DATA VALIDATION CHECKLIST – STAGE 2A

Site Name	Joint Base Pearl Harbor - Hickam	**Project Name**	Red-Hill-Incident
Data Reviewer (signature and date)	Jan 24, 2022	**Technical Reviewer (signature and date)**	Jan 25, 2022
Laboratory Report No.	2112152	**Laboratory**	Torrent Laboratory, Inc. - Milpitas, CA
Analyses	Semivolatile organic compounds (SVOC) by EPA SW-846 Method 8270 using selected ion monitoring, total petroleum hydrocarbons (TPH) by EPA SW-846 Method 8015B, and total organic carbon (TOC) by SM 5310B		
Samples and Matrix	One groundwater sample (AIEA Halawa Water Sample)		
Field Duplicate Pairs	None		
Field Blanks	None		

INTRODUCTION,

This checklist summarizes the Stage 2A validation performed on the subject laboratory report, in accordance with the U.S. Environmental Protection Agency (EPA) *Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use* (January 2009). Analytical data were evaluated in general accordance with the EPA *National Functional Guidelines (NFG) for Organic Superfund Methods Data Review* (November 2020).

OVERALL EVALUATION

No rejection or qualification of results was required for this data package. All results are usable as reported by the laboratory.

Data completeness:

Within Criteria	Exceedance/Notes
N	The laboratory reported water method blanks and water laboratory control samples for TPH diesel and motor oil and TPH diesel (SG) and motor oil (SG) in solid units of mg/Kg. The laboratory was contacted to review this issue, and the laboratory confirmed water method blank and LCS samples in units of mg/Kg are incorrect and the correct units are mg/L. The laboratory provided revised laboratory reports to correct the issue.

DATA VALIDATION CHECKLIST – STAGE 2A

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
N	All sample containers were received intact and with proper COC documentation. The cooler temperature and sample preservation (as applicable) were verified upon receipt of the samples. An attached email requested TPH using silica gel cleanup, but this analysis was not performed by the laboratory. No qualifications were applied for this variance. No custody seals were present on sample or shipping containers, but no qualifications were applied for this field oversight.

Method blanks:

Within Criteria	Exceedance/Notes
N	**TOC by 5310** • Batch 1137773: The method blank contained 0.52 milligrams per liter (mg/L) of TOC; however, no qualification was applied because the TOC sample result exceeded the reporting limit and is greater than 10x the concentration of TOC in the method blank.

Field blanks:

Within Criteria	Exceedance/Notes
NA	

System monitoring compounds (surrogates and labeled compounds):

Within Criteria	Exceedance/Notes
Y	

MS/MSD:

Within Criteria	Exceedance/Notes
NA	

Laboratory duplicates:

Within Criteria	Exceedance/Notes
NA	

Field duplicates:

Within Criteria	Exceedance/Notes
NA	

LCSs/LCSDs:

Within Criteria	Exceedance/Notes
N	Only method-specified analytes (as opposed to all reported analytes) were spiked in the LCS/LCSD. The NFG requires all of the SVOC and VOC target analytes to be spiked in the LCS/LCSD, but no qualifications were applied because the laboratory achieved the method 8270 and 8260 requirements by spiking a representative subset of SVOC and VOC method-specified analytes (as opposed to all reported analytes) in the LCS/LCSD.

Sample dilutions:

Within Criteria	Exceedance/Notes
Y	The Sample was analyzed undiluted.

Re-extraction and reanalysis:

Within Criteria	Exceedance/Notes
NA	

DATA VALIDATION CHECKLIST – STAGE 2A

MDLs/RLs:

Within Criteria	Exceedance/Notes
Y	Analytes detected between the MDL and RL were not present. The nondetect sample results are reported at the reporting limit (identified as PQL [project quantitation limit] in the laboratory report) and qualified non-detect (flagged U).

