Observer/s:				
Date: 1/04/2023	Site Name	: Upstream Site	Time: _	8:17 am
WEATHER CONDI	ΓIONS			
NOW		Past 24 Hours		Has there been a heavy rain in the past 7 days?
☐ storm (heavy r	ain)	☐ storm (heavy rain)		□ yes ⊠ no
☐ rain (steady rai		☐ rain (steady rain)	,	Wind: 1-3 mph
☐ showers (interi	mittent)	☑ showers (intermitte		Air Temperature: 71 °F
90 % cloud cove		50 % cloud cover or le		
□ clear/sunny		□ clear/sunny		
Observed Turbidit Water Color: Clean Estimated Depth: Visibility: to botto Tide (if applicable) Notes: Wet upstre rocks, tall growing	y/Sedimentation  ~ 2 inches m I: N/A eam and downstr	_	ion growth or ant leaf litter branches sca	
SPECIES OBSERVA Fish Kill? ☐ Yes Fish Breathing Stre Fish Abnormal Bel Notes: No waterbi	図 No # Dead ess/Gulping 図 N navior 図 N	Fish <u>0</u> Ione □Yes Ione □Yes Observed at this sight		
Species Observed	# of individuals	Behavior		Notes/Observations
N/A				

#### **PHOTOGRAPHS**



Photograph # 1:
Upstream Site
looking
upstream.



Photograph # 2:
Upstream Site
looking
downstream.

Observer/s:						
Date: <u>1/04 /2023</u> Site Na	ame: <u>Discharge Site</u>	Time: <u>8:26 AM</u>				
WEATHER CONDITIONS						
NOW	Past 24 Hours	Has there been a heavy rain in the past 7 days?				
storm (heavy rain)	☐ storm (heavy rain)	□ yes 図 no				
☐ rain (steady rain)	☐ rain (steady rain)	Wind: 1-3 mph				
☐ showers (intermittent)		t) Air Temperature: 72 °F				
90 % cloud cover	50 % cloud cover or les	5				
☐ clear/sunny	☐ clear/sunny					
Observed Turbidity/Sedimental Water Color: Clear. Estimated Depth: ~ 1 inch above Visibility: Clear to bottom. Tide (if applicable): N/A  Notes: Light leaf litter and vego	rtion: Sediment throughout we discharge, 1 foot down etation debris throughout					
SPECIES OBSERVATIONS						
Fish Breathing Stress/Gulping	Dead Fish <u>0</u> ☑ None □Yes ☑ None □Yes					
Notes: No waterbirds/shorebir	ds observed at this sight.	Ladder above canal.				
Species # of Observed individual	Behavior Notes/Observations					
N/A						

## **PHOTOGRAPHS**



Photograph # 1:
Discharge Site
looking
upstream.



Photograph # 2:

Discharge Site looking downstream.

Observer/s:		
Date: 1/04 /2023 Site Name:	Downstream Site # 1 Time	: <u>8:40 AM</u>
WEATHER CONDITIONS		
NOW	Past 24 Hours	Has there been a heavy rain in the past 7 days?
☐ storm (heavy rain)	☐ storm (heavy rain)	□yes ⊠ no
☐ rain (steady rain)	☐ rain (steady rain)	Wind: 0 mph
☐ showers (intermittent)		Air Temperature 73° F
100 % cloud cover	50 % cloud cover or less	
☐ clear/sunny	☐ clear/sunny	
Observed Turbidity/Sedimentation: Water Color: Transparent, brownish Estimated Depth: 1 foot. Visibility: Visible to the bottom. Tide (if applicable): N/A.  Notes: Rocks and leaf litter scattered the stream. Some rubbish along the	h. ed throughout the channel, and gro	ttom of stream.
SPECIES OBSERVATIONS		
Fish Kill? ☐ Yes ☒ No # Dead Fish Breathing Stress/Gulping ☒ No Fish Abnormal Behavior ☒ No	·	
Notes:		

Species Observed	# of individuals	Behavior	Notes/Observations
Wandering Tattler	1	Foraging	Foraging throughout the stream bed.
Koloa/Mallard hybrid	1	Foraging	Foraging alongside of the stream bed.
Hawaiian Stilt	4	Foraging	Foraging alongside of the stream bed.

## **PHOTOGRAPHS**



Photograph # 1:

Downstrea m Site #1 looking upstream.

Observer/s:								
Date: <u>1/04 /2023</u> Site Name:	Downstream Site #2	Time: 8:44 AM						
WEATHER CONDITIONS								
NOW	Past 24 Hours	Has there been a heavy rain in the past 7 days?						
☐ storm (heavy rain)	☐ storm (heavy rain)	□ yes 図 no						
☐ rain (steady rain)	☐ rain (steady rain)	Wind: 0 mph						
☐ showers (intermittent)	⋈ showers (intermittent)	Air Temperature: 73 °F						
<u>100</u> % cloud cover	50 % cloud cover or less							
☐ clear/sunny	☐ clear/sunny							
Water level dry wet sometimentation water Color: Clear. Estimated Depth: 1 foot in shallow Visibility: ~1ft. Tide (if applicable): N/A  Notes: Vegetation growth and rock concrete of channel. Significant vegetation	Observed Turbidity/Sedimentation: Sediment on bottom of stream floor. Water Color: Clear. Estimated Depth: 1 foot in shallow section of channel, 4-5+ feet deep in the estuary portion of channel. Visibility: ~1ft.							
SPECIES OBSERVATIONS								
Fish Kill? ☐ Yes ☒ No # Dead Fish <u>0</u> Fish Breathing Stress/Gulping ☒ None ☐ Yes  Fish Abnormal Behavior ☒ None ☐ Yes								
Notes:								

Species	# of	Behavior	Notes/Observations
Observed	individuals		
Koloa/	8	Loafing, Foraging	Loafing and foraging in stream bed and along
Mallard			vegetation in the stream.
Hybrid			

## **PHOTOGRAPHS**



Photograph # 1: Downstream

Site # 2 looking downstream.

Observer/s:		<u> </u>				
Date: 1/04 /202	Site Name	: Estuary Site #1	1 Time:9:02 AM			
WEATHER CONDI	TIONS					
NOW		Past 24 Hours	Has there been a heavy rain in the past 7 days?			
☐ storm (heavy r	ain)	☐ storm (heavy rain)				
☐ rain (steady rai	in)	☐ rain (steady rain)	Wind: 0 mph			
⊠ showers (inter	rmittent)		ittent) Air Temperature: 73°F			
<u>100</u> % cloud cov	er	50 % cloud cover or	r less			
☐ clear/sunny		☐ clear/sunny				
Observed Turbidit Water Color: Opac Estimated Depth: Visibility: ~ 1 Foot Tide (if applicable)	y/Sedimentation que, green/brow 5+ Feet ): Falling, 0.44 fee af litter flowing o	n: High turbidity in wat n, murky. et. downstream. Fishing li	wing water □ sheen visible iter column.			
SPECIES OBSERVATIONS  Fish Kill? □ Yes ☒ No # Dead Fish <u>0</u> Fish Breathing Stress/Gulping ☒ None □ Yes  Fish Abnormal Behavior ☒ None □ Yes						
		observed at this sight				
Species Observed	# of individuals	Behavior	Notes/Observations			
N/A						

## **PHOTOGRAPHS**



Photograph # 1:

Estuary Site #1 looking upstream.

Observer/s:		_								
Observer/s		<b>i</b>								
Date: 1/04 /20	Site Name	e: Estuary Site #2	Time:	8:51 AM						
WEATHER COND	WEATHER CONDITIONS									
NOW		Past 24 Hours		Has there been a heavy rain in the past 7 days?						
☐ storm (heavy	rain)	☐ storm (heavy rain)		□ yes ⊠no						
☐ rain (steady ra		☐ rain (steady rain)		Wind: 0 mph						
	ermittent)		tent)	Air Temperature: 73 °F						
100 % cloud co	ver	50 % cloud cover or	less							
☐ clear/sunny		☐ clear/sunny								
Observed Turbidi Water Color: Bro Estimated Depth Visibility: ~1 Feet Tide (if applicable	Water level □dry ☑wet □ standing water ☒ flowing water □ sheen visible Observed Turbidity/Sedimentation: Turbidity increases as depth increases. Water Color: Brownish-green, murky. Estimated Depth: 5+ Feet. Visibility: ~1 Feet. Tide (if applicable): Falling, 0.5 ft.  Notes: Waddle installed. Rubbish caught along waddle. 1 fishing pole next to pipeline.									
SPECIES OBSERV	ATIONS									
Fish Kill? ☐ Yes ☒ No # Dead Fish <u>0</u> Fish Breathing Stress/Gulping ☒ None ☐ Yes  Fish Abnormal Behavior ☒ None ☐ Yes  Notes:										
Species Observed	# of individuals	Behavior		Notes/Observations						
Koloa/Mallard	1	Loafing	Loafing Loafing in river bed.							

#### **PHOTOGRAPHS**



Photograph # 1:

Estuary Site #2 looking upstream.

#### **WATERBIRD SURVEY DATASHEET**

	WETLAND CONDTION CODES		WEATHER CODES		
Water Level (WL)	Human Impact (HI)	Rainfall (RF)	Wind		
0 = dry	0 = indirect (little garbage, few people)	0 = no rain	0 = no wind, < 1 mph		
1 = lower than normal	1 = moderate	1 = mist or fog	1 = smoke drifts, 1-3 mph		
2= normal	2 = heavy (many people present;	2 = drizzle	2 = wind felt on face, 4-7 mph		
3 = higher than normal	e.g., wading, boating, fishing, etc)	3 = light rain	3 = leaves and twigs rustle, 8-12 mph		
Vegetation Cover (VC)	Shoreline Condition of Tidal Wetlands (SC)	4 = heavy rain	4 = dust raises, branches stir, 13-18 mph		
0 = open water (<25% veg)	0 = water at high tide mark N/A=not applicable	5 = snow or hail	5 = small trees sway, >19 mph		
1 = 26-50% veg cover	1 = water 25 ft from high tide mark	Claud Cause (CC) - Fo	timete to the propert 100/		
2 = 51-75% veg cover	2 = water 50 ft from high tide mark	Cloud Cover (CC) = Estimate to the nearest 10%			
3 = >75% cover	3 = water >50 ft from high tide mark	-			

Date	1-04-23	

<u>REMINDERS:</u> If site it not accessible, include wetland name and write 'no access'

Observers

If no birds observed, fill out top portion and write 'no birds'

KEEP A COPY FOR YOUR RECORDS

Island O'ahu

Subadult includes juveniles and chicks

Wetland Name	US		DC			DS 1				DS 2						
Condition	WL	VC	HI	SC	WL	VC	HI	SC	WL	VC	HI	SC	WL	VC	HI	SC
	CC 2	10 <b>RF</b>	0 Wind	na	2 CC	0 RF	0 Wind	na	3 CC	0 RF	0 Wind	na	3 <b>CC</b>	10 RF	0 Wind	na
Weather	100	0	1		90	0	1		100	0	0		100	0	0	
Time		tart 7am		top 9 am	St 826	art		op Bam		art Oam		op 2am	St 844	art am	St 846	•
COOT adult				-					-							
subadult																
GALLINULE/MOORHEN adult																
subadult																
STILT adult										4 (Adults	/Foraging)	)				
subadult																
KOLOA adult													8 (Ad	dults/Loa	fing/ Forag	ging)
subadult																
Koloa/Mallard Hybrid										1 (Adults	/Foraging)	)				
Mallard (domestic/feral)																
Other Domestic Duck																
Black-cr. Night Heron																
Cattle Egret																
Pacific Golden Plover																
Ruddy Turnstone																
Sanderling																
Wandering Tattler										1 (Adult/	Foraging)					
Northern Pintail																
Mallard (migratory)																
Lesser scaup																
Comments																
	no wa	aterbirds/sl	norebirds		no wa	aterbirds/s	shorebirds								Rev.	Aug 2017

#### **WATERBIRD SURVEY DATASHEET**

	WETLAND CONDTION CODES		WEATHER CODES		
Water Level (WL)	Human Impact (HI)	Rainfall (RF)	Wind		
0 = dry	0 = indirect (little garbage, few people)	0 = no rain	0 = no wind, < 1 mph		
1 = lower than normal	1 = moderate	1 = mist or fog	1 = smoke drifts, 1-3 mph		
2= normal	2 = heavy (many people present;	2 = drizzle	2 = wind felt on face, 4-7 mph		
3 = higher than normal	e.g., wading, boating, fishing, etc)	3 = light rain	3 = leaves and twigs rustle, 8-12 mph		
Vegetation Cover (VC)	Shoreline Condition of Tidal Wetlands (SC)	4 = heavy rain	4 = dust raises, branches stir, 13-18 mph		
0 = open water (<25% veg)	0 = water at high tide mark N/A=not applicable	5 = snow or hail	5 = small trees sway, >19 mph		
1 = 26-50% veg cover	1 = water 25 ft from high tide mark	Claud Cause (CC) - Fo	timete to the manual 100/		
2 = 51-75% veg cover	2 = water 50 ft from high tide mark	Cloud Cover (CC) = Estimate to the nearest 10%			
3 = >75% cover	3 = water >50 ft from high tide mark	-			

1-04-23 Date

REMINDERS: If site it not accessible, include wetland name and write 'no access'

Observers

If no birds observed, fill out top portion and write 'no birds'

KEEP A COPY FOR YOUR RECORDS

Island O'ahu Subadult includes juveniles and chicks

					Ι											
Wetland Name	ES1			ES 2												
Condition	WL	VC	HI 0	SC 1	WL	<b>VC</b>	HI 0	SC 1	WL	VC	HI	SC	WL	VC	HI	SC
Weather	2 CC	0 RF	Wind	1	3 CC	RF 0	Wind 0	1	CC	RF	Wind		CC	RF	Wind	
Time		0 tart		ор	100 St	art	St	ор	St	art	St	ор	St	art	St	ор
		902am	904	1am	85	1am	85	3am								
COOT adult																
subadult																
GALLINULE/MOORHEN adult																
subadult																
STILT adult																
subadult																
KOLOA adult																
subadult	•					1 (Adult	/Loafing)									
Koloa/Mallard Hybrid						`										
Mallard (domestic/feral) Other Domestic Duck																
Black-cr. Night Heron																
Cattle Egret																
Pacific Golden Plover																
Ruddy Turnstone																
Sanderling																
Wandering Tattler																
Northern Pintail																
Mallard (migratory)																
Lesser scaup																
White Tern																
Comments																
	no wate	erbirds/sh	orebirds													
															Rev	Aug 2017

Observer/s:							
Date: <u>1/10/2023</u> Site Name:	Upstream Site Time:	8:31 am					
WEATHER CONDITIONS							
NOW	Past 24 Hours	Has there been a heavy rain in the past 7 days?					
☐ storm (heavy rain)	☐ storm (heavy rain)	□ yes ⊠ no					
☐ rain (steady rain)	☐ rain (steady rain)	Wind: 1-3 mph					
☐ showers (intermittent)	☐ showers (intermittent)	Air Temperature: 71 °F					
<u>10</u> % cloud cover	40 % cloud cover or less						
□ clear/sunny	☐ clear/sunny						
Water level □ dry ☑ wet □ standing water ☑ flowing water □ sheen visible Observed Turbidity/Sedimentation: Sediment and vegetation growth on the channel floor. Water Color: Clear Estimated Depth: ~ 1/2 inch Visibility: to bottom Tide (if applicable): N/A  Notes: Wet upstream and downstream of channel. Significant leaf litter throughout channel. Small							
rocks, tall growing vegetation along the stream bed. Fallen branches scattered in and next to the stream.  Dead branches are hanging over fence, making the fence lean.  SPECIES OBSERVATIONS							
SPECIES OBSERVATIONS  Fish Kill? □ Yes ☒ No # Dead Fish _0  Fish Breathing Stress/Gulping ☒ None □ Yes  Fish Abnormal Behavior ☒ None □ Yes							

Species Observed	# of individuals	Behavior	Notes/Observations
Observed	IIIuiviuuais		
Java Sparrow	2	Foraging	Foraging along stream bed.
Red-crested Cardinal	1	Foraging	Foraging along stream bed.
Common Myna	1	Foraging, Transitioning	Foraging along stream bed and transitioning around trees above.

#### **PHOTOGRAPHS**



Photograph # 1: Upstream Site looking upstream.



Photograph # 2:
Upstream Site
looking
downstream.

Observer/s:		<b>I</b>					
Date: <u>1/ 10 /20</u>	Date: 1/ 10 /2023 Site Name: Discharge Site Time: 8:43 AM						
WEATHER CONDI	TIONS						
NOW	Р	ast 24 Hours	Has there been a heavy rain in the past 7 days?				
☐ storm (heavy r	ain)	storm (heavy rain)	□ yes ⊠ no				
☐ rain (steady rai	in)	rain (steady rain)	Wind: 1-3 mph				
☐ showers (inter	mittent)	showers (intermittent	Air Temperature: 73 °F				
0% cloud cover		40 % cloud cover or les	S				
☐ clear/sunny		clear/sunny					
Water Color: Clear Estimated Depth: Visibility: Clear to Tide (if applicable) Notes: Light leaf li Wooden pallet ab	Observed Turbidity/Sedimentation: Sediment throughout channel floor.  Water Color: Clear.  Estimated Depth: ~ 1/2 inch above discharge, ~ 1 foot down from discharge.  Visibility: Clear to bottom.  Tide (if applicable): N/A  Notes: Light leaf litter and vegetation debris throughout drainage, dead tree branches above discharge.  Wooden pallet above discharge in stream bed. Stream clear of debris past discharge, waddle installed.  Tall grass growing in stream.						
SPECIES OBSERVA	TIONS						
Fish Kill? ☐ Yes ☒ No # Dead Fish <u>0</u> Fish Breathing Stress/Gulping ☒ None ☐ Yes  Fish Abnormal Behavior ☒ None ☐ Yes							
Notes:							
Species Observed	# of individuals	Behavior Notes/Observations s					
Pacific Golden-	1	Foraging	Foraging along upper and lower stream bed.				

Plover

## **PHOTOGRAPHS**



Photograph # 1:
Discharge Site
looking
upstream.



Photograph # 2: Discharge Site looking downstream.

Observer/s:						
Date: 1/10 /2023 Site Name:	Downstream Site # 1 Time:	9:03 AM				
WEATHER CONDITIONS						
NOW	Past 24 Hours	Has there been a heavy rain in the past 7 days?				
☐ storm (heavy rain)	☐ storm (heavy rain)	□yes ⊠ no				
☐ rain (steady rain)	☐ rain (steady rain)	Wind: 1-3 mph				
☐ showers (intermittent)	☐ showers (intermittent)	Air Temperature 74° F				
<u>0</u> % cloud cover	40 % cloud cover or less					
☐ clear/sunny	☐ clear/sunny					
Water level □ dry ☑ wet □ standing water ☒ flowing water □ sheen visible Observed Turbidity/Sedimentation: Soil/Sedimentation present on bottom of stream. Water Color: Transparent. Estimated Depth: 1 foot. Visibility: Visible to the bottom. Tide (if applicable): N/A.  Notes: Rocks and leaf litter scattered throughout the channel, and growing vegetation along the sides of the stream. Some rubbish along the top edge of the stream. Bicycle wheel in stream, and possible homeless encampment under bridge.  SPECIES OBSERVATIONS  Fish Kill? □ Yes ☒ No # Dead Fish 0						
Fish Breathing Stress/Gulping ⊠ No Fish Abnormal Behavior ⊠ No	one □Yes one □Yes					

#### Notes:

Species Observed	# of individuals	Behavior	Notes/Observations
Pacific Golden- Plover	1	Foraging	Foraged along dry portion of stream bed.
Koloa/Mallard hybrid	1	Foraging	Foraged alongside of the stream bed.
Juvenile Black- crowned Night- Heron	1	Transitioning, Foraging	Transitioned from below bridge into steam. Foraging alongside of the stream bed.

## **PHOTOGRAPHS**



Photograph # 1: Downstream Site #1 looking

Observer/s:						
Date: <u>1/10/2023</u> Site	e Name: Downstream Site #2	Time: 9:09 AM				
WEATHER CONDITIONS		<del>-</del>				
NOW	Past 24 Hours	Has there been a heavy rain in the past 7 days?				
☐ storm (heavy rain)	☐ storm (heavy rain)	□ yes  ☒ no				
☐ rain (steady rain)	☐ rain (steady rain)	Wind: 1-3 mph				
☐ showers (intermittent)	☐ showers (intermittent)	Air Temperature: 74 °F				
<u>10</u> % cloud cover	40 % cloud cover or less					
□ clear/sunny	□ clear/sunny					
WATER QUALITY  Water level □ dry ☑ wet □ standing water ☑ flowing water □ sheen visible  Observed Turbidity/Sedimentation: Sediment on bottom of stream floor.  Water Color: Clear.  Estimated Depth: 1 foot in shallow section of channel, 4-5+ feet deep in the estuary portion of channel.  Visibility: ~1ft.  Tide (if applicable): N/A						
Notes: Vegetation growth and rock sides of the stream.	s, throughout the estuary. Significa	nt vegetation growth on both				
SPECIES OBSERVATIONS						
Fish Kill? ☐ Yes ☒ No # Dead Fish <u>0</u> Fish Breathing Stress/Gulping ☒ None ☐ Yes  Fish Abnormal Behavior ☒ None ☐ Yes						
Ninter						

#### Notes:

Species	# of	Behavior	Notes/Observations
Observed	individuals		
Koloa/	4	Transitioning,	Two transitioned from under the bridge. Two
Mallard		Foraging	foraging in stream bed.
Hybrid			
Adult Black-	2	Transitioning,	Transitioned from trees above stream, foraged
crowned		Foraging	along deeper part of estuary.
Night-Heron			
Juvenile	1	Foraging	Foraged along estuary edge on branch above
Black-			water.
crowned			
Night-Heron			

Pacific Golden-Plover	1	Foraging	Foraged along stream bed.
Zebra dove	2	Loafing, Transitioning	Loafing along dry portion of estuary, transitioned to low hanging trees above steam.
Rose-ringed Parakeets	4	Transitioning	Transitioned over stream from high trees above estuary.
Myna	1	Transitioning	Transitioned around trees above estuary.

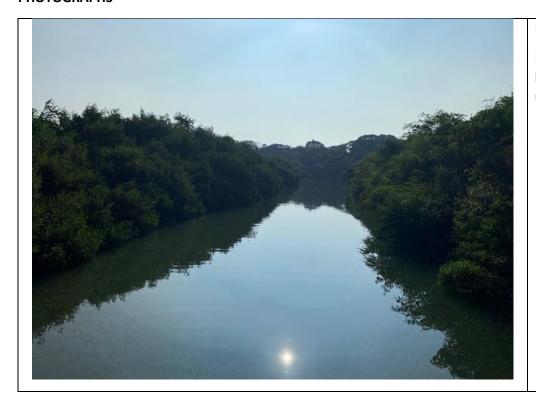
#### **PHOTOGRAPHS**



Photograph # 1: Downstream Site # 2 looking downstream.

Observer/s:								
Date: 1/ 10 /20	Date: <u>1/ 10 /2023</u> Site Name: <u>Estuary Site #1</u> Time: <u>9:36 AM</u>							
WEATHER CONDITIONS								
NOW		Past 24 Hours		Has there	e been a heavy rain in 7 days?			
☐ storm (heavy r	ain)	☐ storm (heavy rain	)	□ yes ⊠ no				
☐ rain (steady rai	n)	☐ rain (steady rain)		Wind: 1-3	3 mph			
☐ showers (inter	mittent)	☐ showers (intermit	tent)	Air Temp	erature: 75°F			
0 % cloud cover		40 % cloud cover o	r less					
☐ clear/sunny		☐ clear/sunny						
Observed Turbidit Water Color: Opac Estimated Depth: Visibility: ~ 1 Foot Tide (if applicable)	Observed Turbidity/Sedimentation: High turbidity in water column.  Water Color: Opaque, green/brown, murky.  Estimated Depth: 5+ Feet  Visibility: ~ 1 Foot.  Tide (if applicable): Falling, 1.19 feet.  Notes: Water very still, but still flowing. Minimal leaf litter flowing downstream. Multiple fishing lines							
SPECIES OBSERVA	TIONS							
Fish Kill? ☐ Yes ☒ No # Dead Fish <u>0</u> Fish Breathing Stress/Gulping ☒ None ☐ Yes  Fish Abnormal Behavior ☒ None ☐ Yes  Notes: No waterbirds/shorebirds observed at this sight								
			1					
Species	# of	Behavior		Notes/C	Observations			
Observed	individuals							
N/A								

## **PHOTOGRAPHS**



Photograph # 1: Estuary Site #1 looking upstream.

Observer/s:								
Date: <u>1/10/2</u>	1/ 10 /2023 Site Name: <u>Estuary Site #2</u> Time: <u>9:26 AM</u>							
WEATHER COND	WEATHER CONDITIONS							
NOW		Past 24 Hours		Has ther	e been a heavy rain in 7 days?			
☐ storm (heavy	rain)	☐ storm (heav	y rain)	□ yes ⊠no				
☐ rain (steady ra	ain)	☐ rain (steady	rain)	Wind: 1-	3 mph			
☐ showers (inte	ermittent)	☐ showers (in	termittent)	Air Temp	perature: 75 °F			
0% cloud cove	r	<u>40</u> % cloud co	over or less					
☐ clear/sunny		☐ clear/sunny	1					
Water level □dry ☑wet □ standing water ☑ flowing water □ sheen visible Observed Turbidity/Sedimentation: Turbidity increases as depth increases. Water Color: Brownish-green, murky. Estimated Depth: 5+ Feet. Visibility: ~1 Feet. Tide (if applicable): Falling, 1.26 ft.  Notes: Waddle installed. Rubbish caught along waddle.								
SPECIES OBSERV	ATIONS							
Fish Kill? ☐ Yes ☒ No # Dead Fish O  Fish Breathing Stress/Gulping ☒ None ☐ Yes  Fish Abnormal Behavior ☒ None ☐ Yes  Notes:								
Species	# of	Behavior		Notes/	Observations			
Observed	individuals							
Pacific	2	Loafing Loafed along stream edge.						

Species	# of	Behavior	Notes/Observations
Observed	individuals		
Pacific	2	Loafing	Loafed along stream edge.
Golden-Plover			
Common	2	Transitioning	Transitioned above stream bed.
Myna			
Medium	2	Foraging	Foraged along waddle.
unknown fish			

#### **PHOTOGRAPHS**



Photograph # 1: Estuary Site #2 looking upstream.

#### **WATERBIRD SURVEY DATASHEET**

	WETLAND CONDTION CODES		WEATHER CODES		
Water Level (WL)	Human Impact (HI)	Rainfall (RF)	Wind		
0 = dry	0 = indirect (little garbage, few people)	0 = no rain	0 = no wind, < 1 mph		
1 = lower than normal	1 = moderate	1 = mist or fog	1 = smoke drifts, 1-3 mph		
2= normal	2 = heavy (many people present;	2 = drizzle	2 = wind felt on face, 4-7 mph		
3 = higher than normal	e.g., wading, boating, fishing, etc)	3 = light rain	3 = leaves and twigs rustle, 8-12 mph		
Vegetation Cover (VC)	Shoreline Condition of Tidal Wetlands (SC)	4 = heavy rain	4 = dust raises, branches stir, 13-18 mph		
0 = open water (<25% veg)	0 = water at high tide mark N/A=not applicable	5 = snow or hail	5 = small trees sway, >19 mph		
1 = 26-50% veg cover	1 = water 25 ft from high tide mark	Claud Cause (CC) - Fa			
2 = 51-75% veg cover	2 = water 50 ft from high tide mark	Cloud Cover (CC) = Estimate to the nearest 10%			
3 = >75% cover	3 = water >50 ft from high tide mark	•			

Date 1-10-23

<u>REMINDERS:</u> If site it not accessible, include wetland name and write 'no access'

Observers

If no birds observed, fill out top portion and write 'no birds'

KEEP A COPY FOR YOUR RECORDS

Island O'ahu Subadult includes juveniles and chicks

Wetland Name	US		DC			DS 1				DS 2						
Condition	WL	VC	HI 0	SC na	<b>WL</b> 2	<b>VC</b>	HI 0	SC na	WL 2	VC 0	HI 0	SC na	<b>WL</b> 2	VC 10	HI 0	SC na
Weather	CC C	10 RF	Wind	Tid	CC	RF	Wind	Па	CC	RF	Wind	Tid	CC	RF	Wind	na
	10 S1	0 tart	1 St	top	0 St	o art	1 St	ор	0 St	0 art	1 St	ор	0 St	o art	1 Sto	op
Time		1am		3 am	843			7am		3am		Bam	909		916	•
COOT adult																
subadult																
GALLINULE/MOORHEN adult																
subadult																
STILT adult																
subadult																
KOLOA adult													4 (Adult	s/ Transi	tioning/ Fo	oraging)
subadult																
Koloa/Mallard Hybrid										1 (Adult/	Foraging)					
Mallard (domestic/feral)																
Other Domestic Duck																
Black-cr. Night Heron									1 (Juven	nile/ Trans	sitioning/ F	oraging)	2 (Adult	s/ Transi	tioning/ Fo	oraging)
Cattle Egret														(OUVOIIII)	or r oraging	9
Pacific Golden Plover										1 (Adult	/ Loafing)			1 (Adult/	Foraging)	
Ruddy Turnstone																
Sanderling																
Wandering Tattler																
Northern Pintail																
Mallard (migratory)																
Lesser scaup																
Comments																
	no wa	aterbirds/s	horebirds		no wa	terbirds/s	shorebirds								Rev.	Aug 2017

#### **WATERBIRD SURVEY DATASHEET**

	WETLAND CONDTION CODES		WEATHER CODES		
Water Level (WL)	Human Impact (HI)	Rainfall (RF)	Wind		
0 = dry	0 = indirect (little garbage, few people)	0 = no rain	0 = no wind, < 1 mph		
1 = lower than normal	1 = moderate	1 = mist or fog	1 = smoke drifts, 1-3 mph		
2= normal	2 = heavy (many people present;	2 = drizzle	2 = wind felt on face, 4-7 mph		
3 = higher than normal	e.g., wading, boating, fishing, etc)	3 = light rain	3 = leaves and twigs rustle, 8-12 mph		
Vegetation Cover (VC)	Shoreline Condition of Tidal Wetlands (SC)	4 = heavy rain	4 = dust raises, branches stir, 13-18 mph		
0 = open water (<25% veg)	0 = water at high tide mark N/A=not applicable	5 = snow or hail	5 = small trees sway, >19 mph		
1 = 26-50% veg cover	1 = water 25 ft from high tide mark	Claud Cours (CC) - For	timesta to the magnet 100/		
2 = 51-75% veg cover	2 = water 50 ft from high tide mark	cloud cover (CC) = ES	Cloud Cover (CC) = Estimate to the nearest 10%		
3 = >75% cover	3 = water >50 ft from high tide mark	•			

1- 10-23

<u>REMINDERS:</u> If site it not accessible, include wetland name and write 'no access'

Observers

If no birds observed, fill out top portion and write 'no birds'

KEEP A COPY FOR YOUR RECORDS

Island O'ahu Subadult includes juveniles and chicks

Wetland Name			S 1				S 2									
Condition	<b>WL</b> 2	<b>VC</b>	HI o	SC 1	<b>WL</b> 3	<b>VC</b>	HI 0	SC 1	WL	VC	HI	SC	WL	VC	HI	SC
Weather	CC 0	RF 0	Wind	1	CC 0	RF 0	Wind 0	1	CC	RF	Wind		CC	RF	Wind	
Time	St	tart 936am	St	op 2am	St	art 6am	St	op 0am	St	art	St	ор	St	art	St	ор
COOT adult		0004111	0-12	-cin	92	Oam	93	Oam								
subadult																
GALLINULE/MOORHEN adult																
subadult																
STILT adult																
subadult																
KOLOA adult																
subadult																
Koloa/Mallard Hybrid																
Mallard (domestic/feral)																
Other Domestic Duck																
Black-cr. Night Heron																
Cattle Egret																
Pacific Golden Plover						2 (Adult/	Foraging)									
Ruddy Turnstone																
Sanderling																
Wandering Tattler																
Northern Pintail																
Mallard (migratory)																
Lesser scaup																
White Tern																
Comments																
	no wate	erbirds/sh	orebirds													
															Rev.	Aug 2017

Observer/s:		<u> </u>							
Date: <u>1/17/2023</u>	Date: 1/17/2023 Site Name: Upstream Site Time: 11:13 am								
WEATHER CONDITIONS									
NOW		Past 24 Hours		Has there been a heavy rain in the past 7 days?					
☐ storm (heavy ra	ain)	☐ storm (heavy rain)		⊥ yes ⊠ no					
☐ rain (steady rai		☐ rain (steady rain)		Wind: 0 mph					
☐ showers (interi	-		tent)	Air Temperature: 79 °F					
10 % cloud cove		60 % cloud cover or							
□ clear/sunny		□ clear/sunny							
Water Color: Clear Estimated Depth: Visibility: to botton Tide (if applicable) Notes: Wet and flo Large rocks, tall gr	~ 2 inches m i: N/A owing upstream owing vegetation	n along the stream be	nannel. Signifi d. Fallen bran	cant leaf litter throughout channel. ches scattered in and next to the					
stream. Dead branches are hanging over fence, making the fence lean.  SPECIES OBSERVATIONS  Fish Kill? □ Yes ☒ No # Dead Fish _0  Fish Breathing Stress/Gulping ☒ None □ Yes  Fish Abnormal Behavior ☒ None □ Yes  Notes: No waterbirds/shorebirds observed at this sight									
Species Observed	# of individuals	Behavior Notes/Observations							
N/A									

#### **PHOTOGRAPHS**



Photograph # 1: Upstream Site looking upstream.



Photograph # 2:
Upstream Site
looking
downstream.

Observer/s:									
Date: <u>1/17/202</u>	3 Site Nam	ne: <u>Discharge Site</u>	Time:11:23 AM						
WEATHER CONDI	TIONS								
NOW		Past 24 Hours Has there been a heavy rather past 7 days?							
☐ storm (heavy r	ain)	storm (heavy rain)	□ yes 図 no						
☐ rain (steady ra	in)	□ rain (steady rain)	Wind: 1-3 mph						
☐ showers (inter	mittent)	showers (intermitten	t) Air Temperature: 80 °F						
10 % cloud cove	r	60 % cloud cover or les	s						
☐ clear/sunny		□ clear/sunny							
Water level Observed Turbidit Water Color: Clea Estimated Depth: Visibility: Clear to Tide (if applicable)	WATER QUALITY  Water level □ dry ☑ wet □ standing water ☑ flowing water □ sheen visible  Observed Turbidity/Sedimentation: Sediment throughout channel floor.  Water Color: Clear.  Estimated Depth: ~ 1 inch above discharge, ~ 1 foot down from discharge.  Visibility: Clear to bottom.  Tide (if applicable): N/A  Notes: Light leaf litter and vegetation debris throughout drainage, dead tree branches above and below discharge. Wooden pallet above discharge in stream bed. Stream clear of debris past discharge, waddle								
SPECIES OBSERVA	TIONS								
Fish Breathing Str	Fish Kill? ☐ Yes ☒ No # Dead Fish <u>0</u> Fish Breathing Stress/Gulping ☒ None ☐ Yes Fish Abnormal Behavior ☒ None ☐ Yes								
Notes: Ladder abo	ove canal.								
Species Observed	# of individuals	Behavior Notes/Observations							
Pacific Golden- plover	1	Transitioning	Transitioned around stream bed above discharg						
Spotted Dove	1	Foraging	Foraged directly below discharge pipes.						

## **PHOTOGRAPHS**



Photograph # 1:
Discharge Site
looking
upstream.



Photograph # 2: Discharge Site looking downstream.

Observer/s:	<u></u>								
Date: 1/17/2023 Site Name: Downstream Site # 1 Time: 11:40 AM									
WEATHER CONDITIONS									
NOW	Past 24 Hours	Has there been a heavy rain in the past 7 days?							
☐ storm (heavy rain)	☐ storm (heavy rain)	□yes ⊠ no							
☐ rain (steady rain)	☐ rain (steady rain)	Wind: 1-3 mph							
☐ showers (intermittent)	☐ showers (intermittent)	Air Temperature 81° F							
<u>0</u> % cloud cover	60 % cloud cover or less								
☐ clear/sunny	☐ clear/sunny								
Water level □ dry ☒ wet □ s Observed Turbidity/Sedimentation Water Color: Transparent, brownisk Estimated Depth: ~ 1 foot. Visibility: Visible to the bottom. Tide (if applicable): N/A.  Notes: Rocks scattered throughout Some rubbish along the top edge of	n. the channel, and growing vegetation	of stream throughout.							
SPECIES OBSERVATIONS									
Fish Kill? □ Yes 図 No # Dead Fish <u>0</u> Fish Breathing Stress/Gulping 図 None □Yes Fish Abnormal Behavior 図 None □Yes									
Notes:									

Species Observed	# of individuals	Behavior	Notes/Observations
Pacific Golden- plover	1	Foraging	Foraged in dry portion of stream bed.
Hawaiian Stilt	2	Loafing	Loafed under bridge in shaded area.

## **PHOTOGRAPHS**



Photograph # 1:

Downstream
Site #1 looking upstream.

