



ANALYTICAL REPORT

PREPARED FOR

Attn: Terri Choy
AECOM

1001 Bishop Street
Honolulu, Hawaii 96813

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JOB DESCRIPTION

Red Hill - AFFF Assessment Sampling

JOB NUMBER

580-129233-1

Eurofins Seattle

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

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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Case Narrative

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

Job ID: 580-129233-1

Job ID: 580-129233-1

Laboratory: Eurofins Seattle

Narrative

CASE NARRATIVE

Client: AECOM
Project: Red Hill - AFFF Assessment Sampling
Report Number: 580-129233-1

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

Seven samples were received on 7/8/2023 9:30 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 0.2° 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-RHMW04-WGN01LF-2307 (580-129233-1), AF-RHMW225401-WGN01B-2307 (580-129233-2), AF-RHMW02-WGN01LF-2307 (580-129233-3), AF-RHMW02-WGFD01LF-2307 (580-129233-4), AF-RHMW03-WGN01LF-2307 (580-129233-5), AF-RHMW06-WGN01LF-2307 (580-129233-6) and AF-RHMW10-WGN01LF-2307 (580-129233-7) were analyzed for glycols in accordance with EPA SW-846 Method 8015B - DAI. The samples were analyzed on 07/11/2023.

The continuing calibration verification (CCV) associated with batch 680-787708 recovered above the upper control limit for 2-(2-Butoxyethoxy)ethanol. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data has been reported.

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

Definitions/Glossary

Client: AECOM

Job ID: 580-129233-1

Project/Site: Red Hill - AFFF Assessment Sampling

Qualifiers

GC Semi VOA

Qualifier	Qualifier Description
M	Manual integrated compound.
Q	One or more quality control criteria failed.
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: 580-129233-1

Client Sample ID: AF-RHMW04-WGN01LF-2307

Lab Sample ID: 580-129233-1

Date Collected: 07/05/23 10:25

Matrix: Water

Date Received: 07/08/23 09:30

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 Q	5.0	1.1	mg/L			07/11/23 16:52	1

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10

Client Sample Results

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

Job ID: 580-129233-1

Client Sample ID: AF-RHMW225401-WGN01B-2307

Lab Sample ID: 580-129233-2

Date Collected: 07/03/23 14:15

Matrix: Water

Date Received: 07/08/23 09:30

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 Q	5.0	1.1	mg/L			07/11/23 17:16	1

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10

Client Sample Results

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

Job ID: 580-129233-1

Client Sample ID: AF-RHMW02-WGN01LF-2307

Lab Sample ID: 580-129233-3

Date Collected: 07/05/23 10:35

Matrix: Water

Date Received: 07/08/23 09:30

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 Q	5.0	1.1	mg/L			07/11/23 17:39	1

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10

Client Sample Results

Client: AECOM

Job ID: 580-129233-1

Project/Site: Red Hill - AFFF Assessment Sampling

Client Sample ID: AF-RHMW02-WGFD01LF-2307

Lab Sample ID: 580-129233-4

Date Collected: 07/05/23 10:35

Matrix: Water

Date Received: 07/08/23 09:30

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 M Q	5.0	1.1	mg/L			07/11/23 18:02	1

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10

Client Sample Results

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

Job ID: 580-129233-1

Client Sample ID: AF-RHMW03-WGN01LF-2307

Lab Sample ID: 580-129233-5

Date Collected: 07/05/23 13:20

Matrix: Water

Date Received: 07/08/23 09:30

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 M Q	5.0	1.1	mg/L			07/11/23 18:25	1

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10

Client Sample Results

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

Job ID: 580-129233-1

Client Sample ID: AF-RHMW06-WGN01LF-2307

Lab Sample ID: 580-129233-6

Date Collected: 07/05/23 13:15

Matrix: Water

Date Received: 07/08/23 09:30

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 M Q	5.0	1.1	mg/L			07/11/23 18:48	1

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10

Client Sample Results

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

Job ID: 580-129233-1

Client Sample ID: AF-RHMW10-WGN01LF-2307

Lab Sample ID: 580-129233-7

Date Collected: 07/05/23 14:25

Matrix: Water

Date Received: 07/08/23 09:30

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 M Q	5.0	1.1	mg/L			07/11/23 19:11	1

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10

QC Sample Results

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

Job ID: 580-129233-1

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

Lab Sample ID: MB 680-787708/9
Matrix: Water
Analysis Batch: 787708

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	-		07/11/23 14:33	1

Lab Sample ID: LCS 680-787708/5
Matrix: Water
Analysis Batch: 787708

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	22.9		mg/L	-	115	50 - 150

Lab Sample ID: LCSD 680-787708/6
Matrix: Water
Analysis Batch: 787708

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	18.3		mg/L	-	91	50 - 150	23	50

Lab Chronicle

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

Job ID: 580-129233-1

Client Sample ID: AF-RHMW04-WGN01LF-2307

Lab Sample ID: 580-129233-1

Date Collected: 07/05/23 10:25

Matrix: Water

Date Received: 07/08/23 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8015C GLY		1	787708	DBM	EET SAV	07/11/23 16:52

