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 27, 2022
Laboratory Report No.	2112083	**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, TPH using silica gel (SG) by EPA SW-846 Method 8015B, and total organic carbon (TOC) by SM 5310B		
Samples and Matrix	Two groundwater samples and one product 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

SVOC, motor oil, and motor oil (SG) nondetect results were rejected for this data package as described below. The remaining results are usable with the qualifications described in this checklist.

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	Sample 33/Red Hill Shaft (product) was biphasic, and the aqueous and product phases of this sample were analyzed separately. An aliquot was taken from the aqueous phase for TOC analysis. 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. 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	**SVOCs by 8270**. • Batch 1138098**:** The method blank contained 0.0697 micrograms per liter (µg/L) of diethyl phthalate, 0.286 µg/L of di-n-butyl phthalate, and 0.0748 µg/L of benzyl butyl phthalate; however, no qualifications were applied because the diethyl phthalate, di-n-butyl phthalate, and benzyl butyl phthalate results were nondetect. **TPH by 8015B** • Batch 1137557: The method blank contained 0.130 milligrams per liter (mg/L) of motor oil. No qualifications were applied to the motor oil non-detect results. **TPH (SG) by 8015B** • Batch 1137566: The method blank contained 0.137 mg/L of motor oil (SG). No qualifications were applied because the motor oil (SG) results were nondetect. **TOC by 5310** • Batch 1137614: The method blank contained 0.41 mg/L of TOC. No qualifications were applied because the TOC sample results exceeded the RL and are 10x greater than the blank value.

Field blanks:

Within Criteria	Exceedance/Notes
NA	

System monitoring compounds (surrogates and labeled compounds):

Within Criteria	Exceedance/Notes
N	**SVOC by 8270** • 32/Red Hill Upper Storage Tank: The acid extractable surrogate phenol-d_6 had a 7.49% recovery below the NFG 10% acceptance limit; therefore, all acid extractable non-detect sample results were rejected (flagged R). • 33/Red Hill Shaft (aqueous): The base/neutral extractable surrogate nitrobenzene-d_5 had a 0.0% recovery, and the acid extractable surrogate 2,4,6-tribromophenol had a 0.0% recovery, and both surrogate recoveries were below the NFG 10% acceptance limit; therefore, naphthalene, 2-methylnaphthalene, 1-methylnaphthalene, and dibenzofuran positive detections were qualified as estimated, possibly biased low (flagged J-), and the nondetect results were rejected (flagged R). • 33/Red Hill Shaft (product): All surrogates had 0.0% recoveries below the laboratory acceptance limits; however, no qualifications were applied to the SVOC results because the surrogates were diluted out. **TPH by 8015B** • 33/Red Hill Shaft (aqueous) and 33/Red Hill Shaft (product): The surrogate pentacosane had a 0.0% percent recovery below the laboratory 59% acceptance limit; however, no qualifications were applied to the diesel or motor oil results because the surrogate was diluted out. **TPH (SG) by 8015B** • 33/Red Hill Shaft (aqueous) and 33/Red Hill Shaft (product): The surrogate pentacosane had a 0.0% percent recovery below the laboratory 40% acceptance limit; however, no qualifications were applied to the diesel (SG) or motor oil (SG) results because the surrogate was diluted out.

MS/MSD:

Within Criteria	Exceedance/Notes
NA	

Laboratory duplicates:

Within Criteria	Exceedance/Notes
N	Laboratory duplicate analysis was only performed for TOC analysis.

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	While no qualifications were applied for sample dilutions, the data user should note the increased reporting limits. **33/Red Hill Shaft (aqueous):** • Diesel, motor oil, diesel (SG), and motor oil (SG) were analyzed with 50-fold dilutions. **33/Red Hill Shaft (product):** • Due to the oily and viscous nature of the matrix, all SVOCs were analyzed with 100-fold dilution. • Diesel, motor oil, diesel (SG), and motor oil (SG) were analyzed with 40-fold dilutions.

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
Y	2-(2-butoxyethoxy)ethanol was not identified in any of the samples.

Other [target analyte identification]:

Within Criteria	Exceedance/Notes
N	**TPH by 8015B** • The data user should note the laboratory's evaluation of the chromatography suggested the diesel pattern for samples 33/Red Hill Shaft (product) and 33/Red Hill Shaft (aqueous) did not match the pattern of the diesel reference standard. The diesel result for 33/Red Hill Shaft (product) and 33/Red Hill Shaft (aqueous) had contributions from unknown peaks within the diesel quantification range; therefore, the diesel result for 33/Red Hill Shaft (product) and 33/Red Hill Shaft (aqueous) was qualified as estimated (flagged J). **TPH (SG) by 8015B** • The data user should note the laboratory's evaluation of the chromatography suggested the diesel (SG) pattern for samples 33/Red Hill Shaft (aqueous) and 33/Red Hill Shaft (product) did not match the pattern of the diesel (SG) reference standard. The diesel (SG) result for the sample had contributions from unknown peaks within the diesel quantification range; therefore, the diesel (SG) result for 33/Red Hill Shaft (aqueous) and 33/Red Hill Shaft (product) was qualified as estimated (flagged J).

DATA VALIDATION CHECKLIST – STAGE 2A

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.

Torrent LABORATORY, INC.

Talaidh Isaacs 01/24/2022

SAMPLE RESULTS

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

Date/Time Received: 12/08/21, 10:33 am
Date Reported: 12/10/21

Client Sample ID:	32/Red Hill Upper Storage Tank	**Lab Sample ID:**	2112083-001A
Project Name/Location:	HDOH Red Hill	**Sample Matrix:**	Water
Project Number:			
Date/Time Sampled:	12/05/21 / 15:28		
SDG:			

Prep Method:	3510_BNASIM	**Prep Batch Date/Time:**	12/9/21 10:50:00AM
Prep Batch ID:	1137555	**Prep Analyst:**	AKIZ

