

Red Hill Registry:

A community-engaged approach to identifying and addressing community needs from the 2021 jet fuel spill at Red Hill

Presented by

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National Academies of Science Engineering and Medicine Committee Meeting
Session II: Public Health Response and Recovery
February 20, 2025

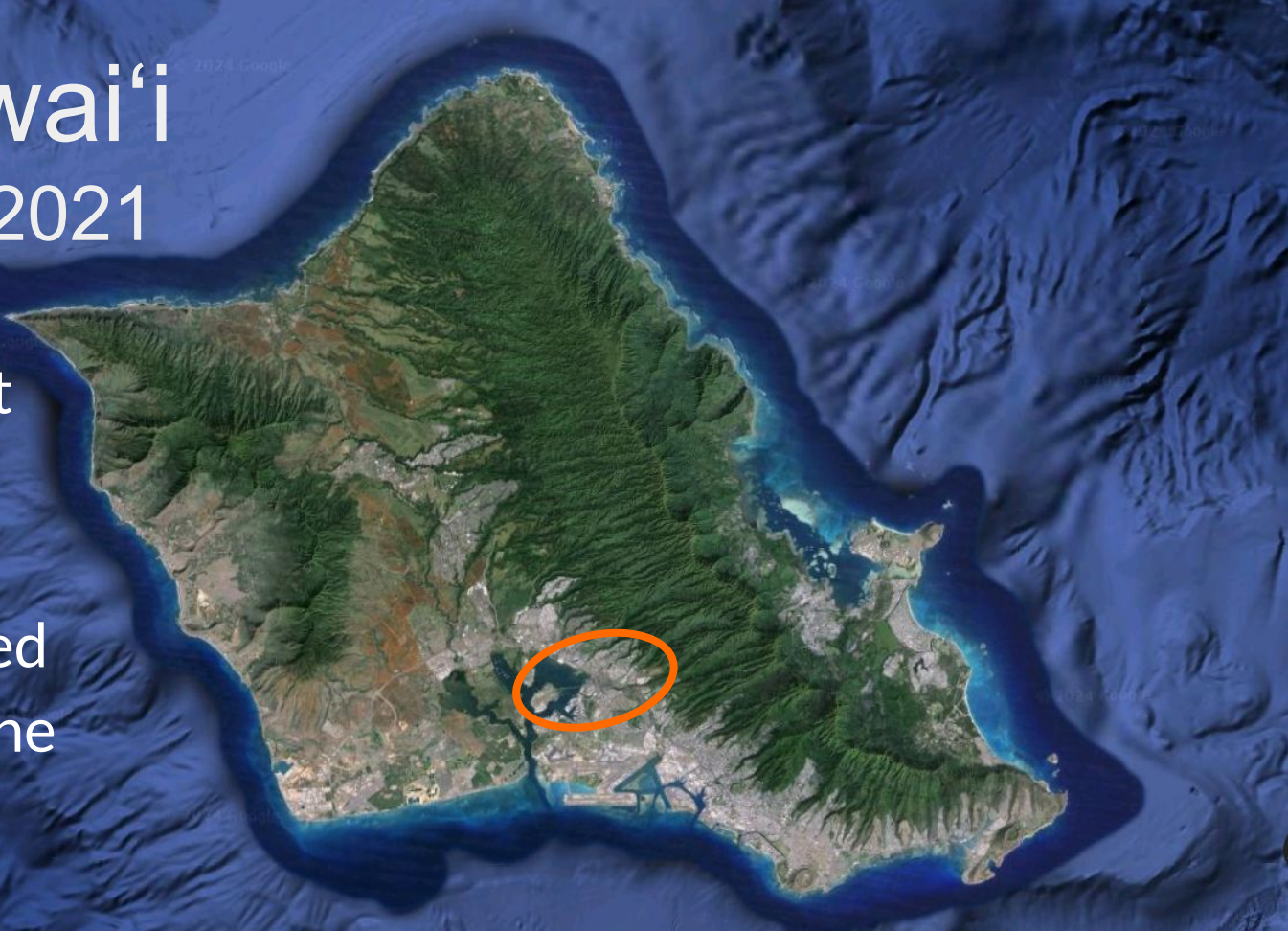


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O'ahu, Hawai'i

November 20, 2021

14,000 gallons of jet
fuel from a Red Hill
Bulk Fuel Storage
Facility pipe ruptured
and contaminated the
drinking water.



