



ANALYTICAL REPORT

PREPARED FOR

Attn: Terri Choy
AECOM
1001 Bishop Street
Honolulu, Hawaii 96813
Generated 1/5/2023 2:58:47 PM

JOB DESCRIPTION

Red Hill - AFFF Assessment Sampling

JOB NUMBER

580-121651-1

Job Notes

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The data in the report relate to the field sample(s) as received by the laboratory and associated QC. All results have been reviewed and have been found to be compliant with laboratory and accreditation requirements, with the exception of the noted deviation(s). For questions, please contact the Project Manager.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing Northwest, LLC Project Manager.

Authorization



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Authorized for release by
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Case Narrative

Client: AECOM
Project/Site: Red Hill - AFFF Assessment Sampling

Job ID: 580-121651-1

Job ID: 580-121651-1

Laboratory: Eurofins Seattle

Narrative

CASE NARRATIVE

Client: AECOM

Project: Red Hill - AFFF Assessment Sampling

Report Number: 580-121651-1

This case narrative is in the form of an exception report, where only the anomalies related to this report, method specific performance and/or QA/QC issues are discussed. If there are no issues to report, this narrative will include a statement that documents that there are no relevant data issues.

It should be noted that samples with elevated Reporting Limits (RLs) resulting from a dilution may not be able to satisfy customer reporting limits in some cases. Such increases in the RLs are an unavoidable but acceptable consequence of sample dilution that enables quantification of target analytes within the calibration range of the instrument or that reduces the interferences thereby enabling the quantification of target analytes.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT

Three samples were received on 12/22/2022 10:45 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 4.8° C.

Note: All samples which require thermal preservation are considered acceptable if the arrival temperature is within 2C of the required temperature or method specified range. For samples with a specified temperature of 4C, samples with a temperature ranging from just above freezing temperature of water to 6C shall be acceptable. Samples that are hand delivered immediately following collection may not meet these criteria, however they will be deemed acceptable according to NELAC standards, if there is evidence that the chilling process has begun, such as arrival on ice, etc.

GLYCOLS - 2-(2-BUTOXYETHOXY)ETHANOL

Samples AF-RHMW02-WGN01LF-2212W3 (580-121651-1), AF-RHMW03-WGN01LF-2212W3 (580-121651-2) and AF-RHMW225401-WGN01B-2212W3 (580-121651-3) were analyzed for glycols in accordance with EPA SW-846 Method 8015B - DAI. The samples were analyzed on 12/31/2022.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Definitions/Glossary

Client: AECOM

Job ID: 580-121651-1

Project/Site: Red Hill - AFFF Assessment Sampling

Qualifiers

GC Semi VOA

Qualifier	Qualifier Description
U	Undetected at the Limit of Detection.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Client Sample Results

Client: AECOM
Project/Site: Red Hill - AFFF Assessment Sampling

Job ID: 580-121651-1

Client Sample ID: AF-RHMW02-WGN01LF-2212W3

Lab Sample ID: 580-121651-1

Date Collected: 12/19/22 13:20

Matrix: Water

Date Received: 12/22/22 10:45

Method: SW846 8015C GLY - Glycols- Direct Injection (GC/FID)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
2-(2-Butoxyethoxy)ethanol	3.0	U	5.0	1.1	mg/L			12/31/22 19:38	1

- 1
- 2
- 3
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Client Sample Results

Client: AECOM

Job ID: 580-121651-1

Project/Site: Red Hill - AFFF Assessment Sampling

Client Sample ID: AF-RHMW03-WGN01LF-2212W3

Lab Sample ID: 580-121651-2

Date Collected: 12/19/22 16:20

Matrix: Water

Date Received: 12/22/22 10:45

Method: SW846 8015C GLY - Glycols- Direct Injection (GC/FID)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
2-(2-Butoxyethoxy)ethanol	3.0	U	5.0	1.1	mg/L			12/31/22 20:01	1

