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Data Validation Report

Project:	Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling	
Laboratory:	SGS AXYS, Sydney, British Columbia Canada	
Service Request:	WG65147	
Analyses/Method:	Chlorinated Biphenyls by HRGC/HRMS / E1668A (SGS AYXS Method MLA-10)	
Validation Level:	Stage 2a	
AECOM Project Number:	60566335.2.12	
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Reviewed by:	Larry Brook/AECOM	File Name: WG65147 DVR

SUMMARY

The samples listed below were collected by AECOM in Portland Harbor in Portland, OR on August 16th, 17th, 18th, and 21st, 2018.

Sample ID	Matrix/Sample Type
PDI-TF-SMB088	Fish Tissue
PDI-TF-SMB074	Fish Tissue
PDI-TF-SMB072	Fish Tissue
PDI-TF-SMB107	Fish Tissue
PDI-TF-SMB111	Fish Tissue
PDI-TF-SMB112	Fish Tissue
PDI-TF-SMB097	Fish Tissue
PDI-TF-SMB084	Fish Tissue
PDI-TF-SMB094	Fish Tissue
PDI-TF-SMB096	Fish Tissue
PDI-TF-SMB100	Fish Tissue
PDI-TF-SMB104	Fish Tissue
PDI-TF-SMB108	Fish Tissue
PDI-TF-SMB078	Fish Tissue
PDI-TF-SMB106	Fish Tissue
PDI-TF-SMB011	Fish Tissue

Data validation activities were conducted with reference to:

- *EPA Method 1668A: Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS* (USEPA, August 2003),

- EPA Method 1668B: Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS (USEPA, November 2008),
- EPA Method 1668C: Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS (USEPA, April 2010),
- *USEPA Contract Laboratory Program National Functional Guidelines for High Resolution Superfund Methods Data Review* (April 2016),
- *Quality Assurance Project Plan, Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling, Portland Harbor Superfund Site (March 2018),* and the
- laboratory quality control (QC) limits.

The National Functional Guidelines were modified to accommodate the non-CLP methodologies. In the absence of method-specific information, laboratory QC limits, project-specific requirements and/or AECOM professional judgment were used as appropriate.

REVIEW ELEMENTS

The data were evaluated based on the following parameters (where applicable to the method):

✓	Data completeness [chain-of-custody (COC)/sample integrity]
✓	Holding times and sample preservation
✗	Laboratory blanks/equipment blanks
NA	Matrix spike (MS) and/or matrix spike duplicate (MSD) results
	Duplicate
✓	Ongoing precision and recovery results
NA	Field duplicate results
✓	Labeled compounds and labeled clean-up standard recoveries
✗	Laboratory Duplicate
✗	Sample results/reporting issues

The symbol (✓) indicates that no validation qualifiers were applied based on this parameter. An NA indicates that the parameter was not included as part of this data set or was not applicable to this validation and therefore not reviewed. The symbol (✗) indicates that a QC nonconformance resulted in the qualification of data. Any QC nonconformance that resulted in the qualification of data is discussed below. In addition, nonconformances or other issues that were noted during validation, but did not result in qualification of data, may be discussed for informational purposes only.

The data appear valid as qualified and may be used for decision making purposes. Select data points were qualified as estimated or negated due to nonconformances of certain QC criteria (see discussion below). Qualified sample results are presented in Table 1.

RESULTS

Data Completeness (COC)/Sample Integrity

The data package was reviewed and found to meet acceptance criteria for completeness:

- The COCs were reviewed for completeness of information relevant to the samples and requested analyses, and for signatures indicating transfer of sample custody.
- The laboratory sample login sheet(s) were reviewed for issues potentially affecting sample integrity, including the condition of sample containers upon receipt at the laboratory.

- Completeness of analyses was verified by comparing the reported results to the COC requests.

Holding Times and Sample Preservation

Sample preservation and preparation/analysis holding times were reviewed for conformance with method criteria. The samples were shipped on dry ice and then stored at -20°C in the dark prior to extraction and analysis. The method QC acceptance criteria were met.

Laboratory Blanks/Equipment Blanks

Method and equipment rinsate blank results are evaluated as to whether there are contaminants detected above the estimated detection limit (EDL). Target compounds were detected in the laboratory method blank associated with the sample in this data set. An equipment blank was not submitted with this data set.

The NFG guidance stipulates that a conservative approach should be taken with regards to qualification of PCB congeners due to the toxicity of these compounds and the reporting of false negative results should be avoided. Therefore, in order to avoid the reporting of false negative results, professional judgment was used to qualify the data in the following manner. As allowed in the NFG, a blank action limit (BAL) was determined as 5 times the method blank result:

- When the sample results were < the method blank result, the sample result was qualified as nondetect (U) at the sample result.
- When the sample result was $\geq$ the method blank result and $\leq$ the BAL, the sample result was qualified as estimated and potentially biased high (J+).
- When the sample result was > the BAL, sample result was not qualified.

