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July 31, 2023

Rear Admiral Stephen Barnett  
Commander, Navy Region Hawai'i  
850 Ticonderoga St., Ste. 110  
Joint Base Pearl Harbor-Hickam, HI 96860-5101  
(Sent via Electronic Mail)

**Subject:** Disapproval of *Consolidation and Optimization of the Groundwater Sampling Programs, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i*, dated May 2023

Dear Rear Admiral Barnett:

Thank you for submitting the *Consolidation and Optimization of the Groundwater Sampling Programs, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i* (Consolidation Plan), received on May 18, 2023. The Consolidation Plan transmittal letter requested any formal, written feedback no later than May 24, 2023. The Hawai'i Department of Health (DOH) and U.S. Environmental Protection Agency (EPA), collectively the Regulatory Agencies (RAs), received the report four business days before the U.S. Department of the Navy's (Navy's) deadline, which was insufficient time to prepare these comments.

Under the 2015 Administrative Order on Consent (2015 AOC), Attachment A, Section 7, the Navy is required to monitor and characterize the flow of groundwater and monitor possible contaminant migration around the Red Hill Bulk Fuel Storage Facility (RHBFSS). In accordance with Item 7 of the 2015 AOC (page 9), deliverables required by the 2015 AOC shall be submitted to the RAs for approval or modification. We therefore consider this a draft proposal subject to the RAs' approval prior to implementation. The RAs expect the Navy to continue sampling based on the previously approved Notice of Interest, long-term monitoring, and plume delineation sampling programs until the Consolidation Plan is revised to address the deficiencies mentioned below, and all parties approve the revised Consolidation Plan.

The Consolidation Plan does not discuss increased groundwater sampling frequency, parameters, and analytical and sampling methods during the pipeline repacking, main tank and tank bottoms defueling, and pipeline unpacking activities. During the Red Hill Remediation Roundtable on June 8, 2023, the Navy indicated that increased sampling frequency would be discussed in the *Groundwater Protection Plan Update – Defueling Revision* (GWPP), dated June 26, 2023. Please reference the GWPP in the Consolidation Plan, and state the GWPP includes changes the Navy will make to the Consolidation Plan during repacking, main tank and bottoms defueling, and pipeline unpacking activities.

While the RAs support a consolidated groundwater sampling program and may consider omitting some analytes, we disagree with or require clarification to approve portions of the Consolidation Plan. In general, the Consolidation Plan requires:

- Clarification on the current and proposed sampling frequency for some events listed below;
- Inclusion of additional analytes to monitor for all contaminants released from the RHBFSF, including fuel additives and cleaning products; and
- Discussion on how the Navy will work with stakeholders to ensure all objectives are met before removing multiple wells from the groundwater sampling program.

**The Consolidation Plan is disapproved until the following items are addressed to the satisfaction of the RAs:**

- 1) **Section 2.1, Sampling Program Integration, PDF Page 2 and Table 4, Sampling Matrix, PDF Page 6:** According to the Consolidation Plan transmittal letter, dated May 18, 2023, “[t]his plan consolidates all monitoring requirements associated with the 2021 fuel releases, the 29 November 2022 aqueous film forming foam (AFFF) release, and the original quarterly monitoring performed under the 2015 Administrative Order on Consent (AOC).” While the Consolidation Plan does include limited sampling of nine wells and the Red Hill Shaft for per- and polyfluoroalkyl substances (PFAS), it does not include sampling and analysis protocols for monitoring PFAS throughout the RHBFSF. Given the Navy’s commitment to address the RHBFSF PFAS investigation and response under an integrated process of both the Federal Facilities Agreement and 2015 AOC, the Consolidation Plan should include PFAS sample locations throughout the Red Hill well network to delineate the extent of PFAS at the site. Additionally, the RAs have yet to receive the Adit 6 removal action completion report, that documents responses to PFAS releases, identifies data gaps, and uses this information to propose specific wells for sampling.
- 2) **Section 2.1, Sampling Program Integration, PDF Page 2:** The Navy shall submit tabulated results in spreadsheet format and laboratory reports, validated or not, within 45 calendar days after sample shipment to the lab or 7 days after receipt of analytical results

from the laboratory, whichever occurs first. Additionally, the Navy and Defense Logistics Agency (DLA) shall submit validated tabulated results in spreadsheet format and laboratory reports within 30 calendar days after receipt of analytical results from the laboratory.

