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PREPARED FOR

Attn: Terri Choy AECOM 1001 Bishop Street Honolulu, Hawaii 96813

Generated 8/14/2023 9:52:41 AM

JOB DESCRIPTION

Red Hill - AFFF Assessment Sampling

ANALYTICAL REPORT

JOB NUMBER

580-130241-1

Eurofins Seattle 5755 8th Street East Tacoma WA 98424



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

M. Elaine Walker

Generated 8/14/2023 9:52:41 AM

Authorized for release by Marie Walker, Senior Project Manager M.Elaine.Walker@et.eurofinsus.com (253)248-4972

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Client: AECOM

Project/Site: Red Hill - AFFF Assessment Sampling

Laboratory Job ID: 580-130241-1

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Case Narrative

Client: AECOM Job ID: 580-130241-1

Project/Site: Red Hill - AFFF Assessment Sampling

Job ID: 580-130241-1

Laboratory: Eurofins Seattle

Narrative

CASE NARRATIVE

Client: AECOM
Project: Red Hill - AFFF Assessment Sampling
Report Number: 580-130241-1

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

Six samples were received on 8/4/2023 3:00 PM. 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 5.3° 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-2308 (580-130241-1), AF-RHMW02-WGFD01LF-2308 (580-130241-2), AF-RHMW03-WGN01LF-2308 (580-130241-3), AF-RHMW12A-WGRD01LF-2308 (580-130241-5) and AF-RHMW16-WGN01LF-2308 (580-130241-6) were analyzed for glycols in accordance with EPA SW-846 Method 8015B - DAI. The samples were analyzed on 08/10/2023.

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

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Definitions/Glossary

Client: AECOM Job ID: 580-130241-1

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

DLC

Ciocoary	
Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	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

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)

Decision Level 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

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Page 5 of 21 8/14/2023

Client: AECOM Job ID: 580-130241-1

Project/Site: Red Hill - AFFF Assessment Sampling

Client Sample ID: AF-RHMW02-WGN01LF-2308 Lab Sample ID: 580-130241-1

Date Collected: 08/03/23 09:35 Matrix: Water

5.0

1.1 mg/L

Date Received: 08/04/23 15:00

2-(2-Butoxyethoxy)ethanol

Method: SW846 8015C GLY - G	lycols- Direct Injection	(GC/FID)				
Analyte	Result Qualifier	LOQ	DL Unit	D	Prepared	Analyzed

3.0 U

Δ

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Dil Fac

08/10/23 18:56

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Client: AECOM Job ID: 580-130241-1

Project/Site: Red Hill - AFFF Assessment Sampling

Client Sample ID: AF-RHMW02-WGFD01LF-2308 Lab Sample ID: 580-130241-2

Date Collected: 08/03/23 09:35 Matrix: Water

Date Received: 08/04/23 15:00

Analyte		ualifier	LOQ		Unit	D	Prepared	Analyzed	Dil Fac	
2-(2-Butoxyethoxy)ethanol	30 U		5.0	11	ma/l			08/10/23 19:19	1	

4

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Client: AECOM Job ID: 580-130241-1

Project/Site: Red Hill - AFFF Assessment Sampling

Client Sample ID: AF-RHMW03-WGN01LF-2308 Lab Sample ID: 580-130241-3

Date Collected: 08/03/23 11:20 Matrix: Water

Date Received: 08/04/23 15:00

Method: SW846 8015C GLY - G	Slycols- Dire	ect Injectio	n (GC/FID)						
Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
2-(2-Butoxyethoxy)ethanol	3.0	U	5.0	1.1	ma/L			08/10/23 19:42	

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Client: AECOM Job ID: 580-130241-1

Project/Site: Red Hill - AFFF Assessment Sampling

Client Sample ID: AF-RHMW12A-WGN01LF-2308 Lab Sample ID: 580-130241-4

Date Collected: 08/03/23 09:30 Matrix: Water

Date Received: 08/04/23 15:00

Analyte	Result Qua	lifier LOQ	DL U	Jnit	D	Prepared	Analyzed	Dil Fac
2-(2-Butoxyethoxy)ethanol	3.0 U	5.0	1.1 n	ma/L			08/10/23 20:05	1