Parameters:	Analysis Method	DF	MDL	PQL	Results	Q	Units	Analyzed	Time	By	Analytical Batch
Pyridine	SW8270	1	0.474	3.8 U	ND		ug/L	12/09/21	15:27	TA	462110
N-Nitrosdimethylamine	SW8270	1	0.474	3.8 U	ND		ug/L	12/09/21	15:27	TA	462110
Aniline	SW8270	1	0.947	3.8 U	ND		ug/L	12/09/21	15:27	TA	462110
Phenol	SW8270	1	0.474	3.8 U	ND		ug/L	12/09/21	15:27	TA	462110
Bis(2-chloroethyl) ether	SW8270	1	0.947	3.8 U	ND		ug/L	12/09/21	15:27	TA	462110
2-Chlorophenol	SW8270	1	0.474	3.8 R	ND		ug/L	12/09/21	15:27	TA	462110
1,3-Dichlorobenzene	SW8270	1	0.474	3.8 U	ND		ug/L	12/09/21	15:27	TA	462110
1,4-Dichlorobenzene	SW8270	1	0.474	3.8 U	ND		ug/L	12/09/21	15:27	TA	462110
Benzyl Alcohol	SW8270	1	0.947	3.8 R	ND		ug/L	12/09/21	15:27	TA	462110
1,2-Dichlorobenzene	SW8270	1	0.947	3.8 U	ND		ug/L	12/09/21	15:27	TA	462110
2-Methylphenol (o-Cresol)	SW8270	1	0.947	3.8 R	ND		ug/L	12/09/21	15:27	TA	462110
Bis(2-chloroisopropyl)ether	SW8270	1	0.474	3.8 U	ND		ug/L	12/09/21	15:27	TA	462110
3-/4-Methylphenol (p-/m-Cresol)	SW8270	1	0.474	3.8 R	ND		ug/L	12/09/21	15:27	TA	462110
N-nitroso-di-n-propylamine	SW8270	1	0.947	3.8 U	ND		ug/L	12/09/21	15:27	TA	462110
Hexachloroethane	SW8270	1	0.474	3.8 U	ND		ug/L	12/09/21	15:27	TA	462110
Nitrobenzene	SW8270	1	0.947	19 U	ND		ug/L	12/09/21	15:27	TA	462110
Isophorone	SW8270	1	0.947	3.8 U	ND		ug/L	12/09/21	15:27	TA	462110
2-Nitrophenol	SW8270	1	0.474	3.8 R	ND		ug/L	12/09/21	15:27	TA	462110
2,4-Dimethylphenol	SW8270	1	0.947	3.8 R	ND		ug/L	12/09/21	15:27	TA	462110
Benzoic Acid	SW8270	1	0.474	3.8 R	ND		ug/L	12/09/21	15:27	TA	462110
Bis(2-Chloroethoxy)methane	SW8270	1	0.947	3.8 U	ND		ug/L	12/09/21	15:27	TA	462110
2,4-Dichlorophenol	SW8270	1	0.189	3.8 R	ND		ug/L	12/09/21	15:27	TA	462110
1,2,4-Trichlorobenzene	SW8270	1	0.474	3.8 U	ND		ug/L	12/09/21	15:27	TA	462110
2,6-Dichlorophenol	SW8270	1	0.947	3.8 R	ND		ug/L	12/09/21	15:27	TA	462110
Naphthalene	SW8270	1	0.189	0.57 U	ND		ug/L	12/09/21	15:27	TA	462110
4-Chloroaniline	SW8270	1	0.189	3.8 U	ND		ug/L	12/09/21	15:27	TA	462110
Hexachloro-1,3-butadiene	SW8270	1	0.474	19 U	ND		ug/L	12/09/21	15:27	TA	462110
4-Chloro-3-methylphenol	SW8270	1	0.947	3.8 R	ND		ug/L	12/09/21	15:27	TA	462110
2-Methylnaphthalene	SW8270	1	0.947	3.8 U	ND		ug/L	12/09/21	15:27	TA	462110
1-Methylnaphthalene	SW8270	1	0.474	3.8 U	ND		ug/L	12/09/21	15:27	TA	462110
Hexachlorocyclopentadiene	SW8270	1	0.474	3.8 U	ND		ug/L	12/09/21	15:27	TA	462110
2,4,6-Trichlorophenol	SW8270	1	0.474	3.8 R	ND		ug/L	12/09/21	15:27	TA	462110
2,4,5-Trichlorophenol	SW8270	1	0.474	3.8 R	ND		ug/L	12/09/21	15:27	TA	462110
2-Chloronaphthalene	SW8270	1	0.189	0.57 U	ND		ug/L	12/09/21	15:27	TA	462110
2-Nitroaniline	SW8270	1	0.947	9.5 U	ND		ug/L	12/09/21	15:27	TA	462110
1,4-Dinitrobenzene	SW8270	1	0.947	3.8 U	ND		ug/L	12/09/21	15:27	TA	462110
Dimethyl phthalate	SW8270	1	0.947	3.8 U	ND		ug/L	12/09/21	15:27	TA	462110
1,3-Dinitrobenzene	SW8270	1	0.474	3.8 U	ND		ug/L	12/09/21	15:27	TA	462110
Acenaphthylene	SW8270	1	0.189	0.57 U	ND		ug/L	12/09/21	15:27	TA	462110

Torrent LABORATORY, INC.

Talaidh Isaacs 01/24/2022

SAMPLE RESULTS

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Date/Time Received: 12/08/21, 10:33 am
Date Reported: 12/10/21

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Project Name/Location:	HDOH Red Hill	**Sample Matrix:**	Water
Project Number:			
Date/Time Sampled:	12/05/21 / 15:28		
SDG:			

Prep Method:	3510_BNASIM	**Prep Batch Date/Time:**	12/9/21 10:50:00AM
Prep Batch ID:	1137555	**Prep Analyst:**	AKIZ