Qualified sample results are summarized in Table 1. Method blank detected compounds are summarized in Attachment A, Table A-1.

MS/MSD Results

MS/MSD analyses were not performed on a sample in this data set. No data validation actions were taken on this basis.

Ongoing Precision and Recovery (OPR)

The OPR percent recoveries (%Rs) and/or relative percent differences (RPDs) were reviewed for conformance with the method QC acceptance criteria. The method QC acceptance criteria were met.

Field Duplicate Results

A field duplicate was not submitted with this data set.

Labeled Compounds and Labeled Clean-up Standard Recoveries

The labeled compounds and labeled clean-up standard %Rs were reviewed for conformance with the QC acceptance criteria. The method QC acceptance criteria were met.

Laboratory Duplicate Analysis

A laboratory duplicate was performed on sample PDI-TF-SMB072.

Professional judgement was applied to use a relative percent difference criterion of <40% for results greater than five times the quantitation limit. Nonconformances are summarized in Attachment A in Table A-2.

Samples were qualified as follows:

Actions: (Based on AECOM professional judgment)

Criteria	RPD	Actions	
		Detected	Nondetect
Sample and duplicate are nondetect results	Not Calculable (NC)	No Qualification	No Qualification
Sample and duplicate results <QL	Not Applicable	No Qualification	No Qualification
Sample and duplicate results >5xQL	>40%	J	Not Applicable
If sample or duplicate result is >5xQL and the other is not detected	NC	J	UJ
If sample or duplicate result is <QL and the other is not detected	NC	No Qualification	No Qualification

Qualified sample results are summarized in Table 1.

Sample Results/Reporting Issues

The sample results detected at concentrations less than the lowest calibration standard (or PQL) but greater than the EDL are qualified by the laboratory as estimated (J). This "J" qualifier is retained during data validation.

Compound Identification

The data were reviewed reviewed to evaluate whether

- the retention time, relative retention time (RRT), ion abundance ratios, ion co-maximization, and signal to noise (S/N) ratio method acceptance criteria were met for compound identification.

Samples were qualified as follows:

Actions: (Based on NFG 2016 and AECOM professional judgment)

Criteria	Actions[1]
RRT falls outside of method limits and RT falls outside of window defining mix windows	If there is no peak, consider the analyte as nondetect (U) at the reported EDL for World Health Organization (WHO) Toxic Congeners. Non-WHO Toxic congeners are considered ND at the PQL.[2]
S/N criteria not met	Consider the analyte as nondetect (U) at the reported EDL for WHO Toxics congeners[2]
Ion co-maximization and/or ion abundance ratios are	Report result as an EMPC and qualify as estimated

Criteria	Actions[1]
outside of QC limits for a PCB congener	(JN).[1]
Ion co-maximization and/or ion abundance ratios are outside QC limits for a Labeled compound	Qualify associated positive and nondetect results as estimated (J/UJ).[1]
[1]Based on AECOM professional judgment. [2]Based on NFG 2016 guidance.	

Qualified sample results are summarized in Table 1.

The laboratory qualified sample results with a "K" to indicate that the ion abundance ratio was outside of the QC acceptance limits; the result should be considered as an Estimated Maximum Possible Concentration (EMPC). These results were qualified as estimated and tentatively identified (JN). Qualified sample results are summarized in Table 1.

It should be noted that the "JN" qualifier was retained rather than replacement with the conventional overall "J", “J+”, and “J-“ qualifiers in instances where sample results were qualified for multiple quality control nonconformances.

Lock Mass Interferences

For the samples reported in this data package, the lock mass signal was deflected at the retention times of PCB 66 and/or PCB coelution 86/87/96/109/119/125 and the laboratory qualified the sample results with “G”. These results were qualified as estimated (J). In addition, other results were qualified as “G” by the laboratory indicating lock mass interferences and these results were also qualified as estimated (J). Nonconformances are summarized in Attachment A, Table A-3. Qualified sample results are summarized in Table 1.

The laboratory reported co-eluting results as one result. For example, PCB 12 and 13 for sample PDI-TF-SM088 is reported singularly as PCB-12 at a concentration of 2.39 pg/g with a laboratory flag of C on the data sheet. PCB 13 is reported with just a laboratory flag of C12 on the data sheet, and in the data validation assistant (DVA) is reported as PCB 12/13 at a concentration of 2.39 pg/g with a laboratory flag of C.

Lipids

The percent lipids data were reviewed. The PCB results were reported on a wet basis and not adjusted for percent lipids; an approach consistent with Method 1668A. Data were not qualified on the basis of percent lipids.