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Client: AECOM Job ID: 580-130241-1

Project/Site: Red Hill - AFFF Assessment Sampling

Client Sample ID: AF-RHMW12A-WGFD01LF-2308 Lab Sample ID: 580-130241-5

Date Collected: 08/03/23 09:30 Matrix: Water

Date Received: 08/04/23 15:00

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

Analyte	Result Qualifie	er LOQ	DL Unit	D	Prepared	Analyzed	Dil Fac
2-(2-Butoxyethoxy)ethanol	3.0 U	5.0	1.1 mg/l			08/10/23 20:28	1

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Client: AECOM Job ID: 580-130241-1

Project/Site: Red Hill - AFFF Assessment Sampling

Client Sample ID: AF-RHMW16-WGN01LF-2308 Lab Sample ID: 580-130241-6

Date Collected: 08/03/23 11:25 Matrix: Water

Date Received: 08/04/23 15:00

Analyte	Result Qualifier	LOQ	DL Un	it D	Prepared	Analyzed	Dil Fac
2-(2-Butoxyethoxy)ethanol	3.0 U	5.0	1.1 mg	/L		08/10/23 20:51	1

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Client: AECOM Job ID: 580-130241-1

Project/Site: Red Hill - AFFF Assessment Sampling

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

Lab Sample ID: MB 680-792737/9 Client Sample ID: Method Blank Prep Type: Total/NA

Matrix: Water

Analysis Batch: 792737

MB MB Result Qualifier LOQ DL Unit Analyzed Dil Fac Analyte D Prepared 3.0 U M 5.0 1.1 mg/L 08/10/23 14:20 2-(2-Butoxyethoxy)ethanol

Lab Sample ID: LCS 680-792737/5 **Client Sample ID: Lab Control Sample Matrix: Water** Prep Type: Total/NA

Analysis Batch: 792737

Spike LCS LCS %Rec Added Result Qualifier D %Rec Limits Unit 20.0 19.6 50 - 150 2-(2-Butoxyethoxy)ethanol mg/L 98

Lab Sample ID: LCSD 680-792737/6 Client Sample ID: Lab Control Sample Dup Prep Type: Total/NA

Matrix: Water

Analysis Batch: 792737

Spike LCSD LCSD %Rec RPD Added Result Qualifier Limits RPD Analyte Unit %Rec Limit 2-(2-Butoxyethoxy)ethanol 20.0 21.2 106 50 - 150 mg/L

Lab Sample ID: 580-130241-6 MS Client Sample ID: AF-RHMW16-WGN01LF-2308 **Matrix: Water** Prep Type: Total/NA

Analysis Batch: 792737

Spike MS MS %Rec Sample Sample Analyte Result Qualifier Added Result Qualifier Unit %Rec Limits 2-(2-Butoxyethoxy)ethanol 3.0 U 20.0 23.1 mg/L 115 50 - 150

Lab Sample ID: 580-130241-6 MSD Client Sample ID: AF-RHMW16-WGN01LF-2308

Matrix: Water

Analysis Batch: 792737

MSD MSD RPD Sample Sample Spike %Rec Analyte Result Qualifier Added Result Qualifier Limits Unit %Rec Limit 50 - 150 2-(2-Butoxyethoxy)ethanol 3.0 U 20.0 25.1 125 mg/L 8 50

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Prep Type: Total/NA

Job ID: 580-130241-1

Project/Site: Red Hill - AFFF Assessment Sampling

Client Sample ID: AF-RHMW02-WGN01LF-2308

Date Collected: 08/03/23 09:35

Lab Sample ID: 580-130241-1

Matrix: Water

Batch Dilution Batch Ratch Prepared Method Analyst or Analyzed **Prep Type** Type Run **Factor** Number Lab Total/NA 8015C GLY DBM EET SAV 08/10/23 18:56 Analysis 792737