- 1
- 2
- 3
- 4
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- 7
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- 10
- 11

Client Sample Results

Client: AECOM
Project/Site: Red Hill - AFFF Assessment Sampling

Job ID: 580-121651-1

Client Sample ID: AF-RHMW225401-WGN01B-2212W3

Lab Sample ID: 580-121651-3

Date Collected: 12/19/22 14:00

Matrix: Water

Date Received: 12/22/22 10:45

Method: SW846 8015C GLY - Glycols- Direct Injection (GC/FID)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
2-(2-Butoxyethoxy)ethanol	3.0	U	5.0	1.1	mg/L			12/31/22 20:24	1

- 1
- 2
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QC Sample Results

Client: AECOM
 Project/Site: Red Hill - AFFF Assessment Sampling

Job ID: 580-121651-1

Method: 8015C GLY - Glycols- Direct Injection (GC/FID)

Lab Sample ID: MB 680-757531/16
Matrix: Water
Analysis Batch: 757531

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
2-(2-Butoxyethoxy)ethanol	3.0	U	5.0	1.1	mg/L	-		12/31/22 18:08	1

Lab Sample ID: LCS 680-757531/12
Matrix: Water
Analysis Batch: 757531

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
2-(2-Butoxyethoxy)ethanol	20.0	20.7		mg/L	-	104	50 - 150

Lab Sample ID: LCSD 680-757531/13
Matrix: Water
Analysis Batch: 757531

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
2-(2-Butoxyethoxy)ethanol	20.0	21.6		mg/L	-	108	50 - 150	4	50

Lab Chronicle

Client: AECOM

Job ID: 580-121651-1

Project/Site: Red Hill - AFFF Assessment Sampling

Client Sample ID: AF-RHMW02-WGN01LF-2212W3

Lab Sample ID: 580-121651-1

Date Collected: 12/19/22 13:20

Matrix: Water

Date Received: 12/22/22 10:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8015C GLY		1	757531	JCK	EET SAV	12/31/22 19:38

Client Sample ID: AF-RHMW03-WGN01LF-2212W3

Lab Sample ID: 580-121651-2

Date Collected: 12/19/22 16:20

Matrix: Water

Date Received: 12/22/22 10:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8015C GLY		1	757531	JCK	EET SAV	12/31/22 20:01

Client Sample ID: AF-RHMW225401-WGN01B-2212W3

Lab Sample ID: 580-121651-3

Date Collected: 12/19/22 14:00

Matrix: Water

Date Received: 12/22/22 10:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8015C GLY		1	757531	JCK	EET SAV	12/31/22 20:24

Laboratory References:

EET SAV = Eurofins Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

Accreditation/Certification Summary

Client: AECOM
Project/Site: Red Hill - AFFF Assessment Sampling

Job ID: 580-121651-1

Laboratory: Eurofins Savannah

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
ANAB	Dept. of Defense ELAP	L2463	09-22-24

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
8015C GLY		Water	2-(2-Butoxyethoxy)ethanol



Sample Summary

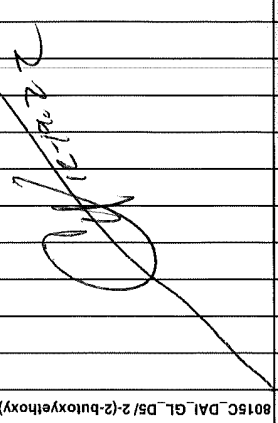
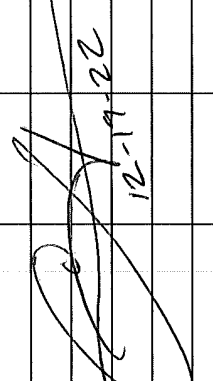
Client: AECOM
Project/Site: Red Hill - AFFF Assessment Sampling

