High-Resolution Gas Chromatography/High-Resolution Mass Spectrometry
PCCDs/PCDFs (EPA Method 1613B)
Stage 2A Review
Data Quality Control (QC)

Site: PHSS-Swan Island Basin	SDG #: 20652
Laboratory: CFA	Project #: DT2002.03.03.04.01
HydroGeoLogic, Inc. Validator: John Tracy	Validation Date: 07.27.23
HGL Peer Reviewer: Ken Rapuano	Peer Review Date: 8.4.23

Client Sample ID	Laboratory Sample ID	Matrix
SIB-061-MLW-0-1-10192022	20652001	Riverbank Soil
SIB-061-OHW-0-1-10192022	20652002	Riverbank Soil
SIB-060-MLW-0-1-10192022	20652003	Riverbank Soil
SIB-060-OHW-0-1-10192022	20652004	Riverbank Soil
SIB-059-MLW-0-1-10192022	20652005	Riverbank Soil
SIB-059-OHW-0-1-10192022	20652006	Riverbank Soil
SIB-058-MLW-0-1-10192022	20652007	Riverbank Soil
SIB-058-MLW-0-1-10192022 MS	20652008	Riverbank Soil
SIB-058-MLW-0-1-10192022 MSD	20652009	Riverbank Soil
SIB-058-OHW-0-1-10192022	20652010	Riverbank Soil
FD11-10192022	20652011	Riverbank Soil
SIB-057-MLW-0-1-10192022	20652012	Riverbank Soil
SIB-057-OHW-0-1-10192022	20652013	Riverbank Soil
SIB-057-TOB-0-1-10192022	20652014	Riverbank Soil
SIB-057-TOB-1-2-10192022	20652015	Riverbank Soil
SIB-056-MLW-0-1-10192022	20652016	Riverbank Soil
SIB-056-OHW-0-1-10192022	20652017	Riverbank Soil
SIB-056-TOB-0-1-10192022	20652018	Riverbank Soil
SIB-055-TOB-0-1-10192022	20652019	Riverbank Soil
SIB-055-OHW-0-1-10192022	20652020	Riverbank Soil
SIB-054-TOB-0-1-10192022	20652021	Riverbank Soil
SIB-054-OHW-0-1-10192022	20652022	Riverbank Soil

The following Stage 2A review was performed on the requested analyses. No results were rejected, and analytical completeness is 100%.

Narrative and Completeness Review – The case narrative and data package were checked for completeness. No completeness issues were noted.

Qualification: None required.

Sample Delivery and Condition – With the exception of several labeling discrepancies, which were resolved, all samples arrived intact at the laboratory in acceptable condition and temperature and were properly preserved. No other discrepancies were noted.

Qualification: None required.

Holding Times – All samples were prepared and analyzed within their required holding times.

Qualification: None required.

Method Blanks – The method 1613B method blank was free from contamination.

Qualification: None required.

Rinsate Blanks – Rinse blank EB03-10192022 (results reported in SDG 20699) is associated with all samples in this SDG and was free from contamination with the exception of 1,2,3,4,6,7,8,9-OCDD, which was detected at 4.08 pg/L leading to a qualification limit of 2.04 pg/g. All detections are above the qualification limit and no qualification is required.

Qualification: None required.

Laboratory Control Sample (LCS) and Laboratory Control Sample Duplicate (LCSD) – All LCS/LCSD %Rs and RSDs were within QAPP control limits.

Qualification: None required.

Surrogates – All surrogates (labeled standards) were within control limits.

Qualification: None required.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) – An MS/MSD was performed using sample SIB-058-MLW-0-1-10192022. All %Rs were within QAPP control limits, with the exception of 1,2,3,4,6,7,8-HpCDD, 1,2,3,4,6,7,8,9-OCDD, 1,2,3,4,6,7,8,9-OCDF, and 1,2,3,4,6,7,8-HpCDF, which recovered outside control limits in the MS and/or MSD. For 1,2,3,4,6,7,8-HpCDD and 1,2,3,4,6,7,8,9-OCDD, the sample concentration was >4x the spike concentration and the %R results are not applicable. For 1,2,3,4,6,7,8,9-OCDF and 1,2,3,4,6,7,8-HpCDF, these results should be qualified J-MSH in the parent sample and the detected OCDF result in the field duplicate associated with the parent sample should also be qualified J-MSH. All RPDs were within control limits.