QUALIFICATION ACTIONS

Sample results qualified as a result of validation actions are summarized in Table 1. The actions are described above.

ATTACHMENTS

Attachment A: Nonconformance Summary Tables

Attachment B: Qualifier Codes and Explanations

Attachment C: Reason Codes and Explanations

Table 1 - Data Validation Summary of Qualified Data

Sample ID	Matrix	Compound	Result	EDL	Units	Validation Qualifiers	Validation Reason
PDI-TF-SMB011	TA	PCB-105	1870	11.6	pg/g	J	q
PDI-TF-SMB011	TA	PCB-126	13.7	9.73	pg/g	JN	k
PDI-TF-SMB011	TA	PCB-145	1.46	0.265	pg/g	JN	k
PDI-TF-SMB011	TA	PCB-146	2330	13.0	pg/g	J	q
PDI-TF-SMB011	TA	PCB-182	25.1	0.316	pg/g	JN	k
PDI-TF-SMB011	TA	PCB-187	4240	0.321	pg/g	J	q
PDI-TF-SMB011	TA	PCB-197/200	129	0.0731	pg/g	J	q
PDI-TF-SMB011	TA	PCB-204	1.74	0.0731	pg/g	JN	k
PDI-TF-SMB011	TA	PCB-38	1.71	1.02	pg/g	JN	k
PDI-TF-SMB011	TA	PCB-5	1.82	0.229	pg/g	JN	k
PDI-TF-SMB011	TA	PCB-55	39.0	2.46	pg/g	JN	k
PDI-TF-SMB011	TA	PCB-57	10.3	2.41	pg/g	JN	k
PDI-TF-SMB011	TA	PCB-66	2440	2.46	pg/g	J	q
PDI-TF-SMB011	TA	PCB-73	43.1	0.524	pg/g	JN	k
PDI-TF-SMB011	TA	PCB-86/87/97/108/119/125	3080	2.91	pg/g	J	q
PDI-TF-SMB072	TA	PCB-111	8.95	1.69	pg/g	JN	k
PDI-TF-SMB072	TA	PCB-126	13.8	6.55	pg/g	JN	k,ld
PDI-TF-SMB072	TA	PCB-152	5.15	0.0711	pg/g	JN	k
PDI-TF-SMB072	TA	PCB-162	42.1	10.5	pg/g	JN	k
PDI-TF-SMB072	TA	PCB-204	1.27	0.0802	pg/g	JN	k
PDI-TF-SMB072	TA	PCB-3	3.26	0.0760	pg/g	JN	bl,k
PDI-TF-SMB072	TA	PCB-38	0.802	0.712	pg/g	JN	k
PDI-TF-SMB072	TA	PCB-55	11.4	1.18	pg/g	JN	k,ld
PDI-TF-SMB072	TA	PCB-66	946	1.12	pg/g	J	q
PDI-TF-SMB072	TA	PCB-79	18.6	0.974	pg/g	JN	k
PDI-TF-SMB072	TA	PCB-81	2.21	1.03	pg/g	JN	k
PDI-TF-SMB072	TA	PCB-86/87/97/108/119/125	1380	1.96	pg/g	J	q
PDI-TF-SMB074	TA	PCB-126	9.01	7.67	pg/g	JN	k
PDI-TF-SMB074	TA	PCB-145	0.989	0.216	pg/g	JN	k
PDI-TF-SMB074	TA	PCB-24	2.48	0.120	pg/g	JN	k
PDI-TF-SMB074	TA	PCB-3	2.96	0.0739	pg/g	J+	bl
PDI-TF-SMB074	TA	PCB-39	2.67	1.07	pg/g	JN	k
PDI-TF-SMB074	TA	PCB-55	17.3	4.42	pg/g	JN	k
PDI-TF-SMB074	TA	PCB-58	7.61	4.49	pg/g	JN	k
PDI-TF-SMB074	TA	PCB-66	1000	4.11	pg/g	J	q
PDI-TF-SMB074	TA	PCB-72	25.8	4.09	pg/g	JN	k
PDI-TF-SMB074	TA	PCB-79	57.9	3.76	pg/g	JN	k
PDI-TF-SMB074	TA	PCB-86/87/97/108/119/125	1790	2.23	pg/g	J	q

