ANALYTICAL REPORT

Lab Number:	L2252035
Client:	Tetra Tech Inc - Honolulu 737 Bishop Street, Suite 2340 Pacific Guardian Center, Mauka Tower Honolulu, HI 96813-3201
ATTN:	Eric Jensen
Phone:	(808) 441-4784
Project Name:	HDOH RED HILL
Project Number:	103S518817512
Report Date:	10/07/22

Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0141), DoD (L2474), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NJ (MA015), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-17-00150), USFWS (Permit #206964).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

Project Name: HDOH RED HILL
Project Number: 103S518817512

Lab Number: L2252035
Report Date: 10/07/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2252035-01	RED HILL SHAFT - P12-21-024	WATER	Not Specified	12/05/21 14:00	09/22/22

Project Name:	HDOH RED HILL	**Lab Number:**	L2252035
Project Number:	103S518817512	**Report Date:**	10/07/22

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name:	HDOH RED HILL	**Lab Number:**	L2252035
Project Number:	103S518817512	**Report Date:**	10/07/22

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Sample Receipt

The samples were received at the laboratory above the required temperature range. The samples were transported via Express Ship in a cooler with ice packs. All requested analyses were performed.

Alkylated PAHs

L2252035-01D: The sample was extracted with the method required holding time exceeded. The sample has elevated detection limits due to the dilution required by the sample matrix. The sample was re-analyzed on dilution in order to quantitate the results within the calibration range. The result(s) should be considered estimated, and are qualified with an E flag, for any compound(s) that exceeded the calibration range in the initial analysis. The re-analysis was performed only for the compound(s) that exceeded the calibration range.

Saturated Hydrocarbons

L2252035-01D: The sample was extracted with the method required holding time exceeded. The sample has elevated detection limits due to the dilution required by the elevated concentrations of target compounds in the sample.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Susan E O'Neil Susan O' Neil

Title: Technical Director/Representative Date: 10/07/22

ORGANICS

SEMIVOLATILES

Project Name: HDOH RED HILL
Project Number: 103S518817512
Lab Number: L2252035
Report Date: 10/07/22

SAMPLE RESULTS

Lab ID: L2252035-01 D2
Client ID: RED HILL SHAFT - P12-21-024
Sample Location: Not Specified

Date Collected: 12/05/21 14:00
Date Received: 09/22/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8270D-SIM(M)
Analytical Date: 09/29/22 10:55
Analyst: CNC

Extraction Method: EPA 3510C
Extraction Date: 09/28/22 09:48

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PAHs - Mansfield Lab						
cis/trans-Decalin	151000		ng/l	106	23.6	20

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Naphthalene-d8	86		50-130
Phenanthrene-d10	111		50-130
Benzo(a)pyrene-d12	84		50-130

Project Name: HDOH RED HILL
Project Number: 103S518817512
Lab Number: L2252035
Report Date: 10/07/22

SAMPLE RESULTS

Lab ID: L2252035-01 D
Client ID: RED HILL SHAFT - P12-21-024
Sample Location: Not Specified

Date Collected: 12/05/21 14:00
Date Received: 09/22/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8270D-SIM(M)
Analytical Date: 09/29/22 08:08
Analyst: CNC

Extraction Method: EPA 3510C
Extraction Date: 09/28/22 09:48

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PAHs - Mansfield Lab						
cis/trans-Decalin	125000	E	ng/l	26.6	5.90	5
C1-Decalins	391000		ng/l	26.6	5.90	5
C2-Decalins	431000		ng/l	26.6	5.90	5
C3-Decalins	280000		ng/l	26.6	5.90	5
C4-Decalins	240000		ng/l	26.6	5.90	5
Naphthalene	4370		ng/l	53.2	10.5	5
C1-Naphthalenes	2470	G	ng/l	53.2	10.5	5
C2-Naphthalenes	23800		ng/l	53.2	10.5	5
C3-Naphthalenes	43300		ng/l	53.2	10.5	5
C4-Naphthalenes	13500		ng/l	53.2	10.5	5
2-Methylnaphthalene	428.		ng/l	53.2	12.2	5
1-Methylnaphthalene	462.		ng/l	53.2	10.4	5
Benzothiophene	3890		ng/l	53.2	8.08	5
C1-Benzo(b)thiophenes	13600		ng/l	53.2	8.08	5
C2-Benzo(b)thiophenes	3700		ng/l	53.2	8.08	5
C3-Benzo(b)thiophenes	9250		ng/l	53.2	8.08	5
C4-Benzo(b)thiophenes	3840		ng/l	53.2	8.08	5
Biphenyl	ND		ng/l	53.2	12.4	5
2,6-Dimethylnaphthalene	343.		ng/l	53.2	12.4	5
Dibenzofuran	315.		ng/l	53.2	9.68	5
Acenaphthylene	582.		ng/l	53.2	10.6	5
Acenaphthene	ND		ng/l	53.2	6.81	5
2,3,5-Trimethylnaphthalene	4440		ng/l	53.2	8.03	5
Fluorene	200.		ng/l	53.2	9.41	5
C1-Fluorenes	558.		ng/l	53.2	9.41	5
C2-Fluorenes	445.		ng/l	53.2	9.41	5
C3-Fluorenes	273.		ng/l	53.2	9.41	5
Dibenzothiophene	64.2		ng/l	53.2	7.76	5