Tentatively identified compounds:

Within Criteria	Exceedance/Notes
NA	

Other [none]:

Within Criteria	Exceedance/Notes
NA	

Overall Qualifications:

See results summary pages attached for changes to the laboratory qualifiers based upon this validation. The following is a list of qualifiers and definitions that may be used for the validation of this data package:

J	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample.
J+	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample and may be biased high.
J-	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample and may be biased low.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated value is the approximate concentration of the analyte in the sample.
R	The sample result is rejected as unusable due to serious deficiencies in one or more quality control criteria. The analyte may or may not be present in the sample.
U	The analyte was analyzed for, but was not detected at or above the associated value (reporting limit).
UJ	The analyte was analyzed for, but was not detected at or above the associated value (reporting limit), which is considered approximate due to deficiencies in one or more quality control criteria.

Talaidh Isaacs 01/24/2022

Torrent LABORATORY, INC.

SAMPLE RESULTS

Report prepared for: Yvonne Parry
Tetra Tech Inc (HI)

Date/Time Received: 12/11/21, 4:22 pm
Date Reported: 12/16/21

Client Sample ID:	AIEA Halawa Water Sample	**Lab Sample ID:**	2112152-001A
Project Name/Location:	HDOH Red Hill	**Sample Matrix:**	Water
Project Number:			
Date/Time Sampled:	12/09/21 / 10:30		
SDG:			

Prep Method:	3510_BNASIM	**Prep Batch Date/Time:**	12/15/21 9:54:00AM
Prep Batch ID:	1137731	**Prep Analyst:**	NDUM

Parameters:	Analysis Method	DF	MDL	PQL	Results	Q	Units	Analyzed	Time	By	Analytical Batch
Pyridine	SW8270	1	0.450	3.6 U	ND		ug/L	12/16/21	0:59	TA	462240
N-Nitrosdimethylamine	SW8270	1	0.450	3.6 U	ND		ug/L	12/16/21	0:59	TA	462240
Aniline	SW8270	1	0.900	3.6 U	ND		ug/L	12/16/21	0:59	TA	462240
Phenol	SW8270	1	0.450	3.6 U	ND		ug/L	12/16/21	0:59	TA	462240
Bis(2-chloroethyl) ether	SW8270	1	0.900	3.6 U	ND		ug/L	12/16/21	0:59	TA	462240
2-Chlorophenol	SW8270	1	0.450	3.6 U	ND		ug/L	12/16/21	0:59	TA	462240
1,3-Dichlorobenzene	SW8270	1	0.450	3.6 U	ND		ug/L	12/16/21	0:59	TA	462240
1,4-Dichlorobenzene	SW8270	1	0.450	3.6 U	ND		ug/L	12/16/21	0:59	TA	462240