Client Sample ID: AF-RHMW02-WGFD01LF-2308

Lab Sample ID: 580-130241-2

Matrix: Water

Date Collected: 08/03/23 09:35 Date Received: 08/04/23 15:00

Date Received: 08/04/23 15:00

Client: AECOM

Batch Batch Dilution Batch **Prepared** Number Analyst **Prep Type** Type Method Run **Factor** Lab or Analyzed Total/NA Analysis 8015C GLY 792737 DBM EET SAV 08/10/23 19:19

Client Sample ID: AF-RHMW03-WGN01LF-2308 Lab Sample ID: 580-130241-3

Date Collected: 08/03/23 11:20 **Matrix: Water**

Date Received: 08/04/23 15:00

Batch Batch Dilution Batch Prepared or Analyzed **Prep Type** Method **Factor Number Analyst** Type Run Lab 08/10/23 19:42 EET SAV Total/NA Analysis 8015C GLY 792737 DBM

Client Sample ID: AF-RHMW12A-WGN01LF-2308 Lab Sample ID: 580-130241-4

Date Collected: 08/03/23 09:30 **Matrix: Water**

Date Received: 08/04/23 15:00

Batch Batch Dilution Batch Prepared **Prep Type** Method **Number Analyst** or Analyzed Type Run **Factor** Lab Analysis 8015C GLY 792737 DBM EET SAV 08/10/23 20:05 Total/NA

Client Sample ID: AF-RHMW12A-WGFD01LF-2308 Lab Sample ID: 580-130241-5

Date Collected: 08/03/23 09:30 **Matrix: Water**

Date Received: 08/04/23 15:00

Batch Batch Dilution Batch Prepared Method Number Analyst or Analyzed **Prep Type** Type Run **Factor** Lab 08/10/23 20:28 DBM Total/NA Analysis 8015C GLY 792737 **EET SAV**

Lab Sample ID: 580-130241-6 Client Sample ID: AF-RHMW16-WGN01LF-2308

Date Collected: 08/03/23 11:25 **Matrix: Water**

Date Received: 08/04/23 15:00

Ratch Dilution Batch **Prepared** Batch **Prep Type** Type Method Run Factor **Number Analyst** or Analyzed Lab 08/10/23 20:51 Total/NA Analysis 8015C GLY 792737 DBM EET SAV

Laboratory References:

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

Accreditation/Certification Summary

Client: AECOM Job ID: 580-130241-1

Project/Site: Red Hill - AFFF Assessment Sampling

Laboratory: Eurofins Savannah

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

Authority ANAB		rogram ept. of Defense ELAP	L2463	Expiration Date 09-22-24	
The following analyte the agency does not	•	ort, but the laboratory is not	certified by the governing authority.	This list may include analytes for which	
Analysis Method	Prep Method	Matrix	Analyte		
8015C GLY		Water	2-(2-Butoxyethoxy)ethanol		

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Sample Summary

Client: AECOM Job ID: 580-130241-1

Project/Site: Red Hill - AFFF Assessment Sampling

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-130241-1	AF-RHMW02-WGN01LF-2308	Water	08/03/23 09:35	08/04/23 15:00
580-130241-2	AF-RHMW02-WGFD01LF-2308	Water	08/03/23 09:35	08/04/23 15:00
580-130241-3	AF-RHMW03-WGN01LF-2308	Water	08/03/23 11:20	08/04/23 15:00
580-130241-4	AF-RHMW12A-WGN01LF-2308	Water	08/03/23 09:30	08/04/23 15:00
580-130241-5	AF-RHMW12A-WGFD01LF-2308	Water	08/03/23 09:30	08/04/23 15:00
580-130241-6	AF-RHMW16-WGN01LF-2308	Water	08/03/23 11:25	08/04/23 15:00