Project Name: HDOH RED HILL **Lab Number:** L2252035

Project Number: 103S518817512 **Report Date:** 10/07/22

SAMPLE RESULTS

Lab ID: L2252035-01 D
Client ID: RED HILL SHAFT - P12-21-024
Sample Location: Not Specified

Date Collected: 12/05/21 14:00
Date Received: 09/22/22
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PAHs - Mansfield Lab						
4-Methyldibenzothiophene(4MDT)	162.		ng/l	53.2	7.76	5
2/3-Methyldibenzothiophene(2MDT)	25.3	J	ng/l	53.2	7.76	5
1-Methyldibenzothiophene(1MDT)	42.5	J	ng/l	53.2	7.76	5
C1-Dibenzothiophenes BS	244.		ng/l	53.2	7.76	5
C2-Dibenzothiophenes	228.		ng/l	53.2	7.76	5
C3-Dibenzothiophenes	100.		ng/l	53.2	7.76	5
C4-Dibenzothiophenes	51.8	J	ng/l	53.2	7.76	5
Phenanthrene	91.7		ng/l	53.2	6.38	5
3-Methylphenanthrene (3MP)	27.6	J	ng/l	53.2	6.38	5
2-Methylphenanthrene (2MP)	21.6	J	ng/l	53.2	6.38	5
2-Methylanthracene (2MA)	ND		ng/l	53.2	6.38	5
9/4-Methylphenanthrene (9MP)	46.3	J	ng/l	53.2	6.38	5
1-Methylphenanthrene (1MP)	26.9	J	ng/l	53.2	6.38	5
C1-Phenanthrenes/Anthracenes	131.		ng/l	53.2	6.38	5
C2-Phenanthrenes/Anthr BS	111.		ng/l	53.2	6.38	5
C3-Phenanthrenes/Anthracenes	68.0		ng/l	53.2	6.38	5
C4-Phenanthrenes/Anthracenes	ND		ng/l	53.2	6.38	5
Retene	ND		ng/l	53.2	14.9	5
Anthracene	ND		ng/l	53.2	9.63	5
Carbazole	10.6	J	ng/l	53.2	8.19	5
Fluoranthene	44.3	J	ng/l	53.2	9.47	5
Benzo(b)fluorene	ND		ng/l	53.2	14.1	5
Pyrene	67.8		ng/l	53.2	9.68	5
C1-Fluoranthenes/Pyrenes	39.8	J	ng/l	53.2	9.68	5
C2-Fluoranthenes/Pyrenes	24.1	J	ng/l	53.2	9.68	5
C3-Fluoranthenes/Pyrenes	ND		ng/l	53.2	9.68	5
C4-Fluoranthenes/Pyrenes	ND		ng/l	53.2	9.68	5
Naphthobenzothiophenes	ND		ng/l	53.2	8.72	5
C1-Naphthobenzothiophenes	ND		ng/l	53.2	8.72	5
C2-Naphthobenzothiophenes	ND		ng/l	53.2	8.72	5
C3-Naphthobenzothiophenes	ND		ng/l	53.2	8.72	5
C4-Naphthobenzothiophenes	ND		ng/l	53.2	8.72	5
Benz(a)anthracene	6.69	J	ng/l	53.2	6.17	5
Chrysene/Triphenylene	24.6	J	ng/l	53.2	6.70	5
C1-Chrysenes	8.91	J	ng/l	53.2	6.70	5
C2-Chrysenes BS	ND		ng/l	53.2	6.70	5
C3-Chrysenes	ND		ng/l	53.2	6.70	5