3) **Section 2.2, Revised Analyte List:**

- a) **PDF Page 2:** In Section 2.2., also include “the 40 PFAS analytes associated with EPA Method 1633,” tri- and tetra-methylbenzenes, 2-(2-methoxyethoxy) ethanol, 2-(2-butoxyethoxy) ethanol, and other constituents associated with fuel additives, lead scavengers, and cleaning agents. Total extractable hydrocarbons (TEH) have typically been reported as part of the laboratory’s analysis of groundwater samples by 8015M. Please include the reporting of TEH. Many of these analytes are already included on Table 1 but should also be briefly discussed here. Clarify whether silica gel cleanup (SGC) will be used. If so, document the decision criteria the Navy will use to employ SGC, and state the pre-SGC data will be reported to regulators and the public.
- b) **PDF Page 2:** A backup analytical laboratory capable of meeting the identified turn-around times for reporting preliminary analytical results for all analytical and preparation methods should be identified. The backup analytical laboratory should be able to prepare data packages that include, at a minimum:
- Case narrative
  - Analytical results
  - Sample management record
  - Quality assurance/quality control information
  - Raw analytical data in ASCII (digital chromatogram) and Electronic Data Deliverable (EDD) files
- c) **PDF Page 3:** Include an additional section or subsection that describes the steps to be taken in the event that evidence of petroleum product is observed during groundwater sampling or installation of new monitoring wells (e.g., observed sheen, petroleum odor, elevated field measurements, etc.). This should include deploying sheen samplers and the collection of a Liquid Non-Aqueous Phase Liquid (LNAPL) sample for laboratory analysis, where feasible. If an LNAPL sample is collected, prior to conducting laboratory analysis of the sample(s), the Navy and DLA must receive concurrence from the RAs regarding the appropriate laboratory analytical methods. These analytical methods will likely include but are not limited to:
- USEPA Method 8015M (gas chromatography-flame ionization detection [GC-FID])
  - USEPA Method 8270E (semivolatile organic compounds [SVOCs] via gas chromatography-mass spectrometry [GC/MS])

- USEPA Method 8270M-Alkylated polycyclic aromatic hydrocarbons (PAHs) (GC/MS-selected ion monitoring [SIM])
- USEPA Method 8260M-Paraffins, Isoparaffins, Aromatics, Naphthenes, and Olefins (PIANO) (forensic method)

Note that, based on the results of the analysis, a more detailed investigation may be required. This would likely include comparing current analytical results to historic results, as well as evaluating Tentatively Identified Compounds, biogenic metabolites, etc. with respect to the site's operational history.

- 4) **Table 1, Consolidated Groundwater Monitoring Program (Fuel), PDF Page 4:**
- a) The following revisions need to be made:
- Include EPA Maximum Contaminant Levels and Regional Screening Levels (updated May 4, 2023).
  - Change the volatile organic compounds (VOC) analytical method to specify that EPA Method 8260 will be done via GC/MS.
  - Update the VOC analyte list to include methylbenzenes, especially tri- and tetra-methylbenzenes.
  - Specify that the PAHs analytical method EPA Method 8270 will include GC/MS - SIM.
  - Include periodic laboratory analysis of field parameters, particularly dissolved-oxygen content, for verification.
  - Footnotes:
    - Delete, "Discontinued if one year's worth of sampling show levels are below DOH EALs [Environmental Action Levels]." The Navy must receive the RAs' approval prior to removing analytes.
    - Add, "As additional contaminants of concern (COCs) are identified (cleaning agents, additives, etc.), analytes will be added to the Red Hill Consolidated Sampling Program."
    - Include the specific references for the screening levels (revision dates, etc.).
- b) Add total extractable hydrocarbons (TEH) via EPA Method 8015M.
- 5) **Table 2, Consolidated Groundwater Monitoring Program (PFAS), PDF Page 5:**  
Make the following revisions:
- Include EPA's Regional Screening Levels (updated May 4, 2023).
  - Use the DOH's current EALs (updated April 2023).
- 6) **Section 2.3, Optimize Sampling Frequency:**
- a) **PDF Page 6:** Section 1 states "the Navy is consolidating Notice of Interest (NOI), Groundwater Long-Term Monitoring (GW LTM), delineation and sentinel wells,

and per- and polyfluoroalkyl substances (PFAS) groundwater sampling programs into one comprehensive, optimized groundwater sampling program.” Section 2.3 discusses changing weekly NOI sampling to monthly and performing quarterly LTM sampling under the consolidated sampling program. However, neither section documents the current sampling frequency for GW LTM, delineation and sentinel wells, and PFAS groundwater sampling. Add a table that shows the current frequency of all groundwater monitoring. Clarify in Section 2.3 whether or not the Navy is proposing changes in frequency to GW LTM, delineation and sentinel well, and/or PFAS groundwater sampling.

