



Joint Base Pearl Harbor Hickam Potable Water System and Red Hill Shaft Recovery

Presented by

Naval Facilities Engineering Systems Command Hawaii



AGENDA

- **Monthly Water Reporting**
- **Water System Recovery and Flushing Plan**
- **Red Hill Shaft Recovery and Monitoring Plan**



Monthly Reporting

JBPHH Aquifer Pumping



JBP HH Monthly Reporting

Joint Base Pearl Harbor Hickam (JBP HH) Water System

| Water Use Permit | Well No. | Well Name | Allocation (mgd) |
|------------------|------------|-------------------|------------------|
| 85 | 3-2254-001 | Red Hill Shaft | 4.659 |
| 86 | 3-2253-032 | Aiea Halawa Shaft | 0.697 |
| 111 | 3-2558-010 | Waiawa Shaft | 14.977 |
| Total | | | 20.333 |

- Monthly Reporting to DLNR CWRM is up to date
 - *January 2022 Monthly Data reported on 4 February 2022*
 - *Weekly submissions to CWRM since 22 December 2021*
- January 12-Month Average JBP HH Pumping under permitted 20.333 MGD
 - *12-Month Average Pumping Data (As of 31 DEC): 19.862 MGD*
 - *Red Hill Shaft: 4.423 MGD*
 - *Aiea Halawa Shaft: 0.283 MGD*
 - *Waiawa Shaft: 15.156 MGD*
- Waiawa Pumpage since Water Conservation Efforts Implemented (6 DEC – Present)
 - Maximum Single Day: 17.586 MG
 - Minimum Single Day: 11.735
 - Average: 15.074 MGD



Water System Recovery and Flushing Plan

Per Jointly Signed Approved Plan



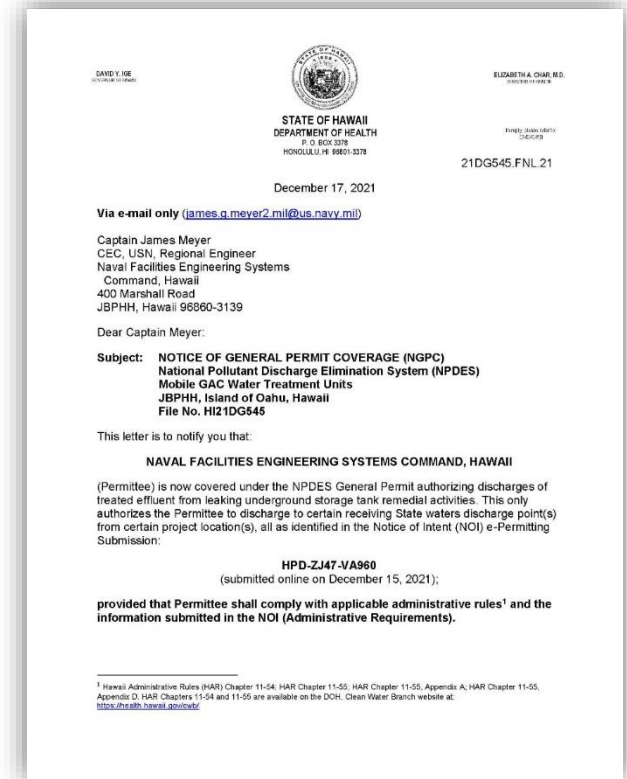
Water System Recovery and Flushing Plan

Execution of Recovery Plan

- **Stage 1: Recovery of Distribution System and Tanks**
- **Stage 2: Flush Points of Service**
- **Stage 3: Certify to Potable Standards**
- **Stage 4: Monitor**