J

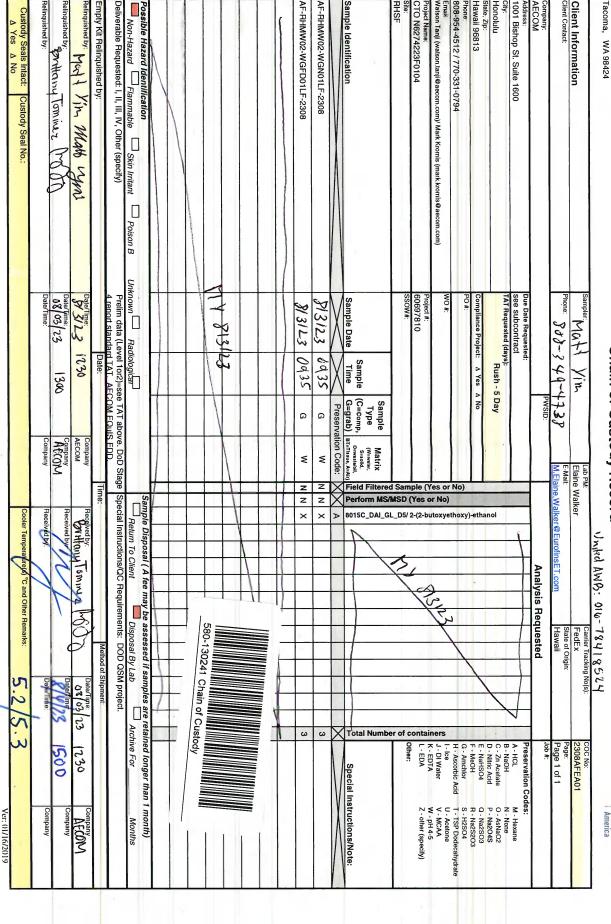
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5755 8th Street East

Eurofins FGS, Seattle

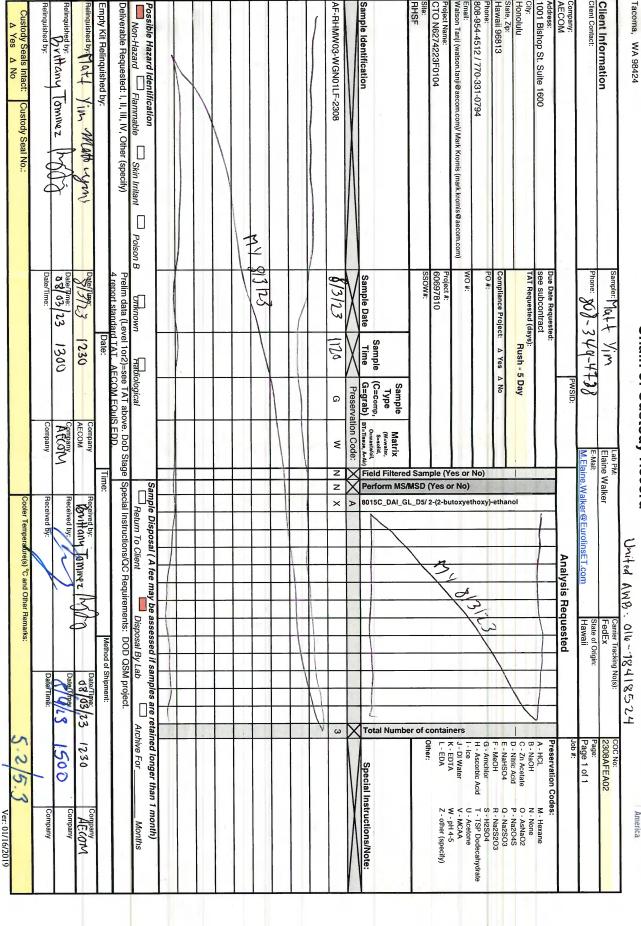
Chain of Custody Record eurofins **Environment Testing**



