REGION 9
SAN FRANCISCO, CA 94105

MEMORANDUM

DATE: July 10, 2026

FROM: United States Environmental Protection Agency, Region 9

TO: Dr. Eva Davis and Ms. Elin Betanzo

SUBJECT: EPA's Review of Combined Comments on the EPA Region 9 Final Report and Sampling Audit

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This memorandum summarizes the United States Environmental Protection Agency (EPA), Region 9's review of the Dr. Eva Davis and Ms. Elin Betanzo's memorandum to EPA titled *Combined Comments on the EPA Region 9 Report entitled: Final Report: Assessment of the Joint Base Pearl Harbor-Hickam and Aliamanu Military Reservation Public Water Systems* ("Davis/Betanzo Memo"), transmitted to EPA on Friday, May 1, 2026 via electronic mail. The Davis/Betanzo Memo references both EPA's *Final Report: Assessment of the Joint Base Pearl Harbor-Hickam and Aliamanu Military Reservation Public Water Systems* ("2026 EPA Assessment")[1] released in March 2026 and EPA's *Field Sampling Audit of Red Hill Joint Base Pearl Harbor-Hickam, Honolulu, HI* ("Sampling Audit Report")[2] released in November 2024.

EPA acknowledges and appreciates the important observations, comments, and feedback provided by Dr. Davis and Ms. Betanzo. While EPA will not be revising the Final Report, the comments and input provided will supplement the public record and inform the accuracy of existing and future public outreach materials.

Davis/Betanzo Memo Comments on 2026 EPA Assessment:

1. *The Executive Summary states that Section 1431(a) of the SDWA, 42 U.S.C. § 300i(a) grants the "EPA emergency authority to protect public health when a contaminant in a PWS or underground source poses an imminent and substantial endangerment." However, this report acknowledges that EPA cannot verify portions of what the Navy has reported about some of the recovery efforts (Sections 3.2.2.1.1 & 3.2.2.1.2 & footnotes for Tables 2 & 3, for example). The lack of oversite of the Navy by*

[1] EPA Final Drinking Water Assessment Report: https://www.epa.gov/system/files/documents/2026-03/epa-final-report-assessment-jbphh-and-amr-pws-2026-03-31.pdf.
[2] EPA Field Sampling Audit of Red Hill JBPHH: https://www.epa.gov/system/files/documents/2024-11/field-sampling-audit-of-red-hill-joint-base-pearl-harbor-hickam-honolulu-hi-redacted-2024-11-27.pdf.

the regulatory agencies is a cause for concern.

EPA Comments: EPA acknowledges the concern regarding verification of Navy-reported recovery actions. The 2026 EPA Assessment identifies where documentation was incomplete or not provided. EPA's oversight approach relied on multiple lines of evidence (e.g., activities completed and water quality reports) to validate Navy-reported recovery actions. Where documentation or direct verification of specific actions was unavailable, the 2026 EPA Assessment identifies these limitations and bases conclusions on available data. This approach is consistent with EPA's regulatory practice, which often relies on certified self-reporting under penalty of law.

2. *Section 2.5 states: "the NPDWR establishes that violations should be determined based on a running annual average of the results, indicating a persistent issue with water quality (i.e., the system must exceed the MCL for one year, except where results are greater than four times the MCL or may otherwise result in an MCL violation)." This describes Safe Drinking Water Act compliance. However, the sampling efforts described in this document are intended to determine when jet fuel contamination was present in the water system and whether it was cleared from the distribution system. This means that comparing single samples to baseline values is appropriate, not calculating running annual averages.*

EPA Comments: EPA appreciates the clarification offered by the commenters. As noted in the 2026 EPA Assessment, the statement in Section 2.5 describes how Maximum Contaminant Level (MCL) compliance determinations are made under the Safe Drinking Water Act (SDWA). EPA agrees that these compliance procedures differ from the objectives of the Red Hill drinking water assessment, which focused on identifying the presence of fuel-related contaminants following the November 2021 incident.

For this reason, the assessment does not rely on running annual averages to evaluate contamination associated with the release. Instead, EPA compared individual sample results to incident-specific parameters (ISP) to determine when contamination was present and to assess the effectiveness of flushing and recovery activities. Moreover, the 2026 EPA Assessment explains that ISPs were set for analytes, such as Total Petroleum Hydrocarbons (TPH), to reflect acute risk and incident context, and that single-sample exceedances triggered immediate remedial actions (see Section 3.3.3 and Table 5). This approach aligns with best practices for emergency response and is distinct from public water system compliance determinations.

3. *Section 3.2.2 States: "Based on the pipe diameters of the water mains, the volumetric flushing rate necessary to achieve scouring velocities was not possible due to limitations of the GAC treatment units' volumetric flow capacities. However, the IDWST deemed the flushing as acceptable based on plans to flush the service connections and to conduct rigorous sampling." This statement is provided with no justification. The IDWST determined it was acceptable because they said so.*

EPA Comments: EPA acknowledges the commenters' concerns regarding flushing methods and tank level management (presented in later comments) during the emergency response. As described in the 2026 EPA Assessment, infrastructure constraints, including pipe diameters and the hydraulic limitations of the Granular Activated Carbon (GAC) treatment units, made achieving scouring velocities infeasible during the emergency response. Due to these constraints, volumetric flushing was therefore selected as the only measurable approach to flushing available to achieve contaminant removal goals in the distribution system.

With respect to storage tank levels, maintaining a minimum of approximately 20 percent capacity was necessary to preserve positive system pressure and prevent the potential for backflow and the intrusion of external pathogens. Operating the tanks below this threshold would have presented significant sanitary risks.

EPA evaluated the effectiveness of flushing and tank management not solely on operational parameters, but through the comprehensive sampling programs that followed. These programs were designed to detect potential residual contaminants, including any that might have originated from tank sediment or the lower portions of the storage tanks. The results from these sampling efforts informed EPA's conclusions regarding the adequacy of the flushing activities and the condition of the drinking water distribution system following the incident.

4. *Section 3.2.2.1.1 States: "It should be noted that the Navy reported that the tank was never run dry, but rather was flushed out to approximately 20% capacity, then refilled." This clearly demonstrates that contaminants that could have concentrated in tank sediment that has not been cleaned, were not removed from the distribution system during the flushing exercises.*

   EPA Comments: See EPA's response on comment 3.

5. *Section 3.2.2.1.1 States: "EPA interprets this to mean that the tank was at least isolated from the system by valves; however, the Memorandum does not specify the way that Tank S2 was "secured"." Given the observations throughout this document, there is no reason why EPA should take Navy at their word and should refrain from "interpreting" incomplete information that is unverified.*

   EPA Comments: See EPA's response on comments 2 & 3.

6. *Section 3.2.2.1.2 states: "The materials available for review do not specify the actual length of the 30-inch transmission line that supplies the Red Hill Tanks, so EPA cannot immediately determine that adequate volumes were delivered to meet the five volumetric turnover targets; however, the efficacy of the flushing activities is ultimately determined by the water quality analyses (discussed in Section 3.3)."*

Water quality analyses will only detect failures of flushing activities if properly designed. None of the water quality samples have been collected from the tanks as they drain below 20%, therefore it is clear that sampling protocols were insufficient to conclude that flushing activities were effective. Section 3.2.2.1.4 States: "The Zone H1 RAR46 does not specify the volume of Middle Tank; however, based on the June 2024 SDWA inspection (see Section 5.3.1), information regarding tank capacity was available to EPA but is not listed in this report due to identification as sensitive information. The flushing summary spreadsheet in the RAR demonstrates that 0.94 MG was flushed from the tank, exceeding the tank volume. While flushing records included in the H1 RAR do not indicate that five volumetric turnovers were achieved, the Navy signed several documents stating that the tanks, including the South and North Tanks, were flushed according to the Recovery Plan." How is it possible that all the other tank volumes listed in this report are not considered sensitive information? This language provides another example of the Navy providing inadequate documentation and EPA relying on it for no reason. EPA's description of Navy's actions throughout this document make it clear that they cannot be taken at their word.

EPA Comments: See EPA's response on comments 2 & 3.