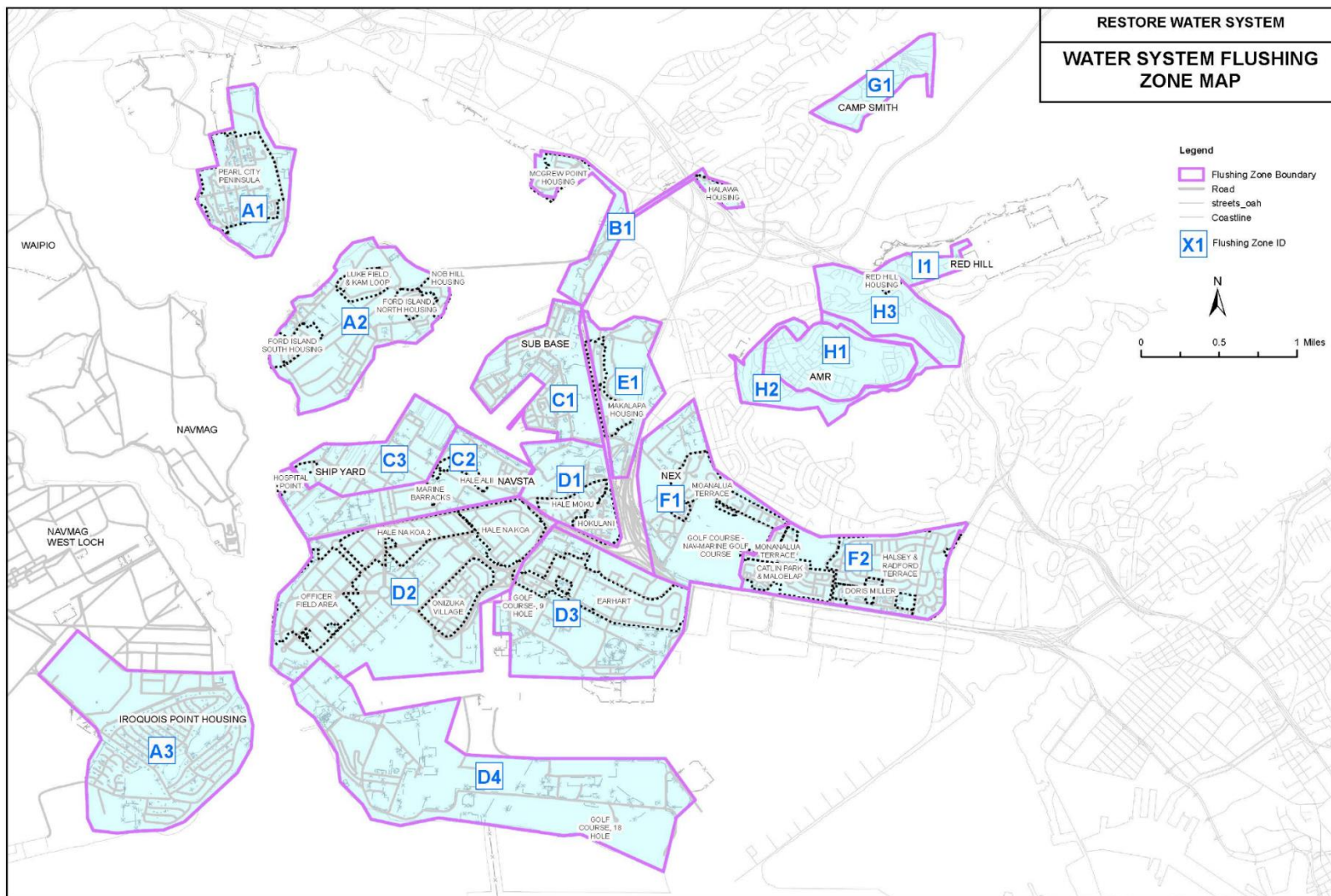
Stage 1: Recovery of Distribution System

- **Systematic Flushing plan**
- **Discharge Water Treated with Granulated Activated Carbon if discharged to land or storm drain system**
 - NPDES Permit issued for Flushing via Navy Storm Drain on 17 DEC
 - C&C Environmental Permit issued 27 DEC
 - DoT Storm Drains Permit issued 21 DEC





Water System Flushing Zone Map



Date: 12/16/2021 Time: 5:18:00 PM



Distribution System Update

Distribution system and home flushing are complete (Stage 1 & 2)

- Final Zone (A3 – Iroquois Point) was complete on Tues. 08 Feb.

