Joint Base Pearl Harbor-Hickam (JBPHH) Public Water System No. HI00000360 & Aliamanu Military Reservation (AMR) Public Water System No. HI0000337

Extended Drinking Water Monitoring Plan: Fourth Quarterly Report

Sampling Results Report for the JBPHH System (January – March 2025)

25 June 2025

Contents

Tables

Figures

Appendices

Acronyms and Abbreviations

ACO	Administrative Consent Order
AECOM	AECOM Technical Services
AL	Action Level
ARF	Average Response Factor
Army	United States Army
ATSDR	Agency for Toxic Substances and Disease Registry
CDCs	Child Development Centers
CDHs	Child Development Homes
COA	Course of Action
CRI	Community Representative Initiative
DOH	State of Hawaii Department of Health
EDB	1,2-Dibromoethane
EDWM	Extended Drinking Water Monitoring
EPA	United States Environmental Protection Agency
ISP	Incident Specific Parameter
JBPHH	Joint Base Pearl Harbor-Hickam
JP-5	Jet Propellant, Grade 5
LRE	Linear Regression Equation
LTM	Long-Term Monitoring
MCLs	Maximum Contaminant Levels
MDL	Method Detection Limit
MDVs	Medical, dental, and veterinary clinics
MRL	Method Reporting Limit
MS	Matrix Spike
NAH	Navy-Aiea Halawa Shaft
Navy	United States Navy
PAHs	Polycyclic Aromatic Hydrocarbons
PE	Performance Evaluation
PIANO	Paraffins, Isoparaffins, Aromatics, Naphthalenes, and Olefin
PWS	Public Water System
QA/QC	Quality Assurance/Quality Control
RH	Red Hill Shaft
SDS	Safety Data Sheet
SME	Subject Matter Expert
System	Joint Base Pearl Harbor-Hickam Drinking Water Distribution System
TPH	Total Petroleum Hydrocarbon
TPH-D	Total Petroleum Hydrocarbon, Diesel Range Organics
TPH-G	Total Petroleum Hydrocarbon, Gasoline Range Organics
TPH-O	Total Petroleum Hydrocarbon, Oil Range Organics
TTHM	Total Trihalomethanes
U.S.	United States
WQAT	Water Quality Action Team

Section 1. Introduction

This report documents the results of the fourth quarter (i.e., January – March 2025) of Extended Drinking Water Monitoring (EDWM) for the Joint Base Pearl Harbor-Hickam (JBPHH) Drinking Water Distribution System (System). Drinking water sampling was conducted in accordance with the EDWM Plan developed by the United States (U.S.) Navy (Navy), U.S. Army (Army), and a team of technical and subject matter experts (SMEs).[1,2] The EDWM Plan was implemented immediately following the completion of long-term monitoring (LTM) of the Public Water System (PWS) #HI0000360 and PWS #HI0000337 was completed in March 2024.[3] **Data collected during the fourth quarter of EDWM show no evidence of JP-5 fuel or other fuels in or impacting the System. The System continues to meet all State and Federal standards.**

The Navy is committed to providing safe drinking water to all JBPHH System users. As part of this commitment, the Navy voluntarily implemented the EDWM program to conduct enhanced drinking water monitoring and a more fuel-related investigatory approach to demonstrating JP-5 and other fuels are not impacting the System. The Navy intends to sample all residences that were not sampled under LTM, ensuring their water was thoroughly investigated. EDWM is one of several steps taken by the Navy to demonstrate the System is no longer impacted by the November 2021 Red Hill release of JP-5 or other fuels.

1.1 Background

The Navy voluntarily initiated the EDWM program and began sampling in April 2024, immediately following the completion of LTM, to ensure that it delivered on its commitment to investigate potential fuel-related contamination in the System. The U.S. Environmental Protection Agency (EPA) approved the final EDWM Plan on 01 November 2024. EDWM incorporates the lessons learned from LTM (e.g., refining analytical methods) and focuses on jet propellent, grade 5 (JP-5)/other fuel-related analytes in order to continue to demonstrate that the November 2021 Red Hill release or any fuel is not impacting the System and continue to ensure the System meets all State and Federal standards and is safe for consumption.

In accordance with the EDWM Plan, the Navy will sample the following locations:

- Waiawa Shaft (entry point to the distribution system) every month for most parameters and quarterly for others. Samples of the source water will be collected pre- and post-chlorination prior to distribution into the System.
- Navy Aiea-Halawa (NAH) Shaft and Red Hill (RH) Shaft raw source water (pre-chlorination) quarterly. Note: These shafts do not provide drinking water to the JBPHH System and are inactive. These samples are collected for information purposes only.
- Houses that were not sampled during LTM will be sampled in each of the 20 Zones on the System (see Figure 1). Manana Housing was added as a new sampling zone for EDWM. The Navy will provide residents with the opportunity to have their homes

[1] The EDWM Plan for the JBPHH PWS #HI0000360 and Aliamanu Military Reservation PWS #HI000037 is available at:https://jbphh-safewaters.org/public/JBPHH_EDWM_Plan_23Oct24.pdf.
[2] The EDWM Plan is an evergreen document and will continue to be updated based on field experience and the recommendations of SMEs, Navy and Army leadership, and U.S. Environmental Protection Agency (EPA)/Hawaii Department of Health (DOH). The EDWM Plan was finalized on 23 October 2024 and became effective as of 01 November 2024.
[3] For the purposes of this Plan, PWS #HI0000360 and PWS #HI0000337 will be considered a single distribution system divided into Zones.

sampled to pursue 100% coverage of remaining residences by the end of the 12-month EDWM. A single drinking water sample will be collected from each residence.

  - Approximately 65% of residences within each Zone were sampled during LTM, leaving approximately 35% to be sampled during EDWM. Note: 100% of the houses in Manana Housing will be sampled during EDWM in order to be consistent with all other Zones. 100% coverage is the overarching goal; however, the Navy will not force residents to have their homes sampled.

- Priority Buildings (i.e., schools, Child Development Centers [CDCs], medical clinics) in all Zones every month; and
- Hydrants in Zones where residences were sampled during the month (hydrants in Zones where residences were not sampled during the month will not be sampled).

EDWM is a surveillance tool intended to identify and evaluate potential JP-5 or other fuel-related impacts to continue to demonstrate that the November 2021 Red Hill release (or any other fuel-related concern) is not impacting the JBPHH System. The EDWM is one of the drinking water surveillance efforts that the Navy is implementing to continue to ensure the JBPHH drinking water is safe by meeting all State and Federal drinking water standards. At the start of EDWM, the Navy also implemented the Water Quality Action Team (WQAT; independent of and not required under EDWM) to expand the functionality of the previous Rapid Response Team in order to provide a more robust water quality concern response capability, complementary to EDWM. Additional information regarding EDWM is provided in Appendix A (Frequently Asked Questions).

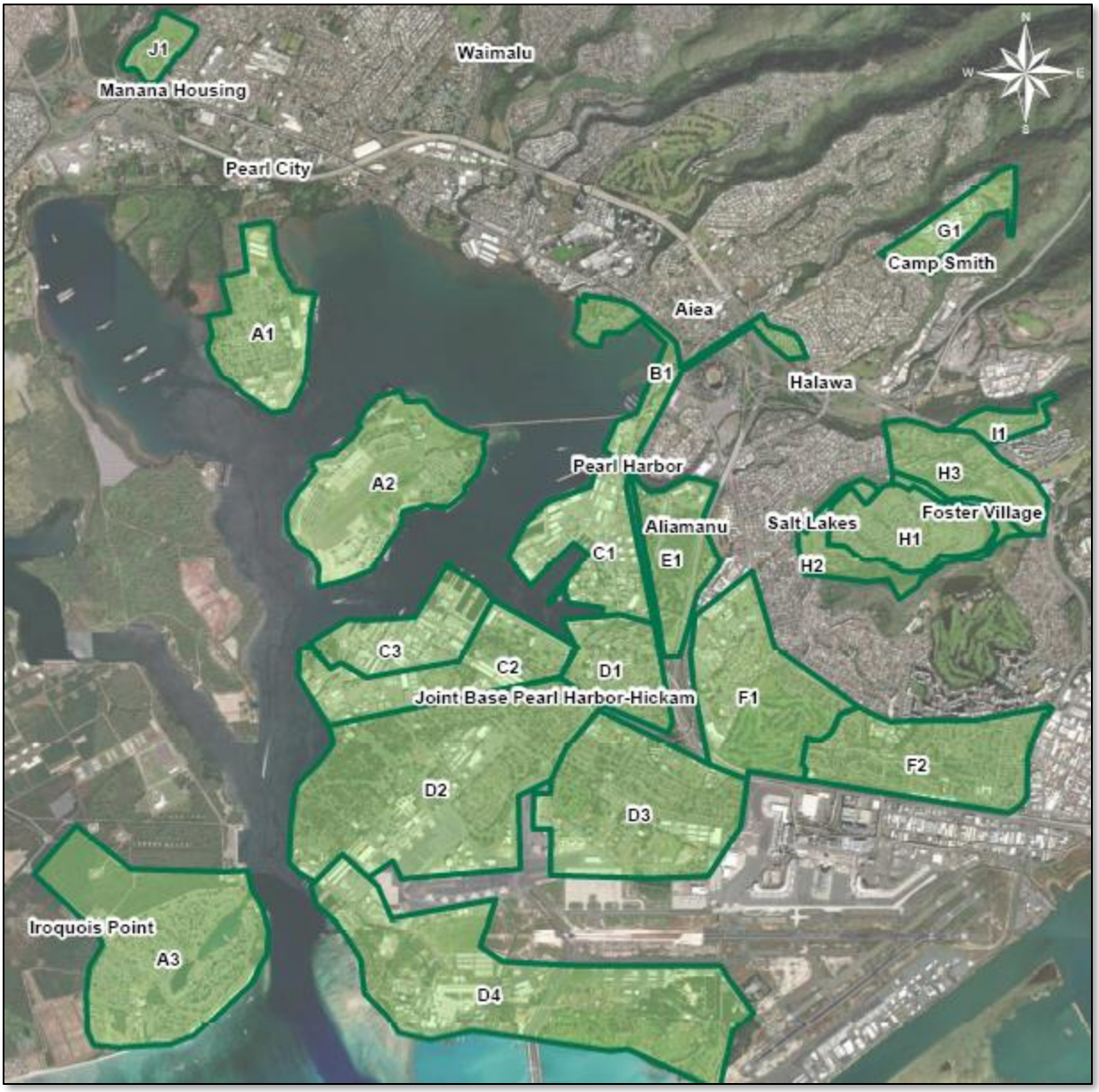


Figure 1. EDWM Sampling Zones

1.2 EDWM Schedule

The fourth quarter of EDWM sampling began in January 2025 following the conclusion of the third quarter of EDWM in December 2024. In accordance with the EDWM Plan, sampling is performed on a monthly basis and results are reported on a quarterly basis. Summaries of the EDWM sampling, including copies of the EDWM Quarterly Reports, will be posted on https://jbphh-safewaters.org/. Below is a summary of the drinking water sampling completed under EDWM.

Table 1. EDWM Schedule Summary

Sampling Event	Summary of Sampling Activities	Completion Date
First Quarter	25% of remaining houses, priority buildings, and distribution systems	June 2024
Second Quarter	25% of remaining houses, priority buildings, and distribution systems	September 2024
Third Quarter	25% of remaining houses, priority buildings, and distribution systems	December 2024
Fourth Quarter	25% of remaining houses, priority buildings, and distribution systems	March 2025

Section 2. EDWM Sampling Locations

Under EDWM, 4,954 drinking water samples were scheduled to be collected and analyzed. During the fourth quarter of EDWM (i.e., January – March 2025), 1,925 drinking water samples were collected from residences, schools, CDCs, hydrants (e.g., distribution lines), priority buildings (e.g., medical clinics), and Waiawa Shaft (source water) in accordance with the EDWM Plan and the Water Quality Action Team's (WQAT's) protocol. This brings the total sample count to 6,840 for all four quarters of EDWM. Drinking water samples were collected from 20 of the 20 Zones in accordance with the EDWM Plan.[4] Drinking water samples were also collected from 6 of the 20 Zones (i.e., A2, A3, D2, E1, F2, and H1) in accordance with the WQAT's protocol.

Table 2. Total Number of Samples by Location Type (April 2024 – March 2025)

Location Type	Number of Samples Collected[1]				Total Number of Samples
	1st Quarter (Apr – Jun 2024)	2nd Quarter (Jul – Sept 2024)	3rd Quarter (Oct – Dec 2024)	4th Quarter (Jan – Mar 2025)	
Residences	934	978	815	1,182	3,909
Schools	177	175	174	180	706
CDCs	128	134	126	130	518
Other Locations[2]	41	43	41	42	167
Hydrants	376	360	389	385	1,510
Waiawa Shaft	8	10	6	6	30
Total Samples Collected To-Date					**6,840**

Notes:
[1] This table includes EDWM samples (as scheduled in the EDWM Plan including field duplicates), WQAT samples, and re-samples.
[2] Other locations are defined as non-residences such as medical, dental, and veterinary clinics (MDVs).

The fourth quarter EDWM sampling locations are shown below in Figure 2.

[4] There are no residences in Zones C1 and D4; therefore, no drinking water samples were collected from residences in these zones during the fourth quarter of EDWM. Residential sampling is not planned in these Zones under EDWM; however, occupants of other locations, schools, or CDCs may request sampling through the WQAT if they have water quality concerns.

Figure 2. Fourth Quarter (January – March 2025) EDWM Sampling Locations

The EDWM Plan identified a target of 9,884 residences that were to be sampled on the System. By the end of LTM, 6,669 residences (67%) on the System had been sampled, which left an estimated amount of 3,214 residences to be sampled under EDWM. Between January and March 2025, 1,039 residences (32% of the residences not sampled during LTM) on the System were sampled.[5] A total of 9,171 residences (93% of residences on the System) have been sampled as of March 2025 (i.e., total number of residences sampled during LTM and EDWM). This total number of residences represents unique locations where a drinking water sample has been collected and does not include resamples. In other words, if a location was sampled both in LTM and EDWM, that location is only counted once towards the total number of residences sampled. The total number of samples collected as part of LTM and EDWM and a summary of EDWM completion are summarized in Tables 3 and 4.

[5] Total number of residences sampled includes only the number of unique locations that were sampled in the fourth quarter of EDWM and does not include any WQAT samples, field duplicates, or locations that were resampled during EDWM as part of additional investigations.

Table 3. Summary of Samples Collected during LTM and EDWM by Location (April 2024 – March 2025)

Location Type	Number of Samples Collected During EDWM[1]	Estimated Number of Samples Scheduled for EDWM[2]	EDWM Completion Percentage[3]	Number of Samples Collected During LTM	Total Number of Samples Collected (LTM + EDWM)
Residences	3,909	3,214	100%	6,631	10,540
Schools[4]	706	660	99.5%	412	1,118
CDCs[4,5]	518	504	93%[5]	311	829
Other Locations[4,6]	167	156	87%	698	865
Hydrants[4]	1,510	--	--	907	2,417
Waiawa Shaft	30	24	100%	12	42
Total Samples	**6,840**	**--**	**--**	**8,971**	**15,811**

Notes:

[1] This number include samples collected by the WQAT, field duplicates, and resamples.

[2] Estimated number of samples scheduled under EDWM were targets established during the development of the EDWM Plan based on available information (e.g., number of residences, number of CDCs, etc.) at the time. These estimates do not include resamples, field duplicates, or WQAT samples.

[3] Completion percentages are based on the number of samples collected versus the number of samples scheduled for EDWM in the EDWM Plan, and are not necessarily representative of the completion percentage of each individual zone. Zone completion percentages are provided below in Table 4.

[4] In accordance with Table 2-1 of the EDWM Plan:

Five samples from 11 schools will be collected on a monthly basis.
One sample from 2 Child Development Homes (CDHs) will be collected on a monthly basis.
Two samples from 19 CDCs will be collected on a monthly basis.
One sample from 13 other locations (i.e., MDVs) will be collected on a monthly basis.
There is no estimated number of hydrant samples. One sample will be collected from each hydrant each month where residential sampling is being conducted in that zone.

[5] At the time of developing the EDWM Plan, there were 21 CDCs (including two CDHs) on the System. Location A1-LOWE1103 was sampled during the first quarter of EDWM and was identified as a CDC. After the first quarter of EDWM, this location type was changed to a residence. This explains why the completion percentage (based on estimates presented in the EDWM Plan) is less than 100%. During EDWM, the Navy collected samples from CDCs at the approved sampling frequency.

[6] Other locations are defined as non-residences such as MDVs.

Table 4. Summary of Residential Sampling Completed during LTM and EDWM (April 2024 – March 2025)

Zone	Total Number of Residences	Number of Residences Sampled before EDWM	Number of Residences Sampled During Each Quarter of EDWM[1]					Total Number of Residences Sampled[2]	Total Number of Unique Residences Sampled on the System[3]	Completion Percentage[4]
			Q1	Q2	Q3	Q4	Q1 – Q4			
A1	635	423	54	46	28	111	239	662	594	94%
A2	411	303	45	25	10	47	127	430	387	94%
A3	1,457	959	99	102	158	140	499	1,458	1,331	91%
B1	227	167	18	20	11	25	74	241	214	94%
C1	--	--	--	--	--	--	--	--	--	--
C2	32	25	5	--	3	14	22	47	30	94%
C3	6	6	--	2	--	--	2	8	6	100%
D1	508	342	43	21	14	89	167	509	459	90%
D2	1,577	1,119	127	179	82	128	516	1,635	1,487	94%
D3	912	615	65	107	81	97	350	965	874	96%
D4	--	--	--	--	--	--	--	--	--	--
E1	89	84	7	5	1	13	26	110	85	96%
F1	752	512	53	64	40	85	242	754	671	89%
F2	1,435	976	125	125	96	130	476	1,452	1,314	92%
G1	10	10	--	--	5	1	6	16	10	100%
H1	918	635	80	94	93	57	324	959	870	95%
H2	230	150	26	20	26	22	94	244	222	97%
H3	379	248	38	36	41	37	152	400	364	96%
I1	136	93	9	24	11	12	56	149	132	97%
J1	170	2	51	26	32	31	140	142	141	83%
Total	**9,884**	**6,669**	**845**	**896**	**732**	**1,039**	**3,512**	**10,181**	**9,171**	**93%**

Notes:

[1] This table shows the unique locations that have been sampled as part of EDWM and LTM. This table does not include WQAT samples, field duplicates, or resamples to prevent locations from being double-counted. The purpose of this table is to track progress towards EDWM completion.

[2] This is the sum of residences sampled during LTM and EDWM. In some instances, the total number of residences sampled during LTM and EDWM is greater than the total number of residences in that Zone. Some residences have been sampled during LTM and EDWM. This could be for several reasons, such as the residence was resampled as part of a water quality investigation (e.g., detection of total petroleum hydrocarbon [TPH] or other fuel indicator compounds in accordance with Section 5 of the EDWM Plan [if necessary], resampling locations where elevated TPH detections were reported in LTM, or bracket sampling when a TPH detection was reported at a nearby residence).

[3] This count represents unique locations that were sampled immediately following the release, during LTM, or EDWM. This does not include resamples and locations that were sampled during multiple sampling efforts. In other words, if a location was sampled during LTM and EDWM, the location was only counted once per the total number of locations.

[4] While the Navy did not achieve full 100% coverage, representative samples were collected from 20 Zones. Samples were collected during each month of EDWM and were not limited to one area of the Zone (i.e., samples were collected throughout the entire Zone), ensuring the Navy achieved thorough spatial and temporal coverage throughout all of EDWM.

Section 3. EDWM Sampling Results

This section summarizes the results of the EDWM drinking water samples collected and analyzed during the fourth quarter of EDWM (i.e., January – March 2025). The following tables summarize the contaminants detected in drinking water samples:[6]

- Table 5 Contaminants Detected in Drinking Water Samples Collected from Residences
- Table 6 Contaminants Detected in Drinking Water Samples Collected from Schools
- Table 7 Contaminants Detected in Drinking Water Samples Collected from CDCs
- Table 8 Contaminants Detected in Drinking Water Samples Collected from Other Locations
- Table 9 Contaminants Detected in Drinking Water Samples Collected from Hydrants
- Table 10 Contaminants Detected in Drinking Water Samples Collected from Source Water (Waiawa Shaft – Post-Chlorination)

Note: Due to size and formatting these tables are included at the end of the report.

3.1 Analyte Exceedances

There were no exceedances of maximum contaminant levels (MCLs) or action levels (ALs) reported in drinking water samples collected during the fourth quarter of EDWM.

3.2 Total Petroleum Hydrocarbons Detections

TPHs were detected in 0% (i.e., 0 of 1,919) drinking water samples collected during the fourth quarter (i.e., January – March 2025) of EDWM. A summary of TPH detections reported during the fourth quarter of EDWM are summarized in Tables 11 and 12 below.

Table 11. Summary Statistics for Samples Analyzed during Fourth Quarter (January – March 2025) of EDWM

Summary Statistic	TPH-D	TPH-G	TPH-O	Total TPHs
Number of Samples Analyzed[1]	1,918	1,915	1,918	1,919
Number of Detections	0	0	0	0
Detection Frequency (%)	0%	0%	0%	0%
Minimum Detected Concentration (ppb)	--	--	--	--
Maximum Detected Concentration (ppb)	--	--	--	--
Average Detected Concentration (ppb)	--	--	--	--

Notes:
[1] This table includes EDWM samples (as scheduled in the EDWM Plan), WQAT samples, and re-samples.
TPH-D: Total Petroleum Hydrocarbons, Diesel Range Organics
TPH-G: Total Petroleum Hydrocarbons, Gasoline Range Organics
TPH-O: Total Petroleum Hydrocarbons, Oil Range Organics
ppb: Parts per billion

[6] These tables include the results from drinking water samples collected as part of the EDWM Plan , drinking water samples collected by the WQAT, and other additional resampling efforts not counted towards EDWM.

Table 12. Summary of TPH Results by Location Type (January – March 2025) of EDWM

Sample Location Type	Contaminant	Units	Screening Level	Basis for Screening Level	EDWM Summary – Fourth Quarter	
					No. of Detects out of Samples	Minimum – Maximum (Average)[1]
Residences	Total Petroleum Hydrocarbons (Total)	ppb	--[2]	--[2]	0/1,182	--
Schools					0/180	--
Child Development Centers					0/130	--
Other Locations[3]					0/42	--
Hydrants					0/382	--
Waiawa Shaft – Post Chlorination					0/3	--

Notes:
[1] These numbers are the minimum and maximum values from all the sample test results. The average (or mathematical mean) includes all sample test results with a detectable contaminant. An average is the sum of the results (excluding non-detects) divided by the total number of results with detection only.
[2] There is no established MCL for TPHs. For the purposes of the EDWM Plan, all detections of TPH above the method detection limit (MDL) will be investigated further to determine if JP-5 or other fuel-related analytes are present in the System.
[3] Other locations are defined as non-residences such as MDVs.

TPHs results represent all hydrocarbons present in that sample and are not necessarily fuel-related (known as petrogenic). TPHs are also naturally occurring biogenic (e.g., bacteria, algae) or pyrogenic (e.g., produced by combustion). JP-5 (i.e., the fuel released from Red Hill in November 2021) contains no chemicals in the TPH-O range. A detection of TPH-O is likely associated with location-specific impacts, such as lubricants used to maintain a fire hydrant and not JP-5.

Consistent with industry standards, common food-grade lubricants (e.g., white mineral oil) are used to service hydrants throughout the JBPHH System. Food-grade, means they are safe for incidental contact with food or animal products as long as they do not exceed certain concentrations. As water passes through the hydrant, it may come in contact with any residual lubricants. These lubricants will be reported as TPH-O by the laboratory if they are present in the sample. The Safety Data Sheet (SDS) for the food-grade lubricants used on the JBPHH System are provided as Appendix B.

Detected TPH concentrations of LTM samples ranged between 50 ppb and 256 ppb with an average concentration of 73 ppb. During LTM Period 6, the frequency of TPH detections increased, primarily in the TPH-D range. None of these detections has exceeded the State of Hawaii Department of Health DOH Incident Specific Parameter (ISP) level of 266 ppb. Since October 2023, the Navy has proactively worked with EPA and DOH on actions to investigate these low-level TPH detections in drinking water samples collected from the JBPHH System. These actions have included inspection and sampling of hot water heaters and interior faucets to ensure there is no contaminant buildup, as well as collection of samples from various points throughout the System.

During the week of 29 January 2024, an interagency team comprised of SMEs from the EPA, DOH, Navy, and Navy contractors met to discuss low-level TPH detections reported in drinking water samples collected from the System. Investigation into the low-level TPH detections indicated these results were likely attributed to a reaction between chlorine in the water (from treatment) and a surrogate used in the lab when analyzing the samples. The Navy voluntarily developed the EDWM Plan to analyze drinking water samples using a revised analytical method following the completion of LTM.[7] TPH results are consistent between the first, second, and third quarters of EDWM. There were no detections of TPHs in the fourth quarter of EDWM. The detection frequencies for the first, second, third, and fourth quarters are 0.24%, 0.30%, 0.26%, and 0%, respectively, with most detections conclusively being related to cross-contamination from incidental contact in the field (e.g., incidental contact with isopropyl alcohol, the disinfectant used in the field) and/or lab or a food-grade lubricant associated with hydrants. There has been no indication of fuel-related impacts in the System. The table below compares TPH results between LTM and the four quarters of EDWM.

Table 13. Summary of TPH Detections Reported during EDWM and LTM

Sampling Period	Contaminant	Units	No. of Detects out of Samples[1]	Minimum – Maximum (Average)[2]	Detection Frequency	
					Detected Less than or Equal to MRL	Detected Greater than MRL
LTM[3]	TPH	ppb	2,653/8,666 (31%)	50 – 256 (73)	2,033/2,653 (77%)	622/2,653 (23%)
First Quarter of EDWM			4/1,641 (0.24%)	49 – 1,552 (450)	2/4 (50%)	2/4 (50%)
Second Quarter of EDWM			5/1,689 (0.30%)	64 – 390 (158)	2/5 (40%)	3/5 (60%)
Third Quarter of EDWM			4/1,530 (0.26%)	53 – 143 (87)	2/4 (50%)	2/4 (50%)
Fourth Quarter of EDWM			0/1,916	--	--	--

Notes:
[1] The number of samples were based on samples collected from residences, schools, CDCs, hydrants, and other locations (e.g., non-residences and MDVs).
[2] These numbers are the minimum and maximum values from all the sample test results. The average (or mathematical mean) includes all sample test results with a detectable contaminant. An average is the sum of the results (excluding non-detects) divided by the total number results with detection only.
[3] For additional information LTM period summary reports are available for review at jbphh-safewaters.org.

When TPH is detected at a concentration greater than the method detection limit (MDL), and/or where JP-5 or other fuel-related indicator compounds are greater than the Method Reporting Limit (MRL), an additional investigation (in accordance with Course of Action [COA] 3 in Section 5.2.3 of the EDWM Plan) is conducted.[8] This investigation includes:

- An initial assessment to verify that the TPH/fuel-related indicator compounds results reported by the laboratory are not associated with blank contamination (i.e., method blank, field blank, or blind blank). If the results are not associated with blank contamination, the evaluation proceeds to Tier 1.
- A Tier 1 screening includes a detailed review of the laboratory report to determine if the detection is due to laboratory contamination, a petrogenic source (e.g., JP-5 or other fuel-related analytes), a non-petrogenic source, or inconclusive. If the detection is not

[7] For more information on the low-level TPH detections observed during LTM and the results of the investigation into these results, see the Summary of Technical Memorandum Regarding Low-Level Hydrocarbon Detections Observed During Long-Term Monitoring at: https://jbphh-safewaters.org/public/Tech_Memo_JBPHH_LOE's_LTM_TPH_Detects_Redacted_Rev.pdf.
[8] The EDWM plan was not approved by the EPA until the third quarter of EDWM (23 October 2024), which implemented additional analysis for detections of JP-5 and other fuel-related indicator compounds greater than the MRL. These detections were to be evaluated under COA 3 in Section 5.2.3 of the final EDWM Plan.

due to a JP-5 or other fuel-related petrogenic source, then the Tiered evaluation will STOP at Tier 1. The results of this analysis will be documented in a technical memorandum.[9]

Locations where samples were taken to analyze for TPH during the fourth quarter (i.e., January – March 2025) of EDWM are shown below in Figure 3.

Figure 3. Fourth Quarter (January – March 2025) EDWM TPH Sampling Locations

3.3 Other Analyte Detections

Five additional analytes were detected in drinking water samples collected during the fourth quarter of EDWM (i.e., January – March 2025): copper, lead, benzo(a)pyrene, benzo(g,h,i)perylene, and total trihalomethanes (TTHM). All results were below their respective MCL and AL. Another analyte that was discussed in this section was total organic carbon (TOC) as it was detected above the ISP of 4,000 ppb in one sample. Results for these chemicals were compared to MCLs/ALs.

[9] The Navy may elect to perform additional analysis (i.e., Tier 2 analysis) on some samples if the results of the Tier 1 assessment concludes that the Method 8015 TPH extract detection may be due to a JP-5 or other fuel-related petrogenic source. The Tier 2 analysis is voluntary and is not part of the EDWM.

A summary of detected analytes reported during the fourth quarter of EDWM is provided below in Table 14.

Table 14. Summary of Other Analyte Detections Reported during Fourth Quarter (January – March 2025) of EDWM

Contaminants	Units	Screening Level	No. Detects out of Samples[1]	Minimum – Maximum (Average)
Benzo(g,h,i)perylene	ppb	--[2]	1/1,912 (0.052%)	0.36 – 0.36 (0.36)
Benzo(a)pyrene	ppb	0.2	19/1,912 (0.99%)	0.01 – 0.064 (0.021)
Lead	ppb	15	796/1,530 (52%)	0.13 – 9 (0.33)
Copper	ppb	1,300	1,530/1,530 (100%)	1.4 – 330 (32)
Total Organic Carbon	ppb	4,000	25/1,915 (1.3%)	200 – 8,600 (592)
Total Trihalomethanes[3]	ppb	80	980/1,912 (51%)	0.25 – 45 (2.2)

Notes:
[1] The number of samples were based on samples collected from residences, schools, CDCs, hydrants, and other locations (e.g., non-residences and MDVs).
[2] There is no established MCL.
[3] Total trihalomethanes (TTHM) include the following analytes: chloroform, bromoform, bromodichloromethane, dibromochloromethane.

TTHMs are associated with drinking water disinfection and were included in EDWM to continue monitoring overall water quality in the System. No MCL exceedances have been reported for TTHMs. Copper is not associated with JP-5 fuel; however, this analyte was included in EDWM due to detections reported during LTM and to support the evaluation of overall drinking water quality and compliance with the Safe Drinking Water Act (SDWA). No AL exceedances have been reported for copper. No additional investigation into these analytes was warranted during EDWM. The Navy will continue sampling and analyzing for this analyte to ensure results are below the MCL.

Two of the analytes (i.e., benzo[a]pyrene and benzo[g,h,i]perylene) are fuel-related indicator compounds. Benzo(g,h,i)perylene was detected below the MRL, and no other fuel indicator compounds were detected this location, therefore no additional investigation (e.g., Tier 1, Tier 2) was required. However, during the fourth quarter of EDWM, benzo(a)pyrene was detected above the MRL in four samples, and in accordance with COA 3 of the EDWM Plan the Navy conducted a voluntary Tier 2 analysis at those locations. A summary of the benzo(a)pyrene detections that triggered a Tier 2 analysis during the fourth quarter of EDWM (i.e., January – March 2025) are summarized below in Table 15.[10]

[10] As the EDWM Plan was not approved until 23 October 2024 there were several detections above the MRL during the third quarter of EDWM that did not trigger a Tier 2, due to adjustments in the analysis protocols.

Table 15. Summary of JP-5 or Other Fuel-Related Indicator Compounds Detections Reported during Fourth Quarter (January – March 2025) of EDWM

Zone	Location Type	Address	Sample Date	Analyte	Result (ppb)	Result of Initial Assessment/ Tier 1 Analysis
D4	Hydrant	FH 1941 (Hydrant 1941)	14-Jan 2025	Benzo(a)pyrene	0.028 J	This detection is likely due to incidental contamination introduced at the time of sample collection or in the laboratory. A Tier 2 analysis was recommended to confirm this potential source.
D3	Residence	862 Ohana Nui Circle	21-Jan 2025	Benzo(a)pyrene	0.051	This detection is likely due to incidental contamination introduced at the time of sample collection or in the laboratory. A Tier 2 analysis was recommended to confirm this potential source.
A1	Hydrant	SA-AFH 60 (Hydrant 2431)	21-Jan 2025	Benzo(a)pyrene	0.064	The detection is likely due to minor contamination in the laboratory. A Tier 2 analysis was recommended to confirm this potential source.
A1	Hydrant	Hydrant 72	21-Jan 2025	Benzo(a)pyrene	0.052	The detection is likely due to minor contamination in the laboratory. A Tier 2 analysis was recommended to confirm this potential source.

Notes:
J: The reported result was an estimated value.

Each of the fuel indicator compound detections above the MRL were investigated further, to determine if the result was related to fuel-related analytes in the System. Below is a summary of the results of the additional investigation conducted for the fuel-related indicator compound detections reported during the fourth quarter (i.e., January – March 2025) of EDWM:

1. **Hydrant 1941 (Zone D4)**
    - Benzo(a)pyrene was detected at 0.028 J ppb, in the field duplicate sample collected from Hydrant 1941 (Zone D4) on 14 January 2025 (Field Sample ID No. D4-DL-0017801-25001-3-N). EPA was notified of the detection on 21 January 2025. After the preliminary results were received, the Navy initiated a Tier 1 investigation. Results of the Tier 1 investigation for Hydrant 1941 are summarized in Appendix C. Investigation into this detection confirmed that it was most likely due to sporadic low-level contamination in the laboratory and not JP-5 or other fuels. There was no evidence of systematic contamination in the laboratory. However, incidental laboratory contamination is not unusual at very low concentrations. Additionally, the parent (original) sample was non-detect for benzo(a)pyrene and other fuel-related analytes. On 21 January 2025, the Navy voluntarily initiated a Tier 2 analysis (e.g.,

PIANO analysis). The results of the Tier 2 analysis evaluation will be documented in a separate technical memorandum.

2. **862 Ohana Nui Circle (Zone D3)**
    - Benzo(a)pyrene was detected at 0.051 ppb, in the sample collected from 862 Ohana Nui Circle (Zone D3) on 21 January 2025 (Field Sample ID No. D3-TW-0009541-24092-N). EPA was notified of the detection on 28 January 2025, after the Navy received results from the analytical laboratory on 27 January 2025. After the preliminary results were received, the Navy initiated a Tier 1 investigation. The results of the Tier 1 investigation are summarized in Appendix C. Investigation into this detection confirmed that it was most likely due to sporadic low-level contamination in the laboratory and not JP-5 or other fuels. There was no evidence of systematic contamination in the laboratory. However, incidental laboratory contamination is not unusual at very low concentrations. On 28 January 2025, the Navy voluntarily initiated a Tier 2 analysis (e.g., PIANO analysis). The results of the Tier 2 analysis evaluation will be documented in a separate technical memorandum.
3. **Hydrant 2431 (Zone A1)**
    - Benzo(a)pyrene was detected at 0.064 ppb, in the sample collected from Hydrant 2431 on 21 January 2025 (Field Sample ID No. A1-DL-0016023-25001-N). EPA was notified of the detection on 28 January 2025, after the Navy received results from the analytical laboratory on 27 January 2025. After the preliminary results were received, the Navy initiated a Tier 1 investigation. The results of the Tier 1 investigation are summarized in Appendix C. Investigation into this detection confirmed that it was most likely due to sporadic low-level contamination in the laboratory and not JP-5 or other fuels. There was no evidence of systematic contamination in the laboratory. However, incidental laboratory contamination is not unusual at very low concentrations. On 28 January 2025, the Navy voluntarily initiated a Tier 2 analysis (e.g., PIANO analysis). The results of the Tier 2 analysis evaluation will be documented in a separate technical memorandum.
4. **Hydrant 72 (Zone A1)**
    - Benzo(a)pyrene was detected at 0.052 ppb, in the sample collected from Hydrant 72 on 21 January 2025 (Field Sample ID No. A1-DL-0016027-25001-N). EPA was notified of the detection on 28 January 2025, after the Navy received results from the analytical laboratory on 27 January 2025. After the preliminary results were received, the Navy initiated a Tier 1 investigation. The results of the Tier 1 investigation are summarized in Appendix C. Investigation into this detection confirmed that it was most likely due to sporadic low-level contamination in the laboratory and not JP-5 or other fuels. There was no evidence of systematic contamination in the laboratory. However, incidental laboratory contamination is not unusual at very low concentrations. On 28 January 2025, the Navy voluntarily initiated a Tier 2 analysis (e.g., PIANO analysis). The results of the Tier 2 analysis evaluation will be documented in a separate technical memorandum.

Two of the analytes (copper and TTHMs) are related to water quality and were not evaluated further as these analytes are not associated with JP-5 or other fuels. Additionally, during LTM copper was found to be related to premise plumbing, with a high frequency of detections throughout the System. The remaining three analytes (i.e., benzo[a]pyrene, benzo[g,h,i]perylene, and lead) were evaluated in further detail due to their potential association with fuels, in addition to TOC. The results are summarized below.

Benzo(a)pyrene

Benzo(a)pyrene was added to the EDWM analytical list as a potential fuel indicator compound. The presence (i.e., detection) of benzo(a)pyrene does not necessarily mean fuel is present in water, but benzo(a)pyrene, along with other chemicals, are commonly associated with fuel and could serve as an indicator for potential fuel-related impacts. However, benzo(a)pyrene is not associated with JP-5.[11] Benzo(a)pyrene is one of many polycyclic aromatic hydrocarbons (PAHs). PAHs are a commonly present chemical because they are often associated with many human activities. Benzo(a)pyrene, and other PAHs, are formed during the burning of fossil fuels, motor vehicle exhaust, industrial processes, or the burning of organic matter. Benzo(a)pyrene is naturally occurring during forest fires and in volcanoes which can impact groundwater used as a source of drinking water. The most common cause for benzo(a)pyrene in drinking water is desorption from new asphalt and coal tar linings in pipes and storage tanks within distribution systems. Benzo(a)pyrene results for the fourth quarter of EDWM are summarized below in Table 16.

Table 16. Summary of Benzo(a)pyrene Results by Location Type during (January – March 2025) of EDWM

Sample Location Type	Contaminant	Units	Screening Level	Basis for Screening Level	EDWM Summary – Fourth Quarter	
					No. of Detects out of Samples[1]	Minimum – Maximum (Average)[2]
Residences	Benzo(a)pyrene	ppb	0.2	MCL	9/1,178 (0.76%)	0.01 – 0.051 (0.017)
Schools					1/180 (0.56%)	0.013 – 0.013 (0.013)
Child Development Centers					1/130 (0.77%)	0.015 – 0.015 (0.015)
Other Locations[3]					2/42 (4.8%)	0.013 – 0.018 (0.016)
Hydrants					6/382 (1.6%)	0.014 – 0.064 (0.032)
Waiawa Shaft – Post Chlorination					0/3 (0%)	--

Notes:
[1] This table includes EDWM samples (as scheduled in the EDWM Plan including field duplicates), WQAT samples, and re-samples.
[2] These numbers are the minimum and maximum values from all the sample test results. The average (or mathematical mean) includes all sample test results with a detectable contaminant. An average is the sum of the results (excluding non-detects) divided by the total number of results with detection only.
[3] Other locations are defined as non-residences such as MDVs.

Benzo(a)pyrene was detected in 0.99% (19 of 1,912) of the drinking water samples collected during the fourth quarter of EDWM from residences, schools, CDCs, hydrants, and non-residences, where concentrations ranged from 0.01 to 0.064 ppb with an average detected concentration of 0.021 ppb. Fifteen out of 19 detections (79%) were less than or equal to the MRL of 0.02 ppb and 4 out of 19 detections (21%) were greater than the MRL during the fourth quarter of EDWM. A summary of benzo(a)pyrene detections throughout EDWM and LTM is included below in Table 17.

[11] Sixteen JP-5 fuel product samples were collected from Red Hill tanks in July 2023 and analyzed to determine the chemical makeup of JP-5 fuel that impacted the System. Benzo(a)pyrene was not detected in any of those samples (see Supplement A of the EDWM Plan).

Table 17. Summary of Benzo(a)pyrene Detections Reported during EDWM and LTM

Sampling Period	Contaminant	Units	No. of Detects out of Samples[1]	Minimum – Maximum (Average)[2]	Detection Frequency	
					Detected Less than or Equal to MRL	Detected Greater than MRL
LTM[3]	Benzo(a)pyrene	ppb	234/8,636 (2.7%)	0.01 – 0.13 (0.034)	137/234 (59%)	97/234 (41%)
First Quarter of EDWM			95/1,641 (5.8%)	0.011 – 0.036 (0.018)	75/95 (80%)	20/95 (21%)
Second Quarter of EDWM			91/1,680 (5.4%)	0.01 – 0.033 (0.017)	73/91 (80%)	18/91 (20%)
Third Quarter of EDWM			26/1,530 (1.7%)	0.01 – 0.035 (0.019)	17/26 (65%)	9/26 (35%)
Fourth Quarter of EDWM			19/1,912 (0.99%)	0.01 – 0.064 (0.021)	15/19 (79%)	4/19 (21%)

Notes:
[1] The number of samples were based on samples collected from residences, schools, CDCs, hydrants, and other locations (e.g., non-residences and MDVs).
[2] These numbers are the minimum and maximum values from all the sample test results. The average (or mathematical mean) includes all sample test results with a detectable contaminant. An average is the sum of the results (excluding non-detects) divided by the total number results with detection only.
[3] For additional information LTM period summary reports are available for review at jbphh-safewaters.org.

Detected concentrations ranged from 0.01 ppb and 0.064 ppb during the fourth quarter of EDWM with an average concentration of 0.021 ppb, similar to the reported detections in the first, second, and third quarters of EDWM and in LTM. In each quarter of EDWM, the majority of detections were low (i.e., detections reported near the MRL), and detection trends in the fourth quarter of EDWM were most similar to those seen during the first and second quarters of EDWM, with 79% of samples being less than or equal to the MRL of 0.02, compared to 80% in both the first and second quarter of EDWM. All detections of benzo(a)pyrene were below the MCL of 0.2 ppb, and no exceedances of benzo(a)pyrene were reported during LTM, or throughout EDWM.

Figure 4. Fourth Quarter (January – March 2025) EDWM Benzo(a)pyrene Detection Locations

The detections were observed throughout the System and were not limited to one Zone or general area (see Figure 4). Locations where benzo(a)pyrene was detected are surrounded by locations that were sampled and reported as non-detects, which indicates that there is not a system-wide impact or source. TPHs were not detected at all locations where benzo(a)pyrene was detected. The Navy performed a lines of evidence evaluation to further investigate benzo(a)pyrene detections reported during EDWM. The results of this evaluation are documented in a separate tech memo and are summarized in Section 7 of this report.

Benzo(g,h,i)perylene

Benzo(g,h,i)perylene was added to the EDWM analytical list as a potential fuel indicator compound. The presence (i.e., detection) of benzo(g,h,i)perylene does not necessarily mean fuel is present in water, but benzo(g,h,i)perylene is associated with other petroleum compounds utilized in fuels. Benzo(g,h,i)perylene is not associated with JP-5 and is not an indicator of JP-5 fuel.[12] Benzo(g,h,i)perylene is one of many polycyclic aromatic hydrocarbons (PAHs). PAHs are a commonly present chemical because they are often associated with many human activities. Benzo(g,h,i)perylene, and other PAHs, are formed during the burning of fossil fuels, motor

[12] Sixteen JP-5 fuel product samples were collected from Red Hill tanks in July 2023 and analyzed to determine the chemical makeup of JP-5 fuel that impacted the System. Benzo(g,h,i)perylene was not detected in any of those samples (see Appendix B of the EDWM Plan)

vehicle exhaust, industrial processes, or the burning of organic matter. Benzo(g,h,i)perylene is natural constituent of coal tar and crude oil. Similar to other PAHs, the most common cause for benzo(g,h,i)perylene in drinking water is from asphalt and coal tar linings in pipes and storage tanks leaching into the distribution system. Benzo(g,h,i)perylene results for the third quarter of EDWM are summarized below in Table 18.

Table 18. Summary of Benzo(g,h,i)perylene Results by Location Type (January – March 2025) of EDWM

Sample Location Type	Contaminant	Units	Screening Level	Basis for Screening Level	EDWM Summary – Fourth Quarter	
					No. of Detects out of Samples	Minimum – Maximum (Average)[1]
Residences	Benzo(g,h,i)perylene	ppb	--[2]	--	1/1,178 (0.085%)	0.36 – 0.36 (0.36)
Schools					0/180 (0%)	--
Child Development Centers					0/130 (0%)	--
Other Locations[3]					0/42 (0%)	--
Hydrants					0/382 (0%)	--
Waiawa Shaft – Post Chlorination					0/3 (0%)	--

Notes:
[1] These numbers are the minimum and maximum values from all the sample test results. The average (or mathematical mean) includes all sample test results with a detectable contaminant. An average is the sum of the results (excluding non-detects) divided by the total number of results with detection only.
[2] There is no established MCL.
[3] Other locations are defined as non-residences such as MDVs.

Benzo(g,h,i)perylene was detected in 1 of the 1,912 (0.052%) drinking water samples collected during the fourth quarter of EDWM from residences, schools, CDCs, hydrants, and non-residences. Benzo(g,h,i)perylene was detected at 0.36 ppb in a sample collected from residence 6719B 107th Street (Field Sample ID No. A3-TW-0016169-24092-N) which is greater than the MDL of 0.25 ppb, but less than the MRL of 0.5 ppb. Since the detection of benzo(g,h,i)perylene was detected below the MRL, and there were no other fuel indicator compounds detected at this location, no additional investigation was warranted. There were no detections for benzo(g,h,i)perylene in either the first or second quarters of EDWM. Benzo(g,h,i)perylene was detected in one sample during third quarter of EDWM at 123 Curtis Court (Field Sample ID No. A1-TW-0001270-24092-N) at a concentration of 0.4 ppb. Benzo(g,h,i)perylene sample locations taken during the fourth quarter of EDWM are shown below in Figure 5.

Figure 5. Fourth Quarter (January – March 2025) EDWM Benzo(g,h,i)perylene Detection Locations

The detections are observed throughout the System and are not co-located in a Zone or general area. Detections of benzo(g,h,i)perylene are surrounded by non-detects and do not indicate a system-wide impact. Benzo(g,h,i)perylene was not detected in three pre-chlorination and post-chlorination samples collected from Waiawa Shaft (source water) on 7 January 2025, 14 February 2025, and 10 March 2025.

Lead

Lead was detected during LTM and was added to the EDWM analytical list; however, lead is not associated with JP-5. The most common sources of lead in drinking water are pipes (e.g., cast iron or other metal pipes with lead solder), faucets, and fixtures in the home. Lead can also be naturally occurring leading to low-level concentrations of lead in drinking water. Naturally occurring lead is not considered a primary source of contamination in drinking water. Lead can enter drinking water when plumbing materials and fixtures that contain lead start to corrode. Lead results for the fourth quarter of EDWM are summarized below in Table 19.

Table 19. Summary of Lead Results by Location Type (January – March 2025) of EDWM

Sample Location Type	Contaminant	Units	Screening Level	Basis for Screening Level	EDWM Summary – Fourth Quarter	
					No. of Detects out of Samples	Minimum – Maximum (Average)[1]
Residences	Lead	ppb	15	AL	603/1,178 (51%)	0.13 – 9 (0.35)
Schools					102/180 (57%)	0.13 – 0.6 (0.2)
Child Development Centers					68/130 (52%)	0.13 – 1.5 (0.37)
Other Locations[2]					23/42 (55%)	0.13 – 0.9 (0.32)
Hydrants[3]					n/a[2]	n/a[2]
Waiawa Shaft – Post Chlorination					n/a	n/a

Notes:
[1] These numbers are the minimum and maximum values from all the sample test results. The average (or mathematical mean) includes all sample test results with a detectable contaminant. An average is the sum of the results (excluding non-detects) divided by the total number results with detection only.
[2] Other locations are defined as non-residences such as MDVs.
[3] In accordance with the EDWM Plan, hydrants are not analyzed for lead.
n/a = Not analyzed

Lead was detected in 796 of the 1,530 (52%) drinking water samples collected during the fourth quarter (i.e., January – March 2025) of EDWM from residences, schools, CDCs, hydrants, and non-residences[13] During the fourth quarter of EDWM, 692 out of 796 (87%) detections were at or below the MRL (i.e., detected at or below 0.5 ppb) and at or above the MDL (i.e., detected at or above 0.13 ppb), while 104 out of 796 detections (13%) were reported above the MRL (i.e., detected above 0.5 ppb). This is similar to the trends observed throughout the first three quarters of EDWM and LTM, with the exception of the higher overall detection frequency (70%) and percentage of detections (23%) above the MRL during LTM. A summary of lead detections throughout EDWM and LTM is included below in Table 20.

[13] In accordance with the EDWM Plan, hydrants are not analyzed for lead.

Table 20. Summary of Lead Detections Reported during EDWM and LTM

Sampling Period	Contaminant	Units	No. of Detects out of Samples[1]	Minimum – Maximum (Average)[2]	Detection Frequency	
					Detected Less than or Equal to MRL	Detected Greater than MRL
LTM[3]	Lead	ppb	5,688/8,131 (70%)	0.13 – 83 (0.59)	4,362/5,688 (77%)	1,326/5,688 (23%)
EDWM Q1			716/1,265 (57%)	0.13 –12 (0.38)	617/716 (86%)	99/716 (14%)
EDWM Q2[4]			719/1,319 (55%)	0.13 – 5.6 (0.32)	628/719 (87%)	91/719 (13%)
EDWM Q3			681/1,145 (59%)	0.13 – 4.8 (0.3)	610/681 (90%)	71/681 (10%)
EDWM Q4			796/1,530 (52%)	0.13 – 9 (0.33)	692/796 (87%)	104/796 (13%)

Notes:
[1] The number of samples were based on samples collected from residences, schools, CDCs, hydrants, and other locations (e.g., non-residences and MDVs).
[2] These numbers are the minimum and maximum values from all the sample test results. The average (or mathematical mean) includes all sample test results with a detectable contaminant. An average is the sum of the results (excluding non-detects) divided by the total number results with detection only.
[3] For additional information LTM period summary reports are available for review at jbphh-safewaters.org.
[4] This does not include the 27 September 2024 (initial) lead result collected from 2417D Challenger Loop (Field Sample ID D2-TW-0008333-24092-N). The lead sample result collected from 2417D Challenger Loop on 27 September 2024 was 44.2 ppb. This was an exceedance of the AL of 15 ppb. The exceedance was determined to be associated with premise plumbing and is not associated with the System. This is discussed in more detail in Section 3.1 Analyte Exceedances of the Third EDWM Quarterly Report.

Detected concentrations during the fourth quarter of EDWM ranged from 0.13 ppb to 9 ppb, with an average detected concentration of 0.33 ppb, which are similar to the reported detections in the first, second, and third quarters of EDWM, as well as LTM. The detection frequency during the fourth quarter of EDWM (52%) was slightly lower than the trends observed in the first, second, and third quarters of EDWM, where lead was detected in 57% (i.e., 716 of 1,265), 55% (i.e., 719 of 1,319), and 59% (i.e., 681 of 1,145) of the drinking water samples collected, respectively. Detected concentrations for the first, second, and third quarters ranged from 0.13 to 12 ppb, 0.13 ppb to 5.6 ppb, and 0.13 to 4.8 ppb with average detected concentrations of 0.38 ppb, 0.32 ppb, and 0.3 ppb. All lead detections throughout EDWM were less than the AL of 15 ppb.[14] Locations of lead samples for the fourth quarter of EDWM are shown below in Figure 6.

[14] This does not include the lead exceedance of 44 ppb (above the AL of 15 ppb) from 2417D Challenger Loop on 27 September 2024. Investigation into this exceedance determined that it was likely due to premise plumbing and resamples taken on 16 December 2024 were below the AL.

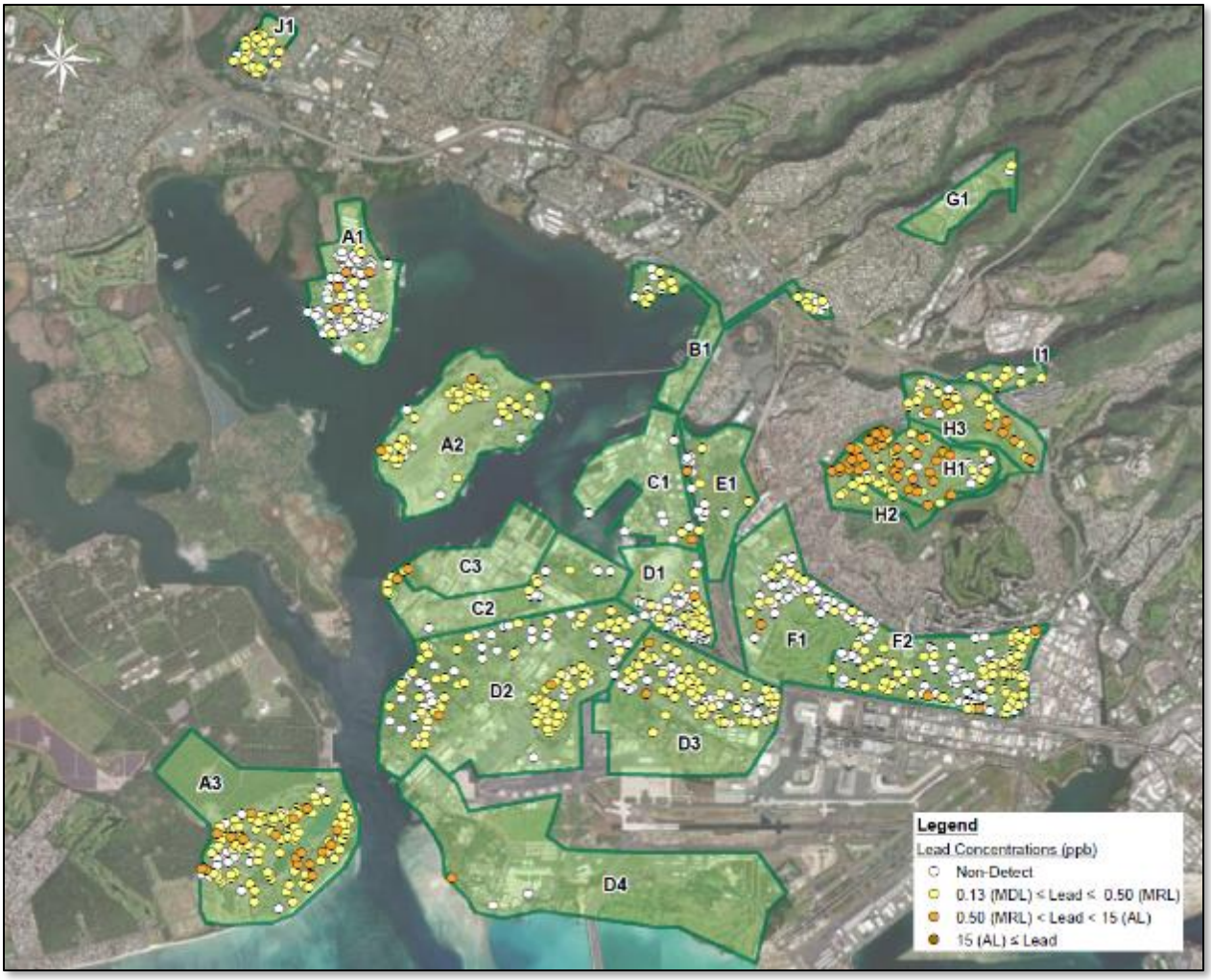


Figure 6. Fourth Quarter (January – March 2025) EDWM Lead Detection Locations

Lead was not analyzed for in pre-chlorination and post-chlorination samples collected from Waiawa Shaft (source water) in the fourth quarter of EDWM. Lead, which is regulated under the Safe Drinking Water Act, was not detected in the samples collected in 2022 as part of the JBPHH compliance monitoring program.[15] The detections were observed throughout the System and are not limited to one Zone or general area. Lead in the System is likely not associated with natural background and is likely associated with premise plumbing issues throughout the System, similar to what was observed and documented during LTM.

The Navy administers a robust and layered monitoring approach for lead which includes EDWM, sampling in accordance with the Lead and Copper Rule, and sampling in accordance with the Lead in Priority Area Rule. The System has been and remains in full compliance with State and Federal standards. The Navy will continue to monitor lead concentrations as part of routine compliance monitoring.

Total Organic Carbon

TOC represents the total amount of carbon from organic compounds, many of which are naturally occurring. TOC is a not a fuel-specific method and the detection of TOC does not

[15] See the Consumer Confidence Reports, available at: https://cnrh.cnic.navy.mil/Operations-and-Management/Environmental/Water-Quality-Information/.

mean there is fuel or fuel indicator compounds present in the water. Although there are no health-based standards for TOC, TOC can also be an indicator of other issues within a water distribution system that can impact drinking water quality and potentially public health. TOC are naturally occurring organic molecules found in water and when elevated levels of these organic molecules come in contact with chlorine, disinfection byproducts can be formed. These disinfection byproducts do have health-based standards and if not monitored and managed effectively, could exceed regulatory MCLs. Investigating TOC levels are appropriate management controls when operating a water system.

A sample collected from Hydrant 1646A on 14 March 2025, resulted in a TOC exceedance of 8,600 ppb, which exceeds the ISP of 4,000 ppb (Field Sample ID: H2-DL-0000688-25060-A). There were no detections of TPH or fuel indicator compounds in this sample. Investigation into this exceedance determined that although it was not fuel-related, further investigation was warranted under EDWM COA 4 including additional analysis and sampling.[16] Mass spectrometry analysis and a review of chromatogram confirmed that the result was not fuel related. A resample was collected on 28 March 2025, and was non-detect for TOC, and was not analyzed for other analytes. TOC sample locations taken during the fourth quarter of EDWM are shown below in Figure 7.

[16] During the first and second quarters of EDWM (i.e., April – September 2024) the EDWM Plan was not approved and analytes with no respective MCLs, except water quality parameters, or at concentrations less than the MCL in the System were not evaluated. The EDWM Plan was approved during the third quarter of EDWM and COA 4 in Section 5.2.4 of the EDWM Plan has been applied during this quarter.

Figure 7. Fourth Quarter (January – March 2025) EDWM TOC Detection Locations

A spatial analysis of residences, schools, child development centers (CDCs), hydrants, and non-residences revealed that TOC detections are observed throughout the System and are not co-located to one Zone or general area throughout EDWM (04 April 2024 – 31 March 2025). Detections of TOC are surrounded by non-detects and do not indicate that there is a system-wide impact. Additionally, TOC was not detected in three pre-chlorination and post-chlorination samples collected from Waiawa Shaft (source water) on 7 January 2025, 14 February 2025, and 10 March 2025.

Section 4. Quality Assurance/Quality Control Sampling

This section summarizes the results of quality assurance/quality control (QA/QC) samples collected by the Navy and EPA to assess the results of drinking water samples. These samples are important for ensuring the data reported by the laboratory is accurate and can be used to evaluate the overall protectiveness of drinking water supplied by the System.

4.1 Monthly Performance Evaluation Monitoring

In accordance with the EDWM Plan, monthly performance evaluation (PE) samples were collected at a minimum of two samples per month. The PE samples are samples that were spiked with a known concentration of JP-5 (i.e., 80 ppb and 266 ppb) and submitted to the laboratory for analysis. These are "blind" samples (i.e., the laboratory does not know that they were spiked with JP-5) and are analyzed as normal samples. The results of the monthly PE samples collected during the fourth quarter (i.e., January – March 2025) of EDWM are summarized below in Table 21.

Table 21. Summary of Monthly PE Monitoring Sample Results (January – March 2025)

Sample ID	Sample Date	Spike Concentration (ppb)	Laboratory Result (ppb)	Percent Recovery (%)
I1-TW-0016032-24122-N-1-R8	01/08/2025	80	69.4 J	87%
I1-TW-0016032-24122-N-2-R8	01/08/2025	266	200	75%
I1-TW-0016032-24122-N-1-R9	02/13/2025	80	94	118%
I1-TW-0016032-24122-N-2-R9	02/13/2025	266	330	124%
I1-TW-0016032-24122-N-1-R10	03/12/2025	80	83.4	104%
I1-TW-0016032-24122-N-2-R10	03/12/2025	266	263	99%

The PE sample results are within the acceptable criteria of 32 – 132% indicating the lab is getting good recoveries and that the EDWM analytical results are of good quality.

4.2 Matrix Spike

In accordance with the EDWM Plan, matrix spike (MS) samples were analyzed at an increased frequency compared to LTM. A MS sample is obtained by the sampling crew collecting additional drinking water samples in the field and submitting it to the lab an additional to the other samples collected. The lab then spikes the MS sample with a known quantity of TPH and analyzes it along with the other samples in the batch. The lab then compares the results of the MS sample to the known quantity they added to the sample. MS samples were spiked with JP-5 near the MRL of 80 ppb and analyzed for TPHs using EPA Method 8015. A total of 75 MS samples were collected and analyzed between 01 January 2025 and 31 March 2025 and analyzed for TPHs. The MS results are presented in Appendix D. Seventy out of 75 (93%) MS results were within the acceptable criteria of 36 – 132% recovery indicating the lab is getting acceptable recoveries and that the sample data is reliable.

4.3 EPA Co-Sampling

The purpose of the co-sampling is to serve as an independent QA/QC measure for assessing the Navy's drinking water results. The co-sampling (referred to as split sampling in the EDWM Plan) involves the Navy and EPA collecting a drinking water sample at the same time, from the same location, but sending their respective samples to different laboratories for analysis. The results are compared to determine if additional investigation or action is warranted. During the fourth quarter of EDWM 156 co-samples were collected. The EPA results from the co-sampling

event have not been published. The results of the EPA co-sampling events for all four quarters of EDWM will be included in a supporting report that will be developed by EPA. Once EPA's results are published a comparison between Navy and EPA sample results can be conducted to confirm that they are consistent.

4.4 DOH Split Sampling

In September 2024, DOH began collecting and analyzing co-samples for VOCs, SVOCs, TTHMs, and PFAS chemicals. The DOH split sampling was conducted independent of EDWM and did not include all analytes outlined in the EDWM Plan. Results of the split sampling could serve as an independent QA/QC measure for assessing the Navy's drinking water results. The co-sampling (referred to as split sampling in the EDWM Plan) involves the Navy and DOH collecting a drinking water sample at the same time, from the same location, but sending their respective samples to different laboratories (i.e., the Navy's contracted laboratory and the laboratory used by DOH) for analysis. The results are compared to determine if additional investigation or action is warranted. Since the Navy and DOH did not conduct split-sampling events in the fourth quarter of EDWM and DOH collected data as part of an independent evaluation, no comparative analysis could be performed.

4.5 Non-Source Water Shaft Samples

In accordance with the EDWM plan, the NAH Shaft and RH Shaft are sampled quarterly. During the fourth quarter of EDWM, neither the RH Shaft or NAH Shaft were analyzed for TPH and fuel indicator compounds. As of May 2025**, the NAH and RH Shafts are offline and do not provide drinking water to the System.**

Section 5. Water Quality Action Team

In addition to the EDWM Plan, the Navy has established the WQAT (previously referred to as the Rapid Response Team) to address consumers' water quality concerns.

The WQAT works independently of the EDWM Plan to collect samples at locations with consumer concerns. The WQAT is one piece of the overall effort taken by the Navy to continue to demonstrate that the System is no longer impacted by the November 2021 Red Hill release and that water provided by the System is safe for consumption. Although the WQAT is a separate program, independent of EDWM, and is not a requirement under the EDWM Plan, the results of the WQAT drinking water samples are included in this report to support the evaluation of drinking water in the System.

System users are encouraged to contact the WQAT Call Center and report any water quality and/or health-related concerns associated with their tap water. The WQAT will then work with the consumer to launch a drinking water investigation and determine if JP-5 or other fuel-related analytes are impacting the System; as well as identify any water quality concerns with the premise and communicate the results to the resident/occupant. This section summarizes the results of the WQAT samples collected by the Navy to address consumers' water quality concerns.

5.1 Summary of WQAT Concerns

During the fourth quarter of EDWM, a total of 10 concerns were reported to the WQAT. Water quality concerns were reported by eight residences and two non-residences. The total calls per month were consistent with three concerns reported in January and March and four reported in February. Additionally, water quality concerns were reported in 6 Zones on the System. Figure 10 below summarizes the total number of calls received between January 2025 and March 2025. Additional information is also available on the https://jbphh-safewaters.org under the "Concern Log Archive".

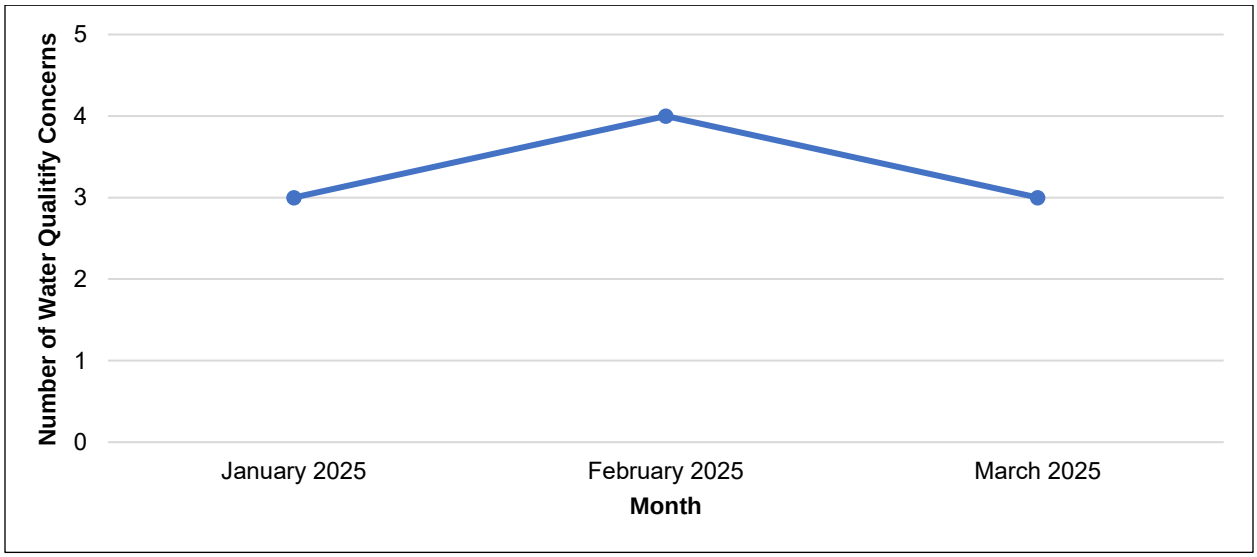


Figure 8. Total Water Quality Concerns (January – March 2025)

Table 22 below summarizes the total number of water quality concerns, by Zone, between January 2025 and March 2025.

Table 22. Summary of WQAT Concerns by Zone (January – March 2025)

Zone[1]	Number of Concerns (January 2025)	Number of Concerns (February 2025)	Number of Concerns (March 2025)	Total Concerns
A2	1	1	1	3
A3	0	2	0	2
D2	1	0	0	1
E1	0	1	0	1
F2	0	0	1	1
H1	1	0	1	2
Total	**3**	**4**	**3**	**10**

Notes:
[1] Zones not listed in this table did not have any residents call into the WQAT during the fourth quarter (i.e., January – March 2025) of EDWM.

In January 2025, three residences from three Zones (i.e., A2, D2, and H1) reported water quality concerns to the WQAT. In February 2025, three residences and one non-residence from three Zones (i.e., A2, A3, and E1) reported water quality concerns to the WQAT. In March 2025, two residences and one non-residence from three Zones (i.e., A2, F2, and H1) reported water quality concerns to the WQAT. In the fourth quarter, the number of concerns was similar month to month. February experienced the highest volume of concerns, followed by January and March. A WQAT investigation was performed at all 11 locations where concerns were reported during the fourth quarter of EDWM. Locations where the WQAT completed WQAT investigations (e.g., inspections, sampling) during the third quarter of EDWM are shown in Figures 8 through 11.

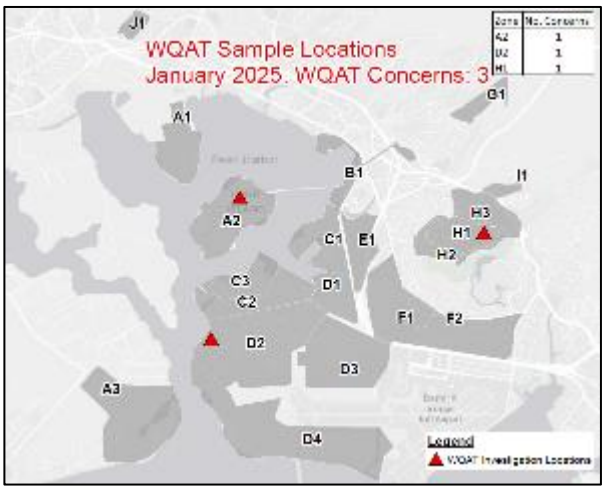


Figure 9. January 2025 WQAT Sample Locations

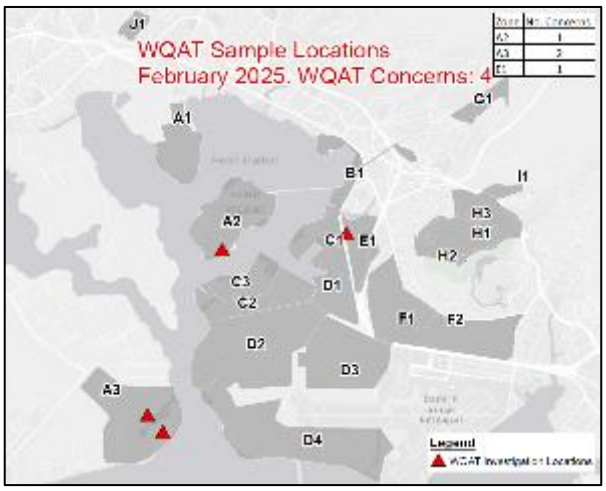


Figure 10. February 2025 WQAT Sample Locations

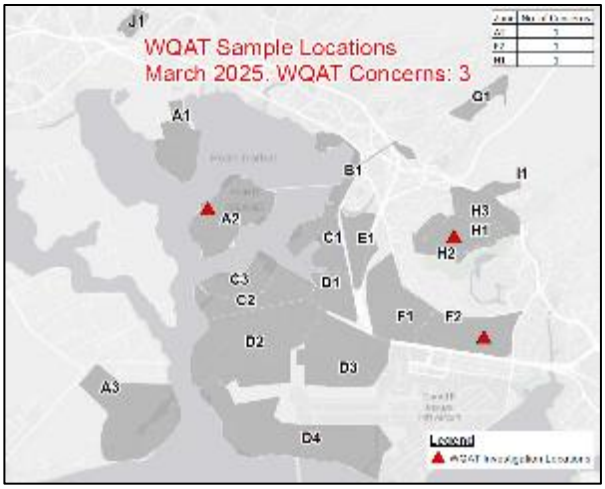


Figure 11. March 2025 WQAT Sample Locations

Other factors, such as public events and media coverage, also impact the number of calls the WQAT call center receives. It is important to acknowledge that ongoing events, such as the finalization of the Administrative Consent Order (ACO), establishment of the Community Representative Initiative (CRI), door-to-door surveys conducted by EPA and Agency for Toxic Substances and Disease Registry (ATSDR), the defueling of the Red Hill Bulk Storage Facility, a lawsuit brought against the US government, and media coverage can raise public awareness and amplify the concerns regarding water quality and safety of their drinking water. The Navy takes every call and water quality concern received by the WQAT call center seriously and is committed to ensuring drinking water provided by the System is no longer impacted by JP-5 fuel.

5.2 Summary of Water Quality Action Team Investigation

Eleven drinking water samples were collected by the WQAT during the fourth quarter of EDWM. All drinking water samples were collected and analyzed in accordance with the EDWM Plan. In addition to collecting a drinking water sample in accordance with the EDWM Plan, the WQAT:

- Conducts a site inspection for all locations that call the WQAT and request to be sampled;
- Measures water quality parameters, including pH, conductivity, turbidity, free chlorine, and temperature, in the field (these measurements are collected from cold and hot water);
- Investigates tap water at each location to determine if a sheen, odor, or other visible indicators of fuel are present;
- Conducts rapid TPH screening and collects a drinking water sample to be collected in accordance with the WQAT protocols and sends the sample to the lab for analysis;
- Offers an alternative water supply (e.g., bottled water); and
- Follows up with the resident/facility regarding the results of the site inspection and sample results.

All observations and results of the WQAT investigation are documented in a technical memorandum (see Appendix E). This information is important for evaluating overall water quality in the System and ensuring the System is not impacted by JP-5 or other fuel-related analytes. A summary of the WQAT's investigation conducted during the fourth quarter of EDWM is provided below in Table 23.

Table 23. Summary of WQAT Observations and TPH Results (January – March 2025)

Zone	Sample ID	Fuel Sheen Observed by WQAT?	Fuel Odor Observed by WQAT?	Petroleum Impacts Observed by WQAT?	TPH Result (ppb)
A2	A2-TW-0001958-24092-N-WQI	No	No	No	Non-Detect
A2	A2-TW-0014263-24092-N-WQI	No	No	No	Non-Detect
A2	A2-TW-0017696-24092-N-1-WQI	No	No	No	Non-Detect
A3	A3-TW-0016167-24092-N-WQI	No	No	No	Non-Detect
A3	A3-TW-0016642-24092-N-WQI[1]	No	No	No	Non-Detect
A3	A3-TW-0017009-24092-N-WQI	No	No	No	Non-Detect
D2	D2-TW-0007523-24331-N-WQI	No	No	No	Non-Detect
E1	E1-TW-0010678-24092-N-WQI	No	No	No	Non-Detect
F2	F2-TW-0009889-24092-N-1-WQI	No	No	No	Non-Detect
H1	H1-TW-0013149-24092-A-WQI	No	No	No	Non-Detect
H1	H1-TW-0013377-24092-A-WQI	No	No	No	Non-Detect

Notes:
[1] This sample is associated with a call reported during Q3.

Total TPHs have not been detected in any of the drinking water samples collected by the WQAT during the fourth quarter of EDWM. Additionally, the WQAT has not observed any fuel-related sheen, odor, or other JP-5 or other fuel-related analytes impacts to drinking water from the eleven samples collected between January and March 2025.

Section 6. Conclusions

The results of the fourth quarter of EDWM demonstrate that JP-5 or other fuel-related analytes are not impacting the System. This is supported by the following:

- TPHs were not detected in the source water (i.e., Waiawa Shaft) in January, February, or March 2025.
- TPHs were not detected in any drinking water samples collected by the Navy the 20 Zones throughout the System in the fourth quarter of EDWM.
- Five additional analytes were detected in drinking water samples collected during the third quarter of EDWM: copper, lead, benzo(a)pyrene, benzo(g,h,i)perylene, and TTHM. Results for these chemicals were compared to MCL/ALs. All results were below their respective MCL/AL. Another analyte, TOC was detected above the ISP of 4,000 ppb in one sample. Two of the analytes, copper and TTHMs, are related to water quality and were not evaluated further as these analytes are not associated with JP-5 or other fuels. Additionally, during LTM copper was found to be related to premise plumbing, with an expectation of a high frequency of detections. TTHM, is a byproduct of drinking water disinfection, and is not a JP-5 or other fuel-related analyte. The remaining three analytes (i.e., benzo[a]pyrene, lead, and benzo[g,h,i]perylene), in addition to TOC, were evaluated in further detail because they may be associated with fuel. The results are summarized below.
    - Benzo(a)pyrene was detected in 0.99% (19 of 1,912) drinking water samples collected during the third quarter of EDWM. All detections were less than the MCL of 0.2 ppb. Detected concentrations ranged from 0.01 to 0.064 ppb with an average detected concentration of 0.021 ppb. The detections were observed throughout the System and were not limited to one Zone or general area. Detections of benzo(a)pyrene are surrounded by non-detects and do not indicate a system-wide impact or source.
    - Benzo(g,h,i)perylene was detected in 0.052% (1 of 1,912) drinking water samples collected during the fourth quarter of EDWM. The detected concentration was 0.36 ppb which is greater than the MDL of 0.25, but less than the MRL of 0.5 ppb. There is no MCL for benzo(g,h,i)perylene. TPH, and other fuel indicator compounds, were not detected at this location.
    - Lead was detected in 52% (796 of 1,530) drinking water samples collected during the fourth quarter of EDWM. All detections were less than the AL of 15 ppb. Detected concentrations ranged from 0.13 to 9 ppb, with an average detected concentration of 0.33 ppb. The detections were observed throughout the System and were not limited to one Zone or general area. The lead detections are likely associated with premise plumbing.
    - TOC was detected in 1.3 % (25 of 1,915) drinking water samples collected during the fourth quarter of EDWM. All detections were less than the ISP of 4,000 ppb with the exception of one detection in Zone H2. One TOC detection of 8,600 ppb exceeded the ISP of 4,000 ppb. This detection occurred at Hydrant 1646A on 14 March 2025 (Field Sample ID: H2-DL-0000688-25060-A). There were no detections of TPH or fuel indicator compounds in this sample. Investigation into this exceedance determined that it was not fuel-related. A resample was collected on 28 March 2025, and was non-detect for TOC, and was not analyzed for other analytes. A spatial analysis of residences, schools, child development centers (CDCs),

hydrants, and non-residences revealed that TOC detections are observed throughout the System and are not co-located to one Zone or general area.

After the Navy voluntarily initiated EDWM in April 2024, the EDWM Plan has gone through various revisions. The EDWM Plan was a “living” document, meaning it was updated and amended based on new information or field conditions. In June 2024, the Navy revised the EDWM analyte list (Table 2-1 of the EDWM Plan) to include 16 additional fuel indicator compounds. As a result, samples collected before June 2024 were not analyzed for these chemicals. Additionally, the Navy, with input from EPA, revised the four COAs in Section 5 of the EDWM Plan to ensure further investigation and action was taken based on EDWM results. For example, COA 3 was revised to include additional investigation for all locations where JP-5 or other fuel-related indicator compounds were detected above the MRL. These revisions do not impact the conclusions of this report.

The results of the fourth quarter of EDWM demonstrate that JP-5 or other fuel-related analytes are not impacting the System. Additional investigations, triggered by the conditions established in Section 5 of the EDWM Plan, will be documented in tech memos (e.g., initial assessments, Tier 1 analysis, etc.). The Navy has voluntarily established a program for conducting a forensics analysis (called Tier 2) at locations where TPH or JP-5 or other fuel-related compounds are detected and the results of the initial assessment and Tier 1 analysis were inconclusive. This Tier 2 analysis is not required under the EDWM Plan, but is another tool the Navy uses, where appropriate, to ensure that drinking water in the System continues to meet all State and Federal standards and is safe for consumption.