***Qualification:* The 1,2,3,4,6,7,8,9-OCDF results in samples SIB-058-MLW-0-1-10192022 and FD11-10192022 are qualified J-MSH; the 1,2,3,4,6,7,8-HpCDF result in sample SIB-058-MLW-0-1-10192022 is qualified J-MSH.**

Field Duplicate – Field duplicate FD11-10192022 was submitted a field duplicate of sample SIB-058-MLW-0-1-10192022. All precision criteria were met with the exception of 1,2,3,4,6,7,8-HpCDF. These results in the parent sample and field duplicate should be qualified J/UJ-FDPA.

***Qualification:* The 1,2,3,4,6,7,8-HpCDF results in samples FD11-10192022 and SIB-058-MLW-0-1-10192022 are qualified J/UJ-FDPA.**

Compound Quantitation – Analyte non-detections were reported as the EDL and qualified U. Analytes detected between the EDL and PQL were reported as J-qualified results by the laboratory. These J qualifiers were retained unless superseded by a more severe qualifier.

If a detected analyte has an ion ration outside the characteristic ion ratio window, the result is reported as an estimated maximum potential concentration. All results reported as an EMPC (a “K” flag is present in the laboratory qualifier) are qualified J-EMPC unless superseded by a higher priority qualifier.

2,3,7,8-TCDF is not fully resolved on the DB-5MS column; when detected above the PQL on the DB-5MS column, the result was confirmed on a DB-225 column using the instrument ID listed in the case narrative. In cases where two results are reported for 2,3,7,8-TCDF for a sample, the result from the DB-225 column is selected for use and the result from the DB-5MS is qualified DNR-EXC.

In cases where a target analyte is detected at a concentration above the calibrated range, the laboratory's practice is to report the result with a laboratory qualifier of E without running a dilution so long as the detector is not saturated. The OCDD results for 10 affected samples are qualified J-ACR.

Qualification: **The following results are qualified:**

- **All results reported with a laboratory qualifier of K are qualified J with reason code EMPC.**
- **All 2,3,7,8-TCDF results reported from the DB-5MS column that are paired with a 2,3,7,8-TCDF result from the DB-225 column are qualified DNR, reason code EXC; ; note that the reportable_result field for these results are populated with "Yes" by the laboratory and are changed to "No" for the affected results.**
- **10 OCDD results reported with a laboratory qualifier of E are qualified J with reason code ACR; note that the reportable_result field for these results are populated with "No" by the laboratory and are changed to "Yes" for the affected results.**
- **Five Heptachloro-p-dioxin results reported with a laboratory qualifier of E have the reportable_result field populated with "No" by the laboratory and are changed to "Yes". Although total congener results are not validated, these results are reportable.**

Qualification Summary Table (results in pg/g):