7. *Section 3.3.2 states: "Distribution mains and upstream storage facilities were assessed via samples collected from hydrants once the flushing activities were completed." It is not clear how representative samples for organic contaminants can be obtained from fire hydrants. Hydrants are designed to deliver large quantities of water at high pressure, whereas water quality samples are generally very small quantities (40 milliliters to 1 liter) that are normally collected under low flow conditions so as not to vent volatile organic compounds (VOCs). How samples were collected from the hydrants should be described so that the quality of the data can be evaluated. Section 3.3.3.3 states: "There were 209 exceedances of the TOC ISP of 2,000 µg/L. Per the Navy's Stage 4 Sampling Result Report for Zone D253, the Navy stated: "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. The IDWST selected a TOC project screening level of 2,000 ppb. For each exceedance, the IDWST investigated by reviewing the associated water quality data (e.g., BTEX results, TPH) and determined that all TOC exceedances are not associated with petroleum hydrocarbons." 2,000 ppb is not an inconsequential value for TOC. 2,000 ppb is commonly associated with elevated TTHM and HAA5 results, above the background levels commonly found in the JBPHH system. Given this unexpected level of TOC in the drinking water, what work did EPA and Navy do to identify the source of this significant detection? If the TOC detections were not associated with petroleum hydrocarbons, where did they come from? Where is the evidence that the TOC does not come from petroleum hydrocarbons?*

EPA Comments: EPA acknowledges the commenters' concerns regarding the representativeness of hydrant sampling and the interpretation of Total Organic Compounds (TOC) exceedances. Hydrant sampling is a standard and accepted method for evaluating distribution system water quality such as bacteriological and TTHM samples. To sample from a hydrant, simple sampling apparatuses are attached

to create controlled, laminar flow conditions suitable for water quality sampling, including volatile organic chemical (VOC) analyses. A photograph of such an apparatus is included below to illustrate a typical configuration used in the field to achieve laminar flow.

As described in the 2026 EPA Assessment, TOC was used as an incident-specific parameter to support the evaluation of potential petroleum-related contamination; however, TOC is a non-specific measure of carbon-containing compounds and does not, by itself, distinguish between naturally occurring organics, disinfection byproduct precursors, or petroleum hydrocarbons. An elevated TOC result caused by jet fuel would simultaneously trigger detections of specific petroleum constituents. When TOC concentrations exceeded the ISP, follow-up actions were taken including comparing the sample results for petroleum-related parameters (e.g., BTEX, TPH, SVOCs, etc.), flushing, and resampling. In the Navy's Long-Term Monitoring and Extended Drinking Water Monitoring Reports, the elevated TOC results are attributed to sampling errors and resamples did not detect TOC. In EPA's split samples, there were five samples with elevated TOC results that were further investigated and attributed to incorrect preservation with ascorbic acid or sodium thiosulfate. Through our analysis of the available evidence, we have not been able to link TOC exceedances to petroleum hydrocarbons.

Please also see EPA's response to Comment 35 for additional information regarding the establishment of 2,000 µg/L as the ISP for TOC.

8. *Section 3.3.3.3 (page 35) states: "An investigation by a Navy contractor into ISP exceedances in both trip blanks and normal samples attributed these exceedances to laboratory contamination, concluding that further action (i.e., flushing and sampling) was not warranted." This paper describes an unexpectedly high level of lab contamination in drinking water samples throughout the process. Has EPA compared the alleged lab errors to typical lab contamination rates? Has EPA considered recalling the certifications for the laboratories used for the analyses described in this document? It should be noted that trip blanks are not for the purpose of determining laboratory contamination. Trip blanks are meant to determine if contaminants (generally volatile organic contaminants) were lost from the samples during the storage and shipping process.*

EPA Comments: EPA addresses laboratory contamination and associated quality assurance/quality control (QA/QC) issues during the emergency response in Section 3.3.3.3 and Table 5 of the 2026 EPA Assessment report, including exceedances involving DEHP and methylene chloride. As part of the Interagency Drinking Water System Team (IDWST), EPA, DOH and the Navy investigated all ISP exceedances during the emergency response, and in some cases these exceedances were confirmed to have resulted from laboratory contamination. The report also clarifies the purpose and limitations of trip blanks and documents corrective actions taken, including reviews of laboratory practices and updates to sampling protocols.

There are no "typical" laboratory contamination rates, and contamination frequency varies by laboratory and analytical method. For ISP exceedances during the emergency response, EPA reviewed the available QC data, laboratory evaluations, and other supporting lines of evidence (e.g. analytical data from resamples). Based on this review, certain ISP exceedances were determined to be consistent with laboratory artifacts rather than fuel-related contamination.

9. *Figure 4 on page 39 shows the number of samples collected and the number of samples with TPH detections from 12/2021-2/9/22. The number of samples collected drops to a mere fraction of the previous samples as of 2/9/22, but detections continue. A far more reassuring graph would show long term high frequency sampling and reduced/minimal detections over time. This figure demonstrates that that the sampling program ended, not that it confirmed a lack of contamination.*

EPA Comments: Figure 4 and Section 3.3.3.3 show that sampling frequency was highest during the emergency response and decreased as ISPs were consistently met. EPA also notes that the transition from emergency response sampling to Long-Term Monitoring (LTM) sampling in February 2022 explains the observed reduction in sampling volume. This reduction reflected a planned shift in program objectives and procedures: completion of emergency response sampling, preparation and review of the Navy's Removal Action Reports, issuance of amendments to DOH's unsafe water advisory (UWA), and subsequent initiation of LTM. Continuity in sampling for key analyses, including TPH, VOC, and

semivolatile organic compound (SVOC) testing was maintained throughout the transition.

The Navy continued additional monitoring efforts for three years post-emergency response, with over 18,000 samples collected. The report provides evidence that water quality achieved standards throughout this period.

10. *'Fuel indicator' compounds in samples analyzed during the emergency response phase are discussed in Section 3.3.3.3 (page 36) and it appears to say that these indicators support the total petroleum hydrocarbon (TPH) data, although only 3 instances of indicator compounds are mentioned for the 63 times that TPH was detected in the samples. However, Section 4.3.2 (page 51) states, "The levels and frequency of detection for the fuel related indicators during LTM did not match the high level of TPH detections and what would be expected for a true JP-5 or fuel-related detection."*

Considering the 'fuel indicator' compounds shown in Table 10, benzene, ethylbenzene, & toluene are all volatile compounds that are present in JP-5 only in very low concentrations. The analysis for these compounds (Method 8260) is quite sensitive, but these compounds are very rarely detected in the groundwater at Red Hill even when the TPH concentrations were quite high after the May 2021 spill.

Naphthalene, 1-methylnaphthalene, & 2-methylnaphthalene are sometimes detected by Method 8270 when TPH concentrations are high, but at concentrations orders of magnitude less than the TPH concentrations. Table 30 of the report acknowledges that naphthalene, 1-methylnaphthalene, & 2-methylnaphthalene are the only 'indictors' that were detected during EDWM. This is typical of the large amount of groundwater data from this site. The lack of detection of 'fuel indicator' compounds in the Long Term Monitoring (LTM) & Extended Drinking Water Monitoring (EDWM) data is not conclusive that the TPH detections were not fuel related.

EPA Comments: Section 4.3.2 and Table 10 describe the targeted analyses for fuel-related indicator compounds, including benzene, naphthalene, and methylnaphthalenes. The 2026 EPA Assessment report acknowledges that the absence of these indicators does not, by itself, conclusively rule out the presence of fuel. However, when considered together with TPH chromatogram pattern evaluations, split sample comparisons, and DOH's independent investigation[3] on the limitations of TPH analysis at low concentrations, the overall evidence provides strong support against ongoing fuel contamination in the drinking water system.

EPA recognizes that Method 8015 has inherent limitations when interpreting low-level TPH detections. For this reason, the 2026 EPA Assessment report does not rely on any single line of evidence. Instead, EPA evaluates TPH results in conjunction with indicator compounds, chromatographic patterns, and

[3] DOH's JBPHH Drinking Water Characterization forensic investigation report by NewFields (May 2024): https://health.hawaii.gov/news/files/2024/05/JBPHH-HIDOH-DW-Report-20240510.pdf

corroborating analytical data. This multimethod approach ensures that the limitations of Method 8015 are appropriately considered and that conclusions are based on the weight of evidence rather than isolated results. EPA also welcomes suggestions on different approaches to detecting petroleum fuels.