Project Name: HDOH RED HILL **Lab Number:** L2252035

Project Number: 103S518817512 **Report Date:** 10/07/22

SAMPLE RESULTS

Lab ID: L2252035-01 D Date Collected: 12/05/21 14:00

Client ID: RED HILL SHAFT - P12-21-024 Date Received: 09/22/22

Sample Location: Not Specified Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PAHs - Mansfield Lab						
C4-Chrysenes	ND		ng/l	53.2	6.70	5
Benzo(b)fluoranthene	15.5	J	ng/l	53.2	7.82	5
Benzo(j)+(k)fluoranthene	13.0	J	ng/l	53.2	7.92	5
Benzo(a)fluoranthene	ND		ng/l	53.2	7.92	5
Benzo(e)pyrene	7.17	J	ng/l	53.2	6.97	5
Benzo(a)pyrene	17.6	J	ng/l	53.2	11.4	5
Perylene	ND		ng/l	53.2	9.73	5
Indeno(1,2,3-cd)pyrene	ND		ng/l	53.2	13.1	5
Dibenz(a,h)+(a,c)anthracene	ND		ng/l	53.2	15.6	5
Benzo(g,h,i)perylene	ND		ng/l	53.2	14.1	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Naphthalene-d8	90		50-130
Phenanthrene-d10	91		50-130
Benzo(a)pyrene-d12	92		50-130

Project Name: HDOH RED HILL
Project Number: 103S518817512

Lab Number: L2252035
Report Date: 10/07/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM(M)
Analytical Date: 09/28/22 21:03
Analyst: CNC

Extraction Method: EPA 3510C
Extraction Date: 09/28/22 09:48

Parameter	Result	Qualifier	Units	RL	MDL
PAHs - Mansfield Lab for sample(s): 01 Batch: WG1692946-1					
cis/trans-Decalin	ND		ng/l	5.00	1.11
C1-Decalins	ND		ng/l	5.00	1.11
C2-Decalins	ND		ng/l	5.00	1.11
C3-Decalins	ND		ng/l	5.00	1.11
C4-Decalins	ND		ng/l	5.00	1.11
Naphthalene	ND		ng/l	10.0	1.97
C1-Naphthalenes	ND		ng/l	10.0	1.97
C2-Naphthalenes	ND		ng/l	10.0	1.97
C3-Naphthalenes	ND		ng/l	10.0	1.97
C4-Naphthalenes	ND		ng/l	10.0	1.97
2-Methylnaphthalene	ND		ng/l	10.0	2.30
1-Methylnaphthalene	ND		ng/l	10.0	1.95
Benzothiophene	ND		ng/l	10.0	1.52
C1-Benzo(b)thiophenes	ND		ng/l	10.0	1.52
C2-Benzo(b)thiophenes	ND		ng/l	10.0	1.52
C3-Benzo(b)thiophenes	ND		ng/l	10.0	1.52
C4-Benzo(b)thiophenes	ND		ng/l	10.0	1.52
Biphenyl	ND		ng/l	10.0	2.33
2,6-Dimethylnaphthalene	ND		ng/l	10.0	2.33
Dibenzofuran	ND		ng/l	10.0	1.82
Acenaphthylene	ND		ng/l	10.0	2.00
Acenaphthene	ND		ng/l	10.0	1.28
2,3,5-Trimethylnaphthalene	ND		ng/l	10.0	1.51
Fluorene	ND		ng/l	10.0	1.77
C1-Fluorenes	ND		ng/l	10.0	1.77
C2-Fluorenes	ND		ng/l	10.0	1.77
C3-Fluorenes	ND		ng/l	10.0	1.77
Dibenzothiophene	ND		ng/l	10.0	1.46
4-Methyldibenzothiophene(4MDT)	ND		ng/l	10.0	1.46

Project Name: HDOH RED HILL
Project Number: 103S518817512
Lab Number: L2252035
Report Date: 10/07/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM(M)
Analytical Date: 09/28/22 21:03
Analyst: CNC