Sample	Analyte	Lab Value	Lab Qualifier	Validated Value	Validated Qualifier	Reason Code
SIB-061-MLW-0-1-10192022	2,3,7,8-TETRACHLORODIBENZOFURAN	3.71	--	3.71	DNR	EXC
SIB-061-MLW-0-1-10192022	2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN	1.45	K	1.45	J	EMPC
SIB-061-MLW-0-1-10192022	OCTACHLORODIBENZO-P-DIOXIN	12500	E	12500	J	ACR
SIB-061-OHW-0-1-10192022	1,2,3,7,8,9-HEXACHLORODIBENZOFURAN	11.8	JK	11.8	J	EMPC
SIB-061-OHW-0-1-10192022	2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN	1.82	JK	1.82	J	EMPC
SIB-061-OHW-0-1-10192022	OCTACHLORODIBENZO-P-DIOXIN	27100	E	27100	J	ACR
SIB-060-MLW-0-1-10192022	1,2,3,4,7,8,9-HEPTACHLORODIBENZOFURAN	7.99	K	7.99	J	EMPC
SIB-060-MLW-0-1-10192022	2,3,4,6,7,8-HEXACHLORODIBENZOFURAN	5.99	K	5.99	J	EMPC
SIB-060-MLW-0-1-10192022	2,3,4,7,8-PENTACHLORODIBENZOFURAN	5.36	K	5.36	J	EMPC
SIB-060-MLW-0-1-10192022	2,3,7,8-TETRACHLORODIBENZOFURAN	1.34	K	1.34	DNR	EXC
SIB-060-MLW-0-1-10192022	2,3,7,8-TETRACHLORODIBENZOFURAN	1.46	K	1.46	J	EMPC
SIB-060-MLW-0-1-10192022	OCTACHLORODIBENZO-P-DIOXIN	8380	E	8380	J	ACR
SIB-060-OHW-0-1-10192022	2,3,4,7,8-PENTACHLORODIBENZOFURAN	23.6	JK	23.6	J	EMPC
SIB-060-OHW-0-1-10192022	OCTACHLORODIBENZO-P-DIOXIN	71500	E	71500	J	ACR
SIB-059-MLW-0-1-10192022	1,2,3,6,7,8-HEXACHLORODIBENZO-P-DIOXIN	5.31	K	5.31	J	EMPC
SIB-059-MLW-0-1-10192022	1,2,3,7,8-PENTACHLORODIBENZOFURAN	0.832	JK	0.832	J	EMPC
SIB-059-MLW-0-1-10192022	1,2,3,7,8-PENTACHLORODIBENZO-P-DIOXIN	0.76	JK	0.76	J	EMPC
SIB-059-MLW-0-1-10192022	2,3,7,8-TETRACHLORODIBENZOFURAN	1.34	K	1.34	DNR	EXC
SIB-059-OHW-0-1-10192022	1,2,3,7,8,9-HEXACHLORODIBENZOFURAN	1.24	JK	1.24	J	EMPC
SIB-059-OHW-0-1-10192022	1,2,3,7,8,9-HEXACHLORODIBENZO-P-DIOXIN	2.7	JK	2.7	J	EMPC
SIB-059-OHW-0-1-10192022	1,2,3,7,8-PENTACHLORODIBENZO-P-DIOXIN	1.91	JK	1.91	J	EMPC
SIB-059-OHW-0-1-10192022	2,3,7,8-TETRACHLORODIBENZOFURAN	2.51	--	2.51	DNR	EXC
SIB-058-MLW-0-1-10192022	1,2,3,4,6,7,8-HEPTACHLORODIBENZOFURAN	176	--	176	J	FDPA,MSH
SIB-058-MLW-0-1-10192022	1,2,3,4,7,8-HEXACHLORODIBENZO-P-DIOXIN	8.27	K	8.27	J	EMPC
SIB-058-MLW-0-1-10192022	1,2,3,7,8-PENTACHLORODIBENZO-P-DIOXIN	3.04	K	3.04	J	EMPC
SIB-058-MLW-0-1-10192022	2,3,7,8-TETRACHLORODIBENZOFURAN	1.7	--	1.7	DNR	EXC
SIB-058-MLW-0-1-10192022	2,3,7,8-TETRACHLORODIBENZOFURAN	1.82	K	1.82	J	EMPC
SIB-058-MLW-0-1-10192022	OCTACHLORODIBENZOFURAN	285	--	285	J	MSH
SIB-058-MLW-0-1-10192022	OCTACHLORODIBENZO-P-DIOXIN	20300	E	20300	J	ACR