Observer/s:		<b>I</b>							
Date: <u>1/17/20</u>	Date: 1/17/2023 Site Name: Downstream Site #2 Time: 1:45 AM								
WEATHER CONDITIONS									
NOW		Past 24 Hours	Has there been a heavy rain in the past 7 days?						
☐ storm (heavy	rain)	☐ storm (heavy rain)	□ yes 図 no						
☐ rain (steady r	ain)	☐ rain (steady rain)	Wind: 1-3 mph						
☐ showers (inte		☐ showers (intermit	tent) Air Temperature: 81 °F						
0% cloud cove	r	60 % cloud cover or	less						
☐ clear/sunny		☐ clear/sunny							
Water Color: Clean Estimated Depth Visibility: ~1ft. Tide (if applicable Notes: Vegetation)	ar. : 1 foot in shallov e): N/A n growth and roc	ks, throughout the est	of stream floor.  5+ feet deep in the estuary portion of channel.  uary. Dead branches in stream, leaf litter on oth sides of the stream.						
SPECIES OBSERV	ATIONS								
Fish Kill? □ Yes ☒ No # Dead Fish <u>0</u> Fish Breathing Stress/Gulping ☒ None □ Yes  Fish Abnormal Behavior ☒ None □ Yes  Notes:									
Species Observed	# of individuals	Behavior	Notes/Observations						
Black-	1	Foraging	Foraged in back portion of the estuary.						

Species	# of	Behavior	Notes/Observations
Observed	individuals		
Black-	1	Foraging	Foraged in back portion of the estuary.
crowned			
Night Heron			
Common	1	Transitioning	Transitioned in trees above estuary.
Myna			
Zebra Dove	1	Loafing	Loafed along the side cement portion of the
			estuary.

### **PHOTOGRAPHS**



Photograph # 1:

Downstream Site # 2 looking downstream

Observer/s:							
Date: <u>1/17/20</u>	<u>23</u> Si	te Name: Estuar	y Site #1	_ Time: _	12:04 AM		
WEATHER CONDI	TIONS						
NOW		Past 24 Hours		Has there	e been a heav 7 days?	vy rain in	
☐ storm (heavy r	ain)	☐ storm (heavy rain)		□ yes ⊠ no			
☐ rain (steady rai	in)	☐ rain (steady rain)		Wind: 0 r	mph		
☐ showers (inter	mittent)	☐ showers (intermit	cent)	Air Temp	erature: 82°l	F	
10 % cloud cove	r	60 % cloud cover or	less				
☐ clear/sunny		☐ clear/sunny					
Observed Turbidit Water Color: Opac Estimated Depth: Visibility: ~ 1 Foot Tide (if applicable)	y/Sedimentatior que, green/brow 5+ Feet ): Falling, 0.55 fe af litter flowing o	•	er column.			Large	
SPECIES OBSERVA	TIONS						
Fish Kill? ☐ Yes Fish Breathing Stro Fish Abnormal Bel Notes: No waterb	ess/Gulping 🗵 N navior 🗵 N	I Fish <u>0</u> None □ Yes None □ Yes Observed at this sight.					
Species Observed	# of individuals	Behavior		Notes/0	Observations		
N/A							

### **PHOTOGRAPHS**



Photograph # 1: Estuary Site

Estuary Site #1 looking upstream.

Observer/s:								
Date: <u>1/17/2023</u> Site Name:	Estuary Site #2 Time	: <u>11:55 AM</u>						
WEATHER CONDITIONS								
NOW	Past 24 Hours	Has there been a heavy rain in the past 7 days?						
☐ storm (heavy rain)	☐ storm (heavy rain)	□ yes ⊠no						
☐ rain (steady rain)	☐ rain (steady rain)	Wind: 4-7 mph						
☐ showers (intermittent)	☐ showers (intermittent)	Air Temperature: 81 °F						
<u>0</u> % cloud cover	60 % cloud cover or less							
☐ clear/sunny	□ clear/sunny							
Observed Turbidity/Sedimentation	Water level □dry ☑wet □ standing water ☑ flowing water □ sheen visible Observed Turbidity/Sedimentation: Turbidity increases as depth increases. Water Color: Brownish-green, murky. Estimated Depth: 5+ Feet. Visibility: ~2 Feet.							
Notes: Waddle installed. Rubbish c	aught along waddle.							
SPECIES OBSERVATIONS								
Fish Kill? ☐ Yes ☒ No # Dead Fish <u>0</u> Fish Breathing Stress/Gulping ☒ None ☐ Yes  Fish Abnormal Behavior ☒ None ☐ Yes								
Notes:								

Species	# of	Behavior	Notes/Observations
Observed	individuals		
White tern	2	Transitioning	Transitioned above stream bed.
Medium	8	Foraging	Foraged along stream edge.
unknown fish			

### **PHOTOGRAPHS**



Photograph # 1: Estuary Site #2 looking upstream.

### **WATERBIRD SURVEY DATASHEET**

	WETLAND CONDTION CODES		WEATHER CODES		
Water Level (WL)	Human Impact (HI)	Rainfall (RF)	Wind		
0 = dry	0 = indirect (little garbage, few people)	0 = no rain	0 = no wind, < 1 mph		
1 = lower than normal	1 = moderate	1 = mist or fog	1 = smoke drifts, 1-3 mph		
2= normal	2 = heavy (many people present;	2 = drizzle	2 = wind felt on face, 4-7 mph		
3 = higher than normal	e.g., wading, boating, fishing, etc)	3 = light rain	3 = leaves and twigs rustle, 8-12 mph		
Vegetation Cover (VC)	Shoreline Condition of Tidal Wetlands (SC)	4 = heavy rain	4 = dust raises, branches stir, 13-18 mph		
0 = open water (<25% veg)	0 = water at high tide mark N/A=not applicable	5 = snow or hail	5 = small trees sway, >19 mph		
1 = 26-50% veg cover	1 = water 25 ft from high tide mark	Claud Carray (CC) - Fa			
2 = 51-75% veg cover	2 = water 50 ft from high tide mark	Cloud Cover (CC) = ES	timate to the n <b>earest 10%</b>		
3 = >75% cover	3 = water >50 ft from high tide mark	•			

<u>REMINDERS:</u> If site it not accessible, include wetland name and write 'no access' Date 1-17-23

Observers

If no birds observed, fill out top portion and write 'no birds'

KEEP A COPY FOR YOUR RECORDS

Island O'ahu Subadult includes juveniles and chicks

	1				I				I				I			
Wetland Name		US	3				C		DS 1					)S 2		
Condition	<b>WL</b> 2	VC 10	HI 0	SC na	<b>WL</b> 2	<b>VC</b>	HI 0	SC na	WL 2	VC 0	HI 0	SC na	WL 2	VC 10	HI 0	SC na
Weather	CC	RF	Wind	TIG.	CC	RF	Wind	ı ıa	CC	RF	Wind	TIG.	CC	RF	Wind	na
	10 S	tart	0 <b>S</b> f	top	0 St	o art	1 St	ор	0 St	0 tart	1 St	ор	0 St	o tart	1 St	ор
Time	11	13am	11	15 am	112	3am	112	26am	11	40am	11-	43am	114	15am	114	17am
COOT adult																
subadult																
GALLINULE/MOORHEN adult																
subadult										0 (4 1 1)	/I					
STILT adult										2 (Adults	/ Loafing)					
subadult																
KOLOA adult																
subadult																
Koloa/Mallard Hybrid																
Mallard (domestic/feral)																
Other Domestic Duck																
Black-cr. Night Heron														1 (Adult/	Foraging)	)
Cattle Egret																
Pacific Golden Plover						1 (Adult/	Foraging)			1 (Adult/	Foraging)					
Ruddy Turnstone																
Sanderling																
Wandering Tattler																
Northern Pintail																
Mallard (migratory)																
Lesser scaup																
Comments																
	no wa	aterbirds/sl	norebirds												Do.,	Aug 2017
															rev.	Aug 2017

### **WATERBIRD SURVEY DATASHEET**

	WETLAND CONDTION CODES		WEATHER CODES			
Water Level (WL)	Human Impact (HI)	Rainfall (RF)	Wind			
0 = dry	0 = indirect (little garbage, few people)	0 = no rain	0 = no wind, < 1 mph			
1 = lower than normal	1 = moderate	1 = mist or fog	1 = smoke drifts, 1-3 mph			
2= normal	2 = heavy (many people present;	2 = drizzle	2 = wind felt on face, 4-7 mph			
3 = higher than normal	e.g., wading, boating, fishing, etc)	3 = light rain	3 = leaves and twigs rustle, 8-12 mph			
Vegetation Cover (VC)	Shoreline Condition of Tidal Wetlands (SC)	4 = heavy rain	4 = dust raises, branches stir, 13-18 mph			
0 = open water (<25% veg)	0 = water at high tide mark N/A=not applicable	5 = snow or hail	5 = small trees sway, >19 mph			
1 = 26-50% veg cover	1 = water 25 ft from high tide mark	Claud Cause (CC) - Fo	timete to the person 100/			
2 = 51-75% veg cover	2 = water 50 ft from high tide mark	cioua cover (CC) = ES	timate to the n <b>earest 10</b> %			
3 = >75% cover	3 = water >50 ft from high tide mark	•				

_	4	17 00
Date	1-1	17-23

<u>REMINDERS:</u> If site it not accessible, include wetland name and write 'no access'

Observers

If no birds observed, fill out top portion and write 'no birds'

KEEP A COPY FOR YOUR RECORDS

Island O'ahu Subadult includes juveniles and chicks

Wetland Name		F	S 1			ES 2										
	WL	VC	HI	SC	WL	VC	S Z	SC	WL	VC	HI	SC	WL	VC	HI	SC
Condition	2	0	0	1	2	0	0	1								
Weather	CC 10	RF 0	Wind 0		CC 0	RF 0	Wind 2		CC	RF	Wind		CC	RF	Wind	
Time	St	art	St	ор	St	art		ор	St	art	St	ор	St	art	St	ор
COOT adult		1204am	120	06am	11	55am	11:	57am								
subadult																
GALLINULE/MOORHEN adult																
subadult																
STILT adult																
subadult																
KOLOA adult																
subadult																
Koloa/Mallard Hybrid																
Mallard (domestic/feral)																
Other Domestic Duck																
Black-cr. Night Heron																
Cattle Egret																
Pacific Golden Plover																
Ruddy Turnstone																
Sanderling																
Wandering Tattler																
Northern Pintail																
Mallard (migratory)																
Lesser scaup White Tern					2	(Adult/ Tr	ansitionin	g)								
white tern																
Comments																
	no wate	erbirds/sh	orebirds													
															Rev.	Aug 2017

Observer/s:		<u></u>							
Date: <u>1/25/2023</u>	_ Site Name	: Upstream Site	Time:	8:13 am					
WEATHER CONDI	WEATHER CONDITIONS								
NOW		Past 24 Hours		Has there been a heavy rain in the past 7 days?					
storm (heavy r	ain)	☐ storm (heavy rain)		□yes ⊠ no					
☐ rain (steady rai		☐ rain (steady rain)		Wind: 0 mph					
☐ showers (inter		☐ showers (intermitt	ent)	Air Temperature: 79 °F					
100 % cloud cov	er	10 % cloud cover or	less	·					
□ clear/sunny		□ clear/sunny							
Observed Turbidit Water Color: Clear Estimated Depth: Visibility: to botto Tide (if applicable) Notes: Wet and flo Large rocks, tall gr	y/Sedimentation  ~ 0.5 inches  m  I: N/A  Dwing upstream  owing vegetatio		ter throughou annel. Signific I. Fallen brand	cant leaf litter throughout channel. Ches scattered in and next to the					
SPECIES OBSERVATIONS  Fish Kill? □ Yes ☒ No # Dead Fish O □  Fish Breathing Stress/Gulping ☒ None □ Yes  Fish Abnormal Behavior ☒ None □ Yes  Notes: No waterbirds/shorebirds observed at this sight									
Species Observed	# of individuals	Behavior		Notes/Observations					
N/A	marvidudis								

### **PHOTOGRAPHS**



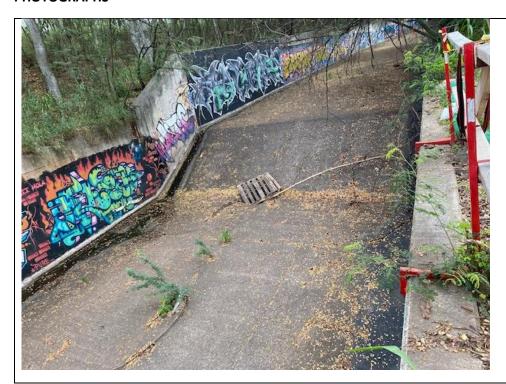
Photograph # 1: Upstream Site looking upstream.



Photograph # 2:
Upstream Site
looking
downstream.

Observer/s:		<b>I</b>							
Date: <u>1/25/202</u>	3 Site Name	e: <u>Discharge Site</u>	Time: _	8:26 AM					
WEATHER CONDI	TIONS								
NOW	Р	ast 24 Hours		Has there been a heavy rain in the past 7 days?					
☐ storm (heavy r	ain)	storm (heavy rain)		□ yes 図 no					
☐ rain (steady rai	in)	rain (steady rain)		Wind: 0 mph					
☐ showers (inter	mittent)	showers (intermittent	)	Air Temperature: 72 °F					
<u>100</u> % cloud cov	er <u>1</u>	<u>.0</u> % cloud cover or less							
☐ clear/sunny	Σ	☑ clear/sunny							
Observed Turbidit Water Color: Clear Estimated Depth: Visibility: Clear to Tide (if applicable) Notes: Light leaf li discharge. Woode	y/Sedimentatio r. ~ 0.5 inches abo bottom. ): N/A tter and vegeta n pallet above o	discharge on channel flo	t channel floor down from disc drainage, dead						
debris past discha  SPECIES OBSERVA		sent.							
Fish Kill? ☐ Yes ☒ No # Dead Fish <u>0</u> Fish Breathing Stress/Gulping ☒ None ☐ Yes  Fish Abnormal Behavior ☒ None ☐ Yes									
Notes: Ladder abo	ove canal.								
Species Observed	# of individuals	Behavior		Notes/Observations					
Pacific Golden- plover	1	Foraging	Foraged just b	pelow discharge and around stream.					

### **PHOTOGRAPHS**



Photograph # 1:
Discharge Site
looking
upstream.



Photograph # 2: Discharge Site looking downstream.

Observer/s:		
Date: 1/25/2023 Site Name:	Downstream Site # 1 Time:	8:51 AM
WEATHER CONDITIONS		
NOW	Past 24 Hours	Has there been a heavy rain in the past 7 days?
☐ storm (heavy rain)	☐ storm (heavy rain)	□yes ⊠ no
☐ rain (steady rain)	☐ rain (steady rain)	Wind: 1-3 mph
☐ showers (intermittent)	☐ showers (intermittent)	Air Temperature 73° F
100 % cloud cover	10 % cloud cover or less	
☐ clear/sunny	☑ clear/sunny	
Water level □ dry ☑ wet □ s Observed Turbidity/Sedimentation Water Color: Transparent, brownis Estimated Depth: ~ 1 foot. Visibility: Visible to the bottom. Tide (if applicable): N/A.  Notes: Rocks scattered throughout Some rubbish along the top edge o	h. the channel, and growing vegetatio	of stream throughout.  on along the sides of the stream.
SPECIES OBSERVATIONS		
Fish Kill? ☐ Yes ☒ No # Dead Fish Breathing Stress/Gulping ☒ N Fish Abnormal Behavior ☒ N		
Notes:		

Species Observed	# of individuals	Behavior	Notes/Observations
Hawaiian Stilt	1	Foraging	Foraged along sides of stream bed
Ruddy Turnstone	5	Foraging	Foraged along the middle of the stream bed.

### **PHOTOGRAPHS**



Photograph # 1:

Downstream
Site #1 looking upstream.

Observer/s:											
Date: <u>1/25/2023</u> Site Na	Date: 1/25/2023 Site Name: Downstream Site #2 Time: 8:55 AM										
WEATHER CONDITIONS											
NOW Past 24 Hours Has there been a heavy the past 7 days?											
☐ storm (heavy rain)	☐ storm (heavy rain)	□ yes 図 no									
☐ rain (steady rain)	☐ rain (steady rain)	Wind: 1-3 mph									
☐ showers (intermittent)	☐ showers (intermittent)	Air Temperature: 73 °F									
100 % cloud cover	10 % cloud cover or less										
☐ clear/sunny	☑ clear/sunny										
Observed Turbidity/Sedimental Water Color: Clear. Estimated Depth: ~ 2 foot in sha channel. Visibility: To bottom in shallow Tide (if applicable): N/A Notes: Vegetation growth and r	□ standing water ☑ flowing water tion: Sediment on bottom of stream allow section of channel, 4-5+ feet of section of channel, ~1 foot in deep rocks, throughout the estuary. Deach roughout stream and on exposed one of the stream.	deep in the estuary portion of portion of estuary channel.									
SPECIES OBSERVATIONS											
Fish Breathing Stress/Gulping E Fish Abnormal Behavior E Notes:	⊠ None □ Yes										
Species # of	l Behavior l	Notes/Observations									

Species Observed	# of individuals	Behavior	Notes/Observations
Black- crowned	1	Foraging	Foraged by exposed concrete portion of estuary.
Night Heron			
Cattle Egret	1	Transitioning	Transitioned above estuary.
Zebra Dove	1	Transitioning	Transitioned from trees above estuary.
Pacific Golden-Plover	1	Foraging	Foraged by exposed concrete portion of estuary.

Koloa/Mallard	2	Loafing	Loafed alongside stream bed in back of estuary.
hybrid			

### **PHOTOGRAPHS**



Photograph # 1: Downstream Site # 2 looking downstream.

Observer/s:								
Date: <u>1/ 25 /20</u>	23 Si	te Name: <u>Estua</u> ı	y Site #1	_Time:	9:18 AM			
WEATHER CONDI	TIONS							
NOW		Past 24 Hours		Has there been a heavy rain in the past 7 days?				
☐ storm (heavy r	ain)	$\square$ storm (heavy rain	)	□ yes ⊠	no			
☐ rain (steady ra	in)	☐ rain (steady rain)	,	Wind: 1-3	3 mph			
☐ showers (inter	mittent)	☐ showers (intermit	tent)	Air Temp	erature: 75°F			
<u>100</u> % cloud cov	er	10 % cloud cover o	rless					
☐ clear/sunny		☑ clear/sunny						
Water Color: Opac Estimated Depth: Visibility: ~ 1 Foot Tide (if applicable Notes: Minimal le into stream attack	que, green/brow 5+ Feet ): Falling, 1.31 fe af litter flowing oned to bridge.	·		t to bridg	e. Fishing line leading			
SPECIES OBSERVA	ATIONS							
Fish Kill? ☐ Yes Fish Breathing Str Fish Abnormal Bel Notes: No waterb	ess/Gulping 🗵 N havior 🖾 N	I Fish <u>0</u> None □ Yes None □ Yes Observed at this sight.						
Species Observed	# of individuals	Behavior	Observations					
N/A								

### **PHOTOGRAPHS**



Photograph # 1: Estuary Site #1 looking upstream.

Observer/s:								
	22 Sita Nama	Estuary Site #2	Time:	۵۰۵۶ ۸۸۸				
Date	23 Site Name	e. Estudiy Site #2	111116.	3.08 AIVI				
WEATHER COND	ITIONS							
NOW		Past 24 Hours		Has there been a heavy rain in the past 7 days?				
☐ storm (heavy	rain)	☐ storm (heavy rain)		□ yes ⊠no				
☐ rain (steady ra	ain)	☐ rain (steady rain)		Wind: 1-3 mph				
☐ showers (inte	ermittent)	☐ showers (intermit	ent)	Air Temperature: 75 °F				
100 % cloud cov	/er	10 % cloud cover or	less					
☐ clear/sunny		☑ clear/sunny						
Estimated Depth Visibility: ~1 Foot Tide (if applicable	t. e): Falling, 1.37 fe	·	ncampment a	along shore pipeline.				
SPECIES OBSERV	ATIONS							
Fish Kill? ☐ Yes ☒ No # Dead Fish O Fish Breathing Stress/Gulping ☒ None ☐ Yes Fish Abnormal Behavior ☒ None ☐ Yes  Notes:								
Species Observed	# of individuals	Behavior		Notes/Observations				
Dacific	1	Foraging	Eorac	god along stroam had in grass				

Species Observed	# of individuals	Behavior	Notes/Observations
Pacific Golden-Plover	1	Foraging	Foraged along stream bed in grass.

### **PHOTOGRAPHS**



Photograph # 1: Estuary Site #2 looking upstream.

### **WATERBIRD SURVEY DATASHEET**

	WETLAND CONDTION CODES		WEATHER CODES			
Water Level (WL)	Human Impact (HI)	Rainfall (RF)	Wind			
0 = dry	0 = indirect (little garbage, few people)	0 = no rain	0 = no wind, < 1 mph			
1 = lower than normal	1 = moderate	1 = mist or fog	1 = smoke drifts, 1-3 mph			
2= normal	2 = heavy (many people present;	2 = drizzle	2 = wind felt on face, 4-7 mph			
3 = higher than normal	e.g., wading, boating, fishing, etc)	3 = light rain	3 = leaves and twigs rustle, 8-12 mph			
Vegetation Cover (VC)	Shoreline Condition of Tidal Wetlands (SC)	4 = heavy rain	4 = dust raises, branches stir, 13-18 mph			
0 = open water (<25% veg)	0 = water at high tide mark N/A=not applicable	5 = snow or hail	5 = small trees sway, >19 mph			
1 = 26-50% veg cover	1 = water 25 ft from high tide mark	Claud Cause (CC) - Fo	timete to the measure 100/			
2 = 51-75% veg cover	2 = water 50 ft from high tide mark	cioua cover (CC) = ES	timate to the n <b>earest 10%</b>			
3 = >75% cover	3 = water >50 ft from high tide mark	•				

Data	1-25-23	

<u>REMINDERS:</u> If site it not accessible, include wetland name and write 'no access'

Observers

Date 1-25-23

If no birds observed, fill out top portion and write 'no birds'

### KEEP A COPY FOR YOUR RECORDS

Island O'ahu Subadult includes juveniles and chicks

Wetland Name		US	3				DC .		DS 1					DS 2				
Condition	WL	VC	HI	SC	WL	VC	HI	SC	WL	VC	HI	SC	WL	VC	HI	SC		
Condition	2	10	0	na	3	0	0	na	2	0	0	na	2	10	0	na		
Weather	CC 100	RF 0	Wind 0		CC 100	RF 0	Wind 0		CC 100	RF 0	Wind 1		CC 100	RF 0	Wind 1			
Time		art 3am		top 5 am	826	art am		op Dam		art 1am		op 3am	St 855	art	St 900	op am		
COOT adult			II.				U.				U.							
subadult																		
GALLINULE/MOORHEN adult																		
subadult																		
STILT adult										1 (Adult/	Foraging)							
subadult																		
KOLOA adult																		
subadult																		
Koloa/Mallard Hybrid														2 (Adults	/ Loafing)			
Mallard (domestic/feral)																		
Other Domestic Duck																		
Black-cr. Night Heron									1 (Adult/ Foraging)									
Cattle Egret																		
Pacific Golden Plover						1 (Adult/	Foraging)							1 (Adult/	Foraging)			
Ruddy Turnstone										5 (Adults/	Foraging	)						
Sanderling																		
Wandering Tattler																		
Northern Pintail																		
Mallard (migratory)																		
Lesser scaup																		
Comments																		
	no wa	aterbirds/s	horebirds															
															Rev.	Aug 2017		

### **WATERBIRD SURVEY DATASHEET**

	WETLAND CONDTION CODES		WEATHER CODES				
Water Level (WL)	Human Impact (HI)	Rainfall (RF)	Wind				
0 = dry	0 = indirect (little garbage, few people)	0 = no rain	0 = no wind, < 1 mph				
1 = lower than normal	1 = moderate	1 = mist or fog	1 = smoke drifts, 1-3 mph				
2= normal	2 = heavy (many people present;	2 = drizzle	2 = wind felt on face, 4-7 mph				
3 = higher than normal	e.g., wading, boating, fishing, etc)	3 = light rain	3 = leaves and twigs rustle, 8-12 mph				
Vegetation Cover (VC)	Shoreline Condition of Tidal Wetlands (SC)	4 = heavy rain	4 = dust raises, branches stir, 13-18 mph				
0 = open water (<25% veg)	0 = water at high tide mark N/A=not applicable	5 = snow or hail	5 = small trees sway, >19 mph				
1 = 26-50% veg cover	1 = water 25 ft from high tide mark						
2 = 51-75% veg cover	2 = water 50 ft from high tide mark	cioua cover (CC) = Es	timate to the n <b>earest 10%</b>				
3 = >75% cover	3 = water >50 ft from high tide mark	•					

1- 25 -23

<u>REMINDERS:</u> If site it not accessible, include wetland name and write 'no access'

Observers

If no birds observed, fill out top portion and write 'no birds'

KEEP A COPY FOR YOUR RECORDS

Island O'ahu Subadult includes juveniles and chicks

					1												
Wetland Name			S 1				S 2										
Condition	WL	VC	HI 0	SC 1	WL	<b>VC</b>	HI 0	SC 1	WL	VC	HI	SC	WL	VC	HI	SC	
Weather	2 CC 100	0 RF	Wind	1	3 CC 100	RF 0	Wind 1	1	CC	RF	Wind		CC	RF	Wind		
Time		o tart	1 St	ор		art		ор	St	art	St	ор	St	art	St	ор	
		918am	925	ām	90	8m	91	2am									
COOT adult																	
subadult																	
GALLINULE/MOORHEN adult																	
subadult																	
STILT adult																	
subadult																	
KOLOA adult																	
subadult																	
Koloa/Mallard Hybrid																	
Mallard (domestic/feral)																	
Other Domestic Duck																	
Black-cr. Night Heron																	
Cattle Egret Pacific Golden Plover						1 (Adult/	Foraging)										
							3 - 3/										
Ruddy Turnstone																	
Sanderling Wandering Tattler																	
Northern Pintail																	
Mallard (migratory)																	
Lesser scaup																	
White Tern																	
Comments																	
	no wate	erbirds/sh	orebirds														
															Rev.	Aug 2017	

Observer/s:									
Date: <u>1/30/2023</u> Site Na	ame: Upstream Site	Time: <u>9:23 am</u>							
WEATHER CONDITIONS									
NOW	Past 24 Hours	Has there been a heavy rain in the past 7 days?							
☐ storm (heavy rain)		⊠ yes □ no							
☐ rain (steady rain)	☐ rain (steady rain)	Wind: 0 mph							
☐ showers (intermittent)	showers (intermitten	t) Air Temperature: 76 °F							
100 % cloud cover	80 % cloud cover or les								
□ clear/sunny	☐ clear/sunny								
Observed Turbidity/Sedimenta	□ standing water 図 flowing tion: Sediment throughout c	_							
• •	tion: Sediment throughout c	hannel floor.							
Water Color: Brown.									
Estimated Depth: ~ 3 inches									
Visibility: to bottom Tide (if applicable): N/A									
ride (ii applicable). N/A									
debris build up in sections of th	ne stream. Tall growing veget	stream of channel. Leaf litter and vegetation ation along the stream bed. Fallen branches ging over fence, making the fence lean.							
Fish Breathing Stress/Gulping	ead Fish <u>0</u> ⊠ None □Yes ⊠ None □Yes								
Notes: No waterbirds/shorebir	ds observed at this sight								
Species # of	Species # of Behavior Notes/Observations								
Observed individuals	5								
N/A									

### **PHOTOGRAPHS**



Photograph # 1: Upstream Site looking upstream.

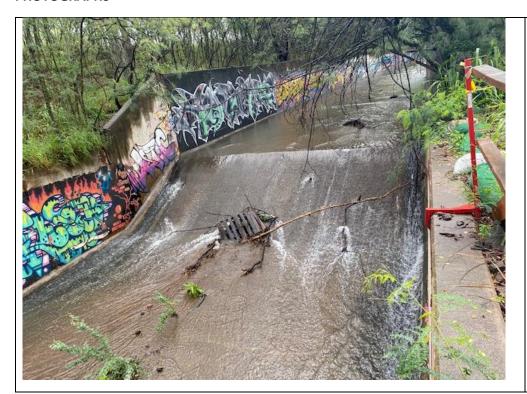


Photograph # 2:

Upstream Site looking downstream.

Observer/s:								
Date: 1/30/202	3 Site Nar	me: <u>Discharge Site</u>	Time:	10:28 AM				
WEATHER CONDIT	TIONS							
NOW		Past 24 Hours		Has there been a heavy rain in the past 7 days?				
storm (heavy ra	ain)			⊠ yes □ no				
☐ rain (steady rai	n)	☐ rain (steady rain)		Wind: 0 mph				
	rmittent)	☐ showers (intermittent	:)	Air Temperature: 78 °F				
100 % cloud cove	er	80 % cloud cover or less						
☐ clear/sunny		☐ clear/sunny						
Observed Turbidity Water Color: Brow Estimated Depth: 'Visibility: Clear to lead to le	Observed Turbidity/Sedimentation: Sediment throughout channel floor. Water Color: Brown. Estimated Depth: ~ 3 inches above discharge, ~ 1 foot down from discharge. Visibility: Clear to bottom. Tide (if applicable): N/A  Notes: Heavy water flow from above discharge. Wooden pallet above discharge on channel floor. Ladder above drainage. Stream clear of debris past discharge. Waddle present.							
Fish Kill? ☐ Yes ☒ No # Dead Fish <u>0</u> Fish Breathing Stress/Gulping ☒ None ☐ Yes  Fish Abnormal Behavior ☒ None ☐ Yes  Notes: Ladder above canal.								
Cnosics	# ~£	Dobovios		Notes/Observations				
Species Observed	# of individuals	Behavior Notes/Observations						
N/A								

### **PHOTOGRAPHS**



Photograph # 1: Discharge Site looking upstream.



Photograph # 2: Discharge Site looking

Observer/s:			
Date: 1/30/2023	Site Nam	e: <u>Downstream Site # :</u>	Time: <u>10:57 AM</u>
WEATHER CONDIT	IONS		
NOW		Past 24 Hours	Has there been a heavy rain in the past 7 days?
storm (heavy ra	in)	⊠storm (heavy rain)	⊠yes □ no
☐ rain (steady rain	າ)	☐ rain (steady rain)	Wind: 1-3 mph
☐ showers (interm	nittent)	☐ showers (intermit	tent) Air Temperature 76° F
90 % cloud cover		80 % cloud cover or	less
□ clear/sunny		□ clear/sunny	
	1 foot +. the bottom. N/A. of water. Grow	ving vegetation along th	ne sides of the stream. Some rubbish along the
SPECIES OBSERVAT		d vegetation debris floa	ting down river.
Fish Kill?	ss/Gulping ⊠	d Fish <u>0</u> None □Yes None □Yes	
Species Observed	# of individuals	Behavior	Notes/Observations
Small unknown	~50	Schooling	Schooled along stream bed edge.

fish

### **PHOTOGRAPHS**



Photograph #

Downstream Site #1 looking upstream.

Observer/s:	<u></u>					
Date: <u>1/30/2023</u> Site Name:	Downstream Site #2	Time: <u>11:05 AM</u>				
WEATHER CONDITIONS						
NOW	Past 24 Hours	Has there been a heavy rain in the past 7 days?				
☐ storm (heavy rain)	☑ storm (heavy rain)	⊠ yes □ no				
☐ rain (steady rain)	□rain (steady rain)	Wind: 1-3 mph				
☐ showers (intermittent)	☐ showers (intermittent)	Air Temperature: 80 °F				
90 % cloud cover	80 % cloud cover or less					
☐ clear/sunny	☐ clear/sunny					
Water level □ dry ☑ wet □ st Observed Turbidity/Sedimentation Water Color: Brownish gray Estimated Depth: ~ 5 inches shallow channel. Visibility: To bottom in shallow sect Tide (if applicable): N/A Notes: Heavy flow of water. Trash a throughout the estuary. Significant along sides of the stream.	Observed Turbidity/Sedimentation: Sediment on bottom of stream floor. Water Color: Brownish gray Estimated Depth: ~ 5 inches shallow section of channel, 4-5+ feet deep in the estuary portion of channel. Visibility: To bottom in shallow section of channel, ~1 foot in deep portion of estuary channel. Tide (if applicable): N/A  Notes: Heavy flow of water. Trash and vegetation debris floating downstream. Vegetation growth throughout the estuary. Significant vegetation growth on both sides of the stream. Turbid foam buildup					
SPECIES OBSERVATIONS						
Fish Kill? ☐ Yes ☒ No # Dead Fish <u>0</u> Fish Breathing Stress/Gulping ☒ None ☐ Yes  Fish Abnormal Behavior ☒ None ☐ Yes						
Notes:						

Species Observed	# of individuals	Behavior	Notes/Observations
Black- crowned Night Heron	4	Foraging, Transitioning	Foraged in the middle of the estuary, Transitioned around estuary and under bridge.
Wandering Tattler	1	Transitioning	Transitioned around estuary stream.
Spotted Dove	2	Transitioning	Transitioned above estuary.
Red-vented Bulbul	6	Transitioning	Transitioned across stream.

Koloa/Mallard hybrid	6	Transitioning, Foraging	Transitioned from far side of the estuary and from in vegetation to middle of the stream.
Common Myna	2	Transitioning	Transitioned above stream.
House Sparrow	1	Transitioning	Transitioned above stream.

### **PHOTOGRAPHS**



Observer/s:						
Date: <u>1/30/2023</u> Sit	e Name: Estuary Site #1	Time: <u>11:50 AM</u>				
WEATHER CONDITIONS						
NOW	Past 24 Hours	Has there been a heavy rain in the past 7 days?				
□ storm (heavy rain)	☑ storm (heavy rain)	⊠ yes □ no				
☐ rain (steady rain)	☐ rain (steady rain)	Wind: 1-3 mph				
□ showers (intermittent)	□ showers (intermittent)	Air Temperature: 81°F				
<u>100</u> % cloud cover	80 % cloud cover or less					
□ clear/sunny	□ clear/sunny					
Water level □dry ☑wet □ standing water ☑ flowing water □ sheen visible Observed Turbidity/Sedimentation: High turbidity in water column. Water Color: Opaque, green/brown, murky. Estimated Depth: 5+ Feet Visibility: ~ 1 Foot. Tide (if applicable): Falling, 0.52 feet.  Notes: Minimal leaf litter flowing downstream. Large encampment next to bridge. Fishing line leading into stream attached to bridge.						
SPECIES OBSERVATIONS						
Fish Kill? ☐ Yes ☒ No # Dead Fish <u>0</u> Fish Breathing Stress/Gulping ☒ None ☐ Yes  Fish Abnormal Behavior ☒ None ☐ Yes						
Notes: No waterbirds/shorebirds observed at this sight.						

Species Observed	# of individuals	Behavior	Notes/Observations
Spotted doves	3	Transitioning	Transitioned above stream.
Common waxbill	1	Transitioning	Transitioned above stream.

### **PHOTOGRAPHS**



Photograph # 1:

Estuary Site #1 looking upstream.

Observer/s:		<b></b>						
Date: <u>1/30/2</u>	2023 Site Name	: Estuary Site #2	Time:	11:31 AM				
WEATHER CONDITIONS								
NOW		Past 24 Hours		Has there been a heavy rain in the past 7 days?				
☐ storm (heav	y rain)		)	⊠yes □ no				
☐ rain (steady	rain)	☐ rain (steady rain)		Wind: 1-3 mph				
☐ showers (in	termittent)	☐ showers (intermitt	ent)	Air Temperature: 81.68 °F				
100 % cloud co	over	80 % cloud cover or	less					
☐ clear/sunny		☐ clear/sunny						
Estimated Dept Visibility: ~1 Fo Tide (if applicab	ot. ble): Falling, 0.53 fe	•						
SPECIES OBSER	SPECIES OBSERVATIONS							
Fish Kill? ☐ Ye Fish Breathing S Fish Abnormal	Stress/Gulping ⊠ N	l Fish <u>0</u> None □Yes None □Yes						
Notes:								
Species Observed	# of individuals	Behavior		Notes/Observations				

Species Observed	# of individuals	Behavior	Notes/Observations
Java sparrow	1	Foraging	Foraged along stream bed in grass.

### **PHOTOGRAPHS**



Photograph # 1: Estuary Site #2 looking

upstream.