Job ID: 580-121651-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-121651-1	AF-RHMW02-WGN01LF-2212W3	Water	12/19/22 13:20	12/22/22 10:45
580-121651-2	AF-RHMW03-WGN01LF-2212W3	Water	12/19/22 16:20	12/22/22 10:45
580-121651-3	AF-RHMW225401-WGN01B-2212W3	Water	12/19/22 14:00	12/22/22 10:45

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Chain of Custody Record

Client Information		Sampler: <u>LAUREN HAZDLE</u>		Lab PM: Elaine Walker	Carrier Tracking No(s): FedEx	COC No: 01-221219-23F0104-EUSav
Client Contact: AECOM		Phone: <u>252-259-5993</u>		E-Mail: M.Elaine.Walker@EurofinsET.com	State of Origin: Hawaii	Page: 1 of 1
Address: 1001 Bishop St. Suite 1600		Due Date Requested: see subcontract		Job #: _____		
City: Honolulu	TAT Requested (days): <u>Rush - ASAP</u>	Analysis Requested 				
State, Zip: Hawaii 96813	Compliance Project: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No					
Phone: 808-954-4512 / 808-356-5311	PO #: _____	Total Number of Containers: <u>3</u>				
Email: Watson Tanji (watson.tanji@aecom.com) / Brant Landers (brant.landiers@aecom.com)	WO #: _____	Preservation Codes: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Anchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other: _____ M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecathylate U - Acetone V - MCAA W - pH 4-5 Z - other (specify)				
Project Name: CTO N6274223F0104	Project #: 60697810	Perform MS/MSD (Yes or No) <input checked="" type="checkbox"/> A Field Filtered Sample (Yes or No) <input checked="" type="checkbox"/> N 8015C_DAL_GL_DS/2-(2-butylethoxy)-ethanol <input checked="" type="checkbox"/> X				
Site: RH5F	SSOW#: _____					
Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, C=chemical, B=biological, A=air)	Preservation Code	Special Instructions/Note:
AF-RHMW02-WGN01LF-2212W3	<u>12-19-22</u>	<u>1320</u>	G		W	
						
Possible Hazard Identification <input checked="" type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological Deliverable Requested: I, II, III, IV, Other (specify) _____						
Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months Special Instructions/QC Requirements: DOD QSM project						
Empty Kit Relinquished by: _____ Date: _____ Time: _____ Relinquished by: <u>Christina Jadhle</u> Date/Time: <u>12-19-22 1610</u> Company: AECOM Relinquished by: <u>IC</u> Date/Time: <u>12/19/22 11:30</u> Company: AECOM Relinquished by: _____ Date/Time: <u>12/20/22 1120</u> Company: AECOM						
Cooler Temperature(s) °C and Other Remarks: <u>48/4.8</u>						