Extraction Method: EPA 3510C
Extraction Date: 09/28/22 09:48

Parameter	Result	Qualifier	Units	RL	MDL
PAHs - Mansfield Lab for sample(s): 01 Batch: WG1692946-1					
2/3-Methyldibenzothiophene(2MDT)	ND		ng/l	10.0	1.46
1-Methyldibenzothiophene(1MDT)	ND		ng/l	10.0	1.46
C1-Dibenzothiophenes BS	ND		ng/l	10.0	1.46
C2-Dibenzothiophenes	ND		ng/l	10.0	1.46
C3-Dibenzothiophenes	ND		ng/l	10.0	1.46
C4-Dibenzothiophenes	ND		ng/l	10.0	1.46
Phenanthrene	2.82	J	ng/l	10.0	1.20
3-Methylphenanthrene (3MP)	ND		ng/l	10.0	1.20
2-Methylphenanthrene (2MP)	ND		ng/l	10.0	1.20
2-Methylanthracene (2MA)	ND		ng/l	10.0	1.20
9/4-Methylphenanthrene (9MP)	ND		ng/l	10.0	1.20
1-Methylphenanthrene (1MP)	ND		ng/l	10.0	1.20
C1-Phenanthrenes/Anthracenes	ND		ng/l	10.0	1.20
C2-Phenanthrenes/Anthr BS	ND		ng/l	10.0	1.20
C3-Phenanthrenes/Anthracenes	ND		ng/l	10.0	1.20
C4-Phenanthrenes/Anthracenes	ND		ng/l	10.0	1.20
Retene	ND		ng/l	10.0	2.80
Anthracene	ND		ng/l	10.0	1.81
Carbazole	ND		ng/l	10.0	1.54
Fluoranthene	ND		ng/l	10.0	1.78
Benzo(b)fluorene	ND		ng/l	10.0	2.65
Pyrene	ND		ng/l	10.0	1.82
C1-Fluoranthenes/Pyrenes	ND		ng/l	10.0	1.82
C2-Fluoranthenes/Pyrenes	ND		ng/l	10.0	1.82
C3-Fluoranthenes/Pyrenes	ND		ng/l	10.0	1.82
C4-Fluoranthenes/Pyrenes	ND		ng/l	10.0	1.82
Naphthobenzothiophenes	ND		ng/l	10.0	1.64
C1-Naphthobenzothiophenes	ND		ng/l	10.0	1.64
C2-Naphthobenzothiophenes	ND		ng/l	10.0	1.64

Project Name: HDOH RED HILL
Project Number: 103S518817512
Lab Number: L2252035
Report Date: 10/07/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM(M)
Analytical Date: 09/28/22 21:03
Analyst: CNC

Extraction Method: EPA 3510C
Extraction Date: 09/28/22 09:48

Parameter	Result	Qualifier	Units	RL	MDL
PAHs - Mansfield Lab for sample(s): 01 Batch: WG1692946-1					
C3-Naphthobenzothiophenes	ND		ng/l	10.0	1.64
C4-Naphthobenzothiophenes	ND		ng/l	10.0	1.64
Benz(a)anthracene	ND		ng/l	10.0	1.16
Chrysene/Triphenylene	ND		ng/l	10.0	1.26
C1-Chrysenes	ND		ng/l	10.0	1.26
C2-Chrysenes BS	ND		ng/l	10.0	1.26
C3-Chrysenes	ND		ng/l	10.0	1.26
C4-Chrysenes	ND		ng/l	10.0	1.26
Benzo(b)fluoranthene	ND		ng/l	10.0	1.47
Benzo(j)+(k)fluoranthene	ND		ng/l	10.0	1.49
Benzo(a)fluoranthene	ND		ng/l	10.0	1.49
Benzo(e)pyrene	ND		ng/l	10.0	1.31
Benzo(a)pyrene	ND		ng/l	10.0	2.15
Perylene	ND		ng/l	10.0	1.83
Indeno(1,2,3-cd)pyrene	ND		ng/l	10.0	2.46
Dibenz(a,h)+(a,c)anthracene	ND		ng/l	10.0	2.94
Benzo(g,h,i)perylene	ND		ng/l	10.0	2.65

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Naphthalene-d8	72		50-130
Phenanthrene-d10	88		50-130
Benzo(a)pyrene-d12	100		50-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: HDOH RED HILL

Project Number: 103S518817512

Lab Number: L2252035

Report Date: 10/07/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
PAHs - Mansfield Lab Associated sample(s): 01 Batch: WG1692946-2 WG1692946-3								
Naphthalene	86		91		50-130	6		30
2-Methylnaphthalene	80		85		50-130	6		30
Acenaphthylene	80		85		50-130	6		30
Acenaphthene	80		86		50-130	7		30
Fluorene	86		92		50-130	7		30
Phenanthrene	87		94		50-130	8		30
Anthracene	94		100		50-130	6		30
Fluoranthene	71		76		50-130	7		30
Pyrene	78		84		50-130	7		30
Benz(a)anthracene	87		91		50-130	4		30
Chrysene/Triphenylene	88		90		50-130	2		30
Benzo(b)fluoranthene	94		98		50-130	4		30
Benzo(j)+(k)fluoranthene	100		103		50-130	3		30
Benzo(a)pyrene	94		97		50-130	3		30
Indeno(1,2,3-cd)pyrene	98		102		50-130	4		30
Dibenz(a,h)+(a,c)anthracene	98		101		50-130	3		30
Benzo(g,h,i)perylene	103		106		50-130	3		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: HDOH RED HILL

