a general data reporting format, sample results that are reported as "<MDL" by KCEL should be assigned a "U" flag in all cases. Sample results that are reported as "less than or equal to the reporting detection limit" (<RDL, RDL) should be assigned a "J" flag and considered estimated in all cases. PCB analytical results for the 12 analytical samples included in this dataset may be used as reported, without qualification. LIMS Batch and QC reports are provided as Attachment A.

4.3 Chlorinated Pesticides

Chlorinated pesticides, 4,4'-DDD, 4,4'-DDE and 4,4'-DDT, were analyzed by GC/ECD, following EPA Method 3550B/8081B – SW846 (EPA 2007). Associated QC samples included only a method blank, laboratory duplicate and surrogates. These QC samples are insufficient to determine the precision and bias of the data; therefore, all pesticide results should be qualified with a "J" flag and considered estimated with an unknown bias.

Table 4-6
Pesticide Workgroups and QC Samples

Workgroup	Samples	MB	LD	Surrogates
WG127409	L57986-1 through -6	✓	✓	✓

4.3.1 Holding Time

All six samples were extracted analyzed within the prescribed frozen holding time of 1 year until extraction and, then, 40 days to analysis.

4.3.2 Method Blanks

Results for all chlorinated pesticides in the method blanks were less than the MDL, indicating that laboratory contamination was not an issue during analysis of the samples included in this workgroup.

4.3.3 Laboratory Duplicate

All chlorinated pesticides were detected below the RDL in the laboratory duplicate sample.

4.3.4 Surrogates

Recoveries for both surrogates in all six analytical samples and the two QC samples were within the empirically-derived laboratory QC limits. Surrogate recoveries were also within the control limits recommended in *National Functional Guidelines* QC limits for the six analytical samples and one of the two QC samples. The 2,4,5,6-tetrachloro-m-xylene recovery of 23% in the method blank were both below the 30% lower QC limit recommended in *National Functional Guidelines*. Sample data, however, will not be qualified based on this surrogate recovery.

4.3.5 Sample Handling

This analysis was added for a subset of samples after chlorinated pesticides were suspected during PCB analysis. Because of this sample extracts had already been acid cleaned, which could interfere with pesticide analysis. As a result all pesticide results should be qualified with a "J" flag and considered estimated with an unknown bias.

4.3.6 Pesticide Data Usability

As a general data reporting format, sample results that are reported as "<MDL" by KCEL should be assigned a "U" flag in all cases. Sample results that are reported as "less than or equal to the reporting detection limit" (<RDL, RDL) should be assigned a "J" flag and considered estimated in all cases. All pesticide data from this workgroup should be qualified with a "J" flag and considered estimated with an unknown bias if the concentration is greater than the MDL. If results are less than the MDL, the result should be qualified "UJ". LIMS Batch and QC reports are provided as Attachment A.

6.0 References

APHA 1998. *Standard Methods for the Examination of Water and Wastewater, 20th Edition.* American Public Health Association. Washington, D.C.

ASTM 2002. *Standard Test Method for Particle-Size Analysis of Soils D422-63(2002)*. American Society for Testing and Materials. West Conshohocken, Pennsylvania.

ASTM 2013. *Standard Test Methods for Determining Sediment Concentration in Water Samples ASTM D3977-97(2013).* American Society for Testing and Materials. West Conshohocken, Pennsylvania.

EPA 2007. *Test Methods for Evaluating Solid Waste*. *Laboratory Manual – Physical/Chemical Methods, SW-846, 3rd Edition, Update IVB*. USEPA, Office of Solid Waste and Emergency Response. Washington, D.C.

EPA 2008. *USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review*. OSWER 9240.1-48, USEPA-540-R-08-01. USEPA. Washington, D.C. June 2001.

EPA 2010. *USEPA Contract Laboratory Program National Functional Guidelines for Superfund Inorganic Data Review.* OSWER 9240.1-51, USEPA-540-R-10-011. USEPA. Washington, D.C. January 2010.

King County 2013. *Green River Study: Suspended Solids Characterization – Sampling and Analysis Plan*. Prepared by Debra Williston and Deb Lester, King County Water and Land Resources Division. Seattle, Washington.

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Should you have questions regarding any of the information contained in this data validation memorandum, please don't hesitate to contact me.

Sincerely,

Carly Greyell
King County, Toxicology and Contaminant Assessment Group
206-477-4703; carly.greyell@kingcounty.gov

ATTACHMENT A

LIMS BATCH AND QC REPORTS

LIMSView Batch Report for Green River Watershed Suspended Solids - Sediment Traps 2013-2014

WG126020 (PSD) Department: 3 - Conventionals Move Date: 2013-04-17 11:10:57

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L57305-1	423589-335-4	LDW Green River, Suspended Solids	CVPSD	TRAP SED	2/14/2013	3/25/2013	3/26/2013	
L57305-3	423589-335-4	LDW Green River, Suspended Solids	CVPSD	TRAP SED	2/4/2013	3/25/2013	3/26/2013	
L57305-4	423589-335-4	LDW Green River, Suspended Solids	CVPSD	TRAP SED	2/4/2013	3/25/2013	3/26/2013	
L57305-5	423589-335-4	LDW Green River, Suspended Solids	CVPSD	TRAP SED	2/4/2013	3/25/2013	4/1/2013	
L57305-6	423589-335-4	LDW Green River, Suspended Solids	CVPSD	TRAP SED	2/4/2013	3/25/2013	3/26/2013	
WG126020-1	LD		CVPSD	TRAP SED		3/25/2013	4/1/2013	L57305-5
WG126020-2	LT		CVPSD	TRAP SED		3/25/2013	4/1/2013	WG126020-1 L57305-5

WG127119 (PSD) Department: 3 - Conventionals Move Date: 2013-06-25 08:38:16

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L57986-2	423589-335-4	LDW Green River, Suspended Solids	CVPSD	TRAP SED	5/14/2013	6/3/2013	6/4/2013	
L57986-3	423589-335-4	LDW Green River, Suspended Solids	CVPSD	TRAP SED	5/14/2013	6/3/2013	6/4/2013	
L57986-4	423589-335-4	LDW Green River, Suspended Solids	CVPSD	TRAP SED	5/14/2013	6/3/2013	6/4/2013	
L57986-5	423589-335-4	LDW Green River, Suspended Solids	CVPSD	TRAP SED	5/14/2013	6/3/2013	6/4/2013	
L57986-6	423589-335-4	LDW Green River, Suspended Solids	CVPSD	TRAP SED	5/14/2013	6/3/2013	6/4/2013	
WG127119-1	LD		CVPSD	TRAP SED		6/3/2013	6/4/2013	L57986-5
WG127119-2	LT		CVPSD	TRAP SED		6/3/2013	6/4/2013	WG127119-1 L57986-5

WG129375 (PSD) Department: 3 - Conventionals Move Date: 2013-11-21 13:21:25

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L58785-2	423589-335-4	LDW Green River, Suspended Solids	CVPSD	TRAP SED	9/30/2013	10/21/2013	10/22/2013	
L58785-3	423589-335-4	LDW Green River, Suspended Solids	CVPSD	TRAP SED	10/8/2013	10/21/2013	10/22/2013	
L58785-4	423589-335-4	LDW Green River, Suspended Solids	CVPSD	TRAP SED	10/8/2013	10/21/2013	10/22/2013	
L58785-5	423589-335-4	LDW Green River, Suspended Solids	CVPSD	TRAP SED	10/8/2013	10/21/2013	10/22/2013	
L58785-6	423589-335-4	LDW Green River, Suspended Solids	CVPSD	TRAP SED	9/30/2013	10/21/2013	10/22/2013	
WG129375-1	LD		CVPSD	TRAP SED		10/21/2013	10/22/2013	L58785-2
WG129375-2	LT		CVPSD	TRAP SED		10/21/2013	10/22/2013	WG129375-1 L58785-2

WG131042 (PSD) Department: 3 - Conventionals Move Date: 2014-02-27 15:18:24

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L59454-1	423589-335-4	LDW Green River, Suspended Solids	CVPSD	TRAP SED	1/7/2014	2/10/2014	2/11/2014	
L59454-2	423589-335-4	LDW Green River, Suspended Solids	CVPSD	TRAP SED	1/7/2014	2/10/2014	2/11/2014	

L59454-3	423589-335-4	LDW Green River, Suspended Solids	CVPSD	TRAP SED	1/7/2014	2/10/2014	2/11/2014	
L59454-4	423589-335-4	LDW Green River, Suspended Solids	CVPSD	TRAP SED	1/7/2014	2/10/2014	2/11/2014	
L59454-5	423589-335-4	LDW Green River, Suspended Solids	CVPSD	TRAP SED	1/7/2014	2/10/2014	2/11/2014	
L59454-6	423589-335-4	LDW Green River, Suspended Solids	CVPSD	TRAP SED	1/7/2014	2/10/2014	2/11/2014	
L59454-7	423589-335-4	LDW Green River, Suspended Solids	CVPSD	TRAP SED	1/7/2014	2/10/2014	2/11/2014	
WG131042-1	LD		CVPSD	TRAP SED		2/10/2014	2/11/2014	L59454-3
WG131042-2	LT		CVPSD	TRAP SED		2/10/2014	2/11/2014	WG131042-1 L59454-3

WG126191 (PSD-LD for LDW Green Rive) Department: 3 - Conventionals Move Date: 2013-04-22 11:40:16

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L57305-2	423589-335-4	LDW Green River, Suspended Solids	CVPSD-LD	TRAP SED	2/14/2013	4/1/2013	4/2/2013	
L57495-1	423589-335-4	LDW Green River, Suspended Solids	CVPSD-LD	FILTER SED	2/22/2013	4/1/2013	4/2/2013	
L57495-4	423589-335-4	LDW Green River, Suspended Solids	CVPSD-LD	FILTER SED	2/22/2013	4/1/2013	4/3/2013	
L57495-5	423589-335-4	LDW Green River, Suspended Solids	CVPSD-LD	FILTER SED	2/22/2013	4/1/2013	4/3/2013	
L57634-1	423589-335-4	LDW Green River, Suspended Solids	CVPSD-LD	FILTER SED	3/20/2013	4/1/2013	4/2/2013	
L57634-2	423589-335-4	LDW Green River, Suspended Solids	CVPSD-LD	FILTER SED	3/20/2013	4/1/2013	4/2/2013	
L57634-3	423589-335-4	LDW Green River, Suspended Solids	CVPSD-LD	FILTER SED	3/20/2013	4/1/2013	4/2/2013	
WG126191-1	LD		CVPSD-LD	FILTER SED		4/1/2013	4/2/2013	L57634-2
WG126191-2	LT		CVPSD-LD	FILTER SED		4/1/2013	4/2/2013	WG126191-1 L57634-2

WG127524 (PSD-LD for CSO and LDW) Department: 3 - Conventionals Move Date: 2013-06-28 11:18:32

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L57786-1	423589-340-4	CSO Source Characterization	CVPSD-LD	IN-LINESED	4/16/2013	6/24/2013	6/25/2013	
L57986-1	423589-335-4	LDW Green River, Suspended Solids	CVPSD-LD	TRAP SED	5/14/2013	6/24/2013	6/25/2013	
L58172-1	423368-210-1	CSO Sediment Quality Characterization	CVPSD-LD	FRSHWTRS	6/20/2013	6/24/2013	6/25/2013	
WG127524-1	LD		CVPSD-LD	FRSHWTRSED		6/24/2013	6/25/2013	L58172-1
WG127524-2	LT		CVPSD-LD	FRSHWTRSED		6/24/2013	6/25/2013	WG127524-1 L58172-1

WG129259 () Department: 3 - Conventionals Move Date: 2013-11-20 09:22:23

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L58754-1	423589-335-4	LDW Green River, Suspended Solids	CVPSD-LD	FILTER SED	9/12/2013	10/7/2013	10/8/2013	
L58785-1	423589-335-4	LDW Green River, Suspended Solids	CVPSD-LD	TRAP SED	9/30/2013	10/7/2013	10/8/2013	

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WG126189 (PSD-SC for LDW Green Rive) Department: 3 - Conventionals Move Date: 2013-04-22 11:39:38

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L57305-2	423589-335-4	LDW Green River, Suspended Solids	CVPSD-SC	TRAP SED	2/14/2013	4/1/2013	4/3/2013	
L57495-1	423589-335-4	LDW Green River, Suspended Solids	CVPSD-SC	FILTER SED	2/22/2013	4/1/2013	4/3/2013	
L57495-4	423589-335-4	LDW Green River, Suspended Solids	CVPSD-SC	FILTER SED	2/22/2013	4/1/2013	4/3/2013	
L57495-5	423589-335-4	LDW Green River, Suspended Solids	CVPSD-SC	FILTER SED	2/22/2013	4/1/2013	4/3/2013	
L57634-1	423589-335-4	LDW Green River, Suspended Solids	CVPSD-SC	FILTER SED	3/20/2013	4/1/2013	4/3/2013	
L57634-2	423589-335-4	LDW Green River, Suspended Solids	CVPSD-SC	FILTER SED	3/20/2013	4/1/2013	4/3/2013	
L57634-3	423589-335-4	LDW Green River, Suspended Solids	CVPSD-SC	FILTER SED	3/20/2013	4/1/2013	4/3/2013	
WG126189-1	LD		CVPSD-SC	FILTER SED		4/1/2013	4/3/2013	L57634-2
WG126189-2	LT		CVPSD-SC	FILTER SED		4/1/2013	4/3/2013	WG126189-1 L57634-2

WG127522 (PSD-SC for CSO and LDW) Department: 3 - Conventionals Move Date: 2013-06-28 13:57:08

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L57786-1	423589-340-4	CSO Source Characterization	CVPSD-SC	IN-LINESED	4/16/2013	6/25/2013	6/27/2013	
L57986-1	423589-335-4	LDW Green River, Suspended Solids	CVPSD-SC	TRAP SED	5/14/2013	6/24/2013	6/27/2013	
L58172-1	423368-210-1	CSO Sediment Quality Characterization	CVPSD-SC	FRSHWTRS	6/20/2013	6/24/2013	6/27/2013	
WG127522-1	LD		CVPSD-SC	FRSHWTRSED		6/24/2013	6/27/2013	L58172-1
WG127522-2	LT		CVPSD-SC	FRSHWTRSED		6/24/2013	6/27/2013	WG127522-1 L58172-1

WG129258 () Department: 3 - Conventionals Move Date: 2013-11-20 09:17:35

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L58754-1	423589-335-4	LDW Green River, Suspended Solids	CVPSD-SC	FILTER SED	9/12/2013	10/7/2013	10/9/2013	
L58785-1	423589-335-4	LDW Green River, Suspended Solids	CVPSD-SC	TRAP SED	9/30/2013	10/7/2013	10/9/2013	

WG125621 (toc soil) Department: 3 - Conventionals Move Date: 2013-04-17 13:45:48

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L57305-1	423589-335-4	LDW Green River, Suspended Solids	CVTOC	TRAP SED	2/14/2013	2/28/2013	3/5/2013	
L57305-2	423589-335-4	LDW Green River, Suspended Solids	CVTOC	TRAP SED	2/14/2013	2/28/2013	3/5/2013	
L57305-3	423589-335-4	LDW Green River, Suspended Solids	CVTOC	TRAP SED	2/4/2013	2/19/2013	3/6/2013	
L57305-4	423589-335-4	LDW Green River, Suspended Solids	CVTOC	TRAP SED	2/4/2013	2/19/2013	3/5/2013	
L57305-5	423589-335-4	LDW Green River, Suspended Solids	CVTOC	TRAP SED	2/4/2013	2/19/2013	3/6/2013	
L57305-6	423589-335-4	LDW Green River, Suspended Solids	CVTOC	TRAP SED	2/4/2013	2/19/2013	3/6/2013	

WG125621-1	MB	CVTOC	OTHR SOLID	2/19/2013	3/5/2013	MB1 130305
WG125621-2	SRM	CVTOC	OTHR SOLID	2/19/2013	3/5/2013	HICONC
WG125621-3	SB	CVTOC	OTHR SOLID	2/19/2013	3/5/2013	WG125621-1
WG125621-4	LD	CVTOC	TRAP SED	2/19/2013	3/5/2013	L57305-4
WG125621-5	LT	CVTOC	TRAP SED	2/19/2013	3/5/2013	WG125621-4 L57305-4
WG125621-6	MS	CVTOC	TRAP SED	2/19/2013	3/5/2013	L57305-4
WG125621-7	MB	CVTOC	OTHR SOLID	2/19/2013	3/6/2013	MB1 130306
WG125621-8	SRM	CVTOC	OTHR SOLID	2/19/2013	3/6/2013	HICONC

WG127207 (toc) Department: 3 - Conventionals Move Date: 2013-06-12 10:23:14

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L57964-1	421196-180	Roads SWAP	CVTOC	SOIL	5/29/2013	5/30/2013	6/5/2013	
L57964-2	421196-180	Roads SWAP	CVTOC	SOIL	5/29/2013	5/30/2013	6/6/2013	
L57964-3	421196-180	Roads SWAP	CVTOC	SOIL	5/29/2013	5/30/2013	6/6/2013	
L57964-4	421196-180	Roads SWAP	CVTOC	SOIL	5/29/2013	5/30/2013	6/6/2013	
L57964-5	421196-180	Roads SWAP	CVTOC	SOIL	5/29/2013	5/30/2013	6/6/2013	
L57964-6	421196-180	Roads SWAP	CVTOC	SOIL	5/29/2013	5/30/2013	6/6/2013	
L57964-8	421196-180	Roads SWAP	CVTOC	SOIL	5/29/2013	5/30/2013	6/6/2013	
L57964-9	421196-180	Roads SWAP	CVTOC	SOIL	5/29/2013	5/30/2013	6/6/2013	
L57964-10	421196-180	Roads SWAP	CVTOC	SOIL	5/29/2013	5/30/2013	6/6/2013	
L57986-1	423589-335-4	LDW Green River, Suspended Solids	CVTOC	TRAP SED	5/14/2013	5/30/2013	6/5/2013	
L57986-2	423589-335-4	LDW Green River, Suspended Solids	CVTOC	TRAP SED	5/14/2013	5/30/2013	6/5/2013	
L57986-3	423589-335-4	LDW Green River, Suspended Solids	CVTOC	TRAP SED	5/14/2013	5/30/2013	6/5/2013	
L57986-4	423589-335-4	LDW Green River, Suspended Solids	CVTOC	TRAP SED	5/14/2013	5/30/2013	6/5/2013	
L57986-5	423589-335-4	LDW Green River, Suspended Solids	CVTOC	TRAP SED	5/14/2013	5/30/2013	6/5/2013	
L57986-6	423589-335-4	LDW Green River, Suspended Solids	CVTOC	TRAP SED	5/14/2013	5/30/2013	6/5/2013	
WG127207-1	MB		CVTOC	OTHR SOLID		5/30/2013	6/5/2013	MB1 130605
WG127207-2	SRM		CVTOC	OTHR SOLID		5/30/2013	6/5/2013	HICONC
WG127207-3	LD		CVTOC	TRAP SED		5/30/2013	6/5/2013	L57986-4
WG127207-4	LT		CVTOC	TRAP SED		5/30/2013	6/5/2013	WG127207-3 L57986-4
WG127207-5	SB		CVTOC	OTHR SOLID		5/30/2013	6/5/2013	WG127207-1
WG127207-6	MS		CVTOC	TRAP SED		5/30/2013	6/5/2013	L57986-4
WG127207-7	MB		CVTOC	OTHR SOLID		5/30/2013	6/6/2013	MB1 130606
WG127207-8	SRM		CVTOC	OTHR SOLID		5/30/2013	6/6/2013	HICONC
WG127207-9	LD		CVTOC	SOIL		5/30/2013	6/6/2013	L57964-6
WG127207-10	LT		CVTOC	SOIL		5/30/2013	6/6/2013	WG127207-9 L57964-6
WG127207-11	MB		CVTOC	OTHR SOLID		5/30/2013	6/7/2013	MB1 130607
WG127207-12	SRM		CVTOC	OTHR SOLID		5/30/2013	6/7/2013	HICONC
WG127207-13	SB		CVTOC	OTHR SOLID		5/30/2013	6/7/2013	WG127207-11

WG127207-14	MS			CVTOC	SOIL		5/30/2013	6/7/2013 L57964-6

WG129299 (toc soils) Department: 3 - Conventionals Move Date: 2013-11-22 11:37:39

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L58785-1	423589-335-4	LDW Green River, Suspended Solids	CVTOC	TRAP SED	9/30/2013	10/7/2013	10/22/2013	
L58785-2	423589-335-4	LDW Green River, Suspended Solids	CVTOC	TRAP SED	9/30/2013	10/7/2013	10/23/2013	
L58785-3	423589-335-4	LDW Green River, Suspended Solids	CVTOC	TRAP SED	10/8/2013	10/14/2013	10/23/2013	
L58785-4	423589-335-4	LDW Green River, Suspended Solids	CVTOC	TRAP SED	10/8/2013	10/14/2013	10/23/2013	
L58785-5	423589-335-4	LDW Green River, Suspended Solids	CVTOC	TRAP SED	10/8/2013	10/14/2013	10/24/2013	
L58785-6	423589-335-4	LDW Green River, Suspended Solids	CVTOC	TRAP SED	9/30/2013	10/7/2013	10/24/2013	
WG129299-1	LCS		CVTOC	OTHR SOLID		10/7/2013	10/22/2013	LEVEL1
WG129299-2	MB		CVTOC	OTHR SOLID		10/7/2013	10/22/2013	MB1 131022
WG129299-3	SB		CVTOC	OTHR SOLID		10/7/2013	10/22/2013	WG129299-2
WG129299-4	LD		CVTOC	TRAP SED		10/7/2013	10/22/2013	L58785-1
WG129299-5	LT		CVTOC	TRAP SED		10/7/2013	10/22/2013	WG129299-4 L58785-1
WG129299-6	MB		CVTOC	OTHR SOLID		10/7/2013	10/23/2013	MB1 131023
WG129299-7	LCS		CVTOC	OTHR SOLID		10/7/2013	10/23/2013	LEVEL1
WG129299-8	SB		CVTOC	OTHR SOLID		10/7/2013	10/23/2013	WG129299-6
WG129299-9	MS		CVTOC	TRAP SED		10/7/2013	10/23/2013	L58785-1
WG129299-10	MB		CVTOC	OTHR SOLID		10/7/2013	10/24/2013	MB1 131024
WG129299-11	LCS		CVTOC	OTHR SOLID		10/7/2013	10/24/2013	LEVEL1

WG130885 (TOC/423589-335-4) Department: 3 - Conventionals Move Date: 2014-02-26 10:20:42

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L59454-1	423589-335-4	LDW Green River, Suspended Solids	CVTOC	TRAP SED	1/7/2014	1/28/2014	2/6/2014	
L59454-2	423589-335-4	LDW Green River, Suspended Solids	CVTOC	TRAP SED	1/7/2014	1/28/2014	2/6/2014	
L59454-3	423589-335-4	LDW Green River, Suspended Solids	CVTOC	TRAP SED	1/7/2014	1/28/2014	2/6/2014	
L59454-4	423589-335-4	LDW Green River, Suspended Solids	CVTOC	TRAP SED	1/7/2014	1/28/2014	2/6/2014	
L59454-5	423589-335-4	LDW Green River, Suspended Solids	CVTOC	TRAP SED	1/7/2014	1/28/2014	2/6/2014	
L59454-6	423589-335-4	LDW Green River, Suspended Solids	CVTOC	TRAP SED	1/7/2014	1/28/2014	2/5/2014	
L59454-7	423589-335-4	LDW Green River, Suspended Solids	CVTOC	TRAP SED	1/7/2014	1/28/2014	2/6/2014	
WG130885-1	MB		CVTOC	OTHR SOLID		1/28/2014	2/5/2014	MB1 140205
WG130885-2	LCS		CVTOC	OTHR SOLID		1/28/2014	2/5/2014	LEVEL1
WG130885-3	SB		CVTOC	OTHR SOLID		1/28/2014	2/5/2014	WG130885-1
WG130885-4	LD		CVTOC	TRAP SED		1/28/2014	2/5/2014	L59454-6
WG130885-5	LT		CVTOC	TRAP SED		1/28/2014	2/5/2014	WG130885-4 L59454-6
WG130885-6	MS		CVTOC	TRAP SED		1/28/2014	2/5/2014	L59454-6

WG130885-7	MB		CVTOC	OTHR SOLID	1/28/2014	2/6/2014	MB1 140206
WG130885-8	LCS		CVTOC	OTHR SOLID	1/28/2014	2/6/2014	LEVEL1

WG125508 (Assorted TOTS) Department: 3 - Conventionals Move Date: 2013-04-18 14:22:58

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L57305-3	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	TRAP SED	2/4/2013	2/19/2013	2/20/2013	
L57305-4	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	TRAP SED	2/4/2013	2/19/2013	2/20/2013	
L57305-5	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	TRAP SED	2/4/2013	2/19/2013	2/20/2013	
L57305-6	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	TRAP SED	2/4/2013	2/19/2013	2/20/2013	
L57348-1	421937	Brightwater Operations	CVTOTS	SOIL	2/6/2013	2/19/2013	2/20/2013	
L57348-2	421937	Brightwater Operations	CVTOTS	SOIL	2/6/2013	2/19/2013	2/20/2013	
L57348-3	421937	Brightwater Operations	CVTOTS	SOIL	2/6/2013	2/19/2013	2/20/2013	
L57348-4	421937	Brightwater Operations	CVTOTS	SOIL	2/6/2013	2/19/2013	2/20/2013	
L57348-5	421937	Brightwater Operations	CVTOTS	SOIL	2/6/2013	2/19/2013	2/20/2013	
L57348-6	421937	Brightwater Operations	CVTOTS	SOIL	2/6/2013	2/19/2013	2/20/2013	
L57348-7	421937	Brightwater Operations	CVTOTS	SOIL	2/6/2013	2/19/2013	2/20/2013	
L57348-8	421937	Brightwater Operations	CVTOTS	SOIL	2/6/2013	2/19/2013	2/20/2013	
L57348-9	421937	Brightwater Operations	CVTOTS	SOIL	2/6/2013	2/19/2013	2/20/2013	
L57348-10	421937	Brightwater Operations	CVTOTS	SOIL	2/6/2013	2/19/2013	2/20/2013	
L57348-11	421937	Brightwater Operations	CVTOTS	SOIL	2/6/2013	2/19/2013	2/20/2013	
L57348-12	421937	Brightwater Operations	CVTOTS	SOIL	2/6/2013	2/19/2013	2/20/2013	
WG125508-1	MB		CVTOTS	OTHR SOLID		2/19/2013	2/20/2013	MB1 2/19/13
WG125508-2	LD		CVTOTS	TRAP SED		2/19/2013	2/20/2013	L57305-4
WG125508-3	LT		CVTOTS	TRAP SED		2/19/2013	2/20/2013	WG125508-2 L57305-4
WG125508-4	LD		CVTOTS	SOIL		2/19/2013	2/20/2013	L57348-1
WG125508-5	LT		CVTOTS	SOIL		2/19/2013	2/20/2013	WG125508-4 L57348-1

WG125612 (TOTS) Department: 3 - Conventionals Move Date: 2013-04-18 14:17:18

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L57305-1	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	TRAP SED	2/14/2013	2/28/2013	3/1/2013	
L57305-2	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	TRAP SED	2/14/2013	2/28/2013	3/1/2013	
WG125612-1	MB		CVTOTS	OTHR SOLID		2/28/2013	3/1/2013	MB1 2/28/13
WG125612-2	LD		CVTOTS	TRAP SED		2/28/2013	3/1/2013	L57305-1
WG125612-3	LT		CVTOTS	TRAP SED		2/28/2013	3/1/2013	WG125612-2 L57305-1

WG127120 (Assorted TOTS) Department: 3 - Conventionals Move Date: 2013-06-04 10:58:41

LIMSView Batch Report for Green River Watershed Suspended Solids - Sediment Traps 2013-2014

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L57964-1	421196-180	Roads SWAP	CVTOTS	SOIL	5/29/2013	5/30/2013	5/31/2013	
L57964-2	421196-180	Roads SWAP	CVTOTS	SOIL	5/29/2013	5/30/2013	5/31/2013	
L57964-3	421196-180	Roads SWAP	CVTOTS	SOIL	5/29/2013	5/30/2013	5/31/2013	
L57964-4	421196-180	Roads SWAP	CVTOTS	SOIL	5/29/2013	5/30/2013	5/31/2013	
L57964-5	421196-180	Roads SWAP	CVTOTS	SOIL	5/29/2013	5/30/2013	5/31/2013	
L57964-6	421196-180	Roads SWAP	CVTOTS	SOIL	5/29/2013	5/30/2013	5/31/2013	
L57964-7	421196-180	Roads SWAP	CVTOTS	SOIL	5/29/2013	5/30/2013	5/31/2013	
L57964-8	421196-180	Roads SWAP	CVTOTS	SOIL	5/29/2013	5/30/2013	5/31/2013	
L57964-9	421196-180	Roads SWAP	CVTOTS	SOIL	5/29/2013	5/30/2013	5/31/2013	
L57964-10	421196-180	Roads SWAP	CVTOTS	SOIL	5/29/2013	5/30/2013	5/31/2013	
L57986-1	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	TRAP SED	5/14/2013	5/30/2013	5/31/2013	
L57986-2	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	TRAP SED	5/14/2013	5/30/2013	5/31/2013	
L57986-3	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	TRAP SED	5/14/2013	5/30/2013	5/31/2013	
L57986-4	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	TRAP SED	5/14/2013	5/30/2013	5/31/2013	
L57986-5	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	TRAP SED	5/14/2013	5/30/2013	5/31/2013	
L57986-6	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	TRAP SED	5/14/2013	5/30/2013	5/31/2013	
WG127120-1	MB		CVTOTS	OTHR SOLID		5/30/2013	5/31/2013	MB1 5/30/13
WG127120-2	LD		CVTOTS	SOIL		5/30/2013	5/31/2013	L57964-10
WG127120-3	LT		CVTOTS	SOIL		5/30/2013	5/31/2013	WG127120-2 L57964-10
WG127120-4	LD		CVTOTS	TRAP SED		5/30/2013	5/31/2013	L57986-6
WG127120-5	LT		CVTOTS	TRAP SED		5/30/2013	5/31/2013	WG127120-4 L57986-6

WG129699 (Assorted TOTS) Department: 3 - Conventionals Move Date: 2013-11-15 14:44:30

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L58785-1	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	TRAP SED	9/30/2013	11/4/2013	11/5/2013	
L58785-2	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	TRAP SED	9/30/2013	11/4/2013	11/5/2013	
L58785-3	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	TRAP SED	10/8/2013	11/4/2013	11/5/2013	
L58785-4	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	TRAP SED	10/8/2013	11/4/2013	11/5/2013	
L58785-5	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	TRAP SED	10/8/2013	11/4/2013	11/5/2013	
L58785-6	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	TRAP SED	9/30/2013	11/4/2013	11/5/2013	
L58977-1	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	FILTER SED	10/16/2013	11/4/2013	11/5/2013	
L59049-1	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	FILTER SED	10/22/2013	11/4/2013	11/5/2013	
L59077-8	421937	Brightwater Operations	CVTOTS	SLUDGE	10/30/2013	11/4/2013	11/5/2013	
WG129699-1	MB		CVTOTS	OTHR SOLID		11/4/2013	11/5/2013	MB1 11/4/13
WG129699-2	LD		CVTOTS	TRAP SED		11/4/2013	11/5/2013	L58785-4
WG129699-3	LT		CVTOTS	TRAP SED		11/4/2013	11/5/2013	WG129699-2 L58785-4
WG129699-4	LD		CVTOTS	FILTER SED		11/4/2013	11/5/2013	L59049-1

WG129699-5	LT			CVTOTS	FILTER SED	11/4/2013	11/5/2013	WG129699-4 L59049-1
WG129699-6	LD			CVTOTS	SLUDGE	11/4/2013	11/5/2013	L59077-8

WG130726 (Assorted TOTS) Department: 3 - Conventionals Move Date: 2014-01-21 10:06:14

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L59405-1	421196-180	Roads SWAP	CVTOTS	SOIL	1/8/2014	1/14/2014	1/15/2014	
L59405-2	421196-180	Roads SWAP	CVTOTS	SOIL	1/8/2014	1/14/2014	1/15/2014	
L59405-3	421196-180	Roads SWAP	CVTOTS	SOIL	1/8/2014	1/14/2014	1/15/2014	
L59405-4	421196-180	Roads SWAP	CVTOTS	SOIL	1/8/2014	1/14/2014	1/15/2014	
L59410-1	423575-850-4	Brightwater Conveyance System Construction NPDES Monitoring	CVTOTS	SOIL	12/31/2013	1/14/2014	1/15/2014	
L59410-2	423575-850-4	Brightwater Conveyance System Construction NPDES Monitoring	CVTOTS	SOIL	12/31/2013	1/14/2014	1/15/2014	
L59410-3	423575-850-4	Brightwater Conveyance System Construction NPDES Monitoring	CVTOTS	SOIL	12/31/2013	1/14/2014	1/15/2014	
L59417-1	421430-300	OCS-Lake Haven Utility District routine testing	CVTOTS	SLUDGE	1/13/2014	1/14/2014	1/15/2014	
L59417-2	421430-300	OCS-Lake Haven Utility District routine testing	CVTOTS	SLUDGE	1/13/2014	1/14/2014	1/15/2014	
L59454-1	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	TRAP SED	1/7/2014	1/14/2014	1/15/2014	
L59454-2	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	TRAP SED	1/7/2014	1/14/2014	1/15/2014	
L59454-3	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	TRAP SED	1/7/2014	1/14/2014	1/15/2014	
L59454-4	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	TRAP SED	1/7/2014	1/14/2014	1/15/2014	
L59454-5	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	TRAP SED	1/7/2014	1/14/2014	1/15/2014	
L59454-6	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	TRAP SED	1/7/2014	1/14/2014	1/15/2014	
L59454-7	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	TRAP SED	1/7/2014	1/14/2014	1/15/2014	
L59457-1	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	FILTER SED	12/18/2013	1/14/2014	1/15/2014	
WG130726-1	MB		CVTOTS	OTHR SOLID		1/14/2014	1/15/2014	MB1 1/14/14
WG130726-2	LD		CVTOTS	SOIL		1/14/2014	1/15/2014	L59405-4
WG130726-3	LD		CVTOTS	SOIL		1/14/2014	1/15/2014	L59410-3
WG130726-4	LD		CVTOTS	SLUDGE		1/14/2014	1/15/2014	L59417-2
WG130726-9	LD		CVTOTS	TRAP SED		1/14/2014	1/15/2014	L59454-3
WG130726-1(	LT		CVTOTS	TRAP SED		1/14/2014	1/15/2014	WG130726-9 L59454-3
WG130726-1:	LD		CVTOTS	FILTER SED		1/14/2014	1/15/2014	L59457-1
WG130726-1:	LT		CVTOTS	FILTER SED		1/14/2014	1/15/2014	WG130726-11 L59457-1

WG125551 (LDW Green River) Department: 6 - Metals Move Date: 2013-05-02 09:32:15

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments

L57305-1	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	TRAP SED	2/14/2013	2/22/2013	2/27/2013	
L57305-2	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	TRAP SED	2/14/2013	2/22/2013	2/27/2013	
L57305-3	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	TRAP SED	2/4/2013	2/22/2013	2/27/2013	
L57305-4	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	TRAP SED	2/4/2013	2/22/2013	2/27/2013	
L57305-5	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	TRAP SED	2/4/2013	2/22/2013	2/27/2013	
L57305-6	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	TRAP SED	2/4/2013	2/22/2013	2/27/2013	
WG125551-1	LCS		MTHG-MIDS	FRSHWTRSED		2/22/2013	2/27/2013	WQB1
WG125551-2	LCSD		MTHG-MIDS	FRSHWTRSED		2/22/2013	2/27/2013	WG125551-1 WQB1
WG125551-3	MB		MTHG-MIDS	SOLIDBLANK		2/22/2013	2/27/2013	METHOD BLANK
WG125551-4	SB		MTHG-MIDS	SOLIDBLANK		2/22/2013	2/27/2013	WG125551-3 HG-SMID
WG125551-5	MS		MTHG-MIDS	TRAP SED		2/22/2013	2/27/2013	L57305-5 HG-SMID
WG125551-6	MSD		MTHG-MIDS	TRAP SED		2/22/2013	2/27/2013	WG125551-5 L57305-5 HG-SMID-MSD
WG125551-7	LD		MTHG-MIDS	TRAP SED		2/22/2013	2/27/2013	L57305-5 RPD-SOL

WG128375 (Green river) Department: 6 - Metals Move Date: 2013-08-28 11:15:06

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L57986-1	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	TRAP SED	5/14/2013	8/16/2013	8/19/2013	
L57986-2	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	TRAP SED	5/14/2013	8/16/2013	8/19/2013	
L57986-3	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	TRAP SED	5/14/2013	8/16/2013	8/19/2013	
L57986-4	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	TRAP SED	5/14/2013	8/16/2013	8/19/2013	
L57986-5	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	TRAP SED	5/14/2013	8/16/2013	8/19/2013	
L57986-6	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	TRAP SED	5/14/2013	8/16/2013	8/19/2013	
WG128375-1	LCS		MTHG-MIDS	FRSHWTRSED		8/16/2013	8/19/2013	WQB1
WG128375-2	LCSD		MTHG-MIDS	FRSHWTRSED		8/16/2013	8/19/2013	WG128375-1 WQB1
WG128375-3	MB		MTHG-MIDS	SOLIDBLANK		8/16/2013	8/19/2013	METHOD BLANK
WG128375-4	SB		MTHG-MIDS	SOLIDBLANK		8/16/2013	8/19/2013	WG128375-3 HG-SMID
WG128375-5	MS		MTHG-MIDS	TRAP SED		8/16/2013	8/19/2013	L57986-6 HG-SMID
WG128375-6	MSD		MTHG-MIDS	TRAP SED		8/16/2013	8/19/2013	WG128375-5 L57986-6 HG-SMID-MSD
WG128375-7	LD		MTHG-MIDS	TRAP SED		8/16/2013	8/19/2013	L57986-6 RPD-SOL

WG129257 (LDW Green river sed.) Department: 6 - Metals Move Date: 2013-10-21 11:51:48

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L58754-1	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	FILTER SED	9/12/2013	10/8/2013	10/9/2013	
L58785-1	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	TRAP SED	9/30/2013	10/8/2013	10/9/2013	
L58785-2	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	TRAP SED	9/30/2013	10/8/2013	10/9/2013	

L58785-6	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	TRAP SED	9/30/2013	10/8/2013	10/9/2013	
WG129257-1	LCS		MTHG-MIDS	FRSHWTRSED		10/8/2013	10/9/2013	WQB1
WG129257-2	LCSD		MTHG-MIDS	FRSHWTRSED		10/8/2013	10/9/2013	WG129257-1 WQB1
WG129257-3	MB		MTHG-MIDS	SOLIDBLANK		10/8/2013	10/9/2013	METHOD BLANK
WG129257-4	SB		MTHG-MIDS	SOLIDBLANK		10/8/2013	10/9/2013	WG129257-3 HG-SMID
WG129257-5	MS		MTHG-MIDS	FILTER SED		10/8/2013	10/9/2013	L58754-1 HG-SMID
WG129257-6	MSD		MTHG-MIDS	FILTER SED		10/8/2013	10/9/2013	WG129257-5 L58754-1 HG-SMID-MSD
WG129257-7	LD		MTHG-MIDS	FILTER SED		10/8/2013	10/9/2013	L58754-1 RPD-SOL

WG129628 (LDW green river) Department: 6 - Metals Move Date: 2013-11-21 15:25:01

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L58785-3	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	TRAP SED	10/8/2013	10/30/2013	10/31/2013	
L58785-4	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	TRAP SED	10/8/2013	10/30/2013	10/31/2013	
L58785-5	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	TRAP SED	10/8/2013	10/30/2013	10/31/2013	
L58977-1	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	FILTER SED	10/16/2013	10/30/2013	10/31/2013	
WG129628-1	LCS		MTHG-MIDS	FRSHWTRSED		10/30/2013	10/31/2013	WQB1
WG129628-2	LCSD		MTHG-MIDS	FRSHWTRSED		10/30/2013	10/31/2013	WG129628-1 WQB1
WG129628-3	MB		MTHG-MIDS	SOLIDBLANK		10/30/2013	10/31/2013	METHOD BLANK
WG129628-4	SB		MTHG-MIDS	SOLIDBLANK		10/30/2013	10/31/2013	WG129628-3 HG-SMID
WG129628-5	MS		MTHG-MIDS	TRAP SED		10/30/2013	10/31/2013	L58785-4 HG-SMID
WG129628-6	MSD		MTHG-MIDS	TRAP SED		10/30/2013	10/31/2013	WG129628-5 L58785-4 HG-SMID-MSD
WG129628-7	LD		MTHG-MIDS	TRAP SED		10/30/2013	10/31/2013	L58785-4 RPD-SOL

WG130733 (Trap Seds) Department: 6 - Metals Move Date: 2014-02-28 15:12:23

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L59454-1	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	TRAP SED	1/7/2014	1/17/2014	1/17/2014	
L59454-2	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	TRAP SED	1/7/2014	1/17/2014	1/17/2014	
L59454-3	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	TRAP SED	1/7/2014	1/17/2014	1/17/2014	
L59454-4	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	TRAP SED	1/7/2014	1/17/2014	1/17/2014	
L59454-5	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	TRAP SED	1/7/2014	1/17/2014	1/17/2014	
L59454-6	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	TRAP SED	1/7/2014	1/17/2014	1/17/2014	
L59454-7	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	TRAP SED	1/7/2014	1/17/2014	1/17/2014	
L59457-1	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	FILTER SED	12/18/2013	1/17/2014	1/17/2014	
WG130733-1	MB		MTHG-MIDS	SOLIDBLANK		1/17/2014	1/17/2014	METHOD BLANK
WG130733-2	SB		MTHG-MIDS	SOLIDBLANK		1/17/2014	1/17/2014	WG130733-1 HG-SMID

WG130733-3	LCS	MTHG-MIDS	FRSHWTRSED	1/17/2014	1/17/2014	WQB1
WG130733-4	LCSD	MTHG-MIDS	FRSHWTRSED	1/17/2014	1/17/2014	WG130733-3 WQB1
WG130733-5	LD	MTHG-MIDS	TRAP SED	1/17/2014	1/17/2014	L59454-4 RPD-SOL
WG130733-6	MS	MTHG-MIDS	TRAP SED	1/17/2014	1/17/2014	L59454-4 HG-SMID
WG130733-7	MSD	MTHG-MIDS	TRAP SED	1/17/2014	1/17/2014	WG130733-6 L59454-4 HG-SMID-MSD

WG126014 (Green R Seds) Department: 6 - Metals Move Date: 2013-04-24 09:21:36

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L57305-1	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	TRAP SED	2/14/2013	3/27/2013	3/28/2013	
L57305-2	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	TRAP SED	2/14/2013	3/27/2013	3/28/2013	
L57305-3	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	TRAP SED	2/4/2013	3/27/2013	3/28/2013	
L57305-4	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	TRAP SED	2/4/2013	3/27/2013	3/28/2013	
L57305-5	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	TRAP SED	2/4/2013	3/27/2013	3/28/2013	
L57305-6	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	TRAP SED	2/4/2013	3/27/2013	3/28/2013	
L57495-1	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	FILTER SED	2/22/2013	3/27/2013	3/28/2013	
L57495-4	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	FILTER SED	2/22/2013	3/27/2013	3/28/2013	
L57495-5	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	FILTER SED	2/22/2013	3/27/2013	3/28/2013	
WG126014-1	MB		MTICPMS-SED	SOLIDBLANK		3/27/2013	3/28/2013	METHOD BLANK
WG126014-2	SB		MTICPMS-SED	SOLIDBLANK		3/27/2013	3/28/2013	WG126014-1 MS-100
WG126014-3	LCS		MTICPMS-SED	SOIL		3/27/2013	3/28/2013	ERASOIL
WG126014-4	LCSD		MTICPMS-SED	SOIL		3/27/2013	3/28/2013	WG126014-3 ERASOIL RPD-SOL
WG126014-5	LCS		MTICPMS-SED	FRSHWTRSED		3/27/2013	3/28/2013	BUFFSED
WG126014-6	LD		MTICPMS-SED	TRAP SED		3/27/2013	3/28/2013	L57305-4 RPD-SOL
WG126014-7	MS		MTICPMS-SED	TRAP SED		3/27/2013	3/28/2013	L57305-4 MS-100

WG127460 (Trap Seds) Department: 6 - Metals Move Date: 2013-06-27 12:42:26

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L57986-1	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	TRAP SED	5/14/2013	6/25/2013	6/26/2013	
L57986-2	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	TRAP SED	5/14/2013	6/25/2013	6/26/2013	
L57986-3	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	TRAP SED	5/14/2013	6/25/2013	6/26/2013	
L57986-4	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	TRAP SED	5/14/2013	6/25/2013	6/26/2013	
L57986-5	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	TRAP SED	5/14/2013	6/25/2013	6/26/2013	
L57986-6	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	TRAP SED	5/14/2013	6/25/2013	6/26/2013	
WG127460-1	MB		MTICPMS-SED	SOLIDBLANK		6/25/2013	6/26/2013	METHOD BLANK
WG127460-2	SB		MTICPMS-SED	SOLIDBLANK		6/25/2013	6/26/2013	WG127460-1 MS-100
WG127460-3	LCS		MTICPMS-SED	FRSHWTRSED		6/25/2013	6/26/2013	BUFFSED
WG127460-4	LCSD		MTICPMS-SED	FRSHWTRSED		6/25/2013	6/26/2013	WG127460-3 BUFFSED

WG127460-5	LD	MTICPMS-SED	TRAP SED	6/25/2013	6/26/2013	L57986-6 RPD-SOL
WG127460-6	MS	MTICPMS-SED	TRAP SED	6/25/2013	6/26/2013	L57986-6 MS-100

WG128370 (Trap Seds) Department: 6 - Metals Move Date: 2013-08-27 15:22:54

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L57986-1	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	TRAP SED	5/14/2013	6/25/2013	8/16/2013	
L57986-2	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	TRAP SED	5/14/2013	6/25/2013	8/16/2013	
L57986-3	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	TRAP SED	5/14/2013	6/25/2013	8/16/2013	
L57986-4	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	TRAP SED	5/14/2013	6/25/2013	8/16/2013	
L57986-5	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	TRAP SED	5/14/2013	6/25/2013	8/16/2013	
L57986-6	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	TRAP SED	5/14/2013	6/25/2013	8/16/2013	
WG128370-1	MB		MTICPMS-SED	SOLIDBLANK		6/25/2013	8/16/2013	METHOD BLANK
WG128370-2	SB		MTICPMS-SED	SOLIDBLANK		6/25/2013	8/16/2013	WG128370-1 MS-100
WG128370-3	LCS		MTICPMS-SED	FRSHWTRSED		6/25/2013	8/16/2013	BUFFSED
WG128370-4	LCSD		MTICPMS-SED	FRSHWTRSED		6/25/2013	8/16/2013	WG128370-3 BUFFSED RPD-SOL
WG128370-5	LD		MTICPMS-SED	TRAP SED		6/25/2013	8/16/2013	L57986-6 RPD-SOL
WG128370-6	MS		MTICPMS-SED	TRAP SED		6/25/2013	8/16/2013	L57986-6 MS-100

WG129766 (08-NOV-13 Green R Seds) Department: 6 - Metals Move Date: 2013-11-25 15:41:18

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L58537-1	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	FILTER SED	8/13/2013	11/8/2013	11/15/2013	
L58537-2	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	FILTER SED	8/19/2013	11/8/2013	11/15/2013	
L58754-1	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	FILTER SED	9/12/2013	11/8/2013	11/15/2013	
L58785-1	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	TRAP SED	9/30/2013	11/8/2013	11/15/2013	
L58785-2	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	TRAP SED	9/30/2013	11/8/2013	11/15/2013	
L58785-3	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	TRAP SED	10/8/2013	11/8/2013	11/15/2013	
L58785-4	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	TRAP SED	10/8/2013	11/8/2013	11/15/2013	
L58785-5	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	TRAP SED	10/8/2013	11/8/2013	11/15/2013	
L58785-6	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	TRAP SED	9/30/2013	11/8/2013	11/15/2013	
L58977-1	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	FILTER SED	10/16/2013	11/8/2013	11/15/2013	
L59049-1	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	FILTER SED	10/22/2013	11/8/2013	11/15/2013	
WG129766-1	MB		MTICPMS-SED	SOLIDBLANK		11/8/2013	11/15/2013	METHOD BLANK
WG129766-2	SB		MTICPMS-SED	SOLIDBLANK		11/8/2013	11/15/2013	WG129766-1 MS-100
WG129766-3	LD		MTICPMS-SED	TRAP SED		11/8/2013	11/15/2013	L58785-4 RPD-SOL
WG129766-4	MS		MTICPMS-SED	TRAP SED		11/8/2013	11/15/2013	L58785-4 MS-100
WG129766-5	LCS		MTICPMS-SED	FRSHWTRSED		11/8/2013	11/15/2013	BUFFSED
WG129766-6	LCSD		MTICPMS-SED	FRSHWTRSED		11/8/2013	11/15/2013	WG129766-5 BUFFSED

WG129766-7	LCS	MTICPMS-SED	SOIL	11/8/2013	11/15/2013	ERASOIL
WG129766-8	LCSD	MTICPMS-SED	SOIL	11/8/2013	11/15/2013	WG129766-7 ERASOIL

WG130834 (27-JAN-14 Sus/Trap Seds) Department: 6 - Metals Move Date: 2014-02-06 13:06:25

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L59454-1	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	TRAP SED	1/7/2014	1/27/2014	1/28/2014	
L59454-2	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	TRAP SED	1/7/2014	1/27/2014	1/28/2014	
L59454-3	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	TRAP SED	1/7/2014	1/27/2014	1/28/2014	
L59454-4	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	TRAP SED	1/7/2014	1/27/2014	1/28/2014	
L59454-5	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	TRAP SED	1/7/2014	1/27/2014	1/28/2014	
L59454-6	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	TRAP SED	1/7/2014	1/27/2014	1/28/2014	
L59454-7	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	TRAP SED	1/7/2014	1/27/2014	1/28/2014	
L59457-1	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	FILTER SED	12/18/2013	1/27/2014	1/28/2014	
WG130834-1	MB		MTICPMS-SED	SOLIDBLANK		1/27/2014	1/28/2014	METHOD BLANK
WG130834-2	SB		MTICPMS-SED	SOLIDBLANK		1/27/2014	1/28/2014	WG130834-1 MS-100
WG130834-3	LCS		MTICPMS-SED	SOIL		1/27/2014	1/28/2014	ERASOIL
WG130834-4	LCSD		MTICPMS-SED	SOIL		1/27/2014	1/28/2014	WG130834-3 ERASOIL
WG130834-5	LCS		MTICPMS-SED	FRSHWTRSED		1/27/2014	1/28/2014	BUFFSED
WG130834-6	LCSD		MTICPMS-SED	FRSHWTRSED		1/27/2014	1/28/2014	WG130834-5 BUFFSED
WG130834-7	LD		MTICPMS-SED	TRAP SED		1/27/2014	1/28/2014	L59454-1 RPD-SOL
WG130834-8	MS		MTICPMS-SED	TRAP SED		1/27/2014	1/28/2014	L59454-1 MS-100

WG125614 (BS#419 bnasms) Department: 7 - Organics Move Date: 2013-04-17 10:45:48

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments	
L57305-1	423589-335-4	LDW Green River, Suspended Solids	ORBNASMS	TRAP SED	2/14/2013	2/28/2013	3/6/2013		
L57305-3	423589-335-4	LDW Green River, Suspended Solids	ORBNASMS	TRAP SED	2/4/2013	2/28/2013	3/6/2013		
L57305-4	423589-335-4	LDW Green River, Suspended Solids	ORBNASMS	TRAP SED	2/4/2013	2/28/2013	3/6/2013		
L57305-5	423589-335-4	LDW Green River, Suspended Solids	ORBNASMS	TRAP SED	2/4/2013	2/28/2013	3/6/2013		
L57305-6	423589-335-4	LDW Green River, Suspended Solids	ORBNASMS	TRAP SED	2/4/2013	2/28/2013	3/6/2013		
WG125614-1	MB		ORBNASMS	OTHR SOLID		2/28/2013	3/6/2013	MB130228	
WG125614-2	SB		ORBNASMS	OTHR SOLID		2/28/2013	3/6/2013	WG125614-1 LOW	
WG125614-3	SB		ORBNASMS	OTHR SOLID		2/28/2013	3/6/2013	WG125614-1 HIGH	
WG125614-4	MS		ORBNASMS	TRAP SED		2/28/2013	3/6/2013	L57305-4	
WG125614-5	MSD		ORBNASMS	TRAP SED		2/28/2013	3/6/2013	WG125614-4 L57305-4	
WG125614-6	SRM		ORBNASMS	SALTWTRSED		2/28/2013	3/6/2013		1944
WG125614-7	SRMD		ORBNASMS	SALTWTRSED		2/28/2013	3/6/2013	WG125614-6 1944	
WG125614-8	LD		ORBNASMS	TRAP SED		2/28/2013	3/6/2013	L57305-5	

LIMSView Batch Report for Green River Watershed Suspended Solids - Sediment Traps 2013-2014

WG127162 (bs#431 bnasms) Department: 7 - Organics Move Date: 2013-06-27 08:52:58

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L57986-1	423589-335-4	LDW Green River, Suspended Solids	ORBNASMS	TRAP SED	5/14/2013	6/5/2013	6/24/2013	
L57986-2	423589-335-4	LDW Green River, Suspended Solids	ORBNASMS	TRAP SED	5/14/2013	6/5/2013	6/24/2013	
L57986-3	423589-335-4	LDW Green River, Suspended Solids	ORBNASMS	TRAP SED	5/14/2013	6/5/2013	6/24/2013	
L57986-4	423589-335-4	LDW Green River, Suspended Solids	ORBNASMS	TRAP SED	5/14/2013	6/5/2013	6/24/2013	
L57986-5	423589-335-4	LDW Green River, Suspended Solids	ORBNASMS	TRAP SED	5/14/2013	6/5/2013	6/24/2013	
L57986-6	423589-335-4	LDW Green River, Suspended Solids	ORBNASMS	TRAP SED	5/14/2013	6/5/2013	6/24/2013	
WG127162-1	MB		ORBNASMS	OTHR SOLID		6/5/2013	6/24/2013	MB130605
WG127162-2	SB		ORBNASMS	OTHR SOLID		6/5/2013	6/20/2013	WG127162-1
WG127162-3	SB		ORBNASMS	OTHR SOLID		6/5/2013	6/20/2013	WG127162-1
WG127162-4	MS		ORBNASMS	TRAP SED		6/5/2013	6/20/2013	L57986-3
WG127162-5	MSD		ORBNASMS	TRAP SED		6/5/2013	6/20/2013	WG127162-4 L57986-3
WG127162-6	SRM		ORBNASMS	SALTWTRSED		6/5/2013	6/20/2013	
WG127162-7	SRMD		ORBNASMS	SALTWTRSED		6/5/2013	6/20/2013	WG127162-6
WG127162-8	LD		ORBNASMS	TRAP SED		6/5/2013	6/24/2013	L57986-5

WG129288 (BS#443 bnasms) Department: 7 - Organics Move Date: 2013-11-19 13:11:22

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments	
L58785-1	423589-335-4	LDW Green River, Suspended Solids	ORBNASMS	TRAP SED	9/30/2013	10/11/2013	11/15/2013		
L58785-2	423589-335-4	LDW Green River, Suspended Solids	ORBNASMS	TRAP SED	9/30/2013	10/11/2013	11/15/2013		
L58785-3	423589-335-4	LDW Green River, Suspended Solids	ORBNASMS	TRAP SED	10/8/2013	10/11/2013	11/15/2013		
L58785-4	423589-335-4	LDW Green River, Suspended Solids	ORBNASMS	TRAP SED	10/8/2013	10/11/2013	11/15/2013		
L58785-5	423589-335-4	LDW Green River, Suspended Solids	ORBNASMS	TRAP SED	10/8/2013	10/11/2013	11/15/2013		
L58785-6	423589-335-4	LDW Green River, Suspended Solids	ORBNASMS	TRAP SED	9/30/2013	10/11/2013	11/15/2013		
WG129288-1	MB		ORBNASMS	OTHR SOLID		10/11/2013	11/15/2013	MB131011	
WG129288-2	SB		ORBNASMS	OTHR SOLID		10/11/2013	11/15/2013	WG129288-1 LOW	
WG129288-3	SB		ORBNASMS	OTHR SOLID		10/11/2013	11/15/2013	WG129288-1 HIGH	
WG129288-4	MS		ORBNASMS	TRAP SED		10/11/2013	11/15/2013	L58785-4	
WG129288-5	MSD		ORBNASMS	TRAP SED		10/11/2013	11/15/2013	WG129288-4 L58785-4	
WG129288-6	SRM		ORBNASMS	SALTWTRSED		10/11/2013	11/15/2013		1944
WG129288-7	SRMD		ORBNASMS	SALTWTRSED		10/11/2013	11/15/2013	WG129288-6 1944	
WG129288-8	LD		ORBNASMS	TRAP SED		10/11/2013	11/15/2013	L58785-3	

WG130715 (BS#450 BNASMS) Department: 7 - Organics Move Date: 2014-02-13 10:46:04

LIMSView Batch Report for Green River Watershed Suspended Solids - Sediment Traps 2013-2014

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L59454-1	423589-335-4	LDW Green River, Suspended Solids	ORBNASMS	TRAP SED	1/7/2014	1/16/2014	1/28/2014	
L59454-2	423589-335-4	LDW Green River, Suspended Solids	ORBNASMS	TRAP SED	1/7/2014	1/16/2014	1/28/2014	
L59454-3	423589-335-4	LDW Green River, Suspended Solids	ORBNASMS	TRAP SED	1/7/2014	1/16/2014	1/28/2014	
L59454-4	423589-335-4	LDW Green River, Suspended Solids	ORBNASMS	TRAP SED	1/7/2014	1/16/2014	1/28/2014	
L59454-5	423589-335-4	LDW Green River, Suspended Solids	ORBNASMS	TRAP SED	1/7/2014	1/16/2014	1/29/2014	
L59454-6	423589-335-4	LDW Green River, Suspended Solids	ORBNASMS	TRAP SED	1/7/2014	1/16/2014	1/28/2014	
L59454-7	423589-335-4	LDW Green River, Suspended Solids	ORBNASMS	TRAP SED	1/7/2014	1/16/2014	1/29/2014	
WG130715-1	MB		ORBNASMS	OTHR SOLID		1/16/2014	1/28/2014	MB140116
WG130715-2	SB		ORBNASMS	OTHR SOLID		1/16/2014	1/28/2014	WG130715-1
WG130715-3	SB		ORBNASMS	OTHR SOLID		1/16/2014	1/28/2014	WG130715-1
WG130715-4	MS		ORBNASMS	TRAP SED		1/16/2014	1/28/2014	L59454-4
WG130715-5	MSD		ORBNASMS	TRAP SED		1/16/2014	1/28/2014	WG130715-4 L59454-4
WG130715-6	SRM		ORBNASMS	SALTWTRSED		1/16/2014	1/28/2014	WG130715-1
WG130715-7	SRMD		ORBNASMS	SALTWTRSED		1/16/2014	1/28/2014	WG130715-6 WG130715-1
WG130715-8	LD		ORBNASMS	TRAP SED		1/16/2014	1/28/2014	L59454-6

WG125613 (pps#549 PCB) Department: 7 - Organics Move Date: 2013-04-22 09:33:53

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L57305-1	423589-335-4	LDW Green River, Suspended Solids	ORPCB	TRAP SED	2/14/2013	2/28/2013	3/7/2013	
L57305-2	423589-335-4	LDW Green River, Suspended Solids	ORPCB	TRAP SED	2/14/2013	2/28/2013	3/7/2013	
L57305-3	423589-335-4	LDW Green River, Suspended Solids	ORPCB	TRAP SED	2/4/2013	2/28/2013	3/7/2013	
L57305-4	423589-335-4	LDW Green River, Suspended Solids	ORPCB	TRAP SED	2/4/2013	2/28/2013	3/7/2013	
L57305-5	423589-335-4	LDW Green River, Suspended Solids	ORPCB	TRAP SED	2/4/2013	2/28/2013	3/7/2013	
L57305-6	423589-335-4	LDW Green River, Suspended Solids	ORPCB	TRAP SED	2/4/2013	2/28/2013	3/7/2013	
WG125613-1	MB		ORPCB	OTHR SOLID		2/28/2013	3/7/2013	MB130228
WG125613-2	SB		ORPCB	OTHR SOLID		2/28/2013	3/7/2013	WG125613-1
WG125613-3	MS		ORPCB	TRAP SED		2/28/2013	3/7/2013	L57305-4
WG125613-4	MSD		ORPCB	TRAP SED		2/28/2013	3/7/2013	WG125613-3 L57305-4
WG125613-5	SRM		ORPCB	TRAP SED		2/28/2013	3/7/2013	DUDI
WG125613-6	SRMD		ORPCB	TRAP SED		2/28/2013	3/7/2013	WG125613-5 DUDI
WG125613-7	LD		ORPCB	TRAP SED		2/28/2013	3/7/2013	L57305-5

WG127132 (pps#566 pcb) Department: 7 - Organics Move Date: 2013-06-21 06:28:28

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L57986-1	423589-335-4	LDW Green River, Suspended Solids	ORPCB	TRAP SED	5/14/2013	6/4/2013	6/10/2013	

L57986-2	423589-335-4	LDW Green River, Suspended Solids	ORPCB	TRAP SED	5/14/2013	6/4/2013	6/10/2013	
L57986-3	423589-335-4	LDW Green River, Suspended Solids	ORPCB	TRAP SED	5/14/2013	6/4/2013	6/10/2013	
L57986-4	423589-335-4	LDW Green River, Suspended Solids	ORPCB	TRAP SED	5/14/2013	6/4/2013	6/10/2013	
L57986-5	423589-335-4	LDW Green River, Suspended Solids	ORPCB	TRAP SED	5/14/2013	6/4/2013	6/10/2013	
L57986-6	423589-335-4	LDW Green River, Suspended Solids	ORPCB	TRAP SED	5/14/2013	6/4/2013	6/10/2013	
WG127132-1	MB		ORPCB	OTHR SOLID		6/4/2013	6/10/2013	MB130604
WG127132-2	SB		ORPCB	OTHR SOLID		6/4/2013	6/10/2013	WG127132-1
WG127132-3	MS		ORPCB	TRAP SED		6/4/2013	6/10/2013	L57986-3
WG127132-4	MSD		ORPCB	TRAP SED		6/4/2013	6/10/2013	WG127132-3 L57986-3
WG127132-5	SRM		ORPCB	SALTWTRSED		6/4/2013	6/10/2013	
WG127132-6	SRMD		ORPCB	SALTWTRSED		6/4/2013	6/10/2013	WG127132-5
WG127132-7	LD		ORPCB	TRAP SED		6/4/2013	6/10/2013	L57986-5

WG127409 (pps#566 pestsms) Department: 7 - Organics Move Date: 2013-06-26 06:39:25

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L57986-1	423589-335-4	LDW Green River, Suspended Solids	ORPESTSMS	TRAP SED	5/14/2013	6/4/2013	6/21/2013	
L57986-2	423589-335-4	LDW Green River, Suspended Solids	ORPESTSMS	TRAP SED	5/14/2013	6/4/2013	6/21/2013	
L57986-3	423589-335-4	LDW Green River, Suspended Solids	ORPESTSMS	TRAP SED	5/14/2013	6/4/2013	6/21/2013	
L57986-4	423589-335-4	LDW Green River, Suspended Solids	ORPESTSMS	TRAP SED	5/14/2013	6/4/2013	6/21/2013	
L57986-5	423589-335-4	LDW Green River, Suspended Solids	ORPESTSMS	TRAP SED	5/14/2013	6/4/2013	6/21/2013	
L57986-6	423589-335-4	LDW Green River, Suspended Solids	ORPESTSMS	TRAP SED	5/14/2013	6/4/2013	6/21/2013	
WG127409-1	MB		ORPESTSMS	OTHR SOLID		6/4/2013	6/21/2013	MB130604
WG127409-2	LD		ORPESTSMS	TRAP SED		6/4/2013	6/21/2013	L57986-5

LIMSView Batch Report for Green River Watershed Suspended Solids - Sediment Traps 2015

WG143238 (TOTS) Department: 3 - Conventionals Move Date: 24-DEC-15

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L63466-1	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	TRAP SED	9/15/2015	12/1/2015	12/2/2015	
L63466-2	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	TRAP SED	9/15/2015	12/1/2015	12/2/2015	
L63466-3	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	TRAP SED	9/15/2015	12/1/2015	12/2/2015	
L63466-4	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	TRAP SED	9/15/2015	12/1/2015	12/2/2015	
L63466-5	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	TRAP SED	8/5/2015	12/1/2015	12/2/2015	
L63466-6	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	TRAP SED	9/15/2015	12/1/2015	12/2/2015	
L63466-7	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	TRAP SED	9/15/2015	12/1/2015	12/2/2015	
L63858-1	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	FILTER SED	9/22/2015	12/1/2015	12/2/2015	
L64173-7	421168	Lander Street Storm Separation	CVTOTS	IN-LINESED	11/23/2015	12/1/2015	12/2/2015	
L64173-8	421168	Lander Street Storm Separation	CVTOTS	IN-LINESED	11/23/2015	12/1/2015	12/2/2015	
L64173-9	421168	Lander Street Storm Separation	CVTOTS	IN-LINESED	11/23/2015	12/1/2015	12/2/2015	
L64173-10	421168	Lander Street Storm Separation	CVTOTS	IN-LINESED	11/23/2015	12/1/2015	12/2/2015	
WG143238-1	MB		CVTOTS	SOLIDBLANK		12/1/2015	12/2/2015	MB151201
WG143238-2	LD		CVTOTS	TRAP SED		12/1/2015	12/2/2015	L63466-1
WG143238-3	LD		CVTOTS	FILTER SED		12/1/2015	12/2/2015	L63858-1
WG143238-4	LD		CVTOTS	IN-LINESED		12/1/2015	12/2/2015	L64173-8

WG143336 (TOC/423589-335-4) Department: 3 - Conventionals Move Date: 30-DEC-15

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L63466-1	423589-335-4	LDW Green River, Suspended Solids	CVTOC	TRAP SED	9/15/2015	12/7/2015	12/17/2015	
L63466-2	423589-335-4	LDW Green River, Suspended Solids	CVTOC	TRAP SED	9/15/2015	12/7/2015	12/17/2015	
L63466-3	423589-335-4	LDW Green River, Suspended Solids	CVTOC	TRAP SED	9/15/2015	12/7/2015	12/18/2015	
L63466-4	423589-335-4	LDW Green River, Suspended Solids	CVTOC	TRAP SED	9/15/2015	12/7/2015	12/18/2015	
L63466-5	423589-335-4	LDW Green River, Suspended Solids	CVTOC	TRAP SED	8/5/2015	12/7/2015	12/18/2015	
L63466-6	423589-335-4	LDW Green River, Suspended Solids	CVTOC	TRAP SED	9/15/2015	12/7/2015	12/18/2015	
L63466-7	423589-335-4	LDW Green River, Suspended Solids	CVTOC	TRAP SED	9/15/2015	12/7/2015	12/18/2015	
WG143336-1	MB		CVTOC	OTHR SOLID		12/7/2015	12/17/2015	MB1 21217
WG143336-2	LCS		CVTOC	OTHR SOLID		12/7/2015	12/17/2015	LEVEL1
WG143336-3	SB		CVTOC	OTHR SOLID		12/7/2015	12/17/2015	WG143336-1
WG143336-4	LD		CVTOC	TRAP SED		12/7/2015	12/17/2015	L63466-1
WG143336-5	LT		CVTOC	TRAP SED		12/7/2015	12/17/2015	WG143336-4 L63466-1
WG143336-6	MS		CVTOC	TRAP SED		12/7/2015	12/17/2015	L63466-1
WG143336-7	MB		CVTOC	OTHR SOLID		12/7/2015	12/18/2015	MB2 151218
WG143336-8	LCS		CVTOC	OTHR SOLID		12/7/2015	12/18/2015	LEVEL1

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WG143688 () Department: 3 - Conventionals Move Date: 04-JAN-16

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L63466-1	423589-335-4	LDW Green River, Suspended Solids	CVPSD	TRAP SED	9/15/2015	12/21/2015	12/24/2015	
L63466-2	423589-335-4	LDW Green River, Suspended Solids	CVPSD	TRAP SED	9/15/2015	12/21/2015	12/24/2015	
L63466-3	423589-335-4	LDW Green River, Suspended Solids	CVPSD	TRAP SED	9/15/2015	12/21/2015	12/24/2015	
L63466-4	423589-335-4	LDW Green River, Suspended Solids	CVPSD	TRAP SED	9/15/2015	12/21/2015	12/24/2015	
L63466-5	423589-335-4	LDW Green River, Suspended Solids	CVPSD	TRAP SED	8/5/2015	12/21/2015	12/24/2015	
L63466-6	423589-335-4	LDW Green River, Suspended Solids	CVPSD	TRAP SED	9/15/2015	12/21/2015	12/24/2015	
L63466-7	423589-335-4	LDW Green River, Suspended Solids	CVPSD	TRAP SED	9/15/2015	12/21/2015	12/24/2015	

WG142099 (02-OCT-15 LDW GR) Department: 6 - Metals Move Date: 08-OCT-15

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L63466-1	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	TRAP SED	9/15/2015	10/2/2015	10/5/2015	
L63466-2	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	TRAP SED	9/15/2015	10/2/2015	10/5/2015	
L63466-3	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	TRAP SED	9/15/2015	10/2/2015	10/5/2015	
L63466-4	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	TRAP SED	9/15/2015	10/2/2015	10/5/2015	
L63466-5	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	TRAP SED	8/5/2015	10/2/2015	10/5/2015	
L63466-6	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	TRAP SED	9/15/2015	10/2/2015	10/5/2015	
L63466-7	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	TRAP SED	9/15/2015	10/2/2015	10/5/2015	
WG142099-1	MB		MTHG-MIDS	SOLIDBLANK		10/2/2015	10/5/2015	MB
WG142099-2	SB		MTHG-MIDS	SOLIDBLANK		10/2/2015	10/5/2015	WG142099-1 HG-SMID
WG142099-3	LD		MTHG-MIDS	TRAP SED		10/2/2015	10/5/2015	L63466-2 RPD-SOL
WG142099-4	MS		MTHG-MIDS	TRAP SED		10/2/2015	10/5/2015	L63466-2 HG-SMID
WG142099-5	MSD		MTHG-MIDS	TRAP SED		10/2/2015	10/5/2015	WG142099-4 L63466-2 HG-SMID-MSD
WG142099-6	LCS		MTHG-MIDS	SOIL		10/2/2015	10/5/2015	ERASOIL
WG142099-7	LCSD		MTHG-MIDS	SOIL		10/2/2015	10/5/2015	WG142099-6 ERASOIL

WG143629 (12/18/15 LDW Ballard CSO) Department: 6 - Metals Move Date: 31-DEC-15

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L63466-1	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	TRAP SED	9/15/2015	12/18/2015	12/22/2015	
L63466-2	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	TRAP SED	9/15/2015	12/18/2015	12/22/2015	
L63466-3	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	TRAP SED	9/15/2015	12/18/2015	12/22/2015	
L63466-4	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	TRAP SED	9/15/2015	12/18/2015	12/22/2015	
L63466-5	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	TRAP SED	8/5/2015	12/18/2015	12/22/2015	
L63466-6	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	TRAP SED	9/15/2015	12/18/2015	12/22/2015	

L63466-7	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	TRAP SED	9/15/2015	12/18/2015	12/22/2015	
L63858-1	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	FILTER SED	9/22/2015	12/18/2015	12/22/2015	
L63934-1	423368-210-1	CSO Sediment Quality Characterization	MTICPMS-SED	FRSHWTRSED	10/14/2015	12/18/2015	12/22/2015	
L63934-2	423368-210-1	CSO Sediment Quality Characterization	MTICPMS-SED	FRSHWTRSED	10/14/2015	12/18/2015	12/22/2015	
L63934-3	423368-210-1	CSO Sediment Quality Characterization	MTICPMS-SED	FRSHWTRSED	10/14/2015	12/18/2015	12/22/2015	
L63934-4	423368-210-1	CSO Sediment Quality Characterization	MTICPMS-SED	FRSHWTRSED	10/14/2015	12/18/2015	12/22/2015	
L63934-5	423368-210-1	CSO Sediment Quality Characterization	MTICPMS-SED	FRSHWTRSED	10/14/2015	12/18/2015	12/22/2015	
L63934-6	423368-210-1	CSO Sediment Quality Characterization	MTICPMS-SED	FRSHWTRSED	10/14/2015	12/18/2015	12/22/2015	
L63934-7	423368-210-1	CSO Sediment Quality Characterization	MTICPMS-SED	FRSHWTRSED	10/14/2015	12/18/2015	12/22/2015	
L64107-1	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	FILTER SED	10/26/2015	12/18/2015	12/22/2015	
L64265-1	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	FILTER SED	11/14/2015	12/18/2015	12/22/2015	
WG143629-1	MB		MTICPMS-SED	SOLIDBLANK		12/18/2015	12/22/2015	METHOD BLANK
WG143629-2	SB		MTICPMS-SED	SOLIDBLANK		12/18/2015	12/22/2015	WG143629-1 MS-100
WG143629-3	LD		MTICPMS-SED	FILTER SED		12/18/2015	12/22/2015	L64265-1 RPD-SOL
WG143629-4	MS		MTICPMS-SED	FILTER SED		12/18/2015	12/22/2015	L64265-1 MS-100
WG143629-5	LCS		MTICPMS-SED	FRSHWTRSED		12/18/2015	12/22/2015	BUFFSED
WG143629-6	LCS		MTICPMS-SED	SOIL		12/18/2015	12/22/2015	ERASOIL
WG143629-7	LCSD		MTICPMS-SED	SOIL		12/18/2015	12/22/2015	WG143629-6 ERASOIL

WG143702 (bs#504 bna-sms) Department: 7 - Organics Move Date: 12-JAN-16

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L63466-1	423589-335-4	LDW Green River, Suspended Solids	ORBNASMS	TRAP SED	9/15/2015	12/22/2015	12/23/2015	
L63466-2	423589-335-4	LDW Green River, Suspended Solids	ORBNASMS	TRAP SED	9/15/2015	12/22/2015	12/24/2015	
L63466-3	423589-335-4	LDW Green River, Suspended Solids	ORBNASMS	TRAP SED	9/15/2015	12/22/2015	12/23/2015	
L63466-4	423589-335-4	LDW Green River, Suspended Solids	ORBNASMS	TRAP SED	9/15/2015	12/22/2015	12/23/2015	
L63466-5	423589-335-4	LDW Green River, Suspended Solids	ORBNASMS	TRAP SED	8/5/2015	12/22/2015	12/23/2015	
L63466-6	423589-335-4	LDW Green River, Suspended Solids	ORBNASMS	TRAP SED	9/15/2015	12/22/2015	12/23/2015	
L63466-7	423589-335-4	LDW Green River, Suspended Solids	ORBNASMS	TRAP SED	9/15/2015	12/22/2015	12/24/2015	
WG143702-1	MB		ORBNASMS	OTHR SOLID		12/22/2015	12/23/2015	MB151222
WG143702-2	SB		ORBNASMS	OTHR SOLID		12/22/2015	12/23/2015	WG143702-1
WG143702-3	MS		ORBNASMS	TRAP SED		12/22/2015	12/23/2015	L63466-2
WG143702-4	MSD		ORBNASMS	TRAP SED		12/22/2015	12/23/2015	WG143702-3 L63466-2
WG143702-5	SRM		ORBNASMS	SALTWTRSED		12/22/2015	12/23/2015	WG143702-1
WG143702-6	SRMD		ORBNASMS	SALTWTRSED		12/22/2015	12/23/2015	WG143702-5 WG143702-1
WG143702-7	LD		ORBNASMS	TRAP SED		12/22/2015	12/23/2015	L63466-4

LIMSView QC Report for Green River Watershed Suspended Solids - Sediment Traps 2013-2014

Workgroup: WG126020 (PSD) Run ID: R187456

LT:WG126020-2 LD:WG126020-1 L57305-5 Matrix: TRAP SED Listtype:CVPSD Method:ASTM D422 Project:423589-335-4 Pkey:STD
(Lab Triplicate, Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	LT Value	RSD	Qual	LabLimit
Gravel	0.3	3.4	%	<MDL	<MDL	<MDL			0--20
Sand	0.3	3.4	%	51.6	52.7	53.7	2		0--20
Silt	1.7	3.4	%	28.8	25.6	29.6	8		0--20
Clay	1.7	3.4	%	10.2	11.9	10.4	9		0--20

Workgroup: WG127119 (PSD) Run ID: R188742

LT:WG127119-2 LD:WG127119-1 L57986-5 Matrix: TRAP SED Listtype:CVPSD Method:ASTM D422 Project:423589-335-4 Pkey:STD
(Lab Triplicate, Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	LT Value	RSD	Qual	LabLimit
Gravel	0.3	3.2	%	<MDL	<MDL	<MDL			0--20
Sand	0.3	3.2	%	41.7	41.5	40.7	1		0--20
Silt	1.5	3	%	50.6	52.3	51.7	2		0--20
Clay	1.5	3	%	10.4	9	8.9	9		0--20

Workgroup: WG129375 (PSD) Run ID: R192033

LT:WG129375-2 LD:WG129375-1 L58785-2 Matrix: TRAP SED Listtype:CVPSD Method:ASTM D422 Project:423589-335-4 Pkey:STD
(Lab Triplicate, Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	LT Value	RSD	Qual	LabLimit
Gravel	0.4	4.2	%	<MDL	<MDL	<MDL			0--20
Sand	0.4	4.2	%	33.6	33.5	27.1	12		0--20
Silt	2.2	4.4	%	36.9	39.2	43.4	8		0--20
Clay	2.2	4.4	%	10.3	10.9	14.5	19		0--20

Workgroup: WG131042 (PSD) Run ID: R193856

LT:WG131042-2 LD:WG131042-1 L59454-3 Matrix: TRAP SED Listtype:CVPSD Method:ASTM D422 Project:423589-335-4 Pkey:STD
(Lab Triplicate, Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	LT Value	RSD	Qual	LabLimit
Gravel	0.1	1.2	%	32.7	29.5	39	14		0--20
Sand	0.1	1.2	%	61.8	63.7	58.1	5		0--20
Silt	0.6	1.2	%	1.2	1.2	1.2	2		0--20

Clay	0.6	1.2	%	2.3	0.6	0.6	85	*	0--20

Workgroup: WG126191 (PSD-LD for LDW Green River) Run ID: R187556

LT:WG126191-2 LD:WG126191-1 L57634-2 Matrix: FILTER SED Listtype:CVPSD-LD Method:ISO 13320:2009(E) Project:423589-335-4 Pkey:STD
(Lab Triplicate, Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	LT Value	RSD	Qual	LabLimit
Sand<1000	0.1	0.1	% Volume	32.2	31.9	32.2	1		0--20
Silt	0.1	0.1	% Volume	53.7	55.1	54.7	1		0--20
Clay	0.1	0.1	% Volume	5.7	5.9	5.8	2		0--20

Workgroup: WG127524 (PSD-LD for CSO and LDW) Run ID: R188914

LT:WG127524-2 LD:WG127524-1 L58172-1 Matrix: FRSHWTRSED Listtype:CVPSD-LD Method:ISO 13320:2009(E) Project:423368-210-1 Pkey:SED
(Lab Triplicate, Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	LT Value	RSD	Qual	LabLimit
Sand<1000	0.1	0.1	% Volume	39.7	45.1	41.1	7		0--20
Silt	0.1	0.1	% Volume	27	31.5	25.3	11		0--20
Clay	0.1	0.1	% Volume	5.1	6	5.1	9		0--20

Workgroup: WG129259 (PSD-LD for Grn R Flaming Geyser) Run ID: R191685
No QC sample found for this workgroup

Workgroup: WG126189 (PSD-SC for LDW Green River) Run ID: R187555

LT:WG126189-2 LD:WG126189-1 L57634-2 Matrix: FILTER SED Listtype:CVPSD-SC Method:ASTM D422/D3977-97 Project:423589-335-4 Pkey:STD
(Lab Triplicate, Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	LT Value	RSD	Qual	LabLimit
500 Micron (equal to/more	0.005	0.01	%	8.38	7.13	7.39	9		0--20

Workgroup: WG127522 (PSD-SC for CSO and LDW) Run ID: R188913

LT:WG127522-2 LD:WG127522-1 L58172-1 Matrix: FRSHWTRSED Listtype:CVPSD-SC Method:ASTM D422/D3977-97 Project:423368-210-1 Pkey:SED
(Lab Triplicate, Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	LT Value	RSD	Qual	LabLimit
500 Micron (equal to/more	0.005	0.01	%	28.1	17.4	28.5	25	*	0--20

Workgroup: WG129258 (PSD-SC for Grn R Flaming Geyser) Run ID: R191684
No QC sample found for this workgroup

Workgroup: WG125621 (toc soil) Run ID: R187460

MB:WG125621-1 Matrix: OTHR SOLID Listtype:CVTOC Method:SW846 9060-PSEP96 Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Total Organic Carbon	500	1000	mg/Kg	<MDL	

SRM:WG125621-2 Matrix: OTHR SOLID Listtype:CVTOC Method:SW846 9060-PSEP96 Project: Pkey:STD
(Std Reference Material)

Parameter	MDL	RDL	Units	TrueValue	SRM Value	% Rec.	Qual	LabLimit
Total Organic Carbon	1900	3710	mg/Kg	21900	18900	86		80--120

SB:WG125621-3 MB:WG125621-1 Matrix: OTHR SOLID Listtype:CVTOC Method:SW846 9060-PSEP96 Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	TrueValue	SB Value	% Rec	Qual	LabLimit
Total Organic Carbon	500	1000	mg/Kg	<MDL	2500	2450	98		80--120

LT:WG125621-5 LD:WG125621-4 L57305-4 Matrix: TRAP SED Listtype:CVTOC Method:SW846 9060-PSEP96 Project:423589-335-4 Pkey:STD
(Lab Triplicate, Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	LT Value	RSD	Qual	LabLimit
Total Organic Carbon	390	789	mg/Kg	2030	1850	1770	7		0--20

MS:WG125621-6 L57305-4 Matrix: TRAP SED Listtype:CVTOC Method:SW846 9060-PSEP96 Project:423589-335-4 Pkey:STD
(Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	TrueValue	MS Value	% Rec	Qual	LabLimit
Total Organic Carbon	390	788	mg/Kg	2030	1910	3960	101		75--125

MB:WG125621-7 Matrix: OTHR SOLID Listtype:CVTOC Method:SW846 9060-PSEP96 Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Total Organic Carbon	500	1000	mg/Kg	<MDL	

SRM:WG125621-8 Matrix: OTHR SOLID Listtype:CVTOC Method:SW846 9060-PSEP96 Project: Pkey:STD
(Std Reference Material)

Parameter	MDL	RDL	Units	TrueValue	SRM Value	% Rec.	Qual	LabLimit

Total Organic Carbon	2800	5620	mg/Kg	36900	31100	84	80--120

Workgroup: WG127207 (toc) Run ID: R188561

MB:WG127207-1 Matrix: OTHR SOLID Listtype:CVTOC Method:SW846 9060-PSEP96 Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Total Organic Carbon	500	1000	mg/Kg	<MDL	

SRM:WG127207-2 Matrix: OTHR SOLID Listtype:CVTOC Method:SW846 9060-PSEP96 Project: Pkey:STD
(Std Reference Material)

Parameter	MDL	RDL	Units	TrueValue	SRM Value	% Rec.	Qual	LabLimit
Total Organic Carbon	4700	9500	mg/Kg	36900	38100	103		80--120

LT:WG127207-4 LD:WG127207-3 L57986-4 Matrix: TRAP SED Listtype:CVTOC Method:SW846 9060-PSEP96 Project:423589-335-4 Pkey:STD
(Lab Triplicate, Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	LT Value	RSD	Qual	LabLimit
Total Organic Carbon	1700	3330	mg/Kg	6890	6030	5740	10		0--20

SB:WG127207-5 MB:WG127207-1 Matrix: OTHR SOLID Listtype:CVTOC Method:SW846 9060-PSEP96 Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	TrueValue	SB Value	% Rec	Qual	LabLimit
Total Organic Carbon	500	1000	mg/Kg	<MDL	2500	2570	103		80--120

MS:WG127207-6 L57986-4 Matrix: TRAP SED Listtype:CVTOC Method:SW846 9060-PSEP96 Project:423589-335-4 Pkey:STD
(Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	TrueValue	MS Value	% Rec	Qual	LabLimit
Total Organic Carbon	1700	3320	mg/Kg	6890	2500	16200	101		70--130

MB:WG127207-7 Matrix: OTHR SOLID Listtype:CVTOC Method:SW846 9060-PSEP96 Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Total Organic Carbon	500	1000	mg/Kg	<MDL	

SRM:WG127207-8 Matrix: OTHR SOLID Listtype:CVTOC Method:SW846 9060-PSEP96 Project: Pkey:STD
(Std Reference Material)

Parameter	MDL	RDL	Units	TrueValue	SRM Value	% Rec.	Qual	LabLimit
Total Organic Carbon	2800	5660	mg/Kg	21900	23600	108		80--120

LT:WG127207-10 LD:WG127207-9 L57964-6 Matrix: SOIL Listtype:CVTOC Method:SW846 9060-PSEP96 Project:421196-180 Pkey:STD

(Lab Triplicate, Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	LT Value	RSD	Qual	LabLimit
Total Organic Carbon	12000	24900	mg/Kg	75600	76500	66800	7		0--20

MB:WG127207-11 Matrix: OTHR SOLID Listtype:CVTOC Method:SW846 9060-PSEP96 Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Total Organic Carbon	500	1000	mg/Kg	<MDL	

SRM:WG127207-12 Matrix: OTHR SOLID Listtype:CVTOC Method:SW846 9060-PSEP96 Project: Pkey:STD
(Std Reference Material)

Parameter	MDL	RDL	Units	TrueValue	SRM Value	% Rec.	Qual	LabLimit
Total Organic Carbon	4700	9300	mg/Kg	33480	36900	110		80--120

SB:WG127207-13 MB:WG127207-11 Matrix: OTHR SOLID Listtype:CVTOC Method:SW846 9060-PSEP96 Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	TrueValue	SB Value	% Rec	Qual	LabLimit
Total Organic Carbon	500	1000	mg/Kg	<MDL	2500	2430	97		80--120

MS:WG127207-14 L57964-6 Matrix: SOIL Listtype:CVTOC Method:SW846 9060-PSEP96 Project:421196-180 Pkey:STD
(Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	TrueValue	MS Value	% Rec	Qual	LabLimit
Total Organic Carbon	15000	29200	mg/Kg	75600	2500	133000	102		70--130

Workgroup: WG129299 (toc soils) Run ID: R192053

LCS:WG129299-1 Matrix: OTHR SOLID Listtype:CVTOC Method:SW846 9060 PSEP96 Project: Pkey:STD
(Lab Control Sample)

Parameter	MDL	RDL	Units	TrueValue	LCS Value	% Rec.	Qual	LabLimit
Total Organic Carbon	2800	5550	mg/Kg	33510	37200	111		80--120

MB:WG129299-2 Matrix: OTHR SOLID Listtype:CVTOC Method:SW846 9060 PSEP96 Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Total Organic Carbon	500	1000	mg/Kg	<MDL	

SB:WG129299-3 MB:WG129299-2 Matrix: OTHR SOLID Listtype:CVTOC Method:SW846 9060 PSEP96 Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	TrueValue	SB Value	% Rec	Qual	LabLimit
Total Organic Carbon	500	1000	mg/Kg	<MDL	7500	7490	100		80--120

LT:WG129299-5 LD:WG129299-4 L58785-1 Matrix: TRAP SED Listtype:CVTOC Method:SW846 9060 PSEP96 Project:423589-335-4 Pkey:STD
(Lab Triplicate, Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	LT Value	RSD	Qual	LabLimit
Total Organic Carbon	3500	6960	mg/Kg	18300	16800	14000	13		0--20

MB:WG129299-6 Matrix: OTHR SOLID Listtype:CVTOC Method:SW846 9060 PSEP96 Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Total Organic Carbon	500	1000	mg/Kg	<MDL	

LCS:WG129299-7 Matrix: OTHR SOLID Listtype:CVTOC Method:SW846 9060 PSEP96 Project: Pkey:STD
(Lab Control Sample)

Parameter	MDL	RDL	Units	TrueValue	LCS Value	% Rec.	Qual	LabLimit
Total Organic Carbon	3000	5950	mg/Kg	33510	38000	113		80--120

SB:WG129299-8 MB:WG129299-6 Matrix: OTHR SOLID Listtype:CVTOC Method:SW846 9060 PSEP96 Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	TrueValue	SB Value	% Rec	Qual	LabLimit
Total Organic Carbon	500	1000	mg/Kg	<MDL	7500	7770	104		80--120

MS:WG129299-9 L58785-1 Matrix: TRAP SED Listtype:CVTOC Method:SW846 9060 PSEP96 Project:423589-335-4 Pkey:STD
(Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	TrueValue	MS Value	% Rec	Qual	LabLimit
Total Organic Carbon	5400	10800	mg/Kg	18300	19119	37100	99		70--130

MB:WG129299-10 Matrix: OTHR SOLID Listtype:CVTOC Method:SW846 9060 PSEP96 Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Total Organic Carbon	500	1000	mg/Kg	<MDL	

LCS:WG129299-11 Matrix: OTHR SOLID Listtype:CVTOC Method:SW846 9060 PSEP96 Project: Pkey:STD
(Lab Control Sample)

Parameter	MDL	RDL	Units	TrueValue	LCS Value	% Rec.	Qual	LabLimit
Total Organic Carbon	3200	6460	mg/Kg	33510	37600	112		80--120

Workgroup: WG130885 (TOC/423589-335-4) Run ID: R193710

MB:WG130885-1 Matrix: OTHR SOLID Listtype:CVTOC Method:SM5310-B Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Total Organic Carbon	500	1000	mg/Kg	<MDL	

LCS:WG130885-2 Matrix: OTHR SOLID Listtype:CVTOC Method:SM5310-B Project: Pkey:STD
(Lab Control Sample)

Parameter	MDL	RDL	Units	TrueValue	LCS Value	% Rec.	Qual	LabLimit
Total Organic Carbon	4400	8790	mg/Kg	36900	35300	96		80--120

SB:WG130885-3 MB:WG130885-1 Matrix: OTHR SOLID Listtype:CVTOC Method:SM5310-B Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	TrueValue	SB Value	% Rec	Qual	LabLimit
Total Organic Carbon	500	1000	mg/Kg	<MDL	3750	3870	103		80--120

LT:WG130885-5 LD:WG130885-4 L59454-6 Matrix: TRAP SED Listtype:CVTOC Method:SM5310-B Project:423589-335-4 Pkey:STD
(Lab Triplicate, Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	LT Value	RSD	Qual	LabLimit
Total Organic Carbon	1900	3900	mg/Kg	10900	9760	9480	7		0--20

MS:WG130885-6 L59454-6 Matrix: TRAP SED Listtype:CVTOC Method:SM5310-B Project:423589-335-4 Pkey:STD
(Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	TrueValue	MS Value	% Rec	Qual	LabLimit
Total Organic Carbon	1800	3540	mg/Kg	10900	14300	25600	103		70--130

MB:WG130885-7 Matrix: OTHR SOLID Listtype:CVTOC Method:SM5310-B Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Total Organic Carbon	500	1000	mg/Kg	<MDL	

LCS:WG130885-8 Matrix: OTHR SOLID Listtype:CVTOC Method:SM5310-B Project: Pkey:STD
(Lab Control Sample)

Parameter	MDL	RDL	Units	TrueValue	LCS Value	% Rec.	Qual	LabLimit
Total Organic Carbon	4800	9610	mg/Kg	36900	35400	96		80--120

Workgroup: WG125508 (Assorted TOTS) Run ID: R187500

MB:WG125508-1 Matrix: OTHR SOLID Listtype:CVTOTS Method:SM2540-G Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Total Solids	0.005	0.01	%	<MDL	

LT:WG125508-3 LD:WG125508-2 L57305-4 Matrix: TRAP SED Listtype:CVTOTS Method:SM2540-G Project:423589-335-4 Pkey:STD
(Lab Triplicate, Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	LT Value	RSD	Qual	LabLimit
Total Solids	0.005	0.01	%	75.6	76.5	76.1	1		0--20

LT:WG125508-5 LD:WG125508-4 L57348-1 Matrix: SOIL Listtype:CVTOTS Method:SM2540-G Project:421937 Pkey:STD
(Lab Triplicate, Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	LT Value	RSD	Qual	LabLimit
Total Solids	0.005	0.01	%	71.9	71.5	76.9	4		0--20

Workgroup: WG125612 (TOTS) Run ID: R187499

MB:WG125612-1 Matrix: OTHR SOLID Listtype:CVTOTS Method:SM2540-G Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Total Solids	0.005	0.01	%	<MDL	

LT:WG125612-3 LD:WG125612-2 L57305-1 Matrix: TRAP SED Listtype:CVTOTS Method:SM2540-G Project:423589-335-4 Pkey:STD
(Lab Triplicate, Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	LT Value	RSD	Qual	LabLimit
Total Solids	0.005	0.01	%	64.2	64.7	64.3	0		0--20

Workgroup: WG127120 (Assorted TOTS) Run ID: R188437

MB:WG127120-1 Matrix: OTHR SOLID Listtype:CVTOTS Method:SM2540-G Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Total Solids	0.005	0.01	%	<MDL	

LT:WG127120-3 LD:WG127120-2 L57964-10 Matrix: SOIL Listtype:CVTOTS Method:SM2540-G Project:421196-180 Pkey:STD
(Lab Triplicate, Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	LT Value	RSD	Qual	LabLimit
Total Solids	0.005	0.01	%	68.8	73.9	68.5	4		0--25

LT:WG127120-5 LD:WG127120-4 L57986-6 Matrix: TRAP SED Listtype:CVTOTS Method:SM2540-G Project:423589-335-4 Pkey:STD
(Lab Triplicate, Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	LT Value	RSD	Qual	LabLimit
Total Solids	0.005	0.01	%	63.9	63.9	64	0		0--25

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Workgroup: WG129699 (Assorted TOTS) Run ID: R191747

MB:WG129699-1 Matrix: OTHR SOLID Listtype:CVTOTS Method:SM2540-G Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Total Solids	0.005	0.01	%	<MDL	

LT:WG129699-3 LD:WG129699-2 L58785-4 Matrix: TRAP SED Listtype:CVTOTS Method:SM2540-G Project:423589-335-4 Pkey:STD
(Lab Triplicate, Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	LT Value	RSD	Qual	LabLimit
Total Solids	0.005	0.01	%	71.1	68.8	69.9	2		0--25

LT:WG129699-5 LD:WG129699-4 L59049-1 Matrix: FILTER SED Listtype:CVTOTS Method:SM2540-G Project:423589-335-4 Pkey:STD
(Lab Triplicate, Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	LT Value	RSD	Qual	LabLimit
Total Solids	0.005	0.01	%	31.2	30.8	28.9	4		0--25

LD:WG129699-6 L59077-8 Matrix: SLUDGE Listtype:CVTOTS Method:SM2540-G Project:421937 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
Total Solids	0.005	0.01	%	20.3	19.7	3		0--20

Workgroup: WG130726 (Assorted TOTS) Run ID: R193175

MB:WG130726-1 Matrix: OTHR SOLID Listtype:CVTOTS Method:SM2540-G Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Total Solids	0.005	0.01	%	<MDL	

LD:WG130726-2 L59405-4 Matrix: SOIL Listtype:CVTOTS Method:SM2540-G Project:421196-180 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
Total Solids	0.005	0.01	%	79.1	79.3	0		0--20

LD:WG130726-3 L59410-3 Matrix: SOIL Listtype:CVTOTS Method:SM2540-G Project:423575-850-4 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
Total Solids	0.005	0.01	%	76.4	77.6	1		0--20

LD:WG130726-4 L59417-2 Matrix: SLUDGE Listtype:CVTOTS Method:SM2540-G Project:421430-300 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
Total Solids	0.005	0.01	%	16.7	16.3	2		0--20

LT:WG130726-10 LD:WG130726-9 L59454-3 Matrix: TRAP SED Listtype:CVTOTS Method:SM2540-G Project:423589-335-4 Pkey:STD
(Lab Triplicate, Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	LT Value	RSD	Qual	LabLimit
Total Solids	0.005	0.01	%	85.2	84.1	84.8	1		0--25

LT:WG130726-12 LD:WG130726-11 L59457-1 Matrix: FILTER SED Listtype:CVTOTS Method:SM2540-G Project:423589-335-4 Pkey:STD
(Lab Triplicate, Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	LT Value	RSD	Qual	LabLimit
Total Solids	0.005	0.01	%	25.3	26.5	25.7	2		0--25

Workgroup: WG125551 (LDW Green River) Run ID: R187573

LCSD:WG125551-2 LCS:WG125551-1 Matrix: FRSHWTRSED Listtype:MTHG-MIDS Method:SW846 7471B Project: Pkey:SED
(Lab Control Sample Duplicate, Lab Control Sample)

Parameter	MDL	RDL	Units	TrueValue	LCS Value	% Rec.	Qual	LabLimit	TrueValue	LCSD Value	% Rec.	Qual	RPD	Qual	LabLimit
Mercury, Total, CVAA	0.025	0.253	mg/Kg	1.09	0.897	82		80--120	1.09	0.976	90		8		0--20

MB:WG125551-3 Matrix: SOLIDBLANK Listtype:MTHG-MIDS Method:SW846 7471B Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Mercury, Total, CVAA	0.0048	0.0476	mg/Kg	<MDL	

SB:WG125551-4 MB:WG125551-3 Matrix: SOLIDBLANK Listtype:MTHG-MIDS Method:SW846 7471B Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	TrueValue	SB Value	% Rec	Qual	LabLimit
Mercury, Total, CVAA	0.0048	0.0476	mg/Kg	<MDL	0.0952	0.0867	91		85--115

MSD:WG125551-6 MS:WG125551-5 L57305-5 Matrix: TRAP SED Listtype:MTHG-MIDS Method:SW846 7471B Project:423589-335-4 Pkey:STD
(Matrix Spike Duplicate, Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	TrueValue	MS Value	% Rec	Qual	LabLimit	TrueValue	MSD Value	% Rec.	Qual	RPD	Qual	LabLimit
Mercury, Total, CVAA	0.0048	0.0483	mg/Kg	0.021	0.0966	0.111	93		75--125	0.0954	0.111	94		0		0--20

LD:WG125551-7 L57305-5 Matrix: TRAP SED Listtype:MTHG-MIDS Method:SW846 7471B Project:423589-335-4 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit

Mercury, Total, CVAA	0.0048	0.0477	mg/Kg	0.021	0.021	0--20

Workgroup: WG128375 (Green river) Run ID: R189914

LCSD:WG128375-2 LCS:WG128375-1 Matrix: FRSHWTRSED Listtype:MTHG-MIDS Method:SW846 7471B Project: Pkey:SED
(Lab Control Sample Duplicate, Lab Control Sample)

Parameter	MDL	RDL	Units	TrueValue	LCS Value	% Rec.	Qual	LabLimit	TrueValue	LCSD Value	% Rec.	Qual	RPD	Qual	LabLimit
Mercury, Total, CVAA	0.024	0.239	mg/Kg	1.09	1.07	98		80--120	1.09	1.05	96		1		0--20

MB:WG128375-3 Matrix: SOLIDBLANK Listtype:MTHG-MIDS Method:SW846 7471B Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Mercury, Total, CVAA	0.0048	0.0476	mg/Kg	<MDL	

SB:WG128375-4 MB:WG128375-3 Matrix: SOLIDBLANK Listtype:MTHG-MIDS Method:SW846 7471B Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	TrueValue	SB Value	% Rec	Qual	LabLimit
Mercury, Total, CVAA	0.0048	0.0476	mg/Kg	<MDL	0.0952	0.0911	96		85--115

MSD:WG128375-6 MS:WG128375-5 L57986-6 Matrix: TRAP SED Listtype:MTHG-MIDS Method:SW846 7471B Project:423589-335-4 Pkey:STD
(Matrix Spike Duplicate, Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	TrueValue	MS Value	% Rec	Qual	LabLimit	TrueValue	MSD Value	% Rec.	Qual	RPD	Qual	LabLimit
Mercury, Total, CVAA	0.0048	0.0485	mg/Kg	0.032	0.097	0.135	106		75--125	0.0958	0.143	115		5		0--20

LD:WG128375-7 L57986-6 Matrix: TRAP SED Listtype:MTHG-MIDS Method:SW846 7471B Project:423589-335-4 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
Mercury, Total, CVAA	0.0049	0.0489	mg/Kg	0.032	0.025			0--20

Workgroup: WG129257 (LDW Green river sed.) Run ID: R191004

LCSD:WG129257-2 LCS:WG129257-1 Matrix: FRSHWTRSED Listtype:MTHG-MIDS Method:SW846 7471B Project: Pkey:SED
(Lab Control Sample Duplicate, Lab Control Sample)

Parameter	MDL	RDL	Units	TrueValue	LCS Value	% Rec.	Qual	LabLimit	TrueValue	LCSD Value	% Rec.	Qual	RPD	Qual	LabLimit
Mercury, Total, CVAA	0.025	0.245	mg/Kg	1.09	0.966	89		80--120	1.09	0.997	91		3		0--20

MB:WG129257-3 Matrix: SOLIDBLANK Listtype:MTHG-MIDS Method:SW846 7471B Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual

Mercury, Total, CVAA	0.0048	0.0476	mg/Kg	<MDL

SB:WG129257-4 MB:WG129257-3 Matrix: SOLIDBLANK Listtype:MTHG-MIDS Method:SW846 7471B Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	TrueValue	SB Value	% Rec	Qual	LabLimit
Mercury, Total, CVAA	0.0048	0.0476	mg/Kg	<MDL	0.0952	0.089	93		85--115

MSD:WG129257-6 MS:WG129257-5 L58754-1 Matrix: FILTER SED Listtype:MTHG-MIDS Method:SW846 7471B Project:423589-335-4 Pkey:STD
(Matrix Spike Duplicate, Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	TrueValue	MS Value	% Rec	Qual	LabLimit	TrueValue	MSD Value	% Rec.	Qual	RPD	Qual	LabLimit
Mercury, Total, CVAA	0.0048	0.0477	mg/Kg	0.041	0.0954	0.132	95		75--125	0.0952	0.143	107		8		0--20

LD:WG129257-7 L58754-1 Matrix: FILTER SED Listtype:MTHG-MIDS Method:SW846 7471B Project:423589-335-4 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
Mercury, Total, CVAA	0.0048	0.0479	mg/Kg	0.041	0.037			0--20

Workgroup: WG129628 (LDW green river) Run ID: R191507

LCSD:WG129628-2 LCS:WG129628-1 Matrix: FRSHWTRSED Listtype:MTHG-MIDS Method:SW846 7471B Project: Pkey:SED
(Lab Control Sample Duplicate, Lab Control Sample)

Parameter	MDL	RDL	Units	TrueValue	LCS Value	% Rec.	Qual	LabLimit	TrueValue	LCSD Value	% Rec.	Qual	RPD	Qual	LabLimit
Mercury, Total, CVAA	0.025	0.25	mg/Kg	1.09	0.994	91		80--120	1.09	1.08	99		8		0--20

MB:WG129628-3 Matrix: SOLIDBLANK Listtype:MTHG-MIDS Method:SW846 7471B Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Mercury, Total, CVAA	0.0048	0.0476	mg/Kg	<MDL	

SB:WG129628-4 MB:WG129628-3 Matrix: SOLIDBLANK Listtype:MTHG-MIDS Method:SW846 7471B Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	TrueValue	SB Value	% Rec	Qual	LabLimit
Mercury, Total, CVAA	0.0048	0.0476	mg/Kg	<MDL	0.0952	0.0857	90		85--115

MSD:WG129628-6 MS:WG129628-5 L58785-4 Matrix: TRAP SED Listtype:MTHG-MIDS Method:SW846 7471B Project:423589-335-4 Pkey:STD
(Matrix Spike Duplicate, Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	TrueValue	MS Value	% Rec	Qual	LabLimit	TrueValue	MSD Value	% Rec.	Qual	RPD	Qual	LabLimit
Mercury, Total, CVAA	0.0048	0.048	mg/Kg	0.014	0.096	0.113	104		75--125	0.0952	0.111	102		2		0--20

LD:WG129628-7 L58785-4 Matrix: TRAP SED Listtype:MTHG-MIDS Method:SW846 7471B Project:423589-335-4 Pkey:STD

(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
Mercury, Total, CVAA	0.0048	0.0478	mg/Kg	0.014	0.016			0--20

Workgroup: WG130733 (Trap Seds) Run ID: R193201

MB:WG130733-1 Matrix: SOLIDBLANK Listtype:MTHG-MIDS Method:SW846 7471B Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Mercury, Total, CVAA	0.0016	0.0161	mg/Kg	<MDL	

SB:WG130733-2 MB:WG130733-1 Matrix: SOLIDBLANK Listtype:MTHG-MIDS Method:SW846 7471B Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	TrueValue	SB Value	% Rec	Qual	LabLimit
Mercury, Total, CVAA	0.0016	0.0161	mg/Kg	<MDL	0.0323	0.0334	104		85--115

LCSD:WG130733-4 LCS:WG130733-3 Matrix: FRSHWTRSED Listtype:MTHG-MIDS Method:SW846 7471B Project: Pkey:SED
(Lab Control Sample Duplicate, Lab Control Sample)

Parameter	MDL	RDL	Units	TrueValue	LCS Value	% Rec.	Qual	LabLimit	TrueValue	LCSD Value	% Rec.	Qual	RPD	Qual	LabLimit
Mercury, Total, CVAA	0.025	0.246	mg/Kg	1.09	1.13	104		80--120	1.09	1.07	98		6		0--20

LD:WG130733-5 L59454-4 Matrix: TRAP SED Listtype:MTHG-MIDS Method:SW846 7471B Project:423589-335-4 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
Mercury, Total, CVAA	0.0051	0.0512	mg/Kg	0.018	0.018			0--20

MSD:WG130733-7 MS:WG130733-6 L59454-4 Matrix: TRAP SED Listtype:MTHG-MIDS Method:SW846 7471B Project:423589-335-4 Pkey:STD
(Matrix Spike Duplicate, Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	TrueValue	MS Value	% Rec	Qual	LabLimit	TrueValue	MSD Value	% Rec.	Qual	RPD	Qual	LabLimit
Mercury, Total, CVAA	0.0052	0.0521	mg/Kg	0.018	0.104	0.12	98		75--125	0.0982	0.115	98		4		0--20

Workgroup: WG126014 (Green R Seds) Run ID: R187593

MB:WG126014-1 Matrix: SOLIDBLANK Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Vanadium, Total, ICP-MS	0.018	0.0893	mg/Kg	<MDL	
Chromium, Total, ICP-MS	0.048	0.238	mg/Kg	<MDL	
Nickel, Total, ICP-MS	0.024	0.119	mg/Kg	<MDL	

Copper, Total, ICP-MS	0.095	0.476	mg/Kg	<MDL
Zinc, Total, ICP-MS	0.12	0.595	mg/Kg	<MDL
Arsenic, Total, ICP-MS	0.024	0.119	mg/Kg	<MDL
Silver, Total, ICP-MS	0.0095	0.0476	mg/Kg	<MDL
Cadmium, Total, ICP-MS	0.012	0.0595	mg/Kg	<MDL
Lead, Total, ICP-MS	0.024	0.119	mg/Kg	<MDL

SB:WG126014-2 MB:WG126014-1 Matrix: SOLIDBLANK Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	TrueValue	SB Value	% Rec	Qual	LabLimit
Vanadium, Total, ICP-MS	0.018	0.0893	mg/Kg	<MDL	4.76	4.35	91		85--115
Chromium, Total, ICP-MS	0.048	0.238	mg/Kg	<MDL	4.76	4.47	94		85--115
Nickel, Total, ICP-MS	0.024	0.119	mg/Kg	<MDL	4.76	4.65	98		85--115
Copper, Total, ICP-MS	0.095	0.476	mg/Kg	<MDL	4.76	4.56	96		85--115
Zinc, Total, ICP-MS	0.12	0.595	mg/Kg	<MDL	4.76	4.49	94		85--115
Arsenic, Total, ICP-MS	0.024	0.119	mg/Kg	<MDL	4.76	4.5	95		85--115
Silver, Total, ICP-MS	0.0095	0.0476	mg/Kg	<MDL	4.76	4.47	94		85--115
Cadmium, Total, ICP-MS	0.012	0.0595	mg/Kg	<MDL	4.76	4.44	93		85--115
Lead, Total, ICP-MS	0.024	0.119	mg/Kg	<MDL	4.76	4.47	94		85--115

LCSD:WG126014-4 LCS:WG126014-3 Matrix: SOIL Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project: Pkey:STD
(Lab Control Sample Duplicate, Lab Control Sample)

Parameter	MDL	RDL	Units	TrueValue	LCS Value	% Rec.	Qual	LabLimit	TrueValue	LCSD Value	% Rec.	Qual	RPD	Qual	LabLimit
Vanadium, Total, ICP-MS	0.088	0.438	mg/Kg	87.1	81.1	93		77--123	87.1	74.7	86		8		0--20
Chromium, Total, ICP-MS	0.23	1.17	mg/Kg	119	121	102		80--120	119	110	93		9		0--20
Nickel, Total, ICP-MS	0.12	0.584	mg/Kg	70	75.6	108		80--120	70	68	97		11		0--20
Copper, Total, ICP-MS	0.47	2.34	mg/Kg	118	132	112		80--120	118	120	102		10		0--20
Zinc, Total, ICP-MS	0.58	2.92	mg/Kg	276	308	111		80--121	276	288	104		7		0--20
Arsenic, Total, ICP-MS	0.12	0.584	mg/Kg	168	164	97		80--120	168	154	92		6		0--20
Silver, Total, ICP-MS	0.047	0.234	mg/Kg	42.3	43.7	103		66--134	42.3	41.1	97		6		0--20
Cadmium, Total, ICP-MS	0.058	0.292	mg/Kg	103	113	110		80--120	103	104	101		8		0--20
Lead, Total, ICP-MS	0.12	0.584	mg/Kg	76.9	81.8	106		80--120	76.9	78	101		5		0--20

LCS:WG126014-5 Matrix: FRSHWTRSED Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project: Pkey:SED
(Lab Control Sample)

Parameter	MDL	RDL	Units	TrueValue	LCS Value	% Rec.	Qual	LabLimit
Vanadium, Total, ICP-MS	0.082	0.408	mg/Kg	94.6	16.8	18		10--44
Chromium, Total, ICP-MS	0.22	1.09	mg/Kg	121.9	62.5	51		40--80
Nickel, Total, ICP-MS	0.11	0.543	mg/Kg	42.9	32.2	75		70--105
Zinc, Total, ICP-MS	0.54	2.72	mg/Kg	408	363	89		69--109
Arsenic, Total, ICP-MS	0.11	0.543	mg/Kg	17	12.8	75		66--141

Cadmium, Total, ICP-MS	0.054	0.272	mg/Kg	2.94	2.82	96	80--120
Lead, Total, ICP-MS	0.11	0.543	mg/Kg	150	137	91	80--120

LD:WG126014-6 L57305-4 Matrix: TRAP SED Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project:423589-335-4 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
Vanadium, Total, ICP-MS	0.18	0.905	mg/Kg	20.7	20.9	1		0--20
Chromium, Total, ICP-MS	0.48	2.41	mg/Kg	21.2	21.2	0		0--20
Nickel, Total, ICP-MS	0.24	1.21	mg/Kg	23.9	27.1	13		0--20
Copper, Total, ICP-MS	0.097	0.483	mg/Kg	7.36	7.46	1		0--20
Zinc, Total, ICP-MS	0.12	0.603	mg/Kg	25.3	25.5	1		0--20
Arsenic, Total, ICP-MS	0.024	0.121	mg/Kg	1.38	1.39	1		0--20
Silver, Total, ICP-MS	0.0097	0.0483	mg/Kg	0.019	0.019			0--20
Cadmium, Total, ICP-MS	0.012	0.0603	mg/Kg	0.041	0.044			0--20
Lead, Total, ICP-MS	0.024	0.121	mg/Kg	1.75	1.74	1		0--20

MS:WG126014-7 L57305-4 Matrix: TRAP SED Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project:423589-335-4 Pkey:STD
(Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	TrueValue	MS Value	% Rec	Qual	LabLimit
Vanadium, Total, ICP-MS	0.18	0.905	mg/Kg	20.7	4.87	24.1		4xRule	75--125
Chromium, Total, ICP-MS	0.48	2.41	mg/Kg	21.2	4.87	23.5		4xRule	75--125
Nickel, Total, ICP-MS	0.24	1.21	mg/Kg	23.9	4.87	28.3		4xRule	75--125
Copper, Total, ICP-MS	0.097	0.483	mg/Kg	7.36	4.87	12	96		75--125
Zinc, Total, ICP-MS	0.12	0.603	mg/Kg	25.3	4.87	30.3		4xRule	75--125
Arsenic, Total, ICP-MS	0.024	0.121	mg/Kg	1.38	4.87	5.27	80		75--125
Silver, Total, ICP-MS	0.0097	0.0483	mg/Kg	0.019	4.87	4.61	94		75--125
Cadmium, Total, ICP-MS	0.012	0.0603	mg/Kg	0.041	4.87	4.84	99		75--125
Lead, Total, ICP-MS	0.024	0.121	mg/Kg	1.75	4.87	6.55	99		75--125

Workgroup: WG127460 (Trap Seds) Run ID: R188882

MB:WG127460-1 Matrix: SOLIDBLANK Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Arsenic, Total, ICP-MS	0.012	0.061	mg/Kg	<MDL	

SB:WG127460-2 MB:WG127460-1 Matrix: SOLIDBLANK Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	TrueValue	SB Value	% Rec	Qual	LabLimit
Arsenic, Total, ICP-MS	0.012	0.061	mg/Kg	<MDL	4.88	4.86	100		85--115

LCSD:WG127460-4 LCS:WG127460-3 Matrix: FRSHWTRSED Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project: Pkey:SED
(Lab Control Sample Duplicate, Lab Control Sample)

Parameter	MDL	RDL	Units	TrueValue	LCS Value	% Rec.	Qual	LabLimit	TrueValue	LCSD Value	% Rec.	Qual	RPD	Qual	LabLimit
Arsenic, Total, ICP-MS	0.1	0.506	mg/Kg	17	14.8	87		66--141	17	15	88		2		0--20

LD:WG127460-5 L57986-6 Matrix: TRAP SED Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project:423589-335-4 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
Arsenic, Total, ICP-MS	0.026	0.128	mg/Kg	3.42	3.34	2		0--20

MS:WG127460-6 L57986-6 Matrix: TRAP SED Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project:423589-335-4 Pkey:STD
(Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	TrueValue	MS Value	% Rec	Qual	LabLimit
Arsenic, Total, ICP-MS	0.026	0.128	mg/Kg	3.42	9.54	12.8	98		75--125

Workgroup: WG128370 (Trap Seds) Run ID: R190090

MB:WG128370-1 Matrix: SOLIDBLANK Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Vanadium, Total, ICP-MS	0.046	0.229	mg/Kg	<MDL	
Chromium, Total, ICP-MS	0.12	0.61	mg/Kg	<MDL	
Nickel, Total, ICP-MS	0.061	0.305	mg/Kg	<MDL	
Copper, Total, ICP-MS	0.24	1.22	mg/Kg	<MDL	
Zinc, Total, ICP-MS	0.061	0.305	mg/Kg	<MDL	
Silver, Total, ICP-MS	0.0049	0.0244	mg/Kg	<MDL	
Cadmium, Total, ICP-MS	0.0061	0.0305	mg/Kg	<MDL	
Lead, Total, ICP-MS	0.012	0.061	mg/Kg	<MDL	

SB:WG128370-2 MB:WG128370-1 Matrix: SOLIDBLANK Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	TrueValue	SB Value	% Rec	Qual	LabLimit
Vanadium, Total, ICP-MS	0.046	0.229	mg/Kg	<MDL	4.88	4.52	93		85--115
Chromium, Total, ICP-MS	0.12	0.61	mg/Kg	<MDL	4.88	4.46	91		85--115
Nickel, Total, ICP-MS	0.061	0.305	mg/Kg	<MDL	4.88	4.69	96		85--115
Copper, Total, ICP-MS	0.24	1.22	mg/Kg	<MDL	4.88	4.73	97		85--115
Zinc, Total, ICP-MS	0.061	0.305	mg/Kg	<MDL	4.88	4.8	98		85--115
Silver, Total, ICP-MS	0.0049	0.0244	mg/Kg	<MDL	4.88	4.8	98		85--115
Cadmium, Total, ICP-MS	0.0061	0.0305	mg/Kg	<MDL	4.88	4.47	92		85--115

Lead, Total, ICP-MS	0.012	0.061	mg/Kg	<MDL	4.88	4.92	101	85--115

LCSD:WG128370-4 LCS:WG128370-3 Matrix: FRSHWTRSED Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project: Pkey:SED
(Lab Control Sample Duplicate, Lab Control Sample)

Parameter	MDL	RDL	Units	TrueValue	LCS Value	% Rec.	Qual	LabLimit	TrueValue	LCSD Value	% Rec.	Qual	RPD	Qual	LabLimit
Vanadium, Total, ICP-MS	0.38	1.9	mg/Kg	94.6	18.3	19		10--44	94.6	19	20		4		0--20
Chromium, Total, ICP-MS	1	5.06	mg/Kg	121.9	64.2	53		40--80	121.9	64.8	53		1		0--20
Nickel, Total, ICP-MS	0.51	2.53	mg/Kg	42.9	33.9	79		70--105	42.9	34.3	80		1		0--20
Zinc, Total, ICP-MS	0.51	2.53	mg/Kg	408	361	89		69--109	408	385	94		6		0--20
Cadmium, Total, ICP-MS	0.051	0.253	mg/Kg	2.94	2.63	89		83--123	2.94	2.78	95		6		0--20
Lead, Total, ICP-MS	0.1	0.506	mg/Kg	150	138	92		80--120	150	141	94		2		0--20

LD:WG128370-5 L57986-6 Matrix: TRAP SED Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project:423589-335-4 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
Vanadium, Total, ICP-MS	0.096	0.481	mg/Kg	21.9	21.7	1		0--20
Chromium, Total, ICP-MS	0.26	1.28	mg/Kg	9.37	9.15	2		0--20
Nickel, Total, ICP-MS	0.13	0.642	mg/Kg	9.31	9.2	1		0--20
Copper, Total, ICP-MS	0.51	2.57	mg/Kg	11.2	10.7	5		0--20
Zinc, Total, ICP-MS	0.13	0.642	mg/Kg	30.3	30.8	2		0--20
Silver, Total, ICP-MS	0.01	0.0513	mg/Kg	0.022	0.024			0--20
Cadmium, Total, ICP-MS	0.013	0.0642	mg/Kg	0.046	0.05			0--20
Lead, Total, ICP-MS	0.026	0.128	mg/Kg	3.9	4.67	18		0--20

MS:WG128370-6 L57986-6 Matrix: TRAP SED Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project:423589-335-4 Pkey:STD
(Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	TrueValue	MS Value	% Rec	Qual	LabLimit
Vanadium, Total, ICP-MS	0.096	0.481	mg/Kg	21.9	9.54	31	95		75--125
Chromium, Total, ICP-MS	0.26	1.28	mg/Kg	9.37	9.54	18.3	94		75--125
Nickel, Total, ICP-MS	0.13	0.642	mg/Kg	9.31	9.54	17.8	89		75--125
Copper, Total, ICP-MS	0.51	2.57	mg/Kg	11.2	9.54	19.6	88		75--125
Zinc, Total, ICP-MS	0.13	0.642	mg/Kg	30.3	9.54	39.6	98		75--125
Silver, Total, ICP-MS	0.01	0.0513	mg/Kg	0.022	9.54	8.58	90		75--125
Cadmium, Total, ICP-MS	0.013	0.0642	mg/Kg	0.046	9.54	8.76	91		75--125
Lead, Total, ICP-MS	0.026	0.128	mg/Kg	3.9	9.54	12.7	92		75--125

Workgroup: WG129766 (08-NOV-13 Green R Seds) Run ID: R192076

MB:WG129766-1 Matrix: SOLIDBLANK Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Vanadium, Total, ICP-MS	0.0061	0.0307	mg/Kg	<MDL	
Chromium, Total, ICP-MS	0.016	0.082	mg/Kg	<MDL	
Nickel, Total, ICP-MS	0.0082	0.041	mg/Kg	<MDL	
Copper, Total, ICP-MS	0.033	0.164	mg/Kg	<MDL	
Zinc, Total, ICP-MS	0.041	0.205	mg/Kg	<MDL	
Arsenic, Total, ICP-MS	0.0082	0.041	mg/Kg	<MDL	
Silver, Total, ICP-MS	0.0033	0.0164	mg/Kg	<MDL	
Cadmium, Total, ICP-MS	0.0041	0.0205	mg/Kg	<MDL	
Lead, Total, ICP-MS	0.0082	0.041	mg/Kg	<MDL	

SB:WG129766-2 MB:WG129766-1 Matrix: SOLIDBLANK Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	TrueValue	SB Value	% Rec	Qual	LabLimit
Vanadium, Total, ICP-MS	0.0061	0.0307	mg/Kg	<MDL	1.64	1.77	108		85--115
Chromium, Total, ICP-MS	0.016	0.082	mg/Kg	<MDL	1.64	1.8	110		85--115
Nickel, Total, ICP-MS	0.0082	0.041	mg/Kg	<MDL	1.64	1.83	112		85--115
Copper, Total, ICP-MS	0.033	0.164	mg/Kg	<MDL	1.64	1.87	114		85--115
Zinc, Total, ICP-MS	0.041	0.205	mg/Kg	<MDL	1.64	1.76	107		85--115
Arsenic, Total, ICP-MS	0.0082	0.041	mg/Kg	<MDL	1.64	1.64	100		85--115
Silver, Total, ICP-MS	0.0033	0.0164	mg/Kg	<MDL	1.64	1.86	114		85--115
Cadmium, Total, ICP-MS	0.0041	0.0205	mg/Kg	<MDL	1.64	1.68	103		85--115
Lead, Total, ICP-MS	0.0082	0.041	mg/Kg	<MDL	1.64	1.7	104		85--115

LD:WG129766-3 L58785-4 Matrix: TRAP SED Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project:423589-335-4 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
Vanadium, Total, ICP-MS	0.064	0.321	mg/Kg	19.5	18.9	3		0--20
Chromium, Total, ICP-MS	0.17	0.856	mg/Kg	18.6	18.6	0		0--20
Nickel, Total, ICP-MS	0.086	0.428	mg/Kg	22.1	22	0		0--20
Copper, Total, ICP-MS	0.068	0.342	mg/Kg	6.17	6.2	1		0--20
Zinc, Total, ICP-MS	0.086	0.428	mg/Kg	20.6	19.8	4		0--20
Arsenic, Total, ICP-MS	0.086	0.428	mg/Kg	2.18	2.21	1		0--20
Silver, Total, ICP-MS	0.0068	0.0342	mg/Kg	0.018	0.02			0--20
Cadmium, Total, ICP-MS	0.0086	0.0428	mg/Kg	0.0468	0.0495	6		0--20
Lead, Total, ICP-MS	0.086	0.428	mg/Kg	2.53	2.41	5		0--20

MS:WG129766-4 L58785-4 Matrix: TRAP SED Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project:423589-335-4 Pkey:STD
(Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	TrueValue	MS Value	% Rec	Qual	LabLimit
Vanadium, Total, ICP-MS	0.064	0.321	mg/Kg	19.5	3.18	21.9		4xRule	75--125

Chromium, Total, ICP-MS	0.17	0.856	mg/Kg	18.6	3.18	23.4	4xRule	75--125
Nickel, Total, ICP-MS	0.086	0.428	mg/Kg	22.1	3.18	25.1	4xRule	75--125
Copper, Total, ICP-MS	0.068	0.342	mg/Kg	6.17	3.18	9.25 97		75--125
Zinc, Total, ICP-MS	0.086	0.428	mg/Kg	20.6	3.18	22.9	4xRule	75--125
Arsenic, Total, ICP-MS	0.086	0.428	mg/Kg	2.18	3.18	5.24 96		75--125
Silver, Total, ICP-MS	0.0068	0.0342	mg/Kg	0.018	3.18	2.99 94		75--125
Cadmium, Total, ICP-MS	0.0086	0.0428	mg/Kg	0.0468	3.18	3.36 104		75--125
Lead, Total, ICP-MS	0.086	0.428	mg/Kg	2.53	3.18	5.71 100		75--125

LCSD:WG129766-6 LCS:WG129766-5 Matrix: FRSHWTRSED Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project: Pkey:SED
(Lab Control Sample Duplicate, Lab Control Sample)

Parameter	MDL	RDL	Units	TrueValue	LCS Value	% Rec.	Qual	LabLimit	TrueValue	LCSD Value	% Rec.	Qual	RPD	Qual	LabLimit
Vanadium, Total, ICP-MS	0.092	0.46	mg/Kg	94.6	21.8	23		10--44	94.6	20.1	21		8		0--20
Chromium, Total, ICP-MS	0.25	1.23	mg/Kg	121.9	71.8	59		40--80	121.9	70.1	57		2		0--20
Nickel, Total, ICP-MS	0.12	0.613	mg/Kg	42.9	38.4	90		70--105	42.9	36	84		7		0--20
Zinc, Total, ICP-MS	0.61	3.06	mg/Kg	408	397	97		69--109	408	370	91		7		0--20
Arsenic, Total, ICP-MS	0.12	0.613	mg/Kg	17	14.5	85		66--141	17	14.3	84		1		0--20
Cadmium, Total, ICP-MS	0.061	0.306	mg/Kg	2.94	3.24	110		83--123	2.94	3	102		8		0--20
Lead, Total, ICP-MS	0.12	0.613	mg/Kg	150	162	108		80--120	150	151	100		7		0--20

LCSD:WG129766-8 LCS:WG129766-7 Matrix: SOIL Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project: Pkey:STD
(Lab Control Sample Duplicate, Lab Control Sample)

Parameter	MDL	RDL	Units	TrueValue	LCS Value	% Rec.	Qual	LabLimit	TrueValue	LCSD Value	% Rec.	Qual	RPD	Qual	LabLimit
Vanadium, Total, ICP-MS	0.093	0.464	mg/Kg	87.1	87.8	101		77--123	87.1	81.2	93		8		0--20
Chromium, Total, ICP-MS	0.25	1.24	mg/Kg	119	124	104		80--120	119	114	96		8		0--20
Nickel, Total, ICP-MS	0.12	0.619	mg/Kg	70	78.3	112		80--120	70	70.8	101		10		0--20
Copper, Total, ICP-MS	0.5	2.48	mg/Kg	118	131	111		80--120	118	116	98		12		0--20
Zinc, Total, ICP-MS	0.62	3.09	mg/Kg	276	302	109		80--121	276	282	102		7		0--20
Arsenic, Total, ICP-MS	0.12	0.619	mg/Kg	168	161	96		80--120	168	156	93		3		0--20
Silver, Total, ICP-MS	0.05	0.248	mg/Kg	42.3	46	109		66--134	42.3	44.7	106		3		0--20
Cadmium, Total, ICP-MS	0.062	0.309	mg/Kg	103	114	111		80--120	103	106	103		8		0--20
Lead, Total, ICP-MS	0.12	0.619	mg/Kg	76.9	82.6	107		80--120	76.9	77.1	100		7		0--20

Workgroup: WG130834 (27-JAN-14 Sus/Trap Seds) Run ID: R193492

MB:WG130834-1 Matrix: SOLIDBLANK Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Vanadium, Total, ICP-MS	0.0091	0.0457	mg/Kg	<MDL	
Chromium, Total, ICP-MS	0.024	0.122	mg/Kg	<MDL	

Nickel, Total, ICP-MS	0.012	0.061	mg/Kg	<MDL
Copper, Total, ICP-MS	0.049	0.244	mg/Kg	<MDL
Zinc, Total, ICP-MS	0.061	0.305	mg/Kg	<MDL
Arsenic, Total, ICP-MS	0.012	0.061	mg/Kg	<MDL
Silver, Total, ICP-MS	0.0049	0.0244	mg/Kg	<MDL
Cadmium, Total, ICP-MS	0.0061	0.0305	mg/Kg	<MDL
Lead, Total, ICP-MS	0.012	0.061	mg/Kg	<MDL

SB:WG130834-2 MB:WG130834-1 Matrix: SOLIDBLANK Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	TrueValue	SB Value	% Rec	Qual	LabLimit
Vanadium, Total, ICP-MS	0.0091	0.0457	mg/Kg	<MDL	2.44	2.33	95		85--115
Chromium, Total, ICP-MS	0.024	0.122	mg/Kg	<MDL	2.44	2.38	97		85--115
Nickel, Total, ICP-MS	0.012	0.061	mg/Kg	<MDL	2.44	2.49	102		85--115
Copper, Total, ICP-MS	0.049	0.244	mg/Kg	<MDL	2.44	2.5	103		85--115
Zinc, Total, ICP-MS	0.061	0.305	mg/Kg	<MDL	2.44	2.5	103		85--115
Arsenic, Total, ICP-MS	0.012	0.061	mg/Kg	<MDL	2.44	2.34	96		85--115
Silver, Total, ICP-MS	0.0049	0.0244	mg/Kg	<MDL	2.44	2.45	100		85--115
Cadmium, Total, ICP-MS	0.0061	0.0305	mg/Kg	<MDL	2.44	2.38	98		85--115
Lead, Total, ICP-MS	0.012	0.061	mg/Kg	<MDL	2.44	2.38	98		85--115

LCSD:WG130834-4 LCS:WG130834-3 Matrix: SOIL Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project: Pkey:STD
(Lab Control Sample Duplicate, Lab Control Sample)

Parameter	MDL	RDL	Units	TrueValue	LCS Value	% Rec.	Qual	LabLimit	TrueValue	LCSD Value	% Rec.	Qual	RPD	Qual	LabLimit
Vanadium, Total, ICP-MS	0.072	0.358	mg/Kg	87.1	74.5	86		77--123	87.1	77.8	89		4		0--20
Chromium, Total, ICP-MS	0.19	0.954	mg/Kg	119	105	88		80--120	119	110	92		4		0--20
Nickel, Total, ICP-MS	0.095	0.477	mg/Kg	70	69.1	99		80--120	70	71.6	102		4		0--20
Copper, Total, ICP-MS	0.38	1.91	mg/Kg	118	112	95		80--120	118	116	98		3		0--20
Zinc, Total, ICP-MS	0.48	2.39	mg/Kg	276	269	97		80--121	276	278	101		3		0--20
Arsenic, Total, ICP-MS	0.095	0.477	mg/Kg	168	149	89		80--120	168	157	94		5		0--20
Silver, Total, ICP-MS	0.038	0.191	mg/Kg	42.3	40.2	95		66--134	42.3	41.9	99		4		0--20
Cadmium, Total, ICP-MS	0.048	0.239	mg/Kg	103	103	100		80--120	103	106	103		3		0--20
Lead, Total, ICP-MS	0.095	0.477	mg/Kg	76.9	71.3	93		80--120	76.9	76.9	100		8		0--20

LCSD:WG130834-6 LCS:WG130834-5 Matrix: FRSHWTRSED Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project: Pkey:SED
(Lab Control Sample Duplicate, Lab Control Sample)

Parameter	MDL	RDL	Units	TrueValue	LCS Value	% Rec.	Qual	LabLimit	TrueValue	LCSD Value	% Rec.	Qual	RPD	Qual	LabLimit
Vanadium, Total, ICP-MS	0.075	0.375	mg/Kg	94.6	19	20		10--44	94.6	19.6	21		3		0--20
Chromium, Total, ICP-MS	0.2	1	mg/Kg	121.9	62.4	51		40--80	121.9	65.2	53		4		0--20
Nickel, Total, ICP-MS	0.1	0.5	mg/Kg	42.9	34.4	80		70--105	42.9	35.3	82		3		0--20
Zinc, Total, ICP-MS	0.5	2.5	mg/Kg	408	370	91		69--109	408	366	90		1		0--20

Arsenic, Total, ICP-MS	0.1	0.5	mg/Kg	17	13.6	80	66--141	17	14	82	3	0--20
Cadmium, Total, ICP-MS	0.05	0.25	mg/Kg	2.94	2.89	98	83--123	2.94	2.89	98	0	0--20
Lead, Total, ICP-MS	0.1	0.5	mg/Kg	150	140	94	71--111	150	142	95	1	0--20

LD:WG130834-7 L59454-1 Matrix: TRAP SED Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project:423589-335-4 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
Vanadium, Total, ICP-MS	0.073	0.366	mg/Kg	22	22.1	1		0--20
Chromium, Total, ICP-MS	0.2	0.976	mg/Kg	5.15	5.37	4		0--20
Nickel, Total, ICP-MS	0.098	0.488	mg/Kg	5.32	5.34	0		0--20
Copper, Total, ICP-MS	0.39	1.95	mg/Kg	11.5	11.5	0		0--20
Zinc, Total, ICP-MS	0.49	2.44	mg/Kg	29.2	29.4	1		0--20
Arsenic, Total, ICP-MS	0.098	0.488	mg/Kg	3.53	3.56	1		0--20
Silver, Total, ICP-MS	0.0098	0.0488	mg/Kg	0.032	0.032			0--20
Cadmium, Total, ICP-MS	0.012	0.061	mg/Kg	0.0616	0.055	12		0--20
Lead, Total, ICP-MS	0.024	0.122	mg/Kg	2.84	2.71	4		0--20

MS:WG130834-8 L59454-1 Matrix: TRAP SED Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project:423589-335-4 Pkey:STD
(Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	TrueValue	MS Value	% Rec	Qual	LabLimit
Vanadium, Total, ICP-MS	0.073	0.366	mg/Kg	22	4.9	26.4		4xRule	75--125
Chromium, Total, ICP-MS	0.2	0.976	mg/Kg	5.15	4.9	9.69	92		75--125
Nickel, Total, ICP-MS	0.098	0.488	mg/Kg	5.32	4.9	9.91	93		75--125
Copper, Total, ICP-MS	0.39	1.95	mg/Kg	11.5	4.9	15.9	91		75--125
Zinc, Total, ICP-MS	0.49	2.44	mg/Kg	29.2	4.9	32.8		4xRule	75--125
Arsenic, Total, ICP-MS	0.098	0.488	mg/Kg	3.53	4.9	8.15	94		75--125
Silver, Total, ICP-MS	0.0098	0.0488	mg/Kg	0.032	4.9	4.35	88		75--125
Cadmium, Total, ICP-MS	0.012	0.061	mg/Kg	0.0616	4.9	4.67	94		75--125
Lead, Total, ICP-MS	0.024	0.122	mg/Kg	2.84	4.9	7.24	90		75--125

Workgroup: WG125614 (BS#419 bnasms) Run ID: R187451

MB:WG125614-1 Matrix: OTHR SOLID Listtype:ORBNASMS Method:SW846 3550B*SW846 8270D Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Phenol	27	80	ug/Kg	<MDL	
1,4-Dichlorobenzene	8	8	ug/Kg	<MDL	
Benzyl Alcohol	13.3	13.3	ug/Kg	<MDL	
1,2-Dichlorobenzene	5.33	5.33	ug/Kg	<MDL	
2-Methylphenol	5.3	10.7	ug/Kg	<MDL	

3-,4-Methylphenol	27	53.3	ug/Kg	<MDL
2,4-Dimethylphenol	5.3	10.7	ug/Kg	<MDL
Benzoic Acid	107	107	ug/Kg	<MDL
1,2,4-Trichlorobenzene	0.53	1.07	ug/Kg	<MDL
Naphthalene	5.3	10.7	ug/Kg	<MDL
Hexachlorobutadiene	2.7	5.33	ug/Kg	<MDL
2-Methylnaphthalene	5.3	10.7	ug/Kg	<MDL
Dimethyl Phthalate	10.7	10.7	ug/Kg	<MDL
Acenaphthylene	5.3	10.7	ug/Kg	<MDL
Acenaphthene	5.3	10.7	ug/Kg	<MDL
Dibenzofuran	5.3	10.7	ug/Kg	<MDL
Diethyl Phthalate	11	21.3	ug/Kg	<MDL
Fluorene	5.3	10.7	ug/Kg	<MDL
N-Nitrosodiphenylamine	13.3	13.3	ug/Kg	<MDL
Hexachlorobenzene	0.53	1.07	ug/Kg	<MDL
Pentachlorophenol	80	80	ug/Kg	<MDL
Phenanthrene	5.3	10.7	ug/Kg	<MDL
Anthracene	5.3	10.7	ug/Kg	<MDL
Di-N-Butyl Phthalate	11	21.3	ug/Kg	<MDL
Fluoranthene	5.3	10.7	ug/Kg	<MDL
Pyrene	5.3	10.7	ug/Kg	<MDL
Benzyl Butyl Phthalate	8	8	ug/Kg	<MDL
Benzo(a)anthracene	5.3	10.7	ug/Kg	<MDL
Chrysene	5.3	10.7	ug/Kg	<MDL
Bis(2-Ethylhexyl)Phthalate	11	21.3	ug/Kg	<MDL
Di-N-Octyl Phthalate	10.7	10.7	ug/Kg	<MDL
Benzo(b,j,k)fluoranthene	5.3	10.7	ug/Kg	<MDL
Benzo(a)pyrene	5.3	10.7	ug/Kg	<MDL
Indeno(1,2,3-Cd)Pyrene	5.3	10.7	ug/Kg	<MDL
Dibenzo(a,h)anthracene	5.3	10.7	ug/Kg	<MDL
Benzo(g,h,i)perylene	5.3	10.7	ug/Kg	<MDL
Total LPAHs	5.3	10.7	ug/Kg	<MDL
Total HPAHS	5.3	10.7	ug/Kg	<MDL

SB:WG125614-2 MB:WG125614-1 Matrix: OTHR SOLID Listtype:ORBNASMS Method:SW846 3550B*SW846 8270D Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	TrueValue	SB Value	% Rec	Qual	LabLimit
Phenol	27	80	ug/Kg	<MDL	800	260	32		26--136
1,4-Dichlorobenzene	8	8	ug/Kg	<MDL	800	508	63		40--103
Benzyl Alcohol	13.3	13.3	ug/Kg	<MDL	800	325	41		26--111
1,2-Dichlorobenzene	5.33	5.33	ug/Kg	<MDL	800	538	67		44--105

2-Methylphenol	5.3	10.7	ug/Kg	<MDL	800	239	30	20--123
3-,4-Methylphenol	27	53.3	ug/Kg	<MDL	800	294	37	22--119
2,4-Dimethylphenol	5.3	10.7	ug/Kg	<MDL	800	390	49	20--121
Benzoic Acid	107	107	ug/Kg	<MDL	800	<MDL	0 *	20--92
1,2,4-Trichlorobenzene	0.53	1.07	ug/Kg	<MDL	800	592	74	39--94
Naphthalene	5.3	10.7	ug/Kg	<MDL	800	657	82	28--109
Hexachlorobutadiene	2.7	5.33	ug/Kg	<MDL	800	698	87	20--135
2-Methylnaphthalene	5.3	10.7	ug/Kg	<MDL	800	650	81	20--128
Dimethyl Phthalate	10.7	10.7	ug/Kg	<MDL	800	736	92	70--129
Acenaphthylene	5.3	10.7	ug/Kg	<MDL	800	717	90	45--132
Acenaphthene	5.3	10.7	ug/Kg	<MDL	800	622	78	43--126
Dibenzofuran	5.3	10.7	ug/Kg	<MDL	800	635	79	52--133
Diethyl Phthalate	11	21.3	ug/Kg	<MDL	800	729	91	75--131
Fluorene	5.3	10.7	ug/Kg	<MDL	800	634	79	57--150
N-Nitrosodiphenylamine	13.3	13.3	ug/Kg	<MDL	800	761	95	57--136
Hexachlorobenzene	0.53	1.07	ug/Kg	<MDL	800	686	86	53--150
Pentachlorophenol	80	80	ug/Kg	<MDL	800	623	78	25--135
Phenanthrene	5.3	10.7	ug/Kg	<MDL	800	714	89	47--141
Anthracene	5.3	10.7	ug/Kg	<MDL	800	719	90	48--149
Di-N-Butyl Phthalate	11	21.3	ug/Kg	<MDL	800	819	102	71--142
Fluoranthene	5.3	10.7	ug/Kg	<MDL	800	746	93	56--143
Pyrene	5.3	10.7	ug/Kg	<MDL	800	792	99	60--144
Benzyl Butyl Phthalate	8	8	ug/Kg	<MDL	800	964	121	36--150
Benzo(a)anthracene	5.3	10.7	ug/Kg	<MDL	800	785	98	51--150
Chrysene	5.3	10.7	ug/Kg	<MDL	800	788	98	45--150
Bis(2-Ethylhexyl)Phthalate	11	21.3	ug/Kg	<MDL	800	788	99	61--150
Di-N-Octyl Phthalate	10.7	10.7	ug/Kg	<MDL	800	809	101	43--150
Benzo(b,j,k)fluoranthene	5.3	10.7	ug/Kg	<MDL	2400	1690	70	45--143
Benzo(a)pyrene	5.3	10.7	ug/Kg	<MDL	800	805	101	61--140
Indeno(1,2,3-Cd)Pyrene	5.3	10.7	ug/Kg	<MDL	800	807	101	42--150
Dibenzo(a,h)anthracene	5.3	10.7	ug/Kg	<MDL	800	807	101	41--150
Benzo(g,h,i)perylene	5.3	10.7	ug/Kg	<MDL	800	633	79	28--150

SB:WG125614-3 MB:WG125614-1 Matrix: OTHR SOLID Listtype:ORBNASMS Method:SW846 3550B*SW846 8270D Project: Pkey:STD (Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	TrueValue	SB Value	% Rec	Qual	LabLimit
Phenol	27	80	ug/Kg	<MDL	3200	1890	59		26--136
1,4-Dichlorobenzene	8	8	ug/Kg	<MDL	3200	1980	62		40--103
Benzyl Alcohol	13.3	13.3	ug/Kg	<MDL	3200	2020	63		26--111
1,2-Dichlorobenzene	5.33	5.33	ug/Kg	<MDL	3200	2040	64		44--105
2-Methylphenol	5.3	10.7	ug/Kg	<MDL	3200	1990	62		20--123

3-,4-Methylphenol	27	53.3	ug/Kg	<MDL	3200	2030	63	22--119
2,4-Dimethylphenol	5.3	10.7	ug/Kg	<MDL	3200	2100	66	20--121
Benzoic Acid	107	107	ug/Kg	<MDL	3200	<MDL	0 *	20--92
1,2,4-Trichlorobenzene	0.53	1.07	ug/Kg	<MDL	3200	2120	66	39--94
Naphthalene	5.3	10.7	ug/Kg	<MDL	3200	2640	83	28--109
Hexachlorobutadiene	2.7	5.33	ug/Kg	<MDL	3200	2380	74	20--135
2-Methylnaphthalene	5.3	10.7	ug/Kg	<MDL	3200	2280	71	20--128
Dimethyl Phthalate	10.7	10.7	ug/Kg	<MDL	3200	3000	94	70--129
Acenaphthylene	5.3	10.7	ug/Kg	<MDL	3200	2920	91	45--132
Acenaphthene	5.3	10.7	ug/Kg	<MDL	3200	2490	78	43--126
Dibenzofuran	5.3	10.7	ug/Kg	<MDL	3200	2610	82	52--133
Diethyl Phthalate	11	21.3	ug/Kg	<MDL	3200	2920	91	75--131
Fluorene	5.3	10.7	ug/Kg	<MDL	3200	2630	82	57--150
N-Nitrosodiphenylamine	13.3	13.3	ug/Kg	<MDL	3200	3100	97	57--136
Hexachlorobenzene	0.53	1.07	ug/Kg	<MDL	3200	2800	87	53--150
Pentachlorophenol	80	80	ug/Kg	<MDL	3200	2890	90	25--135
Phenanthrene	5.3	10.7	ug/Kg	<MDL	3200	2850	89	47--141
Anthracene	5.3	10.7	ug/Kg	<MDL	3200	2930	92	48--149
Di-N-Butyl Phthalate	11	21.3	ug/Kg	<MDL	3200	3210	100	71--142
Fluoranthene	5.3	10.7	ug/Kg	<MDL	3200	3020	94	56--143
Pyrene	5.3	10.7	ug/Kg	<MDL	3200	3140	98	60--144
Benzyl Butyl Phthalate	8	8	ug/Kg	<MDL	3200	3810	119	36--150
Benzo(a)anthracene	5.3	10.7	ug/Kg	<MDL	3200	3150	99	51--150
Chrysene	5.3	10.7	ug/Kg	<MDL	3200	3070	96	45--150
Bis(2-Ethylhexyl)Phthalate	11	21.3	ug/Kg	<MDL	3200	3110	97	61--150
Di-N-Octyl Phthalate	10.7	10.7	ug/Kg	<MDL	3200	3130	98	43--150
Benzo(b,j,k)fluoranthene	5.3	10.7	ug/Kg	<MDL	9600	6750	70	45--143
Benzo(a)pyrene	5.3	10.7	ug/Kg	<MDL	3200	3180	99	61--140
Indeno(1,2,3-Cd)Pyrene	5.3	10.7	ug/Kg	<MDL	3200	3080	96	42--150
Dibenzo(a,h)anthracene	5.3	10.7	ug/Kg	<MDL	3200	3060	96	41--150
Benzo(g,h,i)perylene	5.3	10.7	ug/Kg	<MDL	3200	2370	74	28--150

MSD:WG125614-5 MS:WG125614-4 L57305-4 Matrix: TRAP SED Listtype:ORBNASMS Method:SW846 3550B*SW846 8270D Project:423589-335-4 Pkey:STD
(Matrix Spike Duplicate, Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	TrueValue	MS Value	% Rec	Qual	LabLimit	TrueValue	MSD Value	% Rec.	Qual	RPD	Qual	LabLimit
Phenol	130	400	ug/Kg	<MDL	3200	1930	60		21--142	3200	1860	58		4		0--35
1,4-Dichlorobenzene	40	40	ug/Kg	<MDL	3200	1840	58		20--105	3200	1960	61		6		0--35
Benzyl Alcohol	66.7	66.7	ug/Kg	<MDL	3200	1990	62		28--111	3200	2010	63		1		0--35
1,2-Dichlorobenzene	26.7	26.7	ug/Kg	<MDL	3200	1950	61		20--110	3200	2070	65		6		0--35
2-Methylphenol	27	53.3	ug/Kg	<MDL	3200	1950	61		21--126	3200	1880	59		4		0--35
3-,4-Methylphenol	130	267	ug/Kg	<MDL	3200	2000	62		24--129	3200	1970	62		1		0--35

2,4-Dimethylphenol	27	53.3	ug/Kg	<MDL		3200	1910	60	27--126	3200	2060	64	7	0--35
Benzoic Acid	533	533	ug/Kg	<MDL		3200	1580	49	20--150	3200	1570	49	1	0--35
1,2,4-Trichlorobenzene	2.7	5.33	ug/Kg	<MDL		3200	2080	65	22--95	3200	2170	68	4	0--35
Naphthalene	27	53.3	ug/Kg	<MDL		3200	2510	78	20--112	3200	2630	82	5	0--35
Hexachlorobutadiene	13	26.7	ug/Kg	<MDL		3200	2330	73	20--133	3200	2490	78	7	0--35
2-Methylnaphthalene	27	53.3	ug/Kg	<MDL		3200	2170	68	22--109	3200	2420	76	11	0--35
Dimethyl Phthalate	53.3	53.3	ug/Kg	<MDL		3200	3180	99	66--128	3200	3160	99	1	0--35
Acenaphthylene	27	53.3	ug/Kg	<MDL		3200	3180	100	44--134	3200	3210	100	1	0--35
Acenaphthene	27	53.3	ug/Kg	<MDL		3200	2730	85	37--129	3200	2740	86	0	0--35
Dibenzofuran	27	53.3	ug/Kg	<MDL		3200	2870	90	49--135	3200	2790	87	3	0--35
Diethyl Phthalate	53	107	ug/Kg	<MDL		3200	3120	98	71--130	3200	3070	96	2	0--35
Fluorene	27	53.3	ug/Kg	<MDL		3200	2870	90	52--150	3200	2820	88	2	0--35
N-Nitrosodiphenylamine	66.7	66.7	ug/Kg	<MDL		3200	3260	102	58--140	3200	3240	101	1	0--35
Hexachlorobenzene	2.7	5.33	ug/Kg	<MDL		3200	2910	91	51--149	3200	2920	91	0	0--35
Pentachlorophenol	400	400	ug/Kg	<MDL		3200	2520	79	35--134	3200	2540	79	1	0--35
Phenanthrene	27	53.3	ug/Kg	<MDL		3200	2970	93	51--136	3200	3010	94	2	0--35
Anthracene	27	53.3	ug/Kg	<MDL		3200	3030	95	37--150	3200	3050	95	0	0--35
Di-N-Butyl Phthalate	53	107	ug/Kg	<MDL		3200	3360	105	64--150	3200	3390	106	1	0--35
Fluoranthene	27	53.3	ug/Kg	<MDL		3200	3090	96	53--144	3200	3090	97	0	0--35
Pyrene	27	53.3	ug/Kg	<MDL		3200	3300	103	59--143	3200	3310	103	0	0--35
Benzyl Butyl Phthalate	40	40	ug/Kg	<MDL		3200	4030	126	27--150	3200	4120	129	2	0--35
Benzo(a)anthracene	27	53.3	ug/Kg	<MDL		3200	3350	105	52--149	3200	3340	105	0	0--35
Chrysene	27	53.3	ug/Kg	<MDL		3200	3290	103	47--141	3200	3240	101	1	0--35
Bis(2-Ethylhexyl)Phthalate	53	107	ug/Kg		14	3200	3360	105	54--150	3200	3320	103	1	0--35
Di-N-Octyl Phthalate	53.3	53.3	ug/Kg	<MDL		3200	3350	105	43--150	3200	3370	105	0	0--35
Benzo(b,j,k)fluoranthene	27	53.3	ug/Kg	<MDL		9600	6980	73	48--135	9600	7070	74	1	0--35
Benzo(a)pyrene	27	53.3	ug/Kg	<MDL		3200	3330	104	62--136	3200	3300	103	1	0--35
Indeno(1,2,3-Cd)Pyrene	27	53.3	ug/Kg	<MDL		3200	3180	99	41--150	3200	3220	101	1	0--35
Dibenzo(a,h)anthracene	27	53.3	ug/Kg	<MDL		3200	3180	99	39--150	3200	3210	100	1	0--35
Benzo(g,h,i)perylene	27	53.3	ug/Kg	<MDL		3200	2480	77	27--150	3200	2470	77	0	0--35

SRMD:WG125614-7 SRM:WG125614-6 Matrix: SALTWTRSED Listtype:ORBNASMS Method:SW846 3550B*SW846 8270D Project: Pkey:SED
(Std Reference Material Duplicate, Std Reference Material)

Parameter	MDL	RDL	Units	TrueValue	SRM Value	% Rec.	Qual	LabLimit	TrueValue	SRMD Value	% Rec.	Qual	RPD	Qual	LabLimit
Phenanthrene	270	533	ug/Kg	5200	4220	81		49--124	5200	3950	76		7		0--35
Fluoranthene	270	533	ug/Kg	8800	7630	87		56--137	8800	7260	83		5		0--35
Pyrene	270	533	ug/Kg	9570	8110	85		58--123	9570	7670	80		6		0--35
Benzo(a)anthracene	270	533	ug/Kg	4660	3900	84		48--127	4660	3760	81		4		0--35
Chrysene	270	533	ug/Kg	4800	5200	108		64--150	4800	5170	108		1		0--35
Benzo(b,j,k)fluoranthene	270	533	ug/Kg	8150	7290	89		50--126	8150	7130	87		2		0--35
Benzo(a)pyrene	270	533	ug/Kg	4240	3110	73		48--119	4240	3080	73		1		0--35