Sample	Analyte	Lab Value	Lab Qualifier	Validated Value	Validated Qualifier	Reason Code
SIB-058-OHW-0-1-10192022	1,2,3,7,8-PENTACHLORODIBENZO-P-DIOXIN	5.95	K	5.95	J	EMPC
SIB-058-OHW-0-1-10192022	2,3,7,8-TETRACHLORODIBENZOFURAN	7.14	--	7.14	DNR	EXC
SIB-058-OHW-0-1-10192022	OCTACHLORODIBENZO-P-DIOXIN	8590	E	8590	J	ACR
FD11-10192022	1,2,3,4,6,7,8-HEPTACHLORODIBENZOFURAN	7.85	U	7.85	UJ	FDPA
FD11-10192022	1,2,3,4,7,8,9-HEPTACHLORODIBENZOFURAN	22.4	JK	22.4	J	EMPC
FD11-10192022	1,2,3,6,7,8-HEXACHLORODIBENZO-P-DIOXIN	48.1	K	48.1	J	EMPC
FD11-10192022	1,2,3,7,8,9-HEXACHLORODIBENZOFURAN	18.4	JK	18.4	J	EMPC
FD11-10192022	2,3,4,7,8-PENTACHLORODIBENZOFURAN	9.64	JK	9.64	J	EMPC
FD11-10192022	OCTACHLORODIBENZOFURAN	335	--	335	J	MSH
FD11-10192022	OCTACHLORODIBENZO-P-DIOXIN	22900	E	22900	J	ACR
SIB-057-MLW-0-1-10192022	1,2,3,6,7,8-HEXACHLORODIBENZOFURAN	5.22	K	5.22	J	EMPC
SIB-057-MLW-0-1-10192022	1,2,3,7,8-PENTACHLORODIBENZOFURAN	4.09	JK	4.09	J	EMPC
SIB-057-MLW-0-1-10192022	2,3,7,8-TETRACHLORODIBENZOFURAN	1.89	K	1.89	DNR	EXC
SIB-057-MLW-0-1-10192022	OCTACHLORODIBENZO-P-DIOXIN	9260	E	9260	J	ACR
SIB-057-OHW-0-1-10192022	1,2,3,7,8-PENTACHLORODIBENZOFURAN	2.83	JK	2.83	J	EMPC
SIB-057-OHW-0-1-10192022	1,2,3,7,8-PENTACHLORODIBENZO-P-DIOXIN	4.22	K	4.22	J	EMPC
SIB-057-OHW-0-1-10192022	2,3,7,8-TETRACHLORODIBENZOFURAN	5	--	5	DNR	EXC
SIB-057-OHW-0-1-10192022	2,3,7,8-TETRACHLORODIBENZOFURAN	2.47	K	2.47	J	EMPC
SIB-057-TOB-0-1-10192022	1,2,3,7,8,9-HEXACHLORODIBENZOFURAN	3.26	JK	3.26	J	EMPC
SIB-057-TOB-0-1-10192022	1,2,3,7,8,9-HEXACHLORODIBENZO-P-DIOXIN	10.5	K	10.5	J	EMPC
SIB-057-TOB-0-1-10192022	1,2,3,7,8-PENTACHLORODIBENZO-P-DIOXIN	7.83	K	7.83	J	EMPC
SIB-057-TOB-0-1-10192022	2,3,7,8-TETRACHLORODIBENZOFURAN	8.19	--	8.19	DNR	EXC
SIB-057-TOB-0-1-10192022	2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN	0.496	JK	0.496	J	EMPC
SIB-057-TOB-1-2-10192022	1,2,3,4,7,8,9-HEPTACHLORODIBENZOFURAN	1.49	JK	1.49	J	EMPC
SIB-057-TOB-1-2-10192022	1,2,3,4,7,8-HEXACHLORODIBENZO-P-DIOXIN	0.693	JK	0.693	J	EMPC
SIB-057-TOB-1-2-10192022	1,2,3,7,8,9-HEXACHLORODIBENZOFURAN	0.643	JK	0.643	J	EMPC
SIB-057-TOB-1-2-10192022	1,2,3,7,8-PENTACHLORODIBENZOFURAN	0.817	JK	0.817	J	EMPC
SIB-057-TOB-1-2-10192022	1,2,3,7,8-PENTACHLORODIBENZO-P-DIOXIN	0.725	JK	0.725	J	EMPC
SIB-057-TOB-1-2-10192022	2,3,7,8-TETRACHLORODIBENZOFURAN	1.7	--	1.7	DNR	EXC
SIB-056-MLW-0-1-10192022	1,2,3,4,7,8-HEXACHLORODIBENZOFURAN	8.73	K	8.73	J	EMPC
SIB-056-MLW-0-1-10192022	1,2,3,6,7,8-HEXACHLORODIBENZOFURAN	2.98	JK	2.98	J	EMPC

