REGION 9
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September 04, 2026

VIA ELECTRONIC MAIL ONLY

Rear Admiral Lester Ortiz
Navy Closure Task Force - Red Hill
850 Ticonderoga Street, Suite 110
Joint Base Pearl Harbor-Hickam, Hawai'i 96860

Subject: U.S. Environmental Protection Agency Comments on *Groundwater Sampling Frequency Reduction Request*, *Red Hill Bulk Fuel Storage Facility, Joint Base Pearl-Harbor, Hickam, Hawaii*, March 4, 2026

Dear Rear Admiral Ortiz:

Thank you for submitting the March 4, 2026 *Groundwater Sampling Frequency Reduction Request, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam Oahu HI*. The groundwater monitoring is required pursuant to the 2023 Administrative Consent Order (ACO).

U.S. Environmental Protection Agency (EPA) completed a review of the Groundwater Sampling Frequency Request and issued comments on May 15, 2026. EPA conditionally approved the Navy's request to reduce groundwater monitoring frequency after July 15, 2026, subject to requirements outlined in Attachment 1 of the letter.

Additionally, EPA requested Navy submit a plan by July 15, 2026, to further evaluate the nature and origin of the sporadic detections of total petroleum hydrocarbons (TPH) in wells and post-pump/pretreatment samples collected at Red Hill Shaft. The method of TPH analysis, 8015, does not discriminate between petroleum and biogenic (naturally occurring organic matter) hydrocarbons, thus other lines of evidence may be necessary to determine the nature and origin of the TPH. Navy responded by hosting a special purpose meeting for EPA and Hawai'i Department of Health, where they described their forensic analyses and multiple lines of evidence (MLE) approach used to characterize TPH detections in groundwater. The Navy's July 8, 2026 special purpose meeting presentation reviewed the evaluation framework established in their October 2025 technical memorandum[1].

[1] Tiered Approach for Evaluating TPH Detections Red Hill Bulk Fuel Storage Facility Joint Base Pearl Harbor-Hickam, Oahu, Hawaii. *Naval Facilities Engineering Command, Hawaii, JBPHH HI October 15, 2025*

Objective of the Evaluation Protocol

Navy's October 2025 memo states: "*This Total Petroleum Hydrocarbons (TPH) Evaluation Protocol describes a tiered approach for interpreting if TPH detections……..is (SIC) related to the fuels previously stored at the Red Hill Bulk Fuel Storage Facility (Facility).*"

EPA believes that in most cases, the Navy's goal cannot be achieved based on chemical analyses alone and that other lines of evidence including conceptual site model (CSM), source proximity, and contaminant concentration gradients factor into a determination.

To conclude Red Hill is the source of a TPH detection, Navy's protocol relies heavily on comparing (and identifying similarities in) chromatograms from groundwater samples to those of fresh fuel. However, for the vast majority of groundwater samples, EPA does not believe distinct fuel signatures will be evident in groundwater sample chromatograms for several reasons including:

- Dilution, chemical weathering and biodegradation of fuels released into the environment;
- Comingling of historical releases at Red Hill including jet fuel, diesel and Navy special fuel oil;
- Absence of unique and persistent chemical tracer or component in fuels stored at Red Hill.

The significant compositional changes that occur when petroleum migrates through the environment result in the sample chromatograms bearing little resemblance to any specific fuel type, or lab standard. However, EPA believes the forensic analyses can be used to determine whether a TPH detection is petroleum or biogenic in origin.

Extraction Limited Ion Profile Screening (ELIPS) Validation

EPA sees the ELIPS screening step as the cornerstone of the forensic analyses and primary bases for distinguishing between petroleum and non-petroleum sources of TPH detections. For EPA to concur with the conclusions and thus base site decisions on the outcome of ELIPS results, the Navy must validate the method to establish its capabilities, limitations, and appropriate applications for distinguishing petroleum from non-petrogenic sources under site-specific conditions. EPA would like to discuss an approach for validating the accuracy of the ELIPS analyses.

EPA's Preferred multi-line of evidence forensic approach.

While positive screening results support a determination that contamination is petroleum-related, negative or inconclusive screening results should trigger additional confirmatory steps.

The following changes to the Navy's approach are recommended and are reflected in the attached flow chart:

1. Any detection of TPH[2] accompanied by the detection of petroleum constituents should be considered petroleum in origin;

[2] Use EPA extraction Method 3520 for all analyses and extraction method 3510 as needed/desired.

2. When TPH is detected but indicator compounds are not present, review chromatograms to determine the source of the TPH:
    - Evaluate chromatogram for the presence of an unresolved complex mixture 'hump", chromatogram peaks typical of fuels, overall resemblance to fresh fuel, or other documented evaluation criteria that can be used to confirm the detection is petroleum in origin.
    - If the review of the chromatogram is inconclusive, additional evaluation is needed to confirm detections are biogenic in origin – move to step 3.
3. Perform ELIPS analysis[3],
    - If Navy can conclusively demonstrate the ELIPS profile represents a biogenic source, the sample and result can be categorized as such.

EPA recommends that Navy document, adopt, and adhere to the framework described in this letter. Until resolved, EPA will continue to assume all TPH detections in groundwater are petroleum related. EPA requests a special purpose meeting to discuss the TPH protocol evaluation and the approach for validating the ELIPS analysis.

If you have any questions regarding this letter, please contact me at russi.tonya@epa.gov or (415) 972-3706.

Sincerely,
/s/

Tonya Russi
Red Hill Project Coordinator
U.S. Environmental Protection Agency, Region 9

Attachment: 1. TPH Forensics Evaluation Flowchart

cc: (email only)
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[3] When analyzing samples via ELIPS, use a newly extracted sample prepared specifically for confirmatory analysis, not the residual extract from previous analyses.