### **WATERBIRD SURVEY DATASHEET**

	WETLAND CONDTION CODES		WEATHER CODES		
Water Level (WL)	Human Impact (HI)	Rainfall (RF)	Wind		
0 = dry	0 = indirect (little garbage, few people)	0 = no rain	0 = no wind, < 1 mph		
1 = lower than normal	1 = moderate	1 = mist or fog	1 = smoke drifts, 1-3 mph		
2= normal	2 = heavy (many people present;	2 = drizzle	2 = wind felt on face, 4-7 mph		
3 = higher than normal	e.g., wading, boating, fishing, etc)	3 = light rain	3 = leaves and twigs rustle, 8-12 mph		
Vegetation Cover (VC)	Shoreline Condition of Tidal Wetlands (SC)	4 = heavy rain	4 = dust raises, branches stir, 13-18 mph		
0 = open water (<25% veg)	0 = water at high tide mark N/A=not applicable	5 = snow or hail	5 = small trees sway, >19 mph		
1 = 26-50% veg cover	1 = water 25 ft from high tide mark	ol 10 (00) 511 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			
2 = 51-75% veg cover	2 = water 50 ft from high tide mark	Cloud Cover (CC) = Estimate to the nearest 10%			
3 = >75% cover	3 = water >50 ft from high tide mark	•			

Date 1-30-23

<u>REMINDERS:</u> If site it not accessible, include wetland name and write 'no access'

Observers

If no birds observed, fill out top portion and write 'no birds'

KEEP A COPY FOR YOUR RECORDS

Island O'ahu Subadult includes juveniles and chicks

	<u> </u>															
Wetland Name		US					C				OS 1				DS 2	
Condition	<b>WL</b> 3	VC 0	HI 0	SC na	WL 3	<b>VC</b>	HI 0	SC na	WL 3	VC 0	HI 0	SC na	<b>WL</b> 3	VC 10	HI 0	SC na
Weather	CC 100	RF 3	Wind		CC 100	RF 3	Wind		CC 90	RF 0	Wind		CC 90	RF 0	Wind	-
Time	S	tart	S	top	St	art	St	ор	St	art		op	S	tart	St	op
COOT adult		23am	92	8 am	102	18am	108	55am	10	)57am	11	:03am	11	05am	11:	22am
subadult																
GALLINULE/MOORHEN adult																
subaduli	+															
STILT adult																
subadult																
KOLOA adult																
subadult																
Koloa/Mallard Hybrid													6	(Adults/ 7	ransitioni	ng)
Mallard (domestic/feral)																
Other Domestic Duck																
Black-cr. Night Heron													4 (Ad	ult/ Foragi	ing/Transi	tioning)
Cattle Egret																
Pacific Golden Plover													1 (Adult/ Foraging)			)
Ruddy Turnstone																
Sanderling																
Wandering Tattler													1	I (Adult/ T	ransitionir	ng)
Northern Pintail																
Mallard (migratory)																
Lesser scaup																
C																
Comments																
	no wa	aterbirds/sh	norebirds		no wa	aterbirds/s	shorebirds		no w	/aterbirds/	shorebirds	S			Rev	. Aug 2017

### WATERBIRD SURVEY DATASHEET

	WETLAND CONDTION CODES		WEATHER CODES		
Water Level (WL)	Human Impact (HI)	Rainfall (RF)	Wind		
0 = dry	0 = indirect (little garbage, few people)	0 = no rain	0 = no wind, < 1 mph		
1 = lower than normal	1 = moderate	1 = mist or fog	1 = smoke drifts, 1-3 mph		
2= normal	2 = heavy (many people present;	2 = drizzle	2 = wind felt on face, 4-7 mph		
3 = higher than normal	e.g., wading, boating, fishing, etc)	3 = light rain	3 = leaves and twigs rustle, 8-12 mph		
Vegetation Cover (VC)	Shoreline Condition of Tidal Wetlands (SC)	4 = heavy rain	4 = dust raises, branches stir, 13-18 mph		
0 = open water (<25% veg)	0 = water at high tide mark N/A=not applicable	5 = snow or hail	5 = small trees sway, >19 mph		
1 = 26-50% veg cover	1 = water 25 ft from high tide mark	0 10 (00) 5 11 1 1 1 1 1 1 1 1 1 1			
2 = 51-75% veg cover	2 = water 50 ft from high tide mark	Cloud Cover (CC) = Estimate to the nearest 10%			
3 = >75% cover	3 = water >50 ft from high tide mark	•			

Date	1_	. 30	-23

<u>REMINDERS:</u> If site it not accessible, include wetland name and write 'no access'

Observers

Date 1-30-23

If no birds observed, fill out top portion and write 'no birds'

### KEEP A COPY FOR YOUR RECORDS

Island O'ahu Subadult includes juveniles and chicks

Wetland Name	ES 1				ES 2											
Condition	WL	VC	HI	SC	WL	VC	HI	SC	WL	VC	HI	SC	WL	VC	HI	SC
Maraka .	3 <b>CC</b>	0 RF	0 Wind	1	3 CC	0 RF	0 Wind	1	CC	RF	Wind		CC	RF	Wind	
Weather	100 St	o art	0 <b>St</b>	ор	100 St	0 art	1 <b>St</b>	on	St	art	St.	on	St	art	Str	nn .
Time			54am	Start 1131m		Stop 1139am		Start		Stop		Start		Stop		
COOT adult																
subadult																
GALLINULE/MOORHEN adult																
subadult																
STILT adult																
subadult																
KOLOA adult																
subadult																
Koloa/Mallard Hybrid																
Mallard (domestic/feral)																
Other Domestic Duck																
Black-cr. Night Heron																
Cattle Egret																
Pacific Golden Plover																
Ruddy Turnstone																
Sanderling																
Wandering Tattler																
Northern Pintail																
Mallard (migratory)																
Lesser scaup																
White Tern																
Comments																
						l l l l	احتاجا معمام									
	no wate	erbirds/sh	orebirds		no wa	iterbirds/s	shorebirds									
															_	A 221=
					<u> </u>				I				I		Rev.	Aug 2017

# 44

PREPARED FOR

**ANALYTICAL REPORT** 

Attn: Kathryn Repine AECOM 1001 Bishop Street Honolulu, Hawaii 96813

Generated 1/18/2023 2:45:00 PM

# **JOB DESCRIPTION**

Red Hill NPDES CV22F0106

# **JOB NUMBER**

580-121898-1

Eurofins Seattle 5755 8th Street East Tacoma WA 98424

# **Eurofins Seattle**

### **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**

M. Elaine Walker

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

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10

Client: AECOM

Project/Site: Red Hill NPDES CV22F0106

Laboratory Job ID: 580-121898-1

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#### **Case Narrative**

Client: AECOM Job ID: 580-121898-1

Project/Site: Red Hill NPDES CV22F0106

Job ID: 580-121898-1

**Laboratory: Eurofins Seattle** 

Narrative

CASE NARRATIVE
Client: AECOM
Project: Red Hill NPDES CV22F0106
Report Number: 580-121898-1

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**

Five samples were received on 1/5/2023 9:20 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 2.7° C.

#### **Receipt Exceptions**

The sample time on the container label for the following samples did not match the information listed on the Chain-of-Custody (COC): RHS-IF-TRAIN-02-010423-N (580-121898-3) and RHS-IF-TRAIN-02-010423-(01)-N (580-121898-5). The container labels list 1100, while the COC lists 1110. The samples were logged per the COC per confirmation from the client.

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.

#### **GASOLINE RANGE ORGANICS (GRO)**

Samples RHS-FB-TRAIN-02-010423-N (580-121898-1), RHS-EF-TRAIN-02-010423-N (580-121898-2), RHS-IF-TRAIN-02-010423-N (580-121898-3), RHS-EF-TRAIN-02-010423-(01)-N (580-121898-4) and RHS-IF-TRAIN-02-010423-(01)-N (580-121898-5) were analyzed for gasoline range organics (GRO) in accordance with CA\_LUFT\_GRO. The samples were analyzed on 01/11/2023 and 01/12/2023.

The continuing calibration verification (CCV) associated with batch 580-415134 recovered above the upper control limit for Gasoline Range Organics (C6-C12). The samples associated with this CCV were non-detects for the affected analyte; therefore, the data have been reported. The associated samples are impacted: RHS-FB-TRAIN-02-010423-N (580-121898-1), RHS-IF-TRAIN-02-010423-N (580-121898-2), RHS-IF-TRAIN-02-010423-N (580-121898-3), RHS-IF-TRAIN-02-010423-(01)-N (580-121898-5), (CCV 580-415134/16), (CCV 580-415134/27) and (CCV 580-415134/31).

The laboratory control sample duplicate (LCSD) for analytical batch 580-415134 recovered outside control limits for the following analytes: Gasoline Range Organics (C6-C12). This analyte was biased high in the LCSD and was not detected in the associated samples; therefore, the data have been reported.

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

#### **VOLATILE ORGANIC COMPOUNDS (GC-MS)**

Samples RHS-FB-TRAIN-02-010423-N (580-121898-1), RHS-EF-TRAIN-02-010423-N (580-121898-2), RHS-IF-TRAIN-02-010423-N

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#### **Case Narrative**

Client: AECOM Job ID: 580-121898-1

Project/Site: Red Hill NPDES CV22F0106

Job ID: 580-121898-1 (Continued)

**Laboratory: Eurofins Seattle (Continued)** 

(580-121898-3), RHS-EF-TRAIN-02-010423-(01)-N (580-121898-4) and RHS-IF-TRAIN-02-010423-(01)-N (580-121898-5) were analyzed for volatile organic compounds (GC-MS) in accordance with 8260C. The samples were analyzed on 01/11/2023 and 01/12/2023.

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

#### SEMIVOLATILE ORGANIC COMPOUNDS - SELECTED ION MODE (SIM)

Samples RHS-EF-TRAIN-02-010423-N (580-121898-2) and RHS-EF-TRAIN-02-010423-(01)-N (580-121898-4) were analyzed for semivolatile organic compounds - Selected Ion Mode (SIM) in accordance with 8270E SIM. The samples were prepared on 01/10/2023 and analyzed on 01/11/2023.

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

#### **DIESEL AND EXTENDED RANGE ORGANICS**

Samples RHS-EF-TRAIN-02-010423-N (580-121898-2), RHS-IF-TRAIN-02-010423-N (580-121898-3), RHS-EF-TRAIN-02-010423-(01)-N (580-121898-4) and RHS-IF-TRAIN-02-010423-(01)-N (580-121898-5) were analyzed for diesel and extended range organics in accordance with 8015D. The samples were prepared on 01/10/2023 and analyzed on 01/12/2023.

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

#### **METALS (ICP)**

Samples RHS-EF-TRAIN-02-010423-N (580-121898-2) and RHS-EF-TRAIN-02-010423-(01)-N (580-121898-4) were analyzed for Metals (ICP) in accordance with 6010D. The samples were prepared on 01/06/2023 and analyzed on 01/09/2023.

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

#### **ORGANIC LEAD**

Samples RHS-EF-TRAIN-02-010423-N (580-121898-2) and RHS-EF-TRAIN-02-010423-(01)-N (580-121898-4) were analyzed for Organic Lead in accordance with 939M. The samples were prepared and analyzed on 01/10/2023.

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: 580-121898-1

Project/Site: Red Hill NPDES CV22F0106

**Qualifiers** 

**GC/MS VOA** 

Qualifier Qualifier Description

\*+ LCS and/or LCSD is outside acceptance limits, high biased.
U Indicates the analyte was analyzed for but not detected.

**GC/MS Semi VOA** 

Qualifier Qualifier Description

U Indicates the analyte was analyzed for but not detected.

**GC Semi VOA** 

Qualifier Qualifier Description

U Indicates the analyte was analyzed for but not detected.

**Metals** 

Qualifier Qualifier Description

J Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

U Indicates the analyte was analyzed for but not detected.

**Glossary** 

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

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

**Eurofins Seattle** 

Page 6 of 26 1/18/2023

Client: AECOM Job ID: 580-121898-1

Project/Site: Red Hill NPDES CV22F0106

Client Sample ID: RHS-FB-TRAIN-02-010423-N

Date Collected: 01/04/23 10:45 Date Received: 01/05/23 09:20

Lab Sample ID: 580-121898-1

**Matrix: Water** 

Method: SW846 8260B/CA_LU	JFTMS - Vol	atile Organ	nic Compoun	ds by G	C/MS				
Analyte Gasoline Range Organics (C6-C12)		Qualifier U *+	100 RL	MDL 31	Unit ug/L	<u>D</u> .	Prepared	Analyzed 01/11/23 20:36	Dil Fac
Surrogate 4-Bromofluorobenzene (Surr)	%Recovery	Qualifier	<b>Limits</b> 78 - 120			-	Prepared	Analyzed 01/11/23 20:36	Dil Fac

. =									-
Method: SW846 8260D - Vo	latile Organic	Compound	ds by GC/MS						
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.24	U	1.0	0.24	ug/L			01/11/23 20:36	1
Toluene	0.39	U	1.0	0.39	ug/L			01/11/23 20:36	1
Ethylbenzene	0.50	U	1.0	0.50	ug/L			01/11/23 20:36	1
m-Xylene & p-Xylene	0.53	U	2.0	0.53	ug/L			01/11/23 20:36	1
o-Xylene	0.39	U	1.0	0.39	ug/L			01/11/23 20:36	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	98		80 - 120			•		01/11/23 20:36	1
1,2-Dichloroethane-d4 (Surr)	105		80 - 120					01/11/23 20:36	1
4-Bromofluorobenzene (Surr)	99		80 - 120					01/11/23 20:36	1
Dibromofluoromethane (Surr)	103		80 - 120					01/11/23 20:36	1

Client: AECOM Job ID: 580-121898-1

Project/Site: Red Hill NPDES CV22F0106

Client Sample ID: RHS-EF-TRAIN-02-010423-N

Date Collected: 01/04/23 10:50 Date Received: 01/05/23 09:20

Dibromofluoromethane (Surr)

Fluoranthene-d10 (Surr)

Lead

Lab Sample ID: 580-121898-2

01/11/23 21:01

01/10/23 10:58 01/11/23 07:44

01/06/23 17:18 01/09/23 19:19

**Matrix: Water** 

		nds by GC/MS				
ult Qualifier	RL	MDL Unit	D	Prepared	Analyzed	Dil Fac
31 U*+	100	31 ug/L			01/11/23 21:01	1
ery Qualifier	Limits			Prepared	Analyzed	Dil Fac
99	78 - 120				01/11/23 21:01	1
	31 U*+ rery Qualifier	31 U *+ 100  very Qualifier Limits	31 U*+ 100 31 ug/L  very Qualifier Limits	31 U*+ 100 31 ug/L  very Qualifier Limits	31 U*+ 100 31 ug/L  very Qualifier Limits Prepared	31 U *+         100         31 ug/L         01/11/23 21:01           ery Qualifier         Limits         Prepared         Analyzed

Method: SW846 8260D - Vo	olatile Organic	Compoun	ds by GC/MS	3					
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.24	U	1.0	0.24	ug/L			01/11/23 21:01	1
Toluene	0.39	U	1.0	0.39	ug/L			01/11/23 21:01	1
Ethylbenzene	0.50	U	1.0	0.50	ug/L			01/11/23 21:01	1
m-Xylene & p-Xylene	0.53	U	2.0	0.53	ug/L			01/11/23 21:01	1
o-Xylene	0.39	U	1.0	0.39	ug/L			01/11/23 21:01	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	97		80 - 120			-		01/11/23 21:01	1
1,2-Dichloroethane-d4 (Surr)	105		80 - 120					01/11/23 21:01	1
4-Bromofluorobenzene (Surr)	99		80 - 120					01/11/23 21:01	1

80 - 120

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Method: SW846 8270E SI	M - Semivolatile	Organic C	ompounds (	GC/MS	SIM)				
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	0.16	U	0.50	0.16	ug/L		01/10/23 10:58	01/11/23 07:44	1
2-Methylnaphthalene	0.039	U	0.20	0.039	ug/L		01/10/23 10:58	01/11/23 07:44	1
1-Methylnaphthalene	0.033	U	0.10	0.033	ug/L		01/10/23 10:58	01/11/23 07:44	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
2,4,6-Tribromophenol	68		29 - 144				01/10/23 10:58	01/11/23 07:44	1
Terphenyl-d14	74		29 - 150				01/10/23 10:58	01/11/23 07:44	1
2-methylnaphthalene-d10	44		35 - 120				01/10/23 10:58	01/11/23 07:44	1

49 - 129

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C9-C25	91	U	110	91	ug/L		01/10/23 07:31	01/12/23 19:10	1
C24-C40	180	U	200	180	ug/L		01/10/23 07:31	01/12/23 19:10	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
o-Terphenyl			53 - 120				01/10/23 07:31	01/12/23 19:10	1

Method: CADHS 939-M - Organ	nic Lead (GFAA)							
Analyte	Result Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead, Total Organic	0.81 U	2.5	0.81	ug/L		01/10/23 16:30	01/10/23 20:23	1

30

2.7 ug/L

Client: AECOM Job ID: 580-121898-1

Project/Site: Red Hill NPDES CV22F0106

Client Sample ID: RHS-IF-TRAIN-02-010423-N

Date Collected: 01/04/23 11:10 Date Received: 01/05/23 09:20 Lab Sample ID: 580-121898-3

**Matrix: Water** 

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (C6-C12)	31	U *+	100	31	ug/L			01/11/23 21:25	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	90		78 - 120					01/11/23 21:25	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.24	U	1.0	0.24	ug/L			01/11/23 21:25	1
Toluene	0.39	U	1.0	0.39	ug/L			01/11/23 21:25	1
Ethylbenzene	0.50	U	1.0	0.50	ug/L			01/11/23 21:25	1
m-Xylene & p-Xylene	0.53	U	2.0	0.53	ug/L			01/11/23 21:25	1
o-Xylene	0.39	U	1.0	0.39	ug/L			01/11/23 21:25	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	100		80 - 120			-		01/11/23 21:25	1
1,2-Dichloroethane-d4 (Surr)	106		80 - 120					01/11/23 21:25	1
4-Bromofluorobenzene (Surr)	90		80 - 120					01/11/23 21:25	1
Dibromofluoromethane (Surr)	94		80 - 120					01/11/23 21:25	1

Method. 344046 6015D - Diese	i Kange On	gailies (DR	U) (GC)						
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C9-C25	91	U	110	91	ug/L		01/10/23 07:31	01/12/23 19:28	1
C24-C40	180	U	200	180	ug/L		01/10/23 07:31	01/12/23 19:28	1
Surrogate o-Terphenyl	%Recovery 70	Qualifier	Limits 53 - 120				Prepared 01/10/23 07:31	Analyzed 01/12/23 19:28	Dil Fac

Client: AECOM Job ID: 580-121898-1

Project/Site: Red Hill NPDES CV22F0106

Client Sample ID: RHS-EF-TRAIN-02-010423-(01)-N

Date Collected: 01/04/23 10:50

Date Received: 01/05/23 09:20

2-methylnaphthalene-d10

Lab Sample ID: 580-121898-4
-----------------------------

01/10/23 10:58 01/11/23 08:09

**Matrix: Water** 

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (C6-C12)	31	U	100	31	ug/L			01/12/23 14:03	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	91		78 - 120					01/12/23 14:03	1

Method: SW846 8260D - Vo	latile Organic	Compound	ds by GC/MS						
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.24	U	1.0	0.24	ug/L			01/12/23 14:03	1
Toluene	0.39	U	1.0	0.39	ug/L			01/12/23 14:03	1
Ethylbenzene	0.50	U	1.0	0.50	ug/L			01/12/23 14:03	1
m-Xylene & p-Xylene	0.53	U	2.0	0.53	ug/L			01/12/23 14:03	1
o-Xylene	0.39	U	1.0	0.39	ug/L			01/12/23 14:03	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	101		80 - 120			-		01/12/23 14:03	1
1,2-Dichloroethane-d4 (Surr)	98		80 - 120					01/12/23 14:03	1
4-Bromofluorobenzene (Surr)	91		80 - 120					01/12/23 14:03	1
Dibromofluoromethane (Surr)	93		80 - 120					01/12/23 14:03	1

Method: SW846 8270E \$		_	compounds	-	-				
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	0.16	U	0.50	0.16	ug/L		01/10/23 10:58	01/11/23 08:09	1
2-Methylnaphthalene	0.039	U	0.20	0.039	ug/L		01/10/23 10:58	01/11/23 08:09	1
1-Methylnaphthalene	0.033	U	0.10	0.033	ug/L		01/10/23 10:58	01/11/23 08:09	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
2,4,6-Tribromophenol	55		29 - 144				01/10/23 10:58	01/11/23 08:09	1
Terphenyl-d14	75		29 - 150				01/10/23 10:58	01/11/23 08:09	1

35 - 120

Fluoranthene-d10 (Surr)	67		49 - 129				01/10/23 10:58	01/11/23 08:09	1
-   Method: SW846 8015D -	Diesel Range Or	ganics (DF	RO) (GC)						
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C9-C25	91	U	110	91	ug/L		01/10/23 07:31	01/12/23 19:47	1
C24-C40	180	U	200	180	ug/L		01/10/23 07:31	01/12/23 19:47	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
o-Terphenyl	63		53 - 120				01/10/23 07:31	01/12/23 19:47	1
_   Method: SW846 6010D -	Metals (ICP) - To	tal Recove	erable						
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	2.7	U	30	2.7	ug/L		01/06/23 17:18	01/09/23 19:39	1
Method: CADHS 939-M -	Organic Lead (G	FAA)							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead, Total Organic	0.81	U	2.5	0.81	ug/L		01/10/23 16:30	01/10/23 20:46	1

Client: AECOM Job ID: 580-121898-1

Project/Site: Red Hill NPDES CV22F0106

Client Sample ID: RHS-IF-TRAIN-02-010423-(01)-N

Date Collected: 01/04/23 11:10

Date Received: 01/05/23 09:20

Method: SW846 8260B/CA_LUFTMS - Volatile Organic Compounds by GC/MS									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (C6-C12)	31	U *+	100	31	ug/L			01/11/23 22:14	1

١	Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
l	4-Bromofluorobenzene (Surr)	91		78 - 120		01/11/23 22:14	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.24	U	1.0	0.24	ug/L			01/11/23 22:14	1
Toluene	0.39	U	1.0	0.39	ug/L			01/11/23 22:14	1
Ethylbenzene	0.50	U	1.0	0.50	ug/L			01/11/23 22:14	1
m-Xylene & p-Xylene	0.53	U	2.0	0.53	ug/L			01/11/23 22:14	1
o-Xylene	0.39	U	1.0	0.39	ug/L			01/11/23 22:14	1

Surrogate	%Recovery Qu	ualifier Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	101	80 - 120		01/11/23 22:14	1
1,2-Dichloroethane-d4 (Surr)	103	80 - 120		01/11/23 22:14	1
4-Bromofluorobenzene (Surr)	91	80 - 120		01/11/23 22:14	1
Dibromofluoromethane (Surr)	93	80 - 120		01/11/23 22:14	1

Method: SW846 8015D	) - Diesel Range Or	ganics (DF	RO) (GC)						
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C9-C25	91	U	110	91	ug/L		01/10/23 07:31	01/12/23 20:06	1
C24-C40	180	U	200	180	ug/L		01/10/23 07:31	01/12/23 20:06	1
Surrogate	%Recovery	Qualifier	l imits				Prenared	Analyzed	Dil Fac

Surrogate	/onecovery	Qualifiei	LIIIII	riepaieu Alialyzeu	DII Fac
o-Terphenyl	69		53 - 120	01/10/23 07:31 01/12/23 20:06	1

**Matrix: Water** 

Lab Sample ID: 580-121898-5

Job ID: 580-121898-1

Project/Site: Red Hill NPDES CV22F0106

Method: 8260B/CA LUFTMS - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 580-415134/6 **Client Sample ID: Method Blank** 

**Matrix: Water** 

Client: AECOM

Analysis Batch: 415134

Prep Type: Total/NA

MB MB Result Qualifier RL **MDL** Unit Analyzed Dil Fac Analyte D Prepared Gasoline Range Organics (C6-C12) 100 31 U 31 ug/L 01/11/23 18:32

MB MB

Surrogate %Recovery Qualifier Limits Prepared Analyzed Dil Fac 4-Bromofluorobenzene (Surr) 92 78 - 120 01/11/23 18:32

Lab Sample ID: LCS 580-415134/9 **Client Sample ID: Lab Control Sample** 

**Matrix: Water** 

Analysis Batch: 415134

LCS LCS Spike %Rec Analyte Added Result Qualifier Unit %Rec Limits Gasoline Range Organics 1000 1250 ug/L 125 75 - 127

(C6-C12)

LCS LCS

Limits Surrogate %Recovery Qualifier 4-Bromofluorobenzene (Surr) 99 78 - 120

Lab Sample ID: LCSD 580-415134/10 Client Sample ID: Lab Control Sample Dup Prep Type: Total/NA

**Matrix: Water** 

Analysis Batch: 415134

LCSD LCSD **RPD** Spike %Rec Added Analyte Result Qualifier Unit D %Rec Limits **RPD** Limit 1000 Gasoline Range Organics 1280 \*+ ug/L 128 75 - 127

(C6-C12)

LCSD LCSD

Surrogate %Recovery Qualifier Limits 4-Bromofluorobenzene (Surr) 107 78 - 120

Lab Sample ID: MB 580-415220/6 Client Sample ID: Method Blank

**Matrix: Water** 

Analysis Batch: 415220

MB MB Result Qualifier RL **MDL** Unit Analyzed Dil Fac Analyte D Prepared 100 Gasoline Range Organics (C6-C12) 01/12/23 11:59 31 U 31 ug/L

MB MB

Surrogate %Recovery Qualifier Limits Prepared Analyzed Dil Fac 4-Bromofluorobenzene (Surr) 97 78 - 120 01/12/23 11:59

Lab Sample ID: LCS 580-415220/9

**Matrix: Water** 

Analysis Batch: 415220

LCS LCS Spike %Rec Added %Rec Analyte Result Qualifier Unit Limits 1000 1240 124 75 - 127 Gasoline Range Organics ug/L

(C6-C12)

LCS LCS

Limits Surrogate %Recovery Qualifier 4-Bromofluorobenzene (Surr) 105 78 - 120

**Eurofins Seattle** 

Prep Type: Total/NA

**Client Sample ID: Lab Control Sample** 

Prep Type: Total/NA

Prep Type: Total/NA

Client: AECOM

Project/Site: Red Hill NPDES CV22F0106

## Method: 8260B/CA\_LUFTMS - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 580-415220/10

**Matrix: Water** 

**Client Sample ID: Lab Control Sample Dup** 

Job ID: 580-121898-1

Prep Type: Total/NA

**Analysis Batch: 415220** 

	Spike	LCSD	LCSD				%Rec		RPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Gasoline Range Organics	1000	1140		ug/L		114	75 - 127	8	13
(00.040)									

(C6-C12)

LCSD LCSD

%Recovery Qualifier Surrogate Limits 78 - 120 4-Bromofluorobenzene (Surr) 96

## Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 580-415139/6

**Matrix: Water** 

**Analysis Batch: 415139** 

**Client Sample ID: Method Blank** 

Prep Type: Total/NA

	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.24	U	1.0	0.24	ug/L			01/11/23 18:32	1
Toluene	0.39	U	1.0	0.39	ug/L			01/11/23 18:32	1
Ethylbenzene	0.50	U	1.0	0.50	ug/L			01/11/23 18:32	1
m-Xylene & p-Xylene	0.53	U	2.0	0.53	ug/L			01/11/23 18:32	1
o-Xylene	0.39	U	1.0	0.39	ug/L			01/11/23 18:32	1

MB MB

Surrogate	%Recovery Qualifie	er Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	100	80 - 120		01/11/23 18:32	1
1,2-Dichloroethane-d4 (Surr)	105	80 - 120		01/11/23 18:32	1
4-Bromofluorobenzene (Surr)	92	80 - 120		01/11/23 18:32	1
Dibromofluoromethane (Surr)	95	80 - 120		01/11/23 18:32	1

Lab Sample ID: LCS 580-415139/7

**Matrix: Water** 

Analysis Batch: 415139

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

	Spike	LCS	LCS				%Rec	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Benzene	10.0	10.8		ug/L		108	80 - 122	
Toluene	10.0	11.4		ug/L		114	80 - 120	
Ethylbenzene	10.0	11.1		ug/L		111	80 - 120	
m-Xylene & p-Xylene	10.0	11.3		ug/L		113	80 - 120	
o-Xylene	10.0	10.7		ug/L		107	80 - 120	

LCS LCS

Surrogate	%Recovery	Qualifier	Limits
Toluene-d8 (Surr)	101		80 - 120
1,2-Dichloroethane-d4 (Surr)	104		80 - 120
4-Bromofluorobenzene (Surr)	94		80 - 120
Dibromofluoromethane (Surr)	93		80 - 120

Lab Sample ID: LCSD 580-415139/8

**Matrix: Water** 

Analysis Batch: 415139

Client Sample ID: Lab	<b>Control Sample Dup</b>
	Pren Type: Total/NA

	Spike	LCSD	LCSD				%Rec		RPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Benzene	10.0	11.4		ug/L		114	80 - 122	5	14

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Client: AECOM Job ID: 580-121898-1

Project/Site: Red Hill NPDES CV22F0106

### Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 580-415139/8

**Matrix: Water** 

**Analysis Batch: 415139** 

**Client Sample ID: Lab Control Sample Dup** 

Prep Type: Total/NA

	Spike	LCSD	LCSD				%Rec		RPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Toluene	10.0	11.1		ug/L		111	80 - 120	2	13
Ethylbenzene	10.0	11.2		ug/L		112	80 - 120	0	14
m-Xylene & p-Xylene	10.0	11.3		ug/L		113	80 - 120	0	14
o-Xylene	10.0	11.2		ug/L		112	80 - 120	4	16

LCSD LCSD

Surrogate	%Recovery	Qualifier	Limits
Toluene-d8 (Surr)	98		80 - 120
1,2-Dichloroethane-d4 (Surr)	104		80 - 120
4-Bromofluorobenzene (Surr)	98		80 - 120
Dibromofluoromethane (Surr)	98		80 - 120

**Client Sample ID: Method Blank** 

Prep Type: Total/NA

Lab Sample ID: MB 580-415225/6

**Matrix: Water** 

**Analysis Batch: 415225** 

MB MB

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.24	U	1.0	0.24	ug/L			01/12/23 11:59	1
Toluene	0.39	U	1.0	0.39	ug/L			01/12/23 11:59	1
Ethylbenzene	0.50	U	1.0	0.50	ug/L			01/12/23 11:59	1
m-Xylene & p-Xylene	0.53	U	2.0	0.53	ug/L			01/12/23 11:59	1
o-Xylene	0.39	U	1.0	0.39	ug/L			01/12/23 11:59	1

MB MB

Surrogate	%Recovery Qualifier	Limits	Prepared	Analyzed	Dil Fac	
Toluene-d8 (Surr)	101	80 - 120	<del></del> <del></del>	01/12/23 11:59	1	
1,2-Dichloroethane-d4 (Surr)	103	80 - 120	C	01/12/23 11:59	1	
4-Bromofluorobenzene (Surr)	97	80 - 120	C	01/12/23 11:59	1	
Dibromofluoromethane (Surr)	98	80 - 120	0	01/12/23 11:59	1	

Lab Sample ID: LCS 580-415225/7

**Matrix: Water** 

Analysis Batch: 415225

**Client Sample ID: Lab Control Sample** 

Prep Type: Total/NA

	Spike	LCS	LCS				%Rec	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Benzene	10.0	9.58		ug/L		96	80 - 122	
Toluene	10.0	10.3		ug/L		103	80 - 120	
Ethylbenzene	10.0	10.4		ug/L		104	80 - 120	
m-Xylene & p-Xylene	10.0	10.5		ug/L		105	80 - 120	
o-Xvlene	10.0	10.2		ua/L		102	80 - 120	

LCS LCS

Surrogate	%Recovery	Qualifier	Limits	
Toluene-d8 (Surr)	101		80 - 120	
1,2-Dichloroethane-d4 (Surr)	102		80 - 120	
4-Bromofluorobenzene (Surr)	95		80 - 120	
Dibromofluoromethane (Surr)	92		80 - 120	

Client: AECOM Job ID: 580-121898-1

Project/Site: Red Hill NPDES CV22F0106

## Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 580-415225/8

**Matrix: Water** 

**Analysis Batch: 415225** 

<b>Client Sample I</b>	ID: Lab	<b>Control</b>	Sample I	Dup
		Pron Ty	me: Total	/N/A

	Spike	LCSD	LCSD				%Rec		RPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Benzene	10.0	9.79		ug/L		98	80 - 122	2	14
Toluene	10.0	10.4		ug/L		104	80 - 120	0	13
Ethylbenzene	10.0	10.2		ug/L		102	80 - 120	2	14
m-Xylene & p-Xylene	10.0	10.3		ug/L		103	80 - 120	2	14
o-Xylene	10.0	9.94		ug/L		99	80 - 120	3	16

LCSD LCSD

Surrogate	%Recovery	Qualifier	Limits
Toluene-d8 (Surr)	103		80 - 120
1,2-Dichloroethane-d4 (Surr)	105		80 - 120
4-Bromofluorobenzene (Surr)	91		80 - 120
Dibromofluoromethane (Surr)	90		80 - 120

## Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM)

Lab Sample ID: MB 580-414917/1-A

**Matrix: Water** 

Analysis Batch: 415049

**Client Sample ID: Method Blank** 

**Prep Type: Total/NA** 

**Prep Batch: 414917** 

•	MB	MB						•	
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	0.16	U	0.50	0.16	ug/L		01/10/23 10:58	01/11/23 04:32	1
2-Methylnaphthalene	0.039	U	0.20	0.039	ug/L		01/10/23 10:58	01/11/23 04:32	1
1-Methylnaphthalene	0.033	U	0.10	0.033	ug/L		01/10/23 10:58	01/11/23 04:32	1

MB MB

Surrogate	%Recovery Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4,6-Tribromophenol	70	29 - 144	01/10/23 10:58	)1/11/23 04:32	1
Terphenyl-d14	93	29 - 150	01/10/23 10:58 (	)1/11/23 04:32	1
2-methylnaphthalene-d10	66	35 - 120	01/10/23 10:58 (	)1/11/23 04:32	1
Fluoranthene-d10 (Surr)	81	49 - 129	01/10/23 10:58 (	01/11/23 04:32	1

Lab Sample ID: LCS 580-414917/2-A

**Matrix: Water** 

**Analysis Batch: 415049** 

**Client Sample ID: Lab Control Sample** 

**Prep Type: Total/NA** 

**Prep Batch: 414917** 

	Spike	LCS	LCS				%Rec	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Naphthalene	8.00	4.43		ug/L		55	34 - 120	
2-Methylnaphthalene	8.00	4.44		ug/L		55	33 - 120	
1-Methylnaphthalene	8.00	4.48		ug/L		56	29 - 120	

LCS LCS

Surrogate	%Recovery	Qualifier	Limits
2,4,6-Tribromophenol	90		29 - 144
Terphenyl-d14	92		29 - 150
2-methylnaphthalene-d10	71		35 - 120
Fluoranthene-d10 (Surr)	83		49 - 129

Job ID: 580-121898-1

Client: AECOM Project/Site: Red Hill NPDES CV22F0106

## Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Lab Sample ID: LCSD 580-414917/3-A

**Matrix: Water** 

Analysis Batch: 415049

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

**Prep Batch: 414917** %Rec **RPD** %Rec Limits RPD Limit 35

Spike LCSD LCSD Added Result Qualifier Analyte Unit Naphthalene 8.00 4.22 ug/L 53 34 - 120 5 2-Methylnaphthalene 8.00 4.27 ug/L 53 33 - 120 35 8.00 4.31 54 35 1-Methylnaphthalene ug/L 29 - 120

LCSD LCSD Surrogate %Recovery Qualifier Limits 2,4,6-Tribromophenol 80 29 - 144 83 29 - 150 Terphenyl-d14 2-methylnaphthalene-d10 64 35 - 120 74 Fluoranthene-d10 (Surr) 49 - 129

## Method: 8015D - Diesel Range Organics (DRO) (GC)

Lab Sample ID: MB 580-414866/1-A

**Matrix: Water** 

**Analysis Batch: 415288** 

**Client Sample ID: Method Blank** 

Prep Type: Total/NA

**Prep Batch: 414866** 

	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C9-C25	90	U	110	90	ug/L		01/10/23 07:31	01/12/23 18:13	1
C24-C40	180	U	200	180	ug/L		01/10/23 07:31	01/12/23 18:13	1
	МВ	MB							
Curromoto	% Pocovory	Qualifier	Limite				Dronarod	Analyzod	Dil Esc

Surrogate %Recovery Qualifier Limits Prepared Analyzed Dil Fac 01/10/23 07:31 01/12/23 18:13 53 - 120 o-Terphenyl 66

Lab Sample ID: LCS 580-414866/2-A

**Matrix: Water** 

**Analysis Batch: 415288** 

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

**Prep Batch: 414866** 

LCS LCS %Rec Spike Added Result Qualifier Limits D %Rec Analyte Unit C9-C25 4000 3720 ug/L 93 55 - 134 C24-C40 4000 3940 ug/L 98 36 - 143

Spike

LCS LCS Surrogate %Recovery Qualifier Limits 53 - 120 o-Terphenyl 99

Lab Sample ID: LCSD 580-414866/3-A

**Matrix: Water** 

**Analysis Batch: 415288** 

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA **Prep Batch: 414866** 

**RPD** %Rec Limits RPD Limit

**Analyte** Added Result Qualifier Unit D %Rec C9-C25 4000 3690 ug/L 92 55 - 134 26 C24-C40 4000 3980 ug/L 99 36 - 143 24

LCSD LCSD

LCSD LCSD Surrogate %Recovery Qualifier Limits 99 53 - 120 o-Terphenyl

### Client: AECOM Project/Site: Red Hill NPDES CV22F0106

Method: 6010D - Metals (ICP)

Lab Sample ID: MB 580-414770/15-A

**Matrix: Water** 

Analysis Batch: 414908

Client Sample ID: Method Blank **Prep Type: Total Recoverable Prep Batch: 414770** MB MB

Result Qualifier RL **MDL** Unit Analyzed Dil Fac Analyte Prepared 30 2.7 ug/L 01/06/23 17:18 01/09/23 19:09 Lead 2.7 U

Lab Sample ID: LCS 580-414770/16-A

**Matrix: Water** 

**Matrix: Water** 

Lead

Analyte

Lead

Lead

Lead

**Analysis Batch: 414908** 

Lab Sample ID: LCSD 580-414770/17-A

Analyte

Sample Sample

47 J

Sample Sample

4.7 J

Sample Sample

47 J

Result Qualifier

MR MR

Result Qualifier

Spike Added 1000

Spike

Added

1000

Spike

Added

1000

Spike

Added

1000

Result Qualifier 993

1010

1030

1040

MS MS

MSD MSD

DU DU

2.7 U

Result Qualifier

MDL Unit

0.81 ug/L

Result Qualifier

Result Qualifier

LCS LCS

LCSD LCSD

Unit

ug/L

Unit

ug/L

Unit

ug/L

D

**Prepared** 

Unit

ug/L

Unit ug/L

%Rec

D %Rec

99

80 - 120 Client Sample ID: RHS-EF-TRAIN-02-010423-N

Lab Sample ID: 580-121898-2 MS

**Matrix: Water** 

**Analysis Batch: 414908** 

**Analysis Batch: 414908** 

Analyte Result Qualifier Lead

Lab Sample ID: 580-121898-2 MSD **Matrix: Water** 

Analysis Batch: 414908

Analyte

Lab Sample ID: 580-121898-2 DU **Matrix: Water** 

**Analysis Batch: 414908** 

Analyte

Method: 939-M - Organic Lead (GFAA)