Sample	Analyte	Lab Value	Lab Qualifier	Validated Value	Validated Qualifier	Reason Code
SIB-056-MLW-0-1-10192022	1,2,3,7,8-PENTACHLORODIBENZOFURAN	1.43	JK	1.43	J	EMPC
SIB-056-MLW-0-1-10192022	2,3,4,7,8-PENTACHLORODIBENZOFURAN	4.56	JK	4.56	J	EMPC
SIB-056-MLW-0-1-10192022	2,3,7,8-TETRACHLORODIBENZOFURAN	2.45	--	2.45	DNR	EXC
SIB-056-OHW-0-1-10192022	1,2,3,7,8,9-HEXACHLORODIBENZO-P-DIOXIN	4.53	JK	4.53	J	EMPC
SIB-056-OHW-0-1-10192022	2,3,7,8-TETRACHLORODIBENZOFURAN	1.04	--	1.04	DNR	EXC
SIB-056-TOB-0-1-10192022	1,2,3,7,8-PENTACHLORODIBENZO-P-DIOXIN	6.11	K	6.11	J	EMPC
SIB-056-TOB-0-1-10192022	2,3,7,8-TETRACHLORODIBENZOFURAN	6.3	--	6.3	DNR	EXC
SIB-056-TOB-0-1-10192022	2,3,7,8-TETRACHLORODIBENZOFURAN	3.65	K	3.65	J	EMPC
SIB-056-TOB-0-1-10192022	2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN	0.504	K	0.504	J	EMPC
SIB-056-TOB-0-1-10192022	OCTACHLORODIBENZO-P-DIOXIN	5990	E	5990	J	ACR
SIB-055-TOB-0-1-10192022	1,2,3,4,7,8,9-HEPTACHLORODIBENZOFURAN	5.22	K	5.22	J	EMPC
SIB-055-TOB-0-1-10192022	1,2,3,7,8-PENTACHLORODIBENZO-P-DIOXIN	4.9	K	4.9	J	EMPC
SIB-055-TOB-0-1-10192022	2,3,4,6,7,8-HEXACHLORODIBENZOFURAN	7.18	K	7.18	J	EMPC
SIB-055-TOB-0-1-10192022	2,3,7,8-TETRACHLORODIBENZOFURAN	2.97	--	2.97	DNR	EXC
SIB-055-TOB-0-1-10192022	2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN	0.618	K	0.618	J	EMPC
SIB-055-OHW-0-1-10192022	1,2,3,4,7,8-HEXACHLORODIBENZO-P-DIOXIN	1.21	JK	1.21	J	EMPC
SIB-055-OHW-0-1-10192022	2,3,4,7,8-PENTACHLORODIBENZOFURAN	1.83	JK	1.83	J	EMPC
SIB-054-TOB-0-1-10192022	1,2,3,7,8-PENTACHLORODIBENZO-P-DIOXIN	9.45	K	9.45	J	EMPC
SIB-054-TOB-0-1-10192022	2,3,7,8-TETRACHLORODIBENZOFURAN	5.31	--	5.31	DNR	EXC
SIB-054-TOB-0-1-10192022	2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN	0.951	K	0.951	J	EMPC
SIB-054-TOB-0-1-10192022	OCTACHLORODIBENZO-P-DIOXIN	5660	E	5660	J	ACR
SIB-054-OHW-0-1-10192022	1,2,3,4,7,8-HEXACHLORODIBENZOFURAN	1.83	JK	1.83	J	EMPC
SIB-054-OHW-0-1-10192022	1,2,3,4,7,8-HEXACHLORODIBENZO-P-DIOXIN	1.18	JK	1.18	J	EMPC
SIB-054-OHW-0-1-10192022	1,2,3,6,7,8-HEXACHLORODIBENZO-P-DIOXIN	2.33	JK	2.33	J	EMPC
SIB-054-OHW-0-1-10192022	1,2,3,7,8,9-HEXACHLORODIBENZO-P-DIOXIN	1.57	JK	1.57	J	EMPC
SIB-054-OHW-0-1-10192022	2,3,4,6,7,8-HEXACHLORODIBENZOFURAN	0.973	JK	0.973	J	EMPC
SIB-054-OHW-0-1-10192022	OCTACHLORODIBENZOFURAN	16.2	K	16.2	J	EMPC