Sample ID	Matrix	Compound	Result	EDL	Units	Validation Qualifiers	Validation Reason
PDI-TF-SMB078	TA	PCB-126	24.0	13.2	pg/g	JN	k
PDI-TF-SMB078	TA	PCB-3	3.79	0.0721	pg/g	J+	bl
PDI-TF-SMB078	TA	PCB-66	2630	2.46	pg/g	J	q
PDI-TF-SMB078	TA	PCB-81	5.26	2.67	pg/g	JN	k
PDI-TF-SMB078	TA	PCB-86/87/97/108/119/125	3210	3.76	pg/g	J	q
PDI-TF-SMB084	TA	PCB-111	12.3	1.70	pg/g	JN	k
PDI-TF-SMB084	TA	PCB-126	90.8	8.82	pg/g	JN	k
PDI-TF-SMB084	TA	PCB-35	1.75	0.913	pg/g	JN	k
PDI-TF-SMB084	TA	PCB-55	31.8	1.59	pg/g	JN	k
PDI-TF-SMB084	TA	PCB-58	11.9	1.64	pg/g	JN	k
PDI-TF-SMB084	TA	PCB-66	1890	1.59	pg/g	J	q
PDI-TF-SMB084	TA	PCB-79	97.0	1.39	pg/g	JN	k
PDI-TF-SMB084	TA	PCB-81	4.91	1.68	pg/g	JN	k
PDI-TF-SMB084	TA	PCB-86/87/97/108/119/125	3410	1.95	pg/g	J	q
PDI-TF-SMB088	TA	PCB-126	18.0	7.50	pg/g	JN	k
PDI-TF-SMB088	TA	PCB-187	26400	0.235	pg/g	J	q
PDI-TF-SMB088	TA	PCB-197/200	684	0.0717	pg/g	J	q
PDI-TF-SMB088	TA	PCB-2	0.925	0.0717	pg/g	J+	bl
PDI-TF-SMB088	TA	PCB-204	1.46	0.0717	pg/g	JN	k
PDI-TF-SMB088	TA	PCB-3	2.26	0.0717	pg/g	J+	bl
PDI-TF-SMB088	TA	PCB-38	0.527	0.443	pg/g	JN	k
PDI-TF-SMB088	TA	PCB-39	1.77	0.427	pg/g	JN	k
PDI-TF-SMB088	TA	PCB-5	0.314	0.127	pg/g	JN	k
PDI-TF-SMB088	TA	PCB-55	14.5	2.59	pg/g	JN	k
PDI-TF-SMB088	TA	PCB-66	835	2.41	pg/g	J	q
PDI-TF-SMB088	TA	PCB-79	31.0	2.20	pg/g	JN	k
PDI-TF-SMB088	TA	PCB-86/87/97/108/119/125	1850	2.07	pg/g	J	q
PDI-TF-SMB094	TA	PCB-111	5.83	1.02	pg/g	JN	k
PDI-TF-SMB094	TA	PCB-126	13.2	4.99	pg/g	JN	k
PDI-TF-SMB094	TA	PCB-197/200	179	0.0711	pg/g	J	q
PDI-TF-SMB094	TA	PCB-2	0.743	0.0711	pg/g	J+	bl
PDI-TF-SMB094	TA	PCB-204	0.921	0.0711	pg/g	JN	k
PDI-TF-SMB094	TA	PCB-3	1.65	0.0711	pg/g	J+	bl
PDI-TF-SMB094	TA	PCB-35	0.586	0.438	pg/g	JN	k
PDI-TF-SMB094	TA	PCB-38	0.639	0.442	pg/g	JN	k
PDI-TF-SMB094	TA	PCB-39	2.01	0.431	pg/g	JN	k
PDI-TF-SMB094	TA	PCB-5	0.296	0.124	pg/g	JN	k
PDI-TF-SMB094	TA	PCB-55	13.1	1.15	pg/g	JN	k
PDI-TF-SMB094	TA	PCB-58	4.37	1.18	pg/g	JN	k
PDI-TF-SMB094	TA	PCB-66	660	1.15	pg/g	J	q