Parameters:	Analysis Method	DF	MDL	PQL	Results	Q	Units	Analyzed	Time	By	Analytical Batch
2,6-Dinitrotoluene	SW8270	1	0.474	3.8	ND	U	ug/L	12/09/21	15:27	TA	462110
1,2-Dinitrobenzene	SW8270	1	0.474	3.8	ND	U	ug/L	12/09/21	15:27	TA	462110
3-Nitroaniline	SW8270	1	0.474	3.8	ND	U	ug/L	12/09/21	15:27	TA	462110
Acenaphthene	SW8270	1	0.474	3.8	ND	U	ug/L	12/09/21	15:27	TA	462110
2,4-Dinitrophenol	SW8270	1	0.474	3.8	ND	R	ug/L	12/09/21	15:27	TA	462110
4-Nitrophenol	SW8270	1	0.947	3.8	ND	R	ug/L	12/09/21	15:27	TA	462110
Dibenzofuran	SW8270	1	0.189	0.57	ND	U	ug/L	12/09/21	15:27	TA	462110
2,4-Dinitrotoluene	SW8270	1	0.189	3.8	ND	U	ug/L	12/09/21	15:27	TA	462110
2,3,5,6-Tetrachlorophenol	SW8270	1	0.474	3.8	ND	R	ug/L	12/09/21	15:27	TA	462110
2,3,4,6-Tetrachlorophenol	SW8270	1	0.474	3.8	ND	R	ug/L	12/09/21	15:27	TA	462110
Diethylphthalate	SW8270	1	0.474	3.8	ND	U	ug/L	12/09/21	15:27	TA	462110
Fluorene	SW8270	1	0.474	3.8	ND	U	ug/L	12/09/21	15:27	TA	462110
4-Chlorophenyl phenyl ether	SW8270	1	0.474	3.8	ND	U	ug/L	12/09/21	15:27	TA	462110
4-Nitroaniline	SW8270	1	0.474	3.8	ND	U	ug/L	12/09/21	15:27	TA	462110
4,6-Dinitro-2-methylphenol	SW8270	1	0.474	3.8	ND	R	ug/L	12/09/21	15:27	TA	462110
Diphenylamine	SW8270	1	0.474	3.8	ND	U	ug/L	12/09/21	15:27	TA	462110
Azobenzene	SW8270	1	0.474	3.8	ND	U	ug/L	12/09/21	15:27	TA	462110
4-Bromophenyl phenyl ether	SW8270	1	0.474	3.8	ND	U	ug/L	12/09/21	15:27	TA	462110
Hexachlorobenzene	SW8270	1	0.189	0.57	ND	U	ug/L	12/09/21	15:27	TA	462110
Pentachlorophenol	SW8270	1	0.189	0.57	ND	R	ug/L	12/09/21	15:27	TA	462110
Phenanthrene	SW8270	1	0.189	0.57	ND	U	ug/L	12/09/21	15:27	TA	462110
Anthracene	SW8270	1	0.189	0.57	ND	U	ug/L	12/09/21	15:27	TA	462110
Carbazole	SW8270	1	0.189	0.57	ND	U	ug/L	12/09/21	15:27	TA	462110
Di-n-butylphthalate	SW8270	1	0.474	3.8	ND	U	ug/L	12/09/21	15:27	TA	462110
Fluoranthene	SW8270	1	0.189	0.57	ND	U	ug/L	12/09/21	15:27	TA	462110
Benzidine	SW8270	1	0.189	0.57	ND	U	ug/L	12/09/21	15:27	TA	462110
Pyrene	SW8270	1	0.189	0.57	ND	U	ug/L	12/09/21	15:27	TA	462110
Benzyl butyl phthalate	SW8270	1	0.189	0.57	ND	U	ug/L	12/09/21	15:27	TA	462110
Benz[a]anthracene	SW8270	1	0.189	0.57	ND	U	ug/L	12/09/21	15:27	TA	462110
3,3-Dichlorobenzidine	SW8270	1	0.189	0.57	ND	U	ug/L	12/09/21	15:27	TA	462110
Chrysene	SW8270	1	0.189	0.57	ND	U	ug/L	12/09/21	15:27	TA	462110
Bis(2-Ethylhexyl)phthalate	SW8270	1	0.189	3.8	ND	U	ug/L	12/09/21	15:27	TA	462110
Di-n-octyl phthalate	SW8270	1	0.189	3.8	ND	U	ug/L	12/09/21	15:27	TA	462110
Benzo[b]fluoranthene	SW8270	1	0.189	0.57	ND	U	ug/L	12/09/21	15:27	TA	462110
Benzo[k]fluoranthene	SW8270	1	0.189	0.57	ND	U	ug/L	12/09/21	15:27	TA	462110
Benzo[a]pyrene	SW8270	1	0.189	0.57	ND	U	ug/L	12/09/21	15:27	TA	462110
Indeno[1,2,3-cd]pyrene	SW8270	1	0.189	0.57	ND	U	ug/L	12/09/21	15:27	TA	462110
Dibenz[a,h]anthracene	SW8270	1	0.189	0.57	ND	U	ug/L	12/09/21	15:27	TA	462110
Benzo[g,h,i]perylene	SW8270	1	0.189	0.57	ND	U	ug/L	12/09/21	15:27	TA	462110

Torrent LABORATORY, INC.

Talaidh Isaacs 01/24/2022

SAMPLE RESULTS

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

Date/Time Received: 12/08/21, 10:33 am
Date Reported: 12/10/21

Client Sample ID:	32/Red Hill Upper Storage Tank	**Lab Sample ID:**	2112083-001A
Project Name/Location:	HDOH Red Hill	**Sample Matrix:**	Water
Project Number:			
Date/Time Sampled:	12/05/21 / 15:28		
SDG:			

Prep Method:	3510_BNASIM	**Prep Batch Date/Time:**	12/9/21 10:50:00AM
Prep Batch ID:	1137555	**Prep Analyst:**	AKIZ

Parameters:	Analysis Method	DF	MDL	PQL	Results	Q	Units	Analyzed	Time	By	Analytical Batch
			Acceptance Limits								
2-Fluorophenol (S)	SW8270		15 - 105		**35.8**		%	12/09/21	15:27	TA	462110
Phenol-d6 (S)	SW8270		15 - 100		**7.49**	S	%	12/09/21	15:27	TA	462110
Nitrobenzene-d5 (S)	SW8270		30 - 100		**60.8**		%	12/09/21	15:27	TA	462110
2-Fluorobiphenyl (S)	SW8270		30 - 105		**60.4**		%	12/09/21	15:27	TA	462110
2,4,6-Tribromophenol (S)	SW8270		15 - 125		**38.9**		%	12/09/21	15:27	TA	462110
p-Terphenyl-d14 (S)	SW8270		30 - 125		**96.6**		%	12/09/21	15:27	TA	462110

NOTE: S-surrogate outside of control limits due to possible matrix interference

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Date Reported: 12/10/21

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Project Name/Location:	HDOH Red Hill	**Sample Matrix:**	Water
Project Number:			
Date/Time Sampled:	12/05/21 / 15:28		
SDG:			

Prep Method:	3510_TPH	**Prep Batch Date/Time:**	12/9/21	11:01:00AM
Prep Batch ID:	1137557	**Prep Analyst:**	AKIZ	

Parameters:	Analysis Method	DF	MDL	PQL	Results	Q	Units	Analyzed	Time	By	Analytical Batch
TPH as Diesel	SW8015B	1	0.039	0.11	ND	U	mg/L	12/09/21	15:46		462092
TPH as Motor Oil	SW8015B	1	0.12	0.42	ND	U	mg/L	12/09/21	15:46		462092
			Acceptance Limits								
Pentacosane (S)	SW8015B		59 - 129		**91.4**		%	12/09/21	15:46		462092

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Date Reported: 12/10/21

Client Sample ID:	32/Red Hill Upper Storage Tank	**Lab Sample ID:**	2112083-001A
Project Name/Location:	HDOH Red Hill	**Sample Matrix:**	Water
Project Number:			
Date/Time Sampled:	12/05/21 / 15:28		
SDG:			

Prep Method:	3510_TPH SG	**Prep Batch Date/Time:**	12/9/21	1:48:00PM
Prep Batch ID:	1137566	**Prep Analyst:**	AKIZ	

Parameters:	Analysis Method	DF	MDL	PQL	Results	Q	Units	Analyzed	Time	By	Analytical Batch
TPH as Diesel (SG)	SW8015B	1	0.039	0.11 U	ND		mg/L	12/10/21	11:12	SN	462095
TPH as Motor Oil (SG)	SW8015B	1	0.12	0.42 U	ND		mg/L	12/10/21	11:12	SN	462095
			Acceptance Limits								
Pentacosane (S)	SW8015B		40 - 129		**94.0**		%	12/10/21	11:12	SN	462095

