igh-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 #: 21637
Laboratory: CFA	Project #: DT2002.03.03.04.01
HydroGeoLogic, Inc. Validator: John Tracy	Validation Date: 09.12.23
HGL Peer Reviewer: Ken Rapuano	Peer Review Date: 9.18.23

Client Sample ID	Laboratory Sample ID	Matrix
SIB-114-TOB-2-3-10042022	21637001	Riverbank Soil
SIB-113-TOB-1-2-10042022	21637002	Riverbank Soil
SIB-112-MLW-1-2-10042022	21637003	Riverbank Soil
SIB-112-MLW-2-3-10042022	21637004	Riverbank Soil
SIB-112-TOB-1-2-10052022	21637005	Riverbank Soil
SIB-112-TOB-2-3-10052022	21637006	Riverbank Soil
SIB-118-TOB-1-2-10042022	21637007	Riverbank Soil
SIB-116-TOB-1-2-10042022	21637008	Riverbank Soil
SIB-115-TOB-1-2-10042022	21637009	Riverbank Soil
SIB-120-OHW-1-2-10032022	21637010	Riverbank Soil
SIB-119-OHW-1-2-10032022	21637011	Riverbank Soil
SIB-119-TOB-1-2-10042022	21637012	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 – 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 bank was contaminated with target analytes including the following:

- 1,2,3,4,6,7,8-HpCDD at 0.256 pg/g, leading to a qualification limit of 1.28 pg/g
- 1,2,3,4,6,7,8,9-OCDD at 0.536 pg/g, leading to a qualification limit of 2.68 pg/g
- 1,2,3,4,7,8-HxCDF at 0.138 pg/g, leading to a qualification limit of 0.69 pg/g
- 1,2,3,4,6,7,8-HpCDF at 0.186 pg/g, leading to a qualification limit of 0.93 pg/g

Detections in associated samples less than or equal to the qualification limits should be qualified U-MBL.

Qualification: **The following results were qualified U-MBL; the detect_flag for the affected results is changed from Y to N.**

- **The 1,2,3,4,7,8-HxCDF results in samples SIB-112-MLW-1-2-10042022 and SIB-112-MLW-2-3-10042022**

Rinsate Blanks – Rinse blank EB01-10052022 (results reported in SDG 20574) is associated with all samples in this SDG and was free from contamination.

Qualification: None required.

Laboratory Control Sample (LCS) and Laboratory Control Sample Duplicate (LCSD) – LCS/LCSD %Rs and RPDs 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-114-TOB-2-3-10042022. All %Rs were within QAPP control limits in the MS/MSD with the exception of 1,2,3,4,6,7,8-HpCDD, 1,2,3,4,6,7,8,9-OCDD, and 1,2,3,4,6,7,8,9-OCDF, which all recovered above control limits in the MSD. For 1,2,3,4,6,7,8,9-OCDD, the sample concentration was >4x the spike concentration and the %R results are not applicable. The results for 1,2,3,4,6,7,8-HpCDD and 1,2,3,4,6,7,8,9-OCDF in the parent sample should be qualified J. All RPDs were within QAPP control limits with the exception of 1,2,3,4,6,7,8,9-OCDD and 1,2,3,4,6,7,8,9-OCDF. These results in the parent sample should be qualified J.

Qualification: **In sample SIB-114-TOB-2-3-10042022, the 1,2,3,4,6,7,8-HpCDD result is qualified J, reason code MSH, the 1,2,3,4,6,7,8,9-OCDF result is qualified J, reason code MSH,MSP, and the 1,2,3,4,6,7,8,9-OCDD result is qualified J, reason code MSP.**

Field Duplicate – No field duplicate was submitted with this SDG.

Qualification: None required.