Sample ID	Matrix	Compound	Result	EDL	Units	Validation Qualifiers	Validation Reason
PDI-TF-SMB094	TA	PCB-79	17.7	1.00	pg/g	JN	k
PDI-TF-SMB094	TA	PCB-86/87/97/108/119/125	1140	1.17	pg/g	J	q
PDI-TF-SMB096	TA	PCB-126	21.7	8.23	pg/g	JN	k
PDI-TF-SMB096	TA	PCB-16	37.3	0.104	pg/g	JN	k
PDI-TF-SMB096	TA	PCB-24	1.69	0.0746	pg/g	JN	k
PDI-TF-SMB096	TA	PCB-27	22.4	0.0746	pg/g	JN	k
PDI-TF-SMB096	TA	PCB-3	2.13	0.0746	pg/g	J+	bl
PDI-TF-SMB096	TA	PCB-38	1.14	0.728	pg/g	JN	k
PDI-TF-SMB096	TA	PCB-55	20.1	5.15	pg/g	JN	k
PDI-TF-SMB096	TA	PCB-66	1290	5.16	pg/g	J	q
PDI-TF-SMB096	TA	PCB-79	48.7	4.50	pg/g	JN	k
PDI-TF-SMB096	TA	PCB-86/87/97/108/119/125	1660	2.09	pg/g	J	q
PDI-TF-SMB097	TA	PCB-12/13	1.93	0.264	pg/g	JN	k
PDI-TF-SMB097	TA	PCB-126	7.74	5.84	pg/g	JN	k
PDI-TF-SMB097	TA	PCB-127	6.97	6.61	pg/g	JN	k
PDI-TF-SMB097	TA	PCB-145	0.703	0.158	pg/g	JN	k
PDI-TF-SMB097	TA	PCB-197/200	199	0.0725	pg/g	J	q
PDI-TF-SMB097	TA	PCB-2	0.683	0.0725	pg/g	J+	bl
PDI-TF-SMB097	TA	PCB-23	0.324	0.196	pg/g	JN	k
PDI-TF-SMB097	TA	PCB-3	1.59	0.0725	pg/g	J+	bl
PDI-TF-SMB097	TA	PCB-35	0.456	0.180	pg/g	JN	k
PDI-TF-SMB097	TA	PCB-55	12.7	1.42	pg/g	JN	k
PDI-TF-SMB097	TA	PCB-66	684	1.34	pg/g	J	q
PDI-TF-SMB097	TA	PCB-73	19.4	0.154	pg/g	JN	k
PDI-TF-SMB097	TA	PCB-79	19.6	1.17	pg/g	JN	k
PDI-TF-SMB097	TA	PCB-81	2.11	1.25	pg/g	JN	k
PDI-TF-SMB097	TA	PCB-86/87/97/108/119/125	1320	1.89	pg/g	J	q
PDI-TF-SMB097	TA	PCB-89	4.85	2.32	pg/g	JN	k
PDI-TF-SMB100	TA	PCB-107/124	52.9	9.72	pg/g	JN	k
PDI-TF-SMB100	TA	PCB-126	14.4	10.6	pg/g	JN	k
PDI-TF-SMB100	TA	PCB-197/200	81.5	0.0724	pg/g	J	q
PDI-TF-SMB100	TA	PCB-2	0.689	0.0724	pg/g	JN	bl,k
PDI-TF-SMB100	TA	PCB-3	1.39	0.0724	pg/g	J+	bl
PDI-TF-SMB100	TA	PCB-34	0.871	0.409	pg/g	JN	k
PDI-TF-SMB100	TA	PCB-39	1.24	0.390	pg/g	JN	k
PDI-TF-SMB100	TA	PCB-55	10.8	1.89	pg/g	JN	k
PDI-TF-SMB100	TA	PCB-66	515	1.90	pg/g	J	q
PDI-TF-SMB100	TA	PCB-79	19.6	1.66	pg/g	JN	k
PDI-TF-SMB100	TA	PCB-81	2.07	2.07	pg/g	JN	k

