

 **ANALYTICAL REPORT****PREPARED FOR**

Attn: Terri Choy  
AECOM  
1001 Bishop Street  
Honolulu, Hawaii 96813  
Generated 4/14/2023 3:48:13 PM

**JOB DESCRIPTION**

Red Hill - AFFF Assessment Sampling

**JOB NUMBER**

580-125741-1

## 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  
Marie Walker, Senior Project Manager  
[M.Elaine.Walker@et.eurofinsus.com](mailto:M.Elaine.Walker@et.eurofinsus.com)  
(253)248-4972



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# Case Narrative

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

Job ID: 580-125741-1

**Job ID: 580-125741-1**

**Laboratory: Eurofins Seattle**

**Narrative**

## CASE NARRATIVE

**Client: AECOM**  
**Project: Red Hill - AFFF Assessment Sampling**  
**Report Number: 580-125741-1**

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**

Two samples were received on 4/10/2023 10:00 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 4.1° 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**

**Samples AF-RHMW02-WGN01LF-2304W1 (580-125741-1) and AF-RHMW03-WGN01LF-2304W1 (580-125741-2) were analyzed for glycols in accordance with EPA SW-846 Method 8015B - DAI. The samples were analyzed on 04/11/2023.**

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

# Definitions/Glossary

Client: AECOM

Job ID: 580-125741-1

Project/Site: Red Hill - AFFF Assessment Sampling

## Qualifiers

### GC Semi VOA

Qualifier	Qualifier Description
M	Manual integrated compound.
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

Job ID: 580-125741-1

Project/Site: Red Hill - AFFF Assessment Sampling

**Client Sample ID: AF-RHMW02-WGN01LF-2304W1**

**Lab Sample ID: 580-125741-1**

**Date Collected: 04/06/23 10:20**

**Matrix: Water**

**Date Received: 04/10/23 10:00**

**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			04/11/23 21:09	1

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# Client Sample Results

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

Job ID: 580-125741-1

**Client Sample ID: AF-RHMW03-WGN01LF-2304W1**

**Lab Sample ID: 580-125741-2**

**Date Collected: 04/06/23 12:15**

**Matrix: Water**

**Date Received: 04/10/23 10:00**

**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			04/11/23 21:32	1

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# QC Sample Results

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

Job ID: 580-125741-1

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

**Lab Sample ID: MB 680-772684/9**  
**Matrix: Water**  
**Analysis Batch: 772684**

**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 M	5.0	1.1	mg/L	-		04/11/23 16:23	1

**Lab Sample ID: LCS 680-772684/5**  
**Matrix: Water**  
**Analysis Batch: 772684**

**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	18.0		mg/L	-	90	50 - 150

**Lab Sample ID: LCSD 680-772684/6**  
**Matrix: Water**  
**Analysis Batch: 772684**

**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	17.6		mg/L	-	88	50 - 150	2	50



# Lab Chronicle

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

Job ID: 580-125741-1

**Client Sample ID: AF-RHMW02-WGN01LF-2304W1**

**Lab Sample ID: 580-125741-1**

Date Collected: 04/06/23 10:20

Matrix: Water

Date Received: 04/10/23 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8015C GLY		1	772684	JCK	EET SAV	04/11/23 21:09

**Client Sample ID: AF-RHMW03-WGN01LF-2304W1**

**Lab Sample ID: 580-125741-2**

Date Collected: 04/06/23 12:15

Matrix: Water

Date Received: 04/10/23 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8015C GLY		1	772684	JCK	EET SAV	04/11/23 21:32

**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: 580-125741-1

## 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: 580-125741-1

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Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-125741-1	AF-RHMW02-WGN01LF-2304W1	Water	04/06/23 10:20	04/10/23 10:00
580-125741-2	AF-RHMW03-WGN01LF-2304W1	Water	04/06/23 12:15	04/10/23 10:00