Indeno(1,2,3-Cd)Pyrene	270	533	ug/Kg		2740	2130	78	40--130	2740	1990	72	7	0--35
Dibenzo(a,h)anthracene	270	533	ug/Kg		419	510	121	54--200	419	520	124	3	0--35
Benzo(g,h,i)perylene	270	533	ug/Kg		2800	2020	72	42--141	2800	1820	65	10	0--35

LD:WG125614-8 L57305-5 Matrix: TRAP SED Listtype:ORBNASMS Method:SW846 3550B*SW846 8270D Project:423589-335-4 Pkey:STD

(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
Phenol	27	80	ug/Kg	<MDL	<MDL			0--35
1,4-Dichlorobenzene	8	8	ug/Kg	<MDL	<MDL			0--35
Benzyl Alcohol	13.3	13.3	ug/Kg	<MDL	<MDL			0--35
1,2-Dichlorobenzene	5.33	5.33	ug/Kg	<MDL	<MDL			0--35
2-Methylphenol	5.3	10.7	ug/Kg	<MDL	<MDL			0--35
3-,4-Methylphenol	27	53.3	ug/Kg	<MDL	<MDL			0--35
2,4-Dimethylphenol	5.3	10.7	ug/Kg	<MDL	<MDL			0--35
Benzoic Acid	107	107	ug/Kg	<MDL	<MDL			0--35
1,2,4-Trichlorobenzene	0.53	1.07	ug/Kg	<MDL	<MDL			0--35
Naphthalene	5.3	10.7	ug/Kg	<MDL	<MDL			0--35
Hexachlorobutadiene	2.7	5.33	ug/Kg	<MDL	<MDL			0--35
2-Methylnaphthalene	5.3	10.7	ug/Kg	<MDL	<MDL			0--35
Dimethyl Phthalate	10.7	10.7	ug/Kg	12.3	12.6	2		0--35
Acenaphthylene	5.3	10.7	ug/Kg	<MDL	<MDL			0--35
Acenaphthene	5.3	10.7	ug/Kg	<MDL	<MDL			0--35
Dibenzofuran	5.3	10.7	ug/Kg	<MDL	<MDL			0--35
Diethyl Phthalate	11	21.3	ug/Kg	<MDL	<MDL			0--35
Fluorene	5.3	10.7	ug/Kg	<MDL	<MDL			0--35
N-Nitrosodiphenylamine	13.3	13.3	ug/Kg	<MDL	<MDL			0--35
Hexachlorobenzene	0.53	1.07	ug/Kg	<MDL	<MDL			0--35
Pentachlorophenol	80	80	ug/Kg	<MDL	<MDL			0--35
Phenanthrene	5.3	10.7	ug/Kg	8.3	6.5			0--35
Anthracene	5.3	10.7	ug/Kg	<MDL	<MDL			0--35
Di-N-Butyl Phthalate	11	21.3	ug/Kg	<MDL	<MDL			0--35
Fluoranthene	5.3	10.7	ug/Kg	18.2	17	7		0--35
Pyrene	5.3	10.7	ug/Kg	17.9	17.3	4		0--35
Benzyl Butyl Phthalate	8	8	ug/Kg	15.5	18.2	16		0--35
Benzo(a)anthracene	5.3	10.7	ug/Kg	8.7	9.1			0--35
Chrysene	5.3	10.7	ug/Kg	16.2	15.6	4		0--35
Bis(2-Ethylhexyl)Phthalate	11	21.3	ug/Kg	68.7	70.3	2		0--35
Di-N-Octyl Phthalate	10.7	10.7	ug/Kg	<MDL	<MDL			0--35
Benzo(b,j,k)fluoranthene	5.3	10.7	ug/Kg	30.7	30.2	2		0--35
Benzo(a)pyrene	5.3	10.7	ug/Kg	10	10			0--35
Indeno(1,2,3-Cd)Pyrene	5.3	10.7	ug/Kg	7.1	7.3			0--35

Dibenzo(a,h)anthracene	5.3	10.7	ug/Kg	<MDL	<MDL		0--35
Benzo(g,h,i)perylene	5.3	10.7	ug/Kg	7	7.9		0--35
Total LPAHs	5.3	10.7	ug/Kg	8.3	6.5		0--35
Total HPAHS	5.3	10.7	ug/Kg	115.8	114.4	1	0--35

Surrogate:	2,4,6-Tribromophenol	2-Fluorobiphenyl	2-Fluorophenol	d14-Terphenyl	d4-2-Chlorophenol	d5-Nitrobenzene	d5-Phenol
(Lab Limits)	45--150	22--135	20--136	25--150	20--127	22--126	20--142
L57305-1	101	79	56	89	43	84	42
L57305-3	96	71	54	81	41	77	39
L57305-4	91	69	48	86	39	77	38
L57305-5	98	63	49	87	43	56	48
L57305-6	100	66	44	88	38	51	44
WG125614-1	75	63	52	86	38	76	36
WG125614-2	85	70	49	86	37	78	33
WG125614-3	86	71	60	82	50	73	61
WG125614-4	96	74	64	89	58	73	66
WG125614-5	91	80	67	87	55	76	61
WG125614-6	75	82	46	90	47	59	56
WG125614-7	83	88	63	88	62	78	77
WG125614-8	95	70	50	85	43	58	46

Workgroup: WG127162 (bs#431 bnasms) Run ID: R188828

MB:WG127162-1 Matrix: OTHR SOLID Listtype:ORBNASMS Method:SW846 3550B*SW846 8270D Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Phenol	27	80	ug/Kg	<MDL	
1,4-Dichlorobenzene	8	8	ug/Kg	<MDL	
Benzyl Alcohol	13.3	13.3	ug/Kg	<MDL	
1,2-Dichlorobenzene	5.33	5.33	ug/Kg	<MDL	
2-Methylphenol	5.3	10.7	ug/Kg	<MDL	
3-,4-Methylphenol	27	53.3	ug/Kg	<MDL	
2,4-Dimethylphenol	5.3	10.7	ug/Kg	<MDL	
Benzoic Acid	107	107	ug/Kg	<MDL	
1,2,4-Trichlorobenzene	0.53	1.07	ug/Kg	<MDL	
Naphthalene	5.3	10.7	ug/Kg	<MDL	
Hexachlorobutadiene	2.7	5.33	ug/Kg	<MDL	
2-Methylnaphthalene	5.3	10.7	ug/Kg	<MDL	

Dimethyl Phthalate	10.7	10.7	ug/Kg	<MDL
Acenaphthylene	5.3	10.7	ug/Kg	<MDL
Acenaphthene	5.3	10.7	ug/Kg	<MDL
Dibenzofuran	5.3	10.7	ug/Kg	<MDL
Diethyl Phthalate	11	21.3	ug/Kg	<MDL
Fluorene	5.3	10.7	ug/Kg	<MDL
N-Nitrosodiphenylamine	13.3	13.3	ug/Kg	<MDL
Hexachlorobenzene	0.53	1.07	ug/Kg	<MDL
Pentachlorophenol	80	80	ug/Kg	<MDL
Phenanthrene	5.3	10.7	ug/Kg	<MDL
Anthracene	5.3	10.7	ug/Kg	<MDL
Di-N-Butyl Phthalate	11	21.3	ug/Kg	<MDL
Fluoranthene	5.3	10.7	ug/Kg	<MDL
Pyrene	5.3	10.7	ug/Kg	<MDL
Benzyl Butyl Phthalate	8	8	ug/Kg	<MDL
Benzo(a)anthracene	5.3	10.7	ug/Kg	<MDL
Chrysene	5.3	10.7	ug/Kg	<MDL
Bis(2-Ethylhexyl)Phthalate	11	21.3	ug/Kg	<MDL
Di-N-Octyl Phthalate	10.7	10.7	ug/Kg	<MDL
Benzo(b,j,k)fluoranthene	5.3	10.7	ug/Kg	<MDL
Benzo(a)pyrene	5.3	10.7	ug/Kg	<MDL
Indeno(1,2,3-Cd)Pyrene	5.3	10.7	ug/Kg	<MDL
Dibenzo(a,h)anthracene	5.3	10.7	ug/Kg	<MDL
Benzo(g,h,i)perylene	5.3	10.7	ug/Kg	<MDL
Total LPAHs	5.3	10.7	ug/Kg	<MDL
Total HPAHS	5.3	10.7	ug/Kg	<MDL

SB:WG127162-2 MB:WG127162-1 Matrix: OTHR SOLID Listtype:ORBNASMS Method:SW846 3550B*SW846 8270D Project: Pkey:STD (Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	TrueValue	SB Value	% Rec	Qual	LabLimit
Phenol	27	80	ug/Kg	<MDL	800	460	58		26--136
1,4-Dichlorobenzene	8	8	ug/Kg	<MDL	800	448	56		40--103
Benzyl Alcohol	13.3	13.3	ug/Kg	<MDL	800	440	55		26--111
1,2-Dichlorobenzene	5.33	5.33	ug/Kg	<MDL	800	455	57		44--105
2-Methylphenol	5.3	10.7	ug/Kg	<MDL	800	188	24		20--123
3-,4-Methylphenol	27	53.3	ug/Kg	<MDL	800	254	32		22--119
2,4-Dimethylphenol	5.3	10.7	ug/Kg	<MDL	800	14.9	2	*	20--121
Benzoic Acid	107	107	ug/Kg	<MDL	800	34.3	4	*	20--92
1,2,4-Trichlorobenzene	0.53	1.07	ug/Kg	<MDL	800	418	52		39--94
Naphthalene	5.3	10.7	ug/Kg	<MDL	800	488	61		28--109
Hexachlorobutadiene	2.7	5.33	ug/Kg	<MDL	800	563	70		20--135

2-Methylnaphthalene	5.3	10.7	ug/Kg	<MDL	800	435	54	20--128
Dimethyl Phthalate	10.7	10.7	ug/Kg	<MDL	800	625	78	70--129
Acenaphthylene	5.3	10.7	ug/Kg	<MDL	800	521	65	45--132
Acenaphthene	5.3	10.7	ug/Kg	<MDL	800	486	61	43--126
Dibenzofuran	5.3	10.7	ug/Kg	<MDL	800	524	65	52--133
Diethyl Phthalate	11	21.3	ug/Kg	<MDL	800	760	95	75--131
Fluorene	5.3	10.7	ug/Kg	<MDL	800	418	52 *	57--150
N-Nitrosodiphenylamine	13.3	13.3	ug/Kg	<MDL	800	695	87	57--136
Hexachlorobenzene	0.53	1.07	ug/Kg	<MDL	800	585	73	53--150
Pentachlorophenol	80	80	ug/Kg	<MDL	800	608	76	25--135
Phenanthrene	5.3	10.7	ug/Kg	<MDL	800	518	65	47--141
Anthracene	5.3	10.7	ug/Kg	<MDL	800	540	67	48--149
Di-N-Butyl Phthalate	11	21.3	ug/Kg	<MDL	800	748	94	71--142
Fluoranthene	5.3	10.7	ug/Kg	<MDL	800	585	73	56--143
Pyrene	5.3	10.7	ug/Kg	<MDL	800	801	100	60--144
Benzyl Butyl Phthalate	8	8	ug/Kg	<MDL	800	721	90	36--150
Benzo(a)anthracene	5.3	10.7	ug/Kg	<MDL	800	658	82	51--150
Chrysene	5.3	10.7	ug/Kg	<MDL	800	637	80	45--150
Bis(2-Ethylhexyl)Phthalate	11	21.3	ug/Kg	<MDL	800	763	95	61--150
Di-N-Octyl Phthalate	10.7	10.7	ug/Kg	<MDL	800	762	95	43--150
Benzo(b,j,k)fluoranthene	5.3	10.7	ug/Kg	<MDL	2400	1530	64	45--143
Benzo(a)pyrene	5.3	10.7	ug/Kg	<MDL	800	697	87	61--140
Indeno(1,2,3-Cd)Pyrene	5.3	10.7	ug/Kg	<MDL	800	658	82	42--150
Dibenzo(a,h)anthracene	5.3	10.7	ug/Kg	<MDL	800	646	81	41--150
Benzo(g,h,i)perylene	5.3	10.7	ug/Kg	<MDL	800	535	67	28--150

SB:WG127162-3 MB:WG127162-1 Matrix: OTHR SOLID Listtype:ORBNASMS Method:SW846 3550B*SW846 8270D Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	TrueValue	SB Value	% Rec	Qual	LabLimit
Phenol	27	80	ug/Kg	<MDL	3200	2250	70		26--136
1,4-Dichlorobenzene	8	8	ug/Kg	<MDL	3200	1950	61		40--103
Benzyl Alcohol	13.3	13.3	ug/Kg	<MDL	3200	2080	65		26--111
1,2-Dichlorobenzene	5.33	5.33	ug/Kg	<MDL	3200	1840	57		44--105
2-Methylphenol	5.3	10.7	ug/Kg	<MDL	3200	1680	52		20--123
3-,4-Methylphenol	27	53.3	ug/Kg	<MDL	3200	1690	53		22--119
2,4-Dimethylphenol	5.3	10.7	ug/Kg	<MDL	3200	436	14	*	20--121
Benzoic Acid	107	107	ug/Kg	<MDL	3200	66.8	2	*	20--92
1,2,4-Trichlorobenzene	0.53	1.07	ug/Kg	<MDL	3200	1460	46		39--94
Naphthalene	5.3	10.7	ug/Kg	<MDL	3200	2040	64		28--109
Hexachlorobutadiene	2.7	5.33	ug/Kg	<MDL	3200	2170	68		20--135
2-Methylnaphthalene	5.3	10.7	ug/Kg	<MDL	3200	1500	47		20--128

Dimethyl Phthalate	10.7	10.7	ug/Kg	<MDL	3200	2990	93	70--129
Acenaphthylene	5.3	10.7	ug/Kg	<MDL	3200	2290	71	45--132
Acenaphthene	5.3	10.7	ug/Kg	<MDL	3200	2110	66	43--126
Dibenzofuran	5.3	10.7	ug/Kg	<MDL	3200	2340	73	52--133
Diethyl Phthalate	11	21.3	ug/Kg	<MDL	3200	3760	117	75--131
Fluorene	5.3	10.7	ug/Kg	<MDL	3200	1930	60	57--150
N-Nitrosodiphenylamine	13.3	13.3	ug/Kg	<MDL	3200	3840	120	57--136
Hexachlorobenzene	0.53	1.07	ug/Kg	<MDL	3200	2990	94	53--150
Pentachlorophenol	80	80	ug/Kg	<MDL	3200	3030	95	25--135
Phenanthrene	5.3	10.7	ug/Kg	<MDL	3200	2080	65	47--141
Anthracene	5.3	10.7	ug/Kg	<MDL	3200	2200	69	48--149
Di-N-Butyl Phthalate	11	21.3	ug/Kg	<MDL	3200	2790	87	71--142
Fluoranthene	5.3	10.7	ug/Kg	<MDL	3200	2420	76	56--143
Pyrene	5.3	10.7	ug/Kg	<MDL	3200	3230	101	60--144
Benzyl Butyl Phthalate	8	8	ug/Kg	<MDL	3200	2590	81	36--150
Benzo(a)anthracene	5.3	10.7	ug/Kg	<MDL	3200	2780	87	51--150
Chrysene	5.3	10.7	ug/Kg	<MDL	3200	2650	83	45--150
Bis(2-Ethylhexyl)Phthalate	11	21.3	ug/Kg	<MDL	3200	2740	85	61--150
Di-N-Octyl Phthalate	10.7	10.7	ug/Kg	<MDL	3200	2460	77	43--150
Benzo(b,j,k)fluoranthene	5.3	10.7	ug/Kg	<MDL	9600	6280	65	45--143
Benzo(a)pyrene	5.3	10.7	ug/Kg	<MDL	3200	2950	92	61--140
Indeno(1,2,3-Cd)Pyrene	5.3	10.7	ug/Kg	<MDL	3200	2910	91	42--150
Dibenzo(a,h)anthracene	5.3	10.7	ug/Kg	<MDL	3200	2850	89	41--150
Benzo(g,h,i)perylene	5.3	10.7	ug/Kg	<MDL	3200	2480	78	28--150

MSD:WG127162-5 MS:WG127162-4 L57986-3 Matrix: TRAP SED Listtype:ORBNASMS Method:SW846 3550B*SW846 8270D Project:423589-335-4 Pkey:STD
(Matrix Spike Duplicate, Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	TrueValue	MS Value	% Rec	Qual	LabLimit	TrueValue	MSD Value	% Rec.	Qual	RPD	Qual	LabLimit
Phenol	130	400	ug/Kg	<MDL	3200	2220	69		21--142	3200	2350	74		6		0--35
1,4-Dichlorobenzene	40	40	ug/Kg	<MDL	3200	1840	57		20--105	3200	1900	59		4		0--35
Benzyl Alcohol	66.7	66.7	ug/Kg	<MDL	3200	2070	65		28--111	3200	2220	69		7		0--35
1,2-Dichlorobenzene	26.7	26.7	ug/Kg	<MDL	3200	1790	56		20--110	3200	1870	58		4		0--35
2-Methylphenol	27	53.3	ug/Kg	<MDL	3200	2020	63		21--126	3200	2150	67		6		0--35
3-,4-Methylphenol	130	267	ug/Kg	<MDL	3200	1920	60		24--129	3200	2440	76		24		0--35
2,4-Dimethylphenol	27	53.3	ug/Kg	<MDL	3200	1990	62		27--126	3200	1790	56		10		0--35
Benzoic Acid	533	533	ug/Kg	<MDL	3200	1020	32		20--150	3200	996	31		3		0--35
1,2,4-Trichlorobenzene	2.7	5.33	ug/Kg	<MDL	3200	1450	45		22--95	3200	1540	48		6		0--35
Naphthalene	27	53.3	ug/Kg	<MDL	3200	1950	61		20--112	3200	2070	65		6		0--35
Hexachlorobutadiene	13	26.7	ug/Kg	<MDL	3200	2110	66		20--133	3200	2150	67		2		0--35
2-Methylnaphthalene	27	53.3	ug/Kg	<MDL	3200	1420	44		22--109	3200	1580	49		10		0--35
Dimethyl Phthalate	53.3	53.3	ug/Kg	<MDL	3200	3090	96		66--128	3200	3090	96		0		0--35

Acenaphthylene	27	53.3	ug/Kg	<MDL	3200	2290	72	44--134	3200	2460	77	7	0--35
Acenaphthene	27	53.3	ug/Kg	<MDL	3200	2090	65	37--129	3200	2270	71	8	0--35
Dibenzofuran	27	53.3	ug/Kg	<MDL	3200	2380	74	49--135	3200	2510	78	5	0--35
Diethyl Phthalate	53	107	ug/Kg	<MDL	3200	3870	121	71--130	3200	3860	121	0	0--35
Fluorene	27	53.3	ug/Kg	<MDL	3200	2010	63	52--150	3200	2060	64	2	0--35
N-Nitrosodiphenylamine	66.7	66.7	ug/Kg	<MDL	3200	3470	108	58--140	3200	3540	111	2	0--35
Hexachlorobenzene	2.7	5.33	ug/Kg	<MDL	3200	2720	85	51--149	3200	2780	87	2	0--35
Pentachlorophenol	400	400	ug/Kg	<MDL	3200	2490	78	35--134	3200	2470	77	1	0--35
Phenanthrene	27	53.3	ug/Kg	<MDL	3200	2380	74	51--136	3200	2430	76	2	0--35
Anthracene	27	53.3	ug/Kg	<MDL	3200	2370	74	37--150	3200	2440	76	3	0--35
Di-N-Butyl Phthalate	53	107	ug/Kg	<MDL	3200	2500	78	64--150	3200	3430	107	32	0--35
Fluoranthene	27	53.3	ug/Kg	<MDL	3200	2160	67	53--144	3200	2700	84	22	0--35
Pyrene	27	53.3	ug/Kg	<MDL	3200	3420	107	59--143	3200	3520	110	3	0--35
Benzyl Butyl Phthalate	40	40	ug/Kg	<MDL	3200	2740	86	27--150	3200	3090	96	12	0--35
Benzo(a)anthracene	27	53.3	ug/Kg	<MDL	3200	2900	91	52--149	3200	2950	92	2	0--35
Chrysene	27	53.3	ug/Kg	<MDL	3200	2730	85	47--141	3200	2750	86	1	0--35
Bis(2-Ethylhexyl)Phthalate	53	107	ug/Kg	<MDL	3200	2970	93	54--150	3200	3300	103	11	0--35
Di-N-Octyl Phthalate	53.3	53.3	ug/Kg	<MDL	3200	2650	83	43--150	3200	3060	96	14	0--35
Benzo(b,j,k)fluoranthene	27	53.3	ug/Kg	<MDL	9600	6430	67	48--135	9600	6640	69	3	0--35
Benzo(a)pyrene	27	53.3	ug/Kg	<MDL	3200	3090	97	62--136	3200	3130	98	1	0--35
Indeno(1,2,3-Cd)Pyrene	27	53.3	ug/Kg	<MDL	3200	3100	97	41--150	3200	3170	99	2	0--35
Dibenzo(a,h)anthracene	27	53.3	ug/Kg	<MDL	3200	3020	94	39--150	3200	3060	95	1	0--35
Benzo(g,h,i)perylene	27	53.3	ug/Kg	<MDL	3200	2610	82	27--150	3200	2650	83	2	0--35

SRMD:WG127162-7 SRM:WG127162-6 Matrix: SALTWTRSED Listtype:ORBNASMS Method:SW846 3550B*SW846 8270D Project: Pkey:SED
(Std Reference Material Duplicate, Std Reference Material)

Parameter	MDL	RDL	Units	TrueValue	SRM Value	% Rec.	Qual	LabLimit	TrueValue	SRMD Value	% Rec.	Qual	RPD	Qual	LabLimit
Phenanthrene	270	533	ug/Kg	5200	3140	60		49--124	5200	3590	69		13		0--35
Fluoranthene	270	533	ug/Kg	8800	6130	70		56--137	8800	6980	79		13		0--35
Pyrene	270	533	ug/Kg	9570	7890	82		58--123	9570	9150	96		15		0--35
Benzo(a)anthracene	270	533	ug/Kg	4660	3310	71		48--127	4660	3760	81		13		0--35
Chrysene	270	533	ug/Kg	4800	4270	89		64--150	4800	4770	100		11		0--35
Benzo(b,j,k)fluoranthene	270	533	ug/Kg	8150	6920	85		50--126	8150	7640	94		10		0--35
Benzo(a)pyrene	270	533	ug/Kg	4240	2670	63		48--119	4240	2950	70		10		0--35
Indeno(1,2,3-Cd)Pyrene	270	533	ug/Kg	2740	1710	62		40--130	2740	2180	80		24		0--35
Dibenzo(a,h)anthracene	270	533	ug/Kg	419	400	96		54--200	419	490	118		20		0--35
Benzo(g,h,i)perylene	270	533	ug/Kg	2800	1680	60		42--141	2800	2030	72		19		0--35

LD:WG127162-8 L57986-5 Matrix: TRAP SED Listtype:ORBNASMS Method:SW846 3550B*SW846 8270D Project:423589-335-4 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit

Phenol	27	80	ug/Kg	<MDL		<MDL		0--35
1,4-Dichlorobenzene	8	8	ug/Kg	<MDL		<MDL		0--35
Benzyl Alcohol	13.3	13.3	ug/Kg	<MDL		<MDL		0--35
1,2-Dichlorobenzene	5.33	5.33	ug/Kg	<MDL		<MDL		0--35
2-Methylphenol	5.3	10.7	ug/Kg	<MDL		<MDL		0--35
3-,4-Methylphenol	27	53.3	ug/Kg	<MDL		<MDL		0--35
2,4-Dimethylphenol	5.3	10.7	ug/Kg	<MDL		<MDL		0--35
Benzoic Acid	107	107	ug/Kg	<MDL		<MDL		0--35
1,2,4-Trichlorobenzene	0.53	1.07	ug/Kg	<MDL		<MDL		0--35
Naphthalene	5.3	10.7	ug/Kg	<MDL		<MDL		0--35
Hexachlorobutadiene	2.7	5.33	ug/Kg	<MDL		<MDL		0--35
2-Methylnaphthalene	5.3	10.7	ug/Kg	<MDL		<MDL		0--35
Dimethyl Phthalate	10.7	10.7	ug/Kg		17.7	17	4	0--35
Acenaphthylene	5.3	10.7	ug/Kg	<MDL		<MDL		0--35
Acenaphthene	5.3	10.7	ug/Kg	<MDL		<MDL		0--35
Dibenzofuran	5.3	10.7	ug/Kg	<MDL		<MDL		0--35
Diethyl Phthalate	11	21.3	ug/Kg	<MDL		<MDL		0--35
Fluorene	5.3	10.7	ug/Kg	<MDL		<MDL		0--35
N-Nitrosodiphenylamine	13.3	13.3	ug/Kg	<MDL		<MDL		0--35
Hexachlorobenzene	0.53	1.07	ug/Kg	<MDL		<MDL		0--35
Pentachlorophenol	80	80	ug/Kg	<MDL		<MDL		0--35
Phenanthrene	5.3	10.7	ug/Kg	<MDL		<MDL		0--35
Anthracene	5.3	10.7	ug/Kg	<MDL		<MDL		0--35
Di-N-Butyl Phthalate	11	21.3	ug/Kg	<MDL		<MDL		0--35
Fluoranthene	5.3	10.7	ug/Kg		24.4	27.6	13	0--35
Pyrene	5.3	10.7	ug/Kg		30.5	33.3	9	0--35
Benzyl Butyl Phthalate	8	8	ug/Kg		17.3	20.1	15	0--35
Benzo(a)anthracene	5.3	10.7	ug/Kg		11.6	14	19	0--35
Chrysene	5.3	10.7	ug/Kg		20.2	22	9	0--35
Bis(2-Ethylhexyl)Phthalate	11	21.3	ug/Kg		97.7	104	6	0--35
Di-N-Octyl Phthalate	10.7	10.7	ug/Kg	<MDL		<MDL		0--35
Benzo(b,j,k)fluoranthene	5.3	10.7	ug/Kg		49	52.7	7	0--35
Benzo(a)pyrene	5.3	10.7	ug/Kg		16.5	17.2	5	0--35
Indeno(1,2,3-Cd)Pyrene	5.3	10.7	ug/Kg		13.3	14.2	6	0--35
Dibenzo(a,h)anthracene	5.3	10.7	ug/Kg	<MDL		<MDL		0--35
Benzo(g,h,i)perylene	5.3	10.7	ug/Kg		13.3	14.9	11	0--35
Total LPAHs	5.3	10.7	ug/Kg	<MDL		<MDL		0--35
Total HPAHS	5.3	10.7	ug/Kg		178.8	195.9	9	0--35

Surrogate: (Lab Limits)	2,4,6-Tribromophenol 45--150	2-Fluorobiphenyl 22--135	2-Fluorophenol 20--136	d14-Terphenyl 25--150	d4-2-Chlorophenol 20--127	d5-Nitrobenzene 22--126	d5-Phenol 20--142
L57986-1	129	72	75	121	61	33	57
L57986-2	134	80	77	124	64	30	63
L57986-3	107	76	73	129	61	36	60
L57986-4	130	73	76	135	62	41	50
L57986-5	128	75	75	116	61	34	58
L57986-6	142	69	60	130	52	23	60
WG127162-1	67	61	63	114	49	43	34
WG127162-2	85	75	81	122	70	42	76
WG127162-3	112	81	79	123	72	25	87
WG127162-4	120	80	77	129	71	25	87
WG127162-5	118	87	84	126	77	27	93
WG127162-6	58	74	28	117	37	18 *	49
WG127162-7	52	91	32	130	47	26	59
WG127162-8	127	75	76	121	60	31	58

Workgroup: WG129288 (BS#443 bnasms) Run ID: R191946

MB:WG129288-1 Matrix: OTHR SOLID Listtype:ORBNASMS Method:SW846 3550B*SW846 8270D Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Phenol	27	80	ug/Kg	<MDL	
1,4-Dichlorobenzene	8	8	ug/Kg	<MDL	
Benzyl Alcohol	13.3	13.3	ug/Kg	<MDL	
1,2-Dichlorobenzene	5.33	5.33	ug/Kg	<MDL	
2-Methylphenol	5.3	10.7	ug/Kg	<MDL	
3-,4-Methylphenol	27	53.3	ug/Kg	<MDL	
2,4-Dimethylphenol	5.3	10.7	ug/Kg	<MDL	
Benzoic Acid	107	107	ug/Kg	<MDL	
1,2,4-Trichlorobenzene	0.53	1.07	ug/Kg	<MDL	
Naphthalene	5.3	10.7	ug/Kg	<MDL	
Hexachlorobutadiene	2.7	5.33	ug/Kg	<MDL	
2-Methylnaphthalene	5.3	10.7	ug/Kg	<MDL	
Dimethyl Phthalate	10.7	10.7	ug/Kg	<MDL	
Acenaphthylene	5.3	10.7	ug/Kg	<MDL	
Acenaphthene	5.3	10.7	ug/Kg	<MDL	
Dibenzofuran	5.3	10.7	ug/Kg	<MDL	

Diethyl Phthalate	11	21.3	ug/Kg	<MDL
Fluorene	5.3	10.7	ug/Kg	<MDL
N-Nitrosodiphenylamine	13.3	13.3	ug/Kg	<MDL
Hexachlorobenzene	0.53	1.07	ug/Kg	<MDL
Pentachlorophenol	80	80	ug/Kg	<MDL
Phenanthrene	5.3	10.7	ug/Kg	<MDL
Anthracene	5.3	10.7	ug/Kg	<MDL
Carbazole	5.3	10.7	ug/Kg	<MDL
Di-N-Butyl Phthalate	11	21.3	ug/Kg	<MDL
Fluoranthene	5.3	10.7	ug/Kg	<MDL
Pyrene	5.3	10.7	ug/Kg	<MDL
Benzyl Butyl Phthalate	8	8	ug/Kg	<MDL
Benzo(a)anthracene	5.3	10.7	ug/Kg	<MDL
Chrysene	5.3	10.7	ug/Kg	<MDL
Bis(2-Ethylhexyl)Phthalate	11	21.3	ug/Kg	<MDL
Di-N-Octyl Phthalate	10.7	10.7	ug/Kg	<MDL
Benzo(b,j,k)fluoranthene	5.3	10.7	ug/Kg	<MDL
Benzo(a)pyrene	5.3	10.7	ug/Kg	<MDL
Indeno(1,2,3-Cd)Pyrene	5.3	10.7	ug/Kg	<MDL
Dibenzo(a,h)anthracene	5.3	10.7	ug/Kg	<MDL
Benzo(g,h,i)perylene	5.3	10.7	ug/Kg	<MDL
Total LPAHs	5.3	10.7	ug/Kg	<MDL
Total HPAHS	5.3	10.7	ug/Kg	<MDL

SB:WG129288-2 MB:WG129288-1 Matrix: OTHR SOLID Listtype:ORBNASMS Method:SW846 3550B*SW846 8270D Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	TrueValue	SB Value	% Rec	Qual	LabLimit
Phenol	27	80	ug/Kg	<MDL	800	711	89		26--136
1,4-Dichlorobenzene	8	8	ug/Kg	<MDL	800	540	68		40--103
Benzyl Alcohol	13.3	13.3	ug/Kg	<MDL	800	497	62		26--111
1,2-Dichlorobenzene	5.33	5.33	ug/Kg	<MDL	800	527	66		44--105
2-Methylphenol	5.3	10.7	ug/Kg	<MDL	800	551	69		20--123
3-,4-Methylphenol	27	53.3	ug/Kg	<MDL	800	611	76		22--119
2,4-Dimethylphenol	5.3	10.7	ug/Kg	<MDL	800	175	22		20--121
Benzoic Acid	107	107	ug/Kg	<MDL	800	<MDL	0	*	20--92
1,2,4-Trichlorobenzene	0.53	1.07	ug/Kg	<MDL	800	510	64		39--94
Naphthalene	5.3	10.7	ug/Kg	<MDL	800	605	76		28--109
Hexachlorobutadiene	2.7	5.33	ug/Kg	<MDL	800	554	69		20--135
2-Methylnaphthalene	5.3	10.7	ug/Kg	<MDL	800	644	80		20--128
Dimethyl Phthalate	10.7	10.7	ug/Kg	<MDL	800	680	85		70--129
Acenaphthylene	5.3	10.7	ug/Kg	<MDL	800	650	81		45--132

Acenaphthene	5.3	10.7	ug/Kg	<MDL	800	697	87	43--126
Dibenzofuran	5.3	10.7	ug/Kg	<MDL	800	865	108	52--133
Diethyl Phthalate	11	21.3	ug/Kg	<MDL	800	764	96	75--131
Fluorene	5.3	10.7	ug/Kg	<MDL	800	678	85	57--150
N-Nitrosodiphenylamine	13.3	13.3	ug/Kg	<MDL	800	1050	132	57--136
Hexachlorobenzene	0.53	1.07	ug/Kg	<MDL	800	590	74	53--150
Pentachlorophenol	80	80	ug/Kg	<MDL	800	665	83	25--135
Phenanthrene	5.3	10.7	ug/Kg	<MDL	800	706	88	47--141
Anthracene	5.3	10.7	ug/Kg	<MDL	800	682	85	48--149
Carbazole	5.3	10.7	ug/Kg	<MDL	800	881	110	48--149
Di-N-Butyl Phthalate	11	21.3	ug/Kg	<MDL	800	897	112	71--142
Fluoranthene	5.3	10.7	ug/Kg	<MDL	800	743	93	56--143
Pyrene	5.3	10.7	ug/Kg	<MDL	800	864	108	60--144
Benzyl Butyl Phthalate	8	8	ug/Kg	<MDL	800	956	119	36--150
Benzo(a)anthracene	5.3	10.7	ug/Kg	<MDL	800	619	77	51--150
Chrysene	5.3	10.7	ug/Kg	<MDL	800	747	93	45--150
Bis(2-Ethylhexyl)Phthalate	11	21.3	ug/Kg	<MDL	800	925	116	61--150
Di-N-Octyl Phthalate	10.7	10.7	ug/Kg	<MDL	800	1110	139	43--150
Benzo(b,j,k)fluoranthene	5.3	10.7	ug/Kg	<MDL	2400	1470	61	45--143
Benzo(a)pyrene	5.3	10.7	ug/Kg	<MDL	800	702	88	61--140
Indeno(1,2,3-Cd)Pyrene	5.3	10.7	ug/Kg	<MDL	800	743	93	42--150
Dibenzo(a,h)anthracene	5.3	10.7	ug/Kg	<MDL	800	609	76	41--150
Benzo(g,h,i)perylene	5.3	10.7	ug/Kg	<MDL	800	313	39	28--150

SB:WG129288-3 MB:WG129288-1 Matrix: OTHR SOLID Listtype:ORBNASMS Method:SW846 3550B*SW846 8270D Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	TrueValue	SB Value	% Rec	Qual	LabLimit
Phenol	27	80	ug/Kg	<MDL	3200	3010	94		26--136
1,4-Dichlorobenzene	8	8	ug/Kg	<MDL	3200	2060	65		40--103
Benzyl Alcohol	13.3	13.3	ug/Kg	<MDL	3200	1930	60		26--111
1,2-Dichlorobenzene	5.33	5.33	ug/Kg	<MDL	3200	2050	64		44--105
2-Methylphenol	5.3	10.7	ug/Kg	<MDL	3200	2600	81		20--123
3-,4-Methylphenol	27	53.3	ug/Kg	<MDL	3200	2670	83		22--119
2,4-Dimethylphenol	5.3	10.7	ug/Kg	<MDL	3200	2830	88		20--121
Benzoic Acid	107	107	ug/Kg	<MDL	3200	<MDL	0	*	20--92
1,2,4-Trichlorobenzene	0.53	1.07	ug/Kg	<MDL	3200	2040	64		39--94
Naphthalene	5.3	10.7	ug/Kg	<MDL	3200	2450	76		28--109
Hexachlorobutadiene	2.7	5.33	ug/Kg	<MDL	3200	2210	69		20--135
2-Methylnaphthalene	5.3	10.7	ug/Kg	<MDL	3200	2690	84		20--128
Dimethyl Phthalate	10.7	10.7	ug/Kg	<MDL	3200	2980	93		70--129
Acenaphthylene	5.3	10.7	ug/Kg	<MDL	3200	2820	88		45--132

Acenaphthene	5.3	10.7	ug/Kg	<MDL	3200	2990	93	43--126
Dibenzofuran	5.3	10.7	ug/Kg	<MDL	3200	3640	114	52--133
Diethyl Phthalate	11	21.3	ug/Kg	<MDL	3200	3270	102	75--131
Fluorene	5.3	10.7	ug/Kg	<MDL	3200	2950	92	57--150
N-Nitrosodiphenylamine	13.3	13.3	ug/Kg	<MDL	3200	4610	144 *	57--136
Hexachlorobenzene	0.53	1.07	ug/Kg	<MDL	3200	2580	81	53--150
Pentachlorophenol	80	80	ug/Kg	<MDL	3200	2710	85	25--135
Phenanthrene	5.3	10.7	ug/Kg	<MDL	3200	2970	93	47--141
Anthracene	5.3	10.7	ug/Kg	<MDL	3200	2930	92	48--149
Carbazole	5.3	10.7	ug/Kg	<MDL	3200	3720	116	48--149
Di-N-Butyl Phthalate	11	21.3	ug/Kg	<MDL	3200	3780	118	71--142
Fluoranthene	5.3	10.7	ug/Kg	<MDL	3200	3110	97	56--143
Pyrene	5.3	10.7	ug/Kg	<MDL	3200	3550	111	60--144
Benzyl Butyl Phthalate	8	8	ug/Kg	<MDL	3200	4000	125	36--150
Benzo(a)anthracene	5.3	10.7	ug/Kg	<MDL	3200	2580	81	51--150
Chrysene	5.3	10.7	ug/Kg	<MDL	3200	3140	98	45--150
Bis(2-Ethylhexyl)Phthalate	11	21.3	ug/Kg	<MDL	3200	3840	120	61--150
Di-N-Octyl Phthalate	10.7	10.7	ug/Kg	<MDL	3200	4550	142	43--150
Benzo(b,j,k)fluoranthene	5.3	10.7	ug/Kg	<MDL	9600	5970	62	45--143
Benzo(a)pyrene	5.3	10.7	ug/Kg	<MDL	3200	2970	93	61--140
Indeno(1,2,3-Cd)Pyrene	5.3	10.7	ug/Kg	<MDL	3200	2910	91	42--150
Dibenzo(a,h)anthracene	5.3	10.7	ug/Kg	<MDL	3200	2400	75	41--150
Benzo(g,h,i)perylene	5.3	10.7	ug/Kg	<MDL	3200	1290	40	28--150

MSD:WG129288-5 MS:WG129288-4 L58785-4 Matrix: TRAP SED Listtype:ORBNASMS Method:SW846 3550B*SW846 8270D Project:423589-335-4 Pkey:STD
(Matrix Spike Duplicate, Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	TrueValue	MS Value	% Rec	Qual	LabLimit	TrueValue	MSD Value	% Rec.	Qual	RPD	Qual	LabLimit
Phenol	130	400	ug/Kg	<MDL	3200	2990	94		21--142	3200	3040	95		2		0--35
1,4-Dichlorobenzene	40	40	ug/Kg	<MDL	3200	2040	64		20--105	3200	2110	66		3		0--35
Benzyl Alcohol	66.7	66.7	ug/Kg	<MDL	3200	1790	56		28--111	3200	1930	60		7		0--35
1,2-Dichlorobenzene	26.7	26.7	ug/Kg	<MDL	3200	2030	63		20--110	3200	2120	66		4		0--35
2-Methylphenol	27	53.3	ug/Kg	<MDL	3200	2540	79		21--126	3200	3280	102		25		0--35
3-,4-Methylphenol	130	267	ug/Kg	<MDL	3200	2920	91		24--129	3200	2940	92		1		0--35
2,4-Dimethylphenol	27	53.3	ug/Kg	<MDL	3200	4040	126		27--126	3200	4030	126		0		0--35
Benzoic Acid	533	533	ug/Kg	<MDL	3200	2710	85		20--150	3200	2750	86		2		0--35
1,2,4-Trichlorobenzene	2.7	5.33	ug/Kg	<MDL	3200	2050	64		22--95	3200	2120	66		4		0--35
Naphthalene	27	53.3	ug/Kg	<MDL	3200	2430	76		20--112	3200	2520	79		4		0--35
Hexachlorobutadiene	13	26.7	ug/Kg	<MDL	3200	2130	67		20--133	3200	2300	72		8		0--35
2-Methylnaphthalene	27	53.3	ug/Kg	<MDL	3200	2790	87		22--109	3200	2770	86		1		0--35
Dimethyl Phthalate	53.3	53.3	ug/Kg	<MDL	3200	3060	96		66--128	3200	2940	92		4		0--35
Acenaphthylene	27	53.3	ug/Kg	<MDL	3200	3010	94		44--134	3200	2890	90		4		0--35

Acenaphthene	27	53.3	ug/Kg	<MDL		3200	3220	101		37--129	3200	3130	98		3	0--35
Dibenzofuran	27	53.3	ug/Kg	<MDL		3200	3910	122		49--135	3200	3770	118		4	0--35
Diethyl Phthalate	53	107	ug/Kg	<MDL		3200	3360	105		71--130	3200	3250	101		3	0--35
Fluorene	27	53.3	ug/Kg	<MDL		3200	3190	100		52--150	3200	3050	95		4	0--35
N-Nitrosodiphenylamine	66.7	66.7	ug/Kg	<MDL		3200	4750	148	*	58--140	3200	4710	147	*	1	0--35
Hexachlorobenzene	2.7	5.33	ug/Kg	<MDL		3200	2590	81		51--149	3200	2600	81		0	0--35
Pentachlorophenol	400	400	ug/Kg	<MDL		3200	3060	96		35--134	3200	3070	96		1	0--35
Phenanthrene	27	53.3	ug/Kg	<MDL		3200	3120	97		51--136	3200	3030	95		3	0--35
Anthracene	27	53.3	ug/Kg	<MDL		3200	2970	93		37--150	3200	2920	91		1	0--35
Carbazole	27	53.3	ug/Kg	<MDL		3200	3700	116		37--150	3200	3290	103		12	0--35
Di-N-Butyl Phthalate	53	107	ug/Kg	<MDL		3200	3870	121		64--150	3200	3850	120		1	0--35
Fluoranthene	27	53.3	ug/Kg		9.5	3200	3240	101		53--144	3200	3180	99		2	0--35
Pyrene	27	53.3	ug/Kg		8.2	3200	3740	117		59--143	3200	3590	112		4	0--35
Benzyl Butyl Phthalate	40	40	ug/Kg	<MDL		3200	4170	130		27--150	3200	4060	127		3	0--35
Benzo(a)anthracene	27	53.3	ug/Kg	<MDL		3200	2680	84		52--149	3200	2600	81		3	0--35
Chrysene	27	53.3	ug/Kg	<MDL		3200	3220	101		47--141	3200	3080	96		4	0--35
Bis(2-Ethylhexyl)Phthalate	53	107	ug/Kg	<MDL		3200	3950	123		54--150	3200	3860	121		2	0--35
Di-N-Octyl Phthalate	53.3	53.3	ug/Kg	<MDL		3200	4780	149		43--150	3200	4760	149		0	0--35
Benzo(b,j,k)fluoranthene	27	53.3	ug/Kg		6.5	9600	6260	65		48--135	9600	6200	65		1	0--35
Benzo(a)pyrene	27	53.3	ug/Kg	<MDL		3200	3050	95		62--136	3200	3000	94		2	0--35
Indeno(1,2,3-Cd)Pyrene	27	53.3	ug/Kg	<MDL		3200	3040	95		41--150	3200	3040	95		0	0--35
Dibenzo(a,h)anthracene	27	53.3	ug/Kg	<MDL		3200	2730	85		39--150	3200	2670	84		2	0--35
Benzo(g,h,i)perylene	27	53.3	ug/Kg	<MDL		3200	1300	41		27--150	3200	1340	42		3	0--35

SRMD:WG129288-7 SRM:WG129288-6 Matrix: SALTWTRSED Listtype:ORBNASMS Method:SW846 3550B*SW846 8270D Project: Pkey:SED
(Std Reference Material Duplicate, Std Reference Material)

Parameter	MDL	RDL	Units	TrueValue	SRM Value	% Rec.	Qual	LabLimit	TrueValue	SRMD Value	% Rec.	Qual	RPD	Qual	LabLimit
Phenanthrene	270	533	ug/Kg	5200	4680	90		49--124	5200	4290	82		9		0--35
Fluoranthene	270	533	ug/Kg	8800	8270	94		56--137	8800	7690	87		7		0--35
Pyrene	270	533	ug/Kg	9570	9780	102		58--123	9570	9430	99		4		0--35
Benzo(a)anthracene	270	533	ug/Kg	4660	3450	74		48--127	4660	3170	68		9		0--35
Chrysene	270	533	ug/Kg	4800	5660	118		64--150	4800	5090	106		10		0--35
Benzo(b,j,k)fluoranthene	270	533	ug/Kg	8150	6900	85		50--126	8150	6250	77		10		0--35
Benzo(a)pyrene	270	533	ug/Kg	4240	3070	72		48--119	4240	2780	66		10		0--35
Indeno(1,2,3-Cd)Pyrene	270	533	ug/Kg	2740	2590	94		40--130	2740	2300	84		12		0--35
Dibenzo(a,h)anthracene	270	533	ug/Kg	419	588	140		54--200	419	562	134		4		0--35
Benzo(g,h,i)perylene	270	533	ug/Kg	2800	1920	68		42--141	2800	1690	60		13		0--35

LD:WG129288-8 L58785-3 Matrix: TRAP SED Listtype:ORBNASMS Method:SW846 3550B*SW846 8270D Project:423589-335-4 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit

Phenol	27	80	ug/Kg	<MDL	<MDL	0--35
1,4-Dichlorobenzene	8	8	ug/Kg	<MDL	<MDL	0--35
Benzyl Alcohol	13.3	13.3	ug/Kg	<MDL	<MDL	0--35
1,2-Dichlorobenzene	5.33	5.33	ug/Kg	<MDL	<MDL	0--35
2-Methylphenol	5.3	10.7	ug/Kg	<MDL	<MDL	0--35
3-,4-Methylphenol	27	53.3	ug/Kg	<MDL	<MDL	0--35
2,4-Dimethylphenol	5.3	10.7	ug/Kg	<MDL	<MDL	0--35
Benzoic Acid	107	107	ug/Kg	<MDL	<MDL	0--35
1,2,4-Trichlorobenzene	0.53	1.07	ug/Kg	<MDL	<MDL	0--35
Naphthalene	5.3	10.7	ug/Kg	<MDL	<MDL	0--35
Hexachlorobutadiene	2.7	5.33	ug/Kg	<MDL	<MDL	0--35
2-Methylnaphthalene	5.3	10.7	ug/Kg	<MDL	<MDL	0--35
Dimethyl Phthalate	10.7	10.7	ug/Kg	<MDL	<MDL	0--35
Acenaphthylene	5.3	10.7	ug/Kg	<MDL	<MDL	0--35
Acenaphthene	5.3	10.7	ug/Kg	<MDL	<MDL	0--35
Dibenzofuran	5.3	10.7	ug/Kg	<MDL	<MDL	0--35
Diethyl Phthalate	11	21.3	ug/Kg	<MDL	<MDL	0--35
Fluorene	5.3	10.7	ug/Kg	<MDL	<MDL	0--35
N-Nitrosodiphenylamine	13.3	13.3	ug/Kg	<MDL	<MDL	0--35
Hexachlorobenzene	0.53	1.07	ug/Kg	<MDL	<MDL	0--35
Pentachlorophenol	80	80	ug/Kg	<MDL	<MDL	0--35
Phenanthrene	5.3	10.7	ug/Kg	<MDL	<MDL	0--35
Anthracene	5.3	10.7	ug/Kg	<MDL	<MDL	0--35
Carbazole	5.3	10.7	ug/Kg	<MDL	<MDL	0--35
Di-N-Butyl Phthalate	11	21.3	ug/Kg	<MDL	<MDL	0--35
Fluoranthene	5.3	10.7	ug/Kg	<MDL	<MDL	0--35
Pyrene	5.3	10.7	ug/Kg	<MDL	<MDL	0--35
Benzyl Butyl Phthalate	8	8	ug/Kg	<MDL	<MDL	0--35
Benzo(a)anthracene	5.3	10.7	ug/Kg	<MDL	<MDL	0--35
Chrysene	5.3	10.7	ug/Kg	<MDL	<MDL	0--35
Bis(2-Ethylhexyl)Phthalate	11	21.3	ug/Kg	<MDL	<MDL	0--35
Di-N-Octyl Phthalate	10.7	10.7	ug/Kg	<MDL	<MDL	0--35
Benzo(b,j,k)fluoranthene	5.3	10.7	ug/Kg	<MDL	<MDL	0--35
Benzo(a)pyrene	5.3	10.7	ug/Kg	<MDL	<MDL	0--35
Indeno(1,2,3-Cd)Pyrene	5.3	10.7	ug/Kg	<MDL	<MDL	0--35
Dibenzo(a,h)anthracene	5.3	10.7	ug/Kg	<MDL	<MDL	0--35
Benzo(g,h,i)perylene	5.3	10.7	ug/Kg	<MDL	<MDL	0--35
Total LPAHs	5.3	10.7	ug/Kg	<MDL	<MDL	0--35
Total HPAHS	5.3	10.7	ug/Kg	<MDL	<MDL	0--35

Surrogate:	2,4,6-Tribromophenol	2-Fluorobiphenyl	2-Fluorophenol	d14-Terphenyl	d4-2-Chlorophenol	d5-Nitrobenzene	d5-Phenol
(Lab Limits)	45--150	22--135	20--136	25--150	20--127	22--126	20--142
L58785-1	65	72	77	81	73	79	85
L58785-2	65	68	64	82	64	71	78
L58785-3	61	74	78	89	75	84	83
L58785-4	64	73	79	89	75	81	85
L58785-5	62	68	63	87	64	65	77
L58785-6	64	72	77	87	74	83	89
WG129288-1	30 *	80	62	92	70	90	81
WG129288-2	66	79	82	93	78	86	90
WG129288-3	71	86	81	94	77	84	89
WG129288-4	74	87	81	98	73	83	88
WG129288-5	72	84	85	92	77	84	90
WG129288-6	47	72	59	94	63	69	75
WG129288-7	48	68	52	91	55	60	70
WG129288-8	58	75	85	90	79	87	88

Workgroup: WG130715 (BS#450 BNASMS) Run ID: R193551

MB:WG130715-1 Matrix: OTHR SOLID Listtype:ORBNASMS Method:SW846 3550B*SW846 8270D Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Phenol	27	80	ug/Kg	<MDL	
1,4-Dichlorobenzene	8	8	ug/Kg	<MDL	
Benzyl Alcohol	13.3	13.3	ug/Kg	<MDL	
1,2-Dichlorobenzene	5.33	5.33	ug/Kg	<MDL	
2-Methylphenol	5.3	10.7	ug/Kg	<MDL	
3-,4-Methylphenol	27	53.3	ug/Kg	<MDL	
2,4-Dimethylphenol	5.3	10.7	ug/Kg	<MDL	
Benzoic Acid	107	107	ug/Kg	<MDL	
1,2,4-Trichlorobenzene	0.53	1.07	ug/Kg	<MDL	
Naphthalene	5.3	10.7	ug/Kg	<MDL	
Hexachlorobutadiene	2.7	5.33	ug/Kg	<MDL	
2-Methylnaphthalene	5.3	10.7	ug/Kg	<MDL	
Dimethyl Phthalate	10.7	10.7	ug/Kg	<MDL	
Acenaphthylene	5.3	10.7	ug/Kg	<MDL	
Acenaphthene	5.3	10.7	ug/Kg	<MDL	
Dibenzofuran	5.3	10.7	ug/Kg	<MDL	

Diethyl Phthalate	11	21.3	ug/Kg	<MDL
Fluorene	5.3	10.7	ug/Kg	<MDL
N-Nitrosodiphenylamine	13.3	13.3	ug/Kg	<MDL
Hexachlorobenzene	0.53	1.07	ug/Kg	<MDL
Pentachlorophenol	80	80	ug/Kg	<MDL
Phenanthrene	5.3	10.7	ug/Kg	<MDL
Anthracene	5.3	10.7	ug/Kg	<MDL
Carbazole	5.3	10.7	ug/Kg	<MDL
Di-N-Butyl Phthalate	11	21.3	ug/Kg	<MDL
Fluoranthene	5.3	10.7	ug/Kg	<MDL
Pyrene	5.3	10.7	ug/Kg	<MDL
Benzyl Butyl Phthalate	8	8	ug/Kg	<MDL
Benzo(a)anthracene	5.3	10.7	ug/Kg	<MDL
Chrysene	5.3	10.7	ug/Kg	<MDL
Bis(2-Ethylhexyl)Phthalate	11	21.3	ug/Kg	<MDL
Di-N-Octyl Phthalate	10.7	10.7	ug/Kg	<MDL
Benzo(b,j,k)fluoranthene	5.3	10.7	ug/Kg	<MDL
Benzo(a)pyrene	5.3	10.7	ug/Kg	<MDL
Indeno(1,2,3-Cd)Pyrene	5.3	10.7	ug/Kg	<MDL
Dibenzo(a,h)anthracene	5.3	10.7	ug/Kg	<MDL
Benzo(g,h,i)perylene	5.3	10.7	ug/Kg	<MDL
Total LPAHs	5.3	10.7	ug/Kg	<MDL
Total HPAHS	5.3	10.7	ug/Kg	<MDL

SB:WG130715-2 MB:WG130715-1 Matrix: OTHR SOLID Listtype:ORBNASMS Method:SW846 3550B*SW846 8270D Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	TrueValue	SB Value	% Rec	Qual	LabLimit
Phenol	27	80	ug/Kg	<MDL	800	638	80		26--136
1,4-Dichlorobenzene	8	8	ug/Kg	<MDL	800	493	62		40--103
Benzyl Alcohol	13.3	13.3	ug/Kg	<MDL	800	497	62		26--111
1,2-Dichlorobenzene	5.33	5.33	ug/Kg	<MDL	800	491	61		44--105
2-Methylphenol	5.3	10.7	ug/Kg	<MDL	800	617	77		20--123
3-,4-Methylphenol	27	53.3	ug/Kg	<MDL	800	807	101		22--119
2,4-Dimethylphenol	5.3	10.7	ug/Kg	<MDL	800	736	92		20--121
Benzoic Acid	107	107	ug/Kg	<MDL	800	<MDL	0	*	20--92
1,2,4-Trichlorobenzene	0.53	1.07	ug/Kg	<MDL	800	518	65		39--94
Naphthalene	5.3	10.7	ug/Kg	<MDL	800	527	66		28--109
Hexachlorobutadiene	2.7	5.33	ug/Kg	<MDL	800	575	72		20--135
2-Methylnaphthalene	5.3	10.7	ug/Kg	<MDL	800	637	80		20--128
Dimethyl Phthalate	10.7	10.7	ug/Kg	<MDL	800	668	84		70--129
Acenaphthylene	5.3	10.7	ug/Kg	<MDL	800	623	78		45--132

Acenaphthene	5.3	10.7	ug/Kg	<MDL	800	563	70	43--126
Dibenzofuran	5.3	10.7	ug/Kg	<MDL	800	750	94	52--133
Diethyl Phthalate	11	21.3	ug/Kg	<MDL	800	679	85	75--131
Fluorene	5.3	10.7	ug/Kg	<MDL	800	603	75	57--150
N-Nitrosodiphenylamine	13.3	13.3	ug/Kg	<MDL	800	893	112	57--136
Hexachlorobenzene	0.53	1.07	ug/Kg	<MDL	800	587	73	53--150
Pentachlorophenol	80	80	ug/Kg	<MDL	800	678	85	25--135
Phenanthrene	5.3	10.7	ug/Kg	<MDL	800	625	78	47--141
Anthracene	5.3	10.7	ug/Kg	<MDL	800	626	78	48--149
Carbazole	5.3	10.7	ug/Kg	<MDL	800	707	88	48--149
Di-N-Butyl Phthalate	11	21.3	ug/Kg	<MDL	800	700	88	71--142
Fluoranthene	5.3	10.7	ug/Kg	<MDL	800	650	81	56--143
Pyrene	5.3	10.7	ug/Kg	<MDL	800	736	92	60--144
Benzyl Butyl Phthalate	8	8	ug/Kg	<MDL	800	743	93	36--150
Benzo(a)anthracene	5.3	10.7	ug/Kg	<MDL	800	628	78	51--150
Chrysene	5.3	10.7	ug/Kg	<MDL	800	655	82	45--150
Bis(2-Ethylhexyl)Phthalate	11	21.3	ug/Kg	<MDL	800	702	88	61--150
Di-N-Octyl Phthalate	10.7	10.7	ug/Kg	<MDL	800	678	85	43--150
Benzo(b,j,k)fluoranthene	5.3	10.7	ug/Kg	<MDL	2400	1330	56	45--143
Benzo(a)pyrene	5.3	10.7	ug/Kg	<MDL	800	611	76	61--140
Indeno(1,2,3-Cd)Pyrene	5.3	10.7	ug/Kg	<MDL	800	767	96	42--150
Dibenzo(a,h)anthracene	5.3	10.7	ug/Kg	<MDL	800	568	71	41--150
Benzo(g,h,i)perylene	5.3	10.7	ug/Kg	<MDL	800	444	56	28--150

SB:WG130715-3 MB:WG130715-1 Matrix: OTHR SOLID Listtype:ORBNASMS Method:SW846 3550B*SW846 8270D Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	TrueValue	SB Value	% Rec	Qual	LabLimit
Phenol	27	80	ug/Kg	<MDL	3200	2560	80		26--136
1,4-Dichlorobenzene	8	8	ug/Kg	<MDL	3200	1980	62		40--103
Benzyl Alcohol	13.3	13.3	ug/Kg	<MDL	3200	1990	62		26--111
1,2-Dichlorobenzene	5.33	5.33	ug/Kg	<MDL	3200	1960	61		44--105
2-Methylphenol	5.3	10.7	ug/Kg	<MDL	3200	2530	79		20--123
3-,4-Methylphenol	27	53.3	ug/Kg	<MDL	3200	2730	85		22--119
2,4-Dimethylphenol	5.3	10.7	ug/Kg	<MDL	3200	3340	104		20--121
Benzoic Acid	107	107	ug/Kg	<MDL	3200	<MDL	0	*	20--92
1,2,4-Trichlorobenzene	0.53	1.07	ug/Kg	<MDL	3200	2090	65		39--94
Naphthalene	5.3	10.7	ug/Kg	<MDL	3200	2090	65		28--109
Hexachlorobutadiene	2.7	5.33	ug/Kg	<MDL	3200	2280	71		20--135
2-Methylnaphthalene	5.3	10.7	ug/Kg	<MDL	3200	2600	81		20--128
Dimethyl Phthalate	10.7	10.7	ug/Kg	<MDL	3200	2500	78		70--129
Acenaphthylene	5.3	10.7	ug/Kg	<MDL	3200	2650	83		45--132

Acenaphthene	5.3	10.7	ug/Kg	<MDL	3200	2280	71	43--126
Dibenzofuran	5.3	10.7	ug/Kg	<MDL	3200	2870	90	52--133
Diethyl Phthalate	11	21.3	ug/Kg	<MDL	3200	2480	78	75--131
Fluorene	5.3	10.7	ug/Kg	<MDL	3200	2330	73	57--150
N-Nitrosodiphenylamine	13.3	13.3	ug/Kg	<MDL	3200	3740	117	57--136
Hexachlorobenzene	0.53	1.07	ug/Kg	<MDL	3200	2460	77	53--150
Pentachlorophenol	80	80	ug/Kg	<MDL	3200	2730	85	25--135
Phenanthrene	5.3	10.7	ug/Kg	<MDL	3200	2580	81	47--141
Anthracene	5.3	10.7	ug/Kg	<MDL	3200	2630	82	48--149
Carbazole	5.3	10.7	ug/Kg	<MDL	3200	2990	93	48--149
Di-N-Butyl Phthalate	11	21.3	ug/Kg	<MDL	3200	2870	90	71--142
Fluoranthene	5.3	10.7	ug/Kg	<MDL	3200	2710	85	56--143
Pyrene	5.3	10.7	ug/Kg	<MDL	3200	2990	93	60--144
Benzyl Butyl Phthalate	8	8	ug/Kg	<MDL	3200	3050	95	36--150
Benzo(a)anthracene	5.3	10.7	ug/Kg	<MDL	3200	2550	80	51--150
Chrysene	5.3	10.7	ug/Kg	<MDL	3200	2650	83	45--150
Bis(2-Ethylhexyl)Phthalate	11	21.3	ug/Kg	<MDL	3200	2750	86	61--150
Di-N-Octyl Phthalate	10.7	10.7	ug/Kg	<MDL	3200	2600	81	43--150
Benzo(b,j,k)fluoranthene	5.3	10.7	ug/Kg	<MDL	9600	5260	55	45--143
Benzo(a)pyrene	5.3	10.7	ug/Kg	<MDL	3200	2510	78	61--140
Indeno(1,2,3-Cd)Pyrene	5.3	10.7	ug/Kg	<MDL	3200	2900	91	42--150
Dibenzo(a,h)anthracene	5.3	10.7	ug/Kg	<MDL	3200	2100	65	41--150
Benzo(g,h,i)perylene	5.3	10.7	ug/Kg	<MDL	3200	1650	52	28--150

MSD:WG130715-5 MS:WG130715-4 L59454-4 Matrix: TRAP SED Listtype:ORBNASMS Method:SW846 3550B*SW846 8270D Project:423589-335-4 Pkey:STD
(Matrix Spike Duplicate, Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	TrueValue	MS Value	% Rec	Qual	LabLimit	TrueValue	MSD Value	% Rec.	Qual	RPD	Qual	LabLimit
Phenol	130	400	ug/Kg	<MDL	3200	2450	76		21--142	3200	2340	73		5		0--35
1,4-Dichlorobenzene	40	40	ug/Kg	<MDL	3200	1670	52		20--105	3200	1620	51		3		0--35
Benzyl Alcohol	66.7	66.7	ug/Kg	<MDL	3200	1920	60		28--111	3200	1840	58		4		0--35
1,2-Dichlorobenzene	26.7	26.7	ug/Kg	<MDL	3200	1640	51		20--110	3200	1640	51		0		0--35
2-Methylphenol	27	53.3	ug/Kg	<MDL	3200	2470	77		21--126	3200	2450	76		1		0--35
3-,4-Methylphenol	130	267	ug/Kg	<MDL	3200	2850	89		24--129	3200	2700	84		6		0--35
2,4-Dimethylphenol	27	53.3	ug/Kg	<MDL	3200	3980	124		27--126	3200	3840	120		4		0--35
Benzoic Acid	533	533	ug/Kg	<MDL	3200	2350	73		20--150	3200	2530	79		8		0--35
1,2,4-Trichlorobenzene	2.7	5.33	ug/Kg	<MDL	3200	1880	59		22--95	3200	1830	57		3		0--35
Naphthalene	27	53.3	ug/Kg	<MDL	3200	1930	60		20--112	3200	1860	58		4		0--35
Hexachlorobutadiene	13	26.7	ug/Kg	<MDL	3200	2020	63		20--133	3200	1940	61		4		0--35
2-Methylnaphthalene	27	53.3	ug/Kg	<MDL	3200	2560	80		22--109	3200	2470	77		4		0--35
Dimethyl Phthalate	53.3	53.3	ug/Kg	<MDL	3200	2430	76		66--128	3200	2490	78		2		0--35
Acenaphthylene	27	53.3	ug/Kg	<MDL	3200	2590	81		44--134	3200	2610	82		1		0--35

Acenaphthene	27	53.3	ug/Kg	<MDL	3200	2380	74	37--129	3200	2390	75	0	0--35
Dibenzofuran	27	53.3	ug/Kg	<MDL	3200	2920	91	49--135	3200	2980	93	2	0--35
Diethyl Phthalate	53	107	ug/Kg	<MDL	3200	2400	75	71--130	3200	2460	77	2	0--35
Fluorene	27	53.3	ug/Kg	<MDL	3200	2310	72	52--150	3200	2410	75	4	0--35
N-Nitrosodiphenylamine	66.7	66.7	ug/Kg	<MDL	3200	3670	115	58--140	3200	3770	118	3	0--35
Hexachlorobenzene	2.7	5.33	ug/Kg	<MDL	3200	2430	76	51--149	3200	2500	78	3	0--35
Pentachlorophenol	400	400	ug/Kg	<MDL	3200	2910	91	35--134	3200	2980	93	2	0--35
Phenanthrene	27	53.3	ug/Kg	7.1	3200	2570	80	51--136	3200	2610	81	2	0--35
Anthracene	27	53.3	ug/Kg	<MDL	3200	2530	79	37--150	3200	2590	81	2	0--35
Carbazole	27	53.3	ug/Kg	<MDL	3200	2900	91	37--150	3200	3050	95	5	0--35
Di-N-Butyl Phthalate	53	107	ug/Kg	<MDL	3200	2830	88	64--150	3200	2880	90	2	0--35
Fluoranthene	27	53.3	ug/Kg	19	3200	2650	82	53--144	3200	2770	86	4	0--35
Pyrene	27	53.3	ug/Kg	18.3	3200	2910	90	59--143	3200	2990	93	3	0--35
Benzyl Butyl Phthalate	40	40	ug/Kg	<MDL	3200	2990	93	27--150	3200	3130	98	5	0--35
Benzo(a)anthracene	27	53.3	ug/Kg	7.5	3200	2500	78	52--149	3200	2560	80	3	0--35
Chrysene	27	53.3	ug/Kg	9.1	3200	2580	80	47--141	3200	2650	83	3	0--35
Bis(2-Ethylhexyl)Phthalate	53	107	ug/Kg	<MDL	3200	2780	87	54--150	3200	2870	90	3	0--35
Di-N-Octyl Phthalate	53.3	53.3	ug/Kg	<MDL	3200	2660	83	43--150	3200	2740	86	3	0--35
Benzo(b,j,k)fluoranthene	27	53.3	ug/Kg	14.8	9600	5250	54	48--135	9600	5400	56	3	0--35
Benzo(a)pyrene	27	53.3	ug/Kg	<MDL	3200	2470	77	62--136	3200	2570	80	4	0--35
Indeno(1,2,3-Cd)Pyrene	27	53.3	ug/Kg	<MDL	3200	3040	95	41--150	3200	3020	95	1	0--35
Dibenzo(a,h)anthracene	27	53.3	ug/Kg	<MDL	3200	2360	74	39--150	3200	2210	69	7	0--35
Benzo(g,h,i)perylene	27	53.3	ug/Kg	<MDL	3200	1770	55	27--150	3200	1790	56	1	0--35

SRMD:WG130715-7 SRM:WG130715-6 Matrix: SALTWTRSED Listtype:ORBNASMS Method:SW846 3550B*SW846 8270D Project: Pkey:SED
(Std Reference Material Duplicate, Std Reference Material)

Parameter	MDL	RDL	Units	TrueValue	SRM Value	% Rec.	Qual	LabLimit	TrueValue	SRMD Value	% Rec.	Qual	RPD	Qual	LabLimit
Phenanthrene	270	533	ug/Kg	5200	3840	74		49--124	5200	3290	63		16		0--35
Fluoranthene	270	533	ug/Kg	8800	6750	77		56--137	8800	5980	68		12		0--35
Pyrene	270	533	ug/Kg	9570	7650	80		58--123	9570	6840	71		11		0--35
Benzo(a)anthracene	270	533	ug/Kg	4660	3250	70		48--127	4660	2960	64		9		0--35
Chrysene	270	533	ug/Kg	4800	4330	90		64--150	4800	3900	81		10		0--35
Benzo(b,j,k)fluoranthene	270	533	ug/Kg	8150	5590	69		50--126	8150	5010	61		11		0--35
Benzo(a)pyrene	270	533	ug/Kg	4240	2360	56		48--119	4240	2260	53		4		0--35
Indeno(1,2,3-Cd)Pyrene	270	533	ug/Kg	2740	2490	91		40--130	2740	2190	80		13		0--35
Dibenzo(a,h)anthracene	270	533	ug/Kg	419	611	146		54--200	419	620	148		2		0--35
Benzo(g,h,i)perylene	270	533	ug/Kg	2800	2090	75		42--141	2800	1960	70		6		0--35

LD:WG130715-8 L59454-6 Matrix: TRAP SED Listtype:ORBNASMS Method:SW846 3550B*SW846 8270D Project:423589-335-4 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit

Phenol	27	80	ug/Kg	<MDL		42		0--35
1,4-Dichlorobenzene	8	8	ug/Kg	<MDL	<MDL			0--35
Benzyl Alcohol	13.3	13.3	ug/Kg	<MDL	<MDL			0--35
1,2-Dichlorobenzene	5.33	5.33	ug/Kg	<MDL	<MDL			0--35
2-Methylphenol	5.3	10.7	ug/Kg	<MDL	<MDL			0--35
3-,4-Methylphenol	27	53.3	ug/Kg	135	177	27		0--35
2,4-Dimethylphenol	5.3	10.7	ug/Kg	<MDL	<MDL			0--35
Benzoic Acid	53.3	107	ug/Kg	71.2	173	83	*	0--35
1,2,4-Trichlorobenzene	0.53	1.07	ug/Kg	<MDL	<MDL			0--35
Naphthalene	5.3	10.7	ug/Kg	<MDL	<MDL			0--35
Hexachlorobutadiene	2.7	5.33	ug/Kg	<MDL	<MDL			0--35
2-Methylnaphthalene	5.3	10.7	ug/Kg	<MDL	<MDL			0--35
Dimethyl Phthalate	10.7	10.7	ug/Kg	<MDL	<MDL			0--35
Acenaphthylene	5.3	10.7	ug/Kg	<MDL	<MDL			0--35
Acenaphthene	5.3	10.7	ug/Kg	<MDL	<MDL			0--35
Dibenzofuran	5.3	10.7	ug/Kg	<MDL	<MDL			0--35
Diethyl Phthalate	11	21.3	ug/Kg	<MDL	<MDL			0--35
Fluorene	5.3	10.7	ug/Kg	<MDL	<MDL			0--35
N-Nitrosodiphenylamine	13.3	13.3	ug/Kg	<MDL	<MDL			0--35
Hexachlorobenzene	0.53	1.07	ug/Kg	<MDL	<MDL			0--35
Pentachlorophenol	80	80	ug/Kg	<MDL	<MDL			0--35
Phenanthrene	5.3	10.7	ug/Kg	8.6	9			0--35
Anthracene	5.3	10.7	ug/Kg	<MDL	<MDL			0--35
Carbazole	5.3	10.7	ug/Kg	<MDL	<MDL			0--35
Di-N-Butyl Phthalate	11	21.3	ug/Kg	<MDL	<MDL			0--35
Fluoranthene	5.3	10.7	ug/Kg	11	13.2	18		0--35
Pyrene	5.3	10.7	ug/Kg	11.2	13.3	17		0--35
Benzyl Butyl Phthalate	8	8	ug/Kg	<MDL	<MDL			0--35
Benzo(a)anthracene	5.3	10.7	ug/Kg	<MDL	<MDL			0--35
Chrysene	5.3	10.7	ug/Kg	7.6	7.6			0--35
Bis(2-Ethylhexyl)Phthalate	11	21.3	ug/Kg	45.6	50.6	10		0--35
Di-N-Octyl Phthalate	10.7	10.7	ug/Kg	<MDL	<MDL			0--35
Benzo(b,j,k)fluoranthene	5.3	10.7	ug/Kg	14	14.8	6		0--35
Benzo(a)pyrene	5.3	10.7	ug/Kg	<MDL	<MDL			0--35
Indeno(1,2,3-Cd)Pyrene	5.3	10.7	ug/Kg	<MDL	<MDL			0--35
Dibenzo(a,h)anthracene	5.3	10.7	ug/Kg	<MDL	<MDL			0--35
Benzo(g,h,i)perylene	5.3	10.7	ug/Kg	5.6	<MDL			0--35
Total LPAHs	5.3	10.7	ug/Kg	8.6	9			0--35
Total HPAHS	5.3	10.7	ug/Kg	49.4	48.9	1		0--35

Surrogate: (Lab Limits)	2,4,6-Tribromophenol 45--150	2-Fluorobiphenyl 22--135	2-Fluorophenol 20--136	d14-Terphenyl 25--150	d4-2-Chlorophenol 20--127	d5-Nitrobenzene 22--126	d5-Phenol 20--142
L59454-1	95	81	71	98	73	74	81
L59454-2	90	73	58	105	62	61	70
L59454-3	89	81	76	110	76	77	79
L59454-4	102	88	79	108	79	81	87
L59454-5	73	51	34	92	37	36	43
L59454-6	90	74	54	101	56	55	67
L59454-7	70	69	61	97	67	69	73
WG130715-1	51	61	54	100	53	58	55
WG130715-2	106	96	79	105	78	81	83
WG130715-3	99	94	78	104	78	78	82
WG130715-4	102	96	70	102	70	75	80
WG130715-5	102	91	70	105	71	71	78
WG130715-6	83	91	65	114	72	72	81
WG130715-7	74	76	51	98	58	56	67
WG130715-8	91	70	56	97	59	57	70

Workgroup: WG125613 (pps#549 PCB) Run ID: R187447

MB:WG125613-1 Matrix: OTHR SOLID Listtype:ORPCB Method:SW846 3550B*SW846 8082A Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Aroclor 1016	1.3	5.33	ug/Kg	<MDL	
Aroclor 1221	4	5.33	ug/Kg	<MDL	
Aroclor 1232	4	5.33	ug/Kg	<MDL	
Aroclor 1242	1.3	5.33	ug/Kg	<MDL	
Aroclor 1248	1.3	5.33	ug/Kg	<MDL	
Aroclor 1254	1.3	5.33	ug/Kg	<MDL	
Aroclor 1260	1.3	5.33	ug/Kg	<MDL	
Total Aroclors	4	5.33	ug/Kg	<MDL	

SB:WG125613-2 MB:WG125613-1 Matrix: OTHR SOLID Listtype:ORPCB Method:SW846 3550B*SW846 8082A Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	TrueValue	SB Value	% Rec	Qual	LabLimit
Aroclor 1242	1.3	5.33	ug/Kg	<MDL	53.3	24.7	46		23--92
Aroclor 1260	1.3	5.33	ug/Kg	<MDL	53.3	51.5	97		52--103

MSD:WG125613-4 MS:WG125613-3 L57305-4 Matrix: TRAP SED Listtype:ORPCB Method:SW846 3550B*SW846 8082A Project:423589-335-4 Pkey:STD
(Matrix Spike Duplicate, Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	TrueValue	MS Value	% Rec	Qual	LabLimit	TrueValue	MSD Value	% Rec.	Qual	RPD	Qual	LabLimit
Aroclor 1242	1.3	5.33	ug/Kg	<MDL	53.3	39.4	74		57--111	53.3	38.5	72		2		0--35
Aroclor 1260	1.3	5.33	ug/Kg	<MDL	53.3	50.4	95		33--105	53.3	50.7	95		1		0--35

SRMD:WG125613-6 SRM:WG125613-5 Matrix: TRAP SED Listtype:ORPCB Method:SW846 3550B*SW846 8082A Project: Pkey:STD
(Std Reference Material Duplicate, Std Reference Material)

Parameter	MDL	RDL	Units	TrueValue	SRM Value	% Rec.	Qual	LabLimit	TrueValue	SRMD Value	% Rec.	Qual	RPD	Qual	LabLimit
Aroclor 1260	13	53.3	ug/Kg	108	106	98		38--167	108	148	137		33		0--35

LD:WG125613-7 L57305-5 Matrix: TRAP SED Listtype:ORPCB Method:SW846 3550B*SW846 8082A Project:423589-335-4 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
Aroclor 1016	1.3	5.33	ug/Kg	<MDL	<MDL			0--35
Aroclor 1221	4	5.33	ug/Kg	<MDL	<MDL			0--35
Aroclor 1232	4	5.33	ug/Kg	<MDL	<MDL			0--35
Aroclor 1242	1.3	5.33	ug/Kg	<MDL	<MDL			0--35
Aroclor 1248	1.3	5.33	ug/Kg	<MDL	<MDL			0--35
Aroclor 1254	1.3	5.33	ug/Kg	<MDL	<MDL			0--35
Aroclor 1260	1.3	5.33	ug/Kg	<MDL	<MDL			0--35
Total Aroclors	4	5.33	ug/Kg	<MDL	<MDL			0--35

Surrogate:	2,4,5,6-Tetrachloro-m-xylene	Decachlorobiphenyl
(Lab Limits)	20--115	55--120
L57305-1	61	90
L57305-2	73	95
L57305-3	65	96
L57305-4	64	105
L57305-5	67	89
L57305-6	71	94
WG125613-1	23	97
WG125613-2	32	102
WG125613-3	60	104
WG125613-4	58	98
WG125613-5	56	90
WG125613-6	61	99
WG125613-7	66	93

LIMSView QC Report for Green River Watershed Suspended Solids - Sediment Traps 2013-2014

Workgroup: WG127132 (pps#566 pcb) Run ID: R188591

MB:WG127132-1 Matrix: OTHR SOLID Listtype:ORPCB Method:SW846 3550B*SW846 8082A Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Aroclor 1016	1.3	5.33	ug/Kg	<MDL	
Aroclor 1221	4	5.33	ug/Kg	<MDL	
Aroclor 1232	4	5.33	ug/Kg	<MDL	
Aroclor 1242	1.3	5.33	ug/Kg	<MDL	
Aroclor 1248	1.3	5.33	ug/Kg	<MDL	
Aroclor 1254	1.3	5.33	ug/Kg	<MDL	
Aroclor 1260	1.3	5.33	ug/Kg	<MDL	
Total Aroclors	4	5.33	ug/Kg	<MDL	

SB:WG127132-2 MB:WG127132-1 Matrix: OTHR SOLID Listtype:ORPCB Method:SW846 3550B*SW846 8082A Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	TrueValue	SB Value	% Rec	Qual	LabLimit
Aroclor 1242	1.3	5.33	ug/Kg	<MDL	53.3	20.4	38		23--92
Aroclor 1260	1.3	5.33	ug/Kg	<MDL	53.3	42.6	80		52--103

MSD:WG127132-4 MS:WG127132-3 L57986-3 Matrix: TRAP SED Listtype:ORPCB Method:SW846 3550B*SW846 8082A Project:423589-335-4 Pkey:STD
(Matrix Spike Duplicate, Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	TrueValue	MS Value	% Rec	Qual	LabLimit	TrueValue	MSD Value	% Rec.	Qual	RPD	Qual	LabLimit
Aroclor 1242	1.3	5.33	ug/Kg	<MDL	53.3	36.7	69		57--111	53.3	34.3	64		7		0--50
Aroclor 1260	1.3	5.33	ug/Kg	<MDL	53.3	43.1	81		33--105	53.3	43	81		0		0--50

SRMD:WG127132-6 SRM:WG127132-5 Matrix: SALTWTRSED Listtype:ORPCB Method:SW846 3550B*SW846 8082A Project: Pkey:SED
(Std Reference Material Duplicate, Std Reference Material)

Parameter	MDL	RDL	Units	TrueValue	SRM Value	% Rec.	Qual	LabLimit	TrueValue	SRMD Value	% Rec.	Qual	RPD	Qual	LabLimit
Aroclor 1260	13	53.3	ug/Kg	108	92.7	86		38--167	108	114	105		21		0--35

LD:WG127132-7 L57986-5 Matrix: TRAP SED Listtype:ORPCB Method:SW846 3550B*SW846 8082A Project:423589-335-4 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
Aroclor 1016	1.3	5.33	ug/Kg	<MDL	<MDL			0--50
Aroclor 1221	4	5.33	ug/Kg	<MDL	<MDL			0--50
Aroclor 1232	4	5.33	ug/Kg	<MDL	<MDL			0--50
Aroclor 1242	1.3	5.33	ug/Kg	<MDL	<MDL			0--50
Aroclor 1248	1.3	5.33	ug/Kg	<MDL	<MDL			0--50
Aroclor 1254	1.3	5.33	ug/Kg	<MDL	<MDL			0--50

Aroclor 1260	1.3	5.33	ug/Kg	<MDL	<MDL	0--50
Total Aroclors	4	5.33	ug/Kg	<MDL	<MDL	0--50

Surrogate:	2,4,5,6-Tetrachloro-m-xylene	Decachlorobiphenyl
(Lab Limits)	20--115	55--120
L57986-1	52	79
L57986-2	62	72
L57986-3	57	82
L57986-4	60	77
L57986-5	69	74
L57986-6	59	75
WG127132-1	23	90
WG127132-2	27	82
WG127132-3	56	82
WG127132-4	59	79
WG127132-5	55	73
WG127132-6	62	81
WG127132-7	64	71

Workgroup: WG127409 (pps#566 pestsms) Run ID: R188763

MB:WG127409-1 Matrix: OTHR SOLID Listtype:ORPESTSMS Method:SW846 3550B*SW846 8081B Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
4,4'-DDD	0.27	0.533	ug/Kg	<MDL	
4,4'-DDE	0.27	0.533	ug/Kg	<MDL	
4,4'-DDT	0.27	0.533	ug/Kg	<MDL	

LD:WG127409-2 L57986-5 Matrix: TRAP SED Listtype:ORPESTSMS Method:SW846 3550B*SW846 8081B Project:423589-335-4 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
4,4'-DDD	0.27	0.533	ug/Kg	0.4	0.4			0--35
4,4'-DDE	0.27	0.533	ug/Kg	0.48	0.47			0--35
4,4'-DDT	0.27	0.533	ug/Kg	0.48	0.47			0--35

Surrogate:	2,4,5,6-Tetrachloro-m-xylene	Decachlorobiphenyl
(Lab Limits)	20--134	47--122
L57986-1	48	74
L57986-2	59	70
L57986-3	55	72
L57986-4	60	74
L57986-5	67	69
L57986-6	59	67
WG127409-1	23	75
WG127409-2	63	66

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4xRule indicates no MS/MSD recovery was calculated due to the 4x rule.

LIMSView QC Report for Green River Watershed Suspended Solids - Sediment Traps 2015

Workgroup: WG143238 (TOTS) Run ID: R208240

MB:WG143238-1 Matrix: SOLIDBLANK Listtype:CVTOTS Method:SM2540-G Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Total Solids	0.005	0.01	%	<MDL	

LD:WG143238-2 L63466-1 Matrix: TRAP SED Listtype:CVTOTS Method:SM2540-G Project:423589-335-4 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Valu	LD Value	RPD	Qual	LabLimit
Total Solids	0.005	0.01	%	49.2	48.6	1		0--20

LD:WG143238-3 L63858-1 Matrix: FILTER SED Listtype:CVTOTS Method:SM2540-G Project:423589-335-4 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Valu	LD Value	RPD	Qual	LabLimit
Total Solids	0.005	0.01	%	26.6	27.1	2		0--20

LD:WG143238-4 L64173-8 Matrix: IN-LINESED Listtype:CVTOTS Method:SM2540-G Project:421168 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Valu	LD Value	RPD	Qual	LabLimit
Total Solids	0.005	0.01	%	71.3	72.5	2		0--20

Workgroup: WG143336 (TOC/423589-335-4) Run ID: R208434

MB:WG143336-1 Matrix: OTHR SOLID Listtype:CVTOC Method:SW846 9060 PSEP96 Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Total Organic Carbon	500	1000	mg/Kg	<MDL	

LCS:WG143336-2 Matrix: OTHR SOLID Listtype:CVTOC Method:SW846 9060 PSEP96 Project: Pkey:STD
(Lab Control Sample)

Parameter	MDL	RDL	Units	TrueValue	LCS Value	% Rec.	Qual	LabLimit
Total Organic Carbon	3300	6570	mg/Kg	33510	33100	99		80--120

SB:WG143336-3 MB:WG143336-1 Matrix: OTHR SOLID Listtype:CVTOC Method:SW846 9060 PSEP96 Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	TrueValue	SB Value	% Rec.	Qual	LabLimit
Total Organic Carbon	500	1000	mg/Kg	<MDL	3750	3800	101		80--120

LT:WG143336-5 LD:WG143336-4 L63466-1 Matrix: TRAP SED Listtype:CVTOC Method:SW846 9060 PSEP96 Project:423589-335-4 Pkey:STD

(Lab Triplicate, Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Valu	LD Value	LT Value	RSD	Qual	LabLimit
Total Organic Carbon	4500	9010	mg/Kg	24200	25700	24900	3		0--20

MS:WG143336-6 L63466-1 Matrix: TRAP SED Listtype:CVTOC Method:SW846 9060 PSEP96 Project:423589-335-4 Pkey:STD
(Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Valu	TrueValue	MS Value	% Rec.	Qual	LabLimit
Total Organic Carbon	3500	7070	mg/Kg	24200	32700	58900	106		70--130

MB:WG143336-7 Matrix: OTHR SOLID Listtype:CVTOC Method:SW846 9060 PSEP96 Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Total Organic Carbon	500	1000	mg/Kg	<MDL	

LCS:WG143336-8 Matrix: OTHR SOLID Listtype:CVTOC Method:SW846 9060 PSEP96 Project: Pkey:STD
(Lab Control Sample)

Parameter	MDL	RDL	Units	TrueValue	LCS Value	% Rec.	Qual	LabLimit
Total Organic Carbon	3200	6340	mg/Kg	33510	33100	99		80--120

Workgroup: WG143688 (LDW Green River PSD) Run ID: R208979
No QC sample found for this workgroup

Workgroup: WG142099 (02-OCT-15 LDW GR) Run ID: R206879

MB:WG142099-1 Matrix: SOLIDBLANK Listtype:MTHG-MIDS Method:SW846 7471B Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Mercury, Total, CVAA	0.0048	0.0476	mg/Kg	<MDL	

SB:WG142099-2 MB:WG142099-1 Matrix: SOLIDBLANK Listtype:MTHG-MIDS Method:SW846 7471B Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	TrueValue	SB Value	% Rec.	Qual	LabLimit
Mercury, Total, CVAA	0.0048	0.0476	mg/Kg	<MDL	0.0952	0.0976	102		85--115

LD:WG142099-3 L63466-2 Matrix: TRAP SED Listtype:MTHG-MIDS Method:SW846 7471B Project:423589-335-4 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Valu	LD Value	RPD	Qual	LabLimit
Mercury, Total, CVAA	0.0049	0.0487	mg/Kg	0.0541	0.044	20		0--20

MSD:WG142099-5 MS:WG142099-4 L63466-2 Matrix: TRAP SED Listtype:MTHG-MIDS Method:SW846 7471B Project:423589-335-4 Pkey:STD
(Matrix Spike Duplicate, Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Valu	TrueValue	MS Value	% Rec.	Qual	LabLimit	TrueValue	MSD Value	% Rec.	Qual	RPD	Qual	LabLimit

Mercury, Total, CVAA	0.0049	0.0494	mg/Kg	0.0541	0.0988	0.157	104	75--125	0.1	0.155	101	1	0--20

LCSD:WG142099-7 LCS:WG142099-6 Matrix: SOIL Listtype:MTHG-MIDS Method:SW846 7471B Project: Pkey:STD
(Lab Control Sample Duplicate, Lab Control Sample)

Parameter	MDL	RDL	Units	TrueValue	LCS Value	% Rec.	Qual	LabLimit	TrueVal	LCSD Value	% Rec.	Qual	RPD	Qual	LabLimit
Mercury, Total, CVAA	0.25	2.49	mg/Kg	8.22	9.06	110		73--130	8.22	8.83	107		3		0--20

Workgroup: WG143629 (12/18/15 LDW Ballard CSO) Run ID: R208923

MB:WG143629-1 Matrix: SOLIDBLANK Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Vanadium, Total, ICP-MS	0.018	0.0893	mg/Kg	<MDL	
Chromium, Total, ICP-MS	0.048	0.238	mg/Kg	<MDL	
Nickel, Total, ICP-MS	0.024	0.119	mg/Kg	<MDL	
Copper, Total, ICP-MS	0.048	0.476	mg/Kg	<MDL	
Zinc, Total, ICP-MS	0.12	0.595	mg/Kg	<MDL	
Arsenic, Total, ICP-MS	0.024	0.119	mg/Kg	<MDL	
Silver, Total, ICP-MS	0.0095	0.0476	mg/Kg	<MDL	
Cadmium, Total, ICP-MS	0.012	0.0595	mg/Kg	<MDL	
Lead, Total, ICP-MS	0.024	0.119	mg/Kg	<MDL	

SB:WG143629-2 MB:WG143629-1 Matrix: SOLIDBLANK Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	TrueValue	SB Value	% Rec.	Qual	LabLimit
Vanadium, Total, ICP-MS	0.018	0.0893	mg/Kg	<MDL	4.76	4.97	104		85--115
Chromium, Total, ICP-MS	0.048	0.238	mg/Kg	<MDL	4.76	5.05	106		85--115
Nickel, Total, ICP-MS	0.024	0.119	mg/Kg	<MDL	4.76	5.19	109		85--115
Copper, Total, ICP-MS	0.048	0.476	mg/Kg	<MDL	4.76	5.29	111		85--115
Zinc, Total, ICP-MS	0.12	0.595	mg/Kg	<MDL	4.76	5.08	107		85--115
Arsenic, Total, ICP-MS	0.024	0.119	mg/Kg	<MDL	4.76	5.1	107		85--115
Silver, Total, ICP-MS	0.0095	0.0476	mg/Kg	<MDL	4.76	5.24	110		85--115
Cadmium, Total, ICP-MS	0.012	0.0595	mg/Kg	<MDL	4.76	4.82	101		85--115
Lead, Total, ICP-MS	0.024	0.119	mg/Kg	<MDL	4.76	5.04	106		85--115

LD:WG143629-3 L64265-1 Matrix: FILTER SED Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project:423589-335-4 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Val	LD Value	RPD	Qual	LabLimit
Vanadium, Total, ICP-MS	0.093	0.465	mg/Kg	36.5	37	1		0--20
Chromium, Total, ICP-MS	0.25	1.24	mg/Kg	15.6	15.8	1		0--20
Nickel, Total, ICP-MS	0.12	0.621	mg/Kg	14.4	14.7	2		0--20
Copper, Total, ICP-MS	0.25	2.48	mg/Kg	20.1	19.7	2		0--20
Zinc, Total, ICP-MS	0.12	0.621	mg/Kg	50.3	50.9	1		0--20

Arsenic, Total, ICP-MS	0.025	0.124	mg/Kg	6.27	6.1	3	0--20
Silver, Total, ICP-MS	0.0099	0.0497	mg/Kg	0.0606	0.0599	1	0--20
Cadmium, Total, ICP-MS	0.012	0.0621	mg/Kg	0.128	0.122	5	0--20
Lead, Total, ICP-MS	0.025	0.124	mg/Kg	5.88	5.62	5	0--20

MS:WG143629-4 L64265-1 Matrix: FILTER SED Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project:423589-335-4 Pkey:STD
(Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Valı	TrueValue	MS Value	% Rec.	Qual	LabLimit
Vanadium, Total, ICP-MS	0.093	0.465	mg/Kg	36.5	4.97	41.6		4xRule	75--125
Chromium, Total, ICP-MS	0.25	1.24	mg/Kg	15.6	4.97	20.3	94		75--125
Nickel, Total, ICP-MS	0.12	0.621	mg/Kg	14.4	4.97	18.8	89		75--125
Copper, Total, ICP-MS	0.25	2.48	mg/Kg	20.1	4.97	23.7		4xRule	75--125
Zinc, Total, ICP-MS	0.12	0.621	mg/Kg	50.3	4.97	55.4		4xRule	75--125
Arsenic, Total, ICP-MS	0.025	0.124	mg/Kg	6.27	4.97	10.8	91		75--125
Silver, Total, ICP-MS	0.0099	0.0497	mg/Kg	0.0606	4.97	4.37	87		75--125
Cadmium, Total, ICP-MS	0.012	0.0621	mg/Kg	0.128	4.97	4.87	96		75--125
Lead, Total, ICP-MS	0.025	0.124	mg/Kg	5.88	4.97	11.2	106		75--125

LCS:WG143629-5 Matrix: FRSHWTRSED Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project: Pkey:SED
(Lab Control Sample)

Parameter	MDL	RDL	Units	TrueValue	LCS Value	% Rec.	Qual	LabLimit
Vanadium, Total, ICP-MS	0.074	0.372	mg/Kg	94.6	23	24		10--44
Chromium, Total, ICP-MS	0.2	0.992	mg/Kg	121.9	68	56		40--80
Nickel, Total, ICP-MS	0.099	0.496	mg/Kg	42.9	35.2	82		70--105
Zinc, Total, ICP-MS	0.5	2.48	mg/Kg	408	440	108		69--109
Arsenic, Total, ICP-MS	0.099	0.496	mg/Kg	17	16.3	96		66--141
Cadmium, Total, ICP-MS	0.05	0.248	mg/Kg	2.94	3.09	105		83--123
Lead, Total, ICP-MS	0.099	0.496	mg/Kg	150	148	99		71--111

LCSD:WG143629-7 LCS:WG143629-6 Matrix: SOIL Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project: Pkey:STD
(Lab Control Sample Duplicate, Lab Control Sample)

Parameter	MDL	RDL	Units	TrueValue	LCS Value	% Rec.	Qual	LabLimit	TrueValı	LCSD Value	% Rec.	Qual	RPD	Qual	LabLimit
Vanadium, Total, ICP-MS	0.075	0.374	mg/Kg	73	66.4	91		76--124	73	64.6	88		3		0--20
Chromium, Total, ICP-MS	0.2	0.996	mg/Kg	164	156	95		79--121	164	149	91		5		0--20
Nickel, Total, ICP-MS	0.1	0.498	mg/Kg	89.3	86.9	97		80--120	89.3	82.9	93		5		0--20
Copper, Total, ICP-MS	0.2	1.99	mg/Kg	128	134	105		80--120	128	119	93		12		0--20
Zinc, Total, ICP-MS	0.5	2.49	mg/Kg	168	184	110		80--120	168	180	107		2		0--20
Arsenic, Total, ICP-MS	0.1	0.498	mg/Kg	113	121	107		78--123	113	118	105		3		0--20
Silver, Total, ICP-MS	0.04	0.199	mg/Kg	52.6	57	108		74--126	52.6	56.4	107		1		0--20
Cadmium, Total, ICP-MS	0.05	0.249	mg/Kg	67.5	70	104		80--120	67.5	67.4	100		4		0--20
Lead, Total, ICP-MS	0.1	0.498	mg/Kg	90.1	95.7	106		80--120	90.1	91.4	101		5		0--20

Workgroup: WG143702 (bs#504 bna-sms) Run ID: R209052

MB:WG143702-1 Matrix: OTHR SOLID Listtype:ORBNASMS Method:SW846 3550B*SW846 8270D Project: Pkey:STD

(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Phenol	17	50	ug/Kg	<MDL	
1,4-Dichlorobenzene	5	5	ug/Kg	<MDL	
Benzyl Alcohol	8.33	8.33	ug/Kg	<MDL	
1,2-Dichlorobenzene	3.33	3.33	ug/Kg	<MDL	
2-Methylphenol	3.3	6.67	ug/Kg	<MDL	
3-,4-Methylphenol	17	33.3	ug/Kg	<MDL	
2,4-Dimethylphenol	3.3	6.67	ug/Kg	<MDL	
Benzoic Acid	66.7	66.7	ug/Kg	<MDL	
1,2,4-Trichlorobenzene	0.33	0.667	ug/Kg	<MDL	
Naphthalene	3.3	6.67	ug/Kg	<MDL	
Hexachlorobutadiene	1.7	3.33	ug/Kg	<MDL	
2-Methylnaphthalene	3.3	6.67	ug/Kg	<MDL	
1-Methylnaphthalene	3.3	6.67	ug/Kg	<MDL	
Dimethyl Phthalate	6.67	6.67	ug/Kg	<MDL	
Acenaphthylene	3.3	6.67	ug/Kg	<MDL	
Acenaphthene	3.3	6.67	ug/Kg	<MDL	
Dibenzofuran	3.3	6.67	ug/Kg	<MDL	
Diethyl Phthalate	6.7	13.3	ug/Kg	<MDL	
Fluorene	3.3	6.67	ug/Kg	<MDL	
N-Nitrosodiphenylamine	8.33	8.33	ug/Kg	<MDL	
Hexachlorobenzene	0.33	0.667	ug/Kg	<MDL	
Pentachlorophenol	50	50	ug/Kg	<MDL	
Phenanthrene	3.3	6.67	ug/Kg	<MDL	
Anthracene	3.3	6.67	ug/Kg	<MDL	
Carbazole	3.3	6.67	ug/Kg	<MDL	
Di-N-Butyl Phthalate	6.7	13.3	ug/Kg	<MDL	
Fluoranthene	3.3	6.67	ug/Kg	<MDL	
Pyrene	3.3	6.67	ug/Kg	<MDL	
Benzyl Butyl Phthalate	5	5	ug/Kg	<MDL	
Benzo(a)anthracene	3.3	6.67	ug/Kg	<MDL	
Chrysene	3.3	6.67	ug/Kg	<MDL	
Bis(2-Ethylhexyl)Phthalate	6.7	13.3	ug/Kg	<MDL	
Di-N-Octyl Phthalate	6.67	6.67	ug/Kg	<MDL	
Benzo(b,j,k)fluoranthene	3.3	6.67	ug/Kg	<MDL	
Benzo(a)pyrene	3.3	6.67	ug/Kg	<MDL	
Indeno(1,2,3-Cd)Pyrene	3.3	6.67	ug/Kg	<MDL	
Dibenzo(a,h)anthracene	3.3	6.67	ug/Kg	<MDL	
Benzo(g,h,i)perylene	3.3	6.67	ug/Kg	<MDL	

SB:WG143702-2 MB:WG143702-1 Matrix: OTHR SOLID Listtype:ORBNASMS Method:SW846 3550B*SW846 8270D Project: Pkey:STD

(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	TrueValue	SB Value	% Rec.	Qual	LabLimit
Phenol	17	50	ug/Kg	<MDL	833	600	72		26--136
1,4-Dichlorobenzene	5	5	ug/Kg	<MDL	833	494	59		40--103
Benzyl Alcohol	8.33	8.33	ug/Kg	<MDL	833	566	68		26--111
1,2-Dichlorobenzene	3.33	3.33	ug/Kg	<MDL	833	515	62		44--105
2-Methylphenol	3.3	6.67	ug/Kg	<MDL	833	589	71		20--123
3-,4-Methylphenol	17	33.3	ug/Kg	<MDL	833	550	66		22--119
2,4-Dimethylphenol	3.3	6.67	ug/Kg	<MDL	833	672	81		20--121
Benzoic Acid	66.7	66.7	ug/Kg	<MDL	833	313	38		20--92
1,2,4-Trichlorobenzene	0.33	0.667	ug/Kg	<MDL	833	455	55		39--94
Naphthalene	3.3	6.67	ug/Kg	<MDL	833	522	63		28--109
Hexachlorobutadiene	1.7	3.33	ug/Kg	<MDL	833	538	65		20--135
2-Methylnaphthalene	3.3	6.67	ug/Kg	<MDL	833	499	60		20--128
1-Methylnaphthalene	3.3	6.67	ug/Kg	<MDL	833	545	65		20--128
Dimethyl Phthalate	6.67	6.67	ug/Kg	<MDL	833	712	85		70--129
Acenaphthylene	3.3	6.67	ug/Kg	<MDL	833	547	66		45--132
Acenaphthene	3.3	6.67	ug/Kg	<MDL	833	624	75		43--126
Dibenzofuran	3.3	6.67	ug/Kg	<MDL	833	515	62		52--133
Diethyl Phthalate	6.7	13.3	ug/Kg	<MDL	833	709	85		75--131
Fluorene	3.3	6.67	ug/Kg	<MDL	833	734	88		57--150
N-Nitrosodiphenylamine	8.33	8.33	ug/Kg	<MDL	833	815	98		57--136
Hexachlorobenzene	0.33	0.667	ug/Kg	<MDL	833	587	70		53--150
Pentachlorophenol	50	50	ug/Kg	<MDL	833	689	83		25--135
Phenanthrene	3.3	6.67	ug/Kg	<MDL	833	605	73		47--141
Anthracene	3.3	6.67	ug/Kg	<MDL	833	619	74		48--149
Carbazole	3.3	6.67	ug/Kg	<MDL	833	711	85		48--149
Di-N-Butyl Phthalate	6.7	13.3	ug/Kg	<MDL	833	909	109		71--142
Fluoranthene	3.3	6.67	ug/Kg	<MDL	833	682	82		56--143
Pyrene	3.3	6.67	ug/Kg	<MDL	833	918	110		60--144
Benzyl Butyl Phthalate	5	5	ug/Kg	<MDL	833	1140	136		36--150
Benzo(a)anthracene	3.3	6.67	ug/Kg	<MDL	833	794	95		51--150
Chrysene	3.3	6.67	ug/Kg	<MDL	833	755	91		45--150
Bis(2-Ethylhexyl)Phthalate	6.7	13.3	ug/Kg	<MDL	833	1050	126		61--150
Di-N-Octyl Phthalate	6.67	6.67	ug/Kg	<MDL	833	1070	128		43--150
Benzo(b,j,k)fluoranthene	3.3	6.67	ug/Kg	<MDL	2500	1730	69		45--143
Benzo(a)pyrene	3.3	6.67	ug/Kg	<MDL	833	836	100		61--140
Indeno(1,2,3-Cd)Pyrene	3.3	6.67	ug/Kg	<MDL	833	766	92		42--150
Dibenzo(a,h)anthracene	3.3	6.67	ug/Kg	<MDL	833	374	45		41--150
Benzo(g,h,i)perylene	3.3	6.67	ug/Kg	<MDL	833	496	60		28--150

MSD:WG143702-4 MS:WG143702-3 L63466-2 Matrix: TRAP SED Listtype:ORBNASMS Method:SW846 3550B*SW846 8270D Project:423589-335-4 Pkey:STD

(Matrix Spike Duplicate, Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Valu	TrueValue	MS Value	% Rec.	Qual	LabLimit	TrueValue	MSD Value	% Rec.	Qual	RPD	Qual	LabLimit

Phenol	17	50	ug/Kg	<MDL	833	444	53		21--142	833	425	51		4	0--35
1,4-Dichlorobenzene	5	5	ug/Kg	<MDL	833	214	26		20--105	833	273	33		24	0--35
Benzyl Alcohol	8.33	8.33	ug/Kg	<MDL	833	402	48		28--111	833	394	47		2	0--35
1,2-Dichlorobenzene	3.33	3.33	ug/Kg	<MDL	833	233	28		20--110	833	292	35		22	0--35
2-Methylphenol	3.3	6.67	ug/Kg	<MDL	833	488	59		21--126	833	458	55		6	0--35
3-,4-Methylphenol	17	33.3	ug/Kg	<MDL	833	500	60		24--129	833	458	55		9	0--35
2,4-Dimethylphenol	3.3	6.67	ug/Kg	<MDL	833	733	88		27--126	833	670	80		9	0--35
Benzoic Acid	66.7	66.7	ug/Kg	174	833	1100	112		20--150	833	1000	99		10	0--35
1,2,4-Trichlorobenzene	0.33	0.667	ug/Kg	<MDL	833	255	31		22--95	833	267	32		5	0--35
Naphthalene	3.3	6.67	ug/Kg	<MDL	833	322	39		20--112	833	330	40		2	0--35
Hexachlorobutadiene	1.7	3.33	ug/Kg	<MDL	833	282	34		20--133	833	303	36		7	0--35
2-Methylnaphthalene	3.3	6.67	ug/Kg	<MDL	833	394	47		22--109	833	365	44		7	0--35
1-Methylnaphthalene	3.3	6.67	ug/Kg	<MDL	833	453	54		22--109	833	419	50		8	0--35
Dimethyl Phthalate	6.67	6.67	ug/Kg	<MDL	833	681	82		66--128	833	630	76		8	0--35
Acenaphthylene	3.3	6.67	ug/Kg	<MDL	833	561	67		44--134	833	523	63		7	0--35
Acenaphthene	3.3	6.67	ug/Kg	<MDL	833	653	78		37--129	833	616	74		6	0--35
Dibenzofuran	3.3	6.67	ug/Kg	<MDL	833	552	66		49--135	833	505	61		9	0--35
Diethyl Phthalate	6.7	13.3	ug/Kg	<MDL	833	692	83		71--130	833	638	77		8	0--35
Fluorene	3.3	6.67	ug/Kg	<MDL	833	804	96		52--150	833	747	90		7	0--35
N-Nitrosodiphenylamine	8.33	8.33	ug/Kg	<MDL	833	858	103		58--140	833	830	100		3	0--35
Hexachlorobenzene	0.33	0.667	ug/Kg	<MDL	833	638	77		51--149	833	556	67		14	0--35
Pentachlorophenol	50	50	ug/Kg	<MDL	833	776	93		35--134	833	660	79		16	0--35
Phenanthrene	3.3	6.67	ug/Kg	14.7	833	641	75		51--136	833	605	71		6	0--35
Anthracene	3.3	6.67	ug/Kg	<MDL	833	637	76		37--150	833	608	73		5	0--35
Carbazole	3.3	6.67	ug/Kg	<MDL	833	637	76		37--150	833	623	75		2	0--35
Di-N-Butyl Phthalate	6.7	13.3	ug/Kg	<MDL	833	761	91		64--150	833	740	89		3	0--35
Fluoranthene	3.3	6.67	ug/Kg	36.9	833	674	76		53--144	833	616	70		9	0--35
Pyrene	3.3	6.67	ug/Kg	46.1	833	966	110		59--143	833	937	107		3	0--35
Benzyl Butyl Phthalate	5	5	ug/Kg	<MDL	833	1080	129		27--150	833	1120	135		4	0--35
Benzo(a)anthracene	3.3	6.67	ug/Kg	16.6	833	748	88		52--149	833	698	82		7	0--35
Chrysene	3.3	6.67	ug/Kg	29.8	833	762	88		47--141	833	726	84		5	0--35
Bis(2-Ethylhexyl)Phthalate	6.7	13.3	ug/Kg	244	833	1290	125		54--150	833	1310	128		2	0--35
Di-N-Octyl Phthalate	6.67	6.67	ug/Kg	<MDL	833	1590	191	*	43--150	833	1750	210	*	9	0--35
Benzo(b,j,k)fluoranthene	3.3	6.67	ug/Kg	68.3	2500	2100	81		48--135	2500	2000	77		5	0--35
Benzo(a)pyrene	3.3	6.67	ug/Kg	23.1	833	838	98		62--136	833	796	93		5	0--35
Indeno(1,2,3-Cd)Pyrene	3.3	6.67	ug/Kg	11	833	399	47		41--150	833	403	47		1	0--35
Dibenzo(a,h)anthracene	3.3	6.67	ug/Kg	<MDL	833	203	24	*	39--150	833	205	25	*	1	0--35
Benzo(g,h,i)perylene	3.3	6.67	ug/Kg	8.6	833	257	30		27--150	833	257	30		0	0--35

SRMD:WG143702-6 SRM:WG143702-5 Matrix: SALTWTRSED Listtype:ORBNASMS Method:SW846 3550B*SW846 8270D Project: Pkey:SED
(Std Reference Material Duplicate, Std Reference Material)

Parameter	MDL	RDL	Units	TrueValue	SRM Value	% Rec.	Qual	LabLimit	TrueVal	SRMD Valu	% Rec.	Qual	RPD	Qual	LabLimit
Phenanthrene	170	333	ug/Kg	5200	3430	66		48--112	5200	3450	66		1		0--35
Fluoranthene	170	333	ug/Kg	8800	6370	72		51--127	8800	6370	72		0		0--35

Pyrene	170	333	ug/Kg	9570	8660	90	55--119	9570	8520	89	2	0--35
Benzo(a)anthracene	170	333	ug/Kg	4660	3350	72	45--122	4660	3410	73	2	0--35
Chrysene	170	333	ug/Kg	4800	4550	95	68--144	4800	4510	94	1	0--35
Benzo(b,j,k)fluoranthene	170	333	ug/Kg	8150	7100	87	50--122	8150	7250	89	2	0--35
Benzo(a)pyrene	170	333	ug/Kg	4240	3070	72	38--117	4240	3180	75	4	0--35
Indeno(1,2,3-Cd)Pyrene	170	333	ug/Kg	2740	1980	72	36--127	2740	2100	77	6	0--35
Dibenzo(a,h)anthracene	170	333	ug/Kg	419	487	116	51--200	419	523	125	7	0--35
Benzo(g,h,i)perylene	170	333	ug/Kg	2800	1590	57	32--133	2800	1600	57	0	0--35

LD:WG143702-7 L63466-4 Matrix: TRAP SED Listtype:ORBNASMS Method:SW846 3550B*SW846 8270D Project:423589-335-4 Pkey:STD

(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Valu	LD Value	RPD	Qual	LabLimit
Phenol	17	50	ug/Kg	<MDL	<MDL			0--35
1,4-Dichlorobenzene	5	5	ug/Kg	<MDL	<MDL			0--35
Benzyl Alcohol	8.33	8.33	ug/Kg	8.52	10.8	24		0--35
1,2-Dichlorobenzene	3.33	3.33	ug/Kg	<MDL	<MDL			0--35
2-Methylphenol	3.3	6.67	ug/Kg	<MDL	<MDL			0--35
3-,4-Methylphenol	17	33.3	ug/Kg	<MDL	<MDL			0--35
2,4-Dimethylphenol	3.3	6.67	ug/Kg	<MDL	<MDL			0--35
Benzoic Acid	66.7	66.7	ug/Kg	196	274	33		0--35
1,2,4-Trichlorobenzene	0.33	0.667	ug/Kg	<MDL	<MDL			0--35
Naphthalene	3.3	6.67	ug/Kg	<MDL	<MDL			0--35
Hexachlorobutadiene	1.7	3.33	ug/Kg	<MDL	<MDL			0--35
2-Methylnaphthalene	3.3	6.67	ug/Kg	<MDL	<MDL			0--35
1-Methylnaphthalene	3.3	6.67	ug/Kg	<MDL	<MDL			0--35
Dimethyl Phthalate	6.67	6.67	ug/Kg	<MDL	<MDL			0--35
Acenaphthylene	3.3	6.67	ug/Kg	<MDL	<MDL			0--35
Acenaphthene	3.3	6.67	ug/Kg	<MDL	<MDL			0--35
Dibenzofuran	3.3	6.67	ug/Kg	<MDL	<MDL			0--35
Diethyl Phthalate	6.7	13.3	ug/Kg	<MDL	<MDL			0--35
Fluorene	3.3	6.67	ug/Kg	<MDL	<MDL			0--35
N-Nitrosodiphenylamine	8.33	8.33	ug/Kg	<MDL	<MDL			0--35
Hexachlorobenzene	0.33	0.667	ug/Kg	<MDL	<MDL			0--35
Pentachlorophenol	50	50	ug/Kg	<MDL	<MDL			0--35
Phenanthrene	3.3	6.67	ug/Kg	16.9	18.2	8		0--35
Anthracene	3.3	6.67	ug/Kg	6.1	6.1			0--35
Carbazole	3.3	6.67	ug/Kg	<MDL	<MDL			0--35
Di-N-Butyl Phthalate	6.7	13.3	ug/Kg	<MDL	<MDL			0--35
Fluoranthene	3.3	6.67	ug/Kg	46.2	54.3	16		0--35
Pyrene	3.3	6.67	ug/Kg	50.1	59.8	18		0--35
Benzyl Butyl Phthalate	5	5	ug/Kg	<MDL	<MDL			0--35
Benzo(a)anthracene	3.3	6.67	ug/Kg	14.8	17.3	16		0--35
Chrysene	3.3	6.67	ug/Kg	32.6	35.4	8		0--35
Bis(2-Ethylhexyl)Phthalate	6.7	13.3	ug/Kg	40.4	42.7	5		0--35

Di-N-Octyl Phthalate	33.3	33.3	ug/Kg	<MDL	<MDL			0--35
Benzo(b,j,k)fluoranthene	17	33.3	ug/Kg	49.1	37.6	26		0--35
Benzo(a)pyrene	17	33.3	ug/Kg	17	<MDL			0--35
Indeno(1,2,3-Cd)Pyrene	17	33.3	ug/Kg	<MDL	<MDL			0--35
Dibenzo(a,h)anthracene	17	33.3	ug/Kg	<MDL	<MDL			0--35
Benzo(g,h,i)perylene	17	33.3	ug/Kg	<MDL	<MDL			0--35

Surrogate:	2,4,6-Tribromophenol	2-Fluorobiphenyl	2-Fluorophenol	d14-Terphenyl	d4-2-Chlorophenol	d5-Nitrobenzene	d5-Phenol
(Lab Limits)	45--150	22--135	20--136	25--150	20--127	22--126	20--142
L63466-1	63	58	52	95	56	64	70
L63466-2	68	47	39	79	42	41	53
L63466-3	65	54	52	81	58	61	65
L63466-4	66	55	51	81	52	51	61
L63466-5	57	43	31	78	37	34	48
L63466-6	63	49	40	81	43	46	50
L63466-7	62	54	44	98	49	54	55
WG143702-1	33 *	39	41	77	43	48	46
WG143702-2	61	49	60	81	58	64	64
WG143702-3	70	45	32	81	36	38	49
WG143702-4	59	40	36	76	37	42	46
WG143702-5	60	55	49	76	52	56	61
WG143702-6	64	54	45	77	49	53	59
WG143702-7	64	56	55	83	60	70	69

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4xRule indicates no MS/MSD recovery was calculated due to the 4x rule.

King County

Technical Memorandum

Date: April 14, 2016

To: Debra Williston, King County Toxicology and Contaminant Assessment Group

From: Carly Greyell, King County Toxicology and Contaminant Assessment Group

Subject: Data Validation Review
Green River Watershed Suspended Solids – Filtered Solids

This technical memorandum summarizes a data validation review performed on 43 freshwater suspended sediment samples collected between February 22, 2013 and November 14, 2015. Per the Project Sampling and Analysis Plan (SAP) (King County 2013) samples were analyzed for one or more of the following analyses: particle size distribution (PSD), total solids, mercury, ICP-MS metals, polycyclic aromatic hydrocarbons (PAHs), and polychlorinated biphenyls (PCBs) as Aroclors. Pesticides were also analyzed in a subset of samples after chlorinated pesticides were identified during PCB analysis. This analysis was not specified in the SAP. All samples were collected and analyses performed by the King County Environmental Laboratory (KCEL).

1.0 Introduction

This data validation review has been based, in part, on guidance found in *USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review* (EPA 2008) and *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review* (EPA 2010), as well as the project SAP (King County 2013). Materials reviewed included Batch Reports and Analytical Quality Control (QC) Reports downloaded from the King County Laboratory Information Management System (LIMS) database are included in this memorandum as Attachment A. Also reviewed were data anomaly forms (DAFs), which are available upon request. The QC parameters reviewed during this data validation include; holding time, method blanks, spike blanks, matrix spikes, matrix spike duplicates, laboratory control samples, laboratory control sample duplicates, standard reference materials, laboratory replicates and surrogates, which are described below.

1.1 Holding Time

The analytical holding time is a method-specific timeframe, during which sample preparation and analysis should occur to provide valid data. All samples should be analyzed within this prescribed holding time.

1.2 Method Blank

A method blank is an aliquot of clean reference matrix that is generally processed through the entire analytical procedure. Please see the individual analytical sections for a description of the method blank for each analysis. Analysis of the method blank is used to evaluate the levels of contamination that might be associated with the processing and analysis of samples. All method blank results should be less than the method detection limit (MDL). Method blanks were included with all analyses except PSD.

1.3 Spike Blank

A spike blank is an aliquot of the clean reference matrix used for the method blank, to which a known concentration of target analyte(s) has been added. The spiked aliquot is processed through the entire analytical procedure. Analysis of the spike blank is used as an indicator of method accuracy. Spike blanks were used as part of the QC regimen for mercury, ICP-MS metals, and organic compound analyses. Spike blanks are not addressed in the *National Functional Guidelines*, however, King County has method-defined or empirically-derived control limits for spike blank analytes, which are shown on the attached QC reports. Spike blank results should be within these control limits.

1.4 Matrix Spike

A matrix spike is a sample aliquot fortified with a known concentration of a target analyte(s). The spiked sample is processed through the entire analytical procedure. Analysis of the matrix spike is used as an indicator of sample matrix effect on the recovery of target analyte(s). Matrix spikes were used as part of the QC regimen for mercury, ICP-MS metals, and organic compounds analyses. Control limits for most organic analytes are not addressed in the *National Functional Guidelines* (EPA 2014); however, King County has program-defined or empirically-derived control limits for percent recoveries of these matrix spike analytes, which are shown on the attached QC reports. Matrix spike recoveries should be within these control limits. Matrix spike recoveries for metals are addressed in the *National Functional* Guidelines and should be within 75 to 125% (EPA 2010).

1.5 Matrix Spike Duplicate

A matrix spike duplicate is a second sample aliquot fortified with a known concentration of a target analyte(s). The spiked sample is processed through the entire analytical procedure. Matrix spike duplicates were analyzed as part of the QC regimen for all mercury analysis and organic compounds analyses when sufficient volume was available. Analysis of the matrix spike duplicate is used as an additional indicator of sample matrix effect on the recovery of target analyte(s) as well as an indicator of method precision. The relative percent difference (RPD) between matrix spike and matrix spike duplicate results for most trace organic analytes are not addressed in the *National Functional Guidelines* (EPA 2014); however, King County uses program-defined control limits for this QC analysis, which are shown on the attached QC reports. The RPD for matrix spike/matrix spike duplicate results should be less than 20% for mercury analysis (EPA 2010).

1.6 Laboratory Control Sample and Standard Reference Material

A laboratory control sample is a sample of known analyte concentration(s) that is prepared in the laboratory from a separate source of analyte(s) relative to the calibration standards. Since the laboratory control sample analysis should follow the entire analytical process, it should be stored and prepared following the same procedures as a field sample. A standard reference material is a commercially-prepared laboratory control sample. Analysis of a laboratory control sample or standard reference material is used as an indicator of method accuracy and long-term analytical precision. Laboratory control sample and/or standard reference material analysis was used as part of the QC regimen for mercury, ICP- MS metals, and organic compounds analyses. Percent recoveries for laboratory control samples/standard reference materials for trace metals analysis are addressed in *National Functional Guidelines*, which recommends results should be within control limits of 80 to 120% (EPA 2010). King County, however, also has empirically-derived control limits for selected trace metals, which are shown on the attached QC reports. King County also has empirically-derived control limits for trace organic SRM recoveries. For some methods, a duplicate laboratory control sample or standard reference material was tested to evaluate method precision.

1.7 Laboratory Replicate (Duplicate or Triplicate)

A laboratory replicate is a second (duplicate) or third (triplicate) aliquot of a sample, processed concurrently and in an identical manner with the original sample. Analysis of a laboratory replicate is used as an indicator of method precision and laboratory subsampling procedures. The laboratory replicate can also be used to provide information regarding the homogeneity of the sample matrix. QC results are reported as either a RPD between the sample and laboratory duplicate results or percent relative standard deviation (%RSD) between the sample and laboratory triplicate results. Laboratory duplicates were used during mercury and metals analyses and the RPD should be below 20% (EPA 2010). Laboratory duplicates were also used during analysis of BNAs, PCBs and pesticides; however, QC control limits for organics RPDs are not addressed in the *National Functional Guidelines*. King County used RPD control limits of 35% for BNA, chlorinated pesticide and PCB laboratory duplicate analyses. Laboratory triplicates were used during PSD and total solids analyses for many workgroups; however, control limits for conventional analyses are also not addressed under the *National Functional Guidelines*. King County uses %RSD control limits of 20% for all conventional analyses. The %RSD for laboratory triplicate results should be below these control limits.

1.8 Surrogates

A surrogate is a known concentration of non-target analyte which is added to each sample (both analytical and QC samples) prior to extraction and analysis for BNAs and PCBs. Surrogate recovery is used as a sample-specific indication of method or matrix bias for target analytes. The surrogate is selected to behave in a similar manner to the target analytes. The King County Environmental Laboratory used two surrogates, decachlorobiphenyl and 2,4,5,6-tetrachloro-m-xylene during chlorinated pesticide and PCB analyses. *National Functional Guidelines* provides control limits for percent recoveries of these surrogate compounds and King County has empirically-derived control limits as well, which are shown in Table 1-1. Surrogate recoveries should be within these control limits.

Table 1-1
Surrogate Recovery QC Limits for PCB Analysis

Compound	King County Environmental Lab Recovery Limits	National Functional Guidelines Quality Control Recovery Limits
2,4,5,6-Tetrachloro-m-xylene	20 – 115 (PCB) / 20 to 134 (Pest)	30 – 150
Decachlorobiphenyl	55 – 120 (PCB) / 47 – 122 (Pest)	30 – 150

The King County Environmental Laboratory used two surrogates during analysis of PAHs, 2-fluorobiphenyl and d14-terphenyl. These are not included in the *National Functional Guidelines*, but King County has empirically-derived laboratory QC control limits (Table 1-2).

Table 1-2
Surrogate Recovery QC Limits for PAH Analysis

Compound	King County Environmental Lab Recovery Limits
2-Fluorobiphenyl	33 – 96
d14-Terphenyl	63 – 125

1.9 Sample Inventory

Table 1-3 shows the 43 samples and the analyses performed for each sample that are included in this data validation memo.

Table 1-3
Sample Inventory and Analyses Performed

Sample	Locator	PSD	Solids	Mercury	Metals	PAHs	PCBs	Pesticides
L57495-1	FL319_FS	✓	✓	✓	✓	✓	✓	✓
L57495-4	A320_FS	✓	✓	✓	✓	✓	✓	✓
L57495-5	A315_FS	✓	✓	✓	✓	✓	✓	✓
L57634-1	FL319_FS	✓	✓	✓	✓	✓	✓	✓
L57634-2	A315_FS	✓	✓	✓	✓	✓	✓	✓
L57634-3	FG319_FS	✓	✓		✓		✓	✓
L57732-1	FL319_FS	✓	✓	✓	✓	✓	✓	✓
L57732-2	A320_FS	✓	✓	✓	✓	✓	✓	✓
L57732-3	FG319_FS	✓	✓	✓	✓	✓	✓	✓
L57792-1	FL319_FS	✓	✓	✓	✓	✓	✓	
L57792-2	FG319_FS	✓	✓	✓	✓	✓	✓	
L57792-3	A320_FS	✓	✓	✓	✓	✓	✓	
L58537-1	A315_FS	✓	✓	✓	✓	✓		
L58537-2	FL319_FS	✓	✓	✓	✓	✓		
L58754-1	FG319_FS	✓	✓	✓	✓	✓		
L58977-1	A320_FS	✓	✓	✓	✓	✓		
L59049-1	0322_FS	✓	✓	✓	✓	✓		
L59190-1	A320_FS	✓	✓	✓	✓	✓		
L59190-2	0322_FS	✓	✓	✓	✓	✓		
L59457-1	PS317_FS	✓	✓	✓	✓	✓		
L59472-1	0322_FS	✓	✓		✓	✓		
L59472-3	A320_FS	✓	✓	✓	✓	✓		
L59596-1	0322_FS	✓	✓	✓	✓	✓		
L59596-2	A315_FS	✓	✓	✓	✓	✓		

Sample	Locator	PSD	Solids	Mercury	Metals	PAHs	PCBs	Pesticides
L59723-1	A315_FS	✓	✓	✓	✓	✓		
L59723-2	0322_FS	✓	✓	✓	✓	✓		
L59723-3	A315_FS	✓	✓	✓	✓	✓		
L59723-4	0322_FS	✓	✓	✓	✓	✓		
L59919-1	FL319_FS	✓	✓	✓	✓	✓		
L59919-2	FG319_FS	✓	✓	✓	✓	✓		
L60187-1	FG319_FS	✓	✓	✓	✓	✓		
L60187-2	P317_FS	✓	✓	✓	✓	✓		
L61510-1	PS317_FS	✓	✓	✓	✓	✓		
L61568-1	FL319_FS	✓	✓	✓	✓	✓		
L61568-2	PS317_FS	✓	✓	✓	✓	✓		
L61838-1	PS317_FS	✓	✓	✓	✓	✓		
L62291-1	FL319_FS	✓	✓					
L62291-2	PS317_FS	✓	✓					
L63181-1	FL319_FS	✓	✓	✓	✓	✓		
L63858-1	FL319_FS	✓	✓		✓			
L63997-1	FL319_FS	✓						
L64107-1	P317_FS	✓	✓	✓	✓	✓		
L64265-1	FL319_FS	✓	✓	✓	✓	✓		

2.0 Conventional Analyses

Conventional analyses included particle size distribution (PSD) and total solids.

2.1 Particle Size Distribution

For all 43 samples, there was limited sample material and so PSD analysis was performed by a combination of laser diffraction (LD) and sediment concentration (SC) methods following ISO 13320:2009, *Particle size analysis -- Laser diffraction methods* and ASTM Method D422/D3977 – 97 (ASTM 2002 and ASTM 2013). Associated QC samples included laboratory replicates.

Table 2-1
PSD-LD Workgroups and QC Samples

Workgroup	Samples	LD/LT
WG126191	L57495-1, -4 and -5; L57634-1 through -3	✓
WG127037	L57732-1 through -3; L57792-1 through -3	✓
WG128872	L58537-1 through -2	✓
WG129259	L58754-1	
WG130278	L58977-1; L59049-1; L59190-1 through -2	✓
WG130879	L59457-1	
WG131316	L59472-1 and -3; L59596-1 through -2; L59723-1 through -4	✓
WG132302	L59919-1 through -2	✓
WG133033	L60187-1 through -2	
WG136379	L61510-1; L61568-1 through -2	✓
WG136800	L61838-1	
WG138495	L62291-1 and -2	
WG140774	L63181-1	
WG143795	L63858-1; L63997-1; L64107-1; L64265-1	✓

Table 2-2
PSD-SC Workgroups and QC Samples

Workgroup	Samples	LD/LT
WG126189	L57495-1, -4 and -5; L57634-1 through -3	✓
WG127035	L57732-1 through -3; L57792-1 through -3	✓
WG128871	L58537-1 through -2	✓
WG129258	L58754-1	
WG130277	L58977-1; L59049-1; L59190-1 through -2	✓
WG130878	L59457-1	
WG131315	L59472-1 and -3; L59596-1 through -2; L59723-1 through -4	✓
WG132301	L59919-1 through -2	✓
WG133032	L60187-1 through -2	
WG136378	L61510-1; L61568-1 through -2	✓
WG136799	L61838-1	
WG138494	L62291-1 and -2	
WG140773	L63181-1	
WG143794	L63858-1; L63997-1; L64107-1; L64265-1	✓

2.1.1 Holding Time

All samples were analyzed within the prescribed 6-month holding time.

2.1.2 Laboratory Duplicate/Triplicate

There were no QC samples associated with workgroups WG129259, WG130879, WG133033, WG136800, WG129258, WG130878, WG133032, WG136799, WG138494, WG138495, WG140773, and WG140774. The PSD results for the samples associated with these workgroups (L58754-1; L59457-1; L60187-1 through -2; L61838-1; L62291-1 and -2; and L63181-1) should be qualified with a "J" flag and considered estimated with an unknown bias.

The RPD of 37% between results for the greater than or equal to 500 micron fraction for the laboratory duplicate associated with workgroup WG130277 exceeded the 20% QC limit. Associated results in the sample on which the laboratory duplicate was performed, L58977-1, should be qualified with a "J" flag and considered estimated with an unknown bias.

The RPD of 58% between results for the greater than or equal to 500 micron fraction for the laboratory duplicate associated with workgroup WG136378 exceeded the 20% QC limit. Results for this parameter in sample L61510-1 should be qualified with a "J" flag and considered estimated with an unknown bias.

The RPD of 21% between results for the clay fraction of the laboratory duplicate associated with workgroup WG136379 exceeded the 20% QC limit. Results for the parameter "clay" in sample L61510-1 should be qualified with a "J" flag and considered estimated with an unknown bias. The individual phi sizes associated with the clay fraction may also be qualified with a "J" flag. These phi sizes include p+9.00, p+10.00 and p>+10.00. Since the fraction "clay" is part of the summed parameter "fines" (along with the parameter "silt,") the parameter "fines" for sample L61510-1 should be qualified with a "J" flag and considered estimated with an unknown bias.

All other RPD and RSD values in laboratory duplicates and triplicates associated with this project were below the 20% QC limit, ranging from 0 to 10%. In some cases limited sample volume necessitated performing a laboratory duplicate in place of a laboratory triplicate. The laboratory duplicate provides sufficient precision information to assess the quality of the analytical results; therefore, no additional qualifications are needed for the workgroups where this is the case.

2.1.3 Other QC Concerns

During PSD-LD analysis, the predicted distribution is compared to the actual sample distribution and the weighted residual percentage must be within acceptance limits, as defined in the Standard Operating Procedure (KCEL SOP 350v0). For several samples, L61838-1 (WG136800); L61510-1, L61568-1 and -2 (WG136379); L62291-1 and -2 (WG138495); L63181-1 (WG140774); and L63858-1, L6399-1, L64107-1, and L64265-1 (WG143795), the PSD-LD results should be qualified with a "J" flag and considered estimates with unknown bias because the measured results were outside the accuracy of the method, due to residuals outside acceptance limits.

2.3 Total Solids

Total (percent) solids analysis was performed using a gravimetric determination following Standard Method SM2540-G (APHA 1998). Associated QC samples included method blanks, laboratory replicates.

Table 2-3
Total Solids Workgroups and QC Samples

Workgroup	Samples	MB	LD/LT
WG126099	L57495-1, -4 and -5	✓	✓
WG126570	L57634-1 through -3; L57732-1 through -3; L57792-1 through -3	✓	✓
WG128447	L58537-1	✓	✓
WG129325	L58537-2; L58754-1	✓	✓
WG129699	L58977-1; L59049-1	✓	✓
WG130083	L59190-1 through -2	✓	✓
WG130726	L59457-1	✓	✓
WG131132	L59472-1 and -3; L59596-1 through -2	✓	✓
WG131743	L59723-1 through -4	✓	✓
WG132353	L59919-1 through -2	✓	✓
WG133007	L60187-1 through -2	✓	✓
WG136533	L61510-1; L61568-1 through -2	✓	
WG136994	L61838-1	✓	✓
WG138651	L62291-1 and -2	Sub	Sub
WG140385	L63181-1	✓	✓
WG142935	L64107-1	✓	✓
WG143132	L64265-1	✓	✓
WG143238	L63858-1	✓	✓

Sub = Analysis performed by Pacific Rim Laboratories instead of KCEL. No QC information available.

2.3.1 Holding Time

All samples were analyzed within the prescribed 6-month holding time.

2.3.2 Method Blank

A total solids method blank consists of a conditioned sample cup that is submitted to the entire analytical procedure. All total solids method blank results were less than the MDL, indicating acceptable balance and method performance.

2.3.3 Laboratory Replicate

All RSDs and RPDs between total solids laboratory duplicate and triplicate results were below the 20% QC limit, ranging from 0 to 12%. In some cases limited sample volume necessitated performing a laboratory duplicate in place of a laboratory triplicate. The laboratory duplicate provides sufficient precision information to assess the quality of the analytical results; therefore, no additional qualifications are needed for the workgroups where this is the case.

3.0 Trace Metals Analyses

Trace metals analyses included total mercury and total arsenic, cadmium, chromium, copper, lead, nickel, silver, vanadium and zinc.

3.1 Total Mercury

Total mercury analysis was performed by cold-vapor atomic absorption spectroscopy (CVAA) following EPA Method 7471B – SW846 (EPA 2007). Associated QC samples included method blanks, spike blanks, matrix spikes, matrix spike duplicates, laboratory duplicates and laboratory control samples (analyzed in duplicate). Workgroup WG135928 did not include a laboratory duplicate, but the matrix spike and matrix spike duplicate may be used to assess precision.

Table 3-1
Total Mercury Workgroups and QC Samples

Workgroup	Samples	MB	SB	MS/MSD	LD	LCS/LCSD
WG125947	L57495-1, -4 and -5	✓	✓	✓	✓	✓
WG126318	L57634-1 through -2; L57732-1 through -3	✓	✓	✓	✓	✓
WG126821	L57792-1 through -3	✓	✓	✓	✓	✓
WG128613	L58537-1 through -2	✓	✓	✓	✓	✓
WG129257	L58754-1	✓	✓	✓	✓	✓
WG129628	L58977-1	✓	✓	✓	✓	✓
WG129914	L59049-1	✓	✓	✓	✓	✓
WG130168	L59190-1 through -2	✓	✓	✓	✓	✓
WG130733	L59457-1	✓	✓	✓	✓	✓
WG130972	L59472-3; L59596-1 through -2	✓	✓	✓	✓	✓
WG131469	L59723-1 through -4	✓	✓	✓	✓	✓
WG131893	L59919-1 through -2	✓	✓	✓	✓	✓
WG132653	L60187-1 through -2	✓	✓	✓	✓	✓
WG135928	L61510-1; L61568-1 through -2	✓	✓	✓		✓
WG136780	L61838-1	✓	✓	✓	✓	✓
WG140378	L63181-1	✓	✓	✓	✓	✓
WG142927	L64107-1; L64265-1	✓	✓	✓	✓	✓

3.1.1 Holding Time

Sample L59457-1 in workgroup WG130733 exceeded the 28-day holding time for mercury by 9 days. Total mercury was detected and this result should be qualified with a "J" flag and considered estimated with a low bias per the recommendations of the *National Functional Guidelines*. All other samples were digested and analyzed within the prescribed 28-day holding time.

3.1.2 Method Blank

A mercury method blank consists of an aliquot of reagent water that is digested and then analyzed. All mercury method blank results were less than the MDL, indicating that laboratory contamination was not an issue during analysis of the samples included in these workgroups.

3.1.3 Spike Blank

All mercury spike blank recoveries were within 85 to 115% QC limits, ranging from 90 to 104%.

3.1.4 Matrix Spike and Matrix Spike Duplicate

The recoveries of 62% and 71% for mercury in the matrix spike and matrix spike duplicate associated in workgroup WG132653 were below the lower QC limit of 75%. The RPD between the matrix spike and matrix spike duplicate results was 6%, within the 20% QC limit. The mercury result in the sample on which the matrix spike and matrix spike duplicate were performed, L60187-1, should be qualified with a "J" flag and considered estimated with a low bias. The other mercury results in the workgroup should not be qualified based on the matrix spike and matrix spike duplicates, because the spike blank and laboratory control sample recoveries associated with this workgroup were within the QC limits. This suggests the matrix spike recoveries were due to matrix influences that may be specific to this sample.

Mercury recoveries in the matrix spikes and matrix spike duplicates associated with all other workgroups were within the 75 to 125% QC limits, ranging from 84 to 107%. The RPDs between all other matrix spike and matrix spike duplicate results were less than the 20% QC limit, ranging from 0 to 19%.

3.1.5 Laboratory Duplicate

The RPD of 31% between the sample and laboratory duplicate associated with workgroup WG132653 exceeded the 20% QC limit. The mercury result in the sample on which the laboratory duplicate was performed, L60187-1, should be qualified with a "J" flag and considered estimated with an unknown bias.

The RPD of 28% between the sample and laboratory duplicate associated with workgroup WG142927 exceeded the 20% QC limit. The mercury result in the sample on which the laboratory duplicate was performed, L64265-1, should be qualified with a "J" flag and considered estimated with an unknown bias. Since the RPD between the matrix spike and matrix spike duplicate associated with this workgroup was within QC limits, the heterogeneity observed in the laboratory duplicate is likely sample-specific; therefore, the other samples in the workgroup can be used without additional qualification.

All other RPDs between samples and laboratory duplicates associated with this project were below the 20% QC limit, ranging from 0 to 17%.

3.1.6 Laboratory Control Samples

Laboratory control samples were analyzed in duplicate. All mercury laboratory control sample recoveries were within the 80 to 120% QC limits, ranging from 89 to 111%. RPDs between mercury laboratory control sample results were both below the 20% QC limit, ranging from 0 to 8%.

3.2 ICP-MS Metals

Total metals analysis was performed by inductively-coupled plasma mass spectroscopy (ICP-MS) following EPA Method 3050B/6020A – SW846 (EPA 2007). Target analytes included arsenic, cadmium, chromium, copper, lead, nickel, silver, vanadium and zinc. Associated QC samples included method blanks, spike blanks, matrix spikes, laboratory duplicates and laboratory control samples (in duplicate).

Table 3-2
Total ICP-MS Metals Workgroups and QC Samples

Workgroup	Samples	MB	SB	MS	LD	LCS/LCSD
WG126014	L57495-1, -4 and -5	✓	✓	✓	✓	✓
WG126930	L57634-1 through -3; L57732-1 through -3; L57792-1 through -3	✓	✓	✓	✓	✓
WG129766	L58537-1 through -2; L58754-1; L58977-1; L59049-1	✓	✓	✓	✓	✓
WG130487	L59190-1 through -2	✓	✓	✓	✓	✓
WG131416	L59472-1 and -3; L59596-1 through -2; L59723-1 through -4	✓	✓	✓	✓	✓
WG133002	L59919-1 through -2; L60187-1 through -2	✓	✓	✓	✓	✓
WG136472	L61510-1; L61568-1 through -2	✓	✓	✓	✓	✓
WG137335	L61838-1	✓	✓	✓	✓	✓
WG141123	L63181-1	✓	✓	✓	✓	✓
WG143629	L63858-1; L64107-1: L64265-1	✓	✓	✓	✓	✓

3.3.1 Holding Time

All samples were digested and analyzed within the prescribed 6-month holding time.

3.2.2 Method Blank

Results for all target metals in the method blanks associated with all workgroups were less than the MDL, indicating that laboratory contamination was not an issue during analysis of the samples included in these workgroups.

3.2.3 Spike Blank

Spike blank recoveries for all target metals in all workgroups were within the 85 to 115% laboratory QC limits, ranging from 90 to 114%.

3.2.4 Matrix Spike

The recoveries for several metals in each matrix spike could not be properly assessed from a QC standpoint due to the low spike-to-sample concentration ratio, which did not meet the “4X” rule for evaluating matrix spike recoveries (EPA 2010). Table 3-3 lists all metal recoveries that

did not meet the "4X" rule. Because the spike blank results can be used to evaluate accuracy for the metals in this workgroup, these results may be used as reported without additional qualifiers based on the matrix spike results.

Table 3-3
ICP-MS Metals Matrix Spikes That Did Not Meet the 4x Rule

Workgroup	Chromium	Copper	Lead	Nickel	Vanadium	Zinc
WG126014	✓			✓	✓	✓
WG126930						✓
WG129766	✓			✓	✓	✓
WG130487				✓		✓
WG131416					✓	✓
WG133002		✓			✓	✓
WG136472		✓			✓	✓
WG137335		✓	✓			✓
WG141123					✓	✓
WG143629		✓			✓	✓

The recovery of 69% for lead in the matrix spike associated with workgroup WG133002 was below the lower QC limit of 75%. The result for lead in the sample on which the matrix spike was performed, L59919-2, should be qualified with a "J" flag. While the matrix spike result suggests a low bias, the result should be considered estimated with an unknown bias due to the laboratory duplicate result for lead in this sample (See Section 3.2.5).

All other matrix spike recoveries were within the QC limits of 75 to 125%, ranging from 75 to 106%.

3.2.5 Laboratory Duplicate

The RPD of 22% between the laboratory duplicate results for lead in workgroup WG133002 exceeded the 20% QC limit. The result for lead in the sample on which the laboratory duplicate was performed, L59919-2, should be qualified with a "J" flag and considered estimated with an unknown bias.

The RPD of 31% between the laboratory duplicate results for copper in workgroup WG136472 exceeded the 20% QC limit. The result for copper in the sample on which the laboratory duplicate was performed, L61568-1, should be qualified with a "J" flag and considered estimated with an unknown bias.

RPDs between all other laboratory duplicate results were below the 20% QC limit, ranging from 0 to 13%.

3.2.6 Laboratory Control Sample

One to two laboratory control samples were analyzed with each workgroup, with at least one laboratory control sample analyzed in duplicate. Recoveries for all target metals in each

laboratory control sample were within the empirically-derived laboratory QC limits shown on the attached QC report. The RPD of 25% between the results for cadmium in one laboratory control sample and laboratory control sample duplicate in workgroup WG136472 (results from WG136472-7 and -8), exceeded the 20% QC limit. The other laboratory control sample in this group was not performed on a comparable matrix for the samples in this project; therefore, the results for cadmium in this workgroup should be qualified with "J" flags and considered estimated with unknown bias.

RPDs between all other duplicate laboratory control sample results were less than the 20% QC limit, ranging from 0 to 12%.

4.0 Trace Organics Analyses

Trace organics analyses included PAHs, PCBs and chlorinated pesticides.

4.1 PAHs

PAH analysis was performed by gas chromatography/mass spectroscopy (GC/MS) following EPA Methods 3550B/8270D – SW846 (EPA 2007). Target analytes included 16 PAH compounds, shown on the attached LIMS analytical QC report. Associated QC samples in each workgroup included a method blank, a spike blank, a matrix spike, standard reference material run in duplicate, and surrogates. Two workgroups (WG126920 and WG132411) did not include matrix spikes. Each workgroup included either a matrix spike duplicate or, in the case of insufficient sample volume, a spike blank duplicate. When possible, a laboratory duplicate was also run.

Table 4-1
PAHs Workgroups and QC Samples

Workgroup	Samples	MB	SB	SBD	MS	MSD	SRM/SRMD	LD	Surrogates
WG125733	L57495-1, -4 and -5	✓	✓	✓	✓		✓	✓	✓
WG126329	L57634-1 and -2; L57732-1 through -3	✓	✓	✓	✓	✓	✓		✓
WG126920	L57792-1 through -3	✓	✓	✓			✓		✓
WG129254	L58537-1 through -2; L58754-1	✓	✓	✓	✓	✓	✓	✓	✓
WG129990	L58977-1; L59049-1; L59190-1 through -2	✓	✓		✓	✓	✓	✓	✓
WG130978	L59457-1; L59472-1 and -3; L59596-1 through -2	✓	✓		✓	✓	✓	✓	✓
WG131384	L59723-1 through -4	✓	✓		✓	✓	✓	✓	✓
WG131804	L59919-1 through -2	✓	✓		✓	✓	✓	✓	✓
WG132411	L60187-1 through -2	✓	✓	✓			✓		✓
WG136065	L61510-1; L61568-1 through -2	✓	✓	✓	✓		✓		✓
WG136856	L61838-1	✓	✓	✓	✓		✓		✓
WG143259	L63181-1; L64107-1; L64265-1	✓	✓	✓	✓		✓		✓

4.1.1 Holding Time

All samples were extracted and analyzed within the prescribed frozen holding time of 1 year until extraction and, then, 40 days to analysis.

4.1.2 Method Blank

In workgroup WG126920, both indeno(1,2,3-c,d)pyrene and benzo(g,h,i)perylene were detected in the method blank at concentrations less than the RDL. In sample L57792-2, both compounds were detected at less than the RDL; therefore, the results should be qualified with a "U" flag and considered undetected with the RDL value as the level of detection. In the other two samples in this workgroup, the compounds were either not detected or detected greater than the RDL and greater than five times the blank concentrations. Based on this, no other results in this workgroup should be qualified based on method blank results.

In workgroup WG132411, pyrene was detected in the method blank at a concentration less than the RDL. In sample L60187-1, pyrene was detected at a concentration less than the RDL; therefore, the result should be qualified with a "U" flag and considered undetected with the RDL value as the level of detection. In the other sample in this workgroup, pyrene was detected at a concentration greater than five times the method blank concentration; requiring no qualifications based on method blank results.

Results for all other PAH compounds in all method blanks were all less than the MDL.

4.1.3 Spike Blank

The recoveries of 35% and 39% for anthracene in the spike blank and spike blank duplicate associated with workgroup WG125733 were below the 54% lower QC limit. The RPD between the results was within the 35% QC limit. The anthracene results in this workgroup should be qualified with a "J" flag and considered estimated with a low bias.

The recovery of 53% for anthracene in the spike blank associated with workgroup WG126920 was below the 54% lower QC limit, but the recovery of 68% in the spike blank duplicate was within the QC limits. Since the average recovery was within the QC limits and the RPD of 23% between the results was within the 35% QC limit, the results for anthracene may be used without qualification in this workgroup, based on spike blank results.

The recovery of 39% for 2-methylnaphthalene in the spike blank duplicate associated with workgroup WG143259 was below the 40% lower QC limit, but the recovery of 46% in the spike blank was within the QC limits. However, the matrix spike recovery for 2-methylnaphthalene was also below the QC limits in this workgroup; therefore, detected 2-methylnaphthalene results in samples associated with this workgroup should be qualified with "J" flags and considered estimated with low bias. Non-detect 2-methylnaphthalene results should be qualified with "UJ" flags and considered estimated non-detects with a low bias.

The recoveries of 38% and 35% for acenaphthylene in the spike blank and spike blank duplicate associated with workgroup WG143259 were below the 43% lower QC limit. The detected acenaphthylene results in samples associated with this workgroup should be qualified with "J" flags and considered estimated with low bias. Non-detect acenaphthylene results should be qualified with "UJ" flags and considered estimated non-detects with a low bias.

The recovery of 36% for acenaphthene in the spike blank duplicate associated with workgroup WG143259 was below the 37% lower QC limit, but the recovery of 39% in the spike blank was within the QC limits. Since the average recovery was within the QC limits and the RPD of 7% between the results was within the 35% QC limit, the results for acenaphthene may be used without qualification in this workgroup, based on spike blank results.

The spike blank and spike blank duplicate recoveries for fluorene (43% and 41%), phenanthrene (48% and 48%), and anthracene (40% and 41%) in workgroup WG143259 were below the lower QC limit of 54%. Detected results in samples associated with this workgroup should be qualified with "J" flags and considered estimated with low bias. Non-detect results should be qualified with "UJ" flags and considered estimated non-detects with a low bias.

All other spike blank recoveries were within their respective empirically-derived QC limits, and all RPDs between spike blank and spike blank duplicates were within the 35% QC limit.

4.1.4 Matrix Spike and Matrix Spike Duplicate

In workgroup WG129254, recoveries of acenaphthylene (117% and 123%), acenaphthene (110% and 114%) and benzo(b,j,k)fluoranthene (122% and 124%) in both the associated matrix spike and matrix spike duplicate exceeded their respective upper QC limits (103%, 94% and 120%). The RPDs between all matrix spike and matrix spike duplicate results were within the 35% QC limits.; Based on exceedances of recoveries limits, the acenaphthylene and benzo(b,j,k)fluoranthene results in the sample on which the matrix spike was performed (L58537-2), should be qualified with "J" flags and considered estimated with high bias. Acenaphthene was not detected in this sample. The results of these compounds in other samples associated with this workgroup may be used without qualification. This is because recoveries in the spike blank and spike blank duplicate associated with this workgroup were within QC limits suggesting matrix interference is responsible for the high bias, which could be sample-specific.

Also in workgroup WG129254, recoveries for naphthalene (86%) and anthracene (123%) in the matrix spike duplicate exceeded their respective upper QC limits (85% and 119%); however, the recoveries in the matrix spike for both compounds were within QC limits (78% and 110%, respectively). Since the RPD between the recoveries and the average recovery were within the QC limits for both compounds, the results for naphthalene and anthracene in this workgroup can be used without qualification.

Also in workgroup WG129254, the recovery of 116% for phenanthrene in the matrix spike exceeded the upper QC limit of 108%. While the matrix spike duplicate recovery (106%) and the RPD between the results were within QC limits, the average recovery exceeded the upper QC limit; therefore the result for phenanthrene in the sample on which the matrix spike was performed (L58537-2) should be qualified with a "J" flag and considered estimated with a high bias. The phenanthrene results in other samples associated with this workgroup may be used without qualification. This is because recoveries in the spike blank and spike blank duplicate

associated with this workgroup were within QC limits suggesting matrix interference is responsible for the high bias, which could be sample-specific.

In workgroup WG129990, recoveries of fluoranthene (14% and 20%) and pyrene (42% and 50%) in both the matrix spike and matrix spike duplicate were below their respective lower QC limits of 58% and 51%. The RPDs between the matrix spike and matrix spike duplicate for both compounds were within the 35% QC limit. The results for fluoranthene and pyrene in the sample on which the matrix spike was performed (L58977-1) should be qualified with "J" flags and considered estimated with low bias based on low percent recoveries. The fluoranthene and pyrene results in other samples associated with this workgroup may be used without qualification. This is because recoveries in the spike blank associated with this workgroup were within QC limits suggesting matrix interference is responsible for the low bias, which could be sample-specific.

In workgroup WG131804, recoveries of fluorene (117% and 114%), phenanthrene (111% and 124%), fluoranthene (118% and 132%), benzo(b,j,k)fluoranthene (125% and 128%) and indeno(1,2,3-Cd)pyrene (143% and 143%) in both the associated matrix spike and matrix spike duplicate exceeded their respective upper QC limits (113%, 108%, 115%, 120% and 130%). The RPDs between all matrix spike and matrix spike duplicate results were within the 35% QC limits. Based on the exceedances of recoveries limits, results for all five compounds in the sample on which the matrix spike was performed (L59919-1), should be qualified with "J" flags and considered estimated with high bias. The results for these compounds in other sample associated with this workgroup may be used without qualification. This is because recoveries in the spike blank associated with this workgroup were within QC limits suggesting matrix interference is responsible for the high bias, which could be sample-specific.

Also in workgroup WG131804, recoveries of acenaphthylene (104%), benzo(a)anthracene (123%) and benzo(a)pyrene (141%) in the matrix spike duplicate exceeded their respective upper QC limits (103%, 117% and 134%). The recovery of acenaphthene (95%) in the matrix spike also exceeded the upper QC limit (94%). The RPDs between all matrix spike and matrix spike duplicate results were within the 35% QC limits, and for all but acenaphthylene, the average recovery exceeded the upper QC limit. Acenaphthylene and acenaphthene were not detected in the sample on which the matrix spike was performed (L59919-1). Results for benzo(a)anthracene and benzo(a)pyrene in this sample should be qualified with "J" flags and considered estimated with high bias. The benzo(a)anthracene and benzo(a)pyrene results in other sample associated with this workgroup may be used without qualification. This is because recoveries in the spike blank associated with this workgroup were within QC limits suggesting matrix interference is responsible for the high bias, which could be sample-specific.

In work group WG143259, recoveries of 2-methylnaphthalene (37%) and acenaphthylene (45%) were below their respective lower QC limits of 40% and 51%. Recoveries for these compounds in the associated spike blank were also below lower QC limits; therefore, all detected 2-methylnaphthalene and acenaphthylene results in samples associated with this work group

should be qualified with “J” flags and considered estimated with low bias, and all non-detect results should be qualified with “UJ” flags and considered estimated non-detects with low bias.

This method for PAH analysis is not commonly used for analysis of sediments, but the lower detection limits were necessary for this project. Because of this, the empirically-derived QC limits are based on a relatively small sample-size, and while data were qualified according to the current QC limits, there is some uncertainty as to how representative these are of overall performance.

All other matrix spike and matrix spike duplicate recoveries were within their respective empirically-derived QC limits. All RPDs between duplicate results were below the 35% QC limit, ranging from 0 to 25%.

4.1.5 Standard Reference Material and Standard Reference Material Duplicate

The standard reference material analyzed in association with PAH analysis includes a partial list of target analytes – a total of 10 compounds. Standard reference materials were analyzed in duplicate for all workgroups.

In workgroup WG126329, the recoveries for fluoranthene in the standard reference material and standard reference material duplicate (53% and 54%) was below the lower QC limit of 56%. The RPD between the results was within the 35% QC limit. Fluoranthene results in the samples associated with this workgroup should be qualified with “J” flags and considered estimated with low bias.

In workgroup WG143259, the recoveries for pyrene and benzo(g,h,i)perylene in the standard reference material (58% and 41%) and standard reference material duplicate (53% and 40%) were at or below the lower QC limits (58% and 42%, respectively). The detected pyrene and benzo(g,h,i)perylene results in the samples associated with this work group should be qualified with “J” flags and considered estimated with low bias. The non-detect pyrene and benzo(g,h,i)perylene results should be qualified with “UJ” flags and considered estimated non-detects with low bias.

All other standard reference material recoveries were within their respective empirically-derived QC limits. RPDs between all duplicate results were below the 35% QC limit, ranging from 0 to 29%.

4.1.6 Laboratory Duplicate

All RPDs between duplicate results, detected at concentrations greater than the RDL, for PAH compounds associated with all workgroups were less than the 35% QC limit, ranging from 1 to 32%.