11. *Section 3.6.1 states: "It is worth noting that confirmed free product has not been found during gauging events in Red Hill Shaft since December 15, 2021. While there was also a detection on August 22, 2022, the Navy confirmed there was no presence of observable product and the resulting chromatogram was not similar to middle distillate fuels (e.g., JP-5)." These statements are as clear as mud. The first sentence refers to free product, the second sentence says there was a 'detection' but free product was not observed. The Notice of Interest (NOI) data on the Navy's website shows TPH detections in RHMW2254 (Red Hill Shaft) when sampled using a bailer on 8/25/22, 9/8/22, 11/10/22, 11/15/22, & 1/18/23. This data is very problematic because, as this EPA report states in Section 6.1.1.2 (page 91), "the potential JP-5 or fuel component detections are not expected to be episodic", yet samples taken in between these dates & after are given as nondetect. All the nondetect results are highly questionable.*

EPA Comments: Sections 3.6.1 and 6.1.1 in the 2026 EPA Assessment report discusses episodic TPH detections in the drinking water distribution system and the absence of confirmed free product in the Red Hill Shaft since December 2021. The August 22, 2022, TPH detection from a gauging event in Red Hill Shaft referenced in the report was a low-level- analytical signal that did not correspond to light non-aqueous phase liquid (LNAPL), and its chromatogram did not match JP-5 or other middle- -distillate fuels.

EPA notes that RHMW2254 is a groundwater monitoring well, not the Red Hill Shaft. Groundwater monitoring wells frequently show variability due to localized subsurface conditions and may not be representative of finished drinking water quality. EPA continues to require groundwater monitoring as part of the 2023 Administrative Consent Order[4].

12. *Section 4.2 states: "The Final LTM Plan superseded the drinking water LTM sections of the previously approved and signed SAP; however, differences were not required to be reconciled through resampling. All sampling and analysis rounds performed after the Final LTM Plan was signed and adopted were conducted in accordance with the requirements of the Final LTM Plan." Throughout this process sampling programs were started without an approved sampling plan, and revisions identified after sampling began. This repeated sequence of events demonstrates that EPA did not have adequate control over defining sampling procedures and consistently deferred to Navy even when they had been given ample evidence that Navy should not be trusted. The sampling plan approval process raises questions throughout the period described in this document.*

[4] EPA, Navy, and DLA – 2023 Consent Order for Defueling, Closure, and JBPHH Drinking Water System (Docket No. RCRA 7003-R9-2023-001, PWS-AO-2023-001), June 2, 2023: https://www.epa.gov/system/files/documents/2023-06/2023-red-hill-aoc-for-defueling-closure-dw-protection-2023-06-02.pdf

EPA Comments: EPA acknowledges the concerns raised regarding the timing of sampling relative to the finalization of administrative documents. As described in the 2026 EPA Assessment report, EPA prioritized continuous, uninterrupted monitoring of the drinking water system throughout the transition from the emergency response phase into LTM and later, the Extended Drinking Water Monitoring (EDWM) program. For this reason, sampling began before all administrative paperwork was fully executed. This approach ensured that water quality surveillance was not delayed during critical periods of system recovery.

During emergency response, the Drinking Water Sampling Plan (referred to as a Sampling Analysis Plan or SAP) was developed by the Navy, Army, DOH, and EPA to be an evergreen document that would be updated as needed based on new analytical data or other information. The LTM plan was developed based on the signed SAP and superseded the SAP when it was finalized.

Although the final administrative versions of the LTM and EDWM plans were still being negotiated , the sampling activities conducted during these interim periods relied on established, EPA-approved analytical methods (e.g., EPA Methods 524.2 and 525.3) and were performed by certified laboratories. In addition, all rounds of sampling were conducted in accordance with the most current approved sampling plan. Moreover, all data collected during these intervals underwent the same validation and quality-assurance procedures as the data collected after plan finalization. EPA and DOH reviewed all data, and any deviations were addressed through corrective actions and additional sampling, as needed. As a result, EPA considers the interim data scientifically valid and appropriate for use in evaluating the public water system conditions.

In summary, while certain administrative documents were finalized after sampling had already begun, EPA ensured that analytical methods, QA/QC procedures, and laboratory practices remained consistent and technically sound throughout the transition. Administrative timing did not affect the integrity or validity of the water quality data used in the 2026 EPA Assessment report.

13. *Section 4.3 (pages 46 – 47) states: "During LTM Period 6 (June 2023 through November 2023) and Period 7 (December 2023 through March 2024), there was an increase in the frequency of detections from analyses of water quality via 8015, primarily in the organics range associated with diesel (e.g., TPH-d). All but two of these detections were under the ISP for Combined TPH (266 µg/L); however, the increased frequency of these detections above the MDL and RL, along with increased residential reports of water quality concerns during this period, led to multiple investigations from late 2023 through early 2024."*

EPA Comments: EPA notes that there is no specific comment or question in the Davis/Betanzo Memo associated with this entry.

14. *Section 4.3.1 states, "The Navy attributed the drop in TPH detections beginning January 2024 to a*

decrease in the OTP surrogate added to samples and the reported TPH levels to detection of a byproduct of chlorine residual and OTP, as well as lab-artifacts and contamination". Section 4.6.4 states, "The nature of the residents' complaints varied, but some common themes included allegedly observing an oily sheen in the water and rashes and/or skin irritation as a symptom." After receiving resident's complaints, the Navy & EPA want to say there was nothing in the water – the detections were due to the surrogate added to the samples at the lab & lab contamination? Public water system (PWS) customers cannot get rashes or see sheen caused by lab contamination or analytical surrogates. The use of the word 'allegedly' when discussing customer complaints indicates a lack of belief in the validity of the complaints, which also will not improve the confidence of the customers in the regulatory agencies.

EPA Comments: Section 4.3.1 and 4.6.4 of the 2026 EPA Assessment report explain that investigations into TPH detections during LTM included reviewing surrogate recovery, lab artifacts, and resident complaints. EPA recognizes the importance of resident-reported concerns, and as such, performed a drinking water complaints investigation[5] in October 2023 following an increase in number of complaints reported by residents served by the JBPHH and AMR public water systems during LTM. This inspection report states that TPH-d was reported in three of the four investigated homes and provided follow-up recommendations for the Navy, including further investigation into resident complaints to understand the potential issues causing the water quality concerns, even if a rapid TPH test resulted in non-detect, and further investigation into observed sheens. These recommendations were taken into consideration by the Navy and incorporated into the Navy's Water Quality Action Team (WQAT) procedures.

EPA used the word "allegedly" in the 2026 EPA Assessment report to reflect that EPA did not directly observe the reported sheens during EPA's follow-up investigations and could not rule out other environmental exposures as potential causes for skin irritations, such as rashes. As a result of the complaint investigations, EPA required the Navy to perform corrective actions, improve communication, and provide alternative water for affected residents.

15. *Section 4.3.1 states "Navy-collected LTM samples for 8015 (TPH-d/o) were only preserved with hydrochloric acid (HCl), and not the method recommended sodium thiosulfate." Most laboratories provide sample bottles with the appropriate preservative for the intended analysis. Why didn't Navy have the bottles prepared? Did the lab send the wrong bottles with the wrong preservative? Sodium thiosulfate is a standard quencher for drinking water analysis. Why would anyone even consider adding HCl, a strong oxidant, to the collected samples? Has EPA considered revoking certification of the samplers and the labs that allowed the wrong bottles to be used?*

EPA Comments: As documented in Sections 4.3.1 and 5.5.5.1, EPA investigated these preservation errors and required corrective actions, including retraining and implementation of automated quality

[5] EPA letter to Navy – EPA Investigation Report on October 2023 Drinking Water Complaints, December 20, 2023: https://www.epa.gov/system/files/documents/2023-12/r9-epa-red-hill-investigation-rpt-2023-10-drinking-water-complaints-2023-12-20.pdf.

control systems. For further preservation guidance please refer to the standard SW-846 guidance[6], Table 4-1. The 2026 EPA Assessment report acknowledges challenges encountered during LTM, which informed EPA's recommendation for additional monitoring (e.g., EDWM) and expanded split sample analysis.