Benzyl Alcohol	SW8270	1	0.900	3.6 U	ND		ug/L	12/16/21	0:59	TA	462240
1,2-Dichlorobenzene	SW8270	1	0.900	3.6 U	ND		ug/L	12/16/21	0:59	TA	462240
2-Methylphenol (o-Cresol)	SW8270	1	0.900	3.6 U	ND		ug/L	12/16/21	0:59	TA	462240
Bis(2-chloroisopropyl)ether	SW8270	1	0.450	3.6 U	ND		ug/L	12/16/21	0:59	TA	462240
3-/4-Methylphenol (p-/m-Cresol)	SW8270	1	0.450	3.6 U	ND		ug/L	12/16/21	0:59	TA	462240
N-nitroso-di-n-propylamine	SW8270	1	0.900	3.6 U	ND		ug/L	12/16/21	0:59	TA	462240
Hexachloroethane	SW8270	1	0.450	3.6 U	ND		ug/L	12/16/21	0:59	TA	462240
Nitrobenzene	SW8270	1	0.900	18 U	ND		ug/L	12/16/21	0:59	TA	462240
Isophorone	SW8270	1	0.900	3.6 U	ND		ug/L	12/16/21	0:59	TA	462240
2-Nitrophenol	SW8270	1	0.450	3.6 U	ND		ug/L	12/16/21	0:59	TA	462240
2,4-Dimethylphenol	SW8270	1	0.900	3.6 U	ND		ug/L	12/16/21	0:59	TA	462240
Benzoic Acid	SW8270	1	0.450	3.6 U	ND		ug/L	12/16/21	0:59	TA	462240
Bis(2-Chloroethoxy)methane	SW8270	1	0.900	3.6 U	ND		ug/L	12/16/21	0:59	TA	462240
2,4-Dichlorophenol	SW8270	1	0.180	3.6 U	ND		ug/L	12/16/21	0:59	TA	462240
1,2,4-Trichlorobenzene	SW8270	1	0.450	3.6 U	ND		ug/L	12/16/21	0:59	TA	462240
2,6-Dichlorophenol	SW8270	1	0.900	3.6 U	ND		ug/L	12/16/21	0:59	TA	462240
Naphthalene	SW8270	1	0.180	0.54 U	ND		ug/L	12/16/21	0:59	TA	462240
4-Chloroaniline	SW8270	1	0.180	3.6 U	ND		ug/L	12/16/21	0:59	TA	462240
Hexachloro-1,3-butadiene	SW8270	1	0.450	18 U	ND		ug/L	12/16/21	0:59	TA	462240
4-Chloro-3-methylphenol	SW8270	1	0.900	3.6 U	ND		ug/L	12/16/21	0:59	TA	462240
2-Methylnaphthalene	SW8270	1	0.900	3.6 U	ND		ug/L	12/16/21	0:59	TA	462240
1-Methylnaphthalene	SW8270	1	0.450	3.6 U	ND		ug/L	12/16/21	0:59	TA	462240
Hexachlorocyclopentadiene	SW8270	1	0.450	3.6 U	ND		ug/L	12/16/21	0:59	TA	462240
2,4,6-Trichlorophenol	SW8270	1	0.450	3.6 U	ND		ug/L	12/16/21	0:59	TA	462240
2,4,5-Trichlorophenol	SW8270	1	0.450	3.6 U	ND		ug/L	12/16/21	0:59	TA	462240
2-Chloronaphthalene	SW8270	1	0.180	0.54 U	ND		ug/L	12/16/21	0:59	TA	462240
2-Nitroaniline	SW8270	1	0.900	9.0 U	ND		ug/L	12/16/21	0:59	TA	462240
1,4-Dinitrobenzene	SW8270	1	0.900	3.6 U	ND		ug/L	12/16/21	0:59	TA	462240
Dimethyl phthalate	SW8270	1	0.900	3.6 U	ND		ug/L	12/16/21	0:59	TA	462240
1,3-Dinitrobenzene	SW8270	1	0.450	3.6 U	ND		ug/L	12/16/21	0:59	TA	462240
Acenaphthylene	SW8270	1	0.180	0.54 U	ND		ug/L	12/16/21	0:59	TA	462240