Lab Sample ID: MB 280-599039/1-B **Matrix: Water** 

**Analysis Batch: 599046** 

Result Qualifier Lead, Total Organic 0.81 U

Client Sample ID: Lab Control Sample Dup **Prep Type: Total Recoverable** 

Result Qualifier

**Prep Type: Total Recoverable** Prep Batch: 414770

%Rec %Rec Limits 103

Client Sample ID: Lab Control Sample

%Rec

Limits

80 - 120

%Rec

Limits

**Prep Type: Total Recoverable** 

**Prep Batch: 414770** 

**Prep Batch: 414770** 

RPD

**RPD** 

Limit

Client Sample ID: RHS-EF-TRAIN-02-010423-N **Prep Type: Total Recoverable** 

**Prep Batch: 414770** %Rec **RPD** 

Limits %Rec Limit 80 - 120 104

Client Sample ID: RHS-EF-TRAIN-02-010423-N

**Prep Type: Total Recoverable** 

Prep Batch: 414770 **RPD** 

**RPD** Limit NC 20

Client Sample ID: Method Blank

01/10/23 16:30 01/10/23 20:08

Prep Type: Total/NA **Prep Batch: 599039** 

Analyzed Dil Fac

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RL

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# **QC Sample Results**

Client: AECOM Job ID: 580-121898-1

Project/Site: Red Hill NPDES CV22F0106

Method: 939-M - Organic Lead (GFAA) (Continued)

Lab Sample ID: LCS 280-599039/2-B				Clie	nt Sar	nple ID	: Lab Control Sample
Matrix: Water							Prep Type: Total/NA
Analysis Batch: 599046							<b>Prep Batch: 599039</b>
	Spike	LCS	LCS				%Rec
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits
Lead, Total Organic	15.0	14.3		ug/L		95	80 - 120

Lab Sample ID: 580-121898 Matrix: Water Analysis Batch: 599046		Clie	nt Samp	le ID:	RHS-E	F-TRAIN-02-010423-N Prep Type: Total/NA Prep Batch: 599039			
•	Sample	Sample	Spike	MS	MS				%Rec
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits
Lead, Total Organic	0.81	U	15.0	14.8		ug/L		99	80 - 120

Lab Sample ID: 580-12189	ab Sample ID: 580-121898-2 MSD							RHS-E	F-TRAIN-	02-0104	123-N
Matrix: Water									<b>Prep Ty</b>	pe: Tot	al/NA
Analysis Batch: 599046									Prep Ba	atch: 59	99039
-	Sample	Sample	Spike	MSD	MSD				%Rec		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Lead, Total Organic	0.81	U	15.0	14.8		ug/L		99	80 - 120		20

1/18/2023

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Job ID: 580-121898-1

Project/Site: Red Hill NPDES CV22F0106

Client Sample ID: RHS-FB-TRAIN-02-010423-N

Date Collected: 01/04/23 10:45 Date Received: 01/05/23 09:20

Client: AECOM

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Analysis	8260B/CA_LUFTMS		1	415134	JJY	EET SEA	01/11/23 20:36
Total/NA	Analysis	8260D		1	415139	BNM	EET SEA	01/11/23 20:36

Client Sample ID: RHS-EF-TRAIN-02-010423-N

Date Collected: 01/04/23 10:50 Date Received: 01/05/23 09:20

Lab Sample ID: 580-121898-2

Lab Sample ID: 580-121898-1

**Matrix: Water** 

**Matrix: Water** 

_	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Analysis	8260B/CA_LUFTMS		1	415134	JJY	EET SEA	01/11/23 21:01
Total/NA	Analysis	8260D		1	415139	BNM	EET SEA	01/11/23 21:01
Total/NA	Prep	3510C			414917	KLW	EET SEA	01/10/23 10:58
Total/NA	Analysis	8270E SIM		1	415049	JSM	EET SEA	01/11/23 07:44
Total/NA	Prep	3510C			414866	KLW	EET SEA	01/10/23 07:31
Total/NA	Analysis	8015D		1	415288	KLW	EET SEA	01/12/23 19:10
Total Recoverable	Prep	3005A			414770	JL	EET SEA	01/06/23 17:18
Total Recoverable	Analysis	6010D		1	414908	JLS	EET SEA	01/09/23 19:19
Total/NA	Prep	939M			599039	LRD	EET DEN	01/10/23 16:30
Total/NA	Prep	939M			599040	LRD	EET DEN	01/10/23 17:15
Total/NA	Analysis	939-M		1	599046	LRD	EET DEN	01/10/23 20:23

Client Sample ID: RHS-IF-TRAIN-02-010423-N

Date Collected: 01/04/23 11:10

Date Received: 01/05/23 09:20

Lab Sample ID: 580-121898-3

Lab Sample ID: 580-121898-4

**Matrix: Water** 

**Matrix: Water** 

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Analysis	8260B/CA_LUFTMS			415134	JJY	EET SEA	01/11/23 21:25
Total/NA	Analysis	8260D		1	415139	BNM	EET SEA	01/11/23 21:25
Total/NA	Prep	3510C			414866	KLW	EET SEA	01/10/23 07:31
Total/NA	Analysis	8015D		1	415288	KLW	EET SEA	01/12/23 19:28

Client Sample ID: RHS-EF-TRAIN-02-010423-(01)-N

Date Collected: 01/04/23 10:50

Date Received: 01/05/23 09:20

Prep Type Total/NA	Batch Type Analysis	Batch Method 8260B/CA_LUFTMS	Run	Dilution Factor 1	Batch Number 415220	Analyst BNM	Lab EET SEA	<b>Prepared or Analyzed</b> 01/12/23 14:03
Total/NA	Analysis	8260D		1	415225	BNM	EET SEA	01/12/23 14:03
Total/NA Total/NA	Prep Analysis	3510C 8270E SIM		1	414917 415049		EET SEA EET SEA	01/10/23 10:58 01/11/23 08:09
Total/NA Total/NA	Prep Analysis	3510C 8015D		1	414866 415288		EET SEA EET SEA	01/10/23 07:31 01/12/23 19:47
Total Recoverable Total Recoverable	Prep Analysis	3005A 6010D		1	414770 414908		EET SEA EET SEA	01/06/23 17:18 01/09/23 19:39

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#### **Lab Chronicle**

Client: AECOM Job ID: 580-121898-1

Project/Site: Red Hill NPDES CV22F0106

Client Sample ID: RHS-EF-TRAIN-02-010423-(01)-N

Lab Sample ID: 580-121898-4

Date Collected: 01/04/23 10:50 **Matrix: Water** Date Received: 01/05/23 09:20

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	939M			599039	LRD	EET DEN	01/10/23 16:30
Total/NA	Prep	939M			599040	LRD	EET DEN	01/10/23 17:15
Total/NA	Analysis	939-M		1	599046	LRD	EET DEN	01/10/23 20:46

Client Sample ID: RHS-IF-TRAIN-02-010423-(01)-N

Lab Sample ID: 580-121898-5

Date Collected: 01/04/23 11:10 **Matrix: Water** Date Received: 01/05/23 09:20

_	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Туре	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Analysis	8260B/CA_LUFTMS		1	415134	JJY	EET SEA	01/11/23 22:14
Total/NA	Analysis	8260D		1	415139	BNM	EET SEA	01/11/23 22:14
Total/NA	Prep	3510C			414866	KLW	EET SEA	01/10/23 07:31
Total/NA	Analysis	8015D		1	415288	KLW	EET SEA	01/12/23 20:06

**Laboratory References:** 

EET DEN = Eurofins Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100 EET SEA = Eurofins Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

# **Accreditation/Certification Summary**

Client: AECOM Job ID: 580-121898-1

Project/Site: Red Hill NPDES CV22F0106

## **Laboratory: Eurofins Seattle**

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
ANAB	Dept. of Defense ELAP	L2236	01-19-25

## **Laboratory: Eurofins Denver**

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

Authority		Program	Identification Number	Expiration Date
A2LA		Dept. of Defense ELAP	2907.01	10-31-23
The following analyte the agency does not		eport, but the laboratory is not	certified by the governing authority.	This list may include analytes for which
Analysis Method	Prep Method	Matrix	Analyte	
939-M	939M	Water	Lead, Total Organic	

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# **Sample Summary**

Client: AECOM Job ID: 580-121898-1

Project/Site: Red Hill NPDES CV22F0106

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-121898-1	RHS-FB-TRAIN-02-010423-N	Water	01/04/23 10:45	01/05/23 09:20
580-121898-2	RHS-EF-TRAIN-02-010423-N	Water	01/04/23 10:50	01/05/23 09:20
580-121898-3	RHS-IF-TRAIN-02-010423-N	Water	01/04/23 11:10	01/05/23 09:20
580-121898-4	RHS-EF-TRAIN-02-010423-(01)-N	Water	01/04/23 10:50	01/05/23 09:20
580-121898-5	RHS-IF-TRAIN-02-010423-(01)-N	Water	01/04/23 11:10	01/05/23 09:20

# **Chain of Custody Record**

💸 eurofins

Environment Testing America

Client Information	Sampler: AECOM				Lab PM: Elaine V	/alker							Carrie Fedi	er Trac	king N	vo(s):			COC	No:	الانداد	84 O O C C		
Client Contact: Alethea Ramos (alternate: Margie Pascua)	Phone:				E-Mail:	*		State of 0						of Orig	of Origin:					20230104 NPDES - SEA-O				
Company:	<u> </u>		PWSID:		vi. claine	.vvaik	er(a)	<u></u> uro1				Hawaii Page 1 of 1												
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1001 Bishop St. Suite 1600	see subcontrac	ct																		servation	Code			
City: Honolulu	TAT Requested (	TAT Requested (days): 7 days																		viaOH		M - Hexan N - None		
State, Zip: Hawaii 96813	Compliance Proje	·																	D - 1	Zn Acetate Vitric Acid		O - AsNa0 P - Na2O4	S	
Phone:	PO #:	Compliance Project: A Yes A No											İ						F٠٨	√aHSO4 ∕leOH		Q - Na2SC R - Na2S2		
808-521-3051 (direct: 808-529-7283) (alternate: 808-356-5373) Email:	WO #:				<u> </u>	9-H		thale							1					Amchlor Ascorbic Ad		S - H2SO4 T - TSP Do		vdrate
alethea.ramos@aecom.com (alternate: margie.pascua@aecom.com)	WO #.				5	9 2		Inaph								İ			I − Ic J − D	e I Water		U - Aceton V - MCAA		•
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Ver: 01/16/2019

## **Eurofins FGS, Seattle**

5755 8th Street East Tacoma, WA 98424

# **Chain of Custody Record**

eurofins

Environment Testing America

	Sampler: Lab PM												Ca	rrier Tr	ocking	a Note	1-			COC No:			
Client Information	AECOM			E	Elaine \	ne Walker Fe							dEx	denny	y Nota	.).			2023 0104 NPDES - SEA - OI			-01	
Client Contact: Alethea Ramos (alternate: Margie Pascua)	Phone:				-Mail: //.Elain	e.Wa	alker	@Eu	rofins	sET.	com			te of O waii	rigin:					Page: Page 1 of 1	<u> </u>	i	-
Company: AECOM		PWSID:				Analysis							Requested							Job #:	****		
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1001 Bishop St. Suite 1600	see subcontrac																	ı		A - HCL	M - Hexai	ne	
City: Honolulu State, Zip:	TAT Requested (d			ĺ			İ										B - NaOH C - Zn Acetate	N - None O - AsNal	O2				
Hawaii 96813	Compliance Proje			8260		. l	-										D - Nitric Acid E - NaHSO4 F - MeOH	P - Na2O O - Na2S R - Na2S	O3				
Phone: 808-521-3051 (direct: 808-529-7283) (alternate: 808-356-5373) Email:	PO #:			Hg by		ne, 1-metnyinaphihalene, lene) by 8270SIM											G - Amchlor H - Ascorbic Acid	S - H2SO T - TSP D	4	drate			
alethea.ramos@aecom.com (alternate: margie.pascua@aecom.com)	WO#:	8 or h	101	d Pue	Hand	70SIM											I - Ice J - DI Water	U - Acetor V - MCAA	ne				
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Site: RHSF	SSOW#:				Samp		y 3050	8015 halone 1	alene)	y 939M	lead by 6010B							10	8	Other:			
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Ver: 01/16/2019

Client: AECOM Job Number: 580-121898-1

Login Number: 121898 List Source: Eurofins Seattle

List Number: 1

Creator: Preslev. Kim A

Creator: Presley, Kim A		
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.	False	Refer to Job Narrative for details.
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.	True	
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").	False	Narrative to indicate if headspace container used for analysis.
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Client: AECOM Job Number: 580-121898-1

Login Number: 121898
List Source: Eurofins Denver
List Number: 2
List Creation: 01/07/23 02:57 PM

Creator: Rystrom, Joshua R

oreator. Rystrom, Joshua K		
Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>True</td> <td></td>	True	
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?	N/A	
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").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

# \_\_\_\_

# PREPARED FOR

**ANALYTICAL REPORT** 

Attn: Kathryn Repine AECOM 1001 Bishop Street Honolulu, Hawaii 96813 Generated 1/27/2023 1:08:01 PM

# **JOB DESCRIPTION**

Red Hill NPDES CV22F0106

# **JOB NUMBER**

580-122146-1

Eurofins Seattle 5755 8th Street East Tacoma WA 98424



# **Eurofins Seattle**

### **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**

M. Elaine Walker

Generated 1/27/2023 1:08:01 PM

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 NPDES CV22F0106

Laboratory Job ID: 580-122146-1

# **Table of Contents**

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Case Narrative	4
Definitions	
Client Sample Results	7
QC Sample Results	10
Chronicle	15
Certification Summary	16
Sample Summary	17
Chain of Custody	18
Receipt Checklists	20

#### **Case Narrative**

Client: AECOM Job ID: 580-122146-1

Project/Site: Red Hill NPDES CV22F0106

Job ID: 580-122146-1

**Laboratory: Eurofins Seattle** 

**Narrative** 

CASE NARRATIVE
Client: AECOM
Project: Red Hill NPDES CV22F0106
Report Number: 580-122146-1

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 1/12/2023 9:40 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.

#### **GASOLINE RANGE ORGANICS (GRO)**

Samples RHS-FB-TRAIN-03-011123-N (580-122146-1), RHS-EF-TRAIN-03-011123-N (580-122146-2) and RHS-IF-TRAIN-03-011123-N (580-122146-3) were analyzed for gasoline range organics (GRO) in accordance with CA\_LUFT\_GRO. The samples were analyzed on 01/17/2023.

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

#### **VOLATILE ORGANIC COMPOUNDS (GC-MS)**

Samples RHS-FB-TRAIN-03-011123-N (580-122146-1), RHS-EF-TRAIN-03-011123-N (580-122146-2) and RHS-IF-TRAIN-03-011123-N (580-122146-3) were analyzed for volatile organic compounds (GC-MS) in accordance with 8260C. The samples were analyzed on 01/17/2023.

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

#### SEMIVOLATILE ORGANIC COMPOUNDS - SELECTED ION MODE (SIM)

Sample RHS-EF-TRAIN-03-011123-N (580-122146-2) was analyzed for semivolatile organic compounds - Selected Ion Mode (SIM) in accordance with 8270E SIM. The sample was prepared on 01/17/2023 and analyzed on 01/19/2023.

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

#### **DIESEL AND EXTENDED RANGE ORGANICS**

Samples RHS-EF-TRAIN-03-011123-N (580-122146-2) and RHS-IF-TRAIN-03-011123-N (580-122146-3) were analyzed for diesel and extended range organics in accordance with 8015D. The samples were prepared on 01/17/2023 and analyzed on 01/18/2023.

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

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#### **Case Narrative**

Client: AECOM Job ID: 580-122146-1

Project/Site: Red Hill NPDES CV22F0106

Job ID: 580-122146-1 (Continued)

**Laboratory: Eurofins Seattle (Continued)** 

#### **METALS (ICP)**

Sample RHS-EF-TRAIN-03-011123-N (580-122146-2) was analyzed for Metals (ICP) in accordance with 6010D. The sample was prepared on 01/12/2023 and analyzed on 01/13/2023.

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

#### **ORGANIC LEAD**

Sample RHS-EF-TRAIN-03-011123-N (580-122146-2) was analyzed for Organic Lead in accordance with 939M. The sample was prepared and analyzed on 01/16/2023.

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: 580-122146-1

Project/Site: Red Hill NPDES CV22F0106

**Qualifiers** 

**GC/MS VOA** 

U Indicates the analyte was analyzed for but not detected.

GC/MS Semi VOA

U Indicates the analyte was analyzed for but not detected.

GC Semi VOA

U Indicates the analyte was analyzed for but not detected.

**Metals** 

Qualifier Description

J Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

U Indicates the analyte was analyzed for but not detected.

**Glossary** 

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

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

**Eurofins Seattle** 

Page 6 of 21 1/27/2023

Client: AECOM Job ID: 580-122146-1

Project/Site: Red Hill NPDES CV22F0106

Date Received: 01/12/23 09:40

Dibromofluoromethane (Surr)

Client Sample ID: RHS-FB-TRAIN-03-011123-N

96

Date Collected: 01/11/23 08:30

Lab Sample ID: 580-122146-1 **Matrix: Water** 

01/17/23 05:59

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (C6-C12)	31	U	100	31	ug/L			01/17/23 05:59	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	94		78 - 120					01/17/23 05:59	1
- Method: SW846 8260D - Vola	tile Organic	Compound	ds by GC/MS						
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.24	U	1.0	0.24	ug/L			01/17/23 05:59	1
Toluene	0.39	U	1.0	0.39	ug/L			01/17/23 05:59	1
Ethylbenzene	0.50	U	1.0	0.50	ug/L			01/17/23 05:59	1
m-Xylene & p-Xylene	0.53	U	2.0	0.53	ug/L			01/17/23 05:59	1
o-Xylene	0.39	U	1.0	0.39	ug/L			01/17/23 05:59	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	101		80 - 120			-		01/17/23 05:59	1
1,2-Dichloroethane-d4 (Surr)	93		80 - 120					01/17/23 05:59	1
4-Bromofluorobenzene (Surr)	94		80 - 120					01/17/23 05:59	1

80 - 120

1/27/2023

Client: AECOM Job ID: 580-122146-1

Project/Site: Red Hill NPDES CV22F0106

Client Sample ID: RHS-EF-TRAIN-03-011123-N

Date Collected: 01/11/23 08:35 Date Received: 01/12/23 09:40

2-methylnaphthalene-d10

Fluoranthene-d10 (Surr)

**Analyte** 

Lead

Lab Sample ID: 580-122146-2

01/17/23 11:52 01/19/23 03:44

01/17/23 11:52 01/19/23 03:44

01/12/23 16:12 01/13/23 17:05

Analyzed

Prepared

**Matrix: Water** 

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (C6-C12)	31	U	100	31	ug/L			01/17/23 06:47	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	95		78 - 120					01/17/23 06:47	1
Method: SW846 8260D - Vola	tile Organic	Compound	ds by GC/MS						
		Compound Qualifier	ds by GC/MS RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Analyte		Qualifier	•	MDL	Unit ug/L	<u>D</u> .	Prepared	Analyzed 01/17/23 06:47	Dil Fac
Method: SW846 8260D - Vola Analyte Benzene Toluene	Result	Qualifier U	RL	MDL	ug/L	<u> </u>	Prepared		Dil Fac
Analyte Benzene	Result 0.24	Qualifier U U	RL 1.0	MDL 0.24	ug/L ug/L	<u> </u>	Prepared	01/17/23 06:47	Dil Fac 1 1 1
Analyte Benzene Toluene	0.24 0.39	Qualifier U U U	1.0 1.0	0.24 0.39	ug/L ug/L ug/L	<u>D</u> .	Prepared	01/17/23 06:47 01/17/23 06:47	Dil Fac 1 1 1 1

Surrogate	%Recovery	Qualifier	Limits	Prepared Analyzed	Dil Fac
Toluene-d8 (Surr)	102		80 - 120	01/17/23 06:47	1
1,2-Dichloroethane-d4 (Surr)	93		80 - 120	01/17/23 06:47	1
4-Bromofluorobenzene (Surr)	95		80 - 120	01/17/23 06:47	1
Dibromofluoromethane (Surr)	94		80 - 120	01/17/23 06:47	1

Method: SW846 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM)

81

106

Result Qualifier

4.2 J

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	0.16	U	0.50	0.16	ug/L		01/17/23 11:52	01/19/23 03:44	1
2-Methylnaphthalene	0.039	U	0.20	0.039	ug/L		01/17/23 11:52	01/19/23 03:44	1
1-Methylnaphthalene	0.033	U	0.10	0.033	ug/L		01/17/23 11:52	01/19/23 03:44	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
2,4,6-Tribromophenol	91		29 - 144				01/17/23 11:52	01/19/23 03:44	1
Terphenyl-d14	110		29 - 150				01/17/23 11:52	01/19/23 03:44	1

35 - 120

49 - 129

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C9-C25	91	U	110	91	ug/L		01/17/23 11:22	01/18/23 05:51	1
C24-C40	180	U	200	180	ug/L		01/17/23 11:22	01/18/23 05:51	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
o-Terphenyl			53 - 120				01/17/23 11:22	01/18/23 05:51	1

Method: CADHS 939-M - Org	anic Lead (GFAA)							
Analyte	Result Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead, Total Organic	2.4 J	2.5	0.81	ug/L		01/16/23 15:45	01/16/23 19:30	1

RL

30

MDL Unit

2.7 ug/L

Dil Fac

Client: AECOM Job ID: 580-122146-1

Project/Site: Red Hill NPDES CV22F0106

Date Received: 01/12/23 09:40

Client Sample ID: RHS-IF-TRAIN-03-011123-N

Date Collected: 01/11/23 09:05

Lab Sample ID: 580-122146-3

**Matrix: Water** 

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (C6-C12)	31	U	100	31	ug/L			01/17/23 07:12	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	92		78 - 120					01/17/23 07:12	1

Method: SW846 8260D - Vo	latile Organic	Compound	ds by GC/MS						
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.24	U	1.0	0.24	ug/L			01/17/23 07:12	1
Toluene	0.39	U	1.0	0.39	ug/L			01/17/23 07:12	1
Ethylbenzene	0.50	U	1.0	0.50	ug/L			01/17/23 07:12	1
m-Xylene & p-Xylene	0.53	U	2.0	0.53	ug/L			01/17/23 07:12	1
o-Xylene	0.39	U	1.0	0.39	ug/L			01/17/23 07:12	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	101		80 - 120			-		01/17/23 07:12	1
1,2-Dichloroethane-d4 (Surr)	95		80 - 120					01/17/23 07:12	1
4-Bromofluorobenzene (Surr)	92		80 - 120					01/17/23 07:12	1
Dibromofluoromethane (Surr)	93		80 - 120					01/17/23 07:12	1

Method: SW846 8015	D - Diesel Range Or	ganics (DF	RO) (GC)						
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C9-C25	91	U	110	91	ug/L		01/17/23 11:22	01/18/23 06:10	1
C24-C40	180	U	200	180	ug/L		01/17/23 11:22	01/18/23 06:10	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
a Tambanul			F2 120				04/47/00 44:00	04/49/02 06:40	

Surrogate	/onecovery	Qualifier	Liiiii	riepareu Alialyzeu	DII Fac
o-Terphenyl	70		53 - 120	01/17/23 11:22 01/18/23 06:10	1

1/27/2023

Job ID: 580-122146-1

Project/Site: Red Hill NPDES CV22F0106

Method: 8260B/CA LUFTMS - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 580-415538/5

**Matrix: Water** 

Analyte

Client: AECOM

Analysis Batch: 415538

Gasoline Range Organics (C6-C12)

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

MB MB Result Qualifier RL **MDL** Unit Analyzed Dil Fac D Prepared 100 31 ug/L 01/17/23 02:20

31 U MB MB

Surrogate %Recovery Qualifier Limits Prepared Analyzed Dil Fac 78 - 120 4-Bromofluorobenzene (Surr) 91 01/17/23 02:20

Lab Sample ID: LCS 580-415538/8 **Client Sample ID: Lab Control Sample** Prep Type: Total/NA

**Matrix: Water** 

Analysis Batch: 415538

LCS LCS Spike %Rec Analyte Added Result Qualifier Unit %Rec Limits Gasoline Range Organics 1000 932 ug/L 93 75 - 127

(C6-C12)

LCS LCS

Limits Surrogate %Recovery Qualifier 4-Bromofluorobenzene (Surr) 78 - 120 98

Lab Sample ID: LCSD 580-415538/9 Client Sample ID: Lab Control Sample Dup Prep Type: Total/NA

**Matrix: Water** 

Analysis Batch: 415538

LCSD LCSD **RPD** Spike %Rec Added Analyte Result Qualifier Unit D %Rec Limits **RPD** Limit 1000 Gasoline Range Organics 901 ug/L 90 75 - 127

(C6-C12)

LCSD LCSD

Surrogate %Recovery Qualifier Limits

4-Bromofluorobenzene (Surr) 96 78 - 120

Method: 8260D - Volatile Organic Compounds by GC/MS

Analysis Batch: 415544

Lab Sample ID: MB 580-415544/5 **Client Sample ID: Method Blank Matrix: Water Prep Type: Total/NA** 

MR MR Analyte Result Qualifier RL **MDL** Unit D Prepared Analyzed Dil Fac Benzene 0.24 U 1.0 0.24 ug/L 01/17/23 02:20 Toluene 0.39 U 1.0 0.39 ug/L 01/17/23 02:20 Ethylbenzene 0.50 U 1.0 0.50 ug/L 01/17/23 02:20 m-Xylene & p-Xylene 0.53 U 2.0 0.53 ug/L 01/17/23 02:20 0.39 ug/L o-Xylene 0.39 U 1.0 01/17/23 02:20

	MB MB				
Surrogate	%Recovery Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	105	80 - 120		01/17/23 02:20	1
1,2-Dichloroethane-d4 (Surr)	96	80 - 120		01/17/23 02:20	1
4-Bromofluorobenzene (Surr)	91	80 - 120		01/17/23 02:20	1
Dibromofluoromethane (Surr)	95	80 - 120		01/17/23 02:20	1

Client: AECOM Job ID: 580-122146-1

Project/Site: Red Hill NPDES CV22F0106

## Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 580-415544/6

**Matrix: Water** 

Analysis Batch: 415544

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

Spike LCS LCS %Rec Analyte Added Result Qualifier Unit D %Rec Limits Benzene 10.0 10.7 ug/L 107 80 - 122 Toluene 10.0 10.2 ug/L 102 80 - 120 Ethylbenzene 10.0 9.94 80 - 120 ug/L 99 m-Xylene & p-Xylene 10.0 9.89 99 80 - 120 ug/L 10.0 98 o-Xylene 9.81 ug/L 80 - 120

LCS LCS

Surrogate	%Recovery	Qualifier	Limits
Toluene-d8 (Surr)	100		80 - 120
1,2-Dichloroethane-d4 (Surr)	93		80 - 120
4-Bromofluorobenzene (Surr)	98		80 - 120
Dibromofluoromethane (Surr)	98		80 - 120

Lab Sample ID: LCSD 580-415544/7

**Matrix: Water** 

**Analysis Batch: 415544** 

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

LCSD LCSD RPD Spike %Rec Analyte Added Result Qualifier Unit D %Rec Limits RPD Limit Benzene 10.0 10.8 ug/L 108 80 - 122 14 Toluene 10.0 10.6 13 ug/L 106 80 - 120 10.1 Ethylbenzene 10.0 ug/L 101 80 - 120 14 m-Xylene & p-Xylene 10.0 10.0 100 80 - 120 14 ug/L 102 o-Xylene 10.0 10.2 ug/L 80 - 120 16

LCSD LCSD

Surrogate	%Recovery	Qualifier	Limits
Toluene-d8 (Surr)	101		80 - 120
1,2-Dichloroethane-d4 (Surr)	91		80 - 120
4-Bromofluorobenzene (Surr)	97		80 - 120
Dibromofluoromethane (Surr)	97		80 - 120

### Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM)

Lab Sample ID: MB 580-415586/1-A

**Matrix: Water** 

**Analysis Batch: 415812** 

Client Sample ID: Method Blank

Prep Type: Total/NA

**Prep Batch: 415586** 

MB MB Analyte Result Qualifier RL MDL Unit Prepared Analyzed Dil Fac Naphthalene 0.16 U 0.50 0.16 ug/L 01/17/23 11:52 01/18/23 20:13 2-Methylnaphthalene 0.039 U 0.20 0.039 ug/L 01/17/23 11:52 01/18/23 20:13 1-Methylnaphthalene 0.033 U 0.10 0.033 ug/L 01/17/23 11:52 01/18/23 20:13

MB MB

Surrogate	%Recovery G	Qualifier L	imits	Prepared	Analyzed	Dil Fac
2,4,6-Tribromophenol	76	2	9 - 144	01/17/23 11:52	01/18/23 20:13	1
Terphenyl-d14	102	2	9 - 150	01/17/23 11:52	01/18/23 20:13	1
2-methylnaphthalene-d10	81	3	5 - 120	01/17/23 11:52	01/18/23 20:13	1
Fluoranthene-d10 (Surr)	98	4	9 - 129	01/17/23 11:52	01/18/23 20:13	1

**Eurofins Seattle** 

1/27/2023

Client: AECOM Job ID: 580-122146-1

Project/Site: Red Hill NPDES CV22F0106

#### Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Lab Sample ID: LCS 580-415586/2-A

**Matrix: Water** 

**Analysis Batch: 415812** 

**Client Sample ID: Lab Control Sample** 

**Prep Type: Total/NA** 

**Prep Batch: 415586** 

	Spike	LCS	LCS				%Rec	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Naphthalene	8.00	5.12		ug/L		64	34 - 120	
2-Methylnaphthalene	8.00	5.35		ug/L		67	33 - 120	
1-Methylnaphthalene	8.00	5.12		ug/L		64	29 - 120	

LCS LCS

Surrogate	%Recovery	Qualifier	Limits
2,4,6-Tribromophenol	80		29 - 144
Terphenyl-d14	91		29 - 150
2-methylnaphthalene-d10	76		35 - 120
Fluoranthene-d10 (Surr)	87		49 - 129

Client Sample ID: Lab Control Sample Dup

**Matrix: Water** 

Analysis Batch: 415812

Lab Sample ID: LCSD 580-415586/3-A

Prep Type: Total/NA

**Prep Batch: 415586** 

	Spike	LCSD	LCSD				%Rec		RPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Naphthalene	8.00	5.08		ug/L		64	34 - 120	1	35
2-Methylnaphthalene	8.00	5.35		ug/L		67	33 - 120	0	35
1-Methylnaphthalene	8.00	5.11		ug/L		64	29 - 120	0	35

LCSD LCSD

Surrogate	%Recovery	Qualifier	Limits
2,4,6-Tribromophenol	81		29 - 144
Terphenyl-d14	92		29 - 150
2-methylnaphthalene-d10	73		35 - 120
Fluoranthene-d10 (Surr)	89		49 - 129

#### Method: 8015D - Diesel Range Organics (DRO) (GC)

Lab Sample ID: MB 580-415581/1-A

**Matrix: Water** 

**Analysis Batch: 415673** 

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

**Prep Batch: 415581** 

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C9-C25	90	U	110	90	ug/L		01/17/23 11:22	01/18/23 00:35	1
C24-C40	180	U	200	180	ug/L		01/17/23 11:22	01/18/23 00:35	1

MB MB

MB MB

%Recovery Qualifier Limits Surrogate Prepared Analyzed Dil Fac 53 - 120 01/17/23 11:22 01/18/23 00:35 o-Terphenyl 70

Lab Sample ID: LCS 580-415581/2-A

**Matrix: Water** 

**Analysis Batch: 415673** 

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

**Prep Batch: 415581** 

Timely one Date in Tree is									 
	:	Spike	LCS	LCS				%Rec	
Analyte	Α	dded	Result	Qualifier	Unit	D	%Rec	Limits	
C9-C25		4000	3410		ug/L		85	55 - 134	
C24-C40		4000	3750		ug/L		94	36 - 143	

**Eurofins Seattle** 

1/27/2023

Client: AECOM Job ID: 580-122146-1

Project/Site: Red Hill NPDES CV22F0106

Method: 8015D - Diesel Range Organics (DRO) (GC) (Continued)

Lab Sample ID: LCS 580-415581/2-A **Matrix: Water** 

Lab Sample ID: LCSD 580-415581/3-A

**Analysis Batch: 415673** 

**Matrix: Water** 

Analyte

C9-C25

C24-C40

**Client Sample ID: Lab Control Sample** 

Prep Type: Total/NA

**Prep Batch: 415581** 

LCS LCS

Surrogate %Recovery Qualifier Limits 53 - 120 o-Terphenyl 95

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

**Prep Batch: 415581** 

**Analysis Batch: 415673** Spike LCSD LCSD %Rec **RPD** Added Result Qualifier Limits RPD Limit Unit D %Rec 4000 3590 ug/L 90 55 - 134 5 26 4000 3970 ug/L 99 36 - 143 6 24

LCSD LCSD

MB MB

Surrogate %Recovery Qualifier Limits

o-Terphenyl 98 53 - 120

Method: 6010D - Metals (ICP)

Lab Sample ID: MB 580-414993/2-B

**Matrix: Water** 

**Analysis Batch: 415454** 

Client Sample ID: Method Blank **Prep Type: Total Recoverable** 

**Prep Batch: 415266** 

Result Qualifier RL **MDL** Unit **Analyte** Prepared Analyzed Dil Fac 30 01/12/23 16:12 01/13/23 16:35 Lead 2.7 U 2.7 ug/L

LCS LCS

Lab Sample ID: LCS 580-414993/3-B

**Matrix: Water** 

Analysis Batch: 415454

**Client Sample ID: Lab Control Sample Prep Type: Total Recoverable** 

Prep Batch: 415266

%Rec

Analyte Added Result Qualifier Unit %Rec Limits Lead 1000 994 ug/L 99 80 - 120

Spike

Lab Sample ID: LCSD 580-414993/4-B

**Matrix: Water** 

Analysis Batch: 415454

Client Sample ID: Lab Control Sample Dup **Prep Type: Total Recoverable** 

**Prep Batch: 415266** 

Spike LCSD LCSD %Rec Analyte Added Result Qualifier Unit %Rec Limits RPD Limit Lead 1000 1030 ug/L 103 80 - 120 3

Method: 939-M - Organic Lead (GFAA)

Lab Sample ID: MB 280-599549/1-B

**Matrix: Water** 

Analysis Batch: 599560

Client Sample ID: Method Blank

**Prep Type: Total/NA** 

Prep Batch: 599549

MB MB

Analyte Result Qualifier RL MDL Unit Prepared Analyzed ug/L Lead, Total Organic 0.81 U 2.5 0.81 01/16/23 15:45 01/16/23 19:15

**Eurofins Seattle** 

1/27/2023

# **QC Sample Results**

Client: AECOM Job ID: 580-122146-1

Project/Site: Red Hill NPDES CV22F0106

Lead, Total Organic

Method: 939-M - Organic Lead (GFAA) (Continued)

Lab Sample ID: LCS 280-599549/2-B				Cli	ent Sar	nple ID	: Lab Control Sample
Matrix: Water							Prep Type: Total/NA
Analysis Batch: 599560							<b>Prep Batch: 599549</b>
	Spike	LCS	LCS				%Rec
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits

15.0

ug/L

100

80 - 120

15.0

Lab Sample ID: 580-122146 Matrix: Water Analysis Batch: 599560		Sample	Spike	MS		nt Samp	ole ID:	RHS-E	Prep Ty	03-011123-N pe: Total/NA atch: 599549
	Sample	Sample	Spike	IVIO	IVIS				/orec	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Lead, Total Organic	2.4	J	15.0	17.1		ug/L		97	80 - 120	

Lab Sample ID: 580-122140 Matrix: Water	6-2 MSD				Clie	nt Sam	ple ID:	RHS-E	F-TRAIN- Prep Ty		
Analysis Batch: 599560									Prep Ba	•	9549
	Sample	Sample	Spike	MSD	MSD				%Rec		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Lead, Total Organic	2.4	J	15.0	16.1		ug/L		91	80 - 120	6	20

1/27/2023

#### **Lab Chronicle**

Client: AECOM Job ID: 580-122146-1

Project/Site: Red Hill NPDES CV22F0106

Client Sample ID: RHS-FB-TRAIN-03-011123-N

Date Collected: 01/11/23 08:30

Lab Sample ID: 580-122146-1

**Matrix: Water** 

Batch Batch Dilution Batch **Prepared Prep Type** Туре Method Number Analyst or Analyzed Run **Factor** Lab 01/17/23 05:59 Total/NA Analysis 8260B/CA\_LUFTMS 415538 JJY EET SEA Total/NA 8260D 415544 K1K **EET SEA** 01/17/23 05:59 Analysis 1