It is important to note that EPA Method 8015 is not an approved drinking water method, and therefore, EPA cannot revoke certification for laboratories conducting this specific drinking water analysis. EPA's multi-year assessment of the JBPHH and AMR public water systems found that preservative errors were limited to a small subset of samples as documented in the 2026 EPA Assessment report. EPA recommends that any further questions regarding bottle preparation and preservatives used by the Navy's contractors should also be directed to the Navy.

16. *Section 4.3.1 states: "The levels and frequency of detection for the fuel-related indicators during LTM did not match the high level of TPH detections and what would be expected for a true JP-5 or fuel-related detection." Please quantify how this observation makes sense. The levels detected always depend on the amount of dilution within the water system regardless of the quantity of contaminant present.*

EPA Comments: EPA notes that if increases in TPH detection rates and concentrations by Method 8015 were attributable to fuel contamination, these results would ordinarily be accompanied by corresponding increases in the detection rate and concentration of fuel-related indicator compounds such as naphthalene and methyl-naphthalenes. However, as described in Section 4.3.2 and Table 10, this relationship was not observed during LTM. These findings are evidence that the increase in TPH detections observed during LTM are likely attributable to sampling errors and/or laboratory method limitations and unrelated to JP-5 contamination in the drinking water system. The methods used to analyze the fuel indicators are very sensitive, with detection limits in the sub part per billion range. The evaluation of indicator compounds and chromatographic pattern evaluations support the conclusion that the elevated frequency of TPH detections was not consistent with JP5, or other middle-distillate fuels, including weathered fuels.

17. *Section 4.4 states: "To better discern the source and magnitude of sampling and analytical artifacts and errors identified during LTM, EPA requested that the Navy evaluate each factor potentially contributing to the error, separately. Instead, Navy made multiple changes simultaneously to the sampling and analytical protocols, confounding the error analysis, and potentially obscuring the contributions of individual factors to the total analytical error." The Navy appears to have purposely sabotaged the investigation into the source of the detections.*

EPA Comments: EPA acknowledges that with the Navy implementing multiple procedural changes at once, there was difficulty isolating the specific factors contributing to analytical variability during LTM.

[6] EPA's SW-846 Compendium: https://www.epa.gov/hw-sw846/sw-846-compendium

As noted in Section 4.4, this approach may have limited the opportunity to scientifically answer these challenging questions. However, EPA does not draw conclusions regarding the Navy's intent. To address the resulting uncertainty, EPA required the Navy to conduct additional monitoring under EDWM using controlled, standardized protocols designed to better distinguish methodological artifacts from true fuel detections. The 2026 EPA Assessment report documents these steps and their outcomes.

18. *Section 4.5.2 states: "Following the discovery of the TICs, DOH initiated a follow-up study in 2024 to investigate the origin of these brominated organic, halogenated alcohol, and other unknown compounds. Several chemicals with profiles matching the TICs were found to be related to leaching of synthetic pipe materials suggesting that the TICs may be typical degradation products from polyethylene pipes exposed to chlorinated water. The primary goal of the study is to determine whether petroleum hydrocarbons promote or accelerate the leaching and/or chemical reaction with plastic pipe (i.e., high-density polyethylene, known as HDPE, and cross-linked polyethylene, also known as PEX) exposed to chlorine. As of the date of this report, the study has ended, and the final report is still pending to be published." The fact that several chemicals with profiles matching the TICs were found to be related to leaching of synthetic pipe is not proof that TICs are not associated with TPH, yet this report concludes that since the TICs could be associated with pipe materials, then they must be associated with pipe materials and not a fuel spill. The argument is baseless. The discussion actually poses the possibility that TPH would accelerate leaching and/or chemical reactions with plastic pipe leading to a greater concentration of TICs in the water.*

EPA Comments: As described in Section 4.5.2 of the 2026 EPA Assessment report, EPA summarized the findings of DOH's independent forensic investigation, which identified that several tentatively identified compounds (TICs) were consistent with compounds known to leach from synthetic pipe materials under chlorinated conditions. EPA presented DOH's findings for transparency and noted that DOH initiated a follow-up study to further evaluate whether petroleum hydrocarbons could influence or accelerate such leaching.

Since this is DOH-led investigation, EPA recommends that any further questions regarding the study methodology, interpretation, or pending final report should be directed to DOH.

19. *Section 4.6.1 describes significant problems with the drinking water system operation that were detected during an inspection in 2022. Some of these problems, like cleaning of the storage tanks & having approved SOPs, have not yet been resolved. A second inspection in 2024 also found problems with the drinking water system operation. This raises questions as to why the system was allowed to get in such a compromised condition and why coming into compliance is taking so long. When were the previous DOH & EPA inspections of the system? Members of the U.S. military and their families as well as the nonmilitary community members who are served by this drinking water system are entitled to drinking water systems that are proactively maintained, thoroughly documented, reliable, and fully compliant with the Safe Drinking Water Act and regulatory requirements. Allowing such deficiencies to persist undermines public trust and falls short of the*

standard of care owed to those who serve. Military drinking water systems should exemplify best-in-class operations, not mirror the chronic neglect often seen in the most underfunded and overburdened civilian systems.

EPA Comments: EPA agrees that maintaining proactive, well-documented, and fully compliant drinking water systems protects public health and builds community trust.

Regarding previous oversight, prior to the 2021 fuel release, DOH, the drinking water primacy agency in Hawaii, conducted routine sanitary surveys of the JBPHH system according to the standard regulatory cycle (typically every three years for community water systems). These surveys are designed to check for baseline compliance and sanitation. Due to the November 2021 fuel release incident, EPA conducted a much more thorough inspection, as documented in the 2022 and 2024 reports and generated the robust requirements in the 2023 ACO to align with American Water Works Association (AWWA) standards that are utilized by high-performing public water systems but not typically required by primacy agencies. The 2022 and 2024 inspections demonstrated that the Navy's historical compliance relied on reactive fixes rather than proactive investment, resulting in the conditions identified in the reports. EPA is utilizing the 2023 ACO to guide a fundamental shift from reactive maintenance to comprehensive and proactive management.

The 2023 ACO requires the Navy to complete corrective actions (e.g., storage tank cleaning, development and approval of standard operating procedures (SOPs), etc.) and EPA continues to oversee progress on those requirements. The 2026 EPA Assessment report documents both the deficiencies identified, the progress completed and the corrective actions underway at the time of the report's writing to ensure compliance and improve long-term system reliability.

20. *Section 4.6.4 states: "Navy implemented all recommendations to the complaint response process." This appears to be another place where EPA takes Navy at their word without any evidence to back it up.*

EPA Comments: In addition to our previous response to comment #2, above, EPA acknowledges the concern regarding verification of the Navy's implementation of recommendations. As described in Sections 4.6.4 and 4.6.6, EPA conducted follow-up investigations, including resident interviews and sampling at residential taps. EPA also required the Navy to provide documentation of corrective actions following resident complaints and to implement a community liaison program to improve transparency and accountability. Furthermore, the 2023 ACO[7] requires the Navy to submit updated Water Quality Concern Response and Investigation Procedures to EPA for review, which includes the follow-up procedures for the WQAT. EPA has access to the Navy's database containing the WQAT's full follow-up reports and actions. EPA's engagement with these activities provide the basis for EPA's assessment of

[7] 2023 ACO Statement of Work (SOW) Section 6.11 Complaint Investigation Procedures was modified on March 28, 2025, to be titled 6.11 Water Quality Concern Response and Investigation Procedures.

implementation rather than reliance on Navy assertions alone.

21. *Section 4.6.6 states: "EPA has received and reviewed a SOP that states that one gallon of water per day for five days will be provided upon request. However, there is no criteria for when an alternative water distribution center should be established.*

    EPA is not aware of any specific sheen analysis as part of Navy's drinking water concern response process, if a sheen was observed. EPA has not seen any public correspondence to address concerns of reprisal for filing drinking water concerns." This section again shows that the Navy's emergency response was inadequate and that there is no documentation confirming completion of the asserted sheen analysis.

