



**UNITED STATES ENVIRONMENTAL  
PROTECTION AGENCY  
REGION IX**  
75 Hawthorne Street  
San Francisco, CA 94105



**STATE OF HAWAII  
DEPARTMENT OF HEALTH**  
P. O. BOX 3378  
HONOLULU, HI 96801-3378

September 29, 2022

Captain Cameron J. Geertsema  
NAVFAC Hawai'i  
850 Ticonderoga Street, Suite 110  
Joint Base Pearl Harbor Hickam, Hawai'i 96860-5101  
(Sent via Electronic Mail)

Subject: Conditional Approval of Final Sentinel and Monitoring Well Installation Work Plan, Revision 01

Dear Captain Geertsema:

The U.S. Environmental Protection Agency (EPA) and Hawai'i Department of Health (DOH), collectively the "Regulatory Agencies," received NAVFAC Hawai'i's submittal of the *Final Sentinel and Monitoring Well Installation Work Plan (Work Plan), Red Hill Bulk Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i*, dated September 2, 2022. The Work Plan was prepared by AECOM Technical Services, Inc. on behalf of the U.S. Department of the Navy (Navy) and Defense Logistics Agency pursuant to Sections 6 and 7 of the 2015 Administrative Order on Consent Statement of Work.

The Regulatory Agencies conditionally approve the Work Plan. The Navy shall implement the Work Plan as modified by the attached conditions (Enclosure 1), and according to the direction and recommendations described in the Regulatory Agencies' February 22, 2022 letter, *Groundwater Monitoring Well Network- Installation of Additional Wells* (Enclosure 2).

The Red Hill Bulk Fuel Storage Facility (Facility) in O'ahu, Hawai'i is located above the Southern O'ahu Basal Aquifer, a sole source aquifer that provides drinking water to the Navy and City and County of Honolulu. The Navy has proposed the installation of up to ten additional groundwater monitoring wells near the Facility. These locations were proposed to further investigate the extent of groundwater impacts from both historical and recent releases, and for sentinel monitoring between the groundwater plume areal extent and receptors including the Honolulu Board of Water Supply, Halawa Shaft.

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The Navy must comply with and implement the conditions in this approval. This approval does not relieve the Navy and their consultants from complying with other applicable Federal regulations, or State and local regulations and permits. Departure from this approval without prior written permission from Regulatory Agencies may result in revocation of this approval. Nothing in this approval bars the Regulatory Agencies from imposing penalties for violations of this approval, other applicable requirements, or activities not covered by this approval.

If you have any questions, please contact Gabriela Carvalho, EPA Red Hill Project Coordinator at (808) 541-2723 or Fenix Grange, Supervisor, DOH Site Discovery, Assessment and Remediation Section at (808) 586-4248.

Sincerely,

**GABRIELA  
CARVALHO**

Gabriela Carvalho  
Red Hill Project Coordinator  
US Environmental Protection Agency Region 9

Digitally signed by  
GABRIELA CARVALHO  
Date: 2022.09.29  
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Kelly Ann Lee  
Red Hill Project Coordinator  
State of Hawai'i, Department of Health

Enclosure 1: Conditions of Approval

Enclosure 2: Regulatory Agencies' letter to Navy, dated February 22, 2022

cc: Donald Panthen, Red Hill Program Management Office Director, Navy Region Hawai'i  
CDR James Sullivan, Red Hill Officer in Charge, NAVFAC Hawai'i