Section 7. Summary of EDWM Program (April 2024 – March 2025)

7.1 Overview of EDWM

In April 2024, the Navy voluntarily initiated the EDWM program immediately following the completion of LTM, incorporating lessons learned from LTM (including refinements to analytical methods), to further deliver on its commitment to investigate potential fuel-related contamination in the System stemming from the November 2021 Red Hill fuel release. The EPA approved the final EDWM Plan on 01 November 2024. The EDWM program was structured into four quarterly phases over the course of one year, concluding at the end of March 2025. The Navy demonstrated its commitment to this initiative through several key sampling efforts including:

- Collecting a total of 6,840 drinking water samples from residences, schools, CDCs, hydrants (e.g., distribution lines), other priority buildings (e.g., medical clinics), and Waiawa Shaft across 20 Zones and over a 12-month time-frame.
- Across all 20 Zones, 3,512 residences were sampled (prioritizing locations not sampled during LTM) during EDWM. **Results from the residences demonstrate that JP-5 or other fuels are not impacting the System.**
- Establishing the WQAT to provide additional resources to consumers and to collect drinking water samples at locations with water quality concerns. During EDWM, the WQAT conducted 90 home inspections which included collecting drinking water samples and analyzing for EDWM analytes. Total TPHs have not been detected in any of the drinking water samples collected by the WQAT. Additionally, the WQAT has not observed any fuel-related sheen, odor, or other JP-5 or other fuel-related impacts at any of these locations.

The Navy continued to employ an EPA-certified laboratory to analyze all samples collected under EDWM using approved EPA analytical methods. Between 04 April 2024 and 31 March 2025, 6,840 total samples were collected as a part of the EDWM and WQAT sampling programs. Of these samples, 3,909 were collected at residences, 706 were collected at schools, 518 were collected at CDCs, 167 were collected at other locations (e.g., non-residences, MDVs), 1,510 were collected at hydrants, and 30 were collected from Waiawa Shaft.

In the EDWM Plan, 4,954 samples were scheduled to be collected over the course of 12 months (April 2024 – March 2025). Of these scheduled samples, 3,214 were to be collected at residential locations that were not previously sampled during LTM. Sampling progress for residential housing by month during EDWM is illustrated in Figure 12 below.

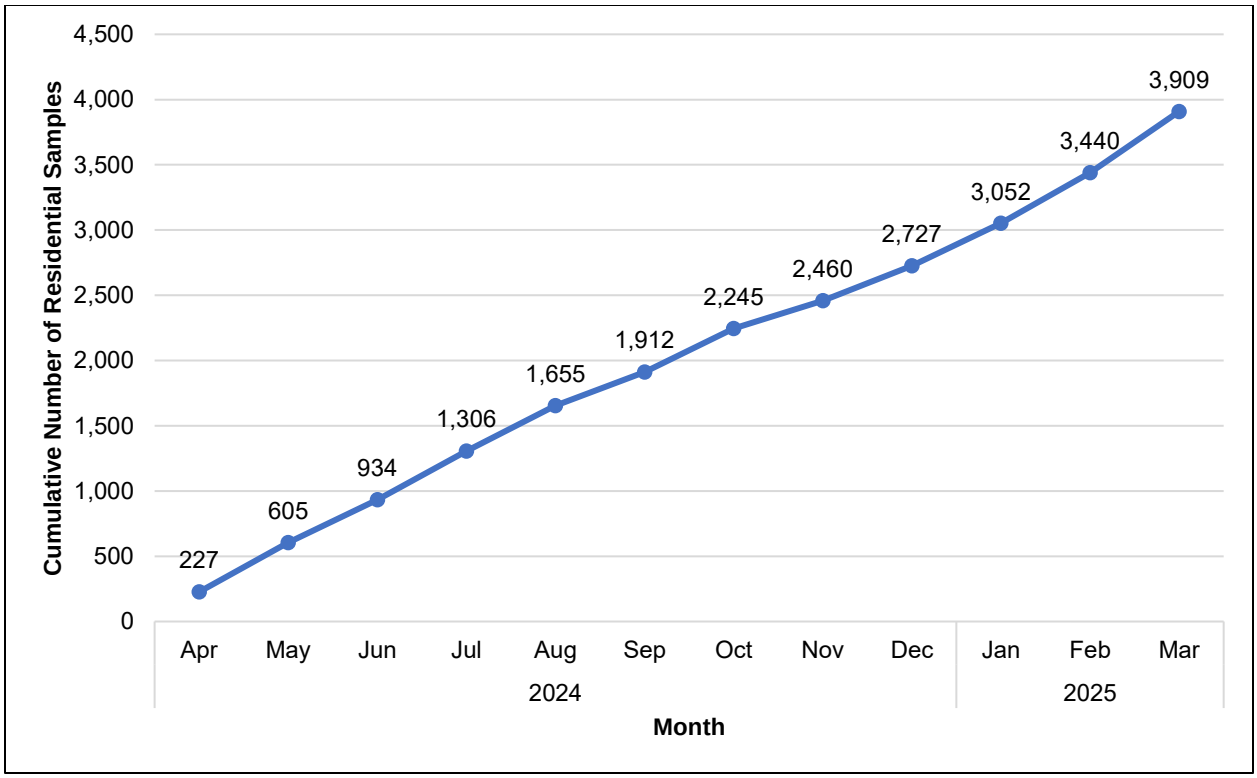


Figure 12. Residential Sampling Progress throughout EDWM (April 2024 – March 2025)

Sampling progress for all other location types (i.e., schools, CDCs, other locations, and hydrants) are summarized below in Table 24.

Table 24. Total Number of Samples by Location Type (April 2024 – March 2025)

Location Type	Number of Samples Collected[1]				Total Number of Samples Collected during EDWM
	1st Quarter (Apr – Jun 2024)	2nd Quarter (Jul – Sept 2024)	3rd Quarter (Oct – Dec 2024)	4th Quarter (Jan – Mar 2025)	
Residences[2]	934	978	815	1,182	3,909
Schools	177	175	174	180	706
CDCs[2]	128	134	126	130	518
Other Locations[3]	41	43	41	42	167
Hydrants	376	360	389	385	1,510
Waiawa Shaft[4]	8	10	6	6	30
Total Samples	**1,664/6,840 (24%)**	**1,700/6,840 (25%)**	**1,551/6,840 (23%)**	**1,925/6,840 (28%)**	**6,840/6,840 (100%)**

Notes:
[1] This table includes EDWM samples (as scheduled in the EDWM Plan), WQAT samples, field duplicates, and re-samples.
[2] One location (i.e., A1-LOWE1103) sampled in the first quarter of EDWM was reclassified after the first quarter of EDWM from a CDH to a residence. It is included as part of the first quarter of EDWM CDC counts.
[3] Other locations are defined as MDVs (i.e., medical, dental, and veterinary clinics) and non-residences.
[4] One pre- and post-chlorination sample were collected from Waiawa Shaft on a monthly basis (not including resamples).

As shown in Figure 12 and Table 24 above, the Navy was able to successfully meet the number of planned scheduled samples with sampling distributed evenly between all four quarters (each quarter encompassing roughly 25% of the total samples). Figure 12 also illustrates the temporal distribution of residential samples over the course of EDWM, further emphasizing the

representative and protective distribution of the data collected throughout the System. Table 25 below further summarizes the sampling progress of unique residences across Zones with residences during EDWM.

Table 25. Summary of Residential Sampling Completed during LTM and EDWM (April 2024 – March 2025)

Zone	Total Number of Residences	Number of Residences Sampled before EDWM	Number of Residences Sampled During Each Quarter of EDWM[1]					Total Number of Residences Sampled[2]	Total Number of Unique Residences Sampled on the System[3]	Completion Percentage[4]
			Q1	Q2	Q3	Q4	Q1 – Q4			
A1	635	423	54	46	28	111	239	662	594	94%
A2	411	303	45	25	10	47	127	430	387	94%
A3	1,457	959	99	102	158	140	499	1,458	1,331	91%
B1	227	167	18	20	11	25	74	241	214	94%
C1	--	--	--	--	--	--	--	--	--	--
C2	32	25	5	--	3	14	22	47	30	94%
C3	6	6	--	2	--	--	2	8	6	100%
D1	508	342	43	21	14	89	167	509	459	90%
D2	1,577	1,119	127	179	82	128	516	1,635	1,487	94%
D3	912	615	65	107	81	97	350	965	874	96%
D4	--	--	--	--	--	--	--	--	--	--
E1	89	84	7	5	1	13	26	110	85	96%
F1	752	512	53	64	40	85	242	754	671	89%
F2	1,435	976	125	125	96	130	476	1,452	1,314	92%
G1	10	10	--	--	5	1	6	16	10	100%
H1	918	635	80	94	93	57	324	959	870	95%
H2	230	150	26	20	26	22	94	244	222	97%
H3	379	248	38	36	41	37	152	400	364	96%
I1	136	93	9	24	11	12	56	149	132	97%
J1	170	2	51	26	32	31	140	142	141	83%
Total	**9,884**	**6,669**	**845**	**896**	**732**	**1,039**	**3,512**	**10,181**	**9,171**	**93%**

Notes:

[1] This table shows the unique locations that have been sampled as part of EDWM and LTM. This table does not include WQAT samples, field duplicates, or resamples to prevent locations from being double-counted. The purpose of this table is to track progress towards EDWM completion.

[2] In some instances, the total number of residences sampled during LTM and EDWM is greater than the total number of residences in that Zone. Some residences have been sampled during LTM and EDWM. This could be for several reasons, such as the residence was resampled as part of a water quality investigation (e.g., detection of total petroleum hydrocarbon [TPH] or other fuel indicator compounds in accordance with Section 5 of the EDWM Plan [if necessary], resampling locations where elevated TPH detections were reported in LTM, or bracket sampling when a TPH detection was reported at a nearby residence).

[3] This count represents unique locations that were sampled immediately following the release, during LTM, or EDWM. This does not include resamples and locations that were sampled during multiple sampling efforts. In other words, if a location was sampled during LTM and EDWM, the location was only counted once per the total number of locations.

[4] While the Navy did not achieve full 100% coverage, representative samples were collected from 20 Zones. Samples were collected during each month of EDWM and were not limited to one area of the Zone (i.e., samples were collected throughout the entire Zone), ensuring the Navy achieved thorough spatial and temporal coverage throughout all of EDWM.

Not all of the residences in the system were sampled due to a number of reasons, such as the refusal of sampling by contacted residents within the Zone, scheduling conflicts, or issues with getting into contact with residents. Over 93% of the 9,884 residences on the System were sampled and the data collected is representative of drinking water conditions throughout the entire System. The Navy was able to achieve thorough spatial and temporal sampling coverage within the Zone. Drinking water samples were collected throughout the entire Zone during each month of EDWM. These data are representative of the entire Zone.

7.2 Revisions to EDWM

The EDWM Plan has gone through revisions since its initial version. In June 2024, 16 additional analytes were added to the EDWM analytical list.[17] In October 2024, the EDWM plan was revised for the final time and finalized. This final revision included changes to the COA's 3 and 4 (Course of Action in response to a detection or exceedance) listed in the original EDWM Plan. COA 3 originally covered the detections of TPHs via Method 8015/8260. In the version finalized on 23 October 2024, COA 3 covered the detection of TPH above the MDL via Method 8015/8260 in addition to detections of JP-5 indicator compounds/other petroleum indicator compounds identified in the EDWM Plan. COA 4 originally covered the detection of analytes at concentrations less than the MCL, and in the final version, COA 4 covered the detection of other analytes with no respective MCL, except water quality parameters, or at concentrations less than the MCL in the System. The final version of the EDWM Plan (finalized 23 October 2024) removed non-fuel related parameters included in the initial draft of the EDWM Plan to align with the intent of EDWM (i.e., focused investigation of fuel-related constituents).

7.3 EDWM Exceedances

Throughout EDWM there were no exceedances of MCLs. However, there were two exceedances of screening levels (i.e., ISPs and ALs) by TOC and lead, exceeding their respective ISP and AL of 4,000 ppb and 15 ppb, respectively.

On 14 March 2025, TOC was detected at 8,600 ppb from Hydrant 1646A in Zone H2 (Sample ID No. H2-DL-0000688-25060-A), which exceeded the ISP for this analyte (4,000 ppb). TPH and other fuel indicator compounds were not detected in this sample. This detection was addressed under COA 4, where an initial assessment determined that the result is not fuel-related. The Navy notified the EPA/DOH in regards to this detection, and a resample was collected on 28 March 2025. The results of this resample were non-detect.

Additionally, a lead AL exceedance took place in the second quarter of EDWM. The sample, collected from 2417D Challenger Loop on 27 September 2024, a lead concentration of 44 ppb, which exceeds the AL of 15 ppb (Field Sample ID D2-TW-0008333-24092-N). Investigation into this exceedance determined that, although it was likely to be a premise plumbing issue, further investigation was warranted through additional sampling. At the time of sampling, the resident was in the process of a Permanent Change of Station (PCS) move. Once the Navy received the preliminary, unvalidated lead results, the Navy contacted the resident to schedule a site investigation and collect a re-sample. The resident requested the Navy wait to collect the re-samples until they were fully moved out of the unit. Once the resident had moved out, the unit's maintenance crew had shut off the water to the unit to accommodate on-going repairs. Water was restored to the unit in December 2024 and the Navy was able to conduct the site investigation and collect re-samples. All faucets at the residence were flushed and resampled on 16 December 2024. The re-samples collected on 16 December 2024 were below the AL. The unit maintenance team and property manager were notified of the re-sample results.

7.4 Overview of TPH Detections during EDWM

TPHs were detected at a low frequency (i.e., less than 1% of samples) throughout the System. The Navy conducted Tier 1 initial assessments at all locations where TPH was detected and concluded that JP-5 or other fuels were not impacting the System. TPHs were analyzed for during EDWM via Methods 8260 and 8015. Per the EDWM Plan, chlorinated drinking water samples were quenched with sodium thiosulfate, prior to sample collection, to prevent possible

[17] The sixteen analytes added in June 2024 were n-propylbenzene, n-butylbenzene, sec-butylbenzene, tert-butylbenzene, cumene, anthracene, pyrene, benzo(g,h,i)perylene, indeno(1,2,3-cd)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, acenaphthylene, chrysene, dibenz(a,h)anthracene, phenanthrene, and fluorene.

reactions occurring between chlorine, potential analytes, and reagents added to the sample by the laboratory. This method is consistent with the findings and recommendations in the April 2024 *Summary of Technical Memorandum Regarding Low-Level Hydrocarbon Detections Observed During Long-Term Monitoring*).[18]

TPHs were detected in 13 out of 6,794 (0.19%) drinking water samples collected during EDWM and analyzed for TPH. TPHs were detected at 12 locations throughout the System. A Tier 1 initial assessment was performed at the 12 locations where TPHs were detected. TPH results and the results of the Tier 1 investigations are summarized below and in Table 26:

- TPH-G was detected in 4 out of 6,775 (0.059%) drinking water samples collected during EDWM. Results of the Tier 1 initial assessments determined these detections were associated with isopropyl alcohol, the disinfectant used in the field prior to sample collection, and were not associated with JP-5 or other fuels. No further investigation was warranted.
- TPH-D was detected in 4 out of 6,776 (0.059%) drinking water samples collected during EDWM. Results of the Tier 1 initial assessments determined these detections were likely associated with incidental contamination introduced in the field at the time of sample collection or the laboratory and were not associated with JP-5 or other fuels. Although the results of the Tier 1 initial assessment presented substantial evidence to suggest these detections were not fuel-related, the Navy elected to conduct Tier 2 analyses at these locations to confirm the conclusions of the Tier 1 initial assessment. Results of the Tier 2 analyses confirmed JP-5 or other fuels are not impacting these locations. The results of the Tier 2 analyses are presented in Section 7.6 of this report and the *Tier 2 Analysis of Total Petroleum Hydrocarbons (TPH) and Fuel Indicator Compounds* technical memorandum.
- TPH-O was detected in 8 out of 6,789 (0.12%) drinking water samples collected during EDWM. TPH-O includes hydrocarbons at the heavier carbon range (C19 – C40), which are not typically found in JP-5 fuel. Results of the Tier 1 initial assessments determined these detections were likely associated with food-grade lubricants used to lubricate the internal parts of hydrants and are not associated with JP-5 or other fuels. Food-grade means they are safe for incidental contact with food or animal products as long as they do not exceed certain concentrations. As water passes through the hydrant, it may come in these lubricants. Which will be reported as TPH-O by the laboratory if they are present in the sample. Although the results of the Tier 1 initial assessment presented substantial evidence to indicate these detections were not fuel-related, the Navy elected to conduct Tier 2 analyses at these locations to confirm the conclusions of the Tier 1 initial assessment. Results of the Tier 2 analyses confirmed JP-5 or other fuels were not impacting these locations. The results of the Tier 2 analyses are presented in Section 7.6 of this report and the *Tier 2 Analysis of Total Petroleum Hydrocarbons (TPH) and Fuel Indicator Compounds* technical memorandum.

[18] For more information regarding the low-level detections observed during LTM and the results of the additional investigation conducted by the Navy, see the Summary of Technical Memorandum Regarding Low-Level Hydrocarbon Detections Observed During Long-Term Monitoring available at: https://jbphh-safewaters.org/public/Tech_Memo_JBPHH_LOE's_LTM_TPH_Detects_Redacted_Rev.pdf.

Table 26. Summary of TPH Detections Reported during EDWM (April 2024 – March 2025)

Zone	Location Type	Address	Sample Date	Analyte	Result (ppb)	Result of Initial Assessment/ Tier 1 Analysis
D2	Hydrant	Hydrant 236	15 April 2024	TPH-O	48.4 J	This detection is likely associated with the food-grade lubricants certified by the manufacturer to lubricate the internal parts of hydrants (e.g., valves). A Tier 2 analysis was recommended to confirm this potential source.
D2	Residence	132 19th Street	28 May 2024	TPH-O	62.4 J	The detection is likely due to cross-contamination from incidental contact with the lab ORO calibration standard. A Tier 2 analysis was recommended to confirm this potential source.
D2	Hydrant	Hydrant 365	29 May 2024	TPH-G	137	Isopropyl alcohol, which is the disinfectant used in the field prior to sample collection, was confirmed in the sample. Therefore, the detection is associated with field contamination.
D2	Hydrant	Hydrant 79	30 May 2024	TPH-D TPH-O	92.4 J 1,460	The chromatogram conclusively demonstrated this detection is associated with the food-grade lubricants certified by the manufacturer to lubricate the internal parts of hydrants (e.g., valves).
A1	Residence	297 Etcell Court	22-Jul-24	TPH-O	73	The detection is likely due to cross-contamination from incidental contact with the lab ORO calibration standard. A Tier 2 analysis was recommended to confirm this potential source.
A3	Residence	4917C Mokupea Place	23-Jul-24	TPH-O TPH-D	245 145	The detection is likely due to cross-contamination from incidental contact in the lab with unrelated compounds during sample preparation. A Tier 2 analysis was recommended to confirm this potential source.
A3	Residence	6620 105th Street	24-Jul-24	TPH-O	156	The detection is likely due to cross-contamination from incidental contact in the field during sample collection with premise plumbing or household products. A Tier 2 analysis was recommended to confirm this potential source.
D3	Residence	223 Puapilo Court	11-Jul-24	TPH-O TPH-D	47 J 62 J	The detection is likely due to cross-contamination from incidental contact in the lab with unrelated compounds during sample preparation. A Tier 2 analysis was recommended to confirm this potential source.
H1	Hydrant	Hydrant 1387	16-Jul-24	TPH-G	64 J	Isopropyl alcohol, which is the disinfectant used in the field prior to sample collection, was confirmed in the sample. Therefore, the detection is associated with field contamination.

Zone	Location Type	Address	Sample Date	Analyte	Result (ppb)	Result of Initial Assessment/ Tier 1 Analysis
A3	Residence	6474A 102nd Street	30-Dec 2024	TPH-O	53.1 J	This detection is likely due to incidental contamination introduced at the time of sample collection or in the laboratory. A Tier 2 analysis was recommended to confirm this potential source.
D3	Hydrant	Hydrant 222	24-Dec 2024	TPH-D	87.4	This detection is likely due to incidental contamination introduced at the time of sample collection or in the laboratory. A Tier 2 analysis was recommended to confirm this potential source.
J1	Hydrant	Hydrant 2A[1]	22-Oct 2024	TPH-G	143	Isopropyl alcohol, which is the disinfectant used in the field prior to sample collection, was confirmed in the sample. Therefore, the detection is associated with field contamination. A Tier 2 analysis was recommended to confirm the potential
J1	Hydrant	Hydrant 2A[1]	22-Oct 2024	TPH-G	64.5[2]	Isopropyl alcohol, which is the disinfectant used in the field prior to sample collection, was confirmed in the sample. Therefore, the detection is associated with field contamination. A Tier 2 analysis was recommended to confirm the potential

Notes:
[1] Hydrant 2A is also known as Hydrant 123 (i.e., Site ID: MN-HYD0002A).
[2] Hydrant 2A had a TPH-G detection in the corresponding field duplicate collected on 22 October 2024 (i.e., Field Sample ID No. J1-DL-0018352-24275-3-N).

TPHs were detected in a few samples throughout EDWM and showed no temporal or spatial trend. TPH results were consistent among the four quarters of EDWM (see Figure 13 below).

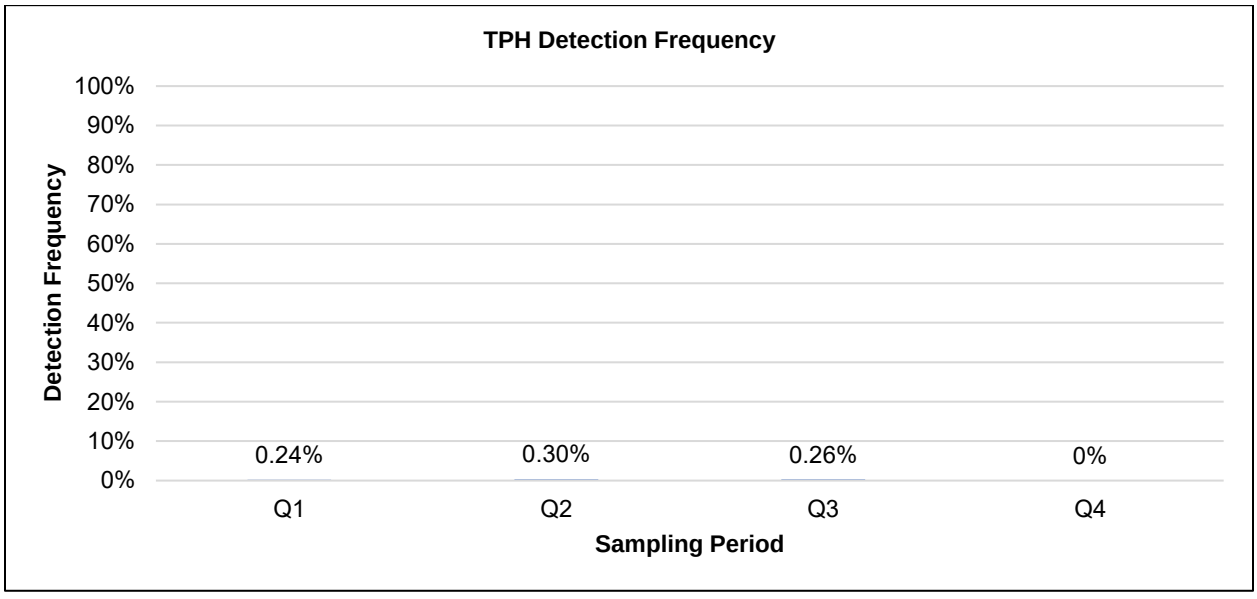


Figure 13. TPH Detection Frequencies during EDWM

7.5 Detections of Fuel Indicator Compounds during EDWM

Fuel indicator compounds, or chemicals that are potentially associated with JP-5 or other fuels, were not detected widespread throughout the System (except for benzo(a)pyrene, which is discussed further in this report) and were not consistent with JP-5 or other fuel patterns.

Detections of fuel indicator compounds were infrequent, had no spatial or temporal association between results, and were not correlated with TPH detections.

The EDWM Plan identified 28 individual analytes that are either primary components of JP-5 or are associated with other petroleum compounds (e.g., other fuels, oils, and lubricants). Only 6 fuel indicator compounds identified in the EDWM Plan were detected during EDWM (04 April 2024 – 31 March 2025). Fuel indicator compounds were detected infrequently and were not co-located with other fuel indicator compounds nor TPHs. These detections were often the only analyte detected in that sample, and there were no cases where three or more fuel indicator compounds were detected in one sample. The fuel indicator compounds were all detected below their respective MCLs and were typically detected at concentrations between the MDL and MRL, with detections of benzo(a)pyrene specifically having a greater frequency of low-level detections (see Benzo(a)pyrene section). Table 26 below summarizes the detection frequencies of all fuel indicator compounds that were detected throughout EDWM.

Table 27. Summary of Fuel Indicator Compound Detection Frequencies EDWM (April 2024 – March 2025)

Analytes	No. Detects out of Samples[1,2]	Detection Frequency (%)	MCL (ppb)	Minimum – Maximum (Average)[3]
1,2-Dibromoethane (EDB)	3/486	0.62%	0.05	0.0085 – 0.02 (0.016)
Benzo(a)pyrene	231/6,770	3.4%	0.2	0.01 – 0.064 (0.018)
Benzo(g,h,i)perylene	2/4,427	0.045%	--[4]	0.36 – 0.4 (0.38)
Naphthalene	2/6,770	0.03%	--[4]	0.27 – 1.3 (0.79)
Phenanthrene	3/4,427	0.068%	--[4]	0.27 – 0.41 (0.32)
Toluene	2/6,763	0.03%	1,000	0.26 – 0.57 (0.42)

Notes:
[1] This table includes EDWM samples (as scheduled in the EDWM Plan including field duplicates), WQAT samples, and re-samples.
[2] The number of samples were based on samples collected from residences, schools, CDCs, hydrants, and other locations (e.g., non-residences and MDVs).
[3] These numbers are the minimum and maximum values from all the sample test results. The average (or mathematical mean) includes all sample test results with a detectable contaminant. An average is the sum of the results (excluding non-detects) divided by the total number of results with detection only.
[4] There is no established MCL.

TPH and fuel indicator compounds detected throughout EDWM indicate that there is no temporal association between results (Figure 14).

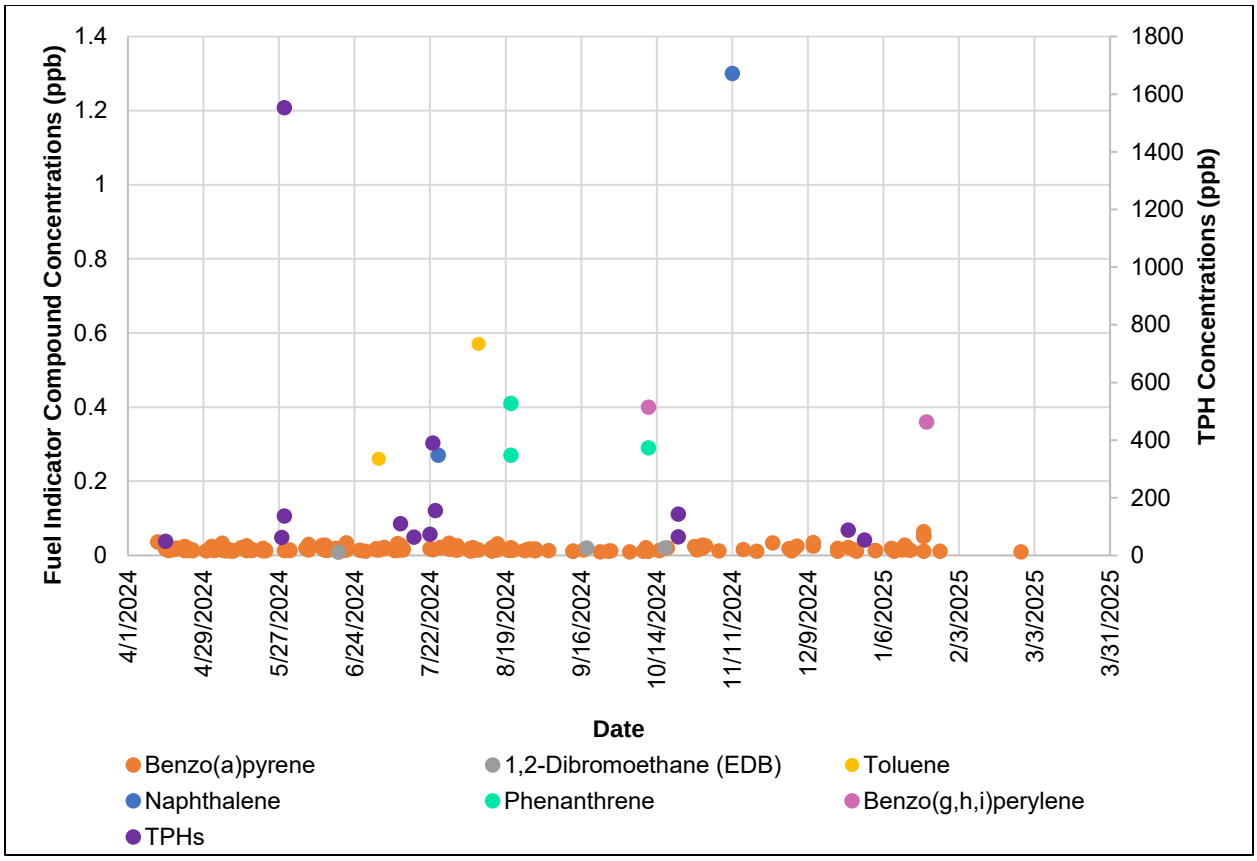


Figure 14. TPH and Fuel Indicator Compounds Detected during EDWM by Month

Locations where fuel indicator compounds were detected, except for benzo(a)pyrene, during EDWM are shown on Figure 15. Detections of fuel indicator compounds were not co-located to one Zone or general area. Locations where benzo(a)pyrene were detected during EDWM are not shown on this figure because additional investigation and evaluation of benzo(a)pyrene was performed as part of EDWM and presented in a separate section.

Figure 15. Fuel Indicator Compound Detections Reported during EDWM (April 2024 – March 2025)

Fuel indicator compound detections were not co-located during EDWM and were not detected, in general, at locations where TPHs were detected. Locations where fuel indicator compounds and/or TPHs were co-located are summarized below:

- Benzo(a)pyrene and TPH-O were detected at 0.022 ppb and 48.4 J ppb, respectively, in the sample collected from Hydrant 236 (Zone D2) on 15 April 2024 (Field Sample ID No. D2-DL-0017711-24092-N). EPA was notified of the detection on 24 April 2024, when the Navy received preliminary results from the analytical laboratory. After the preliminary results were received, the Navy initiated a Tier 1 investigation. Investigation into this detection determined the TPH-O detections was associated with food-grade lubricants used for servicing hydrants and not associated with JP-5 or other fuel-related analytes in the System. Hydrant 236 was resampled and two additional hydrants (one upgradient and one downgradient of the original hydrant) were sampled on 29 May 2024 and 11 June 2024. TPH was non-detect in all resamples. Benzo(a)pyrene was detected in the 29 May 2024 sample at a concentration of 0.013 J ppb and was non-detect in the 11 June 2024 sample. Hydrant 236 has been sampled in July, August, October, November, and January as part of EDWM, and benzo(a)pyrene (and other fuel-related compounds) were not detected in these samples.

- Benzo(a)pyrene and phenanthrene (a PAH) were detected at 0.021 ppb and 0.27 J ppb, respectively, in the sample collected from Building 364 (Zone E1) on 21 August 2024 (Field Sample ID E1-TW-0015244-24214-N-3). In accordance with the EDWM Plan, a minimum of five samples were collected from each school during each sampling event, and all schools are sampled on a monthly basis. Neither benzo(a)pyrene nor phenanthrene have been detected in any of the other samples collected at this location as part of EDWM. No other fuel-related compounds have been detected at this location during EDWM. TPHs were not detected in any of the samples collected at this location.

JP-5 and other fuels are mixtures of hundreds of chemicals. If JP-5 or other fuels were impacting the System, there would be a higher number of fuel-related analytes detected and the detection of fuel indicator compounds would be co-located at locations. The results of the fuel indicator compounds demonstrate JP-5 or other fuels are not impacting the system, and that the detections of fuel indicator compounds do not correlate with TPH detections.

Benzo(a)pyrene

Benzo(a)pyrene was detected at low concentrations at higher detection frequencies than other fuel indicator compounds, prompting an additional investigation. The purpose of the additional investigation was to determine whether the low-level detections of benzo(a)pyrene were associated with JP-5 or other fuels. This evaluation is summarized in the *Lines of Evidence (LOEs) Regarding Benzo(a)pyrene (B(a)P Detections during Extended Drinking Water Monitoring (EDWM)* technical memorandum, which will be available at https://jbphh-safewaters.org. All evidence points to the conclusion that these benzo(a)pyrene detections are not attributable to a petrogenic source and are unrelated to JP-5.[19] Furthermore, it is likely that the benzo(a)pyrene detects were caused by sporadic low-level contamination in the laboratory (e.g., residual concentrations of benzo(a)pyrene on laboratory equipment/glassware used to analyze the samples).

Benzo(a)pyrene was detected in 3.4% (231 of 6,770) of drinking water samples collected during EDWM from residences, schools, CDCs, hydrants, and other priority buildings (e.g., medical clinics) in accordance with the EDWM Plan and the WQAT's protocol. All detections of benzo(a)pyrene were below the MCL of 0.2 ppb. Detected concentrations ranged from 0.010 ppb to 0.064 ppb with an average detected concentration of 0.018 ppb and a median concentration of 0.016 ppb. The standard deviation was 0.0068 ppb which shows little variability in detected results. Non-detect results were consistently at or near the MDL of 0.01 ppb with 96% of non-detects within 10% of the MDL, demonstrating little variability in the results (see Figure 16).

[19] Benzo(a)pyrene is not associated with JP-5 as it is a product of the petroleum distillation process and is therefore present in some refined petroleum products, particularly those on the high end of the range of molecular weights and with high boiling points (e.g., diesel, lubricating oils, fuel oils), while JP-5 is on the lower range of molecular weights. Sixteen JP-5 fuel product samples were collected from Red Hill tanks in July 2023 and analyzed to determine the chemical makeup of JP-5 fuel that impacted the System. Benzo(a)pyrene was not detected in any of those samples (see Supplement A of the EDWM Plan).

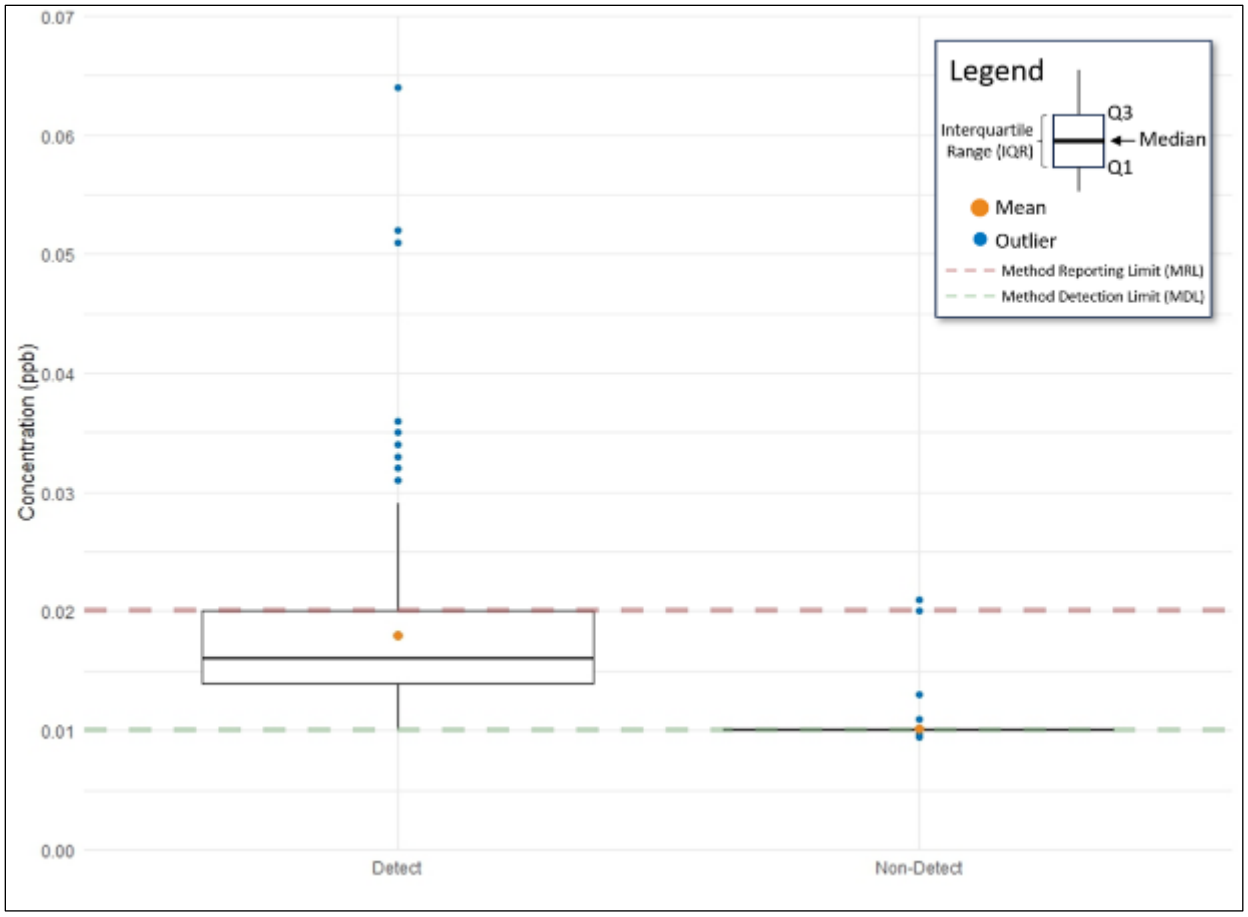


Figure 16: Boxplot of Benzo(a)pyrene Results during EDWM (04 April 2024 – 31 March 2025)

Benzo(a)pyrene detections had no noticeable trend between location types (i.e., residences, schools, CDCs, hydrants, and non-residences) and Waiawa Shaft (source water). Benzo(a)pyrene was only detected in 1 of 24 (4.2%) pre- and post-chlorination samples collected from Waiawa Shaft (source water). The detection occurred in a pre-chlorination sample in May 2024 at 0.012 ppb, and benzo(a)pyrene was not detected in the associated post-chlorination sample, and was not detected in any of the post-chlorination samples (0 of 12) collected during EDWM. At other location types benzo(a)pyrene had a detection frequency between 2.3% and 5.4% with a similar distribution of detected concentrations as presented in Figure 17.

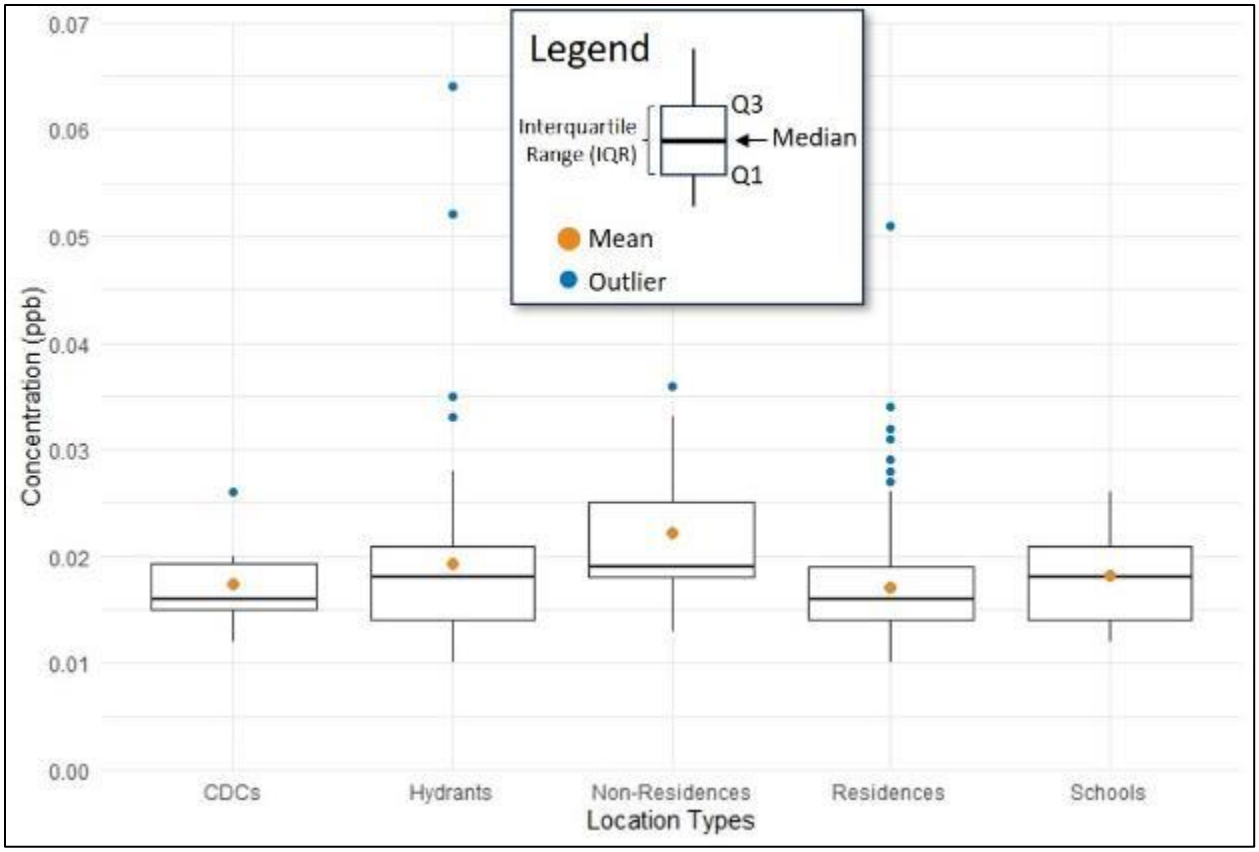


Figure 17: Boxplot of Benzo(a)pyrene Detections at Different Locations during EDWM (04 April 2024 – 31 March 2025)

Zones throughout EDWM exhibited no spatial association with benzo(a)pyrene detections. Detection frequencies and concentrations between Zones are low and consistent (Figure 18). If benzo(a)pyrene detections were related to the release, it would be expected that Zones which received greater than 75% Red Hill Shaft water (Zones F1 and F2) would show greater detection frequencies and higher concentrations than other Zones. Additionally, Zones that are on GAC filters have similar low-level benzo(a)pyrene detections as the other Zones; H1 at 4.4%, H2 at 3.3%, H3 at 1.9%, and I1 at 1.4%. If the detections were due to an issue with the water supply, it would be expected that the filters would remove benzo(a)pyrene and those Zones would be different from other Zones (e.g., free of detections, or have reduced frequency of detections and/or reduced concentrations). This is not the case. Low-level concentrations of benzo(a)pyrene were detected at similar frequencies and concentrations throughout the System

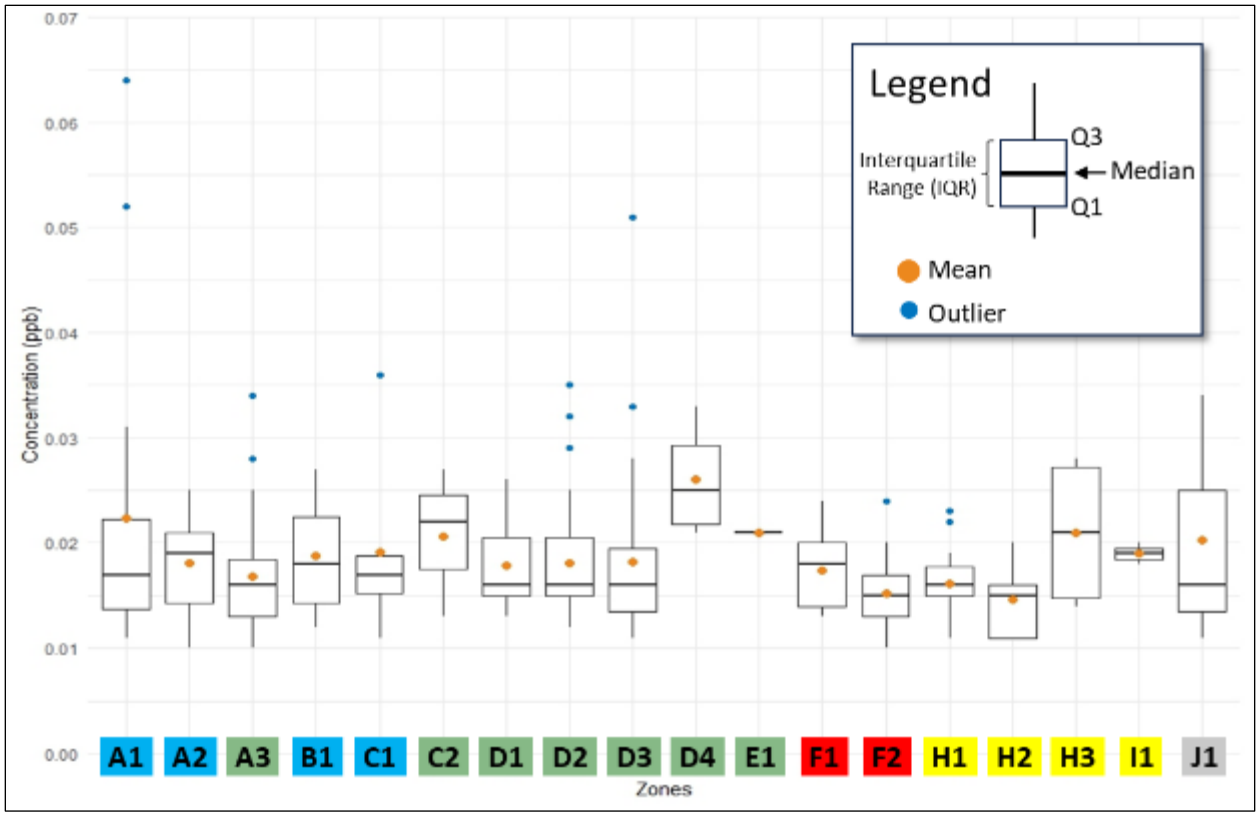


Figure 18. Box and Whisker Plot of Benzo(a)pyrene Detected Concentrations by Zone during EDWM (04 April 2024 – 31 March 2025)

Notes:

Zones with 100% Waiawa Shaft Water During Red Hill Release in November 2021
Zones with Blended Red Hill Shaft and Waiawa Shaft Water During Red Hill Release in November 2021.
Zones with 75% - 100% Red Hill Shaft Water During Red Hill Release in November 2021.
Zones with Inline Granular Activated Carbon Treatment on the Drinking Water Distribution System.
Zone not on the JBPHH System in November 2021. Manana Housing was switched to JBPHH System after the Health Advisories were lifted in March 2022.

Additionally, benzo(a)pyrene detected concentrations by month between April 2024 and March 2025 had consistent low median values between 0.011 ppb (September 2024) and 0.019 ppb (June and December 2024) indicating a relative consistency in the occurrence of low-level detections. Additionally, other than a change in calibration method, benzo(a)pyrene detection frequencies remained consistent between all four quarters of EDWM (Figure 19).

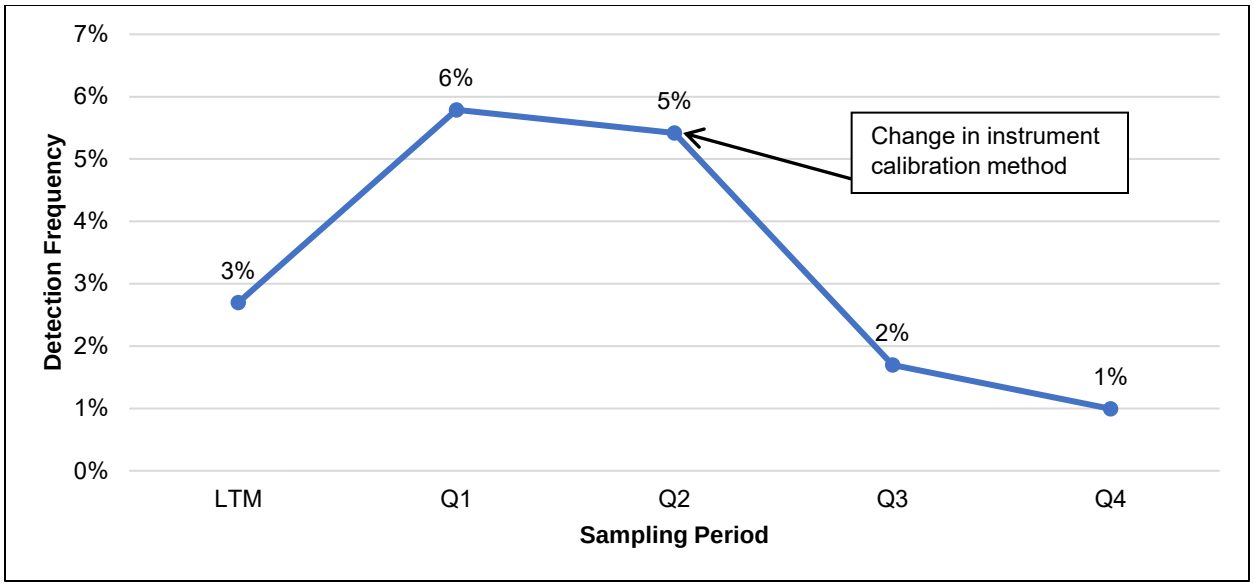


Figure 19. Benzo(a)pyrene Detection Frequencies in LTM and EDWM

Throughout EDWM, the frequency of detection, range of concentrations, average and median detected concentrations, and standard deviations of method blanks, field/trip blanks, and field duplicates are very similar (Figure 20). The consistency in results between method blanks, field/trip blanks, field duplicates, and field samples indicates, when considering the lack of any spatial, temporal or location-based associations, that laboratory and/or field contamination may be the cause of the benzo(a)pyrene detections.

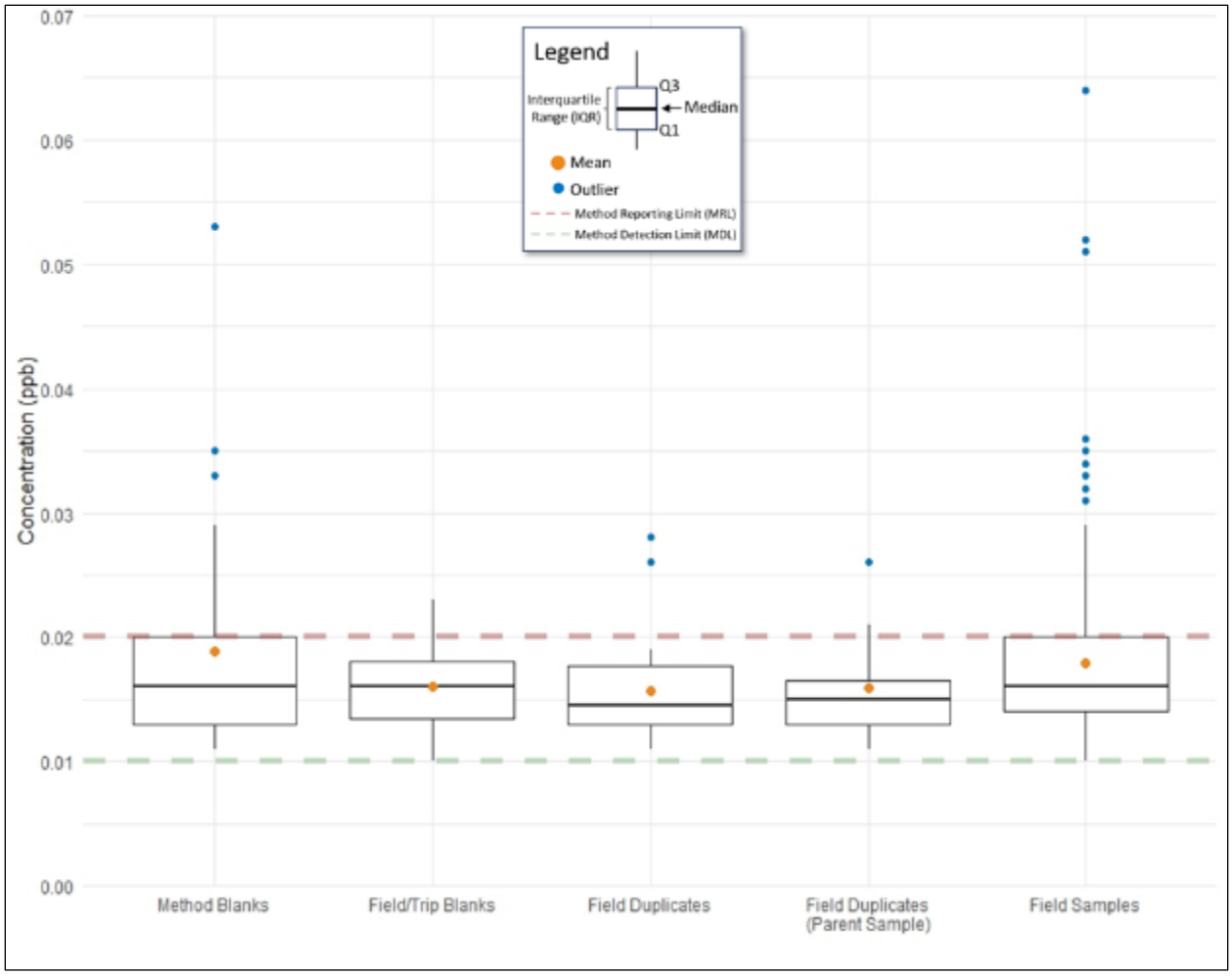


Figure 20. Boxplot of Benzo(a)pyrene Detections from Method Blanks, Field/Trip Blanks, Field Duplicates, and Field Samples during EDWM (04 April 2024 – 31 March 2025)

The investigation into benzo(a)pyrene found that the detections are not associated with the November 2021 release, or other potential releases from Red Hill in the JBPHH System. Benzo(a)pyrene is analyzed by the laboratory using EPA 525.2 at a detection limit of 0.01 ppb, which is significantly lower than the detection limit of other PAHs analyzed using this method under EDWM. This can result in low-level detections of benzo(a)pyrene from trace concentrations in reagents, equipment, and glassware. Throughout EDWM there have been few cases of co-located detections of benzo(a)pyrene and other fuel indicator compounds. As a result, the low-level benzo(a)pyrene detections are associated with sporadic, low-level laboratory contamination not co-located with other TPH/fuel indicator compound detections. This assessment is substantiated by the fact that throughout the entirety of EDWM, there have been no MCL exceedances of benzo(a)pyrene. In summary, benzo(a)pyrene detections seen throughout EDWM are not associated with JP-5 or other fuels within the JBPHH System. The results of this evaluation and more information regarding benzo(a)pyrene detections within the System is documented in a separate technical memorandum.

Lead

Lead was detected at similar frequencies throughout each quarter of EDWM. These results are lower than the 70% frequency of lead detections seen during LTM. An additional investigation

was also performed to evaluate the frequency and concentration of lead detections throughout EDWM. Figure 21 below illustrates the frequency of lead detections throughout EDWM.

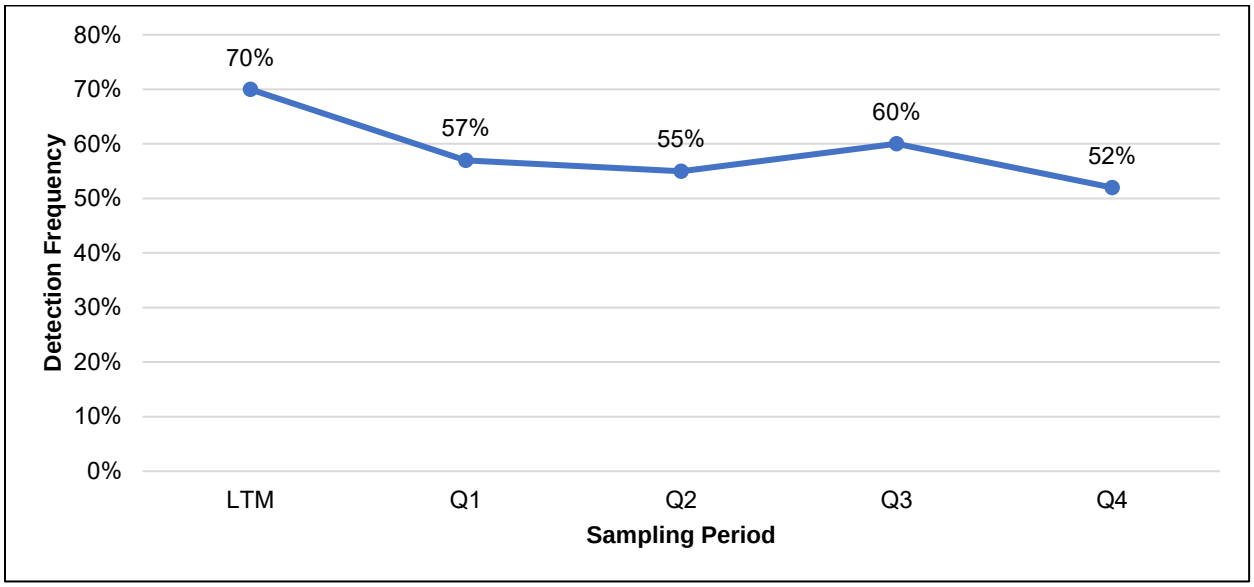


Figure 21. Lead Detection Frequencies in LTM and EDWM

During EDWM and LTM, most detections (i.e., 87% during EDWM and 77% during LTM) were less than or equal to the MRL indicating that the majority of detections are low concentrations. There has been one lead AL exceedance in a sample taken from 2417D Challenger Loop on 27 September 2024, however, this location was resampled and the resample results did not exceed the AL. There have been no other AL exceedances for lead during EDWM. Lead is not associated with JP-5. The most common sources of lead in drinking water are pipes (e.g., cast iron or other metal pipes with lead solder), faucets, and fixtures in the home. Lead can also be naturally occurring leading to low-level concentrations of lead in drinking water. Naturally occurring lead is not considered a primary source of contamination in drinking water. Lead can enter drinking water when plumbing materials and fixtures that contain lead start to corrode. The Navy administers a robust and layered monitoring approach for lead which includes EDWM sampling, routine monitoring in accordance with the Lead and Copper Rule, as well as the Lead in Priority Area Rule. The System has been and remains in full compliance with State and Federal standards. The Navy will continue to monitor lead concentrations within the System, and investigate the cause or source of the detections throughout JBPHH.

7.6 Tier 2

The Navy performed 24 Tier 1 evaluations as part of EDWM stemming from detections of TPH or other fuel indicator compounds. The Tier 1 evaluations determined that none of the TPH or fuel indicator compounds were related to JP-5 or other fuels were most commonly associated with incidental contamination introduced at the time of sample collection, incidental contamination by the lab, or food-grade lubricants used in the hydrants. In the case that the results of the initial assessment and Tier 1 analysis are not conclusive, the Navy performed a Tier 2 forensic analysis to confirm the potential source of the detection. Tier 2 Analysis (i.e., Tier 2) is a voluntary program designed by the Navy for the purpose of performing additional evaluations on TPH and fuel indicator compounds that are not regulated under the Safe Drinking Water Act. Throughout all of EDWM, 74 total Tier 2 drinking water samples across 17 Zones were collected. Fifty of these samples were collected at locations where TPH was detected during LTM. No Tier 2 analytes were detected in 39 of 74 (53%) samples. The 35 of 74

(47%) samples that did have Tier 2 analytes detected were typically low-level (i.e., between the MDL and MRL) and are not spatially co-located. Additionally, there were only two Tier 2 samples had more than three detections of Tier 2 analytes with three and five detected analytes out of the potential 248 Tier 2 analytes. The 35 of 74 (47%) that did have analytes detected were found to pose no unacceptable risk to human health and safety associated with exposure to drinking water from the System. No further action is recommended based on the lines of evidence evaluated in this program. For more information, see the *Tier 2 Analysis of Total Petroleum Hydrocarbons (TPH) and Fuel Indicator Compounds* Technical Memorandum, which will be available at https://jbphh-safewaters.org.

The detections of Tier 2 analytes are typically low-level (i.e., between the MDL and MRL) and are not spatially co-located. The few detections of Tier 2 analytes (i.e., 24 out of 250), and the detections of single analytes show sporadic location-specific incidents and not a system-wide issue.

7.7 Comparison of EDWM and LTM Results

One of the objectives outlined in the EDWM Plan was to enhance analytical methods to increase the resolution of TPH analysis in EDWM, incorporating lessons learned from LTM. Figure 22 illustrates the effects of the analytical method improvements stemming from the recommendations presented in the April 2024 *Summary of Technical Memorandum Regarding Low-Level Hydrocarbon Detections Observed During Long-Term Monitoring*.[20] By quenching samples with sodium thiosulfate, the number of low-level false positive detections associated with chlorine interference with the laboratory method seen in LTM decreased substantially. TPH detections dropped between LTM and EDWM from 31% to 0.19%, respectively, which is what was expected based on the results from the April 2024 *Summary of Technical Memorandum Regarding Low-Level Hydrocarbon Detections Observed During Long-Term Monitoring*. During LTM, 77% of detections were less than or equal to the MRL of 80 ppb, while 23% were greater than the MRL. This changed significantly once quenching was introduced into the sampling and analysis procedures during EDWM, as 46% (6 of 13) detections were less than or equal to the MRL, and 54% (7 of 13) were greater than the MRL. TPH data from each quarter of EDWM is consistent with one another, and do not indicate the presence of fuel contamination specifically stemming from the November 2021 release.

[20] For more information regarding the low-level detections observed during LTM and the results of the additional investigation conducted by the Navy, see the Summary of Technical Memorandum Regarding Low-Level Hydrocarbon Detections Observed During Long-Term Monitoring available at: https://jbphh-safewaters.org/public/Tech_Memo_JBPHH_LOE's_LTM_TPH_Detects_Redacted_Rev.pdf.

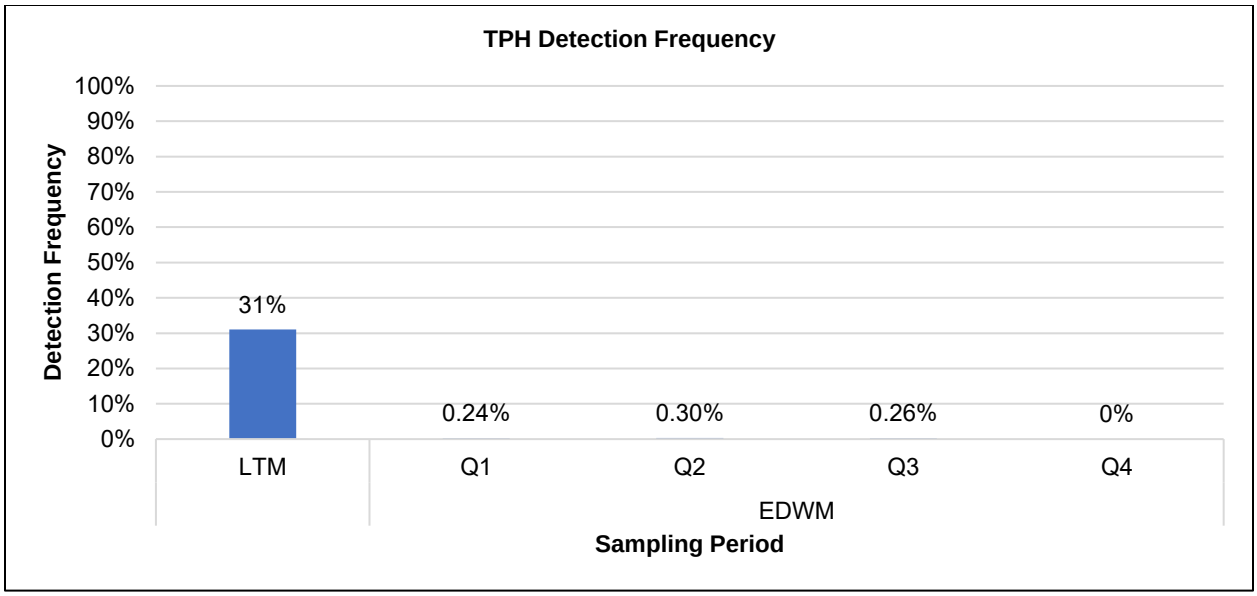


Figure 22. TPH Detection Frequencies in LTM and EDWM

Along with consistent TPH results throughout EDWM. Fuel indicator compounds (not including benzo(a)pyrene) were also detected in less than 1% of samples throughout EDWM as well as during LTM (Figure 23). The consistency in low detection frequencies and detected concentrations of fuel indicator compounds indicate that JP-5 or other fuels are not impacting the System. Benzo(a)pyrene may have a similar detection frequency in both EDWM and LTM, between 2 - 3%, but it is important to note that these low-level detections of benzo(a)pyrene that were detected throughout EDWM have been determined to be associated with sporadic low-level laboratory contamination.

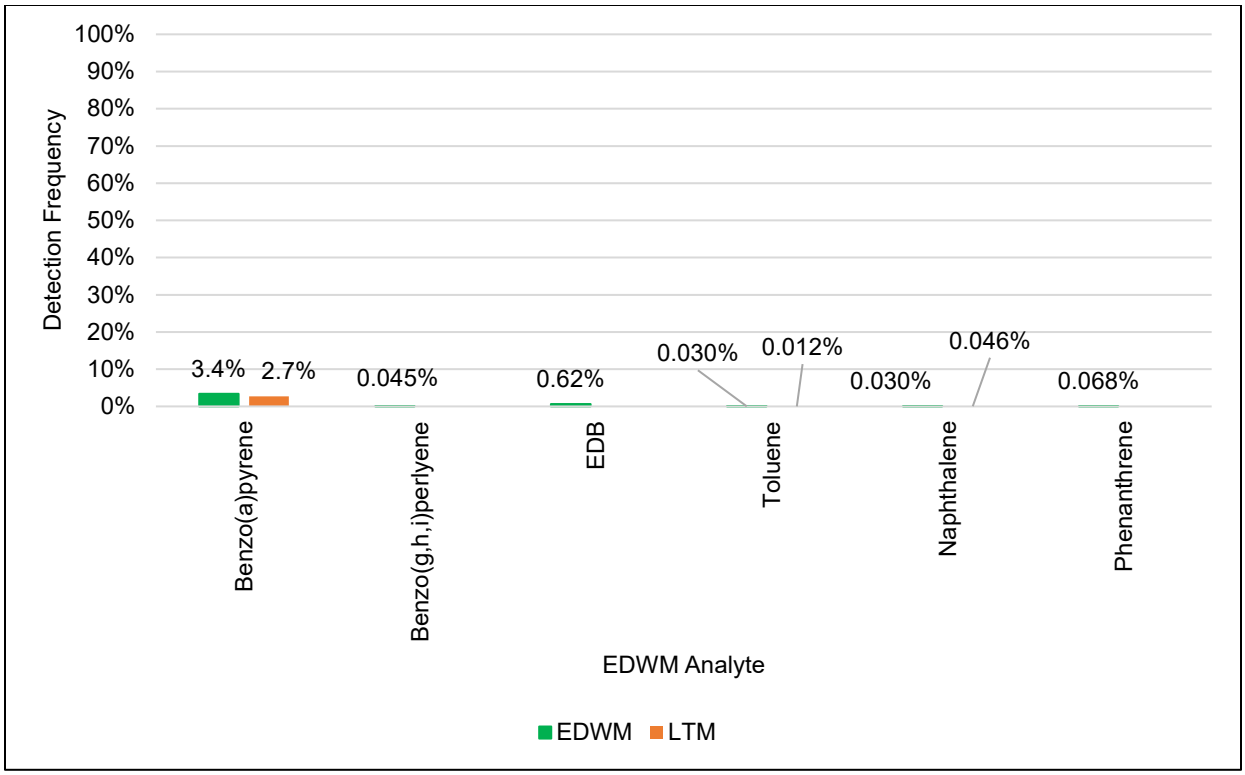


Figure 23. Other Analyte Detection Frequencies in LTM and EDWM

7.8 Data Quality

For the purposes of data integrity and quality control, EDWM data packages go through a Level 2 data validation process which assesses analytical data quality through automated data review supplemented with a manual review by a chemist. A subset (estimated at 10%) of drinking water compliance samples underwent Stage 4 Data Validation by an independent validator (i.e., a data validator outside of the analytical lab). The data validation process evaluates QA/QC information provided by the laboratory. Supplemental QA/QC has been documented within the quarterly reports through the assessment of PE and MS sample results, and analysis of potential blank contamination. PE and MS sample results have generally had good recoveries and have demonstrated EDWM results are of good quality.

Twenty-two PE samples were analyzed during EDWM. Twenty-one of 22 (95%) PE samples analyzed during EDWM were within the acceptable criteria of 36% to 132%. The EDWM Plan scheduled a minimum of two PE samples for each month at spiked concentrations of 266 ppb and 80 ppb. This routine was maintained throughout EDWM except at the start of EDWM in April 2024 where no PE samples were submitted to the laboratory because this requirement was added after EDWM first initiated. Additionally, 282 MS samples were analyzed during EDWM. Two hundred fifty-five of 282 (90%) MS samples analyzed during EDWM were within the acceptable criteria of 36% to 132%. The lab has been able to demonstrate that the data is of good quality and can be used to evaluate whether JP-5 or other fuels are impacting the System.[21]

[21] Detailed information and analysis of the QA/QC data collected as part of EDWM are summarized in Section 4 of the EDWM Quarterly Reports.

7.9 EPA and DOH Co-Sampling

EPA and DOH collected co-samples during EDWM to compare with the Navy's results as an additional method to verify the accuracy and quality of the data collected. A total of 509 EPA co-samples were collected throughout EDWM between 24 April 2024 and 31 March 2025. Split samples were collected throughout all four quarters of EDWM: 94 samples during Q1, 140 samples during Q2, 119 samples during Q3, and 156 samples during Q4. The EPA will publicly release its results for all four quarters after EDWM has been finalized, along with a supporting report. The EPA and DOH sample results for all four quarters of EDWM have not been provided; therefore, a comparison could not be completed at the time of this summary report. Once results from EPA and DOH are available, the Navy will compare the results to ensure the results are consistent.

7.10 WQAT Summary

Throughout EDWM a total of 87 water quality concerns were reported to the WQAT where the resulting response was a visit and sampling. On average per month during EDWM 8 concerns were reported to WQAT, and the month of June 2024 had the highest number of concerns (16 water quality concerns). Figure 24 displays number of concerns per month during EDWM, with a notable decreasing trend of concerns in the second half of EDWM (October 2024 – March 2025).

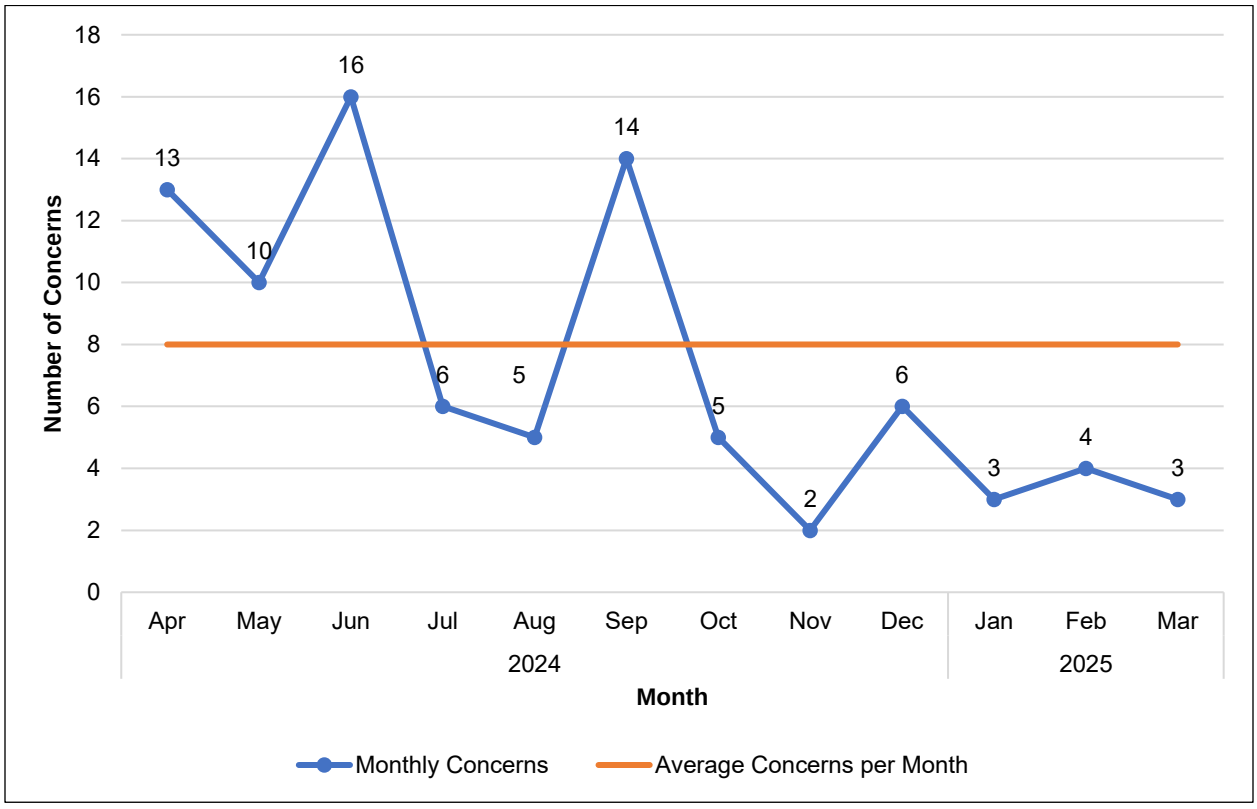


Figure 24. Summary of Water Quality Concerns Throughout EDWM (April 2024 – March 2025)

A total of 90 WQAT samples were collected during EDWM. Figure 24 below summarizes the number of requested WQAT samples. WQAT samples were collected in 13 Zones throughout EDWM. TPHs were non-detect in all samples collected by the WQAT. The WQAT observed no sheens, odors, or fuel-related impacts at any of the locations sampled during EDWM.

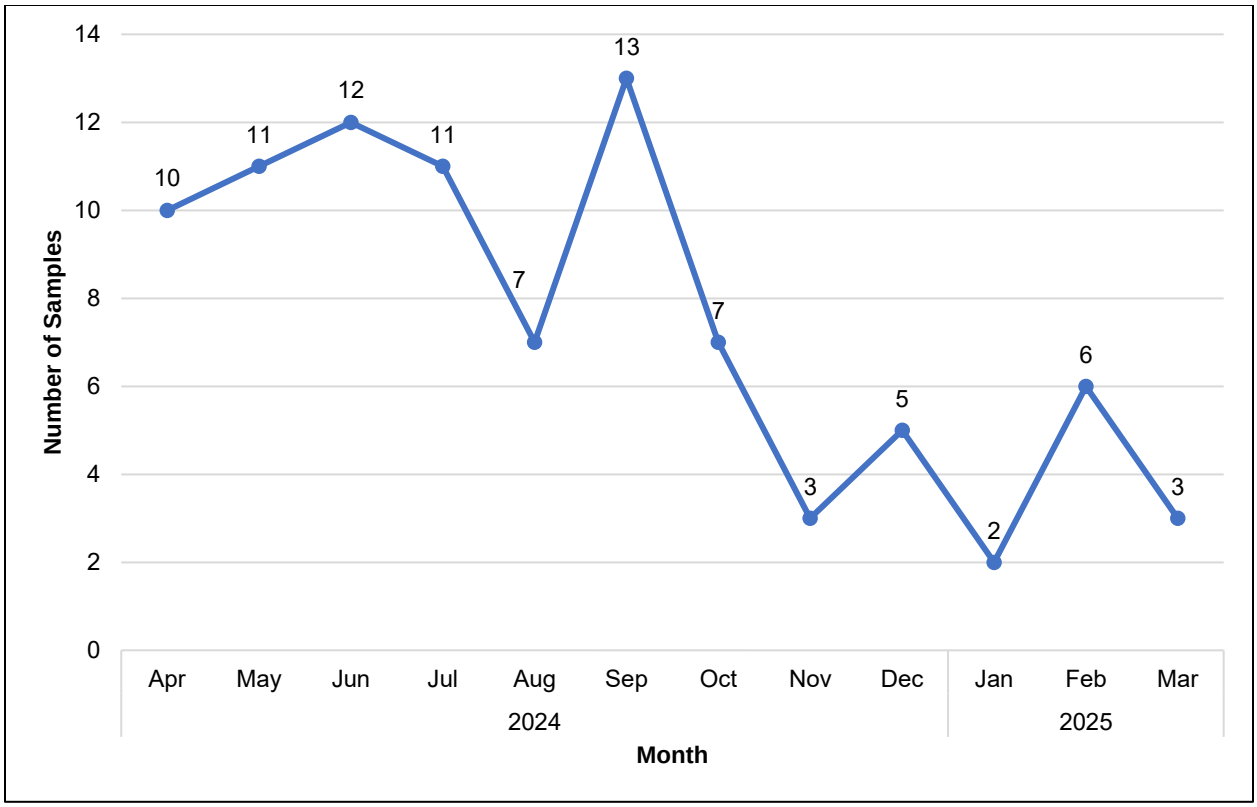


Figure 25. Summary of WQAT Samples Throughout EDWM (April 2024 – March 2025)

7.11 Key Findings and Recommendations

The results of the data gathered over the course of EDWM in conjunction with analyses performed all point to the conclusion that JP-5 and other fuels are not impacting the quality of drinking water in the System. This is supported by:

- The low detection frequency and isolated detections of TPH and other fuel indicator compounds throughout EDWM.
- The absence of fuel sheens, odors, or other visible indicators of fuel in WQAT samples indicate the absence of fuel related impacts within the System.
- The results of the benzo(a)pyrene investigation that determined detections of the benzo(a)pyrene were associated with low-level lab contamination and not JP-5 or other fuels.
- The results of the Tier 1 initial assessments and analyses performed throughout EDWM to determine whether detections of TPH or other fuel indicator compounds were associated with JP-5 or other fuels.
- The results of the Tier 2 forensic analyses performed throughout EDWM which demonstrated that JP-5 or other fuels were not impacting the System and that chemicals present in the water do not pose an unacceptable risk to human health.

Between April 2024 and March 2025, the Navy performed extensive sampling and investigation activities in all 20 Zones of the System. The Navy successfully achieved comprehensive temporal and spatial coverage; a requirement outlined in the EDWM Plan. All lines of evidence indicate that JP-5 or other fuels are not impacting the drinking water in the System. After three years of enhanced drinking water monitoring (i.e., LTM and EDWM), and over 15,000 samples collected from the source and across the JBPHH distribution system, the drinking water in the

System is safe and continues to meet all state and federal requirements. Therefore, it is recommended that the Navy return to routine compliance monitoring only.