Torrent LABORATORY, INC.

Talaidh Isaacs 01/24/2022

SAMPLE RESULTS

Report prepared for: Yvonne Parry
Tetra Tech Inc (HI)

Date/Time Received: 12/11/21, 4:22 pm
Date Reported: 12/16/21

Client Sample ID:	AIEA Halawa Water Sample	**Lab Sample ID:**	2112152-001A
Project Name/Location:	HDOH Red Hill	**Sample Matrix:**	Water
Project Number:			
Date/Time Sampled:	12/09/21 / 10:30		
SDG:			

Prep Method:	3510_BNASIM	**Prep Batch Date/Time:**	12/15/21 9:54:00AM
Prep Batch ID:	1137731	**Prep Analyst:**	NDUM

Parameters:	Analysis Method	DF	MDL	PQL	Results	Q	Units	Analyzed	Time	By	Analytical Batch
2,6-Dinitrotoluene	SW8270	1	0.450	3.6	ND	U	ug/L	12/16/21	0:59	TA	462240
1,2-Dinitrobenzene	SW8270	1	0.450	3.6	ND	U	ug/L	12/16/21	0:59	TA	462240
3-Nitroaniline	SW8270	1	0.450	3.6	ND	U	ug/L	12/16/21	0:59	TA	462240
Acenaphthene	SW8270	1	0.450	3.6	ND	U	ug/L	12/16/21	0:59	TA	462240
2,4-Dinitrophenol	SW8270	1	0.450	3.6	ND	U	ug/L	12/16/21	0:59	TA	462240
4-Nitrophenol	SW8270	1	0.900	3.6	ND	U	ug/L	12/16/21	0:59	TA	462240
Dibenzofuran	SW8270	1	0.180	0.54	ND	U	ug/L	12/16/21	0:59	TA	462240
2,4-Dinitrotoluene	SW8270	1	0.180	3.6	ND	U	ug/L	12/16/21	0:59	TA	462240
2,3,5,6-Tetrachlorophenol	SW8270	1	0.450	3.6	ND	U	ug/L	12/16/21	0:59	TA	462240
2,3,4,6-Tetrachlorophenol	SW8270	1	0.450	3.6	ND	U	ug/L	12/16/21	0:59	TA	462240
Diethylphthalate	SW8270	1	0.450	3.6	ND	U	ug/L	12/16/21	0:59	TA	462240
Fluorene	SW8270	1	0.450	3.6	ND	U	ug/L	12/16/21	0:59	TA	462240
4-Chlorophenyl phenyl ether	SW8270	1	0.450	3.6	ND	U	ug/L	12/16/21	0:59	TA	462240
4-Nitroaniline	SW8270	1	0.450	3.6	ND	U	ug/L	12/16/21	0:59	TA	462240
4,6-Dinitro-2-methylphenol	SW8270	1	0.450	3.6	ND	U	ug/L	12/16/21	0:59	TA	462240
Diphenylamine	SW8270	1	0.450	3.6	ND	U	ug/L	12/16/21	0:59	TA	462240
Azobenzene	SW8270	1	0.450	3.6	ND	U	ug/L	12/16/21	0:59	TA	462240
4-Bromophenyl phenyl ether	SW8270	1	0.450	3.6	ND	U	ug/L	12/16/21	0:59	TA	462240
Hexachlorobenzene	SW8270	1	0.180	0.54	ND	U	ug/L	12/16/21	0:59	TA	462240
Pentachlorophenol	SW8270	1	0.180	0.54	ND	U	ug/L	12/16/21	0:59	TA	462240
Phenanthrene	SW8270	1	0.180	0.54	ND	U	ug/L	12/16/21	0:59	TA	462240
Anthracene	SW8270	1	0.180	0.54	ND	U	ug/L	12/16/21	0:59	TA	462240
Carbazole	SW8270	1	0.180	0.54	ND	U	ug/L	12/16/21	0:59	TA	462240
Di-n-butylphthalate	SW8270	1	0.450	3.6	ND	U	ug/L	12/16/21	0:59	TA	462240
Fluoranthene	SW8270	1	0.180	0.54	ND	U	ug/L	12/16/21	0:59	TA	462240
Benzidine	SW8270	1	0.180	0.54	ND	U	ug/L	12/16/21	0:59	TA	462240
Pyrene	SW8270	1	0.180	0.54	ND	U	ug/L	12/16/21	0:59	TA	462240
Benzyl butyl phthalate	SW8270	1	0.180	0.54	ND	U	ug/L	12/16/21	0:59	TA	462240
Benz[a]anthracene	SW8270	1	0.180	0.54	ND	U	ug/L	12/16/21	0:59	TA	462240
3,3-Dichlorobenzidine	SW8270	1	0.180	0.54	ND	U	ug/L	12/16/21	0:59	TA	462240
Chrysene	SW8270	1	0.180	0.54	ND	U	ug/L	12/16/21	0:59	TA	462240
Bis(2-Ethylhexyl)phthalate	SW8270	1	0.180	3.6	ND	U	ug/L	12/16/21	0:59	TA	462240
Di-n-octyl phthalate	SW8270	1	0.180	3.6	ND	U	ug/L	12/16/21	0:59	TA	462240
Benzo[b]fluoranthene	SW8270	1	0.180	0.54	ND	U	ug/L	12/16/21	0:59	TA	462240
Benzo[k]fluoranthene	SW8270	1	0.180	0.54	ND	U	ug/L	12/16/21	0:59	TA	462240
Benzo[a]pyrene	SW8270	1	0.180	0.54	ND	U	ug/L	12/16/21	0:59	TA	462240
Indeno[1,2,3-cd]pyrene	SW8270	1	0.180	0.54	ND	U	ug/L	12/16/21	0:59	TA	462240
Dibenz[a,h]anthracene	SW8270	1	0.180	0.54	ND	U	ug/L	12/16/21	0:59	TA	462240
Benzo[g,h,i]perylene	SW8270	1	0.180	0.54	ND	U	ug/L	12/16/21	0:59	TA	462240