Client Sample ID: RHS-EF-TRAIN-03-011123-N Lab Sample ID: 580-122146-2

Date Collected: 01/11/23 08:35 **Matrix: Water** 

Date Received: 01/12/23 09:40

Date Received: 01/12/23 09:40

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Analysis	8260B/CA_LUFTMS		1	415538	JJY	EET SEA	01/17/23 06:47
Total/NA	Analysis	8260D		1	415544	K1K	EET SEA	01/17/23 06:47
Total/NA	Prep	3510C			415586	TGO	EET SEA	01/17/23 11:52
Total/NA	Analysis	8270E SIM		1	415812	TL1	EET SEA	01/19/23 03:44
Total/NA	Prep	3510C			415581	TGO	EET SEA	01/17/23 11:22
Total/NA	Analysis	8015D		1	415673	CLC	EET SEA	01/18/23 05:51
Total Recoverable	Prep	3005A			415266	CA	EET SEA	01/12/23 16:12
Total Recoverable	Analysis	6010D		1	415454	JLS	EET SEA	01/13/23 17:05
Total/NA	Prep	939M			599549	LRD	EET DEN	01/16/23 15:45
Total/NA	Prep	939M			599551	LRD	EET DEN	01/16/23 16:45
Total/NA	Analysis	939-M		1	599560	LRD	EET DEN	01/16/23 19:30

Client Sample ID: RHS-IF-TRAIN-03-011123-N Lab Sample ID: 580-122146-3

Date Collected: 01/11/23 09:05 **Matrix: Water** 

Date Received: 01/12/23 09:40

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Туре	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Analysis	8260B/CA_LUFTMS		1	415538	JJY	EET SEA	01/17/23 07:12
Total/NA	Analysis	8260D		1	415544	K1K	EET SEA	01/17/23 07:12
Total/NA	Prep	3510C			415581	TGO	EET SEA	01/17/23 11:22
Total/NA	Analysis	8015D		1	415673	CLC	EET SEA	01/18/23 06:10

#### **Laboratory References:**

EET DEN = Eurofins Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100 EET SEA = Eurofins Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

# **Accreditation/Certification Summary**

Client: AECOM Job ID: 580-122146-1

Project/Site: Red Hill NPDES CV22F0106

#### **Laboratory: Eurofins Seattle**

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
ANAB	Dept. of Defense ELAP	L2236	01-19-25

#### **Laboratory: Eurofins Denver**

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

Authority	Pr	rogram	Identification Number	Expiration Date
A2LA	De	ept. of Defense ELAP	2907.01	10-31-23
	s are included in this rebo	ort, but the laboratory is not c	certified by the governing authority.	This list may include analytes for wh
the agency does not	•	ort, but the laboratory is not c	certified by the governing authority.	This list may include analytes for wh
0 ,	•	ort, but the laboratory is not c Matrix	certified by the governing authority.  Analyte	This list may include analytes for wh

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# **Sample Summary**

Client: AECOM Job ID: 580-122146-1

Project/Site: Red Hill NPDES CV22F0106

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-122146-1	RHS-FB-TRAIN-03-011123-N	Water	01/11/23 08:30	01/12/23 09:40
580-122146-2	RHS-EF-TRAIN-03-011123-N	Water	01/11/23 08:35	01/12/23 09:40
580-122146-3	RHS-IF-TRAIN-03-011123-N	Water	01/11/23 09:05	01/12/23 09:40

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#### **Eurofins FGS, Seattle**

5755 8th Street East Tacoma, WA 98424

# **Chain of Custody Record**



Environment Testing America

Client Information	Sampler: AECOM				ab PM: Elaine		lker							rrier Tra edEx	acking	No(s):			202301	IINPDES-SEA
Client Contact:	Phone:				-Mail: vi.Elaíi	no M	tolko	- O E	rofin	CET				ate of O	rigin:	*			Page: Page 1 of 1	
Alethea Ramos (alternate: Margie Pascua) Company:	<u> </u>		PWSID:	15	VI. L.I.a.I	110.0	vaine	(WE	JIOIII										Job #:	
AECOM			<u> </u>			and shoulder				Ar	nalys	sis R	equ	estec	1	,		- TOMORIO		
Address: 1001 Bishop St. Suite 1600	Due Date Reques see subcontrac												l						Preservation C	
Gity:	TAT Requested (d	ays):								ļ									B - NaOH	M - Hexane N - None
Honolulu State, Zip:	4	7 da	ys							l									C - Zn Acetate D - Nitric Acid	0 - AsNaO2 P - Na2O4S
Hawaii 96813	Compliance Proje	ct: 🛆 Yes	Δ No				826(		.										E - NaHSO4 F - MeOH	Q - Na2SO3 R - Na2S2O3
Phone: 808-521-3051 (direct: 808-529-7283) (alternate: 808-356-5373)	PO #:						by 3050/8260 and TPH-g by 8260		alen								Ì		G - Amchlor H - Ascorbic Acid	S - H2SO4
Email:	WO #:			······································			Ħ		thd. E					1					I - Ice	U - Acetone
alethea.ramos@aecom.com (alternate: margie.pascua@aecom.com)	Project #:					I	and		hyfne 270S									ş	J - DI Water K - EDTA	V - MCAA W - pH 4-5
Project Name: CV22F0106	60674414.01.3	0.01			Š		8260		by 8	_	6010B							containers	L - EDA	Z - other (specify)
Site:	SSOW#:		-		Ę		3050	ın.	ne, 1 fene)	939%	À							8	Other:	
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			Sample Type	Matrix (W±water			BTE)	TPH-d/r/o by	naph yhap	c Lea	rgani							E		
		Sample	(C=Comp,	S=solid, Q=waste/o	8507	ľ	vocs (	Đ	HS (	Organic	Total o							Total Num		
Sample Identification	Sample Date	Time	G=grab) i	BY=Tissue, A	⊫Air) 🗓			CONTRACTOR AND ADDRESS.	terbencionale &		C1110550 V2 C1							¥,	Special I	nstructions/Note:
			Preservat		e:   /	abla	*********	N	N	N	0							₽		
R45-FB-TAN-03-01123-N	1/4/53		BLANK	m	<u> </u>	4 1/2	2	ļ				_			ļ					
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FB VOC'S Bubbles present 5mb						I										180001 580-1	2214	a mina 6 Cha	ain of Custody	
Possible Hazard Identification		<u> </u>	<u></u>		·	Sa	mple	Dis	osal	(A)	tee m	ay be	asse	ssed						
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Deliverable Requested: I, II, III, IV, Other (specify)	Prelim data (Le 4 report standa				Stage	Spe	ecial	nstr	uction	s/QC	C Req	uirem	ents:	DOD	QSN	1 proje	ct.			
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Anaplia Gerobe	Date/Time: 1	100	10	NECOM Company			Rece		w/ .	4		<u> </u>	) (1)	23		ا (ت Date/Ji	• • • •	<del>'                                    </del>	23	Company
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Relinquished by:	Date/Time:		C	Company			Rece	ved b	y:							Da <b>r</b> e/Ti	ne:			Company
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7/2023

# Chain of Custody Record

Chain of Custody Record	Lab PM: COC No: Narie E Carrier Tracking No(s): COC No: Nalker, Marie E 580-114130.1	E-Mail: State of Origin: Page: M. Flaine Walker@et eurofinsus.com Hawaii Page 1 of 1
Chain of Cu	Sampler:	Phone:
Eurofins Seattle 5755 8th Street East Tacoma, WA 98424 Phone: 253-922-2310	Sar Client Information (Sub Contract Lab)	

				And do I	l.			Tarrior Tre	Carrier Tracking No(e):	-	COC No.	
Client Information (Sub Contract Lab)				Walke	Walker, Marie E	ш		5	.(2)2.		580-114130.1	
Client Contact: Shipping/Receiving	Phone:			E-Mail: M.Ela	ine.Wall	ker@et.eı	E-Mail: M.Elaine.Walker@et.eurofinsus.com	State of Origin: Mawaii	rigin:		Page: Page 1 of 1	
Сотралу: TestAmerica Laboratories, Inc.					ccreditativ Dept. of	ons Require Defense	Accreditations Required (See note): Dept. of Defense ELAP - A2L.	Accreditations Required (See note): Dept. of Defense ELAP - A2LA; Dept. of Defense ELAP	e ELAP - A		Job #: 580-122146-1	
Address: 4955 Yarrow Street, ,	Due Date Requested: 1/18/2023	Ü					Analy	Analysis Requested		****	Preservation Codes	odes: M - Hexane
City: Arvada	TAT Requested (days):	ys):								. addination	B - NaOH C - Zn Acetate	N - None O - AsNaO2 D N3O48
State, Zlp: CO, 80002	T									eta-menilik	D - Nitric Acid E - NaHSO4 F - MeOH	G - Na2SO3 R - Na2S2O3 R - Na2S2O3
Phone: 303-736-0100(Tel) 303-431-7171(Fax)	PO #:				(0					alles estation de	G - Amchlor H - Ascorbic Acid	S - H2SO4 T - TSP Dodecahydrate
Email:	:# OM				(oN	DE					I - Ice J - DI Water	V - MCAA W - pH 4-5
Project Name: Red Hill NPDES CV22F0106	Project #: 58017146				10 69	יוווכ רפ						Y - Trizma Z - other (specify)
Site:	SSOW#:				sp (v	b Orga					Other:	
Samula Idantification . Cliant ID (1 ah ID)	Sample Date	Sample	Sample Type (C=comp,	Matrix (W=water, S=solid, O=waste/oil, BT=Tiesus A=Ar)	Field Filtered :	939M/939M					Total Number Soecial	Special Instructions/Note:
	$\bigvee$	X			X				1			
RHS-EF-TRAIN-03-011123-N (580-122146-2)	1/11/23	08:35 Hawaiian		Water		×					RH-MUST MEET Upload COA for	RH-MUST MEET TAT, NO EXCEPTIONS. Upload COA for standards to TALS
		5										
											alline di	
											1	
Note: Since laboratory accreditations are subject to change, Eurofins Environment Testing Northwest, LLC places the ownership of method, analyte & accreditation or planner upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory occurrently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins Environment Testing Northwest, LLC attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Environment Testing Northwest, LLC.	nt Testing Northwest, L nalysis/tests/matrix bei ion immediately. If all I	LC places the ng analyzed, the equested accre	ownership of me s samples must editations are cu	ethod, analyte be shipped ba rrent to date, r	k accredita ck to the E sturn the s	ation compli Eurofins Env igned Chai	ance upon our ironment Testi i of Custody at	subcontract laboratorie ng Northwest, LLC lab testing to said complia	ss. This samp oratory or othe nce to Eurofins	le shipment r instructions s Environme	is forwarded under cha s will be provided. Any nt Testing Northwest, I	ain-of-custody. If the laboratory changes to accreditation L.C.
Possible Hazard Identification					Sam	ple Dispe	le Disposal ( A fee	may be assessed if sam	if sample.	s are reta	Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)	1 month) Months
Oncommined Deliverable Requested: I, III, IV, Other (specify)	Primary Deliverabl	able Rank: 1			Spec	ial Instru	tions/QC R	Special Instructions/QC Requirements:	ana (a			
Empty Kit Relinquished by:		Date:			Time:		,	Mei	Method of Shipment:	art:		
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Custody Seals Intact: Custody Seal No.:					O	cooler Temp	erature(s) °C a	Cooler Temperature(s) °C and Other Remarks:	11	747	CFUO	
1												Ver: 06/08/2021

Client: AECOM Job Number: 580-122146-1

Login Number: 122146 List Source: Eurofins Seattle

List Number: 1

Creator: Presley, Kim A

Creator: Presiey, Kim A		
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.	True	
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").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Client: AECOM Job Number: 580-122146-1

Login Number: 122146
List Source: Eurofins Denver
List Number: 2
List Creation: 01/14/23 05:19 PM

Creator: Rystrom, Joshua R

Creator: Rystrom, Joshua R		
Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>True</td> <td></td>	True	
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?	N/A	
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").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

# 11

# ANALYTICAL REPORT

## PREPARED FOR

Attn: Kathryn Repine AECOM 1001 Bishop Street Honolulu, Hawaii 96813 Generated 2/3/2023 10:29:40 AM

# **JOB DESCRIPTION**

Red Hill NPDES CV22F0106

# **JOB NUMBER**

580-122419-1

Eurofins Seattle 5755 8th Street East Tacoma WA 98424



# **Eurofins Seattle**

#### **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

M. Elaine Walker

Generated 2/3/2023 10:29:40 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 NPDES CV22F0106

Laboratory Job ID: 580-122419-1

# **Table of Contents**

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#### **Case Narrative**

Client: AECOM Job ID: 580-122419-1

Project/Site: Red Hill NPDES CV22F0106

Job ID: 580-122419-1

**Laboratory: Eurofins Seattle** 

**Narrative** 

CASE NARRATIVE
Client: AECOM
Project: Red Hill NPDES CV22F0106
Report Number: 580-122419-1

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 1/19/2023 9:35 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 1.8° 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.

#### **GASOLINE RANGE ORGANICS (GRO)**

Samples RHS-FB-TRAIN-01-011823-N (580-122419-1), RHS-EF-TRAIN-01-011823-N (580-122419-2) and RHS-IF-TRAIN-01-011823-N (580-122419-3) were analyzed for gasoline range organics (GRO) in accordance with CA\_LUFT\_GRO. The samples were analyzed on 01/24/2023.

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

#### **VOLATILE ORGANIC COMPOUNDS (GC-MS)**

Samples RHS-FB-TRAIN-01-011823-N (580-122419-1), RHS-EF-TRAIN-01-011823-N (580-122419-2) and RHS-IF-TRAIN-01-011823-N (580-122419-3) were analyzed for volatile organic compounds (GC-MS) in accordance with 8260C. The samples were analyzed on 01/24/2023.

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

#### SEMIVOLATILE ORGANIC COMPOUNDS - SELECTED ION MODE (SIM)

Sample RHS-EF-TRAIN-01-011823-N (580-122419-2) was analyzed for semivolatile organic compounds - Selected Ion Mode (SIM) in accordance with 8270E SIM. The sample was prepared and analyzed on 01/24/2023.

The laboratory control sample (LCS) and / or laboratory control sample duplicate (LCSD) for preparation batch 580-416142 and analytical batch 580-416210 recovered outside control limits for the following analytes: Naphthalene, 2-Methylnaphthalene and 1-Methylnaphthalene. These analytes were biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported.

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

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#### **Case Narrative**

Client: AECOM Job ID: 580-122419-1

Project/Site: Red Hill NPDES CV22F0106

Job ID: 580-122419-1 (Continued)

**Laboratory: Eurofins Seattle (Continued)** 

#### **DIESEL AND EXTENDED RANGE ORGANICS**

Samples RHS-EF-TRAIN-01-011823-N (580-122419-2) and RHS-IF-TRAIN-01-011823-N (580-122419-3) were analyzed for diesel and extended range organics in accordance with 8015D. The samples were prepared on 01/25/2023 and 01/27/2023 and analyzed on 01/26/2023 and 01/30/2023.

The following sample was re-prepared outside of preparation holding time in order to confirm sample detections: RHS-EF-TRAIN-01-011823-N (580-122419-2).

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

#### **METALS (ICP)**

Sample RHS-EF-TRAIN-01-011823-N (580-122419-2) was analyzed for Metals (ICP) in accordance with 6010D. The sample was prepared on 01/19/2023 and analyzed on 01/20/2023.

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

#### **ORGANIC LEAD**

Sample RHS-EF-TRAIN-01-011823-N (580-122419-2) was analyzed for Organic Lead in accordance with 939M. The sample was prepared and analyzed on 01/23/2023.

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: 580-122419-1

Project/Site: Red Hill NPDES CV22F0106

#### **Qualifiers**

**GC/MS VOA** 

U Indicates the analyte was analyzed for but not detected.

GC/MS Semi VOA

Qualifier Qualifier Description

\*+ LCS and/or LCSD is outside acceptance limits, high biased.
U Indicates the analyte was analyzed for but not detected.

**GC Semi VOA** 

Qualifier Qualifier Description

H Sample was prepped or analyzed beyond the specified holding time

J Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

U Indicates the analyte was analyzed for but not detected.

**Metals** 

Qualifier Qualifier Description

J Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

U Indicates the analyte was analyzed for but not detected.

#### **Glossary**

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

Example 2 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

**Eurofins Seattle** 

Page 6 of 22 2/3/2023

Client: AECOM Job ID: 580-122419-1

Project/Site: Red Hill NPDES CV22F0106

Client Sample ID: RHS-FB-TRAIN-01-011823-N

Date Collected: 01/18/23 10:20 Date Received: 01/19/23 09:35 Lab Sample ID: 580-122419-1

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (C6-C12)	31	U	100	31	ug/L			01/24/23 02:05	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	95		78 - 120					01/24/23 02:05	

, <b></b>					•	_		, <b>.</b> ,	
Benzene	0.24	U	1.0	0.24	ug/L			01/24/23 02:05	1
Toluene	0.39	U	1.0	0.39	ug/L			01/24/23 02:05	1
Ethylbenzene	0.50	U	1.0	0.50	ug/L			01/24/23 02:05	1
m-Xylene & p-Xylene	0.53	U	2.0	0.53	ug/L			01/24/23 02:05	1
o-Xylene	0.39	U	1.0	0.39	ug/L			01/24/23 02:05	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	100		80 - 120					01/24/23 02:05	1

Surrogate	%Recovery Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	100	80 - 120		01/24/23 02:05	1
1,2-Dichloroethane-d4 (Surr)	95	80 - 120		01/24/23 02:05	1
4-Bromofluorobenzene (Surr)	95	80 - 120		01/24/23 02:05	1
Dibromofluoromethane (Surr)	99	80 - 120		01/24/23 02:05	1

2/3/2023

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Client: AECOM Job ID: 580-122419-1

Project/Site: Red Hill NPDES CV22F0106

Client Sample ID: RHS-EF-TRAIN-01-011823-N

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Date Collected: 01/18/23 10:25 Date Received: 01/19/23 09:35

4-Bromofluorobenzene (Surr)

Lab	Sample	e ID:	580-	12241	19-2
-----	--------	-------	------	-------	------

01/24/23 02:53

**Matrix: Water** 

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (C6-C12)	31	U	100	31	ug/L			01/24/23 02:53	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	90		78 - 120					01/24/23 02:53	1

Method: SW846 8260D - Vo	olatile Organic	Compound	ds by GC/MS						
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.24	U	1.0	0.24	ug/L			01/24/23 02:53	1
Toluene	0.39	U	1.0	0.39	ug/L			01/24/23 02:53	1
Ethylbenzene	0.50	U	1.0	0.50	ug/L			01/24/23 02:53	1
m-Xylene & p-Xylene	0.53	U	2.0	0.53	ug/L			01/24/23 02:53	1
o-Xylene	0.39	U	1.0	0.39	ug/L			01/24/23 02:53	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	97		80 - 120					01/24/23 02:53	1
1,2-Dichloroethane-d4 (Surr)	97		80 - 120					01/24/23 02:53	1

	96 - Semivolatile	Organic C	80 - 120 Compounds (	GC/MS	SIM)			01/24/23 02:53	,
Analyte		Qualifier	RL	MDL	•	D	Prepared	Analyzed	Dil Fac
Naphthalene	0.17	U *+	0.51	0.17	ug/L		01/24/23 10:48	01/24/23 23:47	1
2-Methylnaphthalene	0.040	U *+	0.20	0.040	ug/L		01/24/23 10:48	01/24/23 23:47	1
1-Methylnaphthalene	0.034	U *+	0.10	0.034	ug/L		01/24/23 10:48	01/24/23 23:47	1
Surragata	% Bookson	Ouglifier	Limita				Branarad	Analyzad	Dil Ess

80 - 120

Surrogate	%Recovery	Qualifier	Limits	Prepared Analyzed	Dil Fac
2,4,6-Tribromophenol	68		29 - 144	01/24/23 10:48 01/24/23 23:47	1
Terphenyl-d14	86		29 - 150	01/24/23 10:48 01/24/23 23:47	1
2-methylnaphthalene-d10	59		35 - 120	01/24/23 10:48 01/24/23 23:47	1
Fluoranthene-d10 (Surr)	80		49 - 129	01/24/23 10:48 01/24/23 23:47	1

Method: SW846 8015D - Diese	i Kange Or	ganics (שא	(O) (GC)						
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C9-C25	92	U	110	92	ug/L		01/25/23 11:14	01/26/23 16:19	1
C24-C40	190	J	200	180	ug/L		01/25/23 11:14	01/26/23 16:19	1
Surrogate		Qualifier	Limits				Prepared	Analyzed	Dil Fac
o-Terphenyl	55		53 - 120				01/25/23 11:14	01/26/23 16:19	1

Method: SW846 801	5D - Diesel Range Or	ganics (DF	RO) (GC) - RE						
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C9-C25	92	U H	110	92	ug/L		01/27/23 12:49	01/30/23 18:04	1
C24-C40	180	UH	200	180	ug/L		01/27/23 12:49	01/30/23 18:04	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
o-Terphenyl	69		53 - 120				01/27/23 12:49	01/30/23 18:04	1

Method: SW846 6010D - Metals	s (ICP) - Total Recoveral	ble					
Analyte	Result Qualifier	RL	MDL Unit	D	Prepared	Analyzed	Dil Fac
Lead	11 J	30	2.7 ug/L		01/19/23 18:38	01/20/23 18:20	1

Client: AECOM Job ID: 580-122419-1

Project/Site: Red Hill NPDES CV22F0106

Client Sample ID: RHS-EF-TRAIN-01-011823-N Lab Sample ID: 580-122419-2

Date Collected: 01/18/23 10:25 Matrix: Water

Date Received: 01/19/23 09:35

 Method: CADHS 939-M - Organic Lead (GFAA)

 Analyte
 Result Lead, Total Organic
 Qualifier
 RL J
 MDL unit ug/L
 D 01/23/23 16:30
 Prepared 01/23/23 16:30
 Analyzed 01/23/23 20:23
 Dil Fac 01/23/23 16:30

4

5

7

8

10

Client: AECOM Job ID: 580-122419-1

Project/Site: Red Hill NPDES CV22F0106

Client Sample ID: RHS-IF-TRAIN-01-011823-N

Date Collected: 01/18/23 10:30

Date Received: 01/19/23 09:35

Lab Sample ID: 580-122419-3

**Matrix: Water** 

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (C6-C12)	31	U	100	31	ug/L			01/24/23 03:17	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	97		78 - 120					01/24/23 03:17	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.24	U	1.0	0.24	ug/L			01/24/23 03:17	1
Toluene	0.39	U	1.0	0.39	ug/L			01/24/23 03:17	1
Ethylbenzene	0.50	U	1.0	0.50	ug/L			01/24/23 03:17	1
m-Xylene & p-Xylene	0.53	U	2.0	0.53	ug/L			01/24/23 03:17	1
o-Xylene	0.39	U	1.0	0.39	ug/L			01/24/23 03:17	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	99	<del></del>	80 - 120					01/24/23 03:17	1
1,2-Dichloroethane-d4 (Surr)	92		80 - 120					01/24/23 03:17	1
4-Bromofluorobenzene (Surr)	97		80 - 120					01/24/23 03:17	1
Dibromofluoromethane (Surr)	94		80 - 120					01/24/23 03:17	1

Method: SW846 8015D - Diese	el Range Or	ganics (DF	RO) (GC)						
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C9-C25	91	U	110	91	ug/L		01/25/23 11:14	01/26/23 16:38	1
C24-C40	180	U	200	180	ug/L		01/25/23 11:14	01/26/23 16:38	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
a Tarnhanyl			F2 120				04/05/00 11:14	04/06/00 46:00	

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	66		53 - 120	01/25/23 11:14	01/26/23 16:38	1

Client: AECOM Job ID: 580-122419-1

Project/Site: Red Hill NPDES CV22F0106

#### Method: 8260B/CA LUFTMS - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 580-416087/5

**Matrix: Water** 

Analysis Batch: 416087

Prep Type: Total/NA

**Client Sample ID: Method Blank** 

MB MB Result Qualifier RL **MDL** Unit Analyzed Dil Fac Analyte D Prepared 100 Gasoline Range Organics (C6-C12) 31 U 31 ug/L 01/23/23 18:00

MB MB

Surrogate %Recovery Qualifier Limits Prepared Analyzed Dil Fac 78 - 120 01/23/23 18:00 4-Bromofluorobenzene (Surr) 93

Lab Sample ID: LCS 580-416087/8 **Client Sample ID: Lab Control Sample** Prep Type: Total/NA

**Matrix: Water** 

Analysis Batch: 416087

LCS LCS Spike %Rec Analyte Added Result Qualifier Unit D %Rec Limits Gasoline Range Organics 1000 940 ug/L 94 75 - 127

(C6-C12)

LCS LCS

Limits Surrogate %Recovery Qualifier 4-Bromofluorobenzene (Surr) 78 - 120 98

Lab Sample ID: LCSD 580-416087/9 Client Sample ID: Lab Control Sample Dup Prep Type: Total/NA

**Matrix: Water** 

Analysis Batch: 416087

LCSD LCSD **RPD** Spike %Rec Added Analyte Result Qualifier Unit D %Rec Limits RPD Limit 1000 Gasoline Range Organics 981 ug/L 98 75 - 127

(C6-C12)

LCSD LCSD

Surrogate %Recovery Qualifier Limits

4-Bromofluorobenzene (Surr) 96 78 - 120

#### Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 580-416093/5

**Client Sample ID: Method Blank Matrix: Water Prep Type: Total/NA Analysis Batch: 416093** MR MR

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.24	U	1.0	0.24	ug/L			01/23/23 18:00	1
Toluene	0.39	U	1.0	0.39	ug/L			01/23/23 18:00	1
Ethylbenzene	0.50	U	1.0	0.50	ug/L			01/23/23 18:00	1
m-Xylene & p-Xylene	0.53	U	2.0	0.53	ug/L			01/23/23 18:00	1
o-Xylene	0.39	U	1.0	0.39	ug/L			01/23/23 18:00	1

мв мв

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac	
Toluene-d8 (Surr)	99		80 - 120		01/23/23 18:00	1	
1,2-Dichloroethane-d4 (Surr)	98		80 - 120		01/23/23 18:00	1	
4-Bromofluorobenzene (Surr)	93		80 - 120		01/23/23 18:00	1	
Dibromofluoromethane (Surr)	99		80 - 120		01/23/23 18:00	1	

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Client: AECOM Job ID: 580-122419-1

Project/Site: Red Hill NPDES CV22F0106

#### Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 580-416093/6

**Matrix: Water** 

**Analysis Batch: 416093** 

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

	Spike	LCS	LCS				%Rec	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Benzene	10.0	10.6		ug/L		106	80 - 122	
Toluene	10.0	10.6		ug/L		106	80 - 120	
Ethylbenzene	10.0	10.4		ug/L		104	80 - 120	
m-Xylene & p-Xylene	10.0	10.6		ug/L		106	80 - 120	
o-Xylene	10.0	10.4		ug/L		104	80 - 120	

LCS LCS

Surrogate	%Recovery	Qualifier	Limits
Toluene-d8 (Surr)	101		80 - 120
1,2-Dichloroethane-d4 (Surr)	90		80 - 120
4-Bromofluorobenzene (Surr)	95		80 - 120
Dibromofluoromethane (Surr)	99		80 - 120

Lab Sample ID: LCSD 580-416093/7

**Matrix: Water** 

**Analysis Batch: 416093** 

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Spike	LCSD	LCSD				%Rec		RPD
Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
10.0	10.4		ug/L		104	80 - 122	2	14
10.0	9.97		ug/L		100	80 - 120	6	13
10.0	9.81		ug/L		98	80 - 120	6	14
10.0	9.84		ug/L		98	80 - 120	7	14
10.0	9.74		ug/L		97	80 - 120	6	16
	Added 10.0 10.0 10.0 10.0 10.0	Added         Result           10.0         10.4           10.0         9.97           10.0         9.81           10.0         9.84	Added         Result         Qualifier           10.0         10.4           10.0         9.97           10.0         9.81           10.0         9.84	Added         Result         Qualifier         Unit           10.0         10.4         ug/L           10.0         9.97         ug/L           10.0         9.81         ug/L           10.0         9.84         ug/L	Added         Result         Qualifier         Unit         D           10.0         10.4         ug/L           10.0         9.97         ug/L           10.0         9.81         ug/L           10.0         9.84         ug/L	Added         Result         Qualifier         Unit         D         %Rec           10.0         10.4         ug/L         104           10.0         9.97         ug/L         100           10.0         9.81         ug/L         98           10.0         9.84         ug/L         98	Added         Result         Qualifier         Unit         D         %Rec         Limits           10.0         10.4         ug/L         104         80 - 122           10.0         9.97         ug/L         100         80 - 120           10.0         9.81         ug/L         98         80 - 120           10.0         9.84         ug/L         98         80 - 120	Added         Result         Qualifier         Unit         D         %Rec         Limits         RPD           10.0         10.4         ug/L         10.4         80 - 122         2           10.0         9.97         ug/L         100         80 - 120         6           10.0         9.81         ug/L         98         80 - 120         6           10.0         9.84         ug/L         98         80 - 120         7

LCSD LCSD

Surrogate	%Recovery	Qualifier	Limits
Toluene-d8 (Surr)	101		80 - 120
1,2-Dichloroethane-d4 (Surr)	94		80 - 120
4-Bromofluorobenzene (Surr)	96		80 - 120
Dibromofluoromethane (Surr)	99		80 - 120

#### Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM)

Lab Sample ID: MB 580-416142/1-A

**Matrix: Water** 

**Analysis Batch: 416210** 

**Client Sample ID: Method Blank** 

Prep Type: Total/NA **Prep Batch: 416142** 

MB MB Analyte Result Qualifier RL **MDL** Unit Prepared Analyzed Dil Fac Naphthalene 0.16 U 0.50 0.16 ug/L 01/24/23 10:48 01/24/23 22:36 2-Methylnaphthalene 0.039 U 0.20 0.039 ug/L 01/24/23 10:48 01/24/23 22:36 1-Methylnaphthalene 0.033 U 0.10 0.033 ug/L 01/24/23 10:48 01/24/23 22:36

MB MB

%Recovery (	Qualifier	Limits	Prepared	Analyzed	Dil Fac
62		29 - 144	01/24/23 10:48	01/24/23 22:36	1
74		29 - 150	01/24/23 10:48	01/24/23 22:36	1
60		35 - 120	01/24/23 10:48	01/24/23 22:36	1
71		49 - 129	01/24/23 10:48	01/24/23 22:36	1
	<b>%Recovery</b> 62 74	%Recovery Qualifier 62 74	62 29 - 144 74 29 - 150 60 35 - 120	%Recovery         Qualifier         Limits         Prepared           62         29 - 144         01/24/23 10:48           74         29 - 150         01/24/23 10:48           60         35 - 120         01/24/23 10:48	%Recovery         Qualifier         Limits         Prepared         Analyzed           62         29 - 144         01/24/23 10:48         01/24/23 22:36           74         29 - 150         01/24/23 10:48         01/24/23 22:36           60         35 - 120         01/24/23 10:48         01/24/23 22:36

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Project/Site: Red Hill NPDES CV22F0106

#### Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Lab Sample ID: LCS 580-416142/2-A

**Matrix: Water** 

Client: AECOM

**Analysis Batch: 416210** 

**Client Sample ID: Lab Control Sample** 

**Prep Type: Total/NA Prep Batch: 416142** 

	Spike	LCS	LCS				%Rec
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits
Naphthalene	8.00	10.2	*+	ug/L		128	34 - 120
2-Methylnaphthalene	8.00	10.3	*+	ug/L		129	33 - 120
1-Methylnaphthalene	8.00	9.84	*+	ug/L		123	29 - 120

LCS LCS Surrogate %Recovery Qualifier Limits 2,4,6-Tribromophenol 70 29 - 144 Terphenyl-d14 72 29 - 150 2-methylnaphthalene-d10 35 - 120 60 68 Fluoranthene-d10 (Surr) 49 - 129

Lab Sample ID: LCSD 580-416142/3-A

**Matrix: Water** 

**Analysis Batch: 416210** 

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

**Prep Batch: 416142** 

	Spike	LCSD	LCSD				%Rec		RPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Naphthalene	 8.00	11.7	*+	ug/L		147	34 - 120	14	35
2-Methylnaphthalene	8.00	12.0	*+	ug/L		150	33 - 120	15	35
1-Methylnaphthalene	8.00	11.4	*+	ug/L		142	29 - 120	15	35

LCSD LCSD Surrogate %Recovery Qualifier Limits 2,4,6-Tribromophenol 77 29 - 144 29 - 150 Terphenyl-d14 79 2-methylnaphthalene-d10 67 35 - 120 75 Fluoranthene-d10 (Surr) 49 - 129

#### Method: 8015D - Diesel Range Organics (DRO) (GC)

Lab Sample ID: MB 580-416249/1-A Client Sample ID: Method Blank **Matrix: Water** Prep Type: Total/NA **Prep Batch: 416249** 

Analysis Batch: 416389

	IVID	IVID							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C9-C25	90	U	110	90	ug/L		01/25/23 11:14	01/26/23 15:23	1
C24-C40	180	U	200	180	ug/L		01/25/23 11:14	01/26/23 15:23	1

MB MB %Recovery Qualifier Surrogate Limits Analyzed Dil Fac Prepared 53 - 120 01/25/23 11:14 01/26/23 15:23 o-Terphenyl 55

Lab Sample ID: LCS 580-416249/2-A **Client Sample ID: Lab Control Sample Matrix: Water** Prep Type: Total/NA

**Prep Batch: 416249 Analysis Batch: 416389** 

	Spike	LCS	LCS			%Rec	
Analyte	Added	Result	Qualifier l	Unit D	%Rec	Limits	
C9-C25	4000	2950	i	ug/L	74	55 - 134	 
C24-C40	4000	3570	ι	ug/L	89	36 - 143	

**Eurofins Seattle** 

Project/Site: Red Hill NPDES CV22F0106

Job ID: 580-122419-1

#### Method: 8015D - Diesel Range Organics (DRO) (GC) (Continued)

Lab Sample ID: LCS 580-416249/2-A

**Matrix: Water** 

**Analysis Batch: 416389** 

**Client Sample ID: Lab Control Sample** 

Prep Type: Total/NA

**Prep Batch: 416249** 

LCS LCS

Surrogate %Recovery Qualifier Limits o-Terphenyl 85 53 - 120

Lab Sample ID: LCSD 580-416249/3-A Client Sample ID: Lab Control Sample Dup

**Matrix: Water** 

**Analysis Batch: 416389** 

Prep Type: Total/NA

**Prep Batch: 416249** 

Spike LCSD LCSD %Rec **RPD** Added Result Qualifier Limits RPD Limit **Analyte** Unit D %Rec C9-C25 4000 2470 ug/L 62 55 - 134 18 26 C24-C40 4000 3040 ug/L 76 36 - 143 16 24

LCSD LCSD

Surrogate %Recovery Qualifier Limits o-Terphenyl 73 53 - 120

Lab Sample ID: MB 580-416465/1-A Client Sample ID: Method Blank

**Matrix: Water** 

**Analysis Batch: 416545** 

Prep Type: Total/NA

**Prep Batch: 416465** 

MB MB

Result Qualifier RL MDL Unit Analyte Prepared Analyzed Dil Fac C9-C25 90 U 110 90 ug/L 01/27/23 12:49 01/30/23 11:41 180 U 200 C24-C40 ug/L 01/27/23 12:49 01/30/23 11:41 180

MR MR

Surrogate %Recovery Qualifier Limits Prepared Analyzed o-Terphenyl 67 53 - 120 01/27/23 12:49 01/30/23 11:41

Lab Sample ID: LCS 580-416465/2-A **Client Sample ID: Lab Control Sample** 

**Matrix: Water** 

Prep Type: Total/NA Analysis Batch: 416545 **Prep Batch: 416465** 

LCS LCS %Rec Spike Analyte Added Result Qualifier Unit %Rec Limits C9-C25 4000 3360 84 55 - 134 ug/L C24-C40 4000 3710 ug/L 93 36 - 143

LCS LCS

Surrogate %Recovery Qualifier Limits 53 - 120 o-Terphenyl

Lab Sample ID: LCSD 580-416465/3-A Client Sample ID: Lab Control Sample Dup

**Matrix: Water** 

Analysis Batch: 416545

Prep Type: Total/NA

**Prep Batch: 416465** 

LCSD LCSD %Rec Spike **RPD** Analyte Added Result Qualifier Unit D %Rec Limits RPD Limit 4000 26 C9-C25 3540 ug/L 88 55 - 134 5 C24-C40 4000 3810 95 ug/L 36 - 143 24

LCSD LCSD

%Recovery Qualifier Limits Surrogate o-Terphenyl 53 - 120 89

**Eurofins Seattle** 

Client: AECOM Project/Site: Red Hill NPDES CV22F0106

Job ID: 580-122419-1

Method: 6010D - Metals (ICP)

Lab Sample ID: MB 580-415914/21-A

**Matrix: Water** 

**Analysis Batch: 416003** 

Client Sample ID: Method Blank **Prep Type: Total Recoverable** 

**Prep Batch: 415914** 

**Prep Batch: 415914** 

**Prep Batch: 415914** 

Prep Type: Total/NA

Prep Batch: 600178

Analyzed

Result Qualifier RL **MDL** Unit Analyzed Dil Fac Analyte Prepared 30 01/19/23 18:38 01/20/23 17:36 Lead 2.7 U 2.7 ug/L