Table 5. Contaminants Detected in Drinking Water Samples Collected from Residences

Contaminant[1]	Typical Source of Contaminant	Units[2]	Screening Level[3]	Basis for Screening Level	EDWM Summary – First Quarter Apr – Jun 2024		EDWM Summary – Second Quarter Jul – Sept 2024		EDWM Summary – Third Quarter Oct – Dec 2024		EDWM Summary – Fourth Quarter Jan – Mar 2025	
					No. of Detects out of Samples	Minimum – Maximum (Average)[4]	No. of Detects out of Samples	Minimum – Maximum (Average)[4]	No. of Detects out of Samples	Minimum – Maximum (Average)[4]	No. of Detects out of Samples	Minimum – Maximum (Average)[4]
Contaminants of Concern												
Benzene	Discharge from factories; Leaching from gas storage tanks and landfills	ppb	5	MCL	0/926	--	0/968	--	0/804	--	0/1,178	--
Ethylbenzene	Discharge from petroleum refineries	ppb	700	MCL	0/926	--	0/968	--	0/804	--	0/1,178	--
Toluene	Discharge from petroleum factories	ppb	1,000	MCL	0/926	--	1/968	0.57 – 0.57 (0.57)	0/804	--	0/1,178	--
Xylenes (Total)	Discharge from petroleum factories; Discharge from chemical factories	ppb	10,000	MCL	0/926	--	0/968	--	0/804	--	0/1,178	--
1-Methylnaphthalene	Used to make other chemicals such as dyes, and resins; also, present in cigarette smoke, wood smoke, tar, asphalt, and at some hazardous waste sites	ppb	--[8]	--[8]	0/926	--	0/968	--	0/804	--	0/1,178	--
2-Methylnaphthalene	Used to make other chemicals such as dyes, and resins; also used to make vitamin K; and is present in cigarette smoke, wood smoke, tar, asphalt, and at some hazardous waste sites	ppb	--[8]	--[8]	0/926	--	0/968	--	0/804	--	0/1,178	--
Naphthalene	Naphthalene is found in coal tar or crude oil and is used in the manufacture of plastics, resins, fuels, and dyes, and as a fumigant	ppb	--[8]	--[8]	0/926	--	0/968	--	1/804	1.3 – 1.3 (1.3)	0/1,178	--
Total Petroleum Hydrocarbons (Total)	TPH is petroleum and can contaminate drinking water through spills and other releases into the environment	ppb	--[5]	--[5]	1/926	62 – 62 (62)	4/977	73 – 390 (182)	1/804	53 – 53 (53)	0/1,182	--
Total Organic Carbon (TOC)	Naturally present in the environment, but also can be an indicator of contamination, including petroleum or other sources	ppb	4,000[6]	ISP	6/926	200 – 500 (308)	2/968	240 – 290 (260)	4/804	200 – 430 (265)	3/1,178	200 – 230 (213)
Free Chlorine[7]	Water additive used to control microbes	ppb	4,000	ISP	1,263/1,268	10 – 1,050 (497)	1,864/1,868	10 – 1,700 (440)	1,112/1,114	20 – 1,720 (641)	1,060/1,064	20 – 1,880 (662)
Metals												
Copper	Corrosion of household plumbing systems; Erosion of natural deposits	ppb	1,300	AL	924/926	0.68 – 244 (25)	962/968	0.81 – 208 (23)	801/804	0.63 – 140 (21)	1,178/1,178	1.4 – 274 (25)
Lead	Corrosion of household plumbing systems; Erosion of natural deposits	ppb	15	AL	531/926	0.13 – 8.2 (0.36)	524/968	0.13 – 44 (0.41)	498/804	0.13 – 4.4 (0.29)	603/1,178	0.13 – 9 (0.35)
Mercury	Erosion of natural deposits; Discharge from refineries and factories; Runoff from landfills; Runoff from cropland	ppb	2	MCL	1/926	0.028 – 0.028 (0.028)	1/968	0.11 – 0.11 (0.11)	2/804	0.025 – 0.095 (0.060)	0/1,178	--
Volatile Organic Compounds (VOCs)												
Total trihalomethanes (sum of chloroform, bromoform, bromodichloromethane, and di-bromochloromethane)	By-product of drinking water disinfection	ppb	80	MCL	316/926	0.25 – 14 (1.2)	328/968	0.25 – 25 (1.3)	438/804	0.25 – 17.1 (1.2)	499/1,178	0.25 – 11.3 (1.1)
Semi-Volatile Organic Compounds (SVOCs)												
Benzo(a)pyrene	Leaching from linings of water storage tanks and distribution lines	ppb	0.2	MCL	61/926	0.011 – 0.034 (0.017)	56/968	0.011 – 0.032 (0.017)	12/804	0.010 – 0.034 (0.018)	9/1,178	0.01 – 0.051 (0.017)
Benzo(g,h,i)perylene	Benzo(g,h,i)perylene is found in heavy oils, coal tar, and is used in the preservation of wood as well as in the manufacture of dyes, plastics and pesticides	ppb	--[8]	--[8]	--[9]	--	0/978	--	1/804	0.40 – 0.40 (0.40)	1/1,178	0.36 – 0.36 (0.36)
Phenanthrene	Phenanthrene is found in heavy oils, coal tar, and is used in the preservation of wood as well as in the manufacture of dyes, plastics and pesticides	ppb	--[8]	--[8]	--[9]	--	1/605	0.41 – 0.41 (0.41)	1/804	0.29 – 0.29 (0.29)	0/1,178	--

Notes:

[1] This table focuses on JP-5 or other fuel-related analytes detected in drinking water samples collected during this period from drinking water samples collected as part of the EDWM Plan as well as the results from drinking water samples collected by the WQAT. Samples were also tested for water quality parameters (see Table A-1 in Appendix A) which provide additional information for the evaluation of overall water quality in the System. This information is available for review on the Safe Waters Webpage (https://jbphh-safewaters.org/).

[2] All results are reported in parts per billion (ppb). This refers to the amount (or concentration) of a contaminant in the water.

[3] Results of the drinking water samples will be compared to EPA's Safe Drinking Water Act (SDWA) maximum contaminant level (MCLs), SDWA action levels (ALs), and DOH incident specific parameters (ISPs) - where indicated.

[4] These numbers are the minimum and maximum values from all the sample test results. The average (or mathematical mean) includes all sample test results with a detectable contaminant. An average is the sum of the results (excluding non-detects) divided by the total number results with detection only.

[5] There is no established MCL for TPHs. For the purposes of the EDWM Plan, all detections of TPH will be investigated further to determine if JP-5 or other fuel-related analytes are present in the System.

[6] Total Organic Carbon (TOC) test results report any constituent containing carbon, many of which are naturally occurring and some of which may be man-made.

[7] Chlorine is used as an additive to drinking water for disinfection purposes.

[8] No established MCL from EPA.

[9] This analyte was added to the EDWM Plan in August 2024; therefore, this analyte was not analyzed for during Q1 of EDWM and or during July 2024 (first month of Q2 of EDWM). Cells highlighted in green indicate the water sample results were below their respective MCL, AL, or ISP.

Acronyms and explanation of terms used in this table are presented in Appendix A.

Table 6. Contaminants Detected in Drinking Water Samples Collected from Schools

Contaminant[1]	Typical Source of Contaminant	Units[2]	Screening Level[3]	Basis for Screening Level	EDWM Summary – First Quarter Apr – Jun 2024		EDWM Summary – Second Quarter Jul – Sept 2024		EDWM Summary – Third Quarter Oct – Dec 2024		EDWM Summary – Fourth Quarter Jan – Mar 2025	
					No. of Detects out of Samples	Minimum – Maximum (Average)[4]	No. of Detects out of Samples	Minimum – Maximum (Average)[4]	No. of Detects out of Samples	Minimum – Maximum (Average)[4]	No. of Detects out of Samples	Minimum – Maximum (Average)[4]
Contaminants of Concern												
Benzene	Discharge from factories; Leaching from gas storage tanks and landfills	ppb	5	MCL	0/172	--	0/175	--	0/174	--	0/180	--
Ethylbenzene	Discharge from petroleum refineries	ppb	700	MCL	0/172	--	0/175	--	0/174	--	0/180	--
Toluene	Discharge from petroleum factories	ppb	1,000	MCL	0/172	--	0/175	--	0/174	--	0/180	--
Xylenes (Total)	Discharge from petroleum factories; Discharge from chemical factories	ppb	10,000	MCL	0/172	--	0/175	--	0/174	--	0/180	--
1-Methylnaphthalene	Used to make other chemicals such as dyes, and resins; also, present in cigarette smoke, wood smoke, tar, asphalt, and at some hazardous waste sites	ppb	--[8]	--[8]	0/172	--	0/175	--	0/174	--	0/180	--
2-Methylnaphthalene	Used to make other chemicals such as dyes, and resins; also used to make vitamin K; and is present in cigarette smoke, wood smoke, tar, asphalt, and at some hazardous waste sites	ppb	--[8]	--[8]	0/172	--	0/175	--	0/174	--	0/180	--
Naphthalene	Naphthalene is found in coal tar or crude oil and is used in the manufacture of plastics, resins, fuels, and dyes, and as a fumigant	ppb	--[8]	--[8]	0/172	--	0/175	--	0/174	--	0/180	--
Total Petroleum Hydrocarbons (Total)	TPH is petroleum and can contaminate drinking water through spills and other releases into the environment	ppb	--[5]	--[5]	0/172	--	0/175	--	0/174	--	0/180	--
Total Organic Carbon (TOC)	Naturally present in the environment, but also can be an indicator of contamination, including petroleum or other sources	ppb	4,000[6]	ISP	0/172	--	0/175	--	4/174	200 – 210 (203)	0/180	--
Free Chlorine[7]	Water additive used to control microbes	ppb	4,000	ISP	182/187	10 – 910 (348)	223/223	10 – 1,000 (330)	192/192	20 – 1,460 (536)	164/164	20 – 1,680 (522)
Metals												
Copper	Corrosion of household plumbing systems; Erosion of natural deposits	ppb	1,300	AL	172/172	4.4 – 388 (61)	175/175	6.7 – 374 (54)	174/174	5.1 – 287 (51)	180/180	3.7 – 275 (58)
Lead	Corrosion of household plumbing systems; Erosion of natural deposits	ppb	15	AL	103/172	0.13 – 12 (0.35)	117/175	0.13 – 1.4 (0.22)	99/174	0.13 – 4.8 (0.28)	102/180	0.13 – 0.60 (0.20)
Volatile Organic Compounds (VOCs)												
Total trihalomethanes (sum of chloroform, bromoform, bromodichloromethane, and di-bromochloromethane)	By-product of drinking water disinfection	ppb	80	MCL	118/172	0.26 – 22 (2.2)	102/175	0.26 – 18 (2.4)	125/174	0.26 – 26 (3.1)	133/180	0.25 – 24 (3.4)
Semi-Volatile Organic Compounds (SVOCs)												
Benzo(a)pyrene	Leaching from linings of water storage tanks and distribution lines	ppb	0.2	MCL	3/172	0.013 – 0.026 (0.021)	10/175	0.013 – 0.026 (0.018)	3/174	0.012 – 0.019 (0.016)	1/180	0.013 – 0.013 (0.013)
Phenanthrene	Phenanthrene is found in heavy oils, coal tar, and is used in the preservation of wood as well as in the manufacture of dyes, plastics and pesticides	ppb	--[8]	--[8]	--[9]	--	1/79	0.27 – 0.27 (0.27)	0/174	--	0/180	--

Notes:
[1] This table focuses on JP-5 or other fuel-related analytes detected in drinking water samples collected during this period from drinking water samples collected as part of the EDWM Plan as well as the results from drinking water samples collected by the WQAT. Samples were also tested for water quality parameters (see Table A-1 in Appendix A) which provide additional information for the evaluation of overall water quality in the System. This information is available for review on the Safe Waters Webpage (https://jbphh-safewaters.org/).
[2] All results are reported in parts per billion (ppb). This refers to the amount (or concentration) of a contaminant in the water.
[3] Results of the drinking water samples will be compared to EPA's Safe Drinking Water Act (SDWA) maximum contaminant level (MCLs), SDWA action levels (ALs), and DOH incident specific parameters (ISPs) - where indicated.
[4] These numbers are the minimum and maximum values from all the sample test results. The average (or mathematical mean) includes all sample test results with a detectable contaminant. An average is the sum of the results (excluding non-detects) divided by the total number results with detection only.
[5] There is no established MCL for TPHs. For the purposes of the EDWM Plan, all detections of TPH will be investigated further to determine if JP-5 or other fuel-related analytes are present in the System.
[6] Total Organic Carbon (TOC) test results report any constituent containing carbon, many of which are naturally occurring and some of which may be man-made.
[7] Chlorine is used as an additive to drinking water for disinfection purposes.
[8] No established MCL from EPA.
[9] This analyte was added to the EDWM Plan in August 2024; therefore, this analyte was not analyzed for during Q1 of EDWM and or during July 2024 (first month of Q2 of EDWM).
Cells highlighted in green indicate the water sample results were below their respective MCL, AL, or ISP.
Acronyms and explanation of terms used in this table are presented in Appendix A.

Table 7. Contaminants Detected in Drinking Water Samples Collected from Child Development Centers

Contaminant[1]	Typical Source of Contaminant	Units[2]	Screening Level[3]	Basis for Screening Level	EDWM Summary – First Quarter Apr – Jun 2024		EDWM Summary – Second Quarter Jul – Sept 2024		EDWM Summary – Third Quarter Oct – Dec 2024		EDWM Summary – Fourth Quarter Jan – Mar 2025	
					No. of Detects out of Samples	Minimum – Maximum (Average)[4]	No. of Detects out of Samples	Minimum – Maximum (Average)[4]	No. of Detects out of Samples	Minimum – Maximum (Average)[4]	No. of Detects out of Samples	Minimum – Maximum (Average)[4]
Contaminants of Concern												
Benzene	Discharge from factories; Leaching from gas storage tanks and landfills	ppb	5	MCL	0/126	--	0/134	--	0/126	--	0/130	--
Ethylbenzene	Discharge from petroleum refineries	ppb	700	MCL	0/126	--	0/134	--	0/126	--	0/130	--
Toluene	Discharge from petroleum factories	ppb	1,000	MCL	0/126	--	1/134	0.26 – 0.26 (0.26)	0/126	--	0/130	--
Xylenes (Total)	Discharge from petroleum factories; Discharge from chemical factories	ppb	10,000	MCL	0/126	--	0/134	--	0/126	--	0/130	--
1-Methylnaphthalene	Used to make other chemicals such as dyes, and resins; also, present in cigarette smoke, wood smoke, tar, asphalt, and at some hazardous waste sites	ppb	--[8]	--[8]	0/126	--	0/134	--	0/126	--	0/130	--
2-Methylnaphthalene	Used to make other chemicals such as dyes, and resins; also used to make vitamin K; and is present in cigarette smoke, wood smoke, tar, asphalt, and at some hazardous waste sites	ppb	--[8]	--[8]	0/126	--	0/134	--	0/126	--	0/130	--
Naphthalene	Naphthalene is found in coal tar or crude oil and is used in the manufacture of plastics, resins, fuels, and dyes, and as a fumigant	ppb	--[8]	--[8]	0/126	--	0/134	--	0/126	--	0/130	--
Total Petroleum Hydrocarbons (Total)	TPH is petroleum and can contaminate drinking water through spills and other releases into the environment	ppb	--[5]	--[5]	0/126	--	0/134	--	0/126	--	0/130	--
Total Organic Carbon (TOC)	Naturally present in the environment, but also can be an indicator of contamination, including petroleum or other sources	ppb	4,000[6]	ISP	0/126	--	0/134	--	5/126	200 – 220 (214)	0/130	--
Free Chlorine[7]	Water additive used to control microbes	ppb	4,000	ISP	150/150	40 – 950 (455)	198/200	20 – 1,200 (420)	165/165	20 – 1,620 (603)	117/117	20 – 1,570 (611)
Metals												
Copper	Corrosion of household plumbing systems; Erosion of natural deposits	ppb	1,300	AL	126/126	5.2 – 228 (53)	134/134	3.5 – 372 (48)	126/126	5.8 – 285 (51)	130/130	5.2 – 330 (50)
Lead	Corrosion of household plumbing systems; Erosion of natural deposits	ppb	15	AL	60/126	0.13 – 7.7 (0.52)	52/134	0.13 – 1.8 (0.39)	60/126	0.13 – 1.4 (0.38)	68/130	0.13 – 1.5 (0.37)
Mercury	Erosion of natural deposits; Discharge from refineries and factories; Runoff from landfills; Runoff from cropland	ppb	2	MCL	2/126	0.059 – 0.075 (0.067)	1/134	0.037 – 0.037 (0.037)	3/126	0.058 – 0.081 (0.068)	0/130	--
Volatile Organic Compounds (VOCs)												
Total trihalomethanes (sum of chloroform, bromoform, bromodichloromethane, and di-bromochloromethane)	By-product of drinking water disinfection	ppb	80	MCL	55/126	0.25 – 4.8 (1.3)	55/134	0.36 – 4.8 (1.4)	71/126	0.26 – 3.6 (1.4)	81/130	0.25 – 6.11 (1.5)
Semi-Volatile Organic Compounds (SVOCs)												
Benzo(a)pyrene	Leaching from linings of water storage tanks and distribution lines	ppb	0.2	MCL	1/126	0.019 – 0.019 (0.019)	9/134	0.012 – 0.026 (0.017)	1/126	0.026 – 0.026 (0.026)	1/130	0.015 – 0.015 (0.015)

Notes:
[1] This table focuses on JP-5 or other fuel-related analytes detected in drinking water samples collected during this period from drinking water samples collected as part of the EDWM Plan as well as the results from drinking water samples collected by the WQAT. Samples were also tested for water quality parameters (see Table A-1 in Appendix A) which provide additional information for the evaluation of overall water quality in the System. This information is available for review on the Safe Waters Webpage (https://jbphh-safewaters.org/).
[2] All results are reported in parts per billion (ppb). This refers to the amount (or concentration) of a contaminant in the water.
[3] Results of the drinking water samples will be compared to EPA's Safe Drinking Water Act (SDWA) maximum contaminant level (MCLs), SDWA action levels (ALs), and DOH incident specific parameters (ISPs) - where indicated.
[4] These numbers are the minimum and maximum values from all the sample test results. The average (or mathematical mean) includes all sample test results with a detectable contaminant. An average is the sum of the results (excluding non-detects) divided by the total number results with detection only.
[5] There is no established MCL for TPHs. For the purposes of the EDWM Plan, all detections of TPH will be investigated further to determine if JP-5 or other fuel-related analytes are present in the System.
[6] Total Organic Carbon (TOC) test results report any constituent containing carbon, many of which are naturally occurring and some of which may be man-made.
[7] Chlorine is used as an additive to drinking water for disinfection purposes.
[8] No established MCL from EPA.
Cells highlighted in green indicate the water sample results were below their respective MCL, AL, or ISP.
Acronyms and explanation of terms used in this table are presented in Appendix A.

Table 8. Contaminants Detected in Drinking Water Samples Collected from Other Locations

Contaminant[1]	Typical Source of Contaminant	Units[2]	Screening Level[3]	Basis for Screening Level	EDWM Summary – First Quarter Apr – Jun 2024		EDWM Summary – Second Quarter Jul – Sept 2024		EDWM Summary – Third Quarter Oct – Dec 2024		EDWM Summary – Fourth Quarter Jan – Mar 2025	
					No. of Detects out of Samples	Minimum – Maximum (Average)[4]	No. of Detects out of Samples	Minimum – Maximum (Average)[4]	No. of Detects out of Samples	Minimum – Maximum (Average)[4]	No. of Detects out of Samples	Minimum – Maximum (Average)[4]
Contaminants of Concern												
Benzene	Discharge from factories; Leaching from gas storage tanks and landfills	ppb	5	MCL	0/41	--	0/43	--	0/41	--	0/42	--
Ethylbenzene	Discharge from petroleum refineries	ppb	700	MCL	0/41	--	0/43	--	0/41	--	0/42	--
Toluene	Discharge from petroleum factories	ppb	1,000	MCL	0/41	--	0/43	--	0/41	--	0/42	--
Xylenes (Total)	Discharge from petroleum factories; Discharge from chemical factories	ppb	10,000	MCL	0/41	--	0/43	--	0/41	--	0/42	--
1-Methylnaphthalene	Used to make other chemicals such as dyes, and resins; also, present in cigarette smoke, wood smoke, tar, asphalt, and at some hazardous waste sites	ppb	--[8]	--[8]	0/41	--	0/43	--	0/41	--	0/42	--
2-Methylnaphthalene	Used to make other chemicals such as dyes, and resins; also used to make vitamin K; and is present in cigarette smoke, wood smoke, tar, asphalt, and at some hazardous waste sites	ppb	--[8]	--[8]	0/41	--	0/43	--	0/41	--	0/42	--
Naphthalene	Naphthalene is found in coal tar or crude oil and is used in the manufacture of plastics, resins, fuels, and dyes, and as a fumigant	ppb	--[8]	--[8]	0/41	--	0/43	--	0/41	--	0/42	--
Total Petroleum Hydrocarbons (Total)	TPH is petroleum and can contaminate drinking water through spills and other releases into the environment	ppb	--[5]	--[5]	0/41	--	0/43	--	0/41	--	0/42	--
Total Organic Carbon (TOC)	Naturally present in the environment, but also can be an indicator of contamination, including petroleum or other sources	ppb	4,000[6]	ISP	0/41	--	1/43	200 – 200 (200)	4/41	210 – 240 (220)	1/42	200 – 200 (200)
Free Chlorine[7]	Water additive used to control microbes	ppb	4,000	ISP	54/54	10 – 1,050 (421)	68/68	20 – 1,900 (320)	52/53	20 – 1,890 (523)	43/43	10 – 1,000 (446)
Metals												
Copper	Corrosion of household plumbing systems; Erosion of natural deposits	ppb	1,300	AL	41/41	4.0 – 250 (57)	43/43	3.5 – 254 (64)	41/41	9.0 – 273 (62)	42/42	3.8 – 277 (60)
Lead	Corrosion of household plumbing systems; Erosion of natural deposits	ppb	15	AL	22/41	0.13 – 0.60 (0.32)	27/43	0.13 – 1.2 (0.34)	24/41	0.13 – 0.92 (0.32)	23/42	0.13 – 0.9 (0.32)
Volatile Organic Compounds (VOCs)												
Total trihalomethanes (sum of chloroform, bromoform, bromodichloromethane, and di-bromochloromethane)	By-product of drinking water disinfection	ppb	80	MCL	25/41	0.26 – 8.0 (1.8)	27/43	0.35 – 6.5 (1.7)	22/41	0.36 – 4.8 (1.7)	27/42	0.26 – 8.4 (2.2)
Semi-Volatile Organic Compounds (SVOCs)												
Benzo(a)pyrene	Leaching from linings of water storage tanks and distribution lines	ppb	0.2	MCL	5/41	0.018 – 0.036 (0.025)	1/43	0.018 – 0.018 (0.018)	1/41	0.025 – 0.025 (0.025)	2/42	0.013 – 0.018 (0.016)

Notes:
[1] This table focuses on JP-5 or other fuel-related analytes detected in drinking water samples collected during this period from drinking water samples collected as part of the EDWM Plan as well as the results from drinking water samples collected by the WQAT. Samples were also tested for water quality parameters (see Table A-1 in Appendix A) which provide additional information for the evaluation of overall water quality in the System. This information is available for review on the Safe Waters Webpage (https://jbphh-safewaters.org/).
[2] All results are reported in parts per billion (ppb). This refers to the amount (or concentration) of a contaminant in the water.
[3] Results of the drinking water samples will be compared to EPA's Safe Drinking Water Act (SDWA) maximum contaminant level (MCLs), SDWA action levels (ALs), and DOH incident specific parameters (ISPs) - where indicated.
[4] These numbers are the minimum and maximum values from all the sample test results. The average (or mathematical mean) includes all sample test results with a detectable contaminant. An average is the sum of the results (excluding non-detects) divided by the total number results with detection only.
[5] There is no established MCL for TPHs. For the purposes of the EDWM Plan, all detections of TPH will be investigated further to determine if JP-5 or other fuel-related analytes are present in the System.
[6] Total Organic Carbon (TOC) test results report any constituent containing carbon, many of which are naturally occurring and some of which may be man-made.
[7] Chlorine is used as an additive to drinking water for disinfection purposes.
[8] No established MCL from EPA.
Cells highlighted in green indicate the water sample results were below their respective MCL, AL, or ISP.
Acronyms and explanation of terms used in this table are presented in Appendix A.

Table 9. Contaminants Detected in Drinking Water Samples Collected from Hydrants

Contaminant[1]	Typical Source of Contaminant	Units[2]	Screening Level[3]	Basis for Screening Level	EDWM Summary – First Quarter Apr – Jun 2024		EDWM Summary – Second Quarter Jul – Sept 2024		EDWM Summary – Third Quarter Oct – Dec 2024		EDWM Summary – Fourth Quarter Jan – Mar 2025	
					No. of Detects out of Samples	Minimum – Maximum (Average)[4]	No. of Detects out of Samples	Minimum – Maximum (Average)[4]	No. of Detects out of Samples	Minimum – Maximum (Average)[4]	No. of Detects out of Samples	Minimum – Maximum (Average)[4]
Contaminants of Concern												
Benzene	Discharge from factories; Leaching from gas storage tanks and landfills	ppb	5	MCL	0/376	--	0/360	--	0/385	--	0/382	--
Ethylbenzene	Discharge from petroleum refineries	ppb	700	MCL	0/376	--	0/360	--	0/385	--	0/382	--
Toluene	Discharge from petroleum factories	ppb	1,000	MCL	0/376	--	0/360	--	0/385	--	0/382	--
Xylenes (Total)	Discharge from petroleum factories; Discharge from chemical factories	ppb	10,000	MCL	0/376	--	0/360	--	0/385	--	0/382	--
1-Methylnaphthalene	Used to make other chemicals such as dyes, and resins; also, present in cigarette smoke, wood smoke, tar, asphalt, and at some hazardous waste sites	ppb	--[10]	--[10]	0/376	--	0/360	--	0/385	--	0/382	--
2-Methylnaphthalene	Used to make other chemicals such as dyes, and resins; also used to make vitamin K; and is present in cigarette smoke, wood smoke, tar, asphalt, and at some hazardous waste sites	ppb	--[10]	--[10]	0/376	--	0/360	--	0/385	--	0/382	--
Naphthalene	Naphthalene is found in coal tar or crude oil and is used in the manufacture of plastics, resins, fuels, and dyes, and as a fumigant	ppb	--[10]	--[10]	0/376	--	1/360	0.27 – 0.27 (0.27)	0/385	--	0/382	--
Total Petroleum Hydrocarbons (Total)[7]	TPH is petroleum and can contaminate drinking water through spills and other releases into the environment	ppb	--[5]	--[5]	3/376	48 – 1,552 (579)	1/360	64 – 64 (64)	3/386	65 – 143 (98)	0/382	--
Total Organic Carbon (TOC)	Naturally present in the environment, but also can be an indicator of contamination, including petroleum or other sources	ppb	4,000[6]	ISP	34/376	200 – 1,800 (375)	19/360	200 – 1,000 (357)	28/385	200 – 2,000 (393)	21/385	200 – 8,600 (666)
Free Chlorine[8]	Water additive used to control microbes	ppb	4,000	ISP	382/382	20 – 1,100 (429)	340/340	20 – 1,000 (440)	330/332	20 – 1,210 (566)	332/332	30 – 1,340 (567)
Metals – Not Analyzed												
Volatile Organic Compounds (VOCs)												
1,2-Dibromoethane (EDB)	Pesticide for felled logs and beehives; chemical intermediate for dyes, resins, waxes, and gums	ppb	0.05	MCL	1/121[9]	0.0085 – 0.0085 (0.0085)	1/114	0.020 – 0.020 (0.020)	1/118	0.020 – 0.020 (0.020)	0/382	--
Total trihalomethanes (sum of chloroform, bromoform, bromodichloromethane, and di-bromochloromethane)	By-product of drinking water disinfection	ppb	80	MCL	211/376	0.25 – 32 (3.5)	198/360	0.25 – 29 (3.6)	225/385	0.25 – 43 (4.2)	240/382	0.25 – 45 (3.9)
Semi-Volatile Organic Compounds (SVOCs)												
Benzo(a)pyrene	Leaching from linings of water storage tanks and distribution lines	ppb	0.2	MCL	25/368	0.013 – 0.027 (0.017)	15/360	0.010 – 0.033 (0.018)	9/385	0.011 – 0.035 (0.019)	6/382	0.014 – 0.064 (0.032)

Notes:

[1] This table focuses on JP-5 or other fuel-related analytes detected in drinking water samples collected during this period from drinking water samples collected as part of the EDWM Plan as well as the results from drinking water samples collected by the WQAT. Samples were also tested for water quality parameters (see Table A-1 in Appendix A) which provide additional information for the evaluation of overall water quality in the System. This information is available for review on the Safe Waters Webpage (https://jbphh-safewaters.org/).

[2] All results are reported in parts per billion (ppb). This refers to the amount (or concentration) of a contaminant in the water.

[3] Results of the drinking water samples will be compared to EPA's Safe Drinking Water Act (SDWA) maximum contaminant level (MCLs), SDWA action levels (ALs), and DOH incident specific parameters (ISPs) - where indicated.

[4] These numbers are the minimum and maximum values from all the sample test results. The average (or mathematical mean) includes all sample test results with a detectable contaminant. An average is the sum of the results (excluding non-detects) divided by the total number results with detection only.

[5] There is no established MCL for TPHs. For the purposes of the EDWM Plan, all detections of TPH will be investigated further to determine if JP-5 or other fuel-related analytes are present in the System.

[6] Total Organic Carbon (TOC) test results report any constituent containing carbon, many of which are naturally occurring and some of which may be man-made.

[7] Detections of TPH-O at hydrants were primarily associated with common food-grade lubricants used for servicing hydrants and are not associated with JP-5 or other fuel-related analytes in the System.

[8] Chlorine is used as an additive to drinking water for disinfection purposes.

[9] 1,2-Dibromoethane (EDB) was not included in the first draft of the EDWM Plan. After consultation with EPA and DOH, this chemical, along with other VOCs/SVOCs, were added to the list of chemicals analyzed during EDWM beginning in June 2024.

[10] No established MCL from EPA.

Cells highlighted in green indicate the water sample results were below their respective MCL, AL, or ISP.

Acronyms and explanation of terms used in this table are presented in Appendix.

Table 10. Contaminants Detected in Drinking Water Samples Collected from Source Water (Waiawa Shaft – Post-Chlorination)

Contaminant[1]	Typical Source of Contaminant	Units[2]	Screening Level	Basis for Screening Level[3]	EDWM Summary – First Quarter Apr – Jun 2024		EDWM Summary – Second Quarter		EDWM Summary – Third Quarter		EDWM Summary – Fourth Quarter	
					No. of Detects out of Samples	Minimum – Maximum (Average)[4]	No. of Detects out of Samples	Minimum – Maximum (Average)[4]	No. of Detects out of Samples	Minimum – Maximum (Average)[4]	No. of Detects out of Samples	Minimum – Maximum (Average)[4]
Contaminants of Concern												
Benzene	Discharge from factories; Leaching from gas storage tanks and landfills	ppb	5	MCL	0/3	--	0/3	--	0/3	--	0/3	--
Ethylbenzene	Discharge from petroleum refineries	ppb	700	MCL	0/3	--	0/3	--	0/3	--	0/3	--
Toluene	Discharge from petroleum factories	ppb	1,000	MCL	0/3	--	0/3	--	0/3	--	0/3	--
Xylenes (Total)	Discharge from petroleum factories; Discharge from chemical factories	ppb	10,000	MCL	0/3	--	0/3	--	0/3	--	0/3	--
1-Methylnaphthalene	Used to make other chemicals such as dyes, and resins; also, present in cigarette smoke, wood smoke, tar, asphalt, and at some hazardous waste sites.	ppb	--[5]	--[4]	0/3	--	0/3	--	0/3	--	0/3	--
2-Methylnaphthalene	Used to make other chemicals such as dyes, and resins; also used to make vitamin K; and is present in cigarette smoke, wood smoke, tar, asphalt, and at some hazardous waste sites	ppb	--[5]	--[4]	0/3	--	0/3	--	0/3	--	0/3	--
Naphthalene	Naphthalene is found in coal tar or crude oil and is used in the manufacture of plastics, resins, fuels, and dyes, and as a fumigant	ppb	--[5]	--[4]	0/3	--	0/3	--	0/3	--	0/3	--
Total TPH	TPH is petroleum and can contaminate drinking water through spills and other releases into the environment	ppb	--[6]	--[6]	0/3	--	0/3	--	0/3	--	0/3	--
Total Organic Carbon (TOC)[7]	Naturally present in the environment, but also can be an indicator of contamination, including petroleum or other sources	ppb	--[5]	--[5]	0/3	--	0/3	--	0/3	--	0/3	--
Free Chlorine[8]	Water additive used to control microbes	ppb	4,000	ISP	4/5	550 – 960 (797)	6/6	560 – 880 (750)	3/3	310 – 660 (473)	3/3	310 – 440 (367)
Metals												
Copper	Corrosion of household plumbing systems; Erosion of natural deposits	ppb	1,300	AL	1/1	12 – 12 (12)	--	--	--	--	--	--
Lead	Corrosion of household plumbing systems; Erosion of natural deposits	ppb	15	AL	1/1	0.16 – 0.16 (0.16)	--	--	--	--	--	--
Mercury	Erosion of natural deposits; Discharge from refineries and factories; Runoff from landfills; Runoff from cropland	ppb	2	MCL	0/1	--	--	--	--	--	--	--
Volatile Organic Compounds (VOCs)												
1,2-Dibromoethane (EDB)	Pesticide for felled logs and beehives; chemical intermediate for dyes, resins, waxes, and gums	ppb	0.05	MCL	0/2	--	--	--	0/1	--	--	--
2-(2-Methoxy ethoxy) ethanol	Industrial solvent and is also commonly used as a fuel system icing inhibitor (FSII) in jet fuels.	ppb	--[5]	--[5]	0/2	--	--	--	0/1	--	--	--
Synthetic Organic Compounds (SOCs) or Semi-Volatile Organic Compounds (SVOCs) – ND												

Notes:

[1] This table focuses on JP-5 or other fuel-related analytes detected in drinking water samples collected during this period from drinking water samples collected as part of the EDWM Plan as well as the results from drinking water samples collected by the WQAT. Samples were also tested for water quality parameters (see Table A-1 in Appendix A) which provide additional information for the evaluation of overall water quality in the System. This information is available for review on the Safe Waters Webpage (https://jbphh-safewaters.org/).

[2] All results are reported in parts per billion (ppb). This refers to the amount (or concentration) of a contaminant in the water.

[3] Results of the drinking water samples will be compared to EPA's Safe Drinking Water Act (SDWA) maximum contaminant level (MCLs), SDWA action levels (ALs), and DOH incident specific parameters (ISPs) - where indicated.

[4] These numbers are the minimum and maximum values from all the sample test results. The average (or mathematical mean) includes all sample test results with a detectable contaminant. An average is the sum of the results (excluding non-detects) divided by the total number results with detection only.

[5] This chemical does not have an MCL.

[6] There is no established MCL for TPHs. For the purposes of the EDWM Plan, all detections of TPH will be investigated further to determine if JP-5 or other fuel-related analytes are present in the System.

[7] Total Organic Carbon (TOC) test results report any constituent containing carbon, many of which are naturally occurring and some of which may be man-made

[8] Chlorine is used as an additive to drinking water for disinfection purposes.

Cells highlighted in green indicate the water sample results were below their respective MCL, AL, or ISP.

Acronyms and explanation of terms used in this table are presented in Appendix A.

Appendix A

Extended Drinking Water Monitoring
Frequently Asked Questions

What is the purpose of this EDWM Quarterly Sampling Results and EDWM Summary Report?

This Report presents the testing results from drinking water samples that were collected from residences, schools, CDCs, other non-residential buildings, hydrants, and source water (i.e., Waiawa Shaft) to continue to demonstrate that the November 2021 release of JP-5 or other fuels are not impacting the JBPHH drinking water system and ensure that the water meets all state and federal standards. This report also summarizes the results of the entire EDWM program. The Hawaii Department of Health (DOH) health advisory was amended after the first four stages of the Drinking Water Distribution System Recovery Plan were completed in each Zone[22] and the health advisory on the System was lifted as of 26 October 2022. As of March 2024, two years of the LTM were completed. The JBPHH PWS #HI0000360 and AMR PWS #HI0000337 is committed to ensuring tap water continues to be safe for human consumption.

We are sharing this information with you to keep you updated on your community's water quality.

What was found?

The tables on the previous pages present all chemicals of concern that were detected in drinking water samples collected during EDWM. This report, together with the data collected, demonstrates that the drinking water provided by the System meets U.S. EPA and DOH drinking water standards and JP-5 or other fuels are not impacting the System. To assess drinking water results, the Navy used EPA and DOH MCL standards for drinking water. Results of the drinking water samples are analyzed in accordance with the final EDWM Plan finalized on 23 October 2024.

What did the Navy test for?

In order to ensure that drinking water is safe to drink, EPA and Hawaii DOH regulate the number of certain constituents in water provided by public water systems. For this incident, the primary categories of monitored constituents include TPHs, VOCs, SOCs/SVOCs, metals, and TOC, as listed in Table A-1. A description of these contaminant categories can be found under *Explanation of Terms* located at the end of this report. The full list of analytes that were tested are summarized in the table below and the results are presented in the laboratory reports that are located at: https://jbphh-safewaters.org.

Drinking water, including bottled water, can contain small amounts of some contaminants. The presence of these analytes does not necessarily indicate that water poses a health risk. More information about the analytes tested can be obtained by calling the Hawaii DOH Safe Drinking Water Branch at: (**808) 586 – 4258**.

[22] Drinking Water Distribution System Recovery Plan: https://www.cpf.navy.mil/Portals/52/Drinking-Water-Distribution- System-Recovery-Plan.pdf.

Table A-1: EDWM ANALYTICAL LIST (as of October 2024)

Analytical Method	Analyte	CASRN	Residential Priority Buildings Sampling	Hydrant Sampling	Waiawa Shaft Sampling Source (Raw) Water / Post Chlorination	NAH Shaft Sampling Source (Raw) Water	Red Hill Shaft Sampling Source (Raw) Water
EPA 524.2	Benzene[1]	71-43-2	All	M	M/M	n/a	n/a
EPA 524.2	n-Butylbenzene[1]	104-51-8	All	M	M/M	n/a	n/a
EPA 524.2	sec-Butylbenzene[1]	135-98-8	All	M	M/M	n/a	n/a
EPA 524.2	Tert-Butylbenzene[1]	98-06-6	All	M	M/M	n/a	n/a
EPA 524.2	Ethyl Benzene[1]	100-41-4	All	M	M/M	n/a	n/a
EPA 524.2	Isopropylbenzene[1]	98-82-8	All	M	M/M	n/a	n/a
EPA 524.2	n-Propylbenzene[1]	103-65-1	All	M	M/M	n/a	n/a
EPA 524.2	Toluene[1]	108-88-3	All	M	M/M	n/a	n/a
EPA 524.2	1,2,4-Trimethylbenzene[1]	95-63-6	All	M	M/M	n/a	n/a
EPA 524.2	1,3,5-Trimethylbenzene[1]	108-67-8	All	M	M/M	n/a	n/a
EPA 524.2	Xylenes (Total) [1] • m,p-Xylenes • o-Xylenes	 1330-20-7 95-47-6	All	M	M/M	n/a	n/a
EPA 524.2	Total trihalomethanes(TTHM): • Chloroform • Bromoform • Bromodichloromethane • Dibromochloromethane	TTHMs 67-66-3 75-25-2 75-27-4 124-48-1	All	M	n/a/M	n/a	n/a
EPA 525.2	1-Methylnaphthalene[1]	90-12-0	All	M	M/M	n/a	n/a
EPA 525.2	2-Methylnaphthalene[1]	91-57-6	All	M	M/M	n/a	n/a
EPA 525.2	Naphthalene[1]	91-20-3	All	M	M/M	n/a	n/a
EPA 525.2	Acenaphthylene[2]	208-96-8	All	M	M/M	n/a	n/a
EPA 525.2	Anthracene[2]	120-12-7	All	M	M/M	n/a	n/a
EPA 525.2	Benzo[a]pyrene[2]	50-32-8	All	M	M/M	n/a	n/a
EPA 525.2	Benzo[b]fluoranthene[2]	205-82-3	All	M	M/M	n/a	n/a
EPA 525.2	Benzo[k]fluoranthene[2]	207-08-9	All	M	M/M	n/a	n/a
EPA 525.2	Benzo[g,h,i]perylene[2]	191-24-2	All	M	M/M	n/a	n/a
EPA 525.2	Chrysene[2]	218-01-9	All	M	M/M	n/a	n/a
EPA 525.2	Dibenz[a,h]anthracene[2]	53-70-3	All	M	M/M	n/a	n/a
EPA 525.2	Fluorene[2]	86-73-7	All	M	M/M	n/a	n/a
EPA 525.2	Indeno[1,2,3-cd]pyrene[2]	193-39-5	All	M	M/M	n/a	n/a
EPA 525.2	Phenanthrene[2]	85-01-8	All	M	M/M	n/a	n/a
EPA 525.2	Pyrene2	129-00-0	All	M	M/M	n/a	n/a
EPA 8260 EPA 8015 EPA 8015	JP-5 as Combined Total Petroleum Hydrocarbons (TPH)- Gasoline, Diesel, and Oil Ranges	PCHG PCHD MOIL	All	M	M/M	n/a	n/a
EPA 200.8	Copper	7440-50-8	All	n/a	n/a	n/a	n/a
EPA 200.8	Lead	7439-92-1	All	n/a	n/a	n/a	n/a
EPA 245.1	Mercury	7439-94-7	All	n/a	n/a	n/a	n/a
SM 5310 B, C or D, or EPA 415.3, Rev 1.2	Total Organic Carbon (TOC)	TOC	All	M	M/M	n/a	n/a
HACH 8021 (Based on SM 4500-Cl G)	Chlorine, Free (Field Test): • Sample Hot Water • Sample Cold Water	7782-50-5	All	M	n/a/M	n/a	n/a
EPA 170.1	Temperature (Field Test): • Sample Hot Water • Sample Cold Water	TMP	All	M	M/M	Q	Q
EPA 150.3	pH (Field Test)	pH	All	M	M/M	Q	Q
SM 2510 B	Conductivity (Field Test)	CONDUCT	All	M	M/M	Q	Q

Analytical Method	Analyte	CASRN	Residential Priority Buildings Sampling	Hydrant Sampling	Waiawa Shaft Sampling Source (Raw) Water / Post Chlorination	NAH Shaft Sampling Source (Raw) Water	Red Hill Shaft Sampling Source (Raw) Water
SM 2130 B	Turbidity (Field Test)	TURBID	All	M	M/M	Q	Q
SM 2320 B	Total Alkalinity	TOTAL_ALK	All	M	M/M	Q	Q
EPA 200.7	Cations: • Sodium • Potassium • Calcium • Magnesium • Iron • Manganese	 7440-23-5 7440-09-7 7440-70-2 7439-95-4 7439-89-6 7439-96-5	n/a	n/a	M/M	Q	Q
EPA 200.7	Silica	7631-86-9	n/a	n/a	M/M	Q	Q
EPA method 300.0 Rev. 2.1	**Anions**: • Chloride • Sulfate • Fluoride • Ortho-Phosphate-P • Bromide	 16887-00-6 14808-79-8 16984-48-8 14265-44-2 24959-67-9	n/a	n/a	M/M	Q	Q
EPA method 300.1 Rev. 1.0	**Anions**: • Chlorite • Bromate Chlorate	 14998-27-7 15541-45-4 14866-68-3	n/a	n/a	M/M	Q	Q
EPA 504.1	Ethylene Dibromide	106-93-4	n/a	Q	Q	n/a	n/a
EPA 8270SIM	2-(2-Methoxyethoxy)-Ethanol	111-77-3	n/a	Q	Q	n/a	n/a

Notes:
All: Indicates every location will be sampled, M: Indicates monthly sampling, Q: Indicates quarterly sampling, n/a: Indicates not applicable. The analytical laboratory will report non-detected results to the MDL. Values between the MDL and MRL will be flagged as estimates ('J' flag).
[1] These analytes are primary components of JP-5 (i.e., these analytes comprise a significant amount [based on their molar fraction in JP-5 samples obtained from Red Hill on July 5, 2023, and their solubility in water] of the composition of JP-5 dissolved in water) and are key indicators of the presence/absence of JP-5 in drinking water samples.
[2] These analytes are potentially associated with other petroleum compounds (e.g., other fuels, oils, and lubricants).
[3] Lead and copper concentrations in drinking water regulations do not have MCL's, only Action Levels. Lead and copper are regulated by a treatment technique that requires systems to control the corrosiveness of their water. For the purposes of EDWM sampling, lead and copper concentrations in drinking water will be screened at the regulatory Action Levels, though these are not samples collected for the purposes of compliance with federal and state lead and copper regulations.

What happened leading up to the implementation of the EDWM Plan?

On November, 2021, jet fuel was released at the Red Hill Bulk Fuel Storage Facility. Subsequent reporting of fuel-like smell or visual sheen in addition to complaints of health issues from ingestion or dermal contact with the Navy and Army system water were received by the Navy and DOH. On November 28, 2021, the Navy reported that a chemical release of petroleum, which is a hazardous substance, entered the JBPHH drinking water distribution system from the Red Hill Shaft. This release triggered an emergency response and DOH issuance of a public health advisory on November 29, 2021, for the entire JBPHH Public Water System No. HI0000360 (JBPHH System).

The Hawaii DOH, EPA, Navy, and Army formed the Interagency Drinking Water Systems Team (IDWST) to work on a coordinated effort to restore safe drinking water to all Navy Water System users. LTM began in March 2022, immediately following the amendment of the health advisories in each Zone. During LTM Period 6, the frequency of TPH detections increased, primarily in the diesel-range organics (TPH-D). None of these detections has exceeded the DOH's incident-specific parameter (ISP) level of 266 micrograms per liter (µg/L). Since October 2023, the Navy has proactively worked with EPA and DOH on actions to investigate these low-level TPH detections in drinking water samples collected from the JBPHH System. These actions have

included inspection and sampling of hot water heaters and interior faucets to ensure there is no contaminant buildup, as well as collection of samples from various points throughout the System.

During the week of 29 January 2024, an interagency team comprised of SMEs from the EPA, DOH, Navy, and Navy contractors met to discuss low-level TPH detections reported in drinking water samples collected from the System. Investigation into the low-level TPH detections indicated these results were likely attributed to a reaction between chlorine in the water (from treatment) and a surrogate used in the lab when analyzing the samples. The Navy voluntarily committed to extend enhanced monitoring beyond the end of LTM, and developed the EDWM Plan to analyze drinking water samples using a revised analytical method following the completion of LTM.[23]

LTM of the PWS #HI0000360 and PWS #HI0000337 was completed by April 2024. EDWM incorporates lessons learned from LTM (including refinements to analytical methods) and focuses on JP-5 and other fuel-related analytes. EDWM sampling took place for one year after the completion of LTM (i.e., April 2024 – March 2025), and included residential locations not previously tested during LTM.

Where does our water come from?

As of the time of this report, the source of water for the Navy Water System solely comes from the Navy Waiawa Shaft, which was not impacted by the release of JP-5 that occurred at Red Hill in November 2021. The Waiawa Shaft has been sampled, and the EPA and the DOH confirmed that it meets all State and Federal drinking water standards. The Waiawa Shaft will be sampled (in subsequent months during EDWM) in accordance with EPA and the DOH requirements.

What has the Navy done to ensure drinking water is safe for human consumption?

Working closely with the DOH, EPA, and other regulatory bodies, the Navy is working to ensure compliance with all state and federal Standards. The Navy has taken several steps to ensure drinking water continues to be safe for human consumption. These steps have included:

- Completing two years of LTM (March 2022 – March 2024). LTM was implemented as a method of surveillance to continuously ensure that the water is safe to drink, meets all State and Federal drinking water standards, and confirms the System is not being impacted by JP-5 or other fuel-related analytes.
- Implementing the EDWM Plan (April 2024 – March 2025). The purpose of EDWM is to continue to ensure drinking water provided by the System is safe for human consumption by implementing lessons learned from LTM, sampling more residences, and enhancing the ongoing sampling efforts.
- Establishing the Navy Closure Task Force-Red Hill (NCTF-RH) to oversee the safe and deliberate decommissioning of the Red Hill Bulk Fuel Storage Facility, which was the original source of the fuel release. NCTF-RH is dedicated to protecting the environment and public health during the decommissioning process. For more information on the decommissioning of Red Hill, please visit: https://www.navyclosuretaskforce.navy.mil.
- Expanding the availability of the Red Hill Clinic. The goal of the Red Hill Clinic is to offer assessments and care for individuals who may have been exposed to contaminated water. This clinic provides support to those experiencing symptoms related to

[23] For more information on the low-level TPH detections observed during LTM and the results of the investigation into these results, see the Summary of Technical Memorandum Regarding Low-Level Hydrocarbon Detections Observed During Long-Term Monitoring at: https://jbphh-safewaters.org/public/Tech_Memo_JBPHH_LOE's_LTM_TPH_Detects_Redacted_Rev.pdf.

contamination. For more information on medical assistance, please visit: https://nhchawaii.tricare.mil/Clinics/BHC-Makalapa/Red-Hill-Clinic.

- Establishing the WQAT, made up of experts to focus on the quality of drinking water. The team is available to collect drinking water samples to test for the presence of TPH and conduct a water quality investigation. To dispatch the WQAT, residents can call the JBPHH Drinking Water Call Center at **(808) 210 – 6968**. Note, contact information may change, visit the Safe Waters website for latest information (https://jbphh-safewaters.org)
- Updating the Safe Waters Webpage to include up-to-date sampling results and findings, available to all residents at JBPHH. The Safe Waters Webpage provides accurate information about the current status of water and ongoing sampling efforts to ensure public safety. For more information, visit: https://jbphh-safewaters.org.
- Conducting extensive per- and polyfluoroalkyl substances (PFAS) sampling of the Navy's drinking water wells (June 2024 – June 2025). The results of these sampling efforts are available online at https://jbphh-safewaters.org.

When was EDWM sampling conducted?

EDWM began in April 2024. Per the approved EDWM Plan, drinking water samples were collected from residences, schools, CDCs, non-residences, and hydrants on a monthly basis for one year (i.e., April 2024 – March 2025). The results of EDWM sampling are available at the Safe Waters website, and summarized on a quarterly basis.

Where were EDWM samples taken?

Per the approved EDWM Plan, samples were collected at houses that were not previously sampled within LTM, with the goal of sampling 100% of the un-sampled houses on the System by the end of EDWM. Approximately 65% of residences within each Zone were sampled during LTM, which leaves approximately 35% remaining to be sampled during EDWM.

For more information on where samples were taken, please visit the Safe Waters Website at: https://jbphh-safewaters.org

Where can I get more information about the potential health effects associated with these contaminants?

Hawaii Department of Health (DOH)

https://health.hawaii.gov/about/navy-water-system-quality-updates/.

Call the DOH Safe Drinking Water Branch at 808-586-4258

US Environmental Protection Agency (EPA)

https://www.epa.gov/ground-water-and-drinking-water/forms/online-form-epas-office-ground-water-and-drinking-water.

Call EPA Region 9's Environmental Information Center at 1-866-372-9378

Explanation of Terms and Acronyms used in this Report

Action Level (AL). This AL is for Lead and Copper. The AL is a measure of the effectiveness of the corrosion control treatment in water systems. The AL is not a standard for establishing a safe level of lead or copper. The AL is the point at which certain provisions of the proposed standards must be initiated.

Contaminant. Contaminant is any physical, chemical, biological, or radiological substance or matter in water, and can be either healthy or unhealthy, depending on the particular substance and concentration. It could also be a physical parameter monitored such as pH or temperature.

DOH. Hawaii Department of Health

DOH Environmental Action Level (EAL). The DOH Environmental Action Levels (EALs) are concentrations of contaminants in drinking water and other media (e.g., soil, soil gas, and groundwater) below which the contaminants are assumed not to pose a significant threat to human health or the environment. Exceeding these EAL does not necessarily indicate that contamination at the site poses environmental hazards but generally warrants additional investigation.

EPA U.S. Environmental Protection Agency

Free Chlorine. Chlorine is added to drinking water as part of the treatment process. Adding chlorine is the most common way to disinfect drinking water. Disinfection kills bacteria, viruses, and other microorganisms that could cause disease or illness. Chlorine is effective and continues to keep the water safe as it travels from the treatment plant to the consumer's tap. Chlorine measurements provide another line of evidence for evaluating drinking water quality.

Incident Specific Parameter (ISP). To more comprehensively monitor and respond to this specific petroleum contamination of drinking water, the DOH identified contaminants that require additional action prior to amending the Health Advisory. The ISPs are used as a line of evidence to evaluate the data generated in each Zone during the investigation conducted by the IDWST.

Maximum Contaminant Level (MCL). An MCL is the maximum permissible level of a contaminant in water which is delivered to any user of a public water system. The MCL is set to protect the public from acute and chronic health risks associated with consuming water containing these contaminants.

Metals. Metals are not derived from living sources and in general do not contain carbon. Metals include antimony, arsenic, asbestos, barium, beryllium, cadmium, chromium, copper, cyanide, fluoride, lead, mercury, nitrate, nitrite, selenium, and thallium. These contaminants get into drinking water supplies through industrial discharge or spills, erosion of natural deposits, corrosion, sewage discharge, fertilizer runoff, and other sources.

ND. Non-Detect

Project Specific Screening Level. DOH uses multiple criteria to assess the safety of the drinking water including maximum contaminant levels (MCLs) previously established environmental action levels (EALs) and incident specific parameters (ISPs).

Synthetic Organic Compounds (SOCs)/Semi-Volatile Organic Compounds (SVOCs). SOCs and SVOCs may be used interchangeably and are man-made, organic (carbon-based) chemicals that are less volatile than Volatile Organic Contaminants (VOCs). They are used as pesticides, defoliants, fuel additives, and as ingredients for other organic chemicals.

Total Organic Carbon (TOC). TOC is naturally present in the environment, but also can be an indicator of contamination, including petroleum or other sources.

Total Petroleum Hydrocarbons (TPH). TPH is a term used to describe a large family of several hundred chemical compounds that come from crude oil. Crude oil is used to make petroleum products, which can contaminate the environment. TPH is comprised of detected results from TPH-D, TPH-G, and TPH-O. TPHs are analyzed using EPA Method 8015D and 8260. These methods are not fuel-specific. TPH results reported using these methods represent the total concentration (or amount) of hydrocarbons present in the sample. Hydrocarbons can be petroleum (e.g., crude oil, JP-5, and other fuels), biogenic (i.e., organic compounds produced by living organisms such as algae or bacteria), or pyrogenic (i.e., produced via combustion). Many hydrocarbons are naturally occurring and are present in drinking water.

Total Trihalomethanes (TTHM). TTHM is the sum of the concentration in milligrams per liter of the trihalomethane compounds (trichloromethane [chloroform], dibromochloromethane, bromodichloromethane and tribromomethane [bromoform]).

Units. A unit is the concentration of contaminant found in the water. For this report, the units are expressed in U.S. Standard Units.

U.S. Standard Unit (Name)	Acronym	Equivalent International System of Units (Name)	Acronym
parts per billion	ppb	micrograms per liter	mg/L

Volatile Organic Compounds (VOCs). VOCs are a class of chemicals that contain carbon and evaporate, or volatilize, easily into air at room temperature. VOCs are found in a variety of commercial, industrial, and residential products, including gasoline, solvents, cleaners and degreasers, paints, inks and dyes, and pesticides.

Appendix B

Safety Data Sheet for Hydrant Lubricants at JPBHH System

Pollardwater Food Grade Anti-Seize

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations
Issue date: 1/30/2024 Version: 1.0

SECTION 1: Identification

1.1. Identification

Product form	:	Mixture
Product name	:	Pollardwater Food Grade Anti-Seize
Product code	:	P67751

1.2. Recommended use and restrictions on use

Use of the substance/mixture	:	Lubricant where there may be incidental food contact

1.3. Supplier

Pollardwater
200 Atlantic Avenue
New York, NY 11040
T 800-437-1146

1.4. Emergency telephone number

Emergency number	:	Infotrac: North America 1-800-535-5053| Australia 1-300-366-961 | Germany 0800-181-2926 | International 011-1-352-323-3500 (collect) | China 400-120-076

SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture

GHS US classification

Reproductive toxicity Category 2	H361	Suspected of damaging fertility or the unborn child

Full text of H statements : see section 16

2.2. GHS Label elements, including precautionary statements

GHS US labeling

Hazard pictograms (GHS US) :

Signal word (GHS US)	:	Warning
Hazard statements (GHS US)	:	H361 - Suspected of damaging fertility or the unborn child
Precautionary statements (GHS US)	:	P201 - Obtain special instructions before use. P202 - Do not handle until all safety precautions have been read and understood. P280 - Wear protective gloves/protective clothing/eye protection/face protection. P308+P313 - If exposed or concerned: Get medical advice/attention. P405 - Store locked up. P501 - Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation.

2.3. Other hazards which do not result in classification

No additional information available

2.4. Unknown acute toxicity (GHS US)

37.33% of the mixture consists of ingredient(s) of unknown acute toxicity (Oral)
52.13% of the mixture consists of ingredient(s) of unknown acute toxicity (Dermal)
36.73% of the mixture consists of ingredient(s) of unknown acute toxicity (Inhalation (Dust/Mist))

SECTION 3: Composition/Information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

Name	Product identifier	%
white mineral oil (petroleum)	CAS-No.: 8042-47-5	40-60
benzenamine, N-phenyl-, reaction products with 2,4,4-trimethylpentene	CAS-No.: 68411-46-1	<2.5
zinc oxide	CAS-No.: 1314-13-2	1-3

Full text of hazard classes and H-statements : see section 16

SECTION 4: First-aid measures

4.1. Description of first aid measures

First-aid measures general : IF exposed or concerned: Get medical advice/attention.
First-aid measures after inhalation : Remove person to fresh air and keep comfortable for breathing.
First-aid measures after skin contact : Wash skin with plenty of water.
First-aid measures after eye contact : Rinse eyes with water as a precaution.
First-aid measures after ingestion : Call a poison center/doctor/physician if you feel unwell.

4.2. Most important symptoms and effects (acute and delayed)

Symptoms/effects after inhalation : Although no appropriate human or animal health effects data are known to exist, this material is expected to be an inhalation hazard.
Symptoms/effects after skin contact : None under normal conditions.
Symptoms/effects after eye contact : None under normal conditions.
Symptoms/effects after ingestion : None under normal conditions.

4.3. Immediate medical attention and special treatment, if necessary

Treat symptomatically.

SECTION 5: Fire-fighting measures

5.1. Suitable (and unsuitable) extinguishing media

Suitable extinguishing media : Do not use a heavy water stream. Dry powder. Foam. Carbon dioxide.
Unsuitable extinguishing media : Do not use a heavy water stream.

5.2. Specific hazards arising from the chemical

Fire hazard : No fire hazard.
Explosion hazard : No direct explosion hazard.
Hazardous decomposition products in case of fire : Toxic fumes may be released.

5.3. Special protective equipment and precautions for fire-fighters

Firefighting instructions	:	Fight fire from safe distance and protected location. Do not enter fire area without proper protective equipment, including respiratory protection.
Protection during firefighting	:	Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures	:	Stop leak if safe to do so. Notify authorities if product enters sewers or public waters. Absorb spillage to prevent material-damage.

6.1.1. For non-emergency personnel

Protective equipment	:	Wear recommended personal protective equipment.
Emergency procedures	:	Ventilate spillage area.

6.1.2. For emergency responders

Protective equipment	:	Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".
Emergency procedures	:	Evacuate unnecessary personnel. Stop leak if safe to do so.

6.2. Environmental precautions

Avoid release to the environment.

6.3. Methods and material for containment and cleaning up

For containment	:	Absorb spilled material with sand or earth. Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams. Stop leak, if possible without risk.
Methods for cleaning up	:	Take up liquid spill into absorbent material. Notify authorities if product enters sewers or public waters.
Other information	:	Dispose of materials or solid residues at an authorized site.

6.4. Reference to other sections

For further information refer to section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Additional hazards when processed	:	Not expected to present a significant hazard under anticipated conditions of normal use.
Precautions for safe handling	:	Ensure good ventilation of the work station. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear personal protective equipment.
Hygiene measures	:	Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures	:	Keep in a cool, well-ventilated place away from heat.
Storage conditions	:	Store locked up.
Packaging materials	:	Store always product in container of same material as original container.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

white mineral oil (petroleum) (8042-47-5)	
USA - ACGIH - Occupational Exposure Limits	
ACGIH OEL TWA	5 mg/m³ (Inhalable fraction)

zinc oxide (1314-13-2)	
USA - ACGIH - Occupational Exposure Limits	
Local name	Zinc oxide
ACGIH OEL TWA	2 mg/m³ (Respirable fraction)
ACGIH OEL STEL	10 mg/m³ (Respirable fraction)
Remark (ACGIH)	TLV® Basis: Metal fume fever
Regulatory reference	ACGIH 2022
USA - OSHA - Occupational Exposure Limits	
Local name	Zinc oxide
OSHA PEL TWA	5 mg/m³ (Fume) 15 mg/m³ (Total dust) 5 mg/m³ (Respirable fraction)
Regulatory reference (US-OSHA)	OSHA Annotated Table Z-1

8.2. Appropriate engineering controls

Appropriate engineering controls : Ensure good ventilation of the work station.

Environmental exposure controls : Avoid release to the environment.

8.3. Individual protection measures/Personal protective equipment

Personal protective equipment:

Wear recommended personal protective equipment.

Hand protection:
Protective gloves

Eye protection:
Safety glasses

Skin and body protection:
Wear suitable protective clothing

Respiratory protection:
[In case of inadequate ventilation] wear respiratory protection.

Personal protective equipment symbol(s):

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	:	Liquid
Color	:	light brown
Odor	:	No data available
Odor threshold	:	No data available
pH	:	No data available
Melting point	:	No data available
Freezing point	:	No data available
Boiling point	:	No data available
Flash point	:	478 °F (248°C), ASTM D 92
Relative evaporation rate (butyl acetate=1)	:	No data available
Flammability (solid, gas)	:	Not applicable.
Vapor pressure	:	No data available
Relative vapor density at 20°C	:	No data available
Relative density	:	No data available
Solubility	:	No data available
Partition coefficient n-octanol/water (Log Pow)	:	No data available
Auto-ignition temperature	:	No data available
Decomposition temperature	:	No data available
Viscosity, kinematic	:	No data available
Viscosity, dynamic	:	No data available
Explosion limits	:	No data available
Explosive properties	:	No data available
Oxidizing properties	:	No data available

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

The product is non-reactive under normal conditions of use, storage and transport.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

10.4. Conditions to avoid

None under recommended storage and handling conditions (see section 7).

10.5. Incompatible materials

No additional information available

10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity (oral) : Not classified
Acute toxicity (dermal) : Not classified
Acute toxicity (inhalation) : Not classified

Pollardwater Food Grade Anti-Seize	
Unknown acute toxicity (GHS US)	37.33% of the mixture consists of ingredient(s) of unknown acute toxicity (Oral) 52.13% of the mixture consists of ingredient(s) of unknown acute toxicity (Dermal) 36.73% of the mixture consists of ingredient(s) of unknown acute toxicity (Inhalation (Dust/Mist))

white mineral oil (petroleum) (8042-47-5)	
LD50 oral rat	> 5000 mg/kg body weight (Equivalent or similar to OECD 401, Rat, Male / female, Read-across, Oral, 14 day(s))
LD50 dermal rabbit	> 2000 mg/kg body weight (Equivalent or similar to OECD 402, 24 h, Rabbit, Male / female, Read-across, Dermal, 14 day(s))
LC50 Inhalation - Rat	> 5 mg/l (Equivalent or similar to OECD 403, 4 h, Rat, Male / female, Read-across, Inhalation (aerosol), 14 day(s))

benzenamine, N-phenyl-, reaction products with 2,4,4-trimethylpentene (68411-46-1)	
LD50 oral rat	> 5000 mg/kg (OECD 401: Acute Oral Toxicity, Rat, Male / female, Experimental value, Oral, 14 day(s))
LD50 dermal rat	> 2000 mg/kg body weight (Equivalent or similar to OECD 402, Rat, Male / female, Experimental value, Skin)

zinc oxide (1314-13-2)	
LD50 oral rat	> 5000 mg/kg (Equivalent or similar to OECD 401, Rat, Male / female, Experimental value, Oral, 14 day(s))
LD50 dermal rat	> 2000 mg/kg body weight (OECD 402: Acute Dermal Toxicity, 24 h, Rat, Male / female, Experimental value, Dermal, 14 day(s))
LC50 Inhalation - Rat	> 5.7 mg/l (Equivalent or similar to OECD 403, 4 h, Rat, Male / female, Experimental value, Inhalation (dust), 14 day(s))

Skin corrosion/irritation : Not classified

white mineral oil (petroleum) (8042-47-5)	
pH	No data available in the literature

benzenamine, N-phenyl-, reaction products with 2,4,4-trimethylpentene (68411-46-1)	
pH	5.1 – 6.2 (1 %, 20 - 25 °C)

zinc oxide (1314-13-2)	
pH	6.07 – 6.55 (2.9E-4 %, 20 °C, OECD 105: Water Solubility)

Serious eye damage/irritation : Not classified

white mineral oil (petroleum) (8042-47-5)	
pH	No data available in the literature

benzenamine, N-phenyl-, reaction products with 2,4,4-trimethylpentene (68411-46-1)	
pH	5.1 – 6.2 (1 %, 20 - 25 °C)

zinc oxide (1314-13-2)	
pH	6.07 – 6.55 (2.9E-4 %, 20 °C, OECD 105: Water Solubility)

Respiratory or skin sensitization : Not classified
Germ cell mutagenicity : Not classified
Carcinogenicity : Not classified.
Reproductive toxicity : Suspected of damaging fertility or the unborn child.
STOT-single exposure : Not classified
STOT-repeated exposure : Not classified.

benzenamine, N-phenyl-, reaction products with 2,4,4-trimethylpentene (68411-46-1)	
NOAEL (oral,rat,90 days)	25 mg/kg body weight Animal: rat, Guideline: OECD Guideline 422 (Combined Repeated Dose Toxicity Study with the Reproduction / Developmental Toxicity Screening Test)
STOT-repeated exposure	May cause damage to organs through prolonged or repeated exposure.

Aspiration hazard : Not classified
Viscosity, kinematic : No data available

white mineral oil (petroleum) (8042-47-5)	
Viscosity, kinematic	3 – 20.5 mm²/s (40 °C, ISO 3104: Determination of kinematic viscosity and calculation of dynamic viscosity, Niet experimenteel bepaald; afgeleid van de indeling)

benzenamine, N-phenyl-, reaction products with 2,4,4-trimethylpentene (68411-46-1)	
Viscosity, kinematic	353 mm²/s (40 °C, OECD 114: Viscosity of Liquids)

zinc oxide (1314-13-2)	
Viscosity, kinematic	Not applicable (solid)

Symptoms/effects after inhalation : Although no appropriate human or animal health effects data are known to exist, this material is expected to be an inhalation hazard.
Symptoms/effects after skin contact : None under normal conditions.
Symptoms/effects after eye contact : None under normal conditions.
Symptoms/effects after ingestion : None under normal conditions.

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : The product is not considered harmful to aquatic organisms or to cause long-term adverse effects in the environment.

white mineral oil (petroleum) (8042-47-5)	
LC50 - Fish [1]	> 100 mg/l (OECD 203: Fish, Acute Toxicity Test, 96 h, Oncorhynchus mykiss, Static system, Fresh water, Experimental value, Nominal concentration)

benzenamine, N-phenyl-, reaction products with 2,4,4-trimethylpentene (68411-46-1)	
LC50 - Fish [1]	> 100 mg/l (OECD 203: Fish, Acute Toxicity Test, 96 h, Danio rerio, Static system, Fresh water, Experimental value, Nominal concentration)
EC50 - Crustacea [1]	51 mg/l (OECD 202: Daphnia sp. Acute Immobilisation Test, 48 h, Daphnia magna, Static system, Fresh water, Experimental value, Locomotor effect)

benzenamine, N-phenyl-, reaction products with 2,4,4-trimethylpentene (68411-46-1)	
EC50 72h - Algae [1]	> 100 mg/l Test organisms (species): Desmodesmus subspicatus (previous name: Scenedesmus subspicatus)
ErC50 algae	> 100 mg/l (OECD 201: Alga, Growth Inhibition Test, 72 h, Desmodesmus subspicatus, Static system, Fresh water, Experimental value, Nominal concentration)

zinc oxide (1314-13-2)	
LC50 - Fish [1]	1.55 mg/l (96 h, Danio rerio, Static system, Fresh water, Experimental value, Lethal)
EC50 - Crustacea [1]	1 mg/l (OECD 202: Daphnia sp. Acute Immobilisation Test, 48 h, Daphnia magna, Static system, Fresh water, Experimental value, Zinc ion)

12.2. Persistence and degradability

Pollardwater Food Grade Anti-Seize	
Persistence and degradability	Not rapidly degradable

white mineral oil (petroleum) (8042-47-5)	
Persistence and degradability	Not readily biodegradable in water.

benzenamine, N-phenyl-, reaction products with 2,4,4-trimethylpentene (68411-46-1)	
Persistence and degradability	Not readily biodegradable in water.

zinc oxide (1314-13-2)	
Persistence and degradability	Biodegradability in soil: not applicable,Biodegradability: not applicable.
Chemical oxygen demand (COD)	Not applicable (inorganic)
ThOD	Not applicable (inorganic)

12.3. Bioaccumulative potential

white mineral oil (petroleum) (8042-47-5)	
BCF - Other aquatic organisms [1]	1216 l/kg (BCFBAF v3.01, Estimated value, Fresh weight)
Partition coefficient n-octanol/water (Log Pow)	5.18 (Experimental value)
Bioaccumulative potential	Potential for bioaccumulation (500 ≤ BCF ≤ 5000).

benzenamine, N-phenyl-, reaction products with 2,4,4-trimethylpentene (68411-46-1)	
BCF - Fish [1]	1730 (42 day(s), Cyprinus carpio, Flow-through system, Fresh water, Read-across, GLP)
Partition coefficient n-octanol/water (Log Pow)	6.66 (Experimental value, OECD 123: Partition Coefficient (1-Octanol/Water): Slow-Stirring Method, 23 °C)
Bioaccumulative potential	Potential for bioaccumulation (500 ≤ BCF ≤ 5000).

zinc oxide (1314-13-2)	
BCF - Fish [1]	78 – 2060 (14 day(s), Oncorhynchus mykiss, Semi-static system, Fresh water, Experimental value)
Partition coefficient n-octanol/water (Log Pow)	1.53 (Estimated value)
Bioaccumulative potential	Not bioaccumulative.

12.4. Mobility in soil

white mineral oil (petroleum) (8042-47-5)	
Surface tension	No data available in the literature, Data waiving
Organic Carbon Normalized Adsorption Coefficient (Log Koc)	2.64 (log Koc, SRC PCKOCWIN v2.0, Calculated value)
Ecology - soil	Low potential for adsorption in soil.
benzenamine, N-phenyl-, reaction products with 2,4,4-trimethylpentene (68411-46-1)	
Mobility in soil	60460 Source: EPISUITE
Organic Carbon Normalized Adsorption Coefficient (Log Koc)	3.754 – 8.947 (log Koc, SRC PCKOCWIN v2.0, QSAR)
Ecology - soil	Adsorbs into the soil.
zinc oxide (1314-13-2)	
Surface tension	Not applicable (solid)
Organic Carbon Normalized Adsorption Coefficient (Log Koc)	2.2 (log Koc, Literature study)
Ecology - soil	Low potential for adsorption in soil.

12.5. Other adverse effects

No additional information available

SECTION 13: Disposal considerations

13.1. Disposal methods

Regional legislation (waste) : Disposal must be done according to official regulations.
Waste treatment methods : Dispose of contents/container in accordance with licensed collector’s sorting instructions.
Sewage disposal recommendations : Disposal must be done according to official regulations.
Product/Packaging disposal recommendations : Disposal must be done according to official regulations.
Additional information : Do not re-use empty containers.

SECTION 14: Transport information

In accordance with DOT / TDG / IMDG / IATA

DOT	TDG	IMDG	IATA
14.1. UN number			
Not regulated for transport			
14.2. Proper Shipping Name			
Not regulated	Not regulated	Not regulated	Not regulated
14.3. Transport hazard class(es)			
Not regulated	Not regulated	Not regulated	Not regulated

DOT	TDG	IMDG	IATA
14.4. Packing group			
Not regulated	Not regulated	Not regulated	Not regulated
14.5. Environmental hazards			
Not regulated	Not regulated	Not regulated	Not regulated
No supplementary information available			

14.6. Special precautions for user

DOT
Not regulated

TDG
Not regulated

IMDG
Not regulated

IATA
Not regulated

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable

SECTION 15: Regulatory information

15.1. US Federal regulations

All components of this product are present and listed as Active on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) inventory

This product or mixture is not known to contain a toxic chemical or chemicals in excess of the applicable de minimis concentration as specified in 40 CFR §372.38(a) subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

15.2. International regulations

CANADA

white mineral oil (petroleum) (8042-47-5)

Listed on the Canadian DSL (Domestic Substances List)

benzenamine, N-phenyl-, reaction products with 2,4,4-trimethylpentene (68411-46-1)

Listed on the Canadian DSL (Domestic Substances List)

zinc oxide (1314-13-2)

Listed on the Canadian DSL (Domestic Substances List)

EU-Regulations

No additional information available

National regulations

white mineral oil (petroleum) (8042-47-5)

Listed on INSQ (Mexican National Inventory of Chemical Substances)

benzenamine, N-phenyl-, reaction products with 2,4,4-trimethylpentene (68411-46-1)

Listed on INSQ (Mexican National Inventory of Chemical Substances)

zinc oxide (1314-13-2)

Listed on INSQ (Mexican National Inventory of Chemical Substances)

15.3. US State regulations

California Proposition 65 - This product does not contain any substances known to the state of California to cause cancer, developmental and/or reproductive harm

Component	State or local regulations
Benzenesulfonicacid,dodecyl-,calciumsalt(26264-06-2)	U.S. - Delaware - Pollutant Discharge Requirements - Reportable Quantities; U.S. - Massachusetts - Right To Know List; U.S. - New Jersey - Right to Know Hazardous Substance List; U.S. - New York City - Right to Know Hazardous Substances List; U.S. - Pennsylvania - RTK (Right to Know) List
zinc oxide(1314-13-2)	U.S. - Massachusetts - Right To Know List; U.S. - New Jersey - Right to Know Hazardous Substance List; U.S. - New York City - Right to Know Hazardous Substances List; U.S. - Pennsylvania - RTK (Right to Know) List
chalk(1317-65-3)	U.S. - Massachusetts - Right To Know List; U.S. - New Jersey - Right to Know Hazardous Substance List; U.S. - Pennsylvania - RTK (Right to Know) List

SECTION 16: Other information

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Full text of H-phrases	
H361	Suspected of damaging fertility or the unborn child

Safety Data Sheet (SDS), USA

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.

Appendix C

Tier 1 Analysis Tech Memos

AECOM
1001 Bishop Street
Suite 1600
Honolulu, HI 96813
aecom.com

March 28, 2025

CDR Benjamin Dunn, P.E.
NAVFAC Hawaii
400 Marshall Road
JBPHH HI 96860-3139

Subject: **Joint Base Pearl Harbor-Hickam Drinking Water Benzo(a)pyrene Detection Investigation Zone A1, Hydrant 2431 and Hydrant 72**

Attention CDR Dunn:

On Friday, January 24, 2025, AECOM Technical Services, Inc. (AECOM) was notified of benzo(a)pyrene detections of 0.064 micrograms per liter (µg/L) and 0.052 µg/L in samples A1-DL-0016023-25001-N (Hydrant 2431) and A1-DL-0016027-25001-N (Hydrant 72), respectively, collected in Zone A1, on December 11, 2024. The samples were analyzed at (b) (4) in (b) (4), via gas chromatography-mass spectrometry using United States Environmental Protection Agency Method 525.2 and reported in sample delivery group DA70012.

AECOM launched an investigation to determine if the reported detection is likely to be derived from a fuel-related petrogenic source, particularly the November 2021 release of Jet Propellant 5 (JP-5), and if not, to assign a probable reason for the detection. **Based on multiple lines of evidence, AECOM concludes that these benzo(a)pyrene detections are not attributable to a petrogenic source and are unrelated to JP-5. Furthermore, it is likely that the benzo(a)pyrene found is due to minor contamination in the laboratory, which is not unusual at very low concentrations. AECOM concludes that benzo(a)pyrene was not present in the field sample.**

This conclusion was developed after reviewing multiple lines of evidence including:

- Sample chromatograms
- Mass spectral profile
- Field and laboratory quality control data
- Results of supplemental analyses

Benzo(a)pyrene is a polycyclic aromatic hydrocarbon (PAH) that was designated in the revised Extended Drinking Water Monitoring (EDWM) Plan (October 2024) as an analyte that is potentially associated with petroleum compounds and therefore must be evaluated when detected above the reporting limit (RL).

Supplementary Analyses

In addition to ensuring that the laboratory data achieved low method detection limits and met the data quality objectives (DQOs) of EDWM, additional voluntary forensic analyses were performed on the sample. To further evaluate benzo(a)pyrene detections, additional sample volume was sent to (b) (4) ((b) (4) (formerly known as (b) (4)) to measure the concentrations of petroleum hydrocarbons and other potential indicators using specific forensic methods known as Tier 2 analyses:

- SW-846 8260D – Paraffins-Isoparaffins-Aromatics-Naphthenes-Olefins (PIANO)
- SW-846 8270E-SIM – PAHs and Alkylated-PAHs (ALKPAH)
- SW-846 8015D – Saturated Hydrocarbons (SHCs)

These methods provide more detailed information than is possible with the original sample analytical methods covered under the EDWM Program. Specifically, when evaluating total petroleum hydrocarbon detections, the PIANO and SHC methods can identify and quantitate individual hydrocarbon (with RLs of approximately 1 µg/L) concentrations rather than reporting one result for an entire carbon range (with an RL of 80 µg/L). An extended list of PAHs and their alkylated derivatives can be analyzed using the ALKPAH method, all at very low RLs, providing additional information that is key to determining the potential source of any detected analyte. Furthermore, analyzing the same sample by different methods at different laboratories can help to confirm whether an analyte was present in the sample or may have been introduced at the time of sampling or in the laboratory. These additional analyses exceed industry standards and go beyond meeting the DQOs of EDWM.

AECOM immediately directed the laboratory to send additional sample volume of A1-DL-0016023-25001-N and A1-DL-0016027-25001-N to (b) (4) for Tier 2 analyses. **There were no detections of benzo(a)pyrene in either of these samples.** An estimated, trace level detection of one PAH, phenanthrene, was reported at a concentration of 0.00631 µg/L in sample A1-DL-0016023-25001-N (Hydrant 2431). There were no other detections of Tier 2 analytes in either sample.

Conclusion

After examining multiple lines of evidence, AECOM concludes that the water coming from the two hydrants does not contain benzo(a)pyrene nor any other petroleum compounds. The original detections of benzo(a)pyrene are most likely due to a laboratory artifact. AECOM is working with the laboratory to identify the mechanism by which the contaminant may have been introduced to the sample and will continue to do so. No additional action is currently recommended. A detailed discussion of the investigation into this result is provided in Attachment 1. The laboratory report from (b) (4) is provided in Attachment 2. Attachment 3 provides a glossary of terms used in the investigation.