Talaidh Isaacs 01/24/2022

SAMPLE RESULTS

Report prepared for: Yvonne Parry
Tetra Tech Inc (HI)

Date/Time Received: 12/11/21, 4:22 pm
Date Reported: 12/16/21

Client Sample ID:	AIEA Halawa Water Sample	**Lab Sample ID:**	2112152-001A
Project Name/Location:	HDOH Red Hill	**Sample Matrix:**	Water
Project Number:			
Date/Time Sampled:	12/09/21 / 10:30		
SDG:			

Prep Method:	3510_BNASIM	**Prep Batch Date/Time:**	12/15/21	9:54:00AM
Prep Batch ID:	1137731	**Prep Analyst:**	NDUM	

Parameters:	Analysis Method	DF	MDL	PQL	Results	Q	Units	Analyzed	Time	By	Analytical Batch
			Acceptance Limits								
2-Fluorophenol (S)	SW8270		15 - 105		**34.8**		%	12/16/21	0:59	TA	462240
Phenol-d6 (S)	SW8270		15 - 100		**20.2**		%	12/16/21	0:59	TA	462240
Nitrobenzene-d5 (S)	SW8270		30 - 100		**66.4**		%	12/16/21	0:59	TA	462240
2-Fluorobiphenyl (S)	SW8270		30 - 105		**71.2**		%	12/16/21	0:59	TA	462240
2,4,6-Tribromophenol (S)	SW8270		15 - 125		**79.7**		%	12/16/21	0:59	TA	462240
p-Terphenyl-d14 (S)	SW8270		30 - 125		**110**		%	12/16/21	0:59	TA	462240

Talaidh Isaacs 01/24/2022

SAMPLE RESULTS

Report prepared for: Yvonne Parry
Tetra Tech Inc (HI)

Date/Time Received: 12/11/21, 4:22 pm
Date Reported: 12/16/21

Client Sample ID:	AIEA Halawa Water Sample	**Lab Sample ID:**	2112152-001A
Project Name/Location:	HDOH Red Hill	**Sample Matrix:**	Water
Project Number:			
Date/Time Sampled:	12/09/21 / 10:30		
SDG:			

Prep Method:	3510_TPH	**Prep Batch Date/Time:**	12/14/21	9:49:00AM
Prep Batch ID:	1137683	**Prep Analyst:**	AKIZ	

Parameters:	Analysis Method	DF	MDL	PQL	Results	Q	Units	Analyzed	Time	By	Analytical Batch
TPH as Diesel	SW8015B	1	0.037	0.10	ND	U	mg/L	12/14/21	20:50	SN	462214
TPH as Motor Oil	SW8015B	1	0.11	0.40	ND	U	mg/L	12/14/21	20:50	SN	462214
			Acceptance Limits								
Pentacosane (S)	SW8015B		59 - 129		**87.9**		%	12/14/21	20:50	SN	462214

Torrent LABORATORY, INC.

Talaidh Isaacs 01/24/2022

SAMPLE RESULTS

Report prepared for: Yvonne Parry
Tetra Tech Inc (HI)

Date/Time Received: 12/11/21, 4:22 pm
Date Reported: 12/16/21

Client Sample ID:	AIEA Halawa Water Sample	**Lab Sample ID:**	2112152-001B
Project Name/Location:	HDOH Red Hill	**Sample Matrix:**	Water
Project Number:			
Date/Time Sampled:	12/09/21 / 10:30		
SDG:			

Prep Method:	TOC-W-P	**Prep Batch Date/Time:**	12/15/21	11:55:00AM
Prep Batch ID:	1137773	**Prep Analyst:**	BJAY	

Parameters:	Analysis Method	DF	MDL	PQL	Results	Q	Units	Analyzed	Time	By	Analytical Batch
TOC	A5310B	1	0.40	2.0	**26.9**		mg/L	12/15/21	11:55	BJAY	462251