4.1.7 Surrogates

In workgroup WG125733, recoveries of d14-terphenyl in four QC samples exceeded the upper QC limit of 125% (method blank, spike blank, spike blank duplicate, and standard reference material duplicate). The results of these QC samples did not indicate high bias for the

associated compounds. For example, no PAHs were detected in the method blank. Additionally, all recoveries in the spike blank, spike blank duplicate, and standard reference material duplicate were within or below QC limits, with the vast majority of recoveries on the lower half of the QC limits.

In workgroup WG132411-1, recoveries of 2-fluorobiphenyl in the environmental sample L60187-1 (105%) and one QC sample (97%), exceeded the upper QC limit of 96%, but none of the associated compounds were detected in the environmental sample.

In workgroup WG136856, recoveries of 2-fluorobiphenyl in the environmental sample L61838-1 (99%) and two QC samples, exceeded the upper QC limit of 96%, but none were greater than 100% recovery, and the data should be used without qualifications based on the surrogate results.

All other surrogate recoveries were within QC limits.

4.2 PCBs

PCB Aroclors were analyzed by gas chromatography with electron capture detector (GC/ECD), following EPA Method 3550B/8082A – SW846 (EPA 2007). Associated QC samples included method blanks, spike blanks, matrix spikes and matrix spike duplicates, standard reference material (analyzed in duplicate) and surrogates. Only workgroup WG126921 included a laboratory duplicate, as specified in the SAP, due to low sample volumes. A spike blank duplicate were run in place of a matrix spike duplicate in workgroup WG125732. Although matrix spikes were included in workgroup WG126921, the samples selected were of a very different matrix and could not be used to evaluate matrix interference for the samples included in this project. The spike blank and laboratory duplicate provide sufficient QC information for this workgroup.

Table 4-2
PCBs Workgroups and QC Samples

Workgroup	Samples	MB	SB/SBD	MS/MSD	SRM/ SRMD	LD	Surrogates
WG125732	L57495-1, -4 and -5	✓	✓	✓	✓		✓
WG126330	L57634-1 through -3; L57732-1 through -3	✓	✓	✓	✓		✓
WG126921	L57792-1 through -3	✓	✓		✓	✓	✓

4.2.1 Holding Time

All samples were extracted and analyzed within the prescribed frozen holding time of 1 year until extraction and, then, 40 days to analysis.

4.2.2 Method Blanks

Results for all seven Aroclors in all method blanks were less than the MDL, indicating that laboratory contamination was not an issue during analysis of the samples included in these workgroups.

4.2.3 Spike Blank

Two Aroclors, 1242 and 1260, were used in spike blanks as well as matrix spikes (see Section 4.2.4). Recoveries for both Aroclors were within the empirically-derived QC limits for all spike blanks associated with these three workgroups.

4.2.4 Matrix Spikes and Matrix Spike Duplicates

Matrix spike recoveries for both Aroclors in matrix spike and matrix spike duplicates, associated with this project, were within the empirically-derived laboratory QC limits in all workgroups. The RPDs for both Aroclor results between the matrix spikes and matrix spike duplicates were less than the laboratory QC limit of 35%.

4.2.5 Standard Reference Material and Standard Reference Material Duplicate

Aroclor 1260 is used as the target PCB analyte during standard reference material analysis. Recoveries of Aroclor 1260 in the standard reference materials and standard reference material duplicates were within the empirically-derived laboratory QC limits. The RPDs between standard reference material and standard reference material duplicate results were below the 35% laboratory QC limit in all workgroups.

4.2.6 Laboratory Duplicate

All RPDs for Aroclors between project-specific duplicate results, detected at concentrations greater than the RDL, were less than the 35% QC limit.

4.2.7 Surrogates

Recoveries for both surrogates in all environmental and QC samples were within the empirically-derived laboratory QC limits. The recoveries were also within the control limits recommended in *National Functional Guidelines* QC limits.

4.2.8 Sample Handling Issue

The storage jars for PCB Aroclor analysis from samples L57792-2 and -3 cracked prior to extraction, and an unknown amount of sample was lost. Aroclor results for these samples were qualified with “SH” flags by the laboratory. No Aroclors were detected in these samples; therefore results should be qualified with “UJ” flags and considered estimated non-detects with unknown bias.

4.2.8 Other QC Concerns

In sample L57495-5, the percent RSD between the characteristic chromatograph peaks used to identify Aroclor 1254 exceeded 50% due to matrix interference. The result for Aroclor 1254 in this sample should be qualified with a “J” flag to indicate an estimated result.

4.3 Chlorinated Pesticides

Chlorinated pesticides were analyzed by GC/ECD, following EPA Method 3550B/8081B – SW846 (EPA 2007). Associated QC samples included only a method blank for workgroup WG125932, and a method blank, spike blank, spike blank duplicate and surrogates for workgroup WG126588 (see Table 4-3). The QC samples for WG125932 are insufficient to determine the precision and bias of the data, and the QC samples for WG126588 do not include any precision

information for the environmental samples; therefore, all pesticide results for this workgroup should be qualified with a "J" flag and considered estimated with unknown bias if the concentration is greater than the MDL. If the concentration is less than the MDL, the result should be qualified "UJ" with an unknown bias. This analysis was only added after the identification of chlorinated pesticides during PCB analysis for these samples.

Table 4-3
Pesticide Workgroups and QC Samples

Workgroup	Samples	MB	SB/SBD	Surrogates
WG125932	L57495-1, -4 and -5	✓		
WG126588	L57634-1 through -3; L57732-1 through -3	✓	✓	✓

4.3.1 Holding Time

All six samples were extracted analyzed within the prescribed frozen holding time of 1 year until extraction and, then, 40 days to analysis.

4.3.2 Method Blanks

Results for all chlorinated pesticides in the method blanks were less than the MDL, indicating that laboratory contamination was not an issue during analysis of the samples included in this workgroup.

4.3.3 Spike Blank and Spike Blank Duplicate

All spike blank and spike blank duplicate recoveries were within the empirically-derived QC limits. All RPDs between the duplicate results were within the 35% QC limit.

4.3.4 Surrogates

Recoveries for both surrogates in all analytical samples and the QC samples were within the empirically-derived laboratory QC limits. Surrogate recoveries were also within the control limits recommended in *National Functional Guidelines* QC limits.

4.3.5 Sample Handling

For both workgroups, this analysis was added for a subset of samples after chlorinated pesticides were suspected during PCB analysis. Because of this sample extracts had already been acid cleaned, which could interfere with pesticide analysis. As a result, all pesticide results should be qualified with a "J" flag and considered estimated with an unknown bias.

5.0 Data Usability

As a general data reporting format, sample results that are reported as "<MDL" by King County should be assigned a "U" flag in all cases. Sample results that are reported as "less than or equal to the reporting detection limit" (<RDL, RDL) should be assigned a "J" flag and considered estimated in all cases. All other analytical results may be used without qualification with the exception of the results presented in Table 1 at the end of this memorandum. LIMS Batch and QC reports are provided as Attachment A.

6.0 References

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EPA 2010. *USEPA Contract Laboratory Program National Functional Guidelines for Superfund Inorganic Data Review.* OSWER 9240.1-51, USEPA-540-R-10-011. USEPA. Washington, D.C. January 2010.

King County 2013. *Green River Study: Suspended Solids Characterization – Sampling and Analysis Plan*. Prepared by Debra Williston and Deb Lester, King County Water and Land Resources Division. Seattle, Washington.

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Should you have questions regarding any of the information contained in this data validation memorandum, please don't hesitate to contact me.

Sincerely,

Carly Greyell
King County, Toxicology and Contaminant Assessment Group
206-477-4703
carly.greyell@kingcounty.gov

Table 1. Green River Filtered Solids Samples - Data Validation Flags and Bias Notation

Workgroup	Locator	Collect Date	Sample ID	Total Solids	Parameter	Concentration (wet weight basis)	Units	Lab Qual	DV Value	DV Qual	Bias	MDL	RDL
WG129259	FG319_FS	9/10/2013	L58754-1	34.5	Clay	3.48	% Volume		3.48	J	unknown	0.01	0.01
WG129259	FG319_FS	9/10/2013	L58754-1	34.5	Fines	73.42	% Volume		73.42	J	unknown	0.01	0.01
WG129259	FG319_FS	9/10/2013	L58754-1	34.5	p+1.00	0.37	% Volume		0.37	J	unknown	0.01	0.01
WG129259	FG319_FS	9/10/2013	L58754-1	34.5	p+10.0	0.71	% Volume		0.71	J	unknown	0.01	0.01
WG129259	FG319_FS	9/10/2013	L58754-1	34.5	p+10.0(more than)	0.06	% Volume		0.06	J	unknown	0.01	0.01
WG129259	FG319_FS	9/10/2013	L58754-1	34.5	p+2.00	2.75	% Volume		2.75	J	unknown	0.01	0.01
WG129259	FG319_FS	9/10/2013	L58754-1	34.5	p+3.00	6.81	% Volume		6.81	J	unknown	0.01	0.01
WG129259	FG319_FS	9/10/2013	L58754-1	34.5	p+4.00	15.68	% Volume		15.68	J	unknown	0.01	0.01
WG129259	FG319_FS	9/10/2013	L58754-1	34.5	p+5.00	18.18	% Volume		18.18	J	unknown	0.01	0.01
WG129259	FG319_FS	9/10/2013	L58754-1	34.5	p+6.00	25.83	% Volume		25.83	J	unknown	0.01	0.01
WG129259	FG319_FS	9/10/2013	L58754-1	34.5	p+7.00	18.06	% Volume		18.06	J	unknown	0.01	0.01
WG129259	FG319_FS	9/10/2013	L58754-1	34.5	p+8.00	7.87	% Volume		7.87	J	unknown	0.01	0.01
WG129259	FG319_FS	9/10/2013	L58754-1	34.5	p+9.00	2.7	% Volume		2.7	J	unknown	0.01	0.01
WG129259	FG319_FS	9/10/2013	L58754-1	34.5	Sand<1000	25.61	% Volume		25.61	J	unknown	0.01	0.01
WG129259	FG319_FS	9/10/2013	L58754-1	34.5	Silt	69.94	% Volume		69.94	J	unknown	0.01	0.01
WG130879	PS317_FS	12/9/2013	L59457-1	25.3	Clay	9.69	% Volume		9.69	J	unknown	0.01	0.01
WG130879	PS317_FS	12/9/2013	L59457-1	25.3	Fines	84.61	% Volume		84.61	J	unknown	0.01	0.01
WG130879	PS317_FS	12/9/2013	L59457-1	25.3	p+1.00	0.04	% Volume		0.04	J	unknown	0.01	0.01
WG130879	PS317_FS	12/9/2013	L59457-1	25.3	p+10.0	1.85	% Volume		1.85	J	unknown	0.01	0.01
WG130879	PS317_FS	12/9/2013	L59457-1	25.3	p+10.0(more than)	0.07	% Volume		0.07	J	unknown	0.01	0.01
WG130879	PS317_FS	12/9/2013	L59457-1	25.3	p+2.00	0.91	% Volume		0.91	J	unknown	0.01	0.01
WG130879	PS317_FS	12/9/2013	L59457-1	25.3	p+3.00	1.28	% Volume		1.28	J	unknown	0.01	0.01
WG130879	PS317_FS	12/9/2013	L59457-1	25.3	p+4.00	4.68	% Volume		4.68	J	unknown	0.01	0.01
WG130879	PS317_FS	12/9/2013	L59457-1	25.3	p+5.00	10.53	% Volume		10.53	J	unknown	0.01	0.01
WG130879	PS317_FS	12/9/2013	L59457-1	25.3	p+6.00	22.1	% Volume		22.1	J	unknown	0.01	0.01
WG130879	PS317_FS	12/9/2013	L59457-1	25.3	p+7.00	24.67	% Volume		24.67	J	unknown	0.01	0.01
WG130879	PS317_FS	12/9/2013	L59457-1	25.3	p+8.00	17.63	% Volume		17.63	J	unknown	0.01	0.01
WG130879	PS317_FS	12/9/2013	L59457-1	25.3	p+9.00	7.77	% Volume		7.77	J	unknown	0.01	0.01
WG130879	PS317_FS	12/9/2013	L59457-1	25.3	Sand<1000	6.92	% Volume		6.92	J	unknown	0.01	0.01
WG130879	PS317_FS	12/9/2013	L59457-1	25.3	Silt	74.92	% Volume		74.92	J	unknown	0.01	0.01
WG133033	FG319_FS	4/16/2014	L60187-1	46.6	Clay	5.1	% Volume		5.1	J	unknown	0.01	0.01
WG133033	FG319_FS	4/16/2014	L60187-1	46.6	Fines	55.68	% Volume		55.68	J	unknown	0.01	0.01
WG133033	FG319_FS	4/16/2014	L60187-1	46.6	p+1.00	1.64	% Volume		1.64	J	unknown	0.01	0.01
WG133033	FG319_FS	4/16/2014	L60187-1	46.6	p+10.0	1.27	% Volume		1.27	J	unknown	0.01	0.01
WG133033	FG319_FS	4/16/2014	L60187-1	46.6	p+10.0(more than)	0.18	% Volume		0.18	J	unknown	0.01	0.01
WG133033	FG319_FS	4/16/2014	L60187-1	46.6	p+2.00	8.03	% Volume		8.03	J	unknown	0.01	0.01
WG133033	FG319_FS	4/16/2014	L60187-1	46.6	p+3.00	13.22	% Volume		13.22	J	unknown	0.01	0.01

Table 1. Green River Filtered Solids Samples - Data Validation Flags and Bias Notation

Workgroup	Locator	Collect Date	Sample ID	Total Solids	Parameter	Concentration (wet weight basis)	Units	Lab Qual	DV Value	DV Qual	Bias	MDL	RDL
WG133033	FG319_FS	4/16/2014	L60187-1	46.6	p+4.00	17.18	% Volume		17.18	J	unknown	0.01	0.01
WG133033	FG319_FS	4/16/2014	L60187-1	46.6	p+5.00	11.47	% Volume		11.47	J	unknown	0.01	0.01
WG133033	FG319_FS	4/16/2014	L60187-1	46.6	p+6.00	14.74	% Volume		14.74	J	unknown	0.01	0.01
WG133033	FG319_FS	4/16/2014	L60187-1	46.6	p+7.00	14.93	% Volume		14.93	J	unknown	0.01	0.01
WG133033	FG319_FS	4/16/2014	L60187-1	46.6	p+8.00	9.44	% Volume		9.44	J	unknown	0.01	0.01
WG133033	FG319_FS	4/16/2014	L60187-1	46.6	p+9.00	3.65	% Volume		3.65	J	unknown	0.01	0.01
WG133033	FG319_FS	4/16/2014	L60187-1	46.6	Sand<1000	40.07	% Volume		40.07	J	unknown	0.01	0.01
WG133033	FG319_FS	4/16/2014	L60187-1	46.6	Silt	50.58	% Volume		50.58	J	unknown	0.01	0.01
WG133033	P317_FS	4/16/2014	L60187-2	26.7	Clay	9.49	% Volume		9.49	J	unknown	0.01	0.01
WG133033	P317_FS	4/16/2014	L60187-2	26.7	Fines	79.34	% Volume		79.34	J	unknown	0.01	0.01
WG133033	P317_FS	4/16/2014	L60187-2	26.7	p+1.00	0.24	% Volume		0.24	J	unknown	0.01	0.01
WG133033	P317_FS	4/16/2014	L60187-2	26.7	p+10.0	2.08	% Volume		2.08	J	unknown	0.01	0.01
WG133033	P317_FS	4/16/2014	L60187-2	26.7	p+10.0(more than)	0.36	% Volume		0.36	J	unknown	0.01	0.01
WG133033	P317_FS	4/16/2014	L60187-2	26.7	p+2.00	1.54	% Volume		1.54	J	unknown	0.01	0.01
WG133033	P317_FS	4/16/2014	L60187-2	26.7	p+3.00	2.47	% Volume		2.47	J	unknown	0.01	0.01
WG133033	P317_FS	4/16/2014	L60187-2	26.7	p+4.00	7.3	% Volume		7.3	J	unknown	0.01	0.01
WG133033	P317_FS	4/16/2014	L60187-2	26.7	p+5.00	10.32	% Volume		10.32	J	unknown	0.01	0.01
WG133033	P317_FS	4/16/2014	L60187-2	26.7	p+6.00	20.2	% Volume		20.2	J	unknown	0.01	0.01
WG133033	P317_FS	4/16/2014	L60187-2	26.7	p+7.00	23.09	% Volume		23.09	J	unknown	0.01	0.01
WG133033	P317_FS	4/16/2014	L60187-2	26.7	p+8.00	16.24	% Volume		16.24	J	unknown	0.01	0.01
WG133033	P317_FS	4/16/2014	L60187-2	26.7	p+9.00	7.06	% Volume		7.06	J	unknown	0.01	0.01
WG133033	P317_FS	4/16/2014	L60187-2	26.7	Sand<1000	11.55	% Volume		11.55	J	unknown	0.01	0.01
WG133033	P317_FS	4/16/2014	L60187-2	26.7	Silt	69.85	% Volume		69.85	J	unknown	0.01	0.01
WG136379	PS317_FS	10/7/2014	L61510-1	26.8	Clay	18.2	% Volume	J	18.2	J	unknown	0.01	0.01
WG136379	PS317_FS	10/7/2014	L61510-1	26.8	Fines	89.89	% Volume	J	89.89	J	unknown	0.01	0.01
WG136379	PS317_FS	10/7/2014	L61510-1	26.8	p+1.00		% Volume	<MDL,J	0.01	UJ	unknown	0.01	0.01
WG136379	PS317_FS	10/7/2014	L61510-1	26.8	p+10.0	1.14	% Volume	J	1.14	J	unknown	0.01	0.01
WG136379	PS317_FS	10/7/2014	L61510-1	26.8	p+10.0(more than)	9.65	% Volume	J	9.65	J	unknown	0.01	0.01
WG136379	PS317_FS	10/7/2014	L61510-1	26.8	p+2.00	0.57	% Volume	J	0.57	J	unknown	0.01	0.01
WG136379	PS317_FS	10/7/2014	L61510-1	26.8	p+3.00	0.98	% Volume	J	0.98	J	unknown	0.01	0.01
WG136379	PS317_FS	10/7/2014	L61510-1	26.8	p+4.00	3.98	% Volume	J	3.98	J	unknown	0.01	0.01
WG136379	PS317_FS	10/7/2014	L61510-1	26.8	p+5.00	7.52	% Volume	J	7.52	J	unknown	0.01	0.01
WG136379	PS317_FS	10/7/2014	L61510-1	26.8	p+6.00	19.19	% Volume	J	19.19	J	unknown	0.01	0.01
WG136379	PS317_FS	10/7/2014	L61510-1	26.8	p+7.00	25.89	% Volume	J	25.89	J	unknown	0.01	0.01
WG136379	PS317_FS	10/7/2014	L61510-1	26.8	p+8.00	19.09	% Volume	J	19.09	J	unknown	0.01	0.01
WG136379	PS317_FS	10/7/2014	L61510-1	26.8	p+9.00	7.4	% Volume	J	7.4	J	unknown	0.01	0.01
WG136379	PS317_FS	10/7/2014	L61510-1	26.8	Sand<1000	5.53	% Volume	J	5.53	J	unknown	0.01	0.01

Table 1. Green River Filtered Solids Samples - Data Validation Flags and Bias Notation

Workgroup	Locator	Collect Date	Sample ID	Total Solids	Parameter	Concentration (wet weight basis)	Units	Lab Qual	DV Value	DV Qual	Bias	MDL	RDL
WG136379	PS317_FS	10/7/2014	L61510-1	26.8	Silt	71.69	% Volume	J	71.69	J	unknown	0.01	0.01
WG136379	FL319_FS	10/22/2014	L61568-1	47.2	Clay	7.57	% Volume	J	7.57	J	unknown	0.01	0.01
WG136379	FL319_FS	10/22/2014	L61568-1	47.2	Fines	70.94	% Volume	J	70.94	J	unknown	0.01	0.01
WG136379	FL319_FS	10/22/2014	L61568-1	47.2	p+1.00	1.06	% Volume	J	1.06	J	unknown	0.01	0.01
WG136379	FL319_FS	10/22/2014	L61568-1	47.2	p+10.0	1.73	% Volume	J	1.73	J	unknown	0.01	0.01
WG136379	FL319_FS	10/22/2014	L61568-1	47.2	p+10.0(more than)	0.42	% Volume	J	0.42	J	unknown	0.01	0.01
WG136379	FL319_FS	10/22/2014	L61568-1	47.2	p+2.00	4.22	% Volume	J	4.22	J	unknown	0.01	0.01
WG136379	FL319_FS	10/22/2014	L61568-1	47.2	p+3.00	7.75	% Volume	J	7.75	J	unknown	0.01	0.01
WG136379	FL319_FS	10/22/2014	L61568-1	47.2	p+4.00	14.99	% Volume	J	14.99	J	unknown	0.01	0.01
WG136379	FL319_FS	10/22/2014	L61568-1	47.2	p+5.00	14.66	% Volume	J	14.66	J	unknown	0.01	0.01
WG136379	FL319_FS	10/22/2014	L61568-1	47.2	p+6.00	20.58	% Volume	J	20.58	J	unknown	0.01	0.01
WG136379	FL319_FS	10/22/2014	L61568-1	47.2	p+7.00	17.26	% Volume	J	17.26	J	unknown	0.01	0.01
WG136379	FL319_FS	10/22/2014	L61568-1	47.2	p+8.00	10.88	% Volume	J	10.88	J	unknown	0.01	0.01
WG136379	FL319_FS	10/22/2014	L61568-1	47.2	p+9.00	5.41	% Volume	J	5.41	J	unknown	0.01	0.01
WG136379	FL319_FS	10/22/2014	L61568-1	47.2	Sand<1000	26.96	% Volume	J	26.96	J	unknown	0.01	0.01
WG136379	FL319_FS	10/22/2014	L61568-1	47.2	Silt	63.37	% Volume	J	63.37	J	unknown	0.01	0.01
WG136379	PS317_FS	10/22/2014	L61568-2	39.6	Clay	10.31	% Volume	J	10.31	J	unknown	0.01	0.01
WG136379	PS317_FS	10/22/2014	L61568-2	39.6	Fines	64.42	% Volume	J	64.42	J	unknown	0.01	0.01
WG136379	PS317_FS	10/22/2014	L61568-2	39.6	p+1.00	2.76	% Volume	J	2.76	J	unknown	0.01	0.01
WG136379	PS317_FS	10/22/2014	L61568-2	39.6	p+10.0	2.38	% Volume	J	2.38	J	unknown	0.01	0.01
WG136379	PS317_FS	10/22/2014	L61568-2	39.6	p+10.0(more than)	0.45	% Volume	J	0.45	J	unknown	0.01	0.01
WG136379	PS317_FS	10/22/2014	L61568-2	39.6	p+2.00	6.65	% Volume	J	6.65	J	unknown	0.01	0.01
WG136379	PS317_FS	10/22/2014	L61568-2	39.6	p+3.00	8.96	% Volume	J	8.96	J	unknown	0.01	0.01
WG136379	PS317_FS	10/22/2014	L61568-2	39.6	p+4.00	12.39	% Volume	J	12.39	J	unknown	0.01	0.01
WG136379	PS317_FS	10/22/2014	L61568-2	39.6	p+5.00	9.6	% Volume	J	9.6	J	unknown	0.01	0.01
WG136379	PS317_FS	10/22/2014	L61568-2	39.6	p+6.00	14.79	% Volume	J	14.79	J	unknown	0.01	0.01
WG136379	PS317_FS	10/22/2014	L61568-2	39.6	p+7.00	16.46	% Volume	J	16.46	J	unknown	0.01	0.01
WG136379	PS317_FS	10/22/2014	L61568-2	39.6	p+8.00	13.27	% Volume	J	13.27	J	unknown	0.01	0.01
WG136379	PS317_FS	10/22/2014	L61568-2	39.6	p+9.00	7.48	% Volume	J	7.48	J	unknown	0.01	0.01
WG136379	PS317_FS	10/22/2014	L61568-2	39.6	Sand<1000	28.01	% Volume	J	28.01	J	unknown	0.01	0.01
WG136379	PS317_FS	10/22/2014	L61568-2	39.6	Silt	54.12	% Volume	J	54.12	J	unknown	0.01	0.01
WG136800	PS317_FS	12/9/2014	L61838-1	34.1	Clay	11.18	% Volume	J	11.18	J	unknown	0.01	0.01
WG136800	PS317_FS	12/9/2014	L61838-1	34.1	Fines	81.41	% Volume	J	81.41	J	unknown	0.01	0.01
WG136800	PS317_FS	12/9/2014	L61838-1	34.1	p+1.00	0.6	% Volume	J	0.6	J	unknown	0.01	0.01
WG136800	PS317_FS	12/9/2014	L61838-1	34.1	p+10.0	2.43	% Volume	J	2.43	J	unknown	0.01	0.01
WG136800	PS317_FS	12/9/2014	L61838-1	34.1	p+10.0(more than)	0.47	% Volume	J	0.47	J	unknown	0.01	0.01
WG136800	PS317_FS	12/9/2014	L61838-1	34.1	p+2.00	2.55	% Volume	J	2.55	J	unknown	0.01	0.01

Table 1. Green River Filtered Solids Samples - Data Validation Flags and Bias Notation

Workgroup	Locator	Collect Date	Sample ID	Total Solids	Parameter	Concentration (wet weight basis)	Units	Lab Qual	DV Value	DV Qual	Bias	MDL	RDL
WG136800	PS317_FS	12/9/2014	L61838-1	34.1	p+3.00	4.74	% Volume	J	4.74	J	unknown	0.01	0.01
WG136800	PS317_FS	12/9/2014	L61838-1	34.1	p+4.00	10.1	% Volume	J	10.1	J	unknown	0.01	0.01
WG136800	PS317_FS	12/9/2014	L61838-1	34.1	p+5.00	11.41	% Volume	J	11.41	J	unknown	0.01	0.01
WG136800	PS317_FS	12/9/2014	L61838-1	34.1	p+6.00	19.95	% Volume	J	19.95	J	unknown	0.01	0.01
WG136800	PS317_FS	12/9/2014	L61838-1	34.1	p+7.00	22.24	% Volume	J	22.24	J	unknown	0.01	0.01
WG136800	PS317_FS	12/9/2014	L61838-1	34.1	p+8.00	16.63	% Volume	J	16.63	J	unknown	0.01	0.01
WG136800	PS317_FS	12/9/2014	L61838-1	34.1	p+9.00	8.27	% Volume	J	8.27	J	unknown	0.01	0.01
WG136800	PS317_FS	12/9/2014	L61838-1	34.1	Sand<1000	17.39	% Volume	J	17.39	J	unknown	0.01	0.01
WG136800	PS317_FS	12/9/2014	L61838-1	34.1	Silt	70.23	% Volume	J	70.23	J	unknown	0.01	0.01
WG138495	FL319_FS	11/3/2014	L62291-1	45.9	Clay	6.92	% Volume	J	6.92	J	unknown	0.01	0.01
WG138495	FL319_FS	11/3/2014	L62291-1	45.9	Fines	72.99	% Volume	J	72.99	J	unknown	0.01	0.01
WG138495	FL319_FS	11/3/2014	L62291-1	45.9	Sand<1000	26.13	% Volume	J	26.13	J	unknown	0.01	0.01
WG138495	FL319_FS	11/3/2014	L62291-1	45.9	Silt	66.08	% Volume	J	66.08	J	unknown	0.01	0.01
WG138495	FL319_FS	11/3/2014	L62291-1	45.9	p+1.00	0.56	% Volume	J	0.56	J	unknown	0.01	0.01
WG138495	FL319_FS	11/3/2014	L62291-1	45.9	p+10.0	1.55	% Volume	J	1.55	J	unknown	0.01	0.01
WG138495	FL319_FS	11/3/2014	L62291-1	45.9	p+10.0(more than)	0.23	% Volume	J	0.23	J	unknown	0.01	0.01
WG138495	FL319_FS	11/3/2014	L62291-1	45.9	p+2.00	3.42	% Volume	J	3.42	J	unknown	0.01	0.01
WG138495	FL319_FS	11/3/2014	L62291-1	45.9	p+3.00	7.21	% Volume	J	7.21	J	unknown	0.01	0.01
WG138495	FL319_FS	11/3/2014	L62291-1	45.9	p+4.00	15.5	% Volume	J	15.5	J	unknown	0.01	0.01
WG138495	FL319_FS	11/3/2014	L62291-1	45.9	p+5.00	15.54	% Volume	J	15.54	J	unknown	0.01	0.01
WG138495	FL319_FS	11/3/2014	L62291-1	45.9	p+6.00	21.45	% Volume	J	21.45	J	unknown	0.01	0.01
WG138495	FL319_FS	11/3/2014	L62291-1	45.9	p+7.00	18.06	% Volume	J	18.06	J	unknown	0.01	0.01
WG138495	FL319_FS	11/3/2014	L62291-1	45.9	p+8.00	11.02	% Volume	J	11.02	J	unknown	0.01	0.01
WG138495	FL319_FS	11/3/2014	L62291-1	45.9	p+9.00	5.14	% Volume	J	5.14	J	unknown	0.01	0.01
WG138495	PS317_FS	11/24/2014	L62291-2	33	Clay	11.17	% Volume	J	11.17	J	unknown	0.01	0.01
WG138495	PS317_FS	11/24/2014	L62291-2	33	Fines	80.07	% Volume	J	80.07	J	unknown	0.01	0.01
WG138495	PS317_FS	11/24/2014	L62291-2	33	Sand<1000	18.8	% Volume	J	18.8	J	unknown	0.01	0.01
WG138495	PS317_FS	11/24/2014	L62291-2	33	Silt	68.89	% Volume	J	68.89	J	unknown	0.01	0.01
WG138495	PS317_FS	11/24/2014	L62291-2	33	p+1.00	0.33	% Volume	J	0.33	J	unknown	0.01	0.01
WG138495	PS317_FS	11/24/2014	L62291-2	33	p+10.0	2.11	% Volume	J	2.11	J	unknown	0.01	0.01
WG138495	PS317_FS	11/24/2014	L62291-2	33	p+10.0(more than)	0.97	% Volume	J	0.97	J	unknown	0.01	0.01
WG138495	PS317_FS	11/24/2014	L62291-2	33	p+2.00	3.83	% Volume	J	3.83	J	unknown	0.01	0.01
WG138495	PS317_FS	11/24/2014	L62291-2	33	p+3.00	6.52	% Volume	J	6.52	J	unknown	0.01	0.01
WG138495	PS317_FS	11/24/2014	L62291-2	33	p+4.00	8.45	% Volume	J	8.45	J	unknown	0.01	0.01
WG138495	PS317_FS	11/24/2014	L62291-2	33	p+5.00	10	% Volume	J	10	J	unknown	0.01	0.01
WG138495	PS317_FS	11/24/2014	L62291-2	33	p+6.00	19.75	% Volume	J	19.75	J	unknown	0.01	0.01
WG138495	PS317_FS	11/24/2014	L62291-2	33	p+7.00	22.44	% Volume	J	22.44	J	unknown	0.01	0.01

Table 1. Green River Filtered Solids Samples - Data Validation Flags and Bias Notation

Workgroup	Locator	Collect Date	Sample ID	Total Solids	Parameter	Concentration (wet weight basis)	Units	Lab Qual	DV Value	DV Qual	Bias	MDL	RDL
WG138495	PS317_FS	11/24/2014	L62291-2	33	p+8.00	16.71	% Volume	J	16.71	J	unknown	0.01	0.01
WG138495	PS317_FS	11/24/2014	L62291-2	33	p+9.00	8.1	% Volume	J	8.1	J	unknown	0.01	0.01
WG140774	FL319_FS	6/22/2015	L63181-1	32.8	Clay	8.09	% Volume	J	8.09	J	unknown	0.01	0.01
WG140774	FL319_FS	6/22/2015	L63181-1	32.8	Fines	78.83	% Volume	J	78.83	J	unknown	0.01	0.01
WG140774	FL319_FS	6/22/2015	L63181-1	32.8	Sand<1000	20.52	% Volume	J	20.52	J	unknown	0.01	0.01
WG140774	FL319_FS	6/22/2015	L63181-1	32.8	Silt	70.74	% Volume	J	70.74	J	unknown	0.01	0.01
WG140774	FL319_FS	6/22/2015	L63181-1	32.8	p+1.00	0.38	% Volume	J	0.38	J	unknown	0.01	0.01
WG140774	FL319_FS	6/22/2015	L63181-1	32.8	p+10.0	1.59	% Volume	J	1.59	J	unknown	0.01	0.01
WG140774	FL319_FS	6/22/2015	L63181-1	32.8	p+10.0(more than)	0.48	% Volume	J	0.48	J	unknown	0.01	0.01
WG140774	FL319_FS	6/22/2015	L63181-1	32.8	p+2.00	2.12	% Volume	J	2.12	J	unknown	0.01	0.01
WG140774	FL319_FS	6/22/2015	L63181-1	32.8	p+3.00	5.27	% Volume	J	5.27	J	unknown	0.01	0.01
WG140774	FL319_FS	6/22/2015	L63181-1	32.8	p+4.00	13.13	% Volume	J	13.13	J	unknown	0.01	0.01
WG140774	FL319_FS	6/22/2015	L63181-1	32.8	p+5.00	14.69	% Volume	J	14.69	J	unknown	0.01	0.01
WG140774	FL319_FS	6/22/2015	L63181-1	32.8	p+6.00	22.75	% Volume	J	22.75	J	unknown	0.01	0.01
WG140774	FL319_FS	6/22/2015	L63181-1	32.8	p+7.00	20.31	% Volume	J	20.31	J	unknown	0.01	0.01
WG140774	FL319_FS	6/22/2015	L63181-1	32.8	p+8.00	13	% Volume	J	13	J	unknown	0.01	0.01
WG140774	FL319_FS	6/22/2015	L63181-1	32.8	p+9.00	6.02	% Volume	J	6.02	J	unknown	0.01	0.01
WG143795	FL319_FS	9/22/2015	L63858-1	26.6	Clay	5.61	% Volume	J	5.61	J	unknown	0.01	0.01
WG143795	FL319_FS	9/22/2015	L63858-1	26.6	Fines	81.45	% Volume	J	81.45	J	unknown	0.01	0.01
WG143795	FL319_FS	9/22/2015	L63858-1	26.6	Sand<1000	17.38	% Volume	J	17.38	J	unknown	0.01	0.01
WG143795	FL319_FS	9/22/2015	L63858-1	26.6	Silt	75.83	% Volume	J	75.83	J	unknown	0.01	0.01
WG143795	FL319_FS	9/22/2015	L63858-1	26.6	p+1.00	0.88	% Volume	J	0.88	J	unknown	0.01	0.01
WG143795	FL319_FS	9/22/2015	L63858-1	26.6	p+10.0	0.23	% Volume	J	0.23	J	unknown	0.01	0.01
WG143795	FL319_FS	9/22/2015	L63858-1	26.6	p+10.0(more than)	0.35	% Volume	J	0.35	J	unknown	0.01	0.01
WG143795	FL319_FS	9/22/2015	L63858-1	26.6	p+2.00	2.64	% Volume	J	2.64	J	unknown	0.01	0.01
WG143795	FL319_FS	9/22/2015	L63858-1	26.6	p+3.00	3.7	% Volume	J	3.7	J	unknown	0.01	0.01
WG143795	FL319_FS	9/22/2015	L63858-1	26.6	p+4.00	11.03	% Volume	J	11.03	J	unknown	0.01	0.01
WG143795	FL319_FS	9/22/2015	L63858-1	26.6	p+5.00	14.26	% Volume	J	14.26	J	unknown	0.01	0.01
WG143795	FL319_FS	9/22/2015	L63858-1	26.6	p+6.00	25.97	% Volume	J	25.97	J	unknown	0.01	0.01
WG143795	FL319_FS	9/22/2015	L63858-1	26.6	p+7.00	22.47	% Volume	J	22.47	J	unknown	0.01	0.01
WG143795	FL319_FS	9/22/2015	L63858-1	26.6	p+8.00	13.14	% Volume	J	13.14	J	unknown	0.01	0.01
WG143795	FL319_FS	9/22/2015	L63858-1	26.6	p+9.00	5.03	% Volume	J	5.03	J	unknown	0.01	0.01
WG143795	FL319_FS	11/14/2015	L64265-1	63.3	Clay	4.81	% Volume	J	4.81	J	unknown	0.01	0.01
WG143795	FL319_FS	11/14/2015	L64265-1	63.3	Fines	49.23	% Volume	J	49.23	J	unknown	0.01	0.01
WG143795	FL319_FS	11/14/2015	L64265-1	63.3	Sand<1000	47.3	% Volume	J	47.3	J	unknown	0.01	0.01
WG143795	FL319_FS	11/14/2015	L64265-1	63.3	Silt	44.42	% Volume	J	44.42	J	unknown	0.01	0.01
WG143795	FL319_FS	11/14/2015	L64265-1	63.3	p+1.00	2.56	% Volume	J	2.56	J	unknown	0.01	0.01

Table 1. Green River Filtered Solids Samples - Data Validation Flags and Bias Notation

Workgroup	Locator	Collect Date	Sample ID	Total Solids	Parameter	Concentration (wet weight basis)	Units	Lab Qual	DV Value	DV Qual	Bias	MDL	RDL
WG143795	FL319_FS	11/14/2015	L64265-1	63.3	p+10.0	0.67	% Volume	J	0.67	J	unknown	0.01	0.01
WG143795	FL319_FS	11/14/2015	L64265-1	63.3	p+10.0(more than)		% Volume	<MDL,J	0.01	UJ	unknown	0.01	0.01
WG143795	FL319_FS	11/14/2015	L64265-1	63.3	p+2.00	8.47	% Volume	J	8.47	J	unknown	0.01	0.01
WG143795	FL319_FS	11/14/2015	L64265-1	63.3	p+3.00	16.35	% Volume	J	16.35	J	unknown	0.01	0.01
WG143795	FL319_FS	11/14/2015	L64265-1	63.3	p+4.00	22.48	% Volume	J	22.48	J	unknown	0.01	0.01
WG143795	FL319_FS	11/14/2015	L64265-1	63.3	p+5.00	12.43	% Volume	J	12.43	J	unknown	0.01	0.01
WG143795	FL319_FS	11/14/2015	L64265-1	63.3	p+6.00	13.6	% Volume	J	13.6	J	unknown	0.01	0.01
WG143795	FL319_FS	11/14/2015	L64265-1	63.3	p+7.00	11.22	% Volume	J	11.22	J	unknown	0.01	0.01
WG143795	FL319_FS	11/14/2015	L64265-1	63.3	p+8.00	7.17	% Volume	J	7.17	J	unknown	0.01	0.01
WG143795	FL319_FS	11/14/2015	L64265-1	63.3	p+9.00	4.14	% Volume	J	4.14	J	unknown	0.01	0.01
WG143795	P317_FS	10/26/2015	L64107-1	30.6	Clay	6.45	% Volume	J	6.45	J	unknown	0.01	0.01
WG143795	P317_FS	10/26/2015	L64107-1	30.6	Fines	71.63	% Volume	J	71.63	J	unknown	0.01	0.01
WG143795	P317_FS	10/26/2015	L64107-1	30.6	Sand<1000	22.13	% Volume	J	22.13	J	unknown	0.01	0.01
WG143795	P317_FS	10/26/2015	L64107-1	30.6	Silt	65.18	% Volume	J	65.18	J	unknown	0.01	0.01
WG143795	P317_FS	10/26/2015	L64107-1	30.6	p+1.00	1.08	% Volume	J	1.08	J	unknown	0.01	0.01
WG143795	P317_FS	10/26/2015	L64107-1	30.6	p+10.0	0.42	% Volume	J	0.42	J	unknown	0.01	0.01
WG143795	P317_FS	10/26/2015	L64107-1	30.6	p+10.0(more than)	0.38	% Volume	J	0.38	J	unknown	0.01	0.01
WG143795	P317_FS	10/26/2015	L64107-1	30.6	p+2.00	2.4	% Volume	J	2.4	J	unknown	0.01	0.01
WG143795	P317_FS	10/26/2015	L64107-1	30.6	p+3.00	5.75	% Volume	J	5.75	J	unknown	0.01	0.01
WG143795	P317_FS	10/26/2015	L64107-1	30.6	p+4.00	13.98	% Volume	J	13.98	J	unknown	0.01	0.01
WG143795	P317_FS	10/26/2015	L64107-1	30.6	p+5.00	12.95	% Volume	J	12.95	J	unknown	0.01	0.01
WG143795	P317_FS	10/26/2015	L64107-1	30.6	p+6.00	19.6	% Volume	J	19.6	J	unknown	0.01	0.01
WG143795	P317_FS	10/26/2015	L64107-1	30.6	p+7.00	19.76	% Volume	J	19.76	J	unknown	0.01	0.01
WG143795	P317_FS	10/26/2015	L64107-1	30.6	p+8.00	12.87	% Volume	J	12.87	J	unknown	0.01	0.01
WG143795	P317_FS	10/26/2015	L64107-1	30.6	p+9.00	5.65	% Volume	J	5.65	J	unknown	0.01	0.01
WG143795	FL319_FS	10/10/2015	L63997-1		Clay	6.98	% Volume	J	6.98	J	unknown	0.01	0.01
WG143795	FL319_FS	10/10/2015	L63997-1		Fines	80.24	% Volume	J	80.24	J	unknown	0.01	0.01
WG143795	FL319_FS	10/10/2015	L63997-1		Sand<1000	18.19	% Volume	J	18.19	J	unknown	0.01	0.01
WG143795	FL319_FS	10/10/2015	L63997-1		Silt	73.25	% Volume	J	73.25	J	unknown	0.01	0.01
WG143795	FL319_FS	10/10/2015	L63997-1		p+1.00	0.6	% Volume	J	0.6	J	unknown	0.01	0.01
WG143795	FL319_FS	10/10/2015	L63997-1		p+10.0	0.53	% Volume	J	0.53	J	unknown	0.01	0.01
WG143795	FL319_FS	10/10/2015	L63997-1		p+10.0(more than)	0.42	% Volume	J	0.42	J	unknown	0.01	0.01
WG143795	FL319_FS	10/10/2015	L63997-1		p+2.00	1.33	% Volume	J	1.33	J	unknown	0.01	0.01
WG143795	FL319_FS	10/10/2015	L63997-1		p+3.00	3.68	% Volume	J	3.68	J	unknown	0.01	0.01
WG143795	FL319_FS	10/10/2015	L63997-1		p+4.00	13.18	% Volume	J	13.18	J	unknown	0.01	0.01
WG143795	FL319_FS	10/10/2015	L63997-1		p+5.00	15.39	% Volume	J	15.39	J	unknown	0.01	0.01
WG143795	FL319_FS	10/10/2015	L63997-1		p+6.00	24.32	% Volume	J	24.32	J	unknown	0.01	0.01

Table 1. Green River Filtered Solids Samples - Data Validation Flags and Bias Notation

Workgroup	Locator	Collect Date	Sample ID	Total Solids	Parameter	Concentration (wet weight basis)	Units	Lab Qual	DV Value	DV Qual	Bias	MDL	RDL
WG143795	FL319_FS	10/10/2015	L63997-1		p+7.00	20.61	% Volume	J	20.61	J	unknown	0.01	0.01
WG143795	FL319_FS	10/10/2015	L63997-1		p+8.00	12.94	% Volume	J	12.94	J	unknown	0.01	0.01
WG143795	FL319_FS	10/10/2015	L63997-1		p+9.00	6.04	% Volume	J	6.04	J	unknown	0.01	0.01
WG129258	FG319_FS	9/10/2013	L58754-1	34.5	≥ 500 Micron	0.968	%		0.968	J	unknown	0.005	0.01
WG130277	A320_FS	10/16/2013	L58977-1	46.7	≥ 500 Micron	1.28	%		1.28	J	unknown	0.005	0.01
WG130878	PS317_FS	12/9/2013	L59457-1	25.3	≥ 500 Micron	8.48	%		8.48	J	unknown	0.005	0.01
WG133032	FG319_FS	4/16/2014	L60187-1	46.6	≥ 500 Micron	4.25	%		4.25	J	unknown	0.005	0.01
WG133032	P317_FS	4/16/2014	L60187-2	26.7	≥ 500 Micron	9.11	%		9.11	J	unknown	0.005	0.01
WG136378	PS317_FS	10/7/2014	L61510-1	26.8	≥ 500 Micron	4.58	%		4.58	J	unknown	0.005	0.01
WG136799	PS317_FS	12/9/2014	L61838-1	34.1	≥ 500 Micron	0.602	%		0.602	J	unknown	0.005	0.01
WG138494	FL319_FS	11/3/2014	L62291-1	45.9	≥ 500 Micron	0.318	%		0.318	J	unknown	0.005	0.01
WG138494	PS317_FS	11/24/2014	L62291-2	33	≥ 500 Micron	0.796	%		0.796	J	unknown	0.005	0.01
WG140773	FL319_FS	6/22/2015	L63181-1	32.8	≥ 500 Micron	0.266	%		0.266	J	unknown	0.005	0.01
WG130733	PS317_FS	12/9/2013	L59457-1	25.3	Mercury, Total, CVAA	0.016	mg/Kg	<RDL,H	0.016	J	low	0.0021	0.0205
WG132653	FG319_FS	4/16/2014	L60187-1	46.6	Mercury, Total, CVAA	0.0839	mg/Kg	J	0.0839	J	unknown	0.0048	0.0484
WG142927	FL319_FS	11/14/2015	L64265-1	63.3	Mercury, Total, CVAA	0.0844	mg/Kg	J	0.0844	J	unknown	0.0048	0.0477
WG133002	FG319_FS	3/5/2014	L59919-2	56.3	Lead, Total, ICP-MS	5.89	mg/Kg	J	5.89	J	unknown	0.026	0.128
WG136472	PS317_FS	10/7/2014	L61510-1	26.8	Cadmium, Total, ICP-MS	0.252	mg/Kg		0.252	J	unknown	0.029	0.147
WG136472	PS317_FS	10/22/2014	L61568-2	39.6	Cadmium, Total, ICP-MS	3.48	mg/Kg		3.48	J	unknown	0.064	0.319
WG136472	FL319_FS	10/22/2014	L61568-1	47.2	Cadmium, Total, ICP-MS	0.48	mg/Kg		0.48	J	unknown	0.061	0.306
WG136472	FL319_FS	10/22/2014	L61568-1	47.2	Copper, Total, ICP-MS	26.7	mg/Kg	J	26.7	J	unknown	0.49	2.45
WG125733	FL319_FS	2/22/2013	L57495-1	23.7	Anthracene	5.97	ug/Kg		5.97	J	low	0.64	3.2
WG125733	A320_FS	2/22/2013	L57495-4	23.2	Anthracene	3.26	ug/Kg		3.26	J	low	0.53	2.67
WG125733	A315_FS	2/22/2013	L57495-5	22.7	Anthracene	1.2	ug/Kg	<RDL	1.2	J	low	0.53	2.67
WG126329	FL319_FS	3/20/2013	L57634-1	34.5	Fluoranthene	23	ug/Kg		23	J	low	0.8	4
WG126329	A315_FS	3/20/2013	L57634-2	25	Fluoranthene	33.2	ug/Kg		33.2	J	low	0.53	2.67
WG126329	FL319_FS	4/4/2013	L57732-1	30.8	Fluoranthene	34.8	ug/Kg		34.8	J	low	0.53	2.67
WG126329	A320_FS	4/4/2013	L57732-2	18.4	Fluoranthene	34.4	ug/Kg		34.4	J	low	0.53	2.67
WG126329	FG319_FS	4/4/2013	L57732-3	19.3	Fluoranthene	2.85	ug/Kg		2.85	J	low	0.53	2.67
WG126920	FG319_FS	4/18/2013	L57792-2	22.3	Benzo(g,h,i)perylene	4.2	ug/Kg	<RDL,B	8	U		1.6	8
WG126920	FG319_FS	4/18/2013	L57792-2	22.3	Indeno(1,2,3-Cd)Pyrene	2.6	ug/Kg	<RDL,B	8	U		1.6	8
WG129254	FL319_FS	8/19/2013	L58537-2	37.2	Acenaphthene	0.82	ug/Kg	<RDL	0.82	J	high	0.64	3.2
WG129254	FL319_FS	8/19/2013	L58537-2	37.2	Benzo(b,j,k)fluoranthene	31.5	ug/Kg		31.5	J	high	0.64	3.2
WG129254	FL319_FS	8/19/2013	L58537-2	37.2	Phenanthrene	10.5	ug/Kg		10.5	J	high	0.64	3.2
WG129990	A320_FS	10/16/2013	L58977-1	46.7	Fluoranthene	138	ug/Kg	JG	138	J	low	0.64	3.2
WG129990	A320_FS	10/16/2013	L58977-1	46.7	Pyrene	100	ug/Kg	JG	100	J	low	0.64	3.2
WG131804	FL319_FS	3/5/2014	L59919-1	67.7	Benzo(a)anthracene	6.69	ug/Kg	JL	6.69	J	high	0.64	3.2

Table 1. Green River Filtered Solids Samples - Data Validation Flags and Bias Notation

Workgroup	Locator	Collect Date	Sample ID	Total Solids	Parameter	Concentration (wet weight basis)	Units	Lab Qual	DV Value	DV Qual	Bias	MDL	RDL
WG131804	FL319_FS	3/5/2014	L59919-1	67.7	Benzo(a)pyrene	9.96	ug/Kg	JL	9.96	J	high	0.64	3.2
WG131804	FL319_FS	3/5/2014	L59919-1	67.7	Benzo(b,j,k)fluoranthene	23.9	ug/Kg	JL	23.9	J	high	0.64	3.2
WG131804	FL319_FS	3/5/2014	L59919-1	67.7	Fluoranthene	19.3	ug/Kg	JL	19.3	J	high	0.64	3.2
WG131804	FL319_FS	3/5/2014	L59919-1	67.7	Fluorene	0.98	ug/Kg	<RDL,JL	0.98	J	high	0.64	3.2
WG131804	FL319_FS	3/5/2014	L59919-1	67.7	Indeno(1,2,3-Cd)Pyrene	8.44	ug/Kg	JL	8.44	J	high	0.64	3.2
WG131804	FL319_FS	3/5/2014	L59919-1	67.7	Phenanthrene	12.3	ug/Kg	JL	12.3	J	high	0.64	3.2
WG132411	FG319_FS	4/16/2014	L60187-1	46.6	Pyrene	5.8	ug/Kg	<RDL,B3	16	U		3.2	16
WG143259	FL319_FS	11/14/2015	L64265-1	63.3	2-Methylnaphthalene	3.4	ug/Kg	<RDL,JG	3.4	J	low	2	10
WG143259	FL319_FS	11/14/2015	L64265-1	63.3	Acenaphthylene		ug/Kg	<MDL,JG	1	UJ	low	1	5
WG143259	FL319_FS	11/14/2015	L64265-1	63.3	Anthracene		ug/Kg	<MDL	1	UJ	low	1	5
WG143259	FL319_FS	11/14/2015	L64265-1	63.3	Benzo(g,h,i)perylene		ug/Kg	<MDL,JG	1	UJ	low	1	5
WG143259	FL319_FS	11/14/2015	L64265-1	63.3	Fluorene		ug/Kg	<MDL	1	UJ	low	1	5
WG143259	FL319_FS	11/14/2015	L64265-1	63.3	Phenanthrene	11.2	ug/Kg		11.2	J	low	1	5
WG143259	FL319_FS	11/14/2015	L64265-1	63.3	Pyrene	14	ug/Kg		14	J	low	1	5
WG143259	FL319_FS	6/22/2015	L63181-1	32.8	2-Methylnaphthalene		ug/Kg	<MDL,JG	2	UJ	low	2	10
WG143259	FL319_FS	6/22/2015	L63181-1	32.8	Acenaphthylene		ug/Kg	<MDL,JG	1	UJ	low	1	5
WG143259	FL319_FS	6/22/2015	L63181-1	32.8	Anthracene	1.1	ug/Kg	<RDL	1.1	J	low	1	5
WG143259	FL319_FS	6/22/2015	L63181-1	32.8	Benzo(g,h,i)perylene	4.8	ug/Kg	<RDL,JG	4.8	J	low	1	5
WG143259	FL319_FS	6/22/2015	L63181-1	32.8	Fluorene		ug/Kg	<MDL	1	UJ	low	1	5
WG143259	FL319_FS	6/22/2015	L63181-1	32.8	Phenanthrene	6.27	ug/Kg		6.27	J	low	1	5
WG143259	FL319_FS	6/22/2015	L63181-1	32.8	Pyrene	14.1	ug/Kg		14.1	J	low	1	5
WG143259	P317_FS	10/26/2015	L64107-1	30.6	2-Methylnaphthalene	2.9	ug/Kg	<RDL,JG	2.9	J	low	2	10
WG143259	P317_FS	10/26/2015	L64107-1	30.6	Acenaphthylene	2.6	ug/Kg	<RDL,JG	2.6	J	low	1	5
WG143259	P317_FS	10/26/2015	L64107-1	30.6	Anthracene	7.73	ug/Kg		7.73	J	low	1	5
WG143259	P317_FS	10/26/2015	L64107-1	30.6	Benzo(g,h,i)perylene	74.7	ug/Kg	JG	74.7	J	low	5	25
WG143259	P317_FS	10/26/2015	L64107-1	30.6	Fluorene	3.1	ug/Kg	<RDL	3.1	J	low	1	5
WG143259	P317_FS	10/26/2015	L64107-1	30.6	Phenanthrene	49.7	ug/Kg		49.7	J	low	1	5
WG143259	P317_FS	10/26/2015	L64107-1	30.6	Pyrene	197	ug/Kg		197	J	low	5	25
WG125732	A315_FS	2/22/2013	L57495-5	22.7	Aroclor 1254	2.8	ug/Kg	<RDL,J	2.8	J	unknown	1.3	5.33
WG126921	FL319_FS	4/18/2013	L57792-1	26.9	Aroclor 1016		ug/Kg	<MDL,H	1.3	UJ	unknown	1.3	5.33
WG126921	FL319_FS	4/18/2013	L57792-1	26.9	Aroclor 1221		ug/Kg	<MDL,H	4	UJ	unknown	4	5.33
WG126921	FL319_FS	4/18/2013	L57792-1	26.9	Aroclor 1232		ug/Kg	<MDL,H	4	UJ	unknown	4	5.33
WG126921	FL319_FS	4/18/2013	L57792-1	26.9	Aroclor 1242		ug/Kg	<MDL,H	1.3	UJ	unknown	1.3	5.33
WG126921	FL319_FS	4/18/2013	L57792-1	26.9	Aroclor 1248		ug/Kg	<MDL,H	1.3	UJ	unknown	1.3	5.33
WG126921	FL319_FS	4/18/2013	L57792-1	26.9	Aroclor 1254		ug/Kg	<MDL,H	1.3	UJ	unknown	1.3	5.33
WG126921	FL319_FS	4/18/2013	L57792-1	26.9	Aroclor 1260		ug/Kg	<MDL,H	1.3	UJ	unknown	1.3	5.33
WG126921	FL319_FS	4/18/2013	L57792-1	26.9	Total Aroclors		ug/Kg	<MDL	4	UJ	unknown	4	5.33

Table 1. Green River Filtered Solids Samples - Data Validation Flags and Bias Notation

Workgroup	Locator	Collect Date	Sample ID	Total Solids	Parameter	Concentration (wet weight basis)	Units	Lab Qual	DV Value	DV Qual	Bias	MDL	RDL
WG126921	FG319_FS	4/18/2013	L57792-2	22.3	Aroclor 1016		ug/Kg	<MDL,SH	1.6	UJ	unknown	1.6	6.4
WG126921	FG319_FS	4/18/2013	L57792-2	22.3	Aroclor 1221		ug/Kg	<MDL,SH	4.8	UJ	unknown	4.8	6.4
WG126921	FG319_FS	4/18/2013	L57792-2	22.3	Aroclor 1232		ug/Kg	<MDL,SH	4.8	UJ	unknown	4.8	6.4
WG126921	FG319_FS	4/18/2013	L57792-2	22.3	Aroclor 1242		ug/Kg	<MDL,SH	1.6	UJ	unknown	1.6	6.4
WG126921	FG319_FS	4/18/2013	L57792-2	22.3	Aroclor 1248		ug/Kg	<MDL,SH	1.6	UJ	unknown	1.6	6.4
WG126921	FG319_FS	4/18/2013	L57792-2	22.3	Aroclor 1254		ug/Kg	<MDL,SH	1.6	UJ	unknown	1.6	6.4
WG126921	FG319_FS	4/18/2013	L57792-2	22.3	Aroclor 1260		ug/Kg	<MDL,SH	1.6	UJ	unknown	1.6	6.4
WG126921	FG319_FS	4/18/2013	L57792-2	22.3	Total Aroclors		ug/Kg	<MDL,SH	4.8	UJ	unknown	4.8	6.4
WG126921	A320_FS	4/18/2013	L57792-3	47.8	Aroclor 1016		ug/Kg	<MDL,SH	1.3	UJ	unknown	1.3	5.33
WG126921	A320_FS	4/18/2013	L57792-3	47.8	Aroclor 1221		ug/Kg	<MDL,SH	4	UJ	unknown	4	5.33
WG126921	A320_FS	4/18/2013	L57792-3	47.8	Aroclor 1232		ug/Kg	<MDL,SH	4	UJ	unknown	4	5.33
WG126921	A320_FS	4/18/2013	L57792-3	47.8	Aroclor 1242		ug/Kg	<MDL,SH	1.3	UJ	unknown	1.3	5.33
WG126921	A320_FS	4/18/2013	L57792-3	47.8	Aroclor 1248		ug/Kg	<MDL,SH	1.3	UJ	unknown	1.3	5.33
WG126921	A320_FS	4/18/2013	L57792-3	47.8	Aroclor 1254		ug/Kg	<MDL,SH	1.3	UJ	unknown	1.3	5.33
WG126921	A320_FS	4/18/2013	L57792-3	47.8	Aroclor 1260		ug/Kg	<MDL,SH	1.3	UJ	unknown	1.3	5.33
WG126921	A320_FS	4/18/2013	L57792-3	47.8	Total Aroclors		ug/Kg	<MDL,SH	4	UJ	unknown	4	5.33
WG125932	FL319_FS	2/22/2013	L57495-1	23.7	4,4'-DDD		ug/Kg	<MDL,J	0.32	UJ	unknown	0.32	0.64
WG125932	FL319_FS	2/22/2013	L57495-1	23.7	4,4'-DDE	0.43	ug/Kg	<RDL,J	0.43	J	unknown	0.32	0.64
WG125932	FL319_FS	2/22/2013	L57495-1	23.7	4,4'-DDT	0.797	ug/Kg	J	0.797	J	unknown	0.32	0.64
WG125932	FL319_FS	2/22/2013	L57495-1	23.7	Aldrin		ug/Kg	<MDL,J	0.32	UJ	unknown	0.32	0.64
WG125932	FL319_FS	2/22/2013	L57495-1	23.7	Alpha-BHC		ug/Kg	<MDL,J	0.32	UJ	unknown	0.32	0.64
WG125932	FL319_FS	2/22/2013	L57495-1	23.7	Alpha-Chlordane	0.44	ug/Kg	<RDL,J	0.44	J	unknown	0.32	0.64
WG125932	FL319_FS	2/22/2013	L57495-1	23.7	Beta-BHC		ug/Kg	<MDL,J	0.32	UJ	unknown	0.32	0.64
WG125932	FL319_FS	2/22/2013	L57495-1	23.7	Delta-BHC		ug/Kg	<MDL,J	0.32	UJ	unknown	0.32	0.64
WG125932	FL319_FS	2/22/2013	L57495-1	23.7	Endosulfan I		ug/Kg	<MDL,J	0.32	UJ	unknown	0.32	0.64
WG125932	FL319_FS	2/22/2013	L57495-1	23.7	Gamma-BHC (Lindane)		ug/Kg	<MDL,J	0.32	UJ	unknown	0.32	0.64
WG125932	FL319_FS	2/22/2013	L57495-1	23.7	Heptachlor		ug/Kg	<MDL,J	0.32	UJ	unknown	0.32	0.64
WG125932	FL319_FS	2/22/2013	L57495-1	23.7	Heptachlor Epoxide		ug/Kg	<MDL,J	0.32	UJ	unknown	0.32	0.64
WG125932	FL319_FS	2/22/2013	L57495-1	23.7	Toxaphene		ug/Kg	<MDL,J	6.4	UJ	unknown	6.4	32
WG125932	FL319_FS	2/22/2013	L57495-1	23.7	trans-Chlordane	0.55	ug/Kg	<RDL,J	0.55	J	unknown	0.32	0.64
WG125932	A320_FS	2/22/2013	L57495-4	23.2	4,4'-DDD		ug/Kg	<MDL,J	0.27	UJ	unknown	0.27	0.533
WG125932	A320_FS	2/22/2013	L57495-4	23.2	4,4'-DDE	0.31	ug/Kg	<RDL,J	0.31	J	unknown	0.27	0.533
WG125932	A320_FS	2/22/2013	L57495-4	23.2	4,4'-DDT		ug/Kg	<MDL,J	0.27	UJ	unknown	0.27	0.533
WG125932	A320_FS	2/22/2013	L57495-4	23.2	Aldrin		ug/Kg	<MDL,J	0.27	UJ	unknown	0.27	0.533
WG125932	A320_FS	2/22/2013	L57495-4	23.2	Alpha-BHC		ug/Kg	<MDL,J	0.27	UJ	unknown	0.27	0.533
WG125932	A320_FS	2/22/2013	L57495-4	23.2	Alpha-Chlordane	1.32	ug/Kg	J	1.32	J	unknown	0.27	0.533
WG125932	A320_FS	2/22/2013	L57495-4	23.2	Beta-BHC		ug/Kg	<MDL,J	0.27	UJ	unknown	0.27	0.533

Table 1. Green River Filtered Solids Samples - Data Validation Flags and Bias Notation

Workgroup	Locator	Collect Date	Sample ID	Total Solids	Parameter	Concentration (wet weight basis)	Units	Lab Qual	DV Value	DV Qual	Bias	MDL	RDL
WG125932	A320_FS	2/22/2013	L57495-4	23.2	Delta-BHC		ug/Kg	<MDL,J	0.27	UJ	unknown	0.27	0.533
WG125932	A320_FS	2/22/2013	L57495-4	23.2	Endosulfan I		ug/Kg	<MDL,J	0.27	UJ	unknown	0.27	0.533
WG125932	A320_FS	2/22/2013	L57495-4	23.2	Gamma-BHC (Lindane)		ug/Kg	<MDL,J	0.27	UJ	unknown	0.27	0.533
WG125932	A320_FS	2/22/2013	L57495-4	23.2	Heptachlor		ug/Kg	<MDL,J	0.27	UJ	unknown	0.27	0.533
WG125932	A320_FS	2/22/2013	L57495-4	23.2	Heptachlor Epoxide		ug/Kg	<MDL,J	0.27	UJ	unknown	0.27	0.533
WG125932	A320_FS	2/22/2013	L57495-4	23.2	Toxaphene		ug/Kg	<MDL,J	5.3	UJ	unknown	5.3	26.7
WG125932	A320_FS	2/22/2013	L57495-4	23.2	trans-Chlordane	1.45	ug/Kg	J	1.45	J	unknown	0.27	0.533
WG125932	A315_FS	2/22/2013	L57495-5	22.7	4,4'-DDD	1.12	ug/Kg	J	1.12	J	unknown	0.27	0.533
WG125932	A315_FS	2/22/2013	L57495-5	22.7	4,4'-DDE	1.71	ug/Kg	J	1.71	J	unknown	0.27	0.533
WG125932	A315_FS	2/22/2013	L57495-5	22.7	4,4'-DDT	2.22	ug/Kg	J	2.22	J	unknown	0.27	0.533
WG125932	A315_FS	2/22/2013	L57495-5	22.7	Aldrin		ug/Kg	<MDL,J	0.27	UJ	unknown	0.27	0.533
WG125932	A315_FS	2/22/2013	L57495-5	22.7	Alpha-BHC		ug/Kg	<MDL,J	0.27	UJ	unknown	0.27	0.533
WG125932	A315_FS	2/22/2013	L57495-5	22.7	Alpha-Chlordane	0.32	ug/Kg	<RDL,J	0.32	J	unknown	0.27	0.533
WG125932	A315_FS	2/22/2013	L57495-5	22.7	Beta-BHC		ug/Kg	<MDL,J	0.27	UJ	unknown	0.27	0.533
WG125932	A315_FS	2/22/2013	L57495-5	22.7	Delta-BHC		ug/Kg	<MDL,J	0.27	UJ	unknown	0.27	0.533
WG125932	A315_FS	2/22/2013	L57495-5	22.7	Endosulfan I	0.826	ug/Kg	J	0.826	J	unknown	0.27	0.533
WG125932	A315_FS	2/22/2013	L57495-5	22.7	Gamma-BHC (Lindane)		ug/Kg	<MDL,J	0.27	UJ	unknown	0.27	0.533
WG125932	A315_FS	2/22/2013	L57495-5	22.7	Heptachlor		ug/Kg	<MDL,J	0.27	UJ	unknown	0.27	0.533
WG125932	A315_FS	2/22/2013	L57495-5	22.7	Heptachlor Epoxide		ug/Kg	<MDL,J	0.27	UJ	unknown	0.27	0.533
WG125932	A315_FS	2/22/2013	L57495-5	22.7	Toxaphene		ug/Kg	<MDL,J	5.3	UJ	unknown	5.3	26.7
WG125932	A315_FS	2/22/2013	L57495-5	22.7	trans-Chlordane		ug/Kg	<MDL,J	0.27	UJ	unknown	0.27	0.533
WG126588	FL319_FS	3/20/2013	L57634-1	34.5	4,4'-DDD		ug/Kg	<MDL	0.27	UJ		0.27	0.533
WG126588	FL319_FS	3/20/2013	L57634-1	34.5	4,4'-DDE		ug/Kg	<MDL	0.27	UJ		0.27	0.533
WG126588	FL319_FS	3/20/2013	L57634-1	34.5	4,4'-DDT	0.34	ug/Kg	<RDL	0.34	J	unknown	0.27	0.533
WG126588	FL319_FS	3/20/2013	L57634-1	34.5	Aldrin		ug/Kg	<MDL	0.27	UJ		0.27	0.533
WG126588	FL319_FS	3/20/2013	L57634-1	34.5	Alpha-BHC		ug/Kg	<MDL	0.27	UJ		0.27	0.533
WG126588	FL319_FS	3/20/2013	L57634-1	34.5	Alpha-Chlordane		ug/Kg	<MDL	0.27	UJ		0.27	0.533
WG126588	FL319_FS	3/20/2013	L57634-1	34.5	Beta-BHC		ug/Kg	<MDL	0.27	UJ		0.27	0.533
WG126588	FL319_FS	3/20/2013	L57634-1	34.5	Delta-BHC		ug/Kg	<MDL	0.27	UJ		0.27	0.533
WG126588	FL319_FS	3/20/2013	L57634-1	34.5	Endosulfan I		ug/Kg	<MDL	0.27	UJ		0.27	0.533
WG126588	FL319_FS	3/20/2013	L57634-1	34.5	Gamma-BHC (Lindane)		ug/Kg	<MDL	0.27	UJ		0.27	0.533
WG126588	FL319_FS	3/20/2013	L57634-1	34.5	Heptachlor		ug/Kg	<MDL	0.27	UJ		0.27	0.533
WG126588	FL319_FS	3/20/2013	L57634-1	34.5	Heptachlor Epoxide		ug/Kg	<MDL	0.27	UJ		0.27	0.533
WG126588	FL319_FS	3/20/2013	L57634-1	34.5	Toxaphene		ug/Kg	<MDL	5.3	UJ		5.3	26.7
WG126588	FL319_FS	3/20/2013	L57634-1	34.5	trans-Chlordane		ug/Kg	<MDL	0.27	UJ		0.27	0.533
WG126588	A315_FS	3/20/2013	L57634-2	25	4,4'-DDD	0.829	ug/Kg		0.829	J	unknown	0.27	0.533
WG126588	A315_FS	3/20/2013	L57634-2	25	4,4'-DDE	0.947	ug/Kg		0.947	J	unknown	0.27	0.533

Table 1. Green River Filtered Solids Samples - Data Validation Flags and Bias Notation

Workgroup	Locator	Collect Date	Sample ID	Total Solids	Parameter	Concentration (wet weight basis)	Units	Lab Qual	DV Value	DV Qual	Bias	MDL	RDL
WG126588	A315_FS	3/20/2013	L57634-2	25	4,4'-DDT	0.999	ug/Kg		0.999	J	unknown	0.27	0.533
WG126588	A315_FS	3/20/2013	L57634-2	25	Aldrin		ug/Kg	<MDL	0.27	UJ		0.27	0.533
WG126588	A315_FS	3/20/2013	L57634-2	25	Alpha-BHC		ug/Kg	<MDL	0.27	UJ		0.27	0.533
WG126588	A315_FS	3/20/2013	L57634-2	25	Alpha-Chlordane		ug/Kg	<MDL	0.27	UJ		0.27	0.533
WG126588	A315_FS	3/20/2013	L57634-2	25	Beta-BHC		ug/Kg	<MDL	0.27	UJ		0.27	0.533
WG126588	A315_FS	3/20/2013	L57634-2	25	Delta-BHC		ug/Kg	<MDL	0.27	UJ		0.27	0.533
WG126588	A315_FS	3/20/2013	L57634-2	25	Endosulfan I	0.45	ug/Kg	<RDL	0.45	J	unknown	0.27	0.533
WG126588	A315_FS	3/20/2013	L57634-2	25	Gamma-BHC (Lindane)		ug/Kg	<MDL	0.27	UJ		0.27	0.533
WG126588	A315_FS	3/20/2013	L57634-2	25	Heptachlor		ug/Kg	<MDL	0.27	UJ		0.27	0.533
WG126588	A315_FS	3/20/2013	L57634-2	25	Heptachlor Epoxide		ug/Kg	<MDL	0.27	UJ		0.27	0.533
WG126588	A315_FS	3/20/2013	L57634-2	25	Toxaphene		ug/Kg	<MDL	5.3	UJ		5.3	26.7
WG126588	A315_FS	3/20/2013	L57634-2	25	trans-Chlordane		ug/Kg	<MDL	0.27	UJ		0.27	0.533
WG126588	FG319_FS	3/20/2013	L57634-3	28.8	4,4'-DDD		ug/Kg	<MDL	0.27	UJ		0.27	0.533
WG126588	FG319_FS	3/20/2013	L57634-3	28.8	4,4'-DDE		ug/Kg	<MDL	0.27	UJ		0.27	0.533
WG126588	FG319_FS	3/20/2013	L57634-3	28.8	4,4'-DDT		ug/Kg	<MDL	0.27	UJ		0.27	0.533
WG126588	FG319_FS	3/20/2013	L57634-3	28.8	Aldrin		ug/Kg	<MDL	0.27	UJ		0.27	0.533
WG126588	FG319_FS	3/20/2013	L57634-3	28.8	Alpha-BHC		ug/Kg	<MDL	0.27	UJ		0.27	0.533
WG126588	FG319_FS	3/20/2013	L57634-3	28.8	Alpha-Chlordane		ug/Kg	<MDL	0.27	UJ		0.27	0.533
WG126588	FG319_FS	3/20/2013	L57634-3	28.8	Beta-BHC		ug/Kg	<MDL	0.27	UJ		0.27	0.533
WG126588	FG319_FS	3/20/2013	L57634-3	28.8	Delta-BHC		ug/Kg	<MDL	0.27	UJ		0.27	0.533
WG126588	FG319_FS	3/20/2013	L57634-3	28.8	Endosulfan I		ug/Kg	<MDL	0.27	UJ		0.27	0.533
WG126588	FG319_FS	3/20/2013	L57634-3	28.8	Gamma-BHC (Lindane)		ug/Kg	<MDL	0.27	UJ		0.27	0.533
WG126588	FG319_FS	3/20/2013	L57634-3	28.8	Heptachlor		ug/Kg	<MDL	0.27	UJ		0.27	0.533
WG126588	FG319_FS	3/20/2013	L57634-3	28.8	Heptachlor Epoxide		ug/Kg	<MDL	0.27	UJ		0.27	0.533
WG126588	FG319_FS	3/20/2013	L57634-3	28.8	Toxaphene		ug/Kg	<MDL	5.3	UJ		5.3	26.7
WG126588	FG319_FS	3/20/2013	L57634-3	28.8	trans-Chlordane		ug/Kg	<MDL	0.27	UJ		0.27	0.533
WG126588	FL319_FS	4/4/2013	L57732-1	30.8	4,4'-DDD		ug/Kg	<MDL	0.27	UJ		0.27	0.533
WG126588	FL319_FS	4/4/2013	L57732-1	30.8	4,4'-DDE		ug/Kg	<MDL	0.27	UJ		0.27	0.533
WG126588	FL319_FS	4/4/2013	L57732-1	30.8	4,4'-DDT	0.37	ug/Kg	<RDL	0.37	J	unknown	0.27	0.533
WG126588	FL319_FS	4/4/2013	L57732-1	30.8	Aldrin		ug/Kg	<MDL	0.27	UJ		0.27	0.533
WG126588	FL319_FS	4/4/2013	L57732-1	30.8	Alpha-BHC		ug/Kg	<MDL	0.27	UJ	unknown	0.27	0.533
WG126588	FL319_FS	4/4/2013	L57732-1	30.8	Alpha-Chlordane		ug/Kg	<MDL	0.27	UJ	unknown	0.27	0.533
WG126588	FL319_FS	4/4/2013	L57732-1	30.8	Beta-BHC		ug/Kg	<MDL	0.27	UJ	unknown	0.27	0.533
WG126588	FL319_FS	4/4/2013	L57732-1	30.8	Delta-BHC		ug/Kg	<MDL	0.27	UJ	unknown	0.27	0.533
WG126588	FL319_FS	4/4/2013	L57732-1	30.8	Endosulfan I		ug/Kg	<MDL	0.27	UJ	unknown	0.27	0.533
WG126588	FL319_FS	4/4/2013	L57732-1	30.8	Gamma-BHC (Lindane)		ug/Kg	<MDL	0.27	UJ	unknown	0.27	0.533
WG126588	FL319_FS	4/4/2013	L57732-1	30.8	Heptachlor		ug/Kg	<MDL	0.27	UJ	unknown	0.27	0.533

Table 1. Green River Filtered Solids Samples - Data Validation Flags and Bias Notation

Workgroup	Locator	Collect Date	Sample ID	Total Solids	Parameter	Concentration (wet weight basis)	Units	Lab Qual	DV Value	DV Qual	Bias	MDL	RDL
WG126588	FL319_FS	4/4/2013	L57732-1	30.8	Heptachlor Epoxide		ug/Kg	<MDL	0.27	UJ	unknown	0.27	0.533
WG126588	FL319_FS	4/4/2013	L57732-1	30.8	Toxaphene		ug/Kg	<MDL	5.3	UJ	unknown	5.3	26.7
WG126588	FL319_FS	4/4/2013	L57732-1	30.8	trans-Chlordane		ug/Kg	<MDL	0.27	UJ	unknown	0.27	0.533
WG126588	A320_FS	4/4/2013	L57732-2	18.4	4,4'-DDD		ug/Kg	<MDL	0.27	UJ	unknown	0.27	0.533
WG126588	A320_FS	4/4/2013	L57732-2	18.4	4,4'-DDE	0.28	ug/Kg	<RDL	0.28	J	unknown	0.27	0.533
WG126588	A320_FS	4/4/2013	L57732-2	18.4	4,4'-DDT	0.44	ug/Kg	<RDL	0.44	J	unknown	0.27	0.533
WG126588	A320_FS	4/4/2013	L57732-2	18.4	Aldrin		ug/Kg	<MDL	0.27	UJ	unknown	0.27	0.533
WG126588	A320_FS	4/4/2013	L57732-2	18.4	Alpha-BHC		ug/Kg	<MDL	0.27	UJ	unknown	0.27	0.533
WG126588	A320_FS	4/4/2013	L57732-2	18.4	Alpha-Chlordane		ug/Kg	<MDL	0.27	UJ	unknown	0.27	0.533
WG126588	A320_FS	4/4/2013	L57732-2	18.4	Beta-BHC		ug/Kg	<MDL	0.27	UJ	unknown	0.27	0.533
WG126588	A320_FS	4/4/2013	L57732-2	18.4	Delta-BHC		ug/Kg	<MDL	0.27	UJ	unknown	0.27	0.533
WG126588	A320_FS	4/4/2013	L57732-2	18.4	Endosulfan I		ug/Kg	<MDL	0.27	UJ	unknown	0.27	0.533
WG126588	A320_FS	4/4/2013	L57732-2	18.4	Gamma-BHC (Lindane)		ug/Kg	<MDL	0.27	UJ	unknown	0.27	0.533
WG126588	A320_FS	4/4/2013	L57732-2	18.4	Heptachlor		ug/Kg	<MDL	0.27	UJ	unknown	0.27	0.533
WG126588	A320_FS	4/4/2013	L57732-2	18.4	Heptachlor Epoxide		ug/Kg	<MDL	0.27	UJ	unknown	0.27	0.533
WG126588	A320_FS	4/4/2013	L57732-2	18.4	Toxaphene		ug/Kg	<MDL	5.3	UJ	unknown	5.3	26.7
WG126588	A320_FS	4/4/2013	L57732-2	18.4	trans-Chlordane		ug/Kg	<MDL	0.27	UJ	unknown	0.27	0.533
WG126588	FG319_FS	4/4/2013	L57732-3	19.3	4,4'-DDD		ug/Kg	<MDL	0.27	UJ	unknown	0.27	0.533
WG126588	FG319_FS	4/4/2013	L57732-3	19.3	4,4'-DDE		ug/Kg	<MDL	0.27	UJ	unknown	0.27	0.533
WG126588	FG319_FS	4/4/2013	L57732-3	19.3	4,4'-DDT		ug/Kg	<MDL	0.27	UJ	unknown	0.27	0.533
WG126588	FG319_FS	4/4/2013	L57732-3	19.3	Aldrin		ug/Kg	<MDL	0.27	UJ	unknown	0.27	0.533
WG126588	FG319_FS	4/4/2013	L57732-3	19.3	Alpha-BHC		ug/Kg	<MDL	0.27	UJ	unknown	0.27	0.533
WG126588	FG319_FS	4/4/2013	L57732-3	19.3	Alpha-Chlordane		ug/Kg	<MDL	0.27	UJ	unknown	0.27	0.533
WG126588	FG319_FS	4/4/2013	L57732-3	19.3	Beta-BHC		ug/Kg	<MDL	0.27	UJ	unknown	0.27	0.533
WG126588	FG319_FS	4/4/2013	L57732-3	19.3	Delta-BHC		ug/Kg	<MDL	0.27	UJ	unknown	0.27	0.533
WG126588	FG319_FS	4/4/2013	L57732-3	19.3	Endosulfan I		ug/Kg	<MDL	0.27	UJ	unknown	0.27	0.533
WG126588	FG319_FS	4/4/2013	L57732-3	19.3	Gamma-BHC (Lindane)		ug/Kg	<MDL	0.27	UJ	unknown	0.27	0.533
WG126588	FG319_FS	4/4/2013	L57732-3	19.3	Heptachlor		ug/Kg	<MDL	0.27	UJ	unknown	0.27	0.533
WG126588	FG319_FS	4/4/2013	L57732-3	19.3	Heptachlor Epoxide		ug/Kg	<MDL	0.27	UJ	unknown	0.27	0.533
WG126588	FG319_FS	4/4/2013	L57732-3	19.3	Toxaphene		ug/Kg	<MDL	5.3	UJ	unknown	5.3	26.7
WG126588	FG319_FS	4/4/2013	L57732-3	19.3	trans-Chlordane		ug/Kg	<MDL	0.27	UJ	unknown	0.27	0.533

ATTACHMENT A

LIMS BATCH AND QC REPORTS

LIMSView Batch Report for Green River Filtered Solids - Data Validation for PSD - Part 1

WG126191 (PSD-LD for LDW Green Rive) Department: 3 - Conventionals Move Date: 2013-04-22 11:40:16

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L57305-2	423589-335-4	LDW Green River, Suspended Solids	CVPSD-LD	TRAP SED	2/14/2013	4/1/2013	4/2/2013	
L57495-1	423589-335-4	LDW Green River, Suspended Solids	CVPSD-LD	FILTER SED	2/22/2013	4/1/2013	4/2/2013	
L57495-4	423589-335-4	LDW Green River, Suspended Solids	CVPSD-LD	FILTER SED	2/22/2013	4/1/2013	4/3/2013	
L57495-5	423589-335-4	LDW Green River, Suspended Solids	CVPSD-LD	FILTER SED	2/22/2013	4/1/2013	4/3/2013	
L57634-1	423589-335-4	LDW Green River, Suspended Solids	CVPSD-LD	FILTER SED	3/20/2013	4/1/2013	4/2/2013	
L57634-2	423589-335-4	LDW Green River, Suspended Solids	CVPSD-LD	FILTER SED	3/20/2013	4/1/2013	4/2/2013	
L57634-3	423589-335-4	LDW Green River, Suspended Solids	CVPSD-LD	FILTER SED	3/20/2013	4/1/2013	4/2/2013	
WG126191-1	LD		CVPSD-LD	FILTER SED		4/1/2013	4/2/2013	L57634-2
WG126191-2	LT		CVPSD-LD	FILTER SED		4/1/2013	4/2/2013	WG126191-1 L57634-2

WG127037 (PSD-LD for LDW/CSO) Department: 3 - Conventionals Move Date: 2013-06-06 16:17:42

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L57732-1	423589-335-4	LDW Green River, Suspended Solids	CVPSD-LD	FILTER SED	4/4/2013	5/13/2013	5/20/2013	
L57732-2	423589-335-4	LDW Green River, Suspended Solids	CVPSD-LD	FILTER SED	4/4/2013	5/13/2013	5/21/2013	
L57732-3	423589-335-4	LDW Green River, Suspended Solids	CVPSD-LD	FILTER SED	4/4/2013	5/13/2013	5/21/2013	
L57786-3	423589-340-4	CSO Source Characterization	CVPSD-LD	IN-LINESED	4/16/2013	5/13/2013	5/20/2013	
L57786-4	423589-340-4	CSO Source Characterization	CVPSD-LD	IN-LINESED	4/30/2013	5/13/2013	5/20/2013	
L57786-5	423589-340-4	CSO Source Characterization	CVPSD-LD	IN-LINESED	4/30/2013	5/13/2013	5/20/2013	
L57792-1	423589-335-4	LDW Green River, Suspended Solids	CVPSD-LD	FILTER SED	4/18/2013	5/13/2013	5/21/2013	
L57792-2	423589-335-4	LDW Green River, Suspended Solids	CVPSD-LD	FILTER SED	4/18/2013	5/13/2013	5/21/2013	
L57792-3	423589-335-4	LDW Green River, Suspended Solids	CVPSD-LD	FILTER SED	4/18/2013	5/13/2013	5/21/2013	
WG127037-1	LD		CVPSD-LD	IN-LINESED		5/13/2013	5/20/2013	L57786-4
WG127037-2	LT		CVPSD-LD	IN-LINESED		5/13/2013	5/20/2013	WG127037-1 L57786-4

WG128872 (PSD-LD for CSO Seds & LDW) Department: 3 - Conventionals Move Date: 2013-09-18 10:19:44

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L58172-2	423368-210-1	CSO Sediment Quality Characterization	CVPSD-LD	FRSHWTRSED	6/20/2013	9/12/2013	9/13/2013	
L58537-1	423589-335-4	LDW Green River, Suspended Solids	CVPSD-LD	FILTER SED	8/13/2013	9/12/2013	9/13/2013	
L58537-2	423589-335-4	LDW Green River, Suspended Solids	CVPSD-LD	FILTER SED	8/19/2013	9/12/2013	9/13/2013	
WG128872-1	LD		CVPSD-LD	FRSHWTRSED		9/12/2013	9/13/2013	L58172-2
WG128872-2	LD		CVPSD-LD	FILTER SED		9/12/2013	9/13/2013	L58537-2

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WG129259 () Department: 3 - Conventionals Move Date: 2013-11-20 09:22:23

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L58754-1	423589-335-4	LDW Green River, Suspended Solids	CVPSD-LD	FILTER SED	9/10/2013	10/7/2013	10/8/2013	
L58785-1	423589-335-4	LDW Green River, Suspended Solids	CVPSD-LD	TRAP SED	9/30/2013	10/7/2013	10/8/2013	

WG130278 (PSD-LD for LDW Grn Rvr SS) Department: 3 - Conventionals Move Date: 2013-12-13 13:00:31

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L58977-1	423589-335-4	LDW Green River, Suspended Solids	CVPSD-LD	FILTER SED	10/16/2013	12/10/2013	12/11/2013	
L59049-1	423589-335-4	LDW Green River, Suspended Solids	CVPSD-LD	FILTER SED	10/22/2013	12/10/2013	12/11/2013	
L59190-1	423589-335-4	LDW Green River, Suspended Solids	CVPSD-LD	FILTER SED	11/7/2013	12/10/2013	12/11/2013	
L59190-2	423589-335-4	LDW Green River, Suspended Solids	CVPSD-LD	FILTER SED	11/7/2013	12/10/2013	12/11/2013	
WG130278-1	LD		CVPSD-LD	FILTER SED		12/10/2013	12/11/2013	L58977-1

WG131316 (PSD-LD for LDW Grn Rvr, S) Department: 3 - Conventionals Move Date: 2014-03-19 19:48:26

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L59472-1	423589-335-4	LDW Green River, Suspended Solids	CVPSD-LD	FILTER SED	1/8/2014	3/17/2014	3/18/2014	
L59472-3	423589-335-4	LDW Green River, Suspended Solids	CVPSD-LD	FILTER SED	1/8/2014	3/17/2014	3/18/2014	
L59596-1	423589-335-4	LDW Green River, Suspended Solids	CVPSD-LD	FILTER SED	1/28/2014	3/17/2014	3/18/2014	
L59596-2	423589-335-4	LDW Green River, Suspended Solids	CVPSD-LD	FILTER SED	1/29/2014	3/17/2014	3/18/2014	
L59723-1	423589-335-4	LDW Green River, Suspended Solids	CVPSD-LD	FILTER SED	2/12/2014	3/17/2014	3/18/2014	
L59723-2	423589-335-4	LDW Green River, Suspended Solids	CVPSD-LD	FILTER SED	2/11/2014	3/17/2014	3/18/2014	
L59723-3	423589-335-4	LDW Green River, Suspended Solids	CVPSD-LD	FILTER SED	2/18/2014	3/17/2014	3/18/2014	
L59723-4	423589-335-4	LDW Green River, Suspended Solids	CVPSD-LD	FILTER SED	2/18/2014	3/17/2014	3/18/2014	
WG131316-1	LD		CVPSD-LD	FILTER SED		3/17/2014	3/18/2014	L59723-4
WG131316-2	LT		CVPSD-LD	FILTER SED		3/17/2014	3/18/2014	WG131316-1 L59723-4

WG132302 (PSD-LD for LDW Grn Rvr -) Department: 3 - Conventionals Move Date: 2014-06-12 11:12:41

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L59919-1	423589-335-4	LDW Green River, Suspended Solids	CVPSD-LD	FILTER SED	3/5/2014	4/24/2014	4/24/2014	
L59919-2	423589-335-4	LDW Green River, Suspended Solids	CVPSD-LD	FILTER SED	3/5/2014	4/24/2014	4/24/2014	
WG132302-1	LD		CVPSD-LD	FILTER SED		4/24/2014	4/24/2014	L59919-1

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WG133033 () Department: 3 - Conventionals Move Date: 2014-06-12 11:09:52

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L60187-1	423589-335-4	LDW Green River, Suspended Solids	CVPSD-LD	FILTER SED	4/16/2014	6/3/2014	6/4/2014	
L60187-2	423589-335-4	LDW Green River, Suspended Solids	CVPSD-LD	FILTER SED	4/16/2014	6/3/2014	6/4/2014	

WG136379 (PSD-LD for LDW Grn Rvr -) Department: 3 - Conventionals Move Date: 2014-12-11 15:04:01

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L61510-1	423589-335-4	LDW Green River, Suspended Solids	CVPSD-LD	FILTER SED	10/7/2014	12/2/2014	12/5/2014	
L61568-1	423589-335-4	LDW Green River, Suspended Solids	CVPSD-LD	FILTER SED	10/22/2014	12/2/2014	12/5/2014	
L61568-2	423589-335-4	LDW Green River, Suspended Solids	CVPSD-LD	FILTER SED	10/22/2014	12/2/2014	12/5/2014	
WG136379-1	LD		CVPSD-LD	FILTER SED		12/2/2014	12/5/2014	L61510-1

WG126189 (PSD-SC for LDW Green Rive) Department: 3 - Conventionals Move Date: 2013-04-22 11:39:38

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L57305-2	423589-335-4	LDW Green River, Suspended Solids	CVPSD-SC	TRAP SED	2/14/2013	4/1/2013	4/3/2013	
L57495-1	423589-335-4	LDW Green River, Suspended Solids	CVPSD-SC	FILTER SED	2/22/2013	4/1/2013	4/3/2013	
L57495-4	423589-335-4	LDW Green River, Suspended Solids	CVPSD-SC	FILTER SED	2/22/2013	4/1/2013	4/3/2013	
L57495-5	423589-335-4	LDW Green River, Suspended Solids	CVPSD-SC	FILTER SED	2/22/2013	4/1/2013	4/3/2013	
L57634-1	423589-335-4	LDW Green River, Suspended Solids	CVPSD-SC	FILTER SED	3/20/2013	4/1/2013	4/3/2013	
L57634-2	423589-335-4	LDW Green River, Suspended Solids	CVPSD-SC	FILTER SED	3/20/2013	4/1/2013	4/3/2013	
L57634-3	423589-335-4	LDW Green River, Suspended Solids	CVPSD-SC	FILTER SED	3/20/2013	4/1/2013	4/3/2013	
WG126189-1	LD		CVPSD-SC	FILTER SED		4/1/2013	4/3/2013	L57634-2
WG126189-2	LT		CVPSD-SC	FILTER SED		4/1/2013	4/3/2013	WG126189-1 L57634-2

WG127035 (PSD-SC for LDW/CSO) Department: 3 - Conventionals Move Date: 2013-06-06 16:06:35

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L57732-1	423589-335-4	LDW Green River, Suspended Solids	CVPSD-SC	FILTER SED	4/4/2013	5/13/2013	5/17/2013	
L57732-2	423589-335-4	LDW Green River, Suspended Solids	CVPSD-SC	FILTER SED	4/4/2013	5/13/2013	5/17/2013	
L57732-3	423589-335-4	LDW Green River, Suspended Solids	CVPSD-SC	FILTER SED	4/4/2013	5/13/2013	5/17/2013	
L57786-3	423589-340-4	CSO Source Characterization	CVPSD-SC	IN-LINESED	4/16/2013	5/13/2013	5/17/2013	
L57786-4	423589-340-4	CSO Source Characterization	CVPSD-SC	IN-LINESED	4/30/2013	5/13/2013	5/17/2013	
L57786-5	423589-340-4	CSO Source Characterization	CVPSD-SC	IN-LINESED	4/30/2013	5/13/2013	5/17/2013	
L57792-1	423589-335-4	LDW Green River, Suspended Solids	CVPSD-SC	FILTER SED	4/18/2013	5/13/2013	5/28/2013	

L57792-2	423589-335-4	LDW Green River, Suspended Solids	CVPSD-SC	FILTER SED	4/18/2013	5/13/2013	5/28/2013	
L57792-3	423589-335-4	LDW Green River, Suspended Solids	CVPSD-SC	FILTER SED	4/18/2013	5/13/2013	5/28/2013	
WG127035-1	LD		CVPSD-SC	IN-LINESED		5/13/2013	5/17/2013	L57786-4
WG127035-2	LT		CVPSD-SC	IN-LINESED		5/13/2013	5/17/2013	WG127035-1 L57786-4

WG128871 (PSD-SC for CSO Seds & LDW) Department: 3 - Conventionals Move Date: 2013-09-18 10:12:32

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L58172-2	423368-210-1	CSO Sediment Quality Characterization	CVPSD-SC	FRSHWTRSED	6/20/2013	9/12/2013	9/17/2013	
L58537-1	423589-335-4	LDW Green River, Suspended Solids	CVPSD-SC	FILTER SED	8/13/2013	9/12/2013	9/17/2013	
L58537-2	423589-335-4	LDW Green River, Suspended Solids	CVPSD-SC	FILTER SED	8/19/2013	9/12/2013	9/17/2013	
WG128871-1	LD		CVPSD-SC	FRSHWTRSED		9/12/2013	9/17/2013	L58172-2
WG128871-2	LD		CVPSD-SC	FILTER SED		9/12/2013	9/17/2013	L58537-2

WG129258 () Department: 3 - Conventionals Move Date: 2013-11-20 09:17:35

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L58754-1	423589-335-4	LDW Green River, Suspended Solids	CVPSD-SC	FILTER SED	9/10/2013	10/7/2013	10/9/2013	
L58785-1	423589-335-4	LDW Green River, Suspended Solids	CVPSD-SC	TRAP SED	9/30/2013	10/7/2013	10/9/2013	

WG130277 (PSD-SC for LDW Grn Rvr SS) Department: 3 - Conventionals Move Date: 2013-12-13 12:58:02

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L58977-1	423589-335-4	LDW Green River, Suspended Solids	CVPSD-SC	FILTER SED	10/16/2013	12/10/2013	12/13/2013	
L59049-1	423589-335-4	LDW Green River, Suspended Solids	CVPSD-SC	FILTER SED	10/22/2013	12/10/2013	12/13/2013	
L59190-1	423589-335-4	LDW Green River, Suspended Solids	CVPSD-SC	FILTER SED	11/7/2013	12/10/2013	12/13/2013	
L59190-2	423589-335-4	LDW Green River, Suspended Solids	CVPSD-SC	FILTER SED	11/7/2013	12/10/2013	12/13/2013	
WG130277-1	LD		CVPSD-SC	FILTER SED		12/10/2013	12/13/2013	L58977-1

WG131315 (PSD-SC for LDW Grn Rvr, S) Department: 3 - Conventionals Move Date: 2014-03-19 19:47:16

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L59472-1	423589-335-4	LDW Green River, Suspended Solids	CVPSD-SC	FILTER SED	1/8/2014	3/17/2014	3/18/2014	
L59472-3	423589-335-4	LDW Green River, Suspended Solids	CVPSD-SC	FILTER SED	1/8/2014	3/17/2014	3/18/2014	

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L59596-1	423589-335-4	LDW Green River, Suspended Solids	CVPSD-SC	FILTER SED	1/28/2014	3/17/2014	3/18/2014	
L59596-2	423589-335-4	LDW Green River, Suspended Solids	CVPSD-SC	FILTER SED	1/29/2014	3/17/2014	3/18/2014	
L59723-1	423589-335-4	LDW Green River, Suspended Solids	CVPSD-SC	FILTER SED	2/12/2014	3/17/2014	3/18/2014	
L59723-2	423589-335-4	LDW Green River, Suspended Solids	CVPSD-SC	FILTER SED	2/11/2014	3/17/2014	3/18/2014	
L59723-3	423589-335-4	LDW Green River, Suspended Solids	CVPSD-SC	FILTER SED	2/18/2014	3/17/2014	3/18/2014	
L59723-4	423589-335-4	LDW Green River, Suspended Solids	CVPSD-SC	FILTER SED	2/18/2014	3/17/2014	3/18/2014	
WG131315-1	LD		CVPSD-SC	FILTER SED		3/17/2014	3/18/2014	L59723-4
WG131315-2	LT		CVPSD-SC	FILTER SED		3/17/2014	3/18/2014	WG131315-1 L59723-4

WG132301 (PSD-SC for LDW Grn Rvr -) Department: 3 - Conventionals Move Date: 2014-06-12 11:11:19

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L59919-1	423589-335-4	LDW Green River, Suspended Solids	CVPSD-SC	FILTER SED	3/5/2014	4/24/2014	4/28/2014	
L59919-2	423589-335-4	LDW Green River, Suspended Solids	CVPSD-SC	FILTER SED	3/5/2014	4/24/2014	4/28/2014	
WG132301-1	LD		CVPSD-SC	FILTER SED		4/24/2014	4/28/2014	L59919-1

WG133032 () Department: 3 - Conventionals Move Date: 2014-06-12 11:08:05

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L60187-1	423589-335-4	LDW Green River, Suspended Solids	CVPSD-SC	FILTER SED	4/16/2014	6/3/2014	6/5/2014	
L60187-2	423589-335-4	LDW Green River, Suspended Solids	CVPSD-SC	FILTER SED	4/16/2014	6/3/2014	6/5/2014	

WG136378 (PSD-SC for LDW Grn Rvr -) Department: 3 - Conventionals Move Date: 2014-12-11 11:35:58

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L61510-1	423589-335-4	LDW Green River, Suspended Solids	CVPSD-SC	FILTER SED	10/7/2014	12/2/2014	12/3/2014	
L61568-1	423589-335-4	LDW Green River, Suspended Solids	CVPSD-SC	FILTER SED	10/22/2014	12/2/2014	12/3/2014	
L61568-2	423589-335-4	LDW Green River, Suspended Solids	CVPSD-SC	FILTER SED	10/22/2014	12/2/2014	12/3/2014	
WG136378-1	LD		CVPSD-SC	FILTER SED		12/2/2014	12/3/2014	L61510-1

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WG126099 (Assorted TOTS) Department: 3 - Conventionals Move Date: 2013-04-19 07:25:39

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L57495-1	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	FILTER SED	2/22/2013	3/28/2013	3/29/2013	
L57495-4	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	FILTER SED	2/22/2013	3/28/2013	3/29/2013	
L57495-5	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	FILTER SED	2/22/2013	3/28/2013	3/29/2013	
L57597-97	421191-100	WDFW Fish Tissue Analysis	CVTOTS	SHELLFISH	1/9/2013	3/28/2013	3/29/2013	
L57597-98	421191-100	WDFW Fish Tissue Analysis	CVTOTS	SHELLFISH	1/9/2013	3/28/2013	3/29/2013	
L57597-99	421191-100	WDFW Fish Tissue Analysis	CVTOTS	SHELLFISH	1/9/2013	3/28/2013	3/29/2013	
L57597-100	421191-100	WDFW Fish Tissue Analysis	CVTOTS	SHELLFISH	1/9/2013	3/28/2013	3/29/2013	
L57597-101	421191-100	WDFW Fish Tissue Analysis	CVTOTS	SHELLFISH	1/9/2013	3/28/2013	3/29/2013	
L57597-102	421191-100	WDFW Fish Tissue Analysis	CVTOTS	SHELLFISH	1/9/2013	3/28/2013	3/29/2013	
L57597-103	421191-100	WDFW Fish Tissue Analysis	CVTOTS	SHELLFISH	1/9/2013	3/28/2013	3/29/2013	
L57597-104	421191-100	WDFW Fish Tissue Analysis	CVTOTS	SHELLFISH	1/9/2013	3/28/2013	3/29/2013	
L57597-105	421191-100	WDFW Fish Tissue Analysis	CVTOTS	SHELLFISH	1/9/2013	3/28/2013	3/29/2013	
L57597-106	421191-100	WDFW Fish Tissue Analysis	CVTOTS	SHELLFISH	1/9/2013	3/28/2013	3/29/2013	
L57597-107	421191-100	WDFW Fish Tissue Analysis	CVTOTS	SHELLFISH	1/7/2013	3/28/2013	3/29/2013	
L57597-108	421191-100	WDFW Fish Tissue Analysis	CVTOTS	SHELLFISH	1/7/2013	3/28/2013	3/29/2013	
L57597-109	421191-100	WDFW Fish Tissue Analysis	CVTOTS	SHELLFISH	1/7/2013	3/28/2013	3/29/2013	
L57597-110	421191-100	WDFW Fish Tissue Analysis	CVTOTS	SHELLFISH	1/7/2013	3/28/2013	3/29/2013	
L57597-111	421191-100	WDFW Fish Tissue Analysis	CVTOTS	SHELLFISH	1/9/2013	3/28/2013	3/29/2013	
L57597-112	421191-100	WDFW Fish Tissue Analysis	CVTOTS	SHELLFISH	1/7/2013	3/28/2013	3/29/2013	
L57614-2	423368-310-4	LDW Source Control WTD	CVTOTS	IN-LINESED	3/25/2013	3/28/2013	3/29/2013	FREP@L57614-1
L57614-4	423368-310-4	LDW Source Control WTD	CVTOTS	IN-LINESED	3/25/2013	3/28/2013	3/29/2013	FREP@L57614-3
L57614-6	423368-310-4	LDW Source Control WTD	CVTOTS	IN-LINESED	3/25/2013	3/28/2013	3/29/2013	FREP@L57614-5
L57614-8	423368-310-4	LDW Source Control WTD	CVTOTS	IN-LINESED	3/25/2013	3/28/2013	3/29/2013	FREP@L57614-7
L57614-10	423368-310-4	LDW Source Control WTD	CVTOTS	IN-LINESED	3/25/2013	3/28/2013	3/29/2013	FREP@L57614-9
L57636-1	423368-210-1	CSO Sediment Quality Characterizat	CVTOTS	SALTWTRSED	3/26/2013	3/28/2013	3/29/2013	
L57636-2	423368-210-1	CSO Sediment Quality Characterizat	CVTOTS	SALTWTRSED	3/26/2013	3/28/2013	3/29/2013	
L57636-3	423368-210-1	CSO Sediment Quality Characterizat	CVTOTS	SALTWTRSED	3/26/2013	3/28/2013	3/29/2013	
L57636-4	423368-210-1	CSO Sediment Quality Characterizat	CVTOTS	SALTWTRSED	3/26/2013	3/28/2013	3/29/2013	
L57636-5	423368-210-1	CSO Sediment Quality Characterizat	CVTOTS	SALTWTRSED	3/26/2013	3/28/2013	3/29/2013	
L57636-6	423368-210-1	CSO Sediment Quality Characterizat	CVTOTS	SALTWTRSED	3/26/2013	3/28/2013	3/29/2013	
L57636-7	423368-210-1	CSO Sediment Quality Characterizat	CVTOTS	SALTWTRSED	3/26/2013	3/28/2013	3/29/2013	
L57636-8	423368-210-1	CSO Sediment Quality Characterizat	CVTOTS	SALTWTRSED	3/26/2013	3/28/2013	3/29/2013	
L57636-9	423368-210-1	CSO Sediment Quality Characterizat	CVTOTS	SALTWTRSED	3/26/2013	3/28/2013	3/29/2013	
L57636-10	423368-210-1	CSO Sediment Quality Characterizat	CVTOTS	SALTWTRSED	3/26/2013	3/28/2013	3/29/2013	
L57636-11	423368-210-1	CSO Sediment Quality Characterizat	CVTOTS	SALTWTRSED	3/26/2013	3/28/2013	3/29/2013	
L57636-12	423368-210-1	CSO Sediment Quality Characterizat	CVTOTS	SALTWTRSED	3/26/2013	3/28/2013	3/29/2013	
L57636-13	423368-210-1	CSO Sediment Quality Characterizat	CVTOTS	SALTWTRSED	3/26/2013	3/28/2013	3/29/2013	

L57636-14	423368-210-1	CSO Sediment Quality Characterizat	CVTOTS	SALTWTRSED	3/26/2013	3/28/2013	3/29/2013	
L57636-15	423368-210-1	CSO Sediment Quality Characterizat	CVTOTS	SALTWTRSED	3/26/2013	3/28/2013	3/29/2013	
L57645-1	423368-210-1	CSO Sediment Quality Characterizat	CVTOTS	FRSHWTRSED	3/27/2013	3/28/2013	3/29/2013	
L57645-2	423368-210-1	CSO Sediment Quality Characterizat	CVTOTS	FRSHWTRSED	3/27/2013	3/28/2013	3/29/2013	
L57645-3	423368-210-1	CSO Sediment Quality Characterizat	CVTOTS	FRSHWTRSED	3/27/2013	3/28/2013	3/29/2013	
L57645-4	423368-210-1	CSO Sediment Quality Characterizat	CVTOTS	FRSHWTRSED	3/27/2013	3/28/2013	3/29/2013	
L57645-5	423368-210-1	CSO Sediment Quality Characterizat	CVTOTS	FRSHWTRSED	3/27/2013	3/28/2013	3/29/2013	
L57645-6	423368-210-1	CSO Sediment Quality Characterizat	CVTOTS	FRSHWTRSED	3/27/2013	3/28/2013	3/29/2013	
L57645-7	423368-210-1	CSO Sediment Quality Characterizat	CVTOTS	FRSHWTRSED	3/27/2013	3/28/2013	3/29/2013	
L57645-8	423368-210-1	CSO Sediment Quality Characterizat	CVTOTS	FRSHWTRSED	3/27/2013	3/28/2013	3/29/2013	
WG126099-1	MB		CVTOTS	OTHR SOLID		3/28/2013	3/29/2013	MB1 3/28/13
WG126099-2	LD		CVTOTS	FRSHWTRSED		3/28/2013	3/29/2013	L57645-6
WG126099-3	LT		CVTOTS	FRSHWTRSED		3/28/2013	3/29/2013	WG126099-2 L57645-6
WG126099-4	LD		CVTOTS	SALTWTRSED		3/28/2013	3/29/2013	L57636-3
WG126099-5	LT		CVTOTS	SALTWTRSED		3/28/2013	3/29/2013	WG126099-4 L57636-3
WG126099-6	MB		CVTOTS	OTHR SOLID		3/28/2013	3/29/2013	MB2 3/28/13
WG126099-7	LD		CVTOTS	IN-LINESED		3/28/2013	3/29/2013	L57614-6
WG126099-8	LT		CVTOTS	IN-LINESED		3/28/2013	3/29/2013	WG126099-7 L57614-6
WG126099-9	LD		CVTOTS	FILTER SED		3/28/2013	3/29/2013	L57495-4
WG126099-1	LT		CVTOTS	FILTER SED		3/28/2013	3/29/2013	WG126099-9 L57495-4
WG126099-1	LD		CVTOTS	SHELLFISH		3/28/2013	3/29/2013	L57597-97
WG126099-1	MB		CVTOTS	OTHR TISS		3/28/2013	3/29/2013	MB3 3/28/13

WG126570 (Assorted TOTS) Department: 3 - Conventionals Move Date: 2013-05-01 10:45:43

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L57616-67	421189-100	WA DNR Eelgrass Matels	CVTOTS	PLANT	1/10/2013	4/25/2013	4/26/2013	
L57616-68	421189-100	WA DNR Eelgrass Matels	CVTOTS	PLANT	1/10/2013	4/25/2013	4/26/2013	
L57616-69	421189-100	WA DNR Eelgrass Matels	CVTOTS	PLANT	1/10/2013	4/25/2013	4/26/2013	
L57616-70	421189-100	WA DNR Eelgrass Matels	CVTOTS	PLANT	1/10/2013	4/25/2013	4/26/2013	
L57616-71	421189-100	WA DNR Eelgrass Matels	CVTOTS	PLANT	1/10/2013	4/25/2013	4/26/2013	
L57616-72	421189-100	WA DNR Eelgrass Matels	CVTOTS	PLANT	1/10/2013	4/25/2013	4/26/2013	
L57616-73	421189-100	WA DNR Eelgrass Matels	CVTOTS	PLANT	1/10/2013	4/25/2013	4/26/2013	
L57616-74	421189-100	WA DNR Eelgrass Matels	CVTOTS	PLANT	1/10/2013	4/25/2013	4/26/2013	
L57616-75	421189-100	WA DNR Eelgrass Matels	CVTOTS	PLANT	1/10/2013	4/25/2013	4/26/2013	
L57616-76	421189-100	WA DNR Eelgrass Matels	CVTOTS	PLANT	1/10/2013	4/25/2013	4/26/2013	
L57616-77	421189-100	WA DNR Eelgrass Matels	CVTOTS	PLANT	1/10/2013	4/25/2013	4/26/2013	
L57616-78	421189-100	WA DNR Eelgrass Matels	CVTOTS	PLANT	1/10/2013	4/25/2013	4/26/2013	
L57616-79	421189-100	WA DNR Eelgrass Matels	CVTOTS	PLANT	1/11/2013	4/25/2013	4/26/2013	

L57616-80	421189-100	WA DNR Eelgrass Matels	CVTOTS	PLANT	1/11/2013	4/25/2013	4/26/2013	
L57616-81	421189-100	WA DNR Eelgrass Matels	CVTOTS	PLANT	1/11/2013	4/25/2013	4/26/2013	
L57616-82	421189-100	WA DNR Eelgrass Matels	CVTOTS	PLANT	1/11/2013	4/25/2013	4/26/2013	
L57616-83	421189-100	WA DNR Eelgrass Matels	CVTOTS	PLANT	1/11/2013	4/25/2013	4/26/2013	
L57616-84	421189-100	WA DNR Eelgrass Matels	CVTOTS	PLANT	1/11/2013	4/25/2013	4/26/2013	
L57616-85	421189-100	WA DNR Eelgrass Matels	CVTOTS	PLANT	1/7/2013	4/25/2013	4/26/2013	
L57616-86	421189-100	WA DNR Eelgrass Matels	CVTOTS	PLANT	1/7/2013	4/25/2013	4/26/2013	
L57616-87	421189-100	WA DNR Eelgrass Matels	CVTOTS	PLANT	1/7/2013	4/25/2013	4/26/2013	
L57616-88	421189-100	WA DNR Eelgrass Matels	CVTOTS	PLANT	1/7/2013	4/25/2013	4/26/2013	
L57616-89	421189-100	WA DNR Eelgrass Matels	CVTOTS	PLANT	1/7/2013	4/25/2013	4/26/2013	
L57616-90	421189-100	WA DNR Eelgrass Matels	CVTOTS	PLANT	1/7/2013	4/25/2013	4/26/2013	
L57634-1	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	FILTER SED	3/20/2013	4/25/2013	4/26/2013	
L57634-2	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	FILTER SED	3/20/2013	4/25/2013	4/26/2013	
L57634-3	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	FILTER SED	3/20/2013	4/25/2013	4/26/2013	
L57732-1	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	FILTER SED	4/4/2013	4/25/2013	4/26/2013	
L57732-2	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	FILTER SED	4/4/2013	4/25/2013	4/26/2013	
L57732-3	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	FILTER SED	4/4/2013	4/25/2013	4/26/2013	
L57792-1	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	FILTER SED	4/18/2013	4/25/2013	4/26/2013	
L57792-2	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	FILTER SED	4/18/2013	4/25/2013	4/26/2013	
L57792-3	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	FILTER SED	4/18/2013	4/25/2013	4/26/2013	
WG126570-1	MB		CVTOTS	OTHR TISS		4/25/2013	4/26/2013	MB1 4/25/13
WG126570-2	LD		CVTOTS	PLANT		4/25/2013	4/26/2013	L57616-77
WG126570-3	LD		CVTOTS	PLANT		4/25/2013	4/26/2013	L57616-78
WG126570-4	MB		CVTOTS	OTHR TISS		4/25/2013	4/26/2013	MB2 4/25/13
WG126570-5	MB		CVTOTS	OTHR SOLID		4/25/2013	4/26/2013	MB3 4/25/13
WG126570-6	LD		CVTOTS	FILTER SED		4/25/2013	4/26/2013	L57634-2

WG128447 (Assorted TOTS) Department: 3 - Conventionals Move Date: 2013-08-30 12:01:34

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L58477-7	421298A	BIOSOLIDS CHARACTERIZATION	CVTOTS	SLUDGE	8/13/2013	8/19/2013	8/20/2013	
L58522-1	421422-100	SWD , Brownfield Program	CVTOTS	PLANT	8/11/2013	8/19/2013	8/20/2013	
L58522-2	421422-100	SWD , Brownfield Program	CVTOTS	PLANT	8/12/2013	8/19/2013	8/20/2013	
L58522-3	421422-100	SWD , Brownfield Program	CVTOTS	PLANT	8/12/2013	8/19/2013	8/20/2013	
L58522-4	421422-100	SWD , Brownfield Program	CVTOTS	PLANT	8/12/2013	8/19/2013	8/20/2013	
L58522-5	421422-100	SWD , Brownfield Program	CVTOTS	PLANT	8/12/2013	8/19/2013	8/20/2013	
L58537-1	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	FILTER SED	8/13/2013	8/19/2013	8/20/2013	
WG128447-1	MB		CVTOTS	OTHR SOLID		8/19/2013	8/20/2013	MB1 8/19/13
WG128447-2	LD		CVTOTS	PLANT		8/19/2013	8/20/2013	L58522-1

WG128447-3	LD		CVTOTS	SLUDGE		8/19/2013	8/20/2013 L58477-7
WG128447-4	LD		CVTOTS	FILTER SED		8/19/2013	8/20/2013 L58537-1

WG129325 (Solids) Department: 3 - Conventionals Move Date: 2013-10-16 13:18:35

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L58537-2	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	FILTER SED	8/19/2013	9/19/2013	9/20/2013	
L58754-1	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	FILTER SED	9/10/2013	9/19/2013	9/20/2013	
WG129325-1	MB		CVTOTS	OTHR SOLID		9/19/2013	9/20/2013	MB1 9/19/13
WG129325-2	LD		CVTOTS	FILTER SED		9/19/2013	9/20/2013	L58537-2
WG129325-3	LT		CVTOTS	FILTER SED		9/19/2013	9/20/2013	WG129325-2 L58537-2

WG129699 (Assorted TOTS) Department: 3 - Conventionals Move Date: 2013-11-15 14:44:30

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L58785-1	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	TRAP SED	9/30/2013	11/4/2013	11/5/2013	
L58785-2	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	TRAP SED	9/30/2013	11/4/2013	11/5/2013	
L58785-3	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	TRAP SED	10/8/2013	11/4/2013	11/5/2013	
L58785-4	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	TRAP SED	10/8/2013	11/4/2013	11/5/2013	
L58785-5	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	TRAP SED	10/8/2013	11/4/2013	11/5/2013	
L58785-6	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	TRAP SED	9/30/2013	11/4/2013	11/5/2013	
L58977-1	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	FILTER SED	10/16/2013	11/4/2013	11/5/2013	
L59049-1	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	FILTER SED	10/22/2013	11/4/2013	11/5/2013	
L59077-8	421937	Brightwater Operations	CVTOTS	SLUDGE	10/30/2013	11/4/2013	11/5/2013	
WG129699-1	MB		CVTOTS	OTHR SOLID		11/4/2013	11/5/2013	MB1 11/4/13
WG129699-2	LD		CVTOTS	TRAP SED		11/4/2013	11/5/2013	L58785-4
WG129699-3	LT		CVTOTS	TRAP SED		11/4/2013	11/5/2013	WG129699-2 L58785-4
WG129699-4	LD		CVTOTS	FILTER SED		11/4/2013	11/5/2013	L59049-1
WG129699-5	LT		CVTOTS	FILTER SED		11/4/2013	11/5/2013	WG129699-4 L59049-1
WG129699-6	LD		CVTOTS	SLUDGE		11/4/2013	11/5/2013	L59077-8

WG130083 (Assorted TOTS) Department: 3 - Conventionals Move Date: 2013-12-12 10:58:27

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L59112-1	423589-340-4	CSO Source Characterization	CVTOTS	IN-LINESED	10/29/2013	11/26/2013	11/27/2013	
L59112-2	423589-340-4	CSO Source Characterization	CVTOTS	IN-LINESED	10/29/2013	11/26/2013	11/27/2013	
L59112-3	423589-340-4	CSO Source Characterization	CVTOTS	IN-LINESED	10/29/2013	11/26/2013	11/27/2013	

L59112-4	423589-340-4	CSO Source Characterization	CVTOTS	IN-LINESED	10/29/2013	11/26/2013	11/27/2013	
L59147-7	421186B	RTP INPLNT 3 DAY INT (inf,eff,sl)	CVTOTS	SLUDGE	11/19/2013	11/26/2013	11/27/2013	
L59190-1	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	FILTER SED	11/7/2013	11/26/2013	11/27/2013	
L59190-2	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	FILTER SED	11/7/2013	11/26/2013	11/27/2013	
WG130083-1	MB		CVTOTS	OTHR SOLID		11/26/2013	11/27/2013	MB1 11/26/13
WG130083-2	LD		CVTOTS	SLUDGE		11/26/2013	11/27/2013	L59147-7
WG130083-3	LD		CVTOTS	IN-LINESED		11/26/2013	11/27/2013	L59112-2
WG130083-4	LT		CVTOTS	IN-LINESED		11/26/2013	11/27/2013	WG130083-3 L59112-2
WG130083-5	LD		CVTOTS	FILTER SED		11/26/2013	11/27/2013	L59190-2
WG130083-6	LT		CVTOTS	FILTER SED		11/26/2013	11/27/2013	WG130083-5 L59190-2

WG131132 (Assorted S% TOTS: 2/13/14) Department: 3 - Conventionals Move Date: 2014-02-20 15:39:07

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L59472-1	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	FILTER SED	1/8/2014	2/13/2014	2/14/2014	
L59472-3	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	FILTER SED	1/8/2014	2/13/2014	2/14/2014	
L59596-1	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	FILTER SED	1/28/2014	2/13/2014	2/14/2014	
L59596-2	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	FILTER SED	1/29/2014	2/13/2014	2/14/2014	
L59619-4	421298A	BIOSOLIDS CHARACTERIZATION	CVTOTS	SLUDGE	2/11/2014	2/13/2014	2/14/2014	
L59619-5	421298A	BIOSOLIDS CHARACTERIZATION	CVTOTS	SLUDGE	2/10/2014	2/13/2014	2/14/2014	
L59619-6	421298A	BIOSOLIDS CHARACTERIZATION	CVTOTS	SLUDGE	2/10/2014	2/13/2014	2/14/2014	
WG131132-1	MB		CVTOTS	OTHR SOLID		2/13/2014	2/14/2014	MB1 2/13/14
WG131132-2	LD		CVTOTS	SLUDGE		2/13/2014	2/14/2014	L59619-5
WG131132-3	LD		CVTOTS	FILTER SED		2/13/2014	2/14/2014	L59596-1
WG131132-4	LT		CVTOTS	FILTER SED		2/13/2014	2/14/2014	WG131132-3 L59596-1

WG131743 (TOTS) Department: 3 - Conventionals Move Date: 2014-03-21 16:58:13

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L59723-1	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	FILTER SED	2/12/2014	3/20/2014	3/21/2014	
L59723-2	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	FILTER SED	2/11/2014	3/20/2014	3/21/2014	
L59723-3	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	FILTER SED	2/18/2014	3/20/2014	3/21/2014	
L59723-4	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	FILTER SED	2/18/2014	3/20/2014	3/21/2014	
WG131743-1	MB		CVTOTS	OTHR SOLID		3/20/2014	3/21/2014	MB1 140320
WG131743-2	LD		CVTOTS	FILTER SED		3/20/2014	3/21/2014	L59723-4
WG131743-3	LT		CVTOTS	FILTER SED		3/20/2014	3/21/2014	WG131743-2 L59723-4

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WG132353 (TOTS (S%)) Department: 3 - Conventionals Move Date: 2014-04-29 11:47:15

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L59919-1	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	FILTER SED	3/5/2014	4/28/2014	4/29/2014	
L59919-2	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	FILTER SED	3/5/2014	4/28/2014	4/29/2014	
WG132353-1	MB		CVTOTS	OTHR SOLID		4/28/2014	4/29/2014	MB 140428
WG132353-2	LD		CVTOTS	FILTER SED		4/28/2014	4/29/2014	L59919-2

WG133007 (TOTS (S%)) Department: 3 - Conventionals Move Date: 2014-06-06 10:49:35

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L60187-1	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	FILTER SED	4/16/2014	6/3/2014	6/4/2014	
L60187-2	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	FILTER SED	4/16/2014	6/3/2014	6/4/2014	
WG133007-1	MB		CVTOTS	OTHR SOLID		6/3/2014	6/4/2014	MB1 140603
WG133007-2	LD		CVTOTS	FILTER SED		6/3/2014	6/4/2014	L60187-1

WG136533 () Department: 3 - Conventionals Move Date: 2014-12-12 12:26:41

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L61510-1	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	FILTER SED	10/7/2014	12/10/2014	12/11/2014	
L61568-1	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	FILTER SED	10/22/2014	12/10/2014	12/11/2014	
L61568-2	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	FILTER SED	10/22/2014	12/10/2014	12/11/2014	
WG136533-1	MB		CVTOTS	FILTER SED		12/10/2014	12/11/2014	MB1 141210

WG125947 (LDW Green Rvr suspended s) Department: 6 - Metals Move Date: 2013-05-02 09:32:51

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L57495-1	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	FILTER SED	2/22/2013	3/20/2013	3/21/2013	
L57495-4	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	FILTER SED	2/22/2013	3/20/2013	3/21/2013	
L57495-5	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	FILTER SED	2/22/2013	3/20/2013	3/21/2013	
WG125947-1	LCS		MTHG-MIDS	FRSHWTRSED		3/20/2013	3/21/2013	WQB1
WG125947-2	LCSD		MTHG-MIDS	FRSHWTRSED		3/20/2013	3/21/2013	WG125947-1 WQB1
WG125947-3	MB		MTHG-MIDS	SOLIDBLANK		3/20/2013	3/21/2013	METHOD BLANK
WG125947-4	SB		MTHG-MIDS	SOLIDBLANK		3/20/2013	3/21/2013	WG125947-3 HG-SMID
WG125947-5	MS		MTHG-MIDS	FILTER SED		3/20/2013	3/21/2013	L57495-4 HG-SMID
WG125947-6	MSD		MTHG-MIDS	FILTER SED		3/20/2013	3/21/2013	WG125947-5 L57495-4 HG-SMID-MSD
WG125947-7	LD		MTHG-MIDS	FILTER SED		3/20/2013	3/21/2013	L57495-4

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WG126318 (LDW Green River) Department: 6 - Metals Move Date: 2013-05-02 14:38:32

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L57634-1	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	FILTER SED	3/20/2013	4/11/2013	4/12/2013	
L57634-2	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	FILTER SED	3/20/2013	4/11/2013	4/12/2013	
L57732-1	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	FILTER SED	4/4/2013	4/11/2013	4/12/2013	
L57732-2	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	FILTER SED	4/4/2013	4/11/2013	4/12/2013	
L57732-3	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	FILTER SED	4/4/2013	4/11/2013	4/12/2013	
WG126318-1	LCS		MTHG-MIDS	FRSHWTRSED		4/11/2013	4/12/2013	WQB1
WG126318-2	LCSD		MTHG-MIDS	FRSHWTRSED		4/11/2013	4/12/2013	WG126318-1 WQB1
WG126318-3	MB		MTHG-MIDS	SOLIDBLANK		4/11/2013	4/12/2013	METHOD BLANK
WG126318-4	SB		MTHG-MIDS	SOLIDBLANK		4/11/2013	4/12/2013	WG126318-3 HG-SMID
WG126318-5	MS		MTHG-MIDS	FILTER SED		4/11/2013	4/12/2013	L57634-2 HG-SMID
WG126318-6	MSD		MTHG-MIDS	FILTER SED		4/11/2013	4/12/2013	WG126318-5 L57634-2 HG-SMID-MSD
WG126318-7	LD		MTHG-MIDS	FILTER SED		4/11/2013	4/12/2013	L57634-2 RPD-SOL

WG126821 (Green River) Department: 6 - Metals Move Date: 2013-05-23 15:43:06

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L57792-1	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	FILTER SED	4/18/2013	5/14/2013	5/15/2013	
L57792-2	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	FILTER SED	4/18/2013	5/14/2013	5/15/2013	
L57792-3	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	FILTER SED	4/18/2013	5/14/2013	5/15/2013	
WG126821-1	LCS		MTHG-MIDS	FRSHWTRSED		5/14/2013	5/15/2013	WQB1
WG126821-2	LCSD		MTHG-MIDS	FRSHWTRSED		5/14/2013	5/15/2013	WG126821-1 WQB1
WG126821-3	MB		MTHG-MIDS	SOLIDBLANK		5/14/2013	5/15/2013	METHOD BLANK
WG126821-4	SB		MTHG-MIDS	SOLIDBLANK		5/14/2013	5/15/2013	WG126821-3 HG-SMID
WG126821-5	MS		MTHG-MIDS	FILTER SED		5/14/2013	5/15/2013	L57792-3 HG-SMID
WG126821-6	MSD		MTHG-MIDS	FILTER SED		5/14/2013	5/15/2013	WG126821-5 L57792-3 HG-SMID-MSD
WG126821-7	LD		MTHG-MIDS	FILTER SED		5/14/2013	5/15/2013	L57792-3 RPD-SOL

WG128613 (LDW Greenriver) Department: 6 - Metals Move Date: 2013-09-24 12:55:06

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L58537-1	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	FILTER SED	8/13/2013	8/30/2013	9/3/2013	
L58537-2	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	FILTER SED	8/19/2013	8/30/2013	9/3/2013	
WG128613-1	LCS		MTHG-MIDS	FRSHWTRSED		8/30/2013	9/3/2013	WQB1

WG128613-2	LCSD	MTHG-MIDS	FRSHWTRSED	8/30/2013	9/3/2013	WG128613-1 WQB1
WG128613-3	MB	MTHG-MIDS	SOLIDBLANK	8/30/2013	9/3/2013	METHOD BLANK
WG128613-4	SB	MTHG-MIDS	SOLIDBLANK	8/30/2013	9/3/2013	WG128613-3 HG-SMID
WG128613-5	MS	MTHG-MIDS	FILTER SED	8/30/2013	9/3/2013	L58537-2 HG-SMID
WG128613-6	MSD	MTHG-MIDS	FILTER SED	8/30/2013	9/3/2013	WG128613-5 L58537-2 HG-SMID-MSD
WG128613-7	LD	MTHG-MIDS	FILTER SED	8/30/2013	9/3/2013	L58537-2 RPD-SOL

WG129257 (LDW Green river sed.) Department: 6 - Metals Move Date: 2013-10-21 11:51:48

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L58754-1	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	FILTER SED	9/10/2013	10/8/2013	10/9/2013	
L58785-1	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	TRAP SED	9/30/2013	10/8/2013	10/9/2013	
L58785-2	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	TRAP SED	9/30/2013	10/8/2013	10/9/2013	
L58785-6	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	TRAP SED	9/30/2013	10/8/2013	10/9/2013	
WG129257-1	LCS		MTHG-MIDS	FRSHWTRSED		10/8/2013	10/9/2013	WQB1
WG129257-2	LCSD		MTHG-MIDS	FRSHWTRSED		10/8/2013	10/9/2013	WG129257-1 WQB1
WG129257-3	MB		MTHG-MIDS	SOLIDBLANK		10/8/2013	10/9/2013	METHOD BLANK
WG129257-4	SB		MTHG-MIDS	SOLIDBLANK		10/8/2013	10/9/2013	WG129257-3 HG-SMID
WG129257-5	MS		MTHG-MIDS	FILTER SED		10/8/2013	10/9/2013	L58754-1 HG-SMID
WG129257-6	MSD		MTHG-MIDS	FILTER SED		10/8/2013	10/9/2013	WG129257-5 L58754-1 HG-SMID-MSD
WG129257-7	LD		MTHG-MIDS	FILTER SED		10/8/2013	10/9/2013	L58754-1 RPD-SOL

WG129628 (LDW green river) Department: 6 - Metals Move Date: 2013-11-21 15:25:01

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L58785-3	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	TRAP SED	10/8/2013	10/30/2013	10/31/2013	
L58785-4	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	TRAP SED	10/8/2013	10/30/2013	10/31/2013	
L58785-5	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	TRAP SED	10/8/2013	10/30/2013	10/31/2013	
L58977-1	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	FILTER SED	10/16/2013	10/30/2013	10/31/2013	
WG129628-1	LCS		MTHG-MIDS	FRSHWTRSED		10/30/2013	10/31/2013	WQB1
WG129628-2	LCSD		MTHG-MIDS	FRSHWTRSED		10/30/2013	10/31/2013	WG129628-1 WQB1
WG129628-3	MB		MTHG-MIDS	SOLIDBLANK		10/30/2013	10/31/2013	METHOD BLANK
WG129628-4	SB		MTHG-MIDS	SOLIDBLANK		10/30/2013	10/31/2013	WG129628-3 HG-SMID
WG129628-5	MS		MTHG-MIDS	TRAP SED		10/30/2013	10/31/2013	L58785-4 HG-SMID
WG129628-6	MSD		MTHG-MIDS	TRAP SED		10/30/2013	10/31/2013	WG129628-5 L58785-4 HG-SMID-MSD
WG129628-7	LD		MTHG-MIDS	TRAP SED		10/30/2013	10/31/2013	L58785-4 RPD-SOL

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WG129914 (Filter Seds) Department: 6 - Metals Move Date: 2013-12-11 10:48:58

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L59049-1	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	FILTER SED	10/22/2013	11/13/2013	11/18/2013	
WG129914-1	MB		MTHG-MIDS	SOLIDBLANK		11/13/2013	11/18/2013	METHOD BLANK
WG129914-2	SB		MTHG-MIDS	SOLIDBLANK		11/13/2013	11/18/2013	WG129914-1 HG-SMID
WG129914-3	LCS		MTHG-MIDS	FRSHWTRSED		11/13/2013	11/18/2013	WQB1
WG129914-4	LCSD		MTHG-MIDS	FRSHWTRSED		11/13/2013	11/18/2013	WG129914-3 WQB1
WG129914-5	LD		MTHG-MIDS	FILTER SED		11/13/2013	11/18/2013	L59049-1 RPD-SOL
WG129914-6	MS		MTHG-MIDS	FILTER SED		11/13/2013	11/18/2013	L59049-1 HG-SMID
WG129914-7	MSD		MTHG-MIDS	FILTER SED		11/13/2013	11/18/2013	WG129914-6 L59049-1 HG-SMID-MSD

WG130168 (Filter Seds) Department: 6 - Metals Move Date: 2014-01-03 15:29:18

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L59190-1	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	FILTER SED	11/7/2013	12/4/2013	12/5/2013	
L59190-2	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	FILTER SED	11/7/2013	12/4/2013	12/5/2013	
WG130168-1	MB		MTHG-MIDS	SOLIDBLANK		12/4/2013	12/5/2013	METHOD BLANK
WG130168-2	SB		MTHG-MIDS	SOLIDBLANK		12/4/2013	12/5/2013	WG130168-1 HG-SMID
WG130168-3	LCS		MTHG-MIDS	FRSHWTRSED		12/4/2013	12/5/2013	WQB1
WG130168-4	LCSD		MTHG-MIDS	FRSHWTRSED		12/4/2013	12/5/2013	WG130168-3 WQB1
WG130168-5	LD		MTHG-MIDS	FILTER SED		12/4/2013	12/5/2013	L59190-1 RPD-SOL
WG130168-6	MS		MTHG-MIDS	FILTER SED		12/4/2013	12/5/2013	L59190-1 HG-SMID
WG130168-7	MSD		MTHG-MIDS	FILTER SED		12/4/2013	12/5/2013	WG130168-6 L59190-1 HG-SMID-MSD

WG130972 (Filter seds) Department: 6 - Metals Move Date: 2014-02-20 15:20:46

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L59472-3	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	FILTER SED	1/8/2014	2/3/2014	2/5/2014	
L59596-1	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	FILTER SED	1/28/2014	2/3/2014	2/5/2014	
L59596-2	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	FILTER SED	1/29/2014	2/3/2014	2/5/2014	
WG130972-1	MB		MTHG-MIDS	SOLIDBLANK		2/3/2014	2/5/2014	METHOD BLANK
WG130972-2	SB		MTHG-MIDS	SOLIDBLANK		2/3/2014	2/5/2014	WG130972-1 HG-SMID
WG130972-3	LCS		MTHG-MIDS	FRSHWTRSED		2/3/2014	2/5/2014	WQB1
WG130972-4	LCSD		MTHG-MIDS	FRSHWTRSED		2/3/2014	2/5/2014	WG130972-3 WQB1
WG130972-5	LD		MTHG-MIDS	FILTER SED		2/3/2014	2/5/2014	L59596-1 RPD-SOL
WG130972-6	MS		MTHG-MIDS	FILTER SED		2/3/2014	2/5/2014	L59596-1 HG-SMID
WG130972-7	MSD		MTHG-MIDS	FILTER SED		2/3/2014	2/5/2014	WG130972-6 L59596-1 HG-SMID-MSD

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WG131469 (filter seds) Department: 6 - Metals Move Date: 2014-04-10 14:29:04

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L59723-1	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	FILTER SED	2/12/2014	3/6/2014	3/10/2014	
L59723-2	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	FILTER SED	2/11/2014	3/6/2014	3/10/2014	
L59723-3	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	FILTER SED	2/18/2014	3/6/2014	3/10/2014	
L59723-4	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	FILTER SED	2/18/2014	3/6/2014	3/10/2014	
WG131469-1	MB		MTHG-MIDS	SOLIDBLANK		3/6/2014	3/10/2014	METHOD BLANK
WG131469-2	SB		MTHG-MIDS	SOLIDBLANK		3/6/2014	3/10/2014	WG131469-1 HG-SMID
WG131469-3	LCS		MTHG-MIDS	FRSHWTRSED		3/6/2014	3/10/2014	WQB1
WG131469-4	LCSD		MTHG-MIDS	FRSHWTRSED		3/6/2014	3/10/2014	WG131469-3 WQB1
WG131469-5	LD		MTHG-MIDS	FILTER SED		3/6/2014	3/10/2014	L59723-4 RPD-SOL
WG131469-6	MS		MTHG-MIDS	FILTER SED		3/6/2014	3/10/2014	L59723-4 HG-SMID
WG131469-7	MSD		MTHG-MIDS	FILTER SED		3/6/2014	3/10/2014	WG131469-6 L59723-4 HG-SMID-MSD

WG131893 (Filter Seds) Department: 6 - Metals Move Date: 2014-04-16 15:02:17

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L59919-1	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	FILTER SED	3/5/2014	3/31/2014	4/1/2014	
L59919-2	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	FILTER SED	3/5/2014	3/31/2014	4/1/2014	
WG131893-1	MB		MTHG-MIDS	SOLIDBLANK		3/31/2014	4/1/2014	METHOD BLANK
WG131893-2	SB		MTHG-MIDS	SOLIDBLANK		3/31/2014	4/1/2014	WG131893-1 HG-SMID
WG131893-3	LCS		MTHG-MIDS	FRSHWTRSED		3/31/2014	4/1/2014	WQB1
WG131893-4	LCSD		MTHG-MIDS	FRSHWTRSED		3/31/2014	4/1/2014	WG131893-3 WQB1
WG131893-5	LD		MTHG-MIDS	FILTER SED		3/31/2014	4/1/2014	L59919-1 RPD-SOL
WG131893-6	MS		MTHG-MIDS	FILTER SED		3/31/2014	4/1/2014	L59919-1 HG-SMID
WG131893-7	MSD		MTHG-MIDS	FILTER SED		3/31/2014	4/1/2014	WG131893-6 L59919-1 HG-SMID-MSD

WG132653 (LDW Green river) Department: 6 - Metals Move Date: 2014-06-12 12:21:37

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L60187-1	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	FILTER SED	4/16/2014	5/13/2014	5/14/2014	
L60187-2	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	FILTER SED	4/16/2014	5/13/2014	5/14/2014	
WG132653-1	LCS		MTHG-MIDS	FRSHWTRSED		5/13/2014	5/14/2014	WQB1
WG132653-2	LCSD		MTHG-MIDS	FRSHWTRSED		5/13/2014	5/14/2014	WG132653-1 WQB1
WG132653-3	MB		MTHG-MIDS	SOLIDBLANK		5/13/2014	5/14/2014	METHOD BLANK

WG132653-4	SB	MTHG-MIDS	SOLIDBLANK	5/13/2014	5/14/2014	WG132653-3 HG-SMID
WG132653-5	MS	MTHG-MIDS	FILTER SED	5/13/2014	5/14/2014	L60187-1 HG-SMID
WG132653-6	MSD	MTHG-MIDS	FILTER SED	5/13/2014	5/14/2014	WG132653-5 L60187-1 HG-SMID-MSD
WG132653-7	LD	MTHG-MIDS	FILTER SED	5/13/2014	5/14/2014	L60187-1 RPD-SOL

WG135928 (04-nov-14 LDW) Department: 6 - Metals Move Date: 2014-12-05 08:51:17

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L61510-1	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	FILTER SED	10/7/2014	11/4/2014	11/4/2014	
L61568-1	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	FILTER SED	10/22/2014	11/4/2014	11/4/2014	
L61568-2	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	FILTER SED	10/22/2014	11/4/2014	11/4/2014	
WG135928-1	MB		MTHG-MIDS	SOLIDBLANK		11/4/2014	11/4/2014	MB
WG135928-2	SB		MTHG-MIDS	SOLIDBLANK		11/4/2014	11/4/2014	WG135928-1 HG-SMID
WG135928-3	MS		MTHG-MIDS	FILTER SED		11/4/2014	11/4/2014	L61510-1 HG-SMID
WG135928-4	MSD		MTHG-MIDS	FILTER SED		11/4/2014	11/4/2014	WG135928-3 L61510-1 HG-SMID-MSD
WG135928-5	LCS		MTHG-MIDS	SOIL		11/4/2014	11/4/2014	ERASOIL
WG135928-6	LCSD		MTHG-MIDS	SOIL		11/4/2014	11/4/2014	WG135928-5 ERASOIL

WG126014 (Green R Seds) Department: 6 - Metals Move Date: 2013-04-24 09:21:36

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L57305-1	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	TRAP SED	2/14/2013	3/27/2013	3/28/2013	
L57305-2	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	TRAP SED	2/14/2013	3/27/2013	3/28/2013	
L57305-3	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	TRAP SED	2/4/2013	3/27/2013	3/28/2013	
L57305-4	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	TRAP SED	2/4/2013	3/27/2013	3/28/2013	
L57305-5	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	TRAP SED	2/4/2013	3/27/2013	3/28/2013	
L57305-6	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	TRAP SED	2/4/2013	3/27/2013	3/28/2013	
L57495-1	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	FILTER SED	2/22/2013	3/27/2013	3/28/2013	
L57495-4	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	FILTER SED	2/22/2013	3/27/2013	3/28/2013	
L57495-5	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	FILTER SED	2/22/2013	3/27/2013	3/28/2013	
WG126014-1	MB		MTICPMS-SED	SOLIDBLANK		3/27/2013	3/28/2013	METHOD BLANK
WG126014-2	SB		MTICPMS-SED	SOLIDBLANK		3/27/2013	3/28/2013	WG126014-1 MS-100
WG126014-3	LCS		MTICPMS-SED	SOIL		3/27/2013	3/28/2013	ERASOIL
WG126014-4	LCSD		MTICPMS-SED	SOIL		3/27/2013	3/28/2013	WG126014-3 ERASOIL RPD-SOL
WG126014-5	LCS		MTICPMS-SED	FRSHWTRSED		3/27/2013	3/28/2013	BUFFSED
WG126014-6	LD		MTICPMS-SED	TRAP SED		3/27/2013	3/28/2013	L57305-4 RPD-SOL
WG126014-7	MS		MTICPMS-SED	TRAP SED		3/27/2013	3/28/2013	L57305-4 MS-100

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WG126930 (5/22/13 Filtered Seds) Department: 6 - Metals Move Date: 2013-05-24 12:52:30

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L57634-1	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	FILTER SED	3/20/2013	5/22/2013	5/22/2013	
L57634-2	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	FILTER SED	3/20/2013	5/22/2013	5/22/2013	
L57634-3	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	FILTER SED	3/20/2013	5/22/2013	5/22/2013	
L57732-1	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	FILTER SED	4/4/2013	5/22/2013	5/22/2013	
L57732-2	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	FILTER SED	4/4/2013	5/22/2013	5/22/2013	
L57732-3	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	FILTER SED	4/4/2013	5/22/2013	5/22/2013	
L57792-1	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	FILTER SED	4/18/2013	5/22/2013	5/22/2013	
L57792-2	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	FILTER SED	4/18/2013	5/22/2013	5/22/2013	
L57792-3	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	FILTER SED	4/18/2013	5/22/2013	5/22/2013	
WG126930-1	MB		MTICPMS-SED	SOLIDBLANK		5/22/2013	5/22/2013	METHOD BLANK
WG126930-2	SB		MTICPMS-SED	SOLIDBLANK		5/22/2013	5/22/2013	WG126930-1 MS-100 SPIKE BLANK
WG126930-3	LCS		MTICPMS-SED	FRSHWTRSED		5/22/2013	5/22/2013	BUFFSED LAB CONTROL SAMPLE
WG126930-4	LCSD		MTICPMS-SED	FRSHWTRSED		5/22/2013	5/22/2013	WG126930-3 BUFFSED RPD-SOL LCSD
WG126930-5	LD		MTICPMS-SED	FILTER SED		5/22/2013	5/22/2013	L57634-2 RPD-SOL LAB DUPLICATE
WG126930-6	MS		MTICPMS-SED	FILTER SED		5/22/2013	5/22/2013	L57634-2 MS-100 MATRIX SPIKE
WG126930-7	LCS		MTICPMS-SED	SOIL		5/22/2013	5/22/2013	ERASOIL LAB CONTROL SAMPLE

WG129766 (08-NOV-13 Green R Seds) Department: 6 - Metals Move Date: 2013-11-25 15:41:18

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L58537-1	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	FILTER SED	8/13/2013	11/8/2013	11/15/2013	
L58537-2	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	FILTER SED	8/19/2013	11/8/2013	11/15/2013	
L58754-1	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	FILTER SED	9/10/2013	11/8/2013	11/15/2013	
L58785-1	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	TRAP SED	9/30/2013	11/8/2013	11/15/2013	
L58785-2	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	TRAP SED	9/30/2013	11/8/2013	11/15/2013	
L58785-3	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	TRAP SED	10/8/2013	11/8/2013	11/15/2013	
L58785-4	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	TRAP SED	10/8/2013	11/8/2013	11/15/2013	
L58785-5	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	TRAP SED	10/8/2013	11/8/2013	11/15/2013	
L58785-6	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	TRAP SED	9/30/2013	11/8/2013	11/15/2013	
L58977-1	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	FILTER SED	10/16/2013	11/8/2013	11/15/2013	
L59049-1	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	FILTER SED	10/22/2013	11/8/2013	11/15/2013	
WG129766-1	MB		MTICPMS-SED	SOLIDBLANK		11/8/2013	11/15/2013	METHOD BLANK
WG129766-2	SB		MTICPMS-SED	SOLIDBLANK		11/8/2013	11/15/2013	WG129766-1 MS-100
WG129766-3	LD		MTICPMS-SED	TRAP SED		11/8/2013	11/15/2013	L58785-4 RPD-SOL
WG129766-4	MS		MTICPMS-SED	TRAP SED		11/8/2013	11/15/2013	L58785-4 MS-100

WG129766-5	LCS	MTICPMS-SED	FRSHWTRSED	11/8/2013	11/15/2013	BUFFSED
WG129766-6	LCSD	MTICPMS-SED	FRSHWTRSED	11/8/2013	11/15/2013	WG129766-5 BUFFSED
WG129766-7	LCS	MTICPMS-SED	SOIL	11/8/2013	11/15/2013	ERASOIL
WG129766-8	LCSD	MTICPMS-SED	SOIL	11/8/2013	11/15/2013	WG129766-7 ERASOIL

WG130487 (12/27/13 Filtered Seds) Department: 6 - Metals Move Date: 2014-01-03 13:40:17

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L59190-1	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	FILTER SED	11/7/2013	12/27/2013	12/31/2013	
L59190-2	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	FILTER SED	11/7/2013	12/27/2013	12/31/2013	
WG130487-1	MB		MTICPMS-SED	SOLIDBLANK		12/27/2013	12/31/2013	METHOD BLANK
WG130487-2	SB		MTICPMS-SED	SOLIDBLANK		12/27/2013	12/31/2013	WG130487-1 MS-100 SPIKE BLANK
WG130487-3	LCS		MTICPMS-SED	SOIL		12/27/2013	12/31/2013	ERASOIL LAB CONTROL SAMPLE
WG130487-4	LCSD		MTICPMS-SED	SOIL		12/27/2013	12/31/2013	WG130487-3 ERASOIL LCSD
WG130487-5	LCS		MTICPMS-SED	FRSHWTRSED		12/27/2013	12/31/2013	BUFFSED LAB CONTROL SAMPLE
WG130487-6	LCSD		MTICPMS-SED	FRSHWTRSED		12/27/2013	12/31/2013	WG130487-5 BUFFSED LCSD
WG130487-7	LD		MTICPMS-SED	FILTER SED		12/27/2013	12/31/2013	L59190-1 RPD-SOL LAB DUPLICATE
WG130487-8	MS		MTICPMS-SED	FILTER SED		12/27/2013	12/31/2013	L59190-1 MS-100 MATRIX SPIKE

WG131416 (3/7/14 Filtered Seds) Department: 6 - Metals Move Date: 2014-04-10 14:23:27

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L59472-1	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	FILTER SED	1/8/2014	3/7/2014	3/10/2014	
L59472-3	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	FILTER SED	1/8/2014	3/7/2014	3/10/2014	
L59596-1	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	FILTER SED	1/28/2014	3/7/2014	3/10/2014	
L59596-2	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	FILTER SED	1/29/2014	3/7/2014	3/10/2014	
L59723-1	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	FILTER SED	2/12/2014	3/7/2014	3/10/2014	
L59723-2	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	FILTER SED	2/11/2014	3/7/2014	3/10/2014	
L59723-3	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	FILTER SED	2/18/2014	3/7/2014	3/10/2014	
L59723-4	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	FILTER SED	2/18/2014	3/7/2014	3/10/2014	
WG131416-1	MB		MTICPMS-SED	SOLIDBLANK		3/7/2014	3/10/2014	METHOD BLANK
WG131416-2	SB		MTICPMS-SED	SOLIDBLANK		3/7/2014	3/10/2014	WG131416-1 MS-100 SPIKE BLANK
WG131416-3	LCS		MTICPMS-SED	SOIL		3/7/2014	3/10/2014	ERASOIL
WG131416-4	LCSD		MTICPMS-SED	SOIL		3/7/2014	3/10/2014	WG131416-3 ERASOIL
WG131416-5	LCS		MTICPMS-SED	FRSHWTRSED		3/7/2014	3/10/2014	BUFFSED
WG131416-6	LCSD		MTICPMS-SED	FRSHWTRSED		3/7/2014	3/10/2014	WG131416-5 BUFFSED
WG131416-7	LD		MTICPMS-SED	FILTER SED		3/7/2014	3/10/2014	L59723-4 RPD-SOL LAB DUPLICATE
WG131416-8	MS		MTICPMS-SED	FILTER SED		3/7/2014	3/10/2014	L59723-4 MS-100 MATRIX SPIKE

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WG133002 (6/3/14 Filtered Seds) Department: 6 - Metals Move Date: 2014-06-12 11:45:21

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L59919-1	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	FILTER SED	3/5/2014	6/3/2014	6/5/2014	
L59919-2	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	FILTER SED	3/5/2014	6/3/2014	6/5/2014	
L60187-1	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	FILTER SED	4/16/2014	6/3/2014	6/5/2014	
L60187-2	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	FILTER SED	4/16/2014	6/3/2014	6/5/2014	
WG133002-1	MB		MTICPMS-SED	SOLIDBLANK		6/3/2014	6/5/2014	METHOD BLANK
WG133002-2	SB		MTICPMS-SED	SOLIDBLANK		6/3/2014	6/5/2014	WG133002-1 MS-100
WG133002-3	LCS		MTICPMS-SED	SOIL		6/3/2014	6/5/2014	ERASOIL
WG133002-4	LCS		MTICPMS-SED	FRSHWTRSED		6/3/2014	6/5/2014	BUFFSED
WG133002-5	LCSD		MTICPMS-SED	FRSHWTRSED		6/3/2014	6/5/2014	WG133002-4 BUFFSED RPDSOL
WG133002-6	LD		MTICPMS-SED	FILTER SED		6/3/2014	6/5/2014	L59919-2 RPD-SOL
WG133002-7	MS		MTICPMS-SED	FILTER SED		6/3/2014	6/5/2014	L59919-2 MS-100

WG136472 (12/8/14 Filtered Seds) Department: 6 - Metals Move Date: 2014-12-12 09:45:49

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L61510-1	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	FILTER SED	10/7/2014	12/8/2014	12/9/2014	
L61568-1	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	FILTER SED	10/22/2014	12/8/2014	12/9/2014	
L61568-2	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	FILTER SED	10/22/2014	12/8/2014	12/9/2014	
WG136472-1	MB		MTICPMS-SED	SOLIDBLANK		12/8/2014	12/9/2014	METHOD BLANK
WG136472-2	SB		MTICPMS-SED	SOLIDBLANK		12/8/2014	12/9/2014	WG136472-1 MS-100 SPIKE BLANK
WG136472-3	LD		MTICPMS-SED	FILTER SED		12/8/2014	12/9/2014	L61568-1 RPD-SOL LAB DUPLICATE
WG136472-4	MS		MTICPMS-SED	FILTER SED		12/8/2014	12/9/2014	L61568-1 MS-100 MATRIX SPIKE
WG136472-5	LCS		MTICPMS-SED	SOIL		12/8/2014	12/9/2014	ERASOIL
WG136472-6	LCSD		MTICPMS-SED	SOIL		12/8/2014	12/9/2014	WG136472-5 ERASOIL RPD-SOL
WG136472-7	LCS		MTICPMS-SED	FRSHWTRSED		12/8/2014	12/9/2014	BUFFSED
WG136472-8	LCSD		MTICPMS-SED	FRSHWTRSED		12/8/2014	12/9/2014	WG136472-7 BUFFSED RPD-SOL

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WG125932 (PPS#550) Department: 7 - Organics Move Date: 2013-04-22 09:24:43

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L57495-1	423589-335-4	LDW Green River, Suspended Solids	ORCLPEST-ACID	FILTER SED	2/22/2013	3/7/2013	3/18/2013	
L57495-4	423589-335-4	LDW Green River, Suspended Solids	ORCLPEST-ACID	FILTER SED	2/22/2013	3/7/2013	3/18/2013	
L57495-5	423589-335-4	LDW Green River, Suspended Solids	ORCLPEST-ACID	FILTER SED	2/22/2013	3/7/2013	3/18/2013	
WG125932-1	MB		ORCLPEST-ACID	OTHR SOLID		3/7/2013	3/18/2013	MB130307

WG126588 (pps#556 clpest-acid) Department: 7 - Organics Move Date: 2013-05-14 12:45:55

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L57634-1	423589-335-4	LDW Green River, Suspended Solids	ORCLPEST-ACID	FILTER SED	3/20/2013	4/12/2013	4/23/2013	
L57634-2	423589-335-4	LDW Green River, Suspended Solids	ORCLPEST-ACID	FILTER SED	3/20/2013	4/12/2013	4/23/2013	
L57634-3	423589-335-4	LDW Green River, Suspended Solids	ORCLPEST-ACID	FILTER SED	3/20/2013	4/12/2013	4/23/2013	
L57732-1	423589-335-4	LDW Green River, Suspended Solids	ORCLPEST-ACID	FILTER SED	4/4/2013	4/12/2013	4/23/2013	
L57732-2	423589-335-4	LDW Green River, Suspended Solids	ORCLPEST-ACID	FILTER SED	4/4/2013	4/12/2013	4/23/2013	
L57732-3	423589-335-4	LDW Green River, Suspended Solids	ORCLPEST-ACID	FILTER SED	4/4/2013	4/12/2013	4/23/2013	
WG126588-1	MB		ORCLPEST-ACID	OTHR SOLID		4/12/2013	4/23/2013	MB130412
WG126588-2	SB		ORCLPEST-ACID	OTHR SOLID		4/12/2013	4/23/2013	WG126588-1
WG126588-3	SBD		ORCLPEST-ACID	OTHR SOLID		4/12/2013	4/23/2013	WG126588-2 WG126588-1

WG125733 (bs#420 pah-sim) Department: 7 - Organics Move Date: 2013-04-17 10:49:04

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L57495-1	423589-335-4	LDW Green River, Suspended Solids	ORPAH-SIM	FILTER SED	2/22/2013	3/7/2013	4/10/2013	