Lab Sample ID: LCS 580-415914/22-A

**Matrix: Water** 

Analyte

Lead

Lead

**Analysis Batch: 416003** 

MB MB

Spike Added 1000

1030

LCS LCS

Result Qualifier

MDL Unit

0.81 ug/L

Unit ug/L

D %Rec 103

Limits 80 - 120

Client Sample ID: Lab Control Sample Dup

%Rec

Client Sample ID: Lab Control Sample

**Prep Type: Total Recoverable** 

Lab Sample ID: LCSD 580-415914/23-A

**Matrix: Water** 

**Analysis Batch: 416003** 

Analyte

Spike Added 1000

LCSD LCSD Result Qualifier 1050

Unit ug/L

%Rec 105

Limits 80 - 120

Client Sample ID: Method Blank

%Rec

**Prep Type: Total Recoverable** 

RPD Limit

**RPD** 

Dil Fac

Method: 939-M - Organic Lead (GFAA)

Lab Sample ID: MB 280-600178/1-B

**Matrix: Water** 

**Analysis Batch: 600181** 

MB MB

Analyte

Result Qualifier Lead, Total Organic 0.81 U

Lab Sample ID: LCS 280-600178/2-B

**Matrix: Water Analysis Batch: 600181** 

Analyte Lead, Total Organic

Lead, Total Organic

**Matrix: Water** 

**Client Sample ID: Lab Control Sample** 

Client Sample ID: RHS-EF-TRAIN-01-011823-N

Prepared

Prep Type: Total/NA Prep Batch: 600178

%Rec

01/23/23 16:30 01/23/23 20:08

LCS LCS Spike Added Result Qualifier Unit Limits 15.0 14.3 ug/L 80 - 120

Lab Sample ID: 580-122419-2 MS

Lab Sample ID: 580-122419-2 MSD

**Matrix: Water** 

**Analysis Batch: 600181** 

Analyte

1.6 J

Spike Sample Sample Result Qualifier Added

15.0

RL

2.5

MS MS Result Qualifier 15.6

Unit ug/L

%Rec 93

%Rec Limits 80 - 120

Client Sample ID: RHS-EF-TRAIN-01-011823-N

Prep Type: Total/NA

**Prep Batch: 600178** 

Prep Type: Total/NA

Prep Batch: 600178

**Analysis Batch: 600181** RPD Sample Sample Spike MSD MSD %Rec Result Qualifier Added Result Qualifier Unit %Rec Limits RPD Limit 1.6 J 15.0 15.4 92 Lead, Total Organic ug/L 80 - 120

**Eurofins Seattle** 

#### **Lab Chronicle**

Client: AECOM Job ID: 580-122419-1

Project/Site: Red Hill NPDES CV22F0106

Client Sample ID: RHS-FB-TRAIN-01-011823-N

Lab Sample ID: 580-122419-1

Date Collected: 01/18/23 10:20 Date Received: 01/19/23 09:35

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Analysis	8260B/CA_LUFTMS		1	416087	JJY	EET SEA	01/24/23 02:05
Total/NA	Analysis	8260D		1	416093	JJY	EET SEA	01/24/23 02:05

Client Sample ID: RHS-EF-TRAIN-01-011823-N

Date Collected: 01/18/23 10:25 Date Received: 01/19/23 09:35

Jate Neceivea.	01/13/23 0	3.33						
_	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Analysis	8260B/CA_LUFTMS	-	1	416087	JJY	EET SEA	01/24/23 02:53
Total/NA	Analysis	8260D		1	416093	JJY	EET SEA	01/24/23 02:53
Total/NA	Prep	3510C			416142	TGO	EET SEA	01/24/23 10:48
Total/NA	Analysis	8270E SIM		1	416210	T1L	EET SEA	01/24/23 23:47
Total/NA	Prep	3510C	RE		416465	TGO	EET SEA	01/27/23 12:49
Total/NA	Analysis	8015D	RE	1	416545	KLW	EET SEA	01/30/23 18:04
Total/NA	Prep	3510C			416249	TGO	EET SEA	01/25/23 11:14
Total/NA	Analysis	8015D		1	416389	KLW	EET SEA	01/26/23 16:19
Total Recoverable	Prep	3005A			415914	DLV	EET SEA	01/19/23 18:38
Total Recoverable	Analysis	6010D		1	416003	TMH	EET SEA	01/20/23 18:20
Total/NA	Prep	939M			600178	LRD	EET DEN	01/23/23 16:30
Total/NA	Prep	939M			600179	LRD	EET DEN	01/23/23 17:30

600181 LRD

1

Client Sample ID: RHS-IF-TRAIN-01-011823-N

939-M

Analysis

Total/NA

Date Collected: 01/18/23 10:30 Date Received: 01/19/23 09:35

Prep Type Total/NA	Batch Type Analysis	Batch Method 8260B/CA_LUFTMS	Run	Dilution Factor 1	Batch Number 416087	Analyst JJY	Lab EET SEA	Prepared or Analyzed 01/24/23 03:17
Total/NA	Analysis	8260D		1	416093	JJY	EET SEA	01/24/23 03:17
Total/NA	Prep	3510C			416249	TGO	EET SEA	01/25/23 11:14
Total/NA	Analysis	8015D		1	416389	KLW	EET SEA	01/26/23 16:38

#### **Laboratory References:**

EET DEN = Eurofins Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100 EET SEA = Eurofins Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

**Matrix: Water** 

**Matrix: Water** 

**Matrix: Water** 

Lab Sample ID: 580-122419-2

Lab Sample ID: 580-122419-3

EET DEN 01/23/23 20:23

**Eurofins Seattle** 

# **Accreditation/Certification Summary**

Client: AECOM Job ID: 580-122419-1

Project/Site: Red Hill NPDES CV22F0106

#### **Laboratory: Eurofins Seattle**

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	<b>Expiration Date</b>
ANAB	Dept. of Defense ELAP	L2236	01-19-25

#### **Laboratory: Eurofins Denver**

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

Authority A2LA		Program Dept. of Defense ELAP	Identification Number 2907.01	Expiration Date 01-30-23
The following analytes the agency does not do		port, but the laboratory is not	certified by the governing authority.	This list may include analytes for which
Analysis Method	Prep Method	Matrix	Analyte	
939-M	939M	Water	Lead, Total Organic	

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# **Sample Summary**

Client: AECOM Job ID: 580-122419-1

Project/Site: Red Hill NPDES CV22F0106

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-122419-1	RHS-FB-TRAIN-01-011823-N	Water	01/18/23 10:20	01/19/23 09:35
580-122419-2	RHS-EF-TRAIN-01-011823-N	Water	01/18/23 10:25	01/19/23 09:35
580-122419-3	RHS-IF-TRAIN-01-011823-N	Water	01/18/23 10:30	01/19/23 09:35

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#### **Eurofins FGS, Seattle**

5755 8th Street East Tacoma, WA 98424

# **Chain of Custody Record**

eurofins

Environment Testing America

Client Information	Sampler: AECOM		······································		Lab P Elair	M: ie Wa	lker				···			arrier Ti edEx	acking	No(s):			COC No:	 ۹٥١	18 NPC	16S - 5	Ja.
Client Contact: Alethea Ramos (alternate: Margie Pascua)	Phone:	······································	· · · · · · · · · · · · · · · · · · ·		E-Mai M FI	i. aine V	Malke	er@F	urofi	nsFT	com			ate of ( awaii	Origin:				Page: Page 1 of				7
Company:		<del></del>	PWSID:		V	4,7,0.1	vance		OI CI			_:_ r					·······		Job #:				1
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Honolulu	TAT Requested (o	7 da	ys		1														8 - NaOH C - Zn Aceta		N - None O - AsNaO2		
State, Zip: Hawaii 96813	Compliance Proje	ct: ∆ Yes	Δ No				8260										ĺ		D - Nitric Ac E - NaHSO4		P - Na2O4S Q - Na2SO3	i	
Phone: 808-521-3051 (direct: 808-529-7283) (alternate: 808-356-5373)	PO #:						g þý		iene										F - MeOH G - Amchlor		R - Na2S2C S - H2SO4		İ
Email:	WO #:					2	F		phth M				Ì						H - Ascorbic I - Ice		T - TSP Doo U - Acetone		
alethea.ramos@aecom.com (alternate: margie.pascua@aecom.com) Project Name:	Project #:					8 2	3050/8260 and TPH-g by		hylna 270S		9							9	J - DI Waler K - EDTA		V - MCAA W - pH 4-5		1
CV22F0106	60674414.01.3	0.01				를 <b>3</b>	)826(		-met	5	6010B							į	L - EDA		Z - other (sp	ecify)	
site: RHSF	SSOW#:						305(	15	ene,	y 939	lead by							oj jo	Other:				1
Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matri (Wawate Sasolid Oawaste/e BTaTisaue, A	er, L	Field Fillered Perferential	VOCs (BTEX) by	TPH-d/r/o by 80	PAHs (naphthalene, 1-methylnaphthalen 2-methylnaphthalene) by 8270SIM	Organic Lead by 939M	Total organic le							Total Number	Spec	cial In:	structions/	Note:	
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# **Chain of Custody Record**

**Eurofins Seattle** 

5755 8th Street East

Tacoma, WA 98424 Phone: 253-922-2310	Chain of Custody Record	y Kecord			·	Environment Testing
Client Information (Sub Contract Lab)	Sampler:	Lab PM: Walker, Marie E		Carrier Tracking No(s):	-	COC No: 580-114357.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: M.Elaine.Walke	E-Mail: M.Elaine.Walker@et.eurofinsus.com	State of Origin: Hawaii	_	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditation Dept. of D	Accreditations Required (See note): Dept. of Defense ELAP - A2LA; Dept. of Defense ELAP - A	t. of Defense ELAP - A	7 47	Job #: 580-122419-1
Address: 4955 Yarrow Street, ,	Due Date Requested: 1/25/2023		Analysis Requested	equested		ion Code
City: Arvada	TAT Requested (days):				Radicar as a distribution	
State, Zip: CO, 80002					h desirable de voe	D - Nitric Acid Q - Na2SO3 E - NaHSO4 R - Na2S2O3
Phone: 303-736-0100(Tel) 303-431-7171(Fax)	PO#:	(0			- Additional Control	G - Amchlor T - TSP Dodecahydrate H - Ascorbic Acid
Email:	WO #:	(oN				
Project Name: Red Hill NPDES CV22F0106	Project #: 58017146	10 S9				
Site:	SSOW#:	sp (x				Other:
Sample Identification - Client ID (Lab ID)	Sample Date Time Genrah structure Sample Carcomp.	Matrix (w=water, Sesolid, O=wastelal, ijelid ijelid MS/M PT-Treng Aste)			Total Mumber	Special Instructions/Note:
	Preserva	X		- color	X	
RHS-EF-TRAIN-01-011823-N (580-122419-2)	1/18/23 10:25 Wa	Water			2	RH-MUST MEET TAT, NO EXCEPTIONS. Upload COA for standards to TALS

Note: Since laboratory accreditations are subject to change, Eurofins Environment Testing Northwest, LLC places the ownership of method, analyte & accreditation compliance upon our subcontract laboratory or other instructions will be provided. Any changes to accreditation does not currently maintain accreditation in the State of Origin listed above for analysis/lests/mainx being analyzed, the samples must be shipped back to the Eurofins Environment Testing Northwest, LLC attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Environment Testing Northwest, LLC.

	Possible Hazard Identification		<u>iš</u>	Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)	sed if samples are	retained longer	than 1 month)	
	Unconfirmed			Return To Client Dispo	Disposal By Lab	Archive For	Months	hs
	Deliverable Requested: I, II, III, IV, Other (specify)	Primary Deliverable Rank: 1	is _	Requir				
	Empty Kit Relinquished by:	Date:	Time:		Method of Shipment:			
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2/2/°	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:		Company	,
วกวร	Custody Seals Intact: Custody Seal No.: △ Yes △ No			Cooler Temperature(s) °C and Other Remarks: 5 0.0	DIL 0.13	7)		
R							1000/00/70 11	1000/00/

#### **Login Sample Receipt Checklist**

Client: AECOM Job Number: 580-122419-1

SDG Number:

Login Number: 122419 List Source: Eurofins Seattle

List Number: 1

Creator: Presley, Kim A

oreator. Fresiey, Killi A		
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.	True	
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").	False	Narrative to indicate if headspace container used for analysis.
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: 580-122419-1

SDG Number:

Login Number: 122419
List Source: Eurofins Denver
List Number: 2
List Creation: 01/21/23 05:18 PM

Creator: Roehsner, Karen P

ordator. Rochanci, Raion i		
Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>True</td> <td></td>	True	
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?	N/A	
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").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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**ANALYTICAL REPORT** 

## PREPARED FOR

Attn: Kathryn Repine AECOM 1001 Bishop Street Honolulu, Hawaii 96813 Generated 2/7/2023 1:49:20 PM

# **JOB DESCRIPTION**

Red Hill NPDES CV22F0106

# **JOB NUMBER**

580-122713-1

Eurofins Seattle 5755 8th Street East Tacoma WA 98424



# **Eurofins Seattle**

#### **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**

M. Elaine Walker

Generated 2/7/2023 1:49:20 PM

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 NPDES CV22F0106

Laboratory Job ID: 580-122713-1

# **Table of Contents**

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#### **Case Narrative**

Client: AECOM Job ID: 580-122713-1

Project/Site: Red Hill NPDES CV22F0106

Job ID: 580-122713-1

**Laboratory: Eurofins Seattle** 

**Narrative** 

CASE NARRATIVE
Client: AECOM
Project: Red Hill NPDES CV22F0106
Report Number: 580-122713-1

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 1/26/2023 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 2.5° 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.

#### **GASOLINE RANGE ORGANICS (GRO)**

Samples RHS-FB-TRAIN-02-012523-N (580-122713-1), RHS-EF-TRAIN-02-012523-N (580-122713-2) and RHS-IF-TRAIN-02-012523-N (580-122713-3) were analyzed for gasoline range organics (GRO) in accordance with CA\_LUFT\_GRO. The samples were analyzed on 02/03/2023.

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

#### **VOLATILE ORGANIC COMPOUNDS (GC-MS)**

Samples RHS-FB-TRAIN-02-012523-N (580-122713-1), RHS-EF-TRAIN-02-012523-N (580-122713-2) and RHS-IF-TRAIN-02-012523-N (580-122713-3) were analyzed for volatile organic compounds (GC-MS) in accordance with 8260C. The samples were analyzed on 02/02/2023 and 02/03/2023.

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

#### SEMIVOLATILE ORGANIC COMPOUNDS - SELECTED ION MODE (SIM)

Sample RHS-EF-TRAIN-02-012523-N (580-122713-2) was analyzed for semivolatile organic compounds - Selected Ion Mode (SIM) in accordance with 8270E SIM. The sample was prepared on 01/30/2023 and analyzed on 01/31/2023.

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

#### **DIESEL AND EXTENDED RANGE ORGANICS**

Samples RHS-EF-TRAIN-02-012523-N (580-122713-2) and RHS-IF-TRAIN-02-012523-N (580-122713-3) were analyzed for diesel and extended range organics in accordance with 8015D. The samples were prepared on 01/31/2023 and analyzed on 02/01/2023.

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

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#### **Case Narrative**

Client: AECOM Job ID: 580-122713-1

Project/Site: Red Hill NPDES CV22F0106

Job ID: 580-122713-1 (Continued)

**Laboratory: Eurofins Seattle (Continued)** 

#### **METALS (ICP)**

Sample RHS-EF-TRAIN-02-012523-N (580-122713-2) was analyzed for Metals (ICP) in accordance with 6010D. The sample was prepared on 01/30/2023 and analyzed on 01/31/2023.

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

#### **ORGANIC LEAD**

Sample RHS-EF-TRAIN-02-012523-N (580-122713-2) was analyzed for Organic Lead in accordance with 939M. The sample was prepared and analyzed on 01/31/2023.

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: 580-122713-1

Project/Site: Red Hill NPDES CV22F0106

**Qualifiers** 

**GC/MS VOA** 

U Indicates the analyte was analyzed for but not detected.

**GC/MS Semi VOA** 

Qualifier Qualifier Description

U Indicates the analyte was analyzed for but not detected.

GC Semi VOA

Qualifier Description

U Indicates the analyte was analyzed for but not detected.

**Metals** 

Qualifier Qualifier Description

J Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

U Indicates the analyte was analyzed for but not detected.

**Glossary** 

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

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

**Eurofins Seattle** 

Page 6 of 20 2/7/2023

# **Client Sample Results**

Client: AECOM Job ID: 580-122713-1

Project/Site: Red Hill NPDES CV22F0106

Client Sample ID: RHS-FB-TRAIN-02-012523-N

Date Collected: 01/25/23 10:15 Date Received: 01/26/23 09:30 Lab Sample ID: 580-122713-1

Matrix: Water

Method: SW846 8260B/CA_LUFTMS - Volatile Organic Compounds by GC/MS												
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac			
Gasoline Range Organics (C6-C12)	31	U	100	31	ug/L			02/03/23 19:07	1			
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac			

Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	94		78 - 120					02/03/23 19:07	1
- Method: SW846 8260D - Vo	olatile Organic	Compoun	ds by GC/MS						
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.24	U	1.0	0.24	ug/L			02/02/23 23:39	1
Toluene	0.39	U	1.0	0.39	ug/L			02/02/23 23:39	1
Ethylbenzene	0.50	U	1.0	0.50	ug/L			02/02/23 23:39	1
m-Xylene & p-Xylene	0.53	U	2.0	0.53	ug/L			02/02/23 23:39	1
o-Xylene	0.39	U	1.0	0.39	ug/L			02/02/23 23:39	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	94		80 - 120			-		02/02/23 23:39	1
1,2-Dichloroethane-d4 (Surr)	104		80 - 120					02/02/23 23:39	1
4-Bromofluorobenzene (Surr)	97		80 - 120					02/02/23 23:39	1
Dibromofluoromethane (Surr)	104		80 - 120					02/02/23 23:39	1

2/7/2023

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# **Client Sample Results**

Client: AECOM Job ID: 580-122713-1

Project/Site: Red Hill NPDES CV22F0106

Client Sample ID: RHS-EF-TRAIN-02-012523-N

Date Collected: 01/25/23 10:20 Date Received: 01/26/23 09:30

Fluoranthene-d10 (Surr)

Lead, Total Organic

Lab Sample ID: 580-122713-2

01/30/23 12:43 01/31/23 00:03

01/31/23 16:00 01/31/23 22:24

**Matrix: Water** 

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (C6-C12)	31	U	100	31	ug/L			02/03/23 19:32	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	98		78 - 120					02/03/23 19:32	1

Method: SW846 8260D - Vo	latile Organic	Compound	ds by GC/MS	,					
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.24	U	1.0	0.24	ug/L			02/03/23 00:04	1
Toluene	0.39	U	1.0	0.39	ug/L			02/03/23 00:04	1
Ethylbenzene	0.50	U	1.0	0.50	ug/L			02/03/23 00:04	1
m-Xylene & p-Xylene	0.53	U	2.0	0.53	ug/L			02/03/23 00:04	1
o-Xylene	0.39	U	1.0	0.39	ug/L			02/03/23 00:04	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	98		80 - 120			-		02/03/23 00:04	1
1,2-Dichloroethane-d4 (Surr)	100		80 - 120					02/03/23 00:04	1
4-Bromofluorobenzene (Surr)	100		80 - 120					02/03/23 00:04	1
Dibromofluoromethane (Surr)	99		80 - 120					02/03/23 00:04	1

Method: SW846 8270E SI	M - Semivolatile	Organic C	ompounds (	GC/MS	SIM)				
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	0.16	U	0.50	0.16	ug/L		01/30/23 12:43	01/31/23 00:03	1
2-Methylnaphthalene	0.039	U	0.20	0.039	ug/L		01/30/23 12:43	01/31/23 00:03	1
1-Methylnaphthalene	0.033	U	0.10	0.033	ug/L		01/30/23 12:43	01/31/23 00:03	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
2,4,6-Tribromophenol	87		29 - 144				01/30/23 12:43	01/31/23 00:03	1
Terphenyl-d14	97		29 - 150				01/30/23 12:43	01/31/23 00:03	1
2-methylnaphthalene-d10	70		35 - 120				01/30/23 12:43	01/31/23 00:03	1

49 - 129

0.81 U

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C9-C25	91	U	110	91	ug/L		01/31/23 10:54	02/01/23 18:30	1
C24-C40	180	U	200	180	ug/L		01/31/23 10:54	02/01/23 18:30	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
o-Terphenyl	66		53 - 120				01/31/23 10:54	02/01/23 18:30	1
- Method: SW846 601	IOD - Metals (ICP) - To	tal Recove	rable						
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	11	J	30	2.7	ug/L		01/30/23 17:23	01/31/23 14:46	1
Method: CADHS 93	9-M - Organic Lead (G	FAA)							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac

2.5

0.81 ug/L

**Eurofins Seattle** 

# **Client Sample Results**

Client: AECOM Job ID: 580-122713-1

Project/Site: Red Hill NPDES CV22F0106

Client Sample ID: RHS-IF-TRAIN-02-012523-N

Date Collected: 01/25/23 10:35 Date Received: 01/26/23 09:30

Lab Sample ID: 580-122713-3

**Matrix: Water** 

Method: SW846 8260B/CA_LUFTMS - Volatile Organic Compounds by GC/MS											
Analyte Gasoline Range Organics (C6-C12)	Result 31	<b>Qualifier</b> U	RL 100	<b>MDL</b> 31		<u>D</u>	Prepared	Analyzed 02/03/23 19:56	Dil Fac		
Surrogate 4-Bromofluorobenzene (Surr)	%Recovery 91	Qualifier	<b>Limits</b> 78 - 120				Prepared	Analyzed 02/03/23 19:56	Dil Fac		

Method: SW846 8260D - Vo	latile Organic	Compound	ds by GC/MS						
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.24	U	1.0	0.24	ug/L			02/03/23 00:28	1
Toluene	0.39	U	1.0	0.39	ug/L			02/03/23 00:28	1
Ethylbenzene	0.50	U	1.0	0.50	ug/L			02/03/23 00:28	1
m-Xylene & p-Xylene	0.53	U	2.0	0.53	ug/L			02/03/23 00:28	1
o-Xylene	0.39	U	1.0	0.39	ug/L			02/03/23 00:28	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	97		80 - 120			•		02/03/23 00:28	1
1,2-Dichloroethane-d4 (Surr)	102		80 - 120					02/03/23 00:28	1
4-Bromofluorobenzene (Surr)	92		80 - 120					02/03/23 00:28	1
Dibromofluoromethane (Surr)	96		80 - 120					02/03/23 00:28	1

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)												
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac			
C9-C25	91	U	110	91	ug/L		01/31/23 10:54	02/01/23 18:50	1			
C24-C40	180	U	200	180	ug/L		01/31/23 10:54	02/01/23 18:50	1			
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac			
o-Terphenyl	73		53 - 120				01/31/23 10:54	02/01/23 18:50	1			

**Eurofins Seattle** 

2/7/2023

Client: AECOM Job ID: 580-122713-1

Project/Site: Red Hill NPDES CV22F0106

#### Method: 8260B/CA LUFTMS - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 580-417007/5 Client Sample ID: Method Blank

**Matrix: Water** 

**Analysis Batch: 417007** 

MB MB Result Qualifier RL **MDL** Unit Analyzed Dil Fac Analyte D Prepared 100 Gasoline Range Organics (C6-C12) 31 U 31 ug/L 02/03/23 13:51

MB MB

Surrogate %Recovery Qualifier Limits Prepared Analyzed Dil Fac 78 - 120 4-Bromofluorobenzene (Surr) 91 02/03/23 13:51

Lab Sample ID: LCS 580-417007/8 **Client Sample ID: Lab Control Sample** Prep Type: Total/NA

**Matrix: Water** 

**Analysis Batch: 417007** 

LCS LCS Spike %Rec Analyte Added Result Qualifier Unit %Rec Limits Gasoline Range Organics 1000 877 ug/L 88 75 - 127

(C6-C12)

LCS LCS

Limits Surrogate %Recovery Qualifier 4-Bromofluorobenzene (Surr) 78 - 120 96

Lab Sample ID: LCSD 580-417007/9 Client Sample ID: Lab Control Sample Dup Prep Type: Total/NA

**Matrix: Water** 

**Analysis Batch: 417007** 

LCSD LCSD **RPD** Spike %Rec Added Analyte Result Qualifier Unit %Rec Limits **RPD** Limit 1000 Gasoline Range Organics 853 ug/L 85 75 - 127

(C6-C12)

LCSD LCSD

Surrogate %Recovery Qualifier Limits 4-Bromofluorobenzene (Surr) 96 78 - 120

Method: 8260D - Volatile Organic Compounds by GC/MS

**Analysis Batch: 416908** 

Lab Sample ID: MB 580-416908/6 **Client Sample ID: Method Blank Matrix: Water Prep Type: Total/NA** 

MR MR Analyte Result Qualifier RL **MDL** Unit D Prepared Analyzed Dil Fac Benzene 0.24 U 1.0 0.24 ug/L 02/02/23 16:16 Toluene 0.39 U 1.0 0.39 ug/L 02/02/23 16:16 Ethylbenzene 0.50 U 1.0 0.50 ug/L 02/02/23 16:16 m-Xylene & p-Xylene 0.53 U 2.0 0.53 ug/L 02/02/23 16:16 o-Xylene 0.39 U 1.0 0.39 ug/L 02/02/23 16:16

MB MB

	III						
Surrogate	%Recovery	Qualifier	Limits		Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	105		80 - 120	_		02/02/23 16:16	1
1,2-Dichloroethane-d4 (Surr)	101		80 - 120			02/02/23 16:16	1
4-Bromofluorobenzene (Surr)	90		80 - 120			02/02/23 16:16	1
Dibromofluoromethane (Surr)	90		80 - 120			02/02/23 16:16	1

**Eurofins Seattle** 

Prep Type: Total/NA

Client: AECOM Job ID: 580-122713-1

Project/Site: Red Hill NPDES CV22F0106

#### Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 580-416908/7

**Matrix: Water** 

**Analysis Batch: 416908** 

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

Spike LCS LCS %Rec Analyte Added Result Qualifier Unit D %Rec Limits Benzene 10.0 10.5 ug/L 105 80 - 122 Toluene 10.0 10.7 ug/L 107 80 - 120 Ethylbenzene 10.0 10.8 80 - 120 ug/L 108 m-Xylene & p-Xylene 10.0 10.8 108 80 - 120 ug/L 10.0 o-Xylene 10.8 ug/L 108 80 - 120

LCS LCS

Surrogate	%Recovery	Qualifier	Limits
Toluene-d8 (Surr)	101		80 - 120
1,2-Dichloroethane-d4 (Surr)	101		80 - 120
4-Bromofluorobenzene (Surr)	100		80 - 120
Dibromofluoromethane (Surr)	98		80 - 120

Lab Sample ID: LCSD 580-416908/8

**Matrix: Water** 

**Analysis Batch: 416908** 

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

	Spike	LCSD	LCSD				%Rec		RPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Benzene	10.0	10.5		ug/L		105	80 - 122	0	14
Toluene	10.0	11.0		ug/L		110	80 - 120	3	13
Ethylbenzene	10.0	10.8		ug/L		108	80 - 120	1	14
m-Xylene & p-Xylene	10.0	10.7		ug/L		107	80 - 120	0	14
o-Xylene	10.0	10.6		ug/L		106	80 - 120	2	16

LCSD LCSD

Surrogate	%Recovery	Qualifier	Limits
Toluene-d8 (Surr)	105		80 - 120
1,2-Dichloroethane-d4 (Surr)	99		80 - 120
4-Bromofluorobenzene (Surr)	95		80 - 120
Dibromofluoromethane (Surr)	92		80 - 120

#### Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM)

Lab Sample ID: MB 580-416571/1-A

**Matrix: Water** 

**Analysis Batch: 416620** 

**Client Sample ID: Method Blank** 

Prep Type: Total/NA **Prep Batch: 416571** 

MB MB Analyte Result Qualifier RL **MDL** Unit Prepared Analyzed Dil Fac Naphthalene 0.16 U 0.50 0.16 ug/L 01/30/23 12:43 01/30/23 20:54 2-Methylnaphthalene 0.039 U 0.20 0.039 ug/L 01/30/23 12:43 01/30/23 20:54 1-Methylnaphthalene 0.033 U 0.10 0.033 ug/L 01/30/23 12:43 01/30/23 20:54

MB MB

Surrogate	%Recovery Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4,6-Tribromophenol	86	29 - 144	01/30/23 12:43	01/30/23 20:54	1
Terphenyl-d14	96	29 - 150	01/30/23 12:43	01/30/23 20:54	1
2-methylnaphthalene-d10	73	35 - 120	01/30/23 12:43	01/30/23 20:54	1
Fluoranthene-d10 (Surr)	91	49 - 129	01/30/23 12:43	01/30/23 20:54	1

**Eurofins Seattle** 

2/7/2023

Job ID: 580-122713-1

Project/Site: Red Hill NPDES CV22F0106

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Lab Sample ID: LCS 580-416571/2-A

**Matrix: Water** 

Client: AECOM

Analysis Batch: 416620

**Client Sample ID: Lab Control Sample** 

Prep Type: Total/NA

**Prep Batch: 416571** 

	Spike	LCS	LCS				%Rec	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Naphthalene	8.00	5.31		ug/L		66	34 - 120	
2-Methylnaphthalene	8.00	5.26		ug/L		66	33 - 120	
1-Methylnaphthalene	8.00	5.18		ug/L		65	29 - 120	

LCS LCS

Lab Sample ID: LCSD 580-416571/3-A

Surrogate	%Recovery	Qualifier	Limits
2,4,6-Tribromophenol	90		29 - 144
Terphenyl-d14	93		29 - 150
2-methylnaphthalene-d10	76		35 - 120
Fluoranthene-d10 (Surr)	88		49 - 129

Client Sample ID: Lab Control Sample Dup

**Matrix: Water** 

**Analysis Batch: 416620** 

Prep Type: Total/NA **Prep Batch: 416571** 

Spike LCSD LCSD %Rec **RPD** Analyte Added Result Qualifier Unit D %Rec Limits **RPD** Limit 8.00 35 Naphthalene 5.70 ug/L 71 34 - 120 7 8.00 72 2-Methylnaphthalene 5.72 ug/L 33 - 120 8 35 1-Methylnaphthalene 8.00 69 29 - 120 35 5.53 ug/L

LCSD LCSD

MB MB

Surrogate	%Recovery	Qualifier	Limits
2,4,6-Tribromophenol	96		29 - 144
Terphenyl-d14	94		29 - 150
2-methylnaphthalene-d10	81		35 - 120
Fluoranthene-d10 (Surr)	90		49 - 129

#### Method: 8015D - Diesel Range Organics (DRO) (GC)

Lab Sample ID: MB 580-416671/1-A

**Matrix: Water** 

**Analysis Batch: 416777** 

Client Sample ID: Method Blank Prep Type: Total/NA **Prep Batch: 416671** 

Analyte Result Qualifier RL **MDL** Unit Prepared Analyzed Dil Fac C9-C25 90 U 110 90 01/31/23 10:54 02/01/23 13:07 ug/L C24-C40 180 U 200 01/31/23 10:54 02/01/23 13:07 180 ug/L

MB MB Surrogate Qualifier Limits %Recovery Prepared Analyzed 53 - 120 01/31/23 10:54 02/01/23 13:07 o-Terphenyl 67

Lab Sample ID: LCS 580-416671/2-A

**Matrix: Water** 

**Analysis Batch: 416777** 

**Client Sample ID: Lab Control Sample** Prep Type: Total/NA **Prep Batch: 416671** 

Spike LCS LCS %Rec Added Limits Result Qualifier D %Rec Analyte Unit C9-C25 4000 3290 ug/L 82 55 - 134 ug/L C24-C40 4000 3260 81 36 - 143

**Eurofins Seattle** 

Client: AECOM Job ID: 580-122713-1

Project/Site: Red Hill NPDES CV22F0106

Method: 8015D - Diesel Range Organics (DRO) (GC) (Continued)

Lab Sample ID: LCS 580-416671/2-A **Matrix: Water** 

**Analysis Batch: 416777** 

**Client Sample ID: Lab Control Sample** 

Prep Type: Total/NA

**Prep Batch: 416671** 

LCS LCS

Surrogate %Recovery Qualifier Limits 53 - 120 o-Terphenyl

Lab Sample ID: LCSD 580-416671/3-A Client Sample ID: Lab Control Sample Dup

**Matrix: Water** 

**Analysis Batch: 416777** 

Prep Type: Total/NA

**Prep Batch: 416671** 

Spike LCSD LCSD %Rec **RPD** Added Result Qualifier Limits RPD Limit Analyte Unit D %Rec C9-C25 4000 3610 ug/L 90 55 - 134 9 26 C24-C40 4000 3780 ug/L 95 36 - 143 15 24

LCSD LCSD

Surrogate %Recovery Qualifier Limits o-Terphenyl 86 53 - 120

Method: 6010D - Metals (ICP)

Lab Sample ID: MB 580-416614/14-A

**Matrix: Water** 

**Analysis Batch: 416789** 

Client Sample ID: Method Blank **Prep Type: Total Recoverable** 

**Prep Batch: 416614** 

MB MB

Result Qualifier RL **MDL** Unit **Analyte** Prepared Analyzed Dil Fac 30 01/30/23 17:23 01/31/23 13:51 Lead 2.7 U 2.7 ug/L

Lab Sample ID: LCS 580-416614/15-A

**Matrix: Water** 

**Analysis Batch: 416789** 

**Client Sample ID: Lab Control Sample Prep Type: Total Recoverable** 

**Prep Batch: 416614** 

LCS LCS Spike %Rec Added Result Qualifier Unit %Rec Limits

Analyte Lead 1000 1000 ug/L 100 80 - 120

Lab Sample ID: LCSD 580-416614/16-A

**Matrix: Water** 

**Analysis Batch: 416789** 

Client Sample ID: Lab Control Sample Dup

**Prep Type: Total Recoverable** 

**Prep Batch: 416614** 

Spike LCSD LCSD %Rec **RPD** Analyte Added Result Qualifier Unit %Rec Limits RPD Limit Lead 1000 1020 ug/L 102 80 - 120 2

Method: 939-M - Organic Lead (GFAA)

Lab Sample ID: MB 280-600935/1-B

**Matrix: Water** 

Analysis Batch: 600938

**Client Sample ID: Method Blank** 

**Prep Type: Total/NA** 

Prep Batch: 600935

MB MB

Analyte Result Qualifier RL MDL Unit Prepared Analyzed Dil Fac ug/L Lead, Total Organic 0.81 U 2.5 0.81 01/31/23 16:00 01/31/23 22:01

**Eurofins Seattle** 

2/7/2023

# **QC Sample Results**

Client: AECOM Job ID: 580-122713-1

Project/Site: Red Hill NPDES CV22F0106

Method: 939-M - Organic Lead (GFAA) (Continued)

Lab Sample ID: LCS 280-600935/2-B				Clie	nt Saı	mple ID	: Lab Con	trol Sample
Matrix: Water							Prep Ty	pe: Total/NA
Analysis Batch: 600938							Prep Ba	tch: 600935
	Spike	LCS	LCS				%Rec	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Lead, Total Organic	15.0	14.5		ug/L		97	80 - 120	

Lab Sample ID: LCSD 280-600935/3-B				Client Sa	ımple	ID: Lab	Control	Sample	<b>Dup</b>
Matrix: Water							<b>Prep Ty</b>	pe: Tot	al/NA
Analysis Batch: 600938							Prep Ba	atch: 60	00935
	Spike	LCSD	LCSD				%Rec		RPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Lead, Total Organic	15.0	14.2		ug/L		95	80 - 120	2	20

#### **Lab Chronicle**

Client: AECOM Job ID: 580-122713-1

Project/Site: Red Hill NPDES CV22F0106

Client Sample ID: RHS-FB-TRAIN-02-012523-N

Date Collected: 01/25/23 10:15 Date Received: 01/26/23 09:30

	Batch	Batch		Dilution	Batch		Prepared
Prep Type	Type	Method	Run	Factor	Number Analyst	Lab	or Analyzed
Total/NA	Analysis	8260B/CA_LUFTMS			417007 JSM	EET SEA	02/03/23 19:07
Total/NA	Analysis	8260D		1	416908 JSM	EET SEA	02/02/23 23:39

Client Sample ID: RHS-EF-TRAIN-02-012523-N

Date Collected: 01/25/23 10:20 Date Received: 01/26/23 09:30

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Analysis	8260B/CA_LUFTMS		1	417007	JSM	EET SEA	02/03/23 19:32
Total/NA	Analysis	8260D		1	416908	JSM	EET SEA	02/03/23 00:04
Total/NA	Prep	3510C			416571	TGO	EET SEA	01/30/23 12:43
Total/NA	Analysis	8270E SIM		1	416620	TL1	EET SEA	01/31/23 00:03
Total/NA	Prep	3510C			416671	TGO	EET SEA	01/31/23 10:54
Total/NA	Analysis	8015D		1	416777	KLW	EET SEA	02/01/23 18:30
Total Recoverable	Prep	3005A			416614	TMH	EET SEA	01/30/23 17:23
Total Recoverable	Analysis	6010D		1	416789	JLS	EET SEA	01/31/23 14:46
Total/NA	Prep	939M			600935	LRD	EET DEN	01/31/23 16:00
Total/NA	Prep	939M			600936	LRD	EET DEN	01/31/23 17:00
Total/NA	Analysis	939-M		1	600938	LRD	EET DEN	01/31/23 22:24

Client Sample ID: RHS-IF-TRAIN-02-012523-N

Date Collected: 01/25/23 10:35 Date Received: 01/26/23 09:30

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Analysis	8260B/CA_LUFTMS			417007	JSM	EET SEA	02/03/23 19:56
Total/NA	Analysis	8260D		1	416908	JSM	EET SEA	02/03/23 00:28
Total/NA	Prep	3510C			416671	TGO	EET SEA	01/31/23 10:54
Total/NA	Analysis	8015D		1	416777	KLW	EET SEA	02/01/23 18:50

**Laboratory References:** 

EET DEN = Eurofins Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100 EET SEA = Eurofins Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

**Matrix: Water** 

**Matrix: Water** 

**Matrix: Water** 

Lab Sample ID: 580-122713-1

Lab Sample ID: 580-122713-2

Lab Sample ID: 580-122713-3

# **Accreditation/Certification Summary**

Client: AECOM Job ID: 580-122713-1

Project/Site: Red Hill NPDES CV22F0106

#### **Laboratory: Eurofins Seattle**

The accreditations/certifications listed below are applicable to this report.