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Imagery ©2024 Data LDEO-Columbia, NSF, NOAA, Landsat / Copernicus, Data SIO, NOAA, U.S. Navy, NGA, GEBCO, Data MBARI, Map data ©2024

JP-5 (jet propellant-5)- A Total Petroleum Hydrocarbon (TPH)

- Used as military aircraft fuel
- Colorless liquid is flammable and smells like kerosene
- Made in oil refineries from hydrocarbons
- Additives
- Thousands of components

TPH Component	Estimated % of TPH
Benzene	0.2%
Toluene	0.1%
Xylenes	3.5%
Methylnaphthalenes	4.6%
Naphthalene	3.0%
C5-C8 Aliphatics	12%
>C8-C18 Aliphatics	68%
>C18-C32 Aliphatics	0.0%
>C8 Aromatics	9%

Credit: Diana Felton, Hawai'i Department of Health





Joint Base Pearl Harbor-Hickam (JBPHH) Drinking Water Long Term Monitoring Dashboard

Locations Sampled	Total Samples	Analytes Tested	Detected Above Screening Level
5775	8071	444.0K	32

Location Sampled by Zone

Zone Locations

Entry Point to Distribution System

– EPA Required Sampling

LTM A1 Zone Residential

Sampling Month

LTM A1 Zone Residential

Sampling Month

LTM A1 Zone Residential

Sampling Month

LTM A1 Zone Residential

Sampling Month

Total

Zone

All

Find Address

All

Analyte Name

All

Screening

All



Analytes Exceeding Screening Level

Analyte Name	Screening Level	Min Exceedance	Max Exceedance	Count of Exceedances
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20.30	4
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82.70	26
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3.90	1
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130.00	1
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Exposure Assessment

- No environmental samples concurrent with exposure
- No biological samples drawn at the time of exposure
- Needs to consider human behaviors and exposure setting

d Units Screening

UG/L	Not Detected
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UG/L	Not Detected
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UG/L	Not Detected
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UG/L	Not Detected
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UG/L	Not Detected
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UG/L	Not Detected
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A1-ALOH1600	1600 Aloha Avenue	10/17/2023	A1-TW-0001561-23139-3-N	1,1-Dichlorobenzene	70	ND	UG/L	Not Detected
A1-ALOH1600	1600 Aloha Avenue	10/17/2023	A1-TW-0001561-23139-3-N	1,2,4-Trichlorobenzene	70	ND	UG/L	Not Detected
A1-ALOH1600	1600 Aloha Avenue	10/17/2023	A1-TW-0001561-23139-3-N	1,2,4-Trichlorobenzene	70	ND	UG/L	Not Detected
A1-ALOH1600	1600 Aloha Avenue	10/17/2023	A1-TW-0001561-23139-3-N	1,2-Dichlorobenzene	600	ND	UG/L	Not Detected
A1-ALOH1600	1600 Aloha Avenue	10/17/2023	A1-TW-0001561-23139-3-N	1,2-Dichlorobenzene	600	ND	UG/L	Not Detected



Reported Health Effects



Study	Dates	Sample size	Data collection
ACE 1	Jan 7–Feb 10, 2022	2,289	survey/interview
ACE 2	Sep 2022	986 (from ACE 1)	survey
ACE 3	Feb 2023	653	Medical records
UHERO	Jan 2024	174 (from ACE 1 & 2)	survey
DCPH-P-EDC	Nov/2020 - Dec/2023	44,373 (Red Hill), 59,499 (Comparison)	Medical Records

Abbreviations: Assessment of Chemical Exposures (ACE), The Economic Research Organization at the University of Hawai'i (UHERO), Defense Centers for Public Health-Provisional-Epidemiology Data Center (DCPH-P-EDC)

Reported Health Effects



Brain/Central Nervous System

- Brain fog, difficulty concentrating, fatigue, headaches, dizziness, memory loss



Gastrointestinal System

- Diarrhea, N/V, abdominal cramps, heartburn, eosinophilic esophagitis



Skin

- Dry/itchy, rashes, irritation, skin boils, slower healing, more scarring, numbness, tingling, pain