L57495-4	423589-335-4	LDW Green River, Suspended Solids	ORPAH-SIM	FILTER SED	2/22/2013	3/7/2013	4/10/2013	
L57495-5	423589-335-4	LDW Green River, Suspended Solids	ORPAH-SIM	FILTER SED	2/22/2013	3/7/2013	4/10/2013	
WG125733-1	MB		ORPAH-SIM	OTHR SOLID		3/7/2013	4/10/2013	MB130307
WG125733-2	SB		ORPAH-SIM	OTHR SOLID		3/7/2013	4/10/2013	WG125733-1
WG125733-3	SBD		ORPAH-SIM	OTHR SOLID		3/7/2013	4/10/2013	WG125733-2 WG125733-1
WG125733-4	MS		ORPAH-SIM	FILTER SED		3/7/2013	4/10/2013	L57495-5
WG125733-5	SRM		ORPAH-SIM	FILTER SED		3/7/2013	4/10/2013	
WG125733-6	SRMD		ORPAH-SIM	FILTER SED		3/7/2013	4/10/2013	WG125733-5
WG125733-7	LD		ORPAH-SIM	FILTER SED		3/7/2013	4/10/2013	L57495-1

WG126329 (bs#424 pah-sim) Department: 7 - Organics Move Date: 2013-06-05 10:07:40

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments	
L57634-1	423589-335-4	LDW Green River, Suspended Solids	ORPAH-SIM	FILTER SED	3/20/2013	4/12/2013	4/26/2013		
L57634-2	423589-335-4	LDW Green River, Suspended Solids	ORPAH-SIM	FILTER SED	3/20/2013	4/12/2013	4/26/2013		
L57732-1	423589-335-4	LDW Green River, Suspended Solids	ORPAH-SIM	FILTER SED	4/4/2013	4/12/2013	4/26/2013		
L57732-2	423589-335-4	LDW Green River, Suspended Solids	ORPAH-SIM	FILTER SED	4/4/2013	4/12/2013	4/29/2013		
L57732-3	423589-335-4	LDW Green River, Suspended Solids	ORPAH-SIM	FILTER SED	4/4/2013	4/12/2013	4/26/2013		
WG126329-1	MB		ORPAH-SIM	OTHR SOLID		4/12/2013	4/26/2013	MB130412	
WG126329-2	SB		ORPAH-SIM	OTHR SOLID		4/12/2013	4/26/2013	WG126329-1	
WG126329-3	MS		ORPAH-SIM	FILTER SED		4/12/2013	4/26/2013	L57732-2	
WG126329-4	MSD		ORPAH-SIM	FILTER SED		4/12/2013	4/26/2013	WG126329-3 L57732-2	
WG126329-5	SRM		ORPAH-SIM	SALTWTRSED		4/12/2013	4/26/2013		1944
WG126329-6	SRMD		ORPAH-SIM	SALTWTRSED		4/12/2013	4/26/2013	WG126329-5	

WG126920 (bs#429 pah-sim) Department: 7 - Organics Move Date: 2013-06-07 09:39:17

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L57792-1	423589-335-4	LDW Green River, Suspended Solids	ORPAH-SIM	FILTER SED	4/18/2013	5/21/2013	5/30/2013	
L57792-2	423589-335-4	LDW Green River, Suspended Solids	ORPAH-SIM	FILTER SED	4/18/2013	5/21/2013	5/30/2013	
L57792-3	423589-335-4	LDW Green River, Suspended Solids	ORPAH-SIM	FILTER SED	4/18/2013	5/21/2013	5/30/2013	
WG126920-1	MB		ORPAH-SIM	OTHR SOLID		5/21/2013	5/30/2013	MB130521
WG126920-2	SB		ORPAH-SIM	OTHR SOLID		5/21/2013	5/30/2013	WG126920-1
WG126920-3	SBD		ORPAH-SIM	OTHR SOLID		5/21/2013	5/30/2013	WG126920-2 WG126920-1
WG126920-4	SRM		ORPAH-SIM	SALTWTRSED		5/21/2013	5/30/2013	
WG126920-5	SRMD		ORPAH-SIM	SALTWTRSED		5/21/2013	5/30/2013	WG126920-4

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WG129254 (BS#442 pah-sim) Department: 7 - Organics Move Date: 2013-11-20 11:36:41

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L58537-1	423589-335-4	LDW Green River, Suspended Solids	ORPAH-SIM	FILTER SED	8/13/2013	10/9/2013	11/16/2013	
L58537-2	423589-335-4	LDW Green River, Suspended Solids	ORPAH-SIM	FILTER SED	8/19/2013	10/9/2013	11/16/2013	
L58754-1	423589-335-4	LDW Green River, Suspended Solids	ORPAH-SIM	FILTER SED	9/10/2013	10/9/2013	11/16/2013	
WG129254-1	MB		ORPAH-SIM	OTHR SOLID		10/9/2013	11/16/2013	MB131009
WG129254-2	SB		ORPAH-SIM	OTHR SOLID		10/9/2013	11/16/2013	WG129254-1
WG129254-3	SBD		ORPAH-SIM	OTHR SOLID		10/9/2013	11/16/2013	WG129254-2 WG129254-1
WG129254-4	SRM		ORPAH-SIM	SALTWTRSED		10/9/2013	11/16/2013	1944
WG129254-5	SRMD		ORPAH-SIM	SALTWTRSED		10/9/2013	11/16/2013	WG129254-4
WG129254-6	MS		ORPAH-SIM	FILTER SED		10/9/2013	11/16/2013	L58537-2
WG129254-7	MSD		ORPAH-SIM	FILTER SED		10/9/2013	11/16/2013	WG129254-6 L58537-2
WG129254-8	LD		ORPAH-SIM	FILTER SED		10/9/2013	11/16/2013	L58537-2

WG129990 (BS#447 pah-sim) Department: 7 - Organics Move Date: 2013-12-11 14:00:13

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L58977-1	423589-335-4	LDW Green River, Suspended Solids	ORPAH-SIM	FILTER SED	10/16/2013	11/21/2013	12/3/2013	
L59049-1	423589-335-4	LDW Green River, Suspended Solids	ORPAH-SIM	FILTER SED	10/22/2013	11/21/2013	12/3/2013	
L59190-1	423589-335-4	LDW Green River, Suspended Solids	ORPAH-SIM	FILTER SED	11/7/2013	11/21/2013	12/3/2013	
L59190-2	423589-335-4	LDW Green River, Suspended Solids	ORPAH-SIM	FILTER SED	11/7/2013	11/21/2013	12/3/2013	
WG129990-1	MB		ORPAH-SIM	OTHR SOLID		11/21/2013	12/3/2013	MB131121
WG129990-2	SB		ORPAH-SIM	OTHR SOLID		11/21/2013	12/3/2013	WG129990-1
WG129990-3	MS		ORPAH-SIM	FILTER SED		11/21/2013	12/3/2013	L58977-1
WG129990-4	MSD		ORPAH-SIM	FILTER SED		11/21/2013	12/3/2013	WG129990-3 L58977-1
WG129990-5	SRM		ORPAH-SIM	FRSHWTRSED		11/21/2013	12/3/2013	1944
WG129990-6	SRMD		ORPAH-SIM	FRSHWTRSED		11/21/2013	12/3/2013	WG129990-5 1944
WG129990-7	LD		ORPAH-SIM	FILTER SED		11/21/2013	12/3/2013	L59190-2

WG130978 (BS#452 pah-sim) Department: 7 - Organics Move Date: 2014-02-28 13:59:33

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L59457-1	423589-335-4	LDW Green River, Suspended Solids	ORPAH-SIM	FILTER SED	12/9/2013	2/5/2014	2/19/2014	
L59472-1	423589-335-4	LDW Green River, Suspended Solids	ORPAH-SIM	FILTER SED	1/8/2014	2/5/2014	2/19/2014	
L59472-3	423589-335-4	LDW Green River, Suspended Solids	ORPAH-SIM	FILTER SED	1/8/2014	2/5/2014	2/19/2014	
L59596-1	423589-335-4	LDW Green River, Suspended Solids	ORPAH-SIM	FILTER SED	1/28/2014	2/5/2014	2/19/2014	
L59596-2	423589-335-4	LDW Green River, Suspended Solids	ORPAH-SIM	FILTER SED	1/29/2014	2/5/2014	2/19/2014	

WG130978-1	MB		ORPAH-SIM	OTHR SOLID		2/5/2014	2/19/2014	MB140205
WG130978-2	SB		ORPAH-SIM	OTHR SOLID		2/5/2014	2/19/2014	WG130978-1
WG130978-3	MS		ORPAH-SIM	FILTER SED		2/5/2014	2/19/2014	L59472-3
WG130978-4	MSD		ORPAH-SIM	FILTER SED		2/5/2014	2/19/2014	WG130978-3 L59472-3
WG130978-5	SRM		ORPAH-SIM	SALTWTRSED		2/5/2014	2/19/2014	1944
WG130978-6	SRMD		ORPAH-SIM	SALTWTRSED		2/5/2014	2/19/2014	WG130978-5 1944
WG130978-7	LD		ORPAH-SIM	FILTER SED		2/5/2014	2/19/2014	L59596-1

WG131384 (bs#456 pah-sim) Department: 7 - Organics Move Date: 2014-04-03 11:25:45

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L59723-1	423589-335-4	LDW Green River, Suspended Solids	ORPAH-SIM	FILTER SED	2/12/2014	3/5/2014	3/10/2014	
L59723-2	423589-335-4	LDW Green River, Suspended Solids	ORPAH-SIM	FILTER SED	2/11/2014	3/5/2014	3/10/2014	
L59723-3	423589-335-4	LDW Green River, Suspended Solids	ORPAH-SIM	FILTER SED	2/18/2014	3/5/2014	3/10/2014	
L59723-4	423589-335-4	LDW Green River, Suspended Solids	ORPAH-SIM	FILTER SED	2/18/2014	3/5/2014	3/10/2014	
WG131384-1	MB		ORPAH-SIM	OTHR SOLID		3/5/2014	3/10/2014	MB140305
WG131384-2	SB		ORPAH-SIM	OTHR SOLID		3/5/2014	3/10/2014	WG131384-1
WG131384-3	MS		ORPAH-SIM	FILTER SED		3/5/2014	3/10/2014	L59723-4
WG131384-4	MSD		ORPAH-SIM	FILTER SED		3/5/2014	3/10/2014	WG131384-3 L59723-4
WG131384-5	SRM		ORPAH-SIM	SALTWTRSED		3/5/2014	3/10/2014	1944
WG131384-6	SRMD		ORPAH-SIM	SALTWTRSED		3/5/2014	3/10/2014	WG131384-5 1944
WG131384-7	LD		ORPAH-SIM	FILTER SED		3/5/2014	3/10/2014	L59723-2

WG131804 (BS#457 pah-sim) Department: 7 - Organics Move Date: 2014-04-22 07:50:58

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L59919-1	423589-335-4	LDW Green River, Suspended Solids	ORPAH-SIM	FILTER SED	3/5/2014	3/27/2014	4/8/2014	
L59919-2	423589-335-4	LDW Green River, Suspended Solids	ORPAH-SIM	FILTER SED	3/5/2014	3/27/2014	4/8/2014	
WG131804-1	MB		ORPAH-SIM	OTHR SOLID		3/27/2014	4/8/2014	MB140327
WG131804-2	SB		ORPAH-SIM	OTHR SOLID		3/27/2014	4/8/2014	WG131804-1
WG131804-3	MS		ORPAH-SIM	FILTER SED		3/27/2014	4/8/2014	L59919-1
WG131804-4	MSD		ORPAH-SIM	FILTER SED		3/27/2014	4/8/2014	WG131804-3 L59919-1
WG131804-5	SRM		ORPAH-SIM	SALTWTRSED		3/27/2014	4/8/2014	1944
WG131804-6	SRMD		ORPAH-SIM	SALTWTRSED		3/27/2014	4/8/2014	WG131804-5 1944
WG131804-7	LD		ORPAH-SIM	FILTER SED		3/27/2014	4/8/2014	L59919-1

WG132411 (bs#461 pah-sim) Department: 7 - Organics Move Date: 2014-06-10 13:48:45

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Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L60187-1	423589-335-4	LDW Green River, Suspended Solids	ORPAH-SIM	FILTER SED	4/16/2014	5/1/2014	6/3/2014	
L60187-2	423589-335-4	LDW Green River, Suspended Solids	ORPAH-SIM	FILTER SED	4/16/2014	5/1/2014	6/3/2014	
WG132411-1	MB		ORPAH-SIM	OTHR SOLID		5/1/2014	6/3/2014	MB140501
WG132411-2	SB		ORPAH-SIM	OTHR SOLID		5/1/2014	6/3/2014	WG132411-1
WG132411-3	SBD		ORPAH-SIM	OTHR SOLID		5/1/2014	6/3/2014	WG132411-2 WG132411-1
WG132411-4	SRM		ORPAH-SIM	SALTWTRSED		5/1/2014	6/3/2014	
WG132411-5	SRMD		ORPAH-SIM	SALTWTRSED		5/1/2014	6/3/2014	WG132411-4

WG136065 (PAH-SIM BS#472) Department: 7 - Organics Move Date: 2014-11-25 07:22:51

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L61510-1	423589-335-4	LDW Green River, Suspended Solids	ORPAH-SIM	FILTER SED	10/7/2014	11/13/2014	11/20/2014	
L61568-1	423589-335-4	LDW Green River, Suspended Solids	ORPAH-SIM	FILTER SED	10/22/2014	11/13/2014	11/20/2014	
L61568-2	423589-335-4	LDW Green River, Suspended Solids	ORPAH-SIM	FILTER SED	10/22/2014	11/13/2014	11/20/2014	
WG136065-1	MB		ORPAH-SIM	OTHR SOLID		11/13/2014	11/20/2014	MB141113
WG136065-2	SB		ORPAH-SIM	OTHR SOLID		11/13/2014	11/20/2014	WG136065-1
WG136065-3	SBD		ORPAH-SIM	OTHR SOLID		11/13/2014	11/20/2014	WG136065-2 WG136065-1
WG136065-4	MS		ORPAH-SIM	FILTER SED		11/13/2014	11/20/2014	L61568-2
WG136065-5	SRM		ORPAH-SIM	SALTWTRSED		11/13/2014	11/20/2014	1944
WG136065-6	SRMD		ORPAH-SIM	SALTWTRSED		11/13/2014	11/20/2014	WG136065-5

WG125732 (pps#550 pcb) Department: 7 - Organics Move Date: 2013-04-22 09:27:32

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L57495-1	423589-335-4	LDW Green River, Suspended Solids	ORPCB	FILTER SED	2/22/2013	3/7/2013	3/11/2013	
L57495-4	423589-335-4	LDW Green River, Suspended Solids	ORPCB	FILTER SED	2/22/2013	3/7/2013	3/11/2013	
L57495-5	423589-335-4	LDW Green River, Suspended Solids	ORPCB	FILTER SED	2/22/2013	3/7/2013	3/11/2013	
WG125732-1	MB		ORPCB	OTHR SOLID		3/7/2013	3/11/2013	MB130307
WG125732-2	SB		ORPCB	OTHR SOLID		3/7/2013	3/11/2013	WG125732-1
WG125732-3	SBD		ORPCB	OTHR SOLID		3/7/2013	3/11/2013	WG125732-2 WG125732-1
WG125732-4	MS		ORPCB	FILTER SED		3/7/2013	3/11/2013	L57495-4
WG125732-5	SRM		ORPCB	FILTER SED		3/7/2013	3/11/2013	
WG125732-6	SRMD		ORPCB	FILTER SED		3/7/2013	3/11/2013	WG125732-5

WG126330 (pps#556 pcb) Department: 7 - Organics Move Date: 2013-05-14 12:46:35

LIMSView Batch Report for Green River Watershed Filtered Solids - Data Validation - Organics - Part 1

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L57634-1	423589-335-4	LDW Green River, Suspended Solids	ORPCB	FILTER SED	3/20/2013	4/12/2013	4/19/2013	
L57634-2	423589-335-4	LDW Green River, Suspended Solids	ORPCB	FILTER SED	3/20/2013	4/12/2013	4/19/2013	
L57634-3	423589-335-4	LDW Green River, Suspended Solids	ORPCB	FILTER SED	3/20/2013	4/12/2013	4/19/2013	
L57732-1	423589-335-4	LDW Green River, Suspended Solids	ORPCB	FILTER SED	4/4/2013	4/12/2013	4/19/2013	
L57732-2	423589-335-4	LDW Green River, Suspended Solids	ORPCB	FILTER SED	4/4/2013	4/12/2013	4/19/2013	
L57732-3	423589-335-4	LDW Green River, Suspended Solids	ORPCB	FILTER SED	4/4/2013	4/12/2013	4/19/2013	
WG126330-1	MB		ORPCB	OTHR SOLID		4/12/2013	4/19/2013	MB130412
WG126330-2	SB		ORPCB	OTHR SOLID		4/12/2013	4/19/2013	WG126330-1
WG126330-3	MS		ORPCB	FILTER SED		4/12/2013	4/19/2013	L57732-1
WG126330-4	MSD		ORPCB	FILTER SED		4/12/2013	4/19/2013	WG126330-3 L57732-1
WG126330-5	SRM		ORPCB	FILTER SED		4/12/2013	4/19/2013	DUDI
WG126330-6	SRMD		ORPCB	FILTER SED		4/12/2013	4/19/2013	WG126330-5 DUDI

WG126921 (pps#563 pcb) Department: 7 - Organics Move Date: 2013-06-06 10:15:19

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L57636-16	423368-210-1	CSO Sediment Quality Characterization	ORPCB	SALTWTRSED	4/23/2013	5/21/2013	5/24/2013	
L57636-46	423368-210-1	CSO Sediment Quality Characterization	ORPCB	SALTWTRSED	4/23/2013	5/21/2013	5/24/2013	
L57792-1	423589-335-4	LDW Green River, Suspended Solids	ORPCB	FILTER SED	4/18/2013	5/21/2013	5/24/2013	
L57792-2	423589-335-4	LDW Green River, Suspended Solids	ORPCB	FILTER SED	4/18/2013	5/21/2013	5/24/2013	
L57792-3	423589-335-4	LDW Green River, Suspended Solids	ORPCB	FILTER SED	4/18/2013	5/21/2013	5/24/2013	
L57797-1	423368-210-1	CSO Sediment Quality Characterization	ORPCB	FRSHWTRSED	4/23/2013	5/21/2013	5/28/2013	
L57797-2	423368-210-1	CSO Sediment Quality Characterization	ORPCB	FRSHWTRSED	4/23/2013	5/21/2013	5/28/2013	
WG126921-1	MB		ORPCB	OTHR SOLID		5/21/2013	5/24/2013	MB130521
WG126921-2	SB		ORPCB	OTHR SOLID		5/21/2013	5/24/2013	WG126921-1
WG126921-3	MS		ORPCB	SALTWTRSED		5/21/2013	5/24/2013	L57636-16
WG126921-4	MSD		ORPCB	SALTWTRSED		5/21/2013	5/24/2013	WG126921-3 L57636-16
WG126921-5	MS		ORPCB	FRSHWTRSED		5/21/2013	5/24/2013	L57797-2
WG126921-6	MSD		ORPCB	FRSHWTRSED		5/21/2013	5/24/2013	WG126921-5 L57797-2
WG126921-7	SRM		ORPCB	SALTWTRSED		5/21/2013	5/24/2013	
WG126921-8	SRMD		ORPCB	SALTWTRSED		5/21/2013	5/24/2013	WG126921-7
WG126921-9	LD		ORPCB	SALTWTRSED		5/21/2013	5/24/2013	L57636-46
WG126921-10	LD		ORPCB	FILTER SED		5/21/2013	5/24/2013	L57792-3
WG126921-11	LD		ORPCB	FRSHWTRSED		5/21/2013	5/28/2013	L57797-1

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WG130879 () Department: 3 - Conventionals Move Date: 2014-02-06 11:00:09

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L59457-1	423589-335-4	LDW Green River, Suspended Solids	CVPSD-LD	FILTER SED	12/9/2013	1/27/2014	1/28/2014	

WG135530 (PSD-LD for LDW Grn Rvr, S) Department: 3 - Conventionals Move Date: 2014-11-10 12:25:35

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L61427-1	423589-335-4	LDW Green River, Suspended Solids	CVPSD-LD	FRESH WTR	10/9/2014	10/14/2014	10/14/2014	
L61427-2	423589-335-4	LDW Green River, Suspended Solids	CVPSD-LD	FILTER WTR	10/9/2014	10/14/2014	10/14/2014	
WG135530-1	LD		CVPSD-LD	FRESH WTR		10/14/2014	10/14/2014	L61427-1

WG136379 (PSD-LD for LDW Grn Rvr -) Department: 3 - Conventionals Move Date: 2014-12-11 15:04:01

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L61510-1	423589-335-4	LDW Green River, Suspended Solids	CVPSD-LD	FILTER SED	10/7/2014	12/2/2014	12/5/2014	
L61568-1	423589-335-4	LDW Green River, Suspended Solids	CVPSD-LD	FILTER SED	10/22/2014	12/2/2014	12/5/2014	
L61568-2	423589-335-4	LDW Green River, Suspended Solids	CVPSD-LD	FILTER SED	10/22/2014	12/2/2014	12/5/2014	
WG136379-1	LD		CVPSD-LD	FILTER SED		12/2/2014	12/5/2014	L61510-1

WG136800 () Department: 3 - Conventionals Move Date: 2015-01-23 11:44:19

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L61838-1	423589-335-4	LDW Green River, Suspended Solids	CVPSD-LD	FILTER SED	12/9/2014	12/23/2014	12/24/2014	

WG130878 () Department: 3 - Conventionals Move Date: 2014-02-06 10:54:44

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L59457-1	423589-335-4	LDW Green River, Suspended Solids	CVPSD-SC	FILTER SED	12/9/2013	1/27/2014	1/30/2014	

WG135529 (PSD-SC for LDW Grn Rvr, S) Department: 3 - Conventionals Move Date: 2014-11-10 12:05:14

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L61427-1	423589-335-4	LDW Green River, Suspended Solids	CVPSD-SC	FRESH WTR	10/9/2014	10/14/2014	10/15/2014	
L61427-2	423589-335-4	LDW Green River, Suspended Solids	CVPSD-SC	FILTER WTR	10/9/2014	10/14/2014	10/15/2014	

WG135529-1	LD		CVPSD-SC	FRESH WTR	10/14/2014	10/15/2014	L61427-1
WG135529-2	MB		CVPSD-SC	BLANK WTR	10/14/2014	10/15/2014	MB 141014

WG136378 (PSD-SC for LDW Grn Rvr -) Department: 3 - Conventionals Move Date: 2014-12-11 11:35:58

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L61510-1	423589-335-4	LDW Green River, Suspended Solids	CVPSD-SC	FILTER SED	10/7/2014	12/2/2014	12/3/2014	
L61568-1	423589-335-4	LDW Green River, Suspended Solids	CVPSD-SC	FILTER SED	10/22/2014	12/2/2014	12/3/2014	
L61568-2	423589-335-4	LDW Green River, Suspended Solids	CVPSD-SC	FILTER SED	10/22/2014	12/2/2014	12/3/2014	
WG136378-1	LD		CVPSD-SC	FILTER SED		12/2/2014	12/3/2014	L61510-1

WG136799 () Department: 3 - Conventionals Move Date: 2015-01-23 11:35:54

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L61838-1	423589-335-4	LDW Green River, Suspended Solids	CVPSD-SC	FILTER SED	12/9/2014	12/23/2014	12/24/2014	

WG130726 (Assorted TOTS) Department: 3 - Conventionals Move Date: 2014-01-21 10:06:14

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L59405-1	421196-180	Roads SWAP	CVTOTS	SOIL	1/8/2014	1/14/2014	1/15/2014	
L59405-2	421196-180	Roads SWAP	CVTOTS	SOIL	1/8/2014	1/14/2014	1/15/2014	
L59405-3	421196-180	Roads SWAP	CVTOTS	SOIL	1/8/2014	1/14/2014	1/15/2014	
L59405-4	421196-180	Roads SWAP	CVTOTS	SOIL	1/8/2014	1/14/2014	1/15/2014	
L59410-1	423575-850-4	Brightwater Conveyance System Construction NPDES Monitoring	CVTOTS	SOIL	12/31/2013	1/14/2014	1/15/2014	
L59410-2	423575-850-4	Brightwater Conveyance System Construction NPDES Monitoring	CVTOTS	SOIL	12/31/2013	1/14/2014	1/15/2014	
L59410-3	423575-850-4	Brightwater Conveyance System Construction NPDES Monitoring	CVTOTS	SOIL	12/31/2013	1/14/2014	1/15/2014	
L59417-1	421430-300	OCS-Lake Haven Utility District routine testing	CVTOTS	SLUDGE	1/13/2014	1/14/2014	1/15/2014	
L59417-2	421430-300	OCS-Lake Haven Utility District routine testing	CVTOTS	SLUDGE	1/13/2014	1/14/2014	1/15/2014	
L59454-1	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	TRAP SED	1/7/2014	1/14/2014	1/15/2014	

L59454-2	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	TRAP SED	1/7/2014	1/14/2014	1/15/2014	
L59454-3	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	TRAP SED	1/7/2014	1/14/2014	1/15/2014	
L59454-4	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	TRAP SED	1/7/2014	1/14/2014	1/15/2014	
L59454-5	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	TRAP SED	1/7/2014	1/14/2014	1/15/2014	
L59454-6	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	TRAP SED	1/7/2014	1/14/2014	1/15/2014	
L59454-7	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	TRAP SED	1/7/2014	1/14/2014	1/15/2014	
L59457-1	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	FILTER SED	12/9/2013	1/14/2014	1/15/2014	
WG130726-1	MB		CVTOTS	OTHR SOLID		1/14/2014	1/15/2014	MB1 1/14/14
WG130726-2	LD		CVTOTS	SOIL		1/14/2014	1/15/2014	L59405-4
WG130726-3	LD		CVTOTS	SOIL		1/14/2014	1/15/2014	L59410-3
WG130726-4	LD		CVTOTS	SLUDGE		1/14/2014	1/15/2014	L59417-2
WG130726-9	LD		CVTOTS	TRAP SED		1/14/2014	1/15/2014	L59454-3
WG130726-10	LT		CVTOTS	TRAP SED		1/14/2014	1/15/2014	WG130726-9 L59454-3
WG130726-11	LD		CVTOTS	FILTER SED		1/14/2014	1/15/2014	L59457-1
WG130726-12	LT		CVTOTS	FILTER SED		1/14/2014	1/15/2014	WG130726-11 L59457-1

WG136533 () Department: 3 - Conventionals Move Date: 2014-12-12 12:26:41

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L61510-1	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	FILTER SED	10/7/2014	12/10/2014	12/11/2014	
L61568-1	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	FILTER SED	10/22/2014	12/10/2014	12/11/2014	
L61568-2	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	FILTER SED	10/22/2014	12/10/2014	12/11/2014	
WG136533-1	MB		CVTOTS	FILTER SED		12/10/2014	12/11/2014	MB1 141210

WG136994 (TOTS (S%)) Department: 3 - Conventionals Move Date: 2015-01-14 09:55:18

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L61838-1	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	FILTER SED	12/9/2014	1/12/2015	1/13/2015	
WG136994-1	MB		CVTOTS	OTHR SOLID		1/12/2015	1/13/2015	MB1 1/12/15
WG136994-2	LD		CVTOTS	FILTER SED		1/12/2015	1/13/2015	L61838-1

WG135546 (tss) Department: 3 - Conventionals Move Date: 2014-10-30 16:00:35

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L61359-1	421235	MAJOR LAKES (wtr col)	CVTSS	FRESH WTR	10/13/2014	10/15/2014	10/16/2014	
L61359-2	421235	MAJOR LAKES (wtr col)	CVTSS	FRESH WTR	10/13/2014	10/15/2014	10/16/2014	
L61359-3	421235	MAJOR LAKES (wtr col)	CVTSS	FRESH WTR	10/13/2014	10/15/2014	10/16/2014	

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L61359-4	421235	MAJOR LAKES (wtr col)	CVTSS	FRESH WTR	10/13/2014	10/15/2014	10/16/2014
L61359-5	421235	MAJOR LAKES (wtr col)	CVTSS	FRESH WTR	10/13/2014	10/15/2014	10/16/2014
L61359-6	421235	MAJOR LAKES (wtr col)	CVTSS	FRESH WTR	10/13/2014	10/15/2014	10/16/2014
L61359-8	421235	MAJOR LAKES (wtr col)	CVTSS	FRESH WTR	10/13/2014	10/15/2014	10/16/2014
L61359-9	421235	MAJOR LAKES (wtr col)	CVTSS	FRESH WTR	10/13/2014	10/15/2014	10/16/2014
L61359-10	421235	MAJOR LAKES (wtr col)	CVTSS	FRESH WTR	10/13/2014	10/15/2014	10/16/2014
L61359-11	421235	MAJOR LAKES (wtr col)	CVTSS	FRESH WTR	10/13/2014	10/15/2014	10/16/2014
L61359-12	421235	MAJOR LAKES (wtr col)	CVTSS	FRESH WTR	10/13/2014	10/15/2014	10/16/2014
L61359-13	421235	MAJOR LAKES (wtr col)	CVTSS	FRESH WTR	10/13/2014	10/15/2014	10/16/2014
L61359-14	421235	MAJOR LAKES (wtr col)	CVTSS	FRESH WTR	10/13/2014	10/15/2014	10/16/2014
L61359-15	421235	MAJOR LAKES (wtr col)	CVTSS	FRESH WTR	10/13/2014	10/15/2014	10/16/2014
L61359-16	421235	MAJOR LAKES (wtr col)	CVTSS	FRESH WTR	10/13/2014	10/15/2014	10/16/2014
L61359-17	421235	MAJOR LAKES (wtr col)	CVTSS	FRESH WTR	10/13/2014	10/15/2014	10/16/2014
L61359-19	421235	MAJOR LAKES (wtr col)	CVTSS	FRESH WTR	10/13/2014	10/15/2014	10/16/2014
L61359-20	421235	MAJOR LAKES (wtr col)	CVTSS	FRESH WTR	10/13/2014	10/15/2014	10/16/2014
L61359-21	421235	MAJOR LAKES (wtr col)	CVTSS	FRESH WTR	10/13/2014	10/15/2014	10/16/2014
L61359-22	421235	MAJOR LAKES (wtr col)	CVTSS	FRESH WTR	10/13/2014	10/15/2014	10/16/2014
L61359-23	421235	MAJOR LAKES (wtr col)	CVTSS	FRESH WTR	10/13/2014	10/15/2014	10/16/2014
L61359-25	421235	MAJOR LAKES (wtr col)	CVTSS	FRESH WTR	10/13/2014	10/15/2014	10/16/2014
L61359-26	421235	MAJOR LAKES (wtr col)	CVTSS	FRESH WTR	10/13/2014	10/15/2014	10/16/2014
L61359-27	421235	MAJOR LAKES (wtr col)	CVTSS	FRESH WTR	10/13/2014	10/15/2014	10/16/2014
L61359-29	421235	MAJOR LAKES (wtr col)	CVTSS	FRESH WTR	10/13/2014	10/15/2014	10/16/2014
L61359-30	421235	MAJOR LAKES (wtr col)	CVTSS	FRESH WTR	10/13/2014	10/15/2014	10/16/2014
L61359-31	421235	MAJOR LAKES (wtr col)	CVTSS	FRESH WTR	10/13/2014	10/15/2014	10/16/2014
L61359-32	421235	MAJOR LAKES (wtr col)	CVTSS	FRESH WTR	10/13/2014	10/15/2014	10/16/2014
L61359-33	421235	MAJOR LAKES (wtr col)	CVTSS	FRESH WTR	10/13/2014	10/15/2014	10/16/2014
L61427-1	423589-335-4	LDW Green River, Suspended Solids	CVTSS	FRESH WTR	10/9/2014	10/15/2014	10/16/2014
L61427-2	423589-335-4	LDW Green River, Suspended Solids	CVTSS	FILTER WTR	10/9/2014	10/15/2014	10/16/2014
L61427-3	423589-335-4	LDW Green River, Suspended Solids	CVTSS	FILTER WTR	10/9/2014	10/15/2014	10/16/2014
WG135546-1	MB		CVTSS	BLANK WTR		10/15/2014	10/16/2014
WG135546-2	LCS		CVTSS	BLANK WTR		10/15/2014	10/16/2014 LEVEL1
WG135546-3	LD		CVTSS	FRESH WTR		10/15/2014	10/16/2014 L61359-4
WG135546-4	LD		CVTSS	FILTER WTR		10/15/2014	10/16/2014 L61427-3
WG135546-5	LD		CVTSS	FRESH WTR		10/15/2014	10/16/2014 L61359-30
WG135546-6	MB		CVTSS	BLANK WTR		10/15/2014	10/16/2014
WG135546-7	LCS		CVTSS	BLANK WTR		10/15/2014	10/16/2014 LEVEL1

WG130733 (Trap Seds) Department: 6 - Metals Move Date: 2014-02-28 15:12:23

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Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L59454-1	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	TRAP SED	1/7/2014	1/17/2014	1/17/2014	
L59454-2	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	TRAP SED	1/7/2014	1/17/2014	1/17/2014	
L59454-3	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	TRAP SED	1/7/2014	1/17/2014	1/17/2014	
L59454-4	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	TRAP SED	1/7/2014	1/17/2014	1/17/2014	
L59454-5	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	TRAP SED	1/7/2014	1/17/2014	1/17/2014	
L59454-6	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	TRAP SED	1/7/2014	1/17/2014	1/17/2014	
L59454-7	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	TRAP SED	1/7/2014	1/17/2014	1/17/2014	
L59457-1	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	FILTER SED	12/9/2013	1/17/2014	1/17/2014	
WG130733-1	MB		MTHG-MIDS	SOLIDBLANK		1/17/2014	1/17/2014	METHOD BLANK
WG130733-2	SB		MTHG-MIDS	SOLIDBLANK		1/17/2014	1/17/2014	WG130733-1 HG-SMID
WG130733-3	LCS		MTHG-MIDS	FRSHWTRSED		1/17/2014	1/17/2014	WQB1
WG130733-4	LCSD		MTHG-MIDS	FRSHWTRSED		1/17/2014	1/17/2014	WG130733-3 WQB1
WG130733-5	LD		MTHG-MIDS	TRAP SED		1/17/2014	1/17/2014	L59454-4 RPD-SOL
WG130733-6	MS		MTHG-MIDS	TRAP SED		1/17/2014	1/17/2014	L59454-4 HG-SMID
WG130733-7	MSD		MTHG-MIDS	TRAP SED		1/17/2014	1/17/2014	WG130733-6 L59454-4 HG-SMID-MSD

WG135928 (04-nov-14 LDW) Department: 6 - Metals Move Date: 2014-12-05 08:51:17

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L61510-1	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	FILTER SED	10/7/2014	11/4/2014	11/4/2014	
L61568-1	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	FILTER SED	10/22/2014	11/4/2014	11/4/2014	
L61568-2	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	FILTER SED	10/22/2014	11/4/2014	11/4/2014	
WG135928-1	MB		MTHG-MIDS	SOLIDBLANK		11/4/2014	11/4/2014	MB
WG135928-2	SB		MTHG-MIDS	SOLIDBLANK		11/4/2014	11/4/2014	WG135928-1 HG-SMID
WG135928-3	MS		MTHG-MIDS	FILTER SED		11/4/2014	11/4/2014	L61510-1 HG-SMID
WG135928-4	MSD		MTHG-MIDS	FILTER SED		11/4/2014	11/4/2014	WG135928-3 L61510-1 HG-SMID-MSD
WG135928-5	LCS		MTHG-MIDS	SOIL		11/4/2014	11/4/2014	ERASOIL
WG135928-6	LCSD		MTHG-MIDS	SOIL		11/4/2014	11/4/2014	WG135928-5 ERASOIL

WG136780 (23-DEC-14 LDW SN) Department: 6 - Metals Move Date: 2015-01-16 09:59:53

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L61838-1	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	FILTER SED	12/9/2014	12/23/2014	12/23/2014	
WG136780-1	MB		MTHG-MIDS	SOLIDBLANK		12/23/2014	12/23/2014	MB
WG136780-2	SB		MTHG-MIDS	SOLIDBLANK		12/23/2014	12/23/2014	WG136780-1 HG-SMID

WG136780-3	MS	MTHG-MIDS	FILTER SED	12/23/2014	12/23/2014	L61838-1 HG-SMID
WG136780-4	MSD	MTHG-MIDS	FILTER SED	12/23/2014	12/23/2014	WG136780-3 L61838-1 HG-SMID-MSD
WG136780-5	LD	MTHG-MIDS	FILTER SED	12/23/2014	12/23/2014	L61838-1 RPD-SOL
WG136780-6	LCS	MTHG-MIDS	SOIL	12/23/2014	12/23/2014	ERASOIL
WG136780-7	LCSD	MTHG-MIDS	SOIL	12/23/2014	12/23/2014	WG136780-6 ERASOIL

WG130834 (27-JAN-14 Sus/Trap Seds) Department: 6 - Metals Move Date: 2014-02-06 13:06:25

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L59454-1	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	TRAP SED	1/7/2014	1/27/2014	1/28/2014	
L59454-2	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	TRAP SED	1/7/2014	1/27/2014	1/28/2014	
L59454-3	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	TRAP SED	1/7/2014	1/27/2014	1/28/2014	
L59454-4	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	TRAP SED	1/7/2014	1/27/2014	1/28/2014	
L59454-5	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	TRAP SED	1/7/2014	1/27/2014	1/28/2014	
L59454-6	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	TRAP SED	1/7/2014	1/27/2014	1/28/2014	
L59454-7	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	TRAP SED	1/7/2014	1/27/2014	1/28/2014	
L59457-1	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	FILTER SED	12/9/2013	1/27/2014	1/28/2014	
WG130834-1	MB		MTICPMS-SED	SOLIDBLANK		1/27/2014	1/28/2014	METHOD BLANK
WG130834-2	SB		MTICPMS-SED	SOLIDBLANK		1/27/2014	1/28/2014	WG130834-1 MS-100
WG130834-3	LCS		MTICPMS-SED	SOIL		1/27/2014	1/28/2014	ERASOIL
WG130834-4	LCSD		MTICPMS-SED	SOIL		1/27/2014	1/28/2014	WG130834-3 ERASOIL
WG130834-5	LCS		MTICPMS-SED	FRSHWTRSED		1/27/2014	1/28/2014	BUFFSED
WG130834-6	LCSD		MTICPMS-SED	FRSHWTRSED		1/27/2014	1/28/2014	WG130834-5 BUFFSED
WG130834-7	LD		MTICPMS-SED	TRAP SED		1/27/2014	1/28/2014	L59454-1 RPD-SOL
WG130834-8	MS		MTICPMS-SED	TRAP SED		1/27/2014	1/28/2014	L59454-1 MS-100

WG136472 (12/8/14 Filtered Seds) Department: 6 - Metals Move Date: 2014-12-12 09:45:49

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L61510-1	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	FILTER SED	10/7/2014	12/8/2014	12/9/2014	
L61568-1	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	FILTER SED	10/22/2014	12/8/2014	12/9/2014	
L61568-2	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	FILTER SED	10/22/2014	12/8/2014	12/9/2014	
WG136472-1	MB		MTICPMS-SED	SOLIDBLANK		12/8/2014	12/9/2014	METHOD BLANK
WG136472-2	SB		MTICPMS-SED	SOLIDBLANK		12/8/2014	12/9/2014	WG136472-1 MS-100 SPIKE BLANK
WG136472-3	LD		MTICPMS-SED	FILTER SED		12/8/2014	12/9/2014	L61568-1 RPD-SOL LAB DUPLICATE
WG136472-4	MS		MTICPMS-SED	FILTER SED		12/8/2014	12/9/2014	L61568-1 MS-100 MATRIX SPIKE
WG136472-5	LCS		MTICPMS-SED	SOIL		12/8/2014	12/9/2014	ERASOIL

WG136472-6	LCSD	MTICPMS-SED	SOIL	12/8/2014	12/9/2014	WG136472-5 ERASOIL RPD-SOL
WG136472-7	LCS	MTICPMS-SED	FRSHWTRSED	12/8/2014	12/9/2014	BUFFSED
WG136472-8	LCSD	MTICPMS-SED	FRSHWTRSED	12/8/2014	12/9/2014	WG136472-7 BUFFSED RPD-SOL

WG137335 (1/28/15 Filtered Sed) Department: 6 - Metals Move Date: 2015-01-30 15:15:38

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L61838-1	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	FILTER SED	12/9/2014	1/28/2015	1/30/2015	
WG137335-1	MB		MTICPMS-SED	SOLIDBLANK		1/28/2015	1/30/2015	METHOD BLANK
WG137335-2	SB		MTICPMS-SED	SOLIDBLANK		1/28/2015	1/30/2015	WG137335-1 MS-100
WG137335-3	LD		MTICPMS-SED	FILTER SED		1/28/2015	1/30/2015	L61838-1 RPD-SOL
WG137335-4	MS		MTICPMS-SED	FILTER SED		1/28/2015	1/30/2015	L61838-1 MS-100
WG137335-5	LCS		MTICPMS-SED	SOIL		1/28/2015	1/30/2015	ERASOIL
WG137335-6	LCSD		MTICPMS-SED	SOIL		1/28/2015	1/30/2015	WG137335-5 ERASOIL RPD-SOL
WG137335-7	LCS		MTICPMS-SED	FRSHWTRSED		1/28/2015	1/30/2015	BUFFSED

WG130978 (BS#452 pah-sim) Department: 7 - Organics Move Date: 2014-02-28 13:59:33

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments	
L59457-1	423589-335-4	LDW Green River, Suspended Solids	ORPAH-SIM	FILTER SED	12/9/2013	2/5/2014	2/19/2014		
L59472-1	423589-335-4	LDW Green River, Suspended Solids	ORPAH-SIM	FILTER SED	1/8/2014	2/5/2014	2/19/2014		
L59472-3	423589-335-4	LDW Green River, Suspended Solids	ORPAH-SIM	FILTER SED	1/8/2014	2/5/2014	2/19/2014		
L59596-1	423589-335-4	LDW Green River, Suspended Solids	ORPAH-SIM	FILTER SED	1/28/2014	2/5/2014	2/19/2014		
L59596-2	423589-335-4	LDW Green River, Suspended Solids	ORPAH-SIM	FILTER SED	1/29/2014	2/5/2014	2/19/2014		
WG130978-1	MB		ORPAH-SIM	OTHR SOLID		2/5/2014	2/19/2014	MB140205	
WG130978-2	SB		ORPAH-SIM	OTHR SOLID		2/5/2014	2/19/2014	WG130978-1	
WG130978-3	MS		ORPAH-SIM	FILTER SED		2/5/2014	2/19/2014	L59472-3	
WG130978-4	MSD		ORPAH-SIM	FILTER SED		2/5/2014	2/19/2014	WG130978-3 L59472-3	
WG130978-5	SRM		ORPAH-SIM	SALTWTRSED		2/5/2014	2/19/2014		1944
WG130978-6	SRMD		ORPAH-SIM	SALTWTRSED		2/5/2014	2/19/2014	WG130978-5 1944	
WG130978-7	LD		ORPAH-SIM	FILTER SED		2/5/2014	2/19/2014	L59596-1	

WG136065 (PAH-SIM BS#472) Department: 7 - Organics Move Date: 2014-11-25 07:22:51

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L61510-1	423589-335-4	LDW Green River, Suspended Solids	ORPAH-SIM	FILTER SED	10/7/2014	11/13/2014	11/20/2014	
L61568-1	423589-335-4	LDW Green River, Suspended Solids	ORPAH-SIM	FILTER SED	10/22/2014	11/13/2014	11/20/2014	

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L61568-2	423589-335-4	LDW Green River, Suspended Solids	ORPAH-SIM	FILTER SED	10/22/2014	11/13/2014	11/20/2014		
WG136065-1	MB		ORPAH-SIM	OTHR SOLID		11/13/2014	11/20/2014	MB141113	
WG136065-2	SB		ORPAH-SIM	OTHR SOLID		11/13/2014	11/20/2014	WG136065-1	
WG136065-3	SBD		ORPAH-SIM	OTHR SOLID		11/13/2014	11/20/2014	WG136065-2 WG136065-1	
WG136065-4	MS		ORPAH-SIM	FILTER SED		11/13/2014	11/20/2014	L61568-2	
WG136065-5	SRM		ORPAH-SIM	SALTWTRSED		11/13/2014	11/20/2014		1944
WG136065-6	SRMD		ORPAH-SIM	SALTWTRSED		11/13/2014	11/20/2014	WG136065-5	

WG136856 (bs#473 pah-sim) Department: 7 - Organics Move Date: 2015-01-07 13:37:10

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L61838-1	423589-335-4	LDW Green River, Suspended Solids	ORPAH-SIM	FILTER SED	12/9/2014	12/30/2014	12/31/2014	
WG136856-1	MB		ORPAH-SIM	OTHR SOLID		12/30/2014	12/31/2014	MB141230
WG136856-2	SB		ORPAH-SIM	OTHR SOLID		12/30/2014	12/31/2014	WG136856-1
WG136856-3	SBD		ORPAH-SIM	OTHR SOLID		12/30/2014	12/31/2014	WG136856-2 WG136856-1
WG136856-4	MS		ORPAH-SIM	FILTER SED		12/30/2014	12/31/2014	L61838-1
WG136856-5	SRM		ORPAH-SIM	SALTWTRSED		12/30/2014	12/31/2014	
WG136856-6	SRMD		ORPAH-SIM	SALTWTRSED		12/30/2014	12/31/2014	WG136856-5

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WG138494 () Department: 3 - Conventionals Move Date: 16-APR-15

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L62291-1	423589-335-4	LDW Green River, Suspended Solids	CVPSD-SC	FILTER SED	11/3/2014	4/8/2015	4/10/2015	
L62291-2	423589-335-4	LDW Green River, Suspended Solids	CVPSD-SC	FILTER SED	11/24/2014	4/8/2015	4/10/2015	

WG138495 () Department: 3 - Conventionals Move Date: 16-APR-15

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L62291-1	423589-335-4	LDW Green River, Suspended Solids	CVPSD-LD	FILTER SED	11/3/2014	4/8/2015	4/9/2015	
L62291-2	423589-335-4	LDW Green River, Suspended Solids	CVPSD-LD	FILTER SED	11/24/2014	4/8/2015	4/9/2015	

WG138651 () Department: 3 - Conventionals Move Date: 16-APR-15

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L62291-1	423589-335-4	LDW Green River, Suspended Solids	CVTOTS-SUB	FILTER SED	11/3/2014	3/16/2015	3/16/2015	
L62291-2	423589-335-4	LDW Green River, Suspended Solids	CVTOTS-SUB	FILTER SED	11/24/2014	3/16/2015	3/16/2015	

WG140385 (TOTS - S%) Department: 3 - Conventionals Move Date: 07-AUG-15

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L63079-1	421430-300	OCS-Lake Haven Utility District routine testing	CVTOTS	SLUDGE	7/13/2015	7/16/2015	7/17/2015	
L63079-2	421430-300	OCS-Lake Haven Utility District routine testing	CVTOTS	SLUDGE	7/13/2015	7/16/2015	7/17/2015	
L63181-1	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	FILTER SED	6/22/2015	7/16/2015	7/17/2015	
L63182-4	421298A	BIOSOLIDS CHARACTERIZATION	CVTOTS	SLUDGE	7/14/2015	7/16/2015	7/17/2015	
L63182-5	421298A	BIOSOLIDS CHARACTERIZATION	CVTOTS	SLUDGE	7/13/2015	7/16/2015	7/17/2015	
L63182-6	421298A	BIOSOLIDS CHARACTERIZATION	CVTOTS	SLUDGE	7/13/2015	7/16/2015	7/17/2015	
L63184-2	421520-500	RSMP Status and Trends - Streams	CVTOTS	FRSHWTRSED	7/9/2015	7/16/2015	7/17/2015	
L63185-2	421520-500	RSMP Status and Trends - Streams	CVTOTS	FRSHWTRSED	7/9/2015	7/16/2015	7/17/2015	
L63210-1	421520-500	RSMP Status and Trends - Streams	CVTOTS	FRSHWTRSED	7/14/2015	7/16/2015	7/17/2015	
L63213-1	421520-500	RSMP Status and Trends - Streams	CVTOTS	FRSHWTRSED	7/15/2015	7/16/2015	7/17/2015	
WG140385-1	MB		CVTOTS	OTHR SOLID		7/16/2015	7/17/2015	MB1 7/16/15
WG140385-2	LD		CVTOTS	SLUDGE		7/16/2015	7/17/2015	L63079-2
WG140385-3	LD		CVTOTS	SLUDGE		7/16/2015	7/17/2015	L63182-5
WG140385-4	LD		CVTOTS	FILTER SED		7/16/2015	7/17/2015	L63181-1
WG140385-5	LT		CVTOTS	FILTER SED		7/16/2015	7/17/2015	WG140385-4 L63181-1

WG140385-6	LD		CVTOTS	FRSHWTRSED	7/16/2015	7/17/2015	L63185-2
WG140385-7	LT		CVTOTS	FRSHWTRSED	7/16/2015	7/17/2015	WG140385-6 L63185-2

WG140773 () Department: 3 - Conventionals Move Date: 20-AUG-15

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L63181-1	423589-335-4	LDW Green River, Suspended Solids	CVPSD-SC	FILTER SED	6/22/2015	8/3/2015	8/4/2015	

WG140774 () Department: 3 - Conventionals Move Date: 20-AUG-15

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L63181-1	423589-335-4	LDW Green River, Suspended Solids	CVPSD-LD	FILTER SED	6/22/2015	8/3/2015	8/4/2015	

WG142935 (TOTS) Department: 3 - Conventionals Move Date: 17-NOV-15

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L64107-1	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	FILTER SED	10/26/2015	11/12/2015	11/13/2015	
WG142935-1	MB		CVTOTS	OTHR SOLID		11/12/2015	11/13/2015	MB151112
WG142935-2	LD		CVTOTS	FILTER SED		11/12/2015	11/13/2015	L64107-1

WG143132 (TOTS) Department: 3 - Conventionals Move Date: 14-DEC-15

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L64165-6	421937	Brightwater Operations	CVTOTS	SLUDGE	11/18/2015	11/23/2015	11/24/2015	
L64166-8	421186B	RTP INPLNT 3 DAY INT (inf,eff,sl)	CVTOTS	SLUDGE	11/17/2015	11/23/2015	11/24/2015	
L64173-1	421168	Lander Street Storm Separation	CVTOTS	IN-LINESED	11/5/2015	11/23/2015	11/24/2015	
L64173-2	421168	Lander Street Storm Separation	CVTOTS	IN-LINESED	11/5/2015	11/23/2015	11/24/2015	
L64173-3	421168	Lander Street Storm Separation	CVTOTS	IN-LINESED	11/18/2015	11/23/2015	11/24/2015	
L64173-4	421168	Lander Street Storm Separation	CVTOTS	IN-LINESED	11/18/2015	11/23/2015	11/24/2015	
L64173-5	421168	Lander Street Storm Separation	CVTOTS	IN-LINESED	11/18/2015	11/23/2015	11/24/2015	
L64173-6	421168	Lander Street Storm Separation	CVTOTS	IN-LINESED	11/18/2015	11/23/2015	11/24/2015	
L64265-1	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	FILTER SED	11/14/2015	11/23/2015	11/24/2015	
WG143132-1	MB		CVTOTS	OTHR SOLID		11/23/2015	11/24/2015	MB151123
WG143132-2	LD		CVTOTS	SLUDGE		11/23/2015	11/24/2015	L64166-8
WG143132-3	LD		CVTOTS	IN-LINESED		11/23/2015	11/24/2015	L64173-6
WG143132-4	LD		CVTOTS	FILTER SED		11/23/2015	11/24/2015	L64265-1

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WG143238 (TOTS) Department: 3 - Conventionals Move Date: 24-DEC-15

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L63466-1	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	TRAP SED	9/15/2015	12/1/2015	12/2/2015	
L63466-2	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	TRAP SED	9/15/2015	12/1/2015	12/2/2015	
L63466-3	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	TRAP SED	9/15/2015	12/1/2015	12/2/2015	
L63466-4	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	TRAP SED	9/15/2015	12/1/2015	12/2/2015	
L63466-5	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	TRAP SED	8/5/2015	12/1/2015	12/2/2015	
L63466-6	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	TRAP SED	9/15/2015	12/1/2015	12/2/2015	
L63466-7	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	TRAP SED	9/15/2015	12/1/2015	12/2/2015	
L63858-1	423589-335-4	LDW Green River, Suspended Solids	CVTOTS	FILTER SED	9/22/2015	12/1/2015	12/2/2015	
L64173-7	421168	Lander Street Storm Separation	CVTOTS	IN-LINESED	11/23/2015	12/1/2015	12/2/2015	
L64173-8	421168	Lander Street Storm Separation	CVTOTS	IN-LINESED	11/23/2015	12/1/2015	12/2/2015	
L64173-9	421168	Lander Street Storm Separation	CVTOTS	IN-LINESED	11/23/2015	12/1/2015	12/2/2015	
L64173-10	421168	Lander Street Storm Separation	CVTOTS	IN-LINESED	11/23/2015	12/1/2015	12/2/2015	
WG143238-1	MB		CVTOTS	SOLIDBLANK		12/1/2015	12/2/2015	MB151201
WG143238-2	LD		CVTOTS	TRAP SED		12/1/2015	12/2/2015	L63466-1
WG143238-3	LD		CVTOTS	FILTER SED		12/1/2015	12/2/2015	L63858-1
WG143238-4	LD		CVTOTS	IN-LINESED		12/1/2015	12/2/2015	L64173-8

WG143794 (PSD-SC for LDW Green Rive) Department: 3 - Conventionals Move Date: 07-JAN-16

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L63858-1	423589-335-4	LDW Green River, Suspended Solids	CVPSD-SC	FILTER SED	9/22/2015	12/28/2015	12/30/2015	
L63997-1	423589-335-4	LDW Green River, Suspended Solids	CVPSD-SC	FILTER SED	10/10/2015	12/28/2015	12/30/2015	
L64107-1	423589-335-4	LDW Green River, Suspended Solids	CVPSD-SC	FILTER SED	10/26/2015	12/28/2015	12/30/2015	
L64265-1	423589-335-4	LDW Green River, Suspended Solids	CVPSD-SC	FILTER SED	11/14/2015	12/28/2015	12/30/2015	
WG143794-1	LD		CVPSD-SC	FILTER SED		12/28/2015	12/30/2015	L64265-1

WG143795 (PSD-LD for LDW Green Rive) Department: 3 - Conventionals Move Date: 07-JAN-16

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L63858-1	423589-335-4	LDW Green River, Suspended Solids	CVPSD-LD	FILTER SED	9/22/2015	12/28/2015	12/29/2015	
L63997-1	423589-335-4	LDW Green River, Suspended Solids	CVPSD-LD	FILTER SED	10/10/2015	12/28/2015	12/29/2015	
L64107-1	423589-335-4	LDW Green River, Suspended Solids	CVPSD-LD	FILTER SED	10/26/2015	12/28/2015	12/29/2015	
L64265-1	423589-335-4	LDW Green River, Suspended Solids	CVPSD-LD	FILTER SED	11/14/2015	12/28/2015	12/29/2015	
WG143795-1	LD		CVPSD-LD	FILTER SED		12/28/2015	12/29/2015	L64265-1

LIMSView Batch Report for Green River Filtered Solids - Data Validation - Part 3

WG140378 (15-JUL-15 LDW) Department: 6 - Metals Move Date: 23-JUL-15

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L63181-1	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	FILTER SED	6/22/2015	7/15/2015	7/16/2015	
WG140378-1	MB		MTHG-MIDS	SOLIDBLANK		7/15/2015	7/16/2015	MB
WG140378-2	SB		MTHG-MIDS	SOLIDBLANK		7/15/2015	7/16/2015	WG140378-1 HG-SMID
WG140378-3	LD		MTHG-MIDS	FILTER SED		7/15/2015	7/16/2015	L63181-1 RPD-SOL
WG140378-4	MS		MTHG-MIDS	FILTER SED		7/15/2015	7/16/2015	L63181-1 HG-SMID
WG140378-5	MSD		MTHG-MIDS	FILTER SED		7/15/2015	7/16/2015	WG140378-4 L63181-1 HG-SMID-MSD
WG140378-6	LCS		MTHG-MIDS	SOIL		7/15/2015	7/16/2015	ERASOIL
WG140378-7	LCSD		MTHG-MIDS	SOIL		7/15/2015	7/16/2015	WG140378-6 ERASOIL

WG141123 (8/19/15 FILTERED SED) Department: 6 - Metals Move Date: 21-AUG-15

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L63181-1	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	FILTER SED	6/22/2015	8/19/2015	8/19/2015	
WG141123-1	MB		MTICPMS-SED	SOLIDBLANK		8/19/2015	8/19/2015	METHOD BLANK
WG141123-2	SB		MTICPMS-SED	SOLIDBLANK		8/19/2015	8/19/2015	WG141123-1 MS-100
WG141123-3	LCS		MTICPMS-SED	SOIL		8/19/2015	8/19/2015	ERASOIL
WG141123-4	LCSD		MTICPMS-SED	SOIL		8/19/2015	8/19/2015	WG141123-3 ERASOIL
WG141123-5	LCS		MTICPMS-SED	FRSHWTRSED		8/19/2015	8/19/2015	BUFFSED
WG141123-6	LD		MTICPMS-SED	FILTER SED		8/19/2015	8/19/2015	L63181-1 RPD-SOL
WG141123-7	MS		MTICPMS-SED	FILTER SED		8/19/2015	8/19/2015	L63181-1 MS-100

WG142927 (20-NOV-15 LDW GREEN) Department: 6 - Metals Move Date: 08-DEC-15

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L64107-1	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	FILTER SED	10/26/2015	11/20/2015	11/20/2015	
L64265-1	423589-335-4	LDW Green River, Suspended Solids	MTHG-MIDS	FILTER SED	11/14/2015	11/20/2015	11/20/2015	
WG142927-1	MB		MTHG-MIDS	SOLIDBLANK		11/20/2015	11/20/2015	MB
WG142927-2	SB		MTHG-MIDS	SOLIDBLANK		11/20/2015	11/20/2015	WG142927-1 HG-SMID
WG142927-3	LD		MTHG-MIDS	FILTER SED		11/20/2015	11/20/2015	L64265-1 RPD-SOL
WG142927-4	MS		MTHG-MIDS	FILTER SED		11/20/2015	11/20/2015	L64265-1 HG-SMID
WG142927-5	MSD		MTHG-MIDS	FILTER SED		11/20/2015	11/20/2015	WG142927-4 L64265-1 HG-SMID-MSD
WG142927-6	LCS		MTHG-MIDS	SOIL		11/20/2015	11/20/2015	ERASOIL
WG142927-7	LCSD		MTHG-MIDS	SOIL		11/20/2015	11/20/2015	WG142927-6 ERASOIL

LIMSView Batch Report for Green River Filtered Solids - Data Validation - Part 3

WG143629 (12/18/15 LDW Ballard CSO) Department: 6 - Metals Move Date: 31-DEC-15

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L63466-1	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	TRAP SED	9/15/2015	12/18/2015	12/22/2015	
L63466-2	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	TRAP SED	9/15/2015	12/18/2015	12/22/2015	
L63466-3	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	TRAP SED	9/15/2015	12/18/2015	12/22/2015	
L63466-4	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	TRAP SED	9/15/2015	12/18/2015	12/22/2015	
L63466-5	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	TRAP SED	8/5/2015	12/18/2015	12/22/2015	
L63466-6	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	TRAP SED	9/15/2015	12/18/2015	12/22/2015	
L63466-7	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	TRAP SED	9/15/2015	12/18/2015	12/22/2015	
L63858-1	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	FILTER SED	9/22/2015	12/18/2015	12/22/2015	
L63934-1	423368-210-1	CSO Sediment Quality Characterizati	MTICPMS-SED	FRSHWTRSED	10/14/2015	12/18/2015	12/22/2015	
L63934-2	423368-210-1	CSO Sediment Quality Characterizati	MTICPMS-SED	FRSHWTRSED	10/14/2015	12/18/2015	12/22/2015	
L63934-3	423368-210-1	CSO Sediment Quality Characterizati	MTICPMS-SED	FRSHWTRSED	10/14/2015	12/18/2015	12/22/2015	
L63934-4	423368-210-1	CSO Sediment Quality Characterizati	MTICPMS-SED	FRSHWTRSED	10/14/2015	12/18/2015	12/22/2015	
L63934-5	423368-210-1	CSO Sediment Quality Characterizati	MTICPMS-SED	FRSHWTRSED	10/14/2015	12/18/2015	12/22/2015	
L63934-6	423368-210-1	CSO Sediment Quality Characterizati	MTICPMS-SED	FRSHWTRSED	10/14/2015	12/18/2015	12/22/2015	
L63934-7	423368-210-1	CSO Sediment Quality Characterizati	MTICPMS-SED	FRSHWTRSED	10/14/2015	12/18/2015	12/22/2015	
L64107-1	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	FILTER SED	10/26/2015	12/18/2015	12/22/2015	
L64265-1	423589-335-4	LDW Green River, Suspended Solids	MTICPMS-SED	FILTER SED	11/14/2015	12/18/2015	12/22/2015	
WG143629-1	MB		MTICPMS-SED	SOLIDBLANK		12/18/2015	12/22/2015	METHOD BLANK
WG143629-2	SB		MTICPMS-SED	SOLIDBLANK		12/18/2015	12/22/2015	WG143629-1 MS-100
WG143629-3	LD		MTICPMS-SED	FILTER SED		12/18/2015	12/22/2015	L64265-1 RPD-SOL
WG143629-4	MS		MTICPMS-SED	FILTER SED		12/18/2015	12/22/2015	L64265-1 MS-100
WG143629-5	LCS		MTICPMS-SED	FRSHWTRSED		12/18/2015	12/22/2015	BUFFSED
WG143629-6	LCS		MTICPMS-SED	SOIL		12/18/2015	12/22/2015	ERASOIL
WG143629-7	LCSD		MTICPMS-SED	SOIL		12/18/2015	12/22/2015	WG143629-6 ERASOIL

WG143259 (PAH-SIM bs#502) Department: 7 - Organics Move Date: 15-DEC-15

Sample	Project	Project Description	List Type	Matrix	Collect Date	Prep Date	Anal Date	Comments
L63181-1	423589-335-4	LDW Green River, Suspended Solids	ORPAH-SIM	FILTER SED	6/22/2015	12/3/2015	12/8/2015	
L64107-1	423589-335-4	LDW Green River, Suspended Solids	ORPAH-SIM	FILTER SED	10/26/2015	12/3/2015	12/8/2015	
L64265-1	423589-335-4	LDW Green River, Suspended Solids	ORPAH-SIM	FILTER SED	11/14/2015	12/3/2015	12/8/2015	
WG143259-1	MB		ORPAH-SIM	OTHR SOLID		12/3/2015	12/8/2015	MB151203
WG143259-2	SB		ORPAH-SIM	OTHR SOLID		12/3/2015	12/8/2015	WG143259-1
WG143259-3	SBD		ORPAH-SIM	OTHR SOLID		12/3/2015	12/8/2015	WG143259-2 WG143259-1
WG143259-4	MS		ORPAH-SIM	FILTER SED		12/3/2015	12/8/2015	L63181-1
WG143259-5	SRM		ORPAH-SIM	OTHR SOLID		12/3/2015	12/8/2015	WG143259-1
WG143259-6	SRMD		ORPAH-SIM	OTHR SOLID		12/3/2015	12/8/2015	WG143259-5 WG143259-1

LIMSView QC Report for Green River Filtered Solids - Data Validation for PSD - Part 1

Workgroup: WG126191 (PSD-LD for LDW Green River) Run ID: R187556

LT:WG126191-2 LD:WG126191-1 L57634-2 Matrix: FILTER SED Listtype:CVPSD-LD Method:ISO 13320:2009(E) Project:423589-335-4 Pkey:STD
(Lab Triplicate, Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	LT Value	RSD	Qual	LabLimit
Sand<1000	0.1	0.1	% Volume	32.2	31.9	32.2	1		0--20
Silt	0.1	0.1	% Volume	53.7	55.1	54.7	1		0--20
Clay	0.1	0.1	% Volume	5.7	5.9	5.8	2		0--20

Workgroup: WG127037 (PSD-LD for LDW/CSO) Run ID: R188303

LT:WG127037-2 LD:WG127037-1 L57786-4 Matrix: IN-LINESED Listtype:CVPSD-LD Method:ISO 13320:2009(E) Project:423589-340-4 Pkey:STD
(Lab Triplicate, Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	LT Value	RSD	Qual	LabLimit
Sand<1000	0.1	0.1	% Volume	46.5	51.5	49.7	5		0--20
Silt	0.1	0.1	% Volume	40.6	35.7	36.6	7		0--20
Clay	0.1	0.1	% Volume	4.2	3.5	3.9	9		0--20

Workgroup: WG128872 (PSD-LD for CSO Seds & LDW GR-SS) Run ID: R190514

LD:WG128872-1 L58172-2 Matrix: FRSHWTRSED Listtype:CVPSD-LD Method:ISO 13320:2009(E) Project:423368-210-1 Pkey:SED
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
Sand<1000	0.01	0.01	% Volume	50.18	50.05	0		0--25
Silt	0.01	0.01	% Volume	41.65	43.12	3		0--25
Clay	0.01	0.01	% Volume	1.83	1.92	5		0--25

LD:WG128872-2 L58537-2 Matrix: FILTER SED Listtype:CVPSD-LD Method:ISO 13320:2009(E) Project:423589-335-4 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
Sand<1000	0.01	0.01	% Volume	22.72	22.77	0		0--25
Silt	0.01	0.01	% Volume	71.03	71.05	0		0--25
Clay	0.01	0.01	% Volume	6.15	6.09	1		0--25

Workgroup: WG129259 (PSD-LD for Grn R Flaming Geyser) Run ID: R191685
No QC sample found for this workgroup

Workgroup: WG130278 (PSD-LD for LDW Grn Rvr SS) Run ID: R192420

LD:WG130278-1 L58977-1 Matrix: FILTER SED Listtype:CVPSD-LD Method:ISO 13320:2009(E) Project:423589-335-4 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
Sand<1000	0.01	0.01	% Volume	41.52	40.73	2		0--25
Silt	0.01	0.01	% Volume	54.64	55.57	2		0--25
Clay	0.01	0.01	% Volume	2.57	2.83	10		0--25

Workgroup: WG131316 (PSD-LD for LDW Grn Rvr, SS) Run ID: R194279

LIMSView QC Report for Green River Filtered Solids - Data Validation for PSD - Part 1

LT:WG131316-2 LD:WG131316-1 L59723-4 Matrix: FILTER SED Listtype:CVPSD-LD Method:ISO 13320:2009(E) Project:423589-335-4 Pkey:STD
(Lab Triplicate, Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	LT Value	RSD	Qual	LabLimit
Sand<1000	0.01	0.01	% Volume	53.27	52.42	52.74	1		0--20
Silt	0.01	0.01	% Volume	38.86	38.6	38.85	0		0--20
Clay	0.01	0.01	% Volume	3.89	4.17	4.16	4		0--20

Workgroup: WG132302 (PSD-LD for LDW Grn Rvr - SS sediments) Run ID: R195738

LD:WG132302-1 L59919-1 Matrix: FILTER SED Listtype:CVPSD-LD Method:ISO 13320:2009(E) Project:423589-335-4 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
Sand<1000	0.01	0.01	% Volume	37.16	39.93	7		0--25
Silt	0.01	0.01	% Volume	53.42	51.07	4		0--25
Clay	0.01	0.01	% Volume	7.99	7.55	6		0--25

Workgroup: WG133033 (PSD-LD for LDW Green Rvr - SS) Run ID: R195925
No QC sample found for this workgroup

Workgroup: WG136379 (PSD-LD for LDW Grn Rvr - SS) Run ID: R199940

LD:WG136379-1 L61510-1 Matrix: FILTER SED Listtype:CVPSD-LD Method:ISO 13320:2009(E) Project:423589-335-4 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
Sand<1000	0.01	0.01	% Volume	5.53	5.29	4		0--25
Silt	0.01	0.01	% Volume	71.69	69.57	3		0--25
Clay	0.01	0.01	% Volume	18.2	22.56	21		0--25

Workgroup: WG126189 (PSD-SC for LDW Green River) Run ID: R187555

LT:WG126189-2 LD:WG126189-1 L57634-2 Matrix: FILTER SED Listtype:CVPSD-SC Method:ASTM D422/D3977-97 Project:423589-335-4 Pkey:STD
(Lab Triplicate, Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	LT Value	RSD	Qual	LabLimit
500 Micron	0.005	0.01	%	8.38	7.13	7.39	9		0--20

Workgroup: WG127035 (PSD-SC for LDW/CSO) Run ID: R188302

LT:WG127035-2 LD:WG127035-1 L57786-4 Matrix: IN-LINESED Listtype:CVPSD-SC Method:ASTM D422/D3977-97 Project:423589-340-4 Pkey:STD
(Lab Triplicate, Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	LT Value	RSD	Qual	LabLimit
500 Micron	0.005	0.01	%	8.71	9.21	9.83	6		0--20

Workgroup: WG128871 (PSD-SC for CSO Seds & LDW GR-SS) Run ID: R190513

LD:WG128871-1 L58172-2 Matrix: FRSHWTRSED Listtype:CVPSD-SC Method:ASTM D422/D3977-97 Project:423368-210-1 Pkey:SED

(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
500 Micron	0.005	0.01	%	6.28	4.87	25		0--25

LD:WG128871-2 L58537-2 Matrix: FILTER SED Listtype:CVPSD-SC Method:ASTM D422/D3977-97 Project:423589-335-4 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
500 Micron	0.005	0.01	%	0.095	0.0932	2		0--25

Workgroup: WG129258 (PSD-SC for Grn R Flaming Geyser) Run ID: R191684
No QC sample found for this workgroup

Workgroup: WG130277 (PSD-SC for LDW Grn Rvr SS) Run ID: R192419

LD:WG130277-1 L58977-1 Matrix: FILTER SED Listtype:CVPSD-SC Method:ASTM D422/D3977-97 Project:423589-335-4 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
500 Micron	0.005	0.01	%	1.28	0.876	37	*	0--25

Workgroup: WG131315 (PSD-SC for LDW Grn Rvr, SS) Run ID: R194278

LT:WG131315-2 LD:WG131315-1 L59723-4 Matrix: FILTER SED Listtype:CVPSD-SC Method:ASTM D422/D3977-97
Project:423589-335-4 Pkey:STD
(Lab Triplicate, Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	LT Value	RSD	Qual	LabLimit
500 Micron	0.005	0.01	%	3.97	4.81	4.25	10		0--20

Workgroup: WG132301 (PSD-SC for LDW Grn Rvr - SS sediments) Run ID: R195739

LD:WG132301-1 L59919-1 Matrix: FILTER SED Listtype:CVPSD-SC Method:ASTM D422/D3977-97 Project:423589-335-4 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
500 Micron	0.005	0.01	%	1.44	1.45	1		0--25

Workgroup: WG133032 (PSD-SC for LDW Green Rvr - SS) Run ID: R195926
No QC sample found for this workgroup

Workgroup: WG136378 (PSD-SC for LDW Grn Rvr - SS) Run ID: R199890

LD:WG136378-1 L61510-1 Matrix: FILTER SED Listtype:CVPSD-SC Method:ASTM D422/D3977-97 Project:423589-335-4 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
500 Micron	0.005	0.01	%	4.58	2.52	58	*	0--25

LIMSView QC Report for Green River Watershed Filtered Solids - Data Validation - TOTS/Metals - Part 1

Workgroup: WG126099 (Assorted TOTS) Run ID: R187502

MB:WG126099-1 Matrix: OTHR SOLID Listtype:CVTOTS Method:SM2540-G Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Total Solids	0.005	0.01	%	<MDL	

LT:WG126099-3 LD:WG126099-2 L57645-6 Matrix: FRSHWTRSED Listtype:CVTOTS Method:SM2540-G Project:423368-210-1 Pkey:SED
(Lab Triplicate, Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	LT Value	RSD	Qual	LabLimit
Total Solids	0.005	0.01	%	82.4	80.9	81.6	1		0--20

LT:WG126099-5 LD:WG126099-4 L57636-3 Matrix: SALTWTRSED Listtype:CVTOTS Method:SM2540-G Project:423368-210-1 Pkey:SED
(Lab Triplicate, Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	LT Value	RSD	Qual	LabLimit
Total Solids	0.005	0.01	%	72.1	73.4	73.8	1		0--20

MB:WG126099-6 Matrix: OTHR SOLID Listtype:CVTOTS Method:SM2540-G Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Total Solids	0.005	0.01	%	<MDL	

LT:WG126099-8 LD:WG126099-7 L57614-6 Matrix: IN-LINESED Listtype:CVTOTS Method:SM2540-G Project:423368-310-4 Pkey:STD
(Lab Triplicate, Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	LT Value	RSD	Qual	LabLimit
Total Solids	0.005	0.01	%	81	79.4	78.3	2		0--20

LT:WG126099-10 LD:WG126099-9 L57495-4 Matrix: FILTER SED Listtype:CVTOTS Method:SM2540-G Project:423589-335-4 Pkey:STD
(Lab Triplicate, Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	LT Value	RSD	Qual	LabLimit
Total Solids	0.005	0.01	%	23.2	23.8	21.7	5		0--20

LD:WG126099-11 L57597-97 Matrix: SHELLFISH Listtype:CVTOTS Method:SM2540-G Project:421191-100 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
Total Solids	0.005	0.01	%	15	14.9	1		0--20

MB:WG126099-12 Matrix: OTHR TISS Listtype:CVTOTS Method:SM2540-G Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual

Total Solids	0.005	0.01	%	<MDL

Workgroup: WG126570 (Assorted TOTS) Run ID: R187723

MB:WG126570-1 Matrix: OTHR TISS Listtype:CVTOTS Method:SM2540-G Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Total Solids	0.005	0.01	%	<MDL	

LD:WG126570-2 L57616-77 Matrix: PLANT Listtype:CVTOTS Method:SM2540-G Project:421189-100 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
Total Solids	0.005	0.01	%	16.1	14.9	8		0--20

LD:WG126570-3 L57616-78 Matrix: PLANT Listtype:CVTOTS Method:SM2540-G Project:421189-100 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
Total Solids	0.005	0.01	%	10.1	10.7	6		0--20

MB:WG126570-4 Matrix: OTHR TISS Listtype:CVTOTS Method:SM2540-G Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Total Solids	0.005	0.01	%	<MDL	

MB:WG126570-5 Matrix: OTHR SOLID Listtype:CVTOTS Method:SM2540-G Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Total Solids	0.005	0.01	%	<MDL	

LD:WG126570-6 L57634-2 Matrix: FILTER SED Listtype:CVTOTS Method:SM2540-G Project:423589-335-4 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
Total Solids	0.005	0.01	%	25	23.1	8		0--20

Workgroup: WG128447 (Assorted TOTS) Run ID: R190033

MB:WG128447-1 Matrix: OTHR SOLID Listtype:CVTOTS Method:SM2540-G Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Total Solids	0.005	0.01	%	<MDL	

LD:WG128447-2 L58522-1 Matrix: PLANT Listtype:CVTOTS Method:SM2540-G Project:421422-100 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
Total Solids	0.005	0.01	%	15.7	15.7	0		0--20

LD:WG128447-3 L58477-7 Matrix: SLUDGE Listtype:CVTOTS Method:SM2540-G Project:421298A Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
Total Solids	0.005	0.01	%	25.9	25.9	0		0--20

LD:WG128447-4 L58537-1 Matrix: FILTER SED Listtype:CVTOTS Method:SM2540-G Project:423589-335-4 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
Total Solids	0.005	0.01	%	36.8	32.9	11		0--20

Workgroup: WG129325 (Solids) Run ID: R191063

MB:WG129325-1 Matrix: OTHR SOLID Listtype:CVTOTS Method:SM2540-G Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Total Solids	0.005	0.01	%	<MDL	

LT:WG129325-3 LD:WG129325-2 L58537-2 Matrix: FILTER SED Listtype:CVTOTS Method:SM2540-G Project:423589-335-4 Pkey:STD
(Lab Triplicate, Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	LT Value	RSD	Qual	LabLimit
Total Solids	0.005	0.01	%	37.2	37.3	37.2	0		0--25

Workgroup: WG129699 (Assorted TOTS) Run ID: R191747

MB:WG129699-1 Matrix: OTHR SOLID Listtype:CVTOTS Method:SM2540-G Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Total Solids	0.005	0.01	%	<MDL	

LT:WG129699-3 LD:WG129699-2 L58785-4 Matrix: TRAP SED Listtype:CVTOTS Method:SM2540-G Project:423589-335-4 Pkey:STD

(Lab Triplicate, Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	LT Value	RSD	Qual	LabLimit
Total Solids	0.005	0.01	%	71.1	68.8	69.9	2		0--25

LT:WG129699-5 LD:WG129699-4 L59049-1 Matrix: FILTER SED Listtype:CVTOTS Method:SM2540-G Project:423589-335-4 Pkey:STD
(Lab Triplicate, Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	LT Value	RSD	Qual	LabLimit
Total Solids	0.005	0.01	%	31.2	30.8	28.9	4		0--25

LD:WG129699-6 L59077-8 Matrix: SLUDGE Listtype:CVTOTS Method:SM2540-G Project:421937 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
Total Solids	0.005	0.01	%	20.3	19.7	3		0--20

Workgroup: WG130083 (Assorted TOTS) Run ID: R192192

MB:WG130083-1 Matrix: OTHR SOLID Listtype:CVTOTS Method:SM2540-G Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Total Solids	0.005	0.01	%	<MDL	

LD:WG130083-2 L59147-7 Matrix: SLUDGE Listtype:CVTOTS Method:SM2540-G Project:421186B Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
Total Solids	0.005	0.01	%	23.6	23.3	2		0--20

LT:WG130083-4 LD:WG130083-3 L59112-2 Matrix: IN-LINESED Listtype:CVTOTS Method:SM2540-G Project:423589-340-4 Pkey:STD
(Lab Triplicate, Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	LT Value	RSD	Qual	LabLimit
Total Solids	0.005	0.01	%	62	64.3	58.8	4		0--25

LT:WG130083-6 LD:WG130083-5 L59190-2 Matrix: FILTER SED Listtype:CVTOTS Method:SM2540-G Project:423589-335-4 Pkey:STD
(Lab Triplicate, Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	LT Value	RSD	Qual	LabLimit
Total Solids	0.005	0.01	%	30.8	38.2	38.9	12		0--25

Workgroup: WG131132 (Assorted S% TOTS: 2/13/14) Run ID: R193639

MB:WG131132-1 Matrix: OTHR SOLID Listtype:CVTOTS Method:SM2540-G Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Total Solids	0.005	0.01	%	<MDL	

LD:WG131132-2 L59619-5 Matrix: SLUDGE Listtype:CVTOTS Method:SM2540-G Project:421298A Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
Total Solids	0.005	0.01	%	21.9	21.9	0		0--20

LT:WG131132-4 LD:WG131132-3 L59596-1 Matrix: FILTER SED Listtype:CVTOTS Method:SM2540-G Project:423589-335-4 Pkey:STD
(Lab Triplicate, Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	LT Value	RSD	Qual	LabLimit
Total Solids	0.005	0.01	%	33.8	33.9	33.2	1		0--25

Workgroup: WG131743 (TOTS) Run ID: R194360

MB:WG131743-1 Matrix: OTHR SOLID Listtype:CVTOTS Method:SM2540-G Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Total Solids	0.005	0.01	%	<MDL	

LT:WG131743-3 LD:WG131743-2 L59723-4 Matrix: FILTER SED Listtype:CVTOTS Method:SM2540-G Project:423589-335-4 Pkey:STD
(Lab Triplicate, Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	LT Value	RSD	Qual	LabLimit
Total Solids	0.005	0.01	%	58	57.3	57.3	1		0--25

Workgroup: WG132353 (TOTS (S%)) Run ID: R195076

MB:WG132353-1 Matrix: OTHR SOLID Listtype:CVTOTS Method:SM2540-G Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Total Solids	0.005	0.01	%	<MDL	

LD:WG132353-2 L59919-2 Matrix: FILTER SED Listtype:CVTOTS Method:SM2540-G Project:423589-335-4 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
Total Solids	0.005	0.01	%	56.3	55.8	1		0--20

Workgroup: WG133007 (TOTS (S%)) Run ID: R195883

MB:WG133007-1 Matrix: OTHR SOLID Listtype:CVTOTS Method:SM2540-G Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Total Solids	0.005	0.01	%	<MDL	

LD:WG133007-2 L60187-1 Matrix: FILTER SED Listtype:CVTOTS Method:SM2540-G Project:423589-335-4 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
Total Solids	0.005	0.01	%	46.6	44.5	4		0--20

Workgroup: WG136533 (tots for 423589) Run ID: R200019

MB:WG136533-1 Matrix: FILTER SED Listtype:CVTOTS Method:SM2540-G Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Total Solids	0.005	0.01	%	<MDL	

Workgroup: WG125947 (LDW Green Rvr suspended solids) Run ID: R187574

LCSD:WG125947-2 LCS:WG125947-1 Matrix: FRSHWTRSED Listtype:MTHG-MIDS Method:SW846 7471B Project: Pkey:SED
(Lab Control Sample Duplicate, Lab Control Sample)

Parameter	MDL	RDL	Units	TrueValue	LCS Value	% Rec.	Qual	LabLimit	TrueValue	LCSD Value	% Rec.	Qual	RPD	Qual	LabLimit
Mercury, Total,	0.025	0.253	mg/Kg	1.09	1.04	95		80--120	1.09	1.09	100		5		0--20

MB:WG125947-3 Matrix: SOLIDBLANK Listtype:MTHG-MIDS Method:SW846 7471B Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Mercury, Total,	0.0048	0.0476	mg/Kg	<MDL	

SB:WG125947-4 MB:WG125947-3 Matrix: SOLIDBLANK Listtype:MTHG-MIDS Method:SW846 7471B Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	TrueValue	SB Value	% Rec.	Qual	LabLimit
Mercury, Total,	0.0048	0.0476	mg/Kg	<MDL	0.0952	0.0933	98		85--115

MSD:WG125947-6 MS:WG125947-5 L57495-4 Matrix: FILTER SED Listtype:MTHG-MIDS Method:SW846 7471B Project:423589-335-4 Pkey:STD
(Matrix Spike Duplicate, Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	TrueValue	MS Value	% Rec.	Qual	LabLimit	TrueValue	MSD Value	% Rec.	Qual	RPD	Qual	LabLimit
Mercury, Total,	0.0049	0.0488	mg/Kg	0.034	0.0976	0.135	104		75--125	0.0967	0.134	103		1		0--20

LD:WG125947-7 L57495-4 Matrix: FILTER SED Listtype:MTHG-MIDS Method:SW846 7471B Project:423589-335-4 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
Mercury, Total,	0.005	0.0499	mg/Kg	0.034	0.032			0--20

Workgroup: WG126318 (LDW Green River) Run ID: R187572

LCSD:WG126318-2 LCS:WG126318-1 Matrix: FRSHWTRSED Listtype:MTHG-MIDS Method:SW846 7471B Project: Pkey:SED
(Lab Control Sample Duplicate, Lab Control Sample)

Parameter	MDL	RDL	Units	TrueValue	LCS Value	% Rec.	Qual	LabLimit	TrueValue	LCSD Value	% Rec.	Qual	RPD	Qual	LabLimit
Mercury, Total,	0.024	0.24	mg/Kg	1.09	1.01	92		80--120	1.09	1.03	94		2		0--20

MB:WG126318-3 Matrix: SOLIDBLANK Listtype:MTHG-MIDS Method:SW846 7471B Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Mercury, Total,	0.0048	0.0476	mg/Kg	<MDL	

SB:WG126318-4 MB:WG126318-3 Matrix: SOLIDBLANK Listtype:MTHG-MIDS Method:SW846 7471B Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	TrueValue	SB Value	% Rec.	Qual	LabLimit
Mercury, Total,	0.0048	0.0476	mg/Kg	<MDL	0.0952	0.0917	96		85--115

MSD:WG126318-6 MS:WG126318-5 L57634-2 Matrix: FILTER SED Listtype:MTHG-MIDS Method:SW846 7471B Project:423589-335-4 Pkey:STD
(Matrix Spike Duplicate, Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	TrueValue	MS Value	% Rec.	Qual	LabLimit	TrueValue	MSD Value	% Rec.	Qual	RPD	Qual	LabLimit
Mercury, Total,	0.0048	0.048	mg/Kg	0.038	0.096	0.117	83		75--125	0.0971	0.127	93		9		0--20

LD:WG126318-7 L57634-2 Matrix: FILTER SED Listtype:MTHG-MIDS Method:SW846 7471B Project:423589-335-4 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
Mercury, Total,	0.005	0.0497	mg/Kg	0.038	0.029			0--20

Workgroup: WG126821 (Green River) Run ID: R187995

LCSD:WG126821-2 LCS:WG126821-1 Matrix: FRSHWTRSED Listtype:MTHG-MIDS Method:SW846 7471B Project: Pkey:SED
(Lab Control Sample Duplicate, Lab Control Sample)

Parameter	MDL	RDL	Units	TrueValue	LCS Value	% Rec.	Qual	LabLimit	TrueValue	LCSD Value	% Rec.	Qual	RPD	Qual	LabLimit
Mercury, Total,	0.025	0.245	mg/Kg	1.09	1.06	97		80--120	1.09	1.04	95		2		0--20

MB:WG126821-3 Matrix: SOLIDBLANK Listtype:MTHG-MIDS Method:SW846 7471B Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Mercury, Total,	0.0048	0.0476	mg/Kg	<MDL	

SB:WG126821-4 MB:WG126821-3 Matrix: SOLIDBLANK Listtype:MTHG-MIDS Method:SW846 7471B Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	TrueValue	SB Value	% Rec.	Qual	LabLimit
Mercury, Total,	0.0048	0.0476	mg/Kg	<MDL	0.0952	0.0927	97		85--115

MSD:WG126821-6 MS:WG126821-5 L57792-3 Matrix: FILTER SED Listtype:MTHG-MIDS Method:SW846 7471B Project:423589-335-4 Pkey:STD
(Matrix Spike Duplicate, Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	TrueValue	MS Value	% Rec.	Qual	LabLimit	TrueValue	MSD Value	% Rec.	Qual	RPD	Qual	LabLimit
Mercury, Total,	0.0048	0.0484	mg/Kg	0.026	0.0968	0.12	98		75--125	0.0962	0.12	98		0		0--20

LD:WG126821-7 L57792-3 Matrix: FILTER SED Listtype:MTHG-MIDS Method:SW846 7471B Project:423589-335-4 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
Mercury, Total,	0.0048	0.0482	mg/Kg	0.026	0.028			0--20

Workgroup: WG128613 (LDW Greenriver) Run ID: R190243

LCSD:WG128613-2 LCS:WG128613-1 Matrix: FRSHWTRSED Listtype:MTHG-MIDS Method:SW846 7471B Project: Pkey:SED
(Lab Control Sample Duplicate, Lab Control Sample)

Parameter	MDL	RDL	Units	TrueValue	LCS Value	% Rec.	Qual	LabLimit	TrueValue	LCSD Value	% Rec.	Qual	RPD	Qual	LabLimit
Mercury, Total,	0.026	0.255	mg/Kg	1.09	1.07	98		80--120	1.09	1.05	96		2		0--20

MB:WG128613-3 Matrix: SOLIDBLANK Listtype:MTHG-MIDS Method:SW846 7471B Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Mercury, Total,	0.0048	0.0476	mg/Kg	<MDL	

SB:WG128613-4 MB:WG128613-3 Matrix: SOLIDBLANK Listtype:MTHG-MIDS Method:SW846 7471B Project: Pkey:STD

(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	TrueValue	SB Value	% Rec.	Qual	LabLimit
Mercury, Total,	0.0048	0.0476	mg/Kg	<MDL	0.0952	0.0939	99		85--115

MSD:WG128613-6 MS:WG128613-5 L58537-2 Matrix: FILTER SED Listtype:MTHG-MIDS Method:SW846 7471B Project:423589-335-4 Pkey:STD
(Matrix Spike Duplicate, Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	TrueValue	MS Value	% Rec.	Qual	LabLimit	TrueValue	MSD Value	% Rec.	Qual	RPD	Qual	LabLimit
Mercury, Total,	0.0049	0.0492	mg/Kg	0.037	0.0983	0.133	98		75--125	0.099	0.127	91		4		0--20

LD:WG128613-7 L58537-2 Matrix: FILTER SED Listtype:MTHG-MIDS Method:SW846 7471B Project:423589-335-4 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
Mercury, Total,	0.0049	0.0492	mg/Kg	0.037	0.04			0--20

Workgroup: WG129257 (LDW Green river sed.) Run ID: R191004

LCSD:WG129257-2 LCS:WG129257-1 Matrix: FRSHWTRSED Listtype:MTHG-MIDS Method:SW846 7471B Project: Pkey:SED
(Lab Control Sample Duplicate, Lab Control Sample)

Parameter	MDL	RDL	Units	TrueValue	LCS Value	% Rec.	Qual	LabLimit	TrueValue	LCSD Value	% Rec.	Qual	RPD	Qual	LabLimit
Mercury, Total,	0.025	0.245	mg/Kg	1.09	0.966	89		80--120	1.09	0.997	91		3		0--20

MB:WG129257-3 Matrix: SOLIDBLANK Listtype:MTHG-MIDS Method:SW846 7471B Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Mercury, Total,	0.0048	0.0476	mg/Kg	<MDL	

SB:WG129257-4 MB:WG129257-3 Matrix: SOLIDBLANK Listtype:MTHG-MIDS Method:SW846 7471B Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	TrueValue	SB Value	% Rec.	Qual	LabLimit
Mercury, Total,	0.0048	0.0476	mg/Kg	<MDL	0.0952	0.089	93		85--115

MSD:WG129257-6 MS:WG129257-5 L58754-1 Matrix: FILTER SED Listtype:MTHG-MIDS Method:SW846 7471B Project:423589-335-4 Pkey:STD
(Matrix Spike Duplicate, Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	TrueValue	MS Value	% Rec.	Qual	LabLimit	TrueValue	MSD Value	% Rec.	Qual	RPD	Qual	LabLimit
Mercury, Total,	0.0048	0.0477	mg/Kg	0.041	0.0954	0.132	95		75--125	0.0952	0.143	107		8		0--20

LD:WG129257-7 L58754-1 Matrix: FILTER SED Listtype:MTHG-MIDS Method:SW846 7471B Project:423589-335-4 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit

Mercury, Total,	0.0048	0.0479	mg/Kg	0.041	0.037	0--20

Workgroup: WG129628 (LDW green river) Run ID: R191507

LCSD:WG129628-2 LCS:WG129628-1 Matrix: FRSHWTRSED Listtype:MTHG-MIDS Method:SW846 7471B Project: Pkey:SED
(Lab Control Sample Duplicate, Lab Control Sample)

Parameter	MDL	RDL	Units	TrueValue	LCS Value	% Rec.	Qual	LabLimit	TrueValue	LCSD Value	% Rec.	Qual	RPD	Qual	LabLimit
Mercury, Total,	0.025	0.25	mg/Kg	1.09	0.994	91		80--120	1.09	1.08	99		8		0--20

MB:WG129628-3 Matrix: SOLIDBLANK Listtype:MTHG-MIDS Method:SW846 7471B Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Mercury, Total,	0.0048	0.0476	mg/Kg	<MDL	

SB:WG129628-4 MB:WG129628-3 Matrix: SOLIDBLANK Listtype:MTHG-MIDS Method:SW846 7471B Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	TrueValue	SB Value	% Rec.	Qual	LabLimit
Mercury, Total,	0.0048	0.0476	mg/Kg	<MDL	0.0952	0.0857	90		85--115

MSD:WG129628-6 MS:WG129628-5 L58785-4 Matrix: TRAP SED Listtype:MTHG-MIDS Method:SW846 7471B Project:423589-335-4 Pkey:STD
(Matrix Spike Duplicate, Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	TrueValue	MS Value	% Rec.	Qual	LabLimit	TrueValue	MSD Value	% Rec.	Qual	RPD	Qual	LabLimit
Mercury, Total,	0.0048	0.048	mg/Kg	0.014	0.096	0.113	104		75--125	0.0952	0.111	102		2		0--20

LD:WG129628-7 L58785-4 Matrix: TRAP SED Listtype:MTHG-MIDS Method:SW846 7471B Project:423589-335-4 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
Mercury, Total,	0.0048	0.0478	mg/Kg	0.014	0.016			0--20

Workgroup: WG129914 (Filter Seds) Run ID: R192375

MB:WG129914-1 Matrix: SOLIDBLANK Listtype:MTHG-MIDS Method:SW846 7471B Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Mercury, Total,	0.0048	0.0476	mg/Kg	<MDL	

SB:WG129914-2 MB:WG129914-1 Matrix: SOLIDBLANK Listtype:MTHG-MIDS Method:SW846 7471B Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	TrueValue	SB Value	% Rec.	Qual	LabLimit
Mercury, Total,	0.0048	0.0476	mg/Kg	<MDL	0.0952	0.0966	101		85--115

LCSD:WG129914-4 LCS:WG129914-3 Matrix: FRSHWTRSED Listtype:MTHG-MIDS Method:SW846 7471B Project: Pkey:SED
(Lab Control Sample Duplicate, Lab Control Sample)

Parameter	MDL	RDL	Units	TrueValue	LCS Value	% Rec.	Qual	LabLimit	TrueValue	LCSD Value	% Rec.	Qual	RPD	Qual	LabLimit
Mercury, Total,	0.025	0.248	mg/Kg	1.09	1.08	99		80--120	1.09	1.09	100		1		0--20

LD:WG129914-5 L59049-1 Matrix: FILTER SED Listtype:MTHG-MIDS Method:SW846 7471B Project:423589-335-4 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
Mercury, Total,	0.0049	0.049	mg/Kg	0.044	0.047			0--20

MSD:WG129914-7 MS:WG129914-6 L59049-1 Matrix: FILTER SED Listtype:MTHG-MIDS Method:SW846 7471B Project:423589-335-4 Pkey:STD
(Matrix Spike Duplicate, Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	TrueValue	MS Value	% Rec.	Qual	LabLimit	TrueValue	MSD Value	% Rec.	Qual	RPD	Qual	LabLimit
Mercury, Total,	0.0052	0.0518	mg/Kg	0.044	0.104	0.159	110		75--125	0.1	0.131	86		19		0--20

Workgroup: WG130168 (Filter Seds) Run ID: R192406

MB:WG130168-1 Matrix: SOLIDBLANK Listtype:MTHG-MIDS Method:SW846 7471B Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Mercury, Total,	0.0048	0.0476	mg/Kg	<MDL	

SB:WG130168-2 MB:WG130168-1 Matrix: SOLIDBLANK Listtype:MTHG-MIDS Method:SW846 7471B Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	TrueValue	SB Value	% Rec.	Qual	LabLimit
Mercury, Total,	0.0048	0.0476	mg/Kg	<MDL	0.0952	0.0944	99		85--115

LCSD:WG130168-4 LCS:WG130168-3 Matrix: FRSHWTRSED Listtype:MTHG-MIDS Method:SW846 7471B Project: Pkey:SED
(Lab Control Sample Duplicate, Lab Control Sample)

Parameter	MDL	RDL	Units	TrueValue	LCS Value	% Rec.	Qual	LabLimit	TrueValue	LCSD Value	% Rec.	Qual	RPD	Qual	LabLimit
Mercury, Total,	0.026	0.258	mg/Kg	1.09	1.06	97		80--120	1.09	1.06	97		0		0--20

LD:WG130168-5 L59190-1 Matrix: FILTER SED Listtype:MTHG-MIDS Method:SW846 7471B Project:423589-335-4 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
Mercury, Total,	0.0052	0.052	mg/Kg	0.042	0.041			0--20

MSD:WG130168-7 MS:WG130168-6 L59190-1 Matrix: FILTER SED Listtype:MTHG-MIDS Method:SW846 7471B Project:423589-335-4 Pkey:STD
(Matrix Spike Duplicate, Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	TrueValue	MS Value	% Rec.	Qual	LabLimit	TrueValue	MSD Value	% Rec.	Qual	RPD	Qual	LabLimit
Mercury, Total,	0.0051	0.0514	mg/Kg	0.042	0.103	0.139	94		75--125	0.103	0.135	90		3		0--20

Workgroup: WG130972 (Filter seds) Run ID: R193482

MB:WG130972-1 Matrix: SOLIDBLANK Listtype:MTHG-MIDS Method:SW846 7471B Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Mercury, Total,	0.0048	0.0476	mg/Kg	<MDL	

SB:WG130972-2 MB:WG130972-1 Matrix: SOLIDBLANK Listtype:MTHG-MIDS Method:SW846 7471B Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	TrueValue	SB Value	% Rec.	Qual	LabLimit
Mercury, Total,	0.0048	0.0476	mg/Kg	<MDL	0.0952	0.0988	104		85--115

LCSD:WG130972-4 LCS:WG130972-3 Matrix: FRSHWTRSED Listtype:MTHG-MIDS Method:SW846 7471B Project: Pkey:SED
(Lab Control Sample Duplicate, Lab Control Sample)

Parameter	MDL	RDL	Units	TrueValue	LCS Value	% Rec.	Qual	LabLimit	TrueValue	LCSD Value	% Rec.	Qual	RPD	Qual	LabLimit
Mercury, Total,	0.025	0.248	mg/Kg	1.09	0.967	89		80--120	1.09	0.998	92		3		0--20

LD:WG130972-5 L59596-1 Matrix: FILTER SED Listtype:MTHG-MIDS Method:SW846 7471B Project:423589-335-4 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
Mercury, Total,	0.0052	0.0517	mg/Kg	0.039	0.033			0--20

MSD:WG130972-7 MS:WG130972-6 L59596-1 Matrix: FILTER SED Listtype:MTHG-MIDS Method:SW846 7471B Project:423589-335-4 Pkey:STD
(Matrix Spike Duplicate, Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	TrueValue	MS Value	% Rec.	Qual	LabLimit	TrueValue	MSD Value	% Rec.	Qual	RPD	Qual	LabLimit
Mercury, Total,	0.0052	0.0522	mg/Kg	0.039	0.104	0.13	87		75--125	0.104	0.129	86		1		0--20

Workgroup: WG131469 (filter seds) Run ID: R194043

MB:WG131469-1 Matrix: SOLIDBLANK Listtype:MTHG-MIDS Method:SW846 7471B Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual

Mercury, Total, 0.0048 0.0476 mg/Kg <MDL

SB:WG131469-2 MB:WG131469-1 Matrix: SOLIDBLANK Listtype:MTHG-MIDS Method:SW846 7471B Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	TrueValue	SB Value	% Rec.	Qual	LabLimit
Mercury, Total,	0.0048	0.0476	mg/Kg	<MDL	0.0952	0.0942	99		85--115

LCSD:WG131469-4 LCS:WG131469-3 Matrix: FRSHWTRSED Listtype:MTHG-MIDS Method:SW846 7471B Project: Pkey:SED
(Lab Control Sample Duplicate, Lab Control Sample)

Parameter	MDL	RDL	Units	TrueValue	LCS Value	% Rec.	Qual	LabLimit	TrueValue	LCSD Value	% Rec.	Qual	RPD	Qual	LabLimit
Mercury, Total,	0.025	0.254	mg/Kg	1.09	1.03	94		80--120	1.09	1.01	93		1		0--20

LD:WG131469-5 L59723-4 Matrix: FILTER SED Listtype:MTHG-MIDS Method:SW846 7471B Project:423589-335-4 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
Mercury, Total,	0.0048	0.048	mg/Kg	0.032	0.034			0--20

MSD:WG131469-7 MS:WG131469-6 L59723-4 Matrix: FILTER SED Listtype:MTHG-MIDS Method:SW846 7471B Project:423589-335-4 Pkey:STD
(Matrix Spike Duplicate, Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	TrueValue	MS Value	% Rec.	Qual	LabLimit	TrueValue	MSD Value	% Rec.	Qual	RPD	Qual	LabLimit
Mercury, Total,	0.0052	0.0517	mg/Kg	0.032	0.103	0.129	94		75--125	0.101	0.124	90		4		0--20

Workgroup: WG131893 (Filter Seds) Run ID: R194571

MB:WG131893-1 Matrix: SOLIDBLANK Listtype:MTHG-MIDS Method:SW846 7471B Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Mercury, Total,	0.0048	0.0476	mg/Kg	<MDL	

SB:WG131893-2 MB:WG131893-1 Matrix: SOLIDBLANK Listtype:MTHG-MIDS Method:SW846 7471B Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	TrueValue	SB Value	% Rec.	Qual	LabLimit
Mercury, Total,	0.0048	0.0476	mg/Kg	<MDL	0.0952	0.0954	100		85--115

LCSD:WG131893-4 LCS:WG131893-3 Matrix: FRSHWTRSED Listtype:MTHG-MIDS Method:SW846 7471B Project: Pkey:SED
(Lab Control Sample Duplicate, Lab Control Sample)

Parameter	MDL	RDL	Units	TrueValue	LCS Value	% Rec.	Qual	LabLimit	TrueValue	LCSD Value	% Rec.	Qual	RPD	Qual	LabLimit
Mercury, Total,	0.024	0.242	mg/Kg	1.09	0.995	91		80--120	1.09	0.993	91		0		0--20

LD:WG131893-5 L59919-1 Matrix: FILTER SED Listtype:MTHG-MIDS Method:SW846 7471B Project:423589-335-4 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
Mercury, Total,	0.0049	0.049	mg/Kg	0.0523	0.0542	4		0--20

MSD:WG131893-7 MS:WG131893-6 L59919-1 Matrix: FILTER SED Listtype:MTHG-MIDS Method:SW846 7471B Project:423589-335-4 Pkey:STD
(Matrix Spike Duplicate, Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	TrueValue	MS Value	% Rec.	Qual	LabLimit	TrueValue	MSD Value	% Rec.	Qual	RPD	Qual	LabLimit
Mercury, Total,	0.0049	0.0493	mg/Kg	0.0523	0.0986	0.148	97		75--125	0.0981	0.135	84		9		0--20

Workgroup: WG132653 (LDW Green river) Run ID: R195550

LCSD:WG132653-2 LCS:WG132653-1 Matrix: FRSHWTRSED Listtype:MTHG-MIDS Method:SW846 7471B Project: Pkey:SED
(Lab Control Sample Duplicate, Lab Control Sample)

Parameter	MDL	RDL	Units	TrueValue	LCS Value	% Rec.	Qual	LabLimit	TrueValue	LCSD Value	% Rec.	Qual	RPD	Qual	LabLimit
Mercury, Total,	0.025	0.25	mg/Kg	1.09	1.02	93		80--120	1.09	1.02	94		0		0--20

MB:WG132653-3 Matrix: SOLIDBLANK Listtype:MTHG-MIDS Method:SW846 7471B Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Mercury, Total,	0.0048	0.0476	mg/Kg	<MDL	

SB:WG132653-4 MB:WG132653-3 Matrix: SOLIDBLANK Listtype:MTHG-MIDS Method:SW846 7471B Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	TrueValue	SB Value	% Rec.	Qual	LabLimit
Mercury, Total,	0.0048	0.0476	mg/Kg	<MDL	0.0952	0.0912	96		85--115

MSD:WG132653-6 MS:WG132653-5 L60187-1 Matrix: FILTER SED Listtype:MTHG-MIDS Method:SW846 7471B Project:423589-335-4 Pkey:STD
(Matrix Spike Duplicate, Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	TrueValue	MS Value	% Rec.	Qual	LabLimit	TrueValue	MSD Value	% Rec.	Qual	RPD	Qual	LabLimit
Mercury, Total,	0.0048	0.0476	mg/Kg	0.0839	0.0952	0.143	62	*	75--125	0.0957	0.151	71	*	6		0--20

LD:WG132653-7 L60187-1 Matrix: FILTER SED Listtype:MTHG-MIDS Method:SW846 7471B Project:423589-335-4 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
Mercury, Total,	0.0048	0.0484	mg/Kg	0.0839	0.0613	31	*	0--20

Workgroup: WG135928 (04-nov-14 LDW) Run ID: R199295

MB:WG135928-1 Matrix: SOLIDBLANK Listtype:MTHG-MIDS Method:SW846 7471B Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Mercury, Total,	0.0048	0.0476	mg/Kg	<MDL	

SB:WG135928-2 MB:WG135928-1 Matrix: SOLIDBLANK Listtype:MTHG-MIDS Method:SW846 7471B Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	TrueValue	SB Value	% Rec.	Qual	LabLimit
Mercury, Total,	0.0048	0.0476	mg/Kg	<MDL	0.0952	0.088	92		85--115

MSD:WG135928-4 MS:WG135928-3 L61510-1 Matrix: FILTER SED Listtype:MTHG-MIDS Method:SW846 7471B Project:423589-335-4 Pkey:STD
(Matrix Spike Duplicate, Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	TrueValue	MS Value	% Rec.	Qual	LabLimit	TrueValue	MSD Value	% Rec.	Qual	RPD	Qual	LabLimit
Mercury, Total,	0.0049	0.0487	mg/Kg	0.013	0.0974	0.108	97		75--125	0.102	0.114	98		5		0--20

LCSD:WG135928-6 LCS:WG135928-5 Matrix: SOIL Listtype:MTHG-MIDS Method:SW846 7471B Project: Pkey:STD
(Lab Control Sample Duplicate, Lab Control Sample)

Parameter	MDL	RDL	Units	TrueValue	LCS Value	% Rec.	Qual	LabLimit	TrueValue	LCSD Value	% Rec.	Qual	RPD	Qual	LabLimit
Mercury, Total,	0.13	1.27	mg/Kg	9.03	8.76	97		71--129	9.03	9.28	103		6		0--20

Workgroup: WG126014 (Green R Seds) Run ID: R187593

MB:WG126014-1 Matrix: SOLIDBLANK Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Vanadium, Tota	0.018	0.0893	mg/Kg	<MDL	
Chromium, Tota	0.048	0.238	mg/Kg	<MDL	
Nickel, Total, ICI	0.024	0.119	mg/Kg	<MDL	
Copper, Total, IC	0.095	0.476	mg/Kg	<MDL	
Zinc, Total, ICP-I	0.12	0.595	mg/Kg	<MDL	
Arsenic, Total, IC	0.024	0.119	mg/Kg	<MDL	
Silver, Total, ICP	0.0095	0.0476	mg/Kg	<MDL	
Cadmium, Total	0.012	0.0595	mg/Kg	<MDL	
Lead, Total, ICP-	0.024	0.119	mg/Kg	<MDL	

SB:WG126014-2 MB:WG126014-1 Matrix: SOLIDBLANK Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	TrueValue	SB Value	% Rec.	Qual	LabLimit

Vanadium, Tota	0.018	0.0893	mg/Kg	<MDL	4.76	4.35	91	85--115
Chromium, Tota	0.048	0.238	mg/Kg	<MDL	4.76	4.47	94	85--115
Nickel, Total, ICI	0.024	0.119	mg/Kg	<MDL	4.76	4.65	98	85--115
Copper, Total, IC	0.095	0.476	mg/Kg	<MDL	4.76	4.56	96	85--115
Zinc, Total, ICP-I	0.12	0.595	mg/Kg	<MDL	4.76	4.49	94	85--115
Arsenic, Total, IC	0.024	0.119	mg/Kg	<MDL	4.76	4.5	95	85--115
Silver, Total, ICP	0.0095	0.0476	mg/Kg	<MDL	4.76	4.47	94	85--115
Cadmium, Total	0.012	0.0595	mg/Kg	<MDL	4.76	4.44	93	85--115
Lead, Total, ICP-	0.024	0.119	mg/Kg	<MDL	4.76	4.47	94	85--115

LCSD:WG126014-4 LCS:WG126014-3 Matrix: SOIL Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project: Pkey:STD
(Lab Control Sample Duplicate, Lab Control Sample)

Parameter	MDL	RDL	Units	TrueValue	LCS Value	% Rec.	Qual	LabLimit	TrueValue	LCSD Value	% Rec.	Qual	RPD	Qual	LabLimit
Vanadium, Tota	0.088	0.438	mg/Kg	87.1	81.1	93		77--123	87.1	74.7	86		8		0--20
Chromium, Tota	0.23	1.17	mg/Kg	119	121	102		80--120	119	110	93		9		0--20
Nickel, Total, ICI	0.12	0.584	mg/Kg	70	75.6	108		80--120	70	68	97		11		0--20
Copper, Total, IC	0.47	2.34	mg/Kg	118	132	112		80--120	118	120	102		10		0--20
Zinc, Total, ICP-I	0.58	2.92	mg/Kg	276	308	111		80--121	276	288	104		7		0--20
Arsenic, Total, IC	0.12	0.584	mg/Kg	168	164	97		80--120	168	154	92		6		0--20
Silver, Total, ICP	0.047	0.234	mg/Kg	42.3	43.7	103		66--134	42.3	41.1	97		6		0--20
Cadmium, Total	0.058	0.292	mg/Kg	103	113	110		80--120	103	104	101		8		0--20
Lead, Total, ICP-	0.12	0.584	mg/Kg	76.9	81.8	106		80--120	76.9	78	101		5		0--20

LCS:WG126014-5 Matrix: FRSHWTRSED Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project: Pkey:SED
(Lab Control Sample)

Parameter	MDL	RDL	Units	TrueValue	LCS Value	% Rec.	Qual	LabLimit
Vanadium, Tota	0.082	0.408	mg/Kg	94.6	16.8	18		10--44
Chromium, Tota	0.22	1.09	mg/Kg	121.9	62.5	51		40--80
Nickel, Total, ICI	0.11	0.543	mg/Kg	42.9	32.2	75		70--105
Zinc, Total, ICP-I	0.54	2.72	mg/Kg	408	363	89		69--109
Arsenic, Total, IC	0.11	0.543	mg/Kg	17	12.8	75		66--141
Cadmium, Total	0.054	0.272	mg/Kg	2.94	2.82	96		80--120
Lead, Total, ICP-	0.11	0.543	mg/Kg	150	137	91		80--120

LD:WG126014-6 L57305-4 Matrix: TRAP SED Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project:423589-335-4 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
Vanadium, Tota	0.18	0.905	mg/Kg	20.7	20.9	1		0--20
Chromium, Tota	0.48	2.41	mg/Kg	21.2	21.2	0		0--20
Nickel, Total, ICI	0.24	1.21	mg/Kg	23.9	27.1	13		0--20

Copper, Total, IC	0.097	0.483	mg/Kg	7.36	7.46	1	0--20
Zinc, Total, ICP-I	0.12	0.603	mg/Kg	25.3	25.5	1	0--20
Arsenic, Total, IC	0.024	0.121	mg/Kg	1.38	1.39	1	0--20
Silver, Total, ICP	0.0097	0.0483	mg/Kg	0.019	0.019		0--20
Cadmium, Total	0.012	0.0603	mg/Kg	0.041	0.044		0--20
Lead, Total, ICP-	0.024	0.121	mg/Kg	1.75	1.74	1	0--20

MS:WG126014-7 L57305-4 Matrix: TRAP SED Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project:423589-335-4 Pkey:STD
(Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	TrueValue	MS Value	% Rec.	Qual	LabLimit
Vanadium, Tota	0.18	0.905	mg/Kg	20.7	4.87	24.1		4xRule	75--125
Chromium, Tota	0.48	2.41	mg/Kg	21.2	4.87	23.5		4xRule	75--125
Nickel, Total, ICI	0.24	1.21	mg/Kg	23.9	4.87	28.3		4xRule	75--125
Copper, Total, IC	0.097	0.483	mg/Kg	7.36	4.87	12	96		75--125
Zinc, Total, ICP-I	0.12	0.603	mg/Kg	25.3	4.87	30.3		4xRule	75--125
Arsenic, Total, IC	0.024	0.121	mg/Kg	1.38	4.87	5.27	80		75--125
Silver, Total, ICP	0.0097	0.0483	mg/Kg	0.019	4.87	4.61	94		75--125
Cadmium, Total	0.012	0.0603	mg/Kg	0.041	4.87	4.84	99		75--125
Lead, Total, ICP-	0.024	0.121	mg/Kg	1.75	4.87	6.55	99		75--125

Workgroup: WG126930 (5/22/13 Filtered Seds) Run ID: R188178

MB:WG126930-1 Matrix: SOLIDBLANK Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Vanadium, Tota	0.018	0.0893	mg/Kg	<MDL	
Chromium, Tota	0.048	0.238	mg/Kg	<MDL	
Nickel, Total, ICI	0.024	0.119	mg/Kg	<MDL	
Copper, Total, IC	0.095	0.476	mg/Kg	<MDL	
Zinc, Total, ICP-I	0.12	0.595	mg/Kg	<MDL	
Arsenic, Total, IC	0.024	0.119	mg/Kg	<MDL	
Silver, Total, ICP	0.0095	0.0476	mg/Kg	<MDL	
Cadmium, Total	0.012	0.0595	mg/Kg	<MDL	
Lead, Total, ICP-	0.024	0.119	mg/Kg	<MDL	

SB:WG126930-2 MB:WG126930-1 Matrix: SOLIDBLANK Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	TrueValue	SB Value	% Rec.	Qual	LabLimit
Vanadium, Tota	0.018	0.0893	mg/Kg	<MDL	4.76	4.63	97		85--115

Chromium, Tota	0.048	0.238	mg/Kg	<MDL	4.76	4.7	99	85--115
Nickel, Total, ICI	0.024	0.119	mg/Kg	<MDL	4.76	4.84	102	85--115
Copper, Total, IC	0.095	0.476	mg/Kg	<MDL	4.76	4.9	103	85--115
Zinc, Total, ICP-I	0.12	0.595	mg/Kg	<MDL	4.76	4.64	98	85--115
Arsenic, Total, IC	0.024	0.119	mg/Kg	<MDL	4.76	4.56	96	85--115
Silver, Total, ICP	0.0095	0.0476	mg/Kg	<MDL	4.76	4.96	104	85--115
Cadmium, Total	0.012	0.0595	mg/Kg	<MDL	4.76	4.6	97	85--115
Lead, Total, ICP-	0.024	0.119	mg/Kg	<MDL	4.76	4.66	98	85--115

LCSD:WG126930-4 LCS:WG126930-3 Matrix: FRSHWTRSED Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project: Pkey:SED
(Lab Control Sample Duplicate, Lab Control Sample)

Parameter	MDL	RDL	Units	TrueValue	LCS Value	% Rec.	Qual	LabLimit	TrueValue	LCSD Value	% Rec.	Qual	RPD	Qual	LabLimit
Vanadium, Tota	0.15	0.756	mg/Kg	94.6	27.1	29		10--44	94.6	27.7	29		2		0--20
Chromium, Tota	0.4	2.02	mg/Kg	121.9	75.1	62		40--80	121.9	72	59		4		0--20
Nickel, Total, ICI	0.2	1.01	mg/Kg	42.9	36.7	86		70--105	42.9	37.5	87		2		0--20
Zinc, Total, ICP-I	1	5.04	mg/Kg	408	393	96		69--109	408	404	99		3		0--20
Arsenic, Total, IC	0.2	1.01	mg/Kg	17	14.1	83		66--141	17	14.2	84		0		0--20
Cadmium, Total	0.1	0.504	mg/Kg	2.94	2.93	100		83--123	2.94	2.92	99		0		0--20
Lead, Total, ICP-	0.2	1.01	mg/Kg	150	150	100		80--120	150	144	96		4		0--20

LD:WG126930-5 L57634-2 Matrix: FILTER SED Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project:423589-335-4 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
Vanadium, Tota	0.092	0.458	mg/Kg	18.5	18.3	1		0--20
Chromium, Tota	0.24	1.22	mg/Kg	7.01	6.93	1		0--20
Nickel, Total, ICI	0.12	0.611	mg/Kg	6.29	6.15	2		0--20
Copper, Total, IC	0.49	2.44	mg/Kg	14.3	13.8	4		0--20
Zinc, Total, ICP-I	0.61	3.05	mg/Kg	69.4	69.6	0		0--20
Arsenic, Total, IC	0.12	0.611	mg/Kg	8.65	8.43	3		0--20
Silver, Total, ICP	0.0098	0.0489	mg/Kg	0.0677	0.0657	3		0--20
Cadmium, Total	0.012	0.0611	mg/Kg	0.198	0.208	5		0--20
Lead, Total, ICP-	0.024	0.122	mg/Kg	11.2	11.2	1		0--20

MS:WG126930-6 L57634-2 Matrix: FILTER SED Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project:423589-335-4 Pkey:STD
(Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	TrueValue	MS Value	% Rec.	Qual	LabLimit
Vanadium, Tota	0.092	0.458	mg/Kg	18.5	4.93	23.9	108		75--125
Chromium, Tota	0.24	1.22	mg/Kg	7.01	4.93	12.1	104		75--125
Nickel, Total, ICI	0.12	0.611	mg/Kg	6.29	4.93	11.4	105		75--125
Copper, Total, IC	0.49	2.44	mg/Kg	14.3	4.93	19	94		75--125

Zinc, Total, ICP-I	0.61	3.05	mg/Kg	69.4	4.93	74.1	4xRule	75--125
Arsenic, Total, I(	0.12	0.611	mg/Kg	8.65	4.93	13.6	100	75--125
Silver, Total, ICP	0.0098	0.0489	mg/Kg	0.0677	4.93	4.81	96	75--125
Cadmium, Total	0.012	0.0611	mg/Kg	0.198	4.93	4.92	96	75--125
Lead, Total, ICP-	0.024	0.122	mg/Kg	11.2	4.93	15.9	95	75--125

LCS:WG126930-7 Matrix: SOIL Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project: Pkey:STD
(Lab Control Sample)

Parameter	MDL	RDL	Units	TrueValue	LCS Value	% Rec.	Qual	LabLimit
Vanadium, Tota	0.13	0.672	mg/Kg	87.1	87.1	100		77--123
Chromium, Tota	0.36	1.79	mg/Kg	119	119	100		80--120
Nickel, Total, ICI	0.18	0.896	mg/Kg	70	72.6	104		80--120
Copper, Total, I(	0.72	3.58	mg/Kg	118	121	103		80--120
Zinc, Total, ICP-I	0.9	4.48	mg/Kg	276	307	111		80--120
Arsenic, Total, I(	0.18	0.896	mg/Kg	168	167	100		80--120
Silver, Total, ICP	0.072	0.358	mg/Kg	42.3	45.7	108		66--134
Cadmium, Total	0.09	0.448	mg/Kg	103	108	105		80--120
Lead, Total, ICP-	0.18	0.896	mg/Kg	76.9	82.2	107		80--120

Workgroup: WG129766 (08-NOV-13 Green R Seds) Run ID: R192076

MB:WG129766-1 Matrix: SOLIDBLANK Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Vanadium, Tota	0.0061	0.0307	mg/Kg	<MDL	
Chromium, Tota	0.016	0.082	mg/Kg	<MDL	
Nickel, Total, ICI	0.0082	0.041	mg/Kg	<MDL	
Copper, Total, I(	0.033	0.164	mg/Kg	<MDL	
Zinc, Total, ICP-I	0.041	0.205	mg/Kg	<MDL	
Arsenic, Total, I(	0.0082	0.041	mg/Kg	<MDL	
Silver, Total, ICP	0.0033	0.0164	mg/Kg	<MDL	
Cadmium, Total	0.0041	0.0205	mg/Kg	<MDL	
Lead, Total, ICP-	0.0082	0.041	mg/Kg	<MDL	

SB:WG129766-2 MB:WG129766-1 Matrix: SOLIDBLANK Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	TrueValue	SB Value	% Rec.	Qual	LabLimit
Vanadium, Tota	0.0061	0.0307	mg/Kg	<MDL	1.64	1.77	108		85--115
Chromium, Tota	0.016	0.082	mg/Kg	<MDL	1.64	1.8	110		85--115

Nickel, Total, ICI	0.0082	0.041	mg/Kg	<MDL	1.64	1.83	112	85--115
Copper, Total, IC	0.033	0.164	mg/Kg	<MDL	1.64	1.87	114	85--115
Zinc, Total, ICP-I	0.041	0.205	mg/Kg	<MDL	1.64	1.76	107	85--115
Arsenic, Total, IC	0.0082	0.041	mg/Kg	<MDL	1.64	1.64	100	85--115
Silver, Total, ICP	0.0033	0.0164	mg/Kg	<MDL	1.64	1.86	114	85--115
Cadmium, Total	0.0041	0.0205	mg/Kg	<MDL	1.64	1.68	103	85--115
Lead, Total, ICP-	0.0082	0.041	mg/Kg	<MDL	1.64	1.7	104	85--115

LD:WG129766-3 L58785-4 Matrix: TRAP SED Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project:423589-335-4 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
Vanadium, Tota	0.064	0.321	mg/Kg	19.5	18.9	3		0--20
Chromium, Tota	0.17	0.856	mg/Kg	18.6	18.6	0		0--20
Nickel, Total, ICI	0.086	0.428	mg/Kg	22.1	22	0		0--20
Copper, Total, IC	0.068	0.342	mg/Kg	6.17	6.2	1		0--20
Zinc, Total, ICP-I	0.086	0.428	mg/Kg	20.6	19.8	4		0--20
Arsenic, Total, IC	0.086	0.428	mg/Kg	2.18	2.21	1		0--20
Silver, Total, ICP	0.0068	0.0342	mg/Kg	0.018	0.02			0--20
Cadmium, Total	0.0086	0.0428	mg/Kg	0.0468	0.0495	6		0--20
Lead, Total, ICP-	0.086	0.428	mg/Kg	2.53	2.41	5		0--20

MS:WG129766-4 L58785-4 Matrix: TRAP SED Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project:423589-335-4 Pkey:STD
(Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	TrueValue	MS Value	% Rec.	Qual	LabLimit
Vanadium, Tota	0.064	0.321	mg/Kg	19.5	3.18	21.9		4xRule	75--125
Chromium, Tota	0.17	0.856	mg/Kg	18.6	3.18	23.4		4xRule	75--125
Nickel, Total, ICI	0.086	0.428	mg/Kg	22.1	3.18	25.1		4xRule	75--125
Copper, Total, IC	0.068	0.342	mg/Kg	6.17	3.18	9.25	97		75--125
Zinc, Total, ICP-I	0.086	0.428	mg/Kg	20.6	3.18	22.9		4xRule	75--125
Arsenic, Total, IC	0.086	0.428	mg/Kg	2.18	3.18	5.24	96		75--125
Silver, Total, ICP	0.0068	0.0342	mg/Kg	0.018	3.18	2.99	94		75--125
Cadmium, Total	0.0086	0.0428	mg/Kg	0.0468	3.18	3.36	104		75--125
Lead, Total, ICP-	0.086	0.428	mg/Kg	2.53	3.18	5.71	100		75--125

LCSD:WG129766-6 LCS:WG129766-5 Matrix: FRSHWTRSED Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project: Pkey:SED
(Lab Control Sample Duplicate, Lab Control Sample)

Parameter	MDL	RDL	Units	TrueValue	LCS Value	% Rec.	Qual	LabLimit	TrueValue	LCSD Value	% Rec.	Qual	RPD	Qual	LabLimit
Vanadium, Tota	0.092	0.46	mg/Kg	94.6	21.8	23		10--44	94.6	20.1	21		8		0--20
Chromium, Tota	0.25	1.23	mg/Kg	121.9	71.8	59		40--80	121.9	70.1	57		2		0--20
Nickel, Total, ICI	0.12	0.613	mg/Kg	42.9	38.4	90		70--105	42.9	36	84		7		0--20

Zinc, Total, ICP-I	0.61	3.06	mg/Kg	408	397	97	69--109	408	370	91	7	0--20
Arsenic, Total, I(	0.12	0.613	mg/Kg	17	14.5	85	66--141	17	14.3	84	1	0--20
Cadmium, Total	0.061	0.306	mg/Kg	2.94	3.24	110	83--123	2.94	3	102	8	0--20
Lead, Total, ICP-	0.12	0.613	mg/Kg	150	162	108	80--120	150	151	100	7	0--20

LCSD:WG129766-8 LCS:WG129766-7 Matrix: SOIL Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project: Pkey:STD
(Lab Control Sample Duplicate, Lab Control Sample)

Parameter	MDL	RDL	Units	TrueValue	LCS Value	% Rec.	Qual	LabLimit	TrueValue	LCSD Value	% Rec.	Qual	RPD	Qual	LabLimit
Vanadium, Tota	0.093	0.464	mg/Kg	87.1	87.8	101		77--123	87.1	81.2	93		8		0--20
Chromium, Tota	0.25	1.24	mg/Kg	119	124	104		80--120	119	114	96		8		0--20
Nickel, Total, ICI	0.12	0.619	mg/Kg	70	78.3	112		80--120	70	70.8	101		10		0--20
Copper, Total, I(	0.5	2.48	mg/Kg	118	131	111		80--120	118	116	98		12		0--20
Zinc, Total, ICP-I	0.62	3.09	mg/Kg	276	302	109		80--121	276	282	102		7		0--20
Arsenic, Total, I(	0.12	0.619	mg/Kg	168	161	96		80--120	168	156	93		3		0--20
Silver, Total, ICP	0.05	0.248	mg/Kg	42.3	46	109		66--134	42.3	44.7	106		3		0--20
Cadmium, Total	0.062	0.309	mg/Kg	103	114	111		80--120	103	106	103		8		0--20
Lead, Total, ICP-	0.12	0.619	mg/Kg	76.9	82.6	107		80--120	76.9	77.1	100		7		0--20

Workgroup: WG130487 (12/27/13 Filtered Seds) Run ID: R192786

MB:WG130487-1 Matrix: SOLIDBLANK Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Vanadium, Tota	0.018	0.0893	mg/Kg	<MDL	
Chromium, Tota	0.048	0.238	mg/Kg	<MDL	
Nickel, Total, ICI	0.024	0.119	mg/Kg	<MDL	
Copper, Total, I(	0.095	0.476	mg/Kg	<MDL	
Zinc, Total, ICP-I	0.12	0.595	mg/Kg	<MDL	
Arsenic, Total, I(	0.024	0.119	mg/Kg	<MDL	
Silver, Total, ICP	0.0095	0.0476	mg/Kg	<MDL	
Cadmium, Total	0.012	0.0595	mg/Kg	<MDL	
Lead, Total, ICP-	0.024	0.119	mg/Kg	<MDL	

SB:WG130487-2 MB:WG130487-1 Matrix: SOLIDBLANK Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	TrueValue	SB Value	% Rec.	Qual	LabLimit
Vanadium, Tota	0.018	0.0893	mg/Kg	<MDL	4.76	4.27	90		85--115
Chromium, Tota	0.048	0.238	mg/Kg	<MDL	4.76	4.35	91		85--115
Nickel, Total, ICI	0.024	0.119	mg/Kg	<MDL	4.76	4.63	97		85--115

Copper, Total, IC	0.095	0.476	mg/Kg	<MDL	4.76	4.58	96	85--115
Zinc, Total, ICP-I	0.12	0.595	mg/Kg	<MDL	4.76	4.57	96	85--115
Arsenic, Total, IC	0.024	0.119	mg/Kg	<MDL	4.76	4.29	90	85--115
Silver, Total, ICP	0.0095	0.0476	mg/Kg	<MDL	4.76	4.76	100	85--115
Cadmium, Total	0.012	0.0595	mg/Kg	<MDL	4.76	4.67	98	85--115
Lead, Total, ICP-	0.024	0.119	mg/Kg	<MDL	4.76	4.82	101	85--115

LCSD:WG130487-4 LCS:WG130487-3 Matrix: SOIL Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project: Pkey:STD
(Lab Control Sample Duplicate, Lab Control Sample)

Parameter	MDL	RDL	Units	TrueValue	LCS Value	% Rec.	Qual	LabLimit	TrueValue	LCSD Value	% Rec.	Qual	RPD	Qual	LabLimit
Vanadium, Tota	0.076	0.38	mg/Kg	87.1	74.8	86		77--123	87.1	71.7	82		4		0--20
Chromium, Tota	0.2	1.01	mg/Kg	119	106	89		80--120	119	99.7	84		6		0--20
Nickel, Total, ICI	0.1	0.506	mg/Kg	70	66.8	95		80--120	70	62.5	89		7		0--20
Copper, Total, IC	0.4	2.02	mg/Kg	118	109	92		80--120	118	104	88		5		0--20
Zinc, Total, ICP-I	0.51	2.53	mg/Kg	276	280	101		80--121	276	277	100		1		0--20
Arsenic, Total, IC	0.1	0.506	mg/Kg	168	165	98		80--120	168	165	98		0		0--20
Silver, Total, ICP	0.04	0.202	mg/Kg	42.3	44.9	106		66--134	42.3	42.8	101		5		0--20
Cadmium, Total	0.051	0.253	mg/Kg	103	110	107		80--120	103	107	103		3		0--20
Lead, Total, ICP-	0.1	0.506	mg/Kg	76.9	82	107		80--120	76.9	79.5	103		3		0--20

LCSD:WG130487-6 LCS:WG130487-5 Matrix: FRSHWTRSED Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project: Pkey:SED
(Lab Control Sample Duplicate, Lab Control Sample)

Parameter	MDL	RDL	Units	TrueValue	LCS Value	% Rec.	Qual	LabLimit	TrueValue	LCSD Value	% Rec.	Qual	RPD	Qual	LabLimit
Vanadium, Tota	0.077	0.384	mg/Kg	94.6	18	19		10--44	94.6	17.8	19		1		0--20
Chromium, Tota	0.2	1.02	mg/Kg	121.9	58.9	48		40--80	121.9	58.7	48		0		0--20
Nickel, Total, ICI	0.1	0.512	mg/Kg	42.9	31.9	74		70--105	42.9	31.6	74		1		0--20
Zinc, Total, ICP-I	0.51	2.56	mg/Kg	408	344	84		69--109	408	357	87		4		0--20
Arsenic, Total, IC	0.1	0.512	mg/Kg	17	14.1	83		66--141	17	13.7	81		3		0--20
Cadmium, Total	0.051	0.256	mg/Kg	2.94	2.87	98		83--123	2.94	2.88	98		0		0--20
Lead, Total, ICP-	0.1	0.512	mg/Kg	150	136	91		80--120	150	133	88		2		0--20

LD:WG130487-7 L59190-1 Matrix: FILTER SED Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project:423589-335-4 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
Vanadium, Tota	0.037	0.185	mg/Kg	19	19.4	2		0--20
Chromium, Tota	0.098	0.492	mg/Kg	17.3	18.5	6		0--20
Nickel, Total, ICI	0.049	0.246	mg/Kg	19.9	20.5	3		0--20
Copper, Total, IC	0.2	0.984	mg/Kg	12.3	12.9	5		0--20
Zinc, Total, ICP-I	0.25	1.23	mg/Kg	58.6	59.9	2		0--20
Arsenic, Total, IC	0.025	0.123	mg/Kg	5.13	5.35	4		0--20

Silver, Total, ICP	0.0098	0.0492	mg/Kg	0.033	0.034		0--20
Cadmium, Total	0.012	0.0615	mg/Kg	0.125	0.129	3	0--20
Lead, Total, ICP-	0.025	0.123	mg/Kg	6.82	7.03	3	0--20

MS:WG130487-8 L59190-1 Matrix: FILTER SED Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project:423589-335-4 Pkey:STD
(Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	TrueValue	MS Value	% Rec.	Qual	LabLimit
Vanadium, Tota	0.037	0.185	mg/Kg	19	4.95	23.4	89		75--125
Chromium, Tota	0.098	0.492	mg/Kg	17.3	4.95	22.2	99		75--125
Nickel, Total, ICI	0.049	0.246	mg/Kg	19.9	4.95	24.8		4xRule	75--125
Copper, Total, IC	0.2	0.984	mg/Kg	12.3	4.95	16.6	87		75--125
Zinc, Total, ICP-I	0.25	1.23	mg/Kg	58.6	4.95	65.3		4xRule	75--125
Arsenic, Total, IC	0.025	0.123	mg/Kg	5.13	4.95	10	99		75--125
Silver, Total, ICP	0.0098	0.0492	mg/Kg	0.033	4.95	4.28	86		75--125
Cadmium, Total	0.012	0.0615	mg/Kg	0.125	4.95	4.8	94		75--125
Lead, Total, ICP-	0.025	0.123	mg/Kg	6.82	4.95	11.8	101		75--125

Workgroup: WG131416 (3/7/14 Filtered Seds) Run ID: R194032

MB:WG131416-1 Matrix: SOLIDBLANK Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Vanadium, Tota	0.018	0.0893	mg/Kg	<MDL	
Chromium, Tota	0.048	0.238	mg/Kg	<MDL	
Nickel, Total, ICI	0.024	0.119	mg/Kg	<MDL	
Copper, Total, IC	0.095	0.476	mg/Kg	<MDL	
Zinc, Total, ICP-I	0.12	0.595	mg/Kg	<MDL	
Arsenic, Total, IC	0.024	0.119	mg/Kg	<MDL	
Silver, Total, ICP	0.0095	0.0476	mg/Kg	<MDL	
Cadmium, Total	0.012	0.0595	mg/Kg	<MDL	
Lead, Total, ICP-	0.024	0.119	mg/Kg	<MDL	

SB:WG131416-2 MB:WG131416-1 Matrix: SOLIDBLANK Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	TrueValue	SB Value	% Rec.	Qual	LabLimit
Vanadium, Tota	0.018	0.0893	mg/Kg	<MDL	4.76	4.57	96		85--115
Chromium, Tota	0.048	0.238	mg/Kg	<MDL	4.76	4.55	96		85--115
Nickel, Total, ICI	0.024	0.119	mg/Kg	<MDL	4.76	4.7	99		85--115
Copper, Total, IC	0.095	0.476	mg/Kg	<MDL	4.76	4.42	93		85--115

Zinc, Total, ICP-I	0.12	0.595	mg/Kg	<MDL	4.76	4.38	92	85--115
Arsenic, Total, IC	0.024	0.119	mg/Kg	<MDL	4.76	4.44	93	85--115
Silver, Total, ICP	0.0095	0.0476	mg/Kg	<MDL	4.76	4.63	97	85--115
Cadmium, Total	0.012	0.0595	mg/Kg	<MDL	4.76	4.57	96	85--115
Lead, Total, ICP-	0.024	0.119	mg/Kg	<MDL	4.76	4.71	99	85--115

LCSD:WG131416-4 LCS:WG131416-3 Matrix: SOIL Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project: Pkey:STD
(Lab Control Sample Duplicate, Lab Control Sample)

Parameter	MDL	RDL	Units	TrueValue	LCS Value	% Rec.	Qual	LabLimit	TrueValue	LCSD Value	% Rec.	Qual	RPD	Qual	LabLimit
Vanadium, Tota	0.074	0.371	mg/Kg	156	149	95		76--124	156	152	98		2		0--20
Chromium, Tota	0.2	0.988	mg/Kg	86.8	79.9	92		79--120	86.8	80.4	93		1		0--20
Nickel, Total, ICI	0.099	0.494	mg/Kg	236	233	99		80--120	236	240	102		3		0--20
Copper, Total, IC	0.4	1.98	mg/Kg	268	266	99		80--120	268	263	98		1		0--20
Zinc, Total, ICP-I	0.49	2.47	mg/Kg	130	127	98		80--120	130	125	96		2		0--20
Arsenic, Total, IC	0.099	0.494	mg/Kg	88.4	86	97		80--120	88.4	86.3	98		0		0--20
Silver, Total, ICP	0.04	0.198	mg/Kg	66.2	67.7	102		74--126	66.2	66.5	100		2		0--20
Cadmium, Total	0.049	0.247	mg/Kg	142	151	106		80--120	142	151	106		0		0--20
Lead, Total, ICP-	0.099	0.494	mg/Kg	97.9	104	106		80--120	97.9	102	104		2		0--20

LCSD:WG131416-6 LCS:WG131416-5 Matrix: FRSHWTRSED Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project: Pkey:SED
(Lab Control Sample Duplicate, Lab Control Sample)

Parameter	MDL	RDL	Units	TrueValue	LCS Value	% Rec.	Qual	LabLimit	TrueValue	LCSD Value	% Rec.	Qual	RPD	Qual	LabLimit
Vanadium, Tota	0.074	0.372	mg/Kg	94.6	19.2	20		10--44	94.6	19.2	20		0		0--20
Chromium, Tota	0.2	0.992	mg/Kg	121.9	61.1	50		40--80	121.9	61.5	50		1		0--20
Nickel, Total, ICI	0.099	0.496	mg/Kg	42.9	32.6	76		70--105	42.9	33.6	78		3		0--20
Zinc, Total, ICP-I	0.5	2.48	mg/Kg	408	363	89		69--109	408	368	90		1		0--20
Arsenic, Total, IC	0.099	0.496	mg/Kg	17	14	82		66--141	17	14.2	84		2		0--20
Cadmium, Total	0.05	0.248	mg/Kg	2.94	3.06	104		83--123	2.94	2.88	98		6		0--20
Lead, Total, ICP-	0.099	0.496	mg/Kg	150	158	106		71--111	150	153	102		3		0--20

LD:WG131416-7 L59723-4 Matrix: FILTER SED Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project:423589-335-4 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
Vanadium, Tota	0.097	0.486	mg/Kg	24.1	24.1	0		0--20
Chromium, Tota	0.26	1.3	mg/Kg	12.5	12.5	0		0--20
Nickel, Total, ICI	0.13	0.648	mg/Kg	13.4	13.1	3		0--20
Copper, Total, IC	0.52	2.59	mg/Kg	14.7	15.1	2		0--20
Zinc, Total, ICP-I	0.65	3.24	mg/Kg	39.4	40	2		0--20
Arsenic, Total, IC	0.13	0.648	mg/Kg	2.68	2.53	6		0--20
Silver, Total, ICP	0.01	0.0518	mg/Kg	0.028	0.026			0--20

Cadmium, Total	0.013	0.0648	mg/Kg	0.082	0.0783	5	0--20
Lead, Total, ICP-	0.13	0.648	mg/Kg	3.39	3.37	1	0--20

MS:WG131416-8 L59723-4 Matrix: FILTER SED Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project:423589-335-4 Pkey:STD
(Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	TrueValue	MS Value	% Rec.	Qual	LabLimit
Vanadium, Tota	0.097	0.486	mg/Kg	24.1	5.1	29.1		4xRule	75--125
Chromium, Tota	0.26	1.3	mg/Kg	12.5	5.1	17.2	93		75--125
Nickel, Total, ICI	0.13	0.648	mg/Kg	13.4	5.1	17.7	83		75--125
Copper, Total, IC	0.52	2.59	mg/Kg	14.7	5.1	19.5	94		75--125
Zinc, Total, ICP-I	0.65	3.24	mg/Kg	39.4	5.1	45.8		4xRule	75--125
Arsenic, Total, IC	0.13	0.648	mg/Kg	2.68	5.1	7.43	93		75--125
Silver, Total, ICP	0.01	0.0518	mg/Kg	0.028	5.1	4.21	82		75--125
Cadmium, Total	0.013	0.0648	mg/Kg	0.082	5.1	4.92	95		75--125
Lead, Total, ICP-	0.13	0.648	mg/Kg	3.39	5.1	8.14	93		75--125

Workgroup: WG133002 (6/3/14 Filtered Seds) Run ID: R196034

MB:WG133002-1 Matrix: SOLIDBLANK Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Vanadium, Tota	0.018	0.0893	mg/Kg	<MDL	
Chromium, Tota	0.048	0.238	mg/Kg	<MDL	
Nickel, Total, ICI	0.024	0.119	mg/Kg	<MDL	
Copper, Total, IC	0.095	0.476	mg/Kg	<MDL	
Zinc, Total, ICP-I	0.12	0.595	mg/Kg	<MDL	
Arsenic, Total, IC	0.024	0.119	mg/Kg	<MDL	
Silver, Total, ICP	0.0095	0.0476	mg/Kg	<MDL	
Cadmium, Total	0.012	0.0595	mg/Kg	<MDL	
Lead, Total, ICP-	0.024	0.119	mg/Kg	<MDL	

SB:WG133002-2 MB:WG133002-1 Matrix: SOLIDBLANK Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	TrueValue	SB Value	% Rec.	Qual	LabLimit
Vanadium, Tota	0.018	0.0893	mg/Kg	<MDL	4.76	4.36	92		85--115
Chromium, Tota	0.048	0.238	mg/Kg	<MDL	4.76	4.52	95		85--115
Nickel, Total, ICI	0.024	0.119	mg/Kg	<MDL	4.76	4.74	99		85--115
Copper, Total, IC	0.095	0.476	mg/Kg	<MDL	4.76	4.7	99		85--115
Zinc, Total, ICP-I	0.12	0.595	mg/Kg	<MDL	4.76	4.85	102		85--115

Arsenic, Total, I(	0.024	0.119	mg/Kg	<MDL	4.76	4.72	99	85--115
Silver, Total, ICP	0.0095	0.0476	mg/Kg	<MDL	4.76	4.7	99	85--115
Cadmium, Total	0.012	0.0595	mg/Kg	<MDL	4.76	4.7	99	85--115
Lead, Total, ICP-	0.024	0.119	mg/Kg	<MDL	4.76	4.64	97	85--115

LCS:WG133002-3 Matrix: SOIL Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project: Pkey:STD
(Lab Control Sample)

Parameter	MDL	RDL	Units	TrueValue	LCS Value	% Rec.	Qual	LabLimit
Vanadium, Tota	0.074	0.371	mg/Kg	156	137	88		76--124
Chromium, Tota	0.2	0.988	mg/Kg	86.8	76.5	88		79--120
Nickel, Total, ICI	0.099	0.494	mg/Kg	236	227	96		80--120
Copper, Total, I(	0.4	1.98	mg/Kg	268	256	95		80--120
Zinc, Total, ICP-I	0.49	2.47	mg/Kg	130	133	102		80--120
Arsenic, Total, I(	0.099	0.494	mg/Kg	88.4	89.4	101		80--120
Silver, Total, ICP	0.04	0.198	mg/Kg	66.2	65	98		74--126
Cadmium, Total	0.049	0.247	mg/Kg	142	145	102		80--120
Lead, Total, ICP-	0.099	0.494	mg/Kg	97.9	98.2	100		80--120

LCSD:WG133002-5 LCS:WG133002-4 Matrix: FRSHWTRSED Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project: Pkey:SED
(Lab Control Sample Duplicate, Lab Control Sample)

Parameter	MDL	RDL	Units	TrueValue	LCS Value	% Rec.	Qual	LabLimit	TrueValue	LCSD Value	% Rec.	Qual	RPD	Qual	LabLimit
Vanadium, Tota	0.08	0.399	mg/Kg	94.6	18.6	20		10--44	94.6	18.2	19		3		0--20
Chromium, Tota	0.21	1.06	mg/Kg	121.9	61.6	51		40--80	121.9	63.1	52		3		0--20
Nickel, Total, ICI	0.11	0.532	mg/Kg	42.9	33.3	78		70--105	42.9	33	77		1		0--20
Zinc, Total, ICP-I	0.53	2.66	mg/Kg	408	384	94		69--109	408	375	92		2		0--20
Arsenic, Total, I(	0.11	0.532	mg/Kg	17	14.7	86		66--141	17	14.6	86		1		0--20
Cadmium, Total	0.053	0.266	mg/Kg	2.94	2.97	101		83--123	2.94	2.85	97		4		0--20
Lead, Total, ICP-	0.11	0.532	mg/Kg	150	134	89		71--111	150	141	94		5		0--20

LD:WG133002-6 L59919-2 Matrix: FILTER SED Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project:423589-335-4 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
Vanadium, Tota	0.096	0.481	mg/Kg	34	32.4	5		0--20
Chromium, Tota	0.26	1.28	mg/Kg	10.6	10.1	4		0--20
Nickel, Total, ICI	0.13	0.642	mg/Kg	10.3	10.1	1		0--20
Copper, Total, I(	0.51	2.57	mg/Kg	21.5	20.4	5		0--20
Zinc, Total, ICP-I	0.13	0.642	mg/Kg	46.3	45.3	2		0--20
Arsenic, Total, I(	0.026	0.128	mg/Kg	5.86	5.82	1		0--20
Silver, Total, ICP	0.01	0.0513	mg/Kg	0.0534	0.0539	1		0--20
Cadmium, Total	0.013	0.0642	mg/Kg	0.104	0.109	5		0--20

Lead, Total, ICP-	0.026	0.128	mg/Kg	5.89	4.74	22	*	0--20

MS:WG133002-7 L59919-2 Matrix: FILTER SED Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project:423589-335-4 Pkey:STD
(Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	TrueValue	MS Value	% Rec.	Qual	LabLimit
Vanadium, Tota	0.096	0.481	mg/Kg	34	5.2	37.2		4xRule	75--125
Chromium, Tota	0.26	1.28	mg/Kg	10.6	5.2	14.7	80		75--125
Nickel, Total, ICI	0.13	0.642	mg/Kg	10.3	5.2	14.8	86		75--125
Copper, Total, IC	0.51	2.57	mg/Kg	21.5	5.2	25.1		4xRule	75--125
Zinc, Total, ICP-I	0.13	0.642	mg/Kg	46.3	5.2	51.4		4xRule	75--125
Arsenic, Total, IC	0.026	0.128	mg/Kg	5.86	5.2	10.8	95		75--125
Silver, Total, ICP	0.01	0.0513	mg/Kg	0.0534	5.2	3.98	76		75--125
Cadmium, Total	0.013	0.0642	mg/Kg	0.104	5.2	5.08	96		75--125
Lead, Total, ICP-	0.026	0.128	mg/Kg	5.89	5.2	9.48	69	*	75--125

Workgroup: WG136472 (12/8/14 Filtered Seds) Run ID: R199966

MB:WG136472-1 Matrix: SOLIDBLANK Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Vanadium, Tota	0.0087	0.0436	mg/Kg	<MDL	
Chromium, Tota	0.023	0.116	mg/Kg	<MDL	
Nickel, Total, ICI	0.012	0.0581	mg/Kg	<MDL	
Copper, Total, IC	0.047	0.233	mg/Kg	<MDL	
Zinc, Total, ICP-I	0.058	0.291	mg/Kg	<MDL	
Arsenic, Total, IC	0.012	0.0581	mg/Kg	<MDL	
Silver, Total, ICP	0.0047	0.0233	mg/Kg	<MDL	
Cadmium, Total	0.0058	0.0291	mg/Kg	<MDL	
Lead, Total, ICP-	0.012	0.0581	mg/Kg	<MDL	

SB:WG136472-2 MB:WG136472-1 Matrix: SOLIDBLANK Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	TrueValue	SB Value	% Rec.	Qual	LabLimit
Vanadium, Tota	0.0087	0.0436	mg/Kg	<MDL	2.33	2.21	95		85--115
Chromium, Tota	0.023	0.116	mg/Kg	<MDL	2.33	2.3	99		85--115
Nickel, Total, ICI	0.012	0.0581	mg/Kg	<MDL	2.33	2.27	97		85--115
Copper, Total, IC	0.047	0.233	mg/Kg	<MDL	2.33	2.29	98		85--115
Zinc, Total, ICP-I	0.058	0.291	mg/Kg	<MDL	2.33	2.2	95		85--115
Arsenic, Total, IC	0.012	0.0581	mg/Kg	<MDL	2.33	2.07	89		85--115

Silver, Total, ICP	0.0047	0.0233	mg/Kg	<MDL	2.33	2.25	97	85--115
Cadmium, Total	0.0058	0.0291	mg/Kg	<MDL	2.33	2.13	91	85--115
Lead, Total, ICP-	0.012	0.0581	mg/Kg	<MDL	2.33	2.35	101	85--115

LD:WG136472-3 L61568-1 Matrix: FILTER SED Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project:423589-335-4 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
Vanadium, Tota	0.092	0.46	mg/Kg	26.9	27.1	1		0--20
Chromium, Tota	0.25	1.23	mg/Kg	16.1	16.3	1		0--20
Nickel, Total, ICI	0.12	0.613	mg/Kg	12.5	12.6	0		0--20
Copper, Total, IC	0.49	2.45	mg/Kg	26.7	36.6	31	*	0--20
Zinc, Total, ICP-I	0.61	3.06	mg/Kg	128	128	0		0--20
Arsenic, Total, IC	0.12	0.613	mg/Kg	7.87	8.15	3		0--20
Silver, Total, ICP	0.049	0.245	mg/Kg	0.15	0.17			0--20
Cadmium, Total	0.061	0.306	mg/Kg	0.48	0.494	3		0--20
Lead, Total, ICP-	0.12	0.613	mg/Kg	18.1	18.8	4		0--20

MS:WG136472-4 L61568-1 Matrix: FILTER SED Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project:423589-335-4 Pkey:STD
(Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	TrueValue	MS Value	% Rec.	Qual	LabLimit
Vanadium, Tota	0.092	0.46	mg/Kg	26.9	4.91	30.9		4xRule	75--125
Chromium, Tota	0.25	1.23	mg/Kg	16.1	4.91	20.3	86		75--125
Nickel, Total, ICI	0.12	0.613	mg/Kg	12.5	4.91	16.6	82		75--125
Copper, Total, IC	0.49	2.45	mg/Kg	26.7	4.91	30.3		4xRule	75--125
Zinc, Total, ICP-I	0.61	3.06	mg/Kg	128	4.91	133		4xRule	75--125
Arsenic, Total, IC	0.12	0.613	mg/Kg	7.87	4.91	12	84		75--125
Silver, Total, ICP	0.049	0.245	mg/Kg	0.15	4.91	4.07	80		75--125
Cadmium, Total	0.061	0.306	mg/Kg	0.48	4.91	5.1	94		75--125
Lead, Total, ICP-	0.12	0.613	mg/Kg	18.1	4.91	23.7	113		75--125

LCSD:WG136472-6 LCS:WG136472-5 Matrix: SOIL Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project: Pkey:STD
(Lab Control Sample Duplicate, Lab Control Sample)

Parameter	MDL	RDL	Units	TrueValue	LCS Value	% Rec.	Qual	LabLimit	TrueValue	LCSD Value	% Rec.	Qual	RPD	Qual	LabLimit
Vanadium, Tota	0.07	0.351	mg/Kg	156	144	92		76--124	156	146	93		1		0--20
Chromium, Tota	0.19	0.936	mg/Kg	86.8	79.7	92		79--120	86.8	81	93		2		0--20
Nickel, Total, ICI	0.094	0.468	mg/Kg	236	213	90		80--120	236	217	92		2		0--20
Copper, Total, IC	0.37	1.87	mg/Kg	268	245	91		80--120	268	252	94		3		0--20
Zinc, Total, ICP-I	0.47	2.34	mg/Kg	130	116	89		80--120	130	111	85		4		0--20
Arsenic, Total, IC	0.094	0.468	mg/Kg	88.4	75.6	85		80--120	88.4	75.5	85		0		0--20
Silver, Total, ICP	0.037	0.187	mg/Kg	66.2	67.2	102		74--126	66.2	66.4	100		1		0--20

Cadmium, Total	0.047	0.234	mg/Kg	142	138	97	80--120	142	133	94		4	0--20
Lead, Total, ICP-	0.094	0.468	mg/Kg	97.9	104	107	80--120	97.9	100	102		4	0--20

LCSD:WG136472-8 LCS:WG136472-7 Matrix: FRSHWTRSED Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project: Pkey:SED
(Lab Control Sample Duplicate, Lab Control Sample)

Parameter	MDL	RDL	Units	TrueValue	LCS Value	% Rec.	Qual	LabLimit	TrueValue	LCSD Value	% Rec.	Qual	RPD	Qual	LabLimit
Vanadium, Tota	0.074	0.372	mg/Kg	94.6	18.6	20		10--44	94.6	18.5	20		1		0--20
Chromium, Tota	0.2	0.992	mg/Kg	121.9	63.9	52		40--80	121.9	64.2	53		0		0--20
Nickel, Total, ICI	0.099	0.496	mg/Kg	42.9	31.4	73		70--105	42.9	31.2	73		0		0--20
Zinc, Total, ICP-I	0.5	2.48	mg/Kg	408	347	85		69--109	408	338	83		3		0--20
Arsenic, Total, IC	0.099	0.496	mg/Kg	17	12.7	75		66--141	17	12.5	73		1		0--20
Cadmium, Total	0.05	0.248	mg/Kg	2.94	2.71	92		83--123	2.94	3.48	118		25	*	0--20
Lead, Total, ICP-	0.099	0.496	mg/Kg	150	157	105		71--111	150	148	99		6		0--20

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4xRule indicates no MS/MSD recovery was calculated due to the 4x rule.