Project Number: 103S518817512

Lab Number: L2252035

Report Date: 10/07/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
PAHs - Mansfield Lab Associated sample(s): 01 Batch: WG1692946-2 WG1692946-3								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Naphthalene-d8	78		83		50-130
Phenanthrene-d10	89		95		50-130
Benzo(a)pyrene-d12	101		103		50-130

PETROLEUM HYDROCARBONS

Project Name: HDOH RED HILL
Project Number: 103S518817512
Lab Number: L2252035
Report Date: 10/07/22

SAMPLE RESULTS

Lab ID: L2252035-01 D
Client ID: RED HILL SHAFT - P12-21-024
Sample Location: Not Specified

Date Collected: 12/05/21 14:00
Date Received: 09/22/22
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8015D(M)
Analytical Date: 10/05/22 09:06
Analyst: WR

Extraction Method: EPA 3510C
Extraction Date: 09/28/22 09:48

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Saturated Hydrocarbons by GC-FID - Mansfield Lab						
n-Nonane (C9)	0.043		mg/l	0.021	0.007	20
n-Decane (C10)	0.721		mg/l	0.021	0.002	20
n-Undecane (C11)	2.93		mg/l	0.021	0.002	20
n-Dodecane (C12)	3.69		mg/l	0.021	0.003	20
n-Tridecane (C13)	3.19		mg/l	0.106	0.019	20
2,6,10-Trimethyldodecane (1380)	0.579		mg/l	0.021	0.002	20
n-Tetradecane (C14)	2.03		mg/l	0.021	0.002	20
2,6,10-Trimethyltridecane (1470)	0.466		mg/l	0.021	0.003	20
n-Pentadecane (C15)	0.753		mg/l	0.021	0.003	20
n-Hexadecane (C16)	0.160		mg/l	0.021	0.003	20
Norpristane (1650)	0.024		mg/l	0.021	0.003	20
n-Heptadecane (C17)	0.037		mg/l	0.021	0.003	20
Pristane	0.017	J	mg/l	0.021	0.004	20
n-Octadecane (C18)	0.011	J	mg/l	0.021	0.002	20
Phytane	0.004	J	mg/l	0.021	0.002	20
n-Nonadecane (C19)	0.004	J	mg/l	0.021	0.004	20
n-Eicosane (C20)	0.001	J	mg/l	0.021	0.001	20
n-Heneicosane (C21)	ND		mg/l	0.021	0.002	20
n-Docosane (C22)	ND		mg/l	0.021	0.001	20
n-Tricosane (C23)	0.002	J	mg/l	0.021	0.002	20
n-Tetracosane (C24)	ND		mg/l	0.021	0.002	20
n-Pentacosane (C25)	ND		mg/l	0.106	0.013	20
n-Hexacosane (C26)	ND		mg/l	0.021	0.002	20
n-Heptacosane (C27)	ND		mg/l	0.021	0.002	20
n-Octacosane (C28)	ND		mg/l	0.021	0.004	20
n-Nonacosane (C29)	0.005	J	mg/l	0.021	0.002	20
n-Triacontane (C30)	ND		mg/l	0.021	0.003	20
n-Hentriacontane (C31)	ND		mg/l	0.021	0.003	20

Project Name: HDOH RED HILL **Lab Number:** L2252035

Project Number: 103S518817512 **Report Date:** 10/07/22

SAMPLE RESULTS

Lab ID: L2252035-01 D
Client ID: RED HILL SHAFT - P12-21-024
Sample Location: Not Specified

Date Collected: 12/05/21 14:00
Date Received: 09/22/22
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Saturated Hydrocarbons by GC-FID - Mansfield Lab						
n-Dotriacontane (C32)	ND		mg/l	0.021	0.003	20
n-Tritriacontane (C33)	ND		mg/l	0.021	0.003	20
n-Tetratriacontane (C34)	ND		mg/l	0.021	0.004	20
n-Pentatriacontane (C35)	ND		mg/l	0.021	0.003	20
n-Hexatriacontane (C36)	ND		mg/l	0.021	0.003	20
n-Heptatriacontane (C37)	ND		mg/l	0.021	0.004	20
n-Octatriacontane (C38)	ND		mg/l	0.021	0.004	20
n-Nonatriacontane (C39)	ND		mg/l	0.021	0.004	20
n-Tetracontane (C40)	ND		mg/l	0.021	0.004	20
Total Petroleum Hydrocarbons (C9-C44)	68.9		mg/l	0.702	0.118	20
Total Saturated Hydrocarbons	14.7	J	mg/l	0.021	0.001	20