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Date/Time Received: 12/08/21, 10:33 am
Date Reported: 12/10/21

Client Sample ID:	32/Red Hill Upper Storage Tank	**Lab Sample ID:**	2112083-001B
Project Name/Location:	HDOH Red Hill	**Sample Matrix:**	Water
Project Number:			
Date/Time Sampled:	12/05/21 / 15:28		
SDG:			

Prep Method:	TOC-W-P	**Prep Batch Date/Time:**	12/9/21	4:12:00PM
Prep Batch ID:	1137614	**Prep Analyst:**	BJAY	

Parameters:	Analysis Method	DF	MDL	PQL	Results	Q	Units	Analyzed	Time	By	Analytical Batch
TOC	A5310B	1	0.40	2.0	**16.7**		mg/L	12/09/21	16:12	BJAY	462097

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Tetra Tech Inc (HI)

Date/Time Received: 12/08/21, 10:33 am
Date Reported: 12/10/21

Client Sample ID:	33/Red Hill Shaft (aqueous)	**Lab Sample ID:**	2112083-002A
Project Name/Location:	HDOH Red Hill	**Sample Matrix:**	Water
Project Number:			
Date/Time Sampled:	12/05/21 / 14:00		
SDG:			

Prep Method:	3510_BNASIM	**Prep Batch Date/Time:**	12/9/21 10:50:00AM
Prep Batch ID:	1137555	**Prep Analyst:**	AKIZ

Parameters:	Analysis Method	DF	MDL	PQL	Results	Q	Units	Analyzed	Time	By	Analytical Batch
Pyridine	SW8270	1	0.474	3.8 R	ND		ug/L	12/09/21	15:58	TA	462110
N-Nitrosdimethylamine	SW8270	1	0.474	3.8 R	ND		ug/L	12/09/21	15:58	TA	462110
Aniline	SW8270	1	0.947	3.8 R	ND		ug/L	12/09/21	15:58	TA	462110
Phenol	SW8270	1	0.474	3.8 R	ND		ug/L	12/09/21	15:58	TA	462110
Bis(2-chloroethyl) ether	SW8270	1	0.947	3.8 R	ND		ug/L	12/09/21	15:58	TA	462110
2-Chlorophenol	SW8270	1	0.474	3.8 R	ND		ug/L	12/09/21	15:58	TA	462110
1,3-Dichlorobenzene	SW8270	1	0.474	3.8 R	ND		ug/L	12/09/21	15:58	TA	462110
1,4-Dichlorobenzene	SW8270	1	0.474	3.8 R	ND		ug/L	12/09/21	15:58	TA	462110
Benzyl Alcohol	SW8270	1	0.947	3.8 R	ND		ug/L	12/09/21	15:58	TA	462110
1,2-Dichlorobenzene	SW8270	1	0.947	3.8 R	ND		ug/L	12/09/21	15:58	TA	462110
2-Methylphenol (o-Cresol)	SW8270	1	0.947	3.8 R	ND		ug/L	12/09/21	15:58	TA	462110
Bis(2-chloroisopropyl)ether	SW8270	1	0.474	3.8 R	ND		ug/L	12/09/21	15:58	TA	462110
3-/4-Methylphenol (p-/m-Cresol)	SW8270	1	0.474	3.8 R	ND		ug/L	12/09/21	15:58	TA	462110
N-nitroso-di-n-propylamine	SW8270	1	0.947	3.8 R	ND		ug/L	12/09/21	15:58	TA	462110
Hexachloroethane	SW8270	1	0.474	3.8 R	ND		ug/L	12/09/21	15:58	TA	462110
Nitrobenzene	SW8270	1	0.947	19 R	ND		ug/L	12/09/21	15:58	TA	462110
Isophorone	SW8270	1	0.947	3.8 R	ND		ug/L	12/09/21	15:58	TA	462110
2-Nitrophenol	SW8270	1	0.474	3.8 R	ND		ug/L	12/09/21	15:58	TA	462110
2,4-Dimethylphenol	SW8270	1	0.947	3.8 R	ND		ug/L	12/09/21	15:58	TA	462110
Benzoic Acid	SW8270	1	0.474	3.8 R	ND		ug/L	12/09/21	15:58	TA	462110
Bis(2-Chloroethoxy)methane	SW8270	1	0.947	3.8 R	ND		ug/L	12/09/21	15:58	TA	462110
2,4-Dichlorophenol	SW8270	1	0.189	3.8 R	ND		ug/L	12/09/21	15:58	TA	462110
1,2,4-Trichlorobenzene	SW8270	1	0.474	3.8 R	ND		ug/L	12/09/21	15:58	TA	462110
2,6-Dichlorophenol	SW8270	1	0.947	3.8 R	ND		ug/L	12/09/21	15:58	TA	462110
Naphthalene	SW8270	1	0.189	0.57	**58.6**	J-	ug/L	12/09/21	15:58	TA	462110
4-Chloroaniline	SW8270	1	0.189	3.8 R	ND		ug/L	12/09/21	15:58	TA	462110
Hexachloro-1,3-butadiene	SW8270	1	0.474	19 R	ND		ug/L	12/09/21	15:58	TA	462110
4-Chloro-3-methylphenol	SW8270	1	0.947	3.8 R	ND		ug/L	12/09/21	15:58	TA	462110
2-Methylnaphthalene	SW8270	1	0.947	3.8	**93.8**	J-	ug/L	12/09/21	15:58	TA	462110
1-Methylnaphthalene	SW8270	1	0.474	3.8	**176**	J-	ug/L	12/09/21	15:58	TA	462110
Hexachlorocyclopentadiene	SW8270	1	0.474	3.8 R	ND		ug/L	12/09/21	15:58	TA	462110
2,4,6-Trichlorophenol	SW8270	1	0.474	3.8 R	ND		ug/L	12/09/21	15:58	TA	462110
2,4,5-Trichlorophenol	SW8270	1	0.474	3.8 R	ND		ug/L	12/09/21	15:58	TA	462110
2-Chloronaphthalene	SW8270	1	0.189	0.57 R	ND		ug/L	12/09/21	15:58	TA	462110
2-Nitroaniline	SW8270	1	0.947	9.5 R	ND		ug/L	12/09/21	15:58	TA	462110
1,4-Dinitrobenzene	SW8270	1	0.947	3.8 R	ND		ug/L	12/09/21	15:58	TA	462110
Dimethyl phthalate	SW8270	1	0.947	3.8 R	ND		ug/L	12/09/21	15:58	TA	462110
1,3-Dinitrobenzene	SW8270	1	0.474	3.8 R	ND		ug/L	12/09/21	15:58	TA	462110
Acenaphthylene	SW8270	1	0.189	0.57 R	ND		ug/L	12/09/21	15:58	TA	462110

Torrent LABORATORY, INC.