LIMSView QC Report for Green River Watershed Filtered Solids - Data Validation - Organics - Part 1

Workgroup: WG125932 (PPS#550) Run ID: R187452

MB:WG125932-1 Matrix: OTHR SOLID Listtype:ORCLPEST-ACID Method:SW846 3550B*SW846 8081B Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Alpha-BHC	0.27	0.53	ug/Kg	<MDL	
Beta-BHC	0.27	0.53	ug/Kg	<MDL	
Delta-BHC	0.27	0.53	ug/Kg	<MDL	
Gamma-BHC (Lindane)	0.27	0.53	ug/Kg	<MDL	
Heptachlor	0.27	0.53	ug/Kg	<MDL	
Aldrin	0.27	0.53	ug/Kg	<MDL	
Heptachlor Epoxide	0.27	0.53	ug/Kg	<MDL	
Endosulfan I	0.27	0.53	ug/Kg	<MDL	
4,4'-DDE	0.27	0.53	ug/Kg	<MDL	
4,4'-DDD	0.27	0.53	ug/Kg	<MDL	
4,4'-DDT	0.27	0.53	ug/Kg	<MDL	
trans-Chlordane	0.27	0.53	ug/Kg	<MDL	
Alpha-Chlordane	0.27	0.53	ug/Kg	<MDL	
Toxaphene	5.3	26.7	ug/Kg	<MDL	

Surrogate:	2,4,5,6-Tetrachloro-m-xylene	Decachlorobiphenyl
(Lab Limits)	20--134	47--122
L57495-1	91	79
L57495-4	90	83
L57495-5	89	82
WG125932-1	23	90

Workgroup: WG126588 (pps#556 clpest-acid) Run ID: R187742

MB:WG126588-1 Matrix: OTHR SOLID Listtype:ORCLPEST-ACID Method:SW846 3550B*SW846 8081B Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Alpha-BHC	0.27	0.53	ug/Kg	<MDL	
Beta-BHC	0.27	0.53	ug/Kg	<MDL	
Delta-BHC	0.27	0.53	ug/Kg	<MDL	
Gamma-BHC (Lindane)	0.27	0.53	ug/Kg	<MDL	

Heptachlor	0.27	0.53	ug/Kg	<MDL
Aldrin	0.27	0.53	ug/Kg	<MDL
Heptachlor Epoxide	0.27	0.53	ug/Kg	<MDL
Endosulfan I	0.27	0.53	ug/Kg	<MDL
4,4'-DDE	0.27	0.53	ug/Kg	<MDL
4,4'-DDD	0.27	0.53	ug/Kg	<MDL
4,4'-DDT	0.27	0.53	ug/Kg	<MDL
trans-Chlordane	0.27	0.53	ug/Kg	<MDL
Alpha-Chlordane	0.27	0.53	ug/Kg	<MDL
Toxaphene	5.3	26.7	ug/Kg	<MDL

SBD:WG126588-3 SB:WG126588-2 MB:WG126588-1 Matrix: OTHR SOLID Listtype:ORCLPEST-ACID Method:SW846 3550B*SW846 8081B Project: Pkey:STD
(Spiked Blank Duplicate, Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	TrueValue	SB Value	% Rec.	Qual	LabLimit	TrueValue	SBD Valu	% Rec	Qual	RPD	Qual	LabLimit
Alpha-BHC	0.27	0.53	ug/Kg	<MDL	5.33	2.85	53		35--77	5.33	2.84	53		0		0--35
Beta-BHC	0.27	0.53	ug/Kg	<MDL	5.33	3.67	69		54--90	5.33	3.79	71		3		0--35
Delta-BHC	0.27	0.53	ug/Kg	<MDL	5.33	4.01	75		53--98	5.33	4.27	80		6		0--35
Gamma-BHC (Lindane)	0.27	0.53	ug/Kg	<MDL	5.33	3.09	58		39--82	5.33	3.26	61		5		0--35
Heptachlor	0.27	0.53	ug/Kg	<MDL	5.33	3.09	58		40--81	5.33	3.24	61		5		0--35
Aldrin	0.27	0.53	ug/Kg	<MDL	5.33	2.98	56		51--71	5.33	3.09	58		4		0--35
Heptachlor Epoxide	0.27	0.53	ug/Kg	<MDL	5.33	3.65	68		54--94	5.33	3.94	74		8		0--35
Endosulfan I	0.27	0.53	ug/Kg	<MDL	5.33	3.35	63		27--104	5.33	3.31	62		1		0--35
4,4'-DDE	0.27	0.53	ug/Kg	<MDL	5.33	4.6	86		62--99	5.33	4.64	87		1		0--35
4,4'-DDD	0.27	0.53	ug/Kg	<MDL	5.33	5	94		57--107	5.33	4.94	93		1		0--35
4,4'-DDT	0.27	0.53	ug/Kg	<MDL	5.33	4.88	92		47--131	5.33	4.69	88		4		0--35
trans-Chlordane	0.27	0.53	ug/Kg	<MDL	5.33	4.13	77		52--105	5.33	4.3	81		4		0--35
Alpha-Chlordane	0.27	0.53	ug/Kg	<MDL	5.33	4.23	79		69--98	5.33	4.36	82		3		0--35

Surrogate:	2,4,5,6-Tetrachloro-m-xylene	Decachlorobiphenyl
(Lab Limits)	20--134	47--122
L57634-1	69	81
L57634-2	69	78
L57634-3	63	75
L57732-1	72	75
L57732-2	64	77
L57732-3	66	78

WG126588-1	44	86
WG126588-2	48	91
WG126588-3	44	89

Workgroup: WG125733 (bs#420 pah-sim) Run ID: R187448

MB:WG125733-1 Matrix: OTHR SOLID Listtype:ORPAH-SIM Method:SW846 3550B*SW846 8270D SIM Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
2-Methylnaphthalene	1.1	5.33	ug/Kg	<MDL	
Naphthalene	0.53	2.67	ug/Kg	<MDL	
Acenaphthylene	0.53	2.67	ug/Kg	<MDL	
Acenaphthene	0.53	2.67	ug/Kg	<MDL	
Fluorene	0.53	2.67	ug/Kg	<MDL	
Phenanthrene	0.53	2.67	ug/Kg	<MDL	
Anthracene	0.53	2.67	ug/Kg	<MDL	
Fluoranthene	0.53	2.67	ug/Kg	<MDL	
Pyrene	0.53	2.67	ug/Kg	<MDL	
Benzo(a)anthracene	0.53	2.67	ug/Kg	<MDL	
Chrysene	0.53	2.67	ug/Kg	<MDL	
Benzo(b,j,k)fluoranthene	0.53	2.67	ug/Kg	<MDL	
Benzo(a)pyrene	0.53	2.67	ug/Kg	<MDL	
Indeno(1,2,3-Cd)Pyrene	0.53	2.67	ug/Kg	<MDL	
Dibenzo(a,h)anthracene	0.53	2.67	ug/Kg	<MDL	
Benzo(g,h,i)perylene	0.53	2.67	ug/Kg	<MDL	

SBD:WG125733-3 SB:WG125733-2 MB:WG125733-1 Matrix: OTHR SOLID Listtype:ORPAH-SIM Method:SW846 3550B*SW846 8270D SIM Project: Pkey:STD
(Spiked Blank Duplicate, Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	TrueValue	SB Value	% Rec.	Qual	LabLimit	TrueValue	SBD Valu	% Rec	Qual	RPD	Qual	LabLimit
2-Methylnaphthalene	1.1	5.33	ug/Kg	<MDL	107	65.1	61		40--160	107	56.2	53		15		0--35
Naphthalene	0.53	2.67	ug/Kg	<MDL	107	60.3	57		15--93	107	51.3	48		16		0--40
Acenaphthylene	0.53	2.67	ug/Kg	<MDL	107	61.3	57		43--111	107	56.1	53		9		0--40
Acenaphthene	0.53	2.67	ug/Kg	<MDL	107	65.2	61		37--99	107	60.2	56		8		0--40
Fluorene	0.53	2.67	ug/Kg	<MDL	107	67.4	63		54--104	107	65	61		4		0--40
Phenanthrene	0.53	2.67	ug/Kg	<MDL	107	79.2	74		54--107	107	78	73		2		0--35
Anthracene	0.53	2.67	ug/Kg	<MDL	107	37.3	35	*	54--121	107	41.9	39	*	12		0--35
Fluoranthene	0.53	2.67	ug/Kg	<MDL	107	85.9	81		63--115	107	85.7	80		0		0--35
Pyrene	0.53	2.67	ug/Kg	<MDL	107	81.7	77		54--136	107	81.4	76		0		0--35
Benzo(a)anthracene	0.53	2.67	ug/Kg	<MDL	107	94.5	89		65--117	107	96	90		2		0--35

Chrysene	0.53	2.67	ug/Kg	<MDL	107	90.7	85	44--114	107	92.5	87	2	0--35
Benzo(b,j,k)fluoranthene	0.53	2.67	ug/Kg	<MDL	320	349	109	50--121	320	321	100	8	0--35
Benzo(a)pyrene	0.53	2.67	ug/Kg	<MDL	107	71.5	67	45--133	107	77.1	72	8	0--35
Indeno(1,2,3-Cd)Pyrene	0.53	2.67	ug/Kg	<MDL	107	111	104	33--152	107	112	105	0	0--35
Dibenzo(a,h)anthracene	0.53	2.67	ug/Kg	<MDL	107	113	106	34--140	107	115	108	2	0--35
Benzo(g,h,i)perylene	0.53	2.67	ug/Kg	<MDL	107	103	97	29--134	107	106	99	2	0--35

MS:WG125733-4 L57495-5 Matrix: FILTER SED Listtype:ORPAH-SIM Method:SW846 3550B*SW846 8270D SIM Project:423589-335-4 Pkey:STD
(Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	TrueValue	MS Value	% Rec.	Qual	LabLimit
2-Methylnaphthalene	1.1	5.33	ug/Kg	<MDL	107	68.9	65		40--160
Naphthalene	0.53	2.67	ug/Kg	0.79	107	57.4	53		24--85
Acenaphthylene	0.53	2.67	ug/Kg	<MDL	107	81	76		51--103
Acenaphthene	0.53	2.67	ug/Kg	<MDL	107	76.4	72		44--94
Fluorene	0.53	2.67	ug/Kg	<MDL	107	82	77		54--113
Phenanthrene	0.53	2.67	ug/Kg	7.84	107	95.3	82		57--108
Anthracene	0.53	2.67	ug/Kg	1.2	107	68.3	63		50--119
Fluoranthene	0.53	2.67	ug/Kg	18.3	107	97.2	74		58--115
Pyrene	0.53	2.67	ug/Kg	18.6	107	97.2	74		51--142
Benzo(a)anthracene	0.53	2.67	ug/Kg	8.89	107	111	96		62--117
Chrysene	0.53	2.67	ug/Kg	18.1	107	104	81		39--115
Benzo(b,j,k)fluoranthene	0.53	2.67	ug/Kg	35.9	320	316	88		45--120
Benzo(a)pyrene	0.53	2.67	ug/Kg	13.5	107	111	91		38--134
Indeno(1,2,3-Cd)Pyrene	0.53	2.67	ug/Kg	8.59	107	81.3	68		38--130
Dibenzo(a,h)anthracene	0.53	2.67	ug/Kg	2	107	75.5	69		25--138
Benzo(g,h,i)perylene	0.53	2.67	ug/Kg	10.5	107	74.3	60		25--122

SRMD:WG125733-6 SRM:WG125733-5 Matrix: FILTER SED Listtype:ORPAH-SIM Method:SW846 3550B*SW846 8270D SIM Project: Pkey:STD
(Std Reference Material Duplicate, Std Reference Material)

Parameter	MDL	RDL	Units	TrueValue	SRM Value	% Rec.	Qual	LabLimit	TrueValue	SRMD Valu	% Rec.	Qual	RPD	Qual	LabLimit
Phenanthrene	27	133	ug/Kg	5200	3860	74		49--124	5200	3610	69		7		0--35
Fluoranthene	27	133	ug/Kg	8800	6700	76		56--137	8800	6190	70		8		0--35
Pyrene	27	133	ug/Kg	9570	6690	70		58--123	9570	6240	65		7		0--35
Benzo(a)anthracene	27	133	ug/Kg	4660	3870	83		48--127	4660	3670	79		5		0--35
Chrysene	27	133	ug/Kg	4800	4680	97		64--150	4800	4440	93		5		0--35
Benzo(b,j,k)fluoranthene	27	133	ug/Kg	8150	7550	93		50--126	8150	6910	85		9		0--35
Benzo(a)pyrene	27	133	ug/Kg	4240	3050	72		48--119	4240	2960	70		3		0--35
Indeno(1,2,3-Cd)Pyrene	27	133	ug/Kg	2740	2060	75		40--130	2740	1850	67		11		0--35
Dibenzo(a,h)anthracene	27	133	ug/Kg	419	646	154		54--200	419	576	138		11		0--35
Benzo(g,h,i)perylene	27	133	ug/Kg	2800	2210	79		42--141	2800	2020	72		9		0--35

LD:WG125733-7 L57495-1 Matrix: FILTER SED Listtype:ORPAH-SIM Method:SW846 3550B*SW846 8270D SIM Project:423589-335-4 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
2-Methylnaphthalene	1.3	6.4	ug/Kg	4.4	4.3			0--35
Naphthalene	0.64	3.2	ug/Kg	4.58	5.24	13		0--35
Acenaphthylene	0.64	3.2	ug/Kg	2.9	1.7			0--35
Acenaphthene	0.64	3.2	ug/Kg	2.3	2.6			0--35
Fluorene	0.64	3.2	ug/Kg	3.2	3.4	7		0--35
Phenanthrene	0.64	3.2	ug/Kg	56.6	60.6	7		0--35
Anthracene	0.64	3.2	ug/Kg	5.97	5.88	2		0--35
Fluoranthene	0.64	3.2	ug/Kg	130	139	7		0--35
Pyrene	0.64	3.2	ug/Kg	137	150	9		0--35
Benzo(a)anthracene	0.64	3.2	ug/Kg	66.3	70	5		0--35
Chrysene	0.64	3.2	ug/Kg	127	132	4		0--35
Benzo(b,j,k)fluoranthene	0.64	3.2	ug/Kg	259	275	6		0--35
Benzo(a)pyrene	0.64	3.2	ug/Kg	86.8	93.4	7		0--35
Indeno(1,2,3-Cd)Pyrene	0.64	3.2	ug/Kg	42	44.2	5		0--35
Dibenzo(a,h)anthracene	0.64	3.2	ug/Kg	9.09	9.87	8		0--35
Benzo(g,h,i)perylene	0.64	3.2	ug/Kg	65.8	68.2	4		0--35

Surrogate:	2-Fluorobiphenyl	d14-Terphenyl
(Lab Limits)	33--96	63--125
L57495-1	82	125
L57495-4	80	116
L57495-5	79	113
WG125733-1	72	138 *
WG125733-2	76	144 *
WG125733-3	67	139 *
WG125733-4	74	107
WG125733-5	91	125
WG125733-6	91	128 *
WG125733-7	82	114

Workgroup: WG126329 (bs#424 pah-sim) Run ID: R188354

MB:WG126329-1 Matrix: OTHR SOLID Listtype:ORPAH-SIM Method:SW846 3550B*SW846 8270D SIM Project: Pkey:STD

(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
2-Methylnaphthalene	1.1	5.33	ug/Kg	<MDL	
Naphthalene	0.53	2.67	ug/Kg	<MDL	
Acenaphthylene	0.53	2.67	ug/Kg	<MDL	
Acenaphthene	0.53	2.67	ug/Kg	<MDL	
Fluorene	0.53	2.67	ug/Kg	<MDL	
Phenanthrene	0.53	2.67	ug/Kg	<MDL	
Anthracene	0.53	2.67	ug/Kg	<MDL	
Fluoranthene	0.53	2.67	ug/Kg	<MDL	
Pyrene	0.53	2.67	ug/Kg	<MDL	
Benzo(a)anthracene	0.53	2.67	ug/Kg	<MDL	
Chrysene	0.53	2.67	ug/Kg	<MDL	
Benzo(b,j,k)fluoranthene	0.53	2.67	ug/Kg	<MDL	
Benzo(a)pyrene	0.53	2.67	ug/Kg	<MDL	
Indeno(1,2,3-Cd)Pyrene	0.53	2.67	ug/Kg	<MDL	
Dibenzo(a,h)anthracene	0.53	2.67	ug/Kg	<MDL	
Benzo(g,h,i)perylene	0.53	2.67	ug/Kg	<MDL	

SB:WG126329-2 MB:WG126329-1 Matrix: OTHR SOLID Listtype:ORPAH-SIM Method:SW846 3550B*SW846 8270D SIM Project: Pkey:STD

(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	TrueValue	SB Value	% Rec.	Qual	LabLimit
2-Methylnaphthalene	1.1	5.33	ug/Kg	<MDL	107	62.8	59		40--160
Naphthalene	0.53	2.67	ug/Kg	<MDL	107	62.3	58		15--93
Acenaphthylene	0.53	2.67	ug/Kg	<MDL	107	58	54		43--111
Acenaphthene	0.53	2.67	ug/Kg	<MDL	107	62.6	59		37--99
Fluorene	0.53	2.67	ug/Kg	<MDL	107	67.6	63		54--104
Phenanthrene	0.53	2.67	ug/Kg	<MDL	107	76.7	72		54--107
Anthracene	0.53	2.67	ug/Kg	<MDL	107	70.5	66		54--121
Fluoranthene	0.53	2.67	ug/Kg	<MDL	107	91.9	86		63--115
Pyrene	0.53	2.67	ug/Kg	<MDL	107	91.5	86		54--136
Benzo(a)anthracene	0.53	2.67	ug/Kg	<MDL	107	87.2	82		65--117
Chrysene	0.53	2.67	ug/Kg	<MDL	107	90.8	85		44--114
Benzo(b,j,k)fluoranthene	0.53	2.67	ug/Kg	<MDL	320	266	83		50--121
Benzo(a)pyrene	0.53	2.67	ug/Kg	<MDL	107	81.3	76		45--133
Indeno(1,2,3-Cd)Pyrene	0.53	2.67	ug/Kg	<MDL	107	96.6	91		33--152
Dibenzo(a,h)anthracene	0.53	2.67	ug/Kg	<MDL	107	94.7	89		34--140
Benzo(g,h,i)perylene	0.53	2.67	ug/Kg	<MDL	107	88.3	83		29--134

MSD:WG126329-4 MS:WG126329-3 L57732-2 Matrix: FILTER SED Listtype:ORPAH-SIM Method:SW846 3550B*SW846 8270D SIM Project:423589-335-4 Pkey:STD

LIMSView QC Report for Green River Watershed Filtered Solids - Data Validation - Organics - Part 1

(Matrix Spike Duplicate, Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	TrueValue	MS Value	% Rec.	Qual	LabLimit	TrueValue	MSD Val	% Rec	Qual	RPD	Qual	LabLimit
2-Methylnaphthalene	1.1	5.33	ug/Kg	<MDL	107	79	74		40--160	107	76.5	72		3		0--35
Naphthalene	0.53	2.67	ug/Kg	1.8	107	69.1	63		24--85	107	63.9	58		8		0--40
Acenaphthylene	0.53	2.67	ug/Kg	0.74	107	85.5	79		51--103	107	85.4	79		0		0--40
Acenaphthene	0.53	2.67	ug/Kg	0.72	107	84.8	79		44--94	107	85	79		0		0--40
Fluorene	0.53	2.67	ug/Kg	1.5	107	91.1	84		54--113	107	91.7	85		1		0--40
Phenanthrene	0.53	2.67	ug/Kg	11.5	107	101	84		57--108	107	103	86		2		0--35
Anthracene	0.53	2.67	ug/Kg	2.93	107	89.2	81		50--119	107	93	84		4		0--35
Fluoranthene	0.53	2.67	ug/Kg	34.4	107	128	87		58--115	107	136	95		6		0--35
Pyrene	0.53	2.67	ug/Kg	28.2	107	120	86		51--142	107	125	91		5		0--35
Benzo(a)anthracene	0.53	2.67	ug/Kg	10.2	107	97.8	82		62--117	107	103	87		5		0--35
Chrysene	0.53	2.67	ug/Kg	18.5	107	105	81		39--115	107	109	85		4		0--35
Benzo(b,j,k)fluoranthene	2.7	13.3	ug/Kg	31.3	320	358	102		45--120	320	377	108		5		0--35
Benzo(a)pyrene	2.7	13.3	ug/Kg	11	107	113	95		38--134	107	116	99		3		0--35
Indeno(1,2,3-Cd)Pyrene	2.7	13.3	ug/Kg	5	107	59.4	51		38--130	107	56.9	49		4		0--35
Dibenzo(a,h)anthracene	2.7	13.3	ug/Kg	<MDL	107	58.8	55		25--138	107	56.5	53		4		0--35
Benzo(g,h,i)perylene	2.7	13.3	ug/Kg	4.5	107	46.3	39		25--122	107	42.9	36		8		0--35

SRMD:WG126329-6 SRM:WG126329-5 Matrix: SALTWTRSED Listtype:ORPAH-SIM Method:SW846 3550B*SW846 8270D SIM Project: Pkey:SED

(Std Reference Material Duplicate, Std Reference Material)

Parameter	MDL	RDL	Units	TrueValue	SRM Value	% Rec.	Qual	LabLimit	TrueValue	SRMD Valu	% Rec.	Qual	RPD	Qual	LabLimit
Phenanthrene	27	133	ug/Kg	5200	4030	77		49--124	5200	4160	80		3		0--35
Fluoranthene	27	133	ug/Kg	14300	7520	53	*	56--137	14300	7720	54	*	3		0--35
Pyrene	27	133	ug/Kg	9570	7600	79		58--123	9570	7820	82		3		0--35
Benzo(a)anthracene	27	133	ug/Kg	4660	3500	75		48--127	4660	3710	80		6		0--35
Chrysene	27	133	ug/Kg	4800	4800	100		64--150	4800	4960	103		3		0--35
Benzo(b,j,k)fluoranthene	27	133	ug/Kg	8150	6770	83		50--126	8150	7240	89		7		0--35
Benzo(a)pyrene	27	133	ug/Kg	4240	3120	73		48--119	4240	3380	80		8		0--35
Indeno(1,2,3-Cd)Pyrene	27	133	ug/Kg	2740	1420	52		40--130	2740	1480	54		5		0--35
Dibenzo(a,h)anthracene	27	133	ug/Kg	419	408	97		54--200	419	474	113		15		0--35
Benzo(g,h,i)perylene	27	133	ug/Kg	2800	1360	48		42--141	2800	1420	51		5		0--35

Surrogate:	2-Fluorobiphenyl	d14-Terphenyl
(Lab Limits)	33--96	63--125
L57634-1	86	95
L57634-2	86	93

L57732-1	89	103
L57732-2	89	94
L57732-3	85	102
WG126329-1	78	91
WG126329-2	68	89
WG126329-3	84	88
WG126329-4	84	94
WG126329-5	89	98
WG126329-6	95	99

Workgroup: WG126920 (bs#429 pah-sim) Run ID: R188485

MB:WG126920-1 Matrix: OTHR SOLID Listtype:ORPAH-SIM Method:SW846 3550B*SW846 8270D SIM Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
2-Methylnaphthalene	1.3	6.4	ug/Kg	<MDL	
Naphthalene	0.64	3.2	ug/Kg	<MDL	
Acenaphthylene	0.64	3.2	ug/Kg	<MDL	
Acenaphthene	0.64	3.2	ug/Kg	<MDL	
Fluorene	0.64	3.2	ug/Kg	<MDL	
Phenanthrene	0.64	3.2	ug/Kg	<MDL	
Anthracene	0.64	3.2	ug/Kg	<MDL	
Fluoranthene	0.64	3.2	ug/Kg	<MDL	
Pyrene	0.64	3.2	ug/Kg	<MDL	
Benzo(a)anthracene	0.64	3.2	ug/Kg	<MDL	
Chrysene	0.64	3.2	ug/Kg	<MDL	
Benzo(b,j,k)fluoranthene	0.64	3.2	ug/Kg	<MDL	
Benzo(a)pyrene	0.64	3.2	ug/Kg	<MDL	
Indeno(1,2,3-Cd)Pyrene	0.64	3.2	ug/Kg	0.67	B
Dibenzo(a,h)anthracene	0.64	3.2	ug/Kg	<MDL	
Benzo(g,h,i)perylene	0.64	3.2	ug/Kg	1	B

SBD:WG126920-3 SB:WG126920-2 MB:WG126920-1 Matrix: OTHR SOLID Listtype:ORPAH-SIM Method:SW846 3550B*SW846 8270D SIM Project: Pkey:STD
(Spiked Blank Duplicate, Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	TrueValue	SB Value	% Rec.	Qual	LabLimit	TrueValue	SBD Valu	% Rec	Qual	RPD	Qual	LabLimit
2-Methylnaphthalene	1.3	6.4	ug/Kg	<MDL	128	75.1	59		40--160	128	100	78		29		0--35
Naphthalene	0.64	3.2	ug/Kg	<MDL	128	71.7	56		15--93	128	94.8	74		28		0--40
Acenaphthylene	0.64	3.2	ug/Kg	<MDL	128	62.6	49		43--111	128	85	66		30		0--40
Acenaphthene	0.64	3.2	ug/Kg	<MDL	128	67.5	53		37--99	128	88.1	69		26		0--40
Fluorene	0.64	3.2	ug/Kg	<MDL	128	76.8	60		54--104	128	99.1	77		25		0--40

Phenanthrene	0.64	3.2	ug/Kg	<MDL		128	83.7	65		54--107	128	96.4	75	14	0--35
Anthracene	0.64	3.2	ug/Kg	<MDL		128	68.5	53	*	54--121	128	86.6	68	23	0--35
Fluoranthene	0.64	3.2	ug/Kg	<MDL		128	104	81		63--115	128	112	88	7	0--35
Pyrene	0.64	3.2	ug/Kg	<MDL		128	99.6	78		54--136	128	109	85	9	0--35
Benzo(a)anthracene	0.64	3.2	ug/Kg	<MDL		128	102	80		65--117	128	106	83	4	0--35
Chrysene	0.64	3.2	ug/Kg	<MDL		128	106	83		44--114	128	109	85	3	0--35
Benzo(b,j,k)fluoranthene	0.64	3.2	ug/Kg	<MDL		384	316	82		50--121	384	338	88	7	0--35
Benzo(a)pyrene	0.64	3.2	ug/Kg	<MDL		128	87.1	68		45--133	128	92.3	72	6	0--35
Indeno(1,2,3-Cd)Pyrene	0.64	3.2	ug/Kg		0.67	128	136	106		33--152	128	132	103	3	0--35
Dibenzo(a,h)anthracene	0.64	3.2	ug/Kg	<MDL		128	130	102		34--140	128	127	99	3	0--35
Benzo(g,h,i)perylene	0.64	3.2	ug/Kg		1	128	139	108		29--134	128	133	103	4	0--35

SRMD:WG126920-5 SRM:WG126920-4 Matrix: SALTWTRSED Listtype:ORPAH-SIM Method:SW846 3550B*SW846 8270D SIM Project: Pkey:SED
(Std Reference Material Duplicate, Std Reference Material)

Parameter	MDL	RDL	Units	TrueValue	SRM Value	% Rec.	Qual	LabLimit	TrueValue	SRMD Valu	% Rec.	Qual	RPD	Qual	LabLimit
Phenanthrene	27	133	ug/Kg	5200	3860	74		49--124	5200	3620	70		7		0--35
Fluoranthene	27	133	ug/Kg	8800	6580	75		56--137	8800	6160	70		7		0--35
Pyrene	27	133	ug/Kg	9570	6770	71		58--123	9570	6400	67		6		0--35
Benzo(a)anthracene	27	133	ug/Kg	4660	3340	72		48--127	4660	3150	68		6		0--35
Chrysene	27	133	ug/Kg	4800	4580	96		64--150	4800	4340	90		6		0--35
Benzo(b,j,k)fluoranthene	27	133	ug/Kg	8150	6150	75		50--126	8150	5850	72		5		0--35
Benzo(a)pyrene	27	133	ug/Kg	4240	2980	70		48--119	4240	2860	68		4		0--35
Indeno(1,2,3-Cd)Pyrene	27	133	ug/Kg	2740	2220	81		40--130	2740	2090	76		6		0--35
Dibenzo(a,h)anthracene	27	133	ug/Kg	419	659	157		54--200	419	630	151		4		0--35
Benzo(g,h,i)perylene	27	133	ug/Kg	2800	2620	94		42--141	2800	2500	89		5		0--35

Surrogate:	2-Fluorobiphenyl	d14-Terphenyl
(Lab Limits)	33--96	63--125
L57792-1	68	104
L57792-2	67	107
L57792-3	77	108
WG126920-1	76	104
WG126920-2	63	115
WG126920-3	82	116
WG126920-4	88	114
WG126920-5	82	107

LIMSView QC Report for Green River Watershed Filtered Solids - Data Validation - Organics - Part 1

Workgroup: WG129254 (BS#442 pah-sim) Run ID: R191964

MB:WG129254-1 Matrix: OTHR SOLID Listtype:ORPAH-SIM Method:SW846 3550B*SW846 8270D SIM Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
2-Methylnaphthalene	1.3	6.4	ug/Kg	<MDL	
Naphthalene	0.64	3.2	ug/Kg	<MDL	
Acenaphthylene	0.64	3.2	ug/Kg	<MDL	
Acenaphthene	0.64	3.2	ug/Kg	<MDL	
Fluorene	0.64	3.2	ug/Kg	<MDL	
Phenanthrene	0.64	3.2	ug/Kg	<MDL	
Anthracene	0.64	3.2	ug/Kg	<MDL	
Fluoranthene	0.64	3.2	ug/Kg	<MDL	
Pyrene	0.64	3.2	ug/Kg	<MDL	
Benzo(a)anthracene	0.64	3.2	ug/Kg	<MDL	
Chrysene	0.64	3.2	ug/Kg	<MDL	
Benzo(b,j,k)fluoranthene	0.64	3.2	ug/Kg	<MDL	
Benzo(a)pyrene	0.64	3.2	ug/Kg	<MDL	
Indeno(1,2,3-Cd)Pyrene	0.64	3.2	ug/Kg	<MDL	
Dibenzo(a,h)anthracene	0.64	3.2	ug/Kg	<MDL	
Benzo(g,h,i)perylene	0.64	3.2	ug/Kg	<MDL	

SBD:WG129254-3 SB:WG129254-2 MB:WG129254-1 Matrix: OTHR SOLID Listtype:ORPAH-SIM Method:SW846 3550B*SW846 8270D SIM Project: Pkey:STD
(Spiked Blank Duplicate, Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	TrueValue	SB Value	% Rec.	Qual	LabLimit	TrueValue	SBD Valu	% Rec	Qual	RPD	Qual	LabLimit
2-Methylnaphthalene	1.3	6.4	ug/Kg	<MDL	128	77	60		40--160	128	74.4	58		4		0--35
Naphthalene	0.64	3.2	ug/Kg	<MDL	128	83.2	65		15--93	128	80.3	63		4		0--35
Acenaphthylene	0.64	3.2	ug/Kg	<MDL	128	92.2	72		43--111	128	90.4	71		2		0--35
Acenaphthene	0.64	3.2	ug/Kg	<MDL	128	91.3	71		37--99	128	89.5	70		2		0--35
Fluorene	0.64	3.2	ug/Kg	<MDL	128	92.9	73		54--104	128	92.7	72		0		0--35
Phenanthrene	0.64	3.2	ug/Kg	<MDL	128	122	95		54--107	128	118	92		4		0--35
Anthracene	0.64	3.2	ug/Kg	<MDL	128	99	77		54--121	128	97.6	76		1		0--35
Fluoranthene	0.64	3.2	ug/Kg	<MDL	128	135	106		63--115	128	132	103		3		0--35
Pyrene	0.64	3.2	ug/Kg	<MDL	128	153	120		54--136	128	149	116		3		0--35
Benzo(a)anthracene	0.64	3.2	ug/Kg	<MDL	128	120	93		65--117	128	118	92		1		0--35
Chrysene	0.64	3.2	ug/Kg	<MDL	128	118	93		44--114	128	118	92		1		0--35
Benzo(b,j,k)fluoranthene	0.64	3.2	ug/Kg	<MDL	384	415	108		50--121	384	411	107		1		0--35
Benzo(a)pyrene	0.64	3.2	ug/Kg	<MDL	128	118	92		45--133	128	117	92		0		0--35
Indeno(1,2,3-Cd)Pyrene	0.64	3.2	ug/Kg	<MDL	128	167	131		33--152	128	164	128		2		0--35
Dibenzo(a,h)anthracene	0.64	3.2	ug/Kg	<MDL	128	166	130		34--140	128	163	127		2		0--35

Benzo(g,h,i)perylene	0.64	3.2	ug/Kg	<MDL	128	128	100	29--134	128	127	99	1	0--35

SRMD:WG129254-5 SRM:WG129254-4 Matrix: SALTWTRSED Listtype:ORPAH-SIM Method:SW846 3550B*SW846 8270D SIM Project: Pkey:SED
(Std Reference Material Duplicate, Std Reference Material)

Parameter	MDL	RDL	Units	TrueValue	SRM Value	% Rec.	Qual	LabLimit	TrueValue	SRMD Valu	% Rec.	Qual	RPD	Qual	LabLimit
Phenanthrene	27	133	ug/Kg	5200	5260	101		49--124	5200	5300	102		1		0--35
Fluoranthene	27	133	ug/Kg	8800	8410	96		56--137	8800	8250	94		2		0--35
Pyrene	27	133	ug/Kg	9570	10700	112		58--123	9570	10700	112		0		0--35
Benzo(a)anthracene	27	133	ug/Kg	4660	3860	83		48--127	4660	3790	81		2		0--35
Chrysene	27	133	ug/Kg	4800	5090	106		64--150	4800	5040	105		1		0--35
Benzo(b,j,k)fluoranthene	27	133	ug/Kg	8150	8040	99		50--126	8150	6010	74		29		0--35
Benzo(a)pyrene	27	133	ug/Kg	4240	3360	79		48--119	4240	3210	76		5		0--35
Indeno(1,2,3-Cd)Pyrene	27	133	ug/Kg	2740	3220	117		40--130	2740	3150	115		2		0--35
Dibenzo(a,h)anthracene	27	133	ug/Kg	419	666	159		54--200	419	689	165		4		0--35
Benzo(g,h,i)perylene	27	133	ug/Kg	2800	2360	84		42--141	2800	2260	81		4		0--35

MSD:WG129254-7 MS:WG129254-6 L58537-2 Matrix: FILTER SED Listtype:ORPAH-SIM Method:SW846 3550B*SW846 8270D SIM Project:423589-335-4 Pkey:STD
(Matrix Spike Duplicate, Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	TrueValue	MS Value	% Rec.	Qual	LabLimit	TrueValue	MSD Val	% Rec	Qual	RPD	Qual	LabLimit
2-Methylnaphthalene	2.1	10.7	ug/Kg	1.5	213	181	84		40--160	213	195	91		7		0--35
Naphthalene	1.1	5.33	ug/Kg	1.5	213	169	78		24--85	213	186	86	*	10		0--35
Acenaphthylene	1.1	5.33	ug/Kg	<MDL	213	249	117	*	51--103	213	263	123	*	6		0--35
Acenaphthene	1.1	5.33	ug/Kg	0.82	213	235	110	*	44--94	213	243	114	*	4		0--35
Fluorene	1.1	5.33	ug/Kg	1.2	213	231	108		54--113	213	240	112		4		0--35
Phenanthrene	1.1	5.33	ug/Kg	10.5	213	258	116	*	57--108	213	236	106		9		0--35
Anthracene	1.1	5.33	ug/Kg	<MDL	213	234	110		50--119	213	263	123	*	11		0--35
Fluoranthene	1.1	5.33	ug/Kg	23.2	213	251	107		58--115	213	256	109		2		0--35
Pyrene	1.1	5.33	ug/Kg	24.2	213	315	136		51--142	213	300	129		5		0--35
Benzo(a)anthracene	1.1	5.33	ug/Kg	8.45	213	224	101		62--117	213	232	105		4		0--35
Chrysene	1.1	5.33	ug/Kg	12.4	213	211	93		39--115	213	210	93		0		0--35
Benzo(b,j,k)fluoranthene	1.1	5.33	ug/Kg	31.5	640	809	122	*	45--120	640	828	124	*	2		0--35
Benzo(a)pyrene	1.1	5.33	ug/Kg	10.5	213	256	115		38--134	213	260	117		1		0--35
Indeno(1,2,3-Cd)Pyrene	1.1	5.33	ug/Kg	6.33	213	172	78		38--130	213	170	77		1		0--35
Dibenzo(a,h)anthracene	1.1	5.33	ug/Kg	1	213	163	76		25--138	213	161	75		1		0--35
Benzo(g,h,i)perylene	1.1	5.33	ug/Kg	4.5	213	110	50		25--122	213	104	46		6		0--35

LD:WG129254-8 L58537-2 Matrix: FILTER SED Listtype:ORPAH-SIM Method:SW846 3550B*SW846 8270D SIM Project:423589-335-4 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
2-Methylnaphthalene	1.3	6.4	ug/Kg	1.5	<MDL			0--35

Naphthalene	0.64	3.2	ug/Kg		1.5	2		0--35
Acenaphthylene	0.64	3.2	ug/Kg	<MDL		<MDL		0--35
Acenaphthene	0.64	3.2	ug/Kg		0.82	1.1		0--35
Fluorene	0.64	3.2	ug/Kg		1.2	1.6		0--35
Phenanthrene	0.64	3.2	ug/Kg		10.5	12.6	18	0--35
Anthracene	0.64	3.2	ug/Kg	<MDL		<MDL		0--35
Fluoranthene	0.64	3.2	ug/Kg		23.2	24.8	7	0--35
Pyrene	0.64	3.2	ug/Kg		24.2	26.9	11	0--35
Benzo(a)anthracene	0.64	3.2	ug/Kg		8.45	10.2	19	0--35
Chrysene	0.64	3.2	ug/Kg		12.4	14.6	17	0--35
Benzo(b,j,k)fluoranthene	0.64	3.2	ug/Kg		31.5	37.4	17	0--35
Benzo(a)pyrene	0.64	3.2	ug/Kg		10.5	11.6	10	0--35
Indeno(1,2,3-Cd)Pyrene	0.64	3.2	ug/Kg		6.33	8.16	25	0--35
Dibenzo(a,h)anthracene	0.64	3.2	ug/Kg		1	1.4		0--35
Benzo(g,h,i)perylene	0.64	3.2	ug/Kg		4.5	6.16	31	0--35

Surrogate:	2-Fluorobiphenyl	d14-Terphenyl
(Lab Limits)	33--96	63--125
L58537-1	83	88
L58537-2	81	91
L58754-1	82	90
WG129254-1	53	90
WG129254-2	58	94
WG129254-3	56	92
WG129254-4	92	98
WG129254-5	83	98
WG129254-6	85	95
WG129254-7	90	96
WG129254-8	74	89

Workgroup: WG129990 (BS#447 pah-sim) Run ID: R192319

MB:WG129990-1 Matrix: OTHR SOLID Listtype:ORPAH-SIM Method:SW846 3550B*SW846 8270D SIM Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
2-Methylnaphthalene	1.3	6.4	ug/Kg	<MDL	
Naphthalene	0.64	3.2	ug/Kg	<MDL	

Acenaphthylene	0.64	3.2	ug/Kg	<MDL
Acenaphthene	0.64	3.2	ug/Kg	<MDL
Fluorene	0.64	3.2	ug/Kg	<MDL
Phenanthrene	0.64	3.2	ug/Kg	<MDL
Anthracene	0.64	3.2	ug/Kg	<MDL
Fluoranthene	0.64	3.2	ug/Kg	<MDL
Pyrene	0.64	3.2	ug/Kg	<MDL
Benzo(a)anthracene	0.64	3.2	ug/Kg	<MDL
Chrysene	0.64	3.2	ug/Kg	<MDL
Benzo(b,j,k)fluoranthene	0.64	3.2	ug/Kg	<MDL
Benzo(a)pyrene	0.64	3.2	ug/Kg	<MDL
Indeno(1,2,3-Cd)Pyrene	0.64	3.2	ug/Kg	<MDL
Dibenzo(a,h)anthracene	0.64	3.2	ug/Kg	<MDL
Benzo(g,h,i)perylene	0.64	3.2	ug/Kg	<MDL

SB:WG129990-2 MB:WG129990-1 Matrix: OTHR SOLID Listtype:ORPAH-SIM Method:SW846 3550B*SW846 8270D SIM Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	TrueValue	SB Value	% Rec.	Qual	LabLimit
2-Methylnaphthalene	1.3	6.4	ug/Kg	<MDL	128	79.9	62		40--160
Naphthalene	0.64	3.2	ug/Kg	<MDL	128	82.1	64		15--93
Acenaphthylene	0.64	3.2	ug/Kg	<MDL	128	82.8	65		43--111
Acenaphthene	0.64	3.2	ug/Kg	<MDL	128	81.2	63		37--99
Fluorene	0.64	3.2	ug/Kg	<MDL	128	88.4	69		54--104
Phenanthrene	0.64	3.2	ug/Kg	<MDL	128	110	86		54--107
Anthracene	0.64	3.2	ug/Kg	<MDL	128	101	79		54--121
Fluoranthene	0.64	3.2	ug/Kg	<MDL	128	134	105		63--115
Pyrene	0.64	3.2	ug/Kg	<MDL	128	143	111		54--136
Benzo(a)anthracene	0.64	3.2	ug/Kg	<MDL	128	122	95		65--117
Chrysene	0.64	3.2	ug/Kg	<MDL	128	122	95		44--114
Benzo(b,j,k)fluoranthene	0.64	3.2	ug/Kg	<MDL	384	432	113		50--121
Benzo(a)pyrene	0.64	3.2	ug/Kg	<MDL	128	134	105		45--133
Indeno(1,2,3-Cd)Pyrene	0.64	3.2	ug/Kg	<MDL	128	170	133		33--152
Dibenzo(a,h)anthracene	0.64	3.2	ug/Kg	<MDL	128	171	134		34--140
Benzo(g,h,i)perylene	0.64	3.2	ug/Kg	<MDL	128	134	105		29--134

MSD:WG129990-4 MS:WG129990-3 L58977-1 Matrix: FILTER SED Listtype:ORPAH-SIM Method:SW846 3550B*SW846 8270D SIM Project:423589-335-4 Pkey:STD
(Matrix Spike Duplicate, Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	TrueValue	MS Value	% Rec.	Qual	LabLimit	TrueValue	MSD Val	% Rec	Qual	RPD	Qual	LabLimit
2-Methylnaphthalene	1.3	6.4	ug/Kg	<MDL	128	95	74		40--160	128	91.9	72		3		0--35
Naphthalene	0.64	3.2	ug/Kg	1.4	128	77.4	59		24--85	128	74.4	57		4		0--35

Acenaphthylene	0.64	3.2	ug/Kg	2.5	128	119	91		51--103	128	118	90		0	0--35
Acenaphthene	0.64	3.2	ug/Kg	1.6	128	112	86		44--94	128	111	85		1	0--35
Fluorene	0.64	3.2	ug/Kg	1.9	128	123	95		54--113	128	123	94		1	0--35
Phenanthrene	0.64	3.2	ug/Kg	24.4	128	143	93		57--108	128	142	92		1	0--35
Anthracene	0.64	3.2	ug/Kg	6	128	126	94		50--119	128	126	94		0	0--35
Fluoranthene	0.64	3.2	ug/Kg	138	128	157	14	*	58--115	128	164	20	*	5	0--35
Pyrene	0.64	3.2	ug/Kg	100	128	155	42	*	51--142	128	164	50	*	6	0--35
Benzo(a)anthracene	0.64	3.2	ug/Kg	17.5	128	123	82		62--117	128	125	84		2	0--35
Chrysene	0.64	3.2	ug/Kg	32.6	128	119	67		39--115	128	123	71		4	0--35
Benzo(b,j,k)fluoranthene	0.64	3.2	ug/Kg	67.8	384	516	117		45--120	384	530	120		3	0--35
Benzo(a)pyrene	0.64	3.2	ug/Kg	28.2	128	177	117		38--134	128	166	108		7	0--35
Indeno(1,2,3-Cd)Pyrene	0.64	3.2	ug/Kg	8.11	128	107	77		38--130	128	99.5	71		7	0--35
Dibenzo(a,h)anthracene	0.64	3.2	ug/Kg	1.1	128	85.2	66		25--138	128	79.4	61		7	0--35
Benzo(g,h,i)perylene	0.64	3.2	ug/Kg	5.86	128	56.6	40		25--122	128	52.6	37		7	0--35

SRMD:WG129990-6 SRM:WG129990-5 Matrix: FRSHWTRSED Listtype:ORPAH-SIM Method:SW846 3550B*SW846 8270D SIM Project: Pkey:SED
(Std Reference Material Duplicate, Std Reference Material)

Parameter	MDL	RDL	Units	TrueValue	SRM Value	% Rec.	Qual	LabLimit	TrueValue	SRMD Valu	% Rec.	Qual	RPD	Qual	LabLimit
Phenanthrene	27	133	ug/Kg	5200	4800	92		49--124	5200	5240	101		9		0--35
Fluoranthene	27	133	ug/Kg	8800	7880	90		56--137	8800	8410	96		7		0--35
Pyrene	27	133	ug/Kg	9570	9390	98		58--123	9570	10100	106		7		0--35
Benzo(a)anthracene	27	133	ug/Kg	4660	3840	82		48--127	4660	3990	86		4		0--35
Chrysene	27	133	ug/Kg	4800	4920	103		64--150	4800	5220	109		6		0--35
Benzo(b,j,k)fluoranthene	27	133	ug/Kg	8150	8150	100		50--126	8150	8450	104		4		0--35
Benzo(a)pyrene	27	133	ug/Kg	4240	3740	88		48--119	4240	3850	91		3		0--35
Indeno(1,2,3-Cd)Pyrene	27	133	ug/Kg	2740	3320	121		40--130	2740	3390	123		2		0--35
Dibenzo(a,h)anthracene	27	133	ug/Kg	419	709	169		54--200	419	747	178		5		0--35
Benzo(g,h,i)perylene	27	133	ug/Kg	2800	2450	88		42--141	2800	2490	89		1		0--35

LD:WG129990-7 L59190-2 Matrix: FILTER SED Listtype:ORPAH-SIM Method:SW846 3550B*SW846 8270D SIM Project:423589-335-4 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
2-Methylnaphthalene	1.3	6.4	ug/Kg	1.5	<MDL			0--35
Naphthalene	0.64	3.2	ug/Kg	1.5	0.98			0--35
Acenaphthylene	0.64	3.2	ug/Kg	2	0.82			0--35
Acenaphthene	0.64	3.2	ug/Kg	1.5	<MDL			0--35
Fluorene	0.64	3.2	ug/Kg	1.9	0.69			0--35
Phenanthrene	0.64	3.2	ug/Kg	8.33	6.97	18		0--35
Anthracene	0.64	3.2	ug/Kg	2.3	<MDL			0--35
Fluoranthene	0.64	3.2	ug/Kg	16.5	13.4	21		0--35

Pyrene	0.64	3.2	ug/Kg	15.9	13.1	20	0--35
Benzo(a)anthracene	0.64	3.2	ug/Kg	5.79	4.2	32	0--35
Chrysene	0.64	3.2	ug/Kg	8.84	7.51	16	0--35
Benzo(b,j,k)fluoranthene	0.64	3.2	ug/Kg	28.3	24.4	15	0--35
Benzo(a)pyrene	0.64	3.2	ug/Kg	6.7	6.55	2	0--35
Indeno(1,2,3-Cd)Pyrene	0.64	3.2	ug/Kg	4.42	3.5	23	0--35
Dibenzo(a,h)anthracene	0.64	3.2	ug/Kg	1.6	1.1		0--35
Benzo(g,h,i)perylene	0.64	3.2	ug/Kg	3.61	3.89	8	0--35

Surrogate:	2-Fluorobiphenyl	d14-Terphenyl
(Lab Limits)	33--96	63--125
L58977-1	76	94
L59049-1	72	97
L59190-1	74	90
L59190-2	77	101
WG129990-1	63	97
WG129990-2	60	102
WG129990-3	74	88
WG129990-4	74	92
WG129990-5	77	100
WG129990-6	77	101
WG129990-7	75	99

Workgroup: WG130978 (BS#452 pah-sim) Run ID: R193821

MB:WG130978-1 Matrix: OTHR SOLID Listtype:ORPAH-SIM Method:SW846 3550B*SW846 8270D SIM Project: Pkey:STD

(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
2-Methylnaphthalene	1.3	6.4	ug/Kg	<MDL	
Naphthalene	0.64	3.2	ug/Kg	<MDL	
Acenaphthylene	0.64	3.2	ug/Kg	<MDL	
Acenaphthene	0.64	3.2	ug/Kg	<MDL	
Fluorene	0.64	3.2	ug/Kg	<MDL	
Phenanthrene	0.64	3.2	ug/Kg	<MDL	
Anthracene	0.64	3.2	ug/Kg	<MDL	
Fluoranthene	0.64	3.2	ug/Kg	<MDL	
Pyrene	0.64	3.2	ug/Kg	<MDL	

Benzo(a)anthracene	0.64	3.2	ug/Kg	<MDL
Chrysene	0.64	3.2	ug/Kg	<MDL
Benzo(b,j,k)fluoranthene	0.64	3.2	ug/Kg	<MDL
Benzo(a)pyrene	0.64	3.2	ug/Kg	<MDL
Indeno(1,2,3-Cd)Pyrene	0.64	3.2	ug/Kg	<MDL
Dibenzo(a,h)anthracene	0.64	3.2	ug/Kg	<MDL
Benzo(g,h,i)perylene	0.64	3.2	ug/Kg	<MDL

SB:WG130978-2 MB:WG130978-1 Matrix: OTHR SOLID Listtype:ORPAH-SIM Method:SW846 3550B*SW846 8270D SIM Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	TrueValue	SB Value	% Rec.	Qual	LabLimit
2-Methylnaphthalene	1.3	6.4	ug/Kg	<MDL	128	115	89		40--160
Naphthalene	0.64	3.2	ug/Kg	<MDL	128	105	82		15--93
Acenaphthylene	0.64	3.2	ug/Kg	<MDL	128	97.5	76		43--111
Acenaphthene	0.64	3.2	ug/Kg	<MDL	128	103	81		37--99
Fluorene	0.64	3.2	ug/Kg	<MDL	128	121	94		54--104
Phenanthrene	0.64	3.2	ug/Kg	<MDL	128	120	94		54--107
Anthracene	0.64	3.2	ug/Kg	<MDL	128	98.9	77		54--121
Fluoranthene	0.64	3.2	ug/Kg	<MDL	128	128	100		63--115
Pyrene	0.64	3.2	ug/Kg	<MDL	128	130	102		54--136
Benzo(a)anthracene	0.64	3.2	ug/Kg	<MDL	128	121	95		65--117
Chrysene	0.64	3.2	ug/Kg	<MDL	128	127	99		44--114
Benzo(b,j,k)fluoranthene	0.64	3.2	ug/Kg	<MDL	384	443	115		50--121
Benzo(a)pyrene	0.64	3.2	ug/Kg	<MDL	128	124	97		45--133
Indeno(1,2,3-Cd)Pyrene	0.64	3.2	ug/Kg	<MDL	128	160	125		33--152
Dibenzo(a,h)anthracene	0.64	3.2	ug/Kg	<MDL	128	145	113		34--140
Benzo(g,h,i)perylene	0.64	3.2	ug/Kg	<MDL	128	156	121		29--134

MSD:WG130978-4 MS:WG130978-3 L59472-3 Matrix: FILTER SED Listtype:ORPAH-SIM Method:SW846 3550B*SW846 8270D SIM Project:423589-335-4 Pkey:STD
(Matrix Spike Duplicate, Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	TrueValue	MS Value	% Rec.	Qual	LabLimit	TrueValue	MSD Val	% Rec	Qual	RPD	Qual	LabLimit
2-Methylnaphthalene	1.6	8	ug/Kg	<MDL	160	118	74		40--160	160	113	71		4		0--35
Naphthalene	0.8	4	ug/Kg	1.3	160	87.8	54		24--85	160	81.7	50		7		0--35
Acenaphthylene	0.8	4	ug/Kg	1.2	160	139	86		51--103	160	137	85		2		0--35
Acenaphthene	0.8	4	ug/Kg	0.94	160	134	83		44--94	160	129	80		4		0--35
Fluorene	0.8	4	ug/Kg	1.9	160	166	102		54--113	160	162	100		2		0--35
Phenanthrene	0.8	4	ug/Kg	23.3	160	194	107		57--108	160	180	98		8		0--35
Anthracene	0.8	4	ug/Kg	6.13	160	169	102		50--119	160	167	101		1		0--35
Fluoranthene	0.8	4	ug/Kg	57.4	160	233	110		58--115	160	209	95		11		0--35
Pyrene	0.8	4	ug/Kg	56	160	236	112		51--142	160	229	108		3		0--35

Benzo(a)anthracene	0.8	4	ug/Kg	20.6	160	188	104	62--117	160	185	103	1	0--35
Chrysene	0.8	4	ug/Kg	33.4	160	183	94	39--115	160	180	92	1	0--35
Benzo(b,j,k)fluoranthene	0.8	4	ug/Kg	56.7	480	582	110	45--120	480	572	107	2	0--35
Benzo(a)pyrene	0.8	4	ug/Kg	29.2	160	226	123	38--134	160	223	121	2	0--35
Indeno(1,2,3-Cd)Pyrene	0.8	4	ug/Kg	15.8	160	174	99	38--130	160	171	97	2	0--35
Dibenzo(a,h)anthracene	0.8	4	ug/Kg	2.9	160	137	84	25--138	160	131	80	4	0--35
Benzo(g,h,i)perylene	0.8	4	ug/Kg	12.8	160	146	83	25--122	160	138	78	5	0--35

SRMD:WG130978-6 SRM:WG130978-5 Matrix: SALTWTRSED Listtype:ORPAH-SIM Method:SW846 3550B*SW846 8270D SIM Project: Pkey:SED
(Std Reference Material Duplicate, Std Reference Material)

Parameter	MDL	RDL	Units	TrueValue	SRM Value	% Rec.	Qual	LabLimit	TrueValue	SRMD Valu	% Rec.	Qual	RPD	Qual	LabLimit
Phenanthrene	27	133	ug/Kg	5200	4990	96		49--124	5200	4560	88		9		0--35
Fluoranthene	27	133	ug/Kg	8800	8270	94		56--137	8800	7660	87		8		0--35
Pyrene	27	133	ug/Kg	9570	9910	104		58--123	9570	9330	97		6		0--35
Benzo(a)anthracene	27	133	ug/Kg	4660	4200	90		48--127	4660	3870	83		8		0--35
Chrysene	27	133	ug/Kg	4800	5310	111		64--150	4800	5070	106		4		0--35
Benzo(b,j,k)fluoranthene	27	133	ug/Kg	8150	7980	98		50--126	8150	7610	93		5		0--35
Benzo(a)pyrene	27	133	ug/Kg	4240	4110	97		48--119	4240	3950	93		4		0--35
Indeno(1,2,3-Cd)Pyrene	27	133	ug/Kg	2740	3080	112		40--130	2740	2960	108		4		0--35
Dibenzo(a,h)anthracene	27	133	ug/Kg	419	685	164		54--200	419	668	160		2		0--35
Benzo(g,h,i)perylene	27	133	ug/Kg	2800	2750	98		42--141	2800	2680	96		2		0--35

LD:WG130978-7 L59596-1 Matrix: FILTER SED Listtype:ORPAH-SIM Method:SW846 3550B*SW846 8270D SIM Project:423589-335-4 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
2-Methylnaphthalene	1.6	8	ug/Kg	<MDL	<MDL			0--35
Naphthalene	0.8	4	ug/Kg	1.1	1.1			0--35
Acenaphthylene	0.8	4	ug/Kg	0.89	1			0--35
Acenaphthene	0.8	4	ug/Kg	<MDL	<MDL			0--35
Fluorene	0.8	4	ug/Kg	1.3	1.4			0--35
Phenanthrene	0.8	4	ug/Kg	9.63	9.86	2		0--35
Anthracene	0.8	4	ug/Kg	2.8	2.9			0--35
Fluoranthene	0.8	4	ug/Kg	15	14.2	5		0--35
Pyrene	0.8	4	ug/Kg	14.8	14.2	4		0--35
Benzo(a)anthracene	0.8	4	ug/Kg	6.08	5.04	19		0--35
Chrysene	0.8	4	ug/Kg	11.2	10.7	5		0--35
Benzo(b,j,k)fluoranthene	0.8	4	ug/Kg	23.1	20.9	10		0--35
Benzo(a)pyrene	0.8	4	ug/Kg	15.2	12.9	16		0--35
Indeno(1,2,3-Cd)Pyrene	0.8	4	ug/Kg	7.32	9.18	23		0--35
Dibenzo(a,h)anthracene	0.8	4	ug/Kg	1.1	1.2			0--35

Benzo(g,h,i)perylene	0.8	4	ug/Kg	6.1	8.06	28	0--35

Surrogate:	2-Fluorobiphenyl	d14-Terphenyl
(Lab Limits)	33--96	63--125
L59457-1	82	101
L59472-1	68	96
L59472-3	66	96
L59596-1	66	90
L59596-2	73	101
WG130978-1	81	95
WG130978-2	83	91
WG130978-3	66	91
WG130978-4	64	93
WG130978-5	86	104
WG130978-6	83	102
WG130978-7	71	95

Workgroup: WG131384 (bs#456 pah-sim) Run ID: R194598

MB:WG131384-1 Matrix: OTHR SOLID Listtype:ORPAH-SIM Method:SW846 3550B*SW846 8270D SIM Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
2-Methylnaphthalene	1.3	6.4	ug/Kg	<MDL	
Naphthalene	0.64	3.2	ug/Kg	<MDL	
Acenaphthylene	0.64	3.2	ug/Kg	<MDL	
Acenaphthene	0.64	3.2	ug/Kg	<MDL	
Fluorene	0.64	3.2	ug/Kg	<MDL	
Phenanthrene	0.64	3.2	ug/Kg	<MDL	
Anthracene	0.64	3.2	ug/Kg	<MDL	
Fluoranthene	0.64	3.2	ug/Kg	<MDL	
Pyrene	0.64	3.2	ug/Kg	<MDL	
Benzo(a)anthracene	0.64	3.2	ug/Kg	<MDL	
Chrysene	0.64	3.2	ug/Kg	<MDL	
Benzo(b,j,k)fluoranthene	0.64	3.2	ug/Kg	<MDL	
Benzo(a)pyrene	0.64	3.2	ug/Kg	<MDL	
Indeno(1,2,3-Cd)Pyrene	0.64	3.2	ug/Kg	<MDL	
Dibenzo(a,h)anthracene	0.64	3.2	ug/Kg	<MDL	

Benzo(g,h,i)perylene	0.64	3.2	ug/Kg	<MDL

SB:WG131384-2 MB:WG131384-1 Matrix: OTHR SOLID Listtype:ORPAH-SIM Method:SW846 3550B*SW846 8270D SIM Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	TrueValue	SB Value	% Rec.	Qual	LabLimit
2-Methylnaphthalene	1.3	6.4	ug/Kg	<MDL	128	104	82		40--160
Naphthalene	0.64	3.2	ug/Kg	<MDL	128	89.2	70		15--93
Acenaphthylene	0.64	3.2	ug/Kg	<MDL	128	90.8	71		43--111
Acenaphthene	0.64	3.2	ug/Kg	<MDL	128	89.7	70		37--99
Fluorene	0.64	3.2	ug/Kg	<MDL	128	109	85		54--104
Phenanthrene	0.64	3.2	ug/Kg	<MDL	128	110	86		54--107
Anthracene	0.64	3.2	ug/Kg	<MDL	128	106	83		54--121
Fluoranthene	0.64	3.2	ug/Kg	<MDL	128	138	108		63--115
Pyrene	0.64	3.2	ug/Kg	<MDL	128	113	88		54--136
Benzo(a)anthracene	0.64	3.2	ug/Kg	<MDL	128	126	98		65--117
Chrysene	0.64	3.2	ug/Kg	<MDL	128	125	98		44--114
Benzo(b,j,k)fluoranthene	0.64	3.2	ug/Kg	<MDL	384	404	105		50--121
Benzo(a)pyrene	0.64	3.2	ug/Kg	<MDL	128	143	111		45--133
Indeno(1,2,3-Cd)Pyrene	0.64	3.2	ug/Kg	<MDL	128	173	135		33--152
Dibenzo(a,h)anthracene	0.64	3.2	ug/Kg	<MDL	128	155	121		34--140
Benzo(g,h,i)perylene	0.64	3.2	ug/Kg	<MDL	128	167	130		29--134

MSD:WG131384-4 MS:WG131384-3 L59723-4 Matrix: FILTER SED Listtype:ORPAH-SIM Method:SW846 3550B*SW846 8270D SIM Project:423589-335-4 Pkey:STD
(Matrix Spike Duplicate, Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	TrueValue	MS Value	% Rec.	Qual	LabLimit	TrueValue	MSD Val	% Rec	Qual	RPD	Qual	LabLimit
2-Methylnaphthalene	1.3	6.4	ug/Kg	<MDL	128	103	81		40--160	128	103	80		0		0--35
Naphthalene	0.64	3.2	ug/Kg	0.81	128	71.1	55		24--85	128	70.6	54		1		0--35
Acenaphthylene	0.64	3.2	ug/Kg	<MDL	128	109	85		51--103	128	111	86		2		0--35
Acenaphthene	0.64	3.2	ug/Kg	<MDL	128	103	80		44--94	128	102	80		1		0--35
Fluorene	0.64	3.2	ug/Kg	<MDL	128	133	104		54--113	128	131	103		1		0--35
Phenanthrene	0.64	3.2	ug/Kg	3.76	128	130	98		57--108	128	127	96		2		0--35
Anthracene	0.64	3.2	ug/Kg	1	128	127	98		50--119	128	128	99		1		0--35
Fluoranthene	0.64	3.2	ug/Kg	10.6	128	147	106		58--115	128	146	105		1		0--35
Pyrene	0.64	3.2	ug/Kg	7.17	128	125	92		51--142	128	122	90		2		0--35
Benzo(a)anthracene	0.64	3.2	ug/Kg	2.7	128	141	108		62--117	128	137	105		2		0--35
Chrysene	0.64	3.2	ug/Kg	5.43	128	128	96		39--115	128	126	94		2		0--35
Benzo(b,j,k)fluoranthene	0.64	3.2	ug/Kg	10.6	384	444	113		45--120	384	442	112		0		0--35
Benzo(a)pyrene	0.64	3.2	ug/Kg	6.83	128	155	116		38--134	128	153	114		2		0--35
Indeno(1,2,3-Cd)Pyrene	0.64	3.2	ug/Kg	2.6	128	113	87		38--130	128	105	80		8		0--35
Dibenzo(a,h)anthracene	0.64	3.2	ug/Kg	<MDL	128	101	79		25--138	128	89.5	70		12		0--35

Benzo(g,h,i)perylene	0.64	3.2	ug/Kg	2.6	128	97.8	74	25--122	128	85.1	64	14	0--35

SRMD:WG131384-6 SRM:WG131384-5 Matrix: SALTWTRSED Listtype:ORPAH-SIM Method:SW846 3550B*SW846 8270D SIM Project: Pkey:SED
(Std Reference Material Duplicate, Std Reference Material)

Parameter	MDL	RDL	Units	TrueValue	SRM Value	% Rec.	Qual	LabLimit	TrueValue	SRMD Valu	% Rec.	Qual	RPD	Qual	LabLimit
Phenanthrene	27	133	ug/Kg	5200	4640	89		49--124	5200	4540	87		2		0--35
Fluoranthene	27	133	ug/Kg	8800	8340	95		56--137	8800	8200	93		2		0--35
Pyrene	27	133	ug/Kg	9570	7920	83		58--123	9570	7640	80		4		0--35
Benzo(a)anthracene	27	133	ug/Kg	4660	4030	86		48--127	4660	3880	83		4		0--35
Chrysene	27	133	ug/Kg	4800	5170	108		64--150	4800	4950	103		4		0--35
Benzo(b,j,k)fluoranthene	27	133	ug/Kg	8150	7500	92		50--126	8150	7330	90		2		0--35
Benzo(a)pyrene	27	133	ug/Kg	4240	4030	95		48--119	4240	3820	90		5		0--35
Indeno(1,2,3-Cd)Pyrene	27	133	ug/Kg	2740	3180	116		40--130	2740	3030	110		5		0--35
Dibenzo(a,h)anthracene	27	133	ug/Kg	419	655	156		54--200	419	711	170		8		0--35
Benzo(g,h,i)perylene	27	133	ug/Kg	2800	3000	107		42--141	2800	2860	102		5		0--35

LD:WG131384-7 L59723-2 Matrix: FILTER SED Listtype:ORPAH-SIM Method:SW846 3550B*SW846 8270D SIM Project:423589-335-4 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
2-Methylnaphthalene	1.3	6.4	ug/Kg	<MDL	<MDL			0--35
Naphthalene	0.64	3.2	ug/Kg	0.99	1			0--35
Acenaphthylene	0.64	3.2	ug/Kg	0.64	0.7			0--35
Acenaphthene	0.64	3.2	ug/Kg	<MDL	<MDL			0--35
Fluorene	0.64	3.2	ug/Kg	0.88	0.89			0--35
Phenanthrene	0.64	3.2	ug/Kg	8.64	7.97	8		0--35
Anthracene	0.64	3.2	ug/Kg	2.5	2.1			0--35
Fluoranthene	0.64	3.2	ug/Kg	18.5	16.5	11		0--35
Pyrene	0.64	3.2	ug/Kg	14.5	13.2	9		0--35
Benzo(a)anthracene	0.64	3.2	ug/Kg	6.08	5.92	3		0--35
Chrysene	0.64	3.2	ug/Kg	12	9.54	23		0--35
Benzo(b,j,k)fluoranthene	0.64	3.2	ug/Kg	25.2	22.9	9		0--35
Benzo(a)pyrene	0.64	3.2	ug/Kg	15	15.2	1		0--35
Indeno(1,2,3-Cd)Pyrene	0.64	3.2	ug/Kg	5.56	5.09	9		0--35
Dibenzo(a,h)anthracene	0.64	3.2	ug/Kg	<MDL	<MDL			0--35
Benzo(g,h,i)perylene	0.64	3.2	ug/Kg	6.52	6.67	2		0--35

Surrogate:	2-Fluorobiphenyl	d14-Terphenyl

(Lab Limits)	33--96	63--125
L59723-1	83	91
L59723-2	73	85
L59723-3	86	94
L59723-4	76	86
WG131384-1	57	82
WG131384-2	70	85
WG131384-3	76	87
WG131384-4	75	85
WG131384-5	91	93
WG131384-6	91	93
WG131384-7	82	87

Workgroup: WG131804 (BS#457 pah-sim) Run ID: R194733

MB:WG131804-1 Matrix: OTHR SOLID Listtype:ORPAH-SIM Method:SW846 3550B*SW846 8270D SIM Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
2-Methylnaphthalene	1.3	6.4	ug/Kg	<MDL	
Naphthalene	0.64	3.2	ug/Kg	<MDL	
Acenaphthylene	0.64	3.2	ug/Kg	<MDL	
Acenaphthene	0.64	3.2	ug/Kg	<MDL	
Fluorene	0.64	3.2	ug/Kg	<MDL	
Phenanthrene	0.64	3.2	ug/Kg	<MDL	
Anthracene	0.64	3.2	ug/Kg	<MDL	
Fluoranthene	0.64	3.2	ug/Kg	<MDL	
Pyrene	0.64	3.2	ug/Kg	<MDL	
Benzo(a)anthracene	0.64	3.2	ug/Kg	<MDL	
Chrysene	0.64	3.2	ug/Kg	<MDL	
Benzo(b,j,k)fluoranthene	0.64	3.2	ug/Kg	<MDL	
Benzo(a)pyrene	0.64	3.2	ug/Kg	<MDL	
Indeno(1,2,3-Cd)Pyrene	0.64	3.2	ug/Kg	<MDL	
Dibenzo(a,h)anthracene	0.64	3.2	ug/Kg	<MDL	
Benzo(g,h,i)perylene	0.64	3.2	ug/Kg	<MDL	

SB:WG131804-2 MB:WG131804-1 Matrix: OTHR SOLID Listtype:ORPAH-SIM Method:SW846 3550B*SW846 8270D SIM Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	TrueValue	SB Value	% Rec.	Qual	LabLimit
2-Methylnaphthalene	1.3	6.4	ug/Kg	<MDL	128	107	84		40--160
Naphthalene	0.64	3.2	ug/Kg	<MDL	128	100	78		15--93

Acenaphthylene	0.64	3.2	ug/Kg	<MDL	128	104	81	43--111
Acenaphthene	0.64	3.2	ug/Kg	<MDL	128	102	79	37--99
Fluorene	0.64	3.2	ug/Kg	<MDL	128	125	97	54--104
Phenanthrene	0.64	3.2	ug/Kg	<MDL	128	117	91	54--107
Anthracene	0.64	3.2	ug/Kg	<MDL	128	114	89	54--121
Fluoranthene	0.64	3.2	ug/Kg	<MDL	128	142	111	63--115
Pyrene	0.64	3.2	ug/Kg	<MDL	128	121	95	54--136
Benzo(a)anthracene	0.64	3.2	ug/Kg	<MDL	128	132	103	65--117
Chrysene	0.64	3.2	ug/Kg	<MDL	128	135	105	44--114
Benzo(b,j,k)fluoranthene	0.64	3.2	ug/Kg	<MDL	384	437	114	50--121
Benzo(a)pyrene	0.64	3.2	ug/Kg	<MDL	128	147	115	45--133
Indeno(1,2,3-Cd)Pyrene	0.64	3.2	ug/Kg	<MDL	128	191	149	33--152
Dibenzo(a,h)anthracene	0.64	3.2	ug/Kg	<MDL	128	175	137	34--140
Benzo(g,h,i)perylene	0.64	3.2	ug/Kg	<MDL	128	155	121	29--134

MSD:WG131804-4 MS:WG131804-3 L59919-1 Matrix: FILTER SED Listtype:ORPAH-SIM Method:SW846 3550B*SW846 8270D SIM Project:423589-335-4 Pkey:STD
(Matrix Spike Duplicate, Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	TrueValue	MS Value	% Rec.	Qual	LabLimit	TrueValue	MSD Val	% Rec	Qual	RPD	Qual	LabLimit
2-Methylnaphthalene	1.3	6.4	ug/Kg	3.3	128	124	94		40--160	128	110	83		12		0--35
Naphthalene	0.64	3.2	ug/Kg	1.7	128	95.8	74		24--85	128	88.2	68		8		0--35
Acenaphthylene	0.64	3.2	ug/Kg	<MDL	128	128	100		51--103	128	133	104	*	4		0--35
Acenaphthene	0.64	3.2	ug/Kg	<MDL	128	121	95	*	44--94	128	120	94		1		0--35
Fluorene	0.64	3.2	ug/Kg	0.98	128	151	117	*	54--113	128	147	114	*	2		0--35
Phenanthrene	0.64	3.2	ug/Kg	12.3	128	154	111	*	57--108	128	171	124	*	11		0--35
Anthracene	0.64	3.2	ug/Kg	1.6	128	133	102		50--119	128	143	110		7		0--35
Fluoranthene	0.64	3.2	ug/Kg	19.3	128	170	118	*	58--115	128	188	132	*	10		0--35
Pyrene	0.64	3.2	ug/Kg	15.3	128	148	103		51--142	128	163	116		10		0--35
Benzo(a)anthracene	0.64	3.2	ug/Kg	6.69	128	156	116		62--117	128	164	123	*	5		0--35
Chrysene	0.64	3.2	ug/Kg	13	128	149	106		39--115	128	155	111		4		0--35
Benzo(b,j,k)fluoranthene	0.64	3.2	ug/Kg	23.9	384	503	125	*	45--120	384	516	128	*	3		0--35
Benzo(a)pyrene	0.64	3.2	ug/Kg	9.96	128	178	131		38--134	128	190	141	*	7		0--35
Indeno(1,2,3-Cd)Pyrene	0.64	3.2	ug/Kg	8.44	128	192	143	*	38--130	128	191	143	*	0		0--35
Dibenzo(a,h)anthracene	0.64	3.2	ug/Kg	1.4	128	138	106		25--138	128	135	105		2		0--35
Benzo(g,h,i)perylene	0.64	3.2	ug/Kg	7.37	128	113	82		25--122	128	111	81		2		0--35

SRMD:WG131804-6 SRM:WG131804-5 Matrix: SALTWTRSED Listtype:ORPAH-SIM Method:SW846 3550B*SW846 8270D SIM Project: Pkey:SED
(Std Reference Material Duplicate, Std Reference Material)

Parameter	MDL	RDL	Units	TrueValue	SRM Value	% Rec.	Qual	LabLimit	TrueValue	SRMD Valu	% Rec.	Qual	RPD	Qual	LabLimit
Phenanthrene	27	133	ug/Kg	5200	4550	87		49--124	5200	4610	89		1		0--35
Fluoranthene	27	133	ug/Kg	8800	8070	92		56--137	8800	8320	94		3		0--35

Pyrene	27	133	ug/Kg	9570	7650	80	58--123	9570	7640	80	0	0--35
Benzo(a)anthracene	27	133	ug/Kg	4660	3880	83	48--127	4660	3760	81	3	0--35
Chrysene	27	133	ug/Kg	4800	4920	103	64--150	4800	4880	102	1	0--35
Benzo(b,j,k)fluoranthene	27	133	ug/Kg	8150	7070	87	50--126	8150	6990	86	1	0--35
Benzo(a)pyrene	27	133	ug/Kg	4240	3660	86	48--119	4240	3630	86	1	0--35
Indeno(1,2,3-Cd)Pyrene	27	133	ug/Kg	2740	3310	121	40--130	2740	3220	117	3	0--35
Dibenzo(a,h)anthracene	27	133	ug/Kg	419	808	193	54--200	419	739	177	9	0--35
Benzo(g,h,i)perylene	27	133	ug/Kg	2800	2580	92	42--141	2800	2490	89	4	0--35

LD:WG131804-7 L59919-1 Matrix: FILTER SED Listtype:ORPAH-SIM Method:SW846 3550B*SW846 8270D SIM Project:423589-335-4 Pkey:STD

(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
2-Methylnaphthalene	1.3	6.4	ug/Kg	3.3	3.3			0--35
Naphthalene	0.64	3.2	ug/Kg	1.7	1.8			0--35
Acenaphthylene	0.64	3.2	ug/Kg	<MDL	<MDL			0--35
Acenaphthene	0.64	3.2	ug/Kg	<MDL	<MDL			0--35
Fluorene	0.64	3.2	ug/Kg	0.98	1.1			0--35
Phenanthrene	0.64	3.2	ug/Kg	12.3	14.1	14		0--35
Anthracene	0.64	3.2	ug/Kg	1.6	2			0--35
Fluoranthene	0.64	3.2	ug/Kg	19.3	23	17		0--35
Pyrene	0.64	3.2	ug/Kg	15.3	18.6	19		0--35
Benzo(a)anthracene	0.64	3.2	ug/Kg	6.69	8.28	21		0--35
Chrysene	0.64	3.2	ug/Kg	13	14.9	13		0--35
Benzo(b,j,k)fluoranthene	0.64	3.2	ug/Kg	23.9	27.5	14		0--35
Benzo(a)pyrene	0.64	3.2	ug/Kg	9.96	10.5	5		0--35
Indeno(1,2,3-Cd)Pyrene	0.64	3.2	ug/Kg	8.44	9.03	7		0--35
Dibenzo(a,h)anthracene	0.64	3.2	ug/Kg	1.4	1.2			0--35
Benzo(g,h,i)perylene	0.64	3.2	ug/Kg	7.37	8.05	9		0--35

Surrogate:	2-Fluorobiphenyl	d14-Terphenyl
(Lab Limits)	33--96	63--125
L59919-1	74	79
L59919-2	78	73
WG131804-1	66	74
WG131804-2	63	73
WG131804-3	75	75
WG131804-4	71	80

WG131804-5	76	77
WG131804-6	78	70
WG131804-7	77	75

Workgroup: WG132411 (bs#461 pah-sim) Run ID: R195952

MB:WG132411-1 Matrix: OTHR SOLID Listtype:ORPAH-SIM Method:SW846 3550B*SW846 8270D SIM Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
2-Methylnaphthalene	1.3	6.4	ug/Kg	<MDL	
Naphthalene	0.64	3.2	ug/Kg	<MDL	
Acenaphthylene	0.64	3.2	ug/Kg	<MDL	
Acenaphthene	0.64	3.2	ug/Kg	<MDL	
Fluorene	0.64	3.2	ug/Kg	<MDL	
Phenanthrene	0.64	3.2	ug/Kg	<MDL	
Anthracene	0.64	3.2	ug/Kg	<MDL	
Fluoranthene	0.64	3.2	ug/Kg	<MDL	
Pyrene	0.64	3.2	ug/Kg	0.98	B
Benzo(a)anthracene	0.64	3.2	ug/Kg	<MDL	
Chrysene	0.64	3.2	ug/Kg	<MDL	
Benzo(b,j,k)fluoranthene	0.64	3.2	ug/Kg	<MDL	
Benzo(a)pyrene	0.64	3.2	ug/Kg	<MDL	
Indeno(1,2,3-Cd)Pyrene	0.64	3.2	ug/Kg	<MDL	
Dibenzo(a,h)anthracene	0.64	3.2	ug/Kg	<MDL	
Benzo(g,h,i)perylene	0.64	3.2	ug/Kg	<MDL	

SBD:WG132411-3 SB:WG132411-2 MB:WG132411-1 Matrix: OTHR SOLID Listtype:ORPAH-SIM Method:SW846 3550B*SW846 8270D SIM Project: Pkey:STD
(Spiked Blank Duplicate, Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	TrueValue	SB Value	% Rec.	Qual	LabLimit	TrueValue	SBD Valu	% Rec	Qual	RPD	Qual	LabLimit
2-Methylnaphthalene	1.3	6.4	ug/Kg	<MDL	128	92.1	72		40--160	128	92	72		0		0--35
Naphthalene	0.64	3.2	ug/Kg	<MDL	128	89.9	70		15--93	128	89.7	70		0		0--35
Acenaphthylene	0.64	3.2	ug/Kg	<MDL	128	104	81		43--111	128	107	83		2		0--35
Acenaphthene	0.64	3.2	ug/Kg	<MDL	128	82.8	65		37--99	128	85.2	67		3		0--35
Fluorene	0.64	3.2	ug/Kg	<MDL	128	114	89		54--104	128	118	92		4		0--35
Phenanthrene	0.64	3.2	ug/Kg	<MDL	128	113	89		54--107	128	115	90		1		0--35
Anthracene	0.64	3.2	ug/Kg	<MDL	128	96.5	75		54--121	128	98.9	77		2		0--35
Fluoranthene	0.64	3.2	ug/Kg	<MDL	128	132	103		63--115	128	134	105		1		0--35
Pyrene	0.64	3.2	ug/Kg	0.98	128	116	90		54--136	128	118	91		2		0--35
Benzo(a)anthracene	0.64	3.2	ug/Kg	<MDL	128	123	96		65--117	128	127	99		3		0--35
Chrysene	0.64	3.2	ug/Kg	<MDL	128	110	86		44--114	128	119	93		8		0--35

Benzo(b,j,k)fluoranthene	0.64	3.2	ug/Kg	<MDL	256	276	108	50--121	256	286	112	3	0--35
Benzo(a)pyrene	0.64	3.2	ug/Kg	<MDL	128	142	111	45--133	128	148	116	4	0--35
Indeno(1,2,3-Cd)Pyrene	0.64	3.2	ug/Kg	<MDL	128	116	90	33--152	128	120	94	4	0--35
Dibenzo(a,h)anthracene	0.64	3.2	ug/Kg	<MDL	128	152	119	34--140	128	151	118	1	0--35
Benzo(g,h,i)perylene	0.64	3.2	ug/Kg	<MDL	128	131	102	29--134	128	138	108	5	0--35

SRMD:WG132411-5 SRM:WG132411-4 Matrix: SALTWTRSED Listtype:ORPAH-SIM Method:SW846 3550B*SW846 8270D SIM Project: Pkey:SED
(Std Reference Material Duplicate, Std Reference Material)

Parameter	MDL	RDL	Units	TrueValue	SRM Value	% Rec.	Qual	LabLimit	TrueValue	SRMD Valu	% Rec.	Qual	RPD	Qual	LabLimit
Phenanthrene	27	133	ug/Kg	5200	4910	94		49--124	5200	4940	95		1		0--35
Fluoranthene	27	133	ug/Kg	8800	8770	100		56--137	8800	8730	99		1		0--35
Pyrene	27	133	ug/Kg	9570	8260	86		58--123	9570	8360	87		1		0--35
Benzo(a)anthracene	27	133	ug/Kg	4660	3960	85		48--127	4660	3950	85		0		0--35
Chrysene	27	133	ug/Kg	4800	4800	100		64--150	4800	4850	101		1		0--35
Benzo(b,j,k)fluoranthene	27	133	ug/Kg	8150	7880	97		50--126	8150	7910	97		0		0--35
Benzo(a)pyrene	27	133	ug/Kg	4240	3720	88		48--119	4240	3700	87		1		0--35
Indeno(1,2,3-Cd)Pyrene	27	133	ug/Kg	2740	2310	84		40--130	2740	2200	80		5		0--35
Dibenzo(a,h)anthracene	27	133	ug/Kg	419	617	147		54--200	419	563	134		9		0--35
Benzo(g,h,i)perylene	27	133	ug/Kg	2800	2320	83		42--141	2800	2160	77		7		0--35

Surrogate:	2-Fluorobiphenyl	d14-Terphenyl
(Lab Limits)	33--96	63--125
L60187-1	105 *	99
L60187-2	88	88
WG132411-1	94	120
WG132411-2	87	88
WG132411-3	86	89
WG132411-4	86	90
WG132411-5	97 *	94

Workgroup: WG136065 (PAH-SIM BS#472) Run ID: R199698

MB:WG136065-1 Matrix: OTHR SOLID Listtype:ORPAH-SIM Method:SW846 3550B*SW846 8270D SIM Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
2-Methylnaphthalene	1.3	6.4	ug/Kg	<MDL	
Naphthalene	0.64	3.2	ug/Kg	<MDL	

Acenaphthylene	0.64	3.2	ug/Kg	<MDL
Acenaphthene	0.64	3.2	ug/Kg	<MDL
Fluorene	0.64	3.2	ug/Kg	<MDL
Phenanthrene	0.64	3.2	ug/Kg	<MDL
Anthracene	0.64	3.2	ug/Kg	<MDL
Fluoranthene	0.64	3.2	ug/Kg	<MDL
Pyrene	0.64	3.2	ug/Kg	<MDL
Benzo(a)anthracene	0.64	3.2	ug/Kg	<MDL
Chrysene	0.64	3.2	ug/Kg	<MDL
Benzo(b,j,k)fluoranthene	0.64	3.2	ug/Kg	<MDL
Benzo(a)pyrene	0.64	3.2	ug/Kg	<MDL
Indeno(1,2,3-Cd)Pyrene	0.64	3.2	ug/Kg	<MDL
Dibenzo(a,h)anthracene	0.64	3.2	ug/Kg	<MDL
Benzo(g,h,i)perylene	0.64	3.2	ug/Kg	<MDL

SBD:WG136065-3 SB:WG136065-2 MB:WG136065-1 Matrix: OTHR SOLID Listtype:ORPAH-SIM Method:SW846 3550B*SW846 8270D SIM Project: Pkey:STD
(Spiked Blank Duplicate, Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	TrueValue	SB Value	% Rec.	Qual	LabLimit	TrueValue	SBD Valu	% Rec	Qual	RPD	Qual	LabLimit
2-Methylnaphthalene	1.3	6.4	ug/Kg	<MDL	128	97.3	76		40--160	128	93.2	73		4		0--35
Naphthalene	0.64	3.2	ug/Kg	<MDL	128	97.6	76		15--93	128	93	73		5		0--35
Acenaphthylene	0.64	3.2	ug/Kg	<MDL	128	89.9	70		43--111	128	84.3	66		6		0--35
Acenaphthene	0.64	3.2	ug/Kg	<MDL	128	96.2	75		37--99	128	90.6	71		6		0--35
Fluorene	0.64	3.2	ug/Kg	<MDL	128	125	97		54--104	128	116	91		7		0--35
Phenanthrene	0.64	3.2	ug/Kg	<MDL	128	104	81		54--107	128	97.4	76		6		0--35
Anthracene	0.64	3.2	ug/Kg	<MDL	128	93.8	73		54--121	128	87.3	68		7		0--35
Fluoranthene	0.64	3.2	ug/Kg	<MDL	128	133	104		63--115	128	130	102		2		0--35
Pyrene	0.64	3.2	ug/Kg	<MDL	128	119	93		54--136	128	115	90		3		0--35
Benzo(a)anthracene	0.64	3.2	ug/Kg	<MDL	128	121	94		65--117	128	118	92		2		0--35
Chrysene	0.64	3.2	ug/Kg	<MDL	128	133	104		44--114	128	130	101		3		0--35
Benzo(b,j,k)fluoranthene	0.64	3.2	ug/Kg	<MDL	384	409	106		50--121	384	403	105		1		0--35
Benzo(a)pyrene	0.64	3.2	ug/Kg	<MDL	128	114	89		45--133	128	112	88		2		0--35
Indeno(1,2,3-Cd)Pyrene	0.64	3.2	ug/Kg	<MDL	128	134	105		33--152	128	132	103		1		0--35
Dibenzo(a,h)anthracene	0.64	3.2	ug/Kg	<MDL	128	134	105		34--140	128	132	103		2		0--35
Benzo(g,h,i)perylene	0.64	3.2	ug/Kg	<MDL	128	129	101		29--134	128	125	98		3		0--35

MS:WG136065-4 L61568-2 Matrix: FILTER SED Listtype:ORPAH-SIM Method:SW846 3550B*SW846 8270D SIM Project:423589-335-4 Pkey:STD
(Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	TrueValue	MS Value	% Rec.	Qual	LabLimit
2-Methylnaphthalene	32	160	ug/Kg	<MDL	320	294	92		40--160
Naphthalene	16	80	ug/Kg	<MDL	320	265	83		24--85

Acenaphthylene	16	80	ug/Kg	<MDL	320	299	93	51--103
Acenaphthene	16	80	ug/Kg	<MDL	320	273	85	44--94
Fluorene	16	80	ug/Kg	<MDL	320	315	98	54--113
Phenanthrene	16	80	ug/Kg	145	320	423	87	57--108
Anthracene	16	80	ug/Kg	20	320	271	79	50--119
Fluoranthene	16	80	ug/Kg	526	320	876	109	58--115
Pyrene	16	80	ug/Kg	487	320	808	100	51--142
Benzo(a)anthracene	16	80	ug/Kg	181	320	510	103	62--117
Chrysene	16	80	ug/Kg	413	320	726	98	39--115
Benzo(b,j,k)fluoranthene	16	80	ug/Kg	860	960	1920	110	45--120
Benzo(a)pyrene	16	80	ug/Kg	272	320	597	102	38--134
Indeno(1,2,3-Cd)Pyrene	16	80	ug/Kg	213	320	379	52	38--130
Dibenzo(a,h)anthracene	16	80	ug/Kg	41	320	219	56	25--138
Benzo(g,h,i)perylene	16	80	ug/Kg	202	320	343	44	25--122

SRMD:WG136065-6 SRM:WG136065-5 Matrix: SALTWTRSED Listtype:ORPAH-SIM Method:SW846 3550B*SW846 8270D SIM Project: Pkey:SED
(Std Reference Material Duplicate, Std Reference Material)

Parameter	MDL	RDL	Units	TrueValue	SRM Value	% Rec.	Qual	LabLimit	TrueValue	SRMD Valu	% Rec.	Qual	RPD	Qual	LabLimit
Phenanthrene	27	133	ug/Kg	5200	4100	79		49--124	5200	4180	80		2		0--35
Fluoranthene	27	133	ug/Kg	8800	8160	93		56--137	8800	8250	94		1		0--35
Pyrene	27	133	ug/Kg	9570	8170	85		58--123	9570	8310	87		2		0--35
Benzo(a)anthracene	27	133	ug/Kg	4660	3820	82		48--127	4660	3930	84		3		0--35
Chrysene	27	133	ug/Kg	4800	5240	109		64--150	4800	5350	111		2		0--35
Benzo(b,j,k)fluoranthene	27	133	ug/Kg	8150	7810	96		50--126	8150	8000	98		2		0--35
Benzo(a)pyrene	27	133	ug/Kg	4240	3160	75		48--119	4240	3260	77		3		0--35
Indeno(1,2,3-Cd)Pyrene	27	133	ug/Kg	2740	2090	76		40--130	2740	2080	76		1		0--35
Dibenzo(a,h)anthracene	27	133	ug/Kg	419	519	124		54--200	419	515	123		1		0--35
Benzo(g,h,i)perylene	27	133	ug/Kg	2800	1810	65		42--141	2800	1760	63		3		0--35

Surrogate:	2-Fluorobiphenyl	d14-Terphenyl
(Lab Limits)	33--96	63--125
L61510-1	81	102
L61568-1	94	107
L61568-2	92	100
WG136065-1	75	102
WG136065-2	84	101
WG136065-3	78	101

WG136065-4	96	106
WG136065-5	91	106
WG136065-6	96	108

Workgroup: WG125732 (pps#550 pcb) Run ID: R187450

MB:WG125732-1 Matrix: OTHR SOLID Listtype:ORPCB Method:SW846 3550B*SW846 8082A Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Aroclor 1016	1.3	5.33	ug/Kg	<MDL	
Aroclor 1221	4	5.33	ug/Kg	<MDL	
Aroclor 1232	4	5.33	ug/Kg	<MDL	
Aroclor 1242	1.3	5.33	ug/Kg	<MDL	
Aroclor 1248	1.3	5.33	ug/Kg	<MDL	
Aroclor 1254	1.3	5.33	ug/Kg	<MDL	
Aroclor 1260	1.3	5.33	ug/Kg	<MDL	
Total Aroclors	4	5.33	ug/Kg	<MDL	

SBD:WG125732-3 SB:WG125732-2 MB:WG125732-1 Matrix: OTHR SOLID Listtype:ORPCB Method:SW846 3550B*SW846 8082A Project: Pkey:STD
(Spiked Blank Duplicate, Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	TrueValue	SB Value	% Rec.	Qual	LabLimit	TrueValue	SBD Valu	% Rec	Qual	RPD	Qual	LabLimit
Aroclor 1242	1.3	5.33	ug/Kg	<MDL	53.3	30.4	57		23--92	53.3	31	58		2		0--35
Aroclor 1260	1.3	5.33	ug/Kg	<MDL	53.3	51.3	96		52--103	53.3	49.8	93		3		0--35

MS:WG125732-4 L57495-4 Matrix: FILTER SED Listtype:ORPCB Method:SW846 3550B*SW846 8082A Project:423589-335-4 Pkey:STD
(Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	TrueValue	MS Value	% Rec.	Qual	LabLimit
Aroclor 1242	1.3	5.33	ug/Kg	<MDL	53.3	43.5	82		57--111
Aroclor 1260	1.3	5.33	ug/Kg	<MDL	53.3	45.9	86		33--105

SRMD:WG125732-6 SRM:WG125732-5 Matrix: FILTER SED Listtype:ORPCB Method:SW846 3550B*SW846 8082A Project: Pkey:STD
(Std Reference Material Duplicate, Std Reference Material)

Parameter	MDL	RDL	Units	TrueValue	SRM Value	% Rec.	Qual	LabLimit	TrueValue	SRMD Valu	% Rec.	Qual	RPD	Qual	LabLimit
Aroclor 1260	13	53.3	ug/Kg	108	109	101		38--167	108	108	100		1		0--35

Surrogate:	2,4,5,6-Tetrachloro-m-xylene	Decachlorobiphenyl

(Lab Limits)	20--115	55--120
L57495-1	81	90
L57495-4	79	91
L57495-5	77	91
WG125732-1	32	101
WG125732-2	34	99
WG125732-3	43	96
WG125732-4	74	86
WG125732-5	69	94
WG125732-6	62	94

Workgroup: WG126330 (pps#556 pcb) Run ID: R187558

MB:WG126330-1 Matrix: OTHR SOLID Listtype:ORPCB Method:SW846 3550B*SW846 8082A Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Aroclor 1016	1.3	5.33	ug/Kg	<MDL	
Aroclor 1221	4	5.33	ug/Kg	<MDL	
Aroclor 1232	4	5.33	ug/Kg	<MDL	
Aroclor 1242	1.3	5.33	ug/Kg	<MDL	
Aroclor 1248	1.3	5.33	ug/Kg	<MDL	
Aroclor 1254	1.3	5.33	ug/Kg	<MDL	
Aroclor 1260	1.3	5.33	ug/Kg	<MDL	
Total Aroclors	4	5.33	ug/Kg	<MDL	

SB:WG126330-2 MB:WG126330-1 Matrix: OTHR SOLID Listtype:ORPCB Method:SW846 3550B*SW846 8082A Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	TrueValue	SB Value	% Rec.	Qual	LabLimit
Aroclor 1242	1.3	5.33	ug/Kg	<MDL	53.3	28.6	54		23--92
Aroclor 1260	1.3	5.33	ug/Kg	<MDL	53.3	47.9	90		52--103

MSD:WG126330-4 MS:WG126330-3 L57732-1 Matrix: FILTER SED Listtype:ORPCB Method:SW846 3550B*SW846 8082A Project:423589-335-4 Pkey:STD
(Matrix Spike Duplicate, Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	TrueValue	MS Value	% Rec.	Qual	LabLimit	TrueValue	MSD Val	% Rec	Qual	RPD	Qual	LabLimit
Aroclor 1242	1.3	5.33	ug/Kg	<MDL	53.3	43.9	82		57--111	53.3	44.4	83		1		0--35
Aroclor 1260	1.3	5.33	ug/Kg	<MDL	53.3	43.2	81		33--105	53.3	42.7	80		1		0--35

SRMD:WG126330-6 SRM:WG126330-5 Matrix: FILTER SED Listtype:ORPCB Method:SW846 3550B*SW846 8082A Project: Pkey:STD
(Std Reference Material Duplicate, Std Reference Material)

Parameter	MDL	RDL	Units	TrueValue	SRM Value	% Rec.	Qual	LabLimit	TrueValue	SRMD Valu	% Rec.	Qual	RPD	Qual	LabLimit

Aroclor 1260	13	53.3	ug/Kg	108	108	100	38--167	108	90.4	84	17	0--35

Surrogate:	2,4,5,6-Tetrachloro-m-xylene	Decachlorobiphenyl
(Lab Limits)	20--115	55--120
L57634-1	76	80
L57634-2	79	78
L57634-3	75	75
L57732-1	77	75
L57732-2	73	76
L57732-3	77	78
WG126330-1	47	85
WG126330-2	39	89
WG126330-3	77	78
WG126330-4	78	77
WG126330-5	54	73
WG126330-6	63	75

Workgroup: WG126921 (pps#563 pcb) Run ID: R188311

MB:WG126921-1 Matrix: OTHR SOLID Listtype:ORPCB Method:SW846 3550B*SW846 8082A Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Aroclor 1016	1.3	5.33	ug/Kg	<MDL	
Aroclor 1221	4	5.33	ug/Kg	<MDL	
Aroclor 1232	4	5.33	ug/Kg	<MDL	
Aroclor 1242	1.3	5.33	ug/Kg	<MDL	
Aroclor 1248	1.3	5.33	ug/Kg	<MDL	
Aroclor 1254	1.3	5.33	ug/Kg	<MDL	
Aroclor 1260	1.3	5.33	ug/Kg	<MDL	
Total Aroclors	4	5.33	ug/Kg	<MDL	

SB:WG126921-2 MB:WG126921-1 Matrix: OTHR SOLID Listtype:ORPCB Method:SW846 3550B*SW846 8082A Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	TrueValue	SB Value	% Rec.	Qual	LabLimit
Aroclor 1242	1.3	5.33	ug/Kg	<MDL	53.3	30.6	57		23--92
Aroclor 1260	1.3	5.33	ug/Kg	<MDL	53.3	47.8	90		52--103

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MSD:WG126921-4 MS:WG126921-3 L57636-16 Matrix: SALTWTRSED Listtype:ORPCB Method:SW846 3550B*SW846 8082A Project:423368-210-1 Pkey:SED
(Matrix Spike Duplicate, Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	TrueValue	MS Value	% Rec.	Qual	LabLimit	TrueValue	MSD Val	% Rec	Qual	RPD	Qual	LabLimit
Aroclor 1242	2	8	ug/Kg	11.7	80	74.4	78		57--111	80	72.6	76		2		0--35
Aroclor 1260	2	8	ug/Kg	22.4	80	77.9	69		33--105	80	79.7	72		2		0--35

MSD:WG126921-6 MS:WG126921-5 L57797-2 Matrix: FRSHWTRSED Listtype:ORPCB Method:SW846 3550B*SW846 8082A Project:423368-210-1 Pkey:SED
(Matrix Spike Duplicate, Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	TrueValue	MS Value	% Rec.	Qual	LabLimit	TrueValue	MSD Val	% Rec	Qual	RPD	Qual	LabLimit
Aroclor 1242	2	8	ug/Kg	<MDL	80	80.1	100		57--111	80	77.7	97		3		0--35
Aroclor 1260	2	8	ug/Kg	636	80	290	-433	*	33--105	80	178	-573	*	48	*	0--35

SRMD:WG126921-8 SRM:WG126921-7 Matrix: SALTWTRSED Listtype:ORPCB Method:SW846 3550B*SW846 8082A Project: Pkey:SED
(Std Reference Material Duplicate, Std Reference Material)

Parameter	MDL	RDL	Units	TrueValue	SRM Value	% Rec.	Qual	LabLimit	TrueValue	SRMD Valu	% Rec.	Qual	RPD	Qual	LabLimit
Aroclor 1260	13	53.3	ug/Kg	108	97.7	90		38--167	108	95.3	88		3		0--35

LD:WG126921-9 L57636-46 Matrix: SALTWTRSED Listtype:ORPCB Method:SW846 3550B*SW846 8082A Project:423368-210-1 Pkey:SED
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
Aroclor 1016	2	8	ug/Kg	<MDL	<MDL			0--35
Aroclor 1221	6	8	ug/Kg	<MDL	<MDL			0--35
Aroclor 1232	6	8	ug/Kg	<MDL	<MDL			0--35
Aroclor 1242	2	8	ug/Kg	11.4	29	87	*	0--35
Aroclor 1248	2	8	ug/Kg	<MDL	<MDL			0--35
Aroclor 1254	2	8	ug/Kg	39.6	40	1		0--35
Aroclor 1260	2	8	ug/Kg	23.3	26.6	13		0--35
Total Aroclors	2	8	ug/Kg	74.3	95.6	25		0--35

LD:WG126921-10 L57792-3 Matrix: FILTER SED Listtype:ORPCB Method:SW846 3550B*SW846 8082A Project:423589-335-4 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
Aroclor 1016	1.3	5.33	ug/Kg	<MDL	<MDL			0--35
Aroclor 1221	4	5.33	ug/Kg	<MDL	<MDL			0--35
Aroclor 1232	4	5.33	ug/Kg	<MDL	<MDL			0--35
Aroclor 1242	1.3	5.33	ug/Kg	<MDL	<MDL			0--35
Aroclor 1248	1.3	5.33	ug/Kg	<MDL	<MDL			0--35
Aroclor 1254	1.3	5.33	ug/Kg	<MDL	<MDL			0--35
Aroclor 1260	1.3	5.33	ug/Kg	<MDL	<MDL			0--35

Total Aroclors	4	5.33	ug/Kg	<MDL	<MDL		0--35

LD:WG126921-11 L57797-1 Matrix: FRSHWTRSED Listtype:ORPCB Method:SW846 3550B*SW846 8082A Project:423368-210-1 Pkey:SED
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
Aroclor 1016	2	8	ug/Kg	<MDL	<MDL			0--35
Aroclor 1221	6	8	ug/Kg	<MDL	<MDL			0--35
Aroclor 1232	6	8	ug/Kg	<MDL	<MDL			0--35
Aroclor 1242	2	8	ug/Kg	4.1	6.6			0--35
Aroclor 1248	2	8	ug/Kg	<MDL	<MDL			0--35
Aroclor 1254	2	8	ug/Kg	39.9	31.7	23		0--35
Aroclor 1260	2	8	ug/Kg	20.8	19.7	5		0--35
Total Aroclors	2	8	ug/Kg	64.8	58	11		0--35

Surrogate:	2,4,5,6-Tetrachloro-m-xylene	Decachlorobiphenyl
(Lab Limits)	20--115	55--120
L57636-16	59	77
L57636-46	79	82
L57792-1	64	82
L57792-2	64	77
L57792-3	76	88
L57797-1	78	90
L57797-2	75	98
WG126921-1	32	77
WG126921-2	47	87
WG126921-3	64	75
WG126921-4	62	69
WG126921-5	71	83
WG126921-6	68	91
WG126921-7	57	81
WG126921-8	59	79
WG126921-9	68	83
WG126921-10	72	86
WG126921-11	77	92

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Workgroup: WG130879 (PSD-LD for LDW GR-SS) Run ID: R193366
No QC sample found for this workgroup

Workgroup: WG135530 (PSD-LD for LDW Grn Rvr, SS) Run ID: R199407

LD:WG135530-1 L61427-1 Matrix: FRESH WTR Listtype:CVPSD-LD Method:ISO 13320:2009(E) Project:423589-335-4 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Valu	LD Value	RPD	Qual	LabLimit
Sand<500	0.01	0.01	% Volum	<MDL	<MDL			0--20
Silt	0.01	0.01	% Volum	75.72	78.94	4		0--20
Clay	0.01	0.01	% Volum	24.28	21.06	14		0--20

Workgroup: WG136379 (PSD-LD for LDW Grn Rvr - SS) Run ID: R199940

LD:WG136379-1 L61510-1 Matrix: FILTER SED Listtype:CVPSD-LD Method:ISO 13320:2009(E) Project:423589-335-4 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Valu	LD Value	RPD	Qual	LabLimit
Sand<1000	0.01	0.01	% Volum	5.53	5.29	4		0--25
Silt	0.01	0.01	% Volum	71.69	69.57	3		0--25
Clay	0.01	0.01	% Volum	18.2	22.56	21		0--25

Workgroup: WG136800 (PSD-LD for LDW Grn Rvr - SS) Run ID: R200509
No QC sample found for this workgroup

Workgroup: WG130878 (PSD-SC for LDW GR-SS) Run ID: R193365
No QC sample found for this workgroup

Workgroup: WG135529 (PSD-SC for LDW Grn Rvr, SS) Run ID: R199408

LD:WG135529-1 L61427-1 Matrix: FRESH WTR Listtype:CVPSD-SC Method:ASTM D422/D3977-97 Project:423589-335-4 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Valu	LD Value	RPD	Qual	LabLimit
500 Micron (equal to/more than)	0.5	0.999	mg/L	<MDL	<MDL			0--20
250 Micron to 500 Micron (less than)	0.5	0.999	mg/L	<MDL	<MDL			0--20
250 Micron (less than)	1	2.05	mg/L	4.51	4.51	0		0--20

MB:WG135529-2 Matrix: BLANK WTR Listtype:CVPSD-SC Method:ASTM D422/D3977-97 Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
250 Micron (less than)	0.5	1	mg/L	<MDL	

Workgroup: WG136378 (PSD-SC for LDW Grn Rvr - SS) Run ID: R199890

LD:WG136378-1 L61510-1 Matrix: FILTER SED Listtype:CVPSD-SC Method:ASTM D422/D3977-97 Project:423589-335-4 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Valu	LD Value	RPD	Qual	LabLimit
500 Micron (equal to/more	0.005	0.01	%	4.58	2.52	58	*	0--25

Workgroup: WG136799 (PSD-SC for LDW Grn Rvr - SS) Run ID: R200508
No QC sample found for this workgroup

Workgroup: WG130726 (Assorted TOTS) Run ID: R193175

MB:WG130726-1 Matrix: OTHR SOLID Listtype:CVTOTS Method:SM2540-G Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Total Solids	0.005	0.01	%	<MDL	

LD:WG130726-2 L59405-4 Matrix: SOIL Listtype:CVTOTS Method:SM2540-G Project:421196-180 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Valu	LD Value	RPD	Qual	LabLimit
Total Solids	0.005	0.01	%	79.1	79.3	0		0--20

LD:WG130726-3 L59410-3 Matrix: SOIL Listtype:CVTOTS Method:SM2540-G Project:423575-850-4 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Valu	LD Value	RPD	Qual	LabLimit
Total Solids	0.005	0.01	%	76.4	77.6	1		0--20

LD:WG130726-4 L59417-2 Matrix: SLUDGE Listtype:CVTOTS Method:SM2540-G Project:421430-300 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Valu	LD Value	RPD	Qual	LabLimit
Total Solids	0.005	0.01	%	16.7	16.3	2		0--20

LT:WG130726-10 LD:WG130726-9 L59454-3 Matrix: TRAP SED Listtype:CVTOTS Method:SM2540-G Project:423589-335-4 Pkey:STD
(Lab Triplicate, Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Valu	LD Value	LT Value	RSD	Qual	LabLimit
Total Solids	0.005	0.01	%		85.2	84.1	84.8	1	0--25

LT:WG130726-12 LD:WG130726-11 L59457-1 Matrix: FILTER SED Listtype:CVTOTS Method:SM2540-G Project:423589-335-4 Pkey:STD
(Lab Triplicate, Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Valu	LD Value	LT Value	RSD	Qual	LabLimit
Total Solids	0.005	0.01	%		25.3	26.5	25.7	2	0--25

Workgroup: WG136533 (tots for 423589) Run ID: R200019

MB:WG136533-1 Matrix: FILTER SED Listtype:CVTOTS Method:SM2540-G Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Total Solids	0.005	0.01	%	<MDL	

Workgroup: WG136994 (TOTS (S%)) Run ID: R200598

MB:WG136994-1 Matrix: OTHR SOLID Listtype:CVTOTS Method:SM2540-G Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Total Solids	0.005	0.01	%	<MDL	

LD:WG136994-2 L61838-1 Matrix: FILTER SED Listtype:CVTOTS Method:SM2540-G Project:423589-335-4 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Valu	LD Value	RPD	Qual	LabLimit
Total Solids	0.005	0.01	%		34.1	33.8	1	0--20

Workgroup: WG135546 (tss) Run ID: R198965

MB:WG135546-1 Matrix: BLANK WTR Listtype:CVTSS Method:SM2540-D Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Total Suspended Solids	0.5	1	mg/L	<MDL	

LCS:WG135546-2 Matrix: BLANK WTR Listtype:CVTSS Method:SM2540-D Project: Pkey:STD
(Lab Control Sample)

Parameter	MDL	RDL	Units	TrueValue	LCS Value	% Rec.	Qual	LabLimit

Total Suspended Solids	5	10	mg/L	100	88	88	80--120

LD:WG135546-3 L61359-4 Matrix: FRESH WTR Listtype:CVTSS Method:SM2540-D Project:421235 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Valu	LD Value	RPD	Qual	LabLimit
Total Suspended Solids	0.5	1	mg/L	1.1	1.2	9		0--25

LD:WG135546-4 L61427-3 Matrix: FILTER WTR Listtype:CVTSS Method:SM2540-D Project:423589-335-4 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Valu	LD Value	RPD	Qual	LabLimit
Total Suspended Solids	1	2	mg/L	5.8	6.34	9		0--25

LD:WG135546-5 L61359-30 Matrix: FRESH WTR Listtype:CVTSS Method:SM2540-D Project:421235 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Valu	LD Value	RPD	Qual	LabLimit
Total Suspended Solids	0.5	1	mg/L	0.5	0.6			0--25

MB:WG135546-6 Matrix: BLANK WTR Listtype:CVTSS Method:SM2540-D Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Total Suspended Solids	0.5	1	mg/L	<MDL	

LCS:WG135546-7 Matrix: BLANK WTR Listtype:CVTSS Method:SM2540-D Project: Pkey:STD
(Lab Control Sample)

Parameter	MDL	RDL	Units	TrueValue	LCS Value	% Rec.	Qual	LabLimit
Total Suspended Solids	5	10	mg/L	100	90	90		80--120

Workgroup: WG130733 (Trap Seds) Run ID: R193201

MB:WG130733-1 Matrix: SOLIDBLANK Listtype:MTHG-MIDS Method:SW846 7471B Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Mercury, Total, CVAA	0.0016	0.0161	mg/Kg	<MDL	

SB:WG130733-2 MB:WG130733-1 Matrix: SOLIDBLANK Listtype:MTHG-MIDS Method:SW846 7471B Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	TrueValue	SB Value	% Rec.	Qual	LabLimit
Mercury, Total, CVAA	0.0016	0.0161	mg/Kg	<MDL	0.0323	0.0334	104		85--115

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LCSD:WG130733-4 LCS:WG130733-3 Matrix: FRSHWTRSED Listtype:MTHG-MIDS Method:SW846 7471B Project: Pkey:SED
(Lab Control Sample Duplicate, Lab Control Sample)

Parameter	MDL	RDL	Units	TrueValue	LCS Value	% Rec.	Qual	LabLimit	TrueValu	LCSD Value	% Rec.	Qual	RPD	Qual	LabLimit
Mercury, Total, CVAA	0.025	0.246	mg/Kg	1.09	1.13	104		80--120	1.09	1.07	98		6		0--20

LD:WG130733-5 L59454-4 Matrix: TRAP SED Listtype:MTHG-MIDS Method:SW846 7471B Project:423589-335-4 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Valu	LD Value	RPD	Qual	LabLimit
Mercury, Total, CVAA	0.0051	0.0512	mg/Kg	0.018	0.018			0--20

MSD:WG130733-7 MS:WG130733-6 L59454-4 Matrix: TRAP SED Listtype:MTHG-MIDS Method:SW846 7471B Project:423589-335-4 Pkey:STD
(Matrix Spike Duplicate, Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Valu	TrueValue	MS Valu	% Rec.	Qual	LabLimit	TrueValue	MSD Valu	% Rec.	Qual	RPD	Qual	LabLimit
Mercury, Total, CVAA	0.0052	0.0521	mg/Kg	0.018	0.104	0.12	98		75--125	0.0982	0.115	98		4		0--20

Workgroup: WG135928 (04-nov-14 LDW) Run ID: R199295

MB:WG135928-1 Matrix: SOLIDBLANK Listtype:MTHG-MIDS Method:SW846 7471B Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Mercury, Total, CVAA	0.0048	0.0476	mg/Kg	<MDL	

SB:WG135928-2 MB:WG135928-1 Matrix: SOLIDBLANK Listtype:MTHG-MIDS Method:SW846 7471B Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	TrueValue	SB Value	% Rec.	Qual	LabLimit
Mercury, Total, CVAA	0.0048	0.0476	mg/Kg	<MDL	0.0952	0.088	92		85--115

MSD:WG135928-4 MS:WG135928-3 L61510-1 Matrix: FILTER SED Listtype:MTHG-MIDS Method:SW846 7471B Project:423589-335-4 Pkey:STD
(Matrix Spike Duplicate, Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Valu	TrueValue	MS Valu	% Rec.	Qual	LabLimit	TrueValue	MSD Valu	% Rec.	Qual	RPD	Qual	LabLimit
Mercury, Total, CVAA	0.0049	0.0487	mg/Kg	0.013	0.0974	0.108	97		75--125	0.102	0.114	98		5		0--20

LCSD:WG135928-6 LCS:WG135928-5 Matrix: SOIL Listtype:MTHG-MIDS Method:SW846 7471B Project: Pkey:STD
(Lab Control Sample Duplicate, Lab Control Sample)

Parameter	MDL	RDL	Units	TrueValue	LCS Value	% Rec.	Qual	LabLimit	TrueValu	LCSD Value	% Rec.	Qual	RPD	Qual	LabLimit
Mercury, Total, CVAA	0.13	1.27	mg/Kg	9.03	8.76	97		71--129	9.03	9.28	103		6		0--20

Workgroup: WG136780 (23-DEC-14 LDW SN) Run ID: R200313

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MB:WG136780-1 Matrix: SOLIDBLANK Listtype:MTHG-MIDS Method:SW846 7471B Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Mercury, Total, CVAA	0.0048	0.0476	mg/Kg	<MDL	

SB:WG136780-2 MB:WG136780-1 Matrix: SOLIDBLANK Listtype:MTHG-MIDS Method:SW846 7471B Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	TrueValue	SB Value	% Rec.	Qual	LabLimit
Mercury, Total, CVAA	0.0048	0.0476	mg/Kg	<MDL	0.0952	0.0907	95		85--115

MSD:WG136780-4 MS:WG136780-3 L61838-1 Matrix: FILTER SED Listtype:MTHG-MIDS Method:SW846 7471B Project:423589-335-4 Pkey:STD
(Matrix Spike Duplicate, Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Valu	TrueValue	MS Valu	% Rec.	Qual	LabLimit	TrueValue	MSD Valu	% Rec.	Qual	RPD	Qual	LabLimit
Mercury, Total, CVAA	0.0049	0.0488	mg/Kg	0.0507	0.0977	0.147	98		75--125	0.098	0.151	103		3		0--20

LD:WG136780-5 L61838-1 Matrix: FILTER SED Listtype:MTHG-MIDS Method:SW846 7471B Project:423589-335-4 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Valu	LD Value	RPD	Qual	LabLimit
Mercury, Total, CVAA	0.0049	0.0492	mg/Kg	0.0507	0.0562	10		0--20

LCSD:WG136780-7 LCS:WG136780-6 Matrix: SOIL Listtype:MTHG-MIDS Method:SW846 7471B Project: Pkey:STD
(Lab Control Sample Duplicate, Lab Control Sample)

Parameter	MDL	RDL	Units	TrueValue	LCS Value	% Rec.	Qual	LabLimit	TrueValu	LCSD Value	% Rec.	Qual	RPD	Qual	LabLimit
Mercury, Total, CVAA	0.12	1.24	mg/Kg	9.03	8.76	97		71--129	9.03	8.43	93		4		0--20

Workgroup: WG130834 (27-JAN-14 Sus/Trap Seds) Run ID: R193492

MB:WG130834-1 Matrix: SOLIDBLANK Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Vanadium, Total, ICP-MS	0.0091	0.0457	mg/Kg	<MDL	
Chromium, Total, ICP-MS	0.024	0.122	mg/Kg	<MDL	
Nickel, Total, ICP-MS	0.012	0.061	mg/Kg	<MDL	
Copper, Total, ICP-MS	0.049	0.244	mg/Kg	<MDL	
Zinc, Total, ICP-MS	0.061	0.305	mg/Kg	<MDL	
Arsenic, Total, ICP-MS	0.012	0.061	mg/Kg	<MDL	
Silver, Total, ICP-MS	0.0049	0.0244	mg/Kg	<MDL	
Cadmium, Total, ICP-MS	0.0061	0.0305	mg/Kg	<MDL	

Lead, Total, ICP-MS	0.012	0.061	mg/Kg	<MDL

SB:WG130834-2 MB:WG130834-1 Matrix: SOLIDBLANK Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	TrueValue	SB Value	% Rec.	Qual	LabLimit
Vanadium, Total, ICP-MS	0.0091	0.0457	mg/Kg	<MDL	2.44	2.33	95		85--115
Chromium, Total, ICP-MS	0.024	0.122	mg/Kg	<MDL	2.44	2.38	97		85--115
Nickel, Total, ICP-MS	0.012	0.061	mg/Kg	<MDL	2.44	2.49	102		85--115
Copper, Total, ICP-MS	0.049	0.244	mg/Kg	<MDL	2.44	2.5	103		85--115
Zinc, Total, ICP-MS	0.061	0.305	mg/Kg	<MDL	2.44	2.5	103		85--115
Arsenic, Total, ICP-MS	0.012	0.061	mg/Kg	<MDL	2.44	2.34	96		85--115
Silver, Total, ICP-MS	0.0049	0.0244	mg/Kg	<MDL	2.44	2.45	100		85--115
Cadmium, Total, ICP-MS	0.0061	0.0305	mg/Kg	<MDL	2.44	2.38	98		85--115
Lead, Total, ICP-MS	0.012	0.061	mg/Kg	<MDL	2.44	2.38	98		85--115

LCSD:WG130834-4 LCS:WG130834-3 Matrix: SOIL Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project: Pkey:STD
(Lab Control Sample Duplicate, Lab Control Sample)

Parameter	MDL	RDL	Units	TrueValue	LCS Value	% Rec.	Qual	LabLimit	TrueValu	LCSD Value	% Rec.	Qual	RPD	Qual	LabLimit
Vanadium, Total, ICP-MS	0.072	0.358	mg/Kg	87.1	74.5	86		77--123	87.1	77.8	89		4		0--20
Chromium, Total, ICP-MS	0.19	0.954	mg/Kg	119	105	88		80--120	119	110	92		4		0--20
Nickel, Total, ICP-MS	0.095	0.477	mg/Kg	70	69.1	99		80--120	70	71.6	102		4		0--20
Copper, Total, ICP-MS	0.38	1.91	mg/Kg	118	112	95		80--120	118	116	98		3		0--20
Zinc, Total, ICP-MS	0.48	2.39	mg/Kg	276	269	97		80--121	276	278	101		3		0--20
Arsenic, Total, ICP-MS	0.095	0.477	mg/Kg	168	149	89		80--120	168	157	94		5		0--20
Silver, Total, ICP-MS	0.038	0.191	mg/Kg	42.3	40.2	95		66--134	42.3	41.9	99		4		0--20
Cadmium, Total, ICP-MS	0.048	0.239	mg/Kg	103	103	100		80--120	103	106	103		3		0--20
Lead, Total, ICP-MS	0.095	0.477	mg/Kg	76.9	71.3	93		80--120	76.9	76.9	100		8		0--20

LCSD:WG130834-6 LCS:WG130834-5 Matrix: FRSHWTRSED Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project: Pkey:SED
(Lab Control Sample Duplicate, Lab Control Sample)

Parameter	MDL	RDL	Units	TrueValue	LCS Value	% Rec.	Qual	LabLimit	TrueValu	LCSD Value	% Rec.	Qual	RPD	Qual	LabLimit
Vanadium, Total, ICP-MS	0.075	0.375	mg/Kg	94.6	19	20		10--44	94.6	19.6	21		3		0--20
Chromium, Total, ICP-MS	0.2	1	mg/Kg	121.9	62.4	51		40--80	121.9	65.2	53		4		0--20
Nickel, Total, ICP-MS	0.1	0.5	mg/Kg	42.9	34.4	80		70--105	42.9	35.3	82		3		0--20
Zinc, Total, ICP-MS	0.5	2.5	mg/Kg	408	370	91		69--109	408	366	90		1		0--20
Arsenic, Total, ICP-MS	0.1	0.5	mg/Kg	17	13.6	80		66--141	17	14	82		3		0--20
Cadmium, Total, ICP-MS	0.05	0.25	mg/Kg	2.94	2.89	98		83--123	2.94	2.89	98		0		0--20
Lead, Total, ICP-MS	0.1	0.5	mg/Kg	150	140	94		71--111	150	142	95		1		0--20

LD:WG130834-7 L59454-1 Matrix: TRAP SED Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project:423589-335-4 Pkey:STD

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(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Valu	LD Value	RPD	Qual	LabLimit
Vanadium, Total, ICP-MS	0.073	0.366	mg/Kg	22	22.1	1		0--20
Chromium, Total, ICP-MS	0.2	0.976	mg/Kg	5.15	5.37	4		0--20
Nickel, Total, ICP-MS	0.098	0.488	mg/Kg	5.32	5.34	0		0--20
Copper, Total, ICP-MS	0.39	1.95	mg/Kg	11.5	11.5	0		0--20
Zinc, Total, ICP-MS	0.49	2.44	mg/Kg	29.2	29.4	1		0--20
Arsenic, Total, ICP-MS	0.098	0.488	mg/Kg	3.53	3.56	1		0--20
Silver, Total, ICP-MS	0.0098	0.0488	mg/Kg	0.032	0.032			0--20
Cadmium, Total, ICP-MS	0.012	0.061	mg/Kg	0.0616	0.055	12		0--20
Lead, Total, ICP-MS	0.024	0.122	mg/Kg	2.84	2.71	4		0--20

MS:WG130834-8 L59454-1 Matrix: TRAP SED Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project:423589-335-4 Pkey:STD

(Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Valu	TrueValue	MS Valu	% Rec.	Qual	LabLimit
Vanadium, Total, ICP-MS	0.073	0.366	mg/Kg	22	4.9	26.4		4xRule	75--125
Chromium, Total, ICP-MS	0.2	0.976	mg/Kg	5.15	4.9	9.69	92		75--125
Nickel, Total, ICP-MS	0.098	0.488	mg/Kg	5.32	4.9	9.91	93		75--125
Copper, Total, ICP-MS	0.39	1.95	mg/Kg	11.5	4.9	15.9	91		75--125
Zinc, Total, ICP-MS	0.49	2.44	mg/Kg	29.2	4.9	32.8		4xRule	75--125
Arsenic, Total, ICP-MS	0.098	0.488	mg/Kg	3.53	4.9	8.15	94		75--125
Silver, Total, ICP-MS	0.0098	0.0488	mg/Kg	0.032	4.9	4.35	88		75--125
Cadmium, Total, ICP-MS	0.012	0.061	mg/Kg	0.0616	4.9	4.67	94		75--125
Lead, Total, ICP-MS	0.024	0.122	mg/Kg	2.84	4.9	7.24	90		75--125

Workgroup: WG136472 (12/8/14 Filtered Seds) Run ID: R199966

MB:WG136472-1 Matrix: SOLIDBLANK Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project: Pkey:STD

(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Vanadium, Total, ICP-MS	0.0087	0.0436	mg/Kg	<MDL	
Chromium, Total, ICP-MS	0.023	0.116	mg/Kg	<MDL	
Nickel, Total, ICP-MS	0.012	0.0581	mg/Kg	<MDL	
Copper, Total, ICP-MS	0.047	0.233	mg/Kg	<MDL	
Zinc, Total, ICP-MS	0.058	0.291	mg/Kg	<MDL	
Arsenic, Total, ICP-MS	0.012	0.0581	mg/Kg	<MDL	
Silver, Total, ICP-MS	0.0047	0.0233	mg/Kg	<MDL	
Cadmium, Total, ICP-MS	0.0058	0.0291	mg/Kg	<MDL	
Lead, Total, ICP-MS	0.012	0.0581	mg/Kg	<MDL	

LIMSView QC Report for Green River Filtered Solids for Data Validation - Part 2

SB:WG136472-2 MB:WG136472-1 Matrix: SOLIDBLANK Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	TrueValue	SB Value	% Rec.	Qual	LabLimit
Vanadium, Total, ICP-MS	0.0087	0.0436	mg/Kg	<MDL	2.33	2.21	95		85--115
Chromium, Total, ICP-MS	0.023	0.116	mg/Kg	<MDL	2.33	2.3	99		85--115
Nickel, Total, ICP-MS	0.012	0.0581	mg/Kg	<MDL	2.33	2.27	97		85--115
Copper, Total, ICP-MS	0.047	0.233	mg/Kg	<MDL	2.33	2.29	98		85--115
Zinc, Total, ICP-MS	0.058	0.291	mg/Kg	<MDL	2.33	2.2	95		85--115
Arsenic, Total, ICP-MS	0.012	0.0581	mg/Kg	<MDL	2.33	2.07	89		85--115
Silver, Total, ICP-MS	0.0047	0.0233	mg/Kg	<MDL	2.33	2.25	97		85--115
Cadmium, Total, ICP-MS	0.0058	0.0291	mg/Kg	<MDL	2.33	2.13	91		85--115
Lead, Total, ICP-MS	0.012	0.0581	mg/Kg	<MDL	2.33	2.35	101		85--115

LD:WG136472-3 L61568-1 Matrix: FILTER SED Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project:423589-335-4 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Valu	LD Value	RPD	Qual	LabLimit
Vanadium, Total, ICP-MS	0.092	0.46	mg/Kg	26.9	27.1	1		0--20
Chromium, Total, ICP-MS	0.25	1.23	mg/Kg	16.1	16.3	1		0--20
Nickel, Total, ICP-MS	0.12	0.613	mg/Kg	12.5	12.6	0		0--20
Copper, Total, ICP-MS	0.49	2.45	mg/Kg	26.7	36.6	31	*	0--20
Zinc, Total, ICP-MS	0.61	3.06	mg/Kg	128	128	0		0--20
Arsenic, Total, ICP-MS	0.12	0.613	mg/Kg	7.87	8.15	3		0--20
Silver, Total, ICP-MS	0.049	0.245	mg/Kg	0.15	0.17			0--20
Cadmium, Total, ICP-MS	0.061	0.306	mg/Kg	0.48	0.494	3		0--20
Lead, Total, ICP-MS	0.12	0.613	mg/Kg	18.1	18.8	4		0--20

MS:WG136472-4 L61568-1 Matrix: FILTER SED Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project:423589-335-4 Pkey:STD
(Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Valu	TrueValue	MS Valu	% Rec.	Qual	LabLimit
Vanadium, Total, ICP-MS	0.092	0.46	mg/Kg	26.9	4.91	30.9		4xRule	75--125
Chromium, Total, ICP-MS	0.25	1.23	mg/Kg	16.1	4.91	20.3	86		75--125
Nickel, Total, ICP-MS	0.12	0.613	mg/Kg	12.5	4.91	16.6	82		75--125
Copper, Total, ICP-MS	0.49	2.45	mg/Kg	26.7	4.91	30.3		4xRule	75--125
Zinc, Total, ICP-MS	0.61	3.06	mg/Kg	128	4.91	133		4xRule	75--125
Arsenic, Total, ICP-MS	0.12	0.613	mg/Kg	7.87	4.91	12	84		75--125
Silver, Total, ICP-MS	0.049	0.245	mg/Kg	0.15	4.91	4.07	80		75--125
Cadmium, Total, ICP-MS	0.061	0.306	mg/Kg	0.48	4.91	5.1	94		75--125
Lead, Total, ICP-MS	0.12	0.613	mg/Kg	18.1	4.91	23.7	113		75--125

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LCSD:WG136472-6 LCS:WG136472-5 Matrix: SOIL Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project: Pkey:STD
(Lab Control Sample Duplicate, Lab Control Sample)

Parameter	MDL	RDL	Units	TrueValue	LCS Value	% Rec.	Qual	LabLimit	TrueValu	LCSD Value	% Rec.	Qual	RPD	Qual	LabLimit
Vanadium, Total, ICP-MS	0.07	0.351	mg/Kg	156	144	92		76--124	156	146	93		1		0--20
Chromium, Total, ICP-MS	0.19	0.936	mg/Kg	86.8	79.7	92		79--120	86.8	81	93		2		0--20
Nickel, Total, ICP-MS	0.094	0.468	mg/Kg	236	213	90		80--120	236	217	92		2		0--20
Copper, Total, ICP-MS	0.37	1.87	mg/Kg	268	245	91		80--120	268	252	94		3		0--20
Zinc, Total, ICP-MS	0.47	2.34	mg/Kg	130	116	89		80--120	130	111	85		4		0--20
Arsenic, Total, ICP-MS	0.094	0.468	mg/Kg	88.4	75.6	85		80--120	88.4	75.5	85		0		0--20
Silver, Total, ICP-MS	0.037	0.187	mg/Kg	66.2	67.2	102		74--126	66.2	66.4	100		1		0--20
Cadmium, Total, ICP-MS	0.047	0.234	mg/Kg	142	138	97		80--120	142	133	94		4		0--20
Lead, Total, ICP-MS	0.094	0.468	mg/Kg	97.9	104	107		80--120	97.9	100	102		4		0--20

LCSD:WG136472-8 LCS:WG136472-7 Matrix: FRSHWTRSED Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project: Pkey:SED
(Lab Control Sample Duplicate, Lab Control Sample)

Parameter	MDL	RDL	Units	TrueValue	LCS Value	% Rec.	Qual	LabLimit	TrueValu	LCSD Value	% Rec.	Qual	RPD	Qual	LabLimit
Vanadium, Total, ICP-MS	0.074	0.372	mg/Kg	94.6	18.6	20		10--44	94.6	18.5	20		1		0--20
Chromium, Total, ICP-MS	0.2	0.992	mg/Kg	121.9	63.9	52		40--80	121.9	64.2	53		0		0--20
Nickel, Total, ICP-MS	0.099	0.496	mg/Kg	42.9	31.4	73		70--105	42.9	31.2	73		0		0--20
Zinc, Total, ICP-MS	0.5	2.48	mg/Kg	408	347	85		69--109	408	338	83		3		0--20
Arsenic, Total, ICP-MS	0.099	0.496	mg/Kg	17	12.7	75		66--141	17	12.5	73		1		0--20
Cadmium, Total, ICP-MS	0.05	0.248	mg/Kg	2.94	2.71	92		83--123	2.94	3.48	118		25	*	0--20
Lead, Total, ICP-MS	0.099	0.496	mg/Kg	150	157	105		71--111	150	148	99		6		0--20

Workgroup: WG137335 (1/28/15 Filtered Sed) Run ID: R200997

MB:WG137335-1 Matrix: SOLIDBLANK Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Vanadium, Total, ICP-MS	0.018	0.0893	mg/Kg	<MDL	
Chromium, Total, ICP-MS	0.048	0.238	mg/Kg	<MDL	
Nickel, Total, ICP-MS	0.024	0.119	mg/Kg	<MDL	
Copper, Total, ICP-MS	0.095	0.476	mg/Kg	<MDL	
Zinc, Total, ICP-MS	0.12	0.595	mg/Kg	<MDL	
Arsenic, Total, ICP-MS	0.024	0.119	mg/Kg	<MDL	
Silver, Total, ICP-MS	0.0095	0.0476	mg/Kg	<MDL	
Cadmium, Total, ICP-MS	0.012	0.0595	mg/Kg	<MDL	
Lead, Total, ICP-MS	0.024	0.119	mg/Kg	<MDL	

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SB:WG137335-2 MB:WG137335-1 Matrix: SOLIDBLANK Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	TrueValue	SB Value	% Rec.	Qual	LabLimit
Vanadium, Total, ICP-MS	0.018	0.0893	mg/Kg	<MDL	4.76	4.37	92		85--115
Chromium, Total, ICP-MS	0.048	0.238	mg/Kg	<MDL	4.76	4.45	93		85--115
Nickel, Total, ICP-MS	0.024	0.119	mg/Kg	<MDL	4.76	4.56	96		85--115
Copper, Total, ICP-MS	0.095	0.476	mg/Kg	<MDL	4.76	4.66	98		85--115
Zinc, Total, ICP-MS	0.12	0.595	mg/Kg	<MDL	4.76	4.49	94		85--115
Arsenic, Total, ICP-MS	0.024	0.119	mg/Kg	<MDL	4.76	4.45	93		85--115
Silver, Total, ICP-MS	0.0095	0.0476	mg/Kg	<MDL	4.76	4.62	97		85--115
Cadmium, Total, ICP-MS	0.012	0.0595	mg/Kg	<MDL	4.76	4.43	93		85--115
Lead, Total, ICP-MS	0.024	0.119	mg/Kg	<MDL	4.76	4.47	94		85--115

LD:WG137335-3 L61838-1 Matrix: FILTER SED Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project:423589-335-4 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Valu	LD Value	RPD	Qual	LabLimit
Vanadium, Total, ICP-MS	0.019	0.0961	mg/Kg	19.9	19.9	0		0--20
Chromium, Total, ICP-MS	0.051	0.256	mg/Kg	16.7	16.8	1		0--20
Nickel, Total, ICP-MS	0.026	0.128	mg/Kg	9.15	9.25	1		0--20
Copper, Total, ICP-MS	0.1	0.512	mg/Kg	26.4	26.4	0		0--20
Zinc, Total, ICP-MS	0.13	0.64	mg/Kg	231	230	0		0--20
Arsenic, Total, ICP-MS	0.026	0.128	mg/Kg	9.17	9.21	0		0--20
Silver, Total, ICP-MS	0.01	0.0512	mg/Kg	0.128	0.126	2		0--20
Cadmium, Total, ICP-MS	0.013	0.064	mg/Kg	1.83	1.84	1		0--20
Lead, Total, ICP-MS	0.026	0.128	mg/Kg	22.3	22.5	0		0--20

MS:WG137335-4 L61838-1 Matrix: FILTER SED Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project:423589-335-4 Pkey:STD
(Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Valu	TrueValue	MS Valu	% Rec.	Qual	LabLimit
Vanadium, Total, ICP-MS	0.019	0.0961	mg/Kg	19.9	5.14	24	79		75--125
Chromium, Total, ICP-MS	0.051	0.256	mg/Kg	16.7	5.14	20.8	80		75--125
Nickel, Total, ICP-MS	0.026	0.128	mg/Kg	9.15	5.14	13.2	78		75--125
Copper, Total, ICP-MS	0.1	0.512	mg/Kg	26.4	5.14	30		4xRule	75--125
Zinc, Total, ICP-MS	0.13	0.64	mg/Kg	231	5.14	229		4xRule	75--125
Arsenic, Total, ICP-MS	0.026	0.128	mg/Kg	9.17	5.14	13.2	78		75--125
Silver, Total, ICP-MS	0.01	0.0512	mg/Kg	0.128	5.14	4.53	86		75--125
Cadmium, Total, ICP-MS	0.013	0.064	mg/Kg	1.83	5.14	6.46	90		75--125
Lead, Total, ICP-MS	0.026	0.128	mg/Kg	22.3	5.14	27.2		4xRule	75--125

LCSD:WG137335-6 LCS:WG137335-5 Matrix: SOIL Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project: Pkey:STD

LIMSView QC Report for Green River Filtered Solids for Data Validation - Part 2

(Lab Control Sample Duplicate, Lab Control Sample)

Parameter	MDL	RDL	Units	TrueValue	LCS Value	% Rec.	Qual	LabLimit	TrueValu	LCSD Value	% Rec.	Qual	RPD	Qual	LabLimit
Vanadium, Total, ICP-MS	0.067	0.337	mg/Kg	156	141	90		76--124	156	144	92		2		0--20
Chromium, Total, ICP-MS	0.18	0.899	mg/Kg	86.8	75.3	87		79--120	86.8	75.8	87		1		0--20
Nickel, Total, ICP-MS	0.09	0.45	mg/Kg	236	214	91		80--120	236	214	91		0		0--20
Copper, Total, ICP-MS	0.36	1.8	mg/Kg	268	242	90		80--120	268	239	89		1		0--20
Zinc, Total, ICP-MS	0.45	2.25	mg/Kg	130	113	87		80--120	130	113	87		0		0--20
Arsenic, Total, ICP-MS	0.09	0.45	mg/Kg	88.4	76.4	86		80--120	88.4	77.1	87		1		0--20
Silver, Total, ICP-MS	0.036	0.18	mg/Kg	66.2	63.7	96		74--126	66.2	64.2	97		1		0--20
Cadmium, Total, ICP-MS	0.045	0.225	mg/Kg	142	138	97		80--120	142	138	97		1		0--20
Lead, Total, ICP-MS	0.09	0.45	mg/Kg	97.9	93.8	96		80--120	97.9	94.8	97		1		0--20

LCS:WG137335-7 Matrix: FRSHWTRSED Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project: Pkey:SED

(Lab Control Sample)

Parameter	MDL	RDL	Units	TrueValue	LCS Value	% Rec.	Qual	LabLimit
Vanadium, Total, ICP-MS	0.071	0.356	mg/Kg	94.6	19.5	21		10--44
Chromium, Total, ICP-MS	0.19	0.951	mg/Kg	121.9	60.3	50		40--80
Nickel, Total, ICP-MS	0.095	0.475	mg/Kg	42.9	31	72		70--105
Zinc, Total, ICP-MS	0.48	2.38	mg/Kg	408	319	78		69--109
Arsenic, Total, ICP-MS	0.095	0.475	mg/Kg	17	12.8	75		66--141
Cadmium, Total, ICP-MS	0.048	0.238	mg/Kg	2.94	2.83	96		83--123
Lead, Total, ICP-MS	0.095	0.475	mg/Kg	150	134	89		71--111

Workgroup: WG130978 (BS#452 pah-sim) Run ID: R193821

MB:WG130978-1 Matrix: OTHR SOLID Listtype:ORPAH-SIM Method:SW846 3550B*SW846 8270D SIM Project: Pkey:STD

(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
2-Methylnaphthalene	1.3	6.4	ug/Kg	<MDL	
Naphthalene	0.64	3.2	ug/Kg	<MDL	
Acenaphthylene	0.64	3.2	ug/Kg	<MDL	
Acenaphthene	0.64	3.2	ug/Kg	<MDL	
Fluorene	0.64	3.2	ug/Kg	<MDL	
Phenanthrene	0.64	3.2	ug/Kg	<MDL	
Anthracene	0.64	3.2	ug/Kg	<MDL	
Fluoranthene	0.64	3.2	ug/Kg	<MDL	
Pyrene	0.64	3.2	ug/Kg	<MDL	
Benzo(a)anthracene	0.64	3.2	ug/Kg	<MDL	
Chrysene	0.64	3.2	ug/Kg	<MDL	

Benzo(b,j,k)fluoranthene	0.64	3.2	ug/Kg	<MDL
Benzo(a)pyrene	0.64	3.2	ug/Kg	<MDL
Indeno(1,2,3-Cd)Pyrene	0.64	3.2	ug/Kg	<MDL
Dibenzo(a,h)anthracene	0.64	3.2	ug/Kg	<MDL
Benzo(g,h,i)perylene	0.64	3.2	ug/Kg	<MDL

SB:WG130978-2 MB:WG130978-1 Matrix: OTHR SOLID Listtype:ORPAH-SIM Method:SW846 3550B*SW846 8270D SIM Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	TrueValue	SB Value	% Rec.	Qual	LabLimit
2-Methylnaphthalene	1.3	6.4	ug/Kg	<MDL	128	115	89		40--160
Naphthalene	0.64	3.2	ug/Kg	<MDL	128	105	82		15--93
Acenaphthylene	0.64	3.2	ug/Kg	<MDL	128	97.5	76		43--111
Acenaphthene	0.64	3.2	ug/Kg	<MDL	128	103	81		37--99
Fluorene	0.64	3.2	ug/Kg	<MDL	128	121	94		54--104
Phenanthrene	0.64	3.2	ug/Kg	<MDL	128	120	94		54--107
Anthracene	0.64	3.2	ug/Kg	<MDL	128	98.9	77		54--121
Fluoranthene	0.64	3.2	ug/Kg	<MDL	128	128	100		63--115
Pyrene	0.64	3.2	ug/Kg	<MDL	128	130	102		54--136
Benzo(a)anthracene	0.64	3.2	ug/Kg	<MDL	128	121	95		65--117
Chrysene	0.64	3.2	ug/Kg	<MDL	128	127	99		44--114
Benzo(b,j,k)fluoranthene	0.64	3.2	ug/Kg	<MDL	384	443	115		50--121
Benzo(a)pyrene	0.64	3.2	ug/Kg	<MDL	128	124	97		45--133
Indeno(1,2,3-Cd)Pyrene	0.64	3.2	ug/Kg	<MDL	128	160	125		33--152
Dibenzo(a,h)anthracene	0.64	3.2	ug/Kg	<MDL	128	145	113		34--140
Benzo(g,h,i)perylene	0.64	3.2	ug/Kg	<MDL	128	156	121		29--134

MSD:WG130978-4 MS:WG130978-3 L59472-3 Matrix: FILTER SED Listtype:ORPAH-SIM Method:SW846 3550B*SW846 8270D SIM Project:423589-335-4 Pkey:STD
(Matrix Spike Duplicate, Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Valu	TrueValue	MS Valu	% Rec.	Qual	LabLimit	TrueValue	MSD Valu	% Rec.	Qual	RPD	Qual	LabLimit
2-Methylnaphthalene	1.6	8	ug/Kg	<MDL	160	118	74		40--160	160	113	71		4		0--35
Naphthalene	0.8	4	ug/Kg	1.3	160	87.8	54		24--85	160	81.7	50		7		0--35
Acenaphthylene	0.8	4	ug/Kg	1.2	160	139	86		51--103	160	137	85		2		0--35
Acenaphthene	0.8	4	ug/Kg	0.94	160	134	83		44--94	160	129	80		4		0--35
Fluorene	0.8	4	ug/Kg	1.9	160	166	102		54--113	160	162	100		2		0--35
Phenanthrene	0.8	4	ug/Kg	23.3	160	194	107		57--108	160	180	98		8		0--35
Anthracene	0.8	4	ug/Kg	6.13	160	169	102		50--119	160	167	101		1		0--35
Fluoranthene	0.8	4	ug/Kg	57.4	160	233	110		58--115	160	209	95		11		0--35
Pyrene	0.8	4	ug/Kg	56	160	236	112		51--142	160	229	108		3		0--35
Benzo(a)anthracene	0.8	4	ug/Kg	20.6	160	188	104		62--117	160	185	103		1		0--35
Chrysene	0.8	4	ug/Kg	33.4	160	183	94		39--115	160	180	92		1		0--35

Benzo(b,j,k)fluoranthene	0.8	4	ug/Kg	56.7	480	582	110	45--120	480	572	107	2	0--35
Benzo(a)pyrene	0.8	4	ug/Kg	29.2	160	226	123	38--134	160	223	121	2	0--35
Indeno(1,2,3-Cd)Pyrene	0.8	4	ug/Kg	15.8	160	174	99	38--130	160	171	97	2	0--35
Dibenzo(a,h)anthracene	0.8	4	ug/Kg	2.9	160	137	84	25--138	160	131	80	4	0--35
Benzo(g,h,i)perylene	0.8	4	ug/Kg	12.8	160	146	83	25--122	160	138	78	5	0--35

SRMD:WG130978-6 SRM:WG130978-5 Matrix: SALTWTRSED Listtype:ORPAH-SIM Method:SW846 3550B*SW846 8270D SIM Project: Pkey:SED
(Std Reference Material Duplicate, Std Reference Material)

Parameter	MDL	RDL	Units	TrueValue	SRM Value	% Rec.	Qual	LabLimit	TrueValu	SRMD Value	% Rec.	Qual	RPD	Qual	LabLimit
Phenanthrene	27	133	ug/Kg	5200	4990	96		49--124	5200	4560	88		9		0--35
Fluoranthene	27	133	ug/Kg	8800	8270	94		56--137	8800	7660	87		8		0--35
Pyrene	27	133	ug/Kg	9570	9910	104		58--123	9570	9330	97		6		0--35
Benzo(a)anthracene	27	133	ug/Kg	4660	4200	90		48--127	4660	3870	83		8		0--35
Chrysene	27	133	ug/Kg	4800	5310	111		64--150	4800	5070	106		4		0--35
Benzo(b,j,k)fluoranthene	27	133	ug/Kg	8150	7980	98		50--126	8150	7610	93		5		0--35
Benzo(a)pyrene	27	133	ug/Kg	4240	4110	97		48--119	4240	3950	93		4		0--35
Indeno(1,2,3-Cd)Pyrene	27	133	ug/Kg	2740	3080	112		40--130	2740	2960	108		4		0--35
Dibenzo(a,h)anthracene	27	133	ug/Kg	419	685	164		54--200	419	668	160		2		0--35
Benzo(g,h,i)perylene	27	133	ug/Kg	2800	2750	98		42--141	2800	2680	96		2		0--35

LD:WG130978-7 L59596-1 Matrix: FILTER SED Listtype:ORPAH-SIM Method:SW846 3550B*SW846 8270D SIM Project:423589-335-4 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Valu	LD Value	RPD	Qual	LabLimit
2-Methylnaphthalene	1.6	8	ug/Kg	<MDL	<MDL			0--35
Naphthalene	0.8	4	ug/Kg	1.1	1.1			0--35
Acenaphthylene	0.8	4	ug/Kg	0.89	1			0--35
Acenaphthene	0.8	4	ug/Kg	<MDL	<MDL			0--35
Fluorene	0.8	4	ug/Kg	1.3	1.4			0--35
Phenanthrene	0.8	4	ug/Kg	9.63	9.86	2		0--35
Anthracene	0.8	4	ug/Kg	2.8	2.9			0--35
Fluoranthene	0.8	4	ug/Kg	15	14.2	5		0--35
Pyrene	0.8	4	ug/Kg	14.8	14.2	4		0--35
Benzo(a)anthracene	0.8	4	ug/Kg	6.08	5.04	19		0--35
Chrysene	0.8	4	ug/Kg	11.2	10.7	5		0--35
Benzo(b,j,k)fluoranthene	0.8	4	ug/Kg	23.1	20.9	10		0--35
Benzo(a)pyrene	0.8	4	ug/Kg	15.2	12.9	16		0--35
Indeno(1,2,3-Cd)Pyrene	0.8	4	ug/Kg	7.32	9.18	23		0--35
Dibenzo(a,h)anthracene	0.8	4	ug/Kg	1.1	1.2			0--35
Benzo(g,h,i)perylene	0.8	4	ug/Kg	6.1	8.06	28		0--35

Surrogate:	2-Fluorobiphenyl	d14-Terphenyl
(Lab Limits)	33--96	63--125
L59457-1	82	101
L59472-1	68	96
L59472-3	66	96
L59596-1	66	90
L59596-2	73	101
WG130978-1	81	95
WG130978-2	83	91
WG130978-3	66	91
WG130978-4	64	93
WG130978-5	86	104
WG130978-6	83	102
WG130978-7	71	95

Workgroup: WG136065 (PAH-SIM BS#472) Run ID: R199698

MB:WG136065-1 Matrix: OTHR SOLID Listtype:ORPAH-SIM Method:SW846 3550B*SW846 8270D SIM Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
2-Methylnaphthalene	1.3	6.4	ug/Kg	<MDL	
Naphthalene	0.64	3.2	ug/Kg	<MDL	
Acenaphthylene	0.64	3.2	ug/Kg	<MDL	
Acenaphthene	0.64	3.2	ug/Kg	<MDL	
Fluorene	0.64	3.2	ug/Kg	<MDL	
Phenanthrene	0.64	3.2	ug/Kg	<MDL	
Anthracene	0.64	3.2	ug/Kg	<MDL	
Fluoranthene	0.64	3.2	ug/Kg	<MDL	
Pyrene	0.64	3.2	ug/Kg	<MDL	
Benzo(a)anthracene	0.64	3.2	ug/Kg	<MDL	
Chrysene	0.64	3.2	ug/Kg	<MDL	
Benzo(b,j,k)fluoranthene	0.64	3.2	ug/Kg	<MDL	
Benzo(a)pyrene	0.64	3.2	ug/Kg	<MDL	
Indeno(1,2,3-Cd)Pyrene	0.64	3.2	ug/Kg	<MDL	
Dibenzo(a,h)anthracene	0.64	3.2	ug/Kg	<MDL	
Benzo(g,h,i)perylene	0.64	3.2	ug/Kg	<MDL	

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SBD:WG136065-3 SB:WG136065-2 MB:WG136065-1 Matrix: OTHR SOLID Listtype:ORPAH-SIM Method:SW846 3550B*SW846 8270D SIM Project: Pkey:STD
(Spiked Blank Duplicate, Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	TrueValue	SB Value	% Rec.	Qual	LabLimit	TrueValue	SBD Valu	% Rec.	Qual	RPD	Qual	LabLimit
2-Methylnaphthalene	1.3	6.4	ug/Kg	<MDL	128	97.3	76		40--160	128	93.2	73		4		0--35
Naphthalene	0.64	3.2	ug/Kg	<MDL	128	97.6	76		15--93	128	93	73		5		0--35
Acenaphthylene	0.64	3.2	ug/Kg	<MDL	128	89.9	70		43--111	128	84.3	66		6		0--35
Acenaphthene	0.64	3.2	ug/Kg	<MDL	128	96.2	75		37--99	128	90.6	71		6		0--35
Fluorene	0.64	3.2	ug/Kg	<MDL	128	125	97		54--104	128	116	91		7		0--35
Phenanthrene	0.64	3.2	ug/Kg	<MDL	128	104	81		54--107	128	97.4	76		6		0--35
Anthracene	0.64	3.2	ug/Kg	<MDL	128	93.8	73		54--121	128	87.3	68		7		0--35
Fluoranthene	0.64	3.2	ug/Kg	<MDL	128	133	104		63--115	128	130	102		2		0--35
Pyrene	0.64	3.2	ug/Kg	<MDL	128	119	93		54--136	128	115	90		3		0--35
Benzo(a)anthracene	0.64	3.2	ug/Kg	<MDL	128	121	94		65--117	128	118	92		2		0--35
Chrysene	0.64	3.2	ug/Kg	<MDL	128	133	104		44--114	128	130	101		3		0--35
Benzo(b,j,k)fluoranthene	0.64	3.2	ug/Kg	<MDL	384	409	106		50--121	384	403	105		1		0--35
Benzo(a)pyrene	0.64	3.2	ug/Kg	<MDL	128	114	89		45--133	128	112	88		2		0--35
Indeno(1,2,3-Cd)Pyrene	0.64	3.2	ug/Kg	<MDL	128	134	105		33--152	128	132	103		1		0--35
Dibenzo(a,h)anthracene	0.64	3.2	ug/Kg	<MDL	128	134	105		34--140	128	132	103		2		0--35
Benzo(g,h,i)perylene	0.64	3.2	ug/Kg	<MDL	128	129	101		29--134	128	125	98		3		0--35

MS:WG136065-4 L61568-2 Matrix: FILTER SED Listtype:ORPAH-SIM Method:SW846 3550B*SW846 8270D SIM Project:423589-335-4 Pkey:STD
(Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Valu	TrueValue	MS Valu	% Rec.	Qual	LabLimit
2-Methylnaphthalene	32	160	ug/Kg	<MDL	320	294	92		40--160
Naphthalene	16	80	ug/Kg	<MDL	320	265	83		24--85
Acenaphthylene	16	80	ug/Kg	<MDL	320	299	93		51--103
Acenaphthene	16	80	ug/Kg	<MDL	320	273	85		44--94
Fluorene	16	80	ug/Kg	<MDL	320	315	98		54--113
Phenanthrene	16	80	ug/Kg	145	320	423	87		57--108
Anthracene	16	80	ug/Kg	20	320	271	79		50--119
Fluoranthene	16	80	ug/Kg	526	320	876	109		58--115
Pyrene	16	80	ug/Kg	487	320	808	100		51--142
Benzo(a)anthracene	16	80	ug/Kg	181	320	510	103		62--117
Chrysene	16	80	ug/Kg	413	320	726	98		39--115
Benzo(b,j,k)fluoranthene	16	80	ug/Kg	860	960	1920	110		45--120
Benzo(a)pyrene	16	80	ug/Kg	272	320	597	102		38--134
Indeno(1,2,3-Cd)Pyrene	16	80	ug/Kg	213	320	379	52		38--130
Dibenzo(a,h)anthracene	16	80	ug/Kg	41	320	219	56		25--138
Benzo(g,h,i)perylene	16	80	ug/Kg	202	320	343	44		25--122

LIMSView QC Report for Green River Filtered Solids for Data Validation - Part 2

SRMD:WG136065-6 SRM:WG136065-5 Matrix: SALTWTRSED Listtype:ORPAH-SIM Method:SW846 3550B*SW846 8270D SIM Project: Pkey:SED
(Std Reference Material Duplicate, Std Reference Material)

Parameter	MDL	RDL	Units	TrueValue	SRM Value	% Rec.	Qual	LabLimit	TrueValu	SRMD Value	% Rec.	Qual	RPD	Qual	LabLimit
Phenanthrene	27	133	ug/Kg	5200	4100	79		49--124	5200	4180	80		2		0--35
Fluoranthene	27	133	ug/Kg	8800	8160	93		56--137	8800	8250	94		1		0--35
Pyrene	27	133	ug/Kg	9570	8170	85		58--123	9570	8310	87		2		0--35
Benzo(a)anthracene	27	133	ug/Kg	4660	3820	82		48--127	4660	3930	84		3		0--35
Chrysene	27	133	ug/Kg	4800	5240	109		64--150	4800	5350	111		2		0--35
Benzo(b,j,k)fluoranthene	27	133	ug/Kg	8150	7810	96		50--126	8150	8000	98		2		0--35
Benzo(a)pyrene	27	133	ug/Kg	4240	3160	75		48--119	4240	3260	77		3		0--35
Indeno(1,2,3-Cd)Pyrene	27	133	ug/Kg	2740	2090	76		40--130	2740	2080	76		1		0--35
Dibenzo(a,h)anthracene	27	133	ug/Kg	419	519	124		54--200	419	515	123		1		0--35
Benzo(g,h,i)perylene	27	133	ug/Kg	2800	1810	65		42--141	2800	1760	63		3		0--35

Surrogate:	2-Fluorobiphenyl	d14-Terphenyl
(Lab Limits)	33--96	63--125
L61510-1	81	102
L61568-1	94	107
L61568-2	92	100
WG136065-1	75	102
WG136065-2	84	101
WG136065-3	78	101
WG136065-4	96	106
WG136065-5	91	106
WG136065-6	96	108

Workgroup: WG136856 (bs#473 pah-sim) Run ID: R200485

MB:WG136856-1 Matrix: OTHR SOLID Listtype:ORPAH-SIM Method:SW846 3550B*SW846 8270D SIM Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
2-Methylnaphthalene	3.2	16	ug/Kg	<MDL	
Naphthalene	1.6	8	ug/Kg	<MDL	
Acenaphthylene	1.6	8	ug/Kg	<MDL	
Acenaphthene	1.6	8	ug/Kg	<MDL	
Fluorene	1.6	8	ug/Kg	<MDL	
Phenanthrene	1.6	8	ug/Kg	<MDL	

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Anthracene	1.6	8	ug/Kg	<MDL
Fluoranthene	1.6	8	ug/Kg	<MDL
Pyrene	1.6	8	ug/Kg	<MDL
Benzo(a)anthracene	1.6	8	ug/Kg	<MDL
Chrysene	1.6	8	ug/Kg	<MDL
Benzo(b,j,k)fluoranthene	1.6	8	ug/Kg	<MDL
Benzo(a)pyrene	1.6	8	ug/Kg	<MDL
Indeno(1,2,3-Cd)Pyrene	1.6	8	ug/Kg	<MDL
Dibenzo(a,h)anthracene	1.6	8	ug/Kg	<MDL
Benzo(g,h,i)perylene	1.6	8	ug/Kg	<MDL

SBD:WG136856-3 SB:WG136856-2 MB:WG136856-1 Matrix: OTHR SOLID Listtype:ORPAH-SIM Method:SW846 3550B*SW846 8270D SIM Project: Pkey:STD
(Spiked Blank Duplicate, Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	TrueValue	SB Value	% Rec.	Qual	LabLimit	TrueValue	SBD Valu	% Rec.	Qual	RPD	Qual	LabLimit
2-Methylnaphthalene	3.2	16	ug/Kg	<MDL	320	254	80		40--160	320	270	84		6		0--35
Naphthalene	1.6	8	ug/Kg	<MDL	320	243	76		15--93	320	258	81		6		0--35
Acenaphthylene	1.6	8	ug/Kg	<MDL	320	234	73		43--111	320	242	76		3		0--35
Acenaphthene	1.6	8	ug/Kg	<MDL	320	244	76		37--99	320	258	80		5		0--35
Fluorene	1.6	8	ug/Kg	<MDL	320	257	80		54--104	320	268	84		4		0--35
Phenanthrene	1.6	8	ug/Kg	<MDL	320	264	82		54--107	320	269	84		2		0--35
Anthracene	1.6	8	ug/Kg	<MDL	320	223	70		54--121	320	228	71		2		0--35
Fluoranthene	1.6	8	ug/Kg	<MDL	320	311	97		63--115	320	317	99		2		0--35
Pyrene	1.6	8	ug/Kg	<MDL	320	275	86		54--136	320	283	88		3		0--35
Benzo(a)anthracene	1.6	8	ug/Kg	<MDL	320	285	89		65--117	320	292	91		3		0--35
Chrysene	1.6	8	ug/Kg	<MDL	320	302	94		44--114	320	305	95		1		0--35
Benzo(b,j,k)fluoranthene	1.6	8	ug/Kg	<MDL	960	937	98		50--121	960	953	99		2		0--35
Benzo(a)pyrene	1.6	8	ug/Kg	<MDL	320	267	83		45--133	320	272	85		2		0--35
Indeno(1,2,3-Cd)Pyrene	1.6	8	ug/Kg	<MDL	320	345	108		33--152	320	346	108		0		0--35
Dibenzo(a,h)anthracene	1.6	8	ug/Kg	<MDL	320	333	104		34--140	320	336	105		1		0--35
Benzo(g,h,i)perylene	1.6	8	ug/Kg	<MDL	320	341	106		29--134	320	344	107		1		0--35

MS:WG136856-4 L61838-1 Matrix: FILTER SED Listtype:ORPAH-SIM Method:SW846 3550B*SW846 8270D SIM Project:423589-335-4 Pkey:STD
(Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Valu	TrueValue	MS Valu	% Rec.	Qual	LabLimit
2-Methylnaphthalene	32	160	ug/Kg	<MDL	320	261	81		40--160
Naphthalene	16	80	ug/Kg	<MDL	320	234	73		24--85
Acenaphthylene	16	80	ug/Kg	<MDL	320	283	89		51--103
Acenaphthene	16	80	ug/Kg	<MDL	320	270	84		44--94
Fluorene	16	80	ug/Kg	<MDL	320	294	92		54--113
Phenanthrene	16	80	ug/Kg	131	320	393	82		57--108

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Anthracene	16	80	ug/Kg	18	320	280	82	50--119
Fluoranthene	16	80	ug/Kg	489	320	754	83	58--115
Pyrene	16	80	ug/Kg	423	320	659	74	51--142
Benzo(a)anthracene	16	80	ug/Kg	187	320	488	94	62--117
Chrysene	16	80	ug/Kg	375	320	634	81	39--115
Benzo(b,j,k)fluoranthene	16	80	ug/Kg	839	960	1670	87	45--120
Benzo(a)pyrene	16	80	ug/Kg	287	320	552	83	38--134
Indeno(1,2,3-Cd)Pyrene	16	80	ug/Kg	279	320	498	68	38--130
Dibenzo(a,h)anthracene	16	80	ug/Kg	54	320	272	68	25--138
Benzo(g,h,i)perylene	16	80	ug/Kg	281	320	467	58	25--122

SRMD:WG136856-6 SRM:WG136856-5 Matrix: SALTWTRSED Listtype:ORPAH-SIM Method:SW846 3550B*SW846 8270D SIM Project: Pkey:SED
(Std Reference Material Duplicate, Std Reference Material)

Parameter	MDL	RDL	Units	TrueValue	SRM Value	% Rec.	Qual	LabLimit	TrueValue	SRMD Value	% Rec.	Qual	RPD	Qual	LabLimit
Phenanthrene	27	133	ug/Kg	5200	4010	77		49--124	5200	4230	81		6		0--35
Fluoranthene	27	133	ug/Kg	8800	7820	89		56--137	8800	7940	90		2		0--35
Pyrene	27	133	ug/Kg	9570	7480	78		58--123	9570	7800	81		4		0--35
Benzo(a)anthracene	27	133	ug/Kg	4660	3580	77		48--127	4660	3770	81		5		0--35
Chrysene	27	133	ug/Kg	4800	4900	102		64--150	4800	5150	107		5		0--35
Benzo(b,j,k)fluoranthene	27	133	ug/Kg	8150	6990	86		50--126	8150	7440	91		6		0--35
Benzo(a)pyrene	27	133	ug/Kg	4240	3020	71		48--119	4240	3240	76		7		0--35
Indeno(1,2,3-Cd)Pyrene	27	133	ug/Kg	2740	2380	87		40--130	2740	2310	84		3		0--35
Dibenzo(a,h)anthracene	27	133	ug/Kg	419	591	141		54--200	419	611	146		3		0--35
Benzo(g,h,i)perylene	27	133	ug/Kg	2800	2140	76		42--141	2800	2150	77		1		0--35

Surrogate:	2-Fluorobiphenyl	d14-Terphenyl
(Lab Limits)	33--96	63--125
L61838-1	99 *	113
WG136856-1	95	112
WG136856-2	90	108
WG136856-3	95	111
WG136856-4	96	111
WG136856-5	98 *	110
WG136856-6	100 *	113

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4xRule indicates no MS/MSD recovery was calculated due to the 4x rule.