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 3 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.**
- **Three 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.**
- **One total heptachloro-p-dioxin result reported with a laboratory qualifier of E has the reportable_result field populated with "No" by the laboratory and is changed to "Yes". Although total congener results are not validated, this result is reportable.**

Qualification Summary Table (results in pg/g):

Sample	Analyte	Lab Value	Lab Qualifier	Validated Value	Validated Qualifier	Reason Code
SIB-114-TOB-2-3-10042022	1,2,3,4,6,7,8-HEPTACHLORODIBENZO-P-DIOXIN	123	--	123	J	MSH
SIB-114-TOB-2-3-10042022	1,2,3,4,7,8-HEXACHLORODIBENZO-P-DIOXIN	1.31	JK	1.31	J	EMPC
SIB-114-TOB-2-3-10042022	1,2,3,7,8-PENTACHLORODIBENZO-P-DIOXIN	0.901	JK	0.901	J	EMPC
SIB-114-TOB-2-3-10042022	2,3,7,8-TETRACHLORODIBENZOFURAN	0.873	JK	0.873	J	EMPC
SIB-114-TOB-2-3-10042022	OCTACHLORODIBENZOFURAN	29.7	--	29.7	J	MSH,MSP
SIB-114-TOB-2-3-10042022	OCTACHLORODIBENZO-P-DIOXIN	1020	--	1020	J	MSP
SIB-113-TOB-1-2-10042022	1,2,3,7,8,9-HEXACHLORODIBENZO-P-DIOXIN	56.6	K	56.6	J	EMPC
SIB-113-TOB-1-2-10042022	2,3,4,7,8-PENTACHLORODIBENZOFURAN	6.68	K	6.68	J	EMPC
SIB-113-TOB-1-2-10042022	2,3,7,8-TETRACHLORODIBENZOFURAN	1.89	--	1.89	DNR	EXC
SIB-113-TOB-1-2-10042022	2,3,7,8-TETRACHLORODIBENZOFURAN	1.7	K	1.7	J	EMPC
SIB-113-TOB-1-2-10042022	OCTACHLORODIBENZO-P-DIOXIN	4940	E	4940	J	ACR
SIB-112-MLW-1-2-10042022	1,2,3,4,7,8-HEXACHLORODIBENZOFURAN	0.264	BJK	0.264	UJ	MBL,EMPC
SIB-112-MLW-1-2-10042022	1,2,3,6,7,8-HEXACHLORODIBENZOFURAN	0.236	JK	0.236	J	EMPC
SIB-112-MLW-1-2-10042022	1,2,3,6,7,8-HEXACHLORODIBENZO-P-DIOXIN	0.282	JK	0.282	J	EMPC
SIB-112-MLW-1-2-10042022	1,2,3,7,8-PENTACHLORODIBENZOFURAN	0.152	JK	0.152	J	EMPC
SIB-112-MLW-1-2-10042022	2,3,4,6,7,8-HEXACHLORODIBENZOFURAN	0.158	JK	0.158	J	EMPC
SIB-112-MLW-1-2-10042022	2,3,4,7,8-PENTACHLORODIBENZOFURAN	0.228	JK	0.228	J	EMPC
SIB-112-MLW-2-3-10042022	1,2,3,4,7,8-HEXACHLORODIBENZOFURAN	0.206	BJ	0.206	U	MBL
SIB-112-MLW-2-3-10042022	2,3,7,8-TETRACHLORODIBENZOFURAN	0.326	JK	0.326	J	EMPC
SIB-112-TOB-1-2-10052022	1,2,3,4,7,8-HEXACHLORODIBENZOFURAN	4.32	JK	4.32	J	EMPC
SIB-112-TOB-1-2-10052022	1,2,3,6,7,8-HEXACHLORODIBENZOFURAN	0.788	JK	0.788	J	EMPC
SIB-112-TOB-1-2-10052022	1,2,3,6,7,8-HEXACHLORODIBENZO-P-DIOXIN	2.41	JK	2.41	J	EMPC
SIB-112-TOB-1-2-10052022	1,2,3,7,8-PENTACHLORODIBENZO-P-DIOXIN	0.924	JK	0.924	J	EMPC
SIB-112-TOB-1-2-10052022	2,3,4,7,8-PENTACHLORODIBENZOFURAN	1.37	JK	1.37	J	EMPC
SIB-112-TOB-1-2-10052022	2,3,7,8-TETRACHLORODIBENZOFURAN	0.858	JK	0.858	J	EMPC
SIB-112-TOB-2-3-10052022	1,2,3,4,7,8-HEXACHLORODIBENZOFURAN	1.71	JK	1.71	J	EMPC
SIB-112-TOB-2-3-10052022	2,3,4,7,8-PENTACHLORODIBENZOFURAN	0.627	JK	0.627	J	EMPC
SIB-118-TOB-1-2-10042022	1,2,3,6,7,8-HEXACHLORODIBENZOFURAN	1.97	JK	1.97	J	EMPC
SIB-116-TOB-1-2-10042022	1,2,3,4,7,8,9-HEPTACHLORODIBENZOFURAN	0.865	JK	0.865	J	EMPC