Questions regarding this letter should be addressed to (b) (6) at (b) (6)

Very respectfully,

(b) (6)
(b) (6)
Senior Project Chemist
(b) (6)

(b) (6)
(b) (6)
CLEAN Program Manager
(b) (6)

cc: (b) (6)

Attachments

Attachment 1: Technical Discussion of Samples

Attachment 2: (b) (4) Laboratory Report L2504344

Attachment 3: Glossary of Terms

Attachment 1: Technical Discussion of Samples A1-DL-0016023-25001-N and A1-DL-0016027-25001-N

The chromatograms and mass spectra for A1-DL-0016023-25001-N and A1-DL-0016027-25001-N were reviewed to verify that benzo(a)pyrene was correctly identified. The retention times and ion ratios met all criteria indicating that the peak was correctly identified as benzo(a)pyrene. The mass spectra for these samples are presented in Figure 1 (A1-DL-0016023-25001-N) and Figure 2 (A1-DL-0016027-25001-N).

All associated field and laboratory quality control data were reviewed to look for evidence of laboratory contamination or other method performance issues that may have led to a false positive result. Items reviewed included:

- Field reagent blank results
- Method blank results
- Blank spike recoveries
- Surrogate standard recoveries
- Internal standard recoveries
- Initial calibration (ICAL) curve
- Initial calibration verification (ICV)
- Continuing calibration verification (CCV)

Benzo(a)pyrene was not detected above the detection limit (DL) in either the field reagent blank or method blank. Associated results in the blank spike, surrogate standards, internal standards, ICAL, ICV, and CCV were within acceptance limits.

There is nothing in the (b) (4) data to suggest that either the identity or concentration were reported incorrectly in this sample, however, it is extremely unlikely that benzo(a)pyrene was present in this sample due to a petrogenic source. The preliminary evidence supporting this assertion includes:

- Non-detect results in both the diesel range organics (DRO) and oil range organics (ORO) of the SW-846 8015D total petroleum hydrocarbon (TPH) analysis; and
- Non-detect results for all other polycyclic aromatic hydrocarbons (PAHs).

Benzo(a)pyrene is classified as a PAH, and PAHs from petrogenic sources are known to be less abundant relative to alkane hydrocarbons (alkane hydrocarbons would be detected in the TPH ranges). Benzo(a)pyrene is almost never the most abundant PAH in any pyrogenic or petrogenic PAH pattern, so the ratios of the other parent (and alkylated) can provide valuable clues about the PAH source(s). A pyrogenic PAH pattern is almost always dominated by fluoranthene and pyrene, neither of which were detected. If benzo(a)pyrene was present in either sample due to a petroleum source, additional PAHs would also be expected to be present.

The ability to identify and quantitate individual DRO and ORO constituents is limited in the standard 8015D method used by (b) (4), and its detection limits for the other PAHs measured via method 525.2 are an order of magnitude greater than the detection limit for benzo(a)pyrene. Therefore, to provide further confidence in the assertions above related to the absence of other petroleum indicators, the sample was sent to (b) (4) (formerly known as (b) (4)) for a quantitative evaluation of petroleum hydrocarbons and potential indicators using the following forensic analytical methods (referred to as Tier 2 analyses):

- SW-846 8260D - Paraffins-Isoparaffins-Aromatics-Naphthenes-Olefins (PIANO)
- SW-846 8270E-SIM – PAHs and Alkylated-PAHs (ALKPAH)
- SW-846 8015D – Saturated Hydrocarbons (SHC)

All results were non-detect for both samples in the PIANO analysis. Benzo(a)pyrene was not detected in either sample. An estimated, trace level detection of one PAH, phenanthrene, was reported at a concentration of 0.00631 micrograms per liter (µg/L) in sample A1-DL-0016023-25001-N (Hydrant 2431).

This concentration is within 10% of the detection limit of 0.00580 µg/L, is likely attributable to background and is of no consequence in the evaluation of the original benzo(a)pyrene detections.

In the SHC analysis, the laboratory reported a detection of the C20 alkane, eicosane at an estimated concentration of 0.170 µg/L in sample A1-DL-0016027-25001-N (Hydrant 72). This is less than the concentration found in the method blank, therefore, this detection was negated during validation and is not considered present. These results support the conclusion that the original detections of benzo(a)pyrene were not due to the presence of petroleum.

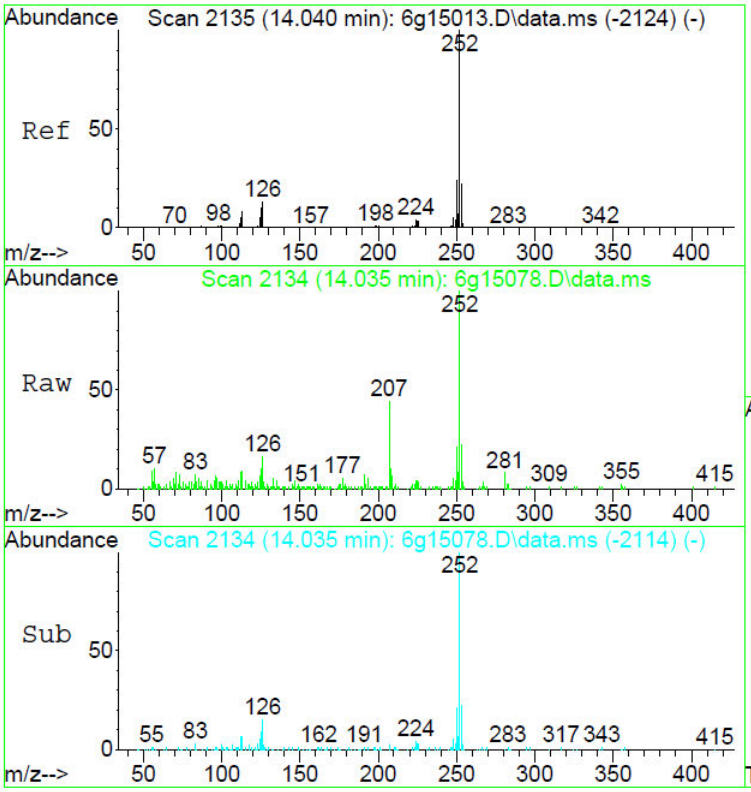
The most likely source of the benzo(a)pyrene is unidentified sporadic low-level contamination in the (b) (4) laboratory. There is no evidence of systematic contamination in the laboratory but given the presence of all target compounds in calibration standards and spiking solutions, the potential for incidental contamination exists, particularly at low levels. The detected concentrations were less than four times the reporting limit (RL) of 0.02 µg/L, which is also the concentration of the lowest calibration standard.

Sporadic low-level hits of benzo(a)pyrene have been detected in field blanks, method blanks, and samples throughout the Extended Drinking Water Monitoring (EDWM) Program. The following table summarizes benzo(a)pyrene detections for samples collected from September through mid-December 2024.

Sample Type	Number	# ND	%ND	# <RL	% <RL	# >RL	% >RL
Field Sample	1667	1634	98%	25	1.5%	8	0.5%
Field Reagent Blank	269	260	97%	7	2.6%	2	0.7%
Method Blank	120	118	98%	2	1.7%	0	0.0%

The fact that frequency of detections in field reagent blanks is the same or slightly greater than that in the field samples further supports the conclusion that benzo(a)pyrene was not present in the sample but was introduced in the laboratory.

Figure 1. Mass Spectral Analysis of A1-DL-0016023-25001-N (Hydrant 2431)



#7
Benzo(a)pyrene
Concen: 0.0631 ppm
RT: 14.035 min Scan# 2134
Delta R.T. -0.005 min
Lab File: 6g15078.D
Acq: 23 Jan 2025 10:44 pm

Tgt Ion:252 Resp: 61875

Ion	Ratio	Lower	Upper
252	100		
253	20.9	1.7	41.7
126	12.6	0.0	32.8

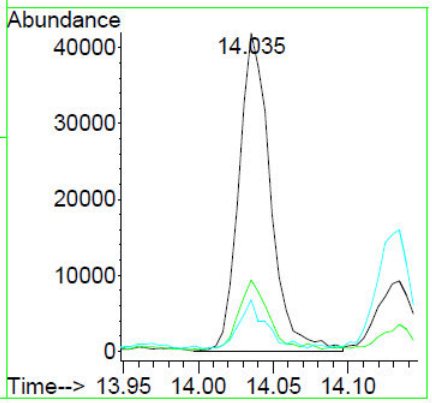
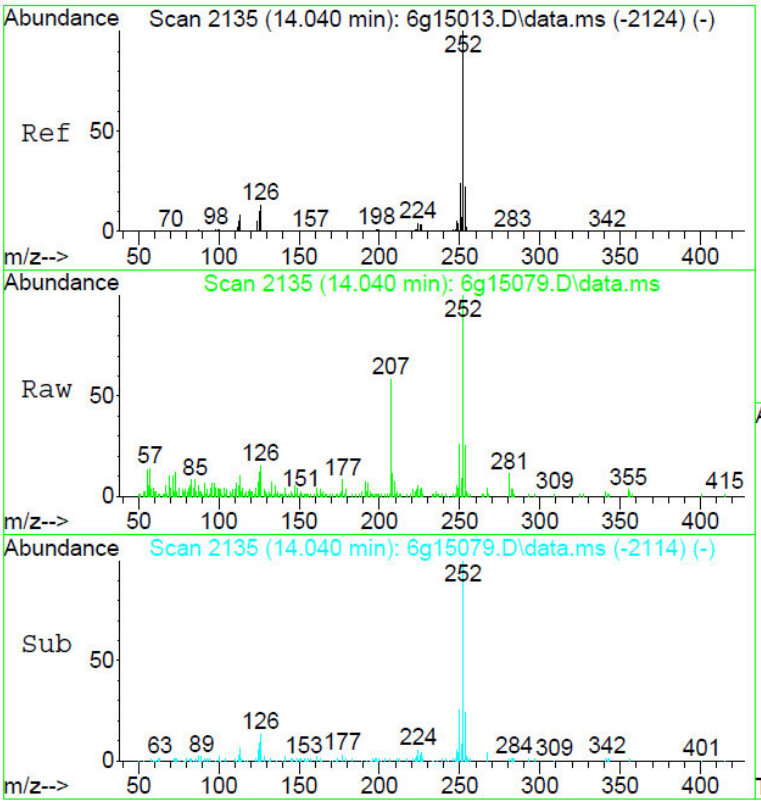


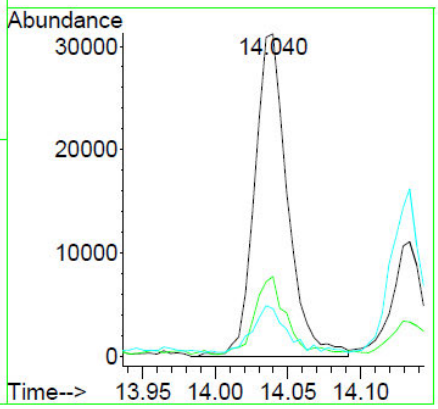
Figure 2. Mass Spectral Analysis of A1-DL-0016027-25001-N (Hydrant 72)



#7
Benzo(a)pyrene
Concen: 0.0512 ppm
RT: 14.040 min Scan# 2135
Delta R.T. -0.000 min
Lab File: 6g15079.D
Acq: 23 Jan 2025 11:06 pm

Tgt Ion:252 Resp: 49243

Ion	Ratio	Lower	Upper
252	100		
253	23.0	1.7	41.7
126	15.0	0.0	32.8



Attachment 2: (b) (4) Laboratory Report L2504344

(b) (4)

ANALYTICAL REPORT

Lab Number:	L2504344
Client:	AECOM 250 Apollo Drive Chelmsford, MA 01824
ATTN:	(b) (6)
Phone:	(b) (6)
Project Name:	EDWM
Project Number:	60729369
Report Date:	02/03/25

Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0825), DoD (L2474), FL (E87814), IL (200081), IN (C-MA-04), KY (KY98046), LA (85084), ME (MA00030), MD (350), MI (9110), MN (025-999-495), NJ (MA015), NY (11627), NC (685), OR (MA-0262), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #525-23-107-88708A1), USFWS (Permit #A24920).

Project Name: EDWM
Project Number: 60729369

Lab Number: L2504344
Report Date: 02/03/25

Lab Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2504344-01	A1-DL-0016023-25001-N	WATER	HONOLULU, HI	01/21/25 09:06	01/25/25
L2504344-02	A1-DL-0016027-25001-N	WATER	HONOLULU, HI	01/21/25 09:59	01/25/25

(b) (4)

Project Name:	EDWM	**Lab Number:**	L2504344
Project Number:	60729369	**Report Date:**	02/03/25

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this (b) (4) Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments and solids are reported on a dry weight basis unless otherwise noted. Tissues are reported "as received" or on a wet weight basis, unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, (b) (4) policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your (b) (4) Project Manager and made arrangements for (b) (4) to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at (b) (4) with any questions.

(b) (4)

Project Name: EDWM
Project Number: 60729369

Lab Number: L2504344
Report Date: 02/03/25

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

PIANO Volatile Organics

L2504344-01 and -02: The associated continuing calibration standard is outside the 35%D criteria for Tridecane, Tetradecane, and Pentadecane; however, samples are non detect for all of these compounds. No further action taken

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: (b) (6)

Title: Technical Director/Representative

Date: 02/03/25

(b) (4)

ORGANICS

(b) (4)

VOLATILES

(b) (4)

Project Name: EDWM
Project Number: 60729369
Lab Number: L2504344
Report Date: 02/03/25

SAMPLE RESULTS

Lab ID: L2504344-01
Client ID: A1-DL-0016023-25001-N
Sample Location: HONOLULU, HI

Date Collected: 01/21/25 09:06
Date Received: 01/25/25
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8260D
Analytical Date: 01/29/25 00:47
Analyst: (b) (6)

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PIANO Volatile Organics by GC/MS - (b) (4)						
3-Methyl-1-butene	ND		ug/l	2.00	0.297	1
Isopentane	ND		ug/l	2.00	0.366	1
1-Pentene	ND		ug/l	2.00	0.365	1
2-Methyl-1-Butene	ND		ug/l	2.00	0.311	1
Pentane	ND		ug/l	2.00	0.624	1
trans-2-Pentene	ND		ug/l	2.00	0.270	1
Isoprene	ND		ug/l	2.00	0.357	1
cis-2-Pentene	ND		ug/l	2.00	0.322	1
Tertiary Butanol	ND		ug/l	25.0	3.24	1
2,2-Dimethylbutane	ND		ug/l	2.00	0.617	1
4-Methyl-1-pentene	ND		ug/l	2.00	0.311	1
Cyclopentane	ND		ug/l	2.00	0.519	1
2,3-Dimethylbutane	ND		ug/l	2.00	0.826	1
2-Methylpentane	ND		ug/l	2.00	0.542	1
Methyl tert butyl ether	ND		ug/l	2.00	0.412	1
3-Methylpentane	ND		ug/l	2.00	0.317	1
1-Hexene	ND		ug/l	2.00	0.281	1
n-Hexane	ND		ug/l	2.00	0.329	1
Isopropyl Ether	ND		ug/l	2.00	0.242	1
trans-2-Hexene	ND		ug/l	2.00	0.261	1
2-Methyl-2-pentene	ND		ug/l	2.00	0.306	1
cis-2-Hexene	ND		ug/l	2.00	0.271	1
Ethyl-Tert-Butyl-Ether	ND		ug/l	2.00	0.303	1
2,2-Dimethylpentane	ND		ug/l	2.00	0.269	1
Methylcyclopentane	ND		ug/l	2.00	0.268	1
2,4-Dimethylpentane	ND		ug/l	2.00	0.247	1
2,2,3-Trimethylbutane	ND		ug/l	2.00	0.270	1
1,2-Dichloroethane	ND		ug/l	2.00	0.295	1

(b) (4)

Project Name: EDWM
Project Number: 60729369

Lab Number: L2504344
Report Date: 02/03/25

SAMPLE RESULTS

Lab ID: L2504344-01
Client ID: A1-DL-0016023-25001-N
Sample Location: HONOLULU, HI

Date Collected: 01/21/25 09:06
Date Received: 01/25/25
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PIANO Volatile Organics by GC/MS - (b) (4)						
3,3-Dimethylpentane	ND		ug/l	2.00	0.372	1
Cyclohexane	ND		ug/l	2.00	0.247	1
2-Methylhexane	ND		ug/l	2.00	0.315	1
Benzene	ND		ug/l	2.00	0.305	1
2,3-Dimethylpentane	ND		ug/l	2.00	0.265	1
Thiophene	ND		ug/l	2.00	0.284	1
1,1-Dimethylcyclopentane	ND		ug/l	2.00	0.240	1
3-Methylhexane	ND		ug/l	2.00	0.320	1
Tertiary-Amyl Methyl Ether	ND		ug/l	2.00	0.246	1
1,3-Dimethylcyclopentane (cis)	ND		ug/l	2.00	0.301	1
3-Ethylpentane	ND		ug/l	2.00	0.289	1
1-Heptene/1,2-DMCP (trans)	ND		ug/l	4.00	0.585	1
Isooctane	ND		ug/l	2.00	0.218	1
trans-3-Heptene	ND		ug/l	2.00	0.311	1
Heptane	ND		ug/l	2.00	0.348	1
trans-2-Heptene	ND		ug/l	2.00	0.256	1
cis-2-Heptene	ND		ug/l	2.00	0.387	1
2,2-Dimethylhexane	ND		ug/l	2.00	0.290	1
Methylcyclohexane	ND		ug/l	2.00	0.270	1
2,5-Dimethylhexane	ND		ug/l	2.00	0.348	1
2,4-Dimethylhexane	ND		ug/l	2.00	0.243	1
Ethylcyclopentane	ND		ug/l	2.00	0.265	1
2,2,3-Trimethylpentane	ND		ug/l	2.00	0.347	1
2,3,4-Trimethylpentane	ND		ug/l	2.00	0.261	1
2,3,3-Trimethylpentane	ND		ug/l	2.00	0.397	1
2,3-Dimethylhexane	ND		ug/l	2.00	0.485	1
2-Methylheptane	ND		ug/l	2.00	0.338	1
4-Methylheptane	ND		ug/l	2.00	0.344	1
3-Methylheptane	ND		ug/l	2.00	0.385	1
3-Ethylhexane	ND		ug/l	2.00	0.358	1
Toluene	ND		ug/l	2.00	0.271	1
2-Methylthiophene	ND		ug/l	2.00	0.170	1
1,4-Dimethylcyclohexane (trans)	ND		ug/l	2.00	0.260	1
3-Methylthiophene	ND		ug/l	2.00	0.234	1
1-Octene	ND		ug/l	5.00	0.307	1
Octane	ND		ug/l	2.00	0.235	1
1,2-Dimethylcyclohexane (trans)	ND		ug/l	2.00	0.294	1

(b) (4)

Project Name: EDWM
Project Number: 60729369

Lab Number: L2504344
Report Date: 02/03/25

SAMPLE RESULTS

Lab ID: L2504344-01
Client ID: A1-DL-0016023-25001-N
Sample Location: HONOLULU, HI

Date Collected: 01/21/25 09:06
Date Received: 01/25/25
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PIANO Volatile Organics by GC/MS - (b) (4)						
1,2-Dibromoethane	ND		ug/l	2.00	0.320	1
cis-2-Octene	ND		ug/l	2.00	0.229	1
Isopropylcyclopentane	ND		ug/l	2.00	0.293	1
1,2-Dimethylcyclohexane (cis)	ND		ug/l	2.00	0.581	1
2,5-Dimethylheptane	ND		ug/l	2.00	0.335	1
3,5-Dimethylheptane	ND		ug/l	2.00	0.282	1
3,3-Dimethylheptane	ND		ug/l	2.00	0.242	1
1,1,4-Trimethylcyclohexane	ND		ug/l	2.00	0.199	1
2,3-Dimethylheptane	ND		ug/l	2.00	0.228	1
3,4-Dimethylheptane	ND		ug/l	2.00	0.340	1
4-Methyloctane	ND		ug/l	2.00	0.334	1
2-Methyloctane	ND		ug/l	2.00	0.512	1
Ethylbenzene	ND		ug/l	2.00	0.216	1
2-Ethylthiophene	ND		ug/l	2.00	0.176	1
3-Methyloctane	ND		ug/l	2.00	0.224	1
3,3-Diethylpentane	ND		ug/l	2.00	0.233	1
p/m-Xylene	ND		ug/l	4.00	0.381	1
1-Nonene	ND		ug/l	5.00	0.270	1
trans-3-Nonene	ND		ug/l	2.00	0.237	1
cis-3-Nonene	ND		ug/l	2.00	0.374	1
Nonane (C9)	ND		ug/l	2.00	0.311	1
Styrene	ND		ug/l	2.00	0.202	1
o-Xylene	ND		ug/l	2.00	0.209	1
Xylene (Total)[1]	ND		ug/l	2.00	0.209	1
2-Nonene	ND		ug/l	5.00	0.254	1
Isopropylcyclohexane	ND		ug/l	2.00	0.212	1
Isopropylbenzene	ND		ug/l	2.00	0.187	1
3,3-Dimethyloctane	ND		ug/l	2.00	0.202	1
n-Propylbenzene	ND		ug/l	2.00	0.177	1
2-Methylnonane	ND		ug/l	2.00	0.283	1
3-Methylnonane	ND		ug/l	2.00	0.279	1
1-Methyl-3-Ethylbenzene	ND		ug/l	2.00	0.316	1
1-Methyl-4-Ethylbenzene	ND		ug/l	2.00	0.282	1
1,3,5-Trimethylbenzene	ND		ug/l	2.00	0.230	1
1-Decene	ND		ug/l	2.00	0.260	1
Isobutylcyclohexane	ND		ug/l	2.00	0.163	1
1-Methyl-2-Ethylbenzene	ND		ug/l	2.00	0.170	1

(b) (4)

Project Name: EDWM
Project Number: 60729369

Lab Number: L2504344
Report Date: 02/03/25

SAMPLE RESULTS

Lab ID: L2504344-01
Client ID: A1-DL-0016023-25001-N
Sample Location: HONOLULU, HI

Date Collected: 01/21/25 09:06
Date Received: 01/25/25
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PIANO Volatile Organics by GC/MS - (b) (4)						
Decane (C10)	ND		ug/l	2.00	0.271	1
tert-Butylbenzene	ND		ug/l	2.00	0.211	1
1,2,4-Trimethylbenzene	ND		ug/l	2.00	0.207	1
Isobutylbenzene	ND		ug/l	2.00	0.270	1
sec-Butylbenzene	ND		ug/l	2.00	0.259	1
1-Methyl-3-Isopropylbenzene	ND		ug/l	2.00	0.258	1
1-Methyl-4-Isopropylbenzene	ND		ug/l	2.00	0.212	1
1,2,3-Trimethylbenzene	ND		ug/l	2.00	0.223	1
1-Methyl-2-Isopropylbenzene	ND		ug/l	2.00	0.217	1
Indane	ND		ug/l	2.00	0.123	1
1,3-Diethylbenzene	ND		ug/l	2.00	0.249	1
1-Methyl-3-N-Propylbenzene	ND		ug/l	2.00	0.202	1
Indene	ND		ug/l	2.00	0.116	1
1-Methyl-4-N-Propylbenzene	ND		ug/l	2.00	0.250	1
n-Butylbenzene	ND		ug/l	2.00	0.197	1
1,2-Dimethyl-4-Ethylbenzene	ND		ug/l	2.00	0.245	1
1,2-Diethylbenzene	ND		ug/l	2.00	0.296	1
1-Methyl-2-N-Propylbenzene	ND		ug/l	2.00	0.249	1
1,4-Dimethyl-2-Ethylbenzene	ND		ug/l	2.00	0.187	1
Undecane	ND		ug/l	2.00	0.222	1
1,3-Dimethyl-4-Ethylbenzene	ND		ug/l	2.00	0.194	1
1,3-Dimethyl-5-Ethylbenzene	ND		ug/l	2.00	0.236	1
1,3-Dimethyl-2-Ethylbenzene	ND		ug/l	2.00	0.149	1
1,2-Dimethyl-3-Ethylbenzene	ND		ug/l	2.00	0.127	1
1,2,4,5-Tetramethylbenzene	ND		ug/l	2.00	0.155	1
1,2,3,5-Tetramethylbenzene	ND		ug/l	2.00	0.152	1
N-Pentylbenzene	ND		ug/l	2.00	0.249	1
1,2,3,4-Tetramethylbenzene	ND		ug/l	2.00	0.214	1
1,3-Dimethyl-5-tert-Butylbenzene	ND		ug/l	2.00	0.285	1
Dodecane (C12)	ND		ug/l	5.00	0.657	1
1,3,5-Triethylbenzene	ND		ug/l	2.00	0.380	1
Naphthalene	ND		ug/l	2.00	0.835	1
Benzothiophene	ND		ug/l	2.00	1.06	1
1,2,4-Triethylbenzene	ND		ug/l	2.00	0.340	1
Hexylbenzene	ND		ug/l	2.00	0.385	1
MMT	ND		ug/l	5.00	1.29	1
Tridecane	ND		ug/l	5.00	1.39	1

(b) (4)

Project Name: EDWM
Project Number: 60729369
Lab Number: L2504344
Report Date: 02/03/25

SAMPLE RESULTS

Lab ID: L2504344-01
Client ID: A1-DL-0016023-25001-N
Sample Location: HONOLULU, HI
Date Collected: 01/21/25 09:06
Date Received: 01/25/25
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PIANO Volatile Organics by GC/MS - (b) (4)						
2-Methylnaphthalene	ND		ug/l	5.00	1.32	1
1-Methylnaphthalene	ND		ug/l	5.00	1.47	1
Tetradecane (C14)	ND		ug/l	5.00	0.612	1
Pentadecane	ND		ug/l	5.00	1.12	1
Tentatively Identified Compounds						
No Tentatively Identified Compounds	ND		ug/l			1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Dibromofluoromethane	106		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	91		70-130

(b) (4)

Project Name: EDWM
Project Number: 60729369
Lab Number: L2504344
Report Date: 02/03/25

SAMPLE RESULTS

Lab ID: L2504344-02
Client ID: A1-DL-0016027-25001-N
Sample Location: HONOLULU, HI

Date Collected: 01/21/25 09:59
Date Received: 01/25/25
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8260D
Analytical Date: 01/29/25 01:58
Analyst: (b) (6)

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PIANO Volatile Organics by GC/MS - (b) (4)						
3-Methyl-1-butene	ND		ug/l	2.00	0.297	1
Isopentane	ND		ug/l	2.00	0.366	1
1-Pentene	ND		ug/l	2.00	0.365	1
2-Methyl-1-Butene	ND		ug/l	2.00	0.311	1
Pentane	ND		ug/l	2.00	0.624	1
trans-2-Pentene	ND		ug/l	2.00	0.270	1
Isoprene	ND		ug/l	2.00	0.357	1
cis-2-Pentene	ND		ug/l	2.00	0.322	1
Tertiary Butanol	ND		ug/l	25.0	3.24	1
2,2-Dimethylbutane	ND		ug/l	2.00	0.617	1
4-Methyl-1-pentene	ND		ug/l	2.00	0.311	1
Cyclopentane	ND		ug/l	2.00	0.519	1
2,3-Dimethylbutane	ND		ug/l	2.00	0.826	1
2-Methylpentane	ND		ug/l	2.00	0.542	1
Methyl tert butyl ether	ND		ug/l	2.00	0.412	1
3-Methylpentane	ND		ug/l	2.00	0.317	1
1-Hexene	ND		ug/l	2.00	0.281	1
n-Hexane	ND		ug/l	2.00	0.329	1
Isopropyl Ether	ND		ug/l	2.00	0.242	1
trans-2-Hexene	ND		ug/l	2.00	0.261	1
2-Methyl-2-pentene	ND		ug/l	2.00	0.306	1
cis-2-Hexene	ND		ug/l	2.00	0.271	1
Ethyl-Tert-Butyl-Ether	ND		ug/l	2.00	0.303	1
2,2-Dimethylpentane	ND		ug/l	2.00	0.269	1
Methylcyclopentane	ND		ug/l	2.00	0.268	1
2,4-Dimethylpentane	ND		ug/l	2.00	0.247	1
2,2,3-Trimethylbutane	ND		ug/l	2.00	0.270	1
1,2-Dichloroethane	ND		ug/l	2.00	0.295	1

(b) (4)

Project Name: EDWM
Project Number: 60729369

Lab Number: L2504344
Report Date: 02/03/25

SAMPLE RESULTS

Lab ID: L2504344-02
Client ID: A1-DL-0016027-25001-N
Sample Location: HONOLULU, HI

Date Collected: 01/21/25 09:59
Date Received: 01/25/25
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PIANO Volatile Organics by GC/MS - (b) (4)						
3,3-Dimethylpentane	ND		ug/l	2.00	0.372	1
Cyclohexane	ND		ug/l	2.00	0.247	1
2-Methylhexane	ND		ug/l	2.00	0.315	1
Benzene	ND		ug/l	2.00	0.305	1
2,3-Dimethylpentane	ND		ug/l	2.00	0.265	1
Thiophene	ND		ug/l	2.00	0.284	1
1,1-Dimethylcyclopentane	ND		ug/l	2.00	0.240	1
3-Methylhexane	ND		ug/l	2.00	0.320	1
Tertiary-Amyl Methyl Ether	ND		ug/l	2.00	0.246	1
1,3-Dimethylcyclopentane (cis)	ND		ug/l	2.00	0.301	1
3-Ethylpentane	ND		ug/l	2.00	0.289	1
1-Heptene/1,2-DMCP (trans)	ND		ug/l	4.00	0.585	1
Isooctane	ND		ug/l	2.00	0.218	1
trans-3-Heptene	ND		ug/l	2.00	0.311	1
Heptane	ND		ug/l	2.00	0.348	1
trans-2-Heptene	ND		ug/l	2.00	0.256	1
cis-2-Heptene	ND		ug/l	2.00	0.387	1
2,2-Dimethylhexane	ND		ug/l	2.00	0.290	1
Methylcyclohexane	ND		ug/l	2.00	0.270	1
2,5-Dimethylhexane	ND		ug/l	2.00	0.348	1
2,4-Dimethylhexane	ND		ug/l	2.00	0.243	1
Ethylcyclopentane	ND		ug/l	2.00	0.265	1
2,2,3-Trimethylpentane	ND		ug/l	2.00	0.347	1
2,3,4-Trimethylpentane	ND		ug/l	2.00	0.261	1
2,3,3-Trimethylpentane	ND		ug/l	2.00	0.397	1
2,3-Dimethylhexane	ND		ug/l	2.00	0.485	1
2-Methylheptane	ND		ug/l	2.00	0.338	1
4-Methylheptane	ND		ug/l	2.00	0.344	1
3-Methylheptane	ND		ug/l	2.00	0.385	1
3-Ethylhexane	ND		ug/l	2.00	0.358	1
Toluene	ND		ug/l	2.00	0.271	1
2-Methylthiophene	ND		ug/l	2.00	0.170	1
1,4-Dimethylcyclohexane (trans)	ND		ug/l	2.00	0.260	1
3-Methylthiophene	ND		ug/l	2.00	0.234	1
1-Octene	ND		ug/l	5.00	0.307	1
Octane	ND		ug/l	2.00	0.235	1
1,2-Dimethylcyclohexane (trans)	ND		ug/l	2.00	0.294	1

(b) (4)

Project Name: EDWM
Project Number: 60729369
Lab Number: L2504344
Report Date: 02/03/25

SAMPLE RESULTS

Lab ID: L2504344-02
Client ID: A1-DL-0016027-25001-N
Sample Location: HONOLULU, HI
Date Collected: 01/21/25 09:59
Date Received: 01/25/25
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PIANO Volatile Organics by GC/MS - (b) (4)						
1,2-Dibromoethane	ND		ug/l	2.00	0.320	1
cis-2-Octene	ND		ug/l	2.00	0.229	1
Isopropylcyclopentane	ND		ug/l	2.00	0.293	1
1,2-Dimethylcyclohexane (cis)	ND		ug/l	2.00	0.581	1
2,5-Dimethylheptane	ND		ug/l	2.00	0.335	1
3,5-Dimethylheptane	ND		ug/l	2.00	0.282	1
3,3-Dimethylheptane	ND		ug/l	2.00	0.242	1
1,1,4-Trimethylcyclohexane	ND		ug/l	2.00	0.199	1
2,3-Dimethylheptane	ND		ug/l	2.00	0.228	1
3,4-Dimethylheptane	ND		ug/l	2.00	0.340	1
4-Methyloctane	ND		ug/l	2.00	0.334	1
2-Methyloctane	ND		ug/l	2.00	0.512	1
Ethylbenzene	ND		ug/l	2.00	0.216	1
2-Ethylthiophene	ND		ug/l	2.00	0.176	1
3-Methyloctane	ND		ug/l	2.00	0.224	1
3,3-Diethylpentane	ND		ug/l	2.00	0.233	1
p/m-Xylene	ND		ug/l	4.00	0.381	1
1-Nonene	ND		ug/l	5.00	0.270	1
trans-3-Nonene	ND		ug/l	2.00	0.237	1
cis-3-Nonene	ND		ug/l	2.00	0.374	1
Nonane (C9)	ND		ug/l	2.00	0.311	1
Styrene	ND		ug/l	2.00	0.202	1
o-Xylene	ND		ug/l	2.00	0.209	1
Xylene (Total)[1]	ND		ug/l	2.00	0.209	1
2-Nonene	ND		ug/l	5.00	0.254	1
Isopropylcyclohexane	ND		ug/l	2.00	0.212	1
Isopropylbenzene	ND		ug/l	2.00	0.187	1
3,3-Dimethyloctane	ND		ug/l	2.00	0.202	1
n-Propylbenzene	ND		ug/l	2.00	0.177	1
2-Methylnonane	ND		ug/l	2.00	0.283	1
3-Methylnonane	ND		ug/l	2.00	0.279	1
1-Methyl-3-Ethylbenzene	ND		ug/l	2.00	0.316	1
1-Methyl-4-Ethylbenzene	ND		ug/l	2.00	0.282	1
1,3,5-Trimethylbenzene	ND		ug/l	2.00	0.230	1
1-Decene	ND		ug/l	2.00	0.260	1
Isobutylcyclohexane	ND		ug/l	2.00	0.163	1
1-Methyl-2-Ethylbenzene	ND		ug/l	2.00	0.170	1

(b) (4)

Project Name: EDWM
Project Number: 60729369

Lab Number: L2504344
Report Date: 02/03/25

SAMPLE RESULTS

Lab ID: L2504344-02
Client ID: A1-DL-0016027-25001-N
Sample Location: HONOLULU, HI

Date Collected: 01/21/25 09:59
Date Received: 01/25/25
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PIANO Volatile Organics by GC/MS -(b) (4)						
Decane (C10)	ND		ug/l	2.00	0.271	1
tert-Butylbenzene	ND		ug/l	2.00	0.211	1
1,2,4-Trimethylbenzene	ND		ug/l	2.00	0.207	1
Isobutylbenzene	ND		ug/l	2.00	0.270	1
sec-Butylbenzene	ND		ug/l	2.00	0.259	1
1-Methyl-3-Isopropylbenzene	ND		ug/l	2.00	0.258	1
1-Methyl-4-Isopropylbenzene	ND		ug/l	2.00	0.212	1
1,2,3-Trimethylbenzene	ND		ug/l	2.00	0.223	1
1-Methyl-2-Isopropylbenzene	ND		ug/l	2.00	0.217	1
Indane	ND		ug/l	2.00	0.123	1
1,3-Diethylbenzene	ND		ug/l	2.00	0.249	1
1-Methyl-3-N-Propylbenzene	ND		ug/l	2.00	0.202	1
Indene	ND		ug/l	2.00	0.116	1
1-Methyl-4-N-Propylbenzene	ND		ug/l	2.00	0.250	1
n-Butylbenzene	ND		ug/l	2.00	0.197	1
1,2-Dimethyl-4-Ethylbenzene	ND		ug/l	2.00	0.245	1
1,2-Diethylbenzene	ND		ug/l	2.00	0.296	1
1-Methyl-2-N-Propylbenzene	ND		ug/l	2.00	0.249	1
1,4-Dimethyl-2-Ethylbenzene	ND		ug/l	2.00	0.187	1
Undecane	ND		ug/l	2.00	0.222	1
1,3-Dimethyl-4-Ethylbenzene	ND		ug/l	2.00	0.194	1
1,3-Dimethyl-5-Ethylbenzene	ND		ug/l	2.00	0.236	1
1,3-Dimethyl-2-Ethylbenzene	ND		ug/l	2.00	0.149	1
1,2-Dimethyl-3-Ethylbenzene	ND		ug/l	2.00	0.127	1
1,2,4,5-Tetramethylbenzene	ND		ug/l	2.00	0.155	1
1,2,3,5-Tetramethylbenzene	ND		ug/l	2.00	0.152	1
N-Pentylbenzene	ND		ug/l	2.00	0.249	1
1,2,3,4-Tetramethylbenzene	ND		ug/l	2.00	0.214	1
1,3-Dimethyl-5-tert-Butylbenzene	ND		ug/l	2.00	0.285	1
Dodecane (C12)	ND		ug/l	5.00	0.657	1
1,3,5-Triethylbenzene	ND		ug/l	2.00	0.380	1
Naphthalene	ND		ug/l	2.00	0.835	1
Benzothiophene	ND		ug/l	2.00	1.06	1
1,2,4-Triethylbenzene	ND		ug/l	2.00	0.340	1
Hexylbenzene	ND		ug/l	2.00	0.385	1
MMT	ND		ug/l	5.00	1.29	1
Tridecane	ND		ug/l	5.00	1.39	1

(b) (4)

Project Name: EDWM
Project Number: 60729369
Lab Number: L2504344
Report Date: 02/03/25

SAMPLE RESULTS

Lab ID: L2504344-02
Client ID: A1-DL-0016027-25001-N
Sample Location: HONOLULU, HI
Date Collected: 01/21/25 09:59
Date Received: 01/25/25
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PIANO Volatile Organics by GC/MS - (b) (4)						
2-Methylnaphthalene	ND		ug/l	5.00	1.32	1
1-Methylnaphthalene	ND		ug/l	5.00	1.47	1
Tetradecane (C14)	ND		ug/l	5.00	0.612	1
Pentadecane	ND		ug/l	5.00	1.12	1
Tentatively Identified Compounds						
No Tentatively Identified Compounds	ND		ug/l			1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Dibromofluoromethane	106		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	90		70-130

(b) (4)

Project Name: EDWM
Project Number: 60729369

Lab Number: L2504344
Report Date: 02/03/25

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 01/28/25 17:44
Analyst: (b) (6)

Parameter	Result	Qualifier	Units	RL	MDL
PIANO Volatile Organics by GC/MS - (b) (4) for sample(s): 01-02 Batch: WG2024709-5					
3-Methyl-1-butene	ND		ug/l	2.00	0.297
Isopentane	ND		ug/l	2.00	0.366
1-Pentene	ND		ug/l	2.00	0.365
2-Methyl-1-Butene	ND		ug/l	2.00	0.311
Pentane	ND		ug/l	2.00	0.624
trans-2-Pentene	ND		ug/l	2.00	0.270
Isoprene	ND		ug/l	2.00	0.357
cis-2-Pentene	ND		ug/l	2.00	0.322
Tertiary Butanol	ND		ug/l	25.0	3.24
2,2-Dimethylbutane	ND		ug/l	2.00	0.617
4-Methyl-1-pentene	ND		ug/l	2.00	0.311
Cyclopentane	ND		ug/l	2.00	0.519
2,3-Dimethylbutane	ND		ug/l	2.00	0.826
2-Methylpentane	ND		ug/l	2.00	0.542
Methyl tert butyl ether	ND		ug/l	2.00	0.412
3-Methylpentane	ND		ug/l	2.00	0.317
1-Hexene	ND		ug/l	2.00	0.281
n-Hexane	ND		ug/l	2.00	0.329
Isopropyl Ether	ND		ug/l	2.00	0.242
trans-2-Hexene	ND		ug/l	2.00	0.261
2-Methyl-2-pentene	ND		ug/l	2.00	0.306
cis-2-Hexene	ND		ug/l	2.00	0.271
Ethyl-Tert-Butyl-Ether	ND		ug/l	2.00	0.303
2,2-Dimethylpentane	ND		ug/l	2.00	0.269
Methylcyclopentane	ND		ug/l	2.00	0.268
2,4-Dimethylpentane	ND		ug/l	2.00	0.247
2,2,3-Trimethylbutane	ND		ug/l	2.00	0.270
1,2-Dichloroethane	ND		ug/l	2.00	0.295
3,3-Dimethylpentane	ND		ug/l	2.00	0.372

(b) (4)

Project Name: EDWM
Project Number: 60729369

Lab Number: L2504344
Report Date: 02/03/25

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 01/28/25 17:44
Analyst: (b) (6)

Parameter	Result	Qualifier	Units	RL	MDL
PIANO Volatile Organics by GC/MS - (b) (4) for sample(s): 01-02 Batch: WG2024709-5					
Cyclohexane	ND		ug/l	2.00	0.247
2-Methylhexane	ND		ug/l	2.00	0.315
Benzene	ND		ug/l	2.00	0.305
2,3-Dimethylpentane	ND		ug/l	2.00	0.265
Thiophene	ND		ug/l	2.00	0.284
1,1-Dimethylcyclopentane	ND		ug/l	2.00	0.240
3-Methylhexane	ND		ug/l	2.00	0.320
Tertiary-Amyl Methyl Ether	ND		ug/l	2.00	0.246
1,3-Dimethylcyclopentane (cis)	ND		ug/l	2.00	0.301
3-Ethylpentane	ND		ug/l	2.00	0.289
1-Heptene/1,2-DMCP (trans)	ND		ug/l	4.00	0.585
Isooctane	ND		ug/l	2.00	0.218
trans-3-Heptene	ND		ug/l	2.00	0.311
Heptane	ND		ug/l	2.00	0.348
trans-2-Heptene	ND		ug/l	2.00	0.256
cis-2-Heptene	ND		ug/l	2.00	0.387
2,2-Dimethylhexane	ND		ug/l	2.00	0.290
Methylcyclohexane	ND		ug/l	2.00	0.270
2,5-Dimethylhexane	ND		ug/l	2.00	0.348
2,4-Dimethylhexane	ND		ug/l	2.00	0.243
Ethylcyclopentane	ND		ug/l	2.00	0.265
2,2,3-Trimethylpentane	ND		ug/l	2.00	0.347
2,3,4-Trimethylpentane	ND		ug/l	2.00	0.261
2,3,3-Trimethylpentane	ND		ug/l	2.00	0.397
2,3-Dimethylhexane	ND		ug/l	2.00	0.485
2-Methylheptane	ND		ug/l	2.00	0.338
4-Methylheptane	ND		ug/l	2.00	0.344
3-Methylheptane	ND		ug/l	2.00	0.385
3-Ethylhexane	ND		ug/l	2.00	0.358

(b) (4)

Project Name: EDWM
Project Number: 60729369

Lab Number: L2504344
Report Date: 02/03/25

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 01/28/25 17:44
Analyst: (b) (6)

Parameter	Result	Qualifier	Units	RL	MDL
PIANO Volatile Organics by GC/MS - (b) (4) for sample(s): 01-02 Batch: WG2024709-5					
Toluene	ND		ug/l	2.00	0.271
2-Methylthiophene	ND		ug/l	2.00	0.170
1,4-Dimethylcyclohexane (trans)	ND		ug/l	2.00	0.260
3-Methylthiophene	ND		ug/l	2.00	0.234
1-Octene	ND		ug/l	5.00	0.307
Octane	ND		ug/l	2.00	0.235
1,2-Dimethylcyclohexane (trans)	ND		ug/l	2.00	0.294
1,2-Dibromoethane	ND		ug/l	2.00	0.320
cis-2-Octene	ND		ug/l	2.00	0.229
Isopropylcyclopentane	ND		ug/l	2.00	0.293
1,2-Dimethylcyclohexane (cis)	ND		ug/l	2.00	0.581
2,5-Dimethylheptane	ND		ug/l	2.00	0.335
3,5-Dimethylheptane	ND		ug/l	2.00	0.282
3,3-Dimethylheptane	ND		ug/l	2.00	0.242
1,1,4-Trimethylcyclohexane	ND		ug/l	2.00	0.199
2,3-Dimethylheptane	ND		ug/l	2.00	0.228
3,4-Dimethylheptane	ND		ug/l	2.00	0.340
4-Methyloctane	ND		ug/l	2.00	0.334
2-Methyloctane	ND		ug/l	2.00	0.512
Ethylbenzene	ND		ug/l	2.00	0.216
2-Ethylthiophene	ND		ug/l	2.00	0.176
3-Methyloctane	ND		ug/l	2.00	0.224
3,3-Diethylpentane	ND		ug/l	2.00	0.233
p/m-Xylene	ND		ug/l	4.00	0.381
1-Nonene	ND		ug/l	5.00	0.270
trans-3-Nonene	ND		ug/l	2.00	0.237
cis-3-Nonene	ND		ug/l	2.00	0.374
Nonane (C9)	ND		ug/l	2.00	0.311
Styrene	ND		ug/l	2.00	0.202

(b) (4)

Project Name: EDWM
Project Number: 60729369

Lab Number: L2504344
Report Date: 02/03/25

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 01/28/25 17:44
Analyst: (b) (6)

Parameter	Result	Qualifier	Units	RL	MDL
PIANO Volatile Organics by GC/MS - (b) (4) for sample(s): 01-02 Batch: WG2024709-5					
o-Xylene	ND		ug/l	2.00	0.209
Xylene (Total)[1]	ND		ug/l	2.00	0.209
2-Nonene	ND		ug/l	5.00	0.254
Isopropylcyclohexane	ND		ug/l	2.00	0.212
Isopropylbenzene	ND		ug/l	2.00	0.187
3,3-Dimethyloctane	ND		ug/l	2.00	0.202
n-Propylbenzene	ND		ug/l	2.00	0.177
2-Methylnonane	ND		ug/l	2.00	0.283
3-Methylnonane	ND		ug/l	2.00	0.279
1-Methyl-3-Ethylbenzene	ND		ug/l	2.00	0.316
1-Methyl-4-Ethylbenzene	ND		ug/l	2.00	0.282
1,3,5-Trimethylbenzene	ND		ug/l	2.00	0.230
1-Decene	ND		ug/l	2.00	0.260
Isobutylcyclohexane	ND		ug/l	2.00	0.163
1-Methyl-2-Ethylbenzene	ND		ug/l	2.00	0.170
Decane (C10)	ND		ug/l	2.00	0.271
tert-Butylbenzene	ND		ug/l	2.00	0.211
1,2,4-Trimethylbenzene	ND		ug/l	2.00	0.207
Isobutylbenzene	ND		ug/l	2.00	0.270
sec-Butylbenzene	ND		ug/l	2.00	0.259
1-Methyl-3-Isopropylbenzene	ND		ug/l	2.00	0.258
1-Methyl-4-Isopropylbenzene	ND		ug/l	2.00	0.212
1,2,3-Trimethylbenzene	ND		ug/l	2.00	0.223
1-Methyl-2-Isopropylbenzene	ND		ug/l	2.00	0.217
Indane	ND		ug/l	2.00	0.123
1,3-Diethylbenzene	ND		ug/l	2.00	0.249
1-Methyl-3-N-Propylbenzene	ND		ug/l	2.00	0.202
Indene	ND		ug/l	2.00	0.116
1-Methyl-4-N-Propylbenzene	ND		ug/l	2.00	0.250

(b) (4)

Project Name: EDWM
Project Number: 60729369

Lab Number: L2504344
Report Date: 02/03/25

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 01/28/25 17:44
Analyst: (b) (6)

Parameter	Result	Qualifier	Units	RL	MDL
PIANO Volatile Organics by GC/MS - (b) (4) for sample(s): 01-02 Batch: WG2024709-5					
n-Butylbenzene	ND		ug/l	2.00	0.197
1,2-Dimethyl-4-Ethylbenzene	ND		ug/l	2.00	0.245
1,2-Diethylbenzene	ND		ug/l	2.00	0.296
1-Methyl-2-N-Propylbenzene	ND		ug/l	2.00	0.249
1,4-Dimethyl-2-Ethylbenzene	ND		ug/l	2.00	0.187
Undecane	ND		ug/l	2.00	0.222
1,3-Dimethyl-4-Ethylbenzene	ND		ug/l	2.00	0.194
1,3-Dimethyl-5-Ethylbenzene	ND		ug/l	2.00	0.236
1,3-Dimethyl-2-Ethylbenzene	ND		ug/l	2.00	0.149
1,2-Dimethyl-3-Ethylbenzene	ND		ug/l	2.00	0.127
1,2,4,5-Tetramethylbenzene	ND		ug/l	2.00	0.155
1,2,3,5-Tetramethylbenzene	ND		ug/l	2.00	0.152
N-Pentylbenzene	ND		ug/l	2.00	0.249
1,2,3,4-Tetramethylbenzene	ND		ug/l	2.00	0.214
1,3-Dimethyl-5-tert-Butylbenzene	ND		ug/l	2.00	0.285
Dodecane (C12)	ND		ug/l	5.00	0.657
1,3,5-Triethylbenzene	ND		ug/l	2.00	0.380
Naphthalene	ND		ug/l	2.00	0.835
Benzothiophene	ND		ug/l	2.00	1.06
1,2,4-Triethylbenzene	ND		ug/l	2.00	0.340
Hexylbenzene	ND		ug/l	2.00	0.385
MMT	ND		ug/l	5.00	1.29
Tridecane	ND		ug/l	5.00	1.39
2-Methylnaphthalene	ND		ug/l	5.00	1.32
1-Methylnaphthalene	ND		ug/l	5.00	1.47
Tetradecane (C14)	ND		ug/l	5.00	0.612
Pentadecane	ND		ug/l	5.00	1.12

(b) (4)

Project Name: EDWM
Project Number: 60729369

Lab Number: L2504344
Report Date: 02/03/25

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 01/28/25 17:44
Analyst: (b) (6)

Parameter	Result	Qualifier	Units	RL	MDL
PIANO Volatile Organics by GC/MS - (b) (4) for sample(s): 01-02 Batch: WG2024709-5					
Tentatively Identified Compounds					
No Tentatively Identified Compounds	ND		ug/l		

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Dibromofluoromethane	105		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	95		70-130

(b) (4)

Lab Control Sample Analysis
Batch Quality Control

Project Name: EDWM
Project Number: 60729369

Lab Number: L2504344
Report Date: 02/03/25

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
PIANO Volatile Organics by GC/MS - (b) (4) Associated sample(s): 01-02 Batch: WG2024709-3 WG2024709-4								
1-Pentene	76		80		50-130	5		30
Pentane	80		80		50-130	0		30
Tertiary Butanol	98		98		50-130	0		30
Cyclopentane	79		81		50-130	3		30
2-Methylpentane	87		88		50-130	1		30
Methyl tert butyl ether	84		85		50-130	1		30
3-Methylpentane	92		94		50-130	2		30
1-Hexene	90		94		50-130	4		30
n-Hexane	86		86		50-130	0		30
Isopropyl Ether	94		94		50-130	0		30
Ethyl-Tert-Butyl-Ether	88		88		50-130	0		30
Methylcyclopentane	93		96		50-130	3		30
2,4-Dimethylpentane	90		91		50-130	1		30
Cyclohexane	94		94		50-130	0		30
2-Methylhexane	91		92		50-130	1		30
Benzene	88		90		50-130	2		30
2,3-Dimethylpentane	93		94		50-130	1		30
3-Methylhexane	88		88		50-130	0		30
Tertiary-Amyl Methyl Ether	76		76		50-130	0		30
Isooctane	92		93		50-130	1		30
Heptane	94		95		50-130	1		30
Methylcyclohexane	80		80		50-130	0		30
2-Methylheptane	98		98		50-130	0		30

(b) (4)

Lab Control Sample Analysis
Batch Quality Control

Project Name: EDWM
Project Number: 60729369

Lab Number: L2504344
Report Date: 02/03/25

PIANO Volatile Organics by GC/MS - (b) (4) Associated sample(s): 01-02 Batch: WG2024709-3 WG2024709-4

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
3-Methylheptane	96		97		50-130	1		30
Toluene	87		87		50-130	0		30
Octane	94		97		50-130	3		30
Ethylbenzene	84		84		50-130	0		30
p/m-Xylene	90		90		50-130	0		30
Nonane (C9)	81		81		50-130	0		30
o-Xylene	89		90		50-130	1		30
Isopropylbenzene	89		88		50-130	1		30
n-Propylbenzene	92		92		50-130	0		30
1-Methyl-3-Ethylbenzene	88		88		50-130	0		30
1-Methyl-4-Ethylbenzene	94		95		50-130	1		30
1,3,5-Trimethylbenzene	89		89		50-130	0		30
1-Decene	68		66		50-130	3		30
1-Methyl-2-Ethylbenzene	88		90		50-130	2		30
Decane (C10)	90		91		50-130	1		30
1,2,4-Trimethylbenzene	85		86		50-130	1		30
sec-Butylbenzene	92		92		50-130	0		30
1-Methyl-4-N-Propylbenzene	80		81		50-130	1		30
n-Butylbenzene	86		87		50-130	1		30
1,2-Diethylbenzene	87		88		50-130	1		30
Undecane	99		98		50-130	1		30
N-Pentylbenzene	86		88		50-130	2		30
Dodecane (C12)	110		112		50-130	2		30

(b) (4)

Lab Control Sample Analysis
Batch Quality Control

Project Name: EDWM
Project Number: 60729369

Lab Number: L2504344
Report Date: 02/03/25

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
PIANO Volatile Organics by GC/MS - (b) (4) Associated sample(s): 01-02 Batch: WG2024709-3 WG2024709-4								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Dibromofluoromethane	95		97		70-130
Toluene-d8	97		98		70-130
4-Bromofluorobenzene	104		103		70-130

(b) (4)

SEMIVOLATILES

(b) (4)

Project Name: EDWM
Project Number: 60729369

Lab Number: L2504344
Report Date: 02/03/25

SAMPLE RESULTS

Lab ID: L2504344-01
Client ID: A1-DL-0016023-25001-N
Sample Location: HONOLULU, HI

Date Collected: 01/21/25 09:06
Date Received: 01/25/25
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8270E-SIM(M)
Analytical Date: 01/29/25 03:33
Analyst: (b) (6)

Extraction Method: EPA 3510C
Extraction Date: 01/27/25 12:40

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PAHs - (b) (4)						
cis/trans-Decalin	ND		ng/l	4.85	2.63	1
C1-Decalins	ND		ng/l	4.85	2.63	1
C2-Decalins	ND		ng/l	4.85	2.63	1
C3-Decalins	ND		ng/l	4.85	2.63	1
C4-Decalins	ND		ng/l	4.85	2.63	1
Naphthalene	ND		ng/l	9.71	2.66	1
C1-Naphthalenes	ND		ng/l	9.71	2.66	1
C2-Naphthalenes	ND		ng/l	9.71	2.66	1
C3-Naphthalenes	ND		ng/l	9.71	2.66	1
C4-Naphthalenes	ND		ng/l	9.71	2.66	1
2-Methylnaphthalene	ND		ng/l	9.71	6.44	1
1-Methylnaphthalene	ND		ng/l	9.71	4.20	1
Benzothiophene	ND		ng/l	9.71	2.50	1
C1-Benzo(b)thiophenes	ND		ng/l	9.71	2.50	1
C2-Benzo(b)thiophenes	ND		ng/l	9.71	2.50	1
C3-Benzo(b)thiophenes	ND		ng/l	9.71	2.50	1
C4-Benzo(b)thiophenes	ND		ng/l	9.71	2.50	1
Biphenyl	ND		ng/l	9.71	2.07	1
2,6-Dimethylnaphthalene	ND		ng/l	9.71	2.96	1
Dibenzofuran	ND		ng/l	9.71	3.64	1
Acenaphthylene	ND		ng/l	9.71	5.08	1
Acenaphthene	ND		ng/l	9.71	3.54	1
2,3,5-Trimethylnaphthalene	ND		ng/l	9.71	1.86	1
Fluorene	ND		ng/l	9.71	4.13	1
C1-Fluorenes	ND		ng/l	9.71	4.13	1
C2-Fluorenes	ND		ng/l	9.71	4.13	1
C3-Fluorenes	ND		ng/l	9.71	4.13	1
Dibenzothiophene	ND		ng/l	9.71	3.24	1

(b) (4)

Project Name: EDWM
Project Number: 60729369
Lab Number: L2504344
Report Date: 02/03/25

SAMPLE RESULTS

Lab ID: L2504344-01
Client ID: A1-DL-0016023-25001-N
Sample Location: HONOLULU, HI
Date Collected: 01/21/25 09:06
Date Received: 01/25/25
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PAHs - (b) (4)						
4-Methyldibenzothiophene(4MDT)	ND		ng/l	9.71	3.24	1
2/3-Methyldibenzothiophene(2MDT)	ND		ng/l	9.71	3.24	1
1-Methyldibenzothiophene(1MDT)	ND		ng/l	9.71	3.24	1
C1-Dibenzothiophenes BS	ND		ng/l	9.71	3.24	1
C2-Dibenzothiophenes	ND		ng/l	9.71	3.24	1
C3-Dibenzothiophenes	ND		ng/l	9.71	3.24	1
C4-Dibenzothiophenes	ND		ng/l	9.71	3.24	1
Phenanthrene	6.31	J	ng/l	9.71	5.80	1
3-Methylphenanthrene (3MP)	ND		ng/l	9.71	5.80	1
2-Methylphenanthrene (2MP)	ND		ng/l	9.71	5.80	1
2-Methylanthracene (2MA)	ND		ng/l	9.71	5.80	1
9/4-Methylphenanthrene (9MP)	ND		ng/l	9.71	5.80	1
1-Methylphenanthrene (1MP)	ND		ng/l	9.71	5.80	1
C1-Phenanthrenes/Anthracenes	ND		ng/l	9.71	5.80	1
C2-Phenanthrenes/Anthr BS	ND		ng/l	9.71	5.80	1
C3-Phenanthrenes/Anthracenes	ND		ng/l	9.71	5.80	1
C4-Phenanthrenes/Anthracenes	ND		ng/l	9.71	5.80	1
Retene	ND		ng/l	9.71	5.87	1
Anthracene	ND		ng/l	9.71	3.34	1
Carbazole	ND		ng/l	9.71	5.26	1
Fluoranthene	ND		ng/l	9.71	6.50	1
Benzo(b)fluorene	ND		ng/l	9.71	4.51	1
7H-Benzo(c)fluorene	ND		ng/l	9.71	4.51	1
2-Methylpyrene[1]	ND		ng/l	9.71	6.85	1
4-Methylpyrene[1]	ND		ng/l	9.71	6.85	1
1-Methylpyrene[1]	ND		ng/l	9.71	6.85	1
Pyrene	ND		ng/l	9.71	6.85	1
C1-Fluoranthenes/Pyrenes	ND		ng/l	9.71	6.85	1
C2-Fluoranthenes/Pyrenes	ND		ng/l	9.71	6.85	1
C3-Fluoranthenes/Pyrenes	ND		ng/l	9.71	6.85	1
C4-Fluoranthenes/Pyrenes	ND		ng/l	9.71	6.85	1
Naphthobenzothiophenes	ND		ng/l	9.71	4.24	1
C1-Naphthobenzothiophenes	ND		ng/l	9.71	4.24	1
C2-Naphthobenzothiophenes	ND		ng/l	9.71	4.24	1
C3-Naphthobenzothiophenes	ND		ng/l	9.71	4.24	1
C4-Naphthobenzothiophenes	ND		ng/l	9.71	4.24	1
Benz(a)anthracene	ND		ng/l	9.71	5.85	1

(b) (4)

Project Name: EDWM
Project Number: 60729369
Lab Number: L2504344
Report Date: 02/03/25

SAMPLE RESULTS

Lab ID: L2504344-01
Client ID: A1-DL-0016023-25001-N
Sample Location: HONOLULU, HI
Date Collected: 01/21/25 09:06
Date Received: 01/25/25
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PAHs - (b) (4)						
Chrysene/Triphenylene	ND		ng/l	9.71	6.88	1
C1-Chrysenes	ND		ng/l	9.71	6.88	1
C2-Chrysenes BS	ND		ng/l	9.71	6.88	1
C3-Chrysenes	ND		ng/l	9.71	6.88	1
C4-Chrysenes	ND		ng/l	9.71	6.88	1
Benzo(b)fluoranthene	ND		ng/l	9.71	7.03	1
Benzo(j)+(k)fluoranthene	ND		ng/l	9.71	6.27	1
Benzo(a)fluoranthene	ND		ng/l	9.71	6.27	1
Benzo(e)pyrene	ND		ng/l	9.71	6.93	1
Benzo(a)pyrene	ND		ng/l	9.71	7.39	1
Perylene	ND		ng/l	9.71	4.47	1
Indeno(1,2,3-cd)pyrene	ND		ng/l	9.71	9.32	1
Dibenz(a,h)+(a,c)anthracene	ND		ng/l	9.71	6.30	1
Benzo(g,h,i)perylene	ND		ng/l	9.71	6.41	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Naphthalene-d8	76		50-130
Phenanthrene-d10	82		50-130
Benzo(a)pyrene-d12	89		50-130

(b) (4)

Project Name: EDWM
Project Number: 60729369
Lab Number: L2504344
Report Date: 02/03/25

SAMPLE RESULTS

Lab ID: L2504344-02
Client ID: A1-DL-0016027-25001-N
Sample Location: HONOLULU, HI

Date Collected: 01/21/25 09:59
Date Received: 01/25/25
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8270E-SIM(M)
Analytical Date: 01/29/25 04:58
Analyst: (b) (6)

Extraction Method: EPA 3510C
Extraction Date: 01/27/25 12:40

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PAHs - (b) (4)						
cis/trans-Decalin	ND		ng/l	4.90	2.66	1
C1-Decalins	ND		ng/l	4.90	2.66	1
C2-Decalins	ND		ng/l	4.90	2.66	1
C3-Decalins	ND		ng/l	4.90	2.66	1
C4-Decalins	ND		ng/l	4.90	2.66	1
Naphthalene	ND		ng/l	9.80	2.69	1
C1-Naphthalenes	ND		ng/l	9.80	2.69	1
C2-Naphthalenes	ND		ng/l	9.80	2.69	1
C3-Naphthalenes	ND		ng/l	9.80	2.69	1
C4-Naphthalenes	ND		ng/l	9.80	2.69	1
2-Methylnaphthalene	ND		ng/l	9.80	6.50	1
1-Methylnaphthalene	ND		ng/l	9.80	4.24	1
Benzothiophene	ND		ng/l	9.80	2.53	1
C1-Benzo(b)thiophenes	ND		ng/l	9.80	2.53	1
C2-Benzo(b)thiophenes	ND		ng/l	9.80	2.53	1
C3-Benzo(b)thiophenes	ND		ng/l	9.80	2.53	1
C4-Benzo(b)thiophenes	ND		ng/l	9.80	2.53	1
Biphenyl	ND		ng/l	9.80	2.09	1
2,6-Dimethylnaphthalene	ND		ng/l	9.80	2.99	1
Dibenzofuran	ND		ng/l	9.80	3.68	1
Acenaphthylene	ND		ng/l	9.80	5.13	1
Acenaphthene	ND		ng/l	9.80	3.58	1
2,3,5-Trimethylnaphthalene	ND		ng/l	9.80	1.88	1
Fluorene	ND		ng/l	9.80	4.17	1
C1-Fluorenes	ND		ng/l	9.80	4.17	1
C2-Fluorenes	ND		ng/l	9.80	4.17	1
C3-Fluorenes	ND		ng/l	9.80	4.17	1
Dibenzothiophene	ND		ng/l	9.80	3.27	1

(b) (4)

Project Name: EDWM
Project Number: 60729369
Lab Number: L2504344
Report Date: 02/03/25

SAMPLE RESULTS

Lab ID: L2504344-02
Client ID: A1-DL-0016027-25001-N
Sample Location: HONOLULU, HI
Date Collected: 01/21/25 09:59
Date Received: 01/25/25
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PAHs - (b) (4)						
4-Methyldibenzothiophene(4MDT)	ND		ng/l	9.80	3.27	1
2/3-Methyldibenzothiophene(2MDT)	ND		ng/l	9.80	3.27	1
1-Methyldibenzothiophene(1MDT)	ND		ng/l	9.80	3.27	1
C1-Dibenzothiophenes BS	ND		ng/l	9.80	3.27	1
C2-Dibenzothiophenes	ND		ng/l	9.80	3.27	1
C3-Dibenzothiophenes	ND		ng/l	9.80	3.27	1
C4-Dibenzothiophenes	ND		ng/l	9.80	3.27	1
Phenanthrene	ND		ng/l	9.80	5.85	1
3-Methylphenanthrene (3MP)	ND		ng/l	9.80	5.85	1
2-Methylphenanthrene (2MP)	ND		ng/l	9.80	5.85	1
2-Methylanthracene (2MA)	ND		ng/l	9.80	5.85	1
9/4-Methylphenanthrene (9MP)	ND		ng/l	9.80	5.85	1
1-Methylphenanthrene (1MP)	ND		ng/l	9.80	5.85	1
C1-Phenanthrenes/Anthracenes	ND		ng/l	9.80	5.85	1
C2-Phenanthrenes/Anthr BS	ND		ng/l	9.80	5.85	1
C3-Phenanthrenes/Anthracenes	ND		ng/l	9.80	5.85	1
C4-Phenanthrenes/Anthracenes	ND		ng/l	9.80	5.85	1
Retene	ND		ng/l	9.80	5.93	1
Anthracene	ND		ng/l	9.80	3.37	1
Carbazole	ND		ng/l	9.80	5.31	1
Fluoranthene	ND		ng/l	9.80	6.56	1
Benzo(b)fluorene	ND		ng/l	9.80	4.56	1
7H-Benzo(c)fluorene	ND		ng/l	9.80	4.56	1
2-Methylpyrene[1]	ND		ng/l	9.80	6.92	1
4-Methylpyrene[1]	ND		ng/l	9.80	6.92	1
1-Methylpyrene[1]	ND		ng/l	9.80	6.92	1
Pyrene	ND		ng/l	9.80	6.92	1
C1-Fluoranthenes/Pyrenes	ND		ng/l	9.80	6.92	1
C2-Fluoranthenes/Pyrenes	ND		ng/l	9.80	6.92	1
C3-Fluoranthenes/Pyrenes	ND		ng/l	9.80	6.92	1
C4-Fluoranthenes/Pyrenes	ND		ng/l	9.80	6.92	1
Naphthobenzothiophenes	ND		ng/l	9.80	4.28	1
C1-Naphthobenzothiophenes	ND		ng/l	9.80	4.28	1
C2-Naphthobenzothiophenes	ND		ng/l	9.80	4.28	1
C3-Naphthobenzothiophenes	ND		ng/l	9.80	4.28	1
C4-Naphthobenzothiophenes	ND		ng/l	9.80	4.28	1
Benz(a)anthracene	ND		ng/l	9.80	5.91	1

(b) (4)

Project Name: EDWM
Project Number: 60729369
Lab Number: L2504344
Report Date: 02/03/25

SAMPLE RESULTS

Lab ID: L2504344-02
Client ID: A1-DL-0016027-25001-N
Sample Location: HONOLULU, HI
Date Collected: 01/21/25 09:59
Date Received: 01/25/25
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PAHs - (b) (4)						
Chrysene/Triphenylene	ND		ng/l	9.80	6.95	1
C1-Chrysenes	ND		ng/l	9.80	6.95	1
C2-Chrysenes BS	ND		ng/l	9.80	6.95	1
C3-Chrysenes	ND		ng/l	9.80	6.95	1
C4-Chrysenes	ND		ng/l	9.80	6.95	1
Benzo(b)fluoranthene	ND		ng/l	9.80	7.10	1
Benzo(j)+(k)fluoranthene	ND		ng/l	9.80	6.33	1
Benzo(a)fluoranthene	ND		ng/l	9.80	6.33	1
Benzo(e)pyrene	ND		ng/l	9.80	7.00	1
Benzo(a)pyrene	ND		ng/l	9.80	7.46	1
Perylene	ND		ng/l	9.80	4.51	1
Indeno(1,2,3-cd)pyrene	ND		ng/l	9.80	9.41	1
Dibenz(a,h)+(a,c)anthracene	ND		ng/l	9.80	6.36	1
Benzo(g,h,i)perylene	ND		ng/l	9.80	6.47	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Naphthalene-d8	80		50-130
Phenanthrene-d10	84		50-130
Benzo(a)pyrene-d12	89		50-130

(b) (4)

Project Name: EDWM
Project Number: 60729369

Lab Number: L2504344
Report Date: 02/03/25

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270E-SIM(M)
Analytical Date: 01/28/25 19:07
Analyst: (b) (6)

Extraction Method: EPA 3510C
Extraction Date: 01/27/25 12:40

Parameter	Result	Qualifier	Units	RL	MDL
PAHs - (b) (4) for sample(s): 01-02 Batch: WG2023956-1					
cis/trans-Decalin	ND		ng/l	5.00	2.71
C1-Decalins	ND		ng/l	5.00	2.71
C2-Decalins	ND		ng/l	5.00	2.71
C3-Decalins	ND		ng/l	5.00	2.71
C4-Decalins	ND		ng/l	5.00	2.71
Naphthalene	ND		ng/l	10.0	2.74
C1-Naphthalenes	ND		ng/l	10.0	2.74
C2-Naphthalenes	ND		ng/l	10.0	2.74
C3-Naphthalenes	ND		ng/l	10.0	2.74
C4-Naphthalenes	ND		ng/l	10.0	2.74
2-Methylnaphthalene	ND		ng/l	10.0	6.63
1-Methylnaphthalene	ND		ng/l	10.0	4.33
Benzothiophene	ND		ng/l	10.0	2.58
C1-Benzo(b)thiophenes	ND		ng/l	10.0	2.58
C2-Benzo(b)thiophenes	ND		ng/l	10.0	2.58
C3-Benzo(b)thiophenes	ND		ng/l	10.0	2.58
C4-Benzo(b)thiophenes	ND		ng/l	10.0	2.58
Biphenyl	ND		ng/l	10.0	2.13
2,6-Dimethylnaphthalene	ND		ng/l	10.0	3.05
Dibenzofuran	ND		ng/l	10.0	3.75
Acenaphthylene	ND		ng/l	10.0	5.23
Acenaphthene	ND		ng/l	10.0	3.65
2,3,5-Trimethylnaphthalene	ND		ng/l	10.0	1.92
Fluorene	ND		ng/l	10.0	4.25
C1-Fluorenes	ND		ng/l	10.0	4.25
C2-Fluorenes	ND		ng/l	10.0	4.25
C3-Fluorenes	ND		ng/l	10.0	4.25
Dibenzothiophene	ND		ng/l	10.0	3.34
4-Methyldibenzothiophene(4MDT)	ND		ng/l	10.0	3.34

(b) (4)

Project Name: EDWM
Project Number: 60729369

Lab Number: L2504344
Report Date: 02/03/25

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270E-SIM(M)
Analytical Date: 01/28/25 19:07
Analyst: (b) (6)

Extraction Method: EPA 3510C
Extraction Date: 01/27/25 12:40

Parameter	Result	Qualifier	Units	RL	MDL
PAHs - (b) (4) for sample(s): 01-02 Batch: WG2023956-1					
2/3-Methyldibenzothiophene(2MDT)	ND		ng/l	10.0	3.34
1-Methyldibenzothiophene(1MDT)	ND		ng/l	10.0	3.34
C1-Dibenzothiophenes BS	ND		ng/l	10.0	3.34
C2-Dibenzothiophenes	ND		ng/l	10.0	3.34
C3-Dibenzothiophenes	ND		ng/l	10.0	3.34
C4-Dibenzothiophenes	ND		ng/l	10.0	3.34
Phenanthrene	ND		ng/l	10.0	5.97
3-Methylphenanthrene (3MP)	ND		ng/l	10.0	5.97
2-Methylphenanthrene (2MP)	ND		ng/l	10.0	5.97
2-Methylanthracene (2MA)	ND		ng/l	10.0	5.97
9/4-Methylphenanthrene (9MP)	ND		ng/l	10.0	5.97
1-Methylphenanthrene (1MP)	ND		ng/l	10.0	5.97
C1-Phenanthrenes/Anthracenes	ND		ng/l	10.0	5.97
C2-Phenanthrenes/Anthr BS	ND		ng/l	10.0	5.97
C3-Phenanthrenes/Anthracenes	ND		ng/l	10.0	5.97
C4-Phenanthrenes/Anthracenes	ND		ng/l	10.0	5.97
Retene	ND		ng/l	10.0	6.05
Anthracene	ND		ng/l	10.0	3.44
Carbazole	ND		ng/l	10.0	5.42
Fluoranthene	ND		ng/l	10.0	6.69
Benzo(b)fluorene	ND		ng/l	10.0	4.65
7H-Benzo(c)fluorene	ND		ng/l	10.0	4.65
2-Methylpyrene[1]	ND		ng/l	10.0	7.06
4-Methylpyrene[1]	ND		ng/l	10.0	7.06
1-Methylpyrene[1]	ND		ng/l	10.0	7.06
Pyrene	ND		ng/l	10.0	7.06
C1-Fluoranthenes/Pyrenes	ND		ng/l	10.0	7.06
C2-Fluoranthenes/Pyrenes	ND		ng/l	10.0	7.06
C3-Fluoranthenes/Pyrenes	ND		ng/l	10.0	7.06

(b) (4)

Project Name: EDWM
Project Number: 60729369

Lab Number: L2504344
Report Date: 02/03/25

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270E-SIM(M)
Analytical Date: 01/28/25 19:07
Analyst: (b) (6)

Extraction Method: EPA 3510C
Extraction Date: 01/27/25 12:40

Parameter	Result	Qualifier	Units	RL	MDL
PAHs - (b) (4) for sample(s): 01-02 Batch: WG2023956-1					
C4-Fluoranthenes/Pyrenes	ND		ng/l	10.0	7.06
Naphthobenzothiophenes	ND		ng/l	10.0	4.37
C1-Naphthobenzothiophenes	ND		ng/l	10.0	4.37
C2-Naphthobenzothiophenes	ND		ng/l	10.0	4.37
C3-Naphthobenzothiophenes	ND		ng/l	10.0	4.37
C4-Naphthobenzothiophenes	ND		ng/l	10.0	4.37
Benz(a)anthracene	ND		ng/l	10.0	6.03
Chrysene/Triphenylene	ND		ng/l	10.0	7.09
C1-Chrysenes	ND		ng/l	10.0	7.09
C2-Chrysenes BS	ND		ng/l	10.0	7.09
C3-Chrysenes	ND		ng/l	10.0	7.09
C4-Chrysenes	ND		ng/l	10.0	7.09
Benzo(b)fluoranthene	ND		ng/l	10.0	7.24
Benzo(j)+(k)fluoranthene	ND		ng/l	10.0	6.46
Benzo(a)fluoranthene	ND		ng/l	10.0	6.46
Benzo(e)pyrene	ND		ng/l	10.0	7.14
Benzo(a)pyrene	ND		ng/l	10.0	7.61
Perylene	ND		ng/l	10.0	4.60
Indeno(1,2,3-cd)pyrene	ND		ng/l	10.0	9.60
Dibenz(a,h)+(a,c)anthracene	ND		ng/l	10.0	6.49
Benzo(g,h,i)perylene	ND		ng/l	10.0	6.60

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Naphthalene-d8	82		50-130
Phenanthrene-d10	87		50-130
Benzo(a)pyrene-d12	93		50-130

(b) (4)

Lab Control Sample Analysis
Batch Quality Control

Project Name: EDWM
Project Number: 60729369

Lab Number: L2504344
Report Date: 02/03/25

PAHs - (b) (4) Associated sample(s): 01-02 Batch: WG2023956-2 WG2023956-3

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Naphthalene	96		97		50-130	1		30
2-Methylnaphthalene	92		91		50-130	1		30
Acenaphthylene	92		92		50-130	0		30
Acenaphthene	90		90		50-130	0		30
Fluorene	96		95		50-130	1		30
Phenanthrene	94		92		50-130	2		30
Anthracene	105		105		50-130	0		30
Fluoranthene	90		90		50-130	0		30
Pyrene	96		95		50-130	1		30
Benz(a)anthracene	97		97		50-130	0		30
Chrysene/Triphenylene	93		94		50-130	1		30
Benzo(b)fluoranthene	91		92		50-130	1		30
Benzo(j)+(k)fluoranthene	94		95		50-130	1		30
Benzo(a)pyrene	94		95		50-130	1		30
Indeno(1,2,3-cd)pyrene	95		95		50-130	0		30
Dibenz(a,h)+(a,c)anthracene	95		96		50-130	1		30
Benzo(g,h,i)perylene	92		93		50-130	1		30

(b) (4)

Lab Control Sample Analysis
Batch Quality Control

Project Name: EDWM
Project Number: 60729369

Lab Number: L2504344
Report Date: 02/03/25

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
PAHs - (b) (4)	Associated sample(s): 01-02	Batch:	WG2023956-2	WG2023956-3				

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Naphthalene-d8	80		78		50-130
Phenanthrene-d10	89		87		50-130
Benzo(a)pyrene-d12	92		92		50-130

(b) (4)

PETROLEUM HYDROCARBONS

(b) (4)

Project Name: EDWM
Project Number: 60729369

Lab Number: L2504344
Report Date: 02/03/25

SAMPLE RESULTS

Lab ID: L2504344-01
Client ID: A1-DL-0016023-25001-N
Sample Location: HONOLULU, HI

Date Collected: 01/21/25 09:06
Date Received: 01/25/25
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8015D(M)
Analytical Date: 01/29/25 05:03
Analyst: (b) (6)

Extraction Method: EPA 3510C
Extraction Date: 01/27/25 12:40

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Saturated Hydrocarbons by GC-FID - (b) (4)						
n-Nonane (C9)	ND		mg/l	0.000971	0.000480	1
n-Decane (C10)	ND		mg/l	0.000971	0.000488	1
n-Undecane (C11)	ND		mg/l	0.000971	0.000443	1
n-Dodecane (C12)	ND		mg/l	0.000971	0.000539	1
n-Tridecane (C13)	ND		mg/l	0.00485	0.000442	1
2,6,10-Trimethyldodecane (1380)	ND		mg/l	0.000971	0.000417	1
n-Tetradecane (C14)	ND		mg/l	0.000971	0.000417	1
2,6,10-Trimethyltridecane (1470)	ND		mg/l	0.000971	0.000352	1
n-Pentadecane (C15)	ND		mg/l	0.000971	0.000352	1
n-Hexadecane (C16)	ND		mg/l	0.000971	0.000274	1
Norpristane (1650)	ND		mg/l	0.000971	0.000233	1
n-Heptadecane (C17)	ND		mg/l	0.000971	0.000247	1
Pristane	ND		mg/l	0.000971	0.000233	1
n-Octadecane (C18)	ND		mg/l	0.000971	0.000901	1
Phytane	ND		mg/l	0.000971	0.000178	1
n-Nonadecane (C19)	ND		mg/l	0.000971	0.000214	1
n-Eicosane (C20)	ND		mg/l	0.000971	0.000156	1
n-Heneicosane (C21)	ND		mg/l	0.000971	0.000156	1
n-Docosane (C22)	ND		mg/l	0.000971	0.000165	1
n-Tricosane (C23)	ND		mg/l	0.000971	0.000186	1
n-Tetracosane (C24)	ND		mg/l	0.000971	0.000272	1
n-Pentacosane (C25)	ND		mg/l	0.00485	0.000667	1
n-Hexacosane (C26)	ND		mg/l	0.000971	0.000335	1
n-Heptacosane (C27)	ND		mg/l	0.000971	0.000358	1
n-Octacosane (C28)	ND		mg/l	0.000971	0.000777	1
n-Nonacosane (C29)	ND		mg/l	0.000971	0.000957	1
n-Triacontane (C30)	ND		mg/l	0.000971	0.000198	1
n-Hentriacontane (C31)	ND		mg/l	0.000971	0.000352	1