Surrogate	% Recovery	Qualifier	Acceptance Criteria
ortho-terphenyl	109		50-130
d50-Tetracosane	113		50-130

Project Name: HDOH RED HILL
Project Number: 103S518817512
Lab Number: L2252035
Report Date: 10/07/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8015D(M)
Analytical Date: 09/29/22 19:07
Analyst: WR

Extraction Method: EPA 3510C
Extraction Date: 09/28/22 09:48

Parameter	Result	Qualifier	Units	RL	MDL
Saturated Hydrocarbons by GC-FID - Mansfield Lab for sample(s): 01 Batch: WG1692946-1					
n-Nonane (C9)	ND		mg/l	0.001	0.0003
n-Decane (C10)	ND		mg/l	0.001	0.0001
n-Undecane (C11)	ND		mg/l	0.001	0.0001
n-Dodecane (C12)	ND		mg/l	0.001	0.0001
n-Tridecane (C13)	ND		mg/l	0.005	0.001
2,6,10-Trimethyldodecane (1380)	ND		mg/l	0.001	0.0001
n-Tetradecane (C14)	ND		mg/l	0.001	0.0001
2,6,10-Trimethyltridecane (1470)	ND		mg/l	0.001	0.0001
n-Pentadecane (C15)	ND		mg/l	0.001	0.0001
n-Hexadecane (C16)	ND		mg/l	0.001	0.0001
Norpristane (1650)	ND		mg/l	0.001	0.0001
n-Heptadecane (C17)	ND		mg/l	0.001	0.0001
Pristane	ND		mg/l	0.001	0.0002
n-Octadecane (C18)	ND		mg/l	0.001	0.0001
Phytane	ND		mg/l	0.001	0.0001
n-Nonadecane (C19)	ND		mg/l	0.001	0.0002
n-Eicosane (C20)	ND		mg/l	0.001	0.0001
n-Heneicosane (C21)	ND		mg/l	0.001	0.0001
n-Docosane (C22)	ND		mg/l	0.001	0.00004
n-Tricosane (C23)	0.000115	J	mg/l	0.001000	0.000074
n-Tetracosane (C24)	ND		mg/l	0.001	0.0001
n-Pentacosane (C25)	ND		mg/l	0.005	0.001
n-Hexacosane (C26)	ND		mg/l	0.001	0.0001
n-Heptacosane (C27)	ND		mg/l	0.001	0.0001
n-Octacosane (C28)	ND		mg/l	0.001	0.0002
n-Nonacosane (C29)	0.001	JC	mg/l	0.001	0.0001
n-Triacontane (C30)	ND		mg/l	0.001	0.0001
n-Hentriacontane (C31)	ND		mg/l	0.001	0.0001
n-Dotriacontane (C32)	ND		mg/l	0.001	0.0001

Project Name: HDOH RED HILL
Project Number: 103S518817512
Lab Number: L2252035
Report Date: 10/07/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8015D(M)
Analytical Date: 09/29/22 19:07
Analyst: WR

Extraction Method: EPA 3510C
Extraction Date: 09/28/22 09:48

Parameter	Result	Qualifier	Units	RL	MDL
Saturated Hydrocarbons by GC-FID - Mansfield Lab for sample(s): 01 Batch: WG1692946-1					
n-Tritriacontane (C33)	ND		mg/l	0.001	0.0001
n-Tetratriacontane (C34)	ND		mg/l	0.001	0.0002
n-Pentatriacontane (C35)	ND		mg/l	0.001	0.0002
n-Hexatriacontane (C36)	ND		mg/l	0.001	0.0001
n-Heptatriacontane (C37)	ND		mg/l	0.001	0.0002
n-Octatriacontane (C38)	ND		mg/l	0.001	0.0002
n-Nonatriacontane (C39)	ND		mg/l	0.001	0.0002
n-Tetracontane (C40)	ND		mg/l	0.001	0.0002
Total Petroleum Hydrocarbons (C9-C44)	ND		mg/l	0.033	0.006
Total Saturated Hydrocarbons	0.001	J	mg/l	0.001	0.00004

Surrogate	%Recovery	Qualifier	Acceptance Criteria
ortho-terphenyl	101		50-130
d50-Tetracosane	105		50-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: HDOH RED HILL