Chain of Custody Record

Client Information		Sampler: <i>Tranahon Ne</i>		Lab PM: Elaine Walker	Carrier Tracking No(s):	COC No: 02-221219-23F0104-EUSav	
Client Contact:		Phone: 808-582-8659		E-Mail: M.Elaine.Walker@EurofinsET.com	FedEx	Page: 1 of 1	
Company: AECOM		PWSID:		State of Origin: Hawaii			
Address: 1001 Bishop St. Suite 1600		Due Date Requested: see subcontract		Job #:			
City: Honolulu		TAT Requested (days): Rush - ASAP		Analysis Requested			
State, Zip: Hawaii: 96813		Compliance Project: <input type="checkbox"/> Yes <input type="checkbox"/> No		Total Number of Containers			
Phone: 808-954-4512 / 808-356-5311		PO #:		Preservation Codes: M - Hexane N - None O - ASNaO2 P - Na2O4S Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 L - EDA Other:			
Email: Watson Tanji (watson.tanji@aecom.com) / Brant Landers (brant.landiers@aecom.com)		WO #:		Special Instructions/Note:			
Project Name: CTO N6274223F0104		Project #: 60697810		Perform MS/MSD (Yes or No)			
Site: RHSF		SSOW#:		Field Filtered Sample (Yes or No)			
Sample Identification		Sample Date		Sample Type (C=comp, G=grab)		Matrix (Water, Solid, Other: specify)	
AF-RHMW03-WGN01LF-2212W3		12/19/22 1620		G		W	
Possible Hazard Identification		Sample Time		Preservation Code:		Total Number of Containers	
<input checked="" type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological		12/19/22 1620		G		3	
Deliverable Requested: I, II, III, IV, Other (specify)		Sample Date		Sample Type (C=comp, G=grab)		Special Instructions/Note:	
4 report standard IAT, AECOM EQUIS, EDD		12/19/22 1620		G		3	
Empty Kit Relinquished by:		Date:		Company:		Special Instructions/QC Requirements: DOD QSM project.	
Tranahon Ne		12/19/22 1610		AECOM		Return To Client <input type="checkbox"/> Archive For <input type="checkbox"/> Months	
IC		12/19/22 1630		AECOM		Disposal By Lab <input type="checkbox"/>	
IC		12/20/22 1130		AECOM		Method of Shipment:	
Custody Seals Intact:		Date/Time:		Company:		Date/Time: 12/19/22 1610	
<input type="checkbox"/> Yes <input type="checkbox"/> No		12/20/22 1045		AECOM		Date/Time: 12/20/22 1045	
Custody Seal No.:		Date/Time:		Company:		Date/Time: 12/20/22 1045	
4-8/4-8		12/20/22 1130		AECOM		Date/Time: 12/20/22 1045	
Cooler Temperature(s) °C and Other Remarks:		Date/Time:		Company:		Date/Time: 12/20/22 1045	
		12/20/22 1130		AECOM		Date/Time: 12/20/22 1045	



Chain of Custody Record

Client Information Sampler: NOAH TURNER Lab P.M.: Elaine Walker Carrier Tracking No(s): FedEX Phone: (781) 366-4777 E-Mail: M.Elaine.Walker@EurofinsET.com State of Origin: Hawaii PWSID:		COC No: 03-221219-23F0104-EUSav Page: Page 1 of 1 Job #:	
Analysis Requested			
Due Date Requested: see subcontract TAT Requested (days): Rush - ASAP Compliance Project: <input type="checkbox"/> Yes <input type="checkbox"/> No PO #:		Preservation Codes: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other:	
Address: 1001 Bishop St. Suite 1600 City: Honolulu State, Zip: Hawaii 96813 Phone: 808-954-4512 / 808-356-5311 Email: Watson.Tanji(watson.tanji@aecom.com) / Brant.Landers(brant.landers@aecom.com)		Project #: 60697810 Project Name: CTO N6274223F0104 Site: RH5F	
Matrix (Water, Solid, Other): Matrix: Sample Type (C=comp, G=grab): Sample Time: Sample Date:		Field Filtered Sample (Yes or No): Perform MS/MSD (Yes or No): Total Number of Containers:	
Sample Identification AF-RHMW225401-WGN01B-2212W3 Sample Date: 12/19/2022 1400 Sample Time: MD 12/19/22 Sample Type: G Preservation Code: W		Special Instructions/Note: MS 12/19/22	
Possible Hazard Identification <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological Deliverable Requested: I, II, III, IV, Other (specify)			
Empty Kit Relinquished by:			
Relinquished by: NOAH TURNER, AECOM Relinquished by: Miranda DeBruino Relinquished by:		Date/Time: 12/19/2022 1530 Date/Time: 12/20/2022 1120 Date/Time:	
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Cooler Temperature(s) °C and Other Remarks: 48 / 4.8	
Received by: Miranda DeBruino Received by:		Date/Time: 12/19/22 1530 Date/Time: 12/20/22 1045 Date/Time:	
Company: AECOM		Company: AECOM	



Login Sample Receipt Checklist

Client: AECOM

Job Number: 580-121651-1

Login Number: 121651

List Number: 2

Creator: Harley, Tynisha

List Source: Eurofins Savannah

List Creation: 12/29/22 01:27 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	