(b) (4)

Project Name: EDWM
Project Number: 60729369
Lab Number: L2504344
Report Date: 02/03/25

SAMPLE RESULTS

Lab ID: L2504344-01
Client ID: A1-DL-0016023-25001-N
Sample Location: HONOLULU, HI
Date Collected: 01/21/25 09:06
Date Received: 01/25/25
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Saturated Hydrocarbons by GC-FID - (b) (6)						
n-Dotriacontane (C32)	ND		mg/l	0.000971	0.000197	1
n-Tritriacontane (C33)	ND		mg/l	0.000971	0.000202	1
n-Tetratriacontane (C34)	ND		mg/l	0.000971	0.000190	1
n-Pentatriacontane (C35)	ND		mg/l	0.000971	0.000208	1
n-Hexatriacontane (C36)	ND		mg/l	0.000971	0.000214	1
n-Heptatriacontane (C37)	ND		mg/l	0.000971	0.000227	1
n-Octatriacontane (C38)	ND		mg/l	0.000971	0.000399	1
n-Nonatriacontane (C39)	ND		mg/l	0.000971	0.000206	1
n-Tetracontane (C40)	ND		mg/l	0.000971	0.000206	1
Total Petroleum Hydrocarbons (C9-C44)	ND		mg/l	0.0320	0.0269	1
Total Saturated Hydrocarbons	ND		mg/l	0.000971	0.000156	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
ortho-terphenyl	80		50-130
d50-Tetracosane	83		50-130

(b) (4)

Project Name: EDWM
Project Number: 60729369

Lab Number: L2504344
Report Date: 02/03/25

SAMPLE RESULTS

Lab ID: L2504344-02
Client ID: A1-DL-0016027-25001-N
Sample Location: HONOLULU, HI

Date Collected: 01/21/25 09:59
Date Received: 01/25/25
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8015D(M)
Analytical Date: 01/29/25 06:27
Analyst: (b) (6)

Extraction Method: EPA 3510C
Extraction Date: 01/27/25 12:40

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Saturated Hydrocarbons by GC-FID - (b) (4)						
n-Nonane (C9)	ND		mg/l	0.000980	0.000485	1
n-Decane (C10)	ND		mg/l	0.000980	0.000493	1
n-Undecane (C11)	ND		mg/l	0.000980	0.000447	1
n-Dodecane (C12)	ND		mg/l	0.000980	0.000544	1
n-Tridecane (C13)	ND		mg/l	0.00490	0.000446	1
2,6,10-Trimethyldodecane (1380)	ND		mg/l	0.000980	0.000422	1
n-Tetradecane (C14)	ND		mg/l	0.000980	0.000422	1
2,6,10-Trimethyltridecane (1470)	ND		mg/l	0.000980	0.000356	1
n-Pentadecane (C15)	ND		mg/l	0.000980	0.000356	1
n-Hexadecane (C16)	ND		mg/l	0.000980	0.000276	1
Norpristane (1650)	ND		mg/l	0.000980	0.000235	1
n-Heptadecane (C17)	ND		mg/l	0.000980	0.000249	1
Pristane	ND		mg/l	0.000980	0.000235	1
n-Octadecane (C18)	ND		mg/l	0.000980	0.000910	1
Phytane	ND		mg/l	0.000980	0.000179	1
n-Nonadecane (C19)	ND		mg/l	0.000980	0.000217	1
n-Eicosane (C20)	0.000170	J	mg/l	0.000980	0.000158	1
n-Heneicosane (C21)	ND		mg/l	0.000980	0.000158	1
n-Docosane (C22)	ND		mg/l	0.000980	0.000167	1
n-Tricosane (C23)	ND		mg/l	0.000980	0.000188	1
n-Tetracosane (C24)	ND		mg/l	0.000980	0.000274	1
n-Pentacosane (C25)	ND		mg/l	0.00490	0.000674	1
n-Hexacosane (C26)	ND		mg/l	0.000980	0.000338	1
n-Heptacosane (C27)	ND		mg/l	0.000980	0.000362	1
n-Octacosane (C28)	ND		mg/l	0.000980	0.000784	1
n-Nonacosane (C29)	ND		mg/l	0.000980	0.000967	1
n-Triacontane (C30)	ND		mg/l	0.000980	0.000200	1
n-Hentriacontane (C31)	ND		mg/l	0.000980	0.000356	1

(b) (4)

Project Name: EDWM
Project Number: 60729369
Lab Number: L2504344
Report Date: 02/03/25

SAMPLE RESULTS

Lab ID: L2504344-02
Client ID: A1-DL-0016027-25001-N
Sample Location: HONOLULU, HI
Date Collected: 01/21/25 09:59
Date Received: 01/25/25
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Saturated Hydrocarbons by GC-FID - (b) (4)						
n-Dotriacontane (C32)	ND		mg/l	0.000980	0.000199	1
n-Tritriacontane (C33)	ND		mg/l	0.000980	0.000204	1
n-Tetratriacontane (C34)	ND		mg/l	0.000980	0.000192	1
n-Pentatriacontane (C35)	ND		mg/l	0.000980	0.000210	1
n-Hexatriacontane (C36)	ND		mg/l	0.000980	0.000216	1
n-Heptatriacontane (C37)	ND		mg/l	0.000980	0.000229	1
n-Octatriacontane (C38)	ND		mg/l	0.000980	0.000403	1
n-Nonatriacontane (C39)	ND		mg/l	0.000980	0.000208	1
n-Tetracontane (C40)	ND		mg/l	0.000980	0.000208	1
Total Petroleum Hydrocarbons (C9-C44)	ND		mg/l	0.0324	0.0272	1
Total Saturated Hydrocarbons	0.000170	JB	mg/l	0.000980	0.000158	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
ortho-terphenyl	82		50-130
d50-Tetracosane	85		50-130

(b) (4)

Project Name: EDWM
Project Number: 60729369

Lab Number: L2504344
Report Date: 02/03/25

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8015D(M)
Analytical Date: 01/28/25 19:15
Analyst: (b) (6)

Extraction Method: EPA 3510C
Extraction Date: 01/27/25 12:40

Parameter	Result	Qualifier	Units	RL	MDL
Saturated Hydrocarbons by GC-FID - (b) (4) for sample(s): 01-02 Batch: WG2023956-1					
n-Nonane (C9)	ND		mg/l	0.00100	0.000495
n-Decane (C10)	ND		mg/l	0.00100	0.000503
n-Undecane (C11)	ND		mg/l	0.00100	0.000456
n-Dodecane (C12)	ND		mg/l	0.00100	0.000555
n-Tridecane (C13)	ND		mg/l	0.00500	0.000455
2,6,10-Trimethyldodecane (1380)	ND		mg/l	0.00100	0.000430
n-Tetradecane (C14)	ND		mg/l	0.00100	0.000430
2,6,10-Trimethyltridecane (1470)	ND		mg/l	0.00100	0.000363
n-Pentadecane (C15)	ND		mg/l	0.00100	0.000363
n-Hexadecane (C16)	ND		mg/l	0.00100	0.000282
Norpristane (1650)	ND		mg/l	0.00100	0.000240
n-Heptadecane (C17)	ND		mg/l	0.00100	0.000254
Pristane	ND		mg/l	0.00100	0.000240
n-Octadecane (C18)	ND		mg/l	0.00100	0.000928
Phytane	ND		mg/l	0.00100	0.000183
n-Nonadecane (C19)	ND		mg/l	0.00100	0.000221
n-Eicosane (C20)	0.000162	J	mg/l	0.00100	0.000161
n-Heneicosane (C21)	ND		mg/l	0.00100	0.000161
n-Docosane (C22)	ND		mg/l	0.00100	0.000170
n-Tricosane (C23)	ND		mg/l	0.00100	0.000192
n-Tetracosane (C24)	ND		mg/l	0.00100	0.000280
n-Pentacosane (C25)	ND		mg/l	0.00500	0.000687
n-Hexacosane (C26)	ND		mg/l	0.00100	0.000345
n-Heptacosane (C27)	ND		mg/l	0.00100	0.000369
n-Octacosane (C28)	ND		mg/l	0.00100	0.000800
n-Nonacosane (C29)	0.000986	JC	mg/l	0.00100	0.000986
n-Triacontane (C30)	ND		mg/l	0.00100	0.000204
n-Hentriacontane (C31)	ND		mg/l	0.00100	0.000363
n-Dotriacontane (C32)	ND		mg/l	0.00100	0.000203

(b) (4)

Project Name: EDWM
Project Number: 60729369

Lab Number: L2504344
Report Date: 02/03/25

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8015D(M)
Analytical Date: 01/28/25 19:15
Analyst: (b) (6)

Extraction Method: EPA 3510C
Extraction Date: 01/27/25 12:40

Parameter	Result	Qualifier	Units	RL	MDL
Saturated Hydrocarbons by GC-FID - (b) (4) for sample(s): 01-02 Batch: WG2023956-1					
n-Tritriacontane (C33)	ND		mg/l	0.00100	0.000208
n-Tetratriacontane (C34)	ND		mg/l	0.00100	0.000196
n-Pentatriacontane (C35)	ND		mg/l	0.00100	0.000214
n-Hexatriacontane (C36)	ND		mg/l	0.00100	0.000220
n-Heptatriacontane (C37)	ND		mg/l	0.00100	0.000234
n-Octatriacontane (C38)	ND		mg/l	0.00100	0.000411
n-Nonatriacontane (C39)	ND		mg/l	0.00100	0.000212
n-Tetracontane (C40)	ND		mg/l	0.00100	0.000212
Total Petroleum Hydrocarbons (C9-C44)	ND		mg/l	0.0330	0.0277
Total Saturated Hydrocarbons	0.00115	J	mg/l	0.00100	0.000161

Surrogate	%Recovery	Qualifier	Acceptance Criteria
ortho-terphenyl	84		50-130
d50-Tetracosane	86		50-130

(b) (4)

Lab Control Sample Analysis
Batch Quality Control

Project Name: EDWM
Project Number: 60729369

Lab Number: L2504344
Report Date: 02/03/25

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Saturated Hydrocarbons by GC-FID - (b) (4) Associated sample(s): 01-02 Batch: WG2023956-2 WG2023956-3								
Nonane (C9)	61		71		50-130	15		30
n-Decane (C10)	67		80		50-130	18		30
n-Dodecane (C12)	76		85		50-130	11		30
n-Tetradecane (C14)	82		85		50-130	4		30
n-Hexadecane (C16)	88		89		50-130	1		30
n-Octadecane (C18)	91		92		50-130	1		30
n-Nonadecane (C19)	93		94		50-130	1		30
n-Eicosane (C20)	90		92		50-130	2		30
n-Docosane (C22)	87		88		50-130	1		30
n-Tetracosane (C24)	93		94		50-130	1		30
n-Hexacosane (C26)	87		88		50-130	1		30
n-Octacosane (C28)	88		88		50-130	0		30
n-Triacontane (C30)	87		88		50-130	1		30
n-Hexatriacontane (C36)	76		74		50-130	3		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
ortho-terphenyl	81		81		50-130
d50-Tetracosane	86		87		50-130

(b) (4)

Project Name: EDWM
Project Number: 60729369

Lab Number: L2504344
Report Date: 02/03/25

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Present/Intact

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2504344-01A	Vial Ascorbic Acid/HCl preserved	A	NA		2.4	Y	Present/Intact		A2-PIANO8260(14)
L2504344-01B	Vial Ascorbic Acid/HCl preserved	A	NA		2.4	Y	Present/Intact		A2-PIANO8260(14)
L2504344-01C	Vial Ascorbic Acid/HCl preserved	A	NA		2.4	Y	Present/Intact		A2-PIANO8260(14)
L2504344-01D	Amber 1L Na2S2O3	A	7	7	2.4	Y	Present/Intact		A2-SHC(7),A2-ALKPAH(7)
L2504344-01E	Amber 1L Na2S2O3	A	7	7	2.4	Y	Present/Intact		A2-SHC(7),A2-ALKPAH(7)
L2504344-02A	Vial Ascorbic Acid/HCl preserved	A	NA		2.4	Y	Present/Intact		A2-PIANO8260(14)
L2504344-02B	Vial Ascorbic Acid/HCl preserved	A	NA		2.4	Y	Present/Intact		A2-PIANO8260(14)
L2504344-02C	Vial Ascorbic Acid/HCl preserved	A	NA		2.4	Y	Present/Intact		A2-PIANO8260(14)
L2504344-02D	Amber 1L Na2S2O3	A	7	7	2.4	Y	Present/Intact		A2-SHC(7),A2-ALKPAH(7)
L2504344-02E	Amber 1L Na2S2O3	A	7	7	2.4	Y	Present/Intact		A2-SHC(7),A2-ALKPAH(7)

*Values in parentheses indicate holding time in days

(b) (4)

Project Name:	EDWM	**Lab Number:**	L2504344
Project Number:	60729369	**Report Date:**	02/03/25

GLOSSARY

Acronyms

DL - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LOD - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

LOQ - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

NR - No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

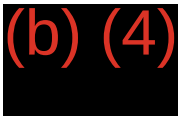
STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



Project Name:	EDWM	**Lab Number:**	L2504344
Project Number:	60729369	**Report Date:**	02/03/25

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers

Project Name:	EDWM	**Lab Number:**	L2504344
Project Number:	60729369	**Report Date:**	02/03/25

Data Qualifiers

Identified Compounds (TICs). For calculated parameters, this represents that one or more values used in the calculation were estimated.

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Report Format: DU Report with 'J' Qualifiers

(b) (4)

Project Name: EDWM
Project Number: 60729369

Lab Number: L2504344
Report Date: 02/03/25

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.

LIMITATION OF LIABILITIES

(b) (4) performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of (b) (4) shall be to re-perform the work at it's own expense. In no event shall (b) (4) be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by (b) (4).

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

(b) (4)

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

(b) (4)
EPA 624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625.1: alpha-Terpineol
EPA 8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol, Azobenzene; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

(b) (4)
SM 2540D: TSS.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
MADEP-APH.
Nonpotable Water: EPA RSK-175 Dissolved Gases
Biological Tissue Matrix: EPA 3050B

(b) (4)
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Nonpotable Water: EPA RSK-175 Dissolved Gases

The following test method is not included in our New Jersey Secondary NELAP Scope of Accreditation:

(b) (4)
Determination of Selected Perfluorinated Alkyl Substances by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry Isotope Dilution (via Alpha SOP 23528)

The following analytes are included in our Massachusetts DEP Scope of Accreditation

(b) (4)

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 524.2: THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N**, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables).
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, EPA 1600, EPA 1603, SM9222D.**

(b) (4)

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb**,** As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

Certification IDs:

(b) (4)
CT PH-0826, IL 200077, IN C-MA-03, KY JY98045, ME MA00086, MD 348, MA M-MA086, NH 2064, NJ MA935, NY 11148, NC (DW) 25700, NC (NPW/SCM) 666, OR MA-1316, PA 68-03671, RI LAO00065, TX T104704476, VT VT-0935, VA 460195

(b) (4)
CT PH-0825, ANAB/DoD L2474, IL 200081, IN C-MA-04, KY KY98046, LA 3090, ME MA00030, MI 9110, MN 025-999-495, NH 2062, NJ MA015, NY 11627, NC (NPW/SCM) 685, OR MA-0262, PA 68-02089, RI LAO00299, TX T-104704419, VT VT-0015, VA 460194, WA C954

(b) (4)
ANAB/DoD L2474, ME MA01156, MN 025-999-498, NH 2249, NJ MA025, NY 12191, OR 4203, TX T104704583, VA 460311, WA C1104.

For a complete listing of analytes and methods, please contact your Project Manager.

L2504344

Lab Rec'd 1/25/25

[redacted]

Monthly EDWM January 2025 Sampling

CHAIN OF CUSTODY

COC ID 250121-[redacted] 10

[redacted] Job # DA70012

Client/Reporting Information		Billing Information (If different from reporting)		Project Information	
Company:	AECOM	Company:		PWSID or Project#:	60729369
Street:	1001 Bishop St. Suite 1600	Street:		System Name:	Extended Drinking Water Monitoring
City:	Honolulu State: HI ZIP: 96813	City:	State: ZIP:	System Address:	
Contact:	[redacted] Phone: [redacted]	Attention:		City:	Honolulu State: HI ZIP: 96813
Email:	[redacted]	Client PO #:		Contact Person:	[redacted]
Sampler:	[redacted] Team: C Team	[redacted] Quote/Bottle Order #:		Tel:	[redacted] Email [redacted]

Turn Around Time (Business days)

- Standard 10 Business Days
- 5 Business Days RUSH
- 3 Business Days RUSH
- 2 Business Days RUSH
- 1 Business Day EMERGENCY

State Form Information

- Compliance Samples: Yes
- Submit Results to EDMS Portal: Yes

Drinking Water Analyses (check analysis)

04344

	Sample Location or ID	Date	Time	No. of Containers	VOC (including TTHMs) 524.2	SOC 525.2	TOC 5310B	TPH-d/o 8015 (microextraction quench)	TPH-g 8260	Metals 200.8 (Cu,Pb only) & Mercury 245.1	Total Alkalinity SM 2320B	Anions 300.1	Anions 300.0	2-(2-Methoxyethoxy)- Ethanol 8270SIM	Ethylene Dibromide 504.1	Silica 200.7	HOLD ANALYSIS - 8270 SIM Parent & Alkylated PA	HOLD ANALYSIS - 8015D Sat Hydrocarbons	HOLD ANALYSIS - 8260D PIANO VOCs				Lab Use Only
				CT	A	B	C	F	A	G	I	D	J	H	K	I	L	L	A				
-01	A1-DL-0016023-25001-N	1/21/25	0906	~~18~~	3	2	1	3	3	0	1	0	0	2	3	0	~~0~~	~~0~~	~~0~~				01
				23	LW 1/21/2025												1	1	3	LW 1/21/2025			

Comments

Container Types (CT):

- A 40 ml VOA Ascorbic Acid + HCl
- B 1 L amber NaSulfite + HCl
- C 250 ml amber Sulfuric Acid
- D 125 ml amber poly EDA
- E 40 ml VOA HCl
- F 60 ml VOA Sodium Thiosulfate
- G 250 ml poly Nitric Acid
- H 60 ml VOA Unpreserved
- I 250 mL unpreserved
- J 250 mL amber unpreserved
- K 40 mL Sodium Thiosulfate
- L 1L amber Sodium Thiosulfate

Special Instructions:

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler: 1	[redacted]	Date/Time: 1/21/25 1050	Received By: [redacted] 38	Date/Time: 1050 1/21/25	Relinquished By: 2	[redacted]	Date/Time: 1613 1/21/25
Received By: 2	[redacted]	Date/Time: 1-23-25 930	[redacted]	Date/Time: 1/24/25 1200	Received By: 3		Date/Time:

Custody Seal # Intact / Not Intact — Preserved where applicable — Cooler Temp. (°C): 2.6 — Therm. ID: 7290 — On Ice

http://www.[redacted].com/terms-and-conditions

Rec! Fedex Rel! Fedex Rec: [redacted] 1/25/25 12:09

 EHSA-QAC-0028-02-FORM[redacted] DW COC; Rev. Date: 6/18/20

(b) (4)

Lab Recd 1/25/25

L2504344

Page 1 of 1

Monthly EDWM January 2025 Sampling

CHAIN OF CUSTODY

COC ID 250121-(b) (4) 09

(b) (4) Job # DA70012

Client/Reporting Information				Billing Information (If different from reporting)				Project Information			
Company:	AECOM			Company:				PWSID or Project#:	60729369		
Street:	1001 Bishop St. Suite 1600			Street:				System Name:	Extended Drinking Water Monitoring		
City:	Honolulu	State: HI	ZIP: 96813	City:		State:	ZIP:	System Address:			
Contact:	(b) (6)	Phone:	(b) (6)	Attention:				City:	Honolulu	State: HI	ZIP: 96813
Email:	(b) (6)			Client PO #:				Contact Person:	(b) (6)		
Sampler:	(b) (6)	Team:	C Team	(b) (4) Quote/Bottle Order #:				Tel:	(b) (6)	Email	(b) (6)

Turn Around Time (Business days)

- Standard 10 Business Days
- 5 Business Days RUSH
- 3 Business Days RUSH
- 2 Business Days RUSH
- 1 Business Day EMERGENCY

State Form Information

Compliance Samples: Yes

Submit Results to EDMS Portal: Yes

Drinking Water Analyses (check analysis)

Sample Location or ID	Date	Time	No. of Containers	VOC (including TTHMs) 524.2	SOC 525.2	TOC 5310B	TPH-d/o 8015 (microextraction quench)	TPH-g 8260	Metals 200.8 (Cu,Pb only) & Mercury 245.1	Total Alkalinity SM 2320B	Anions 300.1	Anions 300.0	2-(2-Methoxyethoxy)- Ethanol 8270SIM	Ethylene Dibromide 504.1	Silica 200.7	HOLD ANALYSIS - 8270 SIM Parent & Alkylated PA	HOLD ANALYSIS - 8015D Sat Hydrocarbons	HOLD ANALYSIS - 8260D PIANO VOCs					Lab Use Only
			CT	A	B	C	F	A	G	I	D	J	H	K	I	L	L	A					
A1-DL-0016027-25001-N	1/21/25	0959	~~18~~ 23	3 LW	2 1/21/2025	1	3	3	0	1	0	0	2	3	~~0~~ 0	~~0~~ 1	~~0~~ 1	~~0~~ 3	LW 1/21/2025				02

04344 -02

Comments

Container Types (CT):

- A 40ml VOA Ascorbic Acid + HCl
- B 1 L amber NaSulfite + HCl
- C 250 ml amber Sulfuric Acid
- D 125 ml amber poly EDA
- E 40ml VOA HCl
- F 60ml VOA Sodium Thiosulfate
- G 250 ml poly Nitric Acid
- H 60ml VOA Unpreserved
- I 250 mL unpreserved
- J 250 mL amber unpreserved
- K 40 mL Sodium Thiosulfate
- L 1L amber Sodium Thiosulfate

Special Instructions:

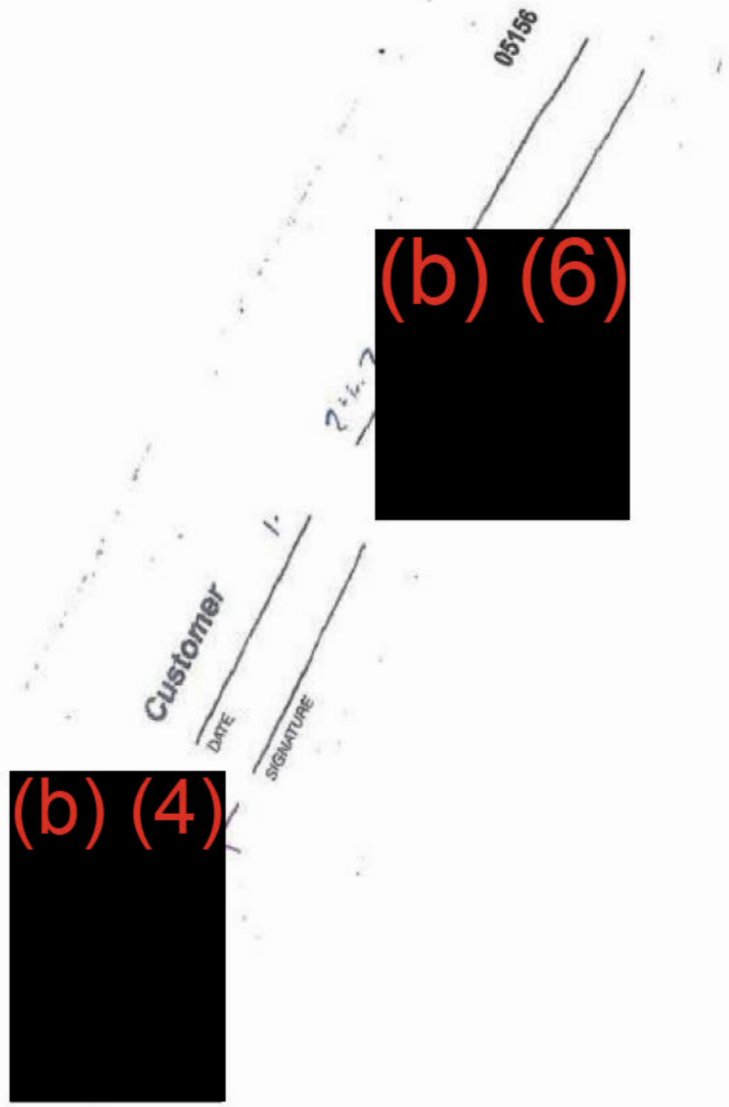
Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sam	(b) (6)	Date/Time: 1/21/25 1050	Received By: 1	(b) (6) 100	Date/Time: 1/21/25 1050	Relinquished By: 2	Date/Time:
Received By: 2	(b) (6)	Date/Time: 1/22/25 0930	(b) (6)		Date/Time: 1/24/25 1700	Received By: 3	Date/Time:

Custody Seal # Intact Not Intact Absent | Preserved where applicable: | Cooler Temp. (°C): 4.2 | Therm. ID: T080 | On Ice: | http://www.(b) (4).com/terms-and-conditions

Rec! Fedex Rel: Fedex Rec! (b) (6) 1/25/25 12:09


(b) (6)
(b) (4)
SHIP DATE: 24JAN25
ACTWGT: 50.00 LB MAN
CAD: 0659493/CAFE3855
BILL SENDER
TO (b) (6)
(b) (4)
INV:
PO:
DEPT:
FedEx
Express
SATURDAY 12:00P
PRIORITY OVERNIGHT
TRK# 0201 7444 9073 6008
XO PYMA
02048
MA-US BOS


05156
(b) (6)
Customer
DATE
SIGNATURE
(b) (4)

Attachment 3: Glossary of Terms

Glossary of Terms

Alkanes – A series of compounds that contain only carbon and hydrogen atoms with single covalent bonds. These are also known as saturated hydrocarbons.

Calibration Curve – A plot of response vs concentration that is used in calculating the concentration in an unknown sample.

Calibration Standards – A mixture of compounds of known concentrations spanning a range that are analyzed to create a calibration curve.

Carbon Number – The number of carbon atoms contained in a compound. For example, a C10 compound contains 10 carbon atoms.

Chromatogram – A plot of retention time versus detector signal intensity. Detector signal intensity is proportional to concentration.

Diesel Range Organics (DRO) – The DRO area is defined for the JBPHH LTM and EDWM programs as the total area of all peaks that come out (elute) between the observed retention times of C10 (decane, the 10 carbon, straight chain alkane) and the retention time of C24 (tetracosane, the 24 carbon, straight chain alkane). Different carbon ranges may be defined for other programs.

Elute – To pass through the chromatographic column to the detector.

Elution time – The time it takes a particular chemical to reach the detector after injection onto a chromatographic column. Used interchangeably with the term retention time in gas chromatography.

Flame Ionization Detector (FID) – A non-specific detector frequently used in conjunction with gas chromatography. It has good sensitivity and is a universal detector for organic compounds. However, since all organic compounds will give a response, it is not very selective and co-eluting components in a sample will interfere with the analysis.

Gas Chromatography (GC) – An analytical technique used to separate and detect the chemical components of a sample mixture to determine their presence or absence and/or quantities.

Gas Chromatography/Mass Spectrometry (GC/MS) – An analytical method that combines the features of gas-chromatography and mass spectrometry to identify different substances within a test sample.

Gasoline Range Organics (GRO) – The GRO area is defined for the Joint Base Pearl Harbor-Hickam (JBPHH) Long-Term Monitoring (LTM) and Extended Drinking Water Monitoring (EDWM) programs as the total area of all peaks that come out (elute) between the observed retention times of C5 and C12 n-alkanes. Different carbon ranges may be defined for other programs.

Hydrocarbon – An organic chemical compound composed solely of hydrogen and carbon atoms.

Internal Standard – A compound of known concentration that is added to standards, samples, and blanks before analysis. It is used to adjust for matrix effects and/or variability in instrument response.

Jet Propellant 5 (JP-5) – A kerosene type fuel with a high flashpoint and a narrow distillation range defined by the military specification in MIL-DTL-5624W. Greater than 99% of the integrated hydrocarbon mass elutes between the retention times of C9 and C16 n-alkanes.

Mass Spectrometry (MS) – An analytical technique that is used to measure the mass-to-charge ratio of ions. The results are presented as a mass spectrum, a plot of intensity as a function of the mass-to-charge ratio. These spectra are used to determine the elemental or isotopic signature of a sample, the masses of particles and of molecules, and to elucidate the chemical identity or structure of molecules and other chemical compounds.

Mass Spectral Profile – A technique used to analyze the composition of chemical substances by measuring the mass-to-charge ratio (m/z) of ions. This profile is used to identify individual components within a sample by displaying their unique mass spectra.

n-Alkanes – Alkanes in which all carbon atoms are bonded to each other in a linear pattern with a single covalent bond.

Oil Range Organics (ORO) – The ORO area is defined for the JBPHH LTM and EDWM programs as the total area of peaks that elute between the observed retention times of C24 and C40 n-alkanes. Different carbon ranges may be defined for other programs.

Petrogenic – Refers to a substance, typically a hydrocarbon, derived from fossil fuels like petroleum, coal, and natural gas.

PIANO – An acronym for n-Paraffins (P), Isoparaffins (I), Aromatics (A), Naphthenes (N) and Olefins (O), A PIANO analysis is a laboratory procedure using gas chromatography coupled with mass spectrometry (GC/MS) for the identification and measurement of light-end refined products such as gasoline or jet fuel with boiling points up to 250 °C.

Polycyclic Aromatic Hydrocarbon (PAH) – A hydrocarbon composed of multiple aromatic (benzene-like) rings fused together. These compounds are formed primarily through the incomplete combustion of organic materials such as coal, oil, gas, wood, or other carbon-containing substances. They can be water soluble and fat soluble and are stable compounds that can persist in the environment.

Pyrogenic – Refers to a substance created by combustion of fossil fuels or organic matter.

Reporting Limit (RL) – The lowest concentration of a compound that can be accurately reported in a sample. The lowest standard in the calibration curve is set at or below this level.

Retention Time (RT) – The time it takes for a compound to pass through a column and be detected after a sample is injected. Used interchangeably with the term elution time in gas chromatography.

RT Marker – A standard containing n-alkanes with different numbers of carbon atoms and are analyzed with each run for the purpose of determining the beginning and end of carbon ranges of interest.

Standard Operating Procedure (SOP) – A list of prescribed steps that outlines how to perform a task.

Surrogate – A compound similar to the target compounds being analyzed that is added to the sample prior to preparation and analysis at a known concentration. Used to evaluate extraction efficiency and matrix interference on a sample specific basis.

Target Compound – A compound included in calibration standards and may be quantitatively evaluated.

Tentatively Identified Compound (TIC) – A compound that is detected in a sample but was not included in the instrument calibration standards. Its identity can often be determined by comparing its mass spectrum with those in a library.

Total Petroleum Hydrocarbon Analysis by SW-846 Method 8015 – An analytical method that uses gas chromatography to separate chemical compounds and a flame ionization detector to measure the signal. Quantitation is performed by summing the entire area between specified n-alkane retention times.

Total Petroleum Hydrocarbons (TPH) – The sum of all petroleum hydrocarbons detected in a sample.

AECOM
1001 Bishop Street
Suite 1600
Honolulu, HI 96813
aecom.com

March 26, 2025

CDR Benjamin Dunn, P.E.
NAVFAC Hawaii
400 Marshall Road
JBPHH HI 96860-3139

Subject: **Joint Base Pearl Harbor-Hickam Drinking Water Benzo(a)pyrene Detection Investigation Zone D3, 862 Ohana Nui Circle**

Attention CDR Dunn:

On Friday, January 24, 2025, AECOM Technical Services, Inc. (AECOM) was notified of a benzo(a)pyrene detection of 0.051 micrograms per liter (µg/L) in sample D3-TW-0009541-24092-N, collected from the kitchen sink in the residence at 862 Ohana Nui Circle in Zone D3, on January 21, 2025. The sample was analyzed at (b) (4) in (b) (4), via gas chromatography-mass spectrometry using United States Environmental Protection Agency (EPA) Method 525.2 and reported in sample delivery group DA70011. This result is above the laboratory's reporting limit (RL) of 0.02 µg/L.

AECOM launched an investigation to determine if the reported detection is likely to be related to a fuel-related petrogenic source, particularly the November 2021 release of Jet Propellant 5 (JP-5), and if not, to assign a probable reason for the detection. **Based on multiple lines of evidence, AECOM concludes that this benzo(a)pyrene detection is not attributable to a petrogenic source and is unrelated to JP-5. Furthermore, it is likely that the benzo(a)pyrene found is due to minor contamination in the laboratory, which is not unusual at very low concentrations. AECOM concludes that benzo(a)pyrene was not present in the field sample.**

This conclusion was developed after reviewing multiple lines of evidence including:

- Sample chromatograms
- Mass spectral profile
- Field and laboratory quality control (QC) data
- Results of supplemental analyses

Benzo(a)pyrene is a polycyclic aromatic hydrocarbon (PAH) that was designated in the revised Extended Drinking Water Monitoring (EDWM) Plan (October 2024) as a compound that is potentially associated with petroleum compounds and therefore must be evaluated when detected above the RL.

Supplementary Analyses

In addition to ensuring that the laboratory data achieved low method detection limits and met the data quality objectives (DQOs) of EDWM, additional voluntary forensic analyses were performed on the sample. To further evaluate benzo(a)pyrene, additional sample volume was sent to (b) (4) (b) (4) (formerly known as (b) (4)) to measure the amount of petroleum hydrocarbons and other potential indicators using specific forensic methods known as Tier 2 analyses:

- SW-846 8260D – Paraffins-Isoparaffins-Aromatics-Naphthenes-Olefins (PIANO)
- SW-846 8270E-SIM – PAHs and Alkylated-PAHs
- SW-846 8015D – Saturated Hydrocarbons (SHCs)

These methods provide more detailed information than is possible with the original sample analytical methods covered under the EDWM Program. Specifically, when evaluating total petroleum hydrocarbon detections, the PIANO and SHC methods can identify and quantitate individual hydrocarbon (with RLs of approximately 1 µg/L) concentrations rather than reporting one result for an entire carbon range (with an RL of 80 µg/L). An extended list of PAHs and their alkylated derivatives can be analyzed using the PAHs and Alkylated-PAHs method, all at very low RLs, providing additional information that is key to determining the potential source of any detected analyte. Furthermore, analyzing the same sample by different methods at different laboratories can help to confirm whether an analyte was present in the sample or may have been introduced at the time of sampling or in the laboratory. These additional analyses exceed industry standards and go beyond meeting the DQOs of EDWM.

AECOM immediately directed the laboratory to send additional sample volume of D3-TW-0009541-24092-N to (b) (4) for Tier 2 analyses. **There were no detections of benzo(a)pyrene, other PAHs, or any other analyte in the additional Tier 2 forensic analyses.**

Conclusion

After examining multiple lines of evidence, AECOM concludes that the water at 862 Ohana Nui Circle does not contain benzo(a)pyrene nor any other petroleum compounds. The original detection of benzo(a)pyrene is most likely due to a laboratory artifact. AECOM is working with the laboratory to identify the mechanism by which the contaminant may have been introduced to the sample and will continue to do so. No additional action is currently recommended.

A detailed discussion of the investigation into this result is provided in Attachment 1. The laboratory report from (b) (4) is provided in Attachment 2. Attachment 3 provides a glossary of terms used in the investigation.

Questions regarding this letter should be addressed to (b) (6) at (b) (6).

Very respectfully,

(b) (6)
(b) (6)
Senior Project Chemist
(b) (6)

(b) (6)
(b) (6)
CLEAN Program Manager
(b) (6)

cc: (b) (6)

Attachments

Attachment 1: Technical Discussion of Sample D3-TW-0009541-24092-N

Attachment 2: (b) (4) Laboratory Report L2504345

Attachment 3: Glossary of Terms

Attachment 1: Technical Discussion of Sample D3-TW-0009541-24092-N

The chromatogram and mass spectrum for D3-TW-0009541-24092-N were reviewed to verify that benzo(a)pyrene was correctly identified. The retention time and ion ratios met all criteria indicating that the peak was correctly identified as benzo(a)pyrene. The mass spectrum is presented as Figure 1.

All associated laboratory quality control data were reviewed to look for evidence of laboratory contamination or other method performance issues that may have led to a false positive result. Items reviewed included:

- Method blank results
- Field reagent blank results
- Blank spike recoveries
- Surrogate standard recoveries
- Internal standard recoveries
- Initial calibration (ICAL) curve
- Initial calibration verification (ICV)
- Continuing calibration verification (CCV)

Benzo(a)pyrene was not detected above the detection limit (DL) in the method blank or field reagent blank. Associated results in the blank spike, surrogate standards, internal standards, ICAL, ICV, and CCV were within acceptance limits.

There is nothing in the (b) (4) data to suggest that either the identity or concentration were reported incorrectly in this sample, however, it is extremely unlikely that benzo(a)pyrene was present in this sample due to a petrogenic source. The preliminary evidence supporting this assertion includes:

- Non-detect results in both the diesel range organics (DRO) and oil range organics (ORO) of the SW-846 8015D total petroleum hydrocarbon (TPH) analysis
- Non-detect results for all other polycyclic aromatic hydrocarbons (PAHs)

Benzo(a)pyrene is classified as a PAH, and PAHs from petrogenic sources are known to be less abundant relative to alkane hydrocarbons (alkane hydrocarbons would be detected in the TPH ranges). Benzo(a)pyrene is almost never the most abundant PAH in any pyrogenic or petrogenic PAH pattern, so the ratios of the other parent (and alkylated) PAHs can provide valuable clues about the PAH source(s). A pyrogenic PAH pattern is almost always dominated by fluoranthene and pyrene, neither of which were detected. If benzo(a)pyrene was present in the sample due to a petroleum source, additional PAHs would also be expected to be present.

The ability to identify and quantitate individual DRO and ORO constituents is limited in the standard 8015D method used by (b) (4), and its detection limits for the other PAHs measured via method 525.2 are an order of magnitude greater than the detection limit for benzo(a)pyrene. Therefore, to provide further confidence in the assertions above related to the absence of other petroleum indicators, back-up containers of the sample and its duplicate were sent to (b) (4) (formerly known as (b) (4) (b) (4)) for a quantitative evaluation of petroleum hydrocarbons and potential indicators using the following forensic analytical methods (referred to as Tier 2 analyses):

- SW-846 8260 D - Paraffins-Isoparaffins-Aromatics-Naphthenes-Olefins (PIANO)
- SW-846 8270E-SIM – PAHs and Alkylated-PAHs (ALKPAH)
- SW-846 8015D – Saturated Hydrocarbons (SHCs)

All PAH results were non-detect, confirming the lack of evidence for a petrogenic source of the original benzo(a) pyrene detection. Furthermore, there were no detections of any analytes in any of the Tier 2 analyses.

The most likely source of benzo(a)pyrene is unidentified sporadic low-level contamination in the laboratory. There is no evidence of systematic contamination in the laboratory but given the presence of all target compounds in calibration standards and spiking solutions, the potential for incidental contamination exists, particularly at low levels.

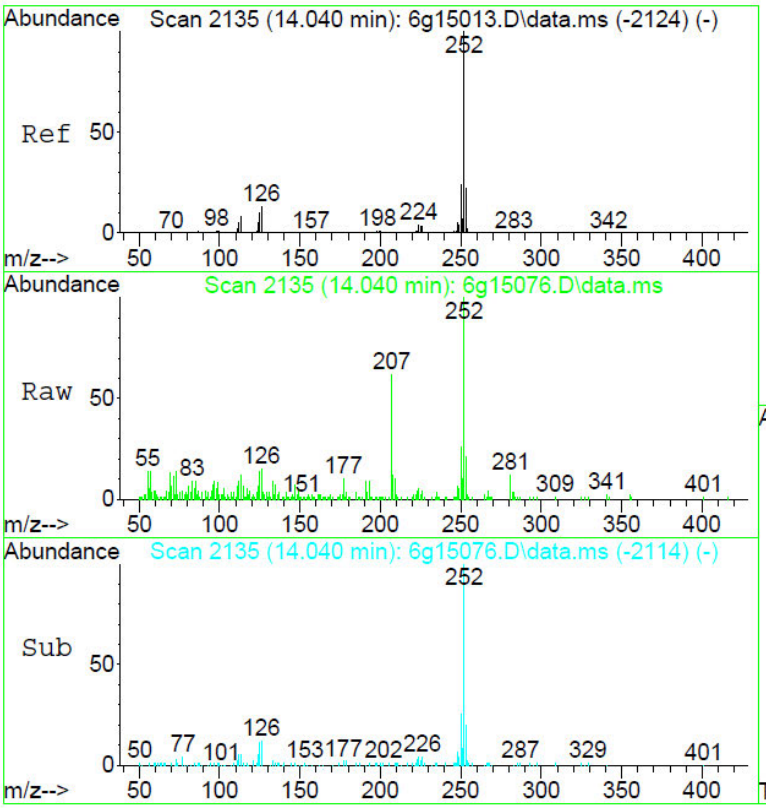
The most likely source of the benzo(a)pyrene is unidentified sporadic low-level contamination in the laboratory. There is no evidence of systematic contamination in the laboratory but given the presence of all target compounds in calibration standards and spiking solutions, the potential for incidental contamination exists, particularly at low levels. The detected concentration was less than three times the reporting limit (RL) of 0.02 µg/L, which is also the concentration of the lowest calibration standard.

Sporadic low-level hits of benzo(a)pyrene have been detected in field blanks, method blanks, and samples throughout the extended drinking water monitoring (EDWM) program. The following table summarizes benzo(a)pyrene detections for samples collected from September through mid-December, 2024.

Sample Type	**Number**	**# ND**	**%ND**	**# <RL**	**% <RL**	**# >RL**	**% >RL**
Field Sample	1667	1634	98%	25	1.5%	8	0.5%
Field Reagent Blank	269	260	97%	7	2.6%	2	0.7%
Method Blank	120	118	98%	2	1.7%	0	0.0%

The fact that frequency of detections in field reagent blanks is the same or slightly greater than that in the field samples further supports the conclusion that benzo(a)pyrene was not present in the sample but was introduced in the laboratory.

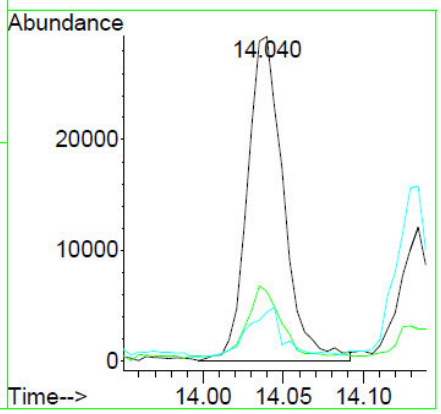
Figure 1. Mass Spectral Analysis of - D3-TW-0009541-24092-N



#7
Benzo(a)pyrene
Concen: 0.0503 ppm
RT: 14.040 min Scan# 2135
Delta R.T. 0.000 min
Lab File: 6g15076.D
Acq: 23 Jan 2025 10:00 pm

Tgt Ion:252 Resp: 45948

Ion	Ratio	Lower	Upper
252	100		
253	22.1	1.7	41.7
126	15.4	0.0	32.8



Attachment 2: (b) (4) Laboratory Report L2504345

(b) (4)

ANALYTICAL REPORT

Lab Number:	L2504345
Client:	AECOM 250 Apollo Drive Chelmsford, MA 01824
ATTN:	(b) (6)
Phone:	(b) (6)
Project Name:	EDWM
Project Number:	60729369
Report Date:	02/03/25

Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0825), DoD (L2474), FL (E87814), IL (200081), IN (C-MA-04), KY (KY98046), LA (85084), ME (MA00030), MD (350), MI (9110), MN (025-999-495), NJ (MA015), NY (11627), NC (685), OR (MA-0262), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #525-23-107-88708A1), USFWS (Permit #A24920).

Project Name: EDWM
Project Number: 60729369

Lab Number: L2504345
Report Date: 02/03/25

Lab Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2504345-01	D3-TW-0009541-24092-N	WATER	HONOLULU, HI	01/21/25 08:37	01/25/25

(b) (4)

Project Name:	EDWM	**Lab Number:**	L2504345
Project Number:	60729369	**Report Date:**	02/03/25

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this (b) (4) Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments and solids are reported on a dry weight basis unless otherwise noted. Tissues are reported "as received" or on a wet weight basis, unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, (b) (4) policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your (b) (4) Project Manager and made arrangements for (b) (4) to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at (b) (4) with any questions.

(b) (4)

Project Name: EDWM
Project Number: 60729369

Lab Number: L2504345
Report Date: 02/03/25

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

PIANO Volatile Organics

L2504345-01: The associated continuing calibration standard is outside the 35%D criteria for Tridecane, Tetradecane, and Pentadecane; however, samples are non detect for all of these compounds. No further action taken

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: (b) (6) (b) (6)

Title: Technical Director/Representative

Date: 02/03/25

(b) (4)

ORGANICS

(b) (4)

VOLATILES

(b) (4)

Project Name: EDWM
Project Number: 60729369
Lab Number: L2504345
Report Date: 02/03/25

SAMPLE RESULTS

Lab ID: L2504345-01
Client ID: D3-TW-0009541-24092-N
Sample Location: HONOLULU, HI

Date Collected: 01/21/25 08:37
Date Received: 01/25/25
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8260D
Analytical Date: 01/29/25 03:08
Analyst: (b) (6)

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PIANO Volatile Organics by GC/MS - (b) (4)						
3-Methyl-1-butene	ND		ug/l	2.00	0.297	1
Isopentane	ND		ug/l	2.00	0.366	1
1-Pentene	ND		ug/l	2.00	0.365	1
2-Methyl-1-Butene	ND		ug/l	2.00	0.311	1
Pentane	ND		ug/l	2.00	0.624	1
trans-2-Pentene	ND		ug/l	2.00	0.270	1
Isoprene	ND		ug/l	2.00	0.357	1
cis-2-Pentene	ND		ug/l	2.00	0.322	1
Tertiary Butanol	ND		ug/l	25.0	3.24	1
2,2-Dimethylbutane	ND		ug/l	2.00	0.617	1
4-Methyl-1-pentene	ND		ug/l	2.00	0.311	1
Cyclopentane	ND		ug/l	2.00	0.519	1
2,3-Dimethylbutane	ND		ug/l	2.00	0.826	1
2-Methylpentane	ND		ug/l	2.00	0.542	1
Methyl tert butyl ether	ND		ug/l	2.00	0.412	1
3-Methylpentane	ND		ug/l	2.00	0.317	1
1-Hexene	ND		ug/l	2.00	0.281	1
n-Hexane	ND		ug/l	2.00	0.329	1
Isopropyl Ether	ND		ug/l	2.00	0.242	1
trans-2-Hexene	ND		ug/l	2.00	0.261	1
2-Methyl-2-pentene	ND		ug/l	2.00	0.306	1
cis-2-Hexene	ND		ug/l	2.00	0.271	1
Ethyl-Tert-Butyl-Ether	ND		ug/l	2.00	0.303	1
2,2-Dimethylpentane	ND		ug/l	2.00	0.269	1
Methylcyclopentane	ND		ug/l	2.00	0.268	1
2,4-Dimethylpentane	ND		ug/l	2.00	0.247	1
2,2,3-Trimethylbutane	ND		ug/l	2.00	0.270	1
1,2-Dichloroethane	ND		ug/l	2.00	0.295	1

(b) (4)

Project Name: EDWM
Project Number: 60729369
Lab Number: L2504345
Report Date: 02/03/25

SAMPLE RESULTS

Lab ID: L2504345-01
Client ID: D3-TW-0009541-24092-N
Sample Location: HONOLULU, HI
Date Collected: 01/21/25 08:37
Date Received: 01/25/25
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PIANO Volatile Organics by GC/MS - (b) (4)						
3,3-Dimethylpentane	ND		ug/l	2.00	0.372	1
Cyclohexane	ND		ug/l	2.00	0.247	1
2-Methylhexane	ND		ug/l	2.00	0.315	1
Benzene	ND		ug/l	2.00	0.305	1
2,3-Dimethylpentane	ND		ug/l	2.00	0.265	1
Thiophene	ND		ug/l	2.00	0.284	1
1,1-Dimethylcyclopentane	ND		ug/l	2.00	0.240	1
3-Methylhexane	ND		ug/l	2.00	0.320	1
Tertiary-Amyl Methyl Ether	ND		ug/l	2.00	0.246	1
1,3-Dimethylcyclopentane (cis)	ND		ug/l	2.00	0.301	1
3-Ethylpentane	ND		ug/l	2.00	0.289	1
1-Heptene/1,2-DMCP (trans)	ND		ug/l	4.00	0.585	1
Isooctane	ND		ug/l	2.00	0.218	1
trans-3-Heptene	ND		ug/l	2.00	0.311	1
Heptane	ND		ug/l	2.00	0.348	1
trans-2-Heptene	ND		ug/l	2.00	0.256	1
cis-2-Heptene	ND		ug/l	2.00	0.387	1
2,2-Dimethylhexane	ND		ug/l	2.00	0.290	1
Methylcyclohexane	ND		ug/l	2.00	0.270	1
2,5-Dimethylhexane	ND		ug/l	2.00	0.348	1
2,4-Dimethylhexane	ND		ug/l	2.00	0.243	1
Ethylcyclopentane	ND		ug/l	2.00	0.265	1
2,2,3-Trimethylpentane	ND		ug/l	2.00	0.347	1
2,3,4-Trimethylpentane	ND		ug/l	2.00	0.261	1
2,3,3-Trimethylpentane	ND		ug/l	2.00	0.397	1
2,3-Dimethylhexane	ND		ug/l	2.00	0.485	1
2-Methylheptane	ND		ug/l	2.00	0.338	1
4-Methylheptane	ND		ug/l	2.00	0.344	1
3-Methylheptane	ND		ug/l	2.00	0.385	1
3-Ethylhexane	ND		ug/l	2.00	0.358	1
Toluene	ND		ug/l	2.00	0.271	1
2-Methylthiophene	ND		ug/l	2.00	0.170	1
1,4-Dimethylcyclohexane (trans)	ND		ug/l	2.00	0.260	1
3-Methylthiophene	ND		ug/l	2.00	0.234	1
1-Octene	ND		ug/l	5.00	0.307	1
Octane	ND		ug/l	2.00	0.235	1
1,2-Dimethylcyclohexane (trans)	ND		ug/l	2.00	0.294	1

(b) (4)

Project Name: EDWM
Project Number: 60729369
Lab Number: L2504345
Report Date: 02/03/25

SAMPLE RESULTS

Lab ID: L2504345-01
Client ID: D3-TW-0009541-24092-N
Sample Location: HONOLULU, HI

Date Collected: 01/21/25 08:37
Date Received: 01/25/25
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PIANO Volatile Organics by GC/MS - (b) (4)						
1,2-Dibromoethane	ND		ug/l	2.00	0.320	1
cis-2-Octene	ND		ug/l	2.00	0.229	1
Isopropylcyclopentane	ND		ug/l	2.00	0.293	1
1,2-Dimethylcyclohexane (cis)	ND		ug/l	2.00	0.581	1
2,5-Dimethylheptane	ND		ug/l	2.00	0.335	1
3,5-Dimethylheptane	ND		ug/l	2.00	0.282	1
3,3-Dimethylheptane	ND		ug/l	2.00	0.242	1
1,1,4-Trimethylcyclohexane	ND		ug/l	2.00	0.199	1
2,3-Dimethylheptane	ND		ug/l	2.00	0.228	1
3,4-Dimethylheptane	ND		ug/l	2.00	0.340	1
4-Methyloctane	ND		ug/l	2.00	0.334	1
2-Methyloctane	ND		ug/l	2.00	0.512	1
Ethylbenzene	ND		ug/l	2.00	0.216	1
2-Ethylthiophene	ND		ug/l	2.00	0.176	1
3-Methyloctane	ND		ug/l	2.00	0.224	1
3,3-Diethylpentane	ND		ug/l	2.00	0.233	1
p/m-Xylene	ND		ug/l	4.00	0.381	1
1-Nonene	ND		ug/l	5.00	0.270	1
trans-3-Nonene	ND		ug/l	2.00	0.237	1
cis-3-Nonene	ND		ug/l	2.00	0.374	1
Nonane (C9)	ND		ug/l	2.00	0.311	1
Styrene	ND		ug/l	2.00	0.202	1
o-Xylene	ND		ug/l	2.00	0.209	1
Xylene (Total)[1]	ND		ug/l	2.00	0.209	1
2-Nonene	ND		ug/l	5.00	0.254	1
Isopropylcyclohexane	ND		ug/l	2.00	0.212	1
Isopropylbenzene	ND		ug/l	2.00	0.187	1
3,3-Dimethyloctane	ND		ug/l	2.00	0.202	1
n-Propylbenzene	ND		ug/l	2.00	0.177	1
2-Methylnonane	ND		ug/l	2.00	0.283	1
3-Methylnonane	ND		ug/l	2.00	0.279	1
1-Methyl-3-Ethylbenzene	ND		ug/l	2.00	0.316	1
1-Methyl-4-Ethylbenzene	ND		ug/l	2.00	0.282	1
1,3,5-Trimethylbenzene	ND		ug/l	2.00	0.230	1
1-Decene	ND		ug/l	2.00	0.260	1
Isobutylcyclohexane	ND		ug/l	2.00	0.163	1
1-Methyl-2-Ethylbenzene	ND		ug/l	2.00	0.170	1

(b) (4)

Project Name: EDWM
Project Number: 60729369
Lab Number: L2504345
Report Date: 02/03/25

SAMPLE RESULTS

Lab ID: L2504345-01
Client ID: D3-TW-0009541-24092-N
Sample Location: HONOLULU, HI
Date Collected: 01/21/25 08:37
Date Received: 01/25/25
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PIANO Volatile Organics by GC/MS - (b) (4)						
Decane (C10)	ND		ug/l	2.00	0.271	1
tert-Butylbenzene	ND		ug/l	2.00	0.211	1
1,2,4-Trimethylbenzene	ND		ug/l	2.00	0.207	1
Isobutylbenzene	ND		ug/l	2.00	0.270	1
sec-Butylbenzene	ND		ug/l	2.00	0.259	1
1-Methyl-3-Isopropylbenzene	ND		ug/l	2.00	0.258	1
1-Methyl-4-Isopropylbenzene	ND		ug/l	2.00	0.212	1
1,2,3-Trimethylbenzene	ND		ug/l	2.00	0.223	1
1-Methyl-2-Isopropylbenzene	ND		ug/l	2.00	0.217	1
Indane	ND		ug/l	2.00	0.123	1
1,3-Diethylbenzene	ND		ug/l	2.00	0.249	1
1-Methyl-3-N-Propylbenzene	ND		ug/l	2.00	0.202	1
Indene	ND		ug/l	2.00	0.116	1
1-Methyl-4-N-Propylbenzene	ND		ug/l	2.00	0.250	1
n-Butylbenzene	ND		ug/l	2.00	0.197	1
1,2-Dimethyl-4-Ethylbenzene	ND		ug/l	2.00	0.245	1
1,2-Diethylbenzene	ND		ug/l	2.00	0.296	1
1-Methyl-2-N-Propylbenzene	ND		ug/l	2.00	0.249	1
1,4-Dimethyl-2-Ethylbenzene	ND		ug/l	2.00	0.187	1
Undecane	ND		ug/l	2.00	0.222	1
1,3-Dimethyl-4-Ethylbenzene	ND		ug/l	2.00	0.194	1
1,3-Dimethyl-5-Ethylbenzene	ND		ug/l	2.00	0.236	1
1,3-Dimethyl-2-Ethylbenzene	ND		ug/l	2.00	0.149	1
1,2-Dimethyl-3-Ethylbenzene	ND		ug/l	2.00	0.127	1
1,2,4,5-Tetramethylbenzene	ND		ug/l	2.00	0.155	1
1,2,3,5-Tetramethylbenzene	ND		ug/l	2.00	0.152	1
N-Pentylbenzene	ND		ug/l	2.00	0.249	1
1,2,3,4-Tetramethylbenzene	ND		ug/l	2.00	0.214	1
1,3-Dimethyl-5-tert-Butylbenzene	ND		ug/l	2.00	0.285	1
Dodecane (C12)	ND		ug/l	5.00	0.657	1
1,3,5-Triethylbenzene	ND		ug/l	2.00	0.380	1
Naphthalene	ND		ug/l	2.00	0.835	1
Benzothiophene	ND		ug/l	2.00	1.06	1
1,2,4-Triethylbenzene	ND		ug/l	2.00	0.340	1
Hexylbenzene	ND		ug/l	2.00	0.385	1
MMT	ND		ug/l	5.00	1.29	1
Tridecane	ND		ug/l	5.00	1.39	1

(b) (4)

Project Name: EDWM
Project Number: 60729369
Lab Number: L2504345
Report Date: 02/03/25

SAMPLE RESULTS

Lab ID: L2504345-01
Client ID: D3-TW-0009541-24092-N
Sample Location: HONOLULU, HI
Date Collected: 01/21/25 08:37
Date Received: 01/25/25
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PIANO Volatile Organics by GC/MS - (b) (4)						
2-Methylnaphthalene	ND		ug/l	5.00	1.32	1
1-Methylnaphthalene	ND		ug/l	5.00	1.47	1
Tetradecane (C14)	ND		ug/l	5.00	0.612	1
Pentadecane	ND		ug/l	5.00	1.12	1
Tentatively Identified Compounds						
No Tentatively Identified Compounds	ND		ug/l			1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Dibromofluoromethane	107		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	90		70-130

(b) (4)

Project Name: EDWM
Project Number: 60729369

Lab Number: L2504345
Report Date: 02/03/25

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 01/28/25 17:44
Analyst: (b) (6)

Parameter	Result	Qualifier	Units	RL	MDL
PIANO Volatile Organics by GC/MS - (b) (4) for sample(s): 01 Batch: WG2024709-5					
3-Methyl-1-butene	ND		ug/l	2.00	0.297
Isopentane	ND		ug/l	2.00	0.366
1-Pentene	ND		ug/l	2.00	0.365
2-Methyl-1-Butene	ND		ug/l	2.00	0.311
Pentane	ND		ug/l	2.00	0.624
trans-2-Pentene	ND		ug/l	2.00	0.270
Isoprene	ND		ug/l	2.00	0.357
cis-2-Pentene	ND		ug/l	2.00	0.322
Tertiary Butanol	ND		ug/l	25.0	3.24
2,2-Dimethylbutane	ND		ug/l	2.00	0.617
4-Methyl-1-pentene	ND		ug/l	2.00	0.311
Cyclopentane	ND		ug/l	2.00	0.519
2,3-Dimethylbutane	ND		ug/l	2.00	0.826
2-Methylpentane	ND		ug/l	2.00	0.542
Methyl tert butyl ether	ND		ug/l	2.00	0.412
3-Methylpentane	ND		ug/l	2.00	0.317
1-Hexene	ND		ug/l	2.00	0.281
n-Hexane	ND		ug/l	2.00	0.329
Isopropyl Ether	ND		ug/l	2.00	0.242
trans-2-Hexene	ND		ug/l	2.00	0.261
2-Methyl-2-pentene	ND		ug/l	2.00	0.306
cis-2-Hexene	ND		ug/l	2.00	0.271
Ethyl-Tert-Butyl-Ether	ND		ug/l	2.00	0.303
2,2-Dimethylpentane	ND		ug/l	2.00	0.269
Methylcyclopentane	ND		ug/l	2.00	0.268
2,4-Dimethylpentane	ND		ug/l	2.00	0.247
2,2,3-Trimethylbutane	ND		ug/l	2.00	0.270
1,2-Dichloroethane	ND		ug/l	2.00	0.295
3,3-Dimethylpentane	ND		ug/l	2.00	0.372

(b) (4)

Project Name: EDWM
Project Number: 60729369

Lab Number: L2504345
Report Date: 02/03/25

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 01/28/25 17:44
Analyst: (b) (6)

Parameter	Result	Qualifier	Units	RL	MDL
PIANO Volatile Organics by GC/MS - (b) (4) for sample(s): 01 Batch: WG2024709-5					
Cyclohexane	ND		ug/l	2.00	0.247
2-Methylhexane	ND		ug/l	2.00	0.315
Benzene	ND		ug/l	2.00	0.305
2,3-Dimethylpentane	ND		ug/l	2.00	0.265
Thiophene	ND		ug/l	2.00	0.284
1,1-Dimethylcyclopentane	ND		ug/l	2.00	0.240
3-Methylhexane	ND		ug/l	2.00	0.320
Tertiary-Amyl Methyl Ether	ND		ug/l	2.00	0.246
1,3-Dimethylcyclopentane (cis)	ND		ug/l	2.00	0.301
3-Ethylpentane	ND		ug/l	2.00	0.289
1-Heptene/1,2-DMCP (trans)	ND		ug/l	4.00	0.585
Isooctane	ND		ug/l	2.00	0.218
trans-3-Heptene	ND		ug/l	2.00	0.311
Heptane	ND		ug/l	2.00	0.348
trans-2-Heptene	ND		ug/l	2.00	0.256
cis-2-Heptene	ND		ug/l	2.00	0.387
2,2-Dimethylhexane	ND		ug/l	2.00	0.290
Methylcyclohexane	ND		ug/l	2.00	0.270
2,5-Dimethylhexane	ND		ug/l	2.00	0.348
2,4-Dimethylhexane	ND		ug/l	2.00	0.243
Ethylcyclopentane	ND		ug/l	2.00	0.265
2,2,3-Trimethylpentane	ND		ug/l	2.00	0.347
2,3,4-Trimethylpentane	ND		ug/l	2.00	0.261
2,3,3-Trimethylpentane	ND		ug/l	2.00	0.397
2,3-Dimethylhexane	ND		ug/l	2.00	0.485
2-Methylheptane	ND		ug/l	2.00	0.338
4-Methylheptane	ND		ug/l	2.00	0.344
3-Methylheptane	ND		ug/l	2.00	0.385
3-Ethylhexane	ND		ug/l	2.00	0.358

(b) (4)

Project Name: EDWM
Project Number: 60729369

Lab Number: L2504345
Report Date: 02/03/25

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 01/28/25 17:44
Analyst: (b) (6)

Parameter	Result	Qualifier	Units	RL	MDL
PIANO Volatile Organics by GC/MS - (b) (4) for sample(s): 01 Batch: WG2024709-5					
Toluene	ND		ug/l	2.00	0.271
2-Methylthiophene	ND		ug/l	2.00	0.170
1,4-Dimethylcyclohexane (trans)	ND		ug/l	2.00	0.260
3-Methylthiophene	ND		ug/l	2.00	0.234
1-Octene	ND		ug/l	5.00	0.307
Octane	ND		ug/l	2.00	0.235
1,2-Dimethylcyclohexane (trans)	ND		ug/l	2.00	0.294
1,2-Dibromoethane	ND		ug/l	2.00	0.320
cis-2-Octene	ND		ug/l	2.00	0.229
Isopropylcyclopentane	ND		ug/l	2.00	0.293
1,2-Dimethylcyclohexane (cis)	ND		ug/l	2.00	0.581
2,5-Dimethylheptane	ND		ug/l	2.00	0.335
3,5-Dimethylheptane	ND		ug/l	2.00	0.282
3,3-Dimethylheptane	ND		ug/l	2.00	0.242
1,1,4-Trimethylcyclohexane	ND		ug/l	2.00	0.199
2,3-Dimethylheptane	ND		ug/l	2.00	0.228
3,4-Dimethylheptane	ND		ug/l	2.00	0.340
4-Methyloctane	ND		ug/l	2.00	0.334
2-Methyloctane	ND		ug/l	2.00	0.512
Ethylbenzene	ND		ug/l	2.00	0.216
2-Ethylthiophene	ND		ug/l	2.00	0.176
3-Methyloctane	ND		ug/l	2.00	0.224
3,3-Diethylpentane	ND		ug/l	2.00	0.233
p/m-Xylene	ND		ug/l	4.00	0.381
1-Nonene	ND		ug/l	5.00	0.270
trans-3-Nonene	ND		ug/l	2.00	0.237
cis-3-Nonene	ND		ug/l	2.00	0.374
Nonane (C9)	ND		ug/l	2.00	0.311
Styrene	ND		ug/l	2.00	0.202

(b) (4)

Project Name: EDWM
Project Number: 60729369

Lab Number: L2504345
Report Date: 02/03/25

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 01/28/25 17:44
Analyst: (b) (6)

Parameter	Result	Qualifier	Units	RL	MDL
PIANO Volatile Organics by GC/MS - (b) (4) for sample(s): 01 Batch: WG2024709-5					
o-Xylene	ND		ug/l	2.00	0.209
Xylene (Total)[1]	ND		ug/l	2.00	0.209
2-Nonene	ND		ug/l	5.00	0.254
Isopropylcyclohexane	ND		ug/l	2.00	0.212
Isopropylbenzene	ND		ug/l	2.00	0.187
3,3-Dimethyloctane	ND		ug/l	2.00	0.202
n-Propylbenzene	ND		ug/l	2.00	0.177
2-Methylnonane	ND		ug/l	2.00	0.283
3-Methylnonane	ND		ug/l	2.00	0.279
1-Methyl-3-Ethylbenzene	ND		ug/l	2.00	0.316
1-Methyl-4-Ethylbenzene	ND		ug/l	2.00	0.282
1,3,5-Trimethylbenzene	ND		ug/l	2.00	0.230
1-Decene	ND		ug/l	2.00	0.260
Isobutylcyclohexane	ND		ug/l	2.00	0.163
1-Methyl-2-Ethylbenzene	ND		ug/l	2.00	0.170
Decane (C10)	ND		ug/l	2.00	0.271
tert-Butylbenzene	ND		ug/l	2.00	0.211
1,2,4-Trimethylbenzene	ND		ug/l	2.00	0.207
Isobutylbenzene	ND		ug/l	2.00	0.270
sec-Butylbenzene	ND		ug/l	2.00	0.259
1-Methyl-3-Isopropylbenzene	ND		ug/l	2.00	0.258
1-Methyl-4-Isopropylbenzene	ND		ug/l	2.00	0.212
1,2,3-Trimethylbenzene	ND		ug/l	2.00	0.223
1-Methyl-2-Isopropylbenzene	ND		ug/l	2.00	0.217
Indane	ND		ug/l	2.00	0.123
1,3-Diethylbenzene	ND		ug/l	2.00	0.249
1-Methyl-3-N-Propylbenzene	ND		ug/l	2.00	0.202
Indene	ND		ug/l	2.00	0.116
1-Methyl-4-N-Propylbenzene	ND		ug/l	2.00	0.250

(b) (4)

Project Name: EDWM
Project Number: 60729369

Lab Number: L2504345
Report Date: 02/03/25

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 01/28/25 17:44
Analyst: (b) (6)

Parameter	Result	Qualifier	Units	RL	MDL
PIANO Volatile Organics by GC/MS - (b) (4) for sample(s): 01 Batch: WG2024709-5					
n-Butylbenzene	ND		ug/l	2.00	0.197
1,2-Dimethyl-4-Ethylbenzene	ND		ug/l	2.00	0.245
1,2-Diethylbenzene	ND		ug/l	2.00	0.296
1-Methyl-2-N-Propylbenzene	ND		ug/l	2.00	0.249
1,4-Dimethyl-2-Ethylbenzene	ND		ug/l	2.00	0.187
Undecane	ND		ug/l	2.00	0.222
1,3-Dimethyl-4-Ethylbenzene	ND		ug/l	2.00	0.194
1,3-Dimethyl-5-Ethylbenzene	ND		ug/l	2.00	0.236
1,3-Dimethyl-2-Ethylbenzene	ND		ug/l	2.00	0.149
1,2-Dimethyl-3-Ethylbenzene	ND		ug/l	2.00	0.127
1,2,4,5-Tetramethylbenzene	ND		ug/l	2.00	0.155
1,2,3,5-Tetramethylbenzene	ND		ug/l	2.00	0.152
N-Pentylbenzene	ND		ug/l	2.00	0.249
1,2,3,4-Tetramethylbenzene	ND		ug/l	2.00	0.214
1,3-Dimethyl-5-tert-Butylbenzene	ND		ug/l	2.00	0.285
Dodecane (C12)	ND		ug/l	5.00	0.657
1,3,5-Triethylbenzene	ND		ug/l	2.00	0.380
Naphthalene	ND		ug/l	2.00	0.835
Benzothiophene	ND		ug/l	2.00	1.06
1,2,4-Triethylbenzene	ND		ug/l	2.00	0.340
Hexylbenzene	ND		ug/l	2.00	0.385
MMT	ND		ug/l	5.00	1.29
Tridecane	ND		ug/l	5.00	1.39
2-Methylnaphthalene	ND		ug/l	5.00	1.32
1-Methylnaphthalene	ND		ug/l	5.00	1.47
Tetradecane (C14)	ND		ug/l	5.00	0.612
Pentadecane	ND		ug/l	5.00	1.12

(b) (4)

Project Name: EDWM
Project Number: 60729369

Lab Number: L2504345
Report Date: 02/03/25

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 01/28/25 17:44
Analyst: (b) (6)

Parameter	Result	Qualifier	Units	RL	MDL
PIANO Volatile Organics by GC/MS - (b) (4) for sample(s): 01 Batch: WG2024709-5					
Tentatively Identified Compounds					
No Tentatively Identified Compounds	ND		ug/l		

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Dibromofluoromethane	105		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	95		70-130

(b) (4)

Lab Control Sample Analysis
Batch Quality Control

Project Name: EDWM
Project Number: 60729369

Lab Number: L2504345
Report Date: 02/03/25

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
PIANO Volatile Organics by GC/MS - (b) (4) Associated sample(s): 01 Batch: WG2024709-3 WG2024709-4								
1-Pentene	76		80		50-130	5		30
Pentane	80		80		50-130	0		30
Tertiary Butanol	98		98		50-130	0		30
Cyclopentane	79		81		50-130	3		30
2-Methylpentane	87		88		50-130	1		30
Methyl tert butyl ether	84		85		50-130	1		30
3-Methylpentane	92		94		50-130	2		30
1-Hexene	90		94		50-130	4		30
n-Hexane	86		86		50-130	0		30
Isopropyl Ether	94		94		50-130	0		30
Ethyl-Tert-Butyl-Ether	88		88		50-130	0		30
Methylcyclopentane	93		96		50-130	3		30
2,4-Dimethylpentane	90		91		50-130	1		30
Cyclohexane	94		94		50-130	0		30
2-Methylhexane	91		92		50-130	1		30
Benzene	88		90		50-130	2		30
2,3-Dimethylpentane	93		94		50-130	1		30
3-Methylhexane	88		88		50-130	0		30
Tertiary-Amyl Methyl Ether	76		76		50-130	0		30
Isooctane	92		93		50-130	1		30
Heptane	94		95		50-130	1		30
Methylcyclohexane	80		80		50-130	0		30
2-Methylheptane	98		98		50-130	0		30

(b) (4)

Lab Control Sample Analysis
Batch Quality Control

Project Name: EDWM
Project Number: 60729369

Lab Number: L2504345
Report Date: 02/03/25

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
PIANO Volatile Organics by GC/MS - (b) (4) Associated sample(s): 01 Batch: WG2024709-3 WG2024709-4								
3-Methylheptane	96		97		50-130	1		30
Toluene	87		87		50-130	0		30
Octane	94		97		50-130	3		30
Ethylbenzene	84		84		50-130	0		30
p/m-Xylene	90		90		50-130	0		30
Nonane (C9)	81		81		50-130	0		30
o-Xylene	89		90		50-130	1		30
Isopropylbenzene	89		88		50-130	1		30
n-Propylbenzene	92		92		50-130	0		30
1-Methyl-3-Ethylbenzene	88		88		50-130	0		30
1-Methyl-4-Ethylbenzene	94		95		50-130	1		30
1,3,5-Trimethylbenzene	89		89		50-130	0		30
1-Decene	68		66		50-130	3		30
1-Methyl-2-Ethylbenzene	88		90		50-130	2		30
Decane (C10)	90		91		50-130	1		30
1,2,4-Trimethylbenzene	85		86		50-130	1		30
sec-Butylbenzene	92		92		50-130	0		30
1-Methyl-4-N-Propylbenzene	80		81		50-130	1		30
n-Butylbenzene	86		87		50-130	1		30
1,2-Diethylbenzene	87		88		50-130	1		30
Undecane	99		98		50-130	1		30
N-Pentylbenzene	86		88		50-130	2		30
Dodecane (C12)	110		112		50-130	2		30

(b) (4)

Lab Control Sample Analysis
Batch Quality Control

Project Name: EDWM
Project Number: 60729369

Lab Number: L2504345
Report Date: 02/03/25

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
PIANO Volatile Organics by GC/MS - (b) (4) Associated sample(s): 01 Batch: WG2024709-3 WG2024709-4								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Dibromofluoromethane	95		97		70-130
Toluene-d8	97		98		70-130
4-Bromofluorobenzene	104		103		70-130

(b) (4)

SEMIVOLATILES

Project Name: EDWM
Project Number: 60729369
Lab Number: L2504345
Report Date: 02/03/25

SAMPLE RESULTS

Lab ID: L2504345-01
Client ID: D3-TW-0009541-24092-N
Sample Location: HONOLULU, HI

Date Collected: 01/21/25 08:37
Date Received: 01/25/25
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8270E-SIM(M)
Analytical Date: 01/29/25 06:22
Analyst: (b) (6)

Extraction Method: EPA 3510C
Extraction Date: 01/27/25 12:40

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PAHs - (b) (4)						
cis/trans-Decalin	ND		ng/l	4.76	2.58	1
C1-Decalins	ND		ng/l	4.76	2.58	1
C2-Decalins	ND		ng/l	4.76	2.58	1
C3-Decalins	ND		ng/l	4.76	2.58	1
C4-Decalins	ND		ng/l	4.76	2.58	1
Naphthalene	ND		ng/l	9.52	2.61	1
C1-Naphthalenes	ND		ng/l	9.52	2.61	1
C2-Naphthalenes	ND		ng/l	9.52	2.61	1
C3-Naphthalenes	ND		ng/l	9.52	2.61	1
C4-Naphthalenes	ND		ng/l	9.52	2.61	1
2-Methylnaphthalene	ND		ng/l	9.52	6.31	1
1-Methylnaphthalene	ND		ng/l	9.52	4.12	1
Benzothiophene	ND		ng/l	9.52	2.46	1
C1-Benzo(b)thiophenes	ND		ng/l	9.52	2.46	1
C2-Benzo(b)thiophenes	ND		ng/l	9.52	2.46	1
C3-Benzo(b)thiophenes	ND		ng/l	9.52	2.46	1
C4-Benzo(b)thiophenes	ND		ng/l	9.52	2.46	1
Biphenyl	ND		ng/l	9.52	2.03	1
2,6-Dimethylnaphthalene	ND		ng/l	9.52	2.90	1
Dibenzofuran	ND		ng/l	9.52	3.57	1
Acenaphthylene	ND		ng/l	9.52	4.98	1
Acenaphthene	ND		ng/l	9.52	3.48	1
2,3,5-Trimethylnaphthalene	ND		ng/l	9.52	1.83	1
Fluorene	ND		ng/l	9.52	4.05	1
C1-Fluorenes	ND		ng/l	9.52	4.05	1
C2-Fluorenes	ND		ng/l	9.52	4.05	1
C3-Fluorenes	ND		ng/l	9.52	4.05	1
Dibenzothiophene	ND		ng/l	9.52	3.18	1

(b) (4)

Project Name: EDWM
Project Number: 60729369
Lab Number: L2504345
Report Date: 02/03/25

SAMPLE RESULTS

Lab ID: L2504345-01
Client ID: D3-TW-0009541-24092-N
Sample Location: HONOLULU, HI
Date Collected: 01/21/25 08:37
Date Received: 01/25/25
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PAHs - (b) (4)						
4-Methyldibenzothiophene(4MDT)	ND		ng/l	9.52	3.18	1
2/3-Methyldibenzothiophene(2MDT)	ND		ng/l	9.52	3.18	1
1-Methyldibenzothiophene(1MDT)	ND		ng/l	9.52	3.18	1
C1-Dibenzothiophenes BS	ND		ng/l	9.52	3.18	1
C2-Dibenzothiophenes	ND		ng/l	9.52	3.18	1
C3-Dibenzothiophenes	ND		ng/l	9.52	3.18	1
C4-Dibenzothiophenes	ND		ng/l	9.52	3.18	1
Phenanthrene	ND		ng/l	9.52	5.68	1
3-Methylphenanthrene (3MP)	ND		ng/l	9.52	5.68	1
2-Methylphenanthrene (2MP)	ND		ng/l	9.52	5.68	1
2-Methylanthracene (2MA)	ND		ng/l	9.52	5.68	1
9/4-Methylphenanthrene (9MP)	ND		ng/l	9.52	5.68	1
1-Methylphenanthrene (1MP)	ND		ng/l	9.52	5.68	1
C1-Phenanthrenes/Anthracenes	ND		ng/l	9.52	5.68	1
C2-Phenanthrenes/Anthr BS	ND		ng/l	9.52	5.68	1
C3-Phenanthrenes/Anthracenes	ND		ng/l	9.52	5.68	1
C4-Phenanthrenes/Anthracenes	ND		ng/l	9.52	5.68	1
Retene	ND		ng/l	9.52	5.76	1
Anthracene	ND		ng/l	9.52	3.28	1
Carbazole	ND		ng/l	9.52	5.16	1
Fluoranthene	ND		ng/l	9.52	6.37	1
Benzo(b)fluorene	ND		ng/l	9.52	4.43	1
7H-Benzo(c)fluorene	ND		ng/l	9.52	4.43	1
2-Methylpyrene[1]	ND		ng/l	9.52	6.72	1
4-Methylpyrene[1]	ND		ng/l	9.52	6.72	1
1-Methylpyrene[1]	ND		ng/l	9.52	6.72	1
Pyrene	ND		ng/l	9.52	6.72	1
C1-Fluoranthenes/Pyrenes	ND		ng/l	9.52	6.72	1
C2-Fluoranthenes/Pyrenes	ND		ng/l	9.52	6.72	1
C3-Fluoranthenes/Pyrenes	ND		ng/l	9.52	6.72	1
C4-Fluoranthenes/Pyrenes	ND		ng/l	9.52	6.72	1
Naphthobenzothiophenes	ND		ng/l	9.52	4.16	1
C1-Naphthobenzothiophenes	ND		ng/l	9.52	4.16	1
C2-Naphthobenzothiophenes	ND		ng/l	9.52	4.16	1
C3-Naphthobenzothiophenes	ND		ng/l	9.52	4.16	1
C4-Naphthobenzothiophenes	ND		ng/l	9.52	4.16	1
Benz(a)anthracene	ND		ng/l	9.52	5.74	1