Talaidh Isaacs 01/24/2022

SAMPLE RESULTS

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

Date/Time Received: 12/08/21, 10:33 am
Date Reported: 12/10/21

Client Sample ID:	33/Red Hill Shaft (aqueous)	**Lab Sample ID:**	2112083-002A
Project Name/Location:	HDOH Red Hill	**Sample Matrix:**	Water
Project Number:			
Date/Time Sampled:	12/05/21 / 14:00		
SDG:			

Prep Method:	3510_BNASIM	**Prep Batch Date/Time:**	12/9/21 10:50:00AM
Prep Batch ID:	1137555	**Prep Analyst:**	AKIZ

Parameters:	Analysis Method	DF	MDL	PQL	Results	Q	Units	Analyzed	Time	By	Analytical Batch
2,6-Dinitrotoluene	SW8270	1	0.474	3.8 R	ND		ug/L	12/09/21	15:58	TA	462110
1,2-Dinitrobenzene	SW8270	1	0.474	3.8 R	ND		ug/L	12/09/21	15:58	TA	462110
3-Nitroaniline	SW8270	1	0.474	3.8 R	ND		ug/L	12/09/21	15:58	TA	462110
Acenaphthene	SW8270	1	0.474	3.8 R	ND		ug/L	12/09/21	15:58	TA	462110
2,4-Dinitrophenol	SW8270	1	0.474	3.8 R	ND		ug/L	12/09/21	15:58	TA	462110
4-Nitrophenol	SW8270	1	0.947	3.8 R	ND		ug/L	12/09/21	15:58	TA	462110
Dibenzofuran	SW8270	1	0.189	0.57	**1.83**	J-	ug/L	12/09/21	15:58	TA	462110
2,4-Dinitrotoluene	SW8270	1	0.189	3.8 R	ND		ug/L	12/09/21	15:58	TA	462110
2,3,5,6-Tetrachlorophenol	SW8270	1	0.474	3.8 R	ND		ug/L	12/09/21	15:58	TA	462110
2,3,4,6-Tetrachlorophenol	SW8270	1	0.474	3.8 R	ND		ug/L	12/09/21	15:58	TA	462110
Diethylphthalate	SW8270	1	0.474	3.8 R	ND		ug/L	12/09/21	15:58	TA	462110
Fluorene	SW8270	1	0.474	3.8 R	ND		ug/L	12/09/21	15:58	TA	462110
4-Chlorophenyl phenyl ether	SW8270	1	0.474	3.8 R	ND		ug/L	12/09/21	15:58	TA	462110
4-Nitroaniline	SW8270	1	0.474	3.8 R	ND		ug/L	12/09/21	15:58	TA	462110
4,6-Dinitro-2-methylphenol	SW8270	1	0.474	3.8 R	ND		ug/L	12/09/21	15:58	TA	462110
Diphenylamine	SW8270	1	0.474	3.8 R	ND		ug/L	12/09/21	15:58	TA	462110
Azobenzene	SW8270	1	0.474	3.8 R	ND		ug/L	12/09/21	15:58	TA	462110
4-Bromophenyl phenyl ether	SW8270	1	0.474	3.8 R	ND		ug/L	12/09/21	15:58	TA	462110
Hexachlorobenzene	SW8270	1	0.189	0.57 R	ND		ug/L	12/09/21	15:58	TA	462110
Pentachlorophenol	SW8270	1	0.189	0.57 R	ND		ug/L	12/09/21	15:58	TA	462110
Phenanthrene	SW8270	1	0.189	0.57 R	ND		ug/L	12/09/21	15:58	TA	462110
Anthracene	SW8270	1	0.189	0.57 R	ND		ug/L	12/09/21	15:58	TA	462110
Carbazole	SW8270	1	0.189	0.57 R	ND		ug/L	12/09/21	15:58	TA	462110
Di-n-butylphthalate	SW8270	1	0.474	3.8 R	ND		ug/L	12/09/21	15:58	TA	462110
Fluoranthene	SW8270	1	0.189	0.57 R	ND		ug/L	12/09/21	15:58	TA	462110
Benzidine	SW8270	1	0.189	0.57 R	ND		ug/L	12/09/21	15:58	TA	462110
Pyrene	SW8270	1	0.189	0.57 R	ND		ug/L	12/09/21	15:58	TA	462110
Benzyl butyl phthalate	SW8270	1	0.189	0.57 R	ND		ug/L	12/09/21	15:58	TA	462110
Benz[a]anthracene	SW8270	1	0.189	0.57 R	ND		ug/L	12/09/21	15:58	TA	462110
3,3-Dichlorobenzidine	SW8270	1	0.189	0.57 R	ND		ug/L	12/09/21	15:58	TA	462110
Chrysene	SW8270	1	0.189	0.57 R	ND		ug/L	12/09/21	15:58	TA	462110
Bis(2-Ethylhexyl)phthalate	SW8270	1	0.189	3.8 R	ND		ug/L	12/09/21	15:58	TA	462110
Di-n-octyl phthalate	SW8270	1	0.189	3.8 R	ND		ug/L	12/09/21	15:58	TA	462110
Benzo[b]fluoranthene	SW8270	1	0.189	0.57 R	ND		ug/L	12/09/21	15:58	TA	462110
Benzo[k]fluoranthene	SW8270	1	0.189	0.57 R	ND		ug/L	12/09/21	15:58	TA	462110
Benzo[a]pyrene	SW8270	1	0.189	0.57 R	ND		ug/L	12/09/21	15:58	TA	462110
Indeno[1,2,3-cd]pyrene	SW8270	1	0.189	0.57 R	ND		ug/L	12/09/21	15:58	TA	462110
Dibenz[a,h]anthracene	SW8270	1	0.189	0.57 R	ND		ug/L	12/09/21	15:58	TA	462110
Benzo[g,h,i]perylene	SW8270	1	0.189	0.57 R	ND		ug/L	12/09/21	15:58	TA	462110

Torrent LABORATORY, INC.