SIB-116-TOB-1-2-10042022	1,2,3,6,7,8-HEXACHLORODIBENZOFURAN	0.687	JK	0.687	J	EMPC
SIB-116-TOB-1-2-10042022	1,2,3,7,8-PENTACHLORODIBENZO-P-DIOXIN	2.6	K	2.6	J	EMPC
SIB-116-TOB-1-2-10042022	2,3,4,6,7,8-HEXACHLORODIBENZOFURAN	1.01	JK	1.01	J	EMPC
SIB-116-TOB-1-2-10042022	2,3,7,8-TETRACHLORODIBENZOFURAN	1.09	--	1.09	DNR	EXC
SIB-116-TOB-1-2-10042022	2,3,7,8-TETRACHLORODIBENZOFURAN	1.05	K	1.05	J	EMPC
SIB-115-TOB-1-2-10042022	1,2,3,7,8-PENTACHLORODIBENZO-P-DIOXIN	1.54	JK	1.54	J	EMPC
SIB-115-TOB-1-2-10042022	2,3,7,8-TETRACHLORODIBENZOFURAN	1.06	--	1.06	DNR	EXC
SIB-115-TOB-1-2-10042022	2,3,7,8-TETRACHLORODIBENZOFURAN	1.47	K	1.47	J	EMPC
SIB-120-OHW-1-2-10032022	1,2,3,4,7,8-HEXACHLORODIBENZO-P-DIOXIN	5.69	K	5.69	J	EMPC
SIB-120-OHW-1-2-10032022	1,2,3,7,8,9-HEXACHLORODIBENZO-P-DIOXIN	9.98	K	9.98	J	EMPC
SIB-120-OHW-1-2-10032022	2,3,7,8-TETRACHLORODIBENZOFURAN	2.1	--	2.1	DNR	EXC
SIB-120-OHW-1-2-10032022	OCTACHLORODIBENZO-P-DIOXIN	12400	E	12400	J	ACR
SIB-119-OHW-1-2-10032022	1,2,3,4,7,8-HEXACHLORODIBENZO-P-DIOXIN	3.02	JK	3.02	J	EMPC
SIB-119-OHW-1-2-10032022	1,2,3,6,7,8-HEXACHLORODIBENZO-P-DIOXIN	16.2	K	16.2	J	EMPC
SIB-119-OHW-1-2-10032022	1,2,3,7,8,9-HEXACHLORODIBENZO-P-DIOXIN	4.65	JK	4.65	J	EMPC
SIB-119-OHW-1-2-10032022	2,3,7,8-TETRACHLORODIBENZOFURAN	2.82	--	2.82	DNR	EXC
SIB-119-OHW-1-2-10032022	2,3,7,8-TETRACHLORODIBENZOFURAN	2.26	K	2.26	J	EMPC
SIB-119-OHW-1-2-10032022	OCTACHLORODIBENZO-P-DIOXIN	5130	E	5130	J	ACR
SIB-119-TOB-1-2-10042022	1,2,3,4,7,8-HEXACHLORODIBENZO-P-DIOXIN	1.43	JK	1.43	J	EMPC
SIB-119-TOB-1-2-10042022	1,2,3,7,8,9-HEXACHLORODIBENZO-P-DIOXIN	1.68	JK	1.68	J	EMPC
SIB-119-TOB-1-2-10042022	1,2,3,7,8-PENTACHLORODIBENZO-P-DIOXIN	1.17	JK	1.17	J	EMPC
SIB-119-TOB-1-2-10042022	2,3,4,7,8-PENTACHLORODIBENZOFURAN	0.962	JK	0.962	J	EMPC
SIB-119-TOB-1-2-10042022	2,3,7,8-TETRACHLORODIBENZOFURAN	1.44	--	1.44	DNR	EXC
SIB-119-TOB-1-2-10042022	2,3,7,8-TETRACHLORODIBENZOFURAN	1.18	K	1.18	J	EMPC