HGL Data Validation Review Report

Project Name/Number	PHSS-SIB PDI / DT2002
Data Validation Stage	4
Laboratory	ALS Environmental
SDG	K2212278
HGL Reviewer	Ken Rapuano 9/28/23
HGL Peer Review	Justin Hersh 9/29/2023

General issues: The HGL reviewer ensured that all results with an interpreted_qualifiers of U or UJ had the corresponding detect_flag field populated with N and that all rows had Y in the validated_yn field.

The DV report used the higher of the method blank or equipment blank results (on-column) to qualify associated results. Although HGL's internal protocol is to use all applicable reason codes, using the reason code only associated with the highest associated blank is consistent with the NFG and is acceptable for this project.

Although equipment blank results are not validated, the method blanks associated with the equipment blanks were contaminated with several target analytes.

- For EB02-10102022, these analytes included DRO, RRO, BEHP, and the PAHs 2-methylnaphthalene, fluorene, and phenanthrene. In most cases, the concentration in the aqueous method blank was below the corresponding concentration found in the equipment blank and in the judgment of the HGL reviewer, it is appropriate to use the equipment blank to qualify any associated sample results for those analytes. However, the concentration of BEHP was below the concentration detected in the associated aqueous method blank and the RRO result was only slightly greater than the aqueous method blank result; these two analytes are also considered to be laboratory artifacts due to aqueous preparation rather than field cross-contamination artifacts.
- For EB03-10192022, these analytes included DRO, RRO, BEHP, and multiple PAHs. The concentrations of most contaminants found in the aqueous method blank associated with EB03-10192022 were similar to the corresponding concentration found in the equipment blank and in the judgment of the HGL reviewer, it is appropriate to consider the detected results in the equipment blank to be laboratory artifacts due to aqueous preparation rather than field cross-contamination artifacts. This affects bis(2-ethylhexyl)phthalate and all PAHs except 2-methylnaphthalene and naphthalene.

Any change to qualification or reason codes is discussed in the method-specific sections below.

<u>Diesel Range Organics (DRO) and Residual Range Organics (RRO):</u>

The DV report used the on-column concentration to determine when to apply qualification for equipment blank contamination. This is appropriate when the dilution factor is 1; however, when the sample is diluted, this has the effect of applying the dilution factor to the qualification limit due to the equipment blank. HGL considers the undiluted qualification limit to be an absolute limit of the potential contribution of cross-contamination during sampling and applying the dilution factor on a sample-specific basis artificially overestimates the potential impact of field sampling cross contamination. When determining whether qualification should be applied, the equipment blank on-column qualification limit should be divided by the dilution factor to appropriately separate field contamination from laboratory contamination as represented by the method blank. The TPH-DRO

and TPH-RRO results reported for samples SIB-011-OHW-0-1-10172022 and SIB-014-MLW-0-1-10172022 are above the qualification limit associated with the equipment blank when the dilution adjustment is removed. The TPH-DRO result for sample SIB-011-OHW-0-1-10172022 is below the corresponding method blank qualification threshold and the reason code for this result is changed to MBL. The other three affected results are above the corresponding method blank qualification limit and the U qualifier and EBL reason code is removed and not replaced for these three results.

The DV report assigned U qualifiers to the RRO results for two undiluted samples due to this compound being detected in associated equipment blank EB02-10102022. Although RRO is considered a false positive in the equipment blank (see General Issues above), RRO was also detected in the method blank associated with these samples. For sample SIB-068-MLW-0-1-10142022, the RRO result is also below the qualification limit (adjusted in raw data) associated with the soil method blank. Reason code EBL should be removed from these results and replaced with MBL. For sample SIB-068-OHW-0-1-10142022, the U qualifier and EBL reason code should be removed from the RRO result.

Sample	Analyte	Validated Result	Validated Qualifier	Modified Validated Qualifier	Modified Interpreted Qualifier	Modified Final Reason Code
SIB-011-OHW-0-1-10172022	DRO	150	U	U	U	MBL
SIB-011-OHW-0-1-10172022	RRO	890	U	--	J	--
SIB-014-MLW-0-1-10172022	DRO	320	U	--	--	--
SIB-014-MLW-0-1-10172022	RRO	860	U	--	J	--
SIB-068-OHW-0-1-10142022	RRO	30	UJ	J	J	CCVD
SIB-068-MLW-0-1-10142022	RRO	10	UJ	UJ	UJ	MBL, CCVD

Tributyltin:

No issues noted.

Organochlorine Pesticides:

No issues noted.

bis(2-Ethylhexyl)phthalate; Polycyclic Aromatic Hydrocarbons (PAHs):

Nine of the 18 B2EHP results were qualified U due to contamination in the equipment blank; these results should have the U-qualifier and EBH reason code removed due to the equipment blank results being considered analytical artifacts (see General Issues). The soil method blank associated with these samples was contaminated; the B2EHP results for samples SIB-010-TOB-0-1-10172022 and FD08-10172022 are below the method blank qualification limit and EBH is replaced with MBL as the reason code. For the other 7 samples, the U-EBH is removed and not replaced.