Sampling and testing underway to clear zones (Stage 3)

- First Zone (I1 – Red Hill housing) DOH amended advisory on Feb 14.

Long-term sampling for monitoring (Stage 4)

- *Plan submitted to IDWST for review*

Reviewing reduced irrigation plans for common areas, housing, and environmentally sensitive areas

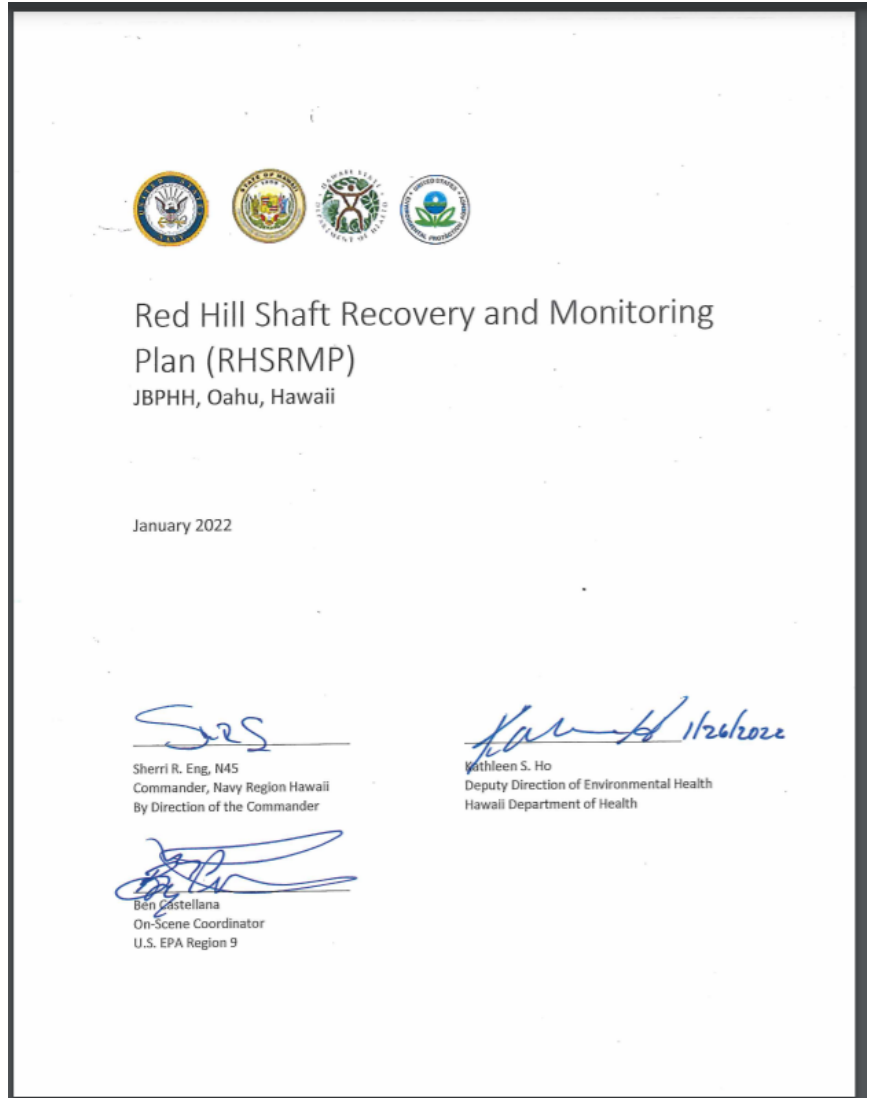


Red Hill Shaft Recovery and Monitoring Plan



Red Hill Shaft Recovery and Monitoring Plan

- **Jointly developed and approved by DOH, USEPA, and Navy**
 - Extensive inputs from DLNR staff
 - CWRM
 - Division of Aquatic Resources
 - Division of Forestry and Wildlife
- **Signed January 26, 2022**
- **The RHSRMP:**
 - Provides a general roadmap for Red Hill Shaft recovery
 - Describes the operations and supports the discharge permitting of the Groundwater Capture Zone project
 - Defines the multiple levels of monitoring for aquifer and stream protection