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# Chain of Custody Record

<b>Client Information</b>		Company: AECOM		Lab PM: Elaine Walker		Carrier Tracking No(s): 2304W1AFEAO1	
Address: 1001 Bishop St. Suite 1600		City: Honolulu		State: HI		FedEX	
State, Zip: Hawaii 96813		Phone: 808-954-4512 / 770-331-0794		E-Mail: M.Elaine.Walker@EurofinsET.com		Page: Page 1 of 1	
Email: Watson.Tanji@aeom.com / Mark.Kromis@aeom.com		Project Name: CTO N6274223F0104		Job #:		Job #:	
Site: R/HSF		SSOW#: 60697810		PWSID:		Job #:	
Due Date Requested: see subcontract		TAT Requested (days): Rush - ASAP		Compliance Project: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		Analysis Requested	
Sample Date		Sample Time		Sample Type (C=Comp, G=grab)		Matrix (W=water, S=solid, O=other (specify))	
AF-RHMW02-WGN01LF-2304W1		02/06/23 1020		G		W	
Field Filtered Sample (Yes or No)		Perform MS/MSD (Yes or No)		8015C_DAL_GL_DS/2-(2-butoxyethoxy)-ethanol		Total Number of Containers	
<input checked="" type="checkbox"/> No		<input checked="" type="checkbox"/> No		<input checked="" type="checkbox"/> No		3	
Special Instructions/Note:		Special Instructions/Note:		Special Instructions/Note:		Special Instructions/Note:	
EP 02/06/23		EP 02/06/23		EP 02/06/23		EP 02/06/23	
Possible Hazard Identification		Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological <input type="checkbox"/>		Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For <input type="checkbox"/> Months		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)	
Deliverable Requested: I, II, III, IV, Other (specify)		Empty Kit Relinquished by: Eli Morris		Date: 02/06/23 1343		Date/Time: 4/1/23 1343	
Relinquished by: Alex Edmond		Date/Time: 02/06/23 1400		Company: AECOM		Company: AECOM	
Relinquished by: Alex Edmond		Date/Time: 02/06/23 1400		Company: AECOM		Company: AECOM	
Custody Seals Intact: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks: 4.1/4.5		Cooler Temperature(s) °C and Other Remarks:	



# Chain of Custody Record

<b>Client Information</b>		Sampler: <u>Eli Martin</u>		Lab PM: <u>Elaine Walker</u>		Carrier Tracking No(s):		COC No: <u>2304W1AFE02</u>	
Client Contact:		Phone: <u>617-599-3662</u>		E-Mail: <u>M.Elaine.Walker@EurofinsET.com</u>		FedEx		Page: <u>1 of 1</u>	
Company: <u>AECOM</u>		PWSID:		State of Origin: <u>Hawaii</u>		Job #:		Job #:	
Address: <u>1001 Bishop St. Suite 1600</u>		Due Date Requested: <u>see subcontract</u>		Analysis Requested		Total Number of Containers		Preservation Codes:	
City: <u>Honolulu</u>		TAT Requested (days): <u>Rush - ASAP</u>		Field Filtered Sample (Yes or No)		Form MS/MSD (Yes or No)		M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2SO4 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 L - EDTA Z - other (specify)	
State, Zip: <u>Hawaii 96813</u>		Compliance Project: <u>Δ Yes Δ No</u>		Field Filled Sample (Yes or No)		15015_DAL_GL_DS/2-(2-butoxyethoxy)-ethanol		A	
Phone: <u>808-954-4512 / 770-331-0794</u>		PO #:		Sample Date		Sample Time		Sample Type	
Email: <u>Watson.Tanji@aeacom.com / Mark.Kromis@aeacom.com</u>		WO #:		Date: <u>04/06/23</u>		Time: <u>12:15</u>		G	
Project Name: <u>CTO N627423F0104</u>		Project #: <u>60697810</u>		Sample Date		Sample Time		Sample Type	
Site: <u>RHSF</u>		SSOW#:		Date: <u>04/06/23</u>		Time: <u>12:15</u>		G	
Sample Identification		AF-RHMW03-WGN01LF-2304W1		Date: <u>04/06/23</u>		Time: <u>12:15</u>		G	
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		Date: <u>04/06/23</u>		Time: <u>13:33</u>		Company: <u>AECOM</u>	
Deliverable Requested: I, II, III, IV, Other (specify)		4 report standard TAT - AECOM EQUUS EDD		Date: <u>04/06/23</u>		Time: <u>14:00</u>		Company: <u>AECOM</u>	
Empty Kit Relinquished by:		Date: <u>04/06/23</u>		Date: <u>04/06/23</u>		Time: <u>13:33</u>		Company: <u>AECOM</u>	
Relinquished by: <u>Eli Martin</u>		Date: <u>04/06/23</u>		Date: <u>04/06/23</u>		Time: <u>13:33</u>		Company: <u>AECOM</u>	
Relinquished by: <u>Alex Edwards</u>		Date: <u>04/06/23</u>		Date: <u>04/06/23</u>		Time: <u>10:00</u>		Company: <u>AECOM</u>	
Relinquished by:		Date: <u>04/14/23</u>		Date: <u>04/14/23</u>		Time: <u>10:00</u>		Company: <u>AECOM</u>	
Custody Seal No.:		Custody Seal No.:		Date: <u>04/14/23</u>		Time: <u>10:00</u>		Company: <u>AECOM</u>	
Cooler Temperature(s) °C and Other Remarks:		Cooler Temperature(s) °C and Other Remarks:		Date: <u>04/14/23</u>		Time: <u>10:00</u>		Company: <u>AECOM</u>	