    EPA Comments: As noted in Section 4.6.6, EPA identified gaps in the Navy's SOPs related to the absence of criteria for establishing an alternative water distribution center and the absence of a defined sheen analysis protocol. EPA has since received updated procedures and continues to work with the Navy to seek improvements in response protocols, including sheen analysis. In addition, the 2023 ACO requires the Navy to update and implement Water Quality Concern Response and Investigation Procedures, including documentation of follow-up actions and communication protocols. EPA will continue to oversee these improvements to ensure that concerns are addressed promptly and transparently.

22. *Section 4.6.6.1 "EPA Attempt to Replicate Chlorine Interaction on Surrogate Recovery." No dates are provided for this analysis. It appears that this is the first time this information has been made public, but it is not clear when this work occurred relative to the timeline of all other investigations presented here.*

    EPA Comments: See EPA's response on comment 23.

23. *Section 4.6.6.1 States: "There was no statistically significant difference in mean OTP recovery between spiked samples (+0.25 mL of 5% NaOCl) that remained chlorinated and spiked samples that were dechlorinated with 80 mg of sodium thiosulfate 95% CI (p = 0.098). There also was no statistical difference between the dechlorinated samples and the treatment with 1.5 mL of 5% NaOCl added at the 95% CI (p = 0.056). There were no TPH-d/JP-5 detections apart from the heavily chlorinated samples (spiked with 1.5 mL of 5% NaOCl) which is attributed to SPE media breakdown." The results presented in this analysis do not support the Navy's assertion that chlorine interaction caused the reported TPH detections. Despite this, the section does not state a clear conclusion or explain how these findings were weighed against the Navy's interpretation. The absence of a definitive statement is problematic, particularly since the results appear to contradict the explanation relied upon elsewhere in the report. If EPA concluded that chlorine-related artifacts do not account for the detections, this determination should be explicitly stated and reflected in the overall report conclusions.*

EPA Comments: Section 4.6.6.1 and Figure 9 in the 2026 EPA Assessment report details the EPA Region 9 laboratory's study on chlorine interactions with ortho-terphenyl (OTP). This study was conducted from late August to early September 2024, and the findings were ultimately incorporated into the 2026 EPA Assessment report. This study observed that chlorine did not significantly impact TPH-d area or OTP recovery except at very high concentrations and helped to inform EPA's assessment on the Navy's 2024 Tech Memo[8]. While the initial results from the study did not produce a definitive explanation as to the cause of the TPH-d spikes during LTM, it did support EPA's requirement of additional sampling through EDWM. EPA considered the additional data collected through EDWM before summarizing and finalizing conclusions from the 2024 study in the 2026 EPA Assessment Report.

24. *Section 5.2 states: "The Navy began sampling under the EDWM program in April 2024, prior to the final approval of the EDWM Plan by EPA and DOH." This repeats the earlier failure of beginning sampling without an approved plan and undermines confidence in the integrity of the EDWM planning and approval process. The sampling plan was not approved until 7 months into the 12-month sampling plan. This is unacceptable.*

EPA Comments: See EPA's response in comment 12.

25. *Section 5.3.1.1 states: "EPA samples detected TPH-d in six of the 13 samples collected, while Navy had non-detects for all TPH samples." What was done to rectify these discrepancies? The Navy has employed several different methods for reducing reported contaminant concentrations such as analyzing samples outside of holding times and using lab blanks that are known to be contaminated to cause valid sample results to be changed to non-detect during the validation process.*

EPA Comments: As documented in Sections 5.3.1.1 and 5.5.4.2 in the 2026 EPA Assessment report, EPA evaluated the differences in TPH-d detections between the Navy and EPA's LTM split samples and determined that they were attributable to variations in laboratory methods, holding times, and sample preservation. EPA's detections were low-level and slightly above the EPA Region 8 laboratory's MDL of 20 ppb. In addition, evaluations of the chromatogram patterns indicated that these detections did not exhibit a JP5 or fuel-related signature and were consistent with the same non-fuel-related patterns the Navy previously attributed to chlorine and surrogate interaction during LTM.

EPA's findings from these LTM split sample analysis helped to support the decision to implement EDWM and further investigate the increased frequency of low-level, TPH-d detections in both EPA and Navy samples. These steps provided the additional data necessary to resolve discrepancies, strengthen confidence in subsequent analytical results and support the conclusions of the 2026 EPA Assessment report.

[8] Navy, April 25, 2024: Low-Level Hydrocarbon Detections Result of Test Method Interferences in Total Petroleum Hydrocarbon (TPH) Analysis of Chlorinated Drinking Water: https://www.navyclosuretaskforce.navy.mil/Portals/101/Tech%20Memo_JBPHH%20LOEs%20LTM%20TPH%20Detects_Redacted.pdf.

26. *Section 5.3.1.2 states: "The Navy is aware of the storage tank concerns and are in the process of replacing storage tanks but will not be able to fully address tank maintenance and system storage capacity concerns for multiple years due to the replacement/construction process. Findings from the 2024 inspection have been responded to by the Navy and addressed or corrective actions have been identified and folded into the 2023 ACO as requirements." In reality, these findings have resulted in continued compliance delays rather than meaningful remediation. DOH oversight failed to prevent the system from deteriorating to this level of disrepair, and repeated deadline extensions merely defer corrective action without reducing public health risk.*

EPA Comments: Section 5.3.1.2 and Table 31 confirm that tank replacement and capacity upgrades are ongoing, as required by the 2023 ACO. A public drinking water system must continuously maintain adequate water supply and pressure for daily use, sanitation, and fire protection. Taking large storage tanks offline for cleaning, repair, or replacement must be carefully phased and staged to prevent severe service disruptions. EPA continues to oversee progress and requires timely completion of all corrective actions without jeopardizing the immediate availability of water.

27. *Section 5.4 (page 68) states: "The Navy also used sample bottles for 8260 (TPH-g) that contained ascorbic acid to quench samples in the field for Navy analysis. EPA provided sample bottles containing sodium thiosulfate for split sample collection for TPH-d, TPH-o, and TPH-g analysis. The low-level TPH-like detections observed during LTM were not observed after quenching was implemented during EDWM." Using ascorbic acid–preserved bottles for carbon-based analyses reflects a fundamental flaw in sample handling that should have been evident to qualified personnel. The report does not explain how this occurred or whether responsibility was assigned. In addition, collecting quenched samples does not reflect the chemistry of water entering the distribution system, rendering these results unrepresentative of real exposure conditions.*

EPA Comments: As detailed in Sections 5.4 and 5.5.5.1, EPA investigated the use of sample preservatives. Ascorbic acid is a commonly used quenching agent for VOC analysis (e.g., TPH-g, see EPA Method 5035a).

Quenching stops ongoing chemical reactions between residual chlorine and organic compounds, preserving the exact water chemistry present at the moment of collection and accurately reflect exposure conditions at the tap. Because the active water source (Waiawa shaft) was not impacted by the November 2021 release, this sampling was specifically designed to determine if a clean source water was mobilizing any residual contamination from within the distribution system pipes.

28. *Section 5.5.2 States: "Detectable concentrations of TTHMs were reported in 174 of 454 (38.3%) EPA split samples and 3324 of 6854 (48.5%) Navy samples. All reported EPA and Navy results were below the EPA MCL of 80 µg/L." Although routine compliance data are not available, detectable TTHMs are generally present in all samples from chlorinated drinking water systems such as JBPHH*

and are consistently reported in Annual Water Quality Reports. The absence of TTHM detections in a substantial fraction of samples therefore raises significant questions about the validity of the sampling and analytical results, particularly given the elevated carbon levels observed throughout this program. An explanation is needed for why TTHM detections appear intermittent.

EPA Comments: TTHMs are volatile disinfection byproducts that form continuously as chlorine reacts with naturally occurring organic matter in the water. Freshly treated water is expected to have lower TTHMs (e.g., below detectable levels) because the disinfected water has interacted with minimal amounts of organic matter. Whereas older water at the distant ends of the system or in low-turnover portions of the distribution system will show higher concentrations due to prolonged chemical reaction times with additional organic matter such as biofilm. Annual Water Quality Reports consistently show detections because routine compliance sampling is targeted at these older-water locations with the highest likelihood of capturing peak TTHM levels. Considering the aggressive flushing and low levels of organic materials in the source water, a lack of TTHM detections would be expected. Section 5.5.2 and Table 16 show that all TTHM detections were below the MCL, and intermittent results are attributed to water stagnation in the proximity of the sampling locations.