5MGD GAC Operations

- Start-up 29 January
 - DOH, EPA, CWRM, USGS present
- Flow stabilized at 4.6 MGD
- Consistent Non-Detects for TPH in both influent and effluent
- Continuous water-level monitoring in 20+ monitoring wells to characterize aquifer response to pumping
- Stream monitoring at 5 stations twice per week, with water quality and eDNA samples collected before (7-8 JAN) and after (5 FEB) start-up
- Effluent beneficial use study underway



Sampling of 5MGD GAC Effluent

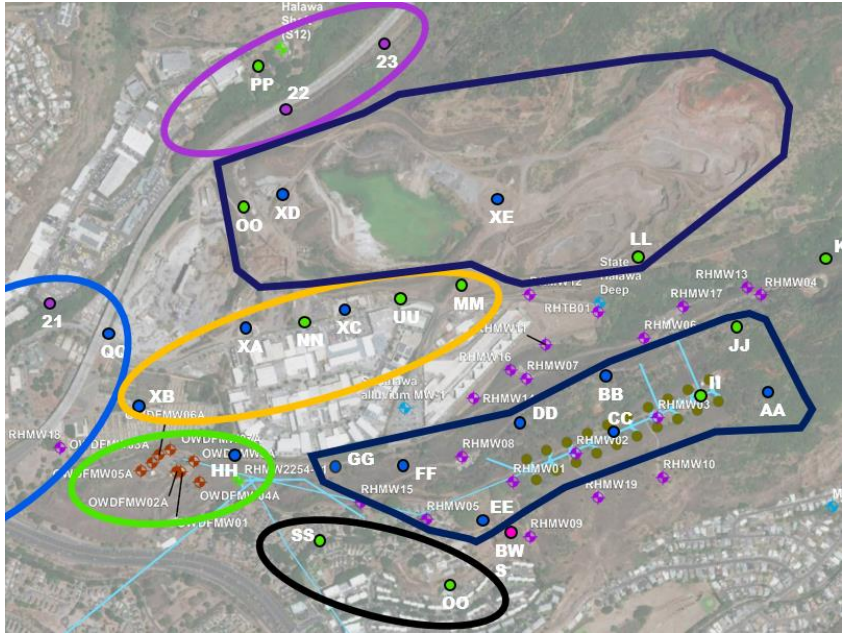
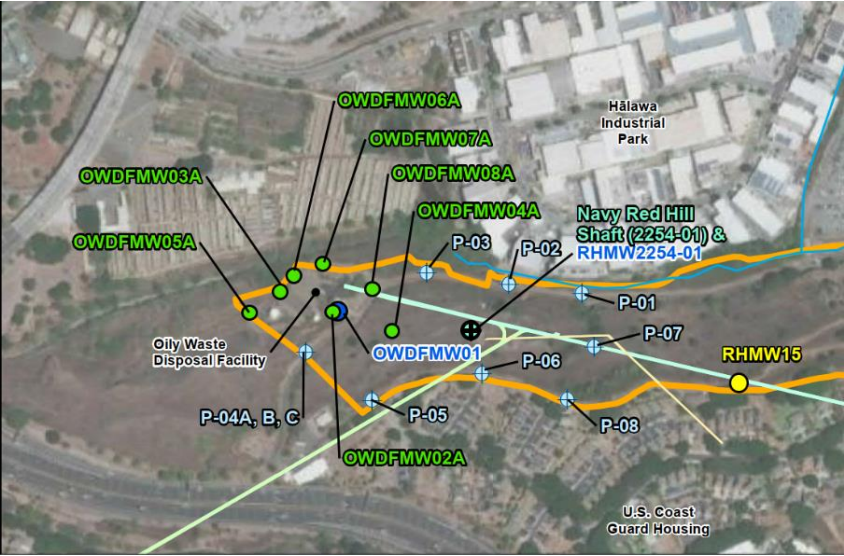