SAMPLE RESULTS

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

Date/Time Received: 12/08/21, 10:33 am
Date Reported: 12/10/21

Client Sample ID:	33/Red Hill Shaft (aqueous)	**Lab Sample ID:**	2112083-002A
Project Name/Location:	HDOH Red Hill	**Sample Matrix:**	Water
Project Number:			
Date/Time Sampled:	12/05/21 / 14:00		
SDG:			

Prep Method:	3510_BNASIM	**Prep Batch Date/Time:**	12/9/21 10:50:00AM
Prep Batch ID:	1137555	**Prep Analyst:**	AKIZ

Parameters:	Analysis Method	DF	MDL	PQL	Results	Q	Units	Analyzed	Time	By	Analytical Batch
			Acceptance Limits								
2-Fluorophenol (S)	SW8270		15 - 105		**34.7**		%	12/09/21	15:58	TA	462110
Phenol-d6 (S)	SW8270		15 - 100		**34.6**		%	12/09/21	15:58	TA	462110
Nitrobenzene-d5 (S)	SW8270		30 - 100		**0.000**	S	%	12/09/21	15:58	TA	462110
2-Fluorobiphenyl (S)	SW8270		30 - 105		**84.3**		%	12/09/21	15:58	TA	462110
2,4,6-Tribromophenol (S)	SW8270		15 - 125		**0.000**	S	%	12/09/21	15:58	TA	462110
p-Terphenyl-d14 (S)	SW8270		30 - 125		**77.6**		%	12/09/21	15:58	TA	462110

NOTE: S-surrogate outside of control limits due to possible matrix interference

Talaidh Isaacs 01/24/2022

SAMPLE RESULTS

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

Date/Time Received: 12/08/21, 10:33 am
Date Reported: 12/10/21

Client Sample ID:	33/Red Hill Shaft (aqueous)	**Lab Sample ID:**	2112083-002A
Project Name/Location:	HDOH Red Hill	**Sample Matrix:**	Water
Project Number:			
Date/Time Sampled:	12/05/21 / 14:00		
SDG:			

Prep Method:	3510_TPH	**Prep Batch Date/Time:**	12/9/21	11:01:00AM
Prep Batch ID:	1137557	**Prep Analyst:**	AKIZ	

Parameters:	Analysis Method	DF	MDL	PQL	Results	Q	Units	Analyzed	Time	By	Analytical Batch
TPH as Diesel	SW8015B	50	1.9	5.3	**88.2**	x	mg/L	12/09/21	16:33		462092
TPH as Motor Oil	SW8015B	50	5.9	21 U	ND		mg/L	12/09/21	16:33		462092
			Acceptance Limits								
Pentacosane (S)	SW8015B		59 - 129		**0.000**	D	%	12/09/21	16:33		462092

NOTE: x- Chromatographic pattern does not resemble typical diesel reference standard; unknown organics within diesel range slightly lighter than diesel quantified as diesel (possibly other type of fuel).

Talaidh Isaacs 01/24/2022

Torrent LABORATORY, INC.

SAMPLE RESULTS

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

Date/Time Received: 12/08/21, 10:33 am
Date Reported: 12/10/21

Client Sample ID:	33/Red Hill Shaft (aqueous)	**Lab Sample ID:**	2112083-002A
Project Name/Location:	HDOH Red Hill	**Sample Matrix:**	Water
Project Number:			
Date/Time Sampled:	12/05/21 / 14:00		
SDG:			

Prep Method:	3510_TPH SG	**Prep Batch Date/Time:**	12/9/21 1:48:00PM
Prep Batch ID:	1137566	**Prep Analyst:**	AKIZ

Parameters:	Analysis Method	DF	MDL	PQL	Results	Q	Units	Analyzed	Time	By	Analytical Batch
TPH as Diesel (SG)	SW8015B	50	1.9	5.3	**49.6**	x	mg/L	12/10/21	11:36	SN	462095
TPH as Motor Oil (SG)	SW8015B	50	5.9	21 U	ND		mg/L	12/10/21	11:36	SN	462095
			Acceptance Limits								
Pentacosane (S)	SW8015B		40 - 129		**0.000**	D	%	12/10/21	11:36	SN	462095

NOTE: x- Chromatographic pattern does not resemble typical diesel reference standard; unknown organics within diesel range slightly lighter than diesel quantified as diesel (possibly other type of fuel).

Torrent LABORATORY, INC.

Talaidh Isaacs 01/24/2022

SAMPLE RESULTS

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

Date/Time Received: 12/08/21, 10:33 am
Date Reported: 12/10/21

Client Sample ID:	33/Red Hill Shaft (aqueous)	**Lab Sample ID:**	2112083-002B
Project Name/Location:	HDOH Red Hill	**Sample Matrix:**	Water
Project Number:			
Date/Time Sampled:	12/05/21 / 14:00		
SDG:			

Prep Method:	TOC-W-P	**Prep Batch Date/Time:**	12/9/21	4:12:00PM
Prep Batch ID:	1137614	**Prep Analyst:**	BJAY	

Parameters:	Analysis Method	DF	MDL	PQL	Results	Q	Units	Analyzed	Time	By	Analytical Batch
TOC	A5310B	1	0.40	2.0	**55.6**		mg/L	12/09/21	16:12	BJAY	462097

Torrent LABORATORY, INC.

Talaidh Isaacs 01/24/2022

SAMPLE RESULTS

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

Date/Time Received: 12/08/21, 10:33 am
Date Reported: 12/10/21

Client Sample ID:	33/Red Hill Shaft (product)	**Lab Sample ID:**	2112083-003A
Project Name/Location:	HDOH Red Hill	**Sample Matrix:**	Product
Project Number:			
Date/Time Sampled:	12/05/21 / 14:00		
SDG:			

Prep Method:	3546-BNASIM	**Prep Batch Date/Time:**	12/9/21	7:35:00PM
Prep Batch ID:	1137618	**Prep Analyst:**	TOMA	