Ear, Nose, And Throat

- Runny nose, nose bleeds, burning nose/throat, hearing loss



Mental Health

- Anxiety, depression, sleep issues, stress, fear, trauma/PTSD



Eyes

- Redness, irritation, pain, burning



Respiratory System

- Difficulty breathing, feeling out of breath, coughing



Long-term Health Effects

- Somewhat unknown
- Many people experiencing symptoms 2+ years after the incident
- Seem to be similar to other complex health problems such as long COVID, chronic fatigue syndrome, or autoimmune issues
- Congressional report on the Health Effects of Jet Fuels

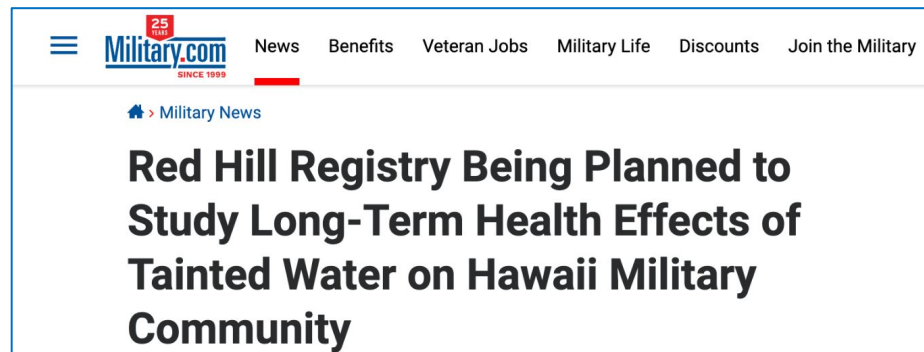
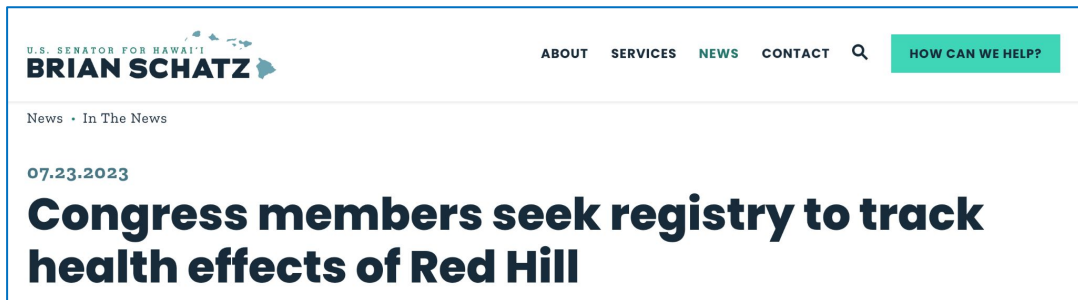
Actions Due to Health Study Results

- Red Hill Clinic established
- DOD established a roster of exposed people
- Additional Epi Data Center Studies
- Additional support for medical providers
- National Academies of Science, Engineering and Medicine Consensus study on the potential health implications of the Red Hill fuel leak



An independent, third-party Red Hill Registry has been called for by...

- Congress
- Centers for Disease Control and Prevention (CDC)/ Agency for Toxic Substances and Disease Registry (ATSDR)
- Hawai'i State Department of Health (HDOH)
- Defense Health Agency (DHA)



UH NEWS

Press Release June 20, 2024

UH entered agreement to establish Red Hill Independent Health Registry



News release headline:

UH awarded grant to establish Red Hill Independent Health Registry

UH News story headline:

Red Hill health registry to support individuals exposed to fuel

The University of Hawai'i is creating a health registry to provide support and resources for anyone directly impacted by the Red Hill water crisis. The Red Hill Independent Health Registry (Red Hill Registry) is a UH Office of Strategic Health Initiatives project funded by a five-year, \$27.2-million federal grant.

"The Red Hill Registry will be a tremendous step forward in serving the tens of thousands of individuals who were exposed or placed at risk of exposure to fuel releases from the Red Hill storage facility," said UH President David Lassner. "The selection of UH to lead this major initiative is a testament to our expertise across multiple disciplines, our scientific independence, and our proven, widely understood ability to execute large complex programs that serve the people of Hawai'i."