Monitoring 5MGD GAC Discharge



RHSRMP Monitoring Programs

- 1. Groundwater Well Network Monitoring
 - Water Quality Sampling and Testing
 - Water Level Monitoring
 - Soil Vapor Monitoring
- 2. GAC Process Performance Monitoring
- 3. NPDES Discharge Monitoring
- 4. Halawa Stream Ecological Monitoring





Remediation Activities

Fuel Recovery

1. Fuel accounting
2. Fuel recovery through skimming and absorbents

Water Development Tunnel

1. Navy diver inspection
2. ROV inspection
3. Identification of contamination pathways

Adit (Tunnel) Investigations

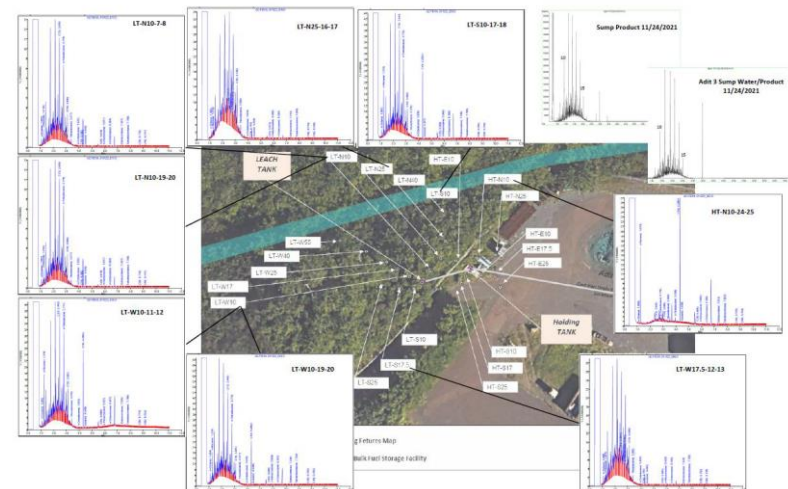
1. Soil vapor monitoring
2. Geophysics
3. Air quality monitoring

Remediation Strategies

1. Developing data-driven remediation objectives for soil, rock media, and groundwater

Leach Tank Investigation

1. Soil sampling and characterization to support excavation actions





Water Resources Impact Offset Actions

Due to Impacts to WRM Navy has committed to:

1. Conduct a **Pearl Harbor Water Resources Master Plan** to reduce Navy water footprint and increase Oahu water security by pursuing 20MGD in water balance solutions in the areas of:
 1. Conservation
 2. Water Reuse
 3. Enhanced Recharge
 4. Source Protection
 5. Production Capacity Expansion
2. Pursue watershed protection efforts through the DoD Readiness and Environmental Protection Integration (REPI) Program
 1. Fencing, ungulate removal, and invasive species removal to improve recharge in the upper watershed
3. Pursue reuse and conservation
 1. Program to upgrade the JBPHH wastewater treatment plant for reuse
 2. Conversion of irrigation to non-potable sources
 3. Water audits and metering



Back Up



Red Hill Shaft Recovery and Monitoring Plan

Overall Goal:

“The overall goal of this plan is to recover and remediate the Red Hill Shaft drinking water quality and quantity for the people of Hawaii while causing no further harm to human or environmental health.”

Immediate Goal:

“The immediate focus towards this project goal is to remove any fuel contamination and create a contaminant capture zone in the vicinity of the Red Hill Shaft through pumping operations.”

Long Term Goal:

“This plan also sets the full context for the larger, longer-term recovery and mitigation activities based on environmental data that is collected and modeled to support solutions protective of the Red Hill Shaft, the aquifer system, and nearby receptors.”