Sample ID	Matrix	Compound	Result	EDL	Units	Validation Qualifiers	Validation Reason
PDI-TF-SMB100	TA	PCB-86/87/97/108/119/125	728	0.706	pg/g	J	q
PDI-TF-SMB104	TA	PCB-12/13	3.31	0.176	pg/g	JN	k
PDI-TF-SMB104	TA	PCB-126	25.3	7.72	pg/g	JN	k
PDI-TF-SMB104	TA	PCB-177	2720	0.387	pg/g	J	q
PDI-TF-SMB104	TA	PCB-202	1020	0.0745	pg/g	J	q
PDI-TF-SMB104	TA	PCB-204	1.72	0.0710	pg/g	JN	k
PDI-TF-SMB104	TA	PCB-23	0.484	0.222	pg/g	JN	k
PDI-TF-SMB104	TA	PCB-3	1.81	0.0710	pg/g	J+	bl
PDI-TF-SMB104	TA	PCB-55	40.8	10.8	pg/g	JN	k
PDI-TF-SMB104	TA	PCB-66	1810	10.8	pg/g	J	q
PDI-TF-SMB104	TA	PCB-73	20.5	0.106	pg/g	JN	k
PDI-TF-SMB104	TA	PCB-79	83.9	9.42	pg/g	JN	k
PDI-TF-SMB104	TA	PCB-86/87/97/108/119/125	2550	1.91	pg/g	J	q
PDI-TF-SMB106	TA	PCB-104	0.688	0.305	pg/g	JN	k
PDI-TF-SMB106	TA	PCB-12/13	3.18	0.216	pg/g	JN	k
PDI-TF-SMB106	TA	PCB-16	23.0	0.159	pg/g	JN	k
PDI-TF-SMB106	TA	PCB-182	19.1	0.363	pg/g	JN	k
PDI-TF-SMB106	TA	PCB-2	0.836	0.0704	pg/g	J+	bl
PDI-TF-SMB106	TA	PCB-22	83.8	1.03	pg/g	JN	k
PDI-TF-SMB106	TA	PCB-24	1.80	0.101	pg/g	JN	k
PDI-TF-SMB106	TA	PCB-27	23.8	0.102	pg/g	JN	k
PDI-TF-SMB106	TA	PCB-3	1.75	0.0794	pg/g	JN	bl,k
PDI-TF-SMB106	TA	PCB-34	2.71	0.998	pg/g	JN	k
PDI-TF-SMB106	TA	PCB-39	2.27	0.953	pg/g	JN	k
PDI-TF-SMB106	TA	PCB-5	0.458	0.238	pg/g	JN	k
PDI-TF-SMB106	TA	PCB-54	1.83	0.146	pg/g	JN	k
PDI-TF-SMB106	TA	PCB-66	1050	5.95	pg/g	J	q
PDI-TF-SMB106	TA	PCB-86/87/97/108/119/125	1430	1.94	pg/g	J	q
PDI-TF-SMB106	TA	PCB-94	4.39	2.43	pg/g	JN	k
PDI-TF-SMB107	TA	PCB-126	13.8	8.07	pg/g	JN	k
PDI-TF-SMB107	TA	PCB-204	2.22	0.0939	pg/g	JN	k
PDI-TF-SMB107	TA	PCB-3	1.90	0.0700	pg/g	J+	bl
PDI-TF-SMB107	TA	PCB-5	1.05	0.245	pg/g	JN	k
PDI-TF-SMB107	TA	PCB-55	13.7	3.36	pg/g	JN	k
PDI-TF-SMB107	TA	PCB-66	956	3.19	pg/g	J	q
PDI-TF-SMB107	TA	PCB-79	18.4	2.76	pg/g	JN	k
PDI-TF-SMB107	TA	PCB-86/87/97/108/119/125	1350	1.43	pg/g	J	q
PDI-TF-SMB108	TA	PCB-104	1.39	0.150	pg/g	JN	k
PDI-TF-SMB108	TA	PCB-105	1790	9.78	pg/g	J	q

Sample ID	Matrix	Compound	Result	EDL	Units	Validation Qualifiers	Validation Reason
PDI-TF-SMB108	TA	PCB-126	19.5	10.6	pg/g	JN	k
PDI-TF-SMB108	TA	PCB-146	2750	13.8	pg/g	J	q
PDI-TF-SMB108	TA	PCB-197/200	130	0.0728	pg/g	J	q
PDI-TF-SMB108	TA	PCB-2	0.955	0.0728	pg/g	J+	bl
PDI-TF-SMB108		PCB-3	1.51	0.0728	pg/g	J+	bl
PDI-TF-SMB108	TA	PCB-38	0.936	0.763	pg/g	JN	k
PDI-TF-SMB108	TA	PCB-5	0.605	0.158	pg/g	JN	k
PDI-TF-SMB108	TA	PCB-66	1050	1.03	pg/g	J	q
PDI-TF-SMB108	TA	PCB-79	72.6	0.900	pg/g	JN	k
PDI-TF-SMB108	TA	PCB-81	3.35	1.14	pg/g	JN	k
PDI-TF-SMB108	TA	PCB-86/87/97/108/119/125	2450	2.14	pg/g	J	q
PDI-TF-SMB111	TA	PCB-126	11.0	6.80	pg/g	JN	k
PDI-TF-SMB111	TA	PCB-3	2.47	0.130	pg/g	J+	bl
PDI-TF-SMB111	TA	PCB-38	1.18	1.09	pg/g	JN	k
PDI-TF-SMB111	TA	PCB-55	16.9	4.91	pg/g	JN	k
PDI-TF-SMB111	TA	PCB-57	5.04	4.70	pg/g	JN	k
PDI-TF-SMB111	TA	PCB-58	7.28	4.81	pg/g	JN	k
PDI-TF-SMB111	TA	PCB-66	1360	4.66	pg/g	J	q
PDI-TF-SMB111	TA	PCB-79	25.3	4.04	pg/g	JN	k
PDI-TF-SMB111	TA	PCB-86/87/97/108/119/125	1770	1.59	pg/g	J	q
PDI-TF-SMB112	TA	PCB-1	1.49	0.0736	pg/g	J+	bl
PDI-TF-SMB112	TA	PCB-126	8.52	3.87	pg/g	JN	k
PDI-TF-SMB112	TA	PCB-197/200	114	0.0736	pg/g	J	q
PDI-TF-SMB112	TA	PCB-2	0.773	0.0736	pg/g	J+	bl
PDI-TF-SMB112	TA	PCB-204	1.45	0.0736	pg/g	JN	k
PDI-TF-SMB112	TA	PCB-3	1.24	0.0736	pg/g	JN	bl,k
PDI-TF-SMB112	TA	PCB-38	0.757	0.697	pg/g	JN	k
PDI-TF-SMB112	TA	PCB-39	1.62	0.673	pg/g	JN	k
PDI-TF-SMB112	TA	PCB-5	0.512	0.207	pg/g	JN	k
PDI-TF-SMB112	TA	PCB-55	9.07	0.726	pg/g	JN	k
PDI-TF-SMB112	TA	PCB-66	544	0.689	pg/g	J	q
PDI-TF-SMB112	TA	PCB-79	18.8	0.597	pg/g	JN	k
PDI-TF-SMB112	TA	PCB-81	1.49	0.653	pg/g	JN	k
PDI-TF-SMB112	TA	PCB-86/87/97/108/119/125	1190	1.14	pg/g	J	q