(b) (4)

Project Name: EDWM
Project Number: 60729369
Lab Number: L2504345
Report Date: 02/03/25

SAMPLE RESULTS

Lab ID: L2504345-01
Client ID: D3-TW-0009541-24092-N
Sample Location: HONOLULU, HI
Date Collected: 01/21/25 08:37
Date Received: 01/25/25
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PAHs - (b) (4)						
Chrysene/Triphenylene	ND		ng/l	9.52	6.75	1
C1-Chrysenes	ND		ng/l	9.52	6.75	1
C2-Chrysenes BS	ND		ng/l	9.52	6.75	1
C3-Chrysenes	ND		ng/l	9.52	6.75	1
C4-Chrysenes	ND		ng/l	9.52	6.75	1
Benzo(b)fluoranthene	ND		ng/l	9.52	6.90	1
Benzo(j)+(k)fluoranthene	ND		ng/l	9.52	6.15	1
Benzo(a)fluoranthene	ND		ng/l	9.52	6.15	1
Benzo(e)pyrene	ND		ng/l	9.52	6.80	1
Benzo(a)pyrene	ND		ng/l	9.52	7.25	1
Perylene	ND		ng/l	9.52	4.38	1
Indeno(1,2,3-cd)pyrene	ND		ng/l	9.52	9.14	1
Dibenz(a,h)+(a,c)anthracene	ND		ng/l	9.52	6.18	1
Benzo(g,h,i)perylene	ND		ng/l	9.52	6.28	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Naphthalene-d8	78		50-130
Phenanthrene-d10	84		50-130
Benzo(a)pyrene-d12	91		50-130

(b) (4)

Project Name: EDWM
Project Number: 60729369

Lab Number: L2504345
Report Date: 02/03/25

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270E-SIM(M)
Analytical Date: 01/28/25 19:07
Analyst: (b) (6)

Extraction Method: EPA 3510C
Extraction Date: 01/27/25 12:40

Parameter	Result	Qualifier	Units	RL	MDL
PAHs - (b) (4) for sample(s): 01 Batch: WG2023956-1					
cis/trans-Decalin	ND		ng/l	5.00	2.71
C1-Decalins	ND		ng/l	5.00	2.71
C2-Decalins	ND		ng/l	5.00	2.71
C3-Decalins	ND		ng/l	5.00	2.71
C4-Decalins	ND		ng/l	5.00	2.71
Naphthalene	ND		ng/l	10.0	2.74
C1-Naphthalenes	ND		ng/l	10.0	2.74
C2-Naphthalenes	ND		ng/l	10.0	2.74
C3-Naphthalenes	ND		ng/l	10.0	2.74
C4-Naphthalenes	ND		ng/l	10.0	2.74
2-Methylnaphthalene	ND		ng/l	10.0	6.63
1-Methylnaphthalene	ND		ng/l	10.0	4.33
Benzothiophene	ND		ng/l	10.0	2.58
C1-Benzo(b)thiophenes	ND		ng/l	10.0	2.58
C2-Benzo(b)thiophenes	ND		ng/l	10.0	2.58
C3-Benzo(b)thiophenes	ND		ng/l	10.0	2.58
C4-Benzo(b)thiophenes	ND		ng/l	10.0	2.58
Biphenyl	ND		ng/l	10.0	2.13
2,6-Dimethylnaphthalene	ND		ng/l	10.0	3.05
Dibenzofuran	ND		ng/l	10.0	3.75
Acenaphthylene	ND		ng/l	10.0	5.23
Acenaphthene	ND		ng/l	10.0	3.65
2,3,5-Trimethylnaphthalene	ND		ng/l	10.0	1.92
Fluorene	ND		ng/l	10.0	4.25
C1-Fluorenes	ND		ng/l	10.0	4.25
C2-Fluorenes	ND		ng/l	10.0	4.25
C3-Fluorenes	ND		ng/l	10.0	4.25
Dibenzothiophene	ND		ng/l	10.0	3.34
4-Methyldibenzothiophene(4MDT)	ND		ng/l	10.0	3.34

(b) (4)

Project Name: EDWM
Project Number: 60729369

Lab Number: L2504345
Report Date: 02/03/25

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270E-SIM(M)
Analytical Date: 01/28/25 19:07
Analyst: (b) (6)

Extraction Method: EPA 3510C
Extraction Date: 01/27/25 12:40

Parameter	Result	Qualifier	Units	RL	MDL
PAHs - (b) (4) for sample(s): 01 Batch: WG2023956-1					
2/3-Methyldibenzothiophene(2MDT)	ND		ng/l	10.0	3.34
1-Methyldibenzothiophene(1MDT)	ND		ng/l	10.0	3.34
C1-Dibenzothiophenes BS	ND		ng/l	10.0	3.34
C2-Dibenzothiophenes	ND		ng/l	10.0	3.34
C3-Dibenzothiophenes	ND		ng/l	10.0	3.34
C4-Dibenzothiophenes	ND		ng/l	10.0	3.34
Phenanthrene	ND		ng/l	10.0	5.97
3-Methylphenanthrene (3MP)	ND		ng/l	10.0	5.97
2-Methylphenanthrene (2MP)	ND		ng/l	10.0	5.97
2-Methylanthracene (2MA)	ND		ng/l	10.0	5.97
9/4-Methylphenanthrene (9MP)	ND		ng/l	10.0	5.97
1-Methylphenanthrene (1MP)	ND		ng/l	10.0	5.97
C1-Phenanthrenes/Anthracenes	ND		ng/l	10.0	5.97
C2-Phenanthrenes/Anthr BS	ND		ng/l	10.0	5.97
C3-Phenanthrenes/Anthracenes	ND		ng/l	10.0	5.97
C4-Phenanthrenes/Anthracenes	ND		ng/l	10.0	5.97
Retene	ND		ng/l	10.0	6.05
Anthracene	ND		ng/l	10.0	3.44
Carbazole	ND		ng/l	10.0	5.42
Fluoranthene	ND		ng/l	10.0	6.69
Benzo(b)fluorene	ND		ng/l	10.0	4.65
7H-Benzo(c)fluorene	ND		ng/l	10.0	4.65
2-Methylpyrene[1]	ND		ng/l	10.0	7.06
4-Methylpyrene[1]	ND		ng/l	10.0	7.06
1-Methylpyrene[1]	ND		ng/l	10.0	7.06
Pyrene	ND		ng/l	10.0	7.06
C1-Fluoranthenes/Pyrenes	ND		ng/l	10.0	7.06
C2-Fluoranthenes/Pyrenes	ND		ng/l	10.0	7.06
C3-Fluoranthenes/Pyrenes	ND		ng/l	10.0	7.06

(b) (4)

Project Name: EDWM
Project Number: 60729369

Lab Number: L2504345
Report Date: 02/03/25

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270E-SIM(M)
Analytical Date: 01/28/25 19:07
Analyst: (b) (6)

Extraction Method: EPA 3510C
Extraction Date: 01/27/25 12:40

Parameter	Result	Qualifier	Units	RL	MDL
PAHs - (b) (4) for sample(s): 01 Batch: WG2023956-1					
C4-Fluoranthenes/Pyrenes	ND		ng/l	10.0	7.06
Naphthobenzothiophenes	ND		ng/l	10.0	4.37
C1-Naphthobenzothiophenes	ND		ng/l	10.0	4.37
C2-Naphthobenzothiophenes	ND		ng/l	10.0	4.37
C3-Naphthobenzothiophenes	ND		ng/l	10.0	4.37
C4-Naphthobenzothiophenes	ND		ng/l	10.0	4.37
Benz(a)anthracene	ND		ng/l	10.0	6.03
Chrysene/Triphenylene	ND		ng/l	10.0	7.09
C1-Chrysenes	ND		ng/l	10.0	7.09
C2-Chrysenes BS	ND		ng/l	10.0	7.09
C3-Chrysenes	ND		ng/l	10.0	7.09
C4-Chrysenes	ND		ng/l	10.0	7.09
Benzo(b)fluoranthene	ND		ng/l	10.0	7.24
Benzo(j)+(k)fluoranthene	ND		ng/l	10.0	6.46
Benzo(a)fluoranthene	ND		ng/l	10.0	6.46
Benzo(e)pyrene	ND		ng/l	10.0	7.14
Benzo(a)pyrene	ND		ng/l	10.0	7.61
Perylene	ND		ng/l	10.0	4.60
Indeno(1,2,3-cd)pyrene	ND		ng/l	10.0	9.60
Dibenz(a,h)+(a,c)anthracene	ND		ng/l	10.0	6.49
Benzo(g,h,i)perylene	ND		ng/l	10.0	6.60

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Naphthalene-d8	82		50-130
Phenanthrene-d10	87		50-130
Benzo(a)pyrene-d12	93		50-130

(b) (4)

Lab Control Sample Analysis
Batch Quality Control

Project Name: EDWM
Project Number: 60729369

Lab Number: L2504345
Report Date: 02/03/25

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
PAHs - [redacted] Associated sample(s): 01 Batch: WG2023956-2 WG2023956-3								
Naphthalene	96		97		50-130	1		30
2-Methylnaphthalene	92		91		50-130	1		30
Acenaphthylene	92		92		50-130	0		30
Acenaphthene	90		90		50-130	0		30
Fluorene	96		95		50-130	1		30
Phenanthrene	94		92		50-130	2		30
Anthracene	105		105		50-130	0		30
Fluoranthene	90		90		50-130	0		30
Pyrene	96		95		50-130	1		30
Benz(a)anthracene	97		97		50-130	0		30
Chrysene/Triphenylene	93		94		50-130	1		30
Benzo(b)fluoranthene	91		92		50-130	1		30
Benzo(j)+(k)fluoranthene	94		95		50-130	1		30
Benzo(a)pyrene	94		95		50-130	1		30
Indeno(1,2,3-cd)pyrene	95		95		50-130	0		30
Dibenz(a,h)+(a,c)anthracene	95		96		50-130	1		30
Benzo(g,h,i)perylene	92		93		50-130	1		30

[redacted]

Lab Control Sample Analysis
Batch Quality Control

Project Name: EDWM
Project Number: 60729369

Lab Number: L2504345
Report Date: 02/03/25

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
PAHs - (b) (4) Associated sample(s): 01 Batch: WG2023956-2 WG2023956-3								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Naphthalene-d8	80		78		50-130
Phenanthrene-d10	89		87		50-130
Benzo(a)pyrene-d12	92		92		50-130

(b) (4)

PETROLEUM HYDROCARBONS

(b) (4)

Project Name: EDWM
Project Number: 60729369

Lab Number: L2504345
Report Date: 02/03/25

SAMPLE RESULTS

Lab ID: L2504345-01
Client ID: D3-TW-0009541-24092-N
Sample Location: HONOLULU, HI

Date Collected: 01/21/25 08:37
Date Received: 01/25/25
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8015D(M)
Analytical Date: 01/29/25 07:51
Analyst: (b) (6)

Extraction Method: EPA 3510C
Extraction Date: 01/27/25 12:40

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Saturated Hydrocarbons by GC-FID - (b) (4)						
n-Nonane (C9)	ND		mg/l	0.000952	0.000471	1
n-Decane (C10)	ND		mg/l	0.000952	0.000479	1
n-Undecane (C11)	ND		mg/l	0.000952	0.000434	1
n-Dodecane (C12)	ND		mg/l	0.000952	0.000528	1
n-Tridecane (C13)	ND		mg/l	0.00476	0.000433	1
2,6,10-Trimethyldodecane (1380)	ND		mg/l	0.000952	0.000410	1
n-Tetradecane (C14)	ND		mg/l	0.000952	0.000410	1
2,6,10-Trimethyltridecane (1470)	ND		mg/l	0.000952	0.000346	1
n-Pentadecane (C15)	ND		mg/l	0.000952	0.000346	1
n-Hexadecane (C16)	ND		mg/l	0.000952	0.000268	1
Norpristane (1650)	ND		mg/l	0.000952	0.000228	1
n-Heptadecane (C17)	ND		mg/l	0.000952	0.000242	1
Pristane	ND		mg/l	0.000952	0.000228	1
n-Octadecane (C18)	ND		mg/l	0.000952	0.000884	1
Phytane	ND		mg/l	0.000952	0.000174	1
n-Nonadecane (C19)	ND		mg/l	0.000952	0.000210	1
n-Eicosane (C20)	ND		mg/l	0.000952	0.000153	1
n-Heneicosane (C21)	ND		mg/l	0.000952	0.000153	1
n-Docosane (C22)	ND		mg/l	0.000952	0.000162	1
n-Tricosane (C23)	ND		mg/l	0.000952	0.000183	1
n-Tetracosane (C24)	ND		mg/l	0.000952	0.000267	1
n-Pentacosane (C25)	ND		mg/l	0.00476	0.000654	1
n-Hexacosane (C26)	ND		mg/l	0.000952	0.000328	1
n-Heptacosane (C27)	ND		mg/l	0.000952	0.000351	1
n-Octacosane (C28)	ND		mg/l	0.000952	0.000762	1
n-Nonacosane (C29)	ND		mg/l	0.000952	0.000939	1
n-Triacontane (C30)	ND		mg/l	0.000952	0.000194	1
n-Hentriacontane (C31)	ND		mg/l	0.000952	0.000346	1

(b) (4)

Project Name: EDWM
Project Number: 60729369
Lab Number: L2504345
Report Date: 02/03/25

SAMPLE RESULTS

Lab ID: L2504345-01
Client ID: D3-TW-0009541-24092-N
Sample Location: HONOLULU, HI
Date Collected: 01/21/25 08:37
Date Received: 01/25/25
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Saturated Hydrocarbons by GC-FID - (b) (4)						
n-Dotriacontane (C32)	ND		mg/l	0.000952	0.000193	1
n-Tritriacontane (C33)	ND		mg/l	0.000952	0.000198	1
n-Tetratriacontane (C34)	ND		mg/l	0.000952	0.000187	1
n-Pentatriacontane (C35)	ND		mg/l	0.000952	0.000204	1
n-Hexatriacontane (C36)	ND		mg/l	0.000952	0.000210	1
n-Heptatriacontane (C37)	ND		mg/l	0.000952	0.000223	1
n-Octatriacontane (C38)	ND		mg/l	0.000952	0.000391	1
n-Nonatriacontane (C39)	ND		mg/l	0.000952	0.000202	1
n-Tetracontane (C40)	ND		mg/l	0.000952	0.000202	1
Total Petroleum Hydrocarbons (C9-C44)	ND		mg/l	0.0314	0.0264	1
Total Saturated Hydrocarbons	ND		mg/l	0.000952	0.000153	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
ortho-terphenyl	83		50-130
d50-Tetracosane	86		50-130

(b) (4)

Project Name: EDWM
Project Number: 60729369

Lab Number: L2504345
Report Date: 02/03/25

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8015D(M)
Analytical Date: 01/28/25 19:15
Analyst: (b) (6)

Extraction Method: EPA 3510C
Extraction Date: 01/27/25 12:40

Parameter	Result	Qualifier	Units	RL	MDL
Saturated Hydrocarbons by GC-FID - (b) (4) for sample(s): 01 Batch: WG2023956-1					
n-Nonane (C9)	ND		mg/l	0.00100	0.000495
n-Decane (C10)	ND		mg/l	0.00100	0.000503
n-Undecane (C11)	ND		mg/l	0.00100	0.000456
n-Dodecane (C12)	ND		mg/l	0.00100	0.000555
n-Tridecane (C13)	ND		mg/l	0.00500	0.000455
2,6,10-Trimethyldodecane (1380)	ND		mg/l	0.00100	0.000430
n-Tetradecane (C14)	ND		mg/l	0.00100	0.000430
2,6,10-Trimethyltridecane (1470)	ND		mg/l	0.00100	0.000363
n-Pentadecane (C15)	ND		mg/l	0.00100	0.000363
n-Hexadecane (C16)	ND		mg/l	0.00100	0.000282
Norpristane (1650)	ND		mg/l	0.00100	0.000240
n-Heptadecane (C17)	ND		mg/l	0.00100	0.000254
Pristane	ND		mg/l	0.00100	0.000240
n-Octadecane (C18)	ND		mg/l	0.00100	0.000928
Phytane	ND		mg/l	0.00100	0.000183
n-Nonadecane (C19)	ND		mg/l	0.00100	0.000221
n-Eicosane (C20)	0.000162	J	mg/l	0.00100	0.000161
n-Heneicosane (C21)	ND		mg/l	0.00100	0.000161
n-Docosane (C22)	ND		mg/l	0.00100	0.000170
n-Tricosane (C23)	ND		mg/l	0.00100	0.000192
n-Tetracosane (C24)	ND		mg/l	0.00100	0.000280
n-Pentacosane (C25)	ND		mg/l	0.00500	0.000687
n-Hexacosane (C26)	ND		mg/l	0.00100	0.000345
n-Heptacosane (C27)	ND		mg/l	0.00100	0.000369
n-Octacosane (C28)	ND		mg/l	0.00100	0.000800
n-Nonacosane (C29)	0.000986	JC	mg/l	0.00100	0.000986
n-Triacontane (C30)	ND		mg/l	0.00100	0.000204
n-Hentriacontane (C31)	ND		mg/l	0.00100	0.000363
n-Dotriacontane (C32)	ND		mg/l	0.00100	0.000203

(b) (4)

Project Name: EDWM
Project Number: 60729369

Lab Number: L2504345
Report Date: 02/03/25

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8015D(M)
Analytical Date: 01/28/25 19:15
Analyst: (b) (6)

Extraction Method: EPA 3510C
Extraction Date: 01/27/25 12:40

Parameter	Result	Qualifier	Units	RL	MDL
Saturated Hydrocarbons by GC-FID - (b) (4) for sample(s): 01 Batch: WG2023956-1					
n-Tritriacontane (C33)	ND		mg/l	0.00100	0.000208
n-Tetratriacontane (C34)	ND		mg/l	0.00100	0.000196
n-Pentatriacontane (C35)	ND		mg/l	0.00100	0.000214
n-Hexatriacontane (C36)	ND		mg/l	0.00100	0.000220
n-Heptatriacontane (C37)	ND		mg/l	0.00100	0.000234
n-Octatriacontane (C38)	ND		mg/l	0.00100	0.000411
n-Nonatriacontane (C39)	ND		mg/l	0.00100	0.000212
n-Tetracontane (C40)	ND		mg/l	0.00100	0.000212
Total Petroleum Hydrocarbons (C9-C44)	ND		mg/l	0.0330	0.0277
Total Saturated Hydrocarbons	0.00115	J	mg/l	0.00100	0.000161

Surrogate	%Recovery	Qualifier	Acceptance Criteria
ortho-terphenyl	84		50-130
d50-Tetracosane	86		50-130

(b) (4)

Lab Control Sample Analysis
Batch Quality Control

Project Name: EDWM
Project Number: 60729369

Lab Number: L2504345
Report Date: 02/03/25

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Saturated Hydrocarbons by GC-FID - (b) (4) Associated sample(s): 01 Batch: WG2023956-2 WG2023956-3								
Nonane (C9)	61		71		50-130	15		30
n-Decane (C10)	67		80		50-130	18		30
n-Dodecane (C12)	76		85		50-130	11		30
n-Tetradecane (C14)	82		85		50-130	4		30
n-Hexadecane (C16)	88		89		50-130	1		30
n-Octadecane (C18)	91		92		50-130	1		30
n-Nonadecane (C19)	93		94		50-130	1		30
n-Eicosane (C20)	90		92		50-130	2		30
n-Docosane (C22)	87		88		50-130	1		30
n-Tetracosane (C24)	93		94		50-130	1		30
n-Hexacosane (C26)	87		88		50-130	1		30
n-Octacosane (C28)	88		88		50-130	0		30
n-Triacontane (C30)	87		88		50-130	1		30
n-Hexatriacontane (C36)	76		74		50-130	3		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
ortho-terphenyl	81		81		50-130
d50-Tetracosane	86		87		50-130

(b) (4)

Project Name: EDWM
Project Number: 60729369

Lab Number: L2504345
Report Date: 02/03/25

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Present/Intact

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2504345-01A	Vial Ascorbic Acid/HCl preserved	A	NA		2.4	Y	Present/Intact		A2-PIANO8260(14)
L2504345-01B	Vial Ascorbic Acid/HCl preserved	A	NA		2.4	Y	Present/Intact		A2-PIANO8260(14)
L2504345-01C	Vial Ascorbic Acid/HCl preserved	A	NA		2.4	Y	Present/Intact		A2-PIANO8260(14)
L2504345-01D	Amber 1L Na2S2O3	A	7	7	2.4	Y	Present/Intact		A2-SHC(7),A2-ALKPAH(7)
L2504345-01E	Amber 1L Na2S2O3	A	7	7	2.4	Y	Present/Intact		A2-SHC(7),A2-ALKPAH(7)

*Values in parentheses indicate holding time in days

(b) (4)

Project Name:	EDWM	**Lab Number:**	L2504345
Project Number:	60729369	**Report Date:**	02/03/25

GLOSSARY

Acronyms

DL - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LOD - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

LOQ - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

NR - No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

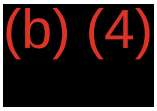
STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



Project Name:	EDWM	**Lab Number:**	L2504345
Project Number:	60729369	**Report Date:**	02/03/25

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers

(b) (4)

Project Name:	EDWM	**Lab Number:**	L2504345
Project Number:	60729369	**Report Date:**	02/03/25

Data Qualifiers

Identified Compounds (TICs). For calculated parameters, this represents that one or more values used in the calculation were estimated.

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name: EDWM
Project Number: 60729369

Lab Number: L2504345
Report Date: 02/03/25

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.

LIMITATION OF LIABILITIES

(b) (4) performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of (b) (4) shall be to re-perform the work at it's own expense. In no event shall (b) (4) be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by (b) (4).

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

(b) (4)

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

(b) (4)
EPA 624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625.1: alpha-Terpineol
EPA 8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol, Azobenzene; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

(b) (4)
SM 2540D: TSS.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
MADEP-APH.
Nonpotable Water: EPA RSK-175 Dissolved Gases
Biological Tissue Matrix: EPA 3050B

(b) (4)
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Nonpotable Water: EPA RSK-175 Dissolved Gases

The following test method is not included in our New Jersey Secondary NELAP Scope of Accreditation:

(b) (4)
Determination of Selected Perfluorinated Alkyl Substances by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry Isotope Dilution (via Alpha SOP 23528)

The following analytes are included in our Massachusetts DEP Scope of Accreditation

(b) (4)

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 524.2: THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N**, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables).
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, EPA 1600, EPA 1603, SM9222D.**

(b) (4)

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb**,** As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

Certification IDs:

(b) (4)
CT PH-0826, IL 200077, IN C-MA-03, KY JY98045, ME MA00086, MD 348, MA M-MA086, NH 2064, NJ MA935, NY 11148, NC (DW) 25700, NC (NPW/SCM) 666, OR MA-1316, PA 68-03671, RI LAO00065, TX T104704476, VT VT-0935, VA 460195

(b) (4)
CT PH-0825, ANAB/DoD L2474, IL 200081, IN C-MA-04, KY KY98046, LA 3090, ME MA00030, MI 9110, MN 025-999-495, NH 2062, NJ MA015, NY 11627, NC (NPW/SCM) 685, OR MA-0262, PA 68-02089, RI LAO00299, TX T-104704419, VT VT-0015, VA 460194, WA C954

(b) (4)
ANAB/DoD L2474, ME MA01156, MN 025-999-498, NH 2249, NJ MA025, NY 12191, OR 4203, TX T104704583, VA 460311, WA C1104.

For a complete listing of analytes and methods, please contact your Project Manager.

L2504345

Lab Reid 1/25/25

[redacted]

Page 1 of 1

EDWM D3 Zone Residential Sampling

CHAIN OF CUSTODY

COC ID 250121-[redacted]-07

[redacted] Job # DA70011

Client/Reporting Information		Billing Information (If different from reporting)		Project Information	
Company:	AECOM	Company:		PWSID or Project#:	60729369
Street:	1001 Bishop St. Suite 1600	Street:		System Name:	Extended Drinking Water Monitoring
City:	Honolulu State: HI ZIP: 96813	City:	State: ZIP:	System Address:	
Contact:	[redacted] Phone: [redacted]	Attention:		City: Honolulu	State: HI ZIP: 96813
Email:	[redacted]	Client PO #:		Contact Person:	[redacted]
Sampler:	[redacted] Team: E Team	[redacted] Quote/Bottle Order #:		Tel: [redacted]	Email [redacted]

Turn Around Time (Business days)

- Standard 10 Business Days
- 5 Business Days RUSH
- 3 Business Days RUSH
- 2 Business Days RUSH
- 1 Business Day EMERGENCY

State Form Information

Compliance Samples Yes

Submit Results to EDMS Portal Yes

04345

Drinking Water Analyses (check analysis)

	Sample Location or ID	Date	Time	No. of Containers	VOC (including TTHMs) 524.2	SOC 525.2	TOC 5310B	TPH-d/o 8015 (microextraction quench)	TPH-g 8260	Metals 200.8 (Cu,Pb only) & Mercury 245.1	Total Alkalinity SM 2320B	Anions 300.1	Anions 300.0	2-(2-Methoxyethoxy)- Ethanol 8270SIM	Ethylene Dibromide 504.1	Silica 200.7	HOLD ANALYSIS - 8270 SIM Parent & Alkylated PA	HOLD ANALYSIS - 8015D Sat Hydrocarbons	HOLD ANALYSIS - 8260D PIANO VOCs		Lab Use Only
				CT	A	B	C	F	A	G	I	D	J	H	K	I	L	L	A		01
-01	D3-TW-0009541-24092-N	1/21/25	0837	14	3	2	1	3	3	1	1	0	0	0	0	0	0	0	0		
				19	LW 1/21/2025												1	1	3	LW 1/21/2025	

Comments

Container Types (CT):

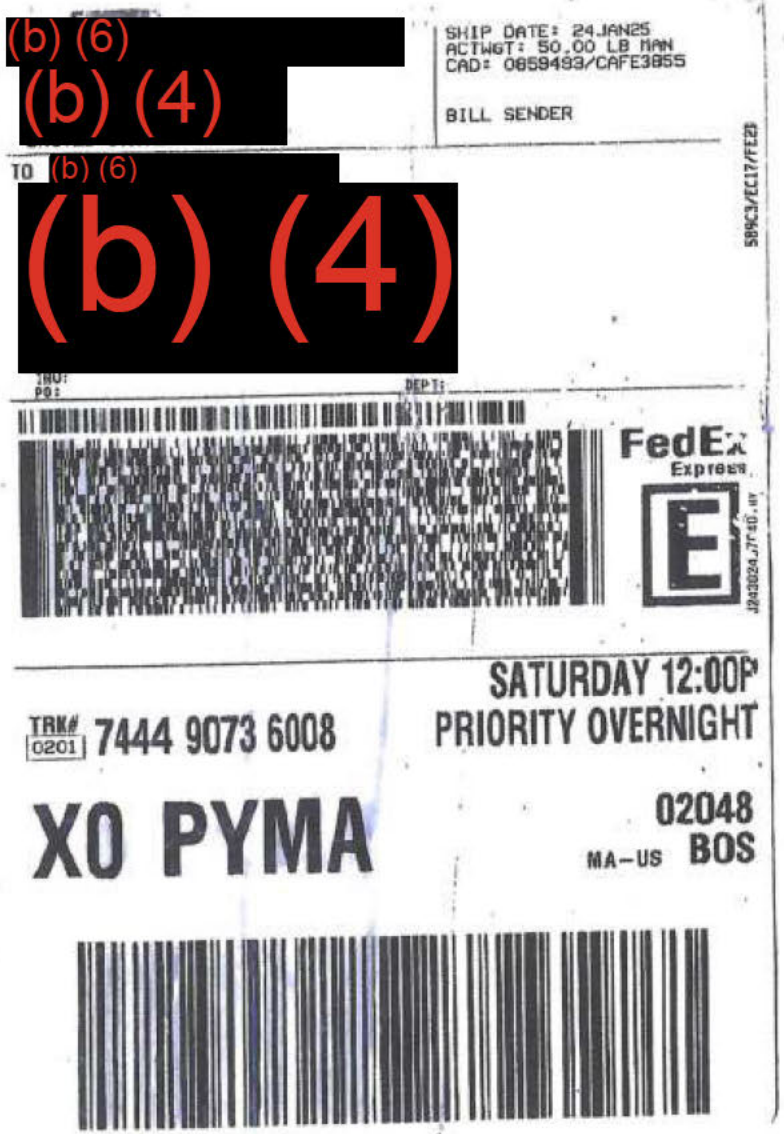
- A 40 ml VOA Ascorbic Acid + HCl
- B 1 L amber NaSulfite + HCl
- C 250 ml amber Sulfuric Acid
- D 125 ml amber poly EDA
- E 40 ml VOA HCl
- F 60 ml VOA Sodium Thiosulfate
- G 250 ml poly Nitric Acid
- H 60 ml VOA Unpreserved
- I 250 mL unpreserved
- J 250 mL amber unpreserved
- K 40 mL Sodium Thiosulfate
- L 1L amber Sodium Thiosulfate

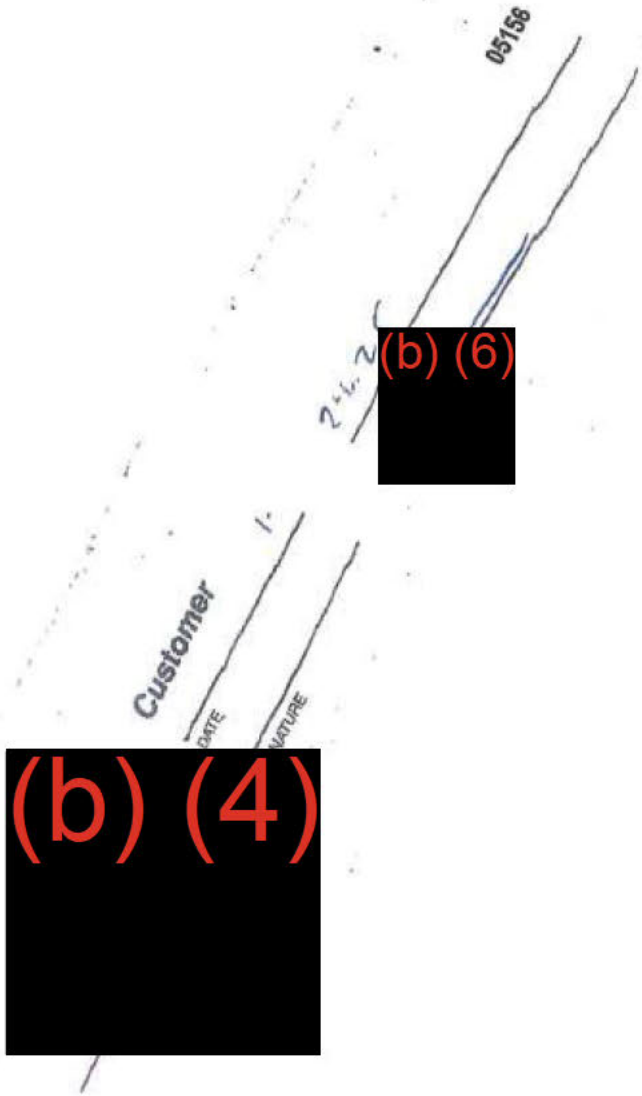
Special Instructions:

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler: 1	[redacted]	Date/Time: 1/21/25 1018	Received By: [redacted] 101	Date/Time: 1018 1/21/25	Relinquished By: 2	[redacted]	Date/Time: 1441 1/21/25
Received By: 2	[redacted]	Date/Time: 1-22-25 13[redacted]	[redacted]	Date/Time: 1/24/25 1200	Received By: 3		Date/Time:
Custody Seal # Intact Not Intact		Preserved where applicable:	Cooler Temp. (°C): 3.4	Therm. ID: [illegible]	On Ice	http://www[redacted] terms and conditions	

Rec! Fedex Rel: Fedex Rec: [redacted] 1/25/25 1209


(b) (6)
(b) (4)
SHIP DATE: 24JAN25
ACTWGT: 50.00 LB MAN
CAD: 0859493/CAFE3855
BILL SENDER
TO (b) (6)
(b) (4)
FedEx
Express
SATURDAY 12:00P
PRIORITY OVERNIGHT
TRK# 0201 7444 9073 6008
XO PYMA
02048
MA-US BOS


05156
(b) (6)
Customer
(b) (4)

Attachment 3: Glossary of Terms

Glossary of Terms

Alkanes – A series of compounds that contain only carbon and hydrogen atoms with single covalent bonds. These are also known as saturated hydrocarbons.

Calibration Curve – A plot of response vs concentration that is used in calculating the concentration in an unknown sample.

Calibration Standards – A mixture of compounds of known concentrations spanning a range that are analyzed to create a calibration curve.

Carbon Number – The number of carbon atoms contained in a compound. For example, a C10 compound contains 10 carbon atoms.

Chromatogram – A plot of retention time versus detector signal intensity. Detector signal intensity is proportional to concentration.

Diesel Range Organics (DRO) – The DRO area is defined for the JBPHH LTM and EDWM programs as the total area of all peaks that come out (elute) between the observed retention times of C10 (decane, the 10 carbon, straight chain alkane) and the retention time of C24 (tetracosane, the 24 carbon, straight chain alkane). Different carbon ranges may be defined for other programs.

Elute – To pass through the chromatographic column to the detector.

Elution time – The time it takes a particular chemical to reach the detector after injection onto a chromatographic column. Used interchangeably with the term retention time in gas chromatography.

Flame Ionization Detector (FID) – A non-specific detector frequently used in conjunction with gas chromatography. It has good sensitivity and is a universal detector for organic compounds. However, since all organic compounds will give a response, it is not very selective and co-eluting components in a sample will interfere with the analysis.

Gas Chromatography (GC) – An analytical technique used to separate and detect the chemical components of a sample mixture to determine their presence or absence and/or quantities.

Gas Chromatography/Mass Spectrometry (GC/MS) – An analytical method that combines the features of gas-chromatography and mass spectrometry to identify different substances within a test sample.

Gasoline Range Organics (GRO) – The GRO area is defined for the Joint Base Pearl Harbor-Hickam (JBPHH) Long-Term Monitoring (LTM) and Extended Drinking Water Monitoring (EDWM) programs as the total area of all peaks that come out (elute) between the observed retention times of C5 and C12 n-alkanes. Different carbon ranges may be defined for other programs.

Hydrocarbon – An organic chemical compound composed solely of hydrogen and carbon atoms.

Internal Standard – A compound of known concentration that is added to standards, samples, and blanks before analysis. It is used to adjust for matrix effects and/or variability in instrument response.

Jet Propellant 5 (JP-5) – A kerosene type fuel with a high flashpoint and a narrow distillation range defined by the military specification in MIL-DTL-5624W. Greater than 99% of the integrated hydrocarbon mass elutes between the retention times of C9 and C16 n-alkanes.

Mass Spectrometry (MS) – An analytical technique that is used to measure the mass-to-charge ratio of ions. The results are presented as a mass spectrum, a plot of intensity as a function of the mass-to-charge ratio. These spectra are used to determine the elemental or isotopic signature of a sample, the masses of particles and of molecules, and to elucidate the chemical identity or structure of molecules and other chemical compounds.

Mass Spectral Profile – A technique used to analyze the composition of chemical substances by measuring the mass-to-charge ratio (m/z) of ions. This profile is used to identify individual components within a sample by displaying their unique mass spectra.

n-Alkanes – Alkanes in which all carbon atoms are bonded to each other in a linear pattern with a single covalent bond.

Oil Range Organics (ORO) – The ORO area is defined for the JBPHH LTM and EDWM programs as the total area of peaks that elute between the observed retention times of C24 and C40 n-alkanes. Different carbon ranges may be defined for other programs.

Petrogenic – Refers to a substance, typically a hydrocarbon, derived from fossil fuels like petroleum, coal, and natural gas.

PIANO – An acronym for n-Paraffins (P), Isoparaffins (I), Aromatics (A), Naphthenes (N) and Olefins (O), A PIANO analysis is a laboratory procedure using gas chromatography coupled with mass spectrometry (GC/MS) for the identification and measurement of light-end refined products such as gasoline or jet fuel with boiling points up to 250 °C.

Polycyclic Aromatic Hydrocarbon (PAH) – A hydrocarbon composed of multiple aromatic (benzene-like) rings fused together. These compounds are formed primarily through the incomplete combustion of organic materials such as coal, oil, gas, wood, or other carbon-containing substances. They can be water soluble and fat soluble and are stable compounds that can persist in the environment.

Pyrogenic – Refers to a substance created by combustion of fossil fuels or organic matter.

Reporting Limit (RL) – The lowest concentration of a compound that can be accurately reported in a sample. The lowest standard in the calibration curve is set at or below this level.

Retention Time (RT) – The time it takes for a compound to pass through a column and be detected after a sample is injected. Used interchangeably with the term elution time in gas chromatography.

RT Marker – A standard containing n-alkanes with different numbers of carbon atoms and are analyzed with each run for the purpose of determining the beginning and end of carbon ranges of interest.

Standard Operating Procedure (SOP) – A list of prescribed steps that outlines how to perform a task.

Surrogate – A compound similar to the target compounds being analyzed that is added to the sample prior to preparation and analysis at a known concentration. Used to evaluate extraction efficiency and matrix interference on a sample specific basis.

Target Compound – A compound included in calibration standards and may be quantitatively evaluated.

Tentatively Identified Compound (TIC) – A compound that is detected in a sample but was not included in the instrument calibration standards. Its identity can often be determined by comparing its mass spectrum with those in a library.

Total Petroleum Hydrocarbon Analysis by SW-846 Method 8015 – An analytical method that uses gas chromatography to separate chemical compounds and a flame ionization detector to measure the signal. Quantitation is performed by summing the entire area between specified n-alkane retention times.

Total Petroleum Hydrocarbons (TPH) – The sum of all petroleum hydrocarbons detected in a sample.

AECOM
1001 Bishop Street
Suite 1600
Honolulu, HI 96813
aecom.com

March 26, 2025

CDR Benjamin Dunn, P.E.
NAVFAC Hawaii
400 Marshall Road
JBPHH HI 96860-3139

Subject: **Joint Base Pearl Harbor-Hickam Drinking Water Benzo(a)pyrene Detection Investigation Zone D4, Hydrant 1941**

Attention CDR Dunn:

On Friday, January 17, 2025, AECOM Technical Services, Inc. (AECOM) was notified of a benzo(a)pyrene detection of 0.028 micrograms per liter (µg/L) in sample D4-DL-0017801-25001-3-N, collected from Hydrant 1941 in Zone D4, on January 14, 2025. The sample was analyzed at (b) (4) in (b) (4) (b) (4), via gas chromatography-mass spectrometry using United States Environmental Protection Agency (EPA) Method 525.2 and reported in sample delivery group DA69896. This result is above the laboratory's reporting limit (RL) of 0.020 µg/L. It is noted that this sample is the field duplicate of sample D4-DL-0017801-25001-N and benzo(a)pyrene was not detected in the native sample.

AECOM launched an investigation to determine if the reported detection is likely to be related to a fuel-related petrogenic source, particularly the November 2021 release of Jet Propellant 5 (JP-5), and if not, to assign a probable reason for the detection. **Based on multiple lines of evidence, AECOM concludes that this benzo(a)pyrene detection is not attributable to a petrogenic source and is unrelated to JP-5. Furthermore, it is likely that the benzo(a)pyrene found is due to minor contamination in the laboratory, which is not unusual at very low concentrations. AECOM concludes that benzo(a)pyrene was not present in the field sample.**

This conclusion was developed after reviewing multiple lines of evidence including:

- Sample chromatograms
- Mass spectral profile
- Field and laboratory quality control data
- Results of supplemental analyses

Benzo(a)pyrene is a polycyclic aromatic hydrocarbon (PAH) that was designated in the revised Extended Drinking Water Monitoring (EDWM) Plan (October 2024) as a compound that is potentially associated with petroleum compounds and therefore must be evaluated when detected above the RL.

Supplementary Analyses

In addition to ensuring that the laboratory data achieved low method detection limits and met the data quality objectives (DQOs) of EDWM, additional voluntary forensic analyses were performed on the sample. To further evaluate benzo(a)pyrene, additional sample volume was sent to (b) (4) (b) (4) (formerly known as (b) (4)) to measure the amount of petroleum hydrocarbons and other potential indicators using specific forensic methods known as Tier 2 analyses:

- SW-846 8260 D – Paraffins-Isoparaffins-Aromatics-Naphthenes-Olefins (PIANO)
- SW-846 8270E-SIM – PAHs and Alkylated-PAHs
- SW-846 8015D – Saturated Hydrocarbons (SHCs)

These methods provide more detailed information than is possible with the original sample analytical methods covered under the EDWM Program. Specifically, when evaluating total petroleum hydrocarbon detections, the PIANO and SHC methods can identify and quantitate individual hydrocarbon (with RLs of approximately 1 µg/L) concentrations rather than reporting one result for an entire carbon range (with an RL of 80 µg/L). An extended list of PAHs and their alkylated derivatives can be analyzed using the PAHs and Alkylated-PAHs method, all at very low RLs, providing additional information that is key to determining the potential source of any detected analyte. Furthermore, analyzing the same sample by different methods at different laboratories can help confirm whether an analyte was present in the sample or may have been introduced at the time of sampling or in the laboratory. These additional analyses exceed industry standards and go beyond meeting the DQOs of EDWM.

AECOM immediately directed the laboratory to send additional sample volume of both D4-DL-0017801-25001-N, the parent sample that did not have a benzo(a)pyrene detection, and D4-DL-0017801-25001-3-N, the duplicate sample that had a benzo(a)pyrene detection, to (b) (4) for Tier 2 analyses. **There were no detections of benzo(a)pyrene or other PAHs in either of these samples.** Furthermore, there were no detections of any kind in the Tier 2 analyses other than several low-level (< 1 µg/L) detections of miscellaneous alkanes that were also present in the method blank and are of no consequence.

Conclusion

After examining multiple lines of evidence, AECOM concludes that the water in Hydrant 1941 does not contain benzo(a)pyrene nor any other petroleum compounds. The original detection of benzo(a)pyrene is most likely due to a laboratory artifact. AECOM is working with the laboratory to identify the mechanism by which the contaminant may have been introduced to the sample and will continue to do so. No additional action is currently recommended.

A detailed discussion of the investigation into this result is provided in Attachment 1. The laboratory report from (b) (4) is provided in Attachment 2. Attachment 3 provides a glossary of terms used in the investigation.

Questions regarding this letter should be addressed to (b) (6) at a(b) (6).

Very respectfully,

(b) (6)
(b) (6)
Senior Project Chemist
(b) (6)

(b) (6)
(b) (6)
CLEAN Program Manager
(b) (6)

cc: (b) (6)

Attachments

Attachment 1: Technical Discussion of Sample D4-DL-0017801-25001-3-N

Attachment 2: (b) (6) Laboratory Report L2503010

Attachment 3: Glossary of Terms

Attachment 1: Technical Discussion of Sample D4-DL-0017801-25001-3-N

The chromatogram and mass spectrum for D4-DL-0017801-25001-3-N were reviewed to verify that benzo(a)pyrene was correctly identified. The retention time and ion ratios met all criteria indicating that the peak was correctly identified as benzo(a)pyrene. The mass spectrum is presented as Figure 1.

All associated field and laboratory quality control (QC) data were reviewed to look for evidence of laboratory contamination or other method performance issues that may have led to a false positive result. Items reviewed included:

- Field reagent blank results
- Field duplicate results
- Method blank results
- Blank spike recoveries
- Surrogate standard recoveries
- Internal standard recoveries
- Initial calibration (ICAL) curve
- Initial calibration verification (ICV)
- Continuing calibration verification (CCV)

Benzo(a)pyrene was not detected above the detection limit (DL) in either the field reagent blank or method blank. It is particularly notable that benzo(a)pyrene was not detected in the field duplicate sample. Associated results in the blank spike, internal standards, ICAL, ICV, and CCV were within acceptance limits. Recoveries for one surrogate standard (triphenyl phosphate) exceeded the upper acceptance limit in all field and QC samples. This is a minor nonconformance and does not impact the usability of the data.

There is nothing in the (b) (4) data to suggest that either the identity or concentration were reported incorrectly in this sample, however, it is extremely unlikely that benzo(a)pyrene was present in this sample due to a petrogenic source. The preliminary evidence supporting this assertion includes:

- Non-detect results in both the diesel range organics (DRO) and oil range organics (ORO) of the SW-846 8015D total petroleum hydrocarbon (TPH) analysis
- Non-detect results for all other polycyclic aromatic hydrocarbons (PAHs)
- Non-detect results for all PAHs in the field duplicate sample

Benzo(a)pyrene is classified as a PAH, and PAHs from petrogenic sources are known to be less abundant relative to alkane hydrocarbons (alkane hydrocarbons would be detected in the TPH ranges.) Benzo(a)pyrene is almost never the most abundant PAH in any pyrogenic or petrogenic PAH pattern, so the ratios of the other parent (and alkylated) PAHs can provide valuable clues about the PAH source(s). A pyrogenic PAH pattern is almost always dominated by fluoranthene and pyrene, neither of which were detected. If benzo(a)pyrene was present in the sample due to a petroleum source, additional PAHs would also be expected to be present.

The ability to identify and quantitate individual DRO and ORO constituents is limited in the standard 8015D method used by (b) (4), and its detection limits for the other PAHs measured via method 525.2 are an order of magnitude greater than the detection limit for benzo(a)pyrene. Therefore, to provide further confidence in the assertions above related to the absence of other petroleum indicators, back-up containers of the sample and its duplicate were sent to (b) (4) (formerly known as (b) (4) (b) (4)) for a quantitative evaluation of petroleum hydrocarbons and potential indicators using the following forensic analytical methods (referred to as Tier 2 analyses):

- SW-846 8260 D - Paraffins-Isoparaffins-Aromatics-Naphthenes-Olefins (PIANO)
- SW-846 8270E-SIM – PAHs and Alkylated-PAHs (ALKPAH)
- SW-846 8015D – Saturated Hydrocarbons (SHCs)

All PAH results were non-detect, confirming the lack of evidence for a petrogenic source of the original benzo(a) pyrene detection.

There were minor detections of selected alkanes in each of the analyses. Isopentane was reported below the reporting limit (RL) in the PIANO analysis at an estimated concentration of 0.525 µg/L, only slightly above the DL of 0.366 µg/L. The remaining detections were also below the reporting limit and were associated with similar concentrations in the method blanks. The concentration levels are consistent with laboratory backgrounds and did not exhibit a fuel pattern. The specific results are tabulated below with the method blank concentrations shown for comparison.

Analysis	Compound	Result (µg/L)	DL (µg/L)	RL (µg/L)	Blank Result (µg/L)	Comment
ALKPAH	C1-Decalins	0.00301 J	0.00264	0.00488	0.00389 J	Negated during validation.
SHC	n-Eicosane (C20)	0.157 J	0.157	0.976	0.166 J	Negated during validation.
SHC	n-Hexacosane (C26)	0.390 J	0.336	0.976	0.237	Sample results are <2x blank results and should not be considered as true detects, but since blank results were less than the DL, they were reported as non-detect (ND) and are not used to validate data.
SHC	n-Heptacosane (C27)	0.425 J	0.360	0.976	0.299	
SHC	n-Triacontane (C30)	0.225 J	0.199	0.976	0.136	

Since the (b) (4) data show no evidence of the presence of PAHs, the most likely source of the benzo(a)pyrene is unidentified sporadic low-level contamination in the (b) (4) [redacted]. There is no evidence of systematic contamination in the laboratory but given the presence of all target compounds in calibration standards and spiking solutions, the potential for incidental contamination exists, particularly at low levels. The detected concentration was less than twice the reporting limit (RL) of 0.02 µg/L, which is also the concentration of the lowest calibration standard.

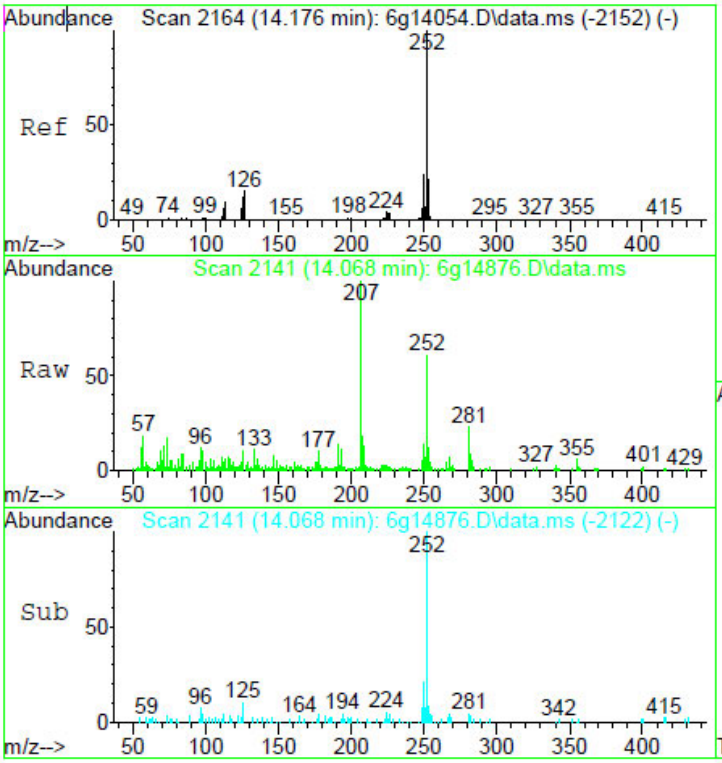
Sporadic low-level hits of benzo(a)pyrene have been detected in field blanks, method blanks, and samples throughout the extended drinking water monitoring (EDWM) program. The following table summarizes benzo(a)pyrene detections for samples collected from September through mid-December 2024.

Sample Type	Number	# ND	%ND	# <RL	% <RL	# >RL	% >RL
Field Sample	1667	1634	98%	25	1.5%	8	0.5%
Field Reagent Blank	269	260	97%	7	2.6%	2	0.7%
Method Blank	120	118	98%	2	1.7%	0	0.0%

The fact that frequency of detections in field reagent blanks is the same or slightly greater than that in the field samples further supports the conclusion that benzo(a)pyrene was not present in the sample but was introduced in the laboratory.

It is notable that benzo(a)pyrene was not detected in the field duplicate collected at the same time. Furthermore, since CDCs were sampled quarterly during the Long-Term Monitoring (LTM) program, and monthly during EDWM, this location has been sampled 15 times since May 4, 2022. Benzo(a)pyrene was not detected above the detection limit of 0.01 µg/L in 14 of these sampling events, further bolstering the argument that this was a sporadic detection unrelated to the site sample.

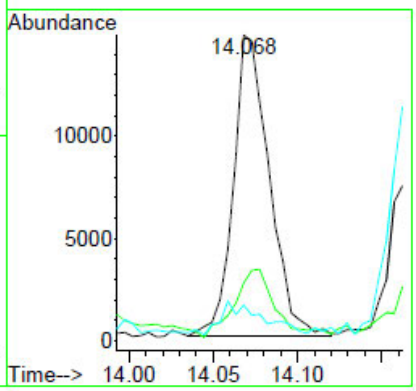
Figure 1. Mass Spectral Analysis of D4-DL-0017801-25001-3-N (DA69896-2)



#7
Benzo(a)pyrene
Concen: 0.0277 ppm
RT: 14.068 min Scan# 2141
Delta R.T. -0.009 min
Lab File: 6g14876.D
Acq: 16 Jan 2025 10:13 pm

Tgt Ion:252 Resp: 21946

Ion	Ratio	Lower	Upper
252	100		
253	26.2	1.9	41.9
126	13.2	0.0	36.1



Attachment 2: (b) (4) Laboratory Report L2503010

(b) (4)

ANALYTICAL REPORT

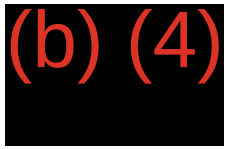
Lab Number:	L2503010
Client:	AECOM 250 Apollo Drive Chelmsford, MA 01824
ATTN:	(b) (6)
Phone:	(b) (6)
Project Name:	EDWM
Project Number:	60729369
Report Date:	01/24/25

Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0825), DoD (L2474), FL (E87814), IL (200081), IN (C-MA-04), KY (KY98046), LA (85084), ME (MA00030), MD (350), MI (9110), MN (025-999-495), NJ (MA015), NY (11627), NC (685), OR (MA-0262), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #525-23-107-88708A1), USFWS (Permit #A24920).

Project Name: EDWM
Project Number: 60729369

Lab Number: L2503010
Report Date: 01/24/25

Lab Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2503010-01	D4-DL-0017801-25001-N	WATER	HONOLULU, HI	01/14/25 08:28	01/18/25
L2503010-02	D4-DL-0017801-25001-3-N	WATER	HONOLULU, HI	01/14/25 08:33	01/18/25



Project Name:	EDWM	**Lab Number:**	L2503010
Project Number:	60729369	**Report Date:**	01/24/25

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this (b) (4) Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments and solids are reported on a dry weight basis unless otherwise noted. Tissues are reported "as received" or on a wet weight basis, unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, (b) (4) policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your (b) (4) Project Manager and made arrangements for (b) (4) to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at (b) (4) with any questions.

(b) (4)

Project Name: EDWM
Project Number: 60729369

Lab Number: L2503010
Report Date: 01/24/25

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Sample Receipt

L2503010-01: The collection date and time on the chain of custody was 14-JAN-25 08:23; however, the collection date/time on the container label was 14-JAN-25 08:28. At the client's request, the collection date/time is reported as 14-JAN-25 08:28 and a revised chain of custody was provided..

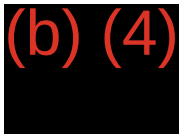
I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: (b) (6) (b) (6)

Title: Technical Director/Representative Date: 01/24/25

(b) (4)

ORGANICS



VOLATILES

(b) (4)

Project Name: EDWM
Project Number: 60729369
Lab Number: L2503010
Report Date: 01/24/25

SAMPLE RESULTS

Lab ID: L2503010-01
Client ID: D4-DL-0017801-25001-N
Sample Location: HONOLULU, HI

Date Collected: 01/14/25 08:28
Date Received: 01/18/25
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8260D
Analytical Date: 01/22/25 19:46
Analyst: (b) (6)

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PIANO Volatile Organics by GC/MS - (b) (4)						
3-Methyl-1-butene	ND		ug/l	2.00	0.297	1
Isopentane	ND		ug/l	2.00	0.366	1
1-Pentene	ND		ug/l	2.00	0.365	1
2-Methyl-1-Butene	ND		ug/l	2.00	0.311	1
Pentane	ND		ug/l	2.00	0.624	1
trans-2-Pentene	ND		ug/l	2.00	0.270	1
Isoprene	ND		ug/l	2.00	0.357	1
cis-2-Pentene	ND		ug/l	2.00	0.322	1
Tertiary Butanol	ND		ug/l	25.0	3.24	1
2,2-Dimethylbutane	ND		ug/l	2.00	0.617	1
4-Methyl-1-pentene	ND		ug/l	2.00	0.311	1
Cyclopentane	ND		ug/l	2.00	0.519	1
2,3-Dimethylbutane	ND		ug/l	2.00	0.826	1
2-Methylpentane	ND		ug/l	2.00	0.542	1
Methyl tert butyl ether	ND		ug/l	2.00	0.412	1
3-Methylpentane	ND		ug/l	2.00	0.317	1
1-Hexene	ND		ug/l	2.00	0.281	1
n-Hexane	ND		ug/l	2.00	0.329	1
Isopropyl Ether	ND		ug/l	2.00	0.242	1
trans-2-Hexene	ND		ug/l	2.00	0.261	1
2-Methyl-2-pentene	ND		ug/l	2.00	0.306	1
cis-2-Hexene	ND		ug/l	2.00	0.271	1
Ethyl-Tert-Butyl-Ether	ND		ug/l	2.00	0.303	1
2,2-Dimethylpentane	ND		ug/l	2.00	0.269	1
Methylcyclopentane	ND		ug/l	2.00	0.268	1
2,4-Dimethylpentane	ND		ug/l	2.00	0.247	1
2,2,3-Trimethylbutane	ND		ug/l	2.00	0.270	1
1,2-Dichloroethane	ND		ug/l	2.00	0.295	1

(b) (4)

Project Name: EDWM
Project Number: 60729369
Lab Number: L2503010
Report Date: 01/24/25

SAMPLE RESULTS

Lab ID: L2503010-01
Client ID: D4-DL-0017801-25001-N
Sample Location: HONOLULU, HI
Date Collected: 01/14/25 08:28
Date Received: 01/18/25
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PIANO Volatile Organics by GC/MS - (b) (4)						
3,3-Dimethylpentane	ND		ug/l	2.00	0.372	1
Cyclohexane	ND		ug/l	2.00	0.247	1
2-Methylhexane	ND		ug/l	2.00	0.315	1
Benzene	ND		ug/l	2.00	0.305	1
2,3-Dimethylpentane	ND		ug/l	2.00	0.265	1
Thiophene	ND		ug/l	2.00	0.284	1
1,1-Dimethylcyclopentane	ND		ug/l	2.00	0.240	1
3-Methylhexane	ND		ug/l	2.00	0.320	1
Tertiary-Amyl Methyl Ether	ND		ug/l	2.00	0.246	1
1,3-Dimethylcyclopentane (cis)	ND		ug/l	2.00	0.301	1
3-Ethylpentane	ND		ug/l	2.00	0.289	1
1-Heptene/1,2-DMCP (trans)	ND		ug/l	4.00	0.585	1
Isooctane	ND		ug/l	2.00	0.218	1
trans-3-Heptene	ND		ug/l	2.00	0.311	1
Heptane	ND		ug/l	2.00	0.348	1
trans-2-Heptene	ND		ug/l	2.00	0.256	1
cis-2-Heptene	ND		ug/l	2.00	0.387	1
2,2-Dimethylhexane	ND		ug/l	2.00	0.290	1
Methylcyclohexane	ND		ug/l	2.00	0.270	1
2,5-Dimethylhexane	ND		ug/l	2.00	0.348	1
2,4-Dimethylhexane	ND		ug/l	2.00	0.243	1
Ethylcyclopentane	ND		ug/l	2.00	0.265	1
2,2,3-Trimethylpentane	ND		ug/l	2.00	0.347	1
2,3,4-Trimethylpentane	ND		ug/l	2.00	0.261	1
2,3,3-Trimethylpentane	ND		ug/l	2.00	0.397	1
2,3-Dimethylhexane	ND		ug/l	2.00	0.485	1
2-Methylheptane	ND		ug/l	2.00	0.338	1
4-Methylheptane	ND		ug/l	2.00	0.344	1
3-Methylheptane	ND		ug/l	2.00	0.385	1
3-Ethylhexane	ND		ug/l	2.00	0.358	1
Toluene	ND		ug/l	2.00	0.271	1
2-Methylthiophene	ND		ug/l	2.00	0.170	1
1,4-Dimethylcyclohexane (trans)	ND		ug/l	2.00	0.260	1
3-Methylthiophene	ND		ug/l	2.00	0.234	1
1-Octene	ND		ug/l	5.00	0.307	1
Octane	ND		ug/l	2.00	0.235	1
1,2-Dimethylcyclohexane (trans)	ND		ug/l	2.00	0.294	1

(b) (4)

Project Name: EDWM
Project Number: 60729369
Lab Number: L2503010
Report Date: 01/24/25

SAMPLE RESULTS

Lab ID: L2503010-01
Client ID: D4-DL-0017801-25001-N
Sample Location: HONOLULU, HI
Date Collected: 01/14/25 08:28
Date Received: 01/18/25
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PIANO Volatile Organics by GC/MS - (b) (4)						
1,2-Dibromoethane	ND		ug/l	2.00	0.320	1
cis-2-Octene	ND		ug/l	2.00	0.229	1
Isopropylcyclopentane	ND		ug/l	2.00	0.293	1
1,2-Dimethylcyclohexane (cis)	ND		ug/l	2.00	0.581	1
2,5-Dimethylheptane	ND		ug/l	2.00	0.335	1
3,5-Dimethylheptane	ND		ug/l	2.00	0.282	1
3,3-Dimethylheptane	ND		ug/l	2.00	0.242	1
1,1,4-Trimethylcyclohexane	ND		ug/l	2.00	0.199	1
2,3-Dimethylheptane	ND		ug/l	2.00	0.228	1
3,4-Dimethylheptane	ND		ug/l	2.00	0.340	1
4-Methyloctane	ND		ug/l	2.00	0.334	1
2-Methyloctane	ND		ug/l	2.00	0.512	1
Ethylbenzene	ND		ug/l	2.00	0.216	1
2-Ethylthiophene	ND		ug/l	2.00	0.176	1
3-Methyloctane	ND		ug/l	2.00	0.224	1
3,3-Diethylpentane	ND		ug/l	2.00	0.233	1
p/m-Xylene	ND		ug/l	4.00	0.381	1
1-Nonene	ND		ug/l	5.00	0.270	1
trans-3-Nonene	ND		ug/l	2.00	0.237	1
cis-3-Nonene	ND		ug/l	2.00	0.374	1
Nonane (C9)	ND		ug/l	2.00	0.311	1
Styrene	ND		ug/l	2.00	0.202	1
o-Xylene	ND		ug/l	2.00	0.209	1
Xylene (Total)[1]	ND		ug/l	2.00	0.209	1
2-Nonene	ND		ug/l	5.00	0.254	1
Isopropylcyclohexane	ND		ug/l	2.00	0.212	1
Isopropylbenzene	ND		ug/l	2.00	0.187	1
3,3-Dimethyloctane	ND		ug/l	2.00	0.202	1
n-Propylbenzene	ND		ug/l	2.00	0.177	1
2-Methylnonane	ND		ug/l	2.00	0.283	1
3-Methylnonane	ND		ug/l	2.00	0.279	1
1-Methyl-3-Ethylbenzene	ND		ug/l	2.00	0.316	1
1-Methyl-4-Ethylbenzene	ND		ug/l	2.00	0.282	1
1,3,5-Trimethylbenzene	ND		ug/l	2.00	0.230	1
1-Decene	ND		ug/l	2.00	0.260	1
Isobutylcyclohexane	ND		ug/l	2.00	0.163	1
1-Methyl-2-Ethylbenzene	ND		ug/l	2.00	0.170	1

(b) (4)

Project Name: EDWM
Project Number: 60729369
Lab Number: L2503010
Report Date: 01/24/25

SAMPLE RESULTS

Lab ID: L2503010-01
Client ID: D4-DL-0017801-25001-N
Sample Location: HONOLULU, HI

Date Collected: 01/14/25 08:28
Date Received: 01/18/25
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PIANO Volatile Organics by GC/MS - (b) (4)						
Decane (C10)	ND		ug/l	2.00	0.271	1
tert-Butylbenzene	ND		ug/l	2.00	0.211	1
1,2,4-Trimethylbenzene	ND		ug/l	2.00	0.207	1
Isobutylbenzene	ND		ug/l	2.00	0.270	1
sec-Butylbenzene	ND		ug/l	2.00	0.259	1
1-Methyl-3-Isopropylbenzene	ND		ug/l	2.00	0.258	1
1-Methyl-4-Isopropylbenzene	ND		ug/l	2.00	0.212	1
1,2,3-Trimethylbenzene	ND		ug/l	2.00	0.223	1
1-Methyl-2-Isopropylbenzene	ND		ug/l	2.00	0.217	1
Indane	ND		ug/l	2.00	0.123	1
1,3-Diethylbenzene	ND		ug/l	2.00	0.249	1
1-Methyl-3-N-Propylbenzene	ND		ug/l	2.00	0.202	1
Indene	ND		ug/l	2.00	0.116	1
1-Methyl-4-N-Propylbenzene	ND		ug/l	2.00	0.250	1
n-Butylbenzene	ND		ug/l	2.00	0.197	1
1,2-Dimethyl-4-Ethylbenzene	ND		ug/l	2.00	0.245	1
1,2-Diethylbenzene	ND		ug/l	2.00	0.296	1
1-Methyl-2-N-Propylbenzene	ND		ug/l	2.00	0.249	1
1,4-Dimethyl-2-Ethylbenzene	ND		ug/l	2.00	0.187	1
Undecane	ND		ug/l	2.00	0.222	1
1,3-Dimethyl-4-Ethylbenzene	ND		ug/l	2.00	0.194	1
1,3-Dimethyl-5-Ethylbenzene	ND		ug/l	2.00	0.236	1
1,3-Dimethyl-2-Ethylbenzene	ND		ug/l	2.00	0.149	1
1,2-Dimethyl-3-Ethylbenzene	ND		ug/l	2.00	0.127	1
1,2,4,5-Tetramethylbenzene	ND		ug/l	2.00	0.155	1
1,2,3,5-Tetramethylbenzene	ND		ug/l	2.00	0.152	1
N-Pentylbenzene	ND		ug/l	2.00	0.249	1
1,2,3,4-Tetramethylbenzene	ND		ug/l	2.00	0.214	1
1,3-Dimethyl-5-tert-Butylbenzene	ND		ug/l	2.00	0.285	1
Dodecane (C12)	ND		ug/l	5.00	0.657	1
1,3,5-Triethylbenzene	ND		ug/l	2.00	0.380	1
Naphthalene	ND		ug/l	2.00	0.835	1
Benzothiophene	ND		ug/l	2.00	1.06	1
1,2,4-Triethylbenzene	ND		ug/l	2.00	0.340	1
Hexylbenzene	ND		ug/l	2.00	0.385	1
MMT	ND		ug/l	5.00	1.29	1
Tridecane	ND		ug/l	5.00	1.39	1

(b) (4)

Project Name: EDWM
Project Number: 60729369
Lab Number: L2503010
Report Date: 01/24/25

SAMPLE RESULTS

Lab ID: L2503010-01
Client ID: D4-DL-0017801-25001-N
Sample Location: HONOLULU, HI
Date Collected: 01/14/25 08:28
Date Received: 01/18/25
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PIANO Volatile Organics by GC/MS - (b) (4)						
2-Methylnaphthalene	ND		ug/l	5.00	1.32	1
1-Methylnaphthalene	ND		ug/l	5.00	1.47	1
Tetradecane (C14)	ND		ug/l	5.00	0.612	1
Pentadecane	ND		ug/l	5.00	1.12	1
Tentatively Identified Compounds						
No Tentatively Identified Compounds	ND		ug/l			1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Dibromofluoromethane	128		70-130
Toluene-d8	113		70-130
4-Bromofluorobenzene	90		70-130

(b) (4)

Project Name: EDWM
Project Number: 60729369
Lab Number: L2503010
Report Date: 01/24/25

SAMPLE RESULTS

Lab ID: L2503010-02
Client ID: D4-DL-0017801-25001-3-N
Sample Location: HONOLULU, HI

Date Collected: 01/14/25 08:33
Date Received: 01/18/25
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8260D
Analytical Date: 01/22/25 20:55
Analyst: (b) (6)

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PIANO Volatile Organics by GC/MS - (b) (4)						
3-Methyl-1-butene	ND		ug/l	2.00	0.297	1
Isopentane	0.525	J	ug/l	2.00	0.366	1
1-Pentene	ND		ug/l	2.00	0.365	1
2-Methyl-1-Butene	ND		ug/l	2.00	0.311	1
Pentane	ND		ug/l	2.00	0.624	1
trans-2-Pentene	ND		ug/l	2.00	0.270	1
Isoprene	ND		ug/l	2.00	0.357	1
cis-2-Pentene	ND		ug/l	2.00	0.322	1
Tertiary Butanol	ND		ug/l	25.0	3.24	1
2,2-Dimethylbutane	ND		ug/l	2.00	0.617	1
4-Methyl-1-pentene	ND		ug/l	2.00	0.311	1
Cyclopentane	ND		ug/l	2.00	0.519	1
2,3-Dimethylbutane	ND		ug/l	2.00	0.826	1
2-Methylpentane	ND		ug/l	2.00	0.542	1
Methyl tert butyl ether	ND		ug/l	2.00	0.412	1
3-Methylpentane	ND		ug/l	2.00	0.317	1
1-Hexene	ND		ug/l	2.00	0.281	1
n-Hexane	ND		ug/l	2.00	0.329	1
Isopropyl Ether	ND		ug/l	2.00	0.242	1
trans-2-Hexene	ND		ug/l	2.00	0.261	1
2-Methyl-2-pentene	ND		ug/l	2.00	0.306	1
cis-2-Hexene	ND		ug/l	2.00	0.271	1
Ethyl-Tert-Butyl-Ether	ND		ug/l	2.00	0.303	1
2,2-Dimethylpentane	ND		ug/l	2.00	0.269	1
Methylcyclopentane	ND		ug/l	2.00	0.268	1
2,4-Dimethylpentane	ND		ug/l	2.00	0.247	1
2,2,3-Trimethylbutane	ND		ug/l	2.00	0.270	1
1,2-Dichloroethane	ND		ug/l	2.00	0.295	1

(b) (4)

Project Name: EDWM
Project Number: 60729369
Lab Number: L2503010
Report Date: 01/24/25

SAMPLE RESULTS

Lab ID: L2503010-02
Client ID: D4-DL-0017801-25001-3-N
Sample Location: HONOLULU, HI
Date Collected: 01/14/25 08:33
Date Received: 01/18/25
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PIANO Volatile Organics by GC/MS - (b) (4)						
3,3-Dimethylpentane	ND		ug/l	2.00	0.372	1
Cyclohexane	ND		ug/l	2.00	0.247	1
2-Methylhexane	ND		ug/l	2.00	0.315	1
Benzene	ND		ug/l	2.00	0.305	1
2,3-Dimethylpentane	ND		ug/l	2.00	0.265	1
Thiophene	ND		ug/l	2.00	0.284	1
1,1-Dimethylcyclopentane	ND		ug/l	2.00	0.240	1
3-Methylhexane	ND		ug/l	2.00	0.320	1
Tertiary-Amyl Methyl Ether	ND		ug/l	2.00	0.246	1
1,3-Dimethylcyclopentane (cis)	ND		ug/l	2.00	0.301	1
3-Ethylpentane	ND		ug/l	2.00	0.289	1
1-Heptene/1,2-DMCP (trans)	ND		ug/l	4.00	0.585	1
Isooctane	ND		ug/l	2.00	0.218	1
trans-3-Heptene	ND		ug/l	2.00	0.311	1
Heptane	ND		ug/l	2.00	0.348	1
trans-2-Heptene	ND		ug/l	2.00	0.256	1
cis-2-Heptene	ND		ug/l	2.00	0.387	1
2,2-Dimethylhexane	ND		ug/l	2.00	0.290	1
Methylcyclohexane	ND		ug/l	2.00	0.270	1
2,5-Dimethylhexane	ND		ug/l	2.00	0.348	1
2,4-Dimethylhexane	ND		ug/l	2.00	0.243	1
Ethylcyclopentane	ND		ug/l	2.00	0.265	1
2,2,3-Trimethylpentane	ND		ug/l	2.00	0.347	1
2,3,4-Trimethylpentane	ND		ug/l	2.00	0.261	1
2,3,3-Trimethylpentane	ND		ug/l	2.00	0.397	1
2,3-Dimethylhexane	ND		ug/l	2.00	0.485	1
2-Methylheptane	ND		ug/l	2.00	0.338	1
4-Methylheptane	ND		ug/l	2.00	0.344	1
3-Methylheptane	ND		ug/l	2.00	0.385	1
3-Ethylhexane	ND		ug/l	2.00	0.358	1
Toluene	ND		ug/l	2.00	0.271	1
2-Methylthiophene	ND		ug/l	2.00	0.170	1
1,4-Dimethylcyclohexane (trans)	ND		ug/l	2.00	0.260	1
3-Methylthiophene	ND		ug/l	2.00	0.234	1
1-Octene	ND		ug/l	5.00	0.307	1
Octane	ND		ug/l	2.00	0.235	1
1,2-Dimethylcyclohexane (trans)	ND		ug/l	2.00	0.294	1

(b) (4)

Project Name: EDWM
Project Number: 60729369
Lab Number: L2503010
Report Date: 01/24/25

SAMPLE RESULTS

Lab ID: L2503010-02
Client ID: D4-DL-0017801-25001-3-N
Sample Location: HONOLULU, HI
Date Collected: 01/14/25 08:33
Date Received: 01/18/25
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PIANO Volatile Organics by GC/MS - (b) (4)						
1,2-Dibromoethane	ND		ug/l	2.00	0.320	1
cis-2-Octene	ND		ug/l	2.00	0.229	1
Isopropylcyclopentane	ND		ug/l	2.00	0.293	1
1,2-Dimethylcyclohexane (cis)	ND		ug/l	2.00	0.581	1
2,5-Dimethylheptane	ND		ug/l	2.00	0.335	1
3,5-Dimethylheptane	ND		ug/l	2.00	0.282	1
3,3-Dimethylheptane	ND		ug/l	2.00	0.242	1
1,1,4-Trimethylcyclohexane	ND		ug/l	2.00	0.199	1
2,3-Dimethylheptane	ND		ug/l	2.00	0.228	1
3,4-Dimethylheptane	ND		ug/l	2.00	0.340	1
4-Methyloctane	ND		ug/l	2.00	0.334	1
2-Methyloctane	ND		ug/l	2.00	0.512	1
Ethylbenzene	ND		ug/l	2.00	0.216	1
2-Ethylthiophene	ND		ug/l	2.00	0.176	1
3-Methyloctane	ND		ug/l	2.00	0.224	1
3,3-Diethylpentane	ND		ug/l	2.00	0.233	1
p/m-Xylene	ND		ug/l	4.00	0.381	1
1-Nonene	ND		ug/l	5.00	0.270	1
trans-3-Nonene	ND		ug/l	2.00	0.237	1
cis-3-Nonene	ND		ug/l	2.00	0.374	1
Nonane (C9)	ND		ug/l	2.00	0.311	1
Styrene	ND		ug/l	2.00	0.202	1
o-Xylene	ND		ug/l	2.00	0.209	1
Xylene (Total)[1]	ND		ug/l	2.00	0.209	1
2-Nonene	ND		ug/l	5.00	0.254	1
Isopropylcyclohexane	ND		ug/l	2.00	0.212	1
Isopropylbenzene	ND		ug/l	2.00	0.187	1
3,3-Dimethyloctane	ND		ug/l	2.00	0.202	1
n-Propylbenzene	ND		ug/l	2.00	0.177	1
2-Methylnonane	ND		ug/l	2.00	0.283	1
3-Methylnonane	ND		ug/l	2.00	0.279	1
1-Methyl-3-Ethylbenzene	ND		ug/l	2.00	0.316	1
1-Methyl-4-Ethylbenzene	ND		ug/l	2.00	0.282	1
1,3,5-Trimethylbenzene	ND		ug/l	2.00	0.230	1
1-Decene	ND		ug/l	2.00	0.260	1
Isobutylcyclohexane	ND		ug/l	2.00	0.163	1
1-Methyl-2-Ethylbenzene	ND		ug/l	2.00	0.170	1

(b) (4)

Project Name: EDWM
Project Number: 60729369
Lab Number: L2503010
Report Date: 01/24/25

SAMPLE RESULTS

Lab ID: L2503010-02
Client ID: D4-DL-0017801-25001-3-N
Sample Location: HONOLULU, HI
Date Collected: 01/14/25 08:33
Date Received: 01/18/25
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PIANO Volatile Organics by GC/MS - (b) (4)						
Decane (C10)	ND		ug/l	2.00	0.271	1
tert-Butylbenzene	ND		ug/l	2.00	0.211	1
1,2,4-Trimethylbenzene	ND		ug/l	2.00	0.207	1
Isobutylbenzene	ND		ug/l	2.00	0.270	1
sec-Butylbenzene	ND		ug/l	2.00	0.259	1
1-Methyl-3-Isopropylbenzene	ND		ug/l	2.00	0.258	1
1-Methyl-4-Isopropylbenzene	ND		ug/l	2.00	0.212	1
1,2,3-Trimethylbenzene	ND		ug/l	2.00	0.223	1
1-Methyl-2-Isopropylbenzene	ND		ug/l	2.00	0.217	1
Indane	ND		ug/l	2.00	0.123	1
1,3-Diethylbenzene	ND		ug/l	2.00	0.249	1
1-Methyl-3-N-Propylbenzene	ND		ug/l	2.00	0.202	1
Indene	ND		ug/l	2.00	0.116	1
1-Methyl-4-N-Propylbenzene	ND		ug/l	2.00	0.250	1
n-Butylbenzene	ND		ug/l	2.00	0.197	1
1,2-Dimethyl-4-Ethylbenzene	ND		ug/l	2.00	0.245	1
1,2-Diethylbenzene	ND		ug/l	2.00	0.296	1
1-Methyl-2-N-Propylbenzene	ND		ug/l	2.00	0.249	1
1,4-Dimethyl-2-Ethylbenzene	ND		ug/l	2.00	0.187	1
Undecane	ND		ug/l	2.00	0.222	1
1,3-Dimethyl-4-Ethylbenzene	ND		ug/l	2.00	0.194	1
1,3-Dimethyl-5-Ethylbenzene	ND		ug/l	2.00	0.236	1
1,3-Dimethyl-2-Ethylbenzene	ND		ug/l	2.00	0.149	1
1,2-Dimethyl-3-Ethylbenzene	ND		ug/l	2.00	0.127	1
1,2,4,5-Tetramethylbenzene	ND		ug/l	2.00	0.155	1
1,2,3,5-Tetramethylbenzene	ND		ug/l	2.00	0.152	1
N-Pentylbenzene	ND		ug/l	2.00	0.249	1
1,2,3,4-Tetramethylbenzene	ND		ug/l	2.00	0.214	1
1,3-Dimethyl-5-tert-Butylbenzene	ND		ug/l	2.00	0.285	1
Dodecane (C12)	ND		ug/l	5.00	0.657	1
1,3,5-Triethylbenzene	ND		ug/l	2.00	0.380	1
Naphthalene	ND		ug/l	2.00	0.835	1
Benzothiophene	ND		ug/l	2.00	1.06	1
1,2,4-Triethylbenzene	ND		ug/l	2.00	0.340	1
Hexylbenzene	ND		ug/l	2.00	0.385	1
MMT	ND		ug/l	5.00	1.29	1
Tridecane	ND		ug/l	5.00	1.39	1

(b) (4)

Project Name: EDWM
Project Number: 60729369
Lab Number: L2503010
Report Date: 01/24/25

SAMPLE RESULTS

Lab ID: L2503010-02
Client ID: D4-DL-0017801-25001-3-N
Sample Location: HONOLULU, HI
Date Collected: 01/14/25 08:33
Date Received: 01/18/25
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PIANO Volatile Organics by GC/MS - (b) (4)						
2-Methylnaphthalene	ND		ug/l	5.00	1.32	1
1-Methylnaphthalene	ND		ug/l	5.00	1.47	1
Tetradecane (C14)	ND		ug/l	5.00	0.612	1
Pentadecane	ND		ug/l	5.00	1.12	1
Tentatively Identified Compounds						
No Tentatively Identified Compounds	ND		ug/l			1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Dibromofluoromethane	127		70-130
Toluene-d8	113		70-130
4-Bromofluorobenzene	89		70-130