Parameters:	Analysis Method	DF	MDL	PQL	Results	Q	Units	Analyzed	Time	By	Analytical Batch
The results shown below are reported using their MDL.											
N-Nitrosodimethylamine	SW8270C	100	32	230 U	ND		mg/Kg	12/09/21	21:09	TA	462111
Phenol	SW8270C	100	51	230 U	ND		mg/Kg	12/09/21	21:09	TA	462111
Bis(2-chloroethyl) ether	SW8270C	100	32	230 U	ND		mg/Kg	12/09/21	21:09	TA	462111
2-Chlorophenol	SW8270C	100	29	230 U	ND		mg/Kg	12/09/21	21:09	TA	462111
1,3-Dichlorobenzene	SW8270C	100	32	230 U	ND		mg/Kg	12/09/21	21:09	TA	462111
1,4-Dichlorobenzene	SW8270C	100	28	230 U	ND		mg/Kg	12/09/21	21:09	TA	462111
1,2-Dichlorobenzene	SW8270C	100	32	230 U	ND		mg/Kg	12/09/21	21:09	TA	462111
2-Methylphenol (o-Cresol)	SW8270C	100	28	230 U	ND		mg/Kg	12/09/21	21:09	TA	462111
Bis(2-chloroisopropyl)ether	SW8270C	100	28	230 U	ND		mg/Kg	12/09/21	21:09	TA	462111
3-/4-Methylphenol (p-/m-Cresol)	SW8270C	100	28	230 U	ND		mg/Kg	12/09/21	21:09	TA	462111
NMP	SW8270C	100	32	922 U	ND		mg/Kg	12/09/21	21:09	TA	462111
Hexachloroethane	SW8270C	100	32	230 U	ND		mg/Kg	12/09/21	21:09	TA	462111
Nitrobenzene	SW8270C	100	14	230 U	ND		mg/Kg	12/09/21	21:09	TA	462111
2-Nitrophenol	SW8270C	100	28	230 U	ND		mg/Kg	12/09/21	21:09	TA	462111
2,4-Dimethylphenol	SW8270C	100	35	230 U	ND		mg/Kg	12/09/21	21:09	TA	462111
Bis(2-Chloroethoxy)methane	SW8270C	100	32	230 U	ND		mg/Kg	12/09/21	21:09	TA	462111
2,4-Dichlorophenol	SW8270C	100	32	230 U	ND		mg/Kg	12/09/21	21:09	TA	462111
1,2,4-Trichlorobenzene	SW8270C	100	32	230 U	ND		mg/Kg	12/09/21	21:09	TA	462111
Naphthalene	SW8270C	100	37	230	**1440**		mg/Kg	12/09/21	21:09	TA	462111
Isophorone	SW8270C	100	32	230	**647**		mg/Kg	12/09/21	21:09	TA	462111
2,6-Dichlorophenol	SW8270C	100	45	230 U	ND		mg/Kg	12/09/21	21:09	TA	462111
Hexachloro-1,3-butadiene	SW8270C	100	41	230 U	ND		mg/Kg	12/09/21	21:09	TA	462111
4-Chloro-3-methylphenol	SW8270C	100	32	230 U	ND		mg/Kg	12/09/21	21:09	TA	462111
2-Methylnaphthalene	SW8270C	100	41	230	**3960**		mg/Kg	12/09/21	21:09	TA	462111
1-Methylnaphthalene	SW8270C	100	44	230	**2760**		mg/Kg	12/09/21	21:09	TA	462111
2,4,6-Trichlorophenol	SW8270C	100	32	230 U	ND		mg/Kg	12/09/21	21:09	TA	462111
2,4,5-Trichlorophenol	SW8270C	100	28	230 U	ND		mg/Kg	12/09/21	21:09	TA	462111
2-Chloronaphthalene	SW8270C	100	28	230 U	ND		mg/Kg	12/09/21	21:09	TA	462111
1,4-Dinitrobenzene	SW8270C	100	25	230 U	ND		mg/Kg	12/09/21	21:09	TA	462111
Dimethyl phthalate	SW8270C	100	32	461 U	ND		mg/Kg	12/09/21	21:09	TA	462111
1,3-Dinitrobenzene	SW8270C	100	28	230 U	ND		mg/Kg	12/09/21	21:09	TA	462111
Acenaphthylene	SW8270C	100	32	230 U	ND		mg/Kg	12/09/21	21:09	TA	462111
2,6-Dinitrotoluene	SW8270C	100	28	230 U	ND		mg/Kg	12/09/21	21:09	TA	462111
1,2-Dinitrobenzene	SW8270C	100	28	230 U	ND		mg/Kg	12/09/21	21:09	TA	462111
Acenaphthene	SW8270C	100	32	230	**76.3**	J	mg/Kg	12/09/21	21:09	TA	462111
Dibenzofuran	SW8270C	100	32	230 U	ND		mg/Kg	12/09/21	21:09	TA	462111
2,4-Dinitrotoluene	SW8270C	100	28	230 U	ND		mg/Kg	12/09/21	21:09	TA	462111
2,3,5,6-Tetrachlorophenol	SW8270C	100	37	230 U	ND		mg/Kg	12/09/21	21:09	TA	462111

Torrent LABORATORY, INC.

Talaidh Isaacs 01/24/2022

SAMPLE RESULTS

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

Date/Time Received: 12/08/21, 10:33 am
Date Reported: 12/10/21

Client Sample ID:	33/Red Hill Shaft (product)	**Lab Sample ID:**	2112083-003A
Project Name/Location:	HDOH Red Hill	**Sample Matrix:**	Product
Project Number:			
Date/Time Sampled:	12/05/21 / 14:00		
SDG:			

Prep Method:	3546-BNASIM	**Prep Batch Date/Time:**	12/9/21 7:35:00PM
Prep Batch ID:	1137618	**Prep Analyst:**	TOMA

Parameters:	Analysis Method	DF	MDL	PQL	Results	Q	Units	Analyzed	Time	By	Analytical Batch
The results shown below are reported using their MDL.											
2,3,4,6-Tetrachlorophenol	SW8270C	100	37	230 U	ND		mg/Kg	12/09/21	21:09	TA	462111
Diethylphthalate	SW8270C	100	32	461 U	ND		mg/Kg	12/09/21	21:09	TA	462111
Fluorene	SW8270C	100	32	230 U	ND		mg/Kg	12/09/21	21:09	TA	462111
4-Chlorophenyl phenyl ether	SW8270C	100	32	230 U	ND		mg/Kg	12/09/21	21:09	TA	462111
4-Bromophenyl phenyl ether	SW8270C	100	32	230 U	ND		mg/Kg	12/09/21	21:09	TA	462111
Hexachlorobenzene	SW8270C	100	46	230 U	ND		mg/Kg	12/09/21	21:09	TA	462111
Pentachlorophenol	SW8270C	100	46	461 U	ND		mg/Kg	12/09/21	21:09	TA	462111
Phenanthrene	SW8270C	100	32	230 U	ND		mg/Kg	12/09/21	21:09	TA	462111
Anthracene	SW8270C	100	41	230 U	ND		mg/Kg	12/09/21	21:09	TA	462111
Carbazole	SW8270C	100	37	230 U	ND		mg/Kg	12/09/21	21:09	TA	462111
Di-n-butylphthalate	SW8270C	100	37	461 U	ND		mg/Kg	12/09/21	21:09	TA	462111
Fluoranthene	SW8270C	100	0.032	230	**4.06**	J	mg/Kg	12/09/21	21:09	TA	462111
Pyrene	SW8270C	100	32	230 U	ND		mg/Kg	12/09/21	21:09	TA	462111
Benzyl butyl phthalate	SW8270C	100	28	461 U	ND		mg/Kg	12/09/21	21:09	TA	462111
Benz[a]anthracene	SW8270C	100	37	230 U	ND		mg/Kg	12/09/21	21:09	TA	462111
Chrysene	SW8270C	100	41	230 U	ND		mg/Kg	12/09/21	21:09	TA	462111
Bis(2-Ethylhexyl)phthalate	SW8270C	100	32	922 U	ND		mg/Kg	12/09/21	21:09	TA	462111
Di-n-octyl phthalate	SW8270C	100	23	461 U	ND		mg/Kg	12/09/21	21:09	TA	462111
Benzo[b]fluoranthene	SW8270C	100	28	230 U	ND		mg/Kg	12/09/21	21:09	TA	462111
Benzo[k]fluoranthene	SW8270C	100	41	230 U	ND		mg/Kg	12/09/21	21:09	TA	462111
Benzo[a]pyrene	SW8270C	100	51	230 U	ND		mg/Kg	12/09/21	21:09	TA	462111
Indeno[1,2,3-cd]pyrene	SW8270C	100	120	230 U	ND		mg/Kg	12/09/21	21:09	TA	462111
Dibenz[a,h]anthracene	SW8270C	100	41	230 U	ND		mg/Kg	12/09/21	21:09	TA	462111
Benzo[g,h,i]perylene	SW8270C	100	37	230 U	ND		mg/Kg	12/09/21	21:09	TA	462111
Pyridine	SW8270C	100	41	230 U	ND		mg/Kg	12/09/21	21:09	TA	462111
3,3-Dichlorobenzidine	SW8270C	100	74	230 U	ND		mg/Kg	12/09/21	21:09	TA	462111
Benzyl Alcohol	SW8270C	100	28	230 U	ND		mg/Kg	12/09/21	21:09	TA	462111
4-Nitrophenol	SW8270C	100	14	230 U	ND		mg/Kg	12/09/21	21:09	TA	462111
Hexachlorocyclopentadiene	SW8270C	100	51	230 U	ND		mg/Kg	12/09/21	21:09	TA	462111
2,4-Dinitrophenol	SW8270C	100	28	230 U	ND	J	mg/Kg	12/09/21	21:09	TA	462111
4,6-Dinitro-2-methylphenol	SW8270C	100	51	230 U	ND		mg/Kg	12/09/21	21:09	TA	462111
Diphenylamine	SW8270C	100	46	230 U	ND		mg/Kg	12/09/21	21:09	TA	462111
Azobenzene	SW8270C	100	28	230 U	ND		mg/Kg	12/09/21	21:09	TA	462111
			Acceptance Limits								
2-Fluorophenol (S)	SW8270C		25 - 125		**0.000**	D	%	12/09/21	21:09	TA	462111
Phenol-d6 (S)	SW8270C		25 - 125		**0.000**	D	%	12/09/21	21:09	TA	462111
Nitrobenzene-d5 (S)	SW8270C		35 - 125		**0.000**	D	%	12/09/21	21:09	TA	462111
2-Fluorobiphenyl (S)	SW8270C		35 - 125		**0.000**	D	%	12/09/21	21:09	TA	462111