29. *Section 5.5.2 (page 72 & 74): "EPA did not receive notice of the Navy's toluene detection of 0.57 µg/L nor of any actions taken as described in COA 3…EPA did not receive notice of this sample nor of any actions taken as described under the EDWM Plan COA 3." This statement documents a continued failure by the Navy to meet required notification obligations. Similar failures occurred with EAL detections in 2021 and continued through 2023 and 2024, indicating a recurring pattern rather than an isolated lapse. The repeated failure to notify regulatory agencies of contaminant detections reflects a systemic breakdown in compliance and oversight that should not be allowed to continue. EPA's lack of documented follow-up or enforcement in response to these failures warrants explanation.*

EPA Comments: EPA appreciates this feedback highlighting these concerns. Section 5.5.2 and 5.5.3 document notification requirements and instances of non-compliance. EPA required corrective actions and improved communication protocols to ensure timely notification of all future detections. EPA is continuing to evaluate this information.

30. *Table 16 shows TTHM results significantly higher than JBPHH's historical TTHM compliance samples, which are typically less than 10 ug/L. However, the table presents only the maximum detected value, preventing evaluation of the full range of results or meaningful comparison to historical data. This apparent change in water quality does not appear to have triggered further analysis, inquiry, or follow-up by EPA. That this apparent shift in water quality did not prompt further EPA scrutiny warrants explanation.*

EPA Comments: Section 5.5.2 and Table 16 provide summary statistics for TTHM detections. Please refer to the response to comment 28, above, discussing TTHM variability that is commonly observed

across a distribution system. The maximum results were listed in the table because the ranges were ND to the maximum concentrations, and therefore the maximum results represent the full range.

31. *Section 5.5.3 states: "TPH has not been detected in Navy samples with quantifiable BaP concentrations, and there are no observed patterns between the detections and location types, zones, or frequency. The Navy conducted a technical investigation and determined that the detections were likely due to low-level contamination at the laboratory, likely from trace amounts present on laboratory equipment and not related to the Red Hill Incident."*

Benzo(a)pyrene (BaP) is a component of jet fuel - high concentrations in the Adit 3 sump after the 2021 spills clearly demonstrates that polynuclear aromatic hydrocarbons (PAHs), including BaP, are present in JP-5. But here, EPA argues that the detection of BaP in the drinking water is not an indicator of jet fuel. If the BaP is from lab contamination, it would have also shown up in the Method Blanks that are analyzed for quality control (QC) purposes, and these detections in samples should have been 'B' qualified by the lab to indicate that the Method Blank also contained this compound &/or thrown out during validation. Proper lab protocol according to SW-846 would require the lab to determine the source of the contamination when they first found it in the Method Blank, and eliminate this source of contamination before continuing to analyze samples. But BaP was detected 237 times – it does not appear that the lab considered the detection of this compound a result of lab contamination. It is not clear that these detections should be disregarded.

Lab contamination appears to be a commonly used excuse by both the Navy & EPA to disregard fuel component detections, but no proof is being put forward to verify that the source of the detections was lab contamination. If this explanation is valid, EPA should document the laboratory certification review performed and explain whether corrective or enforcement actions were considered in response to the persistent errors identified.

Note also that the Detection Limit (DL) for TPH is orders of magnitude greater than the DL for PAHs (including BaP) in the Method 8270 analysis. Thus, TPH can be nondetect even when BaP is detected at the concentrations discussed in this report. If BaP wasn't detected in the lab's Method Blanks, then it is not clear that this data should be dismissed as lab contamination. Given the questions raised throughout this report regarding the quality of Navy's work, why does EPA have any reason at this point to trust Navy's interpretation of BaP data?

EPA Comments: Benzo(a)pyrene (BaP) is not a known constituent of JP-5[9]. This conclusion is supported by EPA's review of the Navy's analysis of the JP-5 fuel collected at the Red Hill Bulk Fue Storage Facility in 2023. As noted in Section 5.5.3 in the 2026 EPA Assessment report, the Navy followed Course of Action (COA) 3 in the EDWM Plan to complete a Tier 1 assessment to further investigate detections of

[9] Toxicological Profile for JP-5, JP-8, And Jet A Fuels, U.S. Department of Health and Human Services, Public Health Service, Agency For Toxic Substances And Disease Registry, 2017: https://www.atsdr.cdc.gov/toxprofiles/tp121.pdf.

BaP. In addition, due to the Navy's frequency of reporting low-level detections of BaP during EDWM, EPA requested that the Navy conduct a Tier 2 analyses on the samples following the non-enforceable EDWM Supplement A document[10] and provide supporting documentation to EPA. The Navy's Tier 1 and 2 analyses documentation shared with EPA confirmed that sporadic low-level concentrations of BaP had been detected in field blanks, method blanks, and samples throughout the EDWM program; however, the results were determined to be unrelated to fuel because: 1) BaP is not a constituent of JP-5, 2) comprehensive analyses of fuel constituents (e.g. Method 8260 PIANO, and Method 8270 Alkyl-PAH) did not detect any fuel indicators, and 3) no TPH was detected in the samples, and 4) EPA did not detect BaP in any of 473 split sample analysis despite EPA's utilization of an MDL that is 1.6 times lower than the Navy's for BaP (refer to Section 5.5.3 and Table 18 in the 2026 EPA Assessment report).

32. *Table 22: The tables throughout this report are useless for understanding water quality trends. Presenting only the highest result with no spread for the other results make no sense.*

EPA Comments: EPA provides summary tables (e.g., Table 22) and acknowledges the importance of full data transparency. All underlying data are available on the Safe Waters dashboard for independent review.

33. *Section 5.5.5 states: "Though TOC is not regulated in drinking water under the SDWA," TOC is regulated under the SDWA for surface water systems. It is a very common analyte for certified drinking water laboratories. It is simply inaccurate to present the data this way.*

EPA Comments: See EPA's response on comments 35.

34. *Section 5.5.5 states: "The EPA Region 9 laboratory requested TOC samples to be collected using 3 x 40 mL vials preserved with HCl. The Navy collected the samples that reported 520 to 620 mg/L TOC levels in vials preserved with ascorbic acid and collected the samples with lower levels (0.53 mg/L to 8.8 mg/L) in vials preserved with sodium thiosulfate. In December 2025, after EPA received the high TOC results for two samples collected in August 2025, the EPA Region 9 laboratory investigated further and analyzed a blank preserved with ascorbic acid and a blank preserved with sodium thiosulfate. The blank preserved with ascorbic acid yielded similarly elevated TOC levels (250 mg/L), and the blank preserved with sodium thiosulfate displayed an estimated concentration that was slightly below the RL of 1 mg/L for TOC. Ascorbic acid, C6H8O6, is an organic compound and would be analytically detected as TOC based on its chemical composition. The EPA Region 9 laboratory assigned an A1 qualifier ("the sample was not properly preserved in the field") to these results and these results should not be interpreted as true TOC concentrations. One sample (A3-DL-0017762-24153-N-S), collected on June 24, 2024, yielded a TOC concentration of 8.8 mg/L and is not assigned*

[10] Navy and Army – EDWM Supplement A Tier 2 Analysis of Total Petroleum Hydrocarbons (TPH) and Fuel Indicator Compounds, October 2024: https://jbphh-safewaters.org/public/EDWM_Supplement_A_Oct_2024_Redacted.pdf.

an A1 qualifier. The sample bottle was disposed of per laboratory protocols by the time EPA's TOC investigation that occurred six months after analysis. The Navy's associated split sample was ND for TOC. EPA discussed the incorrect preservative usages with the Navy and the Navy confirmed implementation of an automated QC system on August 29, 2024, to prevent similar instances. The EPA Region 9 laboratory reported a 520 mg/L concentration of TOC in a split sample collected on December 16, 2024, post-implementation, and confirmed the high concentration was a result of incorrect preservation with ascorbic acid. The EPA Region 9 laboratory has not reported any further detections."