(b) (4)

Project Name: EDWM
Project Number: 60729369

Lab Number: L2503010
Report Date: 01/24/25

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 01/21/25 15:27
Analyst: (b) (6)

Parameter	Result	Qualifier	Units	RL	MDL
PIANO Volatile Organics by GC/MS - (b) (4) for sample(s): 01-02 Batch: WG2022770-5					
3-Methyl-1-butene	ND		ug/l	2.00	0.297
Isopentane	ND		ug/l	2.00	0.366
1-Pentene	ND		ug/l	2.00	0.365
2-Methyl-1-Butene	ND		ug/l	2.00	0.311
Pentane	ND		ug/l	2.00	0.624
trans-2-Pentene	ND		ug/l	2.00	0.270
Isoprene	ND		ug/l	2.00	0.357
cis-2-Pentene	ND		ug/l	2.00	0.322
Tertiary Butanol	ND		ug/l	25.0	3.24
2,2-Dimethylbutane	ND		ug/l	2.00	0.617
4-Methyl-1-pentene	ND		ug/l	2.00	0.311
Cyclopentane	ND		ug/l	2.00	0.519
2,3-Dimethylbutane	ND		ug/l	2.00	0.826
2-Methylpentane	ND		ug/l	2.00	0.542
Methyl tert butyl ether	ND		ug/l	2.00	0.412
3-Methylpentane	ND		ug/l	2.00	0.317
1-Hexene	ND		ug/l	2.00	0.281
n-Hexane	ND		ug/l	2.00	0.329
Isopropyl Ether	ND		ug/l	2.00	0.242
trans-2-Hexene	ND		ug/l	2.00	0.261
2-Methyl-2-pentene	ND		ug/l	2.00	0.306
cis-2-Hexene	ND		ug/l	2.00	0.271
Ethyl-Tert-Butyl-Ether	ND		ug/l	2.00	0.303
2,2-Dimethylpentane	ND		ug/l	2.00	0.269
Methylcyclopentane	ND		ug/l	2.00	0.268
2,4-Dimethylpentane	ND		ug/l	2.00	0.247
2,2,3-Trimethylbutane	ND		ug/l	2.00	0.270
1,2-Dichloroethane	ND		ug/l	2.00	0.295
3,3-Dimethylpentane	ND		ug/l	2.00	0.372

(b) (4)

Project Name: EDWM
Project Number: 60729369

Lab Number: L2503010
Report Date: 01/24/25

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 01/21/25 15:27
Analyst: (b) (6)

Parameter	Result	Qualifier	Units	RL	MDL
PIANO Volatile Organics by GC/MS - (b) (4) for sample(s): 01-02 Batch: WG2022770-5					
Cyclohexane	ND		ug/l	2.00	0.247
2-Methylhexane	ND		ug/l	2.00	0.315
Benzene	ND		ug/l	2.00	0.305
2,3-Dimethylpentane	ND		ug/l	2.00	0.265
Thiophene	ND		ug/l	2.00	0.284
1,1-Dimethylcyclopentane	ND		ug/l	2.00	0.240
3-Methylhexane	ND		ug/l	2.00	0.320
Tertiary-Amyl Methyl Ether	ND		ug/l	2.00	0.246
1,3-Dimethylcyclopentane (cis)	ND		ug/l	2.00	0.301
3-Ethylpentane	ND		ug/l	2.00	0.289
1-Heptene/1,2-DMCP (trans)	ND		ug/l	4.00	0.585
Isooctane	ND		ug/l	2.00	0.218
trans-3-Heptene	ND		ug/l	2.00	0.311
Heptane	ND		ug/l	2.00	0.348
trans-2-Heptene	ND		ug/l	2.00	0.256
cis-2-Heptene	ND		ug/l	2.00	0.387
2,2-Dimethylhexane	ND		ug/l	2.00	0.290
Methylcyclohexane	ND		ug/l	2.00	0.270
2,5-Dimethylhexane	ND		ug/l	2.00	0.348
2,4-Dimethylhexane	ND		ug/l	2.00	0.243
Ethylcyclopentane	ND		ug/l	2.00	0.265
2,2,3-Trimethylpentane	ND		ug/l	2.00	0.347
2,3,4-Trimethylpentane	ND		ug/l	2.00	0.261
2,3,3-Trimethylpentane	ND		ug/l	2.00	0.397
2,3-Dimethylhexane	ND		ug/l	2.00	0.485
2-Methylheptane	ND		ug/l	2.00	0.338
4-Methylheptane	ND		ug/l	2.00	0.344
3-Methylheptane	ND		ug/l	2.00	0.385
3-Ethylhexane	ND		ug/l	2.00	0.358

(b) (4)

Project Name: EDWM
Project Number: 60729369

Lab Number: L2503010
Report Date: 01/24/25

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 01/21/25 15:27
Analyst: (b) (6)

Parameter	Result	Qualifier	Units	RL	MDL
PIANO Volatile Organics by GC/MS - (b) (4) for sample(s): 01-02 Batch: WG2022770-5					
Toluene	ND		ug/l	2.00	0.271
2-Methylthiophene	ND		ug/l	2.00	0.170
1,4-Dimethylcyclohexane (trans)	ND		ug/l	2.00	0.260
3-Methylthiophene	ND		ug/l	2.00	0.234
1-Octene	ND		ug/l	5.00	0.307
Octane	ND		ug/l	2.00	0.235
1,2-Dimethylcyclohexane (trans)	ND		ug/l	2.00	0.294
1,2-Dibromoethane	ND		ug/l	2.00	0.320
cis-2-Octene	ND		ug/l	2.00	0.229
Isopropylcyclopentane	ND		ug/l	2.00	0.293
1,2-Dimethylcyclohexane (cis)	ND		ug/l	2.00	0.581
2,5-Dimethylheptane	ND		ug/l	2.00	0.335
3,5-Dimethylheptane	ND		ug/l	2.00	0.282
3,3-Dimethylheptane	ND		ug/l	2.00	0.242
1,1,4-Trimethylcyclohexane	ND		ug/l	2.00	0.199
2,3-Dimethylheptane	ND		ug/l	2.00	0.228
3,4-Dimethylheptane	ND		ug/l	2.00	0.340
4-Methyloctane	ND		ug/l	2.00	0.334
2-Methyloctane	ND		ug/l	2.00	0.512
Ethylbenzene	ND		ug/l	2.00	0.216
2-Ethylthiophene	ND		ug/l	2.00	0.176
3-Methyloctane	ND		ug/l	2.00	0.224
3,3-Diethylpentane	ND		ug/l	2.00	0.233
p/m-Xylene	ND		ug/l	4.00	0.381
1-Nonene	ND		ug/l	5.00	0.270
trans-3-Nonene	ND		ug/l	2.00	0.237
cis-3-Nonene	ND		ug/l	2.00	0.374
Nonane (C9)	ND		ug/l	2.00	0.311
Styrene	ND		ug/l	2.00	0.202

(b) (4)

Project Name: EDWM
Project Number: 60729369

Lab Number: L2503010
Report Date: 01/24/25

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 01/21/25 15:27
Analyst: (b) (6)

Parameter	Result	Qualifier	Units	RL	MDL
PIANO Volatile Organics by GC/MS - (b) (4) for sample(s): 01-02 Batch: WG2022770-5					
o-Xylene	ND		ug/l	2.00	0.209
Xylene (Total)[1]	ND		ug/l	2.00	0.209
2-Nonene	ND		ug/l	5.00	0.254
Isopropylcyclohexane	ND		ug/l	2.00	0.212
Isopropylbenzene	ND		ug/l	2.00	0.187
3,3-Dimethyloctane	ND		ug/l	2.00	0.202
n-Propylbenzene	ND		ug/l	2.00	0.177
2-Methylnonane	ND		ug/l	2.00	0.283
3-Methylnonane	ND		ug/l	2.00	0.279
1-Methyl-3-Ethylbenzene	ND		ug/l	2.00	0.316
1-Methyl-4-Ethylbenzene	ND		ug/l	2.00	0.282
1,3,5-Trimethylbenzene	ND		ug/l	2.00	0.230
1-Decene	ND		ug/l	2.00	0.260
Isobutylcyclohexane	ND		ug/l	2.00	0.163
1-Methyl-2-Ethylbenzene	ND		ug/l	2.00	0.170
Decane (C10)	ND		ug/l	2.00	0.271
tert-Butylbenzene	ND		ug/l	2.00	0.211
1,2,4-Trimethylbenzene	ND		ug/l	2.00	0.207
Isobutylbenzene	ND		ug/l	2.00	0.270
sec-Butylbenzene	ND		ug/l	2.00	0.259
1-Methyl-3-Isopropylbenzene	ND		ug/l	2.00	0.258
1-Methyl-4-Isopropylbenzene	ND		ug/l	2.00	0.212
1,2,3-Trimethylbenzene	ND		ug/l	2.00	0.223
1-Methyl-2-Isopropylbenzene	ND		ug/l	2.00	0.217
Indane	ND		ug/l	2.00	0.123
1,3-Diethylbenzene	ND		ug/l	2.00	0.249
1-Methyl-3-N-Propylbenzene	ND		ug/l	2.00	0.202
Indene	ND		ug/l	2.00	0.116
1-Methyl-4-N-Propylbenzene	ND		ug/l	2.00	0.250

(b) (4)

Project Name: EDWM
Project Number: 60729369

Lab Number: L2503010
Report Date: 01/24/25

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 01/21/25 15:27
Analyst: (b) (6)

Parameter	Result	Qualifier	Units	RL	MDL
PIANO Volatile Organics by GC/MS - (b) (4) for sample(s): 01-02 Batch: WG2022770-5					
n-Butylbenzene	ND		ug/l	2.00	0.197
1,2-Dimethyl-4-Ethylbenzene	ND		ug/l	2.00	0.245
1,2-Diethylbenzene	ND		ug/l	2.00	0.296
1-Methyl-2-N-Propylbenzene	ND		ug/l	2.00	0.249
1,4-Dimethyl-2-Ethylbenzene	ND		ug/l	2.00	0.187
Undecane	ND		ug/l	2.00	0.222
1,3-Dimethyl-4-Ethylbenzene	ND		ug/l	2.00	0.194
1,3-Dimethyl-5-Ethylbenzene	ND		ug/l	2.00	0.236
1,3-Dimethyl-2-Ethylbenzene	ND		ug/l	2.00	0.149
1,2-Dimethyl-3-Ethylbenzene	ND		ug/l	2.00	0.127
1,2,4,5-Tetramethylbenzene	ND		ug/l	2.00	0.155
1,2,3,5-Tetramethylbenzene	ND		ug/l	2.00	0.152
N-Pentylbenzene	ND		ug/l	2.00	0.249
1,2,3,4-Tetramethylbenzene	ND		ug/l	2.00	0.214
1,3-Dimethyl-5-tert-Butylbenzene	ND		ug/l	2.00	0.285
Dodecane (C12)	ND		ug/l	5.00	0.657
1,3,5-Triethylbenzene	ND		ug/l	2.00	0.380
Naphthalene	ND		ug/l	2.00	0.835
Benzothiophene	ND		ug/l	2.00	1.06
1,2,4-Triethylbenzene	ND		ug/l	2.00	0.340
Hexylbenzene	ND		ug/l	2.00	0.385
MMT	ND		ug/l	5.00	1.29
Tridecane	ND		ug/l	5.00	1.39
2-Methylnaphthalene	ND		ug/l	5.00	1.32
1-Methylnaphthalene	ND		ug/l	5.00	1.47
Tetradecane (C14)	ND		ug/l	5.00	0.612
Pentadecane	ND		ug/l	5.00	1.12

(b) (4)

Project Name: EDWM
Project Number: 60729369

Lab Number: L2503010
Report Date: 01/24/25

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 01/21/25 15:27
Analyst: (b) (6)

Parameter	Result	Qualifier	Units	RL	MDL
PIANO Volatile Organics by GC/MS - (b) (4) for sample(s): 01-02 Batch: WG2022770-5					
Tentatively Identified Compounds					
No Tentatively Identified Compounds	ND		ug/l		

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Dibromofluoromethane	127		70-130
Toluene-d8	113		70-130
4-Bromofluorobenzene	90		70-130

(b) (4)

Lab Control Sample Analysis
Batch Quality Control

Project Name: EDWM
Project Number: 60729369

Lab Number: L2503010
Report Date: 01/24/25

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
PIANO Volatile Organics by GC/MS - (b) (4) Associated sample(s): 01-02 Batch: WG2022770-3 WG2022770-4								
1-Pentene	57		58		50-130	2		30
Pentane	54		54		50-130	0		30
Tertiary Butanol	81		76		50-130	6		30
Cyclopentane	70		66		50-130	6		30
2-Methylpentane	68		70		50-130	3		30
Methyl tert butyl ether	90		94		50-130	4		30
3-Methylpentane	73		74		50-130	1		30
1-Hexene	74		76		50-130	3		30
n-Hexane	72		71		50-130	1		30
Isopropyl Ether	92		92		50-130	0		30
Ethyl-Tert-Butyl-Ether	92		92		50-130	0		30
Methylcyclopentane	75		76		50-130	1		30
2,4-Dimethylpentane	78		80		50-130	3		30
Cyclohexane	78		78		50-130	0		30
2-Methylhexane	79		80		50-130	1		30
Benzene	90		90		50-130	0		30
2,3-Dimethylpentane	84		85		50-130	1		30
3-Methylhexane	77		80		50-130	4		30
Tertiary-Amyl Methyl Ether	90		90		50-130	0		30
Isooctane	82		84		50-130	2		30
Heptane	82		83		50-130	1		30
Methylcyclohexane	82		84		50-130	2		30
2-Methylheptane	84		86		50-130	2		30

(b) (4)

Lab Control Sample Analysis
Batch Quality Control

Project Name: EDWM
Project Number: 60729369

Lab Number: L2503010
Report Date: 01/24/25

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
PIANO Volatile Organics by GC/MS - (b) (4) Associated sample(s): 01-02 Batch: WG2022770-3 WG2022770-4								
3-Methylheptane	86		88		50-130	2		30
Toluene	94		95		50-130	1		30
Octane	85		88		50-130	3		30
Ethylbenzene	92		94		50-130	2		30
p/m-Xylene	96		98		50-130	2		30
Nonane (C9)	83		86		50-130	4		30
o-Xylene	100		102		50-130	2		30
Isopropylbenzene	94		96		50-130	2		30
n-Propylbenzene	96		97		50-130	1		30
1-Methyl-3-Ethylbenzene	96		96		50-130	0		30
1-Methyl-4-Ethylbenzene	100		100		50-130	0		30
1,3,5-Trimethylbenzene	97		98		50-130	1		30
1-Decene	67		68		50-130	1		30
1-Methyl-2-Ethylbenzene	98		99		50-130	1		30
Decane (C10)	88		89		50-130	1		30
1,2,4-Trimethylbenzene	95		96		50-130	1		30
sec-Butylbenzene	98		100		50-130	2		30
1-Methyl-4-N-Propylbenzene	90		90		50-130	0		30
n-Butylbenzene	97		98		50-130	1		30
1,2-Diethylbenzene	100		101		50-130	1		30
Undecane	93		94		50-130	1		30
N-Pentylbenzene	94		93		50-130	1		30
Dodecane (C12)	112		112		50-130	0		30

(b) (4)

Lab Control Sample Analysis
Batch Quality Control

Project Name: EDWM
Project Number: 60729369

Lab Number: L2503010
Report Date: 01/24/25

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
PIANO Volatile Organics by GC/MS - (b) (4) Associated sample(s): 01-02 Batch: WG2022770-3 WG2022770-4								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Dibromofluoromethane	110		109		70-130
Toluene-d8	108		107		70-130
4-Bromofluorobenzene	97		96		70-130

(b) (4)

SEMIVOLATILES

(b) (4)

Project Name: EDWM
Project Number: 60729369

Lab Number: L2503010
Report Date: 01/24/25

SAMPLE RESULTS

Lab ID: L2503010-01
Client ID: D4-DL-0017801-25001-N
Sample Location: HONOLULU, HI

Date Collected: 01/14/25 08:28
Date Received: 01/18/25
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8270E-SIM(M)
Analytical Date: 01/22/25 03:24
Analyst: (b) (6)

Extraction Method: EPA 3510C
Extraction Date: 01/21/25 10:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PAHs - (b) (4)						
cis/trans-Decalin	ND		ng/l	4.90	2.66	1
C1-Decalins	2.95	J	ng/l	4.90	2.66	1
C2-Decalins	ND		ng/l	4.90	2.66	1
C3-Decalins	ND		ng/l	4.90	2.66	1
C4-Decalins	ND		ng/l	4.90	2.66	1
Naphthalene	ND		ng/l	9.80	2.69	1
C1-Naphthalenes	ND		ng/l	9.80	2.69	1
C2-Naphthalenes	ND		ng/l	9.80	2.69	1
C3-Naphthalenes	ND		ng/l	9.80	2.69	1
C4-Naphthalenes	ND		ng/l	9.80	2.69	1
2-Methylnaphthalene	ND		ng/l	9.80	6.50	1
1-Methylnaphthalene	ND		ng/l	9.80	4.24	1
Benzothiophene	ND		ng/l	9.80	2.53	1
C1-Benzo(b)thiophenes	ND		ng/l	9.80	2.53	1
C2-Benzo(b)thiophenes	ND		ng/l	9.80	2.53	1
C3-Benzo(b)thiophenes	ND		ng/l	9.80	2.53	1
C4-Benzo(b)thiophenes	ND		ng/l	9.80	2.53	1
Biphenyl	ND		ng/l	9.80	2.09	1
2,6-Dimethylnaphthalene	ND		ng/l	9.80	2.99	1
Dibenzofuran	ND		ng/l	9.80	3.68	1
Acenaphthylene	ND		ng/l	9.80	5.13	1
Acenaphthene	ND		ng/l	9.80	3.58	1
2,3,5-Trimethylnaphthalene	ND		ng/l	9.80	1.88	1
Fluorene	ND		ng/l	9.80	4.17	1
C1-Fluorenes	ND		ng/l	9.80	4.17	1
C2-Fluorenes	ND		ng/l	9.80	4.17	1
C3-Fluorenes	ND		ng/l	9.80	4.17	1
Dibenzothiophene	ND		ng/l	9.80	3.27	1

(b) (4)

Project Name: EDWM
Project Number: 60729369
Lab Number: L2503010
Report Date: 01/24/25

SAMPLE RESULTS

Lab ID: L2503010-01
Client ID: D4-DL-0017801-25001-N
Sample Location: HONOLULU, HI
Date Collected: 01/14/25 08:28
Date Received: 01/18/25
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PAHs - (b) (4)						
4-Methyldibenzothiophene(4MDT)	ND		ng/l	9.80	3.27	1
2/3-Methyldibenzothiophene(2MDT)	ND		ng/l	9.80	3.27	1
1-Methyldibenzothiophene(1MDT)	ND		ng/l	9.80	3.27	1
C1-Dibenzothiophenes BS	ND		ng/l	9.80	3.27	1
C2-Dibenzothiophenes	ND		ng/l	9.80	3.27	1
C3-Dibenzothiophenes	ND		ng/l	9.80	3.27	1
C4-Dibenzothiophenes	ND		ng/l	9.80	3.27	1
Phenanthrene	ND		ng/l	9.80	5.85	1
3-Methylphenanthrene (3MP)	ND		ng/l	9.80	5.85	1
2-Methylphenanthrene (2MP)	ND		ng/l	9.80	5.85	1
2-Methylanthracene (2MA)	ND		ng/l	9.80	5.85	1
9/4-Methylphenanthrene (9MP)	ND		ng/l	9.80	5.85	1
1-Methylphenanthrene (1MP)	ND		ng/l	9.80	5.85	1
C1-Phenanthrenes/Anthracenes	ND		ng/l	9.80	5.85	1
C2-Phenanthrenes/Anthr BS	ND		ng/l	9.80	5.85	1
C3-Phenanthrenes/Anthracenes	ND		ng/l	9.80	5.85	1
C4-Phenanthrenes/Anthracenes	ND		ng/l	9.80	5.85	1
Retene	ND		ng/l	9.80	5.93	1
Anthracene	ND		ng/l	9.80	3.37	1
Carbazole	ND		ng/l	9.80	5.31	1
Fluoranthene	ND		ng/l	9.80	6.56	1
Benzo(b)fluorene	ND		ng/l	9.80	4.56	1
7H-Benzo(c)fluorene	ND		ng/l	9.80	4.56	1
2-Methylpyrene[1]	ND		ng/l	9.80	6.92	1
4-Methylpyrene[1]	ND		ng/l	9.80	6.92	1
1-Methylpyrene[1]	ND		ng/l	9.80	6.92	1
Pyrene	ND		ng/l	9.80	6.92	1
C1-Fluoranthenes/Pyrenes	ND		ng/l	9.80	6.92	1
C2-Fluoranthenes/Pyrenes	ND		ng/l	9.80	6.92	1
C3-Fluoranthenes/Pyrenes	ND		ng/l	9.80	6.92	1
C4-Fluoranthenes/Pyrenes	ND		ng/l	9.80	6.92	1
Naphthobenzothiophenes	ND		ng/l	9.80	4.28	1
C1-Naphthobenzothiophenes	ND		ng/l	9.80	4.28	1
C2-Naphthobenzothiophenes	ND		ng/l	9.80	4.28	1
C3-Naphthobenzothiophenes	ND		ng/l	9.80	4.28	1
C4-Naphthobenzothiophenes	ND		ng/l	9.80	4.28	1
Benz(a)anthracene	ND		ng/l	9.80	5.91	1

(b) (4)

Project Name: EDWM
Project Number: 60729369
Lab Number: L2503010
Report Date: 01/24/25

SAMPLE RESULTS

Lab ID: L2503010-01
Client ID: D4-DL-0017801-25001-N
Sample Location: HONOLULU, HI
Date Collected: 01/14/25 08:28
Date Received: 01/18/25
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PAHs - (b) (4)						
Chrysene/Triphenylene	ND		ng/l	9.80	6.95	1
C1-Chrysenes	ND		ng/l	9.80	6.95	1
C2-Chrysenes BS	ND		ng/l	9.80	6.95	1
C3-Chrysenes	ND		ng/l	9.80	6.95	1
C4-Chrysenes	ND		ng/l	9.80	6.95	1
Benzo(b)fluoranthene	ND		ng/l	9.80	7.10	1
Benzo(j)+(k)fluoranthene	ND		ng/l	9.80	6.33	1
Benzo(a)fluoranthene	ND		ng/l	9.80	6.33	1
Benzo(e)pyrene	ND		ng/l	9.80	7.00	1
Benzo(a)pyrene	ND		ng/l	9.80	7.46	1
Perylene	ND		ng/l	9.80	4.51	1
Indeno(1,2,3-cd)pyrene	ND		ng/l	9.80	9.41	1
Dibenz(a,h)+(a,c)anthracene	ND		ng/l	9.80	6.36	1
Benzo(g,h,i)perylene	ND		ng/l	9.80	6.47	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Naphthalene-d8	87		50-130
Phenanthrene-d10	88		50-130
Benzo(a)pyrene-d12	93		50-130

(b) (4)

Project Name: EDWM
Project Number: 60729369

Lab Number: L2503010
Report Date: 01/24/25

SAMPLE RESULTS

Lab ID: L2503010-02
Client ID: D4-DL-0017801-25001-3-N
Sample Location: HONOLULU, HI

Date Collected: 01/14/25 08:33
Date Received: 01/18/25
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8270E-SIM(M)
Analytical Date: 01/22/25 04:47
Analyst: (b) (6)

Extraction Method: EPA 3510C
Extraction Date: 01/21/25 10:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PAHs - (b) (4)						
cis/trans-Decalin	ND		ng/l	4.88	2.64	1
C1-Decalins	3.01	J	ng/l	4.88	2.64	1
C2-Decalins	ND		ng/l	4.88	2.64	1
C3-Decalins	ND		ng/l	4.88	2.64	1
C4-Decalins	ND		ng/l	4.88	2.64	1
Naphthalene	ND		ng/l	9.76	2.67	1
C1-Naphthalenes	ND		ng/l	9.76	2.67	1
C2-Naphthalenes	ND		ng/l	9.76	2.67	1
C3-Naphthalenes	ND		ng/l	9.76	2.67	1
C4-Naphthalenes	ND		ng/l	9.76	2.67	1
2-Methylnaphthalene	ND		ng/l	9.76	6.47	1
1-Methylnaphthalene	ND		ng/l	9.76	4.22	1
Benzothiophene	ND		ng/l	9.76	2.52	1
C1-Benzo(b)thiophenes	ND		ng/l	9.76	2.52	1
C2-Benzo(b)thiophenes	ND		ng/l	9.76	2.52	1
C3-Benzo(b)thiophenes	ND		ng/l	9.76	2.52	1
C4-Benzo(b)thiophenes	ND		ng/l	9.76	2.52	1
Biphenyl	ND		ng/l	9.76	2.08	1
2,6-Dimethylnaphthalene	ND		ng/l	9.76	2.98	1
Dibenzofuran	ND		ng/l	9.76	3.66	1
Acenaphthylene	ND		ng/l	9.76	5.10	1
Acenaphthene	ND		ng/l	9.76	3.56	1
2,3,5-Trimethylnaphthalene	ND		ng/l	9.76	1.87	1
Fluorene	ND		ng/l	9.76	4.15	1
C1-Fluorenes	ND		ng/l	9.76	4.15	1
C2-Fluorenes	ND		ng/l	9.76	4.15	1
C3-Fluorenes	ND		ng/l	9.76	4.15	1
Dibenzothiophene	ND		ng/l	9.76	3.26	1

(b) (4)

Project Name: EDWM
Project Number: 60729369
Lab Number: L2503010
Report Date: 01/24/25

SAMPLE RESULTS

Lab ID: L2503010-02
Client ID: D4-DL-0017801-25001-3-N
Sample Location: HONOLULU, HI

Date Collected: 01/14/25 08:33
Date Received: 01/18/25
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PAHs - (b) (4)						
4-Methyldibenzothiophene(4MDT)	ND		ng/l	9.76	3.26	1
2/3-Methyldibenzothiophene(2MDT)	ND		ng/l	9.76	3.26	1
1-Methyldibenzothiophene(1MDT)	ND		ng/l	9.76	3.26	1
C1-Dibenzothiophenes BS	ND		ng/l	9.76	3.26	1
C2-Dibenzothiophenes	ND		ng/l	9.76	3.26	1
C3-Dibenzothiophenes	ND		ng/l	9.76	3.26	1
C4-Dibenzothiophenes	ND		ng/l	9.76	3.26	1
Phenanthrene	ND		ng/l	9.76	5.82	1
3-Methylphenanthrene (3MP)	ND		ng/l	9.76	5.82	1
2-Methylphenanthrene (2MP)	ND		ng/l	9.76	5.82	1
2-Methylanthracene (2MA)	ND		ng/l	9.76	5.82	1
9/4-Methylphenanthrene (9MP)	ND		ng/l	9.76	5.82	1
1-Methylphenanthrene (1MP)	ND		ng/l	9.76	5.82	1
C1-Phenanthrenes/Anthracenes	ND		ng/l	9.76	5.82	1
C2-Phenanthrenes/Anthr BS	ND		ng/l	9.76	5.82	1
C3-Phenanthrenes/Anthracenes	ND		ng/l	9.76	5.82	1
C4-Phenanthrenes/Anthracenes	ND		ng/l	9.76	5.82	1
Retene	ND		ng/l	9.76	5.90	1
Anthracene	ND		ng/l	9.76	3.36	1
Carbazole	ND		ng/l	9.76	5.29	1
Fluoranthene	ND		ng/l	9.76	6.53	1
Benzo(b)fluorene	ND		ng/l	9.76	4.54	1
7H-Benzo(c)fluorene	ND		ng/l	9.76	4.54	1
2-Methylpyrene[1]	ND		ng/l	9.76	6.89	1
4-Methylpyrene[1]	ND		ng/l	9.76	6.89	1
1-Methylpyrene[1]	ND		ng/l	9.76	6.89	1
Pyrene	ND		ng/l	9.76	6.89	1
C1-Fluoranthenes/Pyrenes	ND		ng/l	9.76	6.89	1
C2-Fluoranthenes/Pyrenes	ND		ng/l	9.76	6.89	1
C3-Fluoranthenes/Pyrenes	ND		ng/l	9.76	6.89	1
C4-Fluoranthenes/Pyrenes	ND		ng/l	9.76	6.89	1
Naphthobenzothiophenes	ND		ng/l	9.76	4.26	1
C1-Naphthobenzothiophenes	ND		ng/l	9.76	4.26	1
C2-Naphthobenzothiophenes	ND		ng/l	9.76	4.26	1
C3-Naphthobenzothiophenes	ND		ng/l	9.76	4.26	1
C4-Naphthobenzothiophenes	ND		ng/l	9.76	4.26	1
Benz(a)anthracene	ND		ng/l	9.76	5.88	1

(b) (4)

Project Name: EDWM
Project Number: 60729369
Lab Number: L2503010
Report Date: 01/24/25

SAMPLE RESULTS

Lab ID: L2503010-02
Client ID: D4-DL-0017801-25001-3-N
Sample Location: HONOLULU, HI
Date Collected: 01/14/25 08:33
Date Received: 01/18/25
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PAHs - (b) (4)						
Chrysene/Triphenylene	ND		ng/l	9.76	6.92	1
C1-Chrysenes	ND		ng/l	9.76	6.92	1
C2-Chrysenes BS	ND		ng/l	9.76	6.92	1
C3-Chrysenes	ND		ng/l	9.76	6.92	1
C4-Chrysenes	ND		ng/l	9.76	6.92	1
Benzo(b)fluoranthene	ND		ng/l	9.76	7.06	1
Benzo(j)+(k)fluoranthene	ND		ng/l	9.76	6.30	1
Benzo(a)fluoranthene	ND		ng/l	9.76	6.30	1
Benzo(e)pyrene	ND		ng/l	9.76	6.96	1
Benzo(a)pyrene	ND		ng/l	9.76	7.42	1
Perylene	ND		ng/l	9.76	4.49	1
Indeno(1,2,3-cd)pyrene	ND		ng/l	9.76	9.36	1
Dibenz(a,h)+(a,c)anthracene	ND		ng/l	9.76	6.33	1
Benzo(g,h,i)perylene	ND		ng/l	9.76	6.44	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Naphthalene-d8	86		50-130
Phenanthrene-d10	93		50-130
Benzo(a)pyrene-d12	100		50-130

(b) (4)

Project Name: EDWM
Project Number: 60729369

Lab Number: L2503010
Report Date: 01/24/25

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270E-SIM(M)
Analytical Date: 01/22/25 12:28
Analyst: (b) (6)

Extraction Method: EPA 3510C
Extraction Date: 01/21/25 10:25

Parameter	Result	Qualifier	Units	RL	MDL
PAHs - (b) (4) for sample(s): 01-02 Batch: WG2021989-1					
cis/trans-Decalin	ND		ng/l	5.00	2.71
C1-Decalins	3.89	J	ng/l	5.00	2.71
C2-Decalins	ND		ng/l	5.00	2.71
C3-Decalins	ND		ng/l	5.00	2.71
C4-Decalins	ND		ng/l	5.00	2.71
Naphthalene	ND		ng/l	10.0	2.74
C1-Naphthalenes	ND		ng/l	10.0	2.74
C2-Naphthalenes	ND		ng/l	10.0	2.74
C3-Naphthalenes	ND		ng/l	10.0	2.74
C4-Naphthalenes	ND		ng/l	10.0	2.74
2-Methylnaphthalene	ND		ng/l	10.0	6.63
1-Methylnaphthalene	ND		ng/l	10.0	4.33
Benzothiophene	ND		ng/l	10.0	2.58
C1-Benzo(b)thiophenes	ND		ng/l	10.0	2.58
C2-Benzo(b)thiophenes	ND		ng/l	10.0	2.58
C3-Benzo(b)thiophenes	ND		ng/l	10.0	2.58
C4-Benzo(b)thiophenes	ND		ng/l	10.0	2.58
Biphenyl	ND		ng/l	10.0	2.13
2,6-Dimethylnaphthalene	ND		ng/l	10.0	3.05
Dibenzofuran	ND		ng/l	10.0	3.75
Acenaphthylene	ND		ng/l	10.0	5.23
Acenaphthene	ND		ng/l	10.0	3.65
2,3,5-Trimethylnaphthalene	ND		ng/l	10.0	1.92
Fluorene	ND		ng/l	10.0	4.25
C1-Fluorenes	ND		ng/l	10.0	4.25
C2-Fluorenes	ND		ng/l	10.0	4.25
C3-Fluorenes	ND		ng/l	10.0	4.25
Dibenzothiophene	ND		ng/l	10.0	3.34
4-Methyldibenzothiophene(4MDT)	ND		ng/l	10.0	3.34

(b) (4)

Project Name: EDWM
Project Number: 60729369

Lab Number: L2503010
Report Date: 01/24/25

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270E-SIM(M)
Analytical Date: 01/22/25 12:28
Analyst: (b) (6)

Extraction Method: EPA 3510C
Extraction Date: 01/21/25 10:25

Parameter	Result	Qualifier	Units	RL	MDL
PAHs - (b) (4) for sample(s): 01-02 Batch: WG2021989-1					
2/3-Methyldibenzothiophene(2MDT)	ND		ng/l	10.0	3.34
1-Methyldibenzothiophene(1MDT)	ND		ng/l	10.0	3.34
C1-Dibenzothiophenes BS	ND		ng/l	10.0	3.34
C2-Dibenzothiophenes	ND		ng/l	10.0	3.34
C3-Dibenzothiophenes	ND		ng/l	10.0	3.34
C4-Dibenzothiophenes	ND		ng/l	10.0	3.34
Phenanthrene	ND		ng/l	10.0	5.97
3-Methylphenanthrene (3MP)	ND		ng/l	10.0	5.97
2-Methylphenanthrene (2MP)	ND		ng/l	10.0	5.97
2-Methylanthracene (2MA)	ND		ng/l	10.0	5.97
9/4-Methylphenanthrene (9MP)	ND		ng/l	10.0	5.97
1-Methylphenanthrene (1MP)	ND		ng/l	10.0	5.97
C1-Phenanthrenes/Anthracenes	ND		ng/l	10.0	5.97
C2-Phenanthrenes/Anthr BS	ND		ng/l	10.0	5.97
C3-Phenanthrenes/Anthracenes	ND		ng/l	10.0	5.97
C4-Phenanthrenes/Anthracenes	ND		ng/l	10.0	5.97
Retene	ND		ng/l	10.0	6.05
Anthracene	ND		ng/l	10.0	3.44
Carbazole	ND		ng/l	10.0	5.42
Fluoranthene	ND		ng/l	10.0	6.69
Benzo(b)fluorene	ND		ng/l	10.0	4.65
7H-Benzo(c)fluorene	ND		ng/l	10.0	4.65
2-Methylpyrene[1]	ND		ng/l	10.0	7.06
4-Methylpyrene[1]	ND		ng/l	10.0	7.06
1-Methylpyrene[1]	ND		ng/l	10.0	7.06
Pyrene	ND		ng/l	10.0	7.06
C1-Fluoranthenes/Pyrenes	ND		ng/l	10.0	7.06
C2-Fluoranthenes/Pyrenes	ND		ng/l	10.0	7.06
C3-Fluoranthenes/Pyrenes	ND		ng/l	10.0	7.06

(b) (4)

Project Name: EDWM
Project Number: 60729369

Lab Number: L2503010
Report Date: 01/24/25

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270E-SIM(M)
Analytical Date: 01/22/25 12:28
Analyst: (b) (6)

Extraction Method: EPA 3510C
Extraction Date: 01/21/25 10:25

Parameter	Result	Qualifier	Units	RL	MDL
PAHs - (b) (4) for sample(s): 01-02 Batch: WG2021989-1					
C4-Fluoranthenes/Pyrenes	ND		ng/l	10.0	7.06
Naphthobenzothiophenes	ND		ng/l	10.0	4.37
C1-Naphthobenzothiophenes	ND		ng/l	10.0	4.37
C2-Naphthobenzothiophenes	ND		ng/l	10.0	4.37
C3-Naphthobenzothiophenes	ND		ng/l	10.0	4.37
C4-Naphthobenzothiophenes	ND		ng/l	10.0	4.37
Benz(a)anthracene	ND		ng/l	10.0	6.03
Chrysene/Triphenylene	ND		ng/l	10.0	7.09
C1-Chrysenes	ND		ng/l	10.0	7.09
C2-Chrysenes BS	ND		ng/l	10.0	7.09
C3-Chrysenes	ND		ng/l	10.0	7.09
C4-Chrysenes	ND		ng/l	10.0	7.09
Benzo(b)fluoranthene	ND		ng/l	10.0	7.24
Benzo(j)+(k)fluoranthene	ND		ng/l	10.0	6.46
Benzo(a)fluoranthene	ND		ng/l	10.0	6.46
Benzo(e)pyrene	ND		ng/l	10.0	7.14
Benzo(a)pyrene	ND		ng/l	10.0	7.61
Perylene	ND		ng/l	10.0	4.60
Indeno(1,2,3-cd)pyrene	ND		ng/l	10.0	9.60
Dibenz(a,h)+(a,c)anthracene	ND		ng/l	10.0	6.49
Benzo(g,h,i)perylene	ND		ng/l	10.0	6.60

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Naphthalene-d8	109		50-130
Phenanthrene-d10	111		50-130
Benzo(a)pyrene-d12	116		50-130

(b) (4)

Lab Control Sample Analysis
Batch Quality Control

Project Name: EDWM
Project Number: 60729369

Lab Number: L2503010
Report Date: 01/24/25

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
PAHs - [redacted] Associated sample(s): 01-02 Batch: WG2021989-2 WG2021989-3								
Naphthalene	108		104		50-130	4		30
2-Methylnaphthalene	103		99		50-130	4		30
Acenaphthylene	105		102		50-130	3		30
Acenaphthene	102		99		50-130	3		30
Fluorene	109		106		50-130	3		30
Phenanthrene	106		102		50-130	4		30
Anthracene	120		116		50-130	3		30
Fluoranthene	103		100		50-130	3		30
Pyrene	110		106		50-130	4		30
Benz(a)anthracene	113		108		50-130	5		30
Chrysene/Triphenylene	109		104		50-130	5		30
Benzo(b)fluoranthene	107		102		50-130	5		30
Benzo(j)+(k)fluoranthene	108		103		50-130	5		30
Benzo(a)pyrene	110		104		50-130	6		30
Indeno(1,2,3-cd)pyrene	112		107		50-130	5		30
Dibenz(a,h)+(a,c)anthracene	112		106		50-130	6		30
Benzo(g,h,i)perylene	109		103		50-130	6		30

[redacted]

Lab Control Sample Analysis
Batch Quality Control

Project Name: EDWM
Project Number: 60729369

Lab Number: L2503010
Report Date: 01/24/25

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
PAHs - (b) (4)	Associated sample(s): 01-02	Batch:	WG2021989-2	WG2021989-3				

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Naphthalene-d8	92		89		50-130
Phenanthrene-d10	104		100		50-130
Benzo(a)pyrene-d12	112		107		50-130

(b) (4)

PETROLEUM HYDROCARBONS

(b) (4)

Project Name: EDWM
Project Number: 60729369
Lab Number: L2503010
Report Date: 01/24/25

SAMPLE RESULTS

Lab ID: L2503010-01
Client ID: D4-DL-0017801-25001-N
Sample Location: HONOLULU, HI

Date Collected: 01/14/25 08:28
Date Received: 01/18/25
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8015D(M)
Analytical Date: 01/22/25 04:26
Analyst: (b) (6)

Extraction Method: EPA 3510C
Extraction Date: 01/21/25 10:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Saturated Hydrocarbons by GC-FID - (b) (4)						
n-Nonane (C9)	ND		mg/l	0.000980	0.000485	1
n-Decane (C10)	ND		mg/l	0.000980	0.000493	1
n-Undecane (C11)	ND		mg/l	0.000980	0.000447	1
n-Dodecane (C12)	ND		mg/l	0.000980	0.000544	1
n-Tridecane (C13)	ND		mg/l	0.00490	0.000446	1
2,6,10-Trimethyldodecane (1380)	ND		mg/l	0.000980	0.000422	1
n-Tetradecane (C14)	ND		mg/l	0.000980	0.000422	1
2,6,10-Trimethyltridecane (1470)	ND		mg/l	0.000980	0.000356	1
n-Pentadecane (C15)	ND		mg/l	0.000980	0.000356	1
n-Hexadecane (C16)	ND		mg/l	0.000980	0.000276	1
Norpristane (1650)	ND		mg/l	0.000980	0.000235	1
n-Heptadecane (C17)	ND		mg/l	0.000980	0.000249	1
Pristane	ND		mg/l	0.000980	0.000235	1
n-Octadecane (C18)	ND		mg/l	0.000980	0.000910	1
Phytane	ND		mg/l	0.000980	0.000179	1
n-Nonadecane (C19)	ND		mg/l	0.000980	0.000217	1
n-Eicosane (C20)	ND		mg/l	0.000980	0.000158	1
n-Heneicosane (C21)	ND		mg/l	0.000980	0.000158	1
n-Docosane (C22)	ND		mg/l	0.000980	0.000167	1
n-Tricosane (C23)	ND		mg/l	0.000980	0.000188	1
n-Tetracosane (C24)	ND		mg/l	0.000980	0.000274	1
n-Pentacosane (C25)	ND		mg/l	0.00490	0.000674	1
n-Hexacosane (C26)	ND		mg/l	0.000980	0.000338	1
n-Heptacosane (C27)	ND		mg/l	0.000980	0.000362	1
n-Octacosane (C28)	ND		mg/l	0.000980	0.000784	1
n-Nonacosane (C29)	ND		mg/l	0.000980	0.000967	1
n-Triacontane (C30)	ND		mg/l	0.000980	0.000200	1
n-Hentriacontane (C31)	ND		mg/l	0.000980	0.000356	1

(b) (4)

Project Name: EDWM
Project Number: 60729369
Lab Number: L2503010
Report Date: 01/24/25

SAMPLE RESULTS

Lab ID: L2503010-01
Client ID: D4-DL-0017801-25001-N
Sample Location: HONOLULU, HI
Date Collected: 01/14/25 08:28
Date Received: 01/18/25
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Saturated Hydrocarbons by GC-FID - (b) (4)						
n-Dotriacontane (C32)	ND		mg/l	0.000980	0.000199	1
n-Tritriacontane (C33)	ND		mg/l	0.000980	0.000204	1
n-Tetratriacontane (C34)	ND		mg/l	0.000980	0.000192	1
n-Pentatriacontane (C35)	ND		mg/l	0.000980	0.000210	1
n-Hexatriacontane (C36)	ND		mg/l	0.000980	0.000216	1
n-Heptatriacontane (C37)	ND		mg/l	0.000980	0.000229	1
n-Octatriacontane (C38)	ND		mg/l	0.000980	0.000403	1
n-Nonatriacontane (C39)	ND		mg/l	0.000980	0.000208	1
n-Tetracontane (C40)	ND		mg/l	0.000980	0.000208	1
Total Petroleum Hydrocarbons (C9-C44)	ND		mg/l	0.0324	0.0272	1
Total Saturated Hydrocarbons	ND		mg/l	0.000980	0.000158	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
ortho-terphenyl	84		50-130
d50-Tetracosane	81		50-130

(b) (4)

Project Name: EDWM
Project Number: 60729369
Lab Number: L2503010
Report Date: 01/24/25

SAMPLE RESULTS

Lab ID: L2503010-02
Client ID: D4-DL-0017801-25001-3-N
Sample Location: HONOLULU, HI

Date Collected: 01/14/25 08:33
Date Received: 01/18/25
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8015D(M)
Analytical Date: 01/22/25 05:50
Analyst: (b) (6)

Extraction Method: EPA 3510C
Extraction Date: 01/21/25 10:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Saturated Hydrocarbons by GC-FID - (b) (4)						
n-Nonane (C9)	ND		mg/l	0.000976	0.000483	1
n-Decane (C10)	ND		mg/l	0.000976	0.000491	1
n-Undecane (C11)	ND		mg/l	0.000976	0.000445	1
n-Dodecane (C12)	ND		mg/l	0.000976	0.000541	1
n-Tridecane (C13)	ND		mg/l	0.00488	0.000444	1
2,6,10-Trimethyldodecane (1380)	ND		mg/l	0.000976	0.000420	1
n-Tetradecane (C14)	ND		mg/l	0.000976	0.000420	1
2,6,10-Trimethyltridecane (1470)	ND		mg/l	0.000976	0.000354	1
n-Pentadecane (C15)	ND		mg/l	0.000976	0.000354	1
n-Hexadecane (C16)	ND		mg/l	0.000976	0.000275	1
Norpristane (1650)	ND		mg/l	0.000976	0.000234	1
n-Heptadecane (C17)	ND		mg/l	0.000976	0.000248	1
Pristane	ND		mg/l	0.000976	0.000234	1
n-Octadecane (C18)	ND		mg/l	0.000976	0.000905	1
Phytane	ND		mg/l	0.000976	0.000178	1
n-Nonadecane (C19)	ND		mg/l	0.000976	0.000216	1
n-Eicosane (C20)	0.000157	J	mg/l	0.000976	0.000157	1
n-Heneicosane (C21)	ND		mg/l	0.000976	0.000157	1
n-Docosane (C22)	ND		mg/l	0.000976	0.000166	1
n-Tricosane (C23)	ND		mg/l	0.000976	0.000187	1
n-Tetracosane (C24)	ND		mg/l	0.000976	0.000273	1
n-Pentacosane (C25)	ND		mg/l	0.00488	0.000670	1
n-Hexacosane (C26)	0.000390	J	mg/l	0.000976	0.000336	1
n-Heptacosane (C27)	0.000425	J	mg/l	0.000976	0.000360	1
n-Octacosane (C28)	ND		mg/l	0.000976	0.000780	1
n-Nonacosane (C29)	ND		mg/l	0.000976	0.000962	1
n-Triacontane (C30)	0.000225	J	mg/l	0.000976	0.000199	1
n-Hentriacontane (C31)	ND		mg/l	0.000976	0.000354	1

(b) (4)

Project Name: EDWM
Project Number: 60729369
Lab Number: L2503010
Report Date: 01/24/25

SAMPLE RESULTS

Lab ID: L2503010-02
Client ID: D4-DL-0017801-25001-3-N
Sample Location: HONOLULU, HI

Date Collected: 01/14/25 08:33
Date Received: 01/18/25
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Saturated Hydrocarbons by GC-FID - (b) (4)						
n-Dotriacontane (C32)	ND		mg/l	0.000976	0.000198	1
n-Tritriacontane (C33)	ND		mg/l	0.000976	0.000203	1
n-Tetratriacontane (C34)	ND		mg/l	0.000976	0.000191	1
n-Pentatriacontane (C35)	ND		mg/l	0.000976	0.000209	1
n-Hexatriacontane (C36)	ND		mg/l	0.000976	0.000215	1
n-Heptatriacontane (C37)	ND		mg/l	0.000976	0.000228	1
n-Octatriacontane (C38)	ND		mg/l	0.000976	0.000401	1
n-Nonatriacontane (C39)	ND		mg/l	0.000976	0.000207	1
n-Tetracontane (C40)	ND		mg/l	0.000976	0.000207	1
Total Petroleum Hydrocarbons (C9-C44)	ND		mg/l	0.0322	0.0270	1
Total Saturated Hydrocarbons	0.00120	J	mg/l	0.000976	0.000157	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
ortho-terphenyl	90		50-130
d50-Tetracosane	88		50-130

(b) (4)

Project Name: EDWM
Project Number: 60729369

Lab Number: L2503010
Report Date: 01/24/25

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8015D(M)
Analytical Date: 01/21/25 17:15
Analyst: (b) (6)

Extraction Method: EPA 3510C
Extraction Date: 01/21/25 10:25

Parameter	Result	Qualifier	Units	RL	MDL
Saturated Hydrocarbons by GC-FID - (b) (4) for sample(s): 01-02 Batch: WG2021989-1					
n-Nonane (C9)	ND		mg/l	0.00100	0.000495
n-Decane (C10)	ND		mg/l	0.00100	0.000503
n-Undecane (C11)	ND		mg/l	0.00100	0.000456
n-Dodecane (C12)	ND		mg/l	0.00100	0.000555
n-Tridecane (C13)	ND		mg/l	0.00500	0.000455
2,6,10-Trimethyldodecane (1380)	ND		mg/l	0.00100	0.000430
n-Tetradecane (C14)	ND		mg/l	0.00100	0.000430
2,6,10-Trimethyltridecane (1470)	ND		mg/l	0.00100	0.000363
n-Pentadecane (C15)	ND		mg/l	0.00100	0.000363
n-Hexadecane (C16)	ND		mg/l	0.00100	0.000282
Norpristane (1650)	ND		mg/l	0.00100	0.000240
n-Heptadecane (C17)	ND		mg/l	0.00100	0.000254
Pristane	ND		mg/l	0.00100	0.000240
n-Octadecane (C18)	ND		mg/l	0.00100	0.000928
Phytane	ND		mg/l	0.00100	0.000183
n-Nonadecane (C19)	ND		mg/l	0.00100	0.000221
n-Eicosane (C20)	0.000166	J	mg/l	0.00100	0.000161
n-Heneicosane (C21)	ND		mg/l	0.00100	0.000161
n-Docosane (C22)	ND		mg/l	0.00100	0.000170
n-Tricosane (C23)	ND		mg/l	0.00100	0.000192
n-Tetracosane (C24)	ND		mg/l	0.00100	0.000280
n-Pentacosane (C25)	ND		mg/l	0.00500	0.000687
n-Hexacosane (C26)	ND		mg/l	0.00100	0.000345
n-Heptacosane (C27)	ND		mg/l	0.00100	0.000369
n-Octacosane (C28)	ND		mg/l	0.00100	0.000800
n-Nonacosane (C29)	ND		mg/l	0.00100	0.000986
n-Triacontane (C30)	ND		mg/l	0.00100	0.000204
n-Hentriacontane (C31)	ND		mg/l	0.00100	0.000363
n-Dotriacontane (C32)	ND		mg/l	0.00100	0.000203

(b) (4)

Project Name: EDWM
Project Number: 60729369

Lab Number: L2503010
Report Date: 01/24/25

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8015D(M)
Analytical Date: 01/21/25 17:15
Analyst: (b) (6)

Extraction Method: EPA 3510C
Extraction Date: 01/21/25 10:25

Parameter	Result	Qualifier	Units	RL	MDL
Saturated Hydrocarbons by GC-FID - (b) (4) for sample(s): 01-02 Batch: WG2021989-1					
n-Tritriacontane (C33)	ND		mg/l	0.00100	0.000208
n-Tetratriacontane (C34)	ND		mg/l	0.00100	0.000196
n-Pentatriacontane (C35)	ND		mg/l	0.00100	0.000214
n-Hexatriacontane (C36)	ND		mg/l	0.00100	0.000220
n-Heptatriacontane (C37)	ND		mg/l	0.00100	0.000234
n-Octatriacontane (C38)	ND		mg/l	0.00100	0.000411
n-Nonatriacontane (C39)	ND		mg/l	0.00100	0.000212
n-Tetracontane (C40)	ND		mg/l	0.00100	0.000212
Total Petroleum Hydrocarbons (C9-C44)	ND		mg/l	0.0330	0.0277
Total Saturated Hydrocarbons	0.000166	J	mg/l	0.00100	0.000161

Surrogate	%Recovery	Qualifier	Acceptance Criteria
ortho-terphenyl	93		50-130
d50-Tetracosane	91		50-130

(b) (4)

Lab Control Sample Analysis
Batch Quality Control

Project Name: EDWM
Project Number: 60729369

Lab Number: L2503010
Report Date: 01/24/25

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Saturated Hydrocarbons by GC-FID - (b) (4) Associated sample(s): 01-02 Batch: WG2021989-2 WG2021989-3								
Nonane (C9)	72		68		50-130	6		30
n-Decane (C10)	79		75		50-130	5		30
n-Dodecane (C12)	90		86		50-130	5		30
n-Tetradecane (C14)	95		92		50-130	3		30
n-Hexadecane (C16)	102		98		50-130	4		30
n-Octadecane (C18)	105		101		50-130	4		30
n-Nonadecane (C19)	103		99		50-130	4		30
n-Eicosane (C20)	105		101		50-130	4		30
n-Docosane (C22)	102		97		50-130	5		30
n-Tetracosane (C24)	109		104		50-130	5		30
n-Hexacosane (C26)	102		97		50-130	5		30
n-Octacosane (C28)	102		97		50-130	5		30
n-Triacontane (C30)	101		96		50-130	5		30
n-Hexatriacontane (C36)	89		84		50-130	6		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
ortho-terphenyl	101		97		50-130
d50-Tetracosane	99		96		50-130

(b) (4)

Project Name: EDWM
Project Number: 60729369

Lab Number: L2503010
Report Date: 01/24/25

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Present/Intact

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2503010-01A	Vial Ascorbic Acid/HCl preserved	A	NA		2.6	Y	Present/Intact		A2-PIANO8260(14)
L2503010-01B	Vial Ascorbic Acid/HCl preserved	A	NA		2.6	Y	Present/Intact		A2-PIANO8260(14)
L2503010-01C	Vial Ascorbic Acid/HCl preserved	A	NA		2.6	Y	Present/Intact		A2-PIANO8260(14)
L2503010-01D	Amber 1L Na2S2O3	A	7	7	2.6	Y	Present/Intact		A2-SHC(7),A2-ALKPAH(7)
L2503010-01E	Amber 1L Na2S2O3	A	7	7	2.6	Y	Present/Intact		A2-SHC(7),A2-ALKPAH(7)
L2503010-02A	Vial Ascorbic Acid/HCl preserved	A	NA		2.6	Y	Present/Intact		A2-PIANO8260(14)
L2503010-02B	Vial Ascorbic Acid/HCl preserved	A	NA		2.6	Y	Present/Intact		A2-PIANO8260(14)
L2503010-02C	Vial Ascorbic Acid/HCl preserved	A	NA		2.6	Y	Present/Intact		A2-PIANO8260(14)
L2503010-02D	Amber 1L Na2S2O3	A	7	7	2.6	Y	Present/Intact		A2-SHC(7),A2-ALKPAH(7)
L2503010-02E	Amber 1L Na2S2O3	A	7	7	2.6	Y	Present/Intact		A2-SHC(7),A2-ALKPAH(7)

*Values in parentheses indicate holding time in days

(b) (4)

Project Name:	EDWM	**Lab Number:**	L2503010
Project Number:	60729369	**Report Date:**	01/24/25

GLOSSARY

Acronyms

DL - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LOD - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

LOQ - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

NR - No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

Project Name:	EDWM	**Lab Number:**	L2503010
Project Number:	60729369	**Report Date:**	01/24/25

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers

(b) (4)

Project Name:	EDWM	**Lab Number:**	L2503010
Project Number:	60729369	**Report Date:**	01/24/25

Data Qualifiers

Identified Compounds (TICs). For calculated parameters, this represents that one or more values used in the calculation were estimated.

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name: EDWM
Project Number: 60729369

Lab Number: L2503010
Report Date: 01/24/25

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.

LIMITATION OF LIABILITIES

(b) (4) performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of (b) (4) shall be to re-perform the work at it's own expense. In no event shall (b) (4) be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by (b) (4).

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

(b) (4)

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

(b) (4)
EPA 624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625.1: alpha-Terpineol
EPA 8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol, Azobenzene; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

(b) (4)
SM 2540D: TSS.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
MADEP-APH.
Nonpotable Water: EPA RSK-175 Dissolved Gases
Biological Tissue Matrix: EPA 3050B

(b) (4)
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Nonpotable Water: EPA RSK-175 Dissolved Gases

The following test method is not included in our New Jersey Secondary NELAP Scope of Accreditation:

(b) (4)
(b) (4) **SOP 23528**

The following analytes are included in our Massachusetts DEP Scope of Accreditation

(b) (4)

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 524.2: THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N**, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables).
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, EPA 1600, EPA 1603, SM9222D.**

(b) (4)

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb**,** As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

Certification IDs:

(b) (4)
CT PH-0826, IL 200077, IN C-MA-03, KY JY98045, ME MA00086, MD 348, MA M-MA086, NH 2064, NJ MA935, NY 11148, NC (DW) 25700, NC (NPW/SCM) 666, OR MA-1316, PA 68-03671, RI LAO00065, TX T104704476, VT VT-0935, VA 460195

(b) (4)
CT PH-0825, ANAB/DoD L2474, IL 200081, IN C-MA-04, KY KY98046, LA 3090, ME MA00030, MI 9110, MN 025-999-495, NH 2062, NJ MA015, NY 11627, NC (NPW/SCM) 685, OR MA-0262, PA 68-02089, RI LAO00299, TX T-104704419, VT VT-0015, VA 460194, WA C954

(b) (4)
ANAB/DoD L2474, ME MA01156, MN 025-999-498, NH 2249, NJ MA025, NY 12191, OR 4203, TX T104704583, VA 460311, WA C1104.

For a complete listing of analytes and methods, please contact your Project Manager.

[redacted]

CHAIN OF CUSTODY

PAGE OF

Date Rec'd in Lab: 1/18/25

[redacted] Job #: L2503010

Project Information

Project Name: CTO24F0139

Project Location: Honolulu, HI

Project #: 60729369.00.46.01

Project Manager: [redacted]

[redacted] Quote #:

Client Information

Client: AECOM

Address: 1001 Bishop Street #1600

Honolulu, HI 96813

Phone: 978-905-2133

Fax:

Email: [redacted]

☐ These samples have been Previously analyzed by [redacted]

Turn-Around Time

☐ Standard ☒ Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Report Information Data Deliverables

☐ FAX ☐ EMAIL

☐ ADEx ☒ Add'l Deliverables

Billing Information

☐ Same as Client info PO #: 1677061

Regulatory Requirements/Report Limits

State/Fed Program | Criteria

Other Project Specific Requirements/Comments/Detection Limits:

EDMS DB: JBPHH Drinking Water LTM; Event: EDWM A3 Residentia Samplingl; Zone: A3

☐ MS/MSD (at unit cost) will be omitted unless you check here

ANALYSIS

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	8270 SIM Parent and Alkylated PAHs	8015 Sat Hydrocarbons	8260 PIANO + TICs
-01	D4-DL-0017801-25001-N	1/14/25	8:23	DW		☒	☒	☒
-02	D4-DL-0017801-25001-3-N	1/14/25	8:33	DW		☒	☒	☒

SAMPLE HANDLING

Filtration

☐ Done

☐ Not Needed

☐ Lab to do

Preservation

☐ Lab to do

(Please specify below)

Sample Specific Comments

TOTAL # BOTTLES

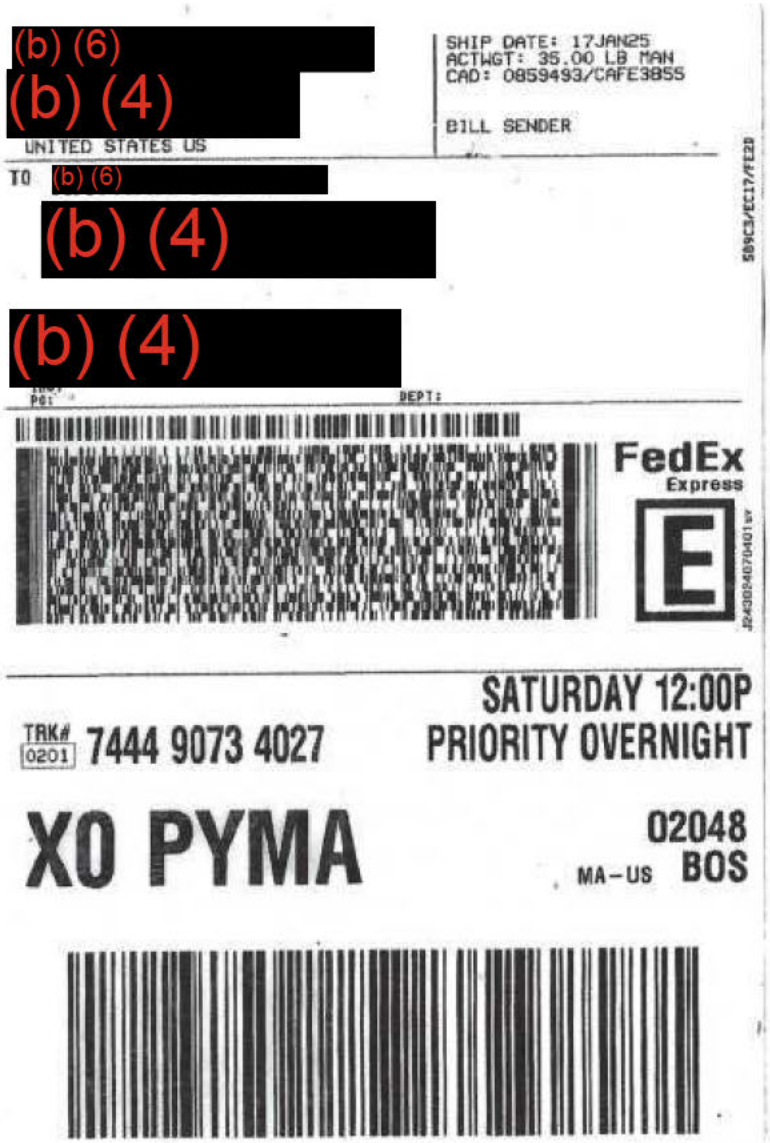
Container Type

Preservative

Relinquished By:	Date/Time	Received By:	Date/Time
[redacted]	1-17-25 12pm	Fedex	
Fedex		[redacted]	1/18/25 10:42

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to [redacted]s Payment Terms.

FORM NO: 101-09(I-NJ) (rev. 5-JAN-12)


(b) (6)
(b) (4)
UNITED STATES US
SHIP DATE: 17JAN25
ACTWGT: 35.00 LB MAN
CAD: 0859493/CAFE3855
BILL SENDER
TO (b) (6)
(b) (4)
(b) (4)
DEPT:
FedEx
Express
SATURDAY 12:00P
PRIORITY OVERNIGHT
TRK# 0201 7444 9073 4027
XO PYMA
02048
MA-US BOS

[redacted] [redacted]

CHAIN OF COUSTODY

PAGE OF

Date Rec'd in Lab:

[redacted] Job #:

[redacted] [redacted]
[redacted] [redacted]
[redacted] [redacted]

Client Information

Client: AECOM

Address: 1001 Bishop Street #1600

Honolulu, HI 96813

Phone: [redacted]

Fax:

Email [redacted]

☐ These samples have been Previously analyzed by [redacted]

Project Information

Project Name: CTO24F0139

Project Location: Honolulu, HI

Project #: 60729369.00.46.01

Project Manager: [redacted]

[redacted] Quote #:

Turn-Around Time

☐ Standard ☒ Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Report Information / Data Deliverables

☐ FAX ☐ EMAIL

☐ ADEx ☒ Add'l Deliverables

Billing Information

☐ Same as Client info PO #: 1677061

Regulatory Requirements/Report Limits

State/Fed Program *Criteria*

Other Project Specific Requirements/Comments/Detection Limits:

EDMS DB: JBPHH Drinking Water LTM; Event: EDWM A3 Residentia Samplingl; Zone: A3

☐ MS/MSD (at unit cost) will be omitted unless you check here

ANALYSIS

SAMPLE HANDLING
Filtration
☐ Done
☐ Not Needed
☐ Lab to do
Preservation
☐ Lab to do
(Please specify below)

[redacted] Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	8270 SIM Parent and Alkylated PAHs	8015 Sat Hydrocarbons	8260 PIANO + TICs										Sample Specific Comments	TOTAL # BOTTLES
						☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐		
	D4-DL-0017801-25001-N	1/14/25	8:28	DW		☒	☒	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐		
	D4-DL-0017801-25001-3-N	1/14/25	8:33	DW		☒	☒	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐		
						☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐		
						☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐		
						☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐		
						☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐		
						☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐		
						☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐		
						☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐		
Container Type						-	-	-	-	-	-	-	-	-	-	-	-		
Preservative						-	-	-	-	-	-	-	-	-	-	-	-		

Relinquished By:	Date/Time	Received By:	Date/Time

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to [redacted]s Payment Terms.

FORM NO: 101-09(I-NJ)
(rev. 5-JAN-12)

Attachment 3: Glossary of Terms

Glossary of Terms

Alkanes – A series of compounds that contain only carbon and hydrogen atoms with single covalent bonds. These are also known as saturated hydrocarbons.

Calibration Curve – A plot of response vs concentration that is used in calculating the concentration in an unknown sample.

Calibration Standards – A mixture of compounds of known concentrations spanning a range that are analyzed to create a calibration curve.

Carbon Number – The number of carbon atoms contained in a compound. For example, a C10 compound contains 10 carbon atoms.

Chromatogram – A plot of retention time versus detector signal intensity. Detector signal intensity is proportional to concentration.

Diesel Range Organics (DRO) – The DRO area is defined for the JBPHH LTM and EDWM programs as the total area of all peaks that come out (elute) between the observed retention times of C10 (decane, the 10 carbon, straight chain alkane) and the retention time of C24 (tetracosane, the 24 carbon, straight chain alkane). Different carbon ranges may be defined for other programs.

Elute – To pass through the chromatographic column to the detector.

Elution time – The time it takes a particular chemical to reach the detector after injection onto a chromatographic column. Used interchangeably with the term retention time in gas chromatography.

Flame Ionization Detector (FID) – A non-specific detector frequently used in conjunction with gas chromatography. It has good sensitivity and is a universal detector for organic compounds. However, since all organic compounds will give a response, it is not very selective and co-eluting components in a sample will interfere with the analysis.

Gas Chromatography (GC) – An analytical technique used to separate and detect the chemical components of a sample mixture to determine their presence or absence and/or quantities.

Gas Chromatography/Mass Spectrometry (GC/MS) – An analytical method that combines the features of gas-chromatography and mass spectrometry to identify different substances within a test sample.

Gasoline Range Organics (GRO) – The GRO area is defined for the Joint Base Pearl Harbor-Hickam (JBPHH) Long-Term Monitoring (LTM) and Extended Drinking Water Monitoring (EDWM) programs as the total area of all peaks that come out (elute) between the observed retention times of C5 and C12 n-alkanes. Different carbon ranges may be defined for other programs.

Hydrocarbon – An organic chemical compound composed solely of hydrogen and carbon atoms.

Internal Standard – A compound of known concentration that is added to standards, samples, and blanks before analysis. It is used to adjust for matrix effects and/or variability in instrument response.

Jet Propellant 5 (JP-5) – A kerosene type fuel with a high flashpoint and a narrow distillation range defined by the military specification in MIL-DTL-5624W. Greater than 99% of the integrated hydrocarbon mass elutes between the retention times of C9 and C16 n-alkanes.

Mass Spectrometry (MS) – An analytical technique that is used to measure the mass-to-charge ratio of ions. The results are presented as a mass spectrum, a plot of intensity as a function of the mass-to-charge ratio. These spectra are used to determine the elemental or isotopic signature of a sample, the masses of particles and of molecules, and to elucidate the chemical identity or structure of molecules and other chemical compounds.

Mass Spectral Profile – A technique used to analyze the composition of chemical substances by measuring the mass-to-charge ratio (m/z) of ions. This profile is used to identify individual components within a sample by displaying their unique mass spectra.

n-Alkanes – Alkanes in which all carbon atoms are bonded to each other in a linear pattern with a single covalent bond.

Oil Range Organics (ORO) – The ORO area is defined for the JBPHH LTM and EDWM programs as the total area of peaks that elute between the observed retention times of C24 and C40 n-alkanes. Different carbon ranges may be defined for other programs.

Petrogenic – Refers to a substance, typically a hydrocarbon, derived from fossil fuels like petroleum, coal, and natural gas.

PIANO – An acronym for n-Paraffins (P), Isoparaffins (I), Aromatics (A), Naphthenes (N) and Olefins (O), A PIANO analysis is a laboratory procedure using gas chromatography coupled with mass spectrometry (GC/MS) for the identification and measurement of light-end refined products such as gasoline or jet fuel with boiling points up to 250 °C.

Polycyclic Aromatic Hydrocarbon (PAH) – A hydrocarbon composed of multiple aromatic (benzene-like) rings fused together. These compounds are formed primarily through the incomplete combustion of organic materials such as coal, oil, gas, wood, or other carbon-containing substances. They can be water soluble and fat soluble and are stable compounds that can persist in the environment.

Pyrogenic – Refers to a substance created by combustion of fossil fuels or organic matter.

Reporting Limit (RL) – The lowest concentration of a compound that can be accurately reported in a sample. The lowest standard in the calibration curve is set at or below this level.

Retention Time (RT) – The time it takes for a compound to pass through a column and be detected after a sample is injected. Used interchangeably with the term elution time in gas chromatography.

RT Marker – A standard containing n-alkanes with different numbers of carbon atoms and are analyzed with each run for the purpose of determining the beginning and end of carbon ranges of interest.

Standard Operating Procedure (SOP) – A list of prescribed steps that outlines how to perform a task.

Surrogate – A compound similar to the target compounds being analyzed that is added to the sample prior to preparation and analysis at a known concentration. Used to evaluate extraction efficiency and matrix interference on a sample specific basis.

Target Compound – A compound included in calibration standards and may be quantitatively evaluated.

Tentatively Identified Compound (TIC) – A compound that is detected in a sample but was not included in the instrument calibration standards. Its identity can often be determined by comparing its mass spectrum with those in a library.

Total Petroleum Hydrocarbon Analysis by SW-846 Method 8015 – An analytical method that uses gas chromatography to separate chemical compounds and a flame ionization detector to measure the signal. Quantitation is performed by summing the entire area between specified n-alkane retention times.

Total Petroleum Hydrocarbons (TPH) – The sum of all petroleum hydrocarbons detected in a sample.

Appendix D

Fourth Quarter (January – March 2025) of
EDWM MS Results

Appendix D. Fourth Quarter (January – March 2025) of EDWM MS Results

Sample ID	Sample Date	Matrix Spike Concentration (ppb)	Laboratory Result (ppb)	Percent Recovery (%)
OP26951-MS	1/3/2025	68.6	72.5	106%
OP26952-MS	1/3/2025	69.9	67.9	97%
OP26963-MS	1/7/2025	69.2	51.7	75%
OP26964-MS	1/7/2025	69	48	70%
OP26975-MS	1/8/2025	69.4	48	69%
OP26970-MS	1/8/2025	70.5	62.7	89%
OP26979-MS	1/9/2025	68.8	66.7	97%
OP26978-MS	1/9/2025	69.1	47	68%
OP26985-MS	1/10/2025	68.5	50.2	73%
OP26998-MS	1/14/2025	68.5	60.3	88%
OP26997-MS	1/14/2025	69.4	48	69%
OP27005-MS	1/15/2025	69.4	49	71%
OP27012-MS	1/16/2025	69.4	55.3	80%
OP27023-MS	1/17/2025	70.5	66	94%
OP27032-MS	1/21/2025	69.7	48	69%
OP27031-MS	1/21/2025	69.2	47	68%
OP27041-MS	1/22/2025	69.4	63.5	91%
OP27042-MS	1/22/2025	69.7	78.1	112%
OP27055-MS	1/23/2025	68.8	54.3	79%
OP27058-MS	1/24/2025	69.6	57.9	83%
OP27071-MS	1/28/2025	70.4	66.9	95%
OP27070-MS	1/28/2025	69.2	56.9	82%
OP27078-MS	1/29/2025	69.2	82.6	119%
OP27077-MS	1/29/2025	69	62.9	91%
OP27084-MS	1/30/2025	69.7	73.7	106%
OP27094-MS	1/31/2025	69.2	72.8	105%
OP27116-MS	2/4/2025	70.1	83.7	119%
OP27115-MS	2/4/2025	69.4	61.9	89%
OP27124-MS	2/5/2025	69.4	69.4	100%
OP27123-MS	2/5/2025	68.8	64.1	93%
OP27125-MS	2/5/2025	70.9	71.1	100%
OP27132-MS	2/6/2025	69.7	74.8	107%
OP27140-MS	2/7/2025	71.2	91.8	129%
OP27144-MS	2/7/2025	69.6	96	138%
OP27155-MS	2/11/2025	69.7	75.6	108%
OP27156-MS	2/11/2025	70.2	92	131%
OP27163-MS	2/12/2025	69.9	59.9	86%
OP27177-MS	2/14/2025	70.1	81.7	117%
OP27176-MS	2/14/2025	70.8	48	68%
OP27190-MS	2/18/2025	69.8	68.1	98%
OP27212-MS	2/20/2025	69.9	68.6	98%
OP27211-MS	2/20/2025	70.1	86.8	124%
OP27225-MS	2/21/2025	69.9	90.2	129%
OP27232-MS	2/23/2025	69.3	91	131%
OP27233-MS	2/23/2025	71	88.9	125%
OP27243-MS	2/25/2025	70.9	76.4	108%
OP27242-MS	2/25/2025	69.9	62.7	90%
OP27248-MS	2/26/2025	70.4	57.3	81%
OP27259-MS	2/28/2025	71.3	71.3	119%[1]
OP27260-MS	2/28/2025	70.4	106	151%
OP27265-MS	3/1/2025	70.4	52.7	75%
OP27282-MS	3/4/2025	69.8	55.8	80%
OP27281-MS	3/4/2025	69.1	72.6	105%
OP27289-MS	3/5/2025	70.3	75.4	107%
OP27290-MS	3/5/2025	69.7	79.8	114%
OP27296-MS	3/6/2025	69.3	74.5	108%
OP27297-MS	3/6/2025	69.9	84.1	120%
OP27313-MS	3/7/2025	70.7	49.7	70%
OP27314-MS	3/7/2025	70.9	65.3	92%

Appendix D. Fourth Quarter (January – March 2025) of EDWM MS Results

Sample ID	Sample Date	Matrix Spike Concentration (ppb)	Laboratory Result (ppb)	Percent Recovery (%)
OP27332-MS	3/11/2025	69.8	83.7	120%
OP27349-MS	3/13/2025	70.7	70.7	100%
OP27363-MS	3/14/2025	69	78.1	113%
OP27378-MS	3/18/2025	69.6	80.3	115%
OP27379-MS	3/18/2025	69.9	79.9	114%
OP27385-MS	3/19/2025	70.3	85.4	121%
OP27384-MS	3/19/2025	68.8	70	102%
OP27394-MS	3/20/2025	73.7	91.2	124%
OP27402-MS	3/21/2025	71.2	87.7	123%
OP27401-MS	3/21/2025	69.8	92.4	132%
OP27418-MS	3/24/2025	70.3	80.6	115%
OP27424-MS	3/25/2025	68.7	86.7	126%
OP27425-MS	3/25/2025	68.4	89.6	131%
OP27433-MS	3/26/2025	68	81.9	120%
OP27439-MS	3/27/2025	69.1	98	142%
OP27444-MS	3/28/2025	71.3	84.9	119%

Notes

Within the laboratory acceptable percent recovery for MS samples of 50 -150% .

Exceeds the QSM Limits (DRO) of 36 -- 132%.

ND: Non-Detect

[1]Percent recovery was manually calculated by the lab due to the laboratory double-spiking the sample.

Appendix E

EDWM Quarter 4 WQAT Summary Tech Memos/Checklists

Thursday 02 January 2025, 1400

Zone – A3, 4910B Mokupea Place
Location Code: A3-MOKU4910B

BLUF

This WQI was requested following a resident reporting their household experiencing dermatological and respiratory issues. No sheen, particles, cloudiness or odors, were observed in either hot or cold water. Significant amount of what is suspected to be black mold was discovered along the ceiling and floor of the master and upstairs hallway bathroom. Signs of water leaks from the air vents in the upstairs hallway bathroom were observed. Based on the observations made during the WQI inspection, it is recommended to conduct an inspection of the residence to confirm the extent of potential mold effects and to minimize any associated health risks.

A. Resident Demographic / Concerns

- Household consists of four (4) adults and one (1) child.
- Resident for approximately two (2) years.
- The resident reported experiencing dermatological and respiratory issues, noticeably after taking showers. The resident stated that the entire household has developed rashes throughout their body. Medical attention has been sought.

B. **Water Quality Observations and Results**

- Unit was not previously sampled.
- No sheen, particles, cloudiness or odors, were observed from either the hot or cold water.
- What appeared to be black mold was discovered along the ceiling and floor of the master and upstairs bathroom.
- Signs of leaks from the air vents were observed in the upstairs hallway bathroom.

- Water Quality Action Team (WQAT) on-site
  - Water Quality Sampling Team – Collected hot and cold samples from the kitchen sink.
  - Community Public Liaison Officer (CPLO) – (b) (6) .
  - Water Quality Investigator(s) – (b) (6) - collected rapid TPH samples from the kitchen sink, upstairs hallway bathroom sink, and master bathroom sink.

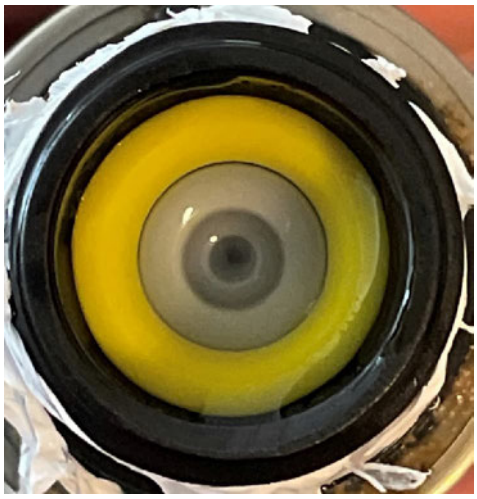
- Results of field testing from the kitchen sink
  - pH – (Expected Range: 6.5 to 8.5)
    - 7.12 (cold)
    - 6.89 (hot)
  - Conductivity - (Expected Range 0 to 800 µS/cm)
    - 239.52 µS/cm (cold)
    - 269.09 µS/cm (hot)
  - Turbidity - (Expected Range: < 5.0 NTU)
    - 1.67 NTU (cold)

    - 0.88 NTU (hot)

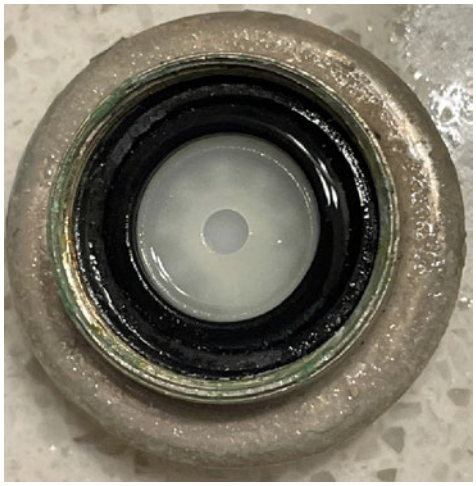
- Free Chlorine - (Expected Range: 0.20 to 4.00 mg/L)
    - 0.66 mg/L (cold)
    - 0.57 mg/L (hot)

- Temperature
    - 78.40 °F (cold)
    - 105.28 °F (hot)

- WQI hot water temperature results collected.
    - Upstairs hallway bathroom sink – 115.8 °F
    - Master bathroom left sink – 117.6 °F



- Figure 1. Interior view of the kitchen sink aerator. No debris was observed. The aerator is in good condition.



- Figure 2. Interior view of the hallway bathroom sink aerator. No debris was observed. The aerator is in good condition.