# Chain of Custody Record

<b>Client Information</b>		Lab PM Elaine Walker		Carrier Tracking No(s): 2304W1AFE01	
Client Contact: AECOM		E-Mail: Elaine.Walker@EurofinsET.com		FedEX Hawaii	
Address: 1001 Bishop St. Suite 1600 Honolulu Hawaii 96813 Phone: 808-954-4512 / 770-331-0794 Email: Watson.Tanji@aeocom.com / Mark.Kromis@aeocom.com		Phone: 1-362 PWSID		Page 1 of 1 Job #:	
Due Date Requested see subcontract		Analysis Requested		Preservation Codes	
TAT Requested (days): Rush - ASAP		8015c DA1 GL DS/2-(2-butylethoxy)-ethanol		A - HCL M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecylhydrate U - Acetone V - MCAA W - pH 4-5 X - EDTA Y - other (specify)	
Compliance Project: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		Field Filtered Sample (Yes or No)		Total Number of Containers	
PO #		Perform MS/MSD (Yes or No)		3	
WO #		Field Filtered Sample (Yes or No)		X	
Project #: 60697810		Sample Date		Sample Time	
SSOW#:		Sample Date		Sample Time	
Site: RHSF		Sample Date		Sample Time	
Sample Identification		Sample Date		Sample Time	
AF-RHMW02-WGN01LF-2304W1		Sample Date		Sample Time	
Sample Type (C=comp, G=grab)		Sample Date		Sample Time	
G		Sample Date		Sample Time	
Matrix (W=water, S=solid, O=swastick, ET=Etanin, A=Air)		Sample Date		Sample Time	
W		Sample Date		Sample Time	
Preservation Code:		Sample Date		Sample Time	
A		Sample Date		Sample Time	
Sample Disposal (A fee may be assessed if samples are retained long)		Sample Date		Sample Time	
<input type="checkbox"/> Return To Client <input checked="" type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For		Sample Date		Sample Time	
Special Instructions/QC Requirements: DOD QSM project.		Sample Date		Sample Time	
Empty Kit Relinquished by		Sample Date		Sample Time	
Relinquished by: E. I. [Signature]		Sample Date		Sample Time	
Relinquished by: AICKY Edmond		Sample Date		Sample Time	
Relinquished by:		Sample Date		Sample Time	
Custody Seals Intact: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		Sample Date		Sample Time	
Custody Seal No		Sample Date		Sample Time	
Cooler Temperature(s) °C and Other Remarks: 4.1/4.5		Sample Date		Sample Time	
Company: AECOM		Sample Date		Sample Time	
Company: AECOM		Sample Date		Sample Time	
Company: AECOM		Sample Date		Sample Time	



## Chain of Custody Record

<b>Client Information</b>	Sampler: <u>3123</u> Phone: <u>313-732</u> Lab PM: Elaine Walker E-Mail: M.Elaine.Walker@EurofinsET.com Carrier Tracking No(s): 2304W1AFE02 State of Origin: Hawaii Page: 1 of 1 Job #:	Due Date Requested: See subcontract TAT Requested (days): <b>Rush - ASAP</b> Compliance Project: <input type="checkbox"/> Yes <input type="checkbox"/> No PO #: <u>                    </u> WO #: <u>                    </u> Project #: 60697810 SSOW#: <u>                    </u>	Address: 1001 Bishop St. Suite 1600 City: Honolulu State Zip: Hawaii 96813 Phone: 808-954-4512 / 770-331-0794 Email: Watson.Tanji@aeecom.com / Mark.Kromis@aeecom.com Project Name: CTO N6274223F0104 Site: RHSE
<b>Sample Identification</b>	AF-RHMW03-WGN01LF-2304W1 Matrix: <u>                    </u> Sample Type (C=Comp, G=grab): <u>                    </u> Sample Time: <u>                    </u> Sample Date: <u>                    </u> Preservation Code: <u>                    </u>	Field Filled Sample (Yes or No): <input checked="" type="checkbox"/> A Perform MS/MSD (Yes or No): <input checked="" type="checkbox"/> A 8015C_DAL_GL_D5/2-(2-butylethoxy)-ethanol	Total Number of containers: <u>3</u> Special Instructions/Note: <u>                    </u>
<b>Possible Hazard Identification</b> <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) <u>                    </u> Prelim data (Level 1or2)-see TAT above DoD Stage <u>                    </u> 4 report standard TAT_AECCOMEQUIS EDD.			
Empty Kit Relinquished by <u>                    </u> Date: <u>                    </u> Time: <u>                    </u> Relinquished by <u>                    </u> Date/Time: <u>                    </u> Company: <u>                    </u> Relinquished by <u>Alex Edwards</u> Date/Time: <u>04/14/23</u> Company: <u>AECOM</u> Relinquished by <u>                    </u> Date/Time: <u>                    </u> Company: <u>                    </u>			
Relinquished by <u>                    </u> Date/Time: <u>                    </u> Company: <u>                    </u> Relinquished by <u>                    </u> Date/Time: <u>                    </u> Company: <u>                    </u> Relinquished by <u>                    </u> Date/Time: <u>                    </u> Company: <u>                    </u>			
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No Custody Seal No: <u>                    </u> Cooler Temperature(s) °C and Other Remarks: <u>4.1/4.5</u>			