The opt-in, third-party registry will be co-developed with the community to provide connections to services and educational programs, while tracking participants' health status and gathering information on how fuel exposures may impact health. In its first year, the project will also include a Congressionally mandated feasibility assessment for an epidemiological outcomes study to further advance the understanding of the long-term health effects related to the Red Hill fuel spill.

Stay informed

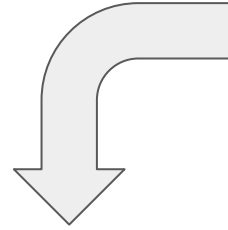
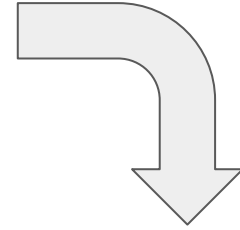
In the coming months, the registry team will host community listening sessions and establish a community oversight working group to ensure that community voices are included at every step of the process. To support these efforts, the team will also seek to hire local community members, including individuals directly affected by the crisis, to support outreach, enrollment and referral services. A formal online registration portal for the registry is anticipated to launch in fall 2025. For now, individuals who are interested in receiving updates on the registry's development and community engagement efforts are encouraged to [sign up at this website](#).

"The health and social-emotional implications of the Red Hill water crisis on individuals and families, in addition to the environmental impacts, are critically important," said Aimee Grace, principal investigator and director of the UH Office of Strategic Health Initiatives. "We see this registry as providing an important opportunity for individuals and families to share their stories and be linked to services, and be able to monitor their health over time."

Funding was provided through the National Center for Disaster Medicine and Public Health at the Uniformed Services University of the Health Sciences. The registry was recommended and will be supported by the Hawai'i State Department of Health, the Agency for Toxic Substances and Disease Registry at the Centers for Disease Control and Prevention, and the Defense Health Agency. Participating units across UH include the [Thompson School of Social Work and Public Health](#), [John A. Burns School of Medicine](#), [Water Resources Research Center](#) and [University Health Partners of Hawai'i](#).

Funding Structure

- Award executed June 11, 2024
- Total Funding - \$27.2M across 5 years
 - \$4M in first year (Planning Year)
 - Significant funding for hiring staff and community incentives



NCDMPH
National Center for Disaster Medicine & Public Health



What is a Registry

- A database
 - To collect, store, and handle data for analysis
 - Data are used to answer questions about exposure and health effects
 - Knowledge gained can help both the Red Hill-affected community as well as other communities that are exposed to hydrocarbons
- A guide for
 - Referral system
 - Education programs

Most importantly...
a Registry is about PEOPLE!



Image by [Freepik](#)



Goals of Red Hill Registry

- Connect the community to needed services through a referral program
 - Health services, social services, housing referrals
- Provide educational programs for healthcare providers and community members
- Track participants' health status over time and gather information on how fuel exposures may impact health



UH Red Hill Registry Team



Office of
Strategic Health Initiatives
UNIVERSITY OF HAWAII SYSTEM



University Health Partners
of Hawai'i



UNIVERSITY of HAWAII at MĀNOA
THOMPSON SCHOOL
SOCIAL WORK & PUBLIC HEALTH

Year One: Planning Year

- Community Engagement and Co-Creation of Registry
 - *Most important!*
- Registry Infrastructure
- Congressional Feasibility Assessment Report
- Recruitment and Enrollment
- Communications and Media
- Scientific Planning
- Referral Program
- Education Program



Registry Infrastructure

- Hiring
 - Seeking to hire from the impacted community
- Website
- IT Setup
- Consent Management Platform
- Managing Incentives



Congressional Feasibility Assessment Report

- Submitted 09/23/24 (on time!)
 - Background & literature review
 - Recruitment strategies
 - Methods for assessing health outcomes
 - Data analysis methods
 - Identifying exposures and eligibility
 - Providing information on resources and services
 - Repository for research

Report to the Committees on Armed Services of
the Senate and the House of Representatives



Feasibility Assessment Regarding a Potential
Red Hill Epidemiological Health Outcomes Study

Prepared by the University of Hawai'i

September 23, 2024



Recruitment and Enrollment

- Sign up for updates
- DOEHS Registry data sharing agreement with DoD
- Pre-enrollment survey
 - Basic exposure, geography, contact information
 - Beginning December 2024
- Enrollment baseline survey
 - Detailed exposure, health, referral needs information
 - Beginning July 2025