This sequence reflects a fundamental failure of sample handling, quality control, and oversight. Despite explicit laboratory instructions, incorrect preservatives were repeatedly used, producing invalid data and delaying identification of the problem. That preservation errors continued even after corrective actions were supposedly implemented raises serious concerns about accountability and the effectiveness of EPA and Navy oversight.

EPA Comments: See EPA's response on comments 35.

35. *Table 5 indicates that an incident-specific parameter (ISP) of 2,000 µg/L was selected for TOC, yet Section 5.5.5.1 states, "There was also one additional EPA split sample, collected on August 12, 2024, in work order 2408006 (sample ID F2-DL-0017776-24214-N-S) that had a concentration of 0.53 mg/L, which is also abnormally high for JBPHH distribution drinking water samples." If EPA considers 530 µg/L to be abnormally high for this system, the basis for selecting a much higher ISP of 2,000 µg/L is unclear and was not explained. This internal inconsistency undermines the credibility of the evaluation and suggests that the ISP was not set in a manner that is protective of public health.*

EPA Comments: Under the Safe Drinking Water Act (SDWA) a contaminant is generally considered "regulated" if it has a legally enforceable standard, such as a health-based Maximum Contaminant Level (MCL). TOC does not have an MCL because it is not a toxic contaminant or a direct health threat; rather, it is a broad measurement of carbon-containing materials, which includes harmless natural organic matter such as highly decomposed vegetation and biofilm. While surface water systems are required to monitor TOC, it acts solely as a "Treatment Technique" indicator to help operators manage the formation of disinfection byproducts (like TTHMs) during the chlorination process.

The report's reference to a 530 µg/L (0.53 mg/L) result as "abnormally high" was meant to identify the reading as a statistical outlier compared to the typical background levels of the JBPHH system. An outlier does not mean the water is unsafe or unhealthy, as TOC is not a health-based standard. The Incident Specific Parameter (ISP) of 2,000 µg/L (2.0 mg/L) for TOC was established as a conservative screening threshold to ensure any significant, unexplained deviations triggered immediate investigation. For further context, the standard regulatory "action level" for TOC in surface water systems is 4.0 mg/L (4,000 µg/L)—double the conservative ISP established for the Red Hill response.

Section 5.5.5.1 details the investigation into preservative errors and the implementation of automated QC systems. EPA required retraining and corrective actions to prevent recurrence. While these sample handling errors occurred, they were isolated to a small percentage of the samples collected. The Navy and EPA collected over 18,000 samples during the response and monitoring phases, and Navy analytical data packages underwent rigorous Level IV data validation—the highest level of independent data quality review. The report details and examines every sampling error in an attempt to maintain transparency and demonstrate the rigor of the QA/QC process.

36. *Section 6.1.1.2 (page 91): "The results have not identified JP-5, and while there have been a few detections of unknown composition (not JP-5 or a known fuel type), given the nature of the potential problem of a fuel spill migrating to a drinking water source, detections would be observed at a high frequency which was not the case. In other words, the potential JP-5 or fuel component detections are not expected to be episodic." This statement seems to imply that as long as the detected TPH does not appear to be JP-5, there is no concern with it being in the water. Is that the stance of the regulatory agencies?*

As stated, detections of significant concentrations of JP-5 in the groundwater would not be expected to be episodic but continuous, which is why the groundwater monitoring well data, which varies from week to week from hundreds of ppb of TPH to nondetect, is problematic & not believable. However, some of the detections of low concentrations in the drinking water distribution system may be more likely to occur due to a lack of total effectiveness of the flushing process & should not be disregarded.

EPA Comments: EPA is dedicated to safeguarding overall water quality and looks at a wide variety of testing parameters, rather than focusing solely on Total Petroleum Hydrocarbons (TPH). EPA has considered the results from every sample collected to inform any decision related to protecting public health.

As explained in EPA's Final Report (Section 6.1.1.2), a major fuel spill migrating through groundwater would typically cause steady, continuous contamination rather than random or episodic readings. However, EPA does not dismiss episodic low-level detections outright. Instead, each detection, regardless of frequency, was investigated through chromatogram analysis, targeted fuel indicator testing, and follow-up sampling. This intensive focus was the core purpose of the Extended Drinking Water Monitoring (EDWM) program. The EDWM, as discussed in the report, allowed us to determine whether trace readings came from highly broken-down (weathered) fuel or from non-fuel sources, such as routine laboratory testing artifacts or potential biogenic sources. All detections above method detection limits were evaluated in context, and the cumulative evidence including the absence of fuel indicators and the results of extended monitoring supports the conclusion that the system is not impacted by residual JP-5.

Also discussed within Section 2 of the 2026 EPA Assessment report, analytical methods for the detection

of TPH (e.g. EPA Method 8015) measure a wide range of carbon-based compounds, many of which are not petroleum-derived. These include naturally occurring organic matter, disinfection byproduct precursors, and other benign or biogenic organics that can register as TPH at low concentrations. The report further emphasizes that incident-specific parameters (ISPs) were intentionally developed to distinguish fuel-related signatures from these non-toxic background organics, and that individual TPH detections must be evaluated together with fuel-indicator compounds, chromatographic patterning, and other supporting lines of evidence. This framework is why the presence of TPH alone, particularly at low levels, cannot be interpreted as confirming petroleum contamination, and why EPA relies on multiple complementary indicators rather than TPH values in isolation.

37. *Section 6.1.1.2 (pages 91 – 92) makes an interesting statement: "As previously noted, the Navy was responsible for collecting drinking water samples for Navy's and EPA's analyses. EPA's September 2024 Field Sampling Audit (see Section 5.3.2) found that the Navy's sample collection practices generally maintained appropriate sample integrity. EPA had not reviewed any data or other evidence to suspect improper or fraudulent actions by the Navy with respect to sample collection and analysis." Note that this is past tense – EPA had not at that time 'reviewed . . .*

evidence to suspect improper or fraudulent actions . . .'. In December 2025 EPA & DOH were made aware of significant problems with the NOI groundwater data from 2021. In March 2026, additional evidence of the Navy changing data from the Red Hill shaft & monitoring wells was sent EPA & DOH. Improper practices with respect to the groundwater data pre-date the 2021 fuel spills. The community should be informed if an investigation of this matter is ongoing and/or if corrective actions are being taken to ensure that these practices do not continue.

The fraud detected in the Navy's data is sporadic – some of the data appears to be valid or at least meets the letter of quality control procedures (not altered by the lab or the Navy), while other data has been purposely altered. This type of fraud is not going to be observed by EPA &/or DOH splitting samples with the Navy. It would be very easy to not mess with the data for the samples that were split, but to alter data for samples that were not split.

The same principle is true for auditing the field sampling which was finally done in 2024 – it is easy to follow sampling SOPs during the audit, then go back to whatever fraudulent practice they had been engaged in when the auditors are not there.

However, the field crews were not likely the source of the fraud problem – the field sampling teams are generally the young, least experienced employees who are likely following the instructions of their supervisors. However, the field audit report does mention several problems with the sampling techniques (not using laminar flow to fill sample containers, opening VOA vials that were three quarters full to finish filling them) that would have biased the VOC results low. This is one more source of low bias to the data that has been reported over many years.

EPA Comments: To clarify on the statement in Section 6.1.1.2.: "EPA had not reviewed any data or other evidence to suspect improper or fraudulent actions by the Navy with respect to sample collection and analysis," EPA has reviewed all materials provided and to this point has not found any data or other evidence to suspect improper or fraudulent actions by the Navy with respect to sample collection and analysis.

Furthermore, as described in Sections 6.1.1.2 and 6.1.1.5, EPA conducted a comprehensive field sampling audit in September 2024, observing Navy sampling teams and reviewing adherence to SOPs. While the audit found that sample integrity was generally maintained, it also identified procedural issues (e.g., not using laminar flow, improper VOA vial filling) that could bias results. EPA acknowledges that field audits and split sampling may not detect all forms of data fraud, especially if manipulation occurs outside the audit window or with unsplit samples. EPA is committed to reviewing all information which may provide evidence of improper or fraudulent sample collection practices.