- Figure 3. View of the master bathroom sink aerator. Significant debris build-up, dirt, was observed alongside the outer surface of the aerator. The aerator is in fair condition.

- Figure 4. View of the upstairs hallway bathroom ceiling. Potential black mold can be seen.

- Figure 5. View of the master bathroom sink, shower, and ceiling, respectively. Potential black mold can be seen.

C. Hot Water Heater

- 119-gallon solar electric water heater manufactured by American Water Heater Co. in 2015
- Water heater thermostat dial was set to approximately 125 °F.
- Visual observation showed the water heater to be in good condition with no signs of external corrosion.
- No visible maintenance records were found on the water heater.
- The supply piping material is copper.

D. Point-of-Use Treatment

No filters installed.

E. Overall Assessment

- Temperature was measured at all available fixtures during inspection. Hot water temperature was measured by both water quality sampling team and Investigator. The Water Quality Investigator took hot water temperatures with an instant read digital thermometer and the Water Quality Sampling Team took measurements with an Aqua Troll 600 (Water Quality Meter). The difference in decimal places in the two hot water temperatures listed is due to the different instruments. The Water Quality Investigator confirmed all hot water fixtures, except the kitchen sink, could reach a temperature of 115°F or above.
- Potential black mold was observed in the upstairs hallway bathroom.
- Analytical results will determine if drinking water complies with the applicable standards.

F. Recommendations

- Follow up with analytical water quality results when available.
- Confirm potential mold sites.
- No further action is required.

Conclusion

This WQI was requested following the resident experiencing dermatological and respiratory issues after showering. No sheen, particles, cloudiness or odors were observed in either hot or cold water. All water quality parameters collected during the inspection were within expected ranges. Potential black mold was discovered in the upstairs bathrooms. Confirmation by a mold specialist is recommended to assess the extent of the potential mold effects and minimize health risks. The resident will be informed of their analytical results when available by the CPLO.

Thursday 23 January 2025, 1200

Zone – H1, 2674 Okamura St
Location Code: H1-OKAM2674

BLUF

The resident recently moved into the neighborhood and requested a WQI to determine their water quality. The resident had no water quality concerns. All water quality parameters collected were within expected ranges. No sheen, cloudiness, or odors were observed in either the hot or cold water. During the WQI inspection, leaks, stains, and rust were observed on the water heater (Fig 5). Because of the observed corrosion/wear, it is recommended to inspect and address potential sources of leaks, ensure proper sealing and drainage around the access panel and fittings, and evaluate the water heater for structural integrity. Alternatively, the water heater could be replaced with a new unit.

A. Resident Demographic / Concerns
- Household consists of two (2) adults and two (2) children
- Resident since 17 January 2025.
- Resident had no water quality concerns

B. **Water Quality Observations and Results**
- Unit was previously sampled on 25 July 2022. Copper, lead, barium, and total trihalomethanes were detected at concentrations below project screening levels.
- No sheen, particles, cloudiness or odors, were observed from either the hot or cold water.

- Water Quality Action Team (WQAT) on-site
  - Water Quality Sampling Team – Collected hot and cold water samples from the kitchen sink.
  - Community Public Liaison Officer (CPLO) – (b) (6) .
  - Water Quality Investigator(s) – (b) (6) – Collected rapid TPH samples from the kitchen sink, downstairs hallway bathroom sinks, upstairs hallway bathroom sinks, and master bathroom sinks.
  - Directorate of Public Works- Environmental Division (DPW)- (b) (6) .

- Results of field testing from the kitchen sink
  - pH – (Expected Range: 6.5 to 8.5)
    - 7.05 (cold)
    - 7.02 (hot)

  - Conductivity - (Expected Range 0 to 800 µS/cm)
    - 274.04 µS/cm (cold)
    - 301.04 µS/cm (hot)

  - Turbidity - (Expected Range: < 5.0 NTU)
    - 0.28 NTU (cold)
    - 0.52 NTU (hot)

  - Free Chlorine - (Expected Range: 0.20 to 4.00 mg/L)

    - 1.32 mg/L (cold)
    - 1.22 mg/L (hot)

  - Temperature
    - 74.89 °F (cold)
    - 104.49 °F (hot)

- WQI hot water temperature results collected.
    - Downstairs hallway bathroom sink – 116.3°F
    - Upstairs hallway bathroom left sink – 118.4°F
    - Upstairs hallway bathroom right sink – 118.1°F
    - Master bathroom left sink – 117.3 °F
    - Master bathroom right sink – 116.9 °F

- Figure 1. Interior view of the kitchen sink aerator. No debris was observed. The aerator is in good condition.

- Figure 2. View of the downstairs hallway bathroom sink aerator. No debris was observed. The aerator is in good condition.

- Figure 3. View of the upstairs hallway bathroom left and right sink aerator. No debris was observed. The aerator is in good condition.

- Figure 4. View of the master bedroom bathroom left and right sink aerator. No debris was observed. The aerator is in good condition.

- Figure 5. View of the water heater access panel and surrounding area. Rust streaks and water stains are observed below the panel, indicating potential water presence. The thermal fuse assembly, the thermostat bracket, and adjacent metal surfaces exhibit visible corrosion.

C. Hot Water Heater

- 119-gallon solar water heater manufactured by Sun Earth Inc. in April 2011.
- Water heater thermostat dial was set to approximately 115-120 °F.
- Visual observation showed the water heater to be in fair condition with signs of external corrosion.
- No visible maintenance records were found on the water heater.
- The supply piping material is copper.

D. Point-of-Use Treatment

No filters installed.

E. Overall Assessment

- Temperature was measured at all available fixtures during inspection. Hot water temperature was measured by the Water Quality Investigator. The Water Quality Investigator took hot water temperatures with an instant read digital thermometer. The Water Quality Investigator confirmed all hot water fixtures, except the kitchen sink, could reach a temperature of 115°F or above.
- Analytical results will determine if drinking water complies with the applicable standards.

F. Recommendations

- Follow up with analytical water quality results when available.
- Inspect water heater to determine structural integrity, consider replacement of the water heater.

Conclusion

The resident recently moved into the neighborhood and requested a WQI to determine their water quality. The resident had no water quality concerns. All water quality parameters collected were within expected ranges. Based on the observations made during the inspection, it is recommended to further inspect water heater for structural integrity or consider replacement of the unit. The resident will be informed of their analytical results when available by the CPLO.

Monday 3 February 2025, 1000

Zone – D2, 508 Julian Avenue
Location Code: D2-JULI0508

BLUF

The resident was contacted as part of the list of 50 homes that are being re-sampled, and during this contact the resident had several questions and concerns. Many concerns were regarding medical concerns and requested WQI visit. The resident moved into the residence about two years ago. The resident reported concerns about a sewage-like odor coming from the hot water of their washing machine. The resident has experienced dermatological issues after taking a shower. Resident was diagnosed with atopic dermatitis in 2021. One of the children in the household is experiencing similar dermatological issues, such as skin rashes, but has not been officially diagnosed with a condition. Water is only used to shower and daily household cleaning (i.e. laundry and dishes). All water quality parameters collected were within expected ranges, except for hot water temperatures, which were measured below 115°F. No sheen, particles, cloudiness, or odors were observed in either the hot or cold water during the investigation.

A. Resident Demographic / Concerns

- Household consists of two (2) adults and two (2) children
- Resident for approximately two (2) years.
  The resident reported concerns about sewage-like odors coming from water and has experienced dermatological issues after taking a shower. The sewage-like odors were reported following use of the washing machine with hot water. The resident reported replacing the washing machine with their own unit (not one owned by housing) and that the odor persists. The resident no longer uses the washing machine on hot water due to the odors. They only wash clothes on cold water.
- Resident has observed black-colored mold inside washing machine cavities.

B. Water Quality Observations and Results

- Unit was previously sampled on 23 February 2024 and 27 July 2023. Benzo(a)pyrene, chromium, copper, lead, barium, selenium, total petroleum hydrocarbons (TPH), and total trihalomethanes (TTHMs)were detected at concentrations below project screening levels during the July 2023 sampling event. Results from the February 2024 sampling event were for TPH only and the results were non-detect.
- No sheen, particles, cloudiness, or odors were observed from either the hot or cold water.
- During WQI, the team inspected the washing machine for odors and was not able to detect a sewage odor at the time of the inspection. Each faucet was tested for odors by filling a 500ml beaker with 250ml of water, once water settled the beakers were wafted for odors. No odors were detected at any faucet within residence.
- Black-colored mold was observed inside the washing machine within the detergent drawer. Resident was in the process of cleaning the drawer when WQI team arrived.

- Water Quality Action Team (WQAT) on-site
  - Water Quality Sampling Team – Collected hot and cold water samples from the upstairs hallway bathroom sink.

- Community Public Liaison Officer (CPLO) – (b) (6) .
- Water Quality Investigator(s) – (b) (6) and (b) (6) – Collected rapid TPH samples from the kitchen sink, downstairs hallway bathroom sink, upstairs hallway bathroom sinks, and master bathroom sinks.

- Results of field testing from the upstairs hallway bathroom sink
  - pH – (Expected Range: 6.5 to 8.5)
    - 7.36 (cold)
    - 7.26 (hot)

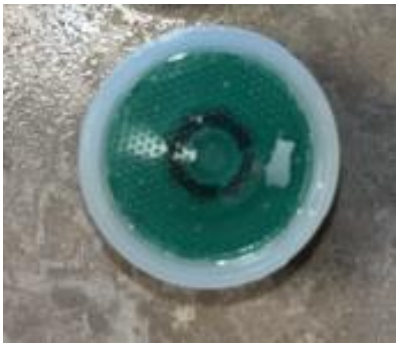
  - Conductivity - (Expected Range 0 to 800 µS/cm)
    - 294 µS/cm (cold)
    - 278 µS/cm (hot)

  - Turbidity - (Expected Range: < 5.0 NTU)
    - 1.44 NTU (cold)
    - 0.78 NTU (hot)

  - Free Chlorine - (Expected Range: 0.20 to 4.00 mg/L)
    - 0.88 mg/L (cold)
    - 0.66 mg/L (hot)

  - Temperature
    - 73.74 °F (cold)
    - 94.37 °F (hot)

- WQI hot water temperature results collected.
  - Kitchen sink – 114.0 °F
  - Downstairs hallway bathroom sink – 109.0 °F
  - Upstairs hallway bathroom sink – 106.1 °F
  - Master bathroom left sink – 107.0 °F
  - Master bathroom right sink – 103.6 °F



- **Figure 1.** Interior view of the kitchen sink aerator. White debris was observed, which may be from a plastic drip tube that has broken down within the hot water heater. The aerator is in good condition.

- **Figure 2.** Interior view of the downstairs hallway bathroom sink aerator. White debris was observed, which may be a plastic drip tube that has broken down within the hot water heater. The aerator is in good condition.


- **Figure 3.** View of the master bedroom bathroom left (blue) and right (pink) sink aerator. White debris was observed on the left sink aerator, which may be from a plastic drip tube that has broken down within the hot water heater. The left sink aerator is in good condition. The right sink aerator is in fair condition.

- **Figure 4.** View of the upstairs hallway bathroom sink aerator. No debris was observed. The aerator is in good condition.

- **Figure 5.** View of the water heater access panel and surrounding area. No corrosion or water stains were observed.

C. Hot Water Heater

- 50-gallon water heater manufactured by Bradford White Corporation in June 2010.
- Water heater thermostat dial was set to approximately 115-120 °F.
- Visual observation showed the water heater to be in good condition with no signs of external corrosion or water stains.
- No visible maintenance records were found on the water heater. Prior maintenance records were provided by the resident. The earliest date of recorded maintenance was December 2015. There were no records of water heater maintenance reported.
- The supply piping material was hidden behind the water heater.

D. Point-of-Use Treatment

Filters were installed on showers. Filters do not appear in accordance with any NSF standards. The resident reported the filter to be a High-Capacity Shower Filter manufactured by Pono Revival.

E. Overall Assessment

- Temperature was measured at all available fixtures during inspection. Hot water temperature was measured by the Water Quality Investigator. The Water Quality Investigator took hot water temperatures with an instant read digital thermometer. All the hot water fixtures were below a temperature of 115°F.
- WQI team observed black-colored mold inside washing machine cavities.
- Analytical results will determine if drinking water complies with the applicable standards.
- WQI team inspected and did not observe odors from the washing machine.

F. Recommendations

- Follow up with analytical water quality results when available.
- Increase temperature on water heater to ensure water temperature reaches at least 120°F.

- The resident reported sewage-like odors following use of the washing machine with hot water . Recommend utility maintenance to investigate hot water feed line to the washing machine and the drain line from the washer machine. An investigation into whether the washing machine is connected to nearby existing sanitary pumpstation is recommended.
- The water heater was manufactured in 2010 and is older than its 10-year service life. The white debris present at most aerators indicates possible degradation of a component within the water heater. It is recommended to either replace or perform water heater maintenance (i.e., flushing, inspecting sacrificial anode, etc.) to remove sediment/corrosion particles. Additional flushing of the hot water in all the fixtures is recommended after water heater maintenance to reestablish disinfection residual.
- Due to observed corrosion and ware, it is recommended to replace aerator on the right sink located in the master bedroom bathroom.
- It is recommended that regular maintenance be performed on the washing machine, below are a few suggestions:
    - Follow manufacturer procedures to complete a “clean washer cycle” at least every 30 days or once a month. The washer should be completely empty. Typically, these cycles should run on hot water. The hot water helps breakdown residue buildup.
    - Leave washer door fully open after each cycle.
    - Follow any additional manufacturer-recommended maintenance for the washing machine.

Conclusion

The resident has concerns about water and requested a WQI to determine their water quality. All water quality parameters collected were within expected ranges. It’s recommended that maintenance increase the water heater temperature to ensure water reaches at least 120° F. An inspection of the hot water feed line and drainage line is recommended to determine whether sewage material from a nearby pump station is causing odors in the washing machine and the dishwasher. The age of the water heater and the white debris found on the aerators may indicate that the hot water heater should be replaced or flushed. The resident will be informed of their analytical results when available by the CPLO.

Friday 7 February 2025, 1200

Zone – A2, 5191 Kamehameha Loop
Location Code: A2-KAME5191

BLUF

The resident requested a WQAT inspection to determine their water quality. The resident reported concerns about brown water coming from the ice machine in their fridge one time in November 2024, a month after moving in. The brown was not observed after and the WQAT did not observe brown water. However, black particles, likely sediment, were observed at all sink aerators. The hot water heater set point temperature was significantly higher than the measured temperatures at the sinks. It is recommended to flush the home to remove sediments and to inspect the hot water heater for thermostatic issues. All water quality parameters collected were within expected ranges. No sheen, cloudiness, or odors were observed in either the hot or cold water during the investigation.

A. Resident Demographic / Concerns

- Household consists of two (2) adults and two (2) children
- Resident for approximately four (4) months.
- The resident had a concern about brown water coming from the ice machine.

B. Water Quality Observations and Results

- Unit was previously sampled on 18 May 2022. Chromium, copper, lead, and barium were detected at concentrations below project screening levels.
- The resident reported observing brown water coming from the ice machine in their fridge one time in November 2024, a month after moving in. The resident noted that it had been at least a month or longer without the ice machine being turned on. The resident did not know how long the ice machine was left unused before they moved in. After they observed the brown water, the resident removed and cleaned the ice machine, allowing it to fully thaw, and restarted the ice machine. During inspection of the ice machine, the WQAT did not observe any discoloration from the ice machine.
- No sheen, cloudiness, or odors were observed from either the hot or cold water. Black particles were observed by the WQAT when flushing the cold water in the downstairs hallway bathroom sink, kitchen sink, and master bathroom sink. The black particles appeared immediately after closing the water valve at the sink basin to isolate the water line of interest. Following additional flushing, the black particles dissipated but were still present. When assessed, the black particles appeared to be inorganic mineral-based. It is possible that these particles are sediment from the distribution system feeding the location.

- Water Quality Action Team (WQAT) on-site
  - Water Quality Sampling Team – Collected hot and cold water samples from the kitchen sink.
  - Community Public Liaison Officer (CPLO) – (b) (6) .
  - Water Quality Investigator(s) – (b) (6) , and (b) (6) – Collected rapid TPH samples from the upstairs hallway bathroom sink and master bathroom sink.

- Results of field testing from the kitchen sink

- pH – (Expected Range: 6.5 to 8.5)
  - 7.29 (cold)
  - 7.39 (hot)

- Conductivity - (Expected Range 0 to 800 µS/cm)
  - 251 µS/cm (cold)
  - 313 µS/cm (hot)

- Turbidity - (Expected Range: < 5.0 NTU)
  - 0.65 NTU (cold)
  - 0.20 NTU (hot)

- Free Chlorine - (Expected Range: 0.20 to 4.00 mg/L)
  - 0.53 mg/L (cold)
  - 0.49 mg/L (hot)

- Temperature
  - 79.30 °F (cold)
  - 97.50 °F (hot)

- WQAT hot water temperature results observed:
  - Upstairs hallway bathroom sink – 115.0 °F
  - Master bathroom sink – 111.7 °F

- **Figure 1.** Interior view of the upstairs hallway sink aerator. Black debris was observed on the aerator, possibly sediment from the distribution system. This aerator is in fair condition.

- **Figure 2.** Interior and exterior view of the master bathroom sink aerator. Black debris was observed on the aerator, possibly sediment from the distribution system. In addition, red plastic debris and a cracked screen were observed. The aerator is in poor condition. It's recommended to replace the aerator.

- **Figure 3.** Interior view of the downstairs hallway bathroom sink. Black debris was observed, possibly sediment from the distribution system.. The aerator is in fair condition.

- **Figure 4.** View of the kitchen sink aerator. Black debris was observed, possibly from the distribution system. The aerator is in good condition. This aerator did not have a washer. Recommend installing a washer or replacing aerator unit.

- **Figure 5.** Example of black particles observed at all sinks after closing sink basin water valves.

- **Figure 6.** View of the water heater access panel and surrounding area. No corrosion or water stains were observed. Note the temperature is set to 140 °F, significantly greater than the outbound temperature reading and the measured temperature readings at the sinks.

- **Figure 7.** Outbound hot water gauge. Note the temperature is being measured at approximately 115 °F, which is significantly below the set-point temperature of the water heater (140 °F).

C. Hot Water Heater

- 80-gallon water heater manufactured by Sun Earth Inc. in March 2021.
- Water heater thermostat dial was set to approximately 140 °F. However, the outbound temperature read about 115 °F, which is significantly below the set-point temperature. This may indicate a thermostatic issue with the hot water heater.
- Visual observation showed the water heater to be in good condition with no signs of external corrosion with no new water stains.
- No visible maintenance records were found on the water heater.
- The supply piping material is copper that appeared to be in good condition.

D. Point-of-Use Treatment

- There were no filters observed at this residence.

E. Overall Assessment

- Temperature was measured at all available fixtures during inspection. Water temperature was measured with an instant read digital thermometer. All hot water temperatures were recorded below a recommended temperature of 120°F.
- Water heater thermostat dial was set to approximately 140 °F. However, the outbound temperature read about 115 °F, which is significantly below the set-point temperature. This may indicate a thermostatic issue with the hot water heater.

- No sheen, cloudiness, or odors were observed from either the hot or cold water. Black particles were observed by the WQAT when flushing. When inspected, the black particles appeared to be inorganic mineral-based sediment from the distribution system.
- Analytical results will determine if drinking water complies with the applicable standards.

F. Recommendations

- Follow up with analytical water quality results when available.
- Recommend adjusting the water heater temperature to 120 °F, as recommended by the EPA, to keep the risk of bacterial growth at bay and prevent risk of scalding.
- Recommended to replace aerator in the upstairs hallway bathroom sink and flush faucet after installation.
- Recommended to install a washer or replace aerator unit at the kitchen sink.
- It is recommended to perform water heater maintenance (i.e., flushing, inspecting sacrificial anode, etc.) to remove sediment/corrosion particles. Additional flushing of the hot water in all the fixtures is recommended after water heater maintenance to reestablish disinfection residual.
- It is recommended that housing maintenance investigate the discrepancies between the set temperature and the outflow temperature on the water heater.
- Recommend thorough flushing of residential water lines to remove observed sediments in the water. Review of recent nearby waterline distribution system maintenance records may explain the observed sediments.
- It is recommended to follow manufacture recommendations for startup of ice machine if extended period times has elapsed since last use of ice machine.

G. Conclusion

The resident recently moved into the neighborhood and requested a WQAT inspection to investigate concerns about their water quality. The resident reported brown water coming from the ice machine in their fridge one time a month after moving in after it had not been used for at least a month. The resident cleaned the ice machine and has not observed the brown water since. Upon inspection, the WQAT did not observe brown water. WQAT observed black inorganic mineral like debris in aerators that appeared to be sediment from an outside source, possibly from the distribution system. It is recommended to flush the residential water lines to clear the sediment, inspect the thermostatic issues with the hot water heater and replace aerators that are in poor condition or missing the gasket. All water quality parameters collected were within expected ranges. The resident will be informed of their analytical results when available by the CPLO.

Thursday 12 February 2025, 0900

Zone – A3, 6718B 107th Street
Location Code: A3-107S6718B

BLUF

Upon moving in on 08 February 2025 the resident observed white, cloudy water from the kitchen sink, and again on 09 February 2025. The resident did not notice an odor during this time. The resident requested a WQAT inspection to determine their water quality. No sheen, cloudiness, or odors were observed in either the hot or cold water. Based on the observations made during the WQI inspection, no immediate concerns regarding water quality were identified.

A. Resident Demographic / Concerns

- Household consists of two (2) adults, two (2) children, and two (2) pets.
- Resident for approximately one (1) week.
- The resident had a concern about white, cloudy water from the kitchen sink two separate times~~,~~ upon moving in on 08 February 2025 and 09 February 2025.

B. Water Quality Observations and Results

- The unit was previously sampled on 28 April 2022. Chromium, copper, lead, barium, selenium, and antimony were detected at concentrations below project screening levels.
- The resident reported observing white, cloudy water coming from the kitchen upon their move in on 08 February 2025 and the following day. The resident is not aware of the timeline between the previous tenant and their move in date. During inspection of the kitchen sink, the WQAT did not observe any discoloration or odor.
- During the WQAT inspection, it was observed that both the hallway bathroom sink and the master bathroom sink were leaking water around the supply line valves for both cold and hot water supply lines.
- Upon inspection of the hot water heater, it was observed that the concrete curbing supporting the walls surrounding the hot water heater had significant cracks.
- WQI conducted discussion with resident regarding air entrainment within the water line. The discussion covered possible problems and how to resolve possible air entrainment.
- No sheen, cloudiness, or odors were observed from either the hot or cold water.

- Water Quality Action Team (WQAT) on-site
  - Water Quality Sampling Team – Collected hot and cold water samples from the kitchen sink.
  - Community Public Liaison Officer (CPLO) – (b) (6) .
  - Water Quality Investigator(s) – (b) (6) and (b) (6) – Collected rapid response TPH samples from the hallway bathroom sink and kitchen sink.

- Results of field testing from the kitchen sink
  - pH – (Expected Range: 6.5 to 8.5)
    - 7.26 (cold)
    - 7.48 (hot)

- Conductivity - (Expected Range 0 to 800 µS/cm)
  - 264 µS/cm (cold)
  - 293 µS/cm (hot)

- Turbidity - (Expected Range: < 5.0 NTU)
  - 0.00 NTU (cold)
  - 0.38 NTU (hot)

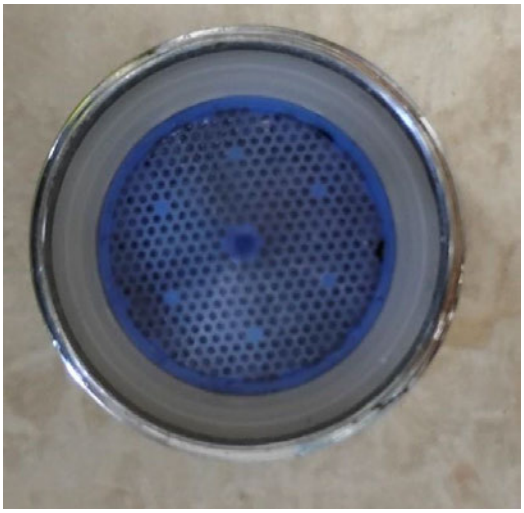
- Free Chlorine - (Expected Range: 0.20 to 4.00 mg/L)
  - 0.53 mg/L (cold)
  - 0.49 mg/L (hot)

- Temperature
  - 73.61 °F (cold)
  - 126.50 °F (hot)

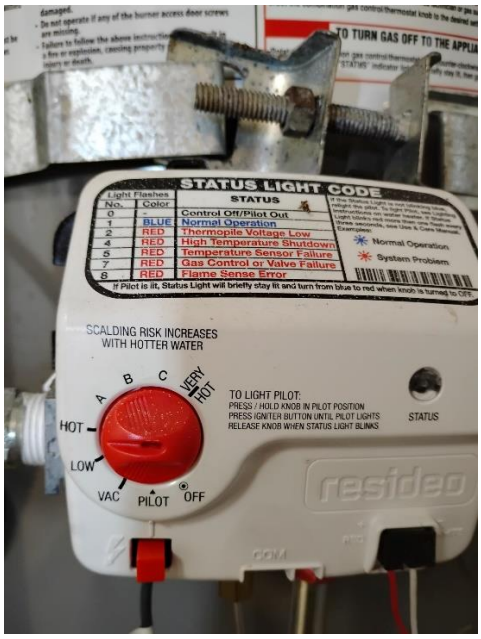
- WQAT hot water temperature results observed:
  - Kitchen sink – 126.5 °F

- **Figure 1.** Interior view of the hallway sink aerator. No debris was observed in aerator. The aerator was observed to be in poor condition. It is recommended to replace this aerator.

- **Figure 2.** Interior view of the master bathroom sink aerator. No debris was observed in aerator. The aerator was observed to be in poor condition. It is recommended to replace this aerator.



- **Figure 3.** Interior view of the kitchen sink aerator. No debris was observed. The aerator is in good condition.



- **Figure 4.** View of the water heater access panel and surrounding area. No corrosion or water stains were observed.

- **Figure 5.** Noticeable cracks on concrete curbing surrounding hot water heater. Noticeable accumulated dust on vent.

C. Hot Water Heater

- 40-gallon water heater manufactured by Rheem Manufacturing Co. in April 2024.
- This water heater unit is heated via natural gas. The thermostat was set to Hot.
- Visual observation showed the water heater to be in good condition with no signs of external corrosion with no new water stains.
- No visible maintenance records were found on the water heater.
- The supply piping material is copper that appeared to be in good condition.

D. Point-of-Use Treatment

- There were no filters observed at this residence.

E. Overall Assessment

- Temperature was only measured at kitchen sink due to immediate leaking of under sink pipes in the hallway and master bathroom sinks. The hot water temperature was recorded above the recommended temperature of 120°F.
- Water heater thermostat dial was set to approximately 130 °F based on manufactures specification sheet for this model.
- No sheen, cloudiness, or odors were observed from either the hot or cold water. Analytical results will determine if drinking water complies with the applicable standards.
- WQAT demonstrated filling a glass beaker in front of the resident to show no observations of white, cloudy water.

F. Recommendations

- Follow up with analytical water quality results when available.
- Recommended to replace aerator in the hallway and master bathroom sinks. After installation, it is recommended to flush the faucets.
- Recommending maintenance to further investigate water leaks in the hallway and master bathroom sinks to determine the source of the leaks and to make repairs.
- Recommending maintenance to inspect concrete deterioration by the hot water heater to determine whether there is a structural concern.

G. Conclusion

This WQI was requested due to a resident reporting white, cloudy water. No sheen, cloudiness, or odors were observed from hot or cold water. All water quality parameters collected during the inspection were within expected ranges. Based on the observations made during the inspection, the following are recommended: to replace aerators in the hallway and master bathroom sinks; to have maintenance investigate leaks in the hallway and master bathroom sinks; and to inspect the concrete deterioration near the hot water heater. The resident will be informed of their analytical results when available by the CPLO.

Friday 13 February 2025, 1200

Zone – A3, 5769 Erne Avenue
Location Code: A3-ERNE5769

BLUF

Upon moving into the residence in late January 2025 a neighbor informed the resident of possible water contamination. The resident did not report any concerning observations. The resident requested a WQAT inspection to determine their water quality. No sheen, cloudiness, or odors were observed in either the hot or cold water. Based on the observations made during the WQI inspection, no immediate concerns regarding water quality were identified.

A. Resident Demographic / Concerns

- Household consists of three (3) adults, one (1) child, and two (2) pets.
- Resident for approximately one (1) month.
- The resident's neighbor mentioned the possibility of water contamination and suggested the resident getting their water tested.

B. Water Quality Observations and Results

- Upon inspection of the hot water heater, it was observed that the concrete curbing supporting the walls surrounding the hot water heater had significant cracks.
- WQI conducted discussion regarding water quality. This discussion covered possible problems and how to resolve certain situations.
- No sheen, cloudiness, or odors were observed from either the hot or cold water.

- Water Quality Action Team (WQAT) on-site
  - Water Quality Sampling Team – Collected hot and cold water samples from the kitchen sink.
  - Community Public Liaison Officer (CPLO) – (b) (6) .
  - Water Quality Investigator(s) – (b) (6) and (b) (6) – Collected rapid response TPH samples from the hallway bathroom sink, master bathroom sink, and kitchen sink.

- Results of field testing from the kitchen sink
  - pH – (Expected Range: 6.5 to 8.5)
    - 7.02 (cold)
    - 7.21 (hot)

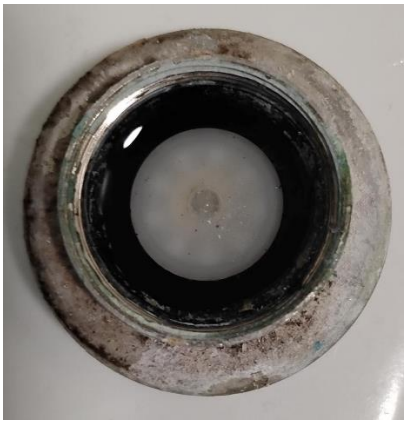
  - Conductivity - (Expected Range 0 to 800 µS/cm)
    - 257 µS/cm (cold)
    - 263 µS/cm (hot)

  - Turbidity - (Expected Range: < 5.0 NTU)
    - 0.91 NTU (cold)
    - 0.22 NTU (hot)

- Free Chlorine - (Expected Range: 0.20 to 4.00 mg/L)
  - 0.77 mg/L (cold)
  - 0.52 mg/L (hot)

- Temperature
  - 75.00 °F (cold)
  - 121.9 °F (hot)

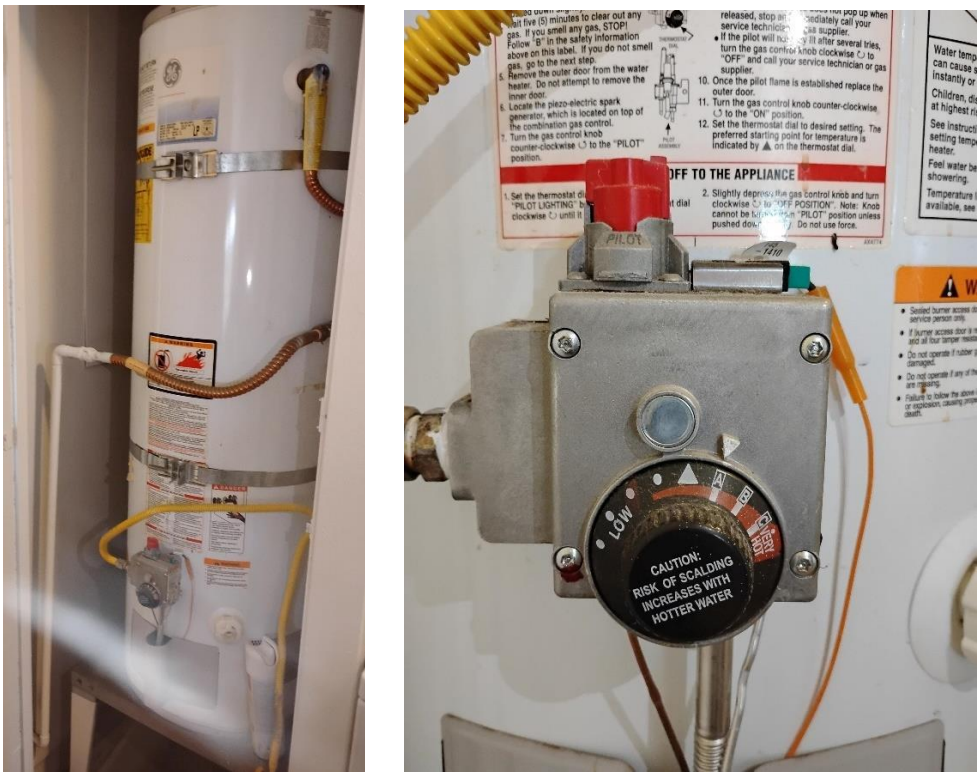
- WQAT hot water temperature results observed:
  - Kitchen sink – 103.9 °F

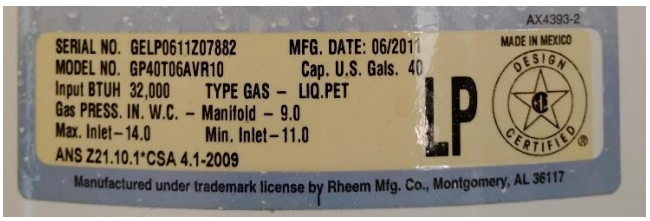


- **Figure 1.** Interior view of the hallway sink aerator. No debris was observed in aerator. The aerator was observed to be in poor condition. It is recommended to replace the aerator.

- **Figure 2.** Interior view of the master bathroom sink aerator. No debris was observed in aerator. The aerator was observed to be in poor condition. It is recommended to replace the aerator.

Figure 3. Interior view of the kitchen sink aerator. Black debris was observed on the aerator, possibly from an internal faucet component or the hot water heater. The aerator is in good condition.





- **Figure 4.** View of the water heater access panel and surrounding area. No corrosion or water stains were observed.

- **Figure 5.** Noticeable significant cracks on concrete curbing surrounding hot water heater.

C. Hot Water Heater

- 40-gallon water heater manufactured by Rheem Manufacturing Co. in June 2011. The expected useful life of a hot water heater is about ten years, and this unit beyond the ten year range.
- This water heater unit is heated via natural gas. The thermostat was set to A (based on manufactures manual this is about 130°F).
- Visual observation showed the water heater to be in fair condition with no signs of external corrosion with no new water stains.
- No visible maintenance records were found on the water heater.
- The supply piping material is copper that appeared to be in good condition.

D. Point-of-Use Treatment

- There were no filters observed at this residence.

E. Overall Assessment

- The hot water temperature was recorded above the recommended temperature of 120°F at all sinks.
- Water heater thermostat dial was set to approximately 130 °F based on the manufacturer's specification sheet for this model.
- No sheen, cloudiness, or odors were observed from either the hot or cold water. Analytical results will determine if drinking water complies with the applicable standards.

F. Recommendations

- Follow up with analytical water quality results when available.
- Recommended to replace aerator in the hallway and master bathroom sinks. After installation, it is recommended to flush the faucets.
- It is recommended to perform water heater maintenance (i.e., flushing inspecting sacrificial anode, etc.) to remove sediment/corrosion particles. Additional flushing of the hot water in all fixtures is recommended after water heater maintenance to reestablish disinfection residual. The hot water heater might need to be replaced depending on the results of the performed maintenance.
- It is recommended that maintenance adjust the thermostat setting to at least 120°F, to prevent the possibility of scalding.

- Recommending maintenance to inspect concrete deterioration by the hot water heater to determine whether there is a structural concern.

G. Conclusion

This WQAT inspection was requested due to a neighbor recommending it to the new resident due to possible water contamination. No sheen, cloudiness, or odors were observed from hot or cold water. All water quality parameters collected during the inspection were within expected ranges. Based on the observations made during the inspection, the following are recommended: replace aerators in the hallway and master bathroom sink; inspect the concrete deterioration near the hot water heater; and to perform hot water heater maintenance. The resident will be informed of their analytical results when available by the CPLO.

Friday 14 February 2025, 0900

Zone E1, 43 Halawa Drive
Location Code: E1-HALA0043

BLUF

The resident moved into the residence approximately 8 months ago. The resident and the resident's spouse noticed a smell coming from the water while washing dishes. In particular, the smell was only noticed at the kitchen sink while the hot water was running. The resident did not report any other observations from any other sink. The resident requested a WQAT inspection to determine their water quality. No sheen, cloudiness, or odors were observed in either the hot or cold water. Based on the observations made during the WQI inspection, no immediate concerns regarding water quality were identified.

A. Resident Demographic / Concerns

- Household consists of two (2) adults, three (3) children and one (1) pet.
- Resident for approximately eight (8) months.
- The resident and the resident's spouse noticed a smell coming from the water while washing dishes. The resident noted that the smell was only apparent in the hot water, which smelled like bleach. The resident had not previously noticed anything wrong with the water.

B. Water Quality Observations and Results

- The unit was previously sampled on 24 January 2025. Total alkalinity, copper, trihalomethanes, dibromochloromethane, and bromoform were detected at concentrations below project screening levels.
- During the WQAT inspection, it was observed that the upstairs hallway bathroom sink leaked water around the supply line valves for both cold and hot water supply lines.
- Upon inspection the WQI observed that hot water at all faucets was above 135°F, a potential scalding issue.
- WQI conducted discussion regarding water quality. This discussion covered possible problems and how to resolve certain situations.
- No sheen, cloudiness, or odors were observed from either the hot or cold water.

- Water Quality Action Team (WQAT) on-site

  - Water Quality Sampling Team – Collected hot and cold water samples from the kitchen sink.
  - Community Public Liaison Officer (CPLO) – (b) (6) .
  - Water Quality Investigator(s) – (b) (6) and (b) (6) – Collected rapid response TPH samples from the master bathroom sink, the upstairs hallway bathroom sink, the downstairs hallway bathroom sink, and the kitchen sink.

- Results of field testing from the kitchen sink

  - pH – (Expected Range: 6.5 to 8.5)
    - 7.16 (cold)

    - 7.20 (hot)
- Conductivity – (Expected Range 0 to 800 µS/cm)
    - 256.20 µS/cm (cold)
    - 281.75 µS/cm (hot)
- Turbidity – (Expected Range: < 5.0 NTU)
    - 0.21 NTU (cold)
    - 0.54 NTU (hot)
- Free Chlorine – (Expected Range: 0.20 to 4.00 mg/L)
    - 0.64 mg/L (cold)
    - 0.36 mg/L (hot)
- Temperature
    - 75.67 °F (cold)
    - 139.5 °F (hot)

- WQAT hot water temperature results observed:
    - Kitchen sink – 139.5 °F

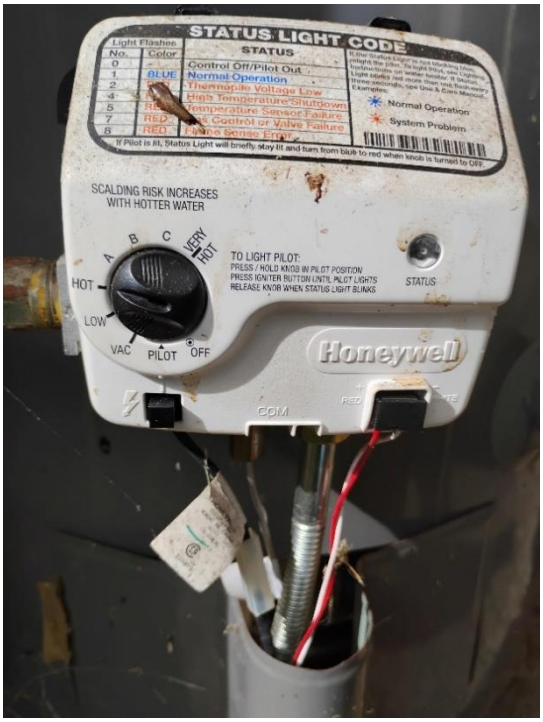
- **Figure 1.** Interior view of the master bathroom sink aerator. No debris was observed in aerator. The aerator was observed to be in good condition.

- **Figure 2.** Interior view of the upstairs hallway bathroom sink aerator. Unidentified debris was observed in aerator. The aerator was observed to be in poor condition. It is recommended to replace the aerator.

- **Figure 3.** Upstairs hallway bathroom sink filled faster than it drained. Recommend maintenance to clear and then flush the drain line.

Figure 4. Interior view of the downstairs bathroom sink aerator. Green and black debris was observed on the aerator, possibly from corrosion of the supply lines or the hot water heater. The aerator is in good condition.

Figure 5. Interior view of the kitchen sink aerator. Black debris was observed on the aerator, possibly from the rubber gasket. The aerator is in good condition.



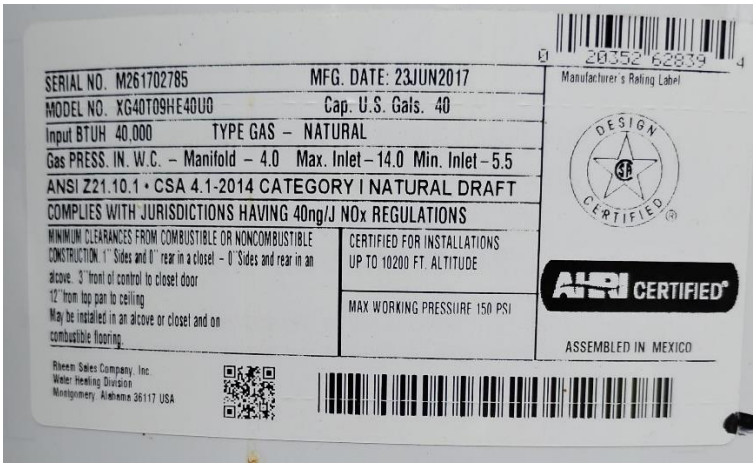


Figure 6. View of the water heater access panel and surrounding area. The water heater was observed to be resting on the ground without a catch pan.


- **Figure 5.** Noticeable surface corrosion on supply lines from hot water heater.

C. Hot Water Heater

- 40-gallon water heater manufactured by Rheem Manufacturing Co. in June 2017.
- This water heater unit is heated via natural gas. The thermostat was set to "Hot" (based on manufacturer's manual this is about 125°F), which is significantly lower than the temperature read at each faucet (faucet readings were higher than 135°F). This may indicate a thermostatic issue with the hot water heater.
- Visual observation showed the water heater to be in fair condition with signs of external corrosion on the cold and hot water pipe intake.
- No visible maintenance records were found on the water heater.
- The supply piping material is copper that appeared to be in fair condition with notable surface corrosion around the welds on both hot and cold water piping.
- The water heater was observed to be resting directly on the ground, with no catch pan or elevation to the water heater.

D. Point-of-Use Treatment

- There were no filters observed at this residence.

E. Overall Assessment

- The hot water temperature was recorded above the recommended temperature of 120°F at all sinks.
- Water heater thermostat dial was set to approximately 125 °F based on the manufacturer's specification sheet for this model. All hot water temperatures were recorded to be above 135°F. This may indicate a thermostatic issue with the hot water heater.
- No sheen, cloudiness, or odors were observed from either the hot or cold water. Analytical results will determine if drinking water complies with the applicable standards.

F. Recommendations

- Follow up with analytical water quality results when available.
- Recommended to set the water heater temperature to 120 °F, as recommended by the EPA, to keep the risk of bacterial growth at bay and prevent risk of scalding.
- Recommended to replace aerator in the upstairs hallway bathroom sink aerator. After installation, it is recommended to flush the faucet.

- It is recommended to perform water heater maintenance (i.e., flushing, inspecting sacrificial anode, etc.) to remove sediment/corrosion particles. Additional flushing of the hot water in all fixtures is recommended after water heater maintenance to reestablish disinfection residual.
- It is recommended that housing maintenance investigate the discrepancies between the water heater's set temperature and effluent temperature on the hot water.
- It is recommended that housing maintenance either elevate hot water heater to no longer sit on the ground or place a drip pan under the hot water heater, in accordance with manufacturer's recommendations.
- It is recommended to inspect the surface corrosion on the hot water heater supply lines to determine extent of corrosion/degradation of the supply lines.

G. Conclusion

This WQAT inspection was requested due to the resident's spouse noticing a strong chemical smell coming from the hot water at the kitchen sink. No sheen, cloudiness, or odors were observed from the hot or cold water. All water quality parameters collected during the inspection were within expected ranges. Based on the observations made during the inspection, the following are recommended: replace aerator in the upstairs hallway bathroom sink; perform hot water heater maintenance; investigate hot water heater thermostatic issue; investigate source of leak in upstairs hallway bathroom; inspect extent of surface corrosion on hot water heater supply lines; and either elevate or install drip pan under hot water heater. The resident will be informed of their analytical results when available by the CPLO.

Tuesday 18 February 2025, 1000

Zone – A2, Building 26
Location Code: A2-BLDG0026

BLUF

This WQI was conducted at the request of the building manager who had received a question as to the building's general water quality. No specific concerns about the water supply were expressed. No sheen, cloudiness, or odors were observed in either the cold or hot water by the Water Quality Action Team (WQAT).

There are two water supply feeds into the building, each with their own hot water heater. One supplies the back of the building and provides water to the kitchen / break room, a water fountain, and a mop room area. A second supply feeds the front of the building and a bathroom / shower/ changing room. This second feed may not be used often. The water quality at the second feed exhibited low to no chlorine concentrations and a high pH value.

A. Resident Demographic / Concerns

- Facility consists of the Afloat Training Group Middle Specific.
- The building manager received health concerns regarding a staff person and thought it warranted a check into the building's water quality.
- **Water Quality Observations and Results**
  - The building was previously sampled on 16 March 2022. Copper, chromium, barium, lead, and total organic carbon were detected at concentrations below project screening levels.
  - No sheen, cloudiness, or odors were observed from either the hot or cold water.

- WQAT on-site
  - Water Quality Sampling Team – Collected hot and cold water samples from the kitchen.
  - Community Public Liaison Officer (CPLO) – (b) (6) .
  - Environment & Remediation, Navy Closure Task Force (NCTF) - Red Hill – (b) (6)
  - Water Quality Investigator(s) (WQI) – (b) (6) and (b) (6) – Collected rapid response TPH samples from both the kitchen sink and the front bathroom sink.

- Results of field testing from the kitchen sink:
  - pH – (Expected Range: 6.5 to 8.5)
    - 7.34 (cold)
    - 7.60 (hot)

  - Conductivity - (Expected Range 0 to 800 µS/cm)
    - 259.59 µS/cm (cold)
    - 276.35 µS/cm (hot)

  - Turbidity - (Expected Range: < 5.0 NTU)
    - 1.05 NTU (cold)

    - 1.89 NTU (hot)

- Free Chlorine - (Expected Range: 0.20 to 4.00 mg/L)
    - 0.15 mg/L (cold)
    - 0.22 (hot)

- Temperature
    - 79.61°F (cold)
    - 112.5°F (hot)

- WQI hot water temperature results observed:
    - 130.1°F

- **Figure 1.** Interior view of the kitchen sink aerator. White and yellow debris was observed in aerator. The aerator was observed to be in good condition.

- **Figure 2.** Mop room sink and rear hot water heater overflow pipe terminating below the sink lip.

- **Figure 3.** Water fountain near the kitchen. An inline filter was installed with an installation date of April 2021.

- **Figure 4.** Outdoor spigot without an anti-siphon valve.

- **Figure 5**. Outdoor irrigation supply without a testable backflow device and supply valve in the “open” position.

- Results of WQI field testing from the front bathroom sink:
  - pH – (Expected Range: 6.5 to 8.5)
    - 8.22 (cold)
    - 9.06 (hot) (note: above expected range)

  - Free Chlorine - (Expected Range: 0.20 to 4.00 mg/L)
    - 0.03 mg/L (cold) (note: below expected range)
    - 0.00 (hot) (note: below expected range)

  - Temperature
    - 78.4°F (cold)
    - 126.5°F (hot)

- **Figure 6.** Interior view of the front bathroom sink aerator. Multi-colored debris was observed in aerator. The aerator is in poor condition.

B. Hot Water Heaters

- Water heater adjacent to the kitchen sink:
  - 65-gallon water heater manufactured by Bradford White Corporation in June 2020.
  - Water heater thermostat digital dial was set to 130°F.
  - Visual observation showed the water heater to be in good condition with no signs of external corrosion with no water stains.
  - The supply piping material is copper that appeared to be in good condition.

- **Figure 7.** Hot water heater adjacent to kitchen / break area sink.

    - Water heater adjacent to the front bathroom:
        - 40-gallon water heater manufactured by Bradford White Corporation in February 2023.
        - Water heater thermostat dial was set to approximately 135°F.
        - Visual observation showed the water heater to be in good condition with no signs of external corrosion with no new water stains.
        - The supply piping material is copper that appeared to be in good condition.

- **Figure 8.** Hot water heater adjacent to the front bathroom.

C. Point-of-Use Treatment

Inline filter on water fountain near the kitchen. No other filters were observed.

D. Overall Assessment

- All water quality parameters collected during sampling from the rear supply area were within expected ranges. However, water quality parameters collected from the front bathroom sink exhibited high pH and low to non-existent free chlorine concentrations.
- Analytical results will determine if drinking water complies with the applicable standards.

E. Recommendations

- Replace front bathroom sink aerator.
- Flush front bathroom sink and shower weekly. Flush until free chlorine concentration can be measured.
- Replace water fountain inline filter. The Building Administrator stated that the filters were on order already.
- Shorten overflow drain line from the rear (mop room) hot water heater in Figure 2 to provide an air gap above the sink lip level.
- Install an anti-siphon valve on the outdoor spigot.
- Evaluate if irrigation supply line is still necessary and if not remove connection to the potable water supply plumbing. If the supply connection is still necessary, determine the appropriate level of cross connection protection.
- Follow up with water quality analytical results when available.

Conclusion

- This WQAT investigation was conducted at the request of building personnel requested an inspection to document the building's general water quality. There was no sheen, cloudiness, or odor observed in the water. All measured water quality parameters collected during the inspection were within expected ranges, except for the front bathroom sink. Based on the observations made, it is recommended to:
  - Replace the front bathroom sink aerator,
  - Flush the front bathroom sink weekly,
  - Replace drinking water fountain filter,
  - Shorten the overflow drain line from the hot water heater in **figure 5**,
  - Install an anti-siphon valve on the rear outdoor spigot, and
  - Assess the need to install backflow prevention on the rear outdoor irrigation supply.

  No other concerns regarding water quality were identified. The building manager will be informed of their analytical results when available by the CPLO.

Wednesday 12 March 2025, 1200

Zone – A2, Building 167B
Location Code: A2-BLDG167B

BLUF

The facility coordinator at Building 167B in Zone A2 requested a Water Quality Action Team (WQAT) inspection following a report that an employee at the building had contracted Legionnaires' disease. All water quality parameters collected were within expected ranges. The Water Quality Inspector(s) (WQI) observed no visible sheen, cloudiness, or odors in either the cold or hot water. The WQAT recommends rerouting the HVAC condensate line to a drain, confirming the potential presence of mold, and replacing the hot water heater, which has exceeded its recommended service life of 10 years.

Background

On 10 March 2025, the facility coordinator requested a WQAT inspection at Building 167B, the NUWC DETPAC (Naval Undersea Warfare Center Detachment Pacific) Headquarters in Zone A2. The building maintains approximately 30 onsite staff. An employee in Building 167B was recently hospitalized due to a *Legionella pneumophila* infection, which causes Legionnaires' disease. In response, the facility coordinator has requested a WQAT inspection to assess potential water-quality issues and to determine if Building 167B contains any potential sources of *Legionella pneumophila*. No additional concerns regarding the water supply were raised.

A. **Resident Demographic / Concerns**
- Building 167B is occupied by the NUWC DETPAC (Naval Undersea Warfare Center Detachment Pacific).
- The facility is a two-story office building containing multiple offices. The facility includes first and second-floor bathrooms, first and second-floor kitchenettes and first-floor shower units, with the water heater being located on the second floor.
- On 10 March 2025, the call center was notified that an employee in Building 167B was recently infected with *Legionella pneumophilia*.

- **Water Quality Observations and Results**
  - The building was previously sampled on 12 April 2022.
    - Copper, chromium, barium, and lead were detected at concentrations below project screening levels.
    - No sheen, cloudiness, or odors were observed from either the hot or cold water.
    - No unusual observations were identified.

- WQAT On-site
  - Water Quality Sampling Team: Collected hot and cold samples from the first-floor, men's bathroom, middle sink.
  - Community Public Liaison Officer (CPLO): Not present.
  - Environment & Remediation, Navy Closure Task Force (NCTF) - Red Hill – (b) (6)
  - Navy Emergency Health Response: (b) (6)

- WQI's–(b) (6) , and (b) (6) : Collected rapid response TPH samples from the first-floor, men's bathroom, middle sink and the second-floor, women's bathroom, left sink.

- Water Quality Sampling Team results of field testing from the first-floor men's bathroom sink:
  - pH – (Expected Range: 6.5 to 8.5)
    - 7.34 (cold)
    - 8.03 (hot)

  - Conductivity - (Expected Range 0 to 800 µS/cm)
    - 280.8 µS/cm (cold)
    - 316.4 µS/cm (hot)

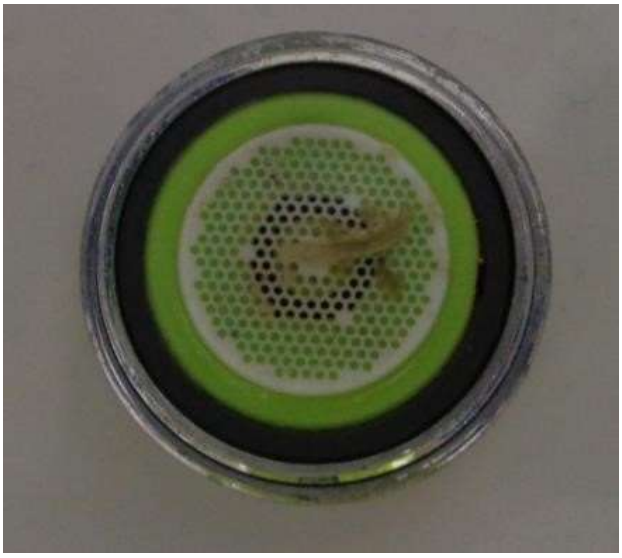
  - Turbidity - (Expected Range: < 5.0 NTU)
    - 0.00 NTU (cold)
    - 0.24 NTU (hot)

  - Free Chlorine - (Expected Range: 0.20 to 4.00 mg/L)
    - 0.58 mg/L (cold)
    - 1.00 mg/L (hot)

  - Temperature
    - 77.54°F (cold)
    - 112.7°F (hot)

  - WQI hot water temperature results observed:
    - 125°F

- **Figure 1.** Interior view of the first-floor men's bathroom sink aerator. No debris was observed in aerator. The aerator was observed to be in good condition.

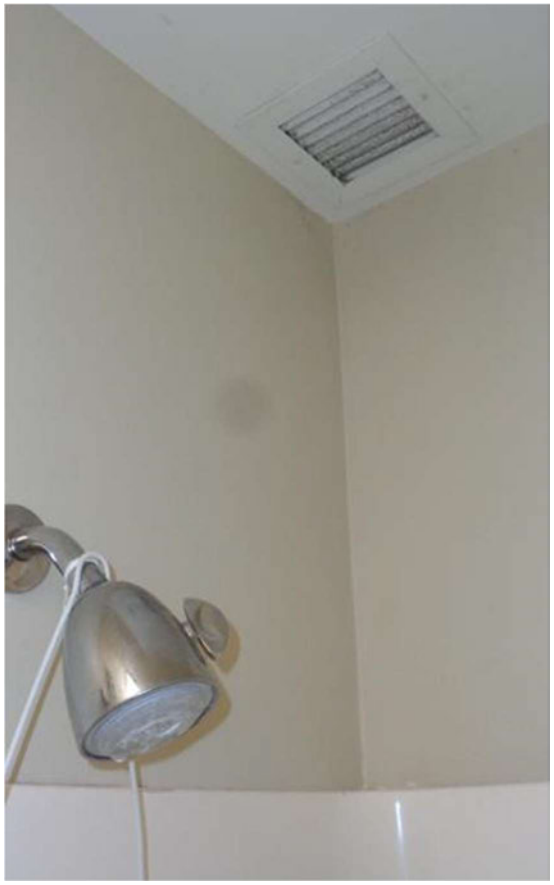


- **Figure 2.** Interior view of the first-floor women's bathroom sink aerator. Chalky gray debris buildup was observed around the inside of the gasket (not visible in Figure 2). The aerator was observed to be in good condition. The debris is likely to be mineral buildup.

- **Figure 3.** Interior view of the second-floor kitchen sink aerator. The aerator was observed to be in good condition; no debris was observed in aerator.

- **Figure 4.** Interior view of the second-floor women's bathroom sink aerator. Minimal debris was observed in the aerator. The aerator was observed to be in good condition.

- **Figure 5.** Close-up view of the second-floor women's bathroom sink aerator gasket. Chalky gray debris, likely mineral build up, was observed accumulating along the inside of the gasket. It is recommended that gaskets be inspected annually to prevent such buildup.



- **Figure 6.** Observation of possible mold buildup in first-floor unisex shower unit. The potential mold is observed on the exhaust vent and adjacent wall.

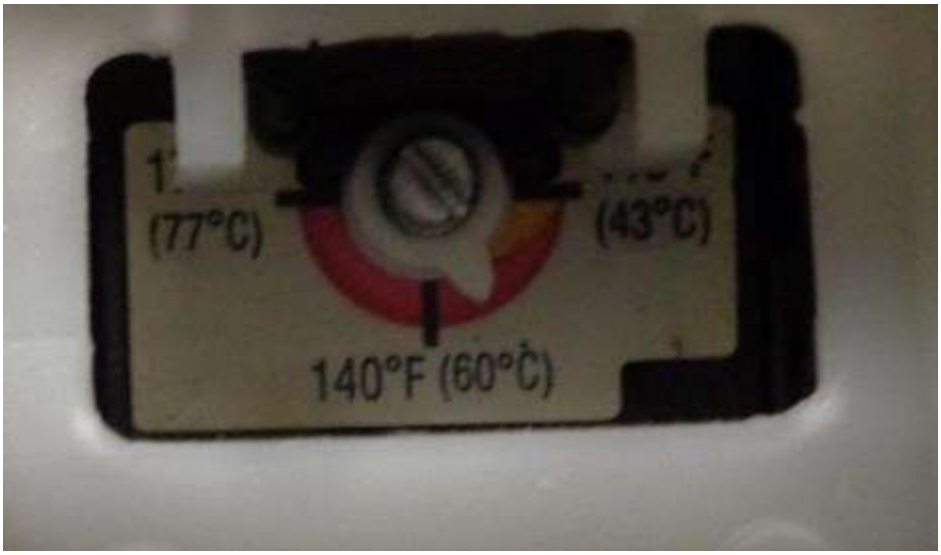
- **Figure 7.** Alternate view of mold buildup in first-floor unisex shower unit. The potential mold is observed on the exhaust vent and adjacent wall.

- **Figure 8.** Air conditioning condensate hose (ceiling to floor) in first-floor women's bathroom. The water in the bucket appeared moderately turbid with a whitish-brown color, suggesting it has been accumulating over an extended period.

- **Figure 9.** Hot water heater in a second-floor storage room.

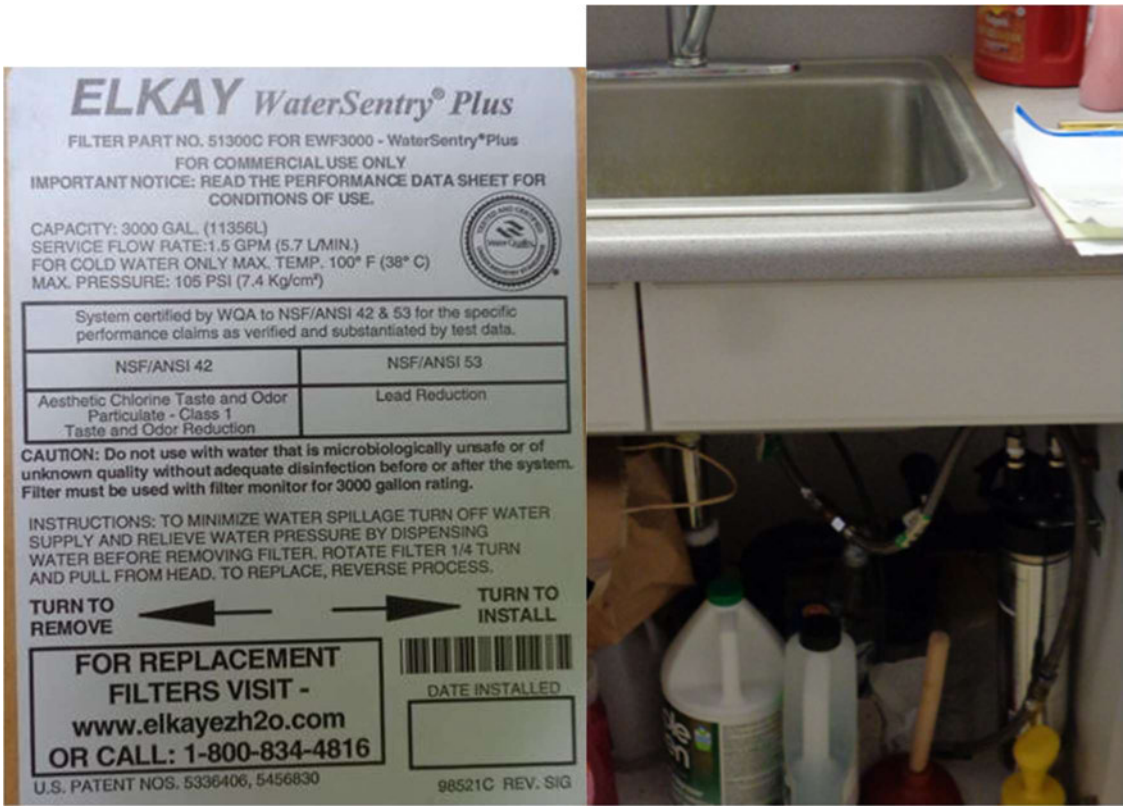
- **Figure 10.** Hot water heater data plate. The date of manufacture is March 2011. The hot water heater is 14 years old, which is beyond its recommended service life of 10 years.

- **Figure 11.** Hot water heater cold water supply piping and hot water outlet piping. The pipe material is copper.



- **Figure 12.** Hot water thermostat set to approximately 130°F. The minimum temperature is 110°F and the maximum temperature is 170°F.

- **Figure 13.** Close-up view of Water Heater discharge line. Note the discoloration near the end of the discharge line. The cause of this discoloration is unknown.



- **Figure 14.** Water filter information and certifications for water fountains at first and second-floor kitchen sinks. The facility coordinator reported that water filters are replaced on a regular basis. The filter is certified by NSF/ANSI 42 & 53 within conditions stated on the label.

B. **Hot Water Heaters**

- Water heater located in second-floor storage room:
  - 120-gallon water heater manufactured by Rheem Corporation in February 2011.
  - Water heater thermostat dial was set to approximately 130°F.
  - Upon visual inspection, the water heater appeared to be in good condition.
  - The supply piping material is copper that appeared to be in good condition.
  - The discharge piping leading to the floor drain showed discoloration, with the pipe getting visibly darker nearer the floor drain.

C. **Point-of-Use Treatment**

- Everpure BH2 Water filters were installed in the first-floor kitchen sink, the second-floor kitchen sink and the first-floor water fountain (model number: EV9612-50). The installed filters are certified by NSF/ANSI.

D. **Overall Assessment**

- All water quality samples collected during sampling were within the expected ranges.
- All observed aerators were in good condition.
- Team observed that the first-floor women's bathroom had an air conditioning condensation drain hose running from the ceiling into a five-gallon bucket. Water observed in this bucket was moderately turbid with a whitish brown color.

- Team observed potential mold growth along the first-floor shower unit fan.
- The facility coordinator informed the team that the exterior backflow preventer which had been in disrepair for approximately four to five months during the latter part of 2024, with water pooling around its base. The backflow preventer was successfully repaired in January 2025.
- HVAC cooling towers were present at the nearby neighboring building; however, none were observed onsite. HVAC cooling towers are a known reservoir of *Legionella pneumophila* bacteria.
- No other hot tubs, fountains nor decorative water features were present onsite or in the surrounding area. These are other known reservoirs of *Legionella pneumophila.*

E. **Recommendations**

- The Rheem Ruud ELD120-B electric water heater typically has a lifespan of 8 to 12 years, although this can vary based on factors such as water quality, maintenance, and usage. After 10 years, it is advisable to closely monitor the unit for signs of wear. Additional flushing of the hot water in all fixtures is recommended after water heater maintenance to reestablish disinfection residual. Given that this water heater is over 12 years old, replacement is recommended.
- Annually inspect and clean or replace inner aerator washers to minimize debris build up.
- Follow up on the repair work for the first-floor women's bathroom air conditioning condensate line to ensure it is properly rerouted to the drain.
- Suspected mold growth was observed around the first-floor shower unit fan. Confirmation by a mold specialist is recommended to assess the extent of the potential mold infestation and minimize health risks.
- Follow up with water quality analytical results when available.

Conclusion

This WQAT investigation was conducted at the request of the facility coordinator to perform an inspection to document the building's general overall water quality status. There was no sheen, turbidity, or odor observed in the water. All measured water quality parameters collected during the inspection were within expected ranges. Based on the observations made, it is recommended to:

- Replace the Rheem Ruud ELD120-B electric water heater as it has exceeded its recommended lifespan. Perform additional flushing of the hot water in all fixtures following water heater maintenance.
- Annually inspect and clean inner aerators washers to minimize debris build up.
- Follow up on the repair work for the first-floor women's bathroom air conditioning condensate line to ensure it is properly rerouted to the drain.
- Confirmation by a mold specialist is recommended to assess the extent of the potential mold infestation and minimize health risks of the first-floor shower unit fan.
- Follow up with water quality analytical results when available.

No other concerns regarding water quality were identified. The facility coordinator will be informed of their analytical results when available by the CPLO.

Friday 14 March 2025, 1430

Zone – F2, 4115 Lounsbury Street
Location Code: F2-LOUN4115

BLUF

The resident requested a Water Quality Action Team (WQAT) inspection to determine their water quality after experiencing a sticky texture on their fingers from their kitchen sink water only. Additionally, the resident reported their child with eczema has developed worsening symptoms since moving into the residence. The residence has been sampled three previous times and a WQAT inspection was completed on 11 April 2024 because of the same concerns. No sheen, cloudiness, or odors were observed in either the hot or cold water. Based on the observations made during the WQAT inspection, no immediate concerns regarding water quality were identified.

A. Resident Demographic / Concerns

- Household consists of two (2) adults, three (3) children, and no pets.
- Resident since August 2023.
- The resident reported a strange "sticky" texture after using their kitchen sink to wash dishes. This effect was not observed in any of the other fixtures. Resident also stated that their child's eczema symptoms have worsened since moving into the residence.

B. **Water Quality Observations and Results**

- Unit was previously sampled on 3 March 2022, 18 August 2023, and 11 April 2024. Traces of Barium, Chromium, Selenium, Lead, Copper, Total Trihalomethanes, and Alkalinity were found below project screening levels.
- No sheen, cloudiness, or odors were observed from either the hot or cold water.

- Water Quality Action Team (WQAT) on-site
  - Water Quality Sampling Team – Collected hot and cold-water samples from the kitchen sink.
  - Community Public Liaison Officer (CPLO) – (b) (6) .
  - Water Quality Investigator(s) (WQIs) – (b) (6) and (b) (6) – Collected rapid response TPH samples from the upstairs hallway bathroom sink and kitchen sink per resident request.

- Results of field testing from the kitchen sink
  - pH – (Expected Range: 6.5 to 8.5)
    - 7.33 (cold)
    - 7.18 (hot)
  - Conductivity - (Expected Range 0 to 800 µS/cm)
    - 258.50 µS/cm (cold)
    - 268.03 µS/cm (hot)
  - Turbidity - (Expected Range: < 5.0 NTU)
    - 0.50 NTU (cold)
    - 3.41 NTU (hot)

- Free Chlorine - (Expected Range: 0.20 to 4.00 mg/L)
  - 0.70 mg/L (cold)
  - 0.72 mg/L (hot)

- Temperature
  - 82.99 °F (cold)
  - 104.63 °F (hot)

- WQAT hot water temperature results observed:
  - Upstairs hallway bathroom sink – 123.7 °F
  - Master bathroom Left Sink – 125.7 °F
  - Master bathroom Right Sink – 123.9 °F
  - Downstairs hallway bathroom sink – 124.4 °F

- Figure 1. Interior view of the kitchen sink aerator. Unknown debris was observed in aerator, the debris was removed. The aerator appears to be in fair condition.

- Figure 2. Interior view of the master bathroom left and right sink aerator. No debris was observed in aerator. The aerator appears to be in fair condition.

- Figure 3. Interior view of the upstairs hallway bathroom sink aerator. No debris was observed in aerator. Scale build-up can be seen on the outer rim of the aerator. The aerator appears to be in fair condition.

- Figure 4. Interior view of the upstairs hallway bathroom sink aerator. Black debris appearing to originate from a gasket were observed in aerator, this was removed. Scale build-up can be seen on the outer rim of the aerator. The aerator appears to be in fair condition.

C. Hot Water Heater
   - 80-gallon electric water heater manufactured by American Water Heater Co., manufacture date could not be determined.
   - Water heater thermostat dial was set to approximately 125 °F.
   - Visual observation showed the water heater to be in good condition with no signs of external corrosion.
   - No visible maintenance records were found on the water heater.
   - The supply piping material is copper.

D. Point-of-Use Treatment
   - A shower filter was installed in the master bathroom shower, (WD-100, Wedell Water), the unit is NSF/ASNI 177 rated for chlorine removal. The resident confirmed that this filter is regularly replaced as recommended by the manufacturer.

E. Overall Assessment
   - Temperature was measured at all available fixtures during inspection. Hot water temperature was measured by both water quality sampling team and WQIs. The WQI took hot water temperatures with an instant read digital thermometer and the Water Quality Sampling Team took measurements with an Aqua Troll 600 (Water Quality Meter). The difference in decimal places in the two hot water temperatures listed is due to the different instruments. The WQI

confirmed all hot water fixtures, except the kitchen sink, could reach a temperature of 115°F or above.

- Resident stated that the sticky texture was only observed after washing dishes. The sticky texture was not observed in the water from the kitchen sink. The sticky texture was observed when the water was mixed with the dish soap used during dishwashing, and it is suspected that the dish soap could be the source of the sticky texture.
- The resident sought medical attention to address their child's dermatological issues. It was reported from the medical professional that the child's skin may be sensitive to the presence of chlorine.
- No sheen, cloudiness, or odors were observed from either the hot or cold water. Analytical results will determine if drinking water complies with the applicable standards.

F. Recommendations

- Follow up with analytical water quality results when available.
- No further action is required

G. Conclusion

The WQAT inspection was requested after the residents experienced a dermatological issues and a sticky texture while using their kitchen sink. No sheen, cloudiness, or odors were observed from hot or cold water. All water quality parameters collected during the inspection were within expected ranges. Based on the observations made during the inspection, no further action is necessary. The resident will be informed of their analytical results when available by the CPLO.

Friday 28 March 2025, 0900

Zone – H1, 3169 Noni Lane
Location Code: H1-NONI3169

BLUF

The resident requested a Water Quality Action Team (WQAT) inspection to document the water quality for their dog. This inspection was requested after their neighbor mentioned their dog passing suddenly. The resident has not observed any unusual behaviors in their dog since they moved in one month ago. All water quality parameters collected were within expected ranges. The Water Quality Inspector(s) (WQI) did not observe sheen, cloudiness, or odors in either the cold or hot water. The hot water heater was manufactured in 2007 and is in good condition with no observed corrosion or water stains.

A. Resident Demographic / Concerns

- Household consists of two (2) adults and one (1) dog.
- Resident for approximately one (1) month.
- Resident requested a WQAT Inspection to document the water quality for their dog.

B. Water Quality Observations and Results

- Unit was previously sampled on 22 June 2022. Copper, Lead, Barium, Selenium, Antimony, and Bromoform, a Trihalomethanes were detected at concentrations below project screening levels.
- No sheen or odors were observed from either the hot or cold water.

- Water Quality Action Team (WQAT) on-site
  - Water Quality Sampling Team – Collected hot and cold samples from the kitchen sink.
  - Community Public Liaison Officer (CPLO) – (b) (6)
  - Water Quality Investigator(s) – (b) (6) , and (b) (6) - collected cold water rapid TPH samples from kitchen sink, main floor hallway bathroom sink, upstairs hallway bathroom sink, master bathroom left and right sink.
  - Hawaii Department of Health Safe Drinking Water Branch (HDOH SDWB) – Not present.

- Results of field testing from the kitchen sink
  - pH – (Expected Range: 6.5 to 8.5)
    - 6.96 cold)
    - 7.18 (hot)

  - Conductivity - (Expected Range 0 to 800 µS/cm)
    - 268.05 µS/cm (cold)
    - 290.48 µS/cm (hot)

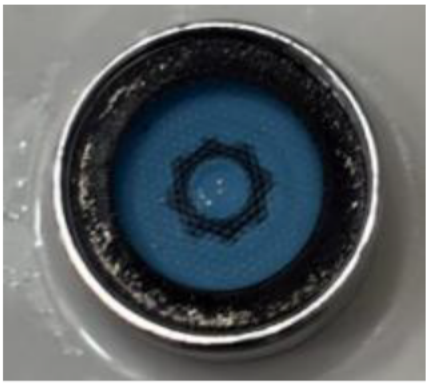
  - Turbidity - (Expected Range: < 5.0 NTU)
    - 0.00 NTU (cold)
    - 0.41 NTU (hot)

  - Free Chlorine - (Expected Range: 0.20 to 4.00 mg/L)

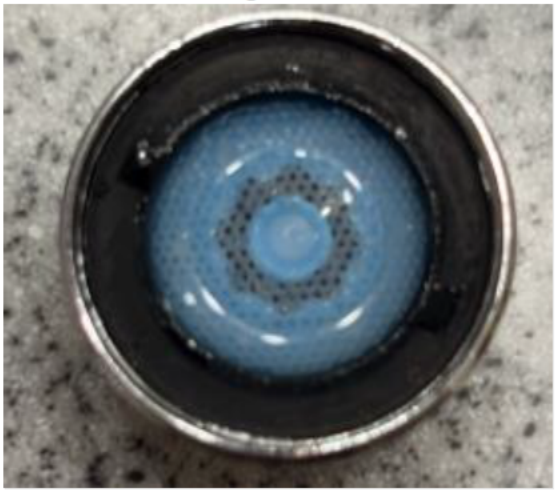
    - 0.65 mg/L (cold)
    - 0.35 mg/L (hot)

- Temperature
    - 75.3°F (cold)
    - 114.3°F (hot)

- WQI hot water temperature results collected.
    - Main floor hallway bathroom sink –116.7°F
    - Upstairs hallway bathroom sink– 115.5°F
    - Master bathroom left sink – 114.8°F
    - Master bathroom right sink – 112.6°F

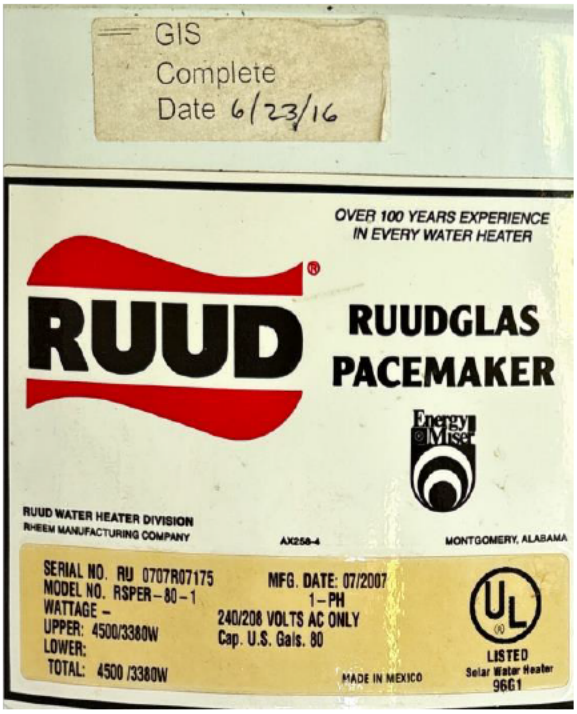


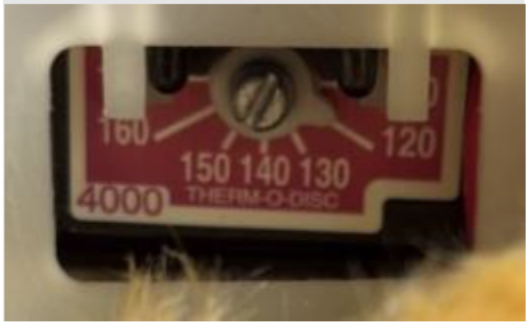
- **Figure 1.** Interior view of the main floor hallway bathroom sink aerator. No debris was observed. The aerator is in good condition.



- **Figure 2.** Interior view of the upstairs hallway bathroom sink aerator. No debris was observed. The aerator is in good condition.

- **Figure 3.** Interior view of the master bathroom left and right sink aerators, respectively. No debris was observed. The aerators are in good condition.





- **Figure 4.** View of the water heater access panel and surrounding area. No corrosion or water stains were observed. The set-point temperature of the water heater is approximately 120°F.

C. Hot Water Heater

- 80-gallon electrical water heater manufactured by Ruud (Rheem Manufacturing Co.) in July 2007.
- Water heater thermostat dial was set to approximately 120 °F.
- Visual observation showed the water heater to be in good condition with no signs of external corrosion or water stains.
- The supply piping material is copper.

D. Point-of-Use Treatment

- There were no filters observed at this residence.

E. Overall Assessment

- Temperature was measured at all available fixtures during inspection. Hot water temperature was measured by both the Water Quality Sampling Team and WQIs. The WQI took hot water temperatures with an instant read digital thermometer and the water quality sampling team took measurements with an AquaTroll 600 water quality meter.
- The WQI confirmed all hot water fixtures, except for the master bathroom left and right sinks, could reach a temperature of 115°F or above. All hot measurements were similar to the set-point temperature of the hot water heater. Temperature readings at the faucet that are similar to the set-point temperature of the hot water heater indicate that the hot water heater is functioning properly.
- Analytical results will determine if drinking water complies with the applicable standards.

F. **Recommendations**

- Perform routine hot water heater maintenance (i.e. flushing, inspecting sacrificial anode, etc.) as it has surpassed the average service lifespan of 8-12 years.
- Follow up with analytical water quality results when available.

Conclusion

The resident requested a WQAT inspection to document the water quality for their dog after their neighbor expressed concerns about their own dog suddenly passing. No sheen or odors were observed in either the hot or cold water. All water quality parameters collected during the inspection were within expected ranges. The hot water heater was manufactured in 2007 and is in good condition with no observed corrosion or water stains. It is recommended to perform routine maintenance on the hot water heater to maintain acceptable performance. The resident will be informed of their analytical results when available by the CPLO.