ANAB Dept. of Defense ELAP L2236 01-19-25	Authority	Program	Identification Number	Expiration Date
	ANAB		L2236	01-19-25

#### **Laboratory: Eurofins Denver**

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

Authority	Pro	ogram	Identification Number	Expiration Date
A2LA	De	ept. of Defense ELAP	2907.01	10-31-23
I he following analyte	s are included in this repo	ort, but the laboratory is not o	certified by the governing authority.	This list may include analytes for w
the agency does not	•	ort, but the laboratory is not o	certified by the governing authority.	This list may include analytes for w
,	•	ort, but the laboratory is not on the Matrix	certified by the governing authority.  Analyte	This list may include analytes for w

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# **Sample Summary**

Client: AECOM Job ID: 580-122713-1

Project/Site: Red Hill NPDES CV22F0106

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-122713-1	RHS-FB-TRAIN-02-012523-N	Water	01/25/23 10:15	01/26/23 09:30
580-122713-2	RHS-EF-TRAIN-02-012523-N	Water	01/25/23 10:20	01/26/23 09:30
580-122713-3	RHS-IF-TRAIN-02-012523-N	Water	01/25/23 10:35	01/26/23 09:30

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#### **Eurofins FGS, Seattle**

5755 8th Street East Tacoma, WA 98424

# **Chain of Custody Record**

🔅 eurofins

Environment Testing America

Client Information	Sampler: AECOM				PM: ine Wai	kor						Carri Fed	er Trac	king N	o(s):			coc no: 20230125	NONES CO	- A - N
Client Information Client Contact:	Phone:	W-M-1	****	E-M		INGI							of Orig	γin:				Page:	· · · · · · · · · · · · · · · · · · ·	<u></u>
Alethea Ramos (alternate: Margie Pascua)				<u>M.E</u>	laine.V	Valker	@Ει	ırofins	ET.c	<u>om</u>		Haw		_				Page 1 of 1		
Company: AECOM			PWSID:						Ana	alysis	Red	ques	ted					Job#: 122 7	13	
Address: 1001 Bishop St. Suite 1600	Due Date Request see subcontrac		<del>*</del> . ***	****										Т		T		Preservation Cod	les:	
City: Honofulu	TAT Requested (d	ays): 7 day	vs.		11													A - HCL B - NaOH C - Zn Acetate	M - Hexane N - None O - AsNaO2	
State, Zip: Hawaii 96813	Compliance Projec				4	8260			Ì									D - Nitric Acid E - NaHSO4	P - Na2O4S Q - Na2SO3	İ
Phone:	PO #:	VI. 11 163			11	by 8;		ene,										F - MeOH G - Amchlor	R - Na2S2O3 S - H2SO4	
808-521-3051 (direct: 808-529-7283) (alternate: 808-356-5373)  Email:	WO #:				-[2]	TPH-9		ohtha M										H - Ascorbic Acid	T - TSP Dodecahy U - Acetone	/drate
alethea.ramos@aecom.com (alternate: margie.pascua@aecom.com) Project Name:	Project #:					and		hylna 270SI									Siers	J - DI Water K - EDTA	V - MCAA W - pH 4-5	
CV22F0106	60674414.01.30	).01			Ne (Yes or Yes or No)	3/8260		by 8	S   9	5							of containers	L - EDA	Z - other (specify)	i
Site: RHSF	SSOW#:					by 3050/8260 and TPH-g by	35	lene, lalene	y 939	lead by							) (C	Other:		
Committee Military in the Committee of t	Samala Data	Sample	Type (w: (C=comp, S= O=w	atrix water, solid, asteroil,	Fleid Filtered Perform #SA	8	TPH-d/r/o by 8015	PAHs (naphthalene, 1-methylnaphthalene, 2-methylnaphthalene) by 8270SiM	Organic Lead by 939M	organic						- Partition	Total Number	Q:		
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9

7/2023

# **Login Sample Receipt Checklist**

Client: AECOM Job Number: 580-122713-1

Login Number: 122713 List Source: Eurofins Seattle

List Number: 1

Creator: Holdener, Heather D

Greator: Holdener, Heather D		
Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>True</td> <td></td>	True	
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.	True	
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").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

3

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11

Client: AECOM Job Number: 580-122713-1

Login Number: 122713 List Source: Eurofins Denver
List Number: 2 List Creation: 01/31/23 12:45 PM

Creator: Held, Wesley

Creator: Heid, Wesley		
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.	N/A	
Sample custody seals, if present, are intact.	N/A	
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?	N/A	
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").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

**Eurofins Seattle** 



# **Bio-Aquatic Testing, Inc.**



#### AECOM US Navy OUTFALL RHS-EF-TRAIN-03-010923-N

**Chronic Biomonitoring Report** 

85388

Pimephales promelas

January 11, 2023

Approved by Joshung Reed

Bio-Aquatic Testing, Inc. • 2501 Mayes Rd. Ste. 100 • Carrollton, Texas • 75006

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Unless otherwise noted in the body of the report, all data reported in this document are in compliance with NELAC standards and apply only to the samples referenced within. This report document may not be edited or reproduced in part or in full by any other entity, unless Bio-Aquatic Testing, Inc. issues written approval.

 $\hbox{*HAND-WRITTEN RAW DATA TABLES ARE AVAILABLE UPON REQUEST}$ 

2501 Mayes Road, Suite 100 Carrollton, Texas 75006 Tel: (972) 242-7750 Fax: (972) 242-7749

#### TOXICITY TEST REPORT - Chronic

Client: AECOM Sample: RHS-EF-TRAIN-03-010923-N Facility: US Navy Laboratory Number: 85388 Permit No. Date: January 11, 2023

Pimephales promelas passed survival and growth testing requirements.

SAMPLE COLLECTION:

Composite effluent samples from AECOM, US Navy, were transported to Bio-Aquatic Testing via via Air Cargo. Samples were received on January 11, 2023, January 13, 2023, and January 15, 2023. Effluent samples were collected from Outfall RHS-EF-TRAIN-03-010923-N by facility personnel.

The effluent samples were analyzed for total residual chlorine using the Hanna Ion Specific Meter #711 and contained <0.10 mg/L, <0.10 mg/L, and <0.10 mg/L, respectively. Effluent and laboratory dilution water pH, temperature, and dissolved oxygen data were collected daily.

**TEST PROCEDURES:** 

Pimephales promelas

EPA METHOD: 1000

The seven-day Chronic Pimephales promelas survival and growth test was initiated at 17:10 hours on January 11, 2023. Five effluent concentrations of 12.5%, 25%, 50%, 75%, and 100% were prepared utilizing synthetic water as dilution water. The test was set up with 450mL plastic cups containing 250mL of test solution as test chambers. Forty organisms less than 24 hours old were used in each concentration. Each concentration consisted of five replicate chambers containing eight laboratory-cultured larvae. A control of five replicate cups of eight organisms each in synthetic water was conducted concurrently with the test. There was 100% survival in the control. The test was renewed daily with fresh solutions. Organisms in each test chamber were fed less than 24-hour old brine shrimp two times per day. At the end of the test all organisms were sacrificed, dried, and weighed. Data on surviving organisms and water quality were collected daily. The test ended at 10:40 hours on January 18, 2023. Survival and growth (weight) were statistically (p=0.05) analyzed according to EPA procedures to determine the Lowest Observable Effect Concentration (LOEC) and the No Observable Effect Concentration (NOEC).

#### SURVIVAL:

Pimephales promelas

Pimephales promelas survival data failed Shapiro Wilk's test for normality at the 0.01 (0.900) alpha level after the arc sine (square root (Y)) transformation. Bartlett's test for homogeneity is sensitive to non-normal data and should not be performed if data fail Shapiro Wilk's test. The non-parametric Steel's Many-One Rank test performed on Pimephales promelas survival data demonstrated no statistically significant differences between the control and any of the effluent concentrations tested.

LOEC: Not Calculable (Q) NOEC: 100% Effluent

#### GROWTH:

Pimephales promelas

*Pimephales promelas* growth data were normally distributed at the alpha level of 0.01 (0.900) using Shapiro Wilk's test for normality. Growth data were homogeneous using Bartlett's test at the alpha level of 0.01 (15.09) without data transformations. Using ANOVA and Dunnett's Test on *Pimephales promelas* growth data demonstrated no statistically significant differences between the control and any of the effluent concentrations tested.

LOEC: Not Calculable (Q) NOEC: 100% Effluent

# BIO-AQUATIC TESTING, INC. TOXICITY TEST

## Chronic Pimephales promelas

Client: AECOM US Navy Lab ID: 85388

Permit Number: Test Temperature (oC):  $25 \pm 1$ 

Sample Type: Composite Outfall Name: RHS-EF-TRAIN-03 Photo Period: 16 Hours Light

8 Hours Dark

Receiving Water Name:

**Begin Date:** 1/11/2023

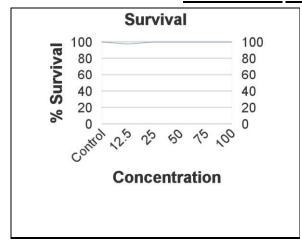
Test Start Time: 17:10 Test End Time: 10:40 End Date: 1/18/2023

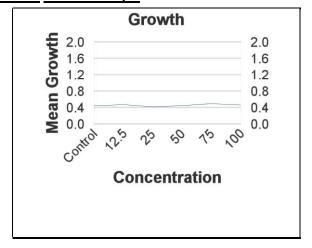
#### **SURVIVAL**

Effluent							0.4.**			
Con.		1/11	1/12	1/13	1/14	Number (	of Alive	1/17	1/18	Avg% Surv.
										Surv.
	Α	8	8	8	8	8	8	8	8	
Control	В	8	8	8	8	8	8	8	8	
Control	С	8	8	8	8	8	8	8	8	100.0%
	D	8	8	8	8	8	8	8	8	
	Е	8	8	8	8	8	8	8	8	
	Α	8	8	8	8	8	8	8	8	
	В	8	8	8	8	8	8	8	8	
12.5	С	8	8	8	8	8	8	8	8	97.5%
	D	8	8	8	8	8	8	7	7	
	Е	8	8	8	8	8	8	8	8	
	Α	8	8	8	8	8	8	8	8	
	В	8	8	8	8	8	8	8	8	
25	С	8	8	8	8	8	8	8	8	100.0%
	D	8	8	8	8	8	8	8	8	
	Е	8	8	8	8	8	8	8	8	
	Α	8	8	8	8	8	8	8	8	
	В	8	8	8	8	8	8	8	8	
50	С	8	8	8	8	8	8	8	8	100.0%
	D	8	8	8	8	8	8	8	8	
	Е	8	8	8	8	8	8	8	8	

Effluent	-									
Con.		1/11	1/12	1/13	Number 1/14	Of Alive 1/15	1/16	1/17	1/18	Avg% Surv.
	Α	8	8	8	8	8	8	8	8	
	В	8	8	8	8	8	8	8	8	
75	С	8	8	8	8	8	8	8	8	100.0%
	D	8	8	8	8	8	8	8	8	
	Е	8	8	8	8	8	8	8	8	
	A	8	8	8	8	8	8	8	8	
	В	8	8	8	8	8	8	8	8	
100	С	8	8	8	8	8	8	8	8	100.0%
	D	8	8	8	8	8	8	8	8	
•	Е	8	8	8	8	8	8	8	8	
	Α									
	В									
	С									
	D									
	Е									
	A									
	H									
	B C									
	D									
	E									

## **Concentration Response Relationships**





		Ch	ronic		]	Pime	phales	s pro	mela	s SU	JRVI	VAL					Lab II	): <b>8</b>	5388	<b>I</b>	
Clie	ent AECON	<u> </u>						Fac	ility _	US Na	avy							Outfall ple Typ		.HS-E	
	INSTRUCT			ronic			Only				~										
Cultui	re No. :	<u> </u>	1-7	3-	ole	B		_ <u>P</u>	hoto I	Period	: 16hr	light, 8	3hr da	rk	RANI	<u>DOMI</u>	<u>ZATIO</u>	<u>N:</u> S	C-5		3
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	DATE/TIME/ TECHNICIAN	A	В	С	D	E	A	В	С	D	Е	А	В	С	D	Е	А	В	С	D	E
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	118-23	$\bigcirc$					8			<u>'                                   </u>	8	8					8				
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Dha	A B	С	D	_ 	7 [	A	В	С	D D	Е	A	В	С	D	E	Γ			D	1	
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	Chronic	Pimepha	iles prome	las SURVIV	AL	L	ab ID: <b>853</b>	88
Client: AECON	**************************************		Facility	US Navy			Outfall: Sample Type	RHS-EF- Composite
EST INSTRUCT	IONS: Chronic	Fathead Only						
	<u> </u>			Test Temper:	atures			
Control		24Hr ld / new (25) (25)	48Hr old / new	72Hr old / new	96Hr old / new	5 days  old / new	6 days  old / new  25.5 25.5	v old

12.5 25 50 75 100 1-12-23 1-13-23 1116123 TIME/DATE TECH 1114/23 1115123 1-11-23 1117/23 11823 3-1710 EH 1308 C) 1527 1213/20 1207/20 120822 1519 Cd EH 1040 IR GUN ID# 020 020 020 020 020 070 020 010

Lined through spaces preceded by a number represent the same number. Lined spaces without a preceding number indicate unused or not applicable spaces.

**TOXICITY TEST** 

#### Chronic Pimephales promelas

Client: AECOM US Navy Lab ID: 85388

**Permit Number:** 

Sample Type: Composite Outfall Name: RHS-EF-TRAIN-03

**Receiving Water Name:** 

	S	ynthetic	c		SN			12.	.5					25					50		
_	ON	SN	Wt.	Avg.	Avg.	-		ON.	Wt.	Avg.	ı		ON	Wt.	Avg.	1		ON	Wt.	Avg.	
Α	8	8	3.325	0.416	0.416		A	8	3.456	0.432		Α	8	3.233	0.404		Α	8	3.283	0.410	
В	8	8	3.394	0.424	0.424		В	8	4.067	0.508		В	8	3.596	0.450		В	8	3.476	0.435	
С	8	8	3.682	0.460	0.460		С	8	3.716	0.465		С	8	3.399	0.425		С	8	3.372	0.422	
D	8	8	3.599	0.450	0.450		D	8	3.578	0.447		D	8	3.300	0.413		D	8	4.177	0.522	
Е	8	8	3.601	0.450	0.450		Е	8	3.931	0.491		Е	8	3.206	0.401		Е	8	3.457	0.432	
	_	Mea	n _	C.V. %	1		N	<u> 1ean</u>		C.V. %			Mean		C.V. %		V	lean	C	.V. %	,
	L	0.440	)	4.33			0	.469		6.67			0.418		4.72		(	0.444	10	).05	,
		SN Me	an SN	I C.V. %	<u>)</u>																
		0.440		4.3																	

		75				10	0										
_	ON	Wt.	Avg.	_		ON	Wt.	Avg.			ON	Wt.	Avg.		ON	Wt.	Avg.
Α	8	4.536	0.567		A	8	4.012	0.502		Α				A			
В	8	3.918	0.490	]	В	8	3.613	0.452	1	В				В			
С	8	4.183	0.523	L	С	8	3.424	0.428	1	С				С			
D	8	3.561	0.445	<u>_1</u>	D	8	2.858	0.357	•	D				D			
Е	8	3.517	0.440		Е	8	4.456	0.557		Е				Е			
	<b>Mean</b> 0.493		0.89			<b>1ean</b> ).459		6.44		ľ	Mean	C	.V. %	N	Mean		C.V. %

<sup>\* =</sup> spilled cup

Note: ON stands for original number per replicate, while SN refers to the number surviving after test completion.

Chronic

# Pimephales promelas TOXICITY TEST

Client:	AECOM		Lab ID: <b>85388</b>
Facility:	US Navy		Balance: Radwag BAL-007
Analyst:  Weigh Date: 1/11/2023  Analyst: 01/22	End Date: 1/18/2023		in Oven: $01/8/23/1510$ d from Oven: $01/9/23/1502$
ControlQtyWt	ı. Q	12.5 % ty. Wt.	<b>25 %</b>
A & 3.325		3,45L0	A \$ 3.233
B 3,394	В	4.067	в 3,594
c 3.68	carno o	3,578	c 3399 D W X 3,300
E 3.40		3,93	E 3.206
Qty. 50 %  A 8 3.283 B 3.474 C 3.3572 D 4.17- E 3.455	A 8	75 % 4,536 3,918 4,183 3,561 3,517	100 % Qty.  A 8 4.012 B 3.613 C 3.424 D 2.858 E 4.456
Qty. Wt. A B C D	A B C D	Oty. Wt.	Qty. Wt.  A B C D

Lined through spaces preceded by a number represent the same number. Lined spaces without a preceding number indicate unused or not applicable spaces.

Report Date: 02/14/2023 Revision 0 Page 10 of 26 Bio-Aquatic Lab ID: 85388

#### APPENDIX A

#### STATISTICS SUMMARY

Both the lethal and sub-lethal endpoints were statistically calculated according to their respective EPA guidelines. The Chronic Freshwater organisms were calculated according to EPA-821-R-02-013, October 2002 Fourth Edition. The Chronic Marine and Estuarine organisms were calculated according to EPA-821-R-02-014, October 2002 Third Edition. The Acute Freshwater and Marine organisms were calculated according to EPA-821-R-02-012, October 2002 Fifth Edition. The fertilization organisms were calculated according to EPA-600-R-95-136 or EPA-600-R-12-022, dependent upon the species. Listed below are the basic principles of these guidelines. If you would like a copy of the raw statistical calculations for your test then please contact us.

The chronic and acute *Pimephales promelas* and *Menidia beryllina* survival data is analyzed using Shapiro Wilks Test and Bartlett's Test. If the data passes both tests then the data is run through ANOVA and Dunnetts (parametric). If the data fails Shapiro Wilks Test or Bartlett's Test then Steels Many One Test (non-parametric) is used. The chronic *Pimephales promelas* and *Menidia beryllina* growth data is analyzed using Shapiro Wilks Test and Bartlett's Test. If the data passes one of these tests then the data is run through ANOVA and Dunnetts. If the data fails Shipiro Wilks Test and Bartlett's Test then Steels Many One Test is used. Point estimation may also be used.

The chronic *Mysidopsis bahia* survival data is analyzed using Chi-square test and Bartlett's Test. If the data passes both tests then the data is run through ANOVA and Dunnetts. If the data fails Chi-square test or Bartlett's Test then Steels Many One Test is used. *Mysidopsis bahia* growth data is analyzed using Chi-square test and Bartlett's Test. If the data passes one of these tests then the data is run through ANOVA and Dunnetts. If the data fails Chi-square test and Bartlett's Test then Steels Many One Test is used. Point estimation may also be used.

The acute *Mysidopsis bahia* survival data is analyzed using Shapiro Wilks Test and Bartlett's Test. If the data passes both tests then the data is run through ANOVA and Dunnetts. If the data fails Shipiro Wilks Test or Bartlett's Test then Steels Many One Test is used. Point estimation may also be used.

The chronic *Ceriodaphnia dubia* survival data are analyzed using the Fisher's Exact Test. The chronic *Ceriodaphnia dubia* reproduction and are analyzed using the Chi-square test and Bartlett Test. If the data passes one of these tests then the data is run through ANOVA and Dunnetts. If the data fails Chi-square test and Bartlett's Test then Steels Many One Test is used. Point estimation may also be used.

The acute *Daphnia pulex* and *Ceriodaphnia dubia* survival data is analyzed using Shapiro Wilks Test and Bartlett's Test. If the data passes both tests then the data is run through ANOVA and Dunnetts. If the data fails Shapiro Wilks Test or Bartlett's Test then Steels Many One Test is used. Point estimation may also be used.

The fertilization data is analyzed using Shapiro Wilks Test and Bartlett's Test. If the data passes both tests then the data is run through ANOVA and Dunnetts. If the data fails Shapiro Wilks Test or Bartlett's Test then Steels Many One Test is used. Point estimation or TST methodology may also be used.

Pimephales promelas Growth

File: 85388.ppg Transform: NO TRANSFORMATION

Shapiro - Wilk's test for normality

D = 0.049

W = 0.967

Critical W (P = 0.05) (n = 30) = 0.927

Critical W (P = 0.01) (n = 30) = 0.900

\_\_\_\_\_\_

Data PASS normality test at P=0.01 level. Continue analysis.

Pimephales promelas Growth

Transform: NO TRANSFORMATION File: 85388.ppg

\_\_\_\_\_\_

Bartlett's test for homogeneity of variance

Calculated B1 statistic = 10.24

-----

Table Chi-square value = 15.09 (alpha = 0.01, df = 5)

Table Chi-square value = 11.07 (alpha = 0.05, df =

Data PASS B1 homogeneity test at 0.01 level. Continue analysis.

Pimephales promelas Growth

Transform: NO TRANSFORMATION File: 85388.ppg

ANOVA TABLE

SOURCE	DF	SS	MS	F
Between	5	0.017	0.003	1.613
Within (Error)	24	0.049	0.002	
Total	29	0.066		

Critical F value = 2.62 (0.05, 5, 24)

Since F < Critical F FAIL TO REJECT Ho: All equal

Pimephales promelas Growth

File: 85388.ppg Transform: NO TRANSFORMATION

	DUNNETT'S TEST -	TABLE 1 OF 2	Ho:Control <t< th=""><th>reatment</th><th></th></t<>	reatment	
GROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	T STAT	SIG
1	Control	0.440	0.440		
2	12.5	0.469	0.469	-0.999	
3	25	0.419	0.419	0.747	
4	50	0.444	0.444	-0.147	
5	75	0.493	0.493	-1.851	
6	100	0.459	0.459	-0.670	

Dunnett table value = 2.36 (1 Tailed Value, P=0.05, df=24,5)

Pimephales promelas Growth

File: 85388.ppg Transform: NO TRANSFORMATION

	DUNNETT'S TEST -	TABLE 2	OF 2 Ho	:Control<	Treatment
GROUP	IDENTIFICATION	NUM OF REPS	Minimum Sig Diff (IN ORIG. UNITS)		DIFFERENCE FROM CONTROL
1	Control	5			
2	12.5	5	0.068	15.4	-0.029
3	25	5	0.068	15.4	0.021
4	50	5	0.068	15.4	-0.004
5	75	5	0.068	15.4	-0.053
6	100	5	0.068	15.4	-0.019

# **Bio-Aquatic Testing, Inc.**

FRESH W	WATER TEST SETUP FORM	
Client: AECOM	Permit	
Facility: US Navy	Lab Number <u>85388</u>	
Outfall Name: RHS-EF-TRAIN-03-010923-N	Number of samples 3	
Dilution Water: Synthetic Lab	Sx Revd Revd Sampling Dates Sampling  # Date Time Begin Date End Date Start	<b>Tim</b> End
Receiving Water Name:		21:0:
Dechlorinate Sample: No	2 01/13/23 15:20 01/11/23 01/11/23 00:00	21:00 21:10
Type of Test(s)		
Pimephales promelas Chronic	Start Sx # 1 Date: 1/11/2023  Renew Sx # 1 Date: 1/12/2023  Renew Sx # 1 Date: 1/13/2023	
Dilution Water	Renew Sx # 2 Date: 1/14/2023	
Hardness Alkalinity as mg/L CaCO <sub>3</sub> Sample #       As mg/L CaCO <sub>3</sub> Alkalinity as mg/L CaCO <sub>3</sub> 1       140       61         2       142       62         3       142       62	Renew Sx #       2       Date:       1/15/2023         Renew Sx #       3       Date:       1/16/2023         Renew Sx #       3       Date:       1/17/2023         Test Start Date:       Test End Date:         1/11/2023       1/18/2023	
Pimephales Test Set Up: 5 Rep  Test Set Up:	ps & 8 Organisms per Rep	
Concentrations: 12.5 25 50 75 100		
Test Chemistry on these dilutions: 12.5 25 50	0 75 100	
Samples received by: O < Value List Missing>		
Other:		

Hardness, Alkalinity, Residual Chlorine, Specific Conductivity, and Salinity Analysis Data

Client: AECOM Lab ID: 85388

Facility: US Navy Outfall: RHS-EF-TRAIN-03

Dilution Water(s): Synthetic Lab Test Date: January 11, 2023

#### **EFFLUENT PARAMETERS**

Effluent	Received		Residual	DeChlor	Ammonia	Analyst	Temp.
Sample #	Date	Time	$Cl_2$ (mg/L)	$(ml/L)^1$	(mg/L)	Initials	Received
1	1/11/23	16:30	< 0.10	N/A	< 0.25	JR	2.2
2	1/13/23	15:20	< 0.10	N/A	< 0.25	JR	5.0
3	1/15/23	14:14	< 0.10	N/A	< 0.25	GS	4.2

<sup>1</sup>Dechlorination Reagent: 0.025 N Sodium Thiosulfate

Effluent Sample #	рН	DO (mg/L)	Hardness (mg/L CaCO <sub>3</sub> )	Alkalinity (mg/L CaCO <sub>3</sub> )	Conductivity (umhos/cm)	Analyst Initials
1	7.5	8.4	105	66	543	JR
2	7.4	7.6	125	69	542	JR
3	6.9	11.7	139	74	547	GS

#### **DAILY RENEWAL CONDUCTIVITY\*\***

			Values a Highest D		
Date		Sample #	Specific Conductivity as umhos/cm	Salinity (ppt)	Analyst
1/11	Lab H2O		422	0.2	IC
1/12	Lab H2O		397	0.2	EH
1/13	Lab H2O		397	0.2	CA
1/14	Lab H2O		381	0.2	IC
1/15	Lab H2O		387	0.2	IC
1/16	Lab H2O		393	0.2	IC
1/17	Lab H2O		396	0.2	IC
1/11	OUTFALL*	1	503	0.3	IC
1/12	OUTFALL*	1	588	0.3	EH
1/13	OUTFALL*	1	542	0.3	CA
1/14	OUTFALL*	2	583	0.3	IC
1/15	OUTFALL*	2	584	0.3	IC
1/16	OUTFALL*	3	575	0.3	IC
1/17	OUTFALL*	3	570	0.3	IC

\*\*Conductivity is taken on the highest remaining effluent concentration used for test renewal, not necessarily 100%

Analysis Methods: Chlorine: Hanna Colorimeter #HI711, Ammonia: Hanna Colorimeter #HI733, Hardness: Hanna Photometer #HI96735, Alkalinity: Hanna Colorimeter #HI775, pH, DO, Conductivity: Thermo Versa Star Benchtop Meter

Report Date: 02/14/2023 Revision 0 Page 15 of 26 Bio-Aquatic Lab ID: 85388

pH, Dissolved Oxygen

**Chronic** Pimephales promelas

Client: AECOM Lab ID: 85388

Facility: US Navy
Outfall: RHS-EF-TRAIN-03-010923-N
Dilution Water(s): Synthetic Lab
Test Begin Date: January 11, 2023

NR indicates that the test is non-renewal.

				Concentration
ANALYST	DATE	TIME	SX# UNIT	Control 12.5 25 50 75 100
IC	1/11	Start 25 ± 1	1 pH DO (mg/L)	7.6       7.7       7.7       7.6       7.6       7.4
ЕН	1/12	24 Hr 25 ± 1	1 pH DO (mg/L)	7.5     7.5     7.5     7.5     7.6       8.1     8.4     8.4     8.3     8.3     8.3
		Renew	1 pH DO (mg/L)	7.6       7.5       7.5       7.6       7.5       7.5         8.2       8.3       8.3       8.5       8.5       8.6       8.6
CA	1/13	48 Hr 25 ± 1	1 pH DO (mg/L)	7.5     7.5     7.4     7.4     7.4     7.4     7.4       8.6     8.4     8.3     8.0     7.9     7.8
		Renew	1 pH DO (mg/L)	7.9     7.8     7.7     7.7     7.6     7.4       7.4     7.8     7.9     7.9     8.3     9.3
IC	1/14	72 Hr 25 ± 1	1 pH DO (mg/L)	7.4     7.4     7.4     7.4     7.5       8.2     8.1     8.1     7.9     7.9     7.8
	7/11	Renew	2 pH DO (mg/L)	7.7     7.7     7.7     7.7     7.6       7.8     7.9     7.9     8.0     8.0     8.3
IC	1/15	96 Hr 25 ± 1	2 pH DO (mg/L)	7.5     7.5     7.5     7.6     7.6     7.6       8.3     8.2     8.2     8.0     8.0     8.0
		Renew	2 pH DO (mg/L)	7.8     7.7     7.8     7.8     7.6       7.9     8.0     8.0     8.0     8.5
IC	1/16	$120 \text{ Hr}$ $25 \pm 1$	2 pH DO (mg/L)	7.4     7.4     7.4     7.4     7.5
		Renew	3 pH DO (mg/L)	7.6     7.7     7.7     7.7     7.6
JR	1/17	144 Hr 25 ± 1	3 pH DO (mg/L)	7.3     7.4     7.4     7.4     7.4     7.4     7.4       7.6     7.6     7.6     7.6     7.6     7.6     7.6
		Renew	3 pH DO (mg/L)	7.6     7.7     7.7     7.7     7.7     7.7       7.9     7.9     7.8     8.1     8.1     8.2
IC	1/18	$168 \text{ Hr}$ $25 \pm 1$	3 pH DO (mg/L)	7.5     7.5     7.5     7.5     7.6

# Appendix B

Pimephales promelas

# **BIO-AQUATIC TESTING, INC.**

Carrollton, TX

#### REFERENCE TOXICANTS

Bio-Aquatic Testing conducts reference toxicant testing monthly for organisms cultured in-house. For studies requiring purchased organisms, reference toxicant testing is performed simultaneously. Reference toxicant testing validates data and measures organism consistency. Only reagent grade chemicals are used of the following choices: sodium laurel sulfate (SLS), copper sulfate, copper chloride, potassium chloride, and sodium chloride. Organism responses are tracked with control charts for each reference toxicant/organism combination. The data are examined for sensitivity trends and to determine if results are within EPA described limits.

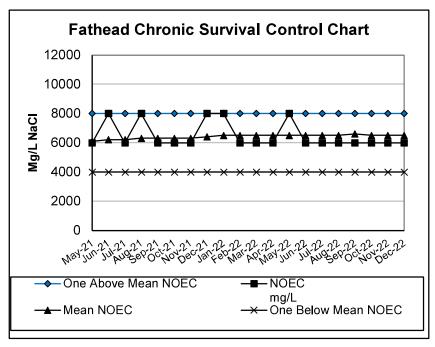
#### CHRONIC REFERENCE TOXICANT TEST RESULTS

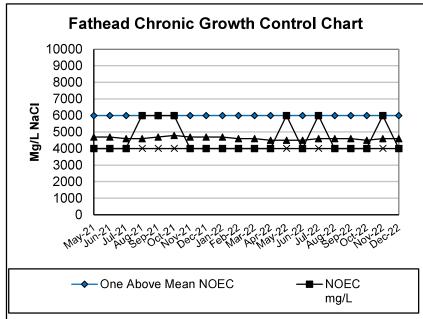
DILUTION WATER:	Standard Synthetic Freshwater
CHEMICAL:	Sodium Chloride
DURATION:	7 Days
TEST NUMBER:	374
PROJECT NUMBER:	84767
START DATE:	12/27/2022
START TIME:	15:17
TOTAL NUMBER EXPOSED:	40 organisms per concentration
CONCENTRATIONS (mg/L):	CON 2000 4000 6000 8000 10000 12000
NUMBER DEAD PER CONCENTRATION:	7 1 0 3 32 40 40
TEST METHODS:	As listed in EPA-821-R-02-013
STATISTICAL METHODS:	SURVIVAL: Steel's Many-One Rank Test GROWTH: ANOVA-Dunnetts Test
NOEC FOR SURVIVAL:	6000 mg/L
LOEC FOR SURVIVAL:	8000 mg/L
NOEC FOR GROWTH:	4000 mg/L
LOEC FOR GROWTH:	6000 mg/L

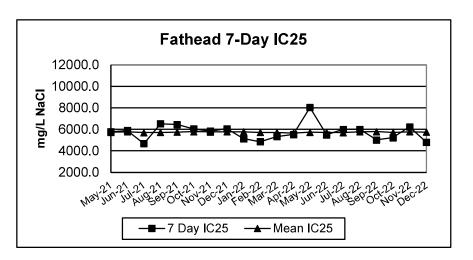
25.3

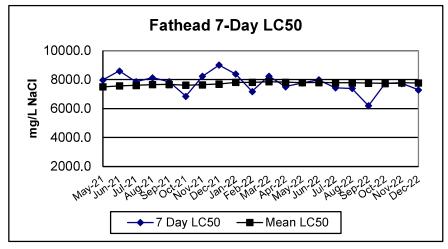
PMSD:

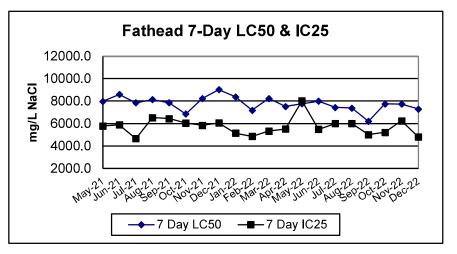
#### Bio Aquatic Testing, Inc.











#### APPENDIX C

#### LITERATURE REFERENCES

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- U.S.E.P.A., 2010. National Pollutant Discharge Elimination System Test of Significant Toxicity Technical Document, U.S. Environmental Protection Agency, Office of Wastewater, Washington D.C., EPA-833-R-10-004.
- U.S.E.P.A., 1991. Technical Support Document For Water Quality-Based Toxics Control, U.S. Environmental Protection Agency, EPA-505-2-90-001.
- Zarr, Jerrold, H., 1984. Biostatistical Analysis, (Second Edition). Prentice-Hall, Inc., Englewood Cliffs, N.J.