37-Continued

The report repeatedly states that the chromatograms don't match so it isn't JP-5 that was detected. However, Section 6.1.1.5 admits: "EPA used a purchased JP-5 standard rather than a fuel sample from Red Hill. Fuels are complex mixtures that can vary in composition based on origin, refining process and from batch to batch. Analytical standards that are purchased may vary from the fuel release being investigated, which is why 8015 mentions ideally getting a sample of specific fuel from the incident being investigated for comparison. This variance can contribute to misinterpretation of patterns that may not accurately match the pattern of the fuel of interest." Red Hill lab reports show that the calibration chromatograms for low concentrations of TPH look quite different from the calibration chromatograms for high TPH concentration. If the Navy or EPA are not comparing chromatograms for similar concentrations, the comparison is not likely valid.

EPA Comments: EPA purchased an independent reference standard of JP-5 with known purity and concentration to ensure reliable calibration, identification, and quality control consistent with laboratory test method practices. More information on standards for EPA Method 8260 can be found in Section 7.0 Reagents and Standards (pg. 11 of the PDF): https://www.epa.gov/sites/default/files/2018-06/documents/method_8260c_rev_3_8-1-2006.pdf. EPA independently requested a sample of the Navy's JP-5 fuel for additional analysis, but the Navy was unable to accommodate this request due to proprietary obligations. Nonetheless, it is a standard lab practice to establish a calibration curve from low to high concentrations and then compare sample results against calibration standards of a similar concentration. For TPH, EPA used calibration standards following EPA Method 8015 that were properly developed using a commercially available JP-5 standard. Furthermore, as discussed in Section 2.3.1 in the 2026 EPA Assessment report, during the evaluation of chromatograms a qualified analyst compares patterns of standards to patterns found in a sample to determine if there is a known fuel pattern.

38. *Section 7.2 states: "Navy has been designing, constructing and pilot testing air sparging (AS) and soil vapor extraction (SVE) systems to treat and recover jet fuel contamination in the unsaturated*

zone. This work is focused on areas beneath Adit 3 where jet fuel draining from the tunnel infiltrated the underlying rock formation. Navy pilot-tested the shallow SVE system in 2024 and is currently refining its design and operational parameters to optimize performance. Navy is also pilot testing a deep SVE system to treat and remove contamination at the base of the vadose zone. A long-term objective of remediation is to restore water quality in the Moanalua aquifer beneath the Red Hill facility. Remedial strategies will be developed after the full extent and magnitude of historical fuel releases at Red Hill are delineated."

These remedial technologies will be discussed during the May 20 CRI meeting, along with natural attenuation and bioremediation, which have also been mentioned as potential remedial technologies for the Moanalua aquifer.

EPA Comments: EPA's Final Report (Section 7.2) outlines the Navy's ongoing remediation efforts, including the design, construction, and pilot testing of both shallow and deep SVE systems to address jet fuel contamination in the vadose zone beneath Adit 3. The long-term remedial objective for Red Hill is to restore water quality in the Moanalua aquifer. Air sparging and SVE are established remediation technologies for treating and removing petroleum contamination from unsaturated soils and groundwater. The report notes that these pilot tests are being refined to optimize performance, and that natural attenuation and bioremediation will also be considered as part of a comprehensive remedial strategy. EPA will continue to review and oversee the Navy's remedial investigation and feasibility studies, with the selection of final corrective actions to be based on effectiveness, reliability, and implementability.

39. *Section 8.0 States: "EPA finds that despite notable technical challenges (as described herein), the overall approach to decontamination and the subsequent evaluation of impacts is appropriate and consistent with EPA guidance and regulations." Given the extensive and recurring technical deficiencies, data quality problems, and documented procedural failures described throughout the report, this conclusion appears disconnected from the body of evidence presented. The statement suggests a predetermined acceptance of the Navy's approach, with little indication that the cumulative impact of errors, omissions, and contradictory information affected EPA's evaluation. Even if current conditions can be characterized as acceptable, the prolonged history of misleading, incomplete, and internally inconsistent information warrants explicit acknowledgment and critical assessment. The report does not adequately grapple with these issues, and its conclusory endorsement undermines confidence in the rigor and objectivity of EPA's oversight.*

EPA Comments: EPA recognizes the importance of aligning conclusions with the body of evidence presented. The 2026 Final Assessment was intentionally developed to openly confront every technical hurdle and provide a rigorous, objective evaluation of all compiled data. Section 8.0 of the Final Report summarizes that, despite notable technical challenges including data gaps, procedural errors, and reliance on incomplete Navy documentation, the cumulative weight of evidence from three years of robust monitoring, independent split sampling, forensic analysis, and corrective actions supports the

conclusion that there is no evidence of residual fuel or fuel-related contamination in the JBPHH and AMR PWSs. Notwithstanding, EPA and the Primacy Agency commit to robust oversight, compliance with the law, and upholding the highest standards of regulatory integrity, stakeholder engagement, and transparency.

Davis/Betanzo Comments on the Field Sampling Audit Report

1. *Page 5 states: "Samples should be placed in the vials and only opened after analysis. The field SOP for DW Sample Collection Part B_V10 specified that field personnel fill VOA vials containing dechlorination agent ¾ full of the sample, add three drops of 1:1 HCL, cap the vial, and invert it. They then remove the cap, fill the vial, and cap it again. This process can potentially lose analytes of interests."*

   Page 28 states: "Based on our conversations, AECOM changed the VOA filling practice today. They now fill VOA ¾, cap, invert x3, open, add HCL, fill to top and cap."

   Page 31 states "For the second day in a row, AECOM changed the VOA filling practice based on internal conversations. They now fill VOA ¾, add HCL, fill to the top, and cap. They do not open the VOA after the sample is in it."

   The discrepancies between these three statements should be clarified. Standard practice when collecting VOC samples is that the vial will not be opened after the sample is collected until after the sample is analyzed. This is one additional way that the VOC samples for Red Hill are biased low.

   EPA Comments: At the time of the field audit, Navy contractors were following DW Sample Collection Part B, Rev. 10 which directed samplers to: fill VOA vials (pre-dosed with dechlorinating agent) approximately ¾ full, add three drops of 1:1 HCl, cap and invert, then reopen the vial, fill to the top, and cap again.

   On 9/12/24, after discussion with the EPA auditor, AECOM verbally instructed the field team to reduce handling while still meeting preservation requirements. The interim instruction was: fill the VOA ~¾ full, cap and invert three times to dissolve the dechlorinating agent, reopen, add HCl, then fill to a positive meniscus and cap.

   On 9/13/24, after further internal deliberation and consultation, AECOM finalized the sample collection instructions as follows: fill the VOA ~¾ full, add HCl, immediately fill, and cap once. After capping, the vial is not reopened.

   EPA agrees that standard practice requires that VOA vials not be opened after the sample has been

collected in order to minimize volatilization, maintain zero headspace, and prevent low bias in VOC results.

2. *Page 5 states: "The addition of water to make a convex meniscus using the VOA vial cap is expressly forbidden in Field SOP for DW Sample Collection Part B_V10." It is not clear why making a convex meniscus on VOA vials is forbidden in the SOP. The meniscus aids in ensuring that the vial is completely filled with the sample water, without bubbles that will bias the water results low.*

EPA Comments: The SOP did not forbid making a convex meniscus, it forbade making a convex meniscus using the VOA vial cap. It was observed that the samplers were using the VOA vial cap to aid in making the meniscus.

Forming a slight convex meniscus is a best practice to ensure zero headspace in VOA vials. Using the cap during the initial closure to seat a Teflon-lined septum on an intentionally overfilled vial—allowing excess water to be expelled as the cap is tightened—is an acceptable way to achieve that meniscus and minimize volatilization. The cap is typically used for the initial closure to achieve a positive meniscus, while still prohibiting:

- Using the cap to transfer or "ladle" water into the vial
- Reopening a vial after final capping to top off
- Manipulating headspace after the final seal

Conclusion

The 2026 EPA Assessment report details the operational, sampling, and laboratory challenges encountered during the various assessments and investigations, with the intent of providing a transparent public record that upholds high standards of scientific integrity and accountability for the Navy and regulators. EPA will continue to provide clarification where additional context may be helpful in understanding the sequence of investigations described in the final EPA Assessment report.