Project Number: 103S518817512

Lab Number: L2252035

Report Date: 10/07/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Saturated Hydrocarbons by GC-FID - Mansfield Lab Associated sample(s): 01 Batch: WG1692946-2 WG1692946-3								
Nonane (C9)	82		81		50-130	1		30
n-Decane (C10)	90		91		50-130	1		30
n-Dodecane (C12)	96		98		50-130	2		30
n-Tetradecane (C14)	96		98		50-130	2		30
n-Hexadecane (C16)	105		108		50-130	3		30
n-Octadecane (C18)	108		112		50-130	4		30
n-Nonadecane (C19)	102		106		50-130	4		30
n-Eicosane (C20)	102		106		50-130	4		30
n-Docosane (C22)	103		107		50-130	4		30
n-Tetracosane (C24)	108		112		50-130	4		30
n-Hexacosane (C26)	107		110		50-130	3		30
n-Octacosane (C28)	107		110		50-130	3		30
n-Triacontane (C30)	108		111		50-130	3		30
n-Hexatriacontane (C36)	98		101		50-130	3		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
ortho-terphenyl	102		105		50-130
d50-Tetracosane	107		110		50-130

Project Name: HDOH RED HILL
Project Number: 103S518817512

Lab Number: L2252035
Report Date: 10/07/22

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2252035-01A	Amber 1000ml unpreserved	A	NA		15.7	Y	Absent		A2-ALKPAH(7)

*Values in parentheses indicate holding time in days

Project Name:	HDOH RED HILL	**Lab Number:**	L2252035
Project Number:	103S518817512	**Report Date:**	10/07/22

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

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Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers

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Data Qualifiers

Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Report Format: DU Report with 'J' Qualifiers

Project Name:	HDOH RED HILL	**Lab Number:**	L2252035
Project Number:	103S518817512	**Report Date:**	10/07/22

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

9/22/22

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CHAIN-OF-CUSTODY RECORD

TETRA TECH

Client Name/Account #: TetraTech, Inc.
Address: 737 Bishop St., Suite 2340
City/State/Zip: Honolulu, HI 96813
Project Manager: Eric Jensen
Telephone Number: 808.225.7084 email eric.jensen@tetratech.com
Sampler Name: (Print) Elizabeth Galvez, HDOH HEER Office
Sampler Signature: See original COC, attached

Report To: Eric Jensen
Invoice To: Eric Jensen
Project ID: HDOH Red Hill
Project #: 103S518817512

Sample ID / Description	Date Sampled	Time Sampled	No. of Containers Shipped	Grab	Composite	Multi-incremental Sample	Preservative: Ice	Preservative: HNO_3 (Red Label)	Preservative: HCl (VOA; Blue Label)	Preservative: NaOH (Orange Label)	Preservative: H_2SO_4 Plastic (Yellow Label)	Preservative: H_2SO_4 Glass(Yellow Label)	Preservative: None (20 mL Product VOA)	Preservative: Other (one MeOH VOA)	Matrix: Groundwater with Product Layer	Matrix: Wastewater	Matrix: Drinking Water	Matrix: Sludge	Matrix: Soil	Matrix: Other (specify): Free Product	Analyze For: Analyses pending	Analyze For: EPA Method 8015M (forensic method)	Analyze For: EPA Method 8270E (SVOCs)	Analyze For: EPA Method 8270M-Alkylated PAHs (forensic method)	Analyze For: EPA Method 8260M-PIANO (forensic method)	Analyze For: See NOTES below	RUSH TAT (Pre-Schedule)	Standard TAT	SAMPLER
-01 Red Hill Shaft - P12-21-024	12/5/21	1400	1 Liter Amber	X											X					X		X	X	X	X	X		X	EG
see original COC, attached																													

Special Instructions:

NOTE 1: analyze sample by EPA Method 8015M and EPA Method 8270E (SVOCs) and then perform either alkylated PAH analysis or PIANO analysis depending on the source materials identified in the sample.

NOTE 2: Coordinate with Eric Litman (NewField) on specific requirments.
NOTE 3 - Thick petroleum layer observed when collected 12/05/2021 - FOCUS FOR ANALYSIS IS THE PRODUCT LAYER
NOTE 4: sample collected on 12/05/21 and maintained in refrigerator since time of collection.
NOTE: See attached original chain of custody

Method of Shipment: FEDEX

Laboratory Comments:

Temperature Upon Receipt:
Sample Containers Intact? Y N
VOCs Free of Headspace? Y N

FOCUS IS PRODUCT LAYER; SAMPLE SHIPPED ON ICE

Relinquished by:	Date	Time	Received by:	Date	Time
[signature]	9/19/22	1515	FEDEX		
Relinquished by: FEDEX	9/20/22	09:53	Received by Laboratory: [signature] AAL	9/22/22	09:53