Talaidh Isaacs 01/24/2022

SAMPLE RESULTS

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

Date/Time Received: 12/08/21, 10:33 am
Date Reported: 12/10/21

Client Sample ID:	33/Red Hill Shaft (product)	**Lab Sample ID:**	2112083-003A
Project Name/Location:	HDOH Red Hill	**Sample Matrix:**	Product
Project Number:			
Date/Time Sampled:	12/05/21 / 14:00		
SDG:			

Prep Method:	3546-BNASIM	**Prep Batch Date/Time:**	12/9/21	7:35:00PM
Prep Batch ID:	1137618	**Prep Analyst:**	TOMA	

Parameters:	Analysis Method	DF	MDL	PQL	Results	Q	Units	Analyzed	Time	By	Analytical Batch
The results shown below are reported using their MDL.											
2,4,6-Tribromophenol (S)	SW8270C		25 - 125		**0.000**	D	%	12/09/21	21:09	TA	462111
p-Terphenyl-d14 (S)	SW8270C		35 - 125		**0.000**	D	%	12/09/21	21:09	TA	462111

NOTE: Sample diluted due to nature of the matrix (oily & viscous extract)

Torrent LABORATORY, INC.

Talaidh Isaacs 01/24/2022

SAMPLE RESULTS

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

Date/Time Received: 12/08/21, 10:33 am
Date Reported: 12/10/21

Client Sample ID:	33/Red Hill Shaft (product)	**Lab Sample ID:**	2112083-003A
Project Name/Location:	HDOH Red Hill	**Sample Matrix:**	Product
Project Number:			
Date/Time Sampled:	12/05/21 / 14:00		
SDG:			

Prep Method:	TOC-S-P	**Prep Batch Date/Time:**	12/10/21	12:05:00PM
Prep Batch ID:	1137612	**Prep Analyst:**	BJAY	

Parameters:	Analysis Method	DF	MDL	PQL	Results	Q	Units	Analyzed	Time	By	Analytical Batch
Total Organic Carbon	A5310B	1	40	400	**608000**		mg/Kg	12/10/21	12:05	BJAY	462096

Torrent LABORATORY, INC.

Talaidh Isaacs 01/24/2022

SAMPLE RESULTS

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

Date/Time Received: 12/08/21, 10:33 am
Date Reported: 12/10/21

Client Sample ID:	33/Red Hill Shaft (product)	**Lab Sample ID:**	2112083-003A
Project Name/Location:	HDOH Red Hill	**Sample Matrix:**	Product
Project Number:			
Date/Time Sampled:	12/05/21 / 14:00		
SDG:			

Prep Method:	3546_TPH	**Prep Batch Date/Time:**	12/9/21 12:57:00PM
Prep Batch ID:	1137563	**Prep Analyst:**	AKIZ

Parameters:	Analysis Method	DF	MDL	PQL	Results	Q	Units	Analyzed	Time	By	Analytical Batch
TPH as Diesel	SW8015B	40	27000	64000	**1000000**	x	mg/Kg	12/09/21	18:41	SN	462098
TPH as Motor Oil	SW8015B	40	100000	320000 U	ND		mg/Kg	12/09/21	18:41	SN	462098
			Acceptance Limits								
Pentacosane (S)	SW8015B		45 - 130		**0.000**	D	%	12/09/21	18:41	SN	462098

NOTE: x- Chromatographic pattern does not resemble typical diesel reference standard; unknown organics within diesel range lighter than diesel quantified as diesel.(possibly other type of fuel)

Torrent LABORATORY, INC.

Talaidh Isaacs 01/24/2022

SAMPLE RESULTS

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

Date/Time Received: 12/08/21, 10:33 am
Date Reported: 12/10/21

Client Sample ID:	33/Red Hill Shaft (product)	**Lab Sample ID:**	2112083-003A
Project Name/Location:	HDOH Red Hill	**Sample Matrix:**	Product
Project Number:			
Date/Time Sampled:	12/05/21 / 14:00		
SDG:			

Prep Method:	3546_TPHSG	**Prep Batch Date/Time:**	12/9/21 1:53:00PM
Prep Batch ID:	1137567	**Prep Analyst:**	AKIZ

Parameters:	Analysis Method	DF	MDL	PQL	Results	Q	Units	Analyzed	Time	By	Analytical Batch
TPH as Diesel (SG)	SW8015B	40	27000	64000	**987000**		mg/Kg	12/10/21	11:50	SN	462106
TPH as Motor Oil (SG)	SW8015B	40	100000	320000 U	ND		mg/Kg	12/10/21	11:50	SN	462106
			Acceptance Limits								
Pentacosane (S)	SW8015B		40 - 129		**0.000**	D	%	12/10/21	11:50	SN	462106

NOTE: x- Chromatographic pattern does not resemble typical diesel reference standard; unknown organics within diesel range lighter than diesel quantified as diesel.(posiblly other type of fuel)