## Enclosure 1: Conditions of Approval

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1. **Interim Progress Updates:** The U.S. Department of the Navy (Navy) shall provide updates presented at meetings every two (2) weeks regarding progress made on offsite access negotiations and well installation progress. The Navy shall continue providing written updates on well installations every week and provide a forecast of future well installation sequence based on offsite access negotiations. The written updates and meetings shall be available to U.S. Environmental Protection Agency (EPA) and Hawai‘i Department of Health (DOH), collectively the “Regulatory Agencies;” and U.S. Geological Survey, Hawai‘i Department of Land and Natural Resources Commission on Water Resource Management, and Honolulu Board of Water Supply, collectively the “Stakeholders.” The written updates shall include, at a minimum, tabulated soil and groundwater analytical results, drilling data, boring logs, well construction logs, and geophysical data to allow for Regulatory Agency direction and Stakeholder involvement. Tabular data such as for well tests (slug test, bail down tests, overnight water level monitoring, etc.) shall be provided in Excel or similar format, rather than PDF, and shall be provided at least 3 working days prior to the meeting. The purpose of the meetings is to allow for Regulatory Agency and Stakeholder input about well specifications that the Navy does not commit to in the September 2, 2022 *Final Sentinel and Monitoring Well Installation Work Plan (Work Plan), Red Hill Bulk Storage Facility, Joint Base Pearl Harbor-Hickam, O‘ahu, Hawai‘i* (e.g., installation of multi-depth wells screened at the water table and at deeper transmissive intervals, see Enclosure 2).
2. **Analytical Data Submittal:** The Navy shall submit tabulated results in spreadsheet format and laboratory reports, whether or not validated, 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, Navy and Defense Logistics Agency shall submit validated tabulated results in spreadsheet format and laboratory reports within 30 calendar days after receipt of analytical results from the lab.

If evidence of petroleum is observed in a borehole, the groundwater samples and discrete soil samples from the most contaminated portion of the cores will be collected, as determined by associated headspace analysis. Samples will be analyzed for petroleum hydrocarbon identification, saturated hydrocarbons, alkylated polynuclear aromatic hydrocarbons, and PIANO for the range and magnitudes of the C9 to C44 carbon range using but not limited to the following methods:

- USEPA Method 8015M (forensic method)
- USEPA Method 8270E (SVOCs)
- USEPA Method 8270M-Alkylated PAHs (forensic method)
- USEPA Method 8260M-PIANO (forensic method)

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3. **Number of proposed monitoring wells:** During the Aquifer Recovery Working Group meetings attended by the Navy, Regulatory Agencies, and Stakeholders in early 2022, a total of 13 wells were identified, including 8 sentinel wells identified as high priority. Following the working group meetings, the Regulatory Agencies issued a February 22, 2022 letter to Navy, *SUBJECT: Groundwater Monitoring Well Network- Installation of Additional Wells* (Enclosure 2), showing the well locations. However, the Work Plan does not include several high priority wells depicted in Enclosure 2 (e.g., locations SS, XE, LL, and OO) and other wells have been moved (e.g., location TT which we were told was because the proposed location was next to a condominium) without including the explanation for the change. The Regulatory Agencies emphasize the importance of the high priority well locations and seek further explanation of why certain locations are no longer under consideration. Additionally, location ZZ has been added as part of the Work Plan. The Regulatory Agencies do not consider location ZZ high priority and recommend selecting another location to be the initial well installation. The Navy shall provide a written explanation for the changes to the well locations described in Enclosure 2. The Regulatory Agencies may require installation of additional sentinel wells and revision of the Work Plan, based on the Navy's written response.
4. **Downhole Data Collection:** Work Plan *Section 3.3.8, Geophysical and Video Logging* states “[a]s an alternative to geologic logging, portions of the borehole may be logged using geophysical tools in place of lithologic logging completed by the field geologist.” The Regulatory Agencies require Navy to collect downhole data including geophysical inspection, video and acoustic logging, and aquifer water profiling using a multiparameter sonde, in addition to geologic logging completed by the field geologist.
5. **Final Well Installation Report:** Navy shall submit a Well Installation Completion Report for review by the Regulatory Agencies within 90 days following implementation of the Work Plan and installation of all wells.
6. **Site visits for monitoring and split sampling:** The Regulatory Agencies or their contractor shall be afforded an opportunity to be present to observe and elect on a well-by-well basis to monitor the geophysical logging, geological, and environmental conditions. This includes but is not limited to obtaining, handling, and shipping the split sample to the Regulatory Agencies' contracted laboratory for analysis.
7. **Water Level Testing:** The Navy shall describe the proposed suite of downhole testing approaches (e.g., temperature and conductivity profiles) that may be used prior to the final determination of the depth of the well screen. In addition, the Navy shall also explain the frequency of different types of water level testing methods. The Regulatory Agencies acknowledge that the data obtained by field personnel will be provided to them on a daily basis.