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Workgroup: WG138494 (PSD-SC for LDW Greern Rvr, SS) Run ID: R202651
No QC sample found for this workgroup

Workgroup: WG138495 (PSD-LD for LDW Green Rvr, SS) Run ID: R202650
No QC sample found for this workgroup

Workgroup: WG138651 (Subcon TOTS for LDW Green River) Run ID: R202657
No QC sample found for this workgroup

Workgroup: WG140385 (TOTS - S%) Run ID: R204808

MB:WG140385-1 Matrix: OTHR SOLID Listtype:CVTOTS Method:SM2540-G Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Total Solids	0.005	0.01	%	<MDL	

LD:WG140385-2 L63079-2 Matrix: SLUDGE Listtype:CVTOTS Method:SM2540-G Project:421430-300 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
Total Solids	0.005	0.01	%	14.3	14.1	2		0--20

LD:WG140385-3 L63182-5 Matrix: SLUDGE Listtype:CVTOTS Method:SM2540-G Project:421298A Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
Total Solids	0.005	0.01	%	19.2	18.9	2		0--20

LT:WG140385-5 LD:WG140385-4 L63181-1 Matrix: FILTER SED Listtype:CVTOTS Method:SM2540-G Project:423589-335-4 Pkey:STD
(Lab Triplicate, Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	LT Value	RSD	Qual	LabLimit
Total Solids	0.005	0.01	%	32.8	32.2	34.4	3		0--20

LT:WG140385-7 LD:WG140385-6 L63185-2 Matrix: FRSHWTRSED Listtype:CVTOTS Method:SM2540-G Project:421520-500 Pkey:SED
(Lab Triplicate, Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	LT Value	RSD	Qual	LabLimit
Total Solids	0.005	0.01	%	23.9	24.4	24.6	1		0--20

Workgroup: WG140773 (PSD-SC for LDW Green River - SS) Run ID: R205356

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No QC sample found for this workgroup

Workgroup: WG140774 (PSD-LD for LDW Green River - SS) Run ID: R205357
No QC sample found for this workgroup

Workgroup: WG142935 (TOTS) Run ID: R207835

MB:WG142935-1 Matrix: OTHR SOLID Listtype:CVTOTS Method:SM2540-G Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Total Solids	0.005	0.01	%	<MDL	

LD:WG142935-2 L64107-1 Matrix: FILTER SED Listtype:CVTOTS Method:SM2540-G Project:423589-335-4 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
Total Solids	0.005	0.01	%	30.6	30.5	0		0--20

Workgroup: WG143132 (TOTS) Run ID: R208155

MB:WG143132-1 Matrix: OTHR SOLID Listtype:CVTOTS Method:SM2540-G Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Total Solids	0.005	0.01	%	<MDL	

LD:WG143132-2 L64166-8 Matrix: SLUDGE Listtype:CVTOTS Method:SM2540-G Project:421186B Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
Total Solids	0.005	0.01	%	22.1	22	0		0--20

LD:WG143132-3 L64173-6 Matrix: IN-LINESED Listtype:CVTOTS Method:SM2540-G Project:421168 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
Total Solids	0.005	0.01	%	74.7	77.3	3		0--20

LD:WG143132-4 L64265-1 Matrix: FILTER SED Listtype:CVTOTS Method:SM2540-G Project:423589-335-4 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
Total Solids	0.005	0.01	%	63.3	61.6	3		0--20

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Workgroup: WG143238 (TOTS) Run ID: R208240

MB:WG143238-1 Matrix: SOLIDBLANK Listtype:CVTOTS Method:SM2540-G Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Total Solids	0.005	0.01	%	<MDL	

LD:WG143238-2 L63466-1 Matrix: TRAP SED Listtype:CVTOTS Method:SM2540-G Project:423589-335-4 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
Total Solids	0.005	0.01	%	49.2	48.6	1		0--20

LD:WG143238-3 L63858-1 Matrix: FILTER SED Listtype:CVTOTS Method:SM2540-G Project:423589-335-4 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
Total Solids	0.005	0.01	%	26.6	27.1	2		0--20

LD:WG143238-4 L64173-8 Matrix: IN-LINESED Listtype:CVTOTS Method:SM2540-G Project:421168 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
Total Solids	0.005	0.01	%	71.3	72.5	2		0--20

Workgroup: WG143794 (PSD-SC for LDW Green River - SS) Run ID: R209068

LD:WG143794-1 L64265-1 Matrix: FILTER SED Listtype:CVPSD-SC Method:ASTM D422/D3977-97 Project:423589-335-4 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
500 Micron (equal to/mo	0.005	0.01	%	0.848	0.807	5		0--25

Workgroup: WG143795 (PSD-LD for LDW Green River - SS) Run ID: R209067

LD:WG143795-1 L64265-1 Matrix: FILTER SED Listtype:CVPSD-LD Method:ISO 13320:2009(E) Project:423589-335-4 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
Sand<1000	0.01	0.01	% Volume	47.3	48.05	2		0--25
Silt	0.01	0.01	% Volume	44.42	44.48	0		0--25
Clay	0.01	0.01	% Volume	4.81	4.85	1		0--25

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Workgroup: WG140378 (15-JUL-15 LDW) Run ID: R204805

MB:WG140378-1 Matrix: SOLIDBLANK Listtype:MTHG-MIDS Method:SW846 7471B Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Mercury, Total, CVAA	0.0048	0.0476	mg/Kg	<MDL	

SB:WG140378-2 MB:WG140378-1 Matrix: SOLIDBLANK Listtype:MTHG-MIDS Method:SW846 7471B Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	TrueValue	SB Value	% Rec.	Qual	LabLimit
Mercury, Total, CVAA	0.0048	0.0476	mg/Kg	<MDL	0.0952	0.0977	103		85--115

LD:WG140378-3 L63181-1 Matrix: FILTER SED Listtype:MTHG-MIDS Method:SW846 7471B Project:423589-335-4 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
Mercury, Total, CVAA	0.0051	0.0507	mg/Kg	0.036	0.042			0--20

MSD:WG140378-5 MS:WG140378-4 L63181-1 Matrix: FILTER SED Listtype:MTHG-MIDS Method:SW846 7471B Project:423589-335-4 Pkey:STD
(Matrix Spike Duplicate, Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	TrueValue	MS Value	% Rec.	Qual	LabLimit	TrueValue	MSD Value	% Rec.	Qual	RPD	Qual	LabLimit
Mercury, Total, CVAA	0.005	0.0504	mg/Kg	0.036	0.101	0.137	100		75--125	0.1	0.137	101		0		0--20

LCSD:WG140378-7 LCS:WG140378-6 Matrix: SOIL Listtype:MTHG-MIDS Method:SW846 7471B Project: Pkey:STD
(Lab Control Sample Duplicate, Lab Control Sample)

Parameter	MDL	RDL	Units	TrueValue	LCS Value	% Rec.	Qual	LabLimit	TrueValue	LCSD Value	% Rec.	Qual	RPD	Qual	LabLimit
Mercury, Total, CVAA	0.13	1.27	mg/Kg	9.03	10	111		71--129	9.03	9.39	104		6		0--20

Workgroup: WG141123 (8/19/15 FILTERED SED) Run ID: R205627

MB:WG141123-1 Matrix: SOLIDBLANK Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Vanadium, Total, ICP-MS	0.018	0.0893	mg/Kg	<MDL	
Chromium, Total, ICP-MS	0.048	0.238	mg/Kg	<MDL	
Nickel, Total, ICP-MS	0.024	0.119	mg/Kg	<MDL	
Copper, Total, ICP-MS	0.048	0.476	mg/Kg	<MDL	
Zinc, Total, ICP-MS	0.12	0.595	mg/Kg	<MDL	
Arsenic, Total, ICP-MS	0.024	0.119	mg/Kg	<MDL	

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Silver, Total, ICP-MS	0.0095	0.0476	mg/Kg	<MDL
Cadmium, Total, ICP-MS	0.012	0.0595	mg/Kg	<MDL
Lead, Total, ICP-MS	0.024	0.119	mg/Kg	<MDL

SB:WG141123-2 MB:WG141123-1 Matrix: SOLIDBLANK Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	TrueValue	SB Value	% Rec.	Qual	LabLimit
Vanadium, Total, ICP-MS	0.018	0.0893	mg/Kg	<MDL	4.76	4.81	101		85--115
Chromium, Total, ICP-MS	0.048	0.238	mg/Kg	<MDL	4.76	4.85	102		85--115
Nickel, Total, ICP-MS	0.024	0.119	mg/Kg	<MDL	4.76	4.85	102		85--115
Copper, Total, ICP-MS	0.048	0.476	mg/Kg	<MDL	4.76	4.79	101		85--115
Zinc, Total, ICP-MS	0.12	0.595	mg/Kg	<MDL	4.76	4.87	102		85--115
Arsenic, Total, ICP-MS	0.024	0.119	mg/Kg	<MDL	4.76	4.63	97		85--115
Silver, Total, ICP-MS	0.0095	0.0476	mg/Kg	<MDL	4.76	4.99	105		85--115
Cadmium, Total, ICP-MS	0.012	0.0595	mg/Kg	<MDL	4.76	4.85	102		85--115
Lead, Total, ICP-MS	0.024	0.119	mg/Kg	<MDL	4.76	4.97	104		85--115

LCSD:WG141123-4 LCS:WG141123-3 Matrix: SOIL Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project: Pkey:STD
(Lab Control Sample Duplicate, Lab Control Sample)

Parameter	MDL	RDL	Units	TrueValue	LCS Value	% Rec.	Qual	LabLimit	TrueVal	LCSD Value	% Rec.	Qual	RPD	Qual	LabLimit
Vanadium, Total, ICP-MS	0.076	0.378	mg/Kg	73	67.3	92		76--124	73	67.8	93		1		0--20
Chromium, Total, ICP-MS	0.2	1.01	mg/Kg	164	159	97		79--121	164	162	99		2		0--20
Nickel, Total, ICP-MS	0.1	0.504	mg/Kg	89.3	93.9	105		80--120	89.3	97.2	109		4		0--20
Copper, Total, ICP-MS	0.2	2.02	mg/Kg	128	120	93		80--120	128	124	97		3		0--20
Zinc, Total, ICP-MS	0.5	2.52	mg/Kg	168	159	95		80--120	168	168	100		6		0--20
Arsenic, Total, ICP-MS	0.1	0.504	mg/Kg	113	100	89		78--123	113	101	89		1		0--20
Silver, Total, ICP-MS	0.04	0.202	mg/Kg	52.6	55.2	105		74--126	52.6	55.1	105		0		0--20
Cadmium, Total, ICP-MS	0.05	0.252	mg/Kg	67.5	69.7	103		80--120	67.5	71	105		2		0--20
Lead, Total, ICP-MS	0.1	0.504	mg/Kg	90.1	95.5	106		80--120	90.1	101	112		6		0--20

LCS:WG141123-5 Matrix: FRSHWTRSED Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project: Pkey:SED
(Lab Control Sample)

Parameter	MDL	RDL	Units	TrueValue	LCS Value	% Rec.	Qual	LabLimit
Vanadium, Total, ICP-MS	0.077	0.383	mg/Kg	94.6	23.6	25		10--44
Chromium, Total, ICP-MS	0.2	1.02	mg/Kg	121.9	72.8	60		40--80
Nickel, Total, ICP-MS	0.1	0.51	mg/Kg	42.9	41.4	96		70--105
Zinc, Total, ICP-MS	0.51	2.55	mg/Kg	408	361	88		69--109
Arsenic, Total, ICP-MS	0.1	0.51	mg/Kg	17	13.4	79		66--141
Cadmium, Total, ICP-MS	0.051	0.255	mg/Kg	2.94	3.17	108		83--123
Lead, Total, ICP-MS	0.1	0.51	mg/Kg	150	161	107		71--111

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LD:WG141123-6 L63181-1 Matrix: FILTER SED Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project:423589-335-4 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
Vanadium, Total, ICP-MS	0.019	0.097	mg/Kg	22.5	22.5	0		0--20
Chromium, Total, ICP-MS	0.052	0.259	mg/Kg	9.1	9.25	2		0--20
Nickel, Total, ICP-MS	0.026	0.129	mg/Kg	8.52	8.27	3		0--20
Copper, Total, ICP-MS	0.052	0.518	mg/Kg	11.9	11.9	0		0--20
Zinc, Total, ICP-MS	0.13	0.647	mg/Kg	47.5	47.8	1		0--20
Arsenic, Total, ICP-MS	0.026	0.129	mg/Kg	12.1	12.2	1		0--20
Silver, Total, ICP-MS	0.01	0.0518	mg/Kg	0.048	0.045			0--20
Cadmium, Total, ICP-MS	0.013	0.0647	mg/Kg	0.16	0.161	1		0--20
Lead, Total, ICP-MS	0.026	0.129	mg/Kg	5.8	5.77	1		0--20

MS:WG141123-7 L63181-1 Matrix: FILTER SED Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project:423589-335-4 Pkey:STD
(Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	TrueValue	MS Value	% Rec.	Qual	LabLimit
Vanadium, Total, ICP-MS	0.019	0.097	mg/Kg	22.5	5.13	26.4		4xRule	75--125
Chromium, Total, ICP-MS	0.052	0.259	mg/Kg	9.1	5.13	13.4	83		75--125
Nickel, Total, ICP-MS	0.026	0.129	mg/Kg	8.52	5.13	13.1	89		75--125
Copper, Total, ICP-MS	0.052	0.518	mg/Kg	11.9	5.13	15.7	75		75--125
Zinc, Total, ICP-MS	0.13	0.647	mg/Kg	47.5	5.13	51.3		4xRule	75--125
Arsenic, Total, ICP-MS	0.026	0.129	mg/Kg	12.1	5.13	16.3	81		75--125
Silver, Total, ICP-MS	0.01	0.0518	mg/Kg	0.048	5.13	4.81	93		75--125
Cadmium, Total, ICP-MS	0.013	0.0647	mg/Kg	0.16	5.13	5.17	98		75--125
Lead, Total, ICP-MS	0.026	0.129	mg/Kg	5.8	5.13	10.8	98		75--125

Workgroup: WG142927 (20-NOV-15 LDW GREEN) Run ID: R208010

MB:WG142927-1 Matrix: SOLIDBLANK Listtype:MTHG-MIDS Method:SW846 7471B Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Mercury, Total, CVAA	0.0048	0.0476	mg/Kg	<MDL	

SB:WG142927-2 MB:WG142927-1 Matrix: SOLIDBLANK Listtype:MTHG-MIDS Method:SW846 7471B Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	TrueValue	SB Value	% Rec.	Qual	LabLimit
Mercury, Total, CVAA	0.0048	0.0476	mg/Kg	<MDL	0.0952	0.0967	102		85--115

LD:WG142927-3 L64265-1 Matrix: FILTER SED Listtype:MTHG-MIDS Method:SW846 7471B Project:423589-335-4 Pkey:STD
(Lab Duplicate)

LIMSView QC Report for Green River Filtered Solids for Data Validation - Part 3

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
Mercury, Total, CVAA	0.0048	0.0477	mg/Kg	0.0844	0.064	28	*	0--20

MSD:WG142927-5 MS:WG142927-4 L64265-1 Matrix: FILTER SED Listtype:MTHG-MIDS Method:SW846 7471B Project:423589-335-4 Pkey:STD
(Matrix Spike Duplicate, Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	TrueValue	MS Value	% Rec.	Qual	LabLimit	TrueValue	MSD Value	% Rec.	Qual	RPD	Qual	LabLimit
Mercury, Total, CVAA	0.0051	0.0508	mg/Kg	0.0844	0.102	0.186	100		75--125	0.101	0.17	84		9		0--20

LCSD:WG142927-7 LCS:WG142927-6 Matrix: SOIL Listtype:MTHG-MIDS Method:SW846 7471B Project: Pkey:STD
(Lab Control Sample Duplicate, Lab Control Sample)

Parameter	MDL	RDL	Units	TrueValue	LCS Value	% Rec.	Qual	LabLimit	TrueValue	LCSD Value	% Rec.	Qual	RPD	Qual	LabLimit
Mercury, Total, CVAA	0.25	2.46	mg/Kg	8.22	8.6	105		73--130	8.22	8.77	107		2		0--20

Workgroup: WG143629 (12/18/15 LDW Ballard CSO) Run ID: R208923

MB:WG143629-1 Matrix: SOLIDBLANK Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
Vanadium, Total, ICP-MS	0.018	0.0893	mg/Kg	<MDL	
Chromium, Total, ICP-MS	0.048	0.238	mg/Kg	<MDL	
Nickel, Total, ICP-MS	0.024	0.119	mg/Kg	<MDL	
Copper, Total, ICP-MS	0.048	0.476	mg/Kg	<MDL	
Zinc, Total, ICP-MS	0.12	0.595	mg/Kg	<MDL	
Arsenic, Total, ICP-MS	0.024	0.119	mg/Kg	<MDL	
Silver, Total, ICP-MS	0.0095	0.0476	mg/Kg	<MDL	
Cadmium, Total, ICP-MS	0.012	0.0595	mg/Kg	<MDL	
Lead, Total, ICP-MS	0.024	0.119	mg/Kg	<MDL	

SB:WG143629-2 MB:WG143629-1 Matrix: SOLIDBLANK Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project: Pkey:STD
(Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	TrueValue	SB Value	% Rec.	Qual	LabLimit
Vanadium, Total, ICP-MS	0.018	0.0893	mg/Kg	<MDL	4.76	4.97	104		85--115
Chromium, Total, ICP-MS	0.048	0.238	mg/Kg	<MDL	4.76	5.05	106		85--115
Nickel, Total, ICP-MS	0.024	0.119	mg/Kg	<MDL	4.76	5.19	109		85--115
Copper, Total, ICP-MS	0.048	0.476	mg/Kg	<MDL	4.76	5.29	111		85--115
Zinc, Total, ICP-MS	0.12	0.595	mg/Kg	<MDL	4.76	5.08	107		85--115
Arsenic, Total, ICP-MS	0.024	0.119	mg/Kg	<MDL	4.76	5.1	107		85--115
Silver, Total, ICP-MS	0.0095	0.0476	mg/Kg	<MDL	4.76	5.24	110		85--115
Cadmium, Total, ICP-MS	0.012	0.0595	mg/Kg	<MDL	4.76	4.82	101		85--115
Lead, Total, ICP-MS	0.024	0.119	mg/Kg	<MDL	4.76	5.04	106		85--115

LIMSView QC Report for Green River Filtered Solids for Data Validation - Part 3

LD:WG143629-3 L64265-1 Matrix: FILTER SED Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project:423589-335-4 Pkey:STD
(Lab Duplicate)

Parameter	MDL	RDL	Units	SAMP Value	LD Value	RPD	Qual	LabLimit
Vanadium, Total, ICP-MS	0.093	0.465	mg/Kg	36.5	37	1		0--20
Chromium, Total, ICP-MS	0.25	1.24	mg/Kg	15.6	15.8	1		0--20
Nickel, Total, ICP-MS	0.12	0.621	mg/Kg	14.4	14.7	2		0--20
Copper, Total, ICP-MS	0.25	2.48	mg/Kg	20.1	19.7	2		0--20
Zinc, Total, ICP-MS	0.12	0.621	mg/Kg	50.3	50.9	1		0--20
Arsenic, Total, ICP-MS	0.025	0.124	mg/Kg	6.27	6.1	3		0--20
Silver, Total, ICP-MS	0.0099	0.0497	mg/Kg	0.0606	0.0599	1		0--20
Cadmium, Total, ICP-MS	0.012	0.0621	mg/Kg	0.128	0.122	5		0--20
Lead, Total, ICP-MS	0.025	0.124	mg/Kg	5.88	5.62	5		0--20

MS:WG143629-4 L64265-1 Matrix: FILTER SED Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project:423589-335-4 Pkey:STD
(Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	TrueValue	MS Value	% Rec.	Qual	LabLimit
Vanadium, Total, ICP-MS	0.093	0.465	mg/Kg	36.5	4.97	41.6		4xRule	75--125
Chromium, Total, ICP-MS	0.25	1.24	mg/Kg	15.6	4.97	20.3	94		75--125
Nickel, Total, ICP-MS	0.12	0.621	mg/Kg	14.4	4.97	18.8	89		75--125
Copper, Total, ICP-MS	0.25	2.48	mg/Kg	20.1	4.97	23.7		4xRule	75--125
Zinc, Total, ICP-MS	0.12	0.621	mg/Kg	50.3	4.97	55.4		4xRule	75--125
Arsenic, Total, ICP-MS	0.025	0.124	mg/Kg	6.27	4.97	10.8	91		75--125
Silver, Total, ICP-MS	0.0099	0.0497	mg/Kg	0.0606	4.97	4.37	87		75--125
Cadmium, Total, ICP-MS	0.012	0.0621	mg/Kg	0.128	4.97	4.87	96		75--125
Lead, Total, ICP-MS	0.025	0.124	mg/Kg	5.88	4.97	11.2	106		75--125

LCS:WG143629-5 Matrix: FRSHWTRSED Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project: Pkey:SED
(Lab Control Sample)

Parameter	MDL	RDL	Units	TrueValue	LCS Value	% Rec.	Qual	LabLimit
Vanadium, Total, ICP-MS	0.074	0.372	mg/Kg	94.6	23	24		10--44
Chromium, Total, ICP-MS	0.2	0.992	mg/Kg	121.9	68	56		40--80
Nickel, Total, ICP-MS	0.099	0.496	mg/Kg	42.9	35.2	82		70--105
Zinc, Total, ICP-MS	0.5	2.48	mg/Kg	408	440	108		69--109
Arsenic, Total, ICP-MS	0.099	0.496	mg/Kg	17	16.3	96		66--141
Cadmium, Total, ICP-MS	0.05	0.248	mg/Kg	2.94	3.09	105		83--123
Lead, Total, ICP-MS	0.099	0.496	mg/Kg	150	148	99		71--111

LCSD:WG143629-7 LCS:WG143629-6 Matrix: SOIL Listtype:MTICPMS-SED Method:SW846 3050B(MODSB)*SW846 6020A Project: Pkey:STD
(Lab Control Sample Duplicate, Lab Control Sample)

Parameter	MDL	RDL	Units	TrueValue	LCS Value	% Rec.	Qual	LabLimit	TrueVal	LCSD Value	% Rec.	Qual	RPD	Qual	LabLimit

Vanadium, Total, ICP-MS	0.075	0.374	mg/Kg	73	66.4	91	76--124	73	64.6	88	3	0--20
Chromium, Total, ICP-MS	0.2	0.996	mg/Kg	164	156	95	79--121	164	149	91	5	0--20
Nickel, Total, ICP-MS	0.1	0.498	mg/Kg	89.3	86.9	97	80--120	89.3	82.9	93	5	0--20
Copper, Total, ICP-MS	0.2	1.99	mg/Kg	128	134	105	80--120	128	119	93	12	0--20
Zinc, Total, ICP-MS	0.5	2.49	mg/Kg	168	184	110	80--120	168	180	107	2	0--20
Arsenic, Total, ICP-MS	0.1	0.498	mg/Kg	113	121	107	78--123	113	118	105	3	0--20
Silver, Total, ICP-MS	0.04	0.199	mg/Kg	52.6	57	108	74--126	52.6	56.4	107	1	0--20
Cadmium, Total, ICP-MS	0.05	0.249	mg/Kg	67.5	70	104	80--120	67.5	67.4	100	4	0--20
Lead, Total, ICP-MS	0.1	0.498	mg/Kg	90.1	95.7	106	80--120	90.1	91.4	101	5	0--20

Workgroup: WG143259 (PAH-SIM bs#502) Run ID: R208364

MB:WG143259-1 Matrix: OTHR SOLID Listtype:ORPAH-SIM Method:SW846 3550B*SW846 8270D SIM Project: Pkey:STD
(Method Blank)

Parameter	MDL	RDL	Units	MB Value	Qual
2-Methylnaphthalene	2	10	ug/Kg	<MDL	
Naphthalene	1	5	ug/Kg	<MDL	
Acenaphthylene	1	5	ug/Kg	<MDL	
Acenaphthene	1	5	ug/Kg	<MDL	
Fluorene	1	5	ug/Kg	<MDL	
Phenanthrene	1	5	ug/Kg	<MDL	
Anthracene	1	5	ug/Kg	<MDL	
Fluoranthene	1	5	ug/Kg	<MDL	
Pyrene	1	5	ug/Kg	<MDL	
Benzo(a)anthracene	1	5	ug/Kg	<MDL	
Chrysene	1	5	ug/Kg	<MDL	
Benzo(b,j,k)fluoranthene	1	5	ug/Kg	<MDL	
Benzo(a)pyrene	1	5	ug/Kg	<MDL	
Indeno(1,2,3-Cd)Pyrene	1	5	ug/Kg	<MDL	
Dibenzo(a,h)anthracene	1	5	ug/Kg	<MDL	
Benzo(g,h,i)perylene	1	5	ug/Kg	<MDL	

SBD:WG143259-3 SB:WG143259-2 MB:WG143259-1 Matrix: OTHR SOLID Listtype:ORPAH-SIM Method:SW846 3550B*SW846 8270D SIM Project: Pkey:STD
(Spiked Blank Duplicate, Spike Blank, Method Blank)

Parameter	MDL	RDL	Units	MB Value	TrueValue	SB Value	% Rec.	Qual	LabLimit	TrueValue	SBD Value	% Rec.	Qual	RPD	Qual	LabLimit
2-Methylnaphthalene	2	10	ug/Kg	<MDL	250	114	46		40--160	250	97.7	39	*	16		0--35
Naphthalene	1	5	ug/Kg	<MDL	250	108	43		15--93	250	89.7	36		19		0--35
Acenaphthylene	1	5	ug/Kg	<MDL	250	95.4	38	*	43--111	250	87	35	*	9		0--35
Acenaphthene	1	5	ug/Kg	<MDL	250	97.6	39		37--99	250	90.8	36	*	7		0--35
Fluorene	1	5	ug/Kg	<MDL	250	107	43	*	54--104	250	103	41	*	4		0--35

Phenanthrene	1	5	ug/Kg	<MDL	250	119	48 *	54--107	250	121	48 *	2	0--35
Anthracene	1	5	ug/Kg	<MDL	250	101	40 *	54--121	250	102	41 *	1	0--35
Fluoranthene	1	5	ug/Kg	<MDL	250	207	83	63--115	250	219	88	6	0--35
Pyrene	1	5	ug/Kg	<MDL	250	168	67	54--136	250	178	71	6	0--35
Benzo(a)anthracene	1	5	ug/Kg	<MDL	250	184	74	65--117	250	199	80	8	0--35
Chrysene	1	5	ug/Kg	<MDL	250	193	77	44--114	250	208	83	8	0--35
Benzo(b,j,k)fluoranthene	1	5	ug/Kg	<MDL	750	534	71	50--121	750	574	76	7	0--35
Benzo(a)pyrene	1	5	ug/Kg	<MDL	250	170	68	45--133	250	181	73	6	0--35
Indeno(1,2,3-Cd)Pyrene	1	5	ug/Kg	<MDL	250	195	78	33--152	250	210	84	7	0--35
Dibenzo(a,h)anthracene	1	5	ug/Kg	<MDL	250	194	77	34--140	250	208	83	7	0--35
Benzo(g,h,i)perylene	1	5	ug/Kg	<MDL	250	153	61	29--134	250	167	67	9	0--35

MS:WG143259-4 L63181-1 Matrix: FILTER SED Listtype:ORPAH-SIM Method:SW846 3550B*SW846 8270D SIM Project:423589-335-4 Pkey:STD
(Matrix Spike)

Parameter	MDL	RDL	Units	SAMP Value	TrueValue	MS Value	% Rec.	Qual	LabLimit
2-Methylnaphthalene	2	10	ug/Kg	<MDL	250	92.2	37	*	40--160
Naphthalene	1	5	ug/Kg	<MDL	250	70.8	28		24--85
Acenaphthylene	1	5	ug/Kg	<MDL	250	113	45	*	51--103
Acenaphthene	1	5	ug/Kg	<MDL	250	115	46		44--94
Fluorene	1	5	ug/Kg	<MDL	250	155	62		54--113
Phenanthrene	1	5	ug/Kg	6.27	250	180	70		57--108
Anthracene	1	5	ug/Kg	1.1	250	159	63		50--119
Fluoranthene	1	5	ug/Kg	19.3	250	249	92		58--115
Pyrene	1	5	ug/Kg	14.1	250	207	77		51--142
Benzo(a)anthracene	1	5	ug/Kg	6.09	250	211	82		62--117
Chrysene	1	5	ug/Kg	12.6	250	221	83		39--115
Benzo(b,j,k)fluoranthene	1	5	ug/Kg	22.1	750	602	77		45--120
Benzo(a)pyrene	1	5	ug/Kg	6.04	250	203	79		38--134
Indeno(1,2,3-Cd)Pyrene	1	5	ug/Kg	5.41	250	134	52		38--130
Dibenzo(a,h)anthracene	1	5	ug/Kg	<MDL	250	135	54		25--138
Benzo(g,h,i)perylene	1	5	ug/Kg	4.8	250	88.5	33		25--122

SRMD:WG143259-6 SRM:WG143259-5 Matrix: OTHR SOLID Listtype:ORPAH-SIM Method:SW846 3550B*SW846 8270D SIM Project: Pkey:STD
(Std Reference Material Duplicate, Std Reference Material)

Parameter	MDL	RDL	Units	TrueValue	SRM Value	% Rec.	Qual	LabLimit	TrueValu	SRMD Valu	% Rec.	Qual	RPD	Qual	LabLimit
Phenanthrene	17	83.3	ug/Kg	5200	3030	58		49--124	5200	2820	54		7		0--35
Fluoranthene	17	83.3	ug/Kg	8800	6450	73		56--137	8800	6000	68		7		0--35
Pyrene	17	83.3	ug/Kg	9570	5510	58		58--123	9570	5120	53	*	7		0--35
Benzo(a)anthracene	17	83.3	ug/Kg	4660	2820	61		48--127	4660	2660	57		6		0--35
Chrysene	17	83.3	ug/Kg	4800	4010	84		64--150	4800	3700	77		8		0--35
Benzo(b,j,k)fluoranthene	17	83.3	ug/Kg	8150	5020	62		50--126	8150	4770	59		5		0--35

LIMSView QC Report for Green River Filtered Solids for Data Validation - Part 3

Benzo(a)pyrene	17	83.3	ug/Kg	4240	2300	54	48--119	4240	2250	53	3	0--35
Indeno(1,2,3-Cd)Pyrene	17	83.3	ug/Kg	2740	1600	58	40--130	2740	1550	57	3	0--35
Dibenzo(a,h)anthracene	17	83.3	ug/Kg	419	346	83	54--200	419	345	82	1	0--35
Benzo(g,h,i)perylene	17	83.3	ug/Kg	2800	1150	41 *	42--141	2800	1110	40 *	4	0--35

Surrogate:	2-Fluorobiphenyl	d14-Terphenyl
(Lab Limits)	33--96	63--125
L63181-1	42	92
L64107-1	71	111
L64265-1	63	92
WG143259-1	58	89
WG143259-2	47	85
WG143259-3	41	90
WG143259-4	44	93
WG143259-5	75	93
WG143259-6	64	84

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4xRule indicates no MS/MSD recovery was calculated due to the 4x rule.

Part 2

Data Validation Memos for PCB and Dioxin/Furan Congener Data

There are five Laboratory Data Consultants, Inc. data validation reports associated with the Suspended solids samples. Of these five reports, three have undergone revisions (both original and revisions are included in this appendix). The data report numbers are listed below:

- 31697 (original, revisions 1 and 2)
- 31372
- 32012
- 34238 (original, revisions 1, 2 and 3)
- 35802 (original and revision 1)

LABORATORY DATA CONSULTANTS, INC.
2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

King County Environmental Laboratory
322 W. Ewing Street
Seattle WA 98119
ATTN: Mr. Fritz Grothkopp

May 13, 2014

SUBJECT: Lower Duwamish Waterway, Green River Study, Suspended Solids Data Validation

Dear Mr. Grothkopp,

Enclosed is the final validation report for the fractions listed below. These SDGs were received on April 22, 2014. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project # 31697:

SDG #	Fraction
DPWG47044, DPWG47054 DPWG47061, DPWG47066	Dioxins/Dibenzofurans, Polychlorinated Biphenyls as Congeners

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

- Green River Study, Suspended Solids Characterization Sampling and Analysis Plan, January 2013
- EPA Region 10 SOP for the Validation of Polychlorinated Dibenzodioxin, PCDD, and Polychlorinated Dibenzofuran, PCDF, Data, Revision 2.0, January 31, 1996
- EPA Region 10 SOP for the Validation of Polychlorinated Biphenyl, PCB Data, Revision 1.0, December 8, 1995

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

Sincerely,

E Rauto for

Stella S. Cuenco
Operations Manager/Senior Chemist

0 Pages CD EDD RTC CD

Attachment 1

III LDC #31697 (King County - Seattle WA / Lower Duwamish Waterway, Green River Study Suspended Solids) Project

LDC	SDG#	DATE REC'D	(3) DATE DUE	PCB Cong (1668)		Dioxins (1613B)																													
Matrix:	Water/Sediment			W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	DPWG47044	04/22/14	05/13/14	0	4	-	-																												
B	DPWG47054	04/22/14	05/13/14	0	13	-	-																												
C	DPWG47061	04/22/14	05/13/14	-	-	0	16																												
D	DPWG47066	04/22/14	05/13/14	0	12	-	-																												
Total	A/SC			0	29	0	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	45

Shaded cells indicate Level IV validation (all other cells are Level II validation). These sample counts do not include MS/MSD, and DUPs

LDC Report# 31697A31

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name:	Lower Duwamish Waterway, Green River Study, Suspended Solids
Collection Date:	February 11 through February 18, 2014
LDC Report Date:	May 9, 2014
Matrix:	Sediment
Parameters:	Polychlorinated Biphenyls as Congeners
Validation Level:	EPA Level III
Laboratory:	AXYS Analytical Services, Ltd.
Sample Delivery Group (SDG):	DPWG47044

Sample Identification

L59723-1
L59723-2
L59723-3
L59723-4

Introduction

This data review covers 4 sediment samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 1668A for Polychlorinated Biphenyls as Congeners.

This review follows the Green River Study, Suspended Solids Characterization Sampling and Analysis Plan (January 2013) and EPA Region 10 SOP for the Validation of Polychlorinated Biphenyl (PCB) Data (Revision 1.0, December 8, 1995).

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 advisory nature.

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.

- J1 Blank Contamination: Indicates possible high bias and/or false positives.
- J2 Calibration Range exceeded: Indicates possible low bias.
- J3 Holding times not met: Indicates low bias for most analytes.
- J4 Other QC parameters outside control limits: bias not readily determined.
- J5 Other QC parameters outside control limits. The reported results appear to be biased high. The actual value of target compound in the sample may be lower than the value reported by the laboratory.
- J6 Other QC parameters outside control limits. The reported results appear to be biased low. The actual value of target compound in the sample may be higher than the value reported by the laboratory.

R Quality control indicates the data is not usable.

NJ Presumptive evidence of presence of the compound at an estimated quantity.

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. HRGC/HRMS Instrument Performance Check

Instrument performance was checked at the required daily frequency.

Retention time windows were established for all congeners. The chromatographic resolution between the congeners PCB-23 and PCB-34 and congeners PCB-182 and PCB-187 was resolved with a valley of less than or equal to 40%.

III. Initial Calibration

A five point initial calibration was performed as required by the method.

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

The ion abundance ratios for all PCBs were within method criteria.

IV. Routine Calibration (Continuing)

Routine calibration was performed at the required frequencies.

All of the routine calibration percent differences (%D) between the initial calibration RRF and the routine calibration RRF were less than or equal to 30.0% for unlabeled compounds and less than or equal to 50.0% for labeled compounds.

The ion abundance ratios for all PCBs were within method criteria.

V. Blanks

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

Method Blank ID	Extraction Date	Compound	Concentration	Associated Samples
WG46704-101	3/3/14	PCB 2	0.169 pg/g	All samples in SDG DPWG47044
		PCB 3	0.484 pg/g	
		PCB 8	0.354 pg/g	
		PCB 11	1.27 pg/g	
		PCB 20+28	0.527 pg/g	
		PCB 21+33	0.199 pg/g	
		PCB 31	0.351 pg/g	
		PCB 40+41+71	0.137 pg/g	
		PCB 45+51	0.131 pg/g	
		PCB 52	0.443 pg/g	
		PCB 56	0.116 pg/g	
		PCB 61+70+74+76	0.406 pg/g	
		PCB 64	0.125 pg/g	
		PCB 66	0.240 pg/g	
		PCB 86+87+97+108+119+125	0.337 pg/g	
		PCB 90+101+113	0.359 pg/g	
		PCB 147+149	0.265 pg/g	
		PCB 153+168	0.226 pg/g	
		Total Monochloro Biphenyls	0.653 pg/g	
		Total Dichloro Biphenyls	1.62 pg/g	
		Total Trichloro Biphenyls	1.08 pg/g	
		Total Tetrachloro Biphenyls	1.60 pg/g	
		Total Pentachloro Biphenyls	0.696 pg/g	
		Total Hexachloro Biphenyls	0.491 pg/g	

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

Sample	Compound	Reported Concentration	Modified Final Concentration
L59723-4	PCB 3	1.32 pg/g	1.32U pg/g
	PCB 8	1.24 pg/g	1.24U pg/g

Method blank results flagged "K" by the laboratory as estimated maximum possible concentration (EMPC) were considered not detected.

VI. Matrix Spike/Matrix Spike Duplicates/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.

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

VII. Ongoing Precision & Recovery Samples (OPR)

Ongoing precision and recovery (OPR) control samples were reviewed for each matrix as applicable. The percent recoveries (%R) were within the QC limits.

VIII. Regional Quality Assurance and Quality Control

Not applicable.

IX. Internal Standards

All internal standard recoveries (%R) were within QC limits.

X. Target Compound Identifications

Raw data were not reviewed for this SDG.

XI. Compound Quantitation

All compound quantitations were within validation criteria with the following exceptions:

Sample	Compound	Flag	A or P
All samples in SDG DPWG47044	All TCL compounds flagged "K" by the laboratory as estimated maximum possible concentration.	U	A

Raw data were not reviewed for this SDG.

XII. System Performance

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

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

XIV. Field Duplicates

No field duplicates were identified in this SDG.

XV. Field Blanks

No field blanks were identified in this SDG.

Lower Duwamish Waterway, Green River Study, Suspended Solids Polychlorinated Biphenyls as Congeners - Data Qualification Summary - SDG DPWG47044

SDG	Sample	Compound	Flag	A or P	Reason
DPWG47044	L59723-1 L59723-2 L59723-3 L59723-4	All TCL compounds flagged "K" by the laboratory as estimated maximum possible concentration.	U	A	Compound quantitation (EMPC)

Lower Duwamish Waterway, Green River Study, Suspended Solids Polychlorinated Biphenyls as Congeners - Laboratory Blank Data Qualification Summary - SDG DPWG47044

SDG	Sample	Compound	Modified Final Concentration	A or P
DPWG47044	L59723-4	PCB 3 PCB 8	1.32U pg/g 1.24U pg/g	A

LDC #: 31697A31 **VALIDATION COMPLETENESS WORKSHEET** Date: 5-8-14

SDG #: DPWG47044 Level III Page: 1 of 1

Laboratory: AXYS Analytical Services Ltd. Reviewer: SM

2nd Reviewer: CF

METHOD: HRGC/HRMS Polychlorinated Biphenyl Congeners (EPA Method 1668A)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 2/11/14 -> 2/18/14
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	≤ 20
IV.	Routine calibration/~~ICV~~	A	QC limits
V.	Blanks	SW	
VI.	Matrix spike/Matrix spike duplicates	N	C.S.
VII.	Laboratory control samples	A	OPR
VIII.	Regional quality assurance and quality control	N	
IX.	Internal standards	A	
X.	Target compound identifications	N	
XI.	Compound quantitationRL/L~~OQ/LODs~~	SW	
XII.	System performance	N	
XIII.	Overall assessment of data	A	
XIV.	Field duplicates	N	
XV.	Field blanks	N	

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

Validated Samples: Sediment

1	L59723-1	11		21		31	
2	L59723-2	12		22		32	
3	L59723-3	13		23		33	
4	L59723-4	14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19	WG46704-101	29		39	
10		20		30		40	

LDC #: 31697A31

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: ym
2nd Reviewer:

METHOD: HRGC/HRMS PCB Congeners (EPA Method 1668A)

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

(Y) N N/A Were all samples associated with a method blank?
Y N (N/A) Was a method blank performed for each matrix and whenever a sample extraction was performed?
(Y) N N/A Was the method blank contaminated?

Blank extraction date: 03/03/14 **Blank analysis date:** 03/15/14 **Associated samples:** All Qual U

Conc. units: pg/g

Compound	Blank ID		Sample Identification								
	WG46704-101	5x	4								
PCB 2	0.169	0.8									
PCB 3	0.484	2.4	1.32								
PCB 8	0.354	1.8	1.24								
PCB 11	1.27	6.4									
PCB 20+28	0.527	2.6									
PCB 21+33	0.199	1.0									
PCB 31	0.351	1.8									
PCB 40+41+71	0.137	0.7									
PCB 45+51	0.131	0.7									
PCB 52	0.443	2.2									
PCB 56	0.116	0.6									
PCB 61+70+74+76	0.406	2.0									
PCB 64	0.125	0.6									
PCB 66	0.240	1.2									
PCB 86+87+97+108+119+125	0.337	1.7									
PCB 90+101+113	0.359	1.8									
PCB 147+149	0.265	1.3									

LDC #: 31697A31

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: HRGC/HRMS PCB Congeners (EPA Method 1668A)

Compound	Blank ID		Sample Identification								
	WG46704-101	5x	4								
PCB 153+168	0.226	1.1									
Total Monochloro Biphenyls	0.653	3.3									
Total Dichloro Biphenyls	1.62	8.1									
Total Trichloro Biphenyls	1.08	5.4									
Total Tetrachloro Biphenyls	1.60	8.0									
Total Pentachloro Biphenyls	0.696	3.5									
Total Hexachloro Biphenyls	0.491	2.5									

All contaminants within five times the method blank concentration were qualified as not detected.

EMPC values flagged "K" considered "ND"

LDC #: 31697A31

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported CRQLs

Reviewer: 9th
2nd Reviewer: 9

METHOD: HRGC/HRMS PCB Congeners (EPA Method 1668A)

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

Y N N/A Were the correct internal standard (IS), quantitation ions and relative response factors (RRF) used to quantitate the compound?
Y N N/A Compound quantitation and CRQLs were adjusted to reflect all sample dilutions and dry weight factors (if necessary).

#	Date	Compound	Finding	Associated Samples	Qualifications
			EMPC results flagged "K"	All	U/A

Comments: ~~See sample calculation verification worksheet for recalculations~~

LDC Report# 31697B31

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name:	Lower Duwamish Waterway, Green River Study, Suspended Solids
Collection Date:	September 30, 2013 through January 7, 2014
LDC Report Date:	May 12, 2014
Matrix:	Sediment
Parameters:	Polychlorinated Biphenyls as Congeners
Validation Level:	EPA Level III
Laboratory:	AXYS Analytical Services, Ltd.
Sample Delivery Group (SDG):	DPWG47054

Sample Identification

L58785-1
L58785-2
L58785-3
L58785-4
L58785-5
L58785-6
L59454-1
L59454-2
L59454-3
L59454-4
L59454-5
L59454-6
L59454-7
L59454-3DUP

Introduction

This data review covers 14 sediment samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 1668A for Polychlorinated Biphenyls as Congeners.

This review follows the Green River Study, Suspended Solids Characterization Sampling and Analysis Plan (January 2013) and EPA Region 10 SOP for the Validation of Polychlorinated Biphenyl (PCB) Data (Revision 1.0, December 8, 1995).

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 advisory nature.

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.

J1 Blank Contamination: Indicates possible high bias and/or false positives.

J2 Calibration Range exceeded: Indicates possible low bias.

J3 Holding times not met: Indicates low bias for most analytes.

J4 Other QC parameters outside control limits: bias not readily determined.

J5 Other QC parameters outside control limits. The reported results appear to be biased high. The actual value of target compound in the sample may be lower than the value reported by the laboratory.

J6 Other QC parameters outside control limits. The reported results appear to be biased low. The actual value of target compound in the sample may be higher than the value reported by the laboratory.

R Quality control indicates the data is not usable.

NJ Presumptive evidence of presence of the compound at an estimated quantity.

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. HRGC/HRMS Instrument Performance Check

Instrument performance was checked at the required daily frequency.

Retention time windows were established for all congeners. The chromatographic resolution between the congeners PCB-23 and PCB-34 and congeners PCB-182 and PCB-187 was resolved with a valley of less than or equal to 40%.

III. Initial Calibration

A five point initial calibration was performed as required by the method.

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

The ion abundance ratios for all PCBs were within method criteria.

IV. Routine Calibration (Continuing)

Routine calibration was performed at the required frequencies.

All of the routine calibration percent differences (%D) between the initial calibration RRF and the routine calibration RRF were less than or equal to 30.0% for unlabeled compounds and less than or equal to 50.0% for labeled compounds.

The ion abundance ratios for all PCBs were within method criteria.

V. Blanks

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

Method Blank ID	Extraction Date	Compound	Concentration	Associated Samples
WG46438-101	2/12/14	PCB 1	0.420 pg/g	All samples in SDG DPWG47054
		PCB 2	0.359 pg/g	
		PCB 3	0.792 pg/g	
		PCB 8	0.262 pg/g	
		PCB 11	1.23 pg/g	
		PCB 18+30	0.260 pg/g	
		PCB 20+28	0.887 pg/g	
		PCB 22	0.247 pg/g	
		PCB 32	0.107 pg/g	
		PCB 40+41+71	0.207 pg/g	
		PCB 42	0.149 pg/g	
		PCB 44+47+65	0.387 pg/g	
		PCB 49+69	0.332 pg/g	
		PCB 56	0.210 pg/g	
		PCB 60	0.160 pg/g	
		PCB 61+70+74+76	0.788 pg/g	
		PCB 66	0.419 pg/g	
		PCB 83+99	0.425 pg/g	
		PCB 85+116+117	0.159 pg/g	
		PCB 90+101+113	0.594 pg/g	
		PCB 110+115	0.446 pg/g	
		PCB 135+151+154	0.170 pg/g	
		PCB 153+168	0.488 pg/g	
		PCB 180+193	0.240 pg/g	
		PCB 187	0.137 pg/g	
		Total Monochloro Biphenyls	1.57 pg/g	
		Total Dichloro Biphenyls	1.49 pg/g	
		Total Trichloro Biphenyls	1.50 pg/g	
		Total Tetrachloro Biphenyls	2.65 pg/g	
		Total Pentachloro Biphenyls	1.62 pg/g	
		Total Hexachloro Biphenyls	0.658 pg/g	
		Total Heptachloro Biphenyls	0.377 pg/g	

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

Sample	Compound	Reported Concentration	Modified Final Concentration
L58785-1	PCB 1	0.529 pg/g	0.529U pg/g
	PCB 2	0.482 pg/g	0.482U pg/g
	PCB 3	0.705 pg/g	0.705U pg/g
	PCB 11	3.38 pg/g	3.38U pg/g
	PCB 20+28	4.40 pg/g	4.40U pg/g
	PCB 22	1.23 pg/g	1.23U pg/g
	PCB 42	0.729 pg/g	0.729U pg/g
L58785-2	PCB 2	1.73 pg/g	1.73U pg/g
	PCB 3	3.22 pg/g	3.22U pg/g

Sample	Compound	Reported Concentration	Modified Final Concentration
L58785-3	PCB 1	0.342 pg/g	0.342U pg/g
	PCB 2	0.297 pg/g	0.297U pg/g
	PCB 3	0.443 pg/g	0.443U pg/g
	PCB 8	0.229 pg/g	0.229U pg/g
	PCB 11	1.39 pg/g	1.39U pg/g
	PCB 18+30	0.255 pg/g	0.255U pg/g
	PCB 20+28	1.04 pg/g	1.04U pg/g
	PCB 22	0.290 pg/g	0.290U pg/g
	PCB 40+41+71	0.362 pg/g	0.362U pg/g
	PCB 44+47+65	0.730 pg/g	0.730U pg/g
	PCB 49+69	0.533 pg/g	0.533U pg/g
	PCB 56	0.285 pg/g	0.285U pg/g
	PCB 60	0.215 pg/g	0.215U pg/g
	PCB 61+70+74+76	1.40 pg/g	1.40U pg/g
	PCB 66	0.679 pg/g	0.679U pg/g
	PCB 83+99	1.23 pg/g	1.23U pg/g
	PCB 90+101+113	1.80 pg/g	1.80U pg/g
	PCB 110+115	1.89 pg/g	1.89U pg/g
	PCB 135+151+154	0.606 pg/g	0.606U pg/g
	PCB 153+168	2.44 pg/g	2.44U pg/g
	PCB 180+193	0.809 pg/g	0.809U pg/g
L58785-4	PCB 1	0.715 pg/g	0.715U pg/g
	PCB 2	0.487 pg/g	0.487U pg/g
	PCB 3	0.654 pg/g	0.654U pg/g
	PCB 8	0.936 pg/g	0.936U pg/g
	PCB 11	2.69 pg/g	2.69U pg/g
L59454-1	PCB 1	0.598 pg/g	0.598U pg/g
	PCB 2	0.629 pg/g	0.629U pg/g
	PCB 3	0.782 pg/g	0.782U pg/g
	PCB 8	1.03 pg/g	1.03U pg/g
	PCB 11	3.72 pg/g	3.72U pg/g
	PCB 32	0.459 pg/g	0.459U pg/g
L59454-2	PCB 1	1.18 pg/g	1.18U pg/g
	PCB 2	0.731 pg/g	0.731U pg/g
	PCB 3	1.10 pg/g	1.10U pg/g
L59454-3	PCB 1	0.582 pg/g	0.582U pg/g
	PCB 2	0.392 pg/g	0.392U pg/g
	PCB 3	0.595 pg/g	0.595U pg/g
	PCB 8	0.296 pg/g	0.296U pg/g
	PCB 11	1.81 pg/g	1.81U pg/g
	PCB 18+30	0.267 pg/g	0.267U pg/g
	PCB 20+28	1.11 pg/g	1.11U pg/g
	PCB 22	0.304 pg/g	0.304U pg/g
	PCB 32	0.153 pg/g	0.153U pg/g
	PCB 40+41+71	0.437 pg/g	0.437U pg/g
	PCB 42	0.182 pg/g	0.182U pg/g
	PCB 44+47+65	0.971 pg/g	0.971U pg/g
	PCB 56	0.325 pg/g	0.325U pg/g
	PCB 60	0.294 pg/g	0.294U pg/g
	PCB 61+70+74+76	1.78 pg/g	1.78U pg/g
	PCB 66	0.921 pg/g	0.921U pg/g
	PCB 83+99	1.60 pg/g	1.60U pg/g
	PCB 90+101+113	2.28 pg/g	2.28U pg/g

Sample	Compound	Reported Concentration	Modified Final Concentration
L59454-3DUP	PCB 1	0.544 pg/g	0.544U pg/g
	PCB 2	0.514 pg/g	0.514U pg/g
	PCB 3	0.606 pg/g	0.606U pg/g
	PCB 11	2.03 pg/g	2.03U pg/g
	PCB 18+30	0.347 pg/g	0.347U pg/g
	PCB 20+28	1.06 pg/g	1.06U pg/g
	PCB 32	0.121 pg/g	0.121U pg/g
	PCB 40+41+71	0.387 pg/g	0.387U pg/g
	PCB 44+47+65	1.57 pg/g	1.57U pg/g
	PCB 49+69	0.683 pg/g	0.683U pg/g
	PCB 56	0.360 pg/g	0.360U pg/g
	PCB 60	0.292 pg/g	0.292U pg/g
	PCB 61+70+74+76	1.94 pg/g	1.94U pg/g
	PCB 66	0.978 pg/g	0.978U pg/g
	PCB 83+99	2.05 pg/g	2.05U pg/g
	PCB 90+101+113	2.95 pg/g	2.95U pg/g
L59454-4	PCB 1	0.622 pg/g	0.622U pg/g
	PCB 2	0.728 pg/g	0.728U pg/g
	PCB 3	0.896 pg/g	0.896U pg/g
	PCB 8	1.27 pg/g	1.27U pg/g
	PCB 11	4.59 pg/g	4.59U pg/g
L59454-6	PCB 1	0.834 pg/g	0.834U pg/g
	PCB 2	0.728 pg/g	0.728U pg/g
	PCB 3	1.05 pg/g	1.05U pg/g

Method blank results flagged "K" by the laboratory as estimated maximum possible concentration (EMPC) were considered not detected.

VI. Matrix Spike/Matrix Spike Duplicates/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.

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

VII. Ongoing Precision & Recovery Samples (OPR)

Ongoing precision and recovery (OPR) control samples were reviewed for each matrix as applicable. The percent recoveries (%R) were within the QC limits.

VIII. Regional Quality Assurance and Quality Control

Not applicable.

IX. Internal Standards

All internal standard recoveries (%R) were within QC limits.

X. Target Compound Identifications

Raw data were not reviewed for this SDG.

XI. Compound Quantitation

All compound quantitations were within validation criteria with the following exceptions:

Sample	Compound	Flag	A or P
All samples in SDG DPWG47054	All TCL compounds flagged "K" by the laboratory as estimated maximum possible concentration.	U	A

Raw data were not reviewed for this SDG.

XII. System Performance

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

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

XIV. Field Duplicates

No field duplicates were identified in this SDG.

XV. Field Blanks

No field blanks were identified in this SDG.

Lower Duwamish Waterway, Green River Study, Suspended Solids Polychlorinated Biphenyls as Congeners - Data Qualification Summary - SDG DPWG47054

SDG	Sample	Compound	Flag	A or P	Reason
DPWG47054	L58785-1 L58785-2 L58785-3 L58785-4 L58785-5 L58785-6 L59454-1 L59454-2 L59454-3 L59454-4 L59454-5 L59454-6 L59454-7 L59454-3DUP	All TCL compounds flagged "K" by the laboratory as estimated maximum possible concentration.	U	A	Compound quantitation (EMPC)

Lower Duwamish Waterway, Green River Study, Suspended Solids Polychlorinated Biphenyls as Congeners - Laboratory Blank Data Qualification Summary - SDG DPWG47054

SDG	Sample	Compound	Modified Final Concentration	A or P
DPWG47054	L58785-1	PCB 1 PCB 2 PCB 3 PCB 11 PCB 20+28 PCB 22 PCB 42	0.529U pg/g 0.482U pg/g 0.705U pg/g 3.38U pg/g 4.40U pg/g 1.23U pg/g 0.729U pg/g	A
DPWG47054	L58785-2	PCB 2 PCB 3	1.73U pg/g 3.22U pg/g	A

SDG	Sample	Compound	Modified Final Concentration	A or P
DPWG47054	L58785-3	PCB 1 PCB 2 PCB 3 PCB 8 PCB 11 PCB 18+30 PCB 20+28 PCB 22 PCB 40+41+71 PCB 44+47+65 PCB 49+69 PCB 56 PCB 60 PCB 61+70+74+76 PCB 66 PCB 83+99 PCB 90+101+113 PCB 110+115 PCB 135+151+154 PCB 153+168 PCB 180+193	0.342U pg/g 0.297U pg/g 0.443U pg/g 0.229U pg/g 1.39U pg/g 0.255U pg/g 1.04U pg/g 0.290U pg/g 0.362U pg/g 0.730U pg/g 0.533U pg/g 0.285U pg/g 0.215U pg/g 1.40U pg/g 0.679U pg/g 1.23U pg/g 1.80U pg/g 1.89U pg/g 0.606U pg/g 2.44U pg/g 0.809U pg/g	A
DPWG47054	L58785-4	PCB 1 PCB 2 PCB 3 PCB 8 PCB 11	0.715U pg/g 0.487U pg/g 0.654U pg/g 0.936U pg/g 2.69U pg/g	A
DPWG47054	L59454-1	PCB 1 PCB 2 PCB 3 PCB 8 PCB 11 PCB 32	0.598U pg/g 0.629U pg/g 0.782U pg/g 1.03U pg/g 3.72U pg/g 0.459U pg/g	A
DPWG47054	L59454-2	PCB 1 PCB 2 PCB 3	1.18U pg/g 0.731U pg/g 1.10U pg/g	A
DPWG47054	L59454-3	PCB 1 PCB 2 PCB 3 PCB 8 PCB 11 PCB 18+30 PCB 20+28 PCB 22 PCB 32 PCB 40+41+71 PCB 42 PCB 44+47+65 PCB 56 PCB 60 PCB 61+70+74+76 PCB 66 PCB 83+99 PCB 90+101+113	0.582U pg/g 0.392U pg/g 0.595U pg/g 0.296U pg/g 1.81U pg/g 0.267U pg/g 1.11U pg/g 0.304U pg/g 0.153U pg/g 0.437U pg/g 0.182U pg/g 0.971U pg/g 0.325U pg/g 0.294U pg/g 1.78U pg/g 0.921U pg/g 1.60U pg/g 2.28U pg/g	A

SDG	Sample	Compound	Modified Final Concentration	A or P
DPWG47054	L59454-3DUP	PCB 1 PCB 2 PCB 3 PCB 11 PCB 18+30 PCB 20+28 PCB 32 PCB 40+41+71 PCB 44+47+65 PCB 49+69 PCB 56 PCB 60 PCB 61+70+74+76 PCB 66 PCB 83+99 PCB 90+101+113	0.544U pg/g 0.514U pg/g 0.606U pg/g 2.03U pg/g 0.347U pg/g 1.06U pg/g 0.121U pg/g 0.387U pg/g 1.57U pg/g 0.683U pg/g 0.360U pg/g 0.292U pg/g 1.94U pg/g 0.978U pg/g 2.05U pg/g 2.95U pg/g	A
DPWG47054	L59454-4	PCB 1 PCB 2 PCB 3 PCB 8 PCB 11	0.622U pg/g 0.728U pg/g 0.896U pg/g 1.27U pg/g 4.59U pg/g	A
DPWG47054	L59454-6	PCB 1 PCB 2 PCB 3	0.834U pg/g 0.728U pg/g 1.05U pg/g	A

LDC #: 31697B31 **VALIDATION COMPLETENESS WORKSHEET** Date: 5/8-14
SDG #: DPWG47054 Level III Page: 1 of 1
Laboratory: AXYS Analytical Services Ltd. Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: HRGC/HRMS Polychlorinated Biphenyl Congeners (EPA Method 1668A)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 9/30/13 -> 1/7/14
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	≤ 20
IV.	Routine calibration/~~ICV~~	A	QC limits
V.	Blanks	SW	
VI.	Matrix spike/Matrix spike duplicates/DUP	N/A	C.S. / D: 9+14
VII.	Laboratory control samples	A	OPR
VIII.	Regional quality assurance and quality control	N	
IX.	Internal standards	A	
X.	Target compound identifications	N	
XI.	Compound quantitationRL/~~LOQ/LODs~~	SW	
XII.	System performance	N	
XIII.	Overall assessment of data	A	
XIV.	Field duplicates	N	
XV.	Field blanks	N	

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

Validated Samples: Sediment

1	L58785-1	11	L59454-5	21		31	
2	L58785-2	12	L59454-6	22		32	
3	L58785-3	13	L59454-7	23		33	
4	L58785-4	14	L59454-3DUP	24		34	
5	L58785-5	15		25		35	
6	L58785-6	16		26		36	
7	L59454-1	17		27		37	
8	L59454-2	18		28		38	
9	L59454-3	19		29		39	
10	L59454-4	20	WG46438-101	30		40	

LDC #: 31697B31

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: JM
2nd Reviewer: CV

METHOD: HRGC/HRMS PCB Congeners (EPA Method 1668A)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".
(Y) N N/A Were all samples associated with a method blank?
Y N (N/A) Was a method blank performed for each matrix and whenever a sample extraction was performed?
(Y) N N/A Was the method blank contaminated?

Blank extraction date: 02/12/14 **Blank analysis date:** 03/09/14 **Associated samples:** All Qual U +Dup

Conc. units: pg/g

Compound	Blank ID		Sample Identification								
	WG46438-101	5x	1	2	3	4	7	8	9	14	10
PCB 1	0.420	2.10	0.529		0.342	0.715	0.598	1.18	0.582	0.544	0.622
PCB 2	0.359	1.80	0.482	1.73	0.297	0.487	0.629	0.731	0.392	0.514	0.728
PCB 3	0.792	3.96	0.705	3.22	0.443	0.654	0.782	1.10	0.595	0.606	0.896
PCB 8	0.262	1.31			0.229	0.936	1.03		0.296		1.27
PCB 11	1.23	6.15	3.38		1.39	2.69	3.72		1.81	2.03	4.59
PCB 18+30	0.260	1.30			0.255				0.267	0.347	
PCB 20+28	0.887	4.44	4.40		1.04				1.11	1.06	
PCB 22	0.247	1.24	1.23		0.290				0.304		
PCB 32	0.107	0.54					0.459		0.153	0.121	
PCB 40+41+71	0.207	1.04			0.362				0.437	0.387	
PCB 42	0.149	0.75	0.729						0.182		
PCB 44+47+65	0.387	1.94			0.730				0.971	1.57	
PCB 49+69	0.332	1.66			0.533					0.683	
PCB 56	0.210	1.05			0.285				0.325	0.360	
PCB 60	0.160	0.80			0.215				0.294	0.292	
PCB 61+70+74+76	0.788	3.94			1.40				1.78	1.94	
PCB 66	0.419	2.10			0.679				0.921	0.978	

LDC #: 31697B31

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: JM
2nd Reviewer: A

METHOD: HRGC/HRMS PCB Congeners (EPA Method 1668A)

Compound	Blank ID		Sample Identification								
	WG46438-101	5x	1	2	3	4	7	8	9	14	10
PCB 83+99	0.425	2.13			1.23				1.60	2.05	
PCB 85+116+117	0.159	0.80									
PCB 90+101+113	0.594	2.97			1.80				2.28	2.95	
PCB 110+115	0.446	2.23			1.89						
PCB 135+151+154	0.170	0.85			0.606						
PCB 153+168	0.488	2.44			2.44						
PCB 180+193	0.240	1.20			0.809						
PCB 187	0.137	0.69									
Total Monochloro Biphenyls	1.57	7.85									
Total Dichloro Biphenyls	1.49	7.45									
Total Trichloro Biphenyls	1.50	7.50									
Total Tetrachloro Biphenyls	2.65	13.25									
Total Pentachloro Biphenyls	1.62	8.10									
Total Hexachloro Biphenyls	0.658	3.29									
Total Heptachloro Biphenyls	0.377	1.89									

All contaminants within five times the method blank concentration were qualified as not detected.

EMPC values flagged "K" considered "ND"

LDC #: 31697B31

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: TM
2nd Reviewer: a

METHOD: HRGC/HRMS PCB Congeners (EPA Method 1668A)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".
(Y) N N/A Were all samples associated with a method blank?
Y N (N/A) Was a method blank performed for each matrix and whenever a sample extraction was performed?
(Y) N N/A Was the method blank contaminated?

Blank extraction date: 02/12/14 **Blank analysis date:** 03/09/14 **Associated samples:** All Qual U +Dup

Conc. units: pg/g

Compound	Blank ID		Sample Identification								
	WG46438-101	5x	12								
PCB 1	0.420	2.10	0.834								
PCB 2	0.359	1.80	0.728								
PCB 3	0.792	3.96	1.05								
PCB 8	0.262	1.31									
PCB 11	1.23	6.15									
PCB 18+30	0.260	1.30									
PCB 20+28	0.887	4.44									
PCB 22	0.247	1.24									
PCB 32	0.107	0.54									
PCB 40+41+71	0.207	1.04									
PCB 42	0.149	0.75									
PCB 44+47+65	0.387	1.94									
PCB 49+69	0.332	1.66									
PCB 56	0.210	1.05									
PCB 60	0.160	0.80									
PCB 61+70+74+76	0.788	3.94									
PCB 66	0.419	2.10									

LDC #: 31697B31

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: HRGC/HRMS PCB Congeners (EPA Method 1668A)

Compound	Blank ID		Sample Identification								
	WG46438-101	5x	12								
PCB 83+99	0.425	2.13									
PCB 85+116+117	0.159	0.80									
PCB 90+101+113	0.594	2.97									
PCB 110+115	0.446	2.23									
PCB 135+151+154	0.170	0.85									
PCB 153+168	0.488	2.44									
PCB 180+193	0.240	1.20									
PCB 187	0.137	0.69									
Total Monochloro Biphenyls	1.57	7.85									
Total Dichloro Biphenyls	1.49	7.45									
Total Trichloro Biphenyls	1.50	7.50									
Total Tetrachloro Biphenyls	2.65	13.25									
Total Pentachloro Biphenyls	1.62	8.10									
Total Hexachloro Biphenyls	0.658	3.29									
Total Heptachloro Biphenyls	0.377	1.89									

All contaminants within five times the method blank concentration were qualified as not detected.

EMPC values flagged "K" considered "ND"

LDC #: 31697B3J

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported CRQLs

Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: HRGC/HRMS PCB Congeners (EPA Method 1668A)

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

Y N (N/A) Were the correct internal standard (IS), quantitation ions and relative response factors (RRF) used to quantitate the compound?
Y N (N/A) Compound quantitation and CRQLs were adjusted to reflect all sample dilutions and dry weight factors (if necessary).

#	Date	Compound	Finding	Associated Samples	Qualifications
			EMPC results flagged "K"	All +Dup	U/A

Comments: ~~See sample calculation verification worksheet for recalculations~~

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name:	Lower Duwamish Waterway, Green River Study, Suspended Solids
Collection Date:	August 13, 2013 through February 18, 2014
LDC Report Date:	May 9, 2014
Matrix:	Sediment
Parameters:	Dioxins/Dibenzofurans
Validation Level:	EPA Level III
Laboratory:	AXYS Analytical Services Ltd.
Sample Delivery Group (SDG):	DPWG47061

Sample Identification

L58537-1
L58537-2
L58754-1
L58977-1
L59049-1
L59190-1
L59190-2
L59457-1
L59472-3
L59596-1
L59596-2
L59454-7
L59723-1
L59723-2
L59723-3
L59723-4
L59472-3DUP

Introduction

This data review covers 17 sediment samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 1613B for Polychlorinated Dioxins/Dibenzofurans.

This review follows the Green River Study, Suspended Solids Characterization Sampling and Analysis Plan (January 2013) and EPA Region 10 SOP for the Validation of Polychlorinated Dibenzodioxin (PCDD) and Polychlorinated Dibenzofuran (PCDF) Data (Revision 2.0, January 31, 1996).

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 advisory nature.

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.

J1 Blank Contamination: Indicates possible high bias and/or false positives.

J2 Calibration Range exceeded: Indicates possible low bias.

J3 Holding times not met: Indicates low bias for most analytes.

J4 Other QC parameters outside control limits: bias not readily determined.

J5 Other QC parameters outside control limits. The reported results appear to be biased high. The actual value of target compound in the sample may be lower than the value reported by the laboratory.

J6 Other QC parameters outside control limits. The reported results appear to be biased low. The actual value of target compound in the sample may be higher than the value reported by the laboratory.

R Quality control indicates the data is not usable.

NJ Presumptive evidence of presence of the compound at an estimated quantity.

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. HRGC/HRMS Instrument Performance Check

Instrument performance was checked at the required daily frequency.

Retention time windows were established for all homologues. The chromatographic resolution between ^{13}C-2,3,7,8-TCDD and ^{13}C-1,2,3,4-TCDD was less than or equal to 25%.

III. Initial Calibration

A five point initial calibration was performed as required by the method.

Percent relative standard deviations (%RSD) were less than or equal to 20.0% for unlabeled compounds and less than or equal to 35.0% for labeled compounds.

The ion abundance ratios for all PCDDs and PCDFs were within validation criteria.

IV. Routine Calibration (Continuing)

Routine calibration was performed at the required frequencies.

All of the routine calibration results were within the QC limits for unlabeled compounds and labeled compounds.

The ion abundance ratios for all PCDDs and PCDFs were within method criteria.

V. Blanks

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

Method Blank ID	Extraction Date	Compound	Concentration	Associated Samples
WG46491-101	2/28/14	1,2,3,4,6,7,8-HpCDD Total HpCDD	0.116 pg/g 0.116 pg/g	All samples in SDG DPWG47061

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

Method blank results flagged "K" by the laboratory as estimated maximum possible concentration (EMPC) were considered not detected.

VI. Matrix Spike/Matrix Spike Duplicates/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.

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

VII. Ongoing Precision & Recovery Samples (OPR)

Ongoing precision and recovery (OPR) control samples were reviewed for each matrix as applicable. The percent recoveries (%R) were within the QC limits.

VIII. Regional Quality Assurance and Quality Control

Not applicable.

IX. Internal Standards

All internal standard recoveries were within QC limits.

X. Target Compound Identifications

Raw data were not reviewed for this SDG.

XI. Compound Quantitation

All compound quantitation were within validation criteria with the following exceptions:

Sample	Compound	Flag	A or P
All samples in SDG DPWG47061	All TCL compounds flagged "K" by the laboratory as estimated maximum possible concentration.	U	A

Raw data were not reviewed for this SDG.

XII. System Performance

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

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

XIV. Field Duplicates

No field duplicates were identified in this SDG.

XV. Field Blanks

No field blanks were identified in this SDG.

Lower Duwamish Waterway, Green River Study, Suspended Solids Dioxins/Dibenzofurans - Data Qualification Summary - SDG DPWG47061

SDG	Sample	Compound	Flag	A or P	Reason
DPWG47061	L58537-1 L58537-2 L58754-1 L58977-1 L59049-1 L59190-1 L59190-2 L59457-1 L59472-3 L59596-1 L59596-2 L59454-7 L59723-1 L59723-2 L59723-3 L59723-4 L59472-3DUP	All TCL compounds flagged "K" by the laboratory as estimated maximum possible concentration.	U	A	Compound quantitation (EMPC)

Lower Duwamish Waterway, Green River Study, Suspended Solids Dioxins/Dibenzofurans - Laboratory Blank Data Qualification Summary - SDG DPWG47061

No Sample Data Qualified in this SDG

LDC #: 31697C21
SDG #: DPWG47061
Laboratory: AXYS Analytical Services Ltd.

VALIDATION COMPLETENESS WORKSHEET
Level III

Date: 5-8-14
Page: 1 of 1
Reviewer:
2nd Reviewer:

METHOD: HRGC/HRMS Dioxins/Dibenzofurans (EPA Method 1613B)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 8/13/13 → 2/18/14
II.	HRGC/HRMS Instrument performance check	A	
III.	Initial calibration	A	≤ 20/35
IV.	Routine calibration/~~ICV~~	A	QC limits
V.	Blanks	SW	
VI.	Matrix spike/Matrix spike duplicates/DUP	N/A	C.S. / D=9+17
VII.	Laboratory control samples	A	OPR
VIII.	Regional quality assurance and quality control	N	
IX.	Internal standards	A	
X.	Target compound identifications	N	
XI.	Compound quantitation/RL/L~~OQ/LODs~~	SW	
XII.	System performance	N	
XIII.	Overall assessment of data	A	
XIV.	Field duplicates	N	
XV.	Field blanks	N	

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

Validated Samples: Sediment

1	L58537-1	11	L59596-2	21		31	
2	L58537-2	12	L59454-7	22		32	
3	L58754-1	13	L59723-1	23		33	
4	L58977-1	14	L59723-2	24		34	
5	L59049-1	15	L59723-3	25		35	
6	L59190-1	16	L59723-4	26		36	
7	L59190-2	17	L59472-3DUP	27		37	
8	L59457-1	18		28		38	
9	L59472-3	19		29		39	
10	L59596-1	20		30	WG46491-101	40	

Notes:

VALIDATION FINDINGS WORKSHEET

METHOD: HRGC/HRMS Dioxins/Dibenzofurans (EPA Method 1613B)

A. 2,3,7,8-TCDD	F. 1,2,3,4,6,7,8-HpCDD	K. 1,2,3,4,7,8-HxCDF	P. 1,2,3,4,7,8,9-HpCDF	U. Total HpCDD
B. 1,2,3,7,8-PeCDD	G. OCDD	L. 1,2,3,6,7,8-HxCDF	Q. OCDF	V. Total TCDF
C. 1,2,3,4,7,8-HxCDD	H. 2,3,7,8-TCDF	M. 2,3,4,6,7,8-HxCDF	R. Total TCDD	W. Total PeCDF
D. 1,2,3,6,7,8-HxCDD	I. 1,2,3,7,8-PeCDF	N. 1,2,3,7,8,9-HxCDF	S. Total PeCDD	X. Total HxCDF
E. 1,2,3,7,8,9-HxCDD	J. 2,3,4,7,8-PeCDF	O. 1,2,3,4,6,7,8-HpCDF	T. Total HxCDD	Y. Total HpCDF

Notes:_____

LDC #: 31697C21

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: Th
2nd Reviewer: 9

METHOD: HRGC/HRMS Dioxins/Dibenzofurans (EPA Method 1613B)
Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Were all samples associated with a method blank?
Y N (N/A) Was a method blank performed for each matrix and whenever a sample extraction was performed?
Y (N) N/A Was the method blank contaminated?

Blank extraction date: 02/28/14 **Blank analysis date:** 03/14/14 **Associated samples:** All >5x + Dup
Conc. units: pg/g

Compound	Blank ID	Sample Identification								
	WG46491-101	5x								
F	0.116	0.580								
U	0.116	0.580								

*EMPC results flagged "K" considered "ND"

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
All contaminants within five times the method blank concentration were qualified as not detected, "U".

LDC #: 31697C21

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported RLs

Reviewer: CM
2nd Reviewer: CM

METHOD: GC/MS Dioxins/Dibenzofurans (Method 1613B)

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

Y N (N/A) Were the correct internal standard (IS), quantitation ions and relative response factors (RRF) used to quantitate the compound?
Y N (N/A) Compound quantitation and RLs were adjusted to reflect all sample dilutions and dry weight factors (if necessary).

#	Date	Compound	Finding	Associated Samples	Qualifications
			All EMPC qualified "K"	All + Dup	U/A

Comments: _____

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name:	Lower Duwamish Waterway, Green River Study, Suspended Solids
Collection Date:	September 13, 2013 through January 29, 2014
LDC Report Date:	May 9, 2014
Matrix:	Sediment
Parameters:	Polychlorinated Biphenyls as Congeners
Validation Level:	EPA Level III
Laboratory:	AXYS Analytical Services, Ltd.
Sample Delivery Group (SDG):	DPWG47066

Sample Identification

L58537-1
L58537-2
L58754-1
L58977-1
L59049-1
L69190-1
L59190-2
L59457-1
L59472-1
L59472-3
L59596-1
L59596-2
L59190-2DUP

Introduction

This data review covers 13 sediment samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 1668A for Polychlorinated Biphenyls as Congeners.

This review follows the Green River Study, Suspended Solids Characterization Sampling and Analysis Plan (January 2013) and EPA Region 10 SOP for the Validation of Polychlorinated Biphenyl (PCB) Data (Revision 1.0, December 8, 1995).

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 advisory nature.

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.

- J1 Blank Contamination: Indicates possible high bias and/or false positives.
- J2 Calibration Range exceeded: Indicates possible low bias.
- J3 Holding times not met: Indicates low bias for most analytes.
- J4 Other QC parameters outside control limits: bias not readily determined.
- J5 Other QC parameters outside control limits. The reported results appear to be biased high. The actual value of target compound in the sample may be lower than the value reported by the laboratory.
- J6 Other QC parameters outside control limits. The reported results appear to be biased low. The actual value of target compound in the sample may be higher than the value reported by the laboratory.

R Quality control indicates the data is not usable.

NJ Presumptive evidence of presence of the compound at an estimated quantity.

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. HRGC/HRMS Instrument Performance Check

Instrument performance was checked at the required daily frequency.

Retention time windows were established for all congeners. The chromatographic resolution between the congeners PCB-23 and PCB-34 and congeners PCB-182 and PCB-187 was resolved with a valley of less than or equal to 40%.

III. Initial Calibration

A five point initial calibration was performed as required by the method.

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

The ion abundance ratios for all PCBs were within method criteria.

IV. Routine Calibration (Continuing)

Routine calibration was performed at the required frequencies.

All of the routine calibration percent differences (%D) between the initial calibration RRF and the routine calibration RRF were less than or equal to 30.0% for unlabeled compounds and less than or equal to 50.0% for labeled compounds.

The ion abundance ratios for all PCBs were within method criteria.

V. Blanks

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

Method Blank ID	Extraction Date	Compound	Concentration	Associated Samples
WG46439-101	2/12/14	PCB 1	0.533 pg/g	All samples in SDG DPWG47066
		PCB 2	0.447 pg/g	
		PCB 3	0.810 pg/g	
		PCB 11	2.04 pg/g	
		PCB 18+30	0.276 pg/g	
		PCB 20+28	0.705 pg/g	
		PCB 21+33	0.319 pg/g	
		PCB 22	0.313 pg/g	
		PCB 31	0.434 pg/g	
		PCB 44+47+65	0.648 pg/g	
		PCB 52	1.10 pg/g	
		PCB 56	0.191 pg/g	
		PCB 61+70+74+76	1.06 pg/g	
		PCB 86+87+97+108+119+125	0.913 pg/g	
		PCB 93+95+98+100+102	1.30 pg/g	
		PCB 105	0.245 pg/g	
		PCB 118	0.775 pg/g	
		PCB 129+138+160+163	0.745 pg/g	
		PCB 147+149	0.562 pg/g	
		PCB 206	0.340 pg/g	
		PCB 209	1.38 pg/g	
		Total Monochloro Biphenyls	1.79 pg/g	
		Total Dichloro Biphenyls	2.04 pg/g	
		Total Trichloro Biphenyls	2.05 pg/g	
		Total Tetrachloro Biphenyls	3.00 pg/g	
		Total Pentachloro Biphenyls	3.23 pg/g	
		Total Hexachloro Biphenyls	1.31 pg/g	
		Total Nonachloro Biphenyls	0.340 pg/g	

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

Sample	Compound	Reported Concentration	Modified Final Concentration
L58754-1	PCB 1	1.74 pg/g	1.74U pg/g
	PCB 2	1.52 pg/g	1.52U pg/g
	PCB 3	2.04 pg/g	2.04U pg/g
L58977-1	PCB 3	3.34 pg/g	3.34U pg/g
L59049-1	PCB 2	2.09 pg/g	2.09U pg/g
	PCB 3	3.86 pg/g	3.86U pg/g
L69190-1	PCB 1	2.02 pg/g	2.02U pg/g
	PCB 2	1.47 pg/g	1.47U pg/g
	PCB 3	2.16 pg/g	2.16U pg/g
L59190-2	PCB 2	2.19 pg/g	2.19U pg/g
	PCB 3	3.24 pg/g	3.24U pg/g

Sample	Compound	Reported Concentration	Modified Final Concentration
L59190-2DUP	PCB 2 PCB 3	2.13 pg/g 3.54 pg/g	2.13U pg/g 3.54U pg/g

Method blank results flagged "K" by the laboratory as estimated maximum possible concentration (EMPC) were considered not detected.

VI. Matrix Spike/Matrix Spike Duplicates/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.

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

VII. Ongoing Precision & Recovery Samples (OPR)

Ongoing precision and recovery (OPR) control samples were reviewed for each matrix as applicable. The percent recoveries (%R) were within the QC limits.

VIII. Regional Quality Assurance and Quality Control

Not applicable.

IX. Internal Standards

All internal standard recoveries (%R) were within QC limits.

X. Target Compound Identifications

Raw data were not reviewed for this SDG.

XI. Compound Quantitation

All compound quantitations were within validation criteria with the following exceptions:

Sample	Compound	Flag	A or P
All samples in SDG DPWG47066	All TCL compounds flagged "K" by the laboratory as estimated maximum possible concentration.	U	A

Raw data were not reviewed for this SDG.

XII. System Performance

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

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

XIV. Field Duplicates

No field duplicates were identified in this SDG.

XV. Field Blanks

No field blanks were identified in this SDG.

Lower Duwamish Waterway, Green River Study, Suspended Solids Polychlorinated Biphenyls as Congeners - Data Qualification Summary - SDG DPWG47066

SDG	Sample	Compound	Flag	A or P	Reason
DPWG47066	L58537-1 L58537-2 L58754-1 L58977-1 L59049-1 L69190-1 L59190-2 L59457-1 L59472-1 L59472-3 L59596-1 L59596-2 L59190-2DUP	All TCL compounds flagged "K" by the laboratory as estimated maximum possible concentration.	U	A	Compound quantitation (EMPC)

Lower Duwamish Waterway, Green River Study, Suspended Solids Polychlorinated Biphenyls as Congeners - Laboratory Blank Data Qualification Summary - SDG DPWG47066

SDG	Sample	Compound	Modified Final Concentration	A or P
DPWG47066	L58754-1	PCB 1 PCB 2 PCB 3	1.74U pg/g 1.52U pg/g 2.04U pg/g	A
DPWG47066	L58977-1	PCB 3	3.34U pg/g	A
DPWG47066	L59049-1	PCB 2 PCB 3	2.09U pg/g 3.86U pg/g	A
DPWG47066	L69190-1	PCB 1 PCB 2 PCB 3	2.02U pg/g 1.47U pg/g 2.16U pg/g	A
DPWG47066	L59190-2	PCB 2 PCB 3	2.19U pg/g 3.24U pg/g	A
DPWG47066	L59190-2DUP	PCB 2 PCB 3	2.13U pg/g 3.54U pg/g	A

LDC #: 31697D31 **VALIDATION COMPLETENESS WORKSHEET** Date: 5-8-14
SDG #: DPWG47066 Level III Page: 1 of 1
Laboratory: AXYS Analytical Services Ltd. Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: HRGC/HRMS Polychlorinated Biphenyl Congeners (EPA Method 1668A)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 8/13/13 -> 1/29/14
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	≤20
IV.	Routine calibration/~~ICV~~	A	QC limits
V.	Blanks	SW	
VI.	Matrix spike/Matrix spike duplicates /DUP	N/A	C.S. /D = 7+13
VII.	Laboratory control samples	A	OPR
VIII.	Regional quality assurance and quality control	N	
IX.	Internal standards	A	
X.	Target compound identifications	N	
XI.	Compound quantitationRL/~~LOQ/LODs~~	SW	
XII.	System performance	N	
XIII.	Overall assessment of data	A	
XIV.	Field duplicates	N	
XV.	Field blanks	N	

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

Validated Samples: Sediment

1	L58537-1	11	L59596-1	21		31	
2	L58537-2	12	L59596-2	22		32	
3	L58754-1	13	L59190-2DUP	23		33	
4	L58977-1	14		24		34	
5	L59049-1	15		25		35	
6	L69190-1	16		26		36	
7	L59190-2	17		27		37	
8	L59457-1	18		28		38	
9	L59472-1	19		29	WG464439-101	39	
10	L59472-3	20		30		40	

LDC #: 31697D31

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: Jm
2nd Reviewer: A

METHOD: HRGC/HRMS PCB Congeners (EPA Method 1668A)

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

(Y) N N/A Were all samples associated with a method blank?

Y N (N/A) Was a method blank performed for each matrix and whenever a sample extraction was performed?

(Y) N N/A Was the method blank contaminated?

Blank extraction date: 02/12/14 **Blank analysis date:** 03/15/14 **Associated samples:** All + Dup Qual U

Conc. units: pg/g

Compound	Blank ID		Sample Identification								
	WG46439-101	5x	3	4	5	6	7	13			
PCB 1	0.533	2.67	1.74			2.02					
PCB 2	0.447	2.24	1.52		2.09	1.47	2.19	2.13			
PCB 3	0.810	4.05	2.04	3.34	3.86	2.16	3.24	3.54			
PCB 11	2.04	10.2									
PCB 18+30	0.276	1.38									
PCB 20+28	0.705	3.53									
PCB 21+33	0.319	1.60									
PCB 22	0.313	1.57									
PCB 31	0.434	2.17									
PCB 44+47+65	0.648	3.24									
PCB 52	1.10	5.50									
PCB 56	0.191	0.955									
PCB 61+70+74+76	1.06	5.30									
PCB 86+87+97+108+119+125	0.913	4.57									
PCB 93+95+98+100+102	1.30	6.50									
PCB 105	0.245	1.23									
PCB 118	0.775	3.88									

LDC #: 31697D31

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: HRGC/HRMS PCB Congeners (EPA Method 1668A)

Compound	Blank ID		Sample Identification								
	WG46439-101	5x	3	4	5	6	7	13			
PCB 129+138+160+163	0.745	3.73									
PCB 147+149	0.562	2.81									
PCB 206	0.340	1.70									
PCB 209	1.38	6.90									
Total Monochloro Biphenyls	1.79	8.95									
Total Dichloro Biphenyls	2.04	10.2									
Total Trichloro Biphenyls	2.05	10.3									
Total Tetrachloro Biphenyls	3.00	15.0									
Total Pentachloro Biphenyls	3.23	16.2									
Total Hexachloro Biphenyls	1.31	6.55									
Total Nonachloro Biphenyls	0.340	1.70									

All contaminants within five times the method blank concentration were qualified as not detected.

LDC #: 31697D31

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported CRQLs

Reviewer: 9m
2nd Reviewer: 9

METHOD: HRGC/HRMS PCB Congeners (EPA Method 1668A)

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

Y N (N/A) Were the correct internal standard (IS), quantitation ions and relative response factors (RRF) used to quantitate the compound?
Y N (N/A) Compound quantitation and CRQLs were adjusted to reflect all sample dilutions and dry weight factors (if necessary).

#	Date	Compound	Finding	Associated Samples	Qualifications
			EMPC results flagged "K"	All + Dup	U/A

Comments: ~~See sample calculation verification worksheet for recalculations~~

LABORATORY DATA CONSULTANTS, INC.
2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

King County Environmental Laboratory
322 W. Ewing Street
Seattle WA 98119
ATTN: Mr. Fritz Grothkopp

June 4, 2014

SUBJECT: Revised Lower Duwamish Waterway, Green River Study, Suspended Solids Data Validation

Dear Mr. Grothkopp,

Enclosed is the revised validation report for the fraction listed below. Please replace the previously submitted report with the enclosed revised report.

LDC Project # 31697:

SDG #	Fraction
DPWG47061	Dioxins/Dibenzofurans

- Chose best result for 2,3,7,8-TCDF

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

Sincerely,

Stella S. Cuenco
Operations Manager/Senior Chemist

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name:	Lower Duwamish Waterway, Green River Study, Suspended Solids
Collection Date:	August 13, 2013 through February 18, 2014
LDC Report Date:	June 4, 2014
Matrix:	Sediment
Parameters:	Dioxins/Dibenzofurans
Validation Level:	EPA Level III
Laboratory:	AXYS Analytical Services Ltd.
Sample Delivery Group (SDG):	DPWG47061

Sample Identification

L58537-1
L58537-2
L58754-1
L58977-1
L59049-1
L59190-1
L59190-2
L59457-1
L59472-3
L59596-1
L59596-2
L59454-7
L59723-1
L59723-2
L59723-3
L59723-4
L59472-3DUP

Introduction

This data review covers 17 sediment samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 1613B for Polychlorinated Dioxins/Dibenzofurans.

This review follows the Green River Study, Suspended Solids Characterization Sampling and Analysis Plan (January 2013) and EPA Region 10 SOP for the Validation of Polychlorinated Dibenzodioxin (PCDD) and Polychlorinated Dibenzofuran (PCDF) Data (Revision 2.0, January 31, 1996).

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 advisory nature.

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.

- J1 Blank Contamination: Indicates possible high bias and/or false positives.
- J2 Calibration Range exceeded: Indicates possible low bias.
- J3 Holding times not met: Indicates low bias for most analytes.
- J4 Other QC parameters outside control limits: bias not readily determined.
- J5 Other QC parameters outside control limits. The reported results appear to be biased high. The actual value of target compound in the sample may be lower than the value reported by the laboratory.
- J6 Other QC parameters outside control limits. The reported results appear to be biased low. The actual value of target compound in the sample may be higher than the value reported by the laboratory.

R Quality control indicates the data is not usable.

NJ Presumptive evidence of presence of the compound at an estimated quantity.

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. HRGC/HRMS Instrument Performance Check

Instrument performance was checked at the required daily frequency.

Retention time windows were established for all homologues. The chromatographic resolution between ^{13}C-2,3,7,8-TCDD and ^{13}C-1,2,3,4-TCDD was less than or equal to 25%.

III. Initial Calibration

A five point initial calibration was performed as required by the method.

Percent relative standard deviations (%RSD) were less than or equal to 20.0% for unlabeled compounds and less than or equal to 35.0% for labeled compounds.

The ion abundance ratios for all PCDDs and PCDFs were within validation criteria.

IV. Routine Calibration (Continuing)

Routine calibration was performed at the required frequencies.

All of the routine calibration results were within the QC limits for unlabeled compounds and labeled compounds.

The ion abundance ratios for all PCDDs and PCDFs were within method criteria.

V. Blanks

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

Method Blank ID	Extraction Date	Compound	Concentration	Associated Samples
WG46491-101	2/28/14	1,2,3,4,6,7,8-HpCDD Total HpCDD	0.116 pg/g 0.116 pg/g	All samples in SDG DPWG47061

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

Method blank results flagged "K" by the laboratory as estimated maximum possible concentration (EMPC) were considered not detected.

VI. Matrix Spike/Matrix Spike Duplicates/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.

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

VII. Ongoing Precision & Recovery Samples (OPR)

Ongoing precision and recovery (OPR) control samples were reviewed for each matrix as applicable. The percent recoveries (%R) were within the QC limits.

VIII. Regional Quality Assurance and Quality Control

Not applicable.

IX. Internal Standards

All internal standard recoveries were within QC limits.

X. Target Compound Identifications

Raw data were not reviewed for this SDG.

XI. Compound Quantitation

All compound quantitation were within validation criteria with the following exceptions:

Sample	Compound	Flag	A or P
All samples in SDG DPWG47061	All TCL compounds flagged "K" by the laboratory as estimated maximum possible concentration.	U	A

Raw data were not reviewed for this SDG.

XII. System Performance

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

Sample	Compound	Flag	A or P
L58537-1 L58537-2 L58754-1 L58977-1 L59049-1 L59190-1 L59457-1 L59472-3 L59596-1 L59596-2 L59454-7 L59723-1 L59723-2 L59723-3 L59723-4 L59472-3DUP	2,3,7,8-TCDF (from DB-5)	R	A

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

XIV. Field Duplicates

No field duplicates were identified in this SDG.

XV. Field Blanks

No field blanks were identified in this SDG.

Lower Duwamish Waterway, Green River Study, Suspended Solids Dioxins/Dibenzofurans - Data Qualification Summary - SDG DPWG47061

SDG	Sample	Compound	Flag	A or P	Reason
DPWG47061	L58537-1 L58537-2 L58754-1 L58977-1 L59049-1 L59190-1 L59190-2 L59457-1 L59472-3 L59596-1 L59596-2 L59454-7 L59723-1 L59723-2 L59723-3 L59723-4 L59472-3DUP	All TCL compounds flagged "K" by the laboratory as estimated maximum possible concentration.	U	A	Compound quantitation (EMPC)
DPWG47061	L58537-1 L58537-2 L58754-1 L58977-1 L59049-1 L59190-1 L59457-1 L59472-3 L59596-1 L59596-2 L59454-7 L59723-1 L59723-2 L59723-3 L59723-4 L59472-3DUP	2,3,7,8-TCDF (from DB-5)	R	A	Overall assessment of data

Lower Duwamish Waterway, Green River Study, Suspended Solids Dioxins/Dibenzofurans - Laboratory Blank Data Qualification Summary - SDG DPWG47061

No Sample Data Qualified in this SDG

LDC #: 31697C21 **VALIDATION COMPLETENESS WORKSHEET** Date: 5-8-14
SDG #: DPWG47061 Level III Page: 1 of 1
Laboratory: AXYS Analytical Services Ltd. Reviewer:
2nd Reviewer:

METHOD: HRGC/HRMS Dioxins/Dibenzofurans (EPA Method 1613B)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 8/13/13 → 2/18/14
II.	HRGC/HRMS Instrument performance check	A	
III.	Initial calibration	A	≤ 20/35
IV.	Routine calibration/~~ICV~~	A	QC limits
V.	Blanks	SW	
VI.	Matrix spike/Matrix spike duplicates/DUP	N/A	C-S. / D=9+17
VII.	Laboratory control samples	A	OPR
VIII.	Regional quality assurance and quality control	N	
IX.	Internal standards	A	
X.	Target compound identifications	N	
XI.	Compound quantitation/RL/~~LOQ/LODs~~	SW	
XII.	System performance	N	
XIII.	Overall assessment of data	SW	
XIV.	Field duplicates	N	
XV.	Field blanks	N	

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

Validated Samples: Sediment

1	L58537-1	11	L59596-2	21		31	
2	L58537-2	12	L59454-7	22		32	
3	L58754-1	13	L59723-1	23		33	
4	L58977-1	14	L59723-2	24		34	
5	L59049-1	15	L59723-3	25		35	
6	L59190-1	16	L59723-4	26		36	
7	L59190-2	17	L59472-3DUP	27		37	
8	L59457-1	18		28		38	
9	L59472-3	19		29		39	
10	L59596-1	20		30	WG46491-101	40	

Notes:

VALIDATION FINDINGS WORKSHEET

METHOD: HRGC/HRMS Dioxins/Dibenzofurans (EPA Method 1613B)

A. 2,3,7,8-TCDD	F. 1,2,3,4,6,7,8-HpCDD	K. 1,2,3,4,7,8-HxCDF	P. 1,2,3,4,7,8,9-HpCDF	U. Total HpCDD
B. 1,2,3,7,8-PeCDD	G. OCDD	L. 1,2,3,6,7,8-HxCDF	Q. OCDF	V. Total TCDF
C. 1,2,3,4,7,8-HxCDD	H. 2,3,7,8-TCDF	M. 2,3,4,6,7,8-HxCDF	R. Total TCDD	W. Total PeCDF
D. 1,2,3,6,7,8-HxCDD	I. 1,2,3,7,8-PeCDF	N. 1,2,3,7,8,9-HxCDF	S. Total PeCDD	X. Total HxCDF
E. 1,2,3,7,8,9-HxCDD	J. 2,3,4,7,8-PeCDF	O. 1,2,3,4,6,7,8-HpCDF	T. Total HxCDD	Y. Total HpCDF

Notes:_____

LDC #: 31697C21

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: TB
2nd Reviewer: 9

METHOD: HRGC/HRMS Dioxins/Dibenzofurans (EPA Method 1613B)

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

(Y) N N/A Were all samples associated with a method blank?

Y N (N/A) Was a method blank performed for each matrix and whenever a sample extraction was performed?

(Y) N N/A Was the method blank contaminated?

Blank extraction date: 02/28/14 **Blank analysis date:** 03/14/14 **Associated samples:** All >5X +Dup

Conc. units: pg/g

Compound	Blank ID	Sample Identification								
	WG46491-101	5x								
F	0.116	0.580								
U	0.116	0.580								

*EMPC results flagged "K" considered "ND"

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
All contaminants within five times the method blank concentration were qualified as not detected, "U".

LDC #: 31697C21

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported RLs

Reviewer: C
2nd Reviewer: C

METHOD: GC/MS Dioxins/Dibenzofurans (Method 1613B)

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

Y N (N/A) Were the correct internal standard (IS), quantitation ions and relative response factors (RRF) used to quantitate the compound?
Y N (N/A) Compound quantitation and RLs were adjusted to reflect all sample dilutions and dry weight factors (if necessary).

#	Date	Compound	Finding	Associated Samples	Qualifications
			All EMPC qualified "K"	All + Dup	U/A

Comments: _____

LDC #: 31697C21

VALIDATION FINDINGS WORKSHEET
Overall Assessment of Data

Reviewer: JC
2nd Reviewer: Q

METHOD: HRGC/HRMS Dioxins/Dibenzofurans (EPA Method 1613B)

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

All available information pertaining to the data were reviewed using professional judgement to compliment the determination of the overall quality of the data.

(Y) N N/A Was the overall quality and usability of the data acceptable?

#	Date	Sample ID	Finding	Associated Samples	Qualifications
	1-6, 8-17		H (from DB-5)		R/A

Comments: _____

LABORATORY DATA CONSULTANTS, INC.
2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

King County Environmental Laboratory
322 W. Ewing Street
Seattle WA 98119
ATTN: Mr. Fritz Grothkopp

June 2, 2016

SUBJECT: Revised LDW, Green River Study, Suspended Solids, Data Validation

Dear Mr. Grothkopp,

Enclosed is the revised validation report for the fraction listed below. Please replace the previously submitted report with the enclosed revised report.

LDC Project #31697:

SDG #	Fraction
DPWG47066	Polychlorinated Biphenyls as Congeners

- Revision: PCB Congeners - Changed Sample ID L69190-1 to L59190-1

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

Sincerely,

Stella Cuenco
Operations Manager/Senior Chemist

0 Pages CD EDD RTC CD

Attachment 1

III LDC #31697 (King County - Seattle WA / Lower Duwamish Waterway, Green River Study Suspended Solids) Project

LDC	SDG#	DATE REC'D	(3) DATE DUE	PCB Cong (1668)		Dioxins (1613B)																											
Matrix:	Water/Sediment			W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	DPWG47044	04/22/14	05/13/14	0	4	-	-																										
B	DPWG47054	04/22/14	05/13/14	0	13	-	-																										
C	DPWG47061	04/22/14	05/13/14	-	-	0	16																										
D	DPWG47066	04/22/14	05/13/14	0	12	-	-																										
Total	A/SC			0	29	0	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	45

Shaded cells indicate Level IV validation (all other cells are Level II validation). These sample counts do not include MS/MSD, and DUPs

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name:	Lower Duwamish Waterway, Green River Study, Suspended Solids
Collection Date:	February 11 through February 18, 2014
LDC Report Date:	May 9, 2014
Matrix:	Sediment
Parameters:	Polychlorinated Biphenyls as Congeners
Validation Level:	EPA Level III
Laboratory:	AXYS Analytical Services, Ltd.
Sample Delivery Group (SDG):	DPWG47044

Sample Identification

L59723-1
L59723-2
L59723-3
L59723-4

Introduction

This data review covers 4 sediment samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 1668A for Polychlorinated Biphenyls as Congeners.

This review follows the Green River Study, Suspended Solids Characterization Sampling and Analysis Plan (January 2013) and EPA Region 10 SOP for the Validation of Polychlorinated Biphenyl (PCB) Data (Revision 1.0, December 8, 1995).

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 advisory nature.

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.

J1 Blank Contamination: Indicates possible high bias and/or false positives.

J2 Calibration Range exceeded: Indicates possible low bias.

J3 Holding times not met: Indicates low bias for most analytes.

J4 Other QC parameters outside control limits: bias not readily determined.

J5 Other QC parameters outside control limits. The reported results appear to be biased high. The actual value of target compound in the sample may be lower than the value reported by the laboratory.

J6 Other QC parameters outside control limits. The reported results appear to be biased low. The actual value of target compound in the sample may be higher than the value reported by the laboratory.

R Quality control indicates the data is not usable.

NJ Presumptive evidence of presence of the compound at an estimated quantity.

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. HRGC/HRMS Instrument Performance Check

Instrument performance was checked at the required daily frequency.

Retention time windows were established for all congeners. The chromatographic resolution between the congeners PCB-23 and PCB-34 and congeners PCB-182 and PCB-187 was resolved with a valley of less than or equal to 40%.

III. Initial Calibration

A five point initial calibration was performed as required by the method.

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

The ion abundance ratios for all PCBs were within method criteria.

IV. Routine Calibration (Continuing)

Routine calibration was performed at the required frequencies.

All of the routine calibration percent differences (%D) between the initial calibration RRF and the routine calibration RRF were less than or equal to 30.0% for unlabeled compounds and less than or equal to 50.0% for labeled compounds.

The ion abundance ratios for all PCBs were within method criteria.

V. Blanks

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

Method Blank ID	Extraction Date	Compound	Concentration	Associated Samples
WG46704-101	3/3/14	PCB 2	0.169 pg/g	All samples in SDG DPWG47044
		PCB 3	0.484 pg/g	
		PCB 8	0.354 pg/g	
		PCB 11	1.27 pg/g	
		PCB 20+28	0.527 pg/g	
		PCB 21+33	0.199 pg/g	
		PCB 31	0.351 pg/g	
		PCB 40+41+71	0.137 pg/g	
		PCB 45+51	0.131 pg/g	
		PCB 52	0.443 pg/g	
		PCB 56	0.116 pg/g	
		PCB 61+70+74+76	0.406 pg/g	
		PCB 64	0.125 pg/g	
		PCB 66	0.240 pg/g	
		PCB 86+87+97+108+119+125	0.337 pg/g	
		PCB 90+101+113	0.359 pg/g	
		PCB 147+149	0.265 pg/g	
		PCB 153+168	0.226 pg/g	
		Total Monochloro Biphenyls	0.653 pg/g	
		Total Dichloro Biphenyls	1.62 pg/g	
		Total Trichloro Biphenyls	1.08 pg/g	
		Total Tetrachloro Biphenyls	1.60 pg/g	
		Total Pentachloro Biphenyls	0.696 pg/g	
		Total Hexachloro Biphenyls	0.491 pg/g	

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

Sample	Compound	Reported Concentration	Modified Final Concentration
L59723-4	PCB 3	1.32 pg/g	1.32U pg/g
	PCB 8	1.24 pg/g	1.24U pg/g

Method blank results flagged "K" by the laboratory as estimated maximum possible concentration (EMPC) were considered not detected.

VI. Matrix Spike/Matrix Spike Duplicates/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.

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

VII. Ongoing Precision & Recovery Samples (OPR)

Ongoing precision and recovery (OPR) control samples were reviewed for each matrix as applicable. The percent recoveries (%R) were within the QC limits.

VIII. Regional Quality Assurance and Quality Control

Not applicable.

IX. Internal Standards

All internal standard recoveries (%R) were within QC limits.

X. Target Compound Identifications

Raw data were not reviewed for this SDG.

XI. Compound Quantitation

All compound quantitations were within validation criteria with the following exceptions:

Sample	Compound	Flag	A or P
All samples in SDG DPWG47044	All TCL compounds flagged "K" by the laboratory as estimated maximum possible concentration.	U	A

Raw data were not reviewed for this SDG.

XII. System Performance

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

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

XIV. Field Duplicates

No field duplicates were identified in this SDG.

XV. Field Blanks

No field blanks were identified in this SDG.

Lower Duwamish Waterway, Green River Study, Suspended Solids Polychlorinated Biphenyls as Congeners - Data Qualification Summary - SDG DPWG47044

SDG	Sample	Compound	Flag	A or P	Reason
DPWG47044	L59723-1 L59723-2 L59723-3 L59723-4	All TCL compounds flagged "K" by the laboratory as estimated maximum possible concentration.	U	A	Compound quantitation (EMPC)

Lower Duwamish Waterway, Green River Study, Suspended Solids Polychlorinated Biphenyls as Congeners - Laboratory Blank Data Qualification Summary - SDG DPWG47044

SDG	Sample	Compound	Modified Final Concentration	A or P
DPWG47044	L59723-4	PCB 3 PCB 8	1.32U pg/g 1.24U pg/g	A

LDC #: 31697A31 **VALIDATION COMPLETENESS WORKSHEET** Date: 5-8-14

SDG #: DPWG47044 Level III Page: 1 of 1

Laboratory: AXYS Analytical Services Ltd. Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: HRGC/HRMS Polychlorinated Biphenyl Congeners (EPA Method 1668A)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 2/11/14 -> 2/18/14
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	≤ 20
IV.	Routine calibration/~~ICV~~	A	QC limits
V.	Blanks	SW	
VI.	Matrix spike/Matrix spike duplicates	N	C-S.
VII.	Laboratory control samples	A	OPR
VIII.	Regional quality assurance and quality control	N	
IX.	Internal standards	A	
X.	Target compound identifications	N	
XI.	Compound quantitationRL/~~LOQ/LODs~~	SW	
XII.	System performance	N	
XIII.	Overall assessment of data	A	
XIV.	Field duplicates	N	
XV.	Field blanks	N	

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

Validated Samples: Sediment

1	L59723-1	11		21		31	
2	L59723-2	12		22		32	
3	L59723-3	13		23		33	
4	L59723-4	14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19	WG46704-101	29		39	
10		20		30		40	

LDC #: 31697A31

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: YM
2nd Reviewer: [illegible]

METHOD: HRGC/HRMS PCB Congeners (EPA Method 1668A)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".
(Y) N N/A Were all samples associated with a method blank?
Y N (N/A) Was a method blank performed for each matrix and whenever a sample extraction was performed?
(Y) N N/A Was the method blank contaminated?
Blank extraction date: 03/03/14 **Blank analysis date:** 03/15/14 **Associated samples:** All Qual U
Conc. units: pg/g

Compound	Blank ID		Sample Identification								
	WG46704-101	5x	4								
PCB 2	0.169	0.8									
PCB 3	0.484	2.4	1.32								
PCB 8	0.354	1.8	1.24								
PCB 11	1.27	6.4									
PCB 20+28	0.527	2.6									
PCB 21+33	0.199	1.0									
PCB 31	0.351	1.8									
PCB 40+41+71	0.137	0.7									
PCB 45+51	0.131	0.7									
PCB 52	0.443	2.2									
PCB 56	0.116	0.6									
PCB 61+70+74+76	0.406	2.0									
PCB 64	0.125	0.6									
PCB 66	0.240	1.2									
PCB 86+87+97+108+119+125	0.337	1.7									
PCB 90+101+113	0.359	1.8									
PCB 147+149	0.265	1.3									

LDC #: 31697A31

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: HRGC/HRMS PCB Congeners (EPA Method 1668A)

Compound	Blank ID		Sample Identification								
	WG46704-101	5x	4								
PCB 153+168	0.226	1.1									
Total Monochloro Biphenyls	0.653	3.3									
Total Dichloro Biphenyls	1.62	8.1									
Total Trichloro Biphenyls	1.08	5.4									
Total Tetrachloro Biphenyls	1.60	8.0									
Total Pentachloro Biphenyls	0.696	3.5									
Total Hexachloro Biphenyls	0.491	2.5									

All contaminants within five times the method blank concentration were qualified as not detected.

EMPC values flagged "K" considered "ND"

LDC #: 31697A31

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported CRQLs

Reviewer: 9th
2nd Reviewer: 9

METHOD: HRGC/HRMS PCB Congeners (EPA Method 1668A)

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

Y N (N/A) Were the correct internal standard (IS), quantitation ions and relative response factors (RRF) used to quantitate the compound?
Y N (N/A) Compound quantitation and CRQLs were adjusted to reflect all sample dilutions and dry weight factors (if necessary).

#	Date	Compound	Finding	Associated Samples	Qualifications
			EMPC results flagged "K"	All	U/A

Comments: ~~See sample calculation verification worksheet for recalculations~~

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name:	Lower Duwamish Waterway, Green River Study, Suspended Solids
Collection Date:	September 30, 2013 through January 7, 2014
LDC Report Date:	May 12, 2014
Matrix:	Sediment
Parameters:	Polychlorinated Biphenyls as Congeners
Validation Level:	EPA Level III
Laboratory:	AXYS Analytical Services, Ltd.

Sample Delivery Group (SDG): DPWG47054

Sample Identification

L58785-1
L58785-2
L58785-3
L58785-4
L58785-5
L58785-6
L59454-1
L59454-2
L59454-3
L59454-4
L59454-5
L59454-6
L59454-7
L59454-3DUP

Introduction

This data review covers 14 sediment samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 1668A for Polychlorinated Biphenyls as Congeners.

This review follows the Green River Study, Suspended Solids Characterization Sampling and Analysis Plan (January 2013) and EPA Region 10 SOP for the Validation of Polychlorinated Biphenyl (PCB) Data (Revision 1.0, December 8, 1995).

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The following are definitions of the data qualifiers:

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- J1 Blank Contamination: Indicates possible high bias and/or false positives.
- J2 Calibration Range exceeded: Indicates possible low bias.
- J3 Holding times not met: Indicates low bias for most analytes.
- J4 Other QC parameters outside control limits: bias not readily determined.
- J5 Other QC parameters outside control limits. The reported results appear to be biased high. The actual value of target compound in the sample may be lower than the value reported by the laboratory.
- J6 Other QC parameters outside control limits. The reported results appear to be biased low. The actual value of target compound in the sample may be higher than the value reported by the laboratory.

R Quality control indicates the data is not usable.

NJ Presumptive evidence of presence of the compound at an estimated quantity.

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. HRGC/HRMS Instrument Performance Check

Instrument performance was checked at the required daily frequency.

Retention time windows were established for all congeners. The chromatographic resolution between the congeners PCB-23 and PCB-34 and congeners PCB-182 and PCB-187 was resolved with a valley of less than or equal to 40%.

III. Initial Calibration

A five point initial calibration was performed as required by the method.

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

The ion abundance ratios for all PCBs were within method criteria.

IV. Routine Calibration (Continuing)

Routine calibration was performed at the required frequencies.

All of the routine calibration percent differences (%D) between the initial calibration RRF and the routine calibration RRF were less than or equal to 30.0% for unlabeled compounds and less than or equal to 50.0% for labeled compounds.

The ion abundance ratios for all PCBs were within method criteria.

V. Blanks

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

Method Blank ID	Extraction Date	Compound	Concentration	Associated Samples
WG46438-101	2/12/14	PCB 1	0.420 pg/g	All samples in SDG DPWG47054
		PCB 2	0.359 pg/g	
		PCB 3	0.792 pg/g	
		PCB 8	0.262 pg/g	
		PCB 11	1.23 pg/g	
		PCB 18+30	0.260 pg/g	
		PCB 20+28	0.887 pg/g	
		PCB 22	0.247 pg/g	
		PCB 32	0.107 pg/g	
		PCB 40+41+71	0.207 pg/g	
		PCB 42	0.149 pg/g	
		PCB 44+47+65	0.387 pg/g	
		PCB 49+69	0.332 pg/g	
		PCB 56	0.210 pg/g	
		PCB 60	0.160 pg/g	
		PCB 61+70+74+76	0.788 pg/g	
		PCB 66	0.419 pg/g	
		PCB 83+99	0.425 pg/g	
		PCB 85+116+117	0.159 pg/g	
		PCB 90+101+113	0.594 pg/g	
		PCB 110+115	0.446 pg/g	
		PCB 135+151+154	0.170 pg/g	
		PCB 153+168	0.488 pg/g	
		PCB 180+193	0.240 pg/g	
		PCB 187	0.137 pg/g	
		Total Monochloro Biphenyls	1.57 pg/g	
		Total Dichloro Biphenyls	1.49 pg/g	
		Total Trichloro Biphenyls	1.50 pg/g	
		Total Tetrachloro Biphenyls	2.65 pg/g	
		Total Pentachloro Biphenyls	1.62 pg/g	
		Total Hexachloro Biphenyls	0.658 pg/g	
		Total Heptachloro Biphenyls	0.377 pg/g	

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

Sample	Compound	Reported Concentration	Modified Final Concentration
L58785-1	PCB 1	0.529 pg/g	0.529U pg/g
	PCB 2	0.482 pg/g	0.482U pg/g
	PCB 3	0.705 pg/g	0.705U pg/g
	PCB 11	3.38 pg/g	3.38U pg/g
	PCB 20+28	4.40 pg/g	4.40U pg/g
	PCB 22	1.23 pg/g	1.23U pg/g
	PCB 42	0.729 pg/g	0.729U pg/g
L58785-2	PCB 2	1.73 pg/g	1.73U pg/g
	PCB 3	3.22 pg/g	3.22U pg/g

Sample	Compound	Reported Concentration	Modified Final Concentration
L58785-3	PCB 1	0.342 pg/g	0.342U pg/g
	PCB 2	0.297 pg/g	0.297U pg/g
	PCB 3	0.443 pg/g	0.443U pg/g
	PCB 8	0.229 pg/g	0.229U pg/g
	PCB 11	1.39 pg/g	1.39U pg/g
	PCB 18+30	0.255 pg/g	0.255U pg/g
	PCB 20+28	1.04 pg/g	1.04U pg/g
	PCB 22	0.290 pg/g	0.290U pg/g
	PCB 40+41+71	0.362 pg/g	0.362U pg/g
	PCB 44+47+65	0.730 pg/g	0.730U pg/g
	PCB 49+69	0.533 pg/g	0.533U pg/g
	PCB 56	0.285 pg/g	0.285U pg/g
	PCB 60	0.215 pg/g	0.215U pg/g
	PCB 61+70+74+76	1.40 pg/g	1.40U pg/g
	PCB 66	0.679 pg/g	0.679U pg/g
	PCB 83+99	1.23 pg/g	1.23U pg/g
	PCB 90+101+113	1.80 pg/g	1.80U pg/g
	PCB 110+115	1.89 pg/g	1.89U pg/g
	PCB 135+151+154	0.606 pg/g	0.606U pg/g
	PCB 153+168	2.44 pg/g	2.44U pg/g
	PCB 180+193	0.809 pg/g	0.809U pg/g
L58785-4	PCB 1	0.715 pg/g	0.715U pg/g
	PCB 2	0.487 pg/g	0.487U pg/g
	PCB 3	0.654 pg/g	0.654U pg/g
	PCB 8	0.936 pg/g	0.936U pg/g
	PCB 11	2.69 pg/g	2.69U pg/g
L59454-1	PCB 1	0.598 pg/g	0.598U pg/g
	PCB 2	0.629 pg/g	0.629U pg/g
	PCB 3	0.782 pg/g	0.782U pg/g
	PCB 8	1.03 pg/g	1.03U pg/g
	PCB 11	3.72 pg/g	3.72U pg/g
	PCB 32	0.459 pg/g	0.459U pg/g
L59454-2	PCB 1	1.18 pg/g	1.18U pg/g
	PCB 2	0.731 pg/g	0.731U pg/g
	PCB 3	1.10 pg/g	1.10U pg/g
L59454-3	PCB 1	0.582 pg/g	0.582U pg/g
	PCB 2	0.392 pg/g	0.392U pg/g
	PCB 3	0.595 pg/g	0.595U pg/g
	PCB 8	0.296 pg/g	0.296U pg/g
	PCB 11	1.81 pg/g	1.81U pg/g
	PCB 18+30	0.267 pg/g	0.267U pg/g
	PCB 20+28	1.11 pg/g	1.11U pg/g
	PCB 22	0.304 pg/g	0.304U pg/g
	PCB 32	0.153 pg/g	0.153U pg/g
	PCB 40+41+71	0.437 pg/g	0.437U pg/g
	PCB 42	0.182 pg/g	0.182U pg/g
	PCB 44+47+65	0.971 pg/g	0.971U pg/g
	PCB 56	0.325 pg/g	0.325U pg/g
	PCB 60	0.294 pg/g	0.294U pg/g
	PCB 61+70+74+76	1.78 pg/g	1.78U pg/g
	PCB 66	0.921 pg/g	0.921U pg/g
	PCB 83+99	1.60 pg/g	1.60U pg/g
	PCB 90+101+113	2.28 pg/g	2.28U pg/g

Sample	Compound	Reported Concentration	Modified Final Concentration
L59454-3DUP	PCB 1	0.544 pg/g	0.544U pg/g
	PCB 2	0.514 pg/g	0.514U pg/g
	PCB 3	0.606 pg/g	0.606U pg/g
	PCB 11	2.03 pg/g	2.03U pg/g
	PCB 18+30	0.347 pg/g	0.347U pg/g
	PCB 20+28	1.06 pg/g	1.06U pg/g
	PCB 32	0.121 pg/g	0.121U pg/g
	PCB 40+41+71	0.387 pg/g	0.387U pg/g
	PCB 44+47+65	1.57 pg/g	1.57U pg/g
	PCB 49+69	0.683 pg/g	0.683U pg/g
	PCB 56	0.360 pg/g	0.360U pg/g
	PCB 60	0.292 pg/g	0.292U pg/g
	PCB 61+70+74+76	1.94 pg/g	1.94U pg/g
	PCB 66	0.978 pg/g	0.978U pg/g
	PCB 83+99	2.05 pg/g	2.05U pg/g
	PCB 90+101+113	2.95 pg/g	2.95U pg/g
L59454-4	PCB 1	0.622 pg/g	0.622U pg/g
	PCB 2	0.728 pg/g	0.728U pg/g
	PCB 3	0.896 pg/g	0.896U pg/g
	PCB 8	1.27 pg/g	1.27U pg/g
	PCB 11	4.59 pg/g	4.59U pg/g
L59454-6	PCB 1	0.834 pg/g	0.834U pg/g
	PCB 2	0.728 pg/g	0.728U pg/g
	PCB 3	1.05 pg/g	1.05U pg/g

Method blank results flagged "K" by the laboratory as estimated maximum possible concentration (EMPC) were considered not detected.

VI. Matrix Spike/Matrix Spike Duplicates/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.

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

VII. Ongoing Precision & Recovery Samples (OPR)

Ongoing precision and recovery (OPR) control samples were reviewed for each matrix as applicable. The percent recoveries (%R) were within the QC limits.

VIII. Regional Quality Assurance and Quality Control

Not applicable.

IX. Internal Standards

All internal standard recoveries (%R) were within QC limits.

X. Target Compound Identifications

Raw data were not reviewed for this SDG.

XI. Compound Quantitation

All compound quantitations were within validation criteria with the following exceptions:

Sample	Compound	Flag	A or P
All samples in SDG DPWG47054	All TCL compounds flagged "K" by the laboratory as estimated maximum possible concentration.	U	A

Raw data were not reviewed for this SDG.

XII. System Performance

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

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

XIV. Field Duplicates

No field duplicates were identified in this SDG.

XV. Field Blanks

No field blanks were identified in this SDG.

Lower Duwamish Waterway, Green River Study, Suspended Solids Polychlorinated Biphenyls as Congeners - Data Qualification Summary - SDG DPWG47054

SDG	Sample	Compound	Flag	A or P	Reason
DPWG47054	L58785-1 L58785-2 L58785-3 L58785-4 L58785-5 L58785-6 L59454-1 L59454-2 L59454-3 L59454-4 L59454-5 L59454-6 L59454-7 L59454-3DUP	All TCL compounds flagged "K" by the laboratory as estimated maximum possible concentration.	U	A	Compound quantitation (EMPC)

Lower Duwamish Waterway, Green River Study, Suspended Solids Polychlorinated Biphenyls as Congeners - Laboratory Blank Data Qualification Summary - SDG DPWG47054

SDG	Sample	Compound	Modified Final Concentration	A or P
DPWG47054	L58785-1	PCB 1 PCB 2 PCB 3 PCB 11 PCB 20+28 PCB 22 PCB 42	0.529U pg/g 0.482U pg/g 0.705U pg/g 3.38U pg/g 4.40U pg/g 1.23U pg/g 0.729U pg/g	A
DPWG47054	L58785-2	PCB 2 PCB 3	1.73U pg/g 3.22U pg/g	A

SDG	Sample	Compound	Modified Final Concentration	A or P
DPWG47054	L58785-3	PCB 1 PCB 2 PCB 3 PCB 8 PCB 11 PCB 18+30 PCB 20+28 PCB 22 PCB 40+41+71 PCB 44+47+65 PCB 49+69 PCB 56 PCB 60 PCB 61+70+74+76 PCB 66 PCB 83+99 PCB 90+101+113 PCB 110+115 PCB 135+151+154 PCB 153+168 PCB 180+193	0.342U pg/g 0.297U pg/g 0.443U pg/g 0.229U pg/g 1.39U pg/g 0.255U pg/g 1.04U pg/g 0.290U pg/g 0.362U pg/g 0.730U pg/g 0.533U pg/g 0.285U pg/g 0.215U pg/g 1.40U pg/g 0.679U pg/g 1.23U pg/g 1.80U pg/g 1.89U pg/g 0.606U pg/g 2.44U pg/g 0.809U pg/g	A
DPWG47054	L58785-4	PCB 1 PCB 2 PCB 3 PCB 8 PCB 11	0.715U pg/g 0.487U pg/g 0.654U pg/g 0.936U pg/g 2.69U pg/g	A
DPWG47054	L59454-1	PCB 1 PCB 2 PCB 3 PCB 8 PCB 11 PCB 32	0.598U pg/g 0.629U pg/g 0.782U pg/g 1.03U pg/g 3.72U pg/g 0.459U pg/g	A
DPWG47054	L59454-2	PCB 1 PCB 2 PCB 3	1.18U pg/g 0.731U pg/g 1.10U pg/g	A
DPWG47054	L59454-3	PCB 1 PCB 2 PCB 3 PCB 8 PCB 11 PCB 18+30 PCB 20+28 PCB 22 PCB 32 PCB 40+41+71 PCB 42 PCB 44+47+65 PCB 56 PCB 60 PCB 61+70+74+76 PCB 66 PCB 83+99 PCB 90+101+113	0.582U pg/g 0.392U pg/g 0.595U pg/g 0.296U pg/g 1.81U pg/g 0.267U pg/g 1.11U pg/g 0.304U pg/g 0.153U pg/g 0.437U pg/g 0.182U pg/g 0.971U pg/g 0.325U pg/g 0.294U pg/g 1.78U pg/g 0.921U pg/g 1.60U pg/g 2.28U pg/g	A

SDG	Sample	Compound	Modified Final Concentration	A or P
DPWG47054	L59454-3DUP	PCB 1 PCB 2 PCB 3 PCB 11 PCB 18+30 PCB 20+28 PCB 32 PCB 40+41+71 PCB 44+47+65 PCB 49+69 PCB 56 PCB 60 PCB 61+70+74+76 PCB 66 PCB 83+99 PCB 90+101+113	0.544U pg/g 0.514U pg/g 0.606U pg/g 2.03U pg/g 0.347U pg/g 1.06U pg/g 0.121U pg/g 0.387U pg/g 1.57U pg/g 0.683U pg/g 0.360U pg/g 0.292U pg/g 1.94U pg/g 0.978U pg/g 2.05U pg/g 2.95U pg/g	A
DPWG47054	L59454-4	PCB 1 PCB 2 PCB 3 PCB 8 PCB 11	0.622U pg/g 0.728U pg/g 0.896U pg/g 1.27U pg/g 4.59U pg/g	A
DPWG47054	L59454-6	PCB 1 PCB 2 PCB 3	0.834U pg/g 0.728U pg/g 1.05U pg/g	A

LDC #: 31697B31 **VALIDATION COMPLETENESS WORKSHEET** Date: 5-8-14
SDG #: DPWG47054 Level III Page: 1 of 1
Laboratory: AXYS Analytical Services Ltd. Reviewer: YH
2nd Reviewer: Q

METHOD: HRGC/HRMS Polychlorinated Biphenyl Congeners (EPA Method 1668A)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 9/30/13 → 1/7/14
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	≤ 20
IV.	Routine calibration/~~ICV~~	A	QC limits
V.	Blanks	SW	
VI.	Matrix spike/Matrix spike duplicates/DUP	N/A	C.S. / D: 9+14
VII.	Laboratory control samples	A	OPR
VIII.	Regional quality assurance and quality control	N	
IX.	Internal standards	A	
X.	Target compound identifications	N	
XI.	Compound quantitationRL/~~LOQ/LODs~~	SW	
XII.	System performance	N	
XIII.	Overall assessment of data	A	
XIV.	Field duplicates	N	
XV.	Field blanks	N	

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

Validated Samples: Sediment

1	L58785-1	11	L59454-5	21		31	
2	L58785-2	12	L59454-6	22		32	
3	L58785-3	13	L59454-7	23		33	
4	L58785-4	14	L59454-3DUP	24		34	
5	L58785-5	15		25		35	
6	L58785-6	16		26		36	
7	L59454-1	17		27		37	
8	L59454-2	18		28		38	
9	L59454-3	19		29		39	
10	L59454-4	20	WG46438-101	30		40	

LDC #: 31697B31

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer:
2nd Reviewer:

METHOD: HRGC/HRMS PCB Congeners (EPA Method 1668A)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".
(Y) N N/A Were all samples associated with a method blank?
Y N (N/A) Was a method blank performed for each matrix and whenever a sample extraction was performed?
(Y) N N/A Was the method blank contaminated?
Blank extraction date: 02/12/14 **Blank analysis date:** 03/09/14 **Associated samples:** All Qual U +Dup
Conc. units: pg/g

Compound	Blank ID		Sample Identification								
	WG46438-101	5x	1	2	3	4	7	8	9	14	10
PCB 1	0.420	2.10	0.529		0.342	0.715	0.598	1.18	0.582	0.544	0.622
PCB 2	0.359	1.80	0.482	1.73	0.297	0.487	0.629	0.731	0.392	0.514	0.728
PCB 3	0.792	3.96	0.705	3.22	0.443	0.654	0.782	1.10	0.595	0.606	0.896
PCB 8	0.262	1.31			0.229	0.936	1.03		0.296		1.27
PCB 11	1.23	6.15	3.38		1.39	2.69	3.72		1.81	2.03	4.59
PCB 18+30	0.260	1.30			0.255				0.267	0.347	
PCB 20+28	0.887	4.44	4.40		1.04				1.11	1.06	
PCB 22	0.247	1.24	1.23		0.290				0.304		
PCB 32	0.107	0.54					0.459		0.153	0.121	
PCB 40+41+71	0.207	1.04			0.362				0.437	0.387	
PCB 42	0.149	0.75	0.729						0.182		
PCB 44+47+65	0.387	1.94			0.730				0.971	1.57	
PCB 49+69	0.332	1.66			0.533					0.683	
PCB 56	0.210	1.05			0.285				0.325	0.360	
PCB 60	0.160	0.80			0.215				0.294	0.292	
PCB 61+70+74+76	0.788	3.94			1.40				1.78	1.94	
PCB 66	0.419	2.10			0.679				0.921	0.978	

LDC #: 31697B31

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: JM
2nd Reviewer: [illegible]

METHOD: HRGC/HRMS PCB Congeners (EPA Method 1668A)

Compound	Blank ID		Sample Identification								
	WG46438-101	5x	1	2	3	4	7	8	9	14	10
PCB 83+99	0.425	2.13			1.23				1.60	2.05	
PCB 85+116+117	0.159	0.80									
PCB 90+101+113	0.594	2.97			1.80				2.28	2.95	
PCB 110+115	0.446	2.23			1.89						
PCB 135+151+154	0.170	0.85			0.1606						
PCB 153+168	0.488	2.44			2.44						
PCB 180+193	0.240	1.20			0.809						
PCB 187	0.137	0.69									
Total Monochloro Biphenyls	1.57	7.85									
Total Dichloro Biphenyls	1.49	7.45									
Total Trichloro Biphenyls	1.50	7.50									
Total Tetrachloro Biphenyls	2.65	13.25									
Total Pentachloro Biphenyls	1.62	8.10									
Total Hexachloro Biphenyls	0.658	3.29									
Total Heptachloro Biphenyls	0.377	1.89									

All contaminants within five times the method blank concentration were qualified as not detected.

EMPC values flagged "K" considered "ND"

LDC #: 31697B31

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: JM
2nd Reviewer: a

METHOD: HRGC/HRMS PCB Congeners (EPA Method 1668A)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".
(Y) N N/A Were all samples associated with a method blank?
Y N (N/A) Was a method blank performed for each matrix and whenever a sample extraction was performed?
(Y) N N/A Was the method blank contaminated?
Blank extraction date: 02/12/14 **Blank analysis date:** 03/09/14 **Associated samples:** All Qual U +Dup
Conc. units: pg/g

Compound	Blank ID		Sample Identification								
	WG46438-101	5x	12								
PCB 1	0.420	2.10	0.834								
PCB 2	0.359	1.80	0.728								
PCB 3	0.792	3.96	1.05								
PCB 8	0.262	1.31									
PCB 11	1.23	6.15									
PCB 18+30	0.260	1.30									
PCB 20+28	0.887	4.44									
PCB 22	0.247	1.24									
PCB 32	0.107	0.54									
PCB 40+41+71	0.207	1.04									
PCB 42	0.149	0.75									
PCB 44+47+65	0.387	1.94									
PCB 49+69	0.332	1.66									
PCB 56	0.210	1.05									
PCB 60	0.160	0.80									
PCB 61+70+74+76	0.788	3.94									
PCB 66	0.419	2.10									

LDC #: 31697B31

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: MC
2nd Reviewer: A

METHOD: HRGC/HRMS PCB Congeners (EPA Method 1668A)

Compound	Blank ID		Sample Identification								
	WG46438-101	5x	12								
PCB 83+99	0.425	2.13									
PCB 85+116+117	0.159	0.80									
PCB 90+101+113	0.594	2.97									
PCB 110+115	0.446	2.23									
PCB 135+151+154	0.170	0.85									
PCB 153+168	0.488	2.44									
PCB 180+193	0.240	1.20									
PCB 187	0.137	0.69									
Total Monochloro Biphenyls	1.57	7.85									
Total Dichloro Biphenyls	1.49	7.45									
Total Trichloro Biphenyls	1.50	7.50									
Total Tetrachloro Biphenyls	2.65	13.25									
Total Pentachloro Biphenyls	1.62	8.10									
Total Hexachloro Biphenyls	0.658	3.29									
Total Heptachloro Biphenyls	0.377	1.89									

All contaminants within five times the method blank concentration were qualified as not detected.

EMPC values flagged "K" considered "ND"

LDC #: 31697B3J

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported CRQLs

Reviewer: JK
2nd Reviewer: CK

METHOD: HRGC/HRMS PCB Congeners (EPA Method 1668A)

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

Y N N/A Were the correct internal standard (IS), quantitation ions and relative response factors (RRF) used to quantitate the compound?
Y N N/A Compound quantitation and CRQLs were adjusted to reflect all sample dilutions and dry weight factors (if necessary).

#	Date	Compound	Finding	Associated Samples	Qualifications
			EMPC results flagged "K"	All +Dup	U/A

Comments: ~~See sample calculation verification worksheet for recalculations~~

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name:	Lower Duwamish Waterway, Green River Study, Suspended Solids
Collection Date:	August 13, 2013 through February 18, 2014
LDC Report Date:	May 9, 2014
Matrix:	Sediment
Parameters:	Dioxins/Dibenzofurans
Validation Level:	EPA Level III
Laboratory:	AXYS Analytical Services Ltd.
Sample Delivery Group (SDG):	DPWG47061

Sample Identification

L58537-1
L58537-2
L58754-1
L58977-1
L59049-1
L59190-1
L59190-2
L59457-1
L59472-3
L59596-1
L59596-2
L59454-7
L59723-1
L59723-2
L59723-3
L59723-4
L59472-3DUP

Introduction

This data review covers 17 sediment samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 1613B for Polychlorinated Dioxins/Dibenzofurans.

This review follows the Green River Study, Suspended Solids Characterization Sampling and Analysis Plan (January 2013) and EPA Region 10 SOP for the Validation of Polychlorinated Dibenzodioxin (PCDD) and Polychlorinated Dibenzofuran (PCDF) Data (Revision 2.0, January 31, 1996).

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 advisory nature.

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.

J1 Blank Contamination: Indicates possible high bias and/or false positives.

J2 Calibration Range exceeded: Indicates possible low bias.

J3 Holding times not met: Indicates low bias for most analytes.

J4 Other QC parameters outside control limits: bias not readily determined.

J5 Other QC parameters outside control limits. The reported results appear to be biased high. The actual value of target compound in the sample may be lower than the value reported by the laboratory.

J6 Other QC parameters outside control limits. The reported results appear to be biased low. The actual value of target compound in the sample may be higher than the value reported by the laboratory.

R Quality control indicates the data is not usable.

NJ Presumptive evidence of presence of the compound at an estimated quantity.

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. HRGC/HRMS Instrument Performance Check

Instrument performance was checked at the required daily frequency.

Retention time windows were established for all homologues. The chromatographic resolution between ^{13}C-2,3,7,8-TCDD and ^{13}C-1,2,3,4-TCDD was less than or equal to 25%.

III. Initial Calibration

A five point initial calibration was performed as required by the method.

Percent relative standard deviations (%RSD) were less than or equal to 20.0% for unlabeled compounds and less than or equal to 35.0% for labeled compounds.

The ion abundance ratios for all PCDDs and PCDFs were within validation criteria.

IV. Routine Calibration (Continuing)

Routine calibration was performed at the required frequencies.

All of the routine calibration results were within the QC limits for unlabeled compounds and labeled compounds.

The ion abundance ratios for all PCDDs and PCDFs were within method criteria.

V. Blanks

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

Method Blank ID	Extraction Date	Compound	Concentration	Associated Samples
WG46491-101	2/28/14	1,2,3,4,6,7,8-HpCDD Total HpCDD	0.116 pg/g 0.116 pg/g	All samples in SDG DPWG47061

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

Method blank results flagged "K" by the laboratory as estimated maximum possible concentration (EMPC) were considered not detected.

VI. Matrix Spike/Matrix Spike Duplicates/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.

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

VII. Ongoing Precision & Recovery Samples (OPR)

Ongoing precision and recovery (OPR) control samples were reviewed for each matrix as applicable. The percent recoveries (%R) were within the QC limits.

VIII. Regional Quality Assurance and Quality Control

Not applicable.

IX. Internal Standards

All internal standard recoveries were within QC limits.

X. Target Compound Identifications

Raw data were not reviewed for this SDG.

XI. Compound Quantitation

All compound quantitation were within validation criteria with the following exceptions:

Sample	Compound	Flag	A or P
All samples in SDG DPWG47061	All TCL compounds flagged "K" by the laboratory as estimated maximum possible concentration.	U	A

Raw data were not reviewed for this SDG.

XII. System Performance

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

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

XIV. Field Duplicates

No field duplicates were identified in this SDG.

XV. Field Blanks

No field blanks were identified in this SDG.

Lower Duwamish Waterway, Green River Study, Suspended Solids Dioxins/Dibenzofurans - Data Qualification Summary - SDG DPWG47061

SDG	Sample	Compound	Flag	A or P	Reason
DPWG47061	L58537-1 L58537-2 L58754-1 L58977-1 L59049-1 L59190-1 L59190-2 L59457-1 L59472-3 L59596-1 L59596-2 L59454-7 L59723-1 L59723-2 L59723-3 L59723-4 L59472-3DUP	All TCL compounds flagged "K" by the laboratory as estimated maximum possible concentration.	U	A	Compound quantitation (EMPC)

Lower Duwamish Waterway, Green River Study, Suspended Solids Dioxins/Dibenzofurans - Laboratory Blank Data Qualification Summary - SDG DPWG47061

No Sample Data Qualified in this SDG

LDC #: 31697C21 **VALIDATION COMPLETENESS WORKSHEET** Date: 5-8-14
SDG #: DPWG47061 Level III Page: 1 of 1
Laboratory: AXYS Analytical Services Ltd. Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: HRGC/HRMS Dioxins/Dibenzofurans (EPA Method 1613B)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 8/13/13 → 2/18/14
II.	HRGC/HRMS Instrument performance check	A	
III.	Initial calibration	A	≤ 20/35
IV.	Routine calibration/~~ICV~~	A	QC limits
V.	Blanks	SW	
VI.	Matrix spike/Matrix spike duplicates/DUP	N/A	C.S. / D=9+17
VII.	Laboratory control samples	A	OPR
VIII.	Regional quality assurance and quality control	N	
IX.	Internal standards	A	
X.	Target compound identifications	N	
XI.	Compound quantitation/RL/~~LOQ/LODs~~	SW	
XII.	System performance	N	
XIII.	Overall assessment of data	A	
XIV.	Field duplicates	N	
XV.	Field blanks	N	

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

Validated Samples: Sediment

1	L58537-1	11	L59596-2	21		31	
2	L58537-2	12	L59454-7	22		32	
3	L58754-1	13	L59723-1	23		33	
4	L58977-1	14	L59723-2	24		34	
5	L59049-1	15	L59723-3	25		35	
6	L59190-1	16	L59723-4	26		36	
7	L59190-2	17	L59472-3DUP	27		37	
8	L59457-1	18		28		38	
9	L59472-3	19		29		39	
10	L59596-1	20		30	WG 46491-101	40	

Notes: _____

VALIDATION FINDINGS WORKSHEET

METHOD: HRGC/HRMS Dioxins/Dibenzofurans (EPA Method 1613B)

A. 2,3,7,8-TCDD	F. 1,2,3,4,6,7,8-HpCDD	K. 1,2,3,4,7,8-HxCDF	P. 1,2,3,4,7,8,9-HpCDF	U. Total HpCDD
B. 1,2,3,7,8-PeCDD	G. OCDD	L. 1,2,3,6,7,8-HxCDF	Q. OCDF	V. Total TCDF
C. 1,2,3,4,7,8-HxCDD	H. 2,3,7,8-TCDF	M. 2,3,4,6,7,8-HxCDF	R. Total TCDD	W. Total PeCDF
D. 1,2,3,6,7,8-HxCDD	I. 1,2,3,7,8-PeCDF	N. 1,2,3,7,8,9-HxCDF	S. Total PeCDD	X. Total HxCDF
E. 1,2,3,7,8,9-HxCDD	J. 2,3,4,7,8-PeCDF	O. 1,2,3,4,6,7,8-HpCDF	T. Total HxCDD	Y. Total HpCDF

Notes:_____

LDC #: 31697C21

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: IA
2nd Reviewer: 9

METHOD: HRGC/HRMS Dioxins/Dibenzofurans (EPA Method 1613B)

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

(Y) N N/A Were all samples associated with a method blank?

Y N (N/A) Was a method blank performed for each matrix and whenever a sample extraction was performed?

(Y) N N/A Was the method blank contaminated?

Blank extraction date: 02/28/14 **Blank analysis date:** 03/14/14 **Associated samples:** All >5X + Dup

Conc. units: pg/g

Compound	Blank ID	Sample Identification								
	WG46491-101	5x								
F	0.116	0.580								
U	0.116	0.580								

*EMPC results flagged "K" considered "ND"

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
All contaminants within five times the method blank concentration were qualified as not detected, "U".

LDC #: 31697C21

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported RLs

Reviewer:
2nd Reviewer:

METHOD: GC/MS Dioxins/Dibenzofurans (Method 1613B)

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

Y N (N/A) Were the correct internal standard (IS), quantitation ions and relative response factors (RRF) used to quantitate the compound?
Y N (N/A) Compound quantitation and RLs were adjusted to reflect all sample dilutions and dry weight factors (if necessary).

#	Date	Compound	Finding	Associated Samples	Qualifications
			All EMPC qualified "K"	All + Dup	U/A

Comments: _____

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name:	Lower Duwamish Waterway, Green River Study, Suspended Solids
Collection Date:	September 13, 2013 through January 29, 2014
LDC Report Date:	June 1, 2016
Matrix:	Sediment
Parameters:	Polychlorinated Biphenyls as Congeners
Validation Level:	EPA Level III
Laboratory:	AXYS Analytical Services, Ltd.
Sample Delivery Group (SDG):	DPWG47066

Sample Identification

L58537-1
L58537-2
L58754-1
L58977-1
L59049-1
L59190-1
L59190-2
L59457-1
L59472-1
L59472-3
L59596-1
L59596-2
L59190-2DUP

Introduction

This data review covers 13 sediment samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 1668A for Polychlorinated Biphenyls as Congeners.

This review follows the Green River Study, Suspended Solids Characterization Sampling and Analysis Plan (January 2013) and EPA Region 10 SOP for the Validation of Polychlorinated Biphenyl (PCB) Data (Revision 1.0, December 8, 1995).

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 advisory nature.

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.

J1 Blank Contamination: Indicates possible high bias and/or false positives.

J2 Calibration Range exceeded: Indicates possible low bias.

J3 Holding times not met: Indicates low bias for most analytes.

J4 Other QC parameters outside control limits: bias not readily determined.

J5 Other QC parameters outside control limits. The reported results appear to be biased high. The actual value of target compound in the sample may be lower than the value reported by the laboratory.

J6 Other QC parameters outside control limits. The reported results appear to be biased low. The actual value of target compound in the sample may be higher than the value reported by the laboratory.

R Quality control indicates the data is not usable.

NJ Presumptive evidence of presence of the compound at an estimated quantity.

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. HRGC/HRMS Instrument Performance Check

Instrument performance was checked at the required daily frequency.

Retention time windows were established for all congeners. The chromatographic resolution between the congeners PCB-23 and PCB-34 and congeners PCB-182 and PCB-187 was resolved with a valley of less than or equal to 40%.

III. Initial Calibration

A five point initial calibration was performed as required by the method.

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

The ion abundance ratios for all PCBs were within method criteria.

IV. Routine Calibration (Continuing)

Routine calibration was performed at the required frequencies.

All of the routine calibration percent differences (%D) between the initial calibration RRF and the routine calibration RRF were less than or equal to 30.0% for unlabeled compounds and less than or equal to 50.0% for labeled compounds.

The ion abundance ratios for all PCBs were within method criteria.

V. Blanks

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

Method Blank ID	Extraction Date	Compound	Concentration	Associated Samples
WG46439-101	2/12/14	PCB 1	0.533 pg/g	All samples in SDG DPWG47066
		PCB 2	0.447 pg/g	
		PCB 3	0.810 pg/g	
		PCB 11	2.04 pg/g	
		PCB 18+30	0.276 pg/g	
		PCB 20+28	0.705 pg/g	
		PCB 21+33	0.319 pg/g	
		PCB 22	0.313 pg/g	
		PCB 31	0.434 pg/g	
		PCB 44+47+65	0.648 pg/g	
		PCB 52	1.10 pg/g	
		PCB 56	0.191 pg/g	
		PCB 61+70+74+76	1.06 pg/g	
		PCB 86+87+97+108+119+125	0.913 pg/g	
		PCB 93+95+98+100+102	1.30 pg/g	
		PCB 105	0.245 pg/g	
		PCB 118	0.775 pg/g	
		PCB 129+138+160+163	0.745 pg/g	
		PCB 147+149	0.562 pg/g	
		PCB 206	0.340 pg/g	
		PCB 209	1.38 pg/g	
		Total Monochloro Biphenyls	1.79 pg/g	
		Total Dichloro Biphenyls	2.04 pg/g	
		Total Trichloro Biphenyls	2.05 pg/g	
		Total Tetrachloro Biphenyls	3.00 pg/g	
		Total Pentachloro Biphenyls	3.23 pg/g	
		Total Hexachloro Biphenyls	1.31 pg/g	
		Total Nonachloro Biphenyls	0.340 pg/g	

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

Sample	Compound	Reported Concentration	Modified Final Concentration
L58754-1	PCB 1	1.74 pg/g	1.74U pg/g
	PCB 2	1.52 pg/g	1.52U pg/g
	PCB 3	2.04 pg/g	2.04U pg/g
L58977-1	PCB 3	3.34 pg/g	3.34U pg/g
L59049-1	PCB 2	2.09 pg/g	2.09U pg/g
	PCB 3	3.86 pg/g	3.86U pg/g
L59190-1	PCB 1	2.02 pg/g	2.02U pg/g
	PCB 2	1.47 pg/g	1.47U pg/g
	PCB 3	2.16 pg/g	2.16U pg/g
L59190-2	PCB 2	2.19 pg/g	2.19U pg/g
	PCB 3	3.24 pg/g	3.24U pg/g

Sample	Compound	Reported Concentration	Modified Final Concentration
L59190-2DUP	PCB 2 PCB 3	2.13 pg/g 3.54 pg/g	2.13U pg/g 3.54U pg/g

Method blank results flagged "K" by the laboratory as estimated maximum possible concentration (EMPC) were considered not detected.

VI. Matrix Spike/Matrix Spike Duplicates/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.

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

VII. Ongoing Precision & Recovery Samples (OPR)

Ongoing precision and recovery (OPR) control samples were reviewed for each matrix as applicable. The percent recoveries (%R) were within the QC limits.

VIII. Regional Quality Assurance and Quality Control

Not applicable.

IX. Internal Standards

All internal standard recoveries (%R) were within QC limits.

X. Target Compound Identifications

Raw data were not reviewed for this SDG.

XI. Compound Quantitation

All compound quantitations were within validation criteria with the following exceptions:

Sample	Compound	Flag	A or P
All samples in SDG DPWG47066	All TCL compounds flagged "K" by the laboratory as estimated maximum possible concentration.	U	A

Raw data were not reviewed for this SDG.

XII. System Performance

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

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

XIV. Field Duplicates

No field duplicates were identified in this SDG.

XV. Field Blanks

No field blanks were identified in this SDG.