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An emergency sample from 1 sample location requires the sampler to fill up 4 of the amber liter bottles (provided in each sampling cooler) with water from the 1 sample location. When collecting the emergency sample, the sampler will need to fill in the fields highlighted in yellow below, the sampler will also need to fill out 4 sampling labels (also provided in each sampling cooler) with the same information as the first 5 highlighted fields listed below. Apply each of the 4 sampling labels to each of the 4 bottles and then fill each of the 4 bottles to the top with water from the sample location and apply the bottle caps. When the sample collection is completed, if the sampler has frozen blue ice, please add it to the sampling cooler. If frozen blue ice is not available, that is okay you can send the samples without blue ice. Please do not use wet ice if frozen blue ice is not available. When sending the cooler please make sure you include this sampling sheet in the cooler and make sure it is enclosed in a Ziploc bag or the plastic pouch that was included in the sampling cooler.

SCRS C OF C# (FILLED IN BY THE LAB) P12-21-024					
SAMPLE DATE: 12-6-21	SAMPLER NAME (PRINT): ELIZABETH GALVEZ			SAMPLER SIGNATURE:	
SAMPLE LOCATION DESCRIPTION: RED HILL SHAFT	SAMPLE TIME: 2:00pm	CAR SCRS# (FILLED IN BY LAB)	CAR SATS# (FILLED IN BY LAB)	EDB SCRS# (FILLED IN BY LAB)	EDB SATS# (FILLED IN BY LAB)
		GLY SCRS# (FILLED IN BY LAB)	GLY SATS# (FILLED IN BY LAB)	HER SCRS# (FILLED IN BY LAB)	HER SATS# (FILLED IN BY LAB)
		MET SCRS# (FILLED IN BY LAB)	MET SATS# (FILLED IN BY LAB)	NIT SCRS# (FILLED IN BY LAB)	NIT SATS# (FILLED IN BY LAB)
SAMPLE COMMENTS (IF ANY):		SOC SCRS# (FILLED IN BY LAB)	SOC SATS# (FILLED IN BY LAB)	VOC SCRS# (FILLED IN BY LAB)	VOC SATS# (FILLED IN BY LAB)
		THM SCRS# (FILLED IN BY LAB)	THM SATS# (FILLED IN BY LAB)	HAA SCRS# (FILLED IN BY LAB)	HAA SATS# (FILLED IN BY LAB)

Relinquished by:	Date/Time: 12/6/2021 1421	Received in Laboratory by: WV			Date/Time: 12/6/21 1444			
Received by:	Date/Time: 12-6-21 1421		Cooler#		Cooler#		Cooler#	Cooler#
Relinquished by:	Date/Time: 9-19-22 1736	Sample Temperature on Receipt at Laboratory:	4° C					
Received by:	Date/Time: 09-19-22 1936	Samples Received Day Of Collection OR T < 6 Deg. C	Yes No		Yes No		Yes No	Yes No
Delivered to Courier or Airport by:	Date/Time:		Cooler#		Cooler#		Cooler#	Cooler#
Method of Shipment: Fedex____: UPS____: Island Air____: Kamaka Air____: Other:		Sample Temperature on Receipt at Laboratory:						
Received by:	Date/Time:	Samples Received Day Of Collection OR T < 6 Deg. C	Yes No		Yes No		Yes No	Yes No
Custody Seal intact? Yes____: No____: Not Used____: TSA/Carrier inspected____		Samples Checked Against COC by:						
Relinquished by:	Date/Time:	Laboratory Comments: • Thick petroleum layer observed YSJ 12/6/21 • Strong petroleum smell						
Received by:	Date/Time:							
Delivered to Lab by:	Date/Time: 12-6-21 1442							

ORIGIN ID:HIKA (808) 441-6601
ERIC JENSEN

737 BISHOP STREET, SUITE 2340

HONOLULU, HI 96813
UNITED STATES US

SHIP DATE: 19SEP22
ACTWGT: 15.00 LB
CAD: 255272455/INET4530
DIMS: 15x18x10 IN

BILL SENDER

TO **SUSAN O'NEIL**
ALPHA ANALYTICAL, INC.
320 FORBES BLVD.

MANSFIELD MA 02048
(508) 844-4117 REF: 103S518817512:H002
INV:
PO: DEPT:

581J1/EC8C/FE2D

FedEx Express

WED - 21 SEP 10:30A
PRIORITY OVERNIGHT

TRK# 0201 **7779 7350 5966**

02048
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