In multiple cases, PAH results were qualified U due to contamination in the equipment blank that was determined to be caused by laboratory aqueous preparation contamination rather than field cross-contamination (see General Issues). In all but one case, the affected sample results are greater

than the qualification limit established by the corresponding soil method blank and the U qualifier and EBL or EBH reason code are removed and not replaced. The benzo(a)anthracene result for sample FD08-10172022 has the EBH reason code is replaced with the MBL reason code.

The MS and MSD %Rs for chrysene were extremely low; the HGL reviewer changed the reason code applied to the chrysene result for sample SIB-012-MLW-0-1-10172022 from MSL to MSLX.

Sample	Analyte	Validated Result	Validated Qualifier	Modified Validated Qualifier	Modified Interpreted Qualifier	Modified Final Reason Code
SIB-007-TOB-0-1-10172022	bis(2-Ethylhexyl)phthalate	740	U	--	--	--
SIB-007-OHW-0-1-10172022	bis(2-Ethylhexyl)phthalate	360	U	--	--	--
SIB-008-OHW-0-1-10172022	bis(2-Ethylhexyl)phthalate	550	U	--	--	--
SIB-009-TOB-0-1-10172022	bis(2-Ethylhexyl)phthalate	360	U	--	--	--
SIB-009-OHW-0-1-10172022	bis(2-Ethylhexyl)phthalate	250	UJ	J	J	SSH
SIB-010-TOB-0-1-10172022	bis(2-Ethylhexyl)phthalate	58	UJ	UJ	UJ	MBL, SSH
SIB-010-OHW-0-1-10172022	bis(2-Ethylhexyl)phthalate	480	UJ	J	J	SSH
SIB-011-OHW-0-1-10172022	bis(2-Ethylhexyl)phthalate	2700	UJ	J	J	SSH
SIB-012-MLW-0-1-10172022	bis(2-Ethylhexyl)phthalate	370	UJ	J	J	SSH
SIB-014-MLW-0-1-10172022	bis(2-Ethylhexyl)phthalate	280	UJ	J	J	SSH
FD08-10172022	bis(2-Ethylhexyl)phthalate	56	UJ	UJ	UJ	MBL, SSH
SIB-007-OHW-0-1-10172022	Fluoranthene	49	U	--	--	--
SIB-007-OHW-0-1-10172022	Phenanthrene	27	U	--	--	--
SIB-007-OHW-0-1-10172022	Pyrene	43	U	--	--	--
SIB-008-MLW-0-1-10172022	Benzo(a)anthracene	9.9	U	--	--	--
SIB-008-MLW-0-1-10172022	Benzo(g,h,i)perylene	11	U	--	--	--
SIB-008-MLW-0-1-10172022	Chrysene	17	U	--	--	--
SIB-008-MLW-0-1-10172022	Fluoranthene	22	U	--	--	--
SIB-008-MLW-0-1-10172022	Phenanthrene	11	U	--	--	--
SIB-008-MLW-0-1-10172022	Pyrene	18	U	--	--	--
SIB-009-OHW-0-1-10172022	Benzo(a)anthracene	9.8	U	--	--	--
SIB-009-OHW-0-1-10172022	Chrysene	15	U	--	--	--
SIB-009-OHW-0-1-10172022	Fluoranthene	27	U	--	--	--
SIB-009-OHW-0-1-10172022	Phenanthrene	15	U	--	--	--
SIB-009-OHW-0-1-10172022	Pyrene	23	U	--	--	--
SIB-010-TOB-0-1-10172022	Chrysene	19	U	--	--	--
SIB-010-TOB-0-1-10172022	Fluoranthene	23	U	--	--	--
SIB-010-TOB-0-1-10172022	Phenanthrene	7.3	U	--	--	--

Sample	Analyte	Validated Result	Validated Qualifier	Modified Validated Qualifier	Modified Interpreted Qualifier	Modified Final Reason Code
SIB-010-TOB-0-1-10172022	Pyrene	29	U	--	--	--
SIB-012-MLW-0-1-10172022	Chrysene	1800	J	J	J	MSLX
SIB-014-MLW-0-1-10172022	Pyrene	490	U	--	--	--
FD08-10172022	Benzo(a)anthracene	2.3	UJ	UJ	UJ	MBL, FDPA
FD08-10172022	Benzo(b)fluoranthene	3.3	UJ	J	J	FDPA
FD08-10172022	Benzo(g,h,i)perylene	1.8	UJ	J	J	FDPA
FD08-10172022	Chrysene	2.7	UJ	J	J	FDPA
FD08-10172022	Fluoranthene	2.8	UJ	J	J	FDPA
FD08-10172022	Phenanthrene	3.8	UJ	J	J	FDPA
FD08-10172022	Pyrene	7.8	UJ	J	J	FDPA

Total Organic Carbon (TOC):

The DV report indicated that all analyses were performed within the holding time. The holding time for soil samples listed in the QAPP is incorrect. The HGL reviewer confirmed that all samples were analyzed within the correct holding time of 28 days.