- b) **Table 4, PDF Page 6:** In a letter submitted to EPA, dated April 10, 2023, the Navy committed to conducting a one-time sampling event of the Red Hill Shaft using drinking water test methods by June 30, 2023. In addition to sampling of the Red Hill Shaft via EPA Method 1633 as part of the monthly PFAS groundwater monitoring program, the Navy shall also collect and analyze a drinking water sample using drinking water test methods 533 and 537.1 and provide the validated analytical results to EPA and DOH.
- 7) **Section 2.3, Optimize Monitoring Locations, PDF Page 7 and Figure 1, Groundwater Monitoring Well Sampling Locations, PDF Page 7:** Continue to sample all existing wells until the Navy meets with stakeholders to discuss the objectives of existing and proposed wells. The RAs disagree with deprioritizing most sampling locations because the existing well network is sparse, and there is an incomplete understanding of contaminant fate and transport from RHBFSF, as the original well locations were selected to meet very specific data collection objectives. In addition, there is concern that data from wells “in another sampling program” are not being utilized to evaluate the fate and transport of RHBFSF contaminants. The RAs are also concerned that many approved well locations are not being utilized and that new proposed locations do not fully meet the objectives for the approved locations.

In 2022, subject matter experts (SMEs) from EPA, DOH, Honolulu Board of Water Supply (BWS), U.S. Geological Survey (USGS), Commission on Water Resource Management (CWRM), and Navy worked together to propose and prioritize new wells in locations that would meet specific objectives. Those objectives included:

- Delineate RHBFSF contaminant plumes
- Assess groundwater flow patterns
- Understand geology/lithology
- Collect water quality data
- Evaluate hydraulic data in response to pumping of the BWS Halawa Shaft
- Monitor for early detection of potential contaminant migration toward the BWS Halawa Shaft

Understanding that field truthing and access constraints could hinder the construction of wells in specific locations, the SMEs created a figure with zones that would meet specific objectives. The Navy could alter a proposed well location, as long as the new location was within the zone where the well objective would still be met. However, over the past year, the Navy has moved proposed wells far from the originally approved locations, omitted important proposed wells from recent figures, and added new wells with unclear objectives.

Figure 1 does not include the approved well locations and does not show which wells will be excluded from the Consolidation Plan. Update Figure 1 to show all existing wells and all RA-approved proposed wells. Use different symbology for wells the Navy is requesting not to sample under the Consolidation Plan.

Also, revise Section 2.4 after meeting with SMEs from the RAs, BWS, USGS, and CWRM to identify data gaps and ensure the monitoring well network will meet data quality objectives, as requested in the RAs' letter, "Sentinel and Monitoring Well Installation Work Plan Addendum," dated June 26, 2023. This meeting should occur at the earliest practicable date.

In addition, include all data generated from the installation and sampling of groundwater monitoring wells at the Oily Waste Disposal Facility in the Navy's Environmental Data Management System. This data includes, but is not limited to, boring logs, analytical laboratory reports, tabulated data, chromatograms, geotechnical data, and EDD files. The use of this data when evaluating risk, contaminant fate and transport, and delineation of RHBFSF contamination will likely aid in providing a more thorough understanding of site conditions.

8) **Section 2.4, Optimize Monitoring Locations, PDF Page 7:**

- a) Include Public Water System sampling point 360001 (pre-chlorination spigot) at the Red Hill Shaft as an additional sampling location under the consolidated groundwater monitoring program to promote the consistency and repeatability of sampling and monitoring data. This sampling location was included under the previous NOI associated with the May 2021 release; however, it has not been included in the sampling program since November 24, 2021.
- b) Well redevelopment may be necessary to obtain water samples that best represent natural undisturbed hydrogeological conditions. Based on field observations and measurements collected during groundwater sampling, it is recommended that an assessment of each well be performed to determine whether it would be beneficial to redevelop the well. The assessment should include, but not be limited to, an evaluation of acceptable well turbidity, identification of potential sediment build-up, and a determination of whether chemical or biological material may be

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present within the well. Information surrounding well development parameters may be found in Procedure I-C-2, Monitoring Well Development, of the 2015 *Final Project Procedures Manual, United States Navy Environmental Restoration Manual, NAVFAC Pacific*.

- 9) **Appendix A, Justification for Monitoring Location Changes, PDF Page 11:** As mentioned above and in the RAs' June 26, 2023 letter, there should be a working meeting with the RAs and other stakeholders to discuss the objectives of wells and identify data gaps at the earliest date practicable. Continue sampling all wells until approval has been received from the RAs regarding the proposed changes.

If you have any questions regarding this letter, please contact Grant Scavello, EPA Red Hill Project Coordinator, at [Scavello.Grant@epa.gov](mailto:Scavello.Grant@epa.gov) or (415) 972-3556; or Kelly Ann Lee, DOH Red Hill Project Coordinator, at [KellyAnn.Lee@doh.hawaii.gov](mailto:KellyAnn.Lee@doh.hawaii.gov) or (808) 586-4226.

Sincerely,

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