5755 8th Street East

Eurofins FGS, Seattle

Chain of Custody Record eurofins **Environment Testing**



Chain of Custody Record

Eurofins FGS, Seattle 5755 8th Street East	Chain of Custody Record	ody Record		environment Testing
Tacoma, WA 98424		United	AWB: 016-78418524	America
Olimat Into Emption	Sampler: March (Session	Lab PM: Flaine Walker	Carrier Tracking No(s): FedEx	COC No: 2308AFEA05
Circin illoringion	I took then !		State of Origina	Dago:
Client Contact:	Phone: 808 - 521-3057	E-Mail: M.Elaine.Walker@EurofinsET.com	State of Origin: Hawaii	Page: Page 1 of 1
Company:	PWSID:	Analysis Requested	guested	Job #:
Address:	Due Date Requested:			Preservation Codes:
1001 Bishop St. Suite 1600	see subcontract		\ \	A - HCL M - Hexane
City:	TAT Requested (days):			
Honolulu	Rush - 5 Day	ol	_	w
State, Zip:		and	100	E - NaHSO4 O - NaSSO3
Hawaii 96813	Compliance Project: A Yes A No	eth	3	
Phone:	PO #:)		9
808-954-4512 / 770-331-0794		No		Acid
Email:	WO #:	_	s	
Watson Tanji (watson.tanji@aecom.com)/ Mark Kromis (mark.kromis@aecom.com)		es r N ito	ner	N EDTA W - NCAA
	7	7 0 0	in	

Ver: 01/16/2019

Eurofins FGS, Seattle 5755 8th Street East Tacoma, WA 98424 5

5755 8th Street East Tacoma, WA 98424	Chain of Custody Record			Environment Testing America
Client Information	Sampler, March Cascho	Lab PM: Elaine Walker	United AWB: 010 - 1841 85 24 Carrier Tracking No(s): Corrier FedEx 2	COC No: 2308AFEA06
Client Contact:	Phone: 808 - 821 - 308	E-Mail: M.Elaine.Walker@EurofinsET.com	Origin:	Page: Page 1 of 1
Company: AECOM	PWSID:	š.	Requested Ju	Job #:
Address: 1001 Bishop St. Suite 1600	Due Date Requested: see subcontract		\	Preservation Codes:
City: Honolulu	TAT Requested (days): Rush - 5 Day		0.8	H
State, Zip: Hawaii 96813	Compliance Project: A Yes A No	ithanol		D - Nitric Acid P - Na2O4S E - NaHSO4 Q - Na2SO3
Phone: BOB 057 4513 / 770 331 0707	- 11			G - Amchlor S - H2SO4
Email:	WO #:	0)		ACIO
Watson Tanji (watson.tanji@aecom.com)/ Mark Kromis (mark.kromis@aecom.com)	0	or N		J - DI Water V - MCAA K - FDTA W - DH 4-5
CTO N6274223F0104	Froject #: 60697810	Yes (-(2-b	ontai	- EDA Z - other (specify)
Site: RHSF	SSOW#:	MSD (Other:
	Sample Type Sample (C=comp.	Sandid. Grandid. Grandid. G. DAI_GL	al Numbe	
Sample Identification	G=grab)	Fie Pe	Хто	Special Instructions/Note:
AE-RHMW16-WGN011 E-2208	120	2	ن د	
	+			
2	0			
	- CAC			
7				
Identification		ee may	be assessed if samples are retained longer than	1 mc
Deliverable Requested: I, II, III, IV, Other (specify)		Stage Special Instructions/QC Requi	project.	
Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:	
Relinquished by what Towns DATE	Date/Time: Cor	AECOM Received by:	Date/Time: 123	1736 Company
Relinquished by:	23 1300	٢	₹	Company
Relinquished by:		Company Received by:	Date/Time:	Company
Custody Seals Intact: Custody Seal No.: A Yes A No		Cooler Temperally (s) °C and Other Remarks:	Remarks:	5.2/5.8/
0 163 0 NO				

Ver: 01/16/2019

Client: AECOM Job Number: 580-130241-1

Login Number: 130241 List Source: Eurofins Seattle

List Number: 1

Creator: Johnson, Corey M

Creator. Johnson, Corey W		
Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>N/A</td> <td></td>	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	

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Client: AECOM Job Number: 580-130241-1

Login Number: 130241 List Source: Eurofins Savannah List Number: 2 List Creation: 08/10/23 03:07 PM

Creator: Johnson, Corey M

Answer	Comment
N/A	
True	
N/A	
True	
N/A	
True	
True	
N/A	
	N/A True True True True True True True True