Client Sample ID: AF-RHMW225401-WGN01B-2307

Lab Sample ID: 580-129233-2

Date Collected: 07/03/23 14:15

Matrix: Water

Date Received: 07/08/23 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8015C GLY		1	787708	DBM	EET SAV	07/11/23 17:16

Client Sample ID: AF-RHMW02-WGN01LF-2307

Lab Sample ID: 580-129233-3

Date Collected: 07/05/23 10:35

Matrix: Water

Date Received: 07/08/23 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8015C GLY		1	787708	DBM	EET SAV	07/11/23 17:39

Client Sample ID: AF-RHMW02-WGFD01LF-2307

Lab Sample ID: 580-129233-4

Date Collected: 07/05/23 10:35

Matrix: Water

Date Received: 07/08/23 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8015C GLY		1	787708	DBM	EET SAV	07/11/23 18:02

Client Sample ID: AF-RHMW03-WGN01LF-2307

Lab Sample ID: 580-129233-5

Date Collected: 07/05/23 13:20

Matrix: Water

Date Received: 07/08/23 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8015C GLY		1	787708	DBM	EET SAV	07/11/23 18:25

Client Sample ID: AF-RHMW06-WGN01LF-2307

Lab Sample ID: 580-129233-6

Date Collected: 07/05/23 13:15

Matrix: Water

Date Received: 07/08/23 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8015C GLY		1	787708	DBM	EET SAV	07/11/23 18:48

Client Sample ID: AF-RHMW10-WGN01LF-2307

Lab Sample ID: 580-129233-7

Date Collected: 07/05/23 14:25

Matrix: Water

Date Received: 07/08/23 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8015C GLY		1	787708	DBM	EET SAV	07/11/23 19:11

Laboratory References:

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

Eurofins Seattle

Accreditation/Certification Summary

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

Job ID: 580-129233-1

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

Job ID: 580-129233-1

Project/Site: Red Hill - AFFF Assessment Sampling

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-129233-1	AF-RHMW04-WGN01LF-2307	Water	07/05/23 10:25	07/08/23 09:30
580-129233-2	AF-RHMW225401-WGN01B-2307	Water	07/03/23 14:15	07/08/23 09:30
580-129233-3	AF-RHMW02-WGN01LF-2307	Water	07/05/23 10:35	07/08/23 09:30
580-129233-4	AF-RHMW02-WGFD01LF-2307	Water	07/05/23 10:35	07/08/23 09:30
580-129233-5	AF-RHMW03-WGN01LF-2307	Water	07/05/23 13:20	07/08/23 09:30
580-129233-6	AF-RHMW06-WGN01LF-2307	Water	07/05/23 13:15	07/08/23 09:30
580-129233-7	AF-RHMW10-WGN01LF-2307	Water	07/05/23 14:25	07/08/23 09:30



Chain of Custody Record

Client Information		Sampler: <u>H. Nishikawa, J. Stowe</u>		Lab PM: Elaine Walker		Carrier Tracking No(s): FedEx		COC No: 2307AFEA07	
Client Contact:		Phone: <u>440-420-1736</u>		E-Mail: <u>M.Elaine.Walker@EurofinsET.com</u>		State of Origin: Hawaii		Page: Page 1 of 1	
Company: AECOM		Address: 1001 Bishop St. Suite 1600		City: Honolulu		State, Zip: Hawaii 96813		Phone: 808-954-4512 / 770-331-0794	
Email: Watson Tanji (watson.tanji@aecom.com) / Mark Kromis (mark.kromis@aecom.com)		Project Name: CTO N6274223F0104		Site: RHSF		Due Date Requested: see subcontract		TAT Requested (days): <u>Rush - 5 Day</u>	
Project #: 60697810		SSOW#:		Compliance Project: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		PO #:		WO #:	
Sample Identification		Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, AA=Air)	Field Filtered Sample (Yes or No)		Total Number of Containers	Special Instructions/Note:
AF-RHMW225401-WGN01B-2307		<u>7/3/2023</u>	<u>1415</u>	G	W	N	N		
Possible Hazard Identification		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)		Prelim data (Level 1 or 2)=see TAT above. DoD Stage 4 report standard TAT. AECOM EQUS EDD.		Special Instructions/QC Requirements: DOD QSM project.			
<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		<input type="checkbox"/> Return To Client <input checked="" type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months		Date: _____ Time: _____		Method of Shipment: _____			
Empty Kit Relinquished by: <u>J. Stowe</u>		Date/Time: <u>7/3/2023 / 1650</u>		Company: <u>AECOM</u>		Received by: <u>GABRIEL ALLEN</u>		Date/Time: <u>7/3/23 1650</u> Company: <u>AECOM</u>	
Relinquished by: <u>GABRIEL ALLEN</u>		Date/Time: <u>7/16/23 / 1855</u>		Company: <u>AECOM</u>		Received by: <u>[Signature]</u>		Date/Time: <u>07/08/23 09:30</u> Company: _____	
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks: <u>0-2/03</u>					