# CHAIN-OF-CUSTODY SHEETS

Appendix D

	IO-AQUA	BIO-AQUATIC TESTING, INC	TING, INC	45	CHAIN	CHAIN OF CUSTODY	TODY	Bio Only: No Sample Left	Lab ld :	3558
	CARROLLTON, TX 75006 PH: 972-242-7750 FAX: 9	CARROLLTON, TX 75006 PH: 972-242-7750 FAX: 972-242-7749	2-242-7749	Please F	se Review & Co	Please Review & Complete Sections A, B, C, & D Check Sample No.: First, Second, or Thir	ions A, B, C,		Sample No:	Effective Date 9/25/2017
Client: AECOM				1						
Facility: US Navy	- RH Shaft			n Ose	area below	Use area below to make changes, if the Scheduled Test(s) in "A" are incorrect:	ges, if the Sch	eduled Test(	s) in "A" are incorrect:	correct:
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	Ann Bridge	CUNTA BAR	CONTRACTOR OCIO ON CONTRACTOR	S. dui	D. pui		ouuim mord	seuəl	√ı peu ouuim,	dobis/
Client Phone: 910	-414 -58	ながら		۸)		_		- 1		
A REVIEW SCHE				☐Chronic☐96 Hour	Chronic   Chroni	Chronic	Chronic 196 Hour	□96 Hour	□Chronic	□Chronic □96 Hour
Chronic	Pimephales promelas	romelas	To Ship the				148 Hour   124 Hour	□24 Hour	148 Hour   124 Hour	148 Hour   124 Hour
			1st Sample on:	on: Notes: Chronic Fathead	nic Fathead					
Concentration: 12.5 25	5 50 75	100	. 1							
(For TX ) Setup separate 24	24hr Acute Test?	No								
(C)	Sample Type:	Sar	Sample Date	Samp (mi	Sample Time (military)	Grab		Sampled By:		Number Of
(Outfall No. or Name)	KS = Rec. Stream S = Sediment	From	To	From	To C	Composite	(Sign	Sign and Print Name)	me)	Shipped
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		Dechlorinate Sample:		Chlorine: 🗸 🔾	mg/l Ammonia:	onia: $\angle >$ . $2$ $arsigma$	mg/I Int. Sal	Int. Sal/Cond: $\mathcal{S}\mathcal{A}\mathcal{S}$ pı	Sppt/uS Adj. Salinity	ty ppt
		Dilution Water:	ater:	PH: 7	Hard	Hardness: / ⊖≶	mg/l	ж		
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B 52 52 E	BIO-AQUATIC TES 2501 MAYES RD., STE. 10 CARROLLTON, TX 75006 PH: 972-242-7750 FAX: 9	BIO-AQUATIC TESTING, INC, 2501 MAYES RD., STE. 100 CARROLLTON, TX 75006 PH: 972-242-7750 FAX: 972-242-7749	'ING, IN	<del></del>	ase Re	CHAIN Se Review & C	CHAIN OF CUSTODY Review & Complete Sections A, B sample No.: First, X Second. or	JSTODY iections A, B,	ت ن	Bio Only: lo Sample Lef	Lab Id :	
Client: AECOM				6	-							
Facility: US Navy -	- RH Shaft			ni	Use a	rea belo	v to make changes, Freshwater Species	hanges, if	the Schedu	ed Test(s	area below to make changes, if the Scheduled Test(s) in "A" are incorrect:  Freshwater Species	A" are incorrect:
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Outfall:				eid								
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			1st Sample on:		Notes: Chronic Rathead	Fothead						
Concentration: 12.5 25	5 50 75	100		~		20230112NPDES	-810-01					
(For TX ) Setup separate 24	24hr Acute Test?	No	···········									
C.	Sample Type:		Sample Date		Sample Time (military)	Time ry)	Grab		Samı	Sampled By:		Number Of Containers
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Bio-Aquatic Sample	e Login	BAT sample personnel:  O Yes  No		Date:   + 2	22	Time: /<	20	By:	T	Temperature:	S( ○ (c) IR#:	<b>7</b>
		) <u>2</u>		Chlorine:	, O.	mg/I Amı	Ammonia: ∠ 🗅 ,	2, mg/l	1 Int. Sal\Cond:	50	ppt/uS Adj. Salinity	ity ppt
		Dilution Water:	ter:	pH:	7	Har	Hardness: ∤2√	∭ l/gm	C Other			
		Keceiving Stream     Synthetic Lab	ream b	DO:	Š	mg/I Alk	Alkalinity: $\mathcal{C} = \mathcal{T}$	mg/l ⇔l⊂	Condition:	Õ	Sol	

	SIO-AQU,	BIO-AQUATIC TESTING, INC	TING, INC	_	CHAIN	CHAIN OF CUSTODY	STODY	<i>₹</i> □	- NPDES - B10 -01 Bio Only No Sample Left Lab Id: 8	× 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5
	ARROLLTO	CARROLLTON, TX 75006		Please R	eview &	Please Review & Complete Sections A, B, C, & D	ctions A, B,	C, & D.	Sample No:	
	Н: 9/2-242-,	PH: 972-242-7750 FAX: 972-242-7749	2-242-7749	Check	Check Sample No. :	: First,	Second, or	Third.	P.O. No:	Effective Date IMSEZ017
Client: AECOM				I_						
Facility: US Navy	- RH Shaft			es Ose	area belc	w to make cha	anges, if the	Use area below to make changes, if the Scheduled Test(s) in "A" are incorrect:	(s) in "A" are in	correct:
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Concentration: 12.5 25	5 50 75	100		TOPIO	iic ranicau					
(For TX ) Setup separate 24hr Acute Test?	thr Acute Test?	oN .								
ن ن	Sample Type: E = Effluent		Sample Date	Sampl (mili	Sample Time (military)	Grab		Sampled By:		Number Of
Sample ID or Location: (Outfall No. or Name)	RS = Rec. Stream S = Sediment	From	To	From	To	or Composite	<b>₩</b>	(Sign and Print Name)	ame)	Shipped
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		Dechlorinate Sample:		Chlorine:	mg/I Am	Ammonia: (0,7)	S mg/l Int.	Int. Sal\Cond: $5$ $\!$	AptfuS Adj. Salinity	ty ppt
		Dilution Water:		pH: 0,0	Har	Hardness: ( )	l/gm	Other		
		Synthetic Lab		DO:	mg/I Alk	Alkalinity: 기나	mg/I C	Condition: (っらら	<b>₽</b> 0	

# REGULATORY AGENCY TABLES

Appendix E

## Table 1 (Sheet 1 of 2 ) BIOMONITORING REPORT

#### Pimephales promelas SURVIVAL AND GROWTH TEST

Receiving Water

Permittee:	Al	ECOM	-US N	avy	
Permit No.:					
Outfall No.: RHS-E	F-TRAIN-	<u>03-010923-N</u>	l .		
Dates and times	FROM: _		e/Time 2023 @ 00:05	TO:	Date/Time 1/9/2023@ 21:05
Composites were collected:	FROM:	1/11/	2023 @ 00:00	TO:	1/11/2023@21:00
,	FROM: _	1/13/	2023 @ 00:10	TO:	1/13/2023@21:10
Test Initiation	: Time:	17:10	Date:	1/11/2023	

#### DATA TABLE FOR GROWTH OF Pimephales promelas

Effluent	Ave	rage Dry Weigh	nt in milligrams	(mg) per replica	ate	Mean Dry	CV % <sup>1</sup>
Concentration	А	В	С	D	E	Weight (mg)	CV 76
0%	0.416	0.424	0.460	0.450	0.450	0.440	4.3
12.5 %	0.432	0.508	0.465	0.447	0.491	0.469	6.7
25 %	0.404	0.450	0.425	0.413	0.401	0.418	4.7
50 %	0.410	0.435	0.422	0.522	0.432	0.444	10.1
75 %	0.567	0.490	0.523	0.445	0.440	0.493	10.9
100 %	0.502	0.452	0.428	0.357	0.557	0.459	16.4
PMSD		Accer	otable Range 30	or less		1	15.4 %

#### DATA TABLE FOR SURVIVAL OF Pimephales promelas

Effluent		Percent S	Survival per	replicate		Ave	erage % Surv	vival	0) ( 0) 1
Concentration	А	В	С	D	E	24 Hours	48 Hours	7-Day	CV % <sup>1</sup>
0%	100	100	100	100	100	100	100	100	0.0
12.5 %	100	100	100	87.5	100	100	100	97.5	5.7
25 %	100	100	100	100	100	100	100	100	0.0
50 %	100	100	100	100	100	100	100	100	0.0
75 %	100	100	100	100	100	100	100	100	0.0
100 %	100	100	100	100	100	100	100	100	0.0

<sup>&</sup>lt;sup>1</sup> Coefficient of Variation = (standard deviation/mean) x 100)

Dilution Water Used:

Synthetic Dilution Water

<sup>?=</sup> cannot be calculated due to 100% mortality or lab exception

## Table 1 (Sheet 2 of 2 ) BIOMONITORING REPORT

Pimephales promelas SURVIVAL AND GROWTH TEST

Permitte	ee:A	ECOM	- US Navy		
Permit I	No.:				
Outfall I	No.: <u>RHS-EF-TRAIN</u>	<u>-03-010923-N</u>			
	ETT'S PROCEDURE OF roni adjustment as appr			OR WILCOXON RAN	IK SUM TEST
	dry weight at 7 days sig ng to significant non-leth		0.05) than the contr	ol's mean dry weight	for the % effluent
	CRITICAL DILUTION	( 100%):	YES	X	NO
If no is chec	ked enter a '0' for Parar	meter TLP6C, othe	erwise enter a '1'.		
	ETT'S PROCEDURE O	R STEEL'S MANY	-ONE RANK TEST	OR WILCOXON RAN	IK SUM TEST
Is the surviva	al at 7 days significantly	less (p=0.05) than	n the control's surviv	al for % effluent corre	esponding to lethality?
	CRITICAL DILUTION	( 100%):	YES	X	_NO
If no is check	ked enter a '0' for Param	eter TWP6C, othe	erwise enter a '1'.		
3. Enter th	e percent effluent corre	sponding to each	NOEC/LOEC below	:	
a.	NOEC Survival =	100	% Effluent	(Parameter TOP60	C)
b.	LOEC Survival =	Q*	% Effluent	(Parameter TXP6C	<del>)</del> )
C.	NOEC Growth =	100	% Effluent	(Parameter TPP6C	<b>(</b> )
d.	LOEC Growth =	Q*	% Effluent	(Parameter TYP6C	;)
	Q* refers to	a value that is not cal	lculable		

Observer Name(s): Angelo Ge	chabe, Hunter Nishikawa Company: AECOM Date: 1/4/23 Time: 1040
Location: Red Hill Shaft 5 MC	Coordinates (latitude and longitude): 21.370777, -157.907716
Observer 1 Signature:	Digitally signed by Genabe, Angelo Date: 2023.02.02 15:13:43 -10'00'  Date: 2023.02.02 15:13:43 -10'00'  Date: 2/2/23
Observer 2 Signature: Hunte	Pr Nishikawa Digitally signed by Hunter Nishikawa DN: cn=Hunter Nishikawa, c=US, email=hunter.nishikawa@aecom.com Date: 2023.02.14.13:06:48-10'00'  Date:
WEATHER CONDITIONS:	
N	□ storm (heavy rain) □ rain (steady rain) ▼ showers (intermittent) <u>100</u> % cloud cover □ clear/sunny
Now	Ambient Air Temperature (°F): 74 Humidity (%): 65 Wind (mph): 10
Past 24 Hours	□ storm (heavy rain) □ rain (steady rain) ☒ showers (intermittent) <u>100</u> % cloud cover □ clear/sunny
Heavy rain in past 7 days?	□ yes ⊠ no
Notes:	
SAMPLE INFORMATION	WATER QUALITY:
NPDES Effluent Grab Sample	ID: RHS-EF-TRAIN-02-010423-N, RHS-EF-TRAIN-02-010423-(01)-N Sample Date/Time: 1/4/23, 1050
	-IF-TRAIN-02-010423-N, RHS-IF-TRAIN-02-010423-(01)-N Sample Date/Time: 1/4/23, 1110
Water Quality Equipment (Ma	ke, Model S/N): AquaTROLL: 925170, MiniRAE3000 PID: 592-600848
Previous grab sample Date:	2/28/22 GAC Train #: 01 Previous grab duplicate (monthly freq.) Date: 12/5/22 GAC Train #: 01
Previous WET sample Date:	
Previous WET sample Date:	Previous WET duplicate (quarterly freq.) Date: 12, 12, 12, 10, 22

NPDES Efforganic lea		Sample (La	ıg Tank) – T	PH-DRO (80	)15), TPH-R	RO (8015), 1	ΓPH-GRO (8	260), BTEX	(8260), tota	al lead (6010	В),
GAC Train #	Date	Time	pH (S.U.)	Cond. (mS/cm)	Temp. (°C)	Turb. (NTU)	Flow (gpm)	Odor <sup>a</sup>	Oils <sup>b</sup>	Appear. c	Headsp. (ppm)
02	1/4/23	1050	7.32	0.600	22.1	0.00	950	N	N	С	0.1
Influent Gr	ab Sample	- TPH-DRO	(8015), TP	H-RRO (801	5), TPH-GRO	O (8260)					
_	1/4/23	1110	7.51	0.600	21.9	0.00	2660	N	N	С	0.0

<sup>&</sup>lt;sup>a</sup> Odor codes: normal/none (N), petroleum (P), fishy (F), sewage (S), and chemical (C). Note in table if not listed.

Notes:		

GAC Train	GAC Units / Serial Numbers	Flushing Status – on or off at time of sample collection
01	01 (lead) / 2570, 02 (lag) / 2571	ON
02	03 (lead) / 2567, 04 (lag) / 2568	ON
03	05 (lead) / 2529, 06 (lag) / 2572	ON
04	07 (lead) / 26330, 08 (lag) / 26327	OFF

<sup>&</sup>lt;sup>b</sup> Surface oil codes: none (N), slick (S), sheen (SH), globs (G), and flecks (F). Note in table if not listed.

<sup>&</sup>lt;sup>c</sup> Water appearance codes: clear (C), opaque (O), slightly cloudy (SC), and cloudy (CL). Note in table if not listed.

### NPDES Red Hill Shaft GAC Discharge Field Sampling Data Sheet - Composite

Observ	er Name(s): Angelo Gei	nabe, Hunter	Nishikawa		Comp	any: <u>AECOl</u>	<u>M</u> Date: 1/	/9/23 <sub>]</sub>	Time: 0000	
Locatio	n: Red Hill Shaft 5 MG	D GAC	Coord	inates (latitud	de and longit	ude): 21.370°	777, -157.90°	7716		
WEAT	THER CONDITIONS:									
NI		□ storm (h	eavy rain) □	rain (steady	rain) 🗆 sho	wers (interm	ittent)	_% cloud cov	ver ເ⊗ clear/s	unny
Now		Ambient Ai	r Temperatur	e (°F): 68	Hum	idity (%): 8	8 /	Wind (mph):	6	
Past 2	4 Hours	□ storm (h	eavy rain) □	rain (steady	rain) □ sho	wers (interm	ittent) 50	_% cloud cov	ver □ clear/s	unny
Heavy	rain in past 7 days?	□ yes 🗷 n	10							
Notes:										
WET S	LE INFORMATION / ample ID:RHS-EF-TR. alysis Parameters: <u>Who</u>	AIN-03-0109	)23-N	) (821/R-02-	013), residua	l chlorine	Sample I	Date/Time: 1/	/9/23 (	0005-2105
ĭ Day	1 Initial Sample 2 3 Renewal Sample 2 5 Renewal Sample	Previo	us WET sam	ple: Date: 1	2/12/22 - 12/10 erly freq.) Da	6/22 GAC T			02	
GAC						Aliquot Coll	ection Time			
Train	GAC Units / Serial I	Numbers	Aliquot 1	Aliquot 2	Aliquot 3	Aliquot 4	Aliquot 5	Aliquot 6	Aliquot 7	Aliquot 8
01	01 (lead) / 2570, 02 (	lag) / 2571								
02	03 (lead) / 2567, 04 (	lag) / 2568								
03	05 (lead) / 2529, 06 (	lag) / 2572	0005	0305	0605	0905	1205	1505	1805	2105

07 (lead) / 26330, 08 (lag) / 26327

Train Effluent Flow Rate (gpm):

Influent Flow Rate (gpm):

Notes:					
Q.Q	Digitally signed by Genabe, Angelo				
Observer 1 Signature:	Date: 2023.02.02 15:14:28 -10'00'	Date: _	2/2/23	_	
Observer 1 Signature:  Observer 2 Signature:  Hunter Nishikawa	Digitally signed by Hunter Nishikawa DN: cn=Hunter Nishikawa, c=US, email=hunter.nishikawa@aecom.com Date: 2023.02.14 13:08:03 -10'00'	Date:	2/14/23		

### NPDES Red Hill Shaft GAC Discharge Field Sampling Data Sheet - Composite

Observe	er Name(s): Angelo Gen		Comp	any: <u>AECON</u>	M Date: 1/	11/23 <sub>1</sub>	Time: 2345 (1/	10/23)			
Locatio	n: <u>Red Hill Shaft 5 MGI</u>	O GAC	Coord	inates (latitud	de and longito	ude): 21.370°	777, -157.907	7716			
WEAT	HER CONDITIONS:										
		□ storm (he	eavy rain) 🗆	rain (steady	rain) 🗆 sho	wers (intermi	ittent)	_% cloud cov	rer ເ≝ clear/s	unny	
Now		Ambient Air	r Temperatur	re (°F): 68	Hum	idity (%): 8	4 V	Vind (mph):	4		
Past 2	4 Hours	□ storm (heavy rain) □ rain (steady rain) □ showers (intermittent) <u>40</u> % cloud cover □ clear/sunny									
Heavy rain in past 7 days? ☐ yes ☒ no											
Notes:											
WET S. Lab An □ Day ☑ Day	LE INFORMATION / Vample ID: RHS-EF-TRA alysis Parameters: Whole I Initial Sample A 3 Renewal Sample A 5 Renewal Sample	AIN-03-0111  le effluent to	23-N xicity (WET us WET sam	ple: Date: 1	013), residual 2/12/22 - 12/10 erly freq.) Da	6/22 GAC T	`rain #:			0000-2100	
GAC						Aliquot Coll	ection Time				
Train	GAC Units / Serial N	lumbers	Aliquot 1	Aliquot 2	Aliquot 3	Aliquot 4	Aliquot 5	Aliquot 6	Aliquot 7	Aliquot 8	
01	01 (lead) / 2570, 02 (la	ag) / 2571									
02	03 (lead) / 2567, 04 (la	ag) / 2568									
03	05 (lead) / 2529, 06 (la	ag) / 2572	0000	0300	0600	0900	1200	1500	1800	2100	
04	07 (lead) / 26330, 08 (la	ag) / 26327									

Train Effluent Flow Rate (gpm):

Influent Flow Rate (gpm):

Notes:						
Observer 1 Signature:		Digitally signed by Genabe, Angelo Date: 2023.02.02 15:14:57 -10'00'	Date:	2/2/23		
Observer 2 Signature	Hunter Nishikawa	Digitally signed by Hunter Nishikawa DN: cn=Hunter Nishikawa, c=US, email=hunter.nishikawa@aecom.com	Date:	2/14/23	-	
Observer 2 Signature.		Date: 2023.02.14 13:08:49 -10'00'	Date		_	

### NPDES Red Hill Shaft GAC Discharge Field Sampling Data Sheet - Composite

Observer Name(s): Angelo Gen	nabe, Hunter Nishikawa Company: <u>AECOM</u> Date: 1/13/23 Time: 0000
Location: Red Hill Shaft 5 MGI	D GAC Coordinates (latitude and longitude): 21.370777, -157.907716
WEATHER CONDITIONS:	
Now	□ storm (heavy rain) □ rain (steady rain) □ showers (intermittent)% cloud cover ☒ clear/sunny
Now	Ambient Air Temperature (°F): 65 Humidity (%): 90 Wind (mph): 3
Past 24 Hours	□ storm (heavy rain) □ rain (steady rain) □ showers (intermittent) <u>50</u> % cloud cover □ clear/sunny
Heavy rain in past 7 days?	□ yes ⊠ no
Notes:	
SAMPLE INFORMATION /	
WET Sample ID: RHS-EF-TRA	AIN-03-011323-N Sample Date/Time: 1/13/23 0010-2110
Lab Analysis Parameters: Who	le effluent toxicity (WET) (821/R-02-013), residual chlorine
☐ Day 1 Initial Sample	Previous WET sample: Date: 12/12/22 - 12/16/22 GAC Train #: 02
☐ Day 3 Renewal Sample	Previous WET duplicate (quarterly freq.) Date: 12/12/22 - 12/16/22 GAC Train #:02
☑ Day 5 Renewal Sample	

GAC		Aliquot Collection Time								
Train	GAC Units / Serial Numbers	Aliquot 1	Aliquot 2	Aliquot 3	Aliquot 4	Aliquot 5	Aliquot 6	Aliquot 7	Aliquot 8	
01	01 (lead) / 2570, 02 (lag) / 2571									
02	03 (lead) / 2567, 04 (lag) / 2568									
03	05 (lead) / 2529, 06 (lag) / 2572	0010	0310	0610	0910	1210	1510	1810	2110	
04	07 (lead) / 26330, 08 (lag) / 26327									
7	rain Effluent Flow Rate (gpm):	980	980	1000	980	1000	1000	1000	1050	
	Influent Flow Rate (gpm):		2530	2540	2560	2750	2770	2600	2540	

Notes:						
	79	Digitally signed by Genabe, Angelo				
Observer 1 Signature:		Date: 2023.02.02 15:15:58 -10'00'	Date: _	2/2/23	_	
Observer 1 Signature: Observer 2 Signature:	Hunter Nishikawa	Digitally signed by Hunter Nishikawa DN: cn=Hunter Nishikawa, c=US, email=hunter.nishikawa@aecom.com Date: 2023.02.14 13:09:38 -10'00'	Date:	2/14/23		
5 5 5 5 1 . 5 1 2 5 1 5 1 attair 6 1		Date. 2020.02.17 10.00.00 -10 00				

Observer Name(s): Angelo Ge	enabe, Max Ulloa 	Company: AECOM	Date:	0825 Time:
Location: Red Hill Shaft 5 MC	Digitally signed by Cons	ude and longitude): 21.37077  abe, Angelo :31-10'00' Date:	7, -157.907716	
Observer 1 Signature:				
Observer 2 Signature:	Date: 2023.02.13 15:12	90010625 2:08 -10'00' Date: 2/13/23		
WEATHER CONDITIONS	:			
New	☐ storm (heavy rain) ☐ rain (stead	dy rain) □ showers (intermitte	ent)% cloud co	ver ⊠ clear/sunny
Now	Ambient Air Temperature (°F): 7	70 Humidity (%):	Wind (mph):	6
Past 24 Hours	☐ storm (heavy rain) ☐ rain (stead	dy rain) ⊠ showers (intermitt	ent) 25 % cloud co	ver □ clear/sunny
Heavy rain in past 7 days?	□ yes ⊠ no			
Notes:				
GAMPY E DIFFORMATION	/WATERD ONAL KING			
SAMPLE INFORMATION	•		g 1 5 /m. 1	/11/23, 0835
_	E ID: RHS-EF-TRAIN-03-011123-N		_	
Influent Grab Sample ID: RHS	G-IF-TRAIN-03-011123-N 		_ Sample Date/Time: 1	/11/23, 0905
Water Quality Equipment (Ma	ake, Model S/N): AquaTROLL: 92048	1, MiniRAE3000 PID: 592-92	5645	
Previous grab sample Date:	1/4/23 GAC Train #: 02 Previou	us grab duplicate (monthly fro	eq.) Date: 1/4/23	GAC Train #:02
Previous WET sample Date:	12/12/22 - 12/16/22 Previous W/F	ET duplicate (quarterly freq.)	Date: 12/12/22 - 12/16/2	22

	NPDES Effluent Grab Sample (Lag Tank) – TPH-DRO (8015), TPH-RRO (8015), TPH-GRO (8260), BTEX (8260), total lead (6010B), organic lead (939M)											
GAC Train #	Date	Time	pH (S.U.)	Cond. (mS/cm)	Temp. (°C)	Turb. (NTU)	Flow (gpm)	Odor <sup>a</sup>	Oils <sup>b</sup>	Appear. c	Headsp. (ppm)	
03	1/11/23	0835	7.28	0.690	20.3	0.00	980	N	N	С	0.1	
Influent G	Influent Grab Sample – TPH-DRO (8015), TPH-RRO (8015), TPH-GRO (8260)											
_	1/11/23	0905	7.39	0.680	20.9	0.03	2540	N	N	С	0.0	

<sup>&</sup>lt;sup>a</sup> Odor codes: normal/none (N), petroleum (P), fishy (F), sewage (S), and chemical (C). Note in table if not listed.

Notes:			

GAC Train	GAC Units / Serial Numbers	Flushing Status – on or off at time of sample collection
01	01 (lead) / 2570, 02 (lag) / 2571	ON
02	03 (lead) / 2567, 04 (lag) / 2568	ON
03	05 (lead) / 2529, 06 (lag) / 2572	ON
04	07 (lead) / 26330, 08 (lag) / 26327	OFF

<sup>&</sup>lt;sup>b</sup> Surface oil codes: none (N), slick (S), sheen (SH), globs (G), and flecks (F). Note in table if not listed.

<sup>&</sup>lt;sup>c</sup> Water appearance codes: clear (C), opaque (O), slightly cloudy (SC), and cloudy (CL). Note in table if not listed.

Observer Name(s): Angelo Ge	nabe, Hunter Nishikawa 	Company: AECOM	Date: 1/18/23 Tir	1020 me:
Location: Red Hill Shaft 5 MC	GD GAC Coordinates (latitude a	and longitude): 21.370777,	-157.907716	_
Observer 1 Signature:	Digitally signed by Genabe, An Date: 2023.02.02 15:16:28 -10	ngelo D'00' Date: 2/2/23		
Observer 2 Signature: Hunte	Pr Nishikawa  Digitally signed by Hunter Nishikawa DN: cn=Hunter Nishikawa, c=US, email=hunter.nishikawa@aecom.com Date: 2023 02 14 13:10:19 -10'00'	Date:		
WEATHER CONDITIONS:				
N	☐ storm (heavy rain) ☐ rain (steady rain	n) 🗆 showers (intermitten	t)% cloud cover	r ⊠ clear/sunny
Now	Ambient Air Temperature (°F): 78	Humidity (%): 65	Wind (mph):	3
Past 24 Hours	☐ storm (heavy rain) ☐ rain (steady rain	n) ☐ showers (intermitten	t)% cloud cover	r ⊠ clear/sunny
Heavy rain in past 7 days?	□ yes ⊠ no			
Notes:				
SAMPLE INFORMATION	/ WATER QUALITY:			
NPDES Effluent Grab Sample	ID: RHS-EF-TRAIN-01-011823-N		Sample Date/Time: 1/18	3/23, 1025
Influent Grab Sample ID: RHS	-IF-TRAIN-01-011823-N	;	Sample Date/Time: 1/18	3/23, 1030
	ike, Model S/N): AquaTROLL: 920481, Mir			
attra Quanty Equipment (triu	, 1.2000 8/11//			
	1/11/23 GAC Train #: 03 Previous gra		1/4/23	G.T 02
	_	-		C Train #:
Previous WET sample Date:	1/9/23 - 1/13/23 Previous WET du	plicate (quarterly freq ) D	ate. 12/12/22 - 12/16/22	

	NPDES Effluent Grab Sample (Lag Tank) – TPH-DRO (8015), TPH-RRO (8015), TPH-GRO (8260), BTEX (8260), total lead (6010B), organic lead (939M)											
GAC Train #	Date	Time	pH (S.U.)	Cond. (mS/cm)	Temp. (°C)	Turb. (NTU)	Flow (gpm)	Odor <sup>a</sup>	Oils <sup>b</sup>	Appear. c	Headsp. (ppm)	
01	1/18/23	1025	7.06	0.620	22.4	0.16	950	N	N	С	0.0	
Influent G	Influent Grab Sample – TPH-DRO (8015), TPH-RRO (8015), TPH-GRO (8260)											
_	1/18/23	1030	7.52	0.630	23.1	0.29	2610	N	N	С	0.0	

<sup>&</sup>lt;sup>a</sup> Odor codes: normal/none (N), petroleum (P), fishy (F), sewage (S), and chemical (C). Note in table if not listed.

Notes:		
		_
		_

0.10.7		
GAC Train	GAC Units / Serial Numbers	Flushing Status – on or off at time of sample collection
01	01 (lead) / 2570, 02 (lag) / 2571	ON
02	03 (lead) / 2567, 04 (lag) / 2568	ON
03	05 (lead) / 2529, 06 (lag) / 2572	ON
04	07 (lead) / 26330, 08 (lag) / 26327	OFF

b Surface oil codes: none (N), slick (S), sheen (SH), globs (G), and flecks (F). Note in table if not listed.

<sup>&</sup>lt;sup>c</sup> Water appearance codes: clear (C), opaque (O), slightly cloudy (SC), and cloudy (CL). Note in table if not listed.

Observer Name(s): Angelo Ge	:nabe, Hunter Nishikawa 	Company: AECOM	Date: 1/25/23	Time: 1015
Location: Red Hill Shaft 5 MC	Coordinates (latitude a	and longitude): 21.370777	, -157.907716	
Observer 1 Signature:	Digitally signed by Genabe, An Date: 2023.02.02 15:17:22 -10	<sup>ngelo</sup> D'00' Date:		
Observer 2 Signature: Hunte	Digitally signed by Hunter Nishikawa DN: cn=Hunter Nishikawa, c=US, email=hunter.nishikawa@aecom.com Date: 2023.02.14.13:11:02-10'00'	Date:		
WEATHER CONDITIONS:				
New	☐ storm (heavy rain) ☐ rain (steady rain	n) □ showers (intermitter	nt) <u>90</u> % cloud	cover □ clear/sunny
Now	Ambient Air Temperature (°F): 75	Wind (mph	n): 11	
Past 24 Hours	☐ storm (heavy rain) ☐ rain (steady rain	n) 🗆 showers (intermitter	nt)50_% cloud	cover   clear/sunny
Heavy rain in past 7 days?	□ yes ⊠ no			
Notes:				
SAMPLE INFORMATION	/ WATED OHALITY			
			Sample Date/Time	1/25/23, 1020
Influent Grab Sample ID: RHS				
	ke, Model S/N): $\underline{\text{AquaTROLL: 920481, Mir}}$		-	
Previous grab sample Date:	1/18/23 GAC Train #: 01 Previous gra	ab duplicate (monthly freq	д.) Date: 1/4/23	GAC Train #:02
Previous WET sample Date:		nlicate (quarterly freq ) [	-	

NPDES Ef		Sample (La	ıg Tank) – T	PH-DRO (80	)15), TPH-R	RO (8015), 1	TPH-GRO (8	260), BTEX	(8260), tota	al lead (6010	В),	
GAC Train #	Date	Time	pH (S.U.)	Cond. (mS/cm)	Temp. (°C)	Turb. (NTU)	Flow (gpm)	Odor <sup>a</sup>	Oils <sup>b</sup>	Appear. c	Headsp. (ppm)	
02	1/25/23	1020	7.11	0.620	22.4	0.27	920	N	N	С	0.1	
Influent G	rab Sample	– TPH-DRO	(8015), TPI	H-RRO (801	5), TPH-GRO	O (8260)						
_	1/25/23	1035	7.55	0.620	23.1	0.58	2590	N	N	С	0.0	

<sup>&</sup>lt;sup>a</sup> Odor codes: normal/none (N), petroleum (P), fishy (F), sewage (S), and chemical (C). Note in table if not listed.

Notes:		

GAC Train	GAC Units / Serial Numbers	Flushing Status – on or off at time of sample collection
		,
01	01 (lead) / 2570, 02 (lag) / 2571	ON
02	03 (lead) / 2567, 04 (lag) / 2568	ON
03	05 (lead) / 2529, 06 (lag) / 2572	ON
04	07 (lead) / 26330, 08 (lag) / 26327	OFF

<sup>&</sup>lt;sup>b</sup> Surface oil codes: none (N), slick (S), sheen (SH), globs (G), and flecks (F). Note in table if not listed.

<sup>&</sup>lt;sup>c</sup> Water appearance codes: clear (C), opaque (O), slightly cloudy (SC), and cloudy (CL). Note in table if not listed.

mary 2023 Results					Trip Blank	NPDES Effluent Grab	NPDESETTLes COUR	Influent Glob	Influent Gods	NPDESETTLent Composite	TOPRING	NPDESETTH-HOUSE	Influent Grab	Trip Black	NPDES Effluent Glob	Influent Gold	19 tierk	APOS Effuero Gob	Influent Graß	1				
				Location		Red Hill Shaft	Red Hill Shaft	Red Hill Shaft	Red Hill Shaft	Red Hill Shaft	Red Hill Shaft	Red Hill Shaft	Red Hill Shaft	Red Hill Shaft	Red Hill Shaft	Red Hill Shaft	Red Hill Shaft	Red Hill Shaft	Red Hill Shaft					
				teceiving Water Body	-	Halawa Stream	Halawa Stream	Halawa Stream	Halawa Stream	Halawa Stream		Halawa Stream	Halawa Stream	-	Halawa Stream	Halawa Stream		Halawa Stream	Halawa Stream					
				Field Observations	-	No odor, no sheen, clear water observed.	No odor, no sheen, clear water observed.	No odor, no sheen, clear water observed.	No odor, no sheen, clear water observed.	No odor, no sheen, clear water observed.		No odor, no sheen, clear water observed.	No odor, no sheen, clear water observed.	-	No odor, no sheen, clear water observed.	No odor, no sheen, clear water observed.		No odor, no sheen, clear water observed.	No odor, no sheen, clear water observed.	1				
				Sample ID	RHS-FB-TRAIN-02-010422-N	RIG-GF-TRAN-02-010425-N	RHG-EF-TRAIN-02-010H20-(01)-N	RHG-F-TRAN-02-010423-N	RIGIE-TRANCO-010420-(01)-N	RIGG-EF-TRAIN-03-010023-N; RI-63-EF- TRAIN-03-011123-N (mineral); RI-63-EF- TRAIN-03-011123-N (mineral)	RIG FD-TRAN-03-011123-N	RHS-EF-TRAIN/03-011103-N	Rid #-TRAN-03-011123-N	RIG-FB-TRANIO1-011823-N	Red EF-TRAN-01-011020-N	RHS-6-TRANIO1-011823-N	RHG-FB-TRAN-02-012523-N	RHS-EF-TRAIN-03-012523-N	Rid-F-TRAN-02-012523-N					
				Sample Date	1423	1/423	1403	14623	1403	192310-11323	1/11/23	1/1103	1/11/23	1/19/23	1/18/29	1/1923	10503	19593	10503	1				
				Sample Time	10.45	1050	1050	11:10	11:10	00:05 to 21:00	830	6.8	905	1020	10.25	1030	10.15	1020	10:35	1				
				Туре	Trip Stank	Normal	FD	Normal	FD	Normal	Trip Stank	Normal	Namai	Trip Blank	Namai	Normal	Trip Blank	Nomal	Nornal	1				
				Lab	Eurofine	Eurofes	Eurofea	Eurofee	Eurofine	BioAquatica	Eurofea	Eurofine	Eurofes	Eurofine	Eurofes	Eurofina	Eurofee	Eurofes	Eurofes	1				
				500	121898-1	121896-2	121090-4	121899-3	121999-5	85388	122166-1	122140-2	122146-3	122419-1	122419-2	122419-3	122713-1	102713-0	122713-3		- 4	nuary 2023 NPOS	S DMR Summery*	
Test Analyse Method	CAS No.		NPDES Effluent Link (Freshwater)		Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	NPDES Effluent Limit (Freshwater)	Heles	Min	Average	T
8280 TPHg (C6-C12)	Gas	×	Report	S00 µg/L	21 U	21 U	21 U	21 U	31 U	-	31 U	31 U	31 U	31 U	21 U	31 U	21 U	21 U	21 U	Report	mgt	0.031 U	0.031 U	0.0
8015 TPH4 (C9-C25)	Diesel	×	Report	S00 µgit.	-	91 U	91 U	91 U	91 U	-	-	91 U	91 U	-	92 U	91 U	-	91 U	91 U	Report	mgt	0.091 U	0.09125 U	0.00
8015 TPH-0 (C26-C40)	Oil		-	500 µg/L	-	180 U	190 U	180 U	190 U	-	-	190 U	180 U	-	180 U	190 U	-	190 U	180 U					
- Total TPH <sup>3</sup>	-		-	S00 µgL	-	180 U	190 U	180 U	190 U	-	-	190 U	180 U	-	180 U	190 U	-	180 U	180 U					_
	71-43-2	×	1900	71 µgL	0.24 U	026 U	0.24 U	0.24 U	0.24 U	-	024 U	0.24 U	034 U	0.24 U	0.24 U	0.24 U	0.26 U	024 U	0.24 U	1.8	mgt	0.00004 U	0.00036 U	0.000
	100-41-4	x	11000	7.3 µgL	0.50 U	050 U	0.50 U	0.50 U	0.50 U	-	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	- 11	mgiL	0.000S U	0.0005 U	0.00
	179601-23-1	×	5800	9.0 pgt	0.59 U	039 U	0.39 U	0.39 U	0.39 U	-	039 U	0.39 U	0.29 U	0.59 U	0.39 U 0.53 U	0.59 U	0.39 U	0.39 U	0.39 U 0.53 U	5.8	mgiL	0.00039 U	0.00039 U	0.0003
	9547.6		- 1	- jgt	0.59 U	039 U	0.39 U	039 U	0.50 U	-	039 U	0.50 U	033 0	0.53 U	0.39 U	0.53 U	0.39 U	033 0	039 U	_	_	_		+
	1995/957	v	Report	13 191	0.50 U	050 U	0.00 U	0.53 U	0.50 U	-	0.53 U	0.50 U	0 S2 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	Second .	-	0.00053 11	0.00050 11	0,0000
	7639-92-1	×	29	- pgt	0.00	47 J	27 U		0.00		0.00	42 J	033 0	030 0	11 4	0.00 0		11 4	0.00	0.029	mgt.	0.0027 U	0.007725 J	9.01
	79-00-21		Report			081 U	0.81 U					24 J			1.6 4			081 U		Report		0,00081 U	0.001405 J	0.002
	75-74-1	х	Helpart	- Half	-	Oan O	oan u	-	-	-	-	24 3	-	-	1.6 J	-	-	Oan O	-	Regon	mgt.			_
PA 921 / Whole effluent toxicity	- 1	×	Pass <sup>2</sup>		-	-	-	-	-	Pass	-			-	-	-	-	-	-	Paus <sup>2</sup>	-	Pass	Pass	Pass
- Residual chlorine	7792-50-5		-	- ngt.	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-					
	90-12-0		-	2.1 µgt.	-	0.023 U	0.030 U	-	-	-	-	0.033 U	-	-	0.034 U	-	-	0033 U	-					
	91674		-	47 µgL	-	0.099 U	0.039 U	-	-	-	-	0.039 U	-	-	0.040 U	-	-	0039 U	-			_		_
	91-20-3		-	12 ust.	-	0.16 U	0.16 U	-	-	-	-	0.16 U		-	0.17 U	-	-	0.16 U	_			_		_
Field Flow	-	х	Report	- gall day	-	1368000	1368000	2820400	3830400	-	-	1411200	3657600	-	1368000	3758400	-	1324800	3729600	Report	galf day		1368000	141120
Field pH	-	×	55-80	- and unit	-	7.32	7.32	7.51	7.51	-	-	7.20	7.29	-	7.06	7.52	-	7.11	7.55	55-80	etd unit	7.06	7.1925	7.3
Field Temperature	-		-	Report degC	-	22.1	22.1	21.9	21.9	-	-	20.3	20.9	-	22.4	23.1	-	22.4	23.1					
Field Conductivity	-		-	Report uSion	-	600	600	600.00	600.00	-	-	660	680	-	620	630	-	600	620					
Field Turbidly lue highlighted cells = NPDES permit requir			-	Report NTU	_	0	0	0		-	-	0	0.03	-	0.16	0.29	-	0.27	0.58		$\perp$			
date:  Index (a) A control of the co	If the strail detected in of the strail detect reflect the efficient concentration above ion exceeds the Nil disample ance limits, tigh bis ince limits, tisy biss bis sord the specified in	concentrations of TP aid concentrations of imitation units specifi as the laboratory first POES permit limitation assed assed	Hig. TPHHI, and TPHHI m.p-Xylene and o-Xylen led in the NPOES perm of detection.	. If all values are non- Average values were	detect, the total value is the highest limi calculated using detected concentration	t of detection of m.p-Xylene and o-Xylene.	arabjas.																	