Attachment A

Nonconformance Summary Tables

Table A-1 – Laboratory Blanks

Blank ID	Compound	Result	QL	Unit	BAL	Associated Samples
WG65147-101	PCB-1	0.369	0.578	pg/g	1.845	PDI-TF-SMB088 PDI-TF-SMB074 PDI-TF-SMB072 PDI-TF-SMB107 PDI-TF-SMB111 PDI-TF-SMB112 PDI-TF-SMB097 PDI-TF-SMB084 PDI-TF-SMB094 PDI-TF-SMB096 PDI-TF-SMB100 PDI-TF-SMB104 PDI-TF-SMB108 PDI-TF-SMB078 PDI-TF-SMB106 PDI-TF-SMB011
	PCB-105	0.206	0.578	pg/g	1.03	
	PCB-11	3.56	0.578	pg/g	17.8	
	PCB-110/115	0.597	0.578	pg/g	2.985	
	PCB-118	0.573	0.578	pg/g	2.865	
	PCB-12/13	0.182	0.578	pg/g	0.91	
	PCB-128/166	0.089	0.578	pg/g	0.445	
	PCB-129/138/160/163	0.459	0.578	pg/g	2.295	
	PCB-132	0.106	0.578	pg/g	0.53	
	PCB-135/151/154	0.149	0.578	pg/g	0.745	
	PCB-146	0.196	0.578	pg/g	0.98	
	PCB-147/149	0.334	0.578	pg/g	1.67	
	PCB-15	0.461	0.578	pg/g	2.305	
	PCB-153/168	0.592	0.578	pg/g	2.96	
	PCB-16	0.336	0.578	pg/g	1.68	
	PCB-17	0.337	0.578	pg/g	1.685	
	PCB-170	0.106	0.578	pg/g	0.53	
	PCB-174	0.082	0.578	pg/g	0.41	
	PCB-177	0.093	0.578	pg/g	0.465	
	PCB-18/30	0.838	0.578	pg/g	4.19	
	PCB-180/193	0.489	0.578	pg/g	2.445	
	PCB-183/185	0.080	0.578	pg/g	0.4	
	PCB-187	0.334	0.578	pg/g	1.67	
	PCB-19	0.109	0.578	pg/g	0.545	
	PCB-194	0.075	0.578	pg/g	0.375	
	PCB-2	0.222	0.578	pg/g	1.11	
	PCB-20/28	1.24	0.578	pg/g	6.2	
	PCB-209 (decachlorobiphenyl)	0.195	0.578	pg/g	0.975	
	PCB-21/33	0.656	0.578	pg/g	3.28	
	PCB-22	0.445	0.578	pg/g	2.225	
	PCB-25	0.099	0.578	pg/g	0.495	
	PCB-26/29	0.208	0.578	pg/g	1.04	
	PCB-3	0.774	0.578	pg/g	3.87	
	PCB-31	0.987	0.578	pg/g	4.935	
	PCB-32	0.242	0.578	pg/g	1.21	
	PCB-35	0.077	0.578	pg/g	0.385	
	PCB-37	0.257	0.578	pg/g	1.285	
	PCB-4	0.277	0.578	pg/g	1.385	
	PCB-40/41/71	0.307	0.578	pg/g	1.535	