Lower Duwamish Waterway, Green River Study, Suspended Solids Polychlorinated Biphenyls as Congeners - Data Qualification Summary - SDG DPWG47066

SDG	Sample	Compound	Flag	A or P	Reason
DPWG47066	L58537-1 L58537-2 L58754-1 L58977-1 L59049-1 L59190-1 L59190-2 L59457-1 L59472-1 L59472-3 L59596-1 L59596-2 L59190-2DUP	All TCL compounds flagged "K" by the laboratory as estimated maximum possible concentration.	U	A	Compound quantitation (EMPC)

Lower Duwamish Waterway, Green River Study, Suspended Solids Polychlorinated Biphenyls as Congeners - Laboratory Blank Data Qualification Summary - SDG DPWG47066

SDG	Sample	Compound	Modified Final Concentration	A or P
DPWG47066	L58754-1	PCB 1 PCB 2 PCB 3	1.74U pg/g 1.52U pg/g 2.04U pg/g	A
DPWG47066	L58977-1	PCB 3	3.34U pg/g	A
DPWG47066	L59049-1	PCB 2 PCB 3	2.09U pg/g 3.86U pg/g	A
DPWG47066	L59190-1	PCB 1 PCB 2 PCB 3	2.02U pg/g 1.47U pg/g 2.16U pg/g	A
DPWG47066	L59190-2	PCB 2 PCB 3	2.19U pg/g 3.24U pg/g	A
DPWG47066	L59190-2DUP	PCB 2 PCB 3	2.13U pg/g 3.54U pg/g	A

LDC #: 31697D31 **VALIDATION COMPLETENESS WORKSHEET** Date: 5-8-14

SDG #: DPWG47066 Level III Page: 1 of 1

Laboratory: AXYS Analytical Services Ltd. Reviewer:

2nd Reviewer:

METHOD: HRGC/HRMS Polychlorinated Biphenyl Congeners (EPA Method 1668A)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 8/13/13 -> 1/29/14
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	≤20
IV.	Routine calibration/~~ICV~~	A	QC limits
V.	Blanks	SW	
VI.	Matrix spike/Matrix spike duplicates /DUP	N/A	C.S. /D = 7+13
VII.	Laboratory control samples	A	OPR
VIII.	Regional quality assurance and quality control	N	
IX.	Internal standards	A	
X.	Target compound identifications	N	
XI.	Compound quantitationRL/~~LOQ/LOD~~s	SW	
XII.	System performance	N	
XIII.	Overall assessment of data	A	
XIV.	Field duplicates	N	
XV.	Field blanks	N	

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

Validated Samples: Sediment

1	L58537-1	11	L59596-1	21		31	
2	L58537-2	12	L59596-2	22		32	
3	L58754-1	13	L59190-2DUP	23		33	
4	L58977-1	14		24		34	
5	L59049-1	15		25		35	
6	L69190-1	16		26		36	
7	L59190-2	17		27		37	
8	L59457-1	18		28		38	
9	L59472-1	19		29	WG44439-101	39	
10	L59472-3	20		30		40	

LABORATORY DATA CONSULTANTS, INC.

2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

King County Environmental Laboratory
322 W. Ewing Street
Seattle WA 98119
ATTN: Mr. Fritz Grothkopp

March 13, 2014

SUBJECT: Lower Duwamish Waterway, Green River Study Suspended Solids, Data Validation

Dear Mr. Grothkopp,

Enclosed are the final validation reports for the fractions listed below. These SDGs were received on February 21, 2014. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project # 31372:

SDG #	Fraction
DPWG45669 DPWG46329 DPWG46351	Dioxins/Dibenzofurans & Polychlorinated Biphenyls as Congeners

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

- Green River Study, Suspended Solids Characterization Sampling and Analysis Plan, January 2013
- EPA Region 10 SOP for the Validation of Polychlorinated Dibenzodioxin (PCDD) and Polychlorinated Dibenzofuran (PCDF) Data, Revision 2.0, January 31,1996
- EPA Region 10 SOP for the Validation of Polychlorinated Biphenyl, PCB, Data, Revision 1.0, December 8, 1995

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

Sincerely,

Stella S. Cuenco
Operations Manager/Senior Chemist

0 Pages CD EDD RTC CD

Attachment 1

III LDC #31372 (King County - Seattle WA / Lower Duwamish Waterway, Green River Study Suspended Solids) Project

LDC	SDG#	DATE REC'D	(3) DATE DUE	PCB Cong (1668)		Dioxins (1613B)																											
Matrix: Water/Sediment				W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	DPWG45669	02/21/14	03/14/14	-	-	0	12																										
B	DPWG46329	02/21/14	03/14/14	-	-	0	12																										
C	DPWG46351	02/21/14	03/14/14	0	12	-	-																										
Total	A/SC			0	12	0	24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	36

Shaded cells indicate Level IV validation (all other cells are Level II validation). These sample counts do not include MS/MSD, and DUPs

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name:	Lower Duwamish Waterway, Green River Study, Suspended Solids
Collection Date:	February 4 through May 14, 2013
LDC Report Date:	March 10, 2014
Matrix:	Sediment
Parameters:	Dioxins/Dibenzofurans
Validation Level:	EPA Level III
Laboratory:	AXYS Analytical Services Ltd.
Sample Delivery Group (SDG):	DPWG45669

Sample Identification

L57305-3
L57305-4
L57305-5
L57305-6
L57986-3
L57986-4
L57986-5
L57495-4
L57495-5
L57634-2
L57732-2
L57792-3
L57305-4DUP

Introduction

This data review covers 13 sediment samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 1613B for Polychlorinated Dioxins/Dibenzofurans.

This review follows the Green River Study, Suspended Solids Characterization Sampling and Analysis Plan (January 2013) and EPA Region 10 SOP for the Validation of Polychlorinated Dibenzodioxin (PCDD) and Polychlorinated Dibenzofuran (PCDF) Data (Revision 2.0, January 31, 1996).

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 advisory nature.

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.

J1 Blank Contamination: Indicates possible high bias and/or false positives.

J2 Calibration Range exceeded: Indicates possible low bias.

J3 Holding times not met: Indicates low bias for most analytes.

J4 Other QC parameters outside control limits: bias not readily determined.

J5 Other QC parameters outside control limits. The reported results appear to be biased high. The actual value of target compound in the sample may be lower than the value reported by the laboratory.

J6 Other QC parameters outside control limits. The reported results appear to be biased low. The actual value of target compound in the sample may be higher than the value reported by the laboratory.

R Quality control indicates the data is not usable.

NJ Presumptive evidence of presence of the compound at an estimated quantity.

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. HRGC/HRMS Instrument Performance Check

Instrument performance was checked at the required daily frequency.

Retention time windows were established for all homologues. The chromatographic resolution between ^{13}C-2,3,7,8-TCDD and ^{13}C-1,2,3,4-TCDD was less than or equal to 25%.

III. Initial Calibration

A five point initial calibration was performed as required by the method.

Percent relative standard deviations (%RSD) were less than or equal to 20.0% for unlabeled compounds and less than or equal to 35.0% for labeled compounds.

The ion abundance ratios for all PCDDs and PCDFs were within validation criteria.

IV. Routine Calibration (Continuing)

Routine calibration was performed at the required frequencies.

All of the routine calibration results were within the QC limits for unlabeled compounds and labeled compounds.

The ion abundance ratios for all PCDDs and PCDFs were within method criteria.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No polychlorinated dioxin/dibenzofuran contaminants were found in the method blanks.

Method blank results flagged "K" by the laboratory as estimated maximum possible concentration (EMPC) were considered not detected.

VI. Matrix Spike/Matrix Spike Duplicates/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.

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

VII. Ongoing Precision & Recovery Samples (OPR)

Ongoing precision and recovery (OPR) control samples were reviewed for each matrix as applicable. The percent recoveries (%R) were within the QC limits.

VIII. Regional Quality Assurance and Quality Control

Not applicable.

IX. Internal Standards

All internal standard recoveries were within QC limits.

X. Target Compound Identifications

Raw data were not reviewed for this SDG.

XI. Compound Quantitation

All compound quantitation were within validation criteria with the following exceptions:

Sample	Compound	Flag	A or P
All samples in SDG DPWG45669	All TCL compounds flagged "K" by the laboratory as estimated maximum possible concentration.	U	A

Raw data were not reviewed for this SDG.

XII. System Performance

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

The overall assessment of data was acceptable. In the case where more than one result was reported for an individual sample, the least technically acceptable results were rejected as follows:

Sample	Compound	Flag	A or P
L57305-4 L57305-5 L57305-6 L57986-4 L57986-5 L57495-4 L57495-5 L57634-2 L57732-2 L57792-3 L57305-4DUP	2,3,7,8-TCDF (from DB-5)	R	A

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

XIV. Field Duplicates

No field duplicates were identified in this SDG.

XV. Field Blanks

No field blanks were identified in this SDG.

Lower Duwamish Waterway, Green River Study, Suspended Solids Dioxins/Dibenzofurans - Data Qualification Summary - SDG DPWG45669

SDG	Sample	Compound	Flag	A or P	Reason
DPWG45669	L57305-3 L57305-4 L57305-5 L57305-6 L57986-3 L57986-4 L57986-5 L57495-4 L57495-5 L57634-2 L57732-2 L57792-3 L57305-4DUP	All TCL compounds flagged "K" by the laboratory as estimated maximum possible concentration.	U	A	Compound quantitation (EMPC)
DPWG45669	L57305-4 L57305-5 L57305-6 L57986-4 L57986-5 L57495-4 L57495-5 L57634-2 L57732-2 L57792-3 L57305-4DUP	2,3,7,8-TCDF (from DB-5)	R	A	Overall assessment of data

Lower Duwamish Waterway, Green River Study, Suspended Solids Dioxins/Dibenzofurans - Laboratory Blank Data Qualification Summary - SDG DPWG45669

No Sample Data Qualified in this SDG

LDC #: 31372A21 **VALIDATION COMPLETENESS WORKSHEET** Date: 2-28-14

SDG #: DPWG45669 Level III Page: 1 of 1

Laboratory: AXYS Analytical Services Ltd. Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: HRGC/HRMS Dioxins/Dibenzofurans (EPA Method 1613B)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 2/4/13 → 5/14/13
II.	HRGC/HRMS Instrument performance check	A	
III.	Initial calibration	A	≤20/35
IV.	Routine calibration/~~ICV~~	A	QC limits
V.	Blanks	A	results flagged "K" (EMPC) considered ND
VI.	Matrix spike/Matrix spike duplicates/DUP	N/A	client ID = 2+13
VII.	Laboratory control samples	A	OPR
VIII.	Regional quality assurance and quality control	N	
IX.	Internal standards	A	
X.	Target compound identifications	N	
XI.	Compound quantitation/RL/~~LOQ/LODs~~	SW	
XII.	System performance	N	
XIII.	Overall assessment of data	SW	
XIV.	Field duplicates	N	
XV.	Field blanks	N	

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

Validated Samples: Sediment

1	L57305-3	11	L57732-2	21		31	
2	L57305-4	12	L57792-3	22		32	
3	L57305-5	13	L57305-4DUP	23		33	
4	L57305-6	14		24		34	
5	L57986-3	15		25		35	
6	L57986-4	16		26		36	
7	L57986-5	17		27		37	
8	L57495-4	18		28		38	
9	L57495-5	19		29		39	
10	L57634-2	20		30	WG45358-101	40	

Notes: _____

LDC #: 31372A21

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported RLs

Reviewer: CM
2nd Reviewer: M

METHOD: GC/MS Dioxins/Dibenzofurans (Method 1613B)

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

Y N ~~N/A~~ Were the correct internal standard (IS), quantitation ions and relative response factors (RRF) used to quantitate the compound?
Y N ~~N/A~~ Compound quantitation and RLs were adjusted to reflect all sample dilutions and dry weight factors (if necessary).

#	Date	Compound	Finding	Associated Samples	Qualifications
			All EMPC qualified "K"	All	U/A

Comments: ~~See sample calculation verification worksheet for recalculations~~

LDC #: 31372A21

VALIDATION FINDINGS WORKSHEET
Overall Assessment of Data

Reviewer: 9m
2nd Reviewer: K

METHOD: HRGC/HRMS Dioxins/Dibenzofurans (EPA Method 1613B)

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

All available information pertaining to the data were reviewed using professional judgement to compliment the determination of the overall quality of the data.

Y N (N/A) Was the overall quality and usability of the data acceptable?

#	Date	Sample ID	Finding	Associated Samples	Qualifications
			2,3,7,8-TCDF from DB-5 column; resolution from DB-225 is better	2-4, 6-13	R/A

Comments: _____

LDC Report# 31372B21

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name:	Lower Duwamish Waterway, Green River Study, Suspended Solids
Collection Date:	February 14 through May 14, 2013
LDC Report Date:	March 10, 2014
Matrix:	Sediment
Parameters:	Dioxins/Dibenzofurans
Validation Level:	EPA Level III
Laboratory:	AXYS Analytical Services Ltd.
Sample Delivery Group (SDG):	DPWG46329

Sample Identification

L57305-1
L57305-2
L57986-1
L57986-2
L57986-6
L57495-1
L57634-1
L57634-3
L57732-1
L57732-3
L57792-1
L57792-2
L57986-6DUP

Introduction

This data review covers 13 sediment samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 1613B for Polychlorinated Dioxins/Dibenzofurans.

This review follows the Green River Study, Suspended Solids Characterization Sampling and Analysis Plan (January 2013) and EPA Region 10 SOP for the Validation of Polychlorinated Dibenzodioxin (PCDD) and Polychlorinated Dibenzofuran (PCDF) Data (Revision 2.0, January 31, 1996).

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 advisory nature.

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.

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J3 Holding times not met: Indicates low bias for most analytes.

J4 Other QC parameters outside control limits: bias not readily determined.

J5 Other QC parameters outside control limits. The reported results appear to be biased high. The actual value of target compound in the sample may be lower than the value reported by the laboratory.

J6 Other QC parameters outside control limits. The reported results appear to be biased low. The actual value of target compound in the sample may be higher than the value reported by the laboratory.

R Quality control indicates the data is not usable.

NJ Presumptive evidence of presence of the compound at an estimated quantity.

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. HRGC/HRMS Instrument Performance Check

Instrument performance was checked at the required daily frequency.

Retention time windows were established for all homologues. The chromatographic resolution between ^{13}C-2,3,7,8-TCDD and ^{13}C-1,2,3,4-TCDD was less than or equal to 25%.

III. Initial Calibration

A five point initial calibration was performed as required by the method.

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

The ion abundance ratios for all PCDDs and PCDFs were within validation criteria.

IV. Routine Calibration (Continuing)

Routine calibration was performed at the required frequencies.

All of the routine calibration results were within the QC limits for unlabeled compounds and labeled compounds.

The ion abundance ratios for all PCDDs and PCDFs were within method criteria.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No polychlorinated dioxin/dibenzofuran contaminants were found in the method blanks.

Method blank results flagged "K" by the laboratory as estimated maximum possible concentration (EMPC) were considered not detected.

VI. Matrix Spike/Matrix Spike Duplicates/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.

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

VII. Ongoing Precision & Recovery Samples (OPR)

Ongoing precision and recovery (OPR) control samples were reviewed for each matrix as applicable. The percent recoveries (%R) were within the QC limits.

VIII. Regional Quality Assurance and Quality Control

Not applicable.

IX. Internal Standards

All internal standard recoveries were within QC limits.

X. Target Compound Identifications

Raw data were not reviewed for this SDG.

XI. Compound Quantitation

All compound quantitation were within validation criteria with the following exceptions:

Sample	Compound	Flag	A or P
All samples in SDG DPWG46329	All TCL compounds flagged "K" by the laboratory as estimated maximum possible concentration.	U	A

Raw data were not reviewed for this SDG.

XII. System Performance

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

The overall assessment of data was acceptable. In the case where more than one result was reported for an individual sample, the least technically acceptable results were rejected as follows:

Sample	Compound	Flag	A or P
L57305-1 L57305-2 L57986-2 L57986-6 L57495-1 L57634-1 L57634-3 L57732-1 L57732-3 L57792-1 L57792-2 L57986-6DUP	2,3,7,8-TCDF (from DB-5)	R	A

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

XIV. Field Duplicates

No field duplicates were identified in this SDG.

XV. Field Blanks

No field blanks were identified in this SDG.

Lower Duwamish Waterway, Green River Study, Suspended Solids Dioxins/Dibenzofurans - Data Qualification Summary - SDG DPWG46329

SDG	Sample	Compound	Flag	A or P	Reason
DPWG46329	L57305-1 L57305-2 L57986-1 L57986-2 L57986-6 L57495-1 L57634-1 L57634-3 L57732-1 L57732-3 L57792-1 L57792-2 L57986-6DUP	All TCL compounds flagged "K" by the laboratory as estimated maximum possible concentration.	U	A	Compound quantitation (EMPC)
DPWG46329	L57305-1 L57305-2 L57986-2 L57986-6 L57495-1 L57634-1 L57634-3 L57732-1 L57732-3 L57792-1 L57792-2 L57986-6DUP	2,3,7,8-TCDF (from DB-5)	R	A	Overall assessment of data

Lower Duwamish Waterway, Green River Study, Suspended Solids Dioxins/Dibenzofurans - Laboratory Blank Data Qualification Summary - SDG DPWG46329

No Sample Data Qualified in this SDG

LDC #: 31372B21 **VALIDATION COMPLETENESS WORKSHEET** Date: 2-28-14

SDG #: DPWG46329 Level III Page: 1 of 1

Laboratory: AXYS Analytical Services Ltd. Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: HRGC/HRMS Dioxins/Dibenzofurans (EPA Method 1613B)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 2/14/13 → 5/14/13
II.	HRGC/HRMS Instrument performance check	A	
III.	Initial calibration	A	≤ 20
IV.	Routine calibration/~~ICV~~	A	QC limits
V.	Blanks	A	results flagged "K" (EMPC) considered ND
VI.	Matrix spike/Matrix spike duplicates/DUP	N/A	client / D = 5+13
VII.	Laboratory control samples	A	OPR
VIII.	Regional quality assurance and quality control	N	
IX.	Internal standards	A	
X.	Target compound identifications	N	
XI.	Compound quantitation/RL/~~LOQ/LODs~~	SW	
XII.	System performance	N	
XIII.	Overall assessment of data	SW	
XIV.	Field duplicates	N	
XV.	Field blanks	N	

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

Validated Samples: Sediment

1	L57305-1	11	L57792-1	21		31	
2	L57305-2	12	L57792-2	22		32	
3	L57986-1	13	L57986-6DUP	23		33	
4	L57986-2	14		24		34	
5	L57986-6	15		25		35	
6	L57495-1	16		26		36	
7	L57634-1	17		27		37	
8	L57634-3	18		28		38	
9	L57732-1	19		29		39	
10	L57732-3	20		30	WG452162-101	40	

Notes: _____

LDC #: 31372B21

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported RLs

Reviewer: [signature]
2nd Reviewer: [signature]

METHOD: GC/MS Dioxins/Dibenzofurans (Method 1613B)

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

Y N (N/A) Were the correct internal standard (IS), quantitation ions and relative response factors (RRF) used to quantitate the compound?
Y N (N/A) Compound quantitation and RLs were adjusted to reflect all sample dilutions and dry weight factors (if necessary).

#	Date	Compound	Finding	Associated Samples	Qualifications
			All EMPC qualified "K"	All	U/A

Comments: ~~See sample calculation verification worksheet for recalculations~~

LDC #: 33728B21

VALIDATION FINDINGS WORKSHEET
Overall Assessment of Data

Page: 1 of 1
Reviewer: ON
2nd Reviewer: A

METHOD: HRGC/HRMS Dioxins/Dibenzofurans (EPA Method 1613B)

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

All available information pertaining to the data were reviewed using professional judgement to compliment the determination of the overall quality of the data.

(Y) N N/A Was the overall quality and usability of the data acceptable?

#	Date	Sample ID	Finding	Associated Samples	Qualifications
			2,3,7,8-TCDF from DB-5 column; resolution from DB-225 is better	All except 3	R/A

Comments: _____

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name:	Lower Duwamish Waterway, Green River Study, Suspended Solids
Collection Date:	February 4 through May 14, 2013
LDC Report Date:	March 12, 2014
Matrix:	Sediment
Parameters:	Polychlorinated Biphenyls as Congeners
Validation Level:	EPA Level III
Laboratory:	AXYS Analytical Services, Ltd.
Sample Delivery Group (SDG):	DPWG46351

Sample Identification

L57305-1
L57305-2
L57986-1
L57986-2
L57986-6
L57495-1
L57634-1
L57634-3
L57732-1
L57732-3
L57792-1
L57792-2
L57986-6DUP

Introduction

This data review covers 13 sediment samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 1668A for Polychlorinated Biphenyls as Congeners.

This review follows the Green River Study, Suspended Solids Characterization Sampling and Analysis Plan (January 2013) and EPA Region 10 SOP for the Validation of Polychlorinated Biphenyl (PCB) Data (Revision 1.0, December 8, 1995).

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 advisory nature.

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.

J1 Blank Contamination: Indicates possible high bias and/or false positives.

J2 Calibration Range exceeded: Indicates possible low bias.

J3 Holding times not met: Indicates low bias for most analytes.

J4 Other QC parameters outside control limits: bias not readily determined.

J5 Other QC parameters outside control limits. The reported results appear to be biased high. The actual value of target compound in the sample may be lower than the value reported by the laboratory.

J6 Other QC parameters outside control limits. The reported results appear to be biased low. The actual value of target compound in the sample may be higher than the value reported by the laboratory.

R Quality control indicates the data is not usable.

NJ Presumptive evidence of presence of the compound at an estimated quantity.

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. HRGC/HRMS Instrument Performance Check

Instrument performance was checked at the required daily frequency.

Retention time windows were established for all congeners. The chromatographic resolution between the congeners PCB-23 and PCB-34 and congeners PCB-182 and PCB-187 was resolved with a valley of less than or equal to 40%.

III. Initial Calibration

A five point initial calibration was performed as required by the method.

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

The ion abundance ratios for all PCBs were within method criteria.

IV. Routine Calibration (Continuing)

Routine calibration was performed at the required frequencies.

All of the routine calibration percent differences (%D) between the initial calibration RRF and the routine calibration RRF were less than or equal to 30.0% for unlabeled compounds and less than or equal to 50.0% for labeled compounds.

The ion abundance ratios for all PCBs were within method criteria.

V. Blanks

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

Method Blank ID	Extraction Date	Compound	Concentration	Associated Samples
WG45262-101	10/28/13	PCB 135+151+154 PCB 183+185 Total Hexachloro Biphenyls Total Heptachloro Biphenyls	0.402 pg/g 0.187 pg/g 0.402 pg/g 0.187 pg/g	All samples in SDG DPWG46351
WG45262-101W2i (20X)	10/28/13	PCB 20+28 PCB 22 PCB 31 PCB 44+47+65 PCB 66 Total Trichloro Biphenyls Total Tetrachloro Biphenyls	1.56 pg/g 0.605 pg/g 1.14 pg/g 1.50 pg/g 1.12 pg/g 3.31 pg/g 2.62 pg/g	All samples in SDG DPWG46351

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

Sample	Compound	Reported Concentration	Modified Final Concentration
L57305-1	PCB 20+28 PCB 22 PCB 31	3.96 pg/g 1.11 pg/g 2.83 pg/g	3.96U pg/g 1.11U pg/g 2.83U pg/g
L57986-1	PCB 20+28 PCB 22 PCB 31 PCB 44+47+65 PCB 66	3.27 pg/g 0.959 pg/g 2.45 pg/g 3.46 pg/g 3.25 pg/g	3.27U pg/g 0.959U pg/g 2.45U pg/g 3.46U pg/g 3.25U pg/g

The laboratory noted that they were unable to quantify the monochlorobiphenyl results in the method blanks due to interferences in the lock mass channel. Using professional judgment, all associated sample results were qualified as estimated.

Sample	Compound	Finding	Flag	A or P
All samples in SDG DPWG46351	PCB 1 PCB 2 PCB 3 Total Monochloro Biphenyls	PCB 1, PCB 2, and PCB 3 results were not reported in the associated method blanks due to quantitation problems.	J (all detects) J (all detects) J (all detects) J (all detects)	A

Method blank results flagged "K" by the laboratory as estimated maximum possible concentration (EMPC) were considered not detected.

VI. Matrix Spike/Matrix Spike Duplicates/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.

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Results were within QC limits with the following exceptions:

DUP ID (Associated Samples)	Compound	RPD (Limits)	Difference (Limits)	Flag	A or P
L57986-6DUP (L57986-6 L57986-6DUP)	PCB 40+41+71	64.7 (≤50)	-	J (all detects)	A
	PCB 42	50.6 (≤50)	-	J (all detects)	
	PCB 44+47+65	81.9 (≤50)	-	J (all detects)	
	PCB 48	75.2 (≤50)	-	J (all detects)	
	PCB 49+69	50.8 (≤50)	-	J (all detects)	
	PCB 52	109 (≤50)	-	J (all detects)	
	PCB 56	96.2 (≤50)	-	J (all detects)	
	PCB 60	90.4 (≤50)	-	J (all detects)	
	PCB 61+70+74+76	115 (≤50)	-	J (all detects)	
	PCB 64	87.8 (≤50)	-	J (all detects)	
	PCB 66	93.0 (≤50)	-	J (all detects)	
	PCB 90+101+113	137 (≤50)	-	J (all detects)	
	PCB 105	154 (≤50)	-	J (all detects)	
	PCB 110+115	138 (≤50)	-	J (all detects)	
	PCB 118	148 (≤50)	-	J (all detects)	
	PCB 128+166	152 (≤50)	-	J (all detects)	
	PCB 129+138+160+163	150 (≤50)	-	J (all detects)	
	PCB 130	147 (≤50)	-	J (all detects)	
	PCB 132	156 (≤50)	-	J (all detects)	
	PCB 134+143	155 (≤50)	-	J (all detects)	
	PCB 135+151+154	148 (≤50)	-	J (all detects)	
	PCB 136	149 (≤50)	-	J (all detects)	
	PCB 137	147 (≤50)	-	J (all detects)	
	PCB 141	158 (≤50)	-	J (all detects)	
	PCB 144	159 (≤50)	-	J (all detects)	
	PCB 147+149	154 (≤50)	-	J (all detects)	
	PCB 153+168	150 (≤50)	-	J (all detects)	
	PCB 156+157	159 (≤50)	-	J (all detects)	
	PCB 158	156 (≤50)	-	J (all detects)	
	PCB 164	151 (≤50)	-	J (all detects)	
	PCB 167	152 (≤50)	-	J (all detects)	
	PCB 170	167 (≤50)	-	J (all detects)	
	PCB 171+173	165 (≤50)	-	J (all detects)	
	PCB 172	160 (≤50)	-	J (all detects)	
	PCB 174	167 (≤50)	-	J (all detects)	
	PCB 176	165 (≤50)	-	J (all detects)	
	PCB 177	162 (≤50)	-	J (all detects)	
	PCB 178	155 (≤50)	-	J (all detects)	
	PCB 179	157 (≤50)	-	J (all detects)	
	PCB 180+193	164 (≤50)	-	J (all detects)	
	PCB 183+185	165 (≤50)	-	J (all detects)	
	PCB 187	156 (≤50)	-	J (all detects)	
	PCB 190	165 (≤50)	-	J (all detects)	
	PCB 194	164 (≤50)	-	J (all detects)	
	PCB 195	164 (≤50)	-	J (all detects)	
	PCB 196	165 (≤50)	-	J (all detects)	
	PCB 198+199	148 (≤50)	-	J (all detects)	
	PCB 202	127 (≤50)	-	J (all detects)	
	PCB 203	147 (≤50)	-	J (all detects)	
	PCB 206	100 (≤50)	-	J (all detects)	
	PCB 208	72.4 (≤50)	-	J (all detects)	

VII. Ongoing Precision & Recovery Samples (OPR)

Ongoing precision and recovery (OPR) control samples were reviewed for each matrix as applicable. The percent recoveries (%R) were within the QC limits.

VIII. Regional Quality Assurance and Quality Control

Not applicable.

IX. Internal Standards

All internal standard recoveries (%R) were within QC limits with the following exceptions:

Sample	Internal Standards	%R (Limits)	Affected Compound	Flag	A or P
WG45262-101 WG45262-101W2i (20X)	^{13}C-PCB 1 ^{13}C-PCB 3	NQ (15-150) NQ (15-150)	Total Mono chlorobiphenyls	J (all detects) UJ (all non-detects)	P

NQ = Not quantitated

As noted in Section V, the laboratory was unable to quantify the monochlorobiphenyl results in the method blanks due to interferences in the lock mass channel. Using professional judgment, the reported results were qualified as estimated.

X. Target Compound Identifications

Raw data were not reviewed for this SDG.

XI. Compound Quantitation

All compound quantitations were within validation criteria with the following exceptions:

Sample	Compound	Flag	A or P
All samples in SDG DPWG46351	All TCL compounds flagged "K" by the laboratory as estimated maximum possible concentration.	U	A

Raw data were not reviewed for this SDG.

XII. System Performance

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

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

XIV. Field Duplicates

No field duplicates were identified in this SDG.

XV. Field Blanks

No field blanks were identified in this SDG.

Lower Duwamish Waterway, Green River Study, Suspended Solids Polychlorinated Biphenyls as Congeners - Data Qualification Summary - SDG DPWG46351

SDG	Sample	Compound	Flag	A or P	Reason
DPWG46351	L57305-1 L57305-2 L57986-1 L57986-2 L57986-6 L57495-1 L57634-1 L57634-3 L57732-1 L57732-3 L57792-1 L57792-2 L57986-6DUP	PCB 1 PCB 2 PCB 3 Total Monochloro Biphenyls	J (all detects) J (all detects) J (all detects) J (all detects)	A	Method blanks (interference)

SDG	Sample	Compound	Flag	A or P	Reason
DPWG46351	L57986-6 L57986-6DUP	PCB 40+41+71 PCB 42 PCB 44+47+65 PCB 48 PCB 49+69 PCB 52 PCB 56 PCB 60 PCB 61+70+74+76 PCB 64 PCB 66 PCB 90+101+113 PCB 105 PCB 110+115 PCB 118 PCB 128+166 PCB 129+138+160+163 PCB 130 PCB 132 PCB 134+143 PCB 135+151+154 PCB 136 PCB 137 PCB 141 PCB 144 PCB 147+149 PCB 153+168 PCB 156+157 PCB 158 PCB 164 PCB 167 PCB 170 PCB 171+173 PCB 172 PCB 174 PCB 176 PCB 177 PCB 178 PCB 179 PCB 180+193 PCB 183+185 PCB 187 PCB 190 PCB 194 PCB 195 PCB 196 PCB 198+199 PCB 202 PCB 203 PCB 206 PCB 208	J (all detects) J (all detects)	A	Duplicate sample analysis (RPD)
DPWG46351	L57305-1 L57305-2 L57986-1 L57986-2 L57986-6 L57495-1 L57634-1 L57634-3 L57732-1 L57732-3 L57792-1 L57792-2 L57986-6DUP	All TCL compounds flagged "K" by the laboratory as estimated maximum possible concentration.	U	A	Compound quantitation (EMPC)

Lower Duwamish Waterway, Green River Study, Suspended Solids Polychlorinated Biphenyls as Congeners - Laboratory Blank Data Qualification Summary - SDG DPWG46351

SDG	Sample	Compound	Modified Final Concentration	A or P
DPWG46351	L57305-1	PCB 20+28 PCB 22 PCB 31	3.96U pg/g 1.11U pg/g 2.83U pg/g	A
DPWG46351	L57986-1	PCB 20+28 PCB 22 PCB 31 PCB 44+47+65 PCB 66	3.27U pg/g 0.959U pg/g 2.45U pg/g 3.46U pg/g 3.25U pg/g	A

LDC #: 31372C31 **VALIDATION COMPLETENESS WORKSHEET** Date: 2-28-14
SDG #: DPWG46351 Level III Page: 1 of 1
Laboratory: AXYS Analytical Services Ltd. Reviewer: SW
2nd Reviewer: A

METHOD: HRGC/HRMS Polychlorinated Biphenyl Congeners (EPA Method 1668A)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 2/4/13 -> 5/14/13
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	≤20
IV.	Routine calibration ~~ICV~~	A	≤30/50
V.	Blanks	SW	
VI.	Matrix spike/Matrix spike duplicates /DUP	N/SW	client/D=5+13
VII.	Laboratory control samples	A	OPR
VIII.	Regional quality assurance and quality control	N	
IX.	Internal standards	SW	
X.	Target compound identifications	N	
XI.	Compound quantitation RL/~~LOQ/LODs~~	SW	
XII.	System performance	N	
XIII.	Overall assessment of data	A	
XIV.	Field duplicates	N	
XV.	Field blanks	N	

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

Validated Samples: Sediment

1	L57305-1	11	L57792-1	21	~~#8 DIL~~	31	
2	L57305-2	12	L57792-2	22	#9 DIL	32	
3	L57986-1	13	L57986-6DUP	23	~~#12 DIL~~	33	
4	L57986-2	14	~~#1 DIL~~	24		34	
5	L57986-6	15	#2 DIL	25		35	
6	L57495-1	16	#3 DIL	26		36	
7	L57634-1	17	#4 DIL	27		37	
8	L57634-3	18	#5 DIL	28		38	
9	L57732-1	19	#6 DIL	29		39	WG45262-101
10	L57732-3	20	~~#7 DIL~~	30		40	[WG45262-101(NDi)]

LDC #: 31372C31

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: TM
2nd Reviewer: M

METHOD: HRGC/HRMS PCB Congeners (EPA Method 1668A)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".
Y N N/A Were all samples associated with a method blank?
Y N N/A Was a method blank performed for each matrix and whenever a sample extraction was performed?
Y N N/A Was the method blank contaminated?

Blank extraction date: 10/28/13 **Blank analysis date:** 12/07/13 **Associated samples:** All Qual U

Conc. units: pg/g

Compound	Blank ID			Sample Identification							
	WG45262-101	WG45262-101 W2i (20X)	5x	1	2	3	4	5	6	7	8
PCB 1		NQ*	-	Jdets/A	Jdets/A	Jdets/A	Jdets/A	Jdets/A	Jdets/A	Jdets/A	Jdets/A
PCB 2		NQ*	-	Jdets/A	Jdets/A	Jdets/A	Jdets/A	Jdets/A	Jdets/A	Jdets/A	Jdets/A
PCB 3		NQ*	-	Jdets/A	Jdets/A	Jdets/A	Jdets/A	Jdets/A	Jdets/A	Jdets/A	Jdets/A
PCB 20+28		1.56	7.80	3.96		3.27					
PCB 22		0.605	3.03	1.11		0.959					
PCB 31		1.14	5.70	2.83		2.45					
PCB 44+47+65		1.50	7.50			3.46					
PCB 66		1.12	5.60			3.25					
PCB 135+151+154	0.402		2.01								
PCB 183+185	0.187		0.935								
Total Trichloro Biphenyls		3.31	16.6								
Total Tetrachloro Biphenyls		2.62	13.1								
Total Hexachloro Biphenyls	0.402		2.01								
Total Heptachloro Biphenyls	0.187		0.935								

*EMPC (flagged "K") considered ND ("U")

All contaminants within five times the method blank concentration were qualified as not detected.

* Lab noted that PCB 1, PCB 2 and PCB 3 were unable to be quantified (NQ) due to interferences in the lock mass channel. All sample results for these compounds are considered Jdets/A

LDC #: 31372C31

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: TM
2nd Reviewer: AC

METHOD: HRGC/HRMS PCB Congeners (EPA Method 1668A)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".
Y N N/A Were all samples associated with a method blank?
Y N N/A Was a method blank performed for each matrix and whenever a sample extraction was performed?
Y N N/A Was the method blank contaminated?

Blank extraction date: 10/28/13 **Blank analysis date:** 12/07/13 **Associated samples:** All Qual U

Conc. units: pg/g

Compound	Blank ID			Sample Identification							
	WG45262-101	WG45262-101 W2i (20X)	5x	9	10	11	12	13			
PCB 1		NQ*	-	Jdets/A	Jdets/A	Jdets/A	Jdets/A	Jdets/A			
PCB 2		NQ*	-	Jdets/A	Jdets/A	Jdets/A	Jdets/A	Jdets/A			
PCB 3		NQ*	-	Jdets/A	Jdets/A	Jdets/A	Jdets/A	Jdets/A			
PCB 20+28		1.56	7.80								
PCB 22		0.605	3.03								
PCB 31		1.14	5.70								
PCB 44+47+65		1.50	7.50								
PCB 66		1.12	5.60								
PCB 135+151+154	0.402		2.01								
PCB 183+185	0.187		0.935								
Total Trichloro Biphenyls		3.31	16.6								
Total Tetrachloro Biphenyls		2.62	13.1								
Total Hexachloro Biphenyls	0.402		2.01								
Total Heptachloro Biphenyls	0.187		0.935								

*EMPC (flagged "K") considered ND ("U")

All contaminants within five times the method blank concentration were qualified as not detected.

* Lab noted that PCB 1, PCB 2 and PCB 3 were unable to be quantified (NQ) due to interferences in the lock mass channel. All sample results for these compounds are considered Jdets/A

LDC #: 31372C31

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates
LABDUP

Reviewer: 9th
2nd Reviewer: AC

METHOD: HRGC/HRMS Polychlorinated Biphenyls (EPA Method 1668A)

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

Y N (N/A) Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.

Y N (N/A) Was a MS/MSD analyzed every 20 samples of each matrix?

Y N (N/A) Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LabDup ~~MS/MSD ID~~	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		13	PCB 40+41+71			64.7 (50)	5,13	Jdets/A
			PCB 42			50.6		
			PCB 44+47+65			81.9		
			PCB 48			75.2		
			PCB 49+69			50.8		
			PCB 52			109		
			PCB 56			96.2		
			PCB 60			90.4		
			PCB 61+70+74+76			115		
			PCB 64			87.8		
			PCB 66			93.0		
			PCB 90+101+113			137		
			PCB 105			154		
			PCB 110+115			138		
			PCB 118			148		
			PCB 128+166			152		
			PCB 129+138+160+163			150		
			PCB 130			147		
			PCB 132			156		
			PCB 134+143			155		
			PCB 135+151+154			148		
			PCB 136			149		
			PCB 137			147		
			PCB 141			158		
			PCB 144			159		

LDC #: 31372C31

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates
LAB DUP

Reviewer: CM
2nd Reviewer: R

METHOD: HRGC/HRMS Polychlorinated Biphenyls (EPA Method 1668A)

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

Y N N/A Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.

Y N N/A Was a MS/MSD analyzed every 20 samples of each matrix?

Y N N/A Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		13	PCB147+149			154 (50)	5,13	J det/A
			PCB153+168			150		
			PCB156+157			159		
			PCB 158			156		
			PCB 164			151		
			PCB 167			152		
			PCB 170			167		
			PCB 171+173			165		
			PCB 172			160		
			PCB 174			167		
			PCB 176			165		
			PCB 177			162		
			PCB 178			155		
			PCB 179			157		
			PCB 180+193			164		
			PCB 183+185			165		
			PCB 187			154		
			PCB 190			165		
			PCB 194			164		
			PCB 195			164		
			PCB 196			165		
			PCB 198+199			148		
			PCB 202			127		
			PCB 203			147		
			PCB 206			100		
			PCB 208			72.4		
			~~PCB 209~~					

LDC #: 31372C31

VALIDATION FINDINGS WORKSHEET
Internal Standards

Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: HRGC/HRMS PCB Congeners (EPA Method 1668A)

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

Y (N) N/A Are all internal standard recoveries within the QC criteria?

Y N (N/A) Was the S/N ratio all internal standard peaks ≥ 10?

#	Date	Lab ID/Reference	Internal Standard	% Recovery (Limit:)	Qualifications
		WG45262-101 (MB)	13C-PCB 1	NQ (15-150)	J/UJ/P (total mono Cls)
			13C-PCB 3	NQ (↓)	
				( )	
				( )	
				( )	
		lab noted labeled	standards and analytes were unable		
		to be quantified due to	interferences in lock mass channel		

LDC #: 31372C31

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported CRQLs

Reviewer: 1m
2nd Reviewer: M

METHOD: HRGC/HRMS PCB Congeners (EPA Method 1668A)

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

(Y) N N/A Were the correct internal standard (IS), quantitation ions and relative response factors (RRF) used to quantitate the compound?
(Y) N N/A Compound quantitation and CRQLs were adjusted to reflect all sample dilutions and dry weight factors (if necessary).

#	Date	Compound	Finding	Associated Samples	Qualifications
			All EMPC qualified "K"	All	U/A

Comments: _____

LABORATORY DATA CONSULTANTS, INC.
2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

King County Environmental Laboratory
322 W. Ewing Street
Seattle WA 98119
ATTN: Mr. Fritz Grothkopp

June 30, 2014

SUBJECT: Lower Duwamish Waterway, Green River Study, Suspended Solids Data Validation

Dear Mr. Grothkopp,

Enclosed is the final validation report for the fractions listed below. These SDGs were received on June 19, 2014. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project # 32012:

SDG #	Fraction
DPWG47590/DPWG47600	Dioxins/Dibenzofurans, Polychlorinated Biphenyls as Congeners

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

- Green River Study, Suspended Solids Characterization Sampling and Analysis Plan, January 2013
- EPA Region 10 SOP for the Validation of Polychlorinated Dibenzodioxin, PCDD, and Polychlorinated Dibenzofuran, PCDF, Data, Revision 2.0, January 31, 1996
- EPA Region 10 SOP for the Validation of Polychlorinated Biphenyl, PCB Data, Revision 1.0, December 8, 1995

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

Sincerely,

Stella S. Cuenco
Operations Manager/Senior Chemist

0 Pages CD EDD RTC CD

Attachment 1

III

LDC #32012 (King County - Seattle WA / Lower Duwamish Waterway, Green River Study Suspended Solids)

LDC	SDG#	DATE REC'D	(3) DATE DUE	PCB Cong. (1668)		Dioxins (1613B)																											
Matrix:	Water/Sediment			W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	DPWG47590/ DPWG47600	06/19/14	07/11/14	0	4	0	4																										
Total	A/SC			0	4	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8

Shaded cells indicate Level IV validation (all other cells are Level II validation). These sample counts do not include MS/MSD, and DUPs

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name:	Lower Duwamish Waterway, Green River Study, Suspended Solids
Collection Date:	March 5 through April 16, 2014
LDC Report Date:	June 26, 2014
Matrix:	Sediment
Parameters:	Polychlorinated Biphenyls as Congeners
Validation Level:	EPA Level III
Laboratory:	AXYS Analytical Services, Ltd.
Sample Delivery Group (SDG):	DPWG47590

Sample Identification

L59919-1
L59919-2
L60187-1
L60187-2

Introduction

This data review covers 4 sediment samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 1668A for Polychlorinated Biphenyls as Congeners.

This review follows the Green River Study, Suspended Solids Characterization Sampling and Analysis Plan (January 2013) and EPA Region 10 SOP for the Validation of Polychlorinated Biphenyl (PCB) Data (Revision 1.0, December 8, 1995).

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 advisory nature.

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.

- J1 Blank Contamination: Indicates possible high bias and/or false positives.
- J2 Calibration Range exceeded: Indicates possible low bias.
- J3 Holding times not met: Indicates low bias for most analytes.
- J4 Other QC parameters outside control limits: bias not readily determined.
- J5 Other QC parameters outside control limits. The reported results appear to be biased high. The actual value of target compound in the sample may be lower than the value reported by the laboratory.
- J6 Other QC parameters outside control limits. The reported results appear to be biased low. The actual value of target compound in the sample may be higher than the value reported by the laboratory.

R Quality control indicates the data is not usable.

NJ Presumptive evidence of presence of the compound at an estimated quantity.

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. HRGC/HRMS Instrument Performance Check

Instrument performance was checked at the required daily frequency.

Retention time windows were established for all congeners. The chromatographic resolution between the congeners PCB-23 and PCB-34 and congeners PCB-182 and PCB-187 was resolved with a valley of less than or equal to 40%.

III. Initial Calibration

A five point initial calibration was performed as required by the method.

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

The ion abundance ratios for all PCBs were within method criteria.

IV. Routine Calibration (Continuing)

Routine calibration was performed at the required frequencies.

All of the routine calibration percent differences (%D) between the initial calibration RRF and the routine calibration RRF were less than or equal to 30.0% for unlabeled compounds and less than or equal to 50.0% for labeled compounds.

The ion abundance ratios for all PCBs were within method criteria.

V. Blanks

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

Method Blank ID	Extraction Date	Compound	Concentration	Associated Samples
WG47329-101	5/6/14	PCB-1 PCB-3 PCB-18+30 PCB-20+28 PCB-31 PCB-61+70+74+76 PCB-209 Total Monochlorobiphenyls Total Trichlorobiphenyls Total Tetrachlorobiphenyls	0.188 pg/g 0.427 pg/g 0.168 pg/g 0.235 pg/g 0.156 pg/g 0.207 pg/g 0.316 pg/g 0.615 pg/g 0.559 pg/g 0.207 pg/g	All samples in SDG DPWG47590

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

Sample	Compound	Reported Concentration	Modified Final Concentration
L59919-1	PCB-3 Total Monochlorobiphenyls	1.05 pg/g 2.78 pg/g	1.05U pg/g 2.78J pg/g
L59919-2	PCB-1 PCB-3 Total Monochlorobiphenyls	0.691 pg/g 1.02 pg/g 2.61 pg/g	0.691U pg/g 1.02U pg/g 2.61J pg/g
L60187-1	PCB-3	1.94 pg/g	1.94U pg/g

Method blank results flagged "K" by the laboratory as estimated maximum possible concentration (EMPC) were considered not detected.

VI. 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.

VII. Ongoing Precision & Recovery Samples (OPR)

Ongoing precision and recovery (OPR) control samples were reviewed for each matrix as applicable. The percent recoveries (%R) were within the QC limits.

VIII. Regional Quality Assurance and Quality Control

Not applicable.

IX. Internal Standards

All internal standard recoveries (%R) were within QC limits.

X. Target Compound Identifications

Raw data were not reviewed for this SDG.

XI. Compound Quantitation

All compound quantitations were within validation criteria with the following exceptions:

Sample	Compound	Flag	A or P
All samples in SDG DPWG47590	All TCL compounds flagged "K" by the laboratory as estimated maximum possible concentration.	U	A

Raw data were not reviewed for this SDG.

XII. System Performance

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

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

XIV. Field Duplicates

No field duplicates were identified in this SDG.

XV. Field Blanks

No field blanks were identified in this SDG.

Lower Duwamish Waterway, Green River Study, Suspended Solids Polychlorinated Biphenyls as Congeners - Data Qualification Summary - SDG DPWG47590

SDG	Sample	Compound	Flag	A or P	Reason
DPWG47590	L59919-1 L59919-2 L60187-1 L60187-2	All TCL compounds flagged "K" by the laboratory as estimated maximum possible concentration.	U	A	Compound quantitation (EMPC)

Lower Duwamish Waterway, Green River Study, Suspended Solids Polychlorinated Biphenyls as Congeners - Laboratory Blank Data Qualification Summary - SDG DPWG47590

SDG	Sample	Compound	Modified Final Concentration	A or P
DPWG47590	L59919-1	PCB-3 Total Monochlorobiphenyls	1.05U pg/g 2.78J pg/g	A
DPWG47590	L59919-2	PCB-1 PCB-3 Total Monochlorobiphenyls	0.691U pg/g 1.02U pg/g 2.61J pg/g	A
DPWG47590	L60187-1	PCB-3	1.94U pg/g	A

LDC #: 32012A31 **VALIDATION COMPLETENESS WORKSHEET** Date: 6-25-14
SDG #: DPWG47590 Level III Page: 1 of 1
Laboratory: AXYS Analytical Services Ltd. Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: HRGC/HRMS Polychlorinated Biphenyl Congeners (EPA Method 1668A)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 3-5-14 → 4-16-14
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	≤ 20
IV.	Routine calibration/~~ICV~~	A	≤ 30/50
V.	Blanks	SW	
VI.	Matrix spike/Matrix spike duplicates	N	C.S.
VII.	Laboratory control samples	A	OPR
VIII.	Regional quality assurance and quality control	N	
IX.	Internal standards	A	
X.	Target compound identifications	N	
XI.	Compound quantitationRL/~~LOQ/LODs~~	SW	
XII.	System performance	N	
XIII.	Overall assessment of data	A	
XIV.	Field duplicates	N	
XV.	Field blanks	N	

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

Validated Samples: Sediment

1	L59919-1	11		21		31	
2	L59919-2	12		22		32	
3	L60187-1	13		23		33	
4	L60187-2	14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19	WG47329-101	29		39	
10		20		30		40	

LDC #: 32012A31

VALIDATION FINDINGS WORKSHEET
Blanks

Page: 1 of 1
Reviewer:
2nd Reviewer:

METHOD: HRGC/HRMS PCB Congeners (EPA Method 1668A)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".
(Y) N N/A Were all samples associated with a method blank?
Y N (N/A) Was a method blank performed for each matrix and whenever a sample extraction was performed?
(Y) N N/A Was the method blank contaminated?
Blank extraction date: 05/06/14 **Blank analysis date:** 05/20/14 **Associated samples:** All
Conc. units: pg/g

Compound	Blank ID		Sample Identification							
	WG47329-101	5x	1	2	3					
PCB 1	0.188	0.940		0.691/u						
PCB 3	0.427	2.14	1.05/u	1.02/u	1.94/u					
PCB 18 + 30	0.168	0.840								
PCB 20 + 28	0.235	1.18								
PCB 31	0.156	0.780								
PCB 61 + 70 + 74 + 76	0.207	1.04								
PCB 209	0.316	1.58								
Total Monochloro Biphenyls	0.615	3.08	2.78/J	2.61/J						
Total Trichloro Biphenyls	0.559	2.80								
Total Tetrachloro Biphenyls	0.207	1.04								

*EMPC

LDC #: 32012A31

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported CRQLs

Reviewer: AN
2nd Reviewer: A

METHOD: HRGC/HRMS PCB Congeners (EPA Method 1668A)

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

Y N (N/A) Were the correct internal standard (IS), quantitation ions and relative response factors (RRF) used to quantitate the compound?
Y N (N/A) Compound quantitation and CRQLs were adjusted to reflect all sample dilutions and dry weight factors (if necessary).

#	Date	Compound	Finding	Associated Samples	Qualifications
			EMPC results flagged "K"	All	U/A

Comments: ~~See sample calculation verification worksheet for recalculations~~

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name:	Lower Duwamish Waterway, Green River Study, Suspended Solids
Collection Date:	March 5 through April 16, 2014
LDC Report Date:	June 26, 2014
Matrix:	Sediment
Parameters:	Dioxins/Dibenzofurans
Validation Level:	EPA Level III
Laboratory:	AXYS Analytical Services Ltd.
Sample Delivery Group (SDG):	DPWG47600

Sample Identification

L59919-1
L59919-2
L60187-1
L60187-2

Introduction

This data review covers 4 sediment samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 1613B for Polychlorinated Dioxins/Dibenzofurans.

This review follows the Green River Study, Suspended Solids Characterization Sampling and Analysis Plan (January 2013) and EPA Region 10 SOP for the Validation of Polychlorinated Dibenzodioxin (PCDD) and Polychlorinated Dibenzofuran (PCDF) Data (Revision 2.0, January 31, 1996).

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 advisory nature.

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.

- J1 Blank Contamination: Indicates possible high bias and/or false positives.
- J2 Calibration Range exceeded: Indicates possible low bias.
- J3 Holding times not met: Indicates low bias for most analytes.
- J4 Other QC parameters outside control limits: bias not readily determined.
- J5 Other QC parameters outside control limits. The reported results appear to be biased high. The actual value of target compound in the sample may be lower than the value reported by the laboratory.
- J6 Other QC parameters outside control limits. The reported results appear to be biased low. The actual value of target compound in the sample may be higher than the value reported by the laboratory.

R Quality control indicates the data is not usable.

NJ Presumptive evidence of presence of the compound at an estimated quantity.

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. HRGC/HRMS Instrument Performance Check

Instrument performance was checked at the required daily frequency.

Retention time windows were established for all homologues. The chromatographic resolution between ^{13}C-2,3,7,8-TCDD and ^{13}C-1,2,3,4-TCDD was less than or equal to 25%.

III. Initial Calibration

A five point initial calibration was performed as required by the method.

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

The ion abundance ratios for all PCDDs and PCDFs were within validation criteria.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the routine calibration results were within the QC limits for unlabeled compounds and labeled compounds.

The ion abundance ratios for all PCDDs and PCDFs were within method criteria.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No polychlorinated dioxin/dibenzofuran contaminants were found in the method blanks.

Method blank results flagged "K" by the laboratory as estimated maximum possible concentration (EMPC) were considered not detected.

VI. 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.

VII. Ongoing Precision & Recovery Samples (OPR)

Ongoing precision and recovery (OPR) control samples were reviewed for each matrix as applicable. The percent recoveries (%R) were within the QC limits.

VIII. Regional Quality Assurance and Quality Control

Not applicable.

IX. Internal Standards

All internal standard recoveries were within QC limits.

X. Target Compound Identifications

Raw data were not reviewed for this SDG.

XI. Compound Quantitation

All compound quantitation were within validation criteria with the following exceptions:

Sample	Compound	Flag	A or P
All samples in SDG DPWG47600	All TCL compounds flagged "K" by the laboratory as estimated maximum possible concentration.	U	A

Raw data were not reviewed for this SDG.

XII. System Performance

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

Sample	Compound	Flag	A or P
All samples in SDG DPWG47600	2,3,7,8-TCDF (from DB-5)	R	A

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

XIV. Field Duplicates

No field duplicates were identified in this SDG.

XV. Field Blanks

No field blanks were identified in this SDG.

Lower Duwamish Waterway, Green River Study, Suspended Solids Dioxins/Dibenzofurans - Data Qualification Summary - SDG DPWG47600

SDG	Sample	Compound	Flag	A or P	Reason
DPWG47600	L59919-1 L59919-2 L60187-1 L60187-2	All TCL compounds flagged "K" by the laboratory as estimated maximum possible concentration.	U	A	Compound quantitation (EMPC)
DPWG47600	L59919-1 L59919-2 L60187-1 L60187-2	2,3,7,8-TCDF (from DB-5)	R	A	Overall assessment of data

Lower Duwamish Waterway, Green River Study, Suspended Solids Dioxins/Dibenzofurans - Laboratory Blank Data Qualification Summary - SDG DPWG47600

No Sample Data Qualified in this SDG

LDC #: 32012A21 **VALIDATION COMPLETENESS WORKSHEET** Date: 6-25-14
SDG #: DPWG47600 Level III Page: 1 of 1
Laboratory: AXYS Analytical Services Ltd. Reviewer: SW
2nd Reviewer: N

METHOD: HRGC/HRMS Dioxins/Dibenzofurans (EPA Method 1613B)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 3-5-14 → 4-16-14
II.	HRGC/HRMS Instrument performance check	A	
III.	Initial calibration	A	≤ 20
IV.	Routine calibration/~~ICV~~	A	QC limits
V.	Blanks	A	
VI.	Matrix spike/Matrix spike duplicates	N	C-S.
VII.	Laboratory control samples	A	OPR
VIII.	Regional quality assurance and quality control	N	
IX.	Internal standards	A	
X.	Target compound identifications	N	
XI.	Compound quantitation/RL/~~LOQ/LODs~~	~~SW~~ N	
XII.	System performance	N	
XIII.	Overall assessment of data	SW	
XIV.	Field duplicates	N	
XV.	Field blanks	N	

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

Validated Samples: Sediment

1	L59919-1	11		21		31	
2	L59919-2	12		22		32	
3	L60187-1	13		23		33	
4	L60187-2	14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19	WG47330-101	29		39	
10		20		30		40	

Notes: _____

VALIDATION FINDINGS WORKSHEET

METHOD: HRGC/HRMS Dioxins/Dibenzofurans (EPA Method 1613B)

A. 2,3,7,8-TCDD	F. 1,2,3,4,6,7,8-HpCDD	K. 1,2,3,4,7,8-HxCDF	P. 1,2,3,4,7,8,9-HpCDF	U. Total HpCDD
B. 1,2,3,7,8-PeCDD	G. OCDD	L. 1,2,3,6,7,8-HxCDF	Q. OCDF	V. Total TCDF
C. 1,2,3,4,7,8-HxCDD	H. 2,3,7,8-TCDF	M. 2,3,4,6,7,8-HxCDF	R. Total TCDD	W. Total PeCDF
D. 1,2,3,6,7,8-HxCDD	I. 1,2,3,7,8-PeCDF	N. 1,2,3,7,8,9-HxCDF	S. Total PeCDD	X. Total HxCDF
E. 1,2,3,7,8,9-HxCDD	J. 2,3,4,7,8-PeCDF	O. 1,2,3,4,6,7,8-HpCDF	T. Total HxCDD	Y. Total HpCDF

Notes:_____

LDC #: 32012A21

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported CRQLs

Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: HRGC/HRMS Dioxins/Dibenzofurans (Method 1613B)

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

Y N N/A Were the correct internal standard (IS), quantitation ions and relative response factors (RRF) used to quantitate the compound?
Y N N/A Compound quantitation and CRQLs were adjusted to reflect all sample dilutions and dry weight factors (if necessary).

#	Date	Compound	Finding	Associated Samples	Qualifications
			EMPC results flagged "K"	All	U/A

Comments: ~~See sample calculation verification worksheet for recalculations~~

LDC #: 32012A21

VALIDATION FINDINGS WORKSHEET
Overall Assessment of Data

Reviewer: 9m
2nd Reviewer: 4

METHOD: HRGC/HRMS Dioxins/Dibenzofurans (EPA Method 1613B)

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

All available information pertaining to the data were reviewed using professional judgement to compliment the determination of the overall quality of the data.

(Y) N N/A Was the overall quality and usability of the data acceptable?

#	Date	Sample ID	Finding	Associated Samples	Qualifications
			2,3,7,8-TCDF from DB-5 column; resolution from DB-225 is better	All	R/A

Comments: _____

LABORATORY DATA CONSULTANTS, INC.
2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

King County Environmental Laboratory
322 W. Ewing Street
Seattle WA 98119
ATTN: Mr. Fritz Grothkopp

June 2, 2015

SUBJECT: Lower Duwamish Waterway, Green River Study, Suspended Solids, Data Validation

Dear Mr. Grothkopp,

Enclosed is the final validation report for the fractions listed below. This SDG was received on May 8, 2015. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project #34238:

SDG #	Fraction
PR150778	Dioxins/Dibenzofurans, Polychlorinated Biphenyls as Congeners

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

- Green River Study, Suspended Solids Characterization Sampling and Analysis Plan, January 2013
- US Environmental Protection Agency, Region 10 Data Validation and Review Guidelines for Polychlorinated Dibenzo-p-Dioxin and Polychlorinated Dibenzofuran Data, PCDD/PCDF, using Method 1613B and SW 846 Method 8290A, May 2014
- EPA Region 10 SOP for the Validation of Polychlorinated Biphenyl, PCB Data, Revision 1.0, December 8, 1995

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

Sincerely,

Stella S. Cuenco
Operations Manager/Senior Chemist

EDD III

LDC #34238 (King County - Seattle WA / Lower Duwamish Waterway, Green River Study Suspended Solids)

LDC	SDG#	DATE REC'D	(3) DATE DUE	Dioxins (1613B)		PCB Cong. (1668)																											
Matrix:	Water/Sediment			W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	PR150778	05/08/15	06/01/15	0	4	0	6																										
Total	A/SC			0	4	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10

Shaded cells indicate Level IV validation (all other cells are Level II validation). These sample counts do not include MS/MSD, and DUPs

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Lower Duwamish Waterway, Green River Study, Suspended Solids

LDC Report Date: May 20, 2015

Parameters: Dioxins/Dibenzofurans

Validation Level: Level III

Laboratory: Pacific Rim Laboratories, Inc.

Sample Delivery Group (SDG): PR150778

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
L61510-1	PR150778	Sediment	10/07/14
L61588-1	PR150779	Sediment	10/22/14
L61588-2	PR150780	Sediment	10/22/14
L61838-1	PR150781	Sediment	12/09/14
L61588-2DUP	PR150780D	Sediment	10/22/14

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Green River Study, Suspended Solids Characterization Sampling and Analysis Plan (January 2013) and US Environmental Protection Agency (EPA) Region 10 Data Validation and Review Guidelines for Polychlorinated Dibenzo-p-Dioxin and Polychlorinated Dibenzofuran Data (PCDD/PCDF) using Method 1613B and SW 846 Method 8290A (May 2014). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polychlorinated Dioxins/Dibenzofurans by Environmental Protection Agency (EPA) Method 1613B

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detect): The compound or analyte was analyzed for and positively identified by the laboratory; however the analyte should be considered non-detect at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

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 advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition; however, the cooler temperature upon receipt was reported at 20.6°C. Using professional judgment, no data were qualified due to the cooler temperature non-conformance since Dioxins and Dibenzofurans are environmentally stable and are not expected to degrade significantly during transit or storage.

All technical holding time requirements were met.

II. HRGC/HRMS Instrument Performance Check

Instrument performance was checked at the required daily frequency.

Retention time windows were established for all homologues. The chromatographic resolution between 2,3,7,8-TCDD and peaks representing any other unlabeled TCDD isomer was less than or equal to 25%.

The static resolving power was at least 10,000 (10% valley definition).

III. Initial Calibration and Initial Calibration Verification

A five point initial calibration was performed as required by the method.

Percent relative standard deviations (%RSD) were less than or equal to 20.0% for unlabeled compounds and less than or equal to 35.0% for labeled compounds.

The ion abundance ratios for all PCDDs and PCDFs were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were within the QC limits for unlabeled compounds and labeled compounds.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration results were within the QC limits for unlabeled compounds and labeled compounds.

The ion abundance ratios for all PCDDs and PCDFs were within validation criteria.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. Results flagged "NJ" by the laboratory as estimated maximum possible concentration (EMPC) and reported below the quantitation limit (QL) are considered not detected.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Matrix Spike/Matrix Spike Duplicates/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.

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

VIII. Ongoing Precision Recovery (OPR)

Ongoing precision recovery samples were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Internal Standards

All internal standard recoveries (%R) were within QC limits.

XI. Compound Quantitation

All compound quantitation were within validation criteria with the following exceptions:

Sample	Compound	Flag	A or P
L61510-1 L61588-1 L61588-2 L61838-1	All compounds flagged "NJ" by the laboratory as EMPC and reported below the QL.	U	A

Raw data were not reviewed for Level III validation.

XII. Target Compound Identifications

Raw data were not reviewed for Level III validation.

XIII. System Performance

Raw data were not reviewed for Level III validation.

XIV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to sample results reported by the laboratory as EMPC and below the QL, data were qualified as not detected in four samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Based upon the data validation all other results are considered valid and usable for all purposes.

Lower Duwamish Waterway, Green River Study, Suspended Solids Dioxins/Dibenzofurans - Data Qualification Summary - SDG PR150778

Sample	Compound	Flag	A or P	Reason
L61510-1 L61588-1 L61588-2 L61838-1	All compounds flagged "NJ" by the laboratory as EMPC and reported below the QL.	U	A	Compound quantitation (EMPC)

Lower Duwamish Waterway, Green River Study, Suspended Solids Dioxins/Dibenzofurans - Laboratory Blank Data Qualification Summary - SDG PR150778

No Sample Data Qualified in this SDG

LDC #: 34238A21 **VALIDATION COMPLETENESS WORKSHEET** Date: 5/14/15
SDG #: PR150778 Level III Page: 1 of 1
Laboratory: Pacific Rim Laboratories Inc. Reviewer: JN
2nd Reviewer:

METHOD: HRGC/HRMS Dioxins/Dibenzofurans (EPA Method 1613B)

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

	Validation Area		Comments
I.	Sample receipt/Technical holding times	SW, A	cooler temp 20.6°C (text)
II.	HRGC/HRMS Instrument performance check	A	
III.	Initial calibration/~~ICV~~	A, N	≤ 20/35
IV.	Continuing calibration	A	QC limits
V.	Laboratory Blanks	SW	EMPC > EDL, < RL considered "U"
VI.	Field blanks	N	
VII.	Matrix spike/Matrix spike duplicates /DUP	N / A	C.S. / D=3+5
VIII.	Laboratory control samples	A	OPR
IX.	Field duplicates	N	
X.	Internal standards	A	
XI.	Compound quantitation RL/~~LOQ/LODs~~	SW	
XII.	Target compound identification	N	
XIII.	System performance	N	
XIV.	Overall assessment of data	A	

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

	Client ID	Lab ID	Matrix	Date
1	L61510-1	PR150778	Sediment	10/07/14
2	L61588-1	PR150779	Sediment	10/22/14
3	L61588-2	PR150780	Sediment	10/22/14
4	L61838-1	PR150781	Sediment	12/09/14
5	L61588-2DUP	PR150780D	Sediment	10/22/14
6				
7				
8				
9				
10				
11				

Notes:

	DF150195B						

VALIDATION FINDINGS WORKSHEET

METHOD: HRGC/HRMS Dioxins/Dibenzofurans (EPA Method 1613B)

A. 2,3,7,8-TCDD	F. 1,2,3,4,6,7,8-HpCDD	K. 1,2,3,4,7,8-HxCDF	P. 1,2,3,4,7,8,9-HpCDF	U. Total HpCDD
B. 1,2,3,7,8-PeCDD	G. OCDD	L. 1,2,3,6,7,8-HxCDF	Q. OCDF	V. Total TCDF
C. 1,2,3,4,7,8-HxCDD	H. 2,3,7,8-TCDF	M. 2,3,4,6,7,8-HxCDF	R. Total TCDD	W. Total PeCDF
D. 1,2,3,6,7,8-HxCDD	I. 1,2,3,7,8-PeCDF	N. 1,2,3,7,8,9-HxCDF	S. Total PeCDD	X. Total HxCDF
E. 1,2,3,7,8,9-HxCDD	J. 2,3,4,7,8-PeCDF	O. 1,2,3,4,6,7,8-HpCDF	T. Total HxCDD	Y. Total HpCDF

Notes:_____

LDC #: 34238A21

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported RLs

Reviewer: 9m
2nd Reviewer: [illegible]

METHOD: GC/MS Dioxins/Dibenzofurans (Method 1613B)

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

Y N N/A Were the correct internal standard (IS), quantitation ions and relative response factors (RRF) used to quantitate the compound?
Y N N/A Compound quantitation and RLs were adjusted to reflect all sample dilutions and dry weight factors (if necessary).

#	Date	Compound	Finding	Associated Samples	Qualifications
			EMPC results >EDL but <RL; elevated to the EMPC value	1-4, DF150195B	U/A

Comments: ~~See sample calculation verification worksheet for recalculations~~

LDC Report# 34238A31

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Lower Duwamish Waterway, Green River Study, Suspended Solids

LDC Report Date: May 20, 2015

Parameters: Polychlorinated Biphenyls as Congeners

Validation Level: Level III

Laboratory: Pacific Rim Laboratories, Inc.

Sample Delivery Group (SDG): PR150778

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
L61510-1	PR150778	Sediment	10/07/14
L61588-1	PR150779	Sediment	10/22/14
L61588-2	PR150780	Sediment	10/22/14
L61838-1	PR150781	Sediment	12/09/14
L62291-1	PR150782	Sediment	11/03/14
L62291-2	PR150783	Sediment	11/24/14
L62291-1DUP	PR150782D	Sediment	11/03/14

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Green River Study, Suspended Solids Characterization Sampling and Analysis Plan (January 2013) and US Environmental Protection Agency (EPA) Region 10 SOP for the Validation of Polychlorinated Biphenyl (PCB) Data (Revision 1.0, December 8, 1995). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polychlorinated Biphenyls as Congeners by Environmental Protection Agency (EPA) Method 1668C

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detect): The compound or analyte was analyzed for and positively identified by the laboratory; however the analyte should be considered non-detect at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

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 advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition; however, the cooler temperature upon receipt was reported at 20.6°C. Using professional judgment, no data were qualified due to the cooler temperature non-conformance since PCBs are environmentally stable and are not expected to degrade significantly during transit or storage.

All technical holding time requirements were met.

II. HRGC/HRMS Instrument Performance Check

Instrument performance was checked at the required frequency.

Retention time windows were established for all congeners. The chromatographic resolution between the congeners PCB-23 and PCB-34 and congeners PCB-182 and PCB-187 was resolved with a valley of less than or equal to 40%.

The static resolving power was at least 10,000 (10% valley definition).

III. Initial Calibration

A five point initial calibration was performed at the required daily frequency.

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

Date	Compound	%RSD	Associated Samples	Affected Compound	Flag	A or P
04/10/15	^{13}C-PCB-081 ^{13}C-PCB-077 ^{13}C-PCB-123 ^{13}C-PCB-118 ^{13}C-PCB-188	29.29 29.32 20.38 20.41 24.88	All samples in SDG PR150778	PCB-081 PCB-077 PCB-123 PCB-118 PCB-188 Tetrachlorobiphenyls Pentachlorobiphenyls Heptachlorobiphenyls	J (all detects) UJ (all non-detects)	P

The ion abundance ratios for all PCBs were within 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 within QC limits for all compounds.

The ion abundance ratios for all PCBs were within method and validation criteria.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks with the following exceptions:

Laboratory Blank ID	Extraction Date	Compound	Concentration	Associated Samples
PC150239B	03/31/15	PCB-002	0.0011 ug/Kg	All samples in SDG PR150778
		PCB-003	0.0051 ug/Kg	
		PCB-005/008	0.0067 ug/Kg	
		PCB-011	0.109 ug/Kg	
		PCB-018	0.0058 ug/Kg	
		PCB-017	0.0017 ug/Kg	
		PCB-027	0.0002 ug/Kg	
		PCB-032	0.0013 ug/Kg	
		PCB-016	0.0037 ug/Kg	
		PCB-026	0.0007 ug/Kg	
		PCB-031	0.0103 ug/Kg	
		PCB-028	0.0112 ug/Kg	
		PCB-020/033	0.0057 ug/Kg	
		PCB-022	0.0062 ug/Kg	
		PCB-035	0.0014 ug/Kg	
		PCB-037	0.0066 ug/Kg	
		PCB-052/069	0.0246 ug/Kg	
		PCB-043/049	0.0089 ug/Kg	
		PCB-047/048	0.0087 ug/Kg	
		PCB-044	0.0142 ug/Kg	
		PCB-059	0.0006 ug/Kg	
		PCB-042	0.0051 ug/Kg	
		PCB-064/072	0.0074 ug/Kg	
		PCB-071	0.0009 ug/Kg	
		PCB-040/057	0.0019 ug/Kg	
		PCB-074	0.0096 ug/Kg	
		PCB-070	0.0255 ug/Kg	
		PCB-066	0.0097 ug/Kg	
		PCB-060	0.0023 ug/Kg	
		PCB-056	0.0086 ug/Kg	
		PCB-077	0.0011 ug/Kg	
		PCB-095	0.0356 ug/Kg	
		PCB-091/121	0.0073 ug/Kg	
		PCB-101	0.0946 ug/Kg	
		PCB-099	0.0116 ug/Kg	
		PCB-083/109	0.0015 ug/Kg	
		PCB-116/125	0.0015 ug/Kg	
		PCB-087/115	0.0133 ug/Kg	
		PCB-110	0.0474 ug/Kg	
		PCB-124	0.0004 ug/Kg	
		PCB-118	0.0209 ug/Kg	
		PCB-105/127	0.0051 ug/Kg	
		PCB-136/148	0.0076 ug/Kg	
		PCB-151	0.0071 ug/Kg	
		PCB-135	0.0007 ug/Kg	
		PCB-144	0.0004 ug/Kg	
		PCB-139/149	0.0222 ug/Kg	
		PCB-134	0.0012 ug/Kg	
		PCB-146	0.0019 ug/Kg	
		PCB-132/161	0.006 ug/Kg	
		PCB-153	0.0165 ug/Kg	
		PCB-141	0.0034 ug/Kg	
		PCB-163/164	0.0029 ug/Kg	
		PCB-138	0.0098 ug/Kg	
		PCB-128	0.002 ug/Kg	
		PCB-169	0.0003 ug/Kg	
		PCB-179	0.0015 ug/Kg	
		PCB-176	0.0001 ug/Kg	
		PCB-182/187	0.0004 ug/Kg	
		PCB-183	0.0007 ug/Kg	

Laboratory Blank ID	Extraction Date	Compound	Concentration	Associated Samples
PC150239B (Cont'd)	03/31/15	PCB-174 PCB-180 PCB-170 Monochlorobiphenyls Dichlorobiphenyls Trichlorobiphenyls Tetrachlorobiphenyls Pentachlorobiphenyls Hexachlorobiphenyls Heptachlorobiphenyls	0.0014 ug/Kg 0.0007 ug/Kg 0.0005 ug/Kg 0.0011 ug/Kg 0.116 ug/Kg 0.0516 ug/Kg 0.0829 ug/Kg 0.181 ug/Kg 0.0434 ug/Kg 0.0007 ug/Kg	All samples in SDG PR150778

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

Sample	Compound	Reported Concentration	Modified Final Concentration
L61510-1	PCB-003 PCB-005/008 PCB-011 PCB-035 Dichlorobiphenyls	0.0115 ug/Kg 0.0331 ug/Kg 0.198 ug/Kg 0.001 ug/Kg 0.314 ug/Kg	0.0115U ug/Kg 0.0331U ug/Kg 0.198U ug/Kg 0.001U ug/Kg 0.314J ug/Kg
L61588-1	PCB-011 Dichlorobiphenyls	0.326 ug/Kg 0.565 ug/Kg	0.326U ug/Kg 0.565J ug/Kg
L61588-2	PCB-011	0.434 ug/Kg	0.434U ug/Kg
L62291-1	PCB-005/008 PCB-011 PCB-016 PCB-031 PCB-020/033 PCB-022 PCB-035 Dichlorobiphenyls	0.024 ug/Kg 0.301 ug/Kg 0.0058 ug/Kg 0.0491 ug/Kg 0.0274 ug/Kg 0.0256 ug/Kg 0.0036 ug/Kg 0.393 ug/Kg	0.024U ug/Kg 0.301U ug/Kg 0.0058U ug/Kg 0.0491U ug/Kg 0.0274U ug/Kg 0.0256U ug/Kg 0.0036U ug/Kg 0.393J ug/Kg
L62291-2	PCB-011	0.36 ug/Kg	0.36U ug/Kg
L62291-1DUP	PCB-003 PCB-005/008 PCB-011 PCB-016 PCB-031 PCB-020/033 PCB-022 PCB-035 PCB-040/057 PCB-169 Dichlorobiphenyls	0.0049 ug/Kg 0.0169 ug/Kg 0.114 ug/Kg 0.0056 ug/Kg 0.0469 ug/Kg 0.0257 ug/Kg 0.0214 ug/Kg 0.0028 ug/Kg 0.0088 ug/Kg 0.002 ug/Kg 0.178 ug/Kg	0.0049U ug/Kg 0.0169U ug/Kg 0.114U ug/Kg 0.0056U ug/Kg 0.0469U ug/Kg 0.0257U ug/Kg 0.0214U ug/Kg 0.0028U ug/Kg 0.0088U ug/Kg 0.002U ug/Kg 0.178J ug/Kg

Laboratory blank results flagged "NJ" by the laboratory as estimated maximum possible concentration (EMPC) and reported below the quantitation limit (QL) are considered not detected.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Matrix Spike/Matrix Spike Duplicates/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.

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits with the following exceptions:

DUP ID (Associated Samples)	Compound	RPD (Limits)	Flag	A or P
L62291-1DUP (L62291-1)	PCB-011	90 (≤50)	J (all detects)	A

VIII. Ongoing Precision & Recovery Samples (OPR)

Ongoing precision and recovery (OPR) samples were reviewed for each matrix as applicable. The percent recoveries (%R) were within the QC limits.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Internal Standards

All internal standard recoveries (%R) were within QC limits with the following exceptions:

Sample	Internal Standards	%R (Limits)	Compound	Flag	A or P
L62291-1	^{13}C-PCB-001 ^{13}C-PCB-003	0 (5-145) 3 (5-145)	PCB-001 PCB-002 PCB-003 Monochlorobiphenyls	J (all detects) R (all non-detects)	P
L62291-1DUP	^{13}C-PCB-001	1 (5-145)	PCB-001 PCB-002 Monochlorobiphenyls	J (all detects)	P

XI. Compound Quantitation

All compound quantitation were within validation criteria with the following exceptions:

Sample	Compound	Flag	A or P
L61510-1 L61588-1 L61588-2 L62291-1 L62291-2 L62291-1DUP	All compounds flagged "NJ" by the laboratory as EMPC and reported below the QL.	U	A
All samples in SDG PR150778	All compounds flagged "N" by the laboratory as EMPC and reported above the QL.	J (all detects)	A

Raw data were not reviewed for Level III validation.

XII. Target Compound Identifications

Raw data were not reviewed for Level III validation.

XIII. System Performance

Raw data were not reviewed for Level III validation.

XIV. Overall Assessment of Data

The analysis was conducted within all specifications of the method.

Due to internal standards %R, data was rejected in one sample.

Due to initial calibration RSD, DUP RPD, and internal standards %R, data were qualified as estimated in seven samples.

Due to laboratory blank contamination, data were qualified as not detected in seven samples.

Due to sample results reported by the laboratory as EMPC and below the QL, data were qualified as not detected in six samples.

Due to sample results reported by the laboratory as EMPC and above the QL, data were qualified as estiamted in seven samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be rejected (R) are unusable for all purposes. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

Lower Duwamish Waterway, Green River Study, Suspended Solids Polychlorinated Biphenyls as Congeners - Data Qualification Summary - SDG PR150778

Sample	Compound	Flag	A or P	Reason
L61510-1 L61588-1 L61588-2 L61838-1 L62291-1 L62291-2 L62291-1DUP	PCB-081 PCB-077 PCB-123 PCB-118 PCB-188 Tetrachlorobiphenyls Pentachlorobiphenyls Heptachlorobiphenyls	J (all detects) UJ (all non-detects)	P	Initial calibration (%RSD)
L62291-1	PCB-011	J (all detects)	A	Duplicate sample analysis (RPD)
L62291-1	PCB-001 PCB-002 PCB-003 Monochlorobiphenyls	J (all detects) R (all non-detects)	P	Internal standards (%R)
L62291-1DUP	PCB-001 PCB-002 Monochlorobiphenyls	J (all detects)	P	Internal standards (%R)
L61510-1 L61588-1 L61588-2 L62291-1 L62291-2 L62291-1DUP	All compounds flagged "NJ" by the laboratory as EMPC and reported below the QL.	U	A	Compound quantitation (EMPC)
L61510-1 L61588-1 L61588-2 L61838-1 L62291-1 L62291-2 L62291-1DUP	All compounds flagged "N" by the laboratory as EMPC and reported above the QL.	J (all detects)	A	Compound quantitation (EMPC)

Lower Duwamish Waterway, Green River Study, Suspended Solids Polychlorinated Biphenyls as Congeners - Laboratory Blank Data Qualification Summary - SDG PR150778

Sample	Compound	Modified Final Concentration	A or P
L61510-1	PCB-003 PCB-005/008 PCB-011 PCB-035 Dichlorobiphenyls	0.0115U ug/Kg 0.0331U ug/Kg 0.198U ug/Kg 0.001U ug/Kg 0.314J ug/Kg	A

Sample	Compound	Modified Final Concentration	A or P
L61588-1	PCB-011 Dichlorobiphenyls	0.326U ug/Kg 0.565J ug/Kg	A
L61588-2	PCB-011	0.434U ug/Kg	A
L62291-1	PCB-005/008 PCB-011 PCB-016 PCB-031 PCB-020/033 PCB-022 PCB-035 Dichlorobiphenyls	0.024U ug/Kg 0.301U ug/Kg 0.0058U ug/Kg 0.0491U ug/Kg 0.0274U ug/Kg 0.0256U ug/Kg 0.0036U ug/Kg 0.393J ug/Kg	A
L62291-2	PCB-011	0.36U ug/Kg	A
L62291-1DUP	PCB-003 PCB-005/008 PCB-011 PCB-016 PCB-031 PCB-020/033 PCB-022 PCB-035 PCB-040/057 PCB-169 Dichlorobiphenyls	0.0049U ug/Kg 0.0169U ug/Kg 0.114U ug/Kg 0.0056U ug/Kg 0.0469U ug/Kg 0.0257U ug/Kg 0.0214U ug/Kg 0.0028U ug/Kg 0.0088U ug/Kg 0.002U ug/Kg 0.178J ug/Kg	A

LDC #: 34238A31 **VALIDATION COMPLETENESS WORKSHEET** Date: 5-15-15
SDG #: PR150778 Level III Page: 1 of 1
Laboratory: Pacific Rim Laboratories Inc. Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: HRGC/HRMS Polychlorinated Biphenyl Congeners (EPA Method 1668C)

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

	Validation Area		Comments
I.	Sample receipt/Technical holding times	SW / A	Cooler temp. 20.6°C. (Text)
II.	HRGC/HRMS Instrument performance check	N	(SGE HT-8 column used)
III.	Initial calibration/~~ICV~~	SW / N	≤20
IV.	Continuing calibration	A	QC limits
V.	Laboratory Blanks	SW	
VI.	Field blanks	N	
VII.	Matrix spike/Matrix spike duplicates /DUP	N / SW	C.S. / D=5+7
VIII.	Laboratory control samples	A	OPR
IX.	Field duplicates	N	
X.	Internal standards	SW	
XI.	Compound quantitation RL/~~LOQ/LOD~~s	SW	
XII.	Target compound identification	N	
XIII.	System performance	N	
XIV.	Overall assessment of data	A	

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

	Client ID	Lab ID	Matrix	Date
1	L61510-1	PR150778	Sediment	10/07/14
2	L61588-1	PR150779	Sediment	10/22/14
3	L61588-2	PR150780	Sediment	10/22/14
4	L61838-1	PR150781	Sediment	12/09/14
5	L62291-1	PR150782	Sediment	11/03/14
6	L62291-2	PR150783	Sediment	11/24/14
7	L62291-1DUP	PR150782D	Sediment	11/03/14
8				
9				
10				

Notes:

	PC150239B						

LDC #: 34238A31

VALIDATION FINDINGS WORKSHEET
Initial Calibration

Page: 1 of 1
Reviewer: CK
2nd Reviewer: K

METHOD: HRGC/HRMS PCB Congeners (EPA Method 1668C)

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

Y N N/A Was the initial calibration performed at 5 concentration levels?
Y N N/A Were all percent relative standard deviations (%RSD) ≤ 20%?
Y N N/A Did all calibration standards meet the Ion Abundance Ratio criteria?
Y N N/A Was the signal to noise ratio for each target compound ≥ 2.5 and for each recovery and internal standard ≥ 10?

#	Date	Standard ID	Compound	Finding %RSD (Limit: <20.0%)	Finding Ion Abundace Ratio	Associated Samples	Qualifications
	04/10/15	PCCS	13C-PCB081	29.29		all + LabDup	J/UJ/P (det/ND)
		↓	PCB077	29.32		↓	
			PCB123	20.38			
			PCB118	20.41			
		↓	PCB188	24.88		↓	
							+Tetrachlorobiphenyls, Pentachlorobiphenyls, Heptachlorobiphenyls

LDC #: 34238A31

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: HRGC/HRMS PCB Congeners (EPA Method 1668C)

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

Y N N/A Were all samples associated with a method blank?
Y N N/A Was a method blank performed for each matrix and whenever a sample extraction was performed?
Y N N/A Was the method blank contaminated?

Blank extraction date: 03/31/15 **Blank analysis date:** 04/11/15 **Associated samples:** all

Conc. units: µg/Kg

Compound	Blank ID		Sample Identification								
	PC150239B	5x	1	2	3	4	5	6	7		
PCB-002	0.0011	0.00550									
PCB-003	0.0051*	0.02550	0.0115/U						0.0049 /U		
PCB-005/008	0.0067	0.03350	0.0331/U				0.024 /U		0.0169 /U		
PCB-011	0.109	0.54500	0.198/U	0.326 /U	0.434 /U		0.301 /U	0.36 /U	0.114 /U		
PCB-018	0.0058	0.02900									
PCB-017	0.0017*	0.00850									
PCB-027	0.0002*	0.00100									
PCB-032	0.0013*	0.00650									
PCB-016	0.0037	0.01850					0.0058 /U		0.0056 /U		
PCB-026	0.0007	0.00350									
PCB-031	0.0103	0.05150					0.0491 /U		0.0469 /U		
PCB-028	0.0112	0.05600									
PCB-020/033	0.0057	0.02850					0.0274 /U		0.0257 /U		
PCB-022	0.0062	0.03100					0.0256 /U		0.0214 /U		
PCB-035	0.0014	0.00700	0.001/U				0.0036 /U		0.0028*/U		
PCB-037	0.0066	0.03300									
PCB-052/069	0.0246*	0.12300									
PCB-043/049	0.0089	0.04450									
PCB-047/048	0.0087	0.04350									

LDC #: 34238A31

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: 1m
2nd Reviewer: R

METHOD: HRGC/HRMS PCB Congeners (EPA Method 1668C)

Compound	Blank ID		Sample Identification								
	PC150239B	5x	1	2	3	4	5	6	7		
PCB-044	0.0142	0.07100									
PCB-059	0.0006*	0.00300									
PCB-042	0.0051*	0.02550									
PCB-064/072	0.0074	0.03700									
PCB-071	0.0009*	0.00450									
PCB-040/057	0.0019*	0.00950				0.0044/U	0.0063*/U	0.0068/U	0.0088 U		
PCB-074	0.0096	0.04800									
PCB-070	0.0255	0.12750									
PCB-066	0.0097*	0.04850									
PCB-060	0.0023*	0.01150									
PCB-056	0.0086	0.04300									
PCB-077	0.0011*	0.00550									
PCB-095	0.0356*	0.17800									
PCB-091/121	0.0073*	0.03650									
PCB-101	0.0946	0.47300									
PCB-099	0.0116*	0.05800									
PCB-083/109	0.0015*	0.00750									
PCB-116/125	0.0015*	0.00750									
PCB-087/115	0.0133	0.06650									
PCB-110	0.0474	0.23700									

LDC #: 34238A31

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: TM
2nd Reviewer: AC

METHOD: HRGC/HRMS PCB Congeners (EPA Method 1668C)

Compound	Blank ID		Sample Identification								
	PC150239B	5x	1	2	3	4	5	6	7		
PCB-124	0.0004*	0.00200									
PCB-118	0.0209	0.10450									
PCB-105/127	0.0051	0.02550									
PCB-136/148	0.0076	0.03800									
PCB-151	0.0071*	0.03550									
PCB-135	0.0007*	0.00350									
PCB-144	0.0004*	0.00200									
PCB-139/149	0.0222*	0.11100									
PCB-134	0.0012	0.00600									
PCB-146	0.0019*	0.00950									
PCB-132/161	0.006*	0.03000									
PCB-153	0.0165	0.08250									
PCB-141	0.0034	0.01700									
PCB-163/164	0.0029	0.01450									
PCB-138	0.0098	0.04900									
PCB-128	0.002	0.01000									
PCB-169	0.0003*	0.00150							0.002/U		
PCB-179	0.0015*	0.00750									
PCB-176	0.0001*	0.00050									
PCB-182/187	0.0004*	0.00200									

LDC #: 34238A31

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: VC
2nd Reviewer: K

METHOD: HRGC/HRMS PCB Congeners (EPA Method 1668C)

Compound	Blank ID		Sample Identification								
	PC150239B	5x	1	2	3	4	5	6	7		
PCB-183	0.0007	0.00350									
PCB-174	0.0014*	0.00700									
PCB-180	0.0007*	0.00350									
PCB-170	0.0005*	0.00250									
Monochlorobiphenyls	0.0011	0.00550									
Dichlorobiphenyls	0.116	0.58000	0.314/J	0.565/J			0.393/J		0.178/J		
Trichlorobiphenyls	0.0516	0.25800									
Tetrachlorobiphenyls	0.0829	0.41450									
Pentachlorobiphenyls	0.181	0.90500									
Hexachlorobiphenyls	0.0434	0.21700									
Heptachlorobiphenyls	0.0007	0.00350									

*EMPC
(EMPC results >EDL but <RL and flagged "NJ" by the laboratory are considered non-detect/"U")

LDC #: 34238A31

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates / Lab Dup

Reviewer: CH
2nd Reviewer: [illegible]

METHOD: HRGC/HRMS Polychlorinated Biphenyls (EPA Method 1668C)

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

Y N N/A Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.

Y N N/A Was a MS/MSD analyzed every 20 samples of each matrix?

Y N N/A Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	Lab Dup ~~MS/MSD ID~~	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		7	PCB-011	( )	( )	90 (50)	5	Jdets/A (det)
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

LDC #: 34238A3J

VALIDATION FINDINGS WORKSHEET
Internal Standards

Reviewer: QC
2nd Reviewer: M

METHOD: HRGC/HRMS PCB Congeners (EPA Method 1668C)

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

Y (N) N/A Are all internal standard recoveries within the QC criteria?

Y N (N/A) Was the S/N ratio all internal standard peaks ≥ 10?

#	Date	Lab ID/Reference	Internal Standard	% Recovery (Limit:)	Qualifications
		5	13C-PCB 001	0 (5-145)	J/R/P (PCB 001, PCB 002 + Monochlorobiphenyls) (ND/det)
			13C-PCB 003	3 (5-145)	J/UJ/P (PCB 002, PCB 003 + Monochlorobiphenyls) (det)
		7	13C-PCB 001	1 (5-145)	J/UJ/P (PCB 001, PCB 002 + Monochlorobiphenyls) (det)

LDC #: 34238A3

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported CRQLs

Reviewer:
2nd Reviewer:

METHOD: HRGC/HRMS PCB Congeners (EPA Method 1668C)

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

Y N N/A Were the correct internal standard (IS), quantitation ions and relative response factors (RRF) used to quantitate the compound?
Y N N/A Compound quantitation and CRQLs were adjusted to reflect all sample dilutions and dry weight factors (if necessary).

#	Date	Compound	Finding	Associated Samples	Qualifications
			EMPC results >EDL but <RL and flagged NJ by the laboratory	1, 2, 3, 5, 6, 7, PC150239B	U/A
			EMPC results >RL and flagged N by the laboratory	all +7 (Lab Dup)	Jdets/A

Comments: ~~See sample calculation verification worksheet for recalculations~~

LDC #: 34294

EDD POPULATION COMPLETENESS WORKSHEET

Anchor

Date: 6/2/15

Page: 1 of 1

2nd Reviewer: _____

The LDC job number listed above was entered by AJ.

	EDD Process	Y/N	Init	Comments/Action
I.	EDD Completeness	-		
Ia.	- All methods present?			
Ib.	- All samples present/match report?			
Ic.	- All reported analytes present?			
Id	-10% verification of EDD?			
II.	EDD Preparation/Entry	-		
IIa.	- QC Level applied? (EPAStage2B or EPAStage4)			
IIb.	- Laboratory EMPC qualified results qualified (J with reason code 23)?			
III.	Reasonableness Checks	-		
IIIa.	- Do all qualified ND results have ND qualifier (i.e. UJ)?			
IIIb.	- Do all qualified detect results have detect qualifier (i.e. J)?			
IIIc.	- If reason codes used, do all qualified results have reason code field populated, and vice versa?			
IIId.	- Do blank concentrations in report match EDD, where data was qualified due to blank?			
IIIe.	- Were any results reported above calibration range? If so, were results qualified appropriately?	/		
IIIf.	- Are all results marked reportable "Yes" unless rejected for overall assessment in the data validation report?			
IIIg.	-Are there any lab "R" qualified data? / Are the entry columns blank for these results?	/		
IIIh.	- Is the detect flag set to "N" for all "U" qualified blank results?			

Notes: _____

LABORATORY DATA CONSULTANTS, INC.
2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

King County Environmental Laboratory
322 W. Ewing Street
Seattle WA 98119
ATTN: Mr. Fritz Grothkopp

June 11, 2015

SUBJECT: Revised Lower Duwamish Waterway, Green River Study, Suspended Solids, Data Validation

Dear Mr. Grothkopp,

Enclosed is the revised validation report for the fraction listed below. Please replace the previously submitted report with the enclosed revised report.

LDC Project #34238:

SDG #	Fraction
PR150778	Polychlorinated Biphenyls as Congeners

- Blank qualifiers were removed for the following since the sample and/or blank result was EMPC < QL:

  Sample L61510-1 – PCB-035

  Sample L62291-1-DUP– PCB-035, PCB-040/057 and PCB-169

- Blank qualifier was added to PCB-022 for Sample L61510-1

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

Sincerely,

Stella S. Cuenco
Operations Manager/Senior Chemist

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Lower Duwamish Waterway, Green River Study, Suspended Solids

LDC Report Date: June 11, 2015

Parameters: Polychlorinated Biphenyls as Congeners

Validation Level: Level III

Laboratory: Pacific Rim Laboratories, Inc.

Sample Delivery Group (SDG): PR150778

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
L61510-1	PR150778	Sediment	10/07/14
L61588-1	PR150779	Sediment	10/22/14
L61588-2	PR150780	Sediment	10/22/14
L61838-1	PR150781	Sediment	12/09/14
L62291-1	PR150782	Sediment	11/03/14
L62291-2	PR150783	Sediment	11/24/14
L62291-1DUP	PR150782D	Sediment	11/03/14

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Green River Study, Suspended Solids Characterization Sampling and Analysis Plan (January 2013) and US Environmental Protection Agency (EPA) Region 10 SOP for the Validation of Polychlorinated Biphenyl (PCB) Data (Revision 1.0, December 8, 1995). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polychlorinated Biphenyls as Congeners by Environmental Protection Agency (EPA) Method 1668C

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detect): The compound or analyte was analyzed for and positively identified by the laboratory; however the analyte should be considered non-detect at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

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 advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition; however, the cooler temperature upon receipt was reported at 20.6°C. Using professional judgment, no data were qualified due to the cooler temperature non-conformance since PCBs are environmentally stable and are not expected to degrade significantly during transit or storage.

All technical holding time requirements were met.

II. HRGC/HRMS Instrument Performance Check

Instrument performance was checked at the required frequency.

Retention time windows were established for all congeners. The chromatographic resolution between the congeners PCB-23 and PCB-34 and congeners PCB-182 and PCB-187 was resolved with a valley of less than or equal to 40%.

The static resolving power was at least 10,000 (10% valley definition).

III. Initial Calibration

A five point initial calibration was performed at the required daily frequency.

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

Date	Compound	%RSD	Associated Samples	Affected Compound	Flag	A or P
04/10/15	^{13}C-PCB-081 ^{13}C-PCB-077 ^{13}C-PCB-123 ^{13}C-PCB-118 ^{13}C-PCB-188	29.29 29.32 20.38 20.41 24.88	All samples in SDG PR150778	PCB-081 PCB-077 PCB-123 PCB-118 PCB-188 Tetrachlorobiphenyls Pentachlorobiphenyls Heptachlorobiphenyls	J (all detects) UJ (all non-detects)	P

The ion abundance ratios for all PCBs were within 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 within QC limits for all compounds.

The ion abundance ratios for all PCBs were within method and validation criteria.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks with the following exceptions:

Laboratory Blank ID	Extraction Date	Compound	Concentration	Associated Samples
PC150239B	03/31/15	PCB-002	0.0011 ug/Kg	All samples in SDG PR150778
		PCB-003	0.0051 ug/Kg	
		PCB-005/008	0.0067 ug/Kg	
		PCB-011	0.109 ug/Kg	
		PCB-018	0.0058 ug/Kg	
		PCB-017	0.0017 ug/Kg	
		PCB-027	0.0002 ug/Kg	
		PCB-032	0.0013 ug/Kg	
		PCB-016	0.0037 ug/Kg	
		PCB-026	0.0007 ug/Kg	
		PCB-031	0.0103 ug/Kg	
		PCB-028	0.0112 ug/Kg	
		PCB-020/033	0.0057 ug/Kg	
		PCB-022	0.0062 ug/Kg	
		PCB-035	0.0014 ug/Kg	
		PCB-037	0.0066 ug/Kg	
		PCB-052/069	0.0246 ug/Kg	
		PCB-043/049	0.0089 ug/Kg	
		PCB-047/048	0.0087 ug/Kg	
		PCB-044	0.0142 ug/Kg	
		PCB-059	0.0006 ug/Kg	
		PCB-042	0.0051 ug/Kg	
		PCB-064/072	0.0074 ug/Kg	
		PCB-071	0.0009 ug/Kg	
		PCB-040/057	0.0019 ug/Kg	
		PCB-074	0.0096 ug/Kg	
		PCB-070	0.0255 ug/Kg	
		PCB-066	0.0097 ug/Kg	
		PCB-060	0.0023 ug/Kg	
		PCB-056	0.0086 ug/Kg	
		PCB-077	0.0011 ug/Kg	
		PCB-095	0.0356 ug/Kg	
		PCB-091/121	0.0073 ug/Kg	
		PCB-101	0.0946 ug/Kg	
		PCB-099	0.0116 ug/Kg	
		PCB-083/109	0.0015 ug/Kg	
		PCB-116/125	0.0015 ug/Kg	
		PCB-087/115	0.0133 ug/Kg	
		PCB-110	0.0474 ug/Kg	
		PCB-124	0.0004 ug/Kg	
		PCB-118	0.0209 ug/Kg	
		PCB-105/127	0.0051 ug/Kg	
		PCB-136/148	0.0076 ug/Kg	
		PCB-151	0.0071 ug/Kg	
		PCB-135	0.0007 ug/Kg	
		PCB-144	0.0004 ug/Kg	
		PCB-139/149	0.0222 ug/Kg	
		PCB-134	0.0012 ug/Kg	
		PCB-146	0.0019 ug/Kg	
		PCB-132/161	0.006 ug/Kg	
		PCB-153	0.0165 ug/Kg	
		PCB-141	0.0034 ug/Kg	
		PCB-163/164	0.0029 ug/Kg	
		PCB-138	0.0098 ug/Kg	
		PCB-128	0.002 ug/Kg	
		PCB-169	0.0003 ug/Kg	
		PCB-179	0.0015 ug/Kg	
		PCB-176	0.0001 ug/Kg	
		PCB-182/187	0.0004 ug/Kg	
		PCB-183	0.0007 ug/Kg	

Laboratory Blank ID	Extraction Date	Compound	Concentration	Associated Samples
PC150239B (Cont'd)	03/31/15	PCB-174 PCB-180 PCB-170 Monochlorobiphenyls Dichlorobiphenyls Trichlorobiphenyls Tetrachlorobiphenyls Pentachlorobiphenyls Hexachlorobiphenyls Heptachlorobiphenyls	0.0014 ug/Kg 0.0007 ug/Kg 0.0005 ug/Kg 0.0011 ug/Kg 0.116 ug/Kg 0.0516 ug/Kg 0.0829 ug/Kg 0.181 ug/Kg 0.0434 ug/Kg 0.0007 ug/Kg	All samples in SDG PR150778

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

Sample	Compound	Reported Concentration	Modified Final Concentration
L61510-1	PCB-003 PCB-005/008 PCB-011 PCB-022 Dichlorobiphenyls	0.0115 ug/Kg 0.0331 ug/Kg 0.198 ug/Kg 0.0295 ug/Kg 0.314 ug/Kg	0.0115U ug/Kg 0.0331U ug/Kg 0.198U ug/Kg 0.0295U ug/Kg 0.314J ug/Kg
L61588-1	PCB-011 Dichlorobiphenyls	0.326 ug/Kg 0.565 ug/Kg	0.326U ug/Kg 0.565J ug/Kg
L61588-2	PCB-011	0.434 ug/Kg	0.434U ug/Kg
L62291-1	PCB-005/008 PCB-011 PCB-016 PCB-031 PCB-020/033 PCB-022 PCB-035 Dichlorobiphenyls	0.024 ug/Kg 0.301 ug/Kg 0.0058 ug/Kg 0.0491 ug/Kg 0.0274 ug/Kg 0.0256 ug/Kg 0.0036 ug/Kg 0.393 ug/Kg	0.024U ug/Kg 0.301U ug/Kg 0.0058U ug/Kg 0.0491U ug/Kg 0.0274U ug/Kg 0.0256U ug/Kg 0.0036U ug/Kg 0.393J ug/Kg
L62291-2	PCB-011	0.36 ug/Kg	0.36U ug/Kg
L62291-1DUP	PCB-003 PCB-005/008 PCB-011 PCB-016 PCB-031 PCB-020/033 PCB-022 Dichlorobiphenyls	0.0049 ug/Kg 0.0169 ug/Kg 0.114 ug/Kg 0.0056 ug/Kg 0.0469 ug/Kg 0.0257 ug/Kg 0.0214 ug/Kg 0.178 ug/Kg	0.0049U ug/Kg 0.0169U ug/Kg 0.114U ug/Kg 0.0056U ug/Kg 0.0469U ug/Kg 0.0257U ug/Kg 0.0214U ug/Kg 0.178J ug/Kg

Laboratory blank results flagged "NJ" by the laboratory as estimated maximum possible concentration (EMPC) and reported below the quantitation limit (QL) are considered not detected.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Matrix Spike/Matrix Spike Duplicates/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.

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits with the following exceptions:

DUP ID (Associated Samples)	Compound	RPD (Limits)	Flag	A or P
L62291-1DUP (L62291-1)	PCB-011	90 (≤50)	J (all detects)	A

VIII. Ongoing Precision & Recovery Samples (OPR)

Ongoing precision and recovery (OPR) samples were reviewed for each matrix as applicable. The percent recoveries (%R) were within the QC limits.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Internal Standards

All internal standard recoveries (%R) were within QC limits with the following exceptions:

Sample	Internal Standards	%R (Limits)	Compound	Flag	A or P
L62291-1	^{13}C-PCB-001 ^{13}C-PCB-003	0 (5-145) 3 (5-145)	PCB-001 PCB-002 PCB-003 Monochlorobiphenyls	J (all detects) R (all non-detects)	P
L62291-1DUP	^{13}C-PCB-001	1 (5-145)	PCB-001 PCB-002 Monochlorobiphenyls	J (all detects)	P

XI. Compound Quantitation

All compound quantitation were within validation criteria with the following exceptions:

Sample	Compound	Flag	A or P
L61510-1 L61588-1 L61588-2 L62291-1 L62291-2 L62291-1DUP	All compounds flagged "NJ" by the laboratory as EMPC and reported below the QL.	U	A
All samples in SDG PR150778	All compounds flagged "N" by the laboratory as EMPC and reported above the QL.	J (all detects)	A

Raw data were not reviewed for Level III validation.

XII. Target Compound Identifications

Raw data were not reviewed for Level III validation.

XIII. System Performance

Raw data were not reviewed for Level III validation.

XIV. Overall Assessment of Data

The analysis was conducted within all specifications of the method.

Due to internal standards %R, data was rejected in one sample.

Due to initial calibration RSD, DUP RPD, and internal standards %R, data were qualified as estimated in seven samples.

Due to laboratory blank contamination, data were qualified as not detected in six samples.

Due to sample results reported by the laboratory as EMPC and below the QL, data were qualified as not detected in six samples.

Due to sample results reported by the laboratory as EMPC and above the QL, data were qualified as estiamted in seven samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be rejected (R) are unusable for all purposes. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

Lower Duwamish Waterway, Green River Study, Suspended Solids Polychlorinated Biphenyls as Congeners - Data Qualification Summary - SDG PR150778

Sample	Compound	Flag	A or P	Reason
L61510-1 L61588-1 L61588-2 L61838-1 L62291-1 L62291-2 L62291-1DUP	PCB-081 PCB-077 PCB-123 PCB-118 PCB-188 Tetrachlorobiphenyls Pentachlorobiphenyls Heptachlorobiphenyls	J (all detects) UJ (all non-detects)	P	Initial calibration (%RSD)
L62291-1	PCB-011	J (all detects)	A	Duplicate sample analysis (RPD)
L62291-1	PCB-001 PCB-002 PCB-003 Monochlorobiphenyls	J (all detects) R (all non-detects)	P	Internal standards (%R)
L62291-1DUP	PCB-001 PCB-002 Monochlorobiphenyls	J (all detects)	P	Internal standards (%R)
L61510-1 L61588-1 L61588-2 L62291-1 L62291-2 L62291-1DUP	All compounds flagged "NJ" by the laboratory as EMPC and reported below the QL.	U	A	Compound quantitation (EMPC)
L61510-1 L61588-1 L61588-2 L61838-1 L62291-1 L62291-2 L62291-1DUP	All compounds flagged "N" by the laboratory as EMPC and reported above the QL.	J (all detects)	A	Compound quantitation (EMPC)

Lower Duwamish Waterway, Green River Study, Suspended Solids Polychlorinated Biphenyls as Congeners - Laboratory Blank Data Qualification Summary - SDG PR150778

Sample	Compound	Modified Final Concentration	A or P
L61510-1	PCB-003 PCB-005/008 PCB-011 PCB-022 Dichlorobiphenyls	0.0115U ug/Kg 0.0331U ug/Kg 0.198U ug/Kg 0.0295U ug/Kg 0.314J ug/Kg	A

Sample	Compound	Modified Final Concentration	A or P
L61588-1	PCB-011 Dichlorobiphenyls	0.326U ug/Kg 0.565J ug/Kg	A
L61588-2	PCB-011	0.434U ug/Kg	A
L62291-1	PCB-005/008 PCB-011 PCB-016 PCB-031 PCB-020/033 PCB-022 PCB-035 Dichlorobiphenyls	0.024U ug/Kg 0.301U ug/Kg 0.0058U ug/Kg 0.0491U ug/Kg 0.0274U ug/Kg 0.0256U ug/Kg 0.0036U ug/Kg 0.393J ug/Kg	A
L62291-2	PCB-011	0.36U ug/Kg	A
L62291-1DUP	PCB-003 PCB-005/008 PCB-011 PCB-016 PCB-031 PCB-020/033 PCB-022 Dichlorobiphenyls	0.0049U ug/Kg 0.0169U ug/Kg 0.114U ug/Kg 0.0056U ug/Kg 0.0469U ug/Kg 0.0257U ug/Kg 0.0214U ug/Kg 0.178J ug/Kg	A

LDC #: 34238A31 **VALIDATION COMPLETENESS WORKSHEET** Date: 5-15-15
SDG #: PR150778 Level III Page: 1 of 1
Laboratory: Pacific Rim Laboratories Inc. Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: HRGC/HRMS Polychlorinated Biphenyl Congeners (EPA Method 1668C)

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

	Validation Area		Comments
I.	Sample receipt/Technical holding times	SW / A	Cooler temp. 20.6°C (text)
II.	HRGC/HRMS Instrument performance check	N	(SGE HT-8 column used)
III.	Initial calibration/~~ICV~~	SW / N	≤ 20
IV.	Continuing calibration	A	QC limits
V.	Laboratory Blanks	SW	
VI.	Field blanks	N	
VII.	Matrix spike/Matrix spike duplicates /DUP	N / SW	C.S. / D=5+7
VIII.	Laboratory control samples	A	OPR
IX.	Field duplicates	N	
X.	Internal standards	SW	
XI.	Compound quantitation RL/~~LOQ/LOD~~s	SW	
XII.	Target compound identification	N	
XIII.	System performance	N	
XIV.	Overall assessment of data	A	

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

	Client ID	Lab ID	Matrix	Date
1	L61510-1	PR150778	Sediment	10/07/14
2	L61588-1	PR150779	Sediment	10/22/14
3	L61588-2	PR150780	Sediment	10/22/14
4	L61838-1	PR150781	Sediment	12/09/14
5	L62291-1	PR150782	Sediment	11/03/14
6	L62291-2	PR150783	Sediment	11/24/14
7	L62291-1DUP	PR150782D	Sediment	11/03/14
8				
9				
10				

Notes:

	PC150239B						

LDC #: 34238A31

VALIDATION FINDINGS WORKSHEET
Initial Calibration

Reviewer: Ch
2nd Reviewer: [illegible]

METHOD: HRGC/HRMS PCB Congeners (EPA Method 1668C)
Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

- (Y) N N/A — Was the initial calibration performed at 5 concentration levels?
- Y (N) N/A — Were all percent relative standard deviations (%RSD) ≤ 20%?
- (Y) N N/A — Did all calibration standards meet the Ion Abundance Ratio criteria?
- Y N (N/A) — Was the signal to noise ratio for each target compound ≥ 2.5 and for each recovery and internal standard ≥ 10?

#	Date	Standard ID	Compound	Finding %RSD (Limit: ≤20.0%)	Finding Ion Abundace Ratio	Associated Samples	Qualifications
	04/10/15	PCCS	13C-PCB081	29.29		all + LabDup	J/UJ/P (det/ND)
		↓	PCB077	29.32		↓	↓
			PCB123	20.38			
			PCB118	20.41			
			PCB188	24.88			
							(+ Tetrachlorobiphenyls, Pentachlorobiphenyls, Heptachlorobiphenyls)

V:\Validation Worksheets\1668\INICAL16A.wpd

LDC #: 34238A31

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: JM
2nd Reviewer: C

METHOD: HRGC/HRMS PCB Congeners (EPA Method 1668C)

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

Y N N/A Were all samples associated with a method blank?
Y N N/A Was a method blank performed for each matrix and whenever a sample extraction was performed?
Y N N/A Was the method blank contaminated?

Blank extraction date: 03/31/15 **Blank analysis date:** 04/11/15 **Associated samples:** all

Conc. units: µg/Kg

Compound	Blank ID		Sample Identification								
	PC150239B	5x	1	2	3	5	6	7			
PCB-002	0.0011	0.00550									
PCB-003 N	0.0051*	0.02550	0.0115/U					0.0049 /U			
PCB-005/008	0.0067	0.03350	0.0331/U			0.024 /U		0.0169 /U			
PCB-011	0.109	0.54500	0.198/U	0.326 /U	0.434 /U	0.301 /U	0.36 /U	0.114 /U			
PCB-018	0.0058	0.02900									
PCB-017	0.0017*	0.00850									
PCB-027	0.0002*	0.00100									
PCB-032	0.0013*	0.00650									
PCB-016	0.0037	0.01850				0.0058 /U		0.0056 /U			
PCB-026	0.0007	0.00350									
PCB-031	0.0103	0.05150				0.0491 /U		0.0469 /U			
PCB-028	0.0112	0.05600									
PCB-020/033	0.0057	0.02850				0.0274 /U		0.0257 /U			
PCB-022	0.0062	0.03100	0.0295/U			0.0256 /U		0.0214 /U			
PCB-035	0.0014	0.00700	0.001*/U			0.0036 /U		0.0028*/U			
PCB-037	0.0066	0.03300									
PCB-052/069 N	0.0246*	0.12300									
PCB-043/049	0.0089	0.04450									
PCB-047/048	0.0087	0.04350									

LDC #: 34238A31

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: HRGC/HRMS PCB Congeners (EPA Method 1668C)

Compound	Blank ID		Sample Identification								
[illegible]	PC150239B	5x	1	2	3	5	6	7			
PCB-044	0.0142	0.07100									
PCB-059	0.0006*	0.00300									
PCB-042 N	0.0051*	0.02550									
PCB-064/072	0.0074	0.03700									
PCB-071	0.0009*	0.00450									
PCB-040/057	0.0019*	0.00950				~~0.0063*/U~~		~~0.0088/U~~			
PCB-074	0.0096	0.04800									
PCB-070	0.0255	0.12750									
PCB-066 N	0.0097*	0.04850									
PCB-060	0.0023*	0.01150									
PCB-056	0.0086	0.04300									
PCB-077	0.0011*	0.00550									
PCB-095 N	0.0356*	0.17800									
PCB-091/121 N	0.0073*	0.03650									
PCB-101	0.0946	0.47300									
PCB-099 N	0.0116*	0.05800									
PCB-083/109	0.0015*	0.00750									
PCB-116/125	0.0015*	0.00750									
PCB-087/115	0.0133	0.06650									
PCB-110	0.0474	0.23700									

LDC #: 34238A31

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: HRGC/HRMS PCB Congeners (EPA Method 1668C)

Compound	Blank ID		Sample Identification								
[illegible]	PC150239B	5x	1	2	3	5	6	7			
PCB-124	0.0004*	0.00200									
PCB-118	0.0209	0.10450									
PCB-105/127	0.0051	0.02550									
PCB-136/148	0.0076	0.03800									
PCB-151 N	0.0071*	0.03550									
PCB-135	0.0007*	0.00350									
PCB-144	0.0004*	0.00200									
PCB-139/149 N	0.0222*	0.11100									
PCB-134	0.0012	0.00600									
PCB-146	0.0019*	0.00950									
PCB-132/161 N	0.006*	0.03000									
PCB-153	0.0165	0.08250									
PCB-141	0.0034	0.01700									
PCB-163/164	0.0029	0.01450									
PCB-138	0.0098	0.04900									
PCB-128	0.002	0.01000									
PCB-169	0.0003*	0.00150						~~0.002~~ * [illegible]			
PCB-179	0.0015*	0.00750									
PCB-176	0.0001*	0.00050									
PCB-182/187	0.0004*	0.00200									

LDC #: 34238A31

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: HRGC/HRMS PCB Congeners (EPA Method 1668C)

Compound	Blank ID		Sample Identification								
[illegible]	PC150239B	5x	1	2	3	5	6	7			
PCB-183	0.0007	0.00350									
PCB-174	0.0014*	0.00700									
PCB-180	0.0007*	0.00350									
PCB-170	0.0005*	0.00250									
Monochlorobiphenyls	0.0011	0.00550									
Dichlorobiphenyls	0.116	0.58000	0.314/J	0.565/J		0.393/J		0.178/J			
Trichlorobiphenyls	0.0516	0.25800									
Tetrachlorobiphenyls	0.0829	0.41450									
Pentachlorobiphenyls	0.181	0.90500									
Hexachlorobiphenyls	0.0434	0.21700									
Heptachlorobiphenyls	0.0007	0.00350									

*EMPC

(EMPC results >EDL but <RL and flagged "NJ" by the laboratory are considered non-detect/"U")

LDC #: 34238A31

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates /Lab Dup

Page: 1 of 1
Reviewer: ON
2nd Reviewer: K

METHOD: HRGC/HRMS Polychlorinated Biphenyls (EPA Method 1668C)

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

Y N ~~N/A~~ Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.

Y N ~~N/A~~ Was a MS/MSD analyzed every 20 samples of each matrix?

Y N ~~N/A~~ Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	Lab Dup ~~MS/MSD ID~~	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		7	PCB-011	( )	( )	90 (50)	5	Jdets/A (det)
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

LDC #: 34238A3J

VALIDATION FINDINGS WORKSHEET
Internal Standards

Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: HRGC/HRMS PCB Congeners (EPA Method 1668C)

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

Y (N) N/A Are all internal standard recoveries within the QC criteria?

Y N (N/A) Was the S/N ratio all internal standard peaks ≥ 10?

#	Date	Lab ID/Reference	Internal Standard	% Recovery (Limit:)	Qualifications
		5	13C-PCB 001	0 (5-145)	J/R/P (PCB 001, PCB 002 + Monochlorobiphenyls) (ND/det)
			13C-PCB 003	3 (5-145)	J/UJ/P (PCB 002, PCB 003 + Monochlorobiphenyls) (det)
		7	13C-PCB 001	1 (5-145)	J/UJ/P (PCB 001, PCB 002 + Monochlorobiphenyls) (det)

LDC #: 34238A3J

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported CRQLs

Reviewer:
2nd Reviewer:

METHOD: HRGC/HRMS PCB Congeners (EPA Method 1668C)

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

Y N N/A Were the correct internal standard (IS), quantitation ions and relative response factors (RRF) used to quantitate the compound?
Y N N/A Compound quantitation and CRQLs were adjusted to reflect all sample dilutions and dry weight factors (if necessary).

#	Date	Compound	Finding	Associated Samples	Qualifications
			EMPC results >EDL but <RL and flagged NJ by the laboratory	1, 2, 3, 5, 6, 7, PC150239B	U/A
			EMPC results >RL and flagged N by the laboratory	all +7 (Lab Dup)	Jdets/A

Comments: ~~See sample calculation verification worksheet for recalculations~~

LABORATORY DATA CONSULTANTS, INC.
2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

King County Environmental Laboratory
322 W. Ewing Street
Seattle WA 98119
ATTN: Mr. Fritz Grothkopp

August 25, 2015

SUBJECT: Revised Lower Duwamish Waterway, Green River Study, Suspended Solids, Data Validation

Dear Mr. Grothkopp,

Enclosed is the revised validation report for the fractions listed below. Please replace the previously submitted report with the enclosed revised report.

LDC Project #34238:

SDG #	Fraction
PR150778	Dioxins/Dibenzofurans

- Validation guideline reference changed to the 1996 version

Polychlorinated Biphenyls

- Blank qualifiers for PCB-003 for samples L61510-1 and L62291-1-DUP were removed
- EMPCs flagged "N" were qualified as not detected

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

Sincerely,

Stella S. Cuenco
Operations Manager/Senior Chemist

357 Pages-SF/EM

Attachment 1

EDD III

LDC #34238 (King County - Seattle WA / Lower Duwamish Waterway, Green River Study Suspended Solids)

LDC	SDG#	DATE REC'D	(3) DATE DUE	Dioxins (1613B)		PCB Cong. (1668)																											
Matrix:	Water/Sediment			W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	PR150778	05/08/15	06/01/15	0	4	0	6																										
Total	A/SC			0	4	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10

Shaded cells indicate Level IV validation (all other cells are Level II validation). These sample counts do not include MS/MSD, and DUPs

L:\King County\Duwamish\Green River Suspended Solids\34238ST.wpd

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name:	Lower Duwamish Waterway, Green River Study, Suspended Solids
Collection Date:	February 4 through May 14, 2013
LDC Report Date:	August 25, 2015
Matrix:	Sediment
Parameters:	Dioxins/Dibenzofurans
Validation Level:	EPA Level III
Laboratory:	AXYS Analytical Services Ltd.
Sample Delivery Group (SDG):	DPWG45669

Sample Identification

L57305-3
L57305-4
L57305-5
L57305-6
L57986-3
L57986-4
L57986-5
L57495-4
L57495-5
L57634-2
L57732-2
L57792-3
L57305-4DUP

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Green River Study, Suspended Solids Characterization Sampling and Analysis Plan (January 2013) and EPA Region 10 SOP for the Validation of Polychlorinated Dibenzodioxin (PCDD) and Polychlorinated Dibenzofuran (PCDF) Data (Revision 2.0, January 31, 1996). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

This review follows the Green River Study, Suspended Solids Characterization Sampling and Analysis Plan (January 2013).

The analyses were performed by the following method:

Polychlorinated Dioxins/Dibenzofurans by Environmental Protection Agency (EPA) Method 1613B

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results.

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.

- J1 Blank Contamination: Indicates possible high bias and/or false positives.
- J2 Calibration Range exceeded: Indicates possible low bias.
- J3 Holding times not met: Indicates low bias for most analytes.
- J4 Other QC parameters outside control limits: bias not readily determined.
- J5 Other QC parameters outside control limits. The reported results appear to be biased high. The actual value of target compound in the sample may be lower than the value reported by the laboratory.
- J6 Other QC parameters outside control limits. The reported results appear to be biased low. The actual value of target compound in the sample may be higher than the value reported by the laboratory.

R Quality control indicates the data is not usable.

NJ Presumptive evidence of presence of the compound at an estimated quantity.

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.

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 advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition; however, the cooler temperature upon receipt was reported at 20.6°C. Using professional judgment, no data were qualified due to the cooler temperature non-conformance since Dioxins and Dibenzofurans are environmentally stable and are not expected to degrade significantly during transit or storage.

All technical holding time requirements were met.

II. HRGC/HRMS Instrument Performance Check

Instrument performance was checked at the required daily frequency.

Retention time windows were established for all homologues. The chromatographic resolution between 2,3,7,8-TCDD and peaks representing any other unlabeled TCDD isomer was less than or equal to 25%.

The static resolving power was at least 10,000 (10% valley definition).

III. Initial Calibration and Initial Calibration Verification

A five point initial calibration was performed as required by the method.

Percent relative standard deviations (%RSD) were less than or equal to 20.0% for unlabeled compounds and less than or equal to 35.0% for labeled compounds.

The ion abundance ratios for all PCDDs and PCDFs were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were within the QC limits for unlabeled compounds and labeled compounds.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration results were within the QC limits for unlabeled compounds and labeled compounds.

The ion abundance ratios for all PCDDs and PCDFs were within validation criteria.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. Results flagged "NJ" by the laboratory as estimated maximum possible concentration (EMPC) and reported below the quantitation limit (QL) are considered not detected.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Matrix Spike/Matrix Spike Duplicates/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.

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

VIII. Ongoing Precision Recovery (OPR)

Ongoing precision recovery samples were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Internal Standards

All internal standard recoveries (%R) were within QC limits.

XI. Compound Quantitation

All compound quantitation were within validation criteria with the following exceptions:

Sample	Compound	Flag	A or P
L61510-1 L61588-1 L61588-2 L61838-1	All compounds flagged "NJ" by the laboratory as EMPC and reported below the QL.	U	A

Raw data were not reviewed for Level III validation.

XII. Target Compound Identifications

Raw data were not reviewed for Level III validation.

XIII. System Performance

Raw data were not reviewed for Level III validation.

XIV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to sample results reported by the laboratory as EMPC and below the QL, data were qualified as not detected in four samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Based upon the data validation all other results are considered valid and usable for all purposes.

Lower Duwamish Waterway, Green River Study, Suspended Solids Dioxins/Dibenzofurans - Data Qualification Summary - SDG PR150778

Sample	Compound	Flag	A or P	Reason
L61510-1 L61588-1 L61588-2 L61838-1	All compounds flagged "NJ" by the laboratory as EMPC and reported below the QL.	U	A	Compound quantitation (EMPC)

Lower Duwamish Waterway, Green River Study, Suspended Solids Dioxins/Dibenzofurans - Laboratory Blank Data Qualification Summary - SDG PR150778

No Sample Data Qualified in this SDG

LDC #: 34238A21 **VALIDATION COMPLETENESS WORKSHEET** Date: 5/14/15
SDG #: PR150778 Level III Page: 1 of 1
Laboratory: Pacific Rim Laboratories Inc. Reviewer: SW
2nd Reviewer:

METHOD: HRGC/HRMS Dioxins/Dibenzofurans (EPA Method 1613B)

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

	Validation Area		Comments
I.	Sample receipt/Technical holding times	SW / A	cooler temp 20.6°C (text)
II.	HRGC/HRMS Instrument performance check	A	
III.	Initial calibration/~~ICV~~	A / N	≤ 20/35
IV.	Continuing calibration	A	QC limits
V.	Laboratory Blanks	SW	EMPC > EDL, < RL considered "U"
VI.	Field blanks	N	
VII.	Matrix spike/Matrix spike duplicates ~~/DUP~~	N / A	C.S. / D=3+5
VIII.	Laboratory control samples	A	OPR
IX.	Field duplicates	N	
X.	Internal standards	A	
XI.	Compound quantitation RL/~~LOQ/LODs~~	SW	
XII.	Target compound identification	N	
XIII.	System performance	N	
XIV.	Overall assessment of data	A	

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

	Client ID	Lab ID	Matrix	Date
1	L61510-1	PR150778	Sediment	10/07/14
2	L61588-1	PR150779	Sediment	10/22/14
3	L61588-2	PR150780	Sediment	10/22/14
4	L61838-1	PR150781	Sediment	12/09/14
5	L61588-2DUP	PR150780D	Sediment	10/22/14
6				
7				
8				
9				
10				
11				

Notes:

	DF150195B						

VALIDATION FINDINGS WORKSHEET

METHOD: HRGC/HRMS Dioxins/Dibenzofurans (EPA Method 1613B)

A. 2,3,7,8-TCDD	F. 1,2,3,4,6,7,8-HpCDD	K. 1,2,3,4,7,8-HxCDF	P. 1,2,3,4,7,8,9-HpCDF	U. Total HpCDD
B. 1,2,3,7,8-PeCDD	G. OCDD	L. 1,2,3,6,7,8-HxCDF	Q. OCDF	V. Total TCDF
C. 1,2,3,4,7,8-HxCDD	H. 2,3,7,8-TCDF	M. 2,3,4,6,7,8-HxCDF	R. Total TCDD	W. Total PeCDF
D. 1,2,3,6,7,8-HxCDD	I. 1,2,3,7,8-PeCDF	N. 1,2,3,7,8,9-HxCDF	S. Total PeCDD	X. Total HxCDF
E. 1,2,3,7,8,9-HxCDD	J. 2,3,4,7,8-PeCDF	O. 1,2,3,4,6,7,8-HpCDF	T. Total HxCDD	Y. Total HpCDF

Notes:_____

LDC #: 34238A21

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported RLs

Reviewer: 4th
2nd Reviewer: 4

METHOD: GC/MS Dioxins/Dibenzofurans (Method 1613B)

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

Y N N/A Were the correct internal standard (IS), quantitation ions and relative response factors (RRF) used to quantitate the compound?
Y N N/A Compound quantitation and RLs were adjusted to reflect all sample dilutions and dry weight factors (if necessary).

#	Date	Compound	Finding	Associated Samples	Qualifications
			EMPC results >EDL but <RL; elevated to the EMPC value	1-4, DF150195B	U/A

Comments: ~~See sample calculation verification worksheet for recalculations~~

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Lower Duwamish Waterway, Green River Study, Suspended Solids

LDC Report Date: August 25, 2015

Parameters: Polychlorinated Biphenyls as Congeners

Validation Level: Level III

Laboratory: Pacific Rim Laboratories, Inc.

Sample Delivery Group (SDG): PR150778

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
L61510-1	PR150778	Sediment	10/07/14
L61588-1	PR150779	Sediment	10/22/14
L61588-2	PR150780	Sediment	10/22/14
L61838-1	PR150781	Sediment	12/09/14
L62291-1	PR150782	Sediment	11/03/14
L62291-2	PR150783	Sediment	11/24/14
L62291-1DUP	PR150782D	Sediment	11/03/14

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Green River Study, Suspended Solids Characterization Sampling and Analysis Plan (January 2013) and US Environmental Protection Agency (EPA) Region 10 SOP for the Validation of Polychlorinated Biphenyl (PCB) Data (Revision 1.0, December 8, 1995). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polychlorinated Biphenyls as Congeners by Environmental Protection Agency (EPA) Method 1668C

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results.

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.

- J1 Blank Contamination: Indicates possible high bias and/or false positives.
- J2 Calibration Range exceeded: Indicates possible low bias.
- J3 Holding times not met: Indicates low bias for most analytes.
- J4 Other QC parameters outside control limits: bias not readily determined.
- J5 Other QC parameters outside control limits. The reported results appear to be biased high. The actual value of target compound in the sample may be lower than the value reported by the laboratory.
- J6 Other QC parameters outside control limits. The reported results appear to be biased low. The actual value of target compound in the sample may be higher than the value reported by the laboratory.

R Quality control indicates the data is not usable.

NJ Presumptive evidence of presence of the compound at an estimated quantity.

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.

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 advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition; however, the cooler temperature upon receipt was reported at 20.6°C. Using professional judgment, no data were qualified due to the cooler temperature non-conformance since PCBs are environmentally stable and are not expected to degrade significantly during transit or storage.

All technical holding time requirements were met.

II. HRGC/HRMS Instrument Performance Check

Instrument performance was checked at the required frequency.

Retention time windows were established for all congeners. The chromatographic resolution between the congeners PCB-23 and PCB-34 and congeners PCB-182 and PCB-187 was resolved with a valley of less than or equal to 40%.

The static resolving power was at least 10,000 (10% valley definition).

III. Initial Calibration

A five point initial calibration was performed at the required daily frequency.

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

Date	Compound	%RSD	Associated Samples	Affected Compound	Flag	A or P
04/10/15	^{13}C-PCB-081 ^{13}C-PCB-077 ^{13}C-PCB-123 ^{13}C-PCB-118 ^{13}C-PCB-188	29.29 29.32 20.38 20.41 24.88	All samples in SDG PR150778	PCB-081 PCB-077 PCB-123 PCB-118 PCB-188 Tetrachlorobiphenyls Pentachlorobiphenyls Heptachlorobiphenyls	J (all detects) UJ (all non-detects)	P

The ion abundance ratios for all PCBs were within 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 within QC limits for all compounds.

The ion abundance ratios for all PCBs were within method and validation criteria.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks with the following exceptions:

Laboratory Blank ID	Extraction Date	Compound	Concentration	Associated Samples
PC150239B	03/31/15	PCB-002	0.0011 ug/Kg	All samples in SDG PR150778
		PCB-005/008	0.0067 ug/Kg	
		PCB-011	0.109 ug/Kg	
		PCB-018	0.0058 ug/Kg	
		PCB-016	0.0037 ug/Kg	
		PCB-026	0.0007 ug/Kg	
		PCB-031	0.0103 ug/Kg	
		PCB-028	0.0112 ug/Kg	
		PCB-020/033	0.0057 ug/Kg	
		PCB-022	0.0062 ug/Kg	
		PCB-035	0.0014 ug/Kg	
		PCB-037	0.0066 ug/Kg	
		PCB-043/049	0.0089 ug/Kg	
		PCB-047/048	0.0087 ug/Kg	
		PCB-044	0.0142 ug/Kg	
		PCB-064/072	0.0074 ug/Kg	
		PCB-074	0.0096 ug/Kg	
		PCB-070	0.0255 ug/Kg	
		PCB-056	0.0086 ug/Kg	
		PCB-101	0.0946 ug/Kg	
		PCB-087/115	0.0133 ug/Kg	
		PCB-110	0.0474 ug/Kg	
		PCB-118	0.0209 ug/Kg	
		PCB-105/127	0.0051 ug/Kg	
		PCB-136/148	0.0076 ug/Kg	
		PCB-134	0.0012 ug/Kg	
		PCB-153	0.0165 ug/Kg	
		PCB-141	0.0034 ug/Kg	
		PCB-163/164	0.0029 ug/Kg	
		PCB-138	0.0098 ug/Kg	
		PCB-128	0.002 ug/Kg	
		PCB-183	0.0007 ug/Kg	
		Monochlorobiphenyls	0.0011 ug/Kg	
		Dichlorobiphenyls	0.116 ug/Kg	
		Trichlorobiphenyls	0.0516 ug/Kg	
		Tetrachlorobiphenyls	0.0829 ug/Kg	
		Pentachlorobiphenyls	0.181 ug/Kg	
		Hexachlorobiphenyls	0.0434 ug/Kg	
		Heptachlorobiphenyls	0.0007 ug/Kg	

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

Sample	Compound	Reported Concentration	Modified Final Concentration
L61510-1	PCB-005/008 PCB-011 PCB-022 Dichlorobiphenyls	0.0331 ug/Kg 0.198 ug/Kg 0.0295 ug/Kg 0.314 ug/Kg	0.0331U ug/Kg 0.198U ug/Kg 0.0295U ug/Kg 0.314J ug/Kg
L61588-1	PCB-011 Dichlorobiphenyls	0.326 ug/Kg 0.565 ug/Kg	0.326U ug/Kg 0.565J ug/Kg
L61588-2	PCB-011	0.434 ug/Kg	0.434U ug/Kg
L62291-1	PCB-005/008 PCB-011 PCB-016 PCB-031 PCB-020/033 PCB-022 PCB-035 Dichlorobiphenyls	0.024 ug/Kg 0.301 ug/Kg 0.0058 ug/Kg 0.0491 ug/Kg 0.0274 ug/Kg 0.0256 ug/Kg 0.0036 ug/Kg 0.393 ug/Kg	0.024U ug/Kg 0.301U ug/Kg 0.0058U ug/Kg 0.0491U ug/Kg 0.0274U ug/Kg 0.0256U ug/Kg 0.0036U ug/Kg 0.393J ug/Kg
L62291-2	PCB-011	0.36 ug/Kg	0.36U ug/Kg
L62291-1DUP	PCB-005/008 PCB-011 PCB-016 PCB-031 PCB-020/033 PCB-022 Dichlorobiphenyls	0.0169 ug/Kg 0.114 ug/Kg 0.0056 ug/Kg 0.0469 ug/Kg 0.0257 ug/Kg 0.0214 ug/Kg 0.178 ug/Kg	0.0169U ug/Kg 0.114U ug/Kg 0.0056U ug/Kg 0.0469U ug/Kg 0.0257U ug/Kg 0.0214U ug/Kg 0.178J ug/Kg

Laboratory blank results flagged “N” or "NJ" by the laboratory as estimated maximum possible concentration (EMPC) are considered not detected.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Matrix Spike/Matrix Spike Duplicates/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.

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits with the following exceptions:

DUP ID (Associated Samples)	Compound	RPD (Limits)	Flag	A or P
L62291-1DUP (L62291-1)	PCB-011	90 (≤50)	J (all detects)	A

VIII. Ongoing Precision & Recovery Samples (OPR)

Ongoing precision and recovery (OPR) samples were reviewed for each matrix as applicable. The percent recoveries (%R) were within the QC limits.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Internal Standards

All internal standard recoveries (%R) were within QC limits with the following exceptions:

Sample	Internal Standards	%R (Limits)	Compound	Flag	A or P
L62291-1	^{13}C-PCB-001 ^{13}C-PCB-003	0 (5-145) 3 (5-145)	PCB-001 PCB-002 PCB-003 Monochlorobiphenyls	J (all detects) R (all non-detects)	P
L62291-1DUP	^{13}C-PCB-001	1 (5-145)	PCB-001 PCB-002 Monochlorobiphenyls	J (all detects)	P

XI. Compound Quantitation

All compound quantitation were within validation criteria with the following exceptions:

Sample	Compound	Flag	A or P
All samples in SDG PR150778	All compounds flagged "N" or "NJ" by the laboratory as EMPC.	U	A

Raw data were not reviewed for Level III validation.

XII. Target Compound Identifications

Raw data were not reviewed for Level III validation.

XIII. System Performance

Raw data were not reviewed for Level III validation.

XIV. Overall Assessment of Data

The analysis was conducted within all specifications of the method.

Due to internal standards %R, data was rejected in one sample.

Due to initial calibration RSD, DUP RPD, and internal standards %R, data were qualified as estimated in seven samples.

Due to laboratory blank contamination, data were qualified as not detected in six samples.

Due to sample results reported by the laboratory as EMPC, data were qualified as not detected in seven samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be rejected (R) are unusable for all purposes. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

Lower Duwamish Waterway, Green River Study, Suspended Solids Polychlorinated Biphenyls as Congeners - Data Qualification Summary - SDG PR150778

Sample	Compound	Flag	A or P	Reason
L61510-1 L61588-1 L61588-2 L61838-1 L62291-1 L62291-2 L62291-1DUP	PCB-081 PCB-077 PCB-123 PCB-118 PCB-188 Tetrachlorobiphenyls Pentachlorobiphenyls Heptachlorobiphenyls	J (all detects) UJ (all non-detects)	P	Initial calibration (%RSD)
L62291-1	PCB-011	J (all detects)	A	Duplicate sample analysis (RPD)
L62291-1	PCB-001 PCB-002 PCB-003 Monochlorobiphenyls	J (all detects) R (all non-detects)	P	Internal standards (%R)
L62291-1DUP	PCB-001 PCB-002 Monochlorobiphenyls	J (all detects)	P	Internal standards (%R)
L61510-1 L61588-1 L61588-2 L61838-1 L62291-1 L62291-2 L62291-1DUP	All compounds flagged "N" or "NJ" by the laboratory as EMPC.	U	A	Compound quantitation (EMPC)

Lower Duwamish Waterway, Green River Study, Suspended Solids Polychlorinated Biphenyls as Congeners - Laboratory Blank Data Qualification Summary - SDG PR150778

Sample	Compound	Modified Final Concentration	A or P
L61510-1	PCB-005/008 PCB-011 PCB-022 Dichlorobiphenyls	0.0331U ug/Kg 0.198U ug/Kg 0.0295U ug/Kg 0.314J ug/Kg	A
L61588-1	PCB-011 Dichlorobiphenyls	0.326U ug/Kg 0.565J ug/Kg	A
L61588-2	PCB-011	0.434U ug/Kg	A

Sample	Compound	Modified Final Concentration	A or P
L62291-1	PCB-005/008 PCB-011 PCB-016 PCB-031 PCB-020/033 PCB-022 PCB-035 Dichlorobiphenyls	0.024U ug/Kg 0.301U ug/Kg 0.0058U ug/Kg 0.0491U ug/Kg 0.0274U ug/Kg 0.0256U ug/Kg 0.0036U ug/Kg 0.393J ug/Kg	A
L62291-2	PCB-011	0.36U ug/Kg	A
L62291-1DUP	PCB-005/008 PCB-011 PCB-016 PCB-031 PCB-020/033 PCB-022 Dichlorobiphenyls	0.0169U ug/Kg 0.114U ug/Kg 0.0056U ug/Kg 0.0469U ug/Kg 0.0257U ug/Kg 0.0214U ug/Kg 0.178J ug/Kg	A

LDC #: 34238A31 **VALIDATION COMPLETENESS WORKSHEET** Date: 5-15-15
SDG #: PR150778 Level III Page: 1 of 1
Laboratory: Pacific Rim Laboratories Inc. Reviewer: SW
2nd Reviewer: M

METHOD: HRGC/HRMS Polychlorinated Biphenyl Congeners (EPA Method 1668C)

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

	Validation Area		Comments
I.	Sample receipt/Technical holding times	SW, A	Cooler temp. 20.6°C (text)
II.	HRGC/HRMS Instrument performance check	N	(SGE HT-8 column used)
III.	Initial calibration/~~ICV~~	SW, N	≤20
IV.	Continuing calibration	A	QC limits
V.	Laboratory Blanks	SW	
VI.	Field blanks	N	
VII.	Matrix spike/Matrix spike duplicates /DUP	N/SW	C.S. / D=5+7
VIII.	Laboratory control samples	A	OPR
IX.	Field duplicates	N	
X.	Internal standards	SW	
XI.	Compound quantitation RL/~~LOQ/LOD~~s	SW	
XII.	Target compound identification	N	
XIII.	System performance	N	
XIV.	Overall assessment of data	A	

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

	Client ID	Lab ID	Matrix	Date
1	L61510-1	PR150778	Sediment	10/07/14
2	L61588-1	PR150779	Sediment	10/22/14
3	L61588-2	PR150780	Sediment	10/22/14
4	L61838-1	PR150781	Sediment	12/09/14
5	L62291-1	PR150782	Sediment	11/03/14
6	L62291-2	PR150783	Sediment	11/24/14
7	L62291-1DUP	PR150782D	Sediment	11/03/14
8				
9				
10				

Notes:

	PC150239B						

LDC #: 34238A31

VALIDATION FINDINGS WORKSHEET
Initial Calibration

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: HRGC/HRMS PCB Congeners (EPA Method 1668C)

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

(Y) N N/A Was the initial calibration performed at 5 concentration levels?
Y (N) N/A Were all percent relative standard deviations (%RSD) ≤ 20%?
(Y) N N/A Did all calibration standards meet the Ion Abundance Ratio criteria?
Y N (N/A) Was the signal to noise ratio for each target compound ≥ 2.5 and for each recovery and internal standard ≥ 10?

#	Date	Standard ID	Compound	Finding %RSD (Limit: <20.0%)	Finding Ion Abundace Ratio	Associated Samples	Qualifications
	04/10/15	PCCS	13C-PCB081	29.29		all + LabDup	J/UJ/P (det/ND)
		↓	PCB077	29.32		↓	↓
			PCB123	20.38			
			PCB118	20.41			
		↓	PCB188	24.88		↓	+ Tetrachlorobiphenyls, Pentachlorobiphenyls, Heptachlorobiphenyls

V:\Validation Worksheets\1668\INICAL16A.wpd

LDC #: 34238A31

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: MM
2nd Reviewer: E

METHOD: HRGC/HRMS PCB Congeners (EPA Method 1668C)

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

Y N N/A Were all samples associated with a method blank?
Y N N/A Was a method blank performed for each matrix and whenever a sample extraction was performed?
Y N N/A Was the method blank contaminated?

Blank extraction date: 03/31/15 **Blank analysis date:** 04/11/15 **Associated samples:** all

Conc. units: µg/Kg

Compound	Blank ID		Sample Identification								
	PC150239B	5x	1	2	3	5	6	7			
PCB-002	0.0011	0.00550									
PCB-003 N	0.0051*	0.02550	~~0.0115/U~~ S					~~0.0049/U~~ N			
PCB-005/008	0.0067	0.03350	0.0331/U			0.024 /U		0.0169 /U			
PCB-011	0.109	0.54500	0.198/U	0.326 /U	0.434 /U	0.301 /U	0.36 /U	0.114 /U			
PCB-018	0.0058	0.02900									
PCB-017	0.0017*	0.00850									
PCB-027	0.0002*	0.00100									
PCB-032	0.0013*	0.00650									
PCB-016	0.0037	0.01850				0.0058 /U		0.0056 /U			
PCB-026	0.0007	0.00350									
PCB-031	0.0103	0.05150				0.0491 /U		0.0469 /U			
PCB-028	0.0112	0.05600									
PCB-020/033	0.0057	0.02850				0.0274 /U		0.0257 /U			
PCB-022	0.0062	0.03100	0.0295/U			0.0256 /U		0.0214 /U			
PCB-035	0.0014	0.00700	0.001/U K			0.0036 /U		0.0028*/U			
PCB-037	0.0066	0.03300									
PCB-052/069 N	0.0246*	0.12300									
PCB-043/049	0.0089	0.04450									
PCB-047/048	0.0087	0.04350									

LDC #: 34238A31

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: HRGC/HRMS PCB Congeners (EPA Method 1668C)

Compound	Blank ID		Sample Identification								
[redacted]	PC150239B	5x	1	2	3	5	6	7			
PCB-044	0.0142	0.07100									
PCB-059	0.0006*	0.00300									
PCB-042 N	0.0051*	0.02550									
PCB-064/072	0.0074	0.03700									
PCB-071	0.0009*	0.00450									
PCB-040/057	0.0019*	0.00950				~~0.0063*/U~~		~~0.0088/U~~			
PCB-074	0.0096	0.04800									
PCB-070	0.0255	0.12750									
PCB-066 N	0.0097*	0.04850									
PCB-060	0.0023*	0.01150									
PCB-056	0.0086	0.04300									
PCB-077	0.0011*	0.00550									
PCB-095 N	0.0356*	0.17800									
PCB-091/121 N	0.0073*	0.03650									
PCB-101	0.0946	0.47300									
PCB-099 N	0.0116*	0.05800									
PCB-083/109	0.0015*	0.00750									
PCB-116/125	0.0015*	0.00750									
PCB-087/115	0.0133	0.06650									
PCB-110	0.0474	0.23700									

LDC #: 34238A31

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: HRGC/HRMS PCB Congeners (EPA Method 1668C)

Compound	Blank ID		Sample Identification								
	PC150239B	5x	1	2	3	5	6	7			
PCB-124	0.0004*	0.00200									
PCB-118	0.0209	0.10450									
PCB-105/127	0.0051	0.02550									
PCB-136/148	0.0076	0.03800									
PCB-151 N	0.0071*	0.03550									
PCB-135	0.0007*	0.00350									
PCB-144	0.0004*	0.00200									
PCB-139/149 N	0.0222*	0.11100									
PCB-134	0.0012	0.00600									
PCB-146	0.0019*	0.00950									
PCB-132/161 N	0.006*	0.03000									
PCB-153	0.0165	0.08250									
PCB-141	0.0034	0.01700									
PCB-163/164	0.0029	0.01450									
PCB-138	0.0098	0.04900									
PCB-128	0.002	0.01000									
PCB-169	0.0003*	0.00150						~~0.002*~~ [illegible]			
PCB-179	0.0015*	0.00750									
PCB-176	0.0001*	0.00050									
PCB-182/187	0.0004*	0.00200									

LDC #: 34238A31

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: HRGC/HRMS PCB Congeners (EPA Method 1668C)

Compound	Blank ID		Sample Identification								
[illegible]	PC150239B	5x	1	2	3	5	6	7			
PCB-183	0.0007	0.00350									
PCB-174	0.0014*	0.00700									
PCB-180	0.0007*	0.00350									
PCB-170	0.0005*	0.00250									
Monochlorobiphenyls	0.0011	0.00550									
Dichlorobiphenyls	0.116	0.58000	0.314/J	0.565/J		0.393/J		0.178/J			
Trichlorobiphenyls	0.0516	0.25800									
Tetrachlorobiphenyls	0.0829	0.41450									
Pentachlorobiphenyls	0.181	0.90500									
Hexachlorobiphenyls	0.0434	0.21700									
Heptachlorobiphenyls	0.0007	0.00350									

*EMPC "NJ" or

(EMPC results ~~>EDL but <RL and~~ flagged "NJ" by the laboratory are considered non-detect/"U")

LDC #: 34238A31

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates / Lab Dup

Reviewer: OK
2nd Reviewer: [illegible]

METHOD: HRGC/HRMS Polychlorinated Biphenyls (EPA Method 1668C)

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

Y N N/A Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.

Y N N/A Was a MS/MSD analyzed every 20 samples of each matrix?

Y N N/A Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	Lab Dup ~~MS/MSD ID~~	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		7	PCB-011	( )	( )	90 (50)	5	Jdet/A (det)
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

LDC #: 34238A31

VALIDATION FINDINGS WORKSHEET
Internal Standards

Reviewer: QC
2nd Reviewer: M

METHOD: HRGC/HRMS PCB Congeners (EPA Method 1668C)

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

Y (N) N/A Are all internal standard recoveries within the QC criteria?

Y N (N/A) Was the S/N ratio all internal standard peaks ≥ 10?

#	Date	Lab ID/Reference	Internal Standard	% Recovery (Limit:)	Qualifications
		5	13C-PCB 001	0 (5-145)	J/R/P (PCB 001, PCB 002 + Monochlorobiphenyls) (ND/det)
			13C-PCB 003	3 (5-145)	J/UJ/P (PCB 002, PCB 003 + Monochlorobiphenyls) (det)
		7	13C-PCB 001	1 (5-145)	J/UJ/P (PCB 001, PCB 002 + Monochlorobiphenyls) (det)

LDC #: 34238A3

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported CRQLs

Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: HRGC/HRMS PCB Congeners (EPA Method 1668C)

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

Y N ~~N/A~~ Were the correct internal standard (IS), quantitation ions and relative response factors (RRF) used to quantitate the compound?
Y N ~~N/A~~ Compound quantitation and CRQLs were adjusted to reflect all sample dilutions and dry weight factors (if necessary).

#	Date	Compound	Finding	Associated Samples	Qualifications
			EMPC results >EDL but <RL and flagged NJ by the laboratory	1, 2, 3, 5, 6, 7, PC150239B	U/A
			EMPC results >RL and flagged N by the laboratory	all +7 (Lab Dup)	~~Idets/A~~

Comments: ~~See sample calculation verification worksheet for recalculations~~

LABORATORY DATA CONSULTANTS, INC.
2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

King County Environmental Laboratory
322 W. Ewing Street
Seattle WA 98119
ATTN: Mr. Fritz Grothkopp

June 2, 2016

SUBJECT: Revised LDW, Green River Study, Suspended Solids, Data Validation

Dear Mr. Grothkopp,

Enclosed is the revised validation report for the fractions listed below. Please replace the previously submitted report with the enclosed revised report.

LDC Project #34238:

SDG #	Fraction
PR150778	Polychlorinated Biphenyls as Congeners & Dioxins/Dibenzofurans

- Revision: Dioxins & PCB Congeners - Changed sample IDs L61588-1 & -2 to L61568-1 & -2 per client request
- Revision: PCB Congeners - Revised initial calibration criteria for labeled compounds to 35.0% and removed qualifiers

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

Sincerely,

Stella Cuenco
Operations Manager/Senior Chemist

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Lower Duwamish Waterway, Green River Study, Suspended Solids

LDC Report Date: June 1, 2016

Parameters: Dioxins/Dibenzofurans

Validation Level: Level III

Laboratory: Pacific Rim Laboratories, Inc.

Sample Delivery Group (SDG): PR150778

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
L61510-1	PR150778	Sediment	10/07/14
L61568-1	PR150779	Sediment	10/22/14
L61568-2	PR150780	Sediment	10/22/14
L61838-1	PR150781	Sediment	12/09/14
L61568-2DUP	PR150780D	Sediment	10/22/14

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Green River Study, Suspended Solids Characterization Sampling and Analysis Plan (January 2013) and EPA Region 10 SOP for the Validation of Polychlorinated Dibenzodioxin (PCDD) and Polychlorinated Dibenzofuran (PCDF) Data (Revision 2.0, January 31, 1996). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

This review follows the Green River Study, Suspended Solids Characterization Sampling and Analysis Plan (January 2013).

The analyses were performed by the following method:

Polychlorinated Dioxins/Dibenzofurans by Environmental Protection Agency (EPA) Method 1613B

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results.

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.

- J1 Blank Contamination: Indicates possible high bias and/or false positives.
- J2 Calibration Range exceeded: Indicates possible low bias.
- J3 Holding times not met: Indicates low bias for most analytes.
- J4 Other QC parameters outside control limits: bias not readily determined.
- J5 Other QC parameters outside control limits. The reported results appear to be biased high. The actual value of target compound in the sample may be lower than the value reported by the laboratory.
- J6 Other QC parameters outside control limits. The reported results appear to be biased low. The actual value of target compound in the sample may be higher than the value reported by the laboratory.

R Quality control indicates the data is not usable.

NJ Presumptive evidence of presence of the compound at an estimated quantity.

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.

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 advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition; however, the cooler temperature upon receipt was reported at 20.6°C. Using professional judgment, no data were qualified due to the cooler temperature non-conformance since Dioxins and Dibenzofurans are environmentally stable and are not expected to degrade significantly during transit or storage.

All technical holding time requirements were met.

II. HRGC/HRMS Instrument Performance Check

Instrument performance was checked at the required daily frequency.

Retention time windows were established for all homologues. The chromatographic resolution between 2,3,7,8-TCDD and peaks representing any other unlabeled TCDD isomer was less than or equal to 25%.

The static resolving power was at least 10,000 (10% valley definition).

III. Initial Calibration and Initial Calibration Verification

A five point initial calibration was performed as required by the method.

Percent relative standard deviations (%RSD) were less than or equal to 20.0% for unlabeled compounds and less than or equal to 35.0% for labeled compounds.

The ion abundance ratios for all PCDDs and PCDFs were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were within the QC limits for unlabeled compounds and labeled compounds.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration results were within the QC limits for unlabeled compounds and labeled compounds.

The ion abundance ratios for all PCDDs and PCDFs were within validation criteria.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. Results flagged "NJ" by the laboratory as estimated maximum possible concentration (EMPC) and reported below the quantitation limit (QL) are considered not detected.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Matrix Spike/Matrix Spike Duplicates/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.

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

VIII. Ongoing Precision Recovery (OPR)

Ongoing precision recovery samples were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Internal Standards

All internal standard recoveries (%R) were within QC limits.

XI. Compound Quantitation

All compound quantitation were within validation criteria with the following exceptions:

Sample	Compound	Flag	A or P
L61510-1 L61568-1 L61568-2 L61838-1	All compounds flagged "NJ" by the laboratory as EMPC and reported below the QL.	U	A

Raw data were not reviewed for Level III validation.

XII. Target Compound Identifications

Raw data were not reviewed for Level III validation.

XIII. System Performance

Raw data were not reviewed for Level III validation.

XIV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to sample results reported by the laboratory as EMPC and below the QL, data were qualified as not detected in four samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Based upon the data validation all other results are considered valid and usable for all purposes.

Lower Duwamish Waterway, Green River Study, Suspended Solids Dioxins/Dibenzofurans - Data Qualification Summary - SDG PR150778

Sample	Compound	Flag	A or P	Reason
L61510-1 L61568-1 L61568-2 L61838-1	All compounds flagged "NJ" by the laboratory as EMPC and reported below the QL.	U	A	Compound quantitation (EMPC)

Lower Duwamish Waterway, Green River Study, Suspended Solids Dioxins/Dibenzofurans - Laboratory Blank Data Qualification Summary - SDG PR150778

No Sample Data Qualified in this SDG

LDC #: 34238A21 **VALIDATION COMPLETENESS WORKSHEET** Date: 5/14/15
SDG #: PR150778 Level III Page: 1 of 1
Laboratory: Pacific Rim Laboratories Inc. Reviewer: SM
2nd Reviewer:

METHOD: HRGC/HRMS Dioxins/Dibenzofurans (EPA Method 1613B)

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

	Validation Area		Comments
I.	Sample receipt/Technical holding times	SW, A	cooler temp 20.6°C (text)
II.	HRGC/HRMS Instrument performance check	A	
III.	Initial calibration/~~ICV~~	A, N	≤20/35
IV.	Continuing calibration	A	QC limits
V.	Laboratory Blanks	SW	EMPC >EDL, <RL considered "U"
VI.	Field blanks	N	
VII.	Matrix spike/Matrix spike duplicates /DUP	N / A	C.S. / D=3+5
VIII.	Laboratory control samples	A	OPR
IX.	Field duplicates	N	
X.	Internal standards	A	
XI.	Compound quantitation RL/~~LOQ/LODs~~	SW	
XII.	Target compound identification	N	
XIII.	System performance	N	
XIV.	Overall assessment of data	A	

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

	Client ID	Lab ID	Matrix	Date
1	L61510-1	PR150778	Sediment	10/07/14
2	L61588-1	PR150779	Sediment	10/22/14
3	L61588-2	PR150780	Sediment	10/22/14
4	L61838-1	PR150781	Sediment	12/09/14
5	L61588-2DUP	PR150780D	Sediment	10/22/14
6				
7				
8				
9				
10				
11				

Notes:

	DF150195B						

VALIDATION FINDINGS WORKSHEET

METHOD: HRGC/HRMS Dioxins/Dibenzofurans (EPA Method 1613B)

A. 2,3,7,8-TCDD	F. 1,2,3,4,6,7,8-HpCDD	K. 1,2,3,4,7,8-HxCDF	P. 1,2,3,4,7,8,9-HpCDF	U. Total HpCDD
B. 1,2,3,7,8-PeCDD	G. OCDD	L. 1,2,3,6,7,8-HxCDF	Q. OCDF	V. Total TCDF
C. 1,2,3,4,7,8-HxCDD	H. 2,3,7,8-TCDF	M. 2,3,4,6,7,8-HxCDF	R. Total TCDD	W. Total PeCDF
D. 1,2,3,6,7,8-HxCDD	I. 1,2,3,7,8-PeCDF	N. 1,2,3,7,8,9-HxCDF	S. Total PeCDD	X. Total HxCDF
E. 1,2,3,7,8,9-HxCDD	J. 2,3,4,7,8-PeCDF	O. 1,2,3,4,6,7,8-HpCDF	T. Total HxCDD	Y. Total HpCDF

Notes:_____

LDC #: 34238A21

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported RLs

Reviewer: 9m
2nd Reviewer:

METHOD: GC/MS Dioxins/Dibenzofurans (Method 1613B)

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

Y N N/A Were the correct internal standard (IS), quantitation ions and relative response factors (RRF) used to quantitate the compound?
Y N N/A Compound quantitation and RLs were adjusted to reflect all sample dilutions and dry weight factors (if necessary).

#	Date	Compound	Finding	Associated Samples	Qualifications
			EMPC results >EDL but <RL; elevated to the EMPC value	1-4, DF150195B	U/A

Comments: ~~See sample calculation verification worksheet for recalculations~~

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Lower Duwamish Waterway, Green River Study, Suspended Solids

LDC Report Date: June 1, 2016

Parameters: Polychlorinated Biphenyls as Congeners

Validation Level: Level III

Laboratory: Pacific Rim Laboratories, Inc.

Sample Delivery Group (SDG): PR150778

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
L61510-1	PR150778	Sediment	10/07/14
L61568-1	PR150779	Sediment	10/22/14
L61568-2	PR150780	Sediment	10/22/14
L61838-1	PR150781	Sediment	12/09/14
L62291-1	PR150782	Sediment	11/03/14
L62291-2	PR150783	Sediment	11/24/14
L62291-1DUP	PR150782D	Sediment	11/03/14

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Green River Study, Suspended Solids Characterization Sampling and Analysis Plan (January 2013) and US Environmental Protection Agency (EPA) Region 10 SOP for the Validation of Polychlorinated Biphenyl (PCB) Data (Revision 1.0, December 8, 1995). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polychlorinated Biphenyls as Congeners by Environmental Protection Agency (EPA) Method 1668C

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results.

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.

J1 Blank Contamination: Indicates possible high bias and/or false positives.

J2 Calibration Range exceeded: Indicates possible low bias.

J3 Holding times not met: Indicates low bias for most analytes.

J4 Other QC parameters outside control limits: bias not readily determined.

J5 Other QC parameters outside control limits. The reported results appear to be biased high. The actual value of target compound in the sample may be lower than the value reported by the laboratory.

J6 Other QC parameters outside control limits. The reported results appear to be biased low. The actual value of target compound in the sample may be higher than the value reported by the laboratory.

R Quality control indicates the data is not usable.

NJ Presumptive evidence of presence of the compound at an estimated quantity.

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.

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 advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition; however, the cooler temperature upon receipt was reported at 20.6°C. Using professional judgment, no data were qualified due to the cooler temperature non-conformance since PCBs are environmentally stable and are not expected to degrade significantly during transit or storage.

All technical holding time requirements were met.

II. HRGC/HRMS Instrument Performance Check

Instrument performance was checked at the required frequency.

Retention time windows were established for all congeners. The chromatographic resolution between the congeners PCB-23 and PCB-34 and congeners PCB-182 and PCB-187 was resolved with a valley of less than or equal to 40%.

The static resolving power was at least 10,000 (10% valley definition).

III. Initial Calibration

A five point initial calibration was performed at the required daily frequency.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for unlabeled compounds and less than or equal to 35.0% for labeled compounds.

The ion abundance ratios for all PCBs were within 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 within QC limits for all compounds.

The ion abundance ratios for all PCBs were within method and validation criteria.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks with the following exceptions:

Laboratory Blank ID	Extraction Date	Compound	Concentration	Associated Samples
PC150239B	03/31/15	PCB-002	0.0011 ug/Kg	All samples in SDG PR150778
		PCB-005/008	0.0067 ug/Kg	
		PCB-011	0.109 ug/Kg	
		PCB-018	0.0058 ug/Kg	
		PCB-016	0.0037 ug/Kg	
		PCB-026	0.0007 ug/Kg	
		PCB-031	0.0103 ug/Kg	
		PCB-028	0.0112 ug/Kg	
		PCB-020/033	0.0057 ug/Kg	
		PCB-022	0.0062 ug/Kg	
		PCB-035	0.0014 ug/Kg	
		PCB-037	0.0066 ug/Kg	
		PCB-043/049	0.0089 ug/Kg	
		PCB-047/048	0.0087 ug/Kg	
		PCB-044	0.0142 ug/Kg	
		PCB-064/072	0.0074 ug/Kg	
		PCB-074	0.0096 ug/Kg	
		PCB-070	0.0255 ug/Kg	
		PCB-056	0.0086 ug/Kg	
		PCB-101	0.0946 ug/Kg	
		PCB-087/115	0.0133 ug/Kg	
		PCB-110	0.0474 ug/Kg	
		PCB-118	0.0209 ug/Kg	
		PCB-105/127	0.0051 ug/Kg	
		PCB-136/148	0.0076 ug/Kg	
		PCB-134	0.0012 ug/Kg	
		PCB-153	0.0165 ug/Kg	
		PCB-141	0.0034 ug/Kg	
		PCB-163/164	0.0029 ug/Kg	
		PCB-138	0.0098 ug/Kg	
		PCB-128	0.002 ug/Kg	
		PCB-183	0.0007 ug/Kg	
		Monochlorobiphenyls	0.0011 ug/Kg	
		Dichlorobiphenyls	0.116 ug/Kg	
		Trichlorobiphenyls	0.0516 ug/Kg	
		Tetrachlorobiphenyls	0.0829 ug/Kg	
		Pentachlorobiphenyls	0.181 ug/Kg	
		Hexachlorobiphenyls	0.0434 ug/Kg	
		Heptachlorobiphenyls	0.0007 ug/Kg	

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

Sample	Compound	Reported Concentration	Modified Final Concentration
L61510-1	PCB-005/008	0.0331 ug/Kg	0.0331U ug/Kg
	PCB-011	0.198 ug/Kg	0.198U ug/Kg
	PCB-022	0.0295 ug/Kg	0.0295U ug/Kg
	Dichlorobiphenyls	0.314 ug/Kg	0.314J ug/Kg
L61568-1	PCB-011	0.326 ug/Kg	0.326U ug/Kg
	Dichlorobiphenyls	0.565 ug/Kg	0.565J ug/Kg
L61568-2	PCB-011	0.434 ug/Kg	0.434U ug/Kg

Sample	Compound	Reported Concentration	Modified Final Concentration
L62291-1	PCB-005/008 PCB-011 PCB-016 PCB-031 PCB-020/033 PCB-022 PCB-035 Dichlorobiphenyls	0.024 ug/Kg 0.301 ug/Kg 0.0058 ug/Kg 0.0491 ug/Kg 0.0274 ug/Kg 0.0256 ug/Kg 0.0036 ug/Kg 0.393 ug/Kg	0.024U ug/Kg 0.301U ug/Kg 0.0058U ug/Kg 0.0491U ug/Kg 0.0274U ug/Kg 0.0256U ug/Kg 0.0036U ug/Kg 0.393J ug/Kg
L62291-2	PCB-011	0.36 ug/Kg	0.36U ug/Kg
L62291-1DUP	PCB-005/008 PCB-011 PCB-016 PCB-031 PCB-020/033 PCB-022 Dichlorobiphenyls	0.0169 ug/Kg 0.114 ug/Kg 0.0056 ug/Kg 0.0469 ug/Kg 0.0257 ug/Kg 0.0214 ug/Kg 0.178 ug/Kg	0.0169U ug/Kg 0.114U ug/Kg 0.0056U ug/Kg 0.0469U ug/Kg 0.0257U ug/Kg 0.0214U ug/Kg 0.178J ug/Kg

Laboratory blank results flagged "N" or "NJ" by the laboratory as estimated maximum possible concentration (EMPC) are considered not detected.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Matrix Spike/Matrix Spike Duplicates/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.

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits with the following exceptions:

DUP ID (Associated Samples)	Compound	RPD (Limits)	Flag	A or P
L62291-1DUP (L62291-1)	PCB-011	90 (≤50)	J (all detects)	A

VIII. Ongoing Precision & Recovery Samples (OPR)

Ongoing precision and recovery (OPR) samples were reviewed for each matrix as applicable. The percent recoveries (%R) were within the QC limits.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Internal Standards

All internal standard recoveries (%R) were within QC limits with the following exceptions:

Sample	Internal Standards	%R (Limits)	Compound	Flag	A or P
L62291-1	^{13}C-PCB-001 ^{13}C-PCB-003	0 (5-145) 3 (5-145)	PCB-001 PCB-002 PCB-003 Monochlorobiphenyls	J (all detects) R (all non-detects)	P
L62291-1DUP	^{13}C-PCB-001	1 (5-145)	PCB-001 PCB-002 Monochlorobiphenyls	J (all detects) J (all detects) J (all detects)	P

XI. Compound Quantitation

All compound quantitation were within validation criteria with the following exceptions:

Sample	Compound	Flag	A or P
All samples in SDG PR150778	All compounds flagged "N" or "NJ" by the laboratory as EMPC.	U	A

Raw data were not reviewed for Level III validation.

XII. Target Compound Identifications

Raw data were not reviewed for Level III validation.

XIII. System Performance

Raw data were not reviewed for Level III validation.

XIV. Overall Assessment of Data

The analysis was conducted within all specifications of the method.

Due to internal standards %R, data was rejected in one sample.

Due to DUP RPD and internal standards %R, data were qualified as estimated in two samples.

Due to laboratory blank contamination, data were qualified as not detected or estimated in six samples.

Due to sample results reported by the laboratory as EMPC, data were qualified as not detected in seven samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be rejected (R) are unusable for all purposes. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

Lower Duwamish Waterway, Green River Study, Suspended Solids Polychlorinated Biphenyls as Congeners - Data Qualification Summary - SDG PR150778

Sample	Compound	Flag	A or P	Reason
L62291-1	PCB-011	J (all detects)	A	Duplicate sample analysis (RPD)
L62291-1	PCB-001 PCB-002 PCB-003 Monochlorobiphenyls	J (all detects) R (all non-detects)	P	Internal standards (%R)
L62291-1DUP	PCB-001 PCB-002 Monochlorobiphenyls	J (all detects) J (all detects) J (all detects)	P	Internal standards (%R)
L61510-1 L61568-1 L61568-2 L61838-1 L62291-1 L62291-2 L62291-1DUP	All compounds flagged "N" or "NJ" by the laboratory as EMPC.	U	A	Compound quantitation (EMPC)

Lower Duwamish Waterway, Green River Study, Suspended Solids Polychlorinated Biphenyls as Congeners - Laboratory Blank Data Qualification Summary - SDG PR150778

Sample	Compound	Modified Final Concentration	A or P
L61510-1	PCB-005/008 PCB-011 PCB-022 Dichlorobiphenyls	0.0331U ug/Kg 0.198U ug/Kg 0.0295U ug/Kg 0.314J ug/Kg	A
L61568-1	PCB-011 Dichlorobiphenyls	0.326U ug/Kg 0.565J ug/Kg	A
L61568-2	PCB-011	0.434U ug/Kg	A
L62291-1	PCB-005/008 PCB-011 PCB-016 PCB-031 PCB-020/033 PCB-022 PCB-035 Dichlorobiphenyls	0.024U ug/Kg 0.301U ug/Kg 0.0058U ug/Kg 0.0491U ug/Kg 0.0274U ug/Kg 0.0256U ug/Kg 0.0036U ug/Kg 0.393J ug/Kg	A
L62291-2	PCB-011	0.36U ug/Kg	A

Sample	Compound	Modified Final Concentration	A or P
L62291-1DUP	PCB-005/008 PCB-011 PCB-016 PCB-031 PCB-020/033 PCB-022 Dichlorobiphenyls	0.0169U ug/Kg 0.114U ug/Kg 0.0056U ug/Kg 0.0469U ug/Kg 0.0257U ug/Kg 0.0214U ug/Kg 0.178J ug/Kg	A

LDC #: 34238A31 **VALIDATION COMPLETENESS WORKSHEET** Date: 5-15-15
SDG #: PR150778 Level III Page: 1 of 1
Laboratory: Pacific Rim Laboratories Inc. Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: HRGC/HRMS Polychlorinated Biphenyl Congeners (EPA Method 1668C)

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

	Validation Area		Comments
I.	Sample receipt/Technical holding times	SW / A	Cooler temp. 20.6°C. (text)
II.	HRGC/HRMS Instrument performance check	N	(SGE HT-8 column used)
III.	Initial calibration/~~ICV~~	A ~~SW~~ / N	≤ 20/35
IV.	Continuing calibration	A	QC limits
V.	Laboratory Blanks	SW	
VI.	Field blanks	N	
VII.	Matrix spike/Matrix spike duplicates / DUP	N / SW	C.S. / D=5+7
VIII.	Laboratory control samples	A	OPR
IX.	Field duplicates	N	
X.	Internal standards	SW	
XI.	Compound quantitation RL/~~LOQ/LOD~~s	SW	
XII.	Target compound identification	N	
XIII.	System performance	N	
XIV.	Overall assessment of data	A	

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

	Client ID	Lab ID	Matrix	Date
1	L61510-1	PR150778	Sediment	10/07/14
2	L61588-1	PR150779	Sediment	10/22/14
3	L61588-2	PR150780	Sediment	10/22/14
4	L61838-1	PR150781	Sediment	12/09/14
5	L62291-1	PR150782	Sediment	11/03/14
6	L62291-2	PR150783	Sediment	11/24/14
7	L62291-1DUP	PR150782D	Sediment	11/03/14
8				
9				
10				

Notes:

	PC150239B						

LDC #: 34238A31

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: JM
2nd Reviewer: C

METHOD: HRGC/HRMS PCB Congeners (EPA Method 1668C)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".
Y N N/A Were all samples associated with a method blank?
Y N N/A Was a method blank performed for each matrix and whenever a sample extraction was performed?
Y N N/A Was the method blank contaminated?
Blank extraction date: 03/31/15 **Blank analysis date:** 04/11/15 **Associated samples:** all
Conc. units: µg/Kg

Compound	Blank ID		Sample Identification								
	PC150239B	5x	1	2	3	5	6	7			
PCB-002	0.0011	0.00550									
PCB-003 N	0.0051*	0.02550	~~0.0116/U~~ S					~~0.0049 /U~~ N			
PCB-005/008	0.0067	0.03350	0.0331/U			0.024 /U		0.0169 /U			
PCB-011	0.109	0.54500	0.198/U	0.326 /U	0.434 /U	0.301 /U	0.36 /U	0.114 /U			
PCB-018	0.0058	0.02900									
PCB-017	0.0017*	0.00850									
PCB-027	0.0002*	0.00100									
PCB-032	0.0013*	0.00650									
PCB-016	0.0037	0.01850				0.0058 /U		0.0056 /U			
PCB-026	0.0007	0.00350									
PCB-031	0.0103	0.05150				0.0491 /U		0.0469 /U			
PCB-028	0.0112	0.05600									
PCB-020/033	0.0057	0.02850				0.0274 /U		0.0257 /U			
PCB-022	0.0062	0.03100	0.0295/U			0.0256 /U		0.0214 /U			
PCB-035	0.0014	0.00700	0.001/U K			0.0036 /U		0.0028*/U			
PCB-037	0.0066	0.03300									
PCB-052/069 N	0.0246*	0.12300									
PCB-043/049	0.0089	0.04450									
PCB-047/048	0.0087	0.04350									

LDC #: 34238A31

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: HRGC/HRMS PCB Congeners (EPA Method 1668C)

Compound	Blank ID		Sample Identification								
	PC150239B	5x	1	2	3	5	6	7			
PCB-044	0.0142	0.07100									
PCB-059	0.0006*	0.00300									
PCB-042 N	0.0051*	0.02550									
PCB-064/072	0.0074	0.03700									
PCB-071	0.0009*	0.00450									
PCB-040/057	0.0019*	0.00950				~~0.0063*/U~~		~~0.0088/U~~			
PCB-074	0.0096	0.04800									
PCB-070	0.0255	0.12750									
PCB-066 N	0.0097*	0.04850									
PCB-060	0.0023*	0.01150									
PCB-056	0.0086	0.04300									
PCB-077	0.0011*	0.00550									
PCB-095 N	0.0356*	0.17800									
PCB-091/121 N	0.0073*	0.03650									
PCB-101	0.0946	0.47300									
PCB-099 N	0.0116*	0.05800									
PCB-083/109	0.0015*	0.00750									
PCB-116/125	0.0015*	0.00750									
PCB-087/115	0.0133	0.06650									
PCB-110	0.0474	0.23700									

LDC #: 34238A31

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: HRGC/HRMS PCB Congeners (EPA Method 1668C)

Compound	Blank ID		Sample Identification								
[redacted]	PC150239B	5x	1	2	3	5	6	7			
PCB-124	0.0004*	0.00200									
PCB-118	0.0209	0.10450									
PCB-105/127	0.0051	0.02550									
PCB-136/148	0.0076	0.03800									
PCB-151 N	0.0071*	0.03550									
PCB-135	0.0007*	0.00350									
PCB-144	0.0004*	0.00200									
PCB-139/149 N	0.0222*	0.11100									
PCB-134	0.0012	0.00600									
PCB-146	0.0019*	0.00950									
PCB-132/161 N	0.006*	0.03000									
PCB-153	0.0165	0.08250									
PCB-141	0.0034	0.01700									
PCB-163/164	0.0029	0.01450									
PCB-138	0.0098	0.04900									
PCB-128	0.002	0.01000									
PCB-169	0.0003*	0.00150						~~0.002~~ * [illegible]			
PCB-179	0.0015*	0.00750									
PCB-176	0.0001*	0.00050									
PCB-182/187	0.0004*	0.00200									

LDC #: 34238A31

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: HRGC/HRMS PCB Congeners (EPA Method 1668C)

Compound	Blank ID		Sample Identification								
[illegible]	PC150239B	5x	1	2	3	5	6	7			
PCB-183	0.0007	0.00350									
PCB-174	0.0014*	0.00700									
PCB-180	0.0007*	0.00350									
PCB-170	0.0005*	0.00250									
Monochlorobiphenyls	0.0011	0.00550									
Dichlorobiphenyls	0.116	0.58000	0.314/J	0.565/J		0.393/J		0.178/J			
Trichlorobiphenyls	0.0516	0.25800									
Tetrachlorobiphenyls	0.0829	0.41450									
Pentachlorobiphenyls	0.181	0.90500									
Hexachlorobiphenyls	0.0434	0.21700									
Heptachlorobiphenyls	0.0007	0.00350									

*EMPC "NJ" or

(EMPC results ~~>EDL but <RL and~~ flagged "NJ" by the laboratory are considered non-detect/"U")

LDC #: 34238A31

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates / Lab Dup

Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: HRGC/HRMS Polychlorinated Biphenyls (EPA Method 1668C)

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

Y N N/A Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.

Y N N/A Was a MS/MSD analyzed every 20 samples of each matrix?

Y N N/A Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	Lab Dup ~~MS/MSD ID~~	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		7	PCB-011	( )	( )	90 (50)	5	Jdets/A (det)
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

LDC #: 34238A3

VALIDATION FINDINGS WORKSHEET
Internal Standards

Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: HRGC/HRMS PCB Congeners (EPA Method 1668C)

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

Y (N) N/A Are all internal standard recoveries within the QC criteria?

Y N (N/A) Was the S/N ratio all internal standard peaks ≥ 10?

#	Date	Lab ID/Reference	Internal Standard	% Recovery (Limit:)	Qualifications
		5	13C-PCB 001	0 (5-145)	J/R/P (PCB 001, PCB 002 + Monochlorobiphenyls) (ND/det)
			13C-PCB 003	3 (5-145)	J/UJ/P (PCB 002, PCB 003 + Monochlorobiphenyls) (det)
		7	13C-PCB 001	1 (5-145)	J/UJ/P (PCB 001, PCB 002 + Monochlorobiphenyls) (det)

LDC #: 34238A3

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported CRQLs

Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: HRGC/HRMS PCB Congeners (EPA Method 1668C)

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

Y N N/A Were the correct internal standard (IS), quantitation ions and relative response factors (RRF) used to quantitate the compound?
Y N N/A Compound quantitation and CRQLs were adjusted to reflect all sample dilutions and dry weight factors (if necessary).

#	Date	Compound	Finding	Associated Samples	Qualifications
			EMPC results >EDL but <RL and flagged NJ by the laboratory	1, 2, 3, 5, 6, 7, PC150239B	U/A
			EMPC results >RL and flagged N by the laboratory	all +7 (Lab Dup)	~~Jdets~~/A

Comments: ~~See sample calculation verification worksheet for recalculations~~

LABORATORY DATA CONSULTANTS, INC.
2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

King County Environmental Laboratory
322 W. Ewing Street
Seattle WA 98119
ATTN: Mr. Fritz Grothkopp

March 1, 2016

SUBJECT: Lower Duwamish Waterway, Green River Study, Suspended Solids, Data Validation

Dear Mr. Grothkopp,

Enclosed is the final validation report for the fractions listed below. This SDG was received on January 28, 2016. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project #35802:

SDG #	Fraction
PR154205	Polychlorinated Dioxins/Dibenzofurans, Polychlorinated Biphenyls as Congeners

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

- Green River Study, Suspended Solids Characterization Sampling and Analysis Plan, January 2013
- US Environmental Protection Agency Region 10 SOP for the Validation of Polychlorinated Biphenyl Data, Revision 1.0, December 8, 1995
- US Environmental Protection Agency Region 10 Data Validation and Review Guidelines for Polychlorinated Dibenzo-p-Dioxin and Polychlorinated Dibenzofuran Data using Method 1613B and SW 846 Method 8290A, May 2014

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

Sincerely,

Stella Cuenco
Operations Manager/Senior Chemist

425 Pages-SF/EM

Attachment 1

EDD III

LDC #35802 (King County - Seattle WA / Lower Duwamish Waterway, Green River Study Suspended Solids)

LDC	SDG#	DATE REC'D	(3) DATE DUE	Dioxins (1613B)		PCB Cong. (1668)																											
Matrix: Water/Sediment				W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	PR154205	01/28/16	02/19/16	0	11	0	12																										
Total	A/SC			0	11	0	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23

Shaded cells indicate Level IV validation (all other cells are Level II validation). These sample counts do not include MS/MSD, and DUPs

L:\King County\Duwamish\Green River Suspended Solids\35802ST.wpd

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Lower Duwamish Waterway, Green River Study, Suspended Solids

LDC Report Date: March 1, 2016

Parameters: Polychlorinated Dioxins/Dibenzofurans

Validation Level: Level III

Laboratory: Pacific Rim Laboratories, Inc.

Sample Delivery Group (SDG): PR154205

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
L-63181-1	PR1504204	Sediment	06/22/15
L-63466-1	PR1504205	Sediment	09/15/15
L-63466-2	PR1504206	Sediment	09/15/15
L-63466-3	PR1504207	Sediment	09/15/15
L-63466-4	PR1504208	Sediment	09/15/15
L-63466-5	PR1504209	Sediment	08/15/15
L-63466-6	PR1504210	Sediment	09/15/15
L-63466-7	PR1504211	Sediment	09/15/15
L-63858-1	PR1504212	Sediment	09/24/15
L64107-1	PR1504214	Sediment	10/26/15
L64265-1	PR1504215	Sediment	11/14/15
L-63466-4DUP	PR1504208DUP	Sediment	09/15/15

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Green River Study, Suspended Solids Characterization Sampling and Analysis Plan (January 2013) and US Environmental Protection Agency (EPA) Region 10 Data Validation and Review Guidelines for Polychlorinated Dibenzo-p-Dioxin and Polychlorinated Dibenzofuran Data (PCDD/PCDF) using Method 1613B and SW 846 Method 8290A (May 2014). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polychlorinated Dioxins/Dibenzofurans by Environmental Protection Agency (EPA) Method 1613B

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detect at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

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 advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. HRGC/HRMS Instrument Performance Check

Instrument performance was checked at the required daily frequency.

Retention time windows were established for all homologues. The chromatographic resolution between 2,3,7,8-TCDD and peaks representing any other unlabeled TCDD isomer was less than or equal to 25%.

The static resolving power was at least 10,000 (10% valley definition).

III. Initial Calibration and Initial Calibration Verification

A five point initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for unlabeled compounds and labeled compounds.

The ion abundance ratios for all PCDDs and PCDFs were within validation criteria.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration results were within the QC limits for unlabeled compounds and labeled compounds.

The ion abundance ratios for all PCDDs and PCDFs were within validation criteria.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. Results flagged "N" or "NJ" by the laboratory as estimated maximum possible concentration (EMPC) are considered not detected.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Matrix Spike/Matrix Spike Duplicates/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.

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

VIII. Ongoing Precision Recovery (OPR)

Ongoing precision recovery samples were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Internal Standards

All internal standard recoveries (%R) were within QC limits.

XI. Compound Quantitation

All compound quantitation were within validation criteria with the following exceptions:

Sample	Compound	Flag	A or P
All samples in SDG PR154205	All compounds flagged "N" or "NJ" by the laboratory as EMPC.	U	A

Raw data were not reviewed for Level III validation.

XII. Target Compound Identifications

Raw data were not reviewed for Level III validation.

XIII. System Performance

Raw data were not reviewed for Level III validation.

XIV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to sample results reported by the laboratory as EMPC, data were qualified as not detected in twelve samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Based upon the data validation all other results are considered valid and usable for all purposes.

Lower Duwamish Waterway, Green River Study, Suspended Solids Polychlorinated Dioxins/Dibenzofurans - Data Qualification Summary - SDG PR154205

Sample	Compound	Flag	A or P	Reason
63181-1 L-63466-1 L-63466-2 L-63466-3 L-63466-4 L-63466-5 L-63466-6 L-63466-7 L-63858-1 L64107-1 L64265-1 L-63466-4DUP	All compounds flagged "N" or "NJ" by the laboratory as EMPC.	U	A	Compound quantitation (EMPC)

Lower Duwamish Waterway, Green River Study, Suspended Solids Polychlorinated Dioxins/Dibenzofurans - Laboratory Blank Data Qualification Summary - SDG PR154205

No Sample Data Qualified in this SDG

LDC #: 35802A21 **VALIDATION COMPLETENESS WORKSHEET** Date: 2-8-16
SDG #: PR154205 Level III Page: 1 of 2
Laboratory: Pacific Rim Laboratories Inc. Reviewer: TM
2nd Reviewer: M

METHOD: HRGC/HRMS Polychlorinated Dioxins/Dibenzofurans (EPA Method 1613B)

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

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / A	
II.	HRGC/HRMS Instrument performance check	A	
III.	Initial calibration/ICV	A / N	≤20
IV.	Continuing calibration	A	QC limits
V.	Laboratory Blanks	SW	all results EMPC (considered "ND")
VI.	Field blanks	N	
VII.	Matrix spike/Matrix spike duplicates/DUP	N / A	C.S / D=5+12
VIII.	Laboratory control samples	A	OPR
IX.	Field duplicates	N	
X.	Internal standards	A	
XI.	Compound quantitation RL/~~LOQ/LODs~~	SW	
XII.	Target compound identification	N	
XIII.	System performance	N	
XIV.	Overall assessment of data	A	

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

	Client ID	Lab ID	Matrix	Date
1	L-63181-1	PR1504204	Sediment	06/22/15
2	L-63466-1	PR1504205	Sediment	09/15/15
3	L-63466-2	PR1504206	Sediment	09/15/15
4	L-63466-3	PR1504207	Sediment	09/15/15
5	L-63466-4	PR1504208	Sediment	09/15/15
6	L-63466-5	PR1504209	Sediment	08 ~~09~~/15/15
7	L-63466-6	PR1504210	Sediment	09/15/15
8	L-63466-7	PR1504211	Sediment	09/15/15
9	L-63858-1	PR1504212	Sediment	09/24/15
10	L64107-1	PR1504214	Sediment	10/26/15
11	L64265-1	PR1504215	Sediment	11/14/15
12	L-63466-4DUP	PR1504208DUP	Sediment	09/15/15
13				
14				

LDC #: 35802A21 **VALIDATION COMPLETENESS WORKSHEET** Date: 2-8-16
SDG #: PR154205 Level III Page: 2 of 2
Laboratory: Pacific Rim Laboratories Inc. Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: HRGC/HRMS Polychlorinated Dioxins/Dibenzofurans (EPA Method 1613B)

	Client ID	Lab ID	Matrix	Date
15				
16				

Notes:

	PRL007						

VALIDATION FINDINGS WORKSHEET

METHOD: HRGC/HRMS Dioxins/Dibenzofurans (EPA Method 1613B)

A. 2,3,7,8-TCDD	F. 1,2,3,4,6,7,8-HpCDD	K. 1,2,3,4,7,8-HxCDF	P. 1,2,3,4,7,8,9-HpCDF	U. Total HpCDD
B. 1,2,3,7,8-PeCDD	G. OCDD	L. 1,2,3,6,7,8-HxCDF	Q. OCDF	V. Total TCDF
C. 1,2,3,4,7,8-HxCDD	H. 2,3,7,8-TCDF	M. 2,3,4,6,7,8-HxCDF	R. Total TCDD	W. Total PeCDF
D. 1,2,3,6,7,8-HxCDD	I. 1,2,3,7,8-PeCDF	N. 1,2,3,7,8,9-HxCDF	S. Total PeCDD	X. Total HxCDF
E. 1,2,3,7,8,9-HxCDD	J. 2,3,4,7,8-PeCDF	O. 1,2,3,4,6,7,8-HpCDF	T. Total HxCDD	Y. Total HpCDF

Notes:_____

LDC #: 35085
35802A21

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported RLs

Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS Dioxins/Dibenzofurans (Method 1613B)

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

Y N N/A Were the correct internal standard (IS), quantitation ions and relative response factors (RRF) used to quantitate the compound?
Y N N/A Compound quantitation and RLs were adjusted to reflect all sample dilutions and dry weight factors (if necessary).

#	Date	Compound	Finding	Associated Samples	Qualifications
			EMPC qualified "N" or "NJ"	All + Lab Dup	U/A

Comments: ~~See sample calculation verification worksheet for recalculations~~

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Lower Duwamish Waterway, Green River Study, Suspended Solids

LDC Report Date: February 25, 2016

Parameters: Polychlorinated Biphenyls as Congeners

Validation Level: Level III

Laboratory: Pacific Rim Laboratories, Inc.

Sample Delivery Group (SDG): PR154205

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
L63181-1	PR1504204	Sediment	06/22/15
L63466-1R	PR1504205R	Sediment	09/15/15
L63466-2	PR1504206	Sediment	09/15/15
L63466-3	PR1504207	Sediment	09/15/15
L63466-4	PR1504208	Sediment	09/15/15
L63466-5	PR1504209	Sediment	08/15/15
L63466-6	PR1504210	Sediment	09/15/15
L63466-7	PR1504211	Sediment	09/15/15
L63858-1	PR1504212	Sediment	09/24/15
L63997-1	PR1504213	Sediment	10/10/15
L64107-1	PR1504214	Sediment	10/26/15
L64265-1R	PR1504215R	Sediment	11/14/15
L63466-2DUP	PR1504206DUP	Sediment	09/15/15
L63466-1	PR1504205	Sediment	09/15/15
L64265-1	PR1504215	Sediment	09/15/15

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Green River Study, Suspended Solids Characterization Sampling and Analysis Plan (January 2013) and US Environmental Protection Agency (EPA) Region 10 SOP for the Validation of Polychlorinated Biphenyl (PCB) Data (Revision 1.0, December 8, 1995). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polychlorinated Biphenyls as Congeners by Environmental Protection Agency (EPA) Method 1668C

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results.

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.

- J1 Blank Contamination: Indicates possible high bias and/or false positives.
- J2 Calibration Range exceeded: Indicates possible low bias.
- J3 Holding times not met: Indicates low bias for most analytes.
- J4 Other QC parameters outside control limits: bias not readily determined.
- J5 Other QC parameters outside control limits. The reported results appear to be biased high. The actual value of target compound in the sample may be lower than the value reported by the laboratory.
- J6 Other QC parameters outside control limits. The reported results appear to be biased low. The actual value of target compound in the sample may be higher than the value reported by the laboratory.

R Quality control indicates the data is not usable.

NJ Presumptive evidence of presence of the compound at an estimated quantity.

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.

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 advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. HRGC/HRMS Instrument Performance Check

Instrument performance was checked at the required frequency.

Retention time windows were established for all congeners. The chromatographic resolution between the congeners PCB-23 and PCB-34 and congeners PCB-182 and PCB-187 was resolved with a valley of less than or equal to 40%.

The static resolving power was at least 10,000 (10% valley definition).

III. Initial Calibration

A five point initial calibration was performed at the required daily frequency.

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

Date	Compound	%RSD	Associated Samples	Affected Compound	Flag	A or P
07/14/15	^{13}C-PCB-15	20.79	All samples in SDG PR154205	PCB-010	J (all detects) UJ (all non-detects)	P
	^{13}C-PCB-126	22.39		PCB-009		
	^{13}C-PCB-155	20.52		PCB-007		
	^{13}C-PCB-167	22.43		PCB-006		
	^{13}C-PCB-156	26.21		PCB-005/008		
	^{13}C-PCB-157	24.7		PCB-014		
	^{13}C-PCB-169	26.21		PCB-011		
	^{13}C-PCB-202	20.55		PCB-012/013		
				PCB-015		
				PCB-126		
				PCB-155		
				PCB-156		
				PCB-157		
				PCB-169		
				PCB-202		
				PCB-150		
				PCB-152		
				PCB-145		
				PCB-136/148		
				PCB-154		
				PCB-151		
				PCB-135		
				PCB-144		
				PCB-147		
				PCB-139/149		
				PCB-140		
				PCB-143		

Date	Compound	%RSD	Associated Samples	Affected Compound	Flag	A or P
07/14/15 (continued)	^{13}C-PCB-15 ^{13}C-PCB-126 ^{13}C-PCB-155 ^{13}C-PCB-167 ^{13}C-PCB-156 ^{13}C-PCB-157 ^{13}C-PCB-169 ^{13}C-PCB-202	20.79 22.39 20.52 22.43 26.21 24.7 26.21 20.55	All samples in SDG PR154205	PCB-134 PCB-142 PCB-131 PCB-133 PCB-165 PCB-146 PCB-132/161 PCB-153 PCB-168 PCB-141 PCB-137 PCB-130 PCB-163/164 PCB-138 PCB-160 PCB-158 PCB-129 PCB-166 PCB-159 PCB-128 PCB-162 PCB-167 PCB-201 PCB-204 PCB-197 PCB-200 PCB-198 PCB-199 PCB-196 PCB-203 PCB-195 PCB-194 Dichlorobiphenyls Pentachlorobiphenyls Hexachlorobiphenyls Octachlorobiphenyls	J (all detects) UJ (all non-detects)	P

The ion abundance ratios for all PCBs were within 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 within QC limits for all compounds.

For samples L63181-1, L63466-2, L63466-3, L63466-4, and L63466-1, the laboratory performed a beginning continuing calibration for the LOC/Toxic compounds only instead of the 209 PCB compounds. No data were qualified due to this non-conformance.

The ion abundance ratios for all PCBs were within method and validation criteria.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks with the following exceptions:

Laboratory Blank ID	Extraction Date	Compound	Concentration	Associated Samples
PRL008	12/07/15	PCB-011	0.0803 ug/Kg	L63181-1
		PCB-018	0.0036 ug/Kg	L63466-2
		PCB-027	0.0002 ug/Kg	L63466-3
		PCB-016	0.0013 ug/Kg	L63466-4
		PCB-026	0.0007 ug/Kg	L63466-5
		PCB-031	0.0068 ug/Kg	L63466-6
		PCB-028	0.0084 ug/Kg	L63466-7
		PCB-020/033	0.0048 ug/Kg	L63858-1
		PCB-022	0.0037 ug/Kg	L63997-1
		PCB-035	0.0008 ug/Kg	L64107-1
		PCB-037	0.0051 ug/Kg	L63466-2DUP
		PCB-053	0.0008 ug/Kg	L63466-1
		PCB-052/069	0.0083 ug/Kg	L64265-1
		PCB-043/049	0.0042 ug/Kg	
		PCB-047/048	0.0042 ug/Kg	
		PCB-044	0.0076 ug/Kg	
		PCB-064/072	0.004 ug/Kg	
		PCB-040/057	0.0009 ug/Kg	
		PCB-074	0.0045 ug/Kg	
		PCB-070	0.0149 ug/Kg	
		PCB-066	0.0073 ug/Kg	
		PCB-056	0.0048 ug/Kg	
		PCB-095	0.0134 ug/Kg	
		PCB-084	0.005 ug/Kg	
		PCB-092	0.0034 ug/Kg	
		PCB-101	0.0186 ug/Kg	
		PCB-099	0.0066 ug/Kg	
		PCB-086/097/117	0.0075 ug/Kg	
		PCB-087/115	0.0107 ug/Kg	
		PCB-085	0.0034 ug/Kg	
		PCB-110	0.0244 ug/Kg	
		PCB-118	0.0156 ug/Kg	
		PCB-105/127	0.0056 ug/Kg	
		PCB-136/148	0.0044 ug/Kg	
		PCB-151	0.0099 ug/Kg	
		PCB-139/149	0.0211 ug/Kg	
		PCB-132/161	0.0066 ug/Kg	
		PCB-153	0.0241 ug/Kg	
		PCB-141	0.0048 ug/Kg	
		PCB-163/164	0.0051 ug/Kg	
		PCB-138	0.0119 ug/Kg	
		PCB-158	0.0016 ug/Kg	
		PCB-179	0.0029 ug/Kg	
		PCB-178	0.0008 ug/Kg	
		PCB-177	0.0013 ug/Kg	
		PCB-180	0.003 ug/Kg	
		Dichlorobiphenyls	0.0803 ug/Kg	
		Trichlorobiphenyls	0.0354 ug/Kg	
		Tetrachlorobiphenyls	0.0615 ug/Kg	
		Pentachlorobiphenyls	0.114 ug/Kg	
		Hexachlorobiphenyls	0.0895 ug/Kg	
		Heptachlorobiphenyls	0.008 ug/Kg	
PRL009	01/05/16	PCB-011	0.0134 ug/Kg	L63466-1R
		PCB-018	0.0007 ug/Kg	L64265-1R
		PCB-031	0.0023 ug/Kg	
		PCB-028	0.0016 ug/Kg	
		PCB-022	0.0004 ug/Kg	
		PCB-110	0.002 ug/Kg	
		Dichlorobiphenyls	0.0134 ug/Kg	
		Trichlorobiphenyls	0.005 ug/Kg	
		Pentachlorobiphenyls	0.002 ug/Kg	

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

Sample	Compound	Reported Concentration	Modified Final Concentration
L63181-1	PCB-011	0.123 ug/Kg	0.123U ug/Kg
	PCB-084	0.0228 ug/Kg	0.0228U ug/Kg
	PCB-092	0.0151 ug/Kg	0.0151U ug/Kg
	PCB-085	0.0143 ug/Kg	0.0143U ug/Kg
	PCB-151	0.047 ug/Kg	0.047U ug/Kg
	Dichlorobiphenyls	0.25 ug/Kg	0.25J ug/Kg
L63466-2	PCB-011	0.129 ug/Kg	0.129U ug/Kg
	Dichlorobiphenyls	0.267 ug/Kg	0.267J ug/Kg
L63466-3	PCB-011	0.0438 ug/Kg	0.0438U ug/Kg
	PCB-018	0.005 ug/Kg	0.005U ug/Kg
	PCB-016	0.0011 ug/Kg	0.0011U ug/Kg
	PCB-031	0.0113 ug/Kg	0.0113U ug/Kg
	PCB-028	0.0147 ug/Kg	0.0147U ug/Kg
	PCB-020/033	0.0064 ug/Kg	0.0064U ug/Kg
	PCB-022	0.005 ug/Kg	0.005U ug/Kg
	PCB-037	0.0042 ug/Kg	0.0042U ug/Kg
	PCB-043/049	0.0135 ug/Kg	0.0135U ug/Kg
	PCB-047/048	0.0071 ug/Kg	0.0071U ug/Kg
	PCB-044	0.0233 ug/Kg	0.0233U ug/Kg
	PCB-064/072	0.0087 ug/Kg	0.0087U ug/Kg
	PCB-074	0.0084 ug/Kg	0.0084U ug/Kg
	PCB-070	0.0446 ug/Kg	0.0446U ug/Kg
	PCB-066	0.0131 ug/Kg	0.0131U ug/Kg
	PCB-056	0.0062 ug/Kg	0.0062U ug/Kg
	PCB-095	0.046 ug/Kg	0.046U ug/Kg
	PCB-084	0.0174 ug/Kg	0.0174U ug/Kg
	PCB-092	0.0116 ug/Kg	0.0116U ug/Kg
	PCB-101	0.0649 ug/Kg	0.0649U ug/Kg
	PCB-099	0.0285 ug/Kg	0.0285U ug/Kg
	PCB-086/097/117	0.0275 ug/Kg	0.0275U ug/Kg
	PCB-087/115	0.0351 ug/Kg	0.0351U ug/Kg
	PCB-110	0.0821 ug/Kg	0.0821U ug/Kg
	PCB-136/148	0.0101 ug/Kg	0.0101U ug/Kg
	PCB-151	0.0129 ug/Kg	0.0129U ug/Kg
	PCB-139/149	0.0577 ug/Kg	0.0577U ug/Kg
	PCB-132/161	0.0328 ug/Kg	0.0328U ug/Kg
	PCB-153	0.113 ug/Kg	0.113U ug/Kg
	PCB-141	0.0167 ug/Kg	0.0167U ug/Kg
	Dichlorobiphenyls	0.0609 ug/Kg	0.0609J ug/Kg
	Trichlorobiphenyls	0.0495 ug/Kg	0.0495J ug/Kg
	Tetrachlorobiphenyls	0.177 ug/Kg	0.177J ug/Kg
	Pentachlorobiphenyls	0.458 ug/Kg	0.458J ug/Kg
L63466-4	PCB-011	0.0904 ug/Kg	0.0904U ug/Kg
	PCB-016	0.0062 ug/Kg	0.0062U ug/Kg
	PCB-035	0.0036 ug/Kg	0.0036U ug/Kg
	Dichlorobiphenyls	0.205 ug/Kg	0.205J ug/Kg
L63466-5	PCB-011	0.0769 ug/Kg	0.0769U ug/Kg
	PCB-031	0.0292 ug/Kg	0.0292U ug/Kg
	PCB-020/033	0.0176 ug/Kg	0.0176U ug/Kg
	PCB-022	0.0159 ug/Kg	0.0159U ug/Kg
	Dichlorobiphenyls	0.132 ug/Kg	0.132J ug/Kg
	Trichlorobiphenyls	0.14 ug/Kg	0.14J ug/Kg

Sample	Compound	Reported Concentration	Modified Final Concentration
L63466-6	PCB-011	0.4 ug/Kg	0.4U ug/Kg
L63466-7	PCB-011	0.345 ug/Kg	0.345U ug/Kg
L63858-1	PCB-011 Dichlorobiphenyls	0.214 ug/Kg 0.349 ug/Kg	0.214U ug/Kg 0.349J ug/Kg
L63466-2DUP	PCB-011 Dichlorobiphenyls	0.117 ug/Kg 0.254 ug/Kg	0.117U ug/Kg 0.254J ug/Kg
L63466-1	PCB-095 PCB-101 PCB-087/115 PCB-110 PCB-118 PCB-105/127 Pentachlorobiphenyls	0.0166 ug/Kg 0.0215 ug/Kg 0.0096 ug/Kg 0.0292 ug/Kg 0.0277 ug/Kg 0.0153 ug/Kg 0.12 ug/Kg	0.0166U ug/Kg 0.0215U ug/Kg 0.0096U ug/Kg 0.0292U ug/Kg 0.0277U ug/Kg 0.0153U ug/Kg 0.12J ug/Kg
L64265-1	PCB-011 PCB-016 PCB-031 PCB-028 PCB-020/033 PCB-022 PCB-037 PCB-052/069 PCB-047/048 PCB-044 PCB-064/072 PCB-040/057 PCB-074 PCB-070 PCB-066 PCB-056 PCB-084 PCB-092 PCB-101 PCB-099 PCB-086/097/117 PCB-087/115 PCB-118 Dichlorobiphenyls Trichlorobiphenyls Tetrachlorobiphenyls	0.0632 ug/Kg 0.0045 ug/Kg 0.021 ug/Kg 0.031 ug/Kg 0.0127 ug/Kg 0.0129 ug/Kg 0.0134 ug/Kg 0.0358 ug/Kg 0.0128 ug/Kg 0.0272 ug/Kg 0.0122 ug/Kg 0.0027 ug/Kg 0.0125 ug/Kg 0.0479 ug/Kg 0.0287 ug/Kg 0.0108 ug/Kg 0.0232 ug/Kg 0.0167 ug/Kg 0.0858 ug/Kg 0.0456 ug/Kg 0.0311 ug/Kg 0.0439 ug/Kg 0.0776 ug/Kg 0.121 ug/Kg 0.137 ug/Kg 0.238 ug/Kg	0.0632U ug/Kg 0.0045U ug/Kg 0.021U ug/Kg 0.031U ug/Kg 0.0127U ug/Kg 0.0129U ug/Kg 0.0134U ug/Kg 0.0358U ug/Kg 0.0128U ug/Kg 0.0272U ug/Kg 0.0122U ug/Kg 0.0027U ug/Kg 0.0125U ug/Kg 0.0479U ug/Kg 0.0287U ug/Kg 0.0108U ug/Kg 0.0232U ug/Kg 0.0167U ug/Kg 0.0858U ug/Kg 0.0456U ug/Kg 0.0311U ug/Kg 0.0439U ug/Kg 0.0776U ug/Kg 0.121J ug/Kg 0.137J ug/Kg 0.238J ug/Kg

Laboratory blank results flagged “N” or "NJ" by the laboratory as estimated maximum possible concentration (EMPC) are considered not detected.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Matrix Spike/Matrix Spike Duplicates/Duplicates Sample Analysis

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.

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

VIII. Ongoing Precision & Recovery Samples (OPR)

Ongoing precision and recovery (OPR) samples were reviewed for each matrix as applicable with the following exceptions:

Sample	Compound	Finding	Criteria	Flag	A or P
L63466-1R L64265-1R	All TCL compounds	No OPR analysis associated with these samples.	OPR analysis required.	J (all detects) UJ (all non-detects)	P

The percent recoveries (%R) were within the QC limits with the following exceptions:

OPR ID	Compound	%R (Limits)	Associated Samples	Affected Compound	Flag	A or P
PC1512055	PCB-005/008	141.7 (60-135)	L63181-1 L63466-2 L63466-3 L63466-4 L63466-5 L63466-6 L63466-7 L63858-1 L63997-1 L64107-1 L63466-2DUP L64265-1	PCB-005/008 Dichlorobiphenyls	J (all detects) J (all detects)	P

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Internal Standards

All internal standard recoveries (%R) were within QC limits with the following exceptions:

Sample	Internal Standards	%R (Limits)	Compound	Flag	A or P
L63181-1	^{13}C-PCB-104	149 (10-145)	PCB-104 PCB-096 PCB-103 PCB-100 PCB-094 PCB-093/098/102 PCB-095 PCB-088 PCB-091/121 PCB-084 PCB-092 PCB-089 PCB-090 PCB-101 PCB-113 PCB-099 PCB-112/119 PCB-083/109 PCB-086/097/117 PCB-116/125 PCB-087/115 PCB-111 PCB-085 PCB-120 PCB-110 PCB-082 PCB-124 PCB-107/108 PCB-106 PCB-122 Pentachlorobiphenyls	J (all detects) UJ (all non-detects)	P
L63466-1R	^{13}C-PCB-1 ^{13}C-PCB-3	<1 (5-145) 1 (5-145)	PCB-1 PCB-2 PCB-3 Monochlorobiphenyls	UJ (all non-detects) UJ (all non-detects) UJ (all non-detects) UJ (all non-detects)	P
L63466-2	^{13}C-PCB-189	146 (10-145)	PCB-184 PCB-179 PCB-176 PCB-186 PCB-178 PCB-175 PCB-182/187 PCB-183 PCB-185 PCB-174 PCB-181 PCB-177 PCB-171 PCB-173 PCB-172 PCB-192 PCB-180 PCB-193 PCB-191 PCB-170 PCB-190 PCB-189 Heptachlorobiphenyls	J (all detects) UJ (all non-detects)	P

Sample	Internal Standards	%R (Limits)	Compound	Flag	A or P
L63466-3	^{13}C-PCB-1 ^{13}C-PCB-3	0 (5-145) 3 (5-145)	PCB-1 PCB-2 PCB-3 Monochlorobiphenyls	R (all non-detects) R (all non-detects) R (all non-detects) R (all non-detects)	P
L63466-6	^{13}C-PCB-189	148 (10-145)	PCB-184 PCB-179 PCB-176 PCB-186 PCB-178 PCB-175 PCB-182/187 PCB-183 PCB-185 PCB-174 PCB-181 PCB-177 PCB-171 PCB-173 PCB-172 PCB-192 PCB-180 PCB-193 PCB-191 PCB-170 PCB-190 PCB-189 Heptachlorobiphenyls	J (all detects) UJ (all non-detects)	P

XI. Compound Quantitation

All compound quantitation were within validation criteria with the following exceptions:

Sample	Compound	Flag	A or P
All samples in SDG PR154205	All compounds flagged "N" or "NJ" by the laboratory as EMPC.	U	A

Sample	Finding	Associated Compound
L63466-1	The laboratory indicated that since ^{13}C-PCB-1, ^{13}C-PCB-3, ^{13}C-PCB-4, ^{13}C-PCB-15, ^{13}C-PCB-19, ^{13}C-PCB-37, ^{13}C-PCB-81, ^{13}C-PCB-77, and ^{13}C-PCB-126 are poorly recovered due to interferences; associated results are not reported.	PCB-001 to 081 PCB-126 Monochlorobiphenyls Dichlorobiphenyls Trichlorobiphenyls Tetrachlorobiphenyls
L64265-1	The laboratory indicated that since ^{13}C-PCB-1 is poorly recovered due to interferences; associated, results are not reported.	PCB-001 PCB-002 Monochlorobiphenyls

Raw data were not reviewed for Level III validation.

XII. Target Compound Identifications

Raw data were not reviewed for Level III validation.

XIII. System Performance

Raw data were not reviewed for Level III validation.

XIV. Overall Assessment of Data

The analysis was conducted within all specifications of the method.

In the case where more than one result was reported for an individual sample, the least technically acceptable results were deemed unusable as follows:

Sample	Compound	Flag	A or P
L63466-1	PCB-001 to 081 PCB-126 Monochlorobiphenyls Dichlorobiphenyls Trichlorobiphenyls Tetrachlorobiphenyls	R R R R R R	A
L63466-1R	All TCL compounds except PCB-001 to 081 PCB-126 Monochlorobiphenyls Dichlorobiphenyls Trichlorobiphenyls Tetrachlorobiphenyls	R	A
L64265-1	PCB-1 PCB-2 PCB-3 Monochlorobiphenyls	R R R R	A
L64265-1R	All TCL compounds except PCB-1 PCB-2 PCB-3 Monochlorobiphenyls	R	A

Due to internal standards %R, data was rejected in one sample.

Due to initial calibration %RSD, OPR %R, and internal standards %R, data were qualified as estimated in thirteen samples.

Due to results reported by the laboratory as EMPC, data were qualified as not detected in thirteen samples.

Due to laboratory blank contamination, data were qualified as estimated or not detected in eleven samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be rejected (R) are unusable for all purposes. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

Lower Duwamish Waterway, Green River Study, Suspended Solids Polychlorinated Biphenyls as Congeners - Data Qualification Summary - SDG PR154205

Sample	Compound	Flag	A or P	Reason
L63181-1	PCB-010	J (all detects)	P	Initial calibration (%RSD)
L63466-1R	PCB-009	UJ (all non-detects)		
L63466-2	PCB-007			
L63466-3	PCB-006			
L63466-4	PCB-005/008			
L63466-5	PCB-014			
L63466-6	PCB-011			
L63466-7	PCB-012/013			
L63858-1	PCB-015			
L63997-1	PCB-126			
L64107-1	PCB-155			
L64265-1R	PCB-156			
L63466-2DUP	PCB-157			
L63466-1	PCB-169			
L64265-1	PCB-202			
	PCB-150			
	PCB-152			
	PCB-145			
	PCB-136/148			
	PCB-154			
	PCB-151			
	PCB-135			
	PCB-144			
	PCB-147			
	PCB-139/149			
	PCB-140			
	PCB-143			
	PCB-134			
	PCB-142			
	PCB-131			
	PCB-133			
	PCB-165			
	PCB-146			
	PCB-132/161			
	PCB-153			
	PCB-168			
	PCB-141			
	PCB-137			
	PCB-130			
	PCB-163/164			
	PCB-138			
	PCB-160			
	PCB-158			
	PCB-129			
	PCB-166			
	PCB-159			
	PCB-128			
	PCB-162			
	PCB-167			
	PCB-201			
	PCB-204			
	PCB-197			
	PCB-200			
	PCB-198			
	PCB-199			
	PCB-196			
	PCB-203			
	PCB-195			
	PCB-194			

Sample	Compound	Flag	A or P	Reason
(continued) L63181-1 L63466-1R L63466-2 L63466-3 L63466-4 L63466-5 L63466-6 L63466-7 L63858-1 L63997-1 L64107-1 L64265-1R L63466-2DUP L63466-1 L64265-1	Dichlorobiphenyls Pentachlorobiphenyls Hexachlorobiphenyls Octachlorobiphenyls	J (all detects) UJ (all non-detects)	P	Initial calibration (%RSD)
L63466-1R L64265-1R	All TCL compounds	J (all detects) UJ (all non-detects)	P	Ongoing precision and recovery (no OPR)
L63181-1 L63466-2 L63466-3 L63466-4 L63466-5 L63466-6 L63466-7 L63858-1 L63997-1 L64107-1 L63466-2DUP L64265-1	PCB-005/008 Dichlorobiphenyls	J (all detects) J (all detects)	P	Ongoing precision and recovery (%R)
L63181-1	PCB-104 PCB-096 PCB-103 PCB-100 PCB-094 PCB-093/098/102 PCB-095 PCB-088 PCB-091/121 PCB-084 PCB-092 PCB-089 PCB-090 PCB-101 PCB-113 PCB-099 PCB-112/119 PCB-083/109 PCB-086/097/117 PCB-116/125 PCB-087/115 PCB-111 PCB-085 PCB-120 PCB-110 PCB-082 PCB-124 PCB-107/108 PCB-106 PCB-122 Pentachlorobiphenyls	J (all detects) UJ (all non-detects)	P	Internal standards (%R)

Sample	Compound	Flag	A or P	Reason
L63466-1R	PCB-1 PCB-2 PCB-3 Monochlorobiphenyls	UJ (all non-detects) UJ (all non-detects) UJ (all non-detects) UJ (all non-detects)	P	Internal standards (%R)
L63466-2 L63466-6	PCB-184 PCB-179 PCB-176 PCB-186 PCB-178 PCB-175 PCB-182/187 PCB-183 PCB-185 PCB-174 PCB-181 PCB-177 PCB-171 PCB-173 PCB-172 PCB-192 PCB-180 PCB-193 PCB-191 PCB-170 PCB-190 PCB-189 Heptachlorobiphenyls	J (all detects) UJ (all non-detects)	P	Internal standards (%R)
L63466-3	PCB-1 PCB-2 PCB-3 Monochlorobiphenyls	R (all non-detects) R (all non-detects) R (all non-detects) R (all non-detects)	P	Internal standards (%R)
L63181-1 L63466-1R L63466-2 L63466-3 L63466-4 L63466-5 L63466-6 L63466-7 L63858-1 L63997-1 L64107-1 L64265-1R L63466-2DUP L63466-1 L64265-1	All compounds flagged "N" or "NJ" by the laboratory as EMPC.	U	A	Compound quantitation (EMPC)
L63466-1	PCB-001 to -081 PCB-126 Monochlorobiphenyls Dichlorobiphenyls Trichlorobiphenyls Tetrachlorobiphenyls	R R R R R R	A	Overall assessment of data

Sample	Compound	Flag	A or P	Reason
L63466-1R	All TCL compounds except PCB-001 to -081 PCB-126 Monochlorobiphenyls Dichlorobiphenyls Trichlorobiphenyls Tetrachlorobiphenyls	R	A	Overall assessment of data
L64265-1	PCB-1 PCB-2 PCB-3 Monochlorobiphenyls	R R R R	A	Overall assessment of data
L64265-1R	All TCL compounds except PCB-1 PCB-2 PCB-3 Monochlorobiphenyls	R	A	Overall assessment of data

Lower Duwamish Waterway, Green River Study, Suspended Solids Polychlorinated Biphenyls as Congeners - Laboratory Blank Data Qualification Summary - SDG PR154205

Sample	Compound	Modified Final Concentration	A or P
L63181-1	PCB-011 PCB-084 PCB-092 PCB-085 PCB-151 Dichlorobiphenyls	0.123U ug/Kg 0.0228U ug/Kg 0.0151U ug/Kg 0.0143U ug/Kg 0.047U ug/Kg 0.25J ug/Kg	A
L63466-2	PCB-011 Dichlorobiphenyls	0.129U ug/Kg 0.267J ug/Kg	A

Sample	Compound	Modified Final Concentration	A or P
L63466-3	PCB-011	0.0438U ug/Kg	A
	PCB-018	0.005U ug/Kg	
	PCB-016	0.0011U ug/Kg	
	PCB-031	0.0113U ug/Kg	
	PCB-028	0.0147U ug/Kg	
	PCB-020/033	0.0064U ug/Kg	
	PCB-022	0.005U ug/Kg	
	PCB-037	0.0042U ug/Kg	
	PCB-043/049	0.0135U ug/Kg	
	PCB-047/048	0.0071U ug/Kg	
	PCB-044	0.0233U ug/Kg	
	PCB-064/072	0.0087U ug/Kg	
	PCB-074	0.0084U ug/Kg	
	PCB-070	0.0446U ug/Kg	
	PCB-066	0.0131U ug/Kg	
	PCB-056	0.0062U ug/Kg	
	PCB-095	0.046U ug/Kg	
	PCB-084	0.0174U ug/Kg	
	PCB-092	0.0116U ug/Kg	
	PCB-101	0.0649U ug/Kg	
	PCB-099	0.0285U ug/Kg	
	PCB-086/097/117	0.0275U ug/Kg	
	PCB-087/115	0.0351U ug/Kg	
	PCB-110	0.0821U ug/Kg	
	PCB-136/148	0.0101U ug/Kg	
	PCB-151	0.0129U ug/Kg	
	PCB-139/149	0.0577U ug/Kg	
	PCB-132/161	0.0328U ug/Kg	
	PCB-153	0.113U ug/Kg	
	PCB-141	0.0167U ug/Kg	
	Dichlorobiphenyls	0.0609J ug/Kg	
	Trichlorobiphenyls	0.0495J ug/Kg	
	Tetrachlorobiphenyls	0.177J ug/Kg	
	Pentachlorobiphenyls	0.458J ug/Kg	
L63466-4	PCB-011	0.0904U ug/Kg	A
	PCB-016	0.0062U ug/Kg	
	PCB-035	0.0036U ug/Kg	
	Dichlorobiphenyls	0.205J ug/Kg	
L63466-5	PCB-011	0.0769U ug/Kg	A
	PCB-031	0.0292U ug/Kg	
	PCB-020/033	0.0176U ug/Kg	
	PCB-022	0.0159U ug/Kg	
	Dichlorobiphenyls	0.132J ug/Kg	
	Trichlorobiphenyls	0.14J ug/Kg	
L63466-6	PCB-011	0.4U ug/Kg	A
L63466-7	PCB-011	0.345U ug/Kg	A
L63858-1	PCB-011	0.214U ug/Kg	A
	Dichlorobiphenyls	0.349J ug/Kg	
L63466-2DUP	PCB-011	0.117U ug/Kg	A
	Dichlorobiphenyls	0.254J ug/Kg	

Sample	Compound	Modified Final Concentration	A or P
L63466-1	PCB-095	0.0166U ug/Kg	A
	PCB-101	0.0215U ug/Kg	
	PCB-087/115	0.0096U ug/Kg	
	PCB-110	0.0292U ug/Kg	
	PCB-118	0.0277U ug/Kg	
	PCB-105/127	0.0153U ug/Kg	
	Pentachlorobiphenyls	0.12J ug/Kg	
L64265-1	PCB-011	0.0632U ug/Kg	A
	PCB-016	0.0045U ug/Kg	
	PCB-031	0.021U ug/Kg	
	PCB-028	0.031U ug/Kg	
	PCB-020/033	0.0127U ug/Kg	
	PCB-022	0.0129U ug/Kg	
	PCB-037	0.0134U ug/Kg	
	PCB-052/069	0.0358U ug/Kg	
	PCB-047/048	0.0128U ug/Kg	
	PCB-044	0.0272U ug/Kg	
	PCB-064/072	0.0122U ug/Kg	
	PCB-040/057	0.0027U ug/Kg	
	PCB-074	0.0125U ug/Kg	
	PCB-070	0.0479U ug/Kg	
	PCB-066	0.0287U ug/Kg	
	PCB-056	0.0108U ug/Kg	
	PCB-084	0.0232U ug/Kg	
	PCB-092	0.0167U ug/Kg	
	PCB-101	0.0858U ug/Kg	
	PCB-099	0.0456U ug/Kg	
	PCB-086/097/117	0.0311U ug/Kg	
	PCB-087/115	0.0439U ug/Kg	
	PCB-118	0.0776U ug/Kg	
	Dichlorobiphenyls	0.121J ug/Kg	
	Trichlorobiphenyls	0.137J ug/Kg	
	Tetrachlorobiphenyls	0.238J ug/Kg	

LDC #: 35802A31 | VALIDATION COMPLETENESS WORKSHEET | Date: 2-8-16

SDG #: PR154205 | Level III | Page: 1 of 2

Laboratory: Pacific Rim Laboratories Inc. | Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: HRGC/HRMS Polychlorinated Biphenyl Congeners (EPA Method 1668C)

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

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / A	
II.	HRGC/HRMS Instrument performance check	A	(HT8 column)
III.	Initial calibration/ICV	SW / N	≤20
IV.	Continuing calibration	~~A SW R~~	QC Limits
V.	Laboratory Blanks	SW	
VI.	Field blanks	N	
VII.	Matrix spike/Matrix spike duplicates	N	
VIII.	Laboratory control samples	SW	OPR
IX.	Field duplicates	N	
X.	Internal standards	SW	
XI.	Compound quantitation RL/LOQ/LODs	SW	
XII.	Target compound identification	N	
XIII.	System performance	N	
XIV.	Overall assessment of data	SW	

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

	Client ID	Lab ID	Matrix	Date
1 D	L63181-1	PR1504204	Sediment	06/22/15
2 I	L63466-1 R	PR1504205 R	Sediment	09/15/15
3 D	L63466-2	PR1504206	Sediment	09/15/15
4 D	L63466-3	PR1504207	Sediment	09/15/15
5 D	L63466-4	PR1504208	Sediment	09/15/15
6 D	L63466-5	PR1504209	Sediment	08/15/15
7 D	L63466-6	PR1504210	Sediment	09/15/15
8 D	L63466-7	PR1504211	Sediment	09/15/15
9 D	L63858-1	PR1504212	Sediment	09/24/15
10 D	L63997-1	PR1504213	Sediment	10/10/15
11 D	L64107-1	PR1504214	Sediment	10/26/15
12 I	L64265-1 R	PR1504215 R	Sediment	11/14/15

LDC #: 35802A31 | VALIDATION COMPLETENESS WORKSHEET | Date: 2-2-16

SDG #: PR154205 | Level III | Page: 2 of 2

Laboratory: Pacific Rim Laboratories Inc. | Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: HRGC/HRMS Polychlorinated Biphenyl Congeners (EPA Method 1668C)

	Client ID	Lab ID	Matrix	Date
13	L63466-2DUP	PR1504206DUP	Sediment	09/15/15
14	L63466-1	PR1504205	"	"
15	L64265-1	PR1504215	"	"
16				
17				

Notes:

2	PRL008						
1	PRL009						

LDC #: 35802A31

VALIDATION FINDINGS WORKSHEET
Initial Calibration

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: HRGC/HRMS PCB Congeners (EPA Method 1668C)

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

(Y) N N/A Was the initial calibration performed at 5 concentration levels?
Y (N) N/A Were all percent relative standard deviations (%RSD) ≤ 20%?
(Y) N N/A Did all calibration standards meet the Ion Abundance Ratio criteria?
Y N (N/A) Was the signal to noise ratio for each target compound ≥ 2.5 and for each recovery and internal standard ≥ 10?

#	Date	Standard ID	Compound	Finding %RSD (Limit: <20.0%)	Finding Ion Abundace Ratio	Associated Samples	Qualifications
	07/14/15	fs071415	13C PCB-15	20.79		all	J/uJ/P (see attached) (det/ND)
			126	22.39			
			155	20.52			
			167	22.43			
			156	26.21			
			157	24.7			
			169	26.21			
			202	20.55			
							+ Dichloro biphenyls
							Penta
							Hexa
							Octa

LDC #: 35802A31

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: am
2nd Reviewer: [illegible]

METHOD: HRGC/HRMS PCB Congeners (EPA Method 1668C)

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

(Y) N N/A Were all samples associated with a method blank?
(Y) N N/A Was a method blank performed for each matrix and whenever a sample extraction was performed?
(Y) N N/A Was the method blank contaminated?

Blank extraction date: 12/07/15 **Blank analysis date:** 12/17-18/15 **Associated samples:** 1, 3-11, 13-15

Conc. units: µg/Kg

Qual U

Compound	Blank ID		Sample Identification									15
	PRL008	5x	1	3	4	5	6	7	8	9	13	
PCB-011	0.0803	0.4015	0.123 /U	0.129 /U	0.0438 /U	0.0904 /U	0.0769 /U	0.4 /U	0.345 /U	0.214 /U	0.117 /U	0.0632
PCB-018	0.0036	0.0180			0.005 /U							~~0.0195~~
PCB-027	0.0002	0.0010										~~0.003~~
PCB-016	0.0013	0.0065			0.0011 /U	0.0062 /U						0.0045
PCB-026	0.0007	0.0035										
PCB-031	0.0068	0.0340			0.0113 /U		0.0292 /U					0.021
PCB-028	0.0084	0.0420			0.0147 /U							0.031
PCB-020/033	0.0048	0.0240			0.0064 /U		0.0176 /U					0.0127
PCB-022	0.0037	0.0185			0.005 /U		0.0159 /U					0.0129
PCB-035	0.0008	0.0040				0.0036 /U						
PCB-037	0.0051	0.0255			0.0042 /U							0.0134
PCB-053	0.0008	0.0040										
PCB-052/069	0.0083	0.0415										0.0358
PCB-043/049	0.0042	0.0210			0.0135 /U							
PCB-047/048	0.0042	0.0210			0.0071 /U							0.0128
PCB-044	0.0076	0.0380			0.0233 /U							0.0272
PCB-064/072	0.004	0.0200			0.0087 /U							0.0122
PCB-040/057	0.0009	0.0045										0.00029
PCB-074	0.0045	0.0225			0.0084 /U							0.0125
PCB-070	0.0149	0.0745			0.0446 /U							0.0419

LDC #: 35802A31

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: 9m
2nd Reviewer: AC

METHOD: HRGC/HRMS PCB Congeners (EPA Method 1668C)

Qual Q

Compound	Blank ID		Sample Identification							14	15
	PRL008	5x	1	3	4	5	6	7	8	~~9~~	~~12~~
PCB-066	0.0073	0.0365			0.0131 /U						0.0287
PCB-056	0.0048	0.0240			0.0062 /U						0.0108
PCB-095	0.0134	0.0670			0.046 /U					0.0166/U	
PCB-084	0.005	0.0250	0.0228 /U		0.0174 /U						0.0232
PCB-092	0.0034	0.0170	0.0151 /U		0.0116 /U						0.0167
PCB-101	0.0186	0.0930			0.0649 /U					0.0215/U	0.0858
PCB-099	0.0066	0.0330			0.0285 /U						0.0156
PCB-086/097/117	0.0075	0.0375			0.0275 /U						0.0311
PCB-087/115	0.0107	0.0535			0.0351 /U					0.0096/U	0.0139
PCB-085	0.0034	0.0170	0.0143 /U								
PCB-110	0.0244	0.1220			0.0821 /U					0.0292/U	
PCB-118	0.0156	0.0780								0.0297/U	0.0776
PCB-105/127	0.0056	0.0280								0.0153/U	
PCB-136/148	0.0044	0.0220			0.0101 /U						
PCB-151	0.0099	0.0495	0.047 /U		0.0129 /U						
PCB-139/149	0.0211	0.1055			0.0577 /U						
PCB-132/161	0.0066	0.0330			0.0328 /U						
PCB-153	0.0241	0.1205			0.113 /U						
PCB-141	0.0048	0.0240			0.0167 /U						
PCB-163/164	0.0051	0.0255									
PCB-138	0.0119	0.0595									
PCB-158	0.0016	0.0080									
PCB-179	0.0029	0.0145									
PCB-178	0.0008	0.0040									

LDC #: 35802A31

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: AR
2nd Reviewer: R

METHOD: HRGC/HRMS PCB Congeners (EPA Method 1668C)

Compound	Blank ID		Sample Identification								
	PRL008	5x	1	3	4	5	6	7	8	9	13
PCB-177	0.0013	0.0065									
PCB-180	0.003	0.0150									
Dichlorobiphenyls	0.0803	0.4015	0.25 /J	0.267 /J	0.0609 /J	0.205 /J	0.132 /J			0.349 /J	0.254 /J
Trichlorobiphenyls	0.0354	0.1770			0.0495 /J		0.14 /J				
Tetrachlorobiphenyls	0.0615	0.3075			0.177 /J						
Pentachlorobiphenyls	0.114	0.5700			0.458 /J						
Hexachlorobiphenyls	0.0895	0.4475									
Heptachlorobiphenyls	0.008	0.0400									

14 15

0.12 J
0.137 J
0.238 J
0.12 J

*EMPC results flagged "N" by laboratory considered nondetect (ND)

LDC #: 35802A31

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: HRGC/HRMS PCB Congeners (EPA Method 1668C)

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

(Y) N N/A Were all samples associated with a method blank?
(Y) N N/A Was a method blank performed for each matrix and whenever a sample extraction was performed?
(Y) N N/A Was the method blank contaminated?

Blank extraction date: 01/05/16 **Blank analysis date:** 01/08/16 **Associated samples:** 2, 12 (>5x)

Conc. units: µg/Kg

Compound	Blank ID		Sample Identification								
	PRL009	5x									
PCB-011	0.0134	0.0670									
PCB-018	0.0007	0.0035									
PCB-031	0.0023	0.0115									
PCB-028	0.0016	0.0080									
PCB-022	0.0004	0.0020									
PCB-110	0.002	0.0100									
Dichlorobiphenyls	0.0134	0.0670									
Trichlorobiphenyls	0.005	0.0250									
Pentachlorobiphenyls	0.002	0.0100									

*EMPC results flagged "N" by laboratory considered nondetect (ND)

LDC #: 35802A31

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

Reviewer: 9v
2nd Reviewer: [illegible]

METHOD: HRGC/HRMS PCB Congeners (EPA Method 1668C)

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

Y N N/A Was a LCS required?
Y N N/A Was a LCS analyzed every 20 samples for each matrix or whenever a sample extraction was performed?
Y N N/A Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?

#	Date	Lab ID/Reference	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		PCT512055	PCB-005/008	141.7 (60-135)	( )	( )	1,3-11,13,PRL0008 15	J detects/P (all=det) (+Dichlorobiphenyls)
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
			NO associated	OPR ( )	( )	( )	2,12,PRL0009	J/UJ/P (all compounds) (det/ND)
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

LDC #: 35802A31

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported CRQLs

Reviewer: 9m
2nd Reviewer: 4

METHOD: HRGC/HRMS PCB Congeners (EPA Method 1668C)

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

Y N (N/A) Were the correct internal standard (IS), quantitation ions and relative response factors (RRF) used to quantitate the compound?
Y N (N/A) Compound quantitation and CRQLs were adjusted to reflect all sample dilutions and dry weight factors (if necessary).

#	Date	Compound	Finding	Associated Samples	Qualifications
			EMPC results flagged "N" or "NJ"	All	U/A
		all Mono-, Di-, Tri-, Tetrachlorobiphenlys, PCB-126	13C PCB-1, -3, -4, -15, -19, -37, -81, -77 and -126 are poorly recovered due to inteferences; therefore, results are not reported.	14	text
		PCB-1, PCB-2 and Monochlorobipenyls ~~PCB-7~~	13C PCB-1 is poorly recovered due to inteferences; therefore, results are not reported.	15	text

Comments: ~~See sample calculation verification worksheet for recalculations~~

LDC #: 35802A31

VALIDATION FINDINGS WORKSHEET
Overall Assessment of Data

Reviewer:
2nd Reviewer: A

METHOD: HRGC/HRMS PCB Congeners (EPA Method 1668C)

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

All available information pertaining to the data were reviewed using professional judgement to compliment the determination of the overall quality of the data.

(X) N N/A Was the overall quality and usability of the data acceptable?

#	Date	Compound	Finding	Associated Samples	Qualifications
		all Mono-, Di-, Tri-, Tetrachlorobiphenlys, PCB-126	poor Internal Standard recoveries	14	R/A
		PCB-1, -2, -3, Monochlorobiphenyls	poor Internal Standard recoveries	15	
		all except all Mono-, Di-, Tri-, Tetrachlorobiphenlys, PCB-126	reported from re-analysis	2	
		all except PCB-1, -2, -3, Monochlorobiphenyls	reported from re-analysis	12	

Comments: _____

LDC #: 35802A31

VALIDATION FINDINGS WORKSHEET
Internal Standards

Reviewer: 9n
2nd Reviewer: n

METHOD: HRGC/HRMS PCB Congeners (EPA Method 1668C)

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

Y (N) N/A Are all internal standard recoveries were within the % criteria?

(Y) N N/A Was the Ion Abundance Ratio within criteria?

Y N (N/A) Was the S/N ratio all internal standard peaks ≥ 10?

#	Date	Lab ID/Reference	Internal Standard	% Recovery (Limit: %)	Qualifications
		1	13C PCB-104	149 (10-145)	J/UJ/P (see attached +Pentachlorobiphenyls) (det/ND)
				( )	
		2	13C PCB-1	<1 of Y (5-145)	J/UJ/P (PCB-1, -2, -3 +Monochlorobiphenyls) (ND)
		↓	13C PCB-3	1 (↓)	↓
				( )	
		3	13C PCB-189	146 (10-145)	J/UJ/P (see attached +Heptachlorobiphenyls) (det/ND)
				( )	
		4	13C PCB-1	0 (5-145)	J/R/P (PCB-1, -2, -3 +Monochlorobiphenyls) (ND)
		↓	13C PCB-3	3 (↓)	↓
				( )	
		7	13C PCB-189	148 (10-145)	J/UJ/P (see attached +Heptachlorobiphenyls) (det/ND)
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	

Sample #2: PCB% taken from Raw Data/form 1 reporting <1%

DATA REPORT

Client:	King County	Date Collected:	6/22/2015
Client ID:	L63181-1	Date Extracted:	12/7/2015
Project ID:	423589-355-4	Date Analysed:	12/17/2015
PRL ID:	PR154204	HRMS File:	FS12171505
Total Solids:	41.57%	Work Group No.:	PRL008

IUPAC Name	PCB #	CAS #	Conc. ug/Kg (dry wt)	SDL ug/Kg (dry wt)	Flag	EQL ug/Kg (dry wt)
2,3',4',6-TeCB	PCB-071	41464-46-4	0.0369	0.0009		0.0038
2,2',3,4-TeCB	PCB-041	52663-59-9	0.0122	0.0013		0.0038
2,3',4,5'-TeCB	PCB-068	73575-52-7	0	0.0009	U J	0.0038
	PCB-040/057		0.0156	0.0011	B1	0.0038
2,3',4,5-TeCB	PCB-067	73575-53-8	0	0.0009	U J	0.0038
2,3,4',5-TeCB	PCB-063	74472-34-7	0	0.001	U J	0.0038
2,3,3',5'-TeCB	PCB-058	41464-49-7	0	0.0007	U J	0.0038
2,3,4,5-TeCB	PCB-061	33284-53-6	0	0.0012	U J	0.0038
2,4,4',5-TeCB	PCB-074	32690-93-0	0.0695	0.0009	B1	0.0038
2,3',4',5-TeCB	PCB-070	32598-11-1	0.258	0.001	B1	0.0038
2,3,3',4-TeCB	PCB-055	74338-24-2	0.238	0.001		0.0038
3,3',5,5'-TeCB	PCB-080	33284-52-5	0	0.001	U J	0.0038
2,3',4,4'-TeCB	PCB-066	32598-10-0	0.147	0.0008	B1	0.0038
2,3',4',5'-TeCB	PCB-076	70362-48-0	0	0.0009	U J	0.0038
2,3,4,4'-TeCB	PCB-060	33025-41-1	0.0127	0.0011	N	0.0038
2,3,3',4'-TeCB	PCB-056	41464-43-1	0.0316	0.0008	B1	0.0038
3,3',4,5'-TeCB	PCB-079	41464-48-6	0	0.0008	U J	0.0038
3,3',4,5-TeCB	PCB-078	70362-49-1	0	0.0008	U J	0.0038
3,4,4',5-TeCB	PCB-081	70362-50-4	0	0.0016	U J	0.0038
3,3',4,4'-TeCB	PCB-077	32598-13-3	0.0251	0.0014		0.0038
2,2',4,6,6'-PeCB	PCB-104	56558-16-8	0	0.0012	U J	0.0038
2,2',3,6,6'-PeCB	PCB-096	73575-54-9	0	0.002	U J	0.0038
2,2',4,5',6-PeCB	PCB-103	60145-21-3	0	0.0023	U J	0.0038
2,2',4,4',6-PeCB	PCB-100	39485-83-1	0	0.0026	U J	0.0038
2,2',3,5,6'-PeCB	PCB-094	73575-55-0	0	0.003	U J	0.0038
	PCB-093/098/102		0	0.003	U J	0.0038
2,2',3,5',6-PeCB	PCB-095	38379-99-6	0.178	0.0024	B1	0.0038
2,2',3,4,6-PeCB	PCB-088	55215-17-3	0	0.0027	U J	0.0038
	PCB-091/121		0.0275	0.0023		0.0038
2,2',3,3',6-PeCB	PCB-084	52663-60-2	0.0228	0.0029	B	0.0038
2,2',3,5,5'-PeCB	PCB-092	52663-61-3	0.0151	0.0027	B1	0.0038
2,2',3,4,6'-PeCB	PCB-089	73575-57-2	0	0.0031	U J	0.0038
2,2',3,4',5-PeCB	PCB-090	68194-07-0	0	0.0027	U J	0.0038
2,2',4,5,5'-PeCB	PCB-101	37680-73-2	0.102	0.0021	B1	0.0038
2,3,3',5',6-PeCB	PCB-113	68194-10-5	0	0.002	U J	0.0038
2,2',4,4',5-PeCB	PCB-099	38380-01-7	0.0551	0.0024	B1	0.0038
	PCB-112/119		0	0.0019	U J	0.0038
	PCB-083/109		0	0.0026	U J	0.0038
	PCB-086/097/117		0.0516	0.0028	B1	0.0038
	PCB-116/125		0	0.002	U J	0.0038
	PCB-087/115		0.064	0.0025	B1	0.0038
2,3,3',5,5'-PeCB	PCB-111	39635-32-0	0	0.0021	U J	0.0038
2,2',3,4,4'-PeCB	PCB-085	65510-45-4	0.0143	0.0029	B	0.0038
2,3',4,5,5'-PeCB	PCB-120	68194-12-7	0	0.002	U J	0.0038
2,3,3',4',6-PeCB	PCB-110	38380-03-9	0.198	0.0021	B1	0.0038
2,2',3,3',4-PeCB	PCB-082	52663-62-4	0	0.0033	U J	0.0038
2,3',4',5,5'-PeCB	PCB-124	70424-70-3	0.0159	0.0007		0.0038
	PCB-107/108		0.0259	0.0009		0.0038
2,3',4,4',5'-PeCB	~~PCB-123~~	65510-44-3	0	0.0008	U J	0.0038
2,3,3',4,5-PeCB	PCB-106	70424-69-0	0	0.0008	U J	0.0038
2,3',4,4',5-PeCB	~~PCB-118~~	31508-00-6	0.265	0.0009	B1	0.0038
2,3,4,4',5-PeCB	~~PCB-114~~	74472-37-0	0	0.0009	U J	0.0038

PCB-122

#1

Pacific Rim Laboratories Inc. #103 - 19575-55A Avenue, Surrey, BC V3S 8P8 CANADA
Tel: 604.532.8711 Fax: 604.532.8712 Email: info@pacificrimlabs.com
www.pacificrimlabs.com

35802A31 - attachment IS

DATA REPORT

Client:	King County	Date Collected:	9/15/2015
Client ID:	L63466-2	Date Extracted:	12/7/2015
Project ID:	423589-355-4	Date Analysed:	12/17/2015
PRL ID:	PR154206	HRMS File:	FS12171507
Total Solids:	47.83%	Work Group No.:	PRL008

IUPAC Name	PCB #	CAS #	Conc. ug/Kg (dry wt)	SDL ug/Kg (dry wt)	Flag	EQL ug/Kg (dry wt)
2,3,3',4',5'-PeCB	PCB-122	76842-07-4	0.0042	0.0008		0.0033
	PCB-105/127		0.187	0.0007	B1	0.0033
3,3',4,4',5-PeCB	PCB-126	57465-28-8	0.0092	0.0007		0.0033
2,2',4,4',6,6'-HxCB	PCB-155	33979-03-2	0	0.0036	U	0.0033
2,2',3,4',6,6'-HxCB	PCB-150	68194-08-1	0	0.0024	U J	0.0033
2,2',3,5,6,6'-HxCB	PCB-152	68194-09-2	0	0.0022	U J	0.0033
2,2',3,4,6,6'-HxCB	PCB-145	74472-40-5	0	0.0025	U J	0.0033
	PCB-136/148		0.0628	0.0026	B1	0.0033
2,2',4,4',5,6'-HxCB	PCB-154	60145-22-4	0.0053	0.0026		0.0033
2,2',3,5,5',6-HxCB	PCB-151	52663-63-5	0.135	0.0035	B1	0.0033
2,2',3,3',5,6'-HxCB	PCB-135	52744-13-5	0.0737	0.0036		0.0033
2,2',3,4,5',6-HxCB	PCB-144	68194-14-9	0	0.0036	U	0.0033
2,2',3,4',5,6-HxCB	PCB-147	68194-13-8	0	0.0025	U J	0.0033
	PCB-139/149		0.447	0.0032	B1	0.0033
2,2',3,4,4',6'-HxCB	PCB-140	59291-64-4	0	0.0008	U J	0.0033
2,2',3,4,5,6'-HxCB	PCB-143	68194-15-0	0	0.001	U J	0.0033
2,2',3,3',5,6-HxCB	PCB-134	52704-70-8	0.0481	0.0013		0.0033
2,2',3,4,5,6-HxCB	PCB-142	41411-61-4	0	0.0012	U J	0.0033
2,2',3,3',4,6-HxCB	PCB-131	61798-70-7	0.0142	0.0013		0.0033
2,2',3,3',5,5'-HxCB	PCB-133	35694-04-3	0.0123	0.0008		0.0033
2,3,3',5,5',6-HxCB	PCB-165	74472-46-1	0	0.0009	U J	0.0033
2,2',3,4',5,5'-HxCB	PCB-146	51908-16-8	0.114	0.0009		0.0033
	PCB-132/161		0.219	0.0009	B1	0.0033
2,2',4,4',5,5'-HxCB	PCB-153	35065-27-1	0.989	0.001	B1	0.0033
2,3',4,4',5',6-HxCB	PCB-168	59291-65-5	0	0.0007	U J	0.0033
2,2',3,4,5,5'-HxCB	PCB-141	52712-04-6	0.176	0.001	B1	0.0033
2,2',3,4,4',5-HxCB	PCB-137	35694-06-5	0.0554	0.0011		0.0033
2,2',3,3',4,5'-HxCB	PCB-130	52663-66-8	0.0579	0.0011		0.0033
	PCB-163/164		0.321	0.0008	B1	0.0033
2,2',3,4,4',5'-HxCB	PCB-138	35065-28-2	0.745	0.0009	B1	0.0033
2,3,3',4,5,6-HxCB	PCB-160	41411-62-5	0	0.0012	U J	0.0033
2,3,3',4,4',6-HxCB	PCB-158	74472-42-7	0.0949	0.0008	B1	0.0033
2,2',3,3',4,5-HxCB	PCB-129	55215-18-4	0.0602	0.0013		0.0033
2,3,4,4',5,6-HxCB	PCB-166	41411-63-6	0	0.0008	U J	0.0033
2,3,3',4,5,5'-HxCB	PCB-159	39635-35-3	0	0.0007	U J	0.0033
2,2',3,3',4,4'-HxCB	PCB-128	38380-07-3	0.221	0.0012		0.0033
2,3,3',4',5,5'-HxCB	PCB-162	39635-34-2	0	0.0006	U J	0.0033
2,3',4,4',5,5'-HxCB	PCB-167	52663-72-6	0.0333	0.0008		0.0033
2,3,3',4,4',5-HxCB	PCB-156	38380-08-4	0.0745	0.0007		0.0033
2,3,3',4,4',5'-HxCB	PCB-157	69782-90-7	0.0203	0.0007		0.0033
3,3',4,4',5,5'-HxCB	PCB-169	32774-16-6	0	0.0008	U J	0.0033
~~2,2',3,4',5,6,6'-HpCB~~	~~PCB-188~~	74487-85-7	0	0.0009	U J	0.0033
2,2',3,4,4',6,6'-HpCB	PCB-184	74472-48-3	0	0.0008	U J	0.0033
2,2',3,3',5,6,6'-HpCB	PCB-179	52663-64-6	0.0933	0.0008	B1	0.0033
2,2',3,3',4,6,6'-HpCB	PCB-176	52663-65-7	0.0271	0.0008		0.0033
2,2',3,4,5,6,6'-HpCB	PCB-186	74472-49-4	0	0.0008	U J	0.0033
2,2',3,3',5,5',6-HpCB	PCB-178	52663-67-9	0.0567	0.0011	B1	0.0033
2,2',3,3',4,5',6-HpCB	PCB-175	40186-70-7	0.0133	0.0011		0.0033
	PCB-182/187		0.369	0.001		0.0033
2,2',3,4,4',5',6-HpCB	PCB-183	52663-69-1	0.0445	0.001		0.0033
2,2',3,4,5,5',6-HpCB	PCB-185	52712-05-7	0.03	0.0011		0.0033
2,2',3,3',4,5,6'-HpCB	PCB-174	38411-25-5	0.222	0.0011		0.0033

#37

35802A31 attachment IS

DATA REPORT

Client:	King County	Date Collected:	9/15/2015
Client ID:	L63466-2	Date Extracted:	12/7/2015
Project ID:	423589-355-4	Date Analysed:	12/17/2015
PRL ID:	PR154206	HRMS File:	FS12171507
Total Solids:	47.83%	Work Group No.:	PRL008

#3,7

IUPAC Name	PCB #	CAS #	Conc. ug/Kg (dry wt)	SDL ug/Kg (dry wt)	Flag	EQL ug/Kg (dry wt)
2,2',3,4,4',5,6-HpCB	PCB-181	74472-47-2	0	0.0011	U J	0.0033
2,2',3,3',4,5',6'-HpCB	PCB-177	52663-70-4	0.0726	0.001	B1	0.0033
2,2',3,3',4,4',6-HpCB	PCB-171	52663-71-5	0.0488	0.001		0.0033
2,2',3,3',4,5,6-HpCB	PCB-173	68194-16-1	0.0032	0.0012	N J	0.0033
2,2',3,3',4,5,5'-HpCB	PCB-172	52663-74-8	0.0301	0.001		0.0033
2,3,3',4,5,5',6-HpCB	PCB-192	74472-51-8	0	0.0009	U J	0.0033
2,2',3,4,4',5,5'-HpCB	PCB-180	35065-29-3	0.519	0.0012	B1	0.0033
2,3,3',4',5,5',6-HpCB	PCB-193	69782-91-8	0	0.0006	U J	0.0033
2,3,3',4,4',5',6-HpCB	PCB-191	74472-50-7	0.005	0.0008		0.0033
2,2',3,3',4,4',5-HpCB	PCB-170	35065-30-6	0.139	0.001		0.0033
2,3,3',4,4',5,6-HpCB	PCB-190	41411-64-7	0.0351	0.0007		0.0033
2,3,3',4,4',5,5'-HpCB	PCB-189	39635-31-9	0.0091	0.0005		0.0033
2,2',3,3',5,5',6,6'-OcCB	PCB-202	2136-99-4	0.166	0.001		0.0033
2,2',3,3',4,5',6,6'-OcCB	PCB-201	40186-71-8	0.0369	0.0008		0.0033
2,2',3,4,4',5,6,6'-OcCB	PCB-204	74472-52-9	0	0.0007	U J	0.0033
2,2',3,3',4,4',6,6'-OcCB	PCB-197	33091-17-7	0.0052	0.0008		0.0033
2,2',3,3',4,5,6,6'-OcCB	PCB-200	52663-73-7	0.0416	0.0008		0.0033
2,2',3,3',4,5,5',6-OcCB	PCB-198	68194-17-2	0	0.0011	U J	0.0033
2,2',3,3',4,5,5',6'-OcCB	PCB-199	52663-75-9	0.0752	0.0009		0.0033
2,2',3,3',4,4',5,6'-OcCB	PCB-196	42740-50-1	0	0.001	U J	0.0033
2,2',3,4,4',5,5',6-OcCB	PCB-203	52663-76-0	0.289	0.0009		0.0033
2,2',3,3',4,4',5,6-OcCB	PCB-195	52663-78-2	0.0427	0.0007		0.0033
2,2',3,3',4,4',5,5'-OcCB	PCB-194	35694-08-7	0.115	0.0006		0.0033
2,3,3',4,4',5,5',6-OcCB	PCB-205	74472-53-0	0.0099	0.0005		0.0033
2,2',3,3',4,5,5',6,6'-NoCB	PCB-208	52663-77-1	0.35	0.0027		0.0033
2,2',3,3',4,4',5,6,6'-NoCB	PCB-207	52663-79-3	0.067	0.0024		0.0033
2,2',3,3',4,4',5,5',6-NoCB	PCB-206	40186-72-9	0.707	0.0034		0.0033
2,2',3,3',4,4',5,5',6,6'-DeCB	PCB-209	2051-24-3	0.101	0.0008		0.0033

Homologs	# of Congeners				
Monochlorobiphenyls	3	0.0092	0.0004		0.0033
Dichlorobiphenyls	12	0.267	0.0006	B	0.0033
Trichlorobiphenyls	24	0.527	0.0003		0.0033
Tetrachlorobiphenyls	42	1.19	0.0007		0.0033
Pentachlorobiphenyls	46	1.93	0.0006		0.0033
Hexachlorobiphenyls	42	3.98	0.0006		0.0033
Heptachlorobiphenyls	24	1.71	0.0005		0.0033
Octachlorobiphenyls	12	0.782	0.0005		0.0033
Nonachlorobiphenyls	3	1.12	0.0024		0.0033
Decachlorobiphenyl	1	0.101	0.0008		0.0033
Total PCB		11.6	0.0003		0.0033

LDC #: 35802

EDD POPULATION COMPLETENESS WORKSHEET

Date: 2/29/16
Page: 1 of 1
2nd Reviewer:

The LDC job number listed above was entered by JE.

	EDD Process		Comments/Action
I.	EDD Completeness	-	
Ia.	- All methods present?	Y	
Ib.	- All samples present/match report?	Y	
Ic.	- All reported analytes present?	Y	
Id.	10% or 100% verification of EDD?	Y	
II.	EDD Preparation/Entry	-	
IIa.	- Carryover U/J?	—	
IIb.	- Reason Codes used? If so, note which codes	Y	LDC
IIc.	-Additional Information (QC Level, Validator, Date, Validated Y/N, etc.)	—	
III.	Reasonableness Checks	-	
IIIa.	- Do all qualified ND results have ND qualifier (i.e. UJ)?	Y	
IIIb.	- Do all qualified detect results have detect qualifier (i.e. J)?	Y	
IIIc.	- If reason codes used, do all qualified results have reason code field populated?	Y	
IIId.	-Does the detect flag require changing for blank qualifiers? If so, are all U results marked ND?	—	
IIIe.	- Do blank concentrations in report match EDD, where data was qualified due to blank?	Y	
IIIf.	- Were any results rejected for overall assessment? If so, were results changed to nonreportable?	Y	
IIIg.	- Is the readme complete? If applicable, were edits or discrepancies listed in the readme?	Y	

Notes: _____

The zip file provided contains three files:

File	Format	Description	SDG	LDC#
1) Readme_Duwamish_022916.doc	MS Word 2007	A "Readme" file (this document).		
2) EDD 423589-330-4 Green River Suspended Solids, Filtered Solids & Traps DxF.xlsx	MS Excel 2007		PR154205	35802A
3) EDD 423589-330-4 Green River Suspended Solids, Filtered Solids & Traps PCB Revised 10Feb16.xlsx				

No discrepancies were observed between the hardcopy data packages and the electronic data deliverables during EDD population of validation qualifiers. A 100% verification of the EDD was not performed.

Please contact Stella Cuenco at (760) 827-1100 if you have any questions regarding this electronic data submittal.

LABORATORY DATA CONSULTANTS, INC.
2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

King County Environmental Laboratory
322 W. Ewing Street
Seattle WA 98119
ATTN: Mr. Fritz Grothkopp

June 2, 2016

SUBJECT: Revised LDW, Green River Study, Suspended Solids, Data Validation

Dear Mr. Grothkopp,

Enclosed is the revised validation report for the fraction listed below. Please replace the previously submitted report with the enclosed revised report.

LDC Project #35802:

SDG #	Fraction
PR154205	Polychlorinated Biphenyls as Congeners

- Revision: PCB Congeners - Revised initial calibration criteria for labeled compounds to 35.0% and removed qualifiers

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

Sincerely,

Stella Cuenco
Operations Manager/Senior Chemist

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Lower Duwamish Waterway, Green River Study, Suspended Solids

LDC Report Date: June 1, 2016

Parameters: Polychlorinated Biphenyls as Congeners

Validation Level: Level III

Laboratory: Pacific Rim Laboratories, Inc.

Sample Delivery Group (SDG): PR154205

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
L63181-1	PR1504204	Sediment	06/22/15
L63466-1R	PR1504205R	Sediment	09/15/15
L63466-2	PR1504206	Sediment	09/15/15
L63466-3	PR1504207	Sediment	09/15/15
L63466-4	PR1504208	Sediment	09/15/15
L63466-5	PR1504209	Sediment	08/15/15
L63466-6	PR1504210	Sediment	09/15/15
L63466-7	PR1504211	Sediment	09/15/15
L63858-1	PR1504212	Sediment	09/24/15
L63997-1	PR1504213	Sediment	10/10/15
L64107-1	PR1504214	Sediment	10/26/15
L64265-1R	PR1504215R	Sediment	11/14/15
L63466-2DUP	PR1504206DUP	Sediment	09/15/15
L63466-1	PR1504205	Sediment	09/15/15
L64265-1	PR1504215	Sediment	09/15/15

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Green River Study, Suspended Solids Characterization Sampling and Analysis Plan (January 2013) and US Environmental Protection Agency (EPA) Region 10 SOP for the Validation of Polychlorinated Biphenyl (PCB) Data (Revision 1.0, December 8, 1995). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polychlorinated Biphenyls as Congeners by Environmental Protection Agency (EPA) Method 1668C

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results.

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.

- J1 Blank Contamination: Indicates possible high bias and/or false positives.
- J2 Calibration Range exceeded: Indicates possible low bias.
- J3 Holding times not met: Indicates low bias for most analytes.
- J4 Other QC parameters outside control limits: bias not readily determined.
- J5 Other QC parameters outside control limits. The reported results appear to be biased high. The actual value of target compound in the sample may be lower than the value reported by the laboratory.
- J6 Other QC parameters outside control limits. The reported results appear to be biased low. The actual value of target compound in the sample may be higher than the value reported by the laboratory.

R Quality control indicates the data is not usable.

NJ Presumptive evidence of presence of the compound at an estimated quantity.

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.

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 advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. HRGC/HRMS Instrument Performance Check

Instrument performance was checked at the required frequency.

Retention time windows were established for all congeners. The chromatographic resolution between the congeners PCB-23 and PCB-34 and congeners PCB-182 and PCB-187 was resolved with a valley of less than or equal to 40%.

The static resolving power was at least 10,000 (10% valley definition).

III. Initial Calibration

A five point initial calibration was performed at the required daily frequency.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for unlabeled compounds and less than or equal to 35.0% for labeled compounds.

The ion abundance ratios for all PCBs were within 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 within QC limits for all compounds.

For samples L63181-1, L63466-2, L63466-3, L63466-4, and L63466-1, the laboratory performed a beginning continuing calibration for the LOC/Toxic compounds only instead of the 209 PCB compounds. No data were qualified due to this non-conformance.

The ion abundance ratios for all PCBs were within method and validation criteria.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks with the following exceptions:

Laboratory Blank ID	Extraction Date	Compound	Concentration	Associated Samples
PRL008	12/07/15	PCB-011	0.0803 ug/Kg	L63181-1
		PCB-018	0.0036 ug/Kg	L63466-2
		PCB-027	0.0002 ug/Kg	L63466-3
		PCB-016	0.0013 ug/Kg	L63466-4
		PCB-026	0.0007 ug/Kg	L63466-5
		PCB-031	0.0068 ug/Kg	L63466-6
		PCB-028	0.0084 ug/Kg	L63466-7
		PCB-020/033	0.0048 ug/Kg	L63858-1
		PCB-022	0.0037 ug/Kg	L63997-1
		PCB-035	0.0008 ug/Kg	L64107-1
		PCB-037	0.0051 ug/Kg	L63466-2DUP
		PCB-053	0.0008 ug/Kg	L63466-1
		PCB-052/069	0.0083 ug/Kg	L64265-1
		PCB-043/049	0.0042 ug/Kg	
		PCB-047/048	0.0042 ug/Kg	
		PCB-044	0.0076 ug/Kg	
		PCB-064/072	0.004 ug/Kg	
		PCB-040/057	0.0009 ug/Kg	
		PCB-074	0.0045 ug/Kg	
		PCB-070	0.0149 ug/Kg	
		PCB-066	0.0073 ug/Kg	
		PCB-056	0.0048 ug/Kg	
		PCB-095	0.0134 ug/Kg	
		PCB-084	0.005 ug/Kg	
		PCB-092	0.0034 ug/Kg	
		PCB-101	0.0186 ug/Kg	
		PCB-099	0.0066 ug/Kg	
		PCB-086/097/117	0.0075 ug/Kg	
		PCB-087/115	0.0107 ug/Kg	
		PCB-085	0.0034 ug/Kg	
		PCB-110	0.0244 ug/Kg	
		PCB-118	0.0156 ug/Kg	
		PCB-105/127	0.0056 ug/Kg	
		PCB-136/148	0.0044 ug/Kg	
		PCB-151	0.0099 ug/Kg	
		PCB-139/149	0.0211 ug/Kg	
		PCB-132/161	0.0066 ug/Kg	
		PCB-153	0.0241 ug/Kg	
		PCB-141	0.0048 ug/Kg	
		PCB-163/164	0.0051 ug/Kg	
		PCB-138	0.0119 ug/Kg	
		PCB-158	0.0016 ug/Kg	
		PCB-179	0.0029 ug/Kg	
		PCB-178	0.0008 ug/Kg	
		PCB-177	0.0013 ug/Kg	
		PCB-180	0.003 ug/Kg	
		Dichlorobiphenyls	0.0803 ug/Kg	
		Trichlorobiphenyls	0.0354 ug/Kg	
		Tetrachlorobiphenyls	0.0615 ug/Kg	
		Pentachlorobiphenyls	0.114 ug/Kg	
		Hexachlorobiphenyls	0.0895 ug/Kg	
		Heptachlorobiphenyls	0.008 ug/Kg	
PRL009	01/05/16	PCB-011	0.0134 ug/Kg	L63466-1R
		PCB-018	0.0007 ug/Kg	L64265-1R
		PCB-031	0.0023 ug/Kg	
		PCB-028	0.0016 ug/Kg	
		PCB-022	0.0004 ug/Kg	
		PCB-110	0.002 ug/Kg	
		Dichlorobiphenyls	0.0134 ug/Kg	
		Trichlorobiphenyls	0.005 ug/Kg	
		Pentachlorobiphenyls	0.002 ug/Kg	

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

Sample	Compound	Reported Concentration	Modified Final Concentration
L63181-1	PCB-011	0.123 ug/Kg	0.123U ug/Kg
	PCB-084	0.0228 ug/Kg	0.0228U ug/Kg
	PCB-092	0.0151 ug/Kg	0.0151U ug/Kg
	PCB-085	0.0143 ug/Kg	0.0143U ug/Kg
	PCB-151	0.047 ug/Kg	0.047U ug/Kg
	Dichlorobiphenyls	0.25 ug/Kg	0.25J ug/Kg
L63466-2	PCB-011	0.129 ug/Kg	0.129U ug/Kg
	Dichlorobiphenyls	0.267 ug/Kg	0.267J ug/Kg
L63466-3	PCB-011	0.0438 ug/Kg	0.0438U ug/Kg
	PCB-018	0.005 ug/Kg	0.005U ug/Kg
	PCB-016	0.0011 ug/Kg	0.0011U ug/Kg
	PCB-031	0.0113 ug/Kg	0.0113U ug/Kg
	PCB-028	0.0147 ug/Kg	0.0147U ug/Kg
	PCB-020/033	0.0064 ug/Kg	0.0064U ug/Kg
	PCB-022	0.005 ug/Kg	0.005U ug/Kg
	PCB-037	0.0042 ug/Kg	0.0042U ug/Kg
	PCB-043/049	0.0135 ug/Kg	0.0135U ug/Kg
	PCB-047/048	0.0071 ug/Kg	0.0071U ug/Kg
	PCB-044	0.0233 ug/Kg	0.0233U ug/Kg
	PCB-064/072	0.0087 ug/Kg	0.0087U ug/Kg
	PCB-074	0.0084 ug/Kg	0.0084U ug/Kg
	PCB-070	0.0446 ug/Kg	0.0446U ug/Kg
	PCB-066	0.0131 ug/Kg	0.0131U ug/Kg
	PCB-056	0.0062 ug/Kg	0.0062U ug/Kg
	PCB-095	0.046 ug/Kg	0.046U ug/Kg
	PCB-084	0.0174 ug/Kg	0.0174U ug/Kg
	PCB-092	0.0116 ug/Kg	0.0116U ug/Kg
	PCB-101	0.0649 ug/Kg	0.0649U ug/Kg
	PCB-099	0.0285 ug/Kg	0.0285U ug/Kg
	PCB-086/097/117	0.0275 ug/Kg	0.0275U ug/Kg
	PCB-087/115	0.0351 ug/Kg	0.0351U ug/Kg
	PCB-110	0.0821 ug/Kg	0.0821U ug/Kg
	PCB-136/148	0.0101 ug/Kg	0.0101U ug/Kg
	PCB-151	0.0129 ug/Kg	0.0129U ug/Kg
	PCB-139/149	0.0577 ug/Kg	0.0577U ug/Kg
	PCB-132/161	0.0328 ug/Kg	0.0328U ug/Kg
	PCB-153	0.113 ug/Kg	0.113U ug/Kg
	PCB-141	0.0167 ug/Kg	0.0167U ug/Kg
	Dichlorobiphenyls	0.0609 ug/Kg	0.0609J ug/Kg
	Trichlorobiphenyls	0.0495 ug/Kg	0.0495J ug/Kg
	Tetrachlorobiphenyls	0.177 ug/Kg	0.177J ug/Kg
	Pentachlorobiphenyls	0.458 ug/Kg	0.458J ug/Kg
L63466-4	PCB-011	0.0904 ug/Kg	0.0904U ug/Kg
	PCB-016	0.0062 ug/Kg	0.0062U ug/Kg
	PCB-035	0.0036 ug/Kg	0.0036U ug/Kg
	Dichlorobiphenyls	0.205 ug/Kg	0.205J ug/Kg
L63466-5	PCB-011	0.0769 ug/Kg	0.0769U ug/Kg
	PCB-031	0.0292 ug/Kg	0.0292U ug/Kg
	PCB-020/033	0.0176 ug/Kg	0.0176U ug/Kg
	PCB-022	0.0159 ug/Kg	0.0159U ug/Kg
	Dichlorobiphenyls	0.132 ug/Kg	0.132J ug/Kg
	Trichlorobiphenyls	0.14 ug/Kg	0.14J ug/Kg

Sample	Compound	Reported Concentration	Modified Final Concentration
L63466-6	PCB-011	0.4 ug/Kg	0.4U ug/Kg
L63466-7	PCB-011	0.345 ug/Kg	0.345U ug/Kg
L63858-1	PCB-011 Dichlorobiphenyls	0.214 ug/Kg 0.349 ug/Kg	0.214U ug/Kg 0.349J ug/Kg
L63466-2DUP	PCB-011 Dichlorobiphenyls	0.117 ug/Kg 0.254 ug/Kg	0.117U ug/Kg 0.254J ug/Kg
L63466-1	PCB-095 PCB-101 PCB-087/115 PCB-110 PCB-118 PCB-105/127 Pentachlorobiphenyls	0.0166 ug/Kg 0.0215 ug/Kg 0.0096 ug/Kg 0.0292 ug/Kg 0.0277 ug/Kg 0.0153 ug/Kg 0.12 ug/Kg	0.0166U ug/Kg 0.0215U ug/Kg 0.0096U ug/Kg 0.0292U ug/Kg 0.0277U ug/Kg 0.0153U ug/Kg 0.12J ug/Kg
L64265-1	PCB-011 PCB-016 PCB-031 PCB-028 PCB-020/033 PCB-022 PCB-037 PCB-052/069 PCB-047/048 PCB-044 PCB-064/072 PCB-040/057 PCB-074 PCB-070 PCB-066 PCB-056 PCB-084 PCB-092 PCB-101 PCB-099 PCB-086/097/117 PCB-087/115 PCB-118 Dichlorobiphenyls Trichlorobiphenyls Tetrachlorobiphenyls	0.0632 ug/Kg 0.0045 ug/Kg 0.021 ug/Kg 0.031 ug/Kg 0.0127 ug/Kg 0.0129 ug/Kg 0.0134 ug/Kg 0.0358 ug/Kg 0.0128 ug/Kg 0.0272 ug/Kg 0.0122 ug/Kg 0.0027 ug/Kg 0.0125 ug/Kg 0.0479 ug/Kg 0.0287 ug/Kg 0.0108 ug/Kg 0.0232 ug/Kg 0.0167 ug/Kg 0.0858 ug/Kg 0.0456 ug/Kg 0.0311 ug/Kg 0.0439 ug/Kg 0.0776 ug/Kg 0.121 ug/Kg 0.137 ug/Kg 0.238 ug/Kg	0.0632U ug/Kg 0.0045U ug/Kg 0.021U ug/Kg 0.031U ug/Kg 0.0127U ug/Kg 0.0129U ug/Kg 0.0134U ug/Kg 0.0358U ug/Kg 0.0128U ug/Kg 0.0272U ug/Kg 0.0122U ug/Kg 0.0027U ug/Kg 0.0125U ug/Kg 0.0479U ug/Kg 0.0287U ug/Kg 0.0108U ug/Kg 0.0232U ug/Kg 0.0167U ug/Kg 0.0858U ug/Kg 0.0456U ug/Kg 0.0311U ug/Kg 0.0439U ug/Kg 0.0776U ug/Kg 0.121J ug/Kg 0.137J ug/Kg 0.238J ug/Kg

Laboratory blank results flagged “N” or "NJ" by the laboratory as estimated maximum possible concentration (EMPC) are considered not detected.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Matrix Spike/Matrix Spike Duplicates/Duplicates Sample Analysis

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.

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

VIII. Ongoing Precision & Recovery Samples (OPR)

Ongoing precision and recovery (OPR) samples were reviewed for each matrix as applicable with the following exceptions:

Sample	Compound	Finding	Criteria	Flag	A or P
L63466-1R L64265-1R	All TCL compounds	No OPR analysis associated with these samples.	OPR analysis required.	J (all detects) UJ (all non-detects)	P

The percent recoveries (%R) were within the QC limits with the following exceptions:

OPR ID	Compound	%R (Limits)	Associated Samples	Affected Compound	Flag	A or P
PC1512055	PCB-005/008	141.7 (60-135)	L63181-1 L63466-2 L63466-3 L63466-4 L63466-5 L63466-6 L63466-7 L63858-1 L63997-1 L64107-1 L63466-2DUP L64265-1	PCB-005/008 Dichlorobiphenyls	J (all detects) J (all detects)	P

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Internal Standards

All internal standard recoveries (%R) were within QC limits with the following exceptions:

Sample	Internal Standards	%R (Limits)	Compound	Flag	A or P
L63181-1	^{13}C-PCB-104	149 (10-145)	PCB-104 PCB-096 PCB-103 PCB-100 PCB-094 PCB-093/098/102 PCB-095 PCB-088 PCB-091/121 PCB-084 PCB-092 PCB-089 PCB-090 PCB-101 PCB-113 PCB-099 PCB-112/119 PCB-083/109 PCB-086/097/117 PCB-116/125 PCB-087/115 PCB-111 PCB-085 PCB-120 PCB-110 PCB-082 PCB-124 PCB-107/108 PCB-106 PCB-122 Pentachlorobiphenyls	J (all detects) UJ (all non-detects)	P
L63466-1R	^{13}C-PCB-1 ^{13}C-PCB-3	<1 (5-145) 1 (5-145)	PCB-1 PCB-2 PCB-3 Monochlorobiphenyls	UJ (all non-detects) UJ (all non-detects) UJ (all non-detects) UJ (all non-detects)	P
L63466-2	^{13}C-PCB-189	146 (10-145)	PCB-184 PCB-179 PCB-176 PCB-186 PCB-178 PCB-175 PCB-182/187 PCB-183 PCB-185 PCB-174 PCB-181 PCB-177 PCB-171 PCB-173 PCB-172 PCB-192 PCB-180 PCB-193 PCB-191 PCB-170 PCB-190 PCB-189 Heptachlorobiphenyls	J (all detects) UJ (all non-detects)	P

Sample	Internal Standards	%R (Limits)	Compound	Flag	A or P
L63466-3	^{13}C-PCB-1 ^{13}C-PCB-3	0 (5-145) 3 (5-145)	PCB-1 PCB-2 PCB-3 Monochlorobiphenyls	R (all non-detects) R (all non-detects) R (all non-detects) R (all non-detects)	P
L63466-6	^{13}C-PCB-189	148 (10-145)	PCB-184 PCB-179 PCB-176 PCB-186 PCB-178 PCB-175 PCB-182/187 PCB-183 PCB-185 PCB-174 PCB-181 PCB-177 PCB-171 PCB-173 PCB-172 PCB-192 PCB-180 PCB-193 PCB-191 PCB-170 PCB-190 PCB-189 Heptachlorobiphenyls	J (all detects) UJ (all non-detects)	P

XI. Compound Quantitation

All compound quantitation were within validation criteria with the following exceptions:

Sample	Compound	Flag	A or P
All samples in SDG PR154205	All compounds flagged "N" or "NJ" by the laboratory as EMPC.	U	A

Sample	Finding	Associated Compound
L63466-1	The laboratory indicated that since ^{13}C-PCB-1, ^{13}C-PCB-3, ^{13}C-PCB-4, ^{13}C-PCB-15, ^{13}C-PCB-19, ^{13}C-PCB-37, ^{13}C-PCB-81, ^{13}C-PCB-77, and ^{13}C-PCB-126 are poorly recovered due to interferences; associated results are not reported.	PCB-001 to 081 PCB-126 Monochlorobiphenyls Dichlorobiphenyls Trichlorobiphenyls Tetrachlorobiphenyls
L64265-1	The laboratory indicated that since ^{13}C-PCB-1 is poorly recovered due to interferences; associated, results are not reported.	PCB-001 PCB-002 Monochlorobiphenyls

Raw data were not reviewed for Level III validation.

XII. Target Compound Identifications

Raw data were not reviewed for Level III validation.

XIII. System Performance

Raw data were not reviewed for Level III validation.

XIV. Overall Assessment of Data

The analysis was conducted within all specifications of the method.

In the case where more than one result was reported for an individual sample, the least technically acceptable results were deemed unusable as follows:

Sample	Compound	Flag	A or P
L63466-1	PCB-001 to 081 PCB-126 Monochlorobiphenyls Dichlorobiphenyls Trichlorobiphenyls Tetrachlorobiphenyls	R R R R R R	A
L63466-1R	All TCL compounds except PCB-001 to 081 PCB-126 Monochlorobiphenyls Dichlorobiphenyls Trichlorobiphenyls Tetrachlorobiphenyls	R	A
L64265-1	PCB-1 PCB-2 PCB-3 Monochlorobiphenyls	R R R R	A
L64265-1R	All TCL compounds except PCB-1 PCB-2 PCB-3 Monochlorobiphenyls	R	A

Due to internal standards %R, data was rejected in one sample.

Due to OPR %R and internal standards %R, data were qualified as estimated in thirteen samples.

Due to results reported by the laboratory as EMPC, data were qualified as not detected in thirteen samples.

Due to laboratory blank contamination, data were qualified as estimated or not detected in eleven samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be rejected (R) are unusable for all purposes. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

Lower Duwamish Waterway, Green River Study, Suspended Solids Polychlorinated Biphenyls as Congeners - Data Qualification Summary - SDG PR154205

Sample	Compound	Flag	A or P	Reason
L63466-1R L64265-1R	All TCL compounds	J (all detects) UJ (all non-detects)	P	Ongoing precision and recovery (no OPR)
L63181-1 L63466-2 L63466-3 L63466-4 L63466-5 L63466-6 L63466-7 L63858-1 L63997-1 L64107-1 L63466-2DUP L64265-1	PCB-005/008 Dichlorobiphenyls	J (all detects) J (all detects)	P	Ongoing precision and recovery (%R)
L63181-1	PCB-104 PCB-096 PCB-103 PCB-100 PCB-094 PCB-093/098/102 PCB-095 PCB-088 PCB-091/121 PCB-084 PCB-092 PCB-089 PCB-090 PCB-101 PCB-113 PCB-099 PCB-112/119 PCB-083/109 PCB-086/097/117 PCB-116/125 PCB-087/115 PCB-111 PCB-085 PCB-120 PCB-110 PCB-082 PCB-124 PCB-107/108 PCB-106 PCB-122 Pentachlorobiphenyls	J (all detects) UJ (all non-detects)	P	Internal standards (%R)
L63466-1R	PCB-1 PCB-2 PCB-3 Monochlorobiphenyls	UJ (all non-detects) UJ (all non-detects) UJ (all non-detects) UJ (all non-detects)	P	Internal standards (%R)

Sample	Compound	Flag	A or P	Reason
L63466-2 L63466-6	PCB-184 PCB-179 PCB-176 PCB-186 PCB-178 PCB-175 PCB-182/187 PCB-183 PCB-185 PCB-174 PCB-181 PCB-177 PCB-171 PCB-173 PCB-172 PCB-192 PCB-180 PCB-193 PCB-191 PCB-170 PCB-190 PCB-189 Heptachlorobiphenyls	J (all detects) UJ (all non-detects)	P	Internal standards (%R)
L63466-3	PCB-1 PCB-2 PCB-3 Monochlorobiphenyls	R (all non-detects) R (all non-detects) R (all non-detects) R (all non-detects)	P	Internal standards (%R)
L63181-1 L63466-1R L63466-2 L63466-3 L63466-4 L63466-5 L63466-6 L63466-7 L63858-1 L63997-1 L64107-1 L64265-1R L63466-2DUP L63466-1 L64265-1	All compounds flagged "N" or "NJ" by the laboratory as EMPC.	U	A	Compound quantitation (EMPC)
L63466-1	PCB-001 to -081 PCB-126 Monochlorobiphenyls Dichlorobiphenyls Trichlorobiphenyls Tetrachlorobiphenyls	R R R R R R	A	Overall assessment of data
L63466-1R	All TCL compounds except PCB-001 to -081 PCB-126 Monochlorobiphenyls Dichlorobiphenyls Trichlorobiphenyls Tetrachlorobiphenyls	R	A	Overall assessment of data

Sample	Compound	Flag	A or P	Reason
L64265-1	PCB-1 PCB-2 PCB-3 Monochlorobiphenyls	R R R R	A	Overall assessment of data
L64265-1R	All TCL compounds except PCB-1 PCB-2 PCB-3 Monochlorobiphenyls	R	A	Overall assessment of data

Lower Duwamish Waterway, Green River Study, Suspended Solids Polychlorinated Biphenyls as Congeners - Laboratory Blank Data Qualification Summary - SDG PR154205

Sample	Compound	Modified Final Concentration	A or P
L63181-1	PCB-011 PCB-084 PCB-092 PCB-085 PCB-151 Dichlorobiphenyls	0.123U ug/Kg 0.0228U ug/Kg 0.0151U ug/Kg 0.0143U ug/Kg 0.047U ug/Kg 0.25J ug/Kg	A
L63466-2	PCB-011 Dichlorobiphenyls	0.129U ug/Kg 0.267J ug/Kg	A

Sample	Compound	Modified Final Concentration	A or P
L63466-3	PCB-011 PCB-018 PCB-016 PCB-031 PCB-028 PCB-020/033 PCB-022 PCB-037 PCB-043/049 PCB-047/048 PCB-044 PCB-064/072 PCB-074 PCB-070 PCB-066 PCB-056 PCB-095 PCB-084 PCB-092 PCB-101 PCB-099 PCB-086/097/117 PCB-087/115 PCB-110 PCB-136/148 PCB-151 PCB-139/149 PCB-132/161 PCB-153 PCB-141 Dichlorobiphenyls Trichlorobiphenyls Tetrachlorobiphenyls Pentachlorobiphenyls	0.0438U ug/Kg 0.005U ug/Kg 0.0011U ug/Kg 0.0113U ug/Kg 0.0147U ug/Kg 0.0064U ug/Kg 0.005U ug/Kg 0.0042U ug/Kg 0.0135U ug/Kg 0.0071U ug/Kg 0.0233U ug/Kg 0.0087U ug/Kg 0.0084U ug/Kg 0.0446U ug/Kg 0.0131U ug/Kg 0.0062U ug/Kg 0.046U ug/Kg 0.0174U ug/Kg 0.0116U ug/Kg 0.0649U ug/Kg 0.0285U ug/Kg 0.0275U ug/Kg 0.0351U ug/Kg 0.0821U ug/Kg 0.0101U ug/Kg 0.0129U ug/Kg 0.0577U ug/Kg 0.0328U ug/Kg 0.113U ug/Kg 0.0167U ug/Kg 0.0609J ug/Kg 0.0495J ug/Kg 0.177J ug/Kg 0.458J ug/Kg	A
L63466-4	PCB-011 PCB-016 PCB-035 Dichlorobiphenyls	0.0904U ug/Kg 0.0062U ug/Kg 0.0036U ug/Kg 0.205J ug/Kg	A
L63466-5	PCB-011 PCB-031 PCB-020/033 PCB-022 Dichlorobiphenyls Trichlorobiphenyls	0.0769U ug/Kg 0.0292U ug/Kg 0.0176U ug/Kg 0.0159U ug/Kg 0.132J ug/Kg 0.14J ug/Kg	A
L63466-6	PCB-011	0.4U ug/Kg	A
L63466-7	PCB-011	0.345U ug/Kg	A
L63858-1	PCB-011 Dichlorobiphenyls	0.214U ug/Kg 0.349J ug/Kg	A
L63466-2DUP	PCB-011 Dichlorobiphenyls	0.117U ug/Kg 0.254J ug/Kg	A

Sample	Compound	Modified Final Concentration	A or P
L63466-1	PCB-095	0.0166U ug/Kg	A
	PCB-101	0.0215U ug/Kg	
	PCB-087/115	0.0096U ug/Kg	
	PCB-110	0.0292U ug/Kg	
	PCB-118	0.0277U ug/Kg	
	PCB-105/127	0.0153U ug/Kg	
	Pentachlorobiphenyls	0.12J ug/Kg	
L64265-1	PCB-011	0.0632U ug/Kg	A
	PCB-016	0.0045U ug/Kg	
	PCB-031	0.021U ug/Kg	
	PCB-028	0.031U ug/Kg	
	PCB-020/033	0.0127U ug/Kg	
	PCB-022	0.0129U ug/Kg	
	PCB-037	0.0134U ug/Kg	
	PCB-052/069	0.0358U ug/Kg	
	PCB-047/048	0.0128U ug/Kg	
	PCB-044	0.0272U ug/Kg	
	PCB-064/072	0.0122U ug/Kg	
	PCB-040/057	0.0027U ug/Kg	
	PCB-074	0.0125U ug/Kg	
	PCB-070	0.0479U ug/Kg	
	PCB-066	0.0287U ug/Kg	
	PCB-056	0.0108U ug/Kg	
	PCB-084	0.0232U ug/Kg	
	PCB-092	0.0167U ug/Kg	
	PCB-101	0.0858U ug/Kg	
	PCB-099	0.0456U ug/Kg	
	PCB-086/097/117	0.0311U ug/Kg	
	PCB-087/115	0.0439U ug/Kg	
	PCB-118	0.0776U ug/Kg	
	Dichlorobiphenyls	0.121J ug/Kg	
	Trichlorobiphenyls	0.137J ug/Kg	
	Tetrachlorobiphenyls	0.238J ug/Kg	

LDC #: 35802A31 | VALIDATION COMPLETENESS WORKSHEET | Date: 2-8-16

SDG #: PR154205 | Level III | Page: 1 of 2

Laboratory: Pacific Rim Laboratories Inc. | Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: HRGC/HRMS Polychlorinated Biphenyl Congeners (EPA Method 1668C)

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

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / A	
II.	HRGC/HRMS Instrument performance check	A	(HT8 Column)
III.	Initial calibration/ICV	~~A~~ SW / N	≤20/35
IV.	Continuing calibration	~~A~~ SW / R	QC Limits
V.	Laboratory Blanks	SW	
VI.	Field blanks	N	
VII.	Matrix spike/Matrix spike duplicates	N	
VIII.	Laboratory control samples	SW	OPR
IX.	Field duplicates	N	
X.	Internal standards	SW	
XI.	Compound quantitation RL/LOQ/LODs	SW	
XII.	Target compound identification	N	
XIII.	System performance	N	
XIV.	Overall assessment of data	SW	

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

	Client ID	Lab ID	Matrix	Date
1 D	Lf63181-1	PR1504204	Sediment	06/22/15
2 I	Lf63466-1 R	PR1504205 R	Sediment	09/15/15
3 D	Lf63466-2	PR1504206	Sediment	09/15/15
4 D	Lf63466-3	PR1504207	Sediment	09/15/15
5 D	Lf63466-4	PR1504208	Sediment	09/15/15
6 D	Lf63466-5	PR1504209	Sediment	08/15/15
7 D	Lf63466-6	PR1504210	Sediment	09/15/15
8 D	Lf63466-7	PR1504211	Sediment	09/15/15
9 D	Lf63858-1	PR1504212	Sediment	09/24/15
10 D	Lf63997-1	PR1504213	Sediment	10/10/15
11 D	L64107-1	PR1504214	Sediment	10/26/15
12 I	L64265-1 R	PR1504215 R	Sediment	11/14/15

LDC #: 35802A31

SDG #: PR154205

Laboratory: Pacific Rim Laboratories Inc.

VALIDATION COMPLETENESS WORKSHEET

Level III

Date: 2-2-16

Page: 2 of 2

Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: HRGC/HRMS Polychlorinated Biphenyl Congeners (EPA Method 1668C)

	Client ID	Lab ID	Matrix	Date
13	L63466-2DUP	PR1504206DUP	Sediment	09/15/15
14	L63466-1	PR1504205	"	"
15	L64265-1	PR1504215	"	"
16				
17				

Notes:

2	PRL008						
1	PRL009						

LDC #: 35802A31

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: Am
2nd Reviewer: C

METHOD: HRGC/HRMS PCB Congeners (EPA Method 1668C)

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

Y N N/A Were all samples associated with a method blank?
Y N N/A Was a method blank performed for each matrix and whenever a sample extraction was performed?
Y N N/A Was the method blank contaminated?

Blank extraction date: 12/07/15 **Blank analysis date:** 12/17-18/15 **Associated samples:** 1, 3-11, 13-15

Conc. units: µg/Kg

Qual U

Compound	Blank ID		Sample Identification									15
	PRL008	5x	1	3	4	5	6	7	8	9	13	
PCB-011	0.0803	0.4015	0.123 /U	0.129 /U	0.0438 /U	0.0904 /U	0.0769 /U	0.4 /U	0.345 /U	0.214 /U	0.117 /U	0.0632
PCB-018	0.0036	0.0180			0.005 /U							~~0.0195~~
PCB-027	0.0002	0.0010										~~0.0013~~
PCB-016	0.0013	0.0065			0.0011 /U	0.0062 /U						0.0045
PCB-026	0.0007	0.0035										
PCB-031	0.0068	0.0340			0.0113 /U		0.0292 /U					0.021
PCB-028	0.0084	0.0420			0.0147 /U							0.031
PCB-020/033	0.0048	0.0240			0.0064 /U		0.0176 /U					0.0127
PCB-022	0.0037	0.0185			0.005 /U		0.0159 /U					0.0129
PCB-035	0.0008	0.0040				0.0036 /U						
PCB-037	0.0051	0.0255			0.0042 /U							0.034
PCB-053	0.0008	0.0040										
PCB-052/069	0.0083	0.0415										0.0358
PCB-043/049	0.0042	0.0210			0.0135 /U							
PCB-047/048	0.0042	0.0210			0.0071 /U							0.028
PCB-044	0.0076	0.0380			0.0233 /U							0.0272
PCB-064/072	0.004	0.0200			0.0087 /U							0.022
PCB-040/057	0.0009	0.0045										0.0027
PCB-074	0.0045	0.0225			0.0084 /U							0.025
PCB-070	0.0149	0.0745			0.0446 /U							0.0479

LDC #: 35802A31

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: 9m
2nd Reviewer: A

METHOD: HRGC/HRMS PCB Congeners (EPA Method 1668C)

Qual U

Compound	Blank ID		Sample Identification							14	15
	PRL008	5x	1	3	4	5	6	7	8	9	12
PCB-066	0.0073	0.0365			0.0131 /U						0.0287
PCB-056	0.0048	0.0240			0.0062 /U						0.0108
PCB-095	0.0134	0.0670			0.046 /U					0.0166/U	
PCB-084	0.005	0.0250	0.0228 /U		0.0174 /U						0.0232
PCB-092	0.0034	0.0170	0.0151 /U		0.0116 /U						0.0167
PCB-101	0.0186	0.0930			0.0649 /U					0.0215/U	0.0858
PCB-099	0.0066	0.0330			0.0285 /U						0.0156
PCB-086/097/117	0.0075	0.0375			0.0275 /U						0.0311
PCB-087/115	0.0107	0.0535			0.0351 /U					0.0096/U	0.0439
PCB-085	0.0034	0.0170	0.0143 /U								
PCB-110	0.0244	0.1220			0.0821 /U					0.0292/U	
PCB-118	0.0156	0.0780								0.0277/U	0.0776
PCB-105/127	0.0056	0.0280								0.0153/U	
PCB-136/148	0.0044	0.0220			0.0101 /U						
PCB-151	0.0099	0.0495	0.047 /U		0.0129 /U						
PCB-139/149	0.0211	0.1055			0.0577 /U						
PCB-132/161	0.0066	0.0330			0.0328 /U						
PCB-153	0.0241	0.1205			0.113 /U						
PCB-141	0.0048	0.0240			0.0167 /U						
PCB-163/164	0.0051	0.0255									
PCB-138	0.0119	0.0595									
PCB-158	0.0016	0.0080									
PCB-179	0.0029	0.0145									
PCB-178	0.0008	0.0040									

LDC #: 35802A31

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: AN
2nd Reviewer: AC

METHOD: HRGC/HRMS PCB Congeners (EPA Method 1668C)

Compound	Blank ID		Sample Identification									
	PRL008	5x	1	3	4	5	6	7	8	9	13	14 15
PCB-177	0.0013	0.0065										
PCB-180	0.003	0.0150										
Dichlorobiphenyls	0.0803	0.4015	0.25 /J	0.267 /J	0.0609 /J	0.205 /J	0.132 /J			0.349 /J	0.254 /J	0.12 J
Trichlorobiphenyls	0.0354	0.1770			0.0495 /J		0.14 /J					0.137 J
Tetrachlorobiphenyls	0.0615	0.3075			0.177 /J							0.238 J
Pentachlorobiphenyls	0.114	0.5700			0.458 /J							0.12 J
Hexachlorobiphenyls	0.0895	0.4475										
Heptachlorobiphenyls	0.008	0.0400										

*EMPC results flagged "N" by laboratory considered nondetect (ND)

LDC #: 35802A31

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer:
2nd Reviewer:

METHOD: HRGC/HRMS PCB Congeners (EPA Method 1668C)

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

(Y) N N/A Were all samples associated with a method blank?
(Y) N N/A Was a method blank performed for each matrix and whenever a sample extraction was performed?
(Y) N N/A Was the method blank contaminated?

Blank extraction date: 01/05/16 **Blank analysis date:** 01/08/16 **Associated samples:** 2, 12 (>54)

Conc. units: µg/Kg

Compound	Blank ID		Sample Identification								
	PRL009	5x									
PCB-011	0.0134	0.0670									
PCB-018	0.0007	0.0035									
PCB-031	0.0023	0.0115									
PCB-028	0.0016	0.0080									
PCB-022	0.0004	0.0020									
PCB-110	0.002	0.0100									
Dichlorobiphenyls	0.0134	0.0670									
Trichlorobiphenyls	0.005	0.0250									
Pentachlorobiphenyls	0.002	0.0100									

*EMPC results flagged "N" by laboratory considered nondetect (ND)

LDC #: 35802A31

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

Reviewer: 9r
2nd Reviewer: 1

METHOD: HRGC/HRMS PCB Congeners (EPA Method 1668C)
Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Was a LCS required?
(Y) N N/A Was a LCS analyzed every 20 samples for each matrix or whenever a sample extraction was performed?
Y N (N/A) Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?

#	Date	Lab ID/Reference	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		PCT512055	PCB-005/008	114 (60-135)	( )	( )	1,3-11,13,PRL0008 15	J-dets/P (all=det) (+Dichlorobiphenyls)
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
			NO associated	OPR ( )	( )	( )	2,12,PRL0009	J/UJ/P (all compounds) (det/ND)
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
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				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

LDC #: 35802A31

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported CRQLs

Reviewer: 9m
2nd Reviewer: 4

METHOD: HRGC/HRMS PCB Congeners (EPA Method 1668C)

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

Y N N/A Were the correct internal standard (IS), quantitation ions and relative response factors (RRF) used to quantitate the compound?
Y N N/A Compound quantitation and CRQLs were adjusted to reflect all sample dilutions and dry weight factors (if necessary).

#	Date	Compound	Finding	Associated Samples	Qualifications
			EMPC results flagged "N" or "NJ"	All	U/A
		all Mono-, Di-, Tri-, Tetrachlorobiphenlys, PCB-126	13C PCB-1, -3, -4, -15, -19, -37, -81, -77 and -126 are poorly recovered due to inteferences; therefore, results are not reported.	14	text
		PCB-1, PCB-2 and Monochlorobipenyls ~~PCB-37~~	13C PCB-1 is poorly recovered due to inteferences; therefore, results are not reported.	15	text

Comments: ~~See sample calculation verification worksheet for recalculations~~

LDC #: 35802A31

VALIDATION FINDINGS WORKSHEET
Overall Assessment of Data

Reviewer: [illegible]
2nd Reviewer: A

METHOD: HRGC/HRMS PCB Congeners (EPA Method 1668C)

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

All available information pertaining to the data were reviewed using professional judgement to compliment the determination of the overall quality of the data.

(Y) N N/A Was the overall quality and usability of the data acceptable?

#	Date	Compound	Finding	Associated Samples	Qualifications
		all Mono-, Di-, Tri-, Tetrachlorobiphenlys, PCB-126	poor Internal Standard recoveries	14	R/A
		PCB-1, -2, -3, Monochlorobiphenyls	poor Internal Standard recoveries	15	
		all except all Mono-, Di-, Tri-, Tetrachlorobiphenlys, PCB-126	reported from re-analysis	2	
		all except PCB-1, -2, -3, Monochlorobiphenyls	reported from re-analysis	12	

Comments: _____

LDC #: 35802A31

VALIDATION FINDINGS WORKSHEET
Internal Standards

Reviewer: On
2nd Reviewer: n

METHOD: HRGC/HRMS PCB Congeners (EPA Method 1668C)
Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y (N) N/A Are all internal standard recoveries were within the % criteria?
(Y) N N/A Was the Ion Abundance Ratio within criteria?
Y N (N/A) Was the S/N ratio all internal standard peaks > 10?

#	Date	Lab ID/Reference	Internal Standard	% Recovery (Limit: %)	Qualifications
		1	13C PCB-104	149 (10-145)	J/UJ/P (see attached +Pentachlorobiphenyls) (det/ND)
				( )	
		2	13C PCB-1	<1 of Y 5-145)	J/UJ/P (PCB-1, -2, -3 +Monochlorobiphenyls) (ND)
		↓	13C PCB-3	1 (↓)	↓
				( )	
		3	13C PCB-189	146 (10-145)	J/UJ/P (see attached +Heptachlorobiphenyls) (det/ND)
				( )	
		4	13C PCB-1	0 (5-145)	J/R/P (PCB-1, -2, -3 +Monochlorobiphenyls) (ND)
		↓	13C PCB-3	3 (↓)	↓
				( )	
		7	13C PCB-189	148 (10-145)	J/UJ/P (see attached +Heptachlorobiphenyls) (det/ND)
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
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				( )	
				( )	
				( )	
				( )	

Sample #2: PCB% taken from Raw Data/form 1 reporting <1%

3S802A31 - attachment IS

DATA REPORT

Client:	King County	Date Collected:	6/22/2015
Client ID:	L63181-1	Date Extracted:	12/7/2015
Project ID:	423589-355-4	Date Analysed:	12/17/2015
PRL ID:	PR154204	HRMS File:	FS12171505
Total Solids:	41.57%	Work Group No.:	PRL008

IUPAC Name	PCB #	CAS #	Conc. ug/Kg (dry wt)	SDL ug/Kg (dry wt)	Flag	EQL ug/Kg (dry wt)
2,3',4',6-TeCB	PCB-071	41464-46-4	0.0369	0.0009		0.0038
2,2',3,4-TeCB	PCB-041	52663-59-9	0.0122	0.0013		0.0038
2,3',4,5'-TeCB	PCB-068	73575-52-7	0	0.0009	U J	0.0038
	PCB-040/057		0.0156	0.0011	B1	0.0038
2,3',4,5-TeCB	PCB-067	73575-53-8	0	0.0009	U J	0.0038
2,3,4',5-TeCB	PCB-063	74472-34-7	0	0.001	U J	0.0038
2,3,3',5'-TeCB	PCB-058	41464-49-7	0	0.0007	U J	0.0038
2,3,4,5-TeCB	PCB-061	33284-53-6	0	0.0012	U J	0.0038
2,4,4',5-TeCB	PCB-074	32690-93-0	0.0695	0.0009	B1	0.0038
2,3',4',5-TeCB	PCB-070	32598-11-1	0.258	0.001	B1	0.0038
2,3,3',4-TeCB	PCB-055	74338-24-2	0.238	0.001		0.0038
3,3',5,5'-TeCB	PCB-080	33284-52-5	0	0.001	U J	0.0038
2,3',4,4'-TeCB	PCB-066	32598-10-0	0.147	0.0008	B1	0.0038
2,3',4',5'-TeCB	PCB-076	70362-48-0	0	0.0009	U J	0.0038
2,3,4,4'-TeCB	PCB-060	33025-41-1	0.0127	0.0011	N	0.0038
2,3,3',4'-TeCB	PCB-056	41464-43-1	0.0316	0.0008	B1	0.0038
3,3',4,5'-TeCB	PCB-079	41464-48-6	0	0.0008	U J	0.0038
3,3',4,5-TeCB	PCB-078	70362-49-1	0	0.0008	U J	0.0038
3,4,4',5-TeCB	PCB-081	70362-50-4	0	0.0016	U J	0.0038
3,3',4,4'-TeCB	PCB-077	32598-13-3	0.0251	0.0014		0.0038
2,2',4,6,6'-PeCB	PCB-104	56558-16-8	0	0.0012	U J	0.0038
2,2',3,6,6'-PeCB	PCB-096	73575-54-9	0	0.002	U J	0.0038
2,2',4,5',6-PeCB	PCB-103	60145-21-3	0	0.0023	U J	0.0038
2,2',4,4',6-PeCB	PCB-100	39485-83-1	0	0.0026	U J	0.0038
2,2',3,5,6'-PeCB	PCB-094	73575-55-0	0	0.003	U J	0.0038
	PCB-093/098/102		0	0.003	U J	0.0038
2,2',3,5',6-PeCB	PCB-095	38379-99-6	0.178	0.0024	B1	0.0038
2,2',3,4,6-PeCB	PCB-088	55215-17-3	0	0.0027	U J	0.0038
	PCB-091/121		0.0275	0.0023		0.0038
2,2',3,3',6-PeCB	PCB-084	52663-60-2	0.0228	0.0029	B	0.0038
2,2',3,5,5'-PeCB	PCB-092	52663-61-3	0.0151	0.0027	B1	0.0038
2,2',3,4,6'-PeCB	PCB-089	73575-57-2	0	0.0031	U J	0.0038
2,2',3,4',5-PeCB	PCB-090	68194-07-0	0	0.0027	U J	0.0038
2,2',4,5,5'-PeCB	PCB-101	37680-73-2	0.102	0.0021	B1	0.0038
2,3,3',5',6-PeCB	PCB-113	68194-10-5	0	0.002	U J	0.0038
2,2',4,4',5-PeCB	PCB-099	38380-01-7	0.0551	0.0024	B1	0.0038
	PCB-112/119		0	0.0019	U J	0.0038
	PCB-083/109		0	0.0026	U J	0.0038
	PCB-086/097/117		0.0516	0.0028	B1	0.0038
	PCB-116/125		0	0.002	U J	0.0038
	PCB-087/115		0.064	0.0025	B1	0.0038
2,3,3',5,5'-PeCB	PCB-111	39635-32-0	0	0.0021	U J	0.0038
2,2',3,4,4'-PeCB	PCB-085	65510-45-4	0.0143	0.0029	B	0.0038
2,3',4,5,5'-PeCB	PCB-120	68194-12-7	0	0.002	U J	0.0038
2,3,3',4',6-PeCB	PCB-110	38380-03-9	0.198	0.0021	B1	0.0038
2,2',3,3',4-PeCB	PCB-082	52663-62-4	0	0.0033	U J	0.0038
2,3',4',5,5'-PeCB	PCB-124	70424-70-3	0.0159	0.0007		0.0038
	PCB-107/108		0.0259	0.0009		0.0038
2,3',4,4',5'-PeCB	~~PCB-123~~	65510-44-3	0	0.0008	U J	0.0038
2,3,3',4,5-PeCB	PCB-106	70424-69-0	0	0.0008	U J	0.0038
2,3',4,4',5-PeCB	~~PCB-118~~	31508-00-6	0.265	0.0009	B1	0.0038
2,3,4,4',5-PeCB	~~PCB-114~~	74472-37-0	0	0.0009	U J	0.0038

#1

PCB-122

Pacific Rim Laboratories Inc. #103 - 19575-55A Avenue, Surrey, BC V3S 8P8 CANADA
Tel: 604.532.8711 Fax: 604.532.8712 Email: info@pacificrimlabs.com
www.pacificrimlabs.com

35802A31- attachment IS

DATA REPORT

Client:	King County	Date Collected:	9/15/2015
Client ID:	L63466-2	Date Extracted:	12/7/2015
Project ID:	423589-355-4	Date Analysed:	12/17/2015
PRL ID:	PR154206	HRMS File:	FS12171507
Total Solids:	47.83%	Work Group No.:	PRL008

IUPAC Name	PCB #	CAS #	Conc. ug/Kg (dry wt)	SDL ug/Kg (dry wt)	Flag	EQL ug/Kg (dry wt)
2,3,3',4',5'-PeCB	PCB-122	76842-07-4	0.0042	0.0008		0.0033
	PCB-105/127		0.187	0.0007	B1	0.0033
3,3',4,4',5-PeCB	PCB-126	57465-28-8	0.0092	0.0007		0.0033
2,2',4,4',6,6'-HxCB	PCB-155	33979-03-2	0	0.0036	U	0.0033
2,2',3,4',6,6'-HxCB	PCB-150	68194-08-1	0	0.0024	U J	0.0033
2,2',3,5,6,6'-HxCB	PCB-152	68194-09-2	0	0.0022	U J	0.0033
2,2',3,4,6,6'-HxCB	PCB-145	74472-40-5	0	0.0025	U J	0.0033
	PCB-136/148		0.0628	0.0026	B1	0.0033
2,2',4,4',5,6'-HxCB	PCB-154	60145-22-4	0.0053	0.0026		0.0033
2,2',3,5,5',6-HxCB	PCB-151	52663-63-5	0.135	0.0035	B1	0.0033
2,2',3,3',5,6'-HxCB	PCB-135	52744-13-5	0.0737	0.0036		0.0033
2,2',3,4,5',6-HxCB	PCB-144	68194-14-9	0	0.0036	U	0.0033
2,2',3,4',5,6-HxCB	PCB-147	68194-13-8	0	0.0025	U J	0.0033
	PCB-139/149		0.447	0.0032	B1	0.0033
2,2',3,4,4',6'-HxCB	PCB-140	59291-64-4	0	0.0008	U J	0.0033
2,2',3,4,5,6'-HxCB	PCB-143	68194-15-0	0	0.001	U J	0.0033
2,2',3,3',5,6-HxCB	PCB-134	52704-70-8	0.0481	0.0013		0.0033
2,2',3,4,5,6-HxCB	PCB-142	41411-61-4	0	0.0012	U J	0.0033
2,2',3,3',4,6-HxCB	PCB-131	61798-70-7	0.0142	0.0013		0.0033
2,2',3,3',5,5'-HxCB	PCB-133	35694-04-3	0.0123	0.0008		0.0033
2,3,3',5,5',6-HxCB	PCB-165	74472-46-1	0	0.0009	U J	0.0033
2,2',3,4',5,5'-HxCB	PCB-146	51908-16-8	0.114	0.0009		0.0033
	PCB-132/161		0.219	0.0009	B1	0.0033
2,2',4,4',5,5'-HxCB	PCB-153	35065-27-1	0.989	0.001	B1	0.0033
2,3',4,4',5',6-HxCB	PCB-168	59291-65-5	0	0.0007	U J	0.0033
2,2',3,4,5,5'-HxCB	PCB-141	52712-04-6	0.176	0.001	B1	0.0033
2,2',3,4,4',5-HxCB	PCB-137	35694-06-5	0.0554	0.0011		0.0033
2,2',3,3',4,5'-HxCB	PCB-130	52663-66-8	0.0579	0.0011		0.0033
	PCB-163/164		0.321	0.0008	B1	0.0033
2,2',3,4,4',5'-HxCB	PCB-138	35065-28-2	0.745	0.0009	B1	0.0033
2,3,3',4,5,6-HxCB	PCB-160	41411-62-5	0	0.0012	U J	0.0033
2,3,3',4,4',6-HxCB	PCB-158	74472-42-7	0.0949	0.0008	B1	0.0033
2,2',3,3',4,5-HxCB	PCB-129	55215-18-4	0.0602	0.0013		0.0033
2,3,4,4',5,6-HxCB	PCB-166	41411-63-6	0	0.0008	U J	0.0033
2,3,3',4,5,5'-HxCB	PCB-159	39635-35-3	0	0.0007	U J	0.0033
2,2',3,3',4,4'-HxCB	PCB-128	38380-07-3	0.221	0.0012		0.0033
2,3,3',4',5,5'-HxCB	PCB-162	39635-34-2	0	0.0006	U J	0.0033
2,3',4,4',5,5'-HxCB	PCB-167	52663-72-6	0.0333	0.0008		0.0033
2,3,3',4,4',5-HxCB	PCB-156	38380-08-4	0.0745	0.0007		0.0033
2,3,3',4,4',5'-HxCB	PCB-157	69782-90-7	0.0203	0.0007		0.0033
3,3',4,4',5,5'-HxCB	PCB-169	32774-16-6	0	0.0008	U J	0.0033
~~2,2',3,4',5,6,6'-HpCB~~	~~PCB-188~~	74487-85-7	0	0.0009	U J	0.0033
2,2',3,4,4',6,6'-HpCB	PCB-184	74472-48-3	0	0.0008	U J	0.0033
2,2',3,3',5,6,6'-HpCB	PCB-179	52663-64-6	0.0933	0.0008	B1	0.0033
2,2',3,3',4,6,6'-HpCB	PCB-176	52663-65-7	0.0271	0.0008		0.0033
2,2',3,4,5,6,6'-HpCB	PCB-186	74472-49-4	0	0.0008	U J	0.0033
2,2',3,3',5,5',6-HpCB	PCB-178	52663-67-9	0.0567	0.0011	B1	0.0033
2,2',3,3',4,5',6-HpCB	PCB-175	40186-70-7	0.0133	0.0011		0.0033
	PCB-182/187		0.369	0.001		0.0033
2,2',3,4,4',5',6-HpCB	PCB-183	52663-69-1	0.0445	0.001		0.0033
2,2',3,4,5,5',6-HpCB	PCB-185	52712-05-7	0.03	0.0011		0.0033
2,2',3,3',4,5,6'-HpCB	PCB-174	38411-25-5	0.222	0.0011		0.0033

#31

35802A31 attachment IS

DATA REPORT

Client:	King County	Date Collected:	9/15/2015
Client ID:	L63466-2	Date Extracted:	12/7/2015
Project ID:	423589-355-4	Date Analysed:	12/17/2015
PRL ID:	PR154206	HRMS File:	FS12171507
Total Solids:	47.83%	Work Group No.:	PRL008

#3,7

IUPAC Name	PCB #	CAS #	Conc. ug/Kg (dry wt)	SDL ug/Kg (dry wt)	Flag	EQL ug/Kg (dry wt)
2,2',3,4,4',5,6-HpCB	PCB-181	74472-47-2	0	0.0011	U J	0.0033
2,2',3,3',4,5',6'-HpCB	PCB-177	52663-70-4	0.0726	0.001	B1	0.0033
2,2',3,3',4,4',6-HpCB	PCB-171	52663-71-5	0.0488	0.001		0.0033
2,2',3,3',4,5,6-HpCB	PCB-173	68194-16-1	0.0032	0.0012	N J	0.0033
2,2',3,3',4,5,5'-HpCB	PCB-172	52663-74-8	0.0301	0.001		0.0033
2,3,3',4,5,5',6-HpCB	PCB-192	74472-51-8	0	0.0009	U J	0.0033
2,2',3,4,4',5,5'-HpCB	PCB-180	35065-29-3	0.519	0.0012	B1	0.0033
2,3,3',4',5,5',6-HpCB	PCB-193	69782-91-8	0	0.0006	U J	0.0033
2,3,3',4,4',5',6-HpCB	PCB-191	74472-50-7	0.005	0.0008		0.0033
2,2',3,3',4,4',5-HpCB	PCB-170	35065-30-6	0.139	0.001		0.0033
2,3,3',4,4',5,6-HpCB	PCB-190	41411-64-7	0.0351	0.0007		0.0033
2,3,3',4,4',5,5'-HpCB	PCB-189	39635-31-9	0.0091	0.0005		0.0033
2,2',3,3',5,5',6,6'-OcCB	PCB-202	2136-99-4	0.166	0.001		0.0033
2,2',3,3',4,5',6,6'-OcCB	PCB-201	40186-71-8	0.0369	0.0008		0.0033
2,2',3,4,4',5,6,6'-OcCB	PCB-204	74472-52-9	0	0.0007	U J	0.0033
2,2',3,3',4,4',6,6'-OcCB	PCB-197	33091-17-7	0.0052	0.0008		0.0033
2,2',3,3',4,5,6,6'-OcCB	PCB-200	52663-73-7	0.0416	0.0008		0.0033
2,2',3,3',4,5,5',6-OcCB	PCB-198	68194-17-2	0	0.0011	U J	0.0033
2,2',3,3',4,5,5',6'-OcCB	PCB-199	52663-75-9	0.0752	0.0009		0.0033
2,2',3,3',4,4',5,6'-OcCB	PCB-196	42740-50-1	0	0.001	U J	0.0033
2,2',3,4,4',5,5',6-OcCB	PCB-203	52663-76-0	0.289	0.0009		0.0033
2,2',3,3',4,4',5,6-OcCB	PCB-195	52663-78-2	0.0427	0.0007		0.0033
2,2',3,3',4,4',5,5'-OcCB	PCB-194	35694-08-7	0.115	0.0006		0.0033
2,3,3',4,4',5,5',6-OcCB	PCB-205	74472-53-0	0.0099	0.0005		0.0033
2,2',3,3',4,5,5',6,6'-NoCB	PCB-208	52663-77-1	0.35	0.0027		0.0033
2,2',3,3',4,4',5,6,6'-NoCB	PCB-207	52663-79-3	0.067	0.0024		0.0033
2,2',3,3',4,4',5,5',6-NoCB	PCB-206	40186-72-9	0.707	0.0034		0.0033
2,2',3,3',4,4',5,5',6,6'-DeCB	PCB-209	2051-24-3	0.101	0.0008		0.0033

Homologs	# of Congeners				
Monochlorobiphenyls	3	0.0092	0.0004		0.0033
Dichlorobiphenyls	12	0.267	0.0006	B	0.0033
Trichlorobiphenyls	24	0.527	0.0003		0.0033
Tetrachlorobiphenyls	42	1.19	0.0007		0.0033
Pentachlorobiphenyls	46	1.93	0.0006		0.0033
Hexachlorobiphenyls	42	3.98	0.0006		0.0033
Heptachlorobiphenyls	24	1.71	0.0005		0.0033
Octachlorobiphenyls	12	0.782	0.0005		0.0033
Nonachlorobiphenyls	3	1.12	0.0024		0.0033
Decachlorobiphenyl	1	0.101	0.0008		0.0033
Total PCB		11.6	0.0003		0.0033