Blank ID	Compound	Result	QL	Unit	BAL	Associated Samples
	PCB-42	0.149	0.578	pg/g	0.745	
	PCB-44/47/65	0.792	0.578	pg/g	3.96	
	PCB-45/51	0.145	0.578	pg/g	0.725	
	PCB-48	0.101	0.578	pg/g	0.505	
	PCB-49/69	0.370	0.578	pg/g	1.85	
	PCB-50/53	0.098	0.578	pg/g	0.49	
	PCB-52	0.586	0.578	pg/g	2.93	
	PCB-56	0.191	0.578	pg/g	0.955	
	PCB-6	0.198	0.578	pg/g	0.99	
	PCB-60	0.118	0.578	pg/g	0.59	
	PCB-61/70/74/76	0.797	0.578	pg/g	3.985	
	PCB-64	0.261	0.578	pg/g	1.305	
	PCB-66	0.396	0.578	pg/g	1.98	
	PCB-68	0.080	0.578	pg/g	0.4	
	PCB-7	0.131	0.578	pg/g	0.655	
	PCB-77	0.076	0.578	pg/g	0.38	
	PCB-8	0.989	0.578	pg/g	4.945	
	PCB-83/99	0.425	0.578	pg/g	2.125	
	PCB-84	0.115	0.578	pg/g	0.575	
	PCB-85/116/117	0.167	0.578	pg/g	0.835	
	PCB-86/87/97/108/119/125	0.576	0.578	pg/g	2.88	
	PCB-88/91	0.118	0.578	pg/g	0.59	
	PCB-9	0.137	0.578	pg/g	0.685	
	PCB-90/101/113	0.541	0.578	pg/g	2.705	
	PCB-92	0.123	0.578	pg/g	0.615	
	PCB-93/95/98/100/102	0.447	0.578	pg/g	2.235	

Table A-2 - Laboratory Duplicates

Sample ID	Compound	Sample Result	Qual	Duplicate Result	Qual	QL	Units	RPD
PDI-TF-SMB072	PCB-126	13.8	JN	47.9	JN	0.569	pg/g	110.5
	PCB-55	11.4	JN	25.6	JN	0.569	pg/g	76.8

Table A-3– Lock Mass Interferences

Sample ID	PCB Congeners or Labeled Surrogates
PDI-TF-SMB011	PCB-105,PCB-146, PCB-187, PCB-197/200, PCB-66, PCB-86/87/97/108/119/125
PDI-TF-SMB072	PCB-66, PCB-86/87/97/108/119/125
PDI-TF-SMB074	PCB-66, PCB-86/87/97/108/119/125
PDI-TF-SMB078	PCB-66, PCB-86/87/97/108/119/125
PDI-TF-SMB084	PCB-66, PCB-86/87/97/108/119/125
PDI-TF-SMB088	PCB-187, PCB-197/200, PCB-66, PCB-86/87/97/108/119/125
PDI-TF-SMB094	PCB-197/200, PCB-66, PCB-86/87/97/108/119/125
PDI-TF-SMB096	PCB-66, PCB-86/87/97/108/119/125
PDI-TF-SMB097	PCB-197/200, PCB-66, PCB-86/87/97/108/119/125
PDI-TF-SMB100	PCB-197/200, PCB-66, PCB-86/87/97/108/119/125
PDI-TF-SMB104	PCB-177, PCB-202, PCB-66, PCB-86/87/97/108/119/125
PDI-TF-SMB106	PCB-66, PCB-86/87/97/108/119/125
PDI-TF-SMB-107	PCB-66, PCB-86/87/97/108/119/125
PDI-TF-SMB-108	PCB-105, PCB-146, PCB-197/200, PCB-66, PCB-86/87/97/108/119/125
PDI-TF-SMB111	PCB-66, PCB-86/87/97/108/119/125
PDI-TF-SMB112	PCB-197/200, PCB-66, PCB-86/87/97/108/119/125

Attachment B

Qualifier Codes and Explanations

Qualifier	Explanation
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
J-	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample with a potential low bias.
J+	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample with a potential high bias.
JN	The analyte was tentatively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Attachment C

Reason Codes and Explanations

Reason Code	Explanation
be	Equipment blank contamination
bf	Field blank contamination
bl	Laboratory blank contamination
c	Calibration issue
cl	Clean-up standard recovery
d	Reporting limit raised due to chromatographic interference
fd	Field duplicate RPDs
h	Holding times
i	Internal standard areas
k	Estimated Maximum Possible Concentration (EMPC)
l	LCS or OPR recoveries
lc	Labeled compound recovery
ld	Laboratory duplicate RPDs
lp	Laboratory control sample/laboratory control sample duplicate RPDs
m	Matrix spike recovery
ma	Multiple analyses. Sample analyzed more than once, a value from another analysis should be used.
md	Matrix spike/matrix spike duplicate RPDs
nb	Negative laboratory blank contamination
p	Chemical preservation issue
r	Dual column RPD
q	Quantitation issue
s	Surrogate recovery
su	Ion suppression
t	Temperature preservation issue
x	Percent solids
y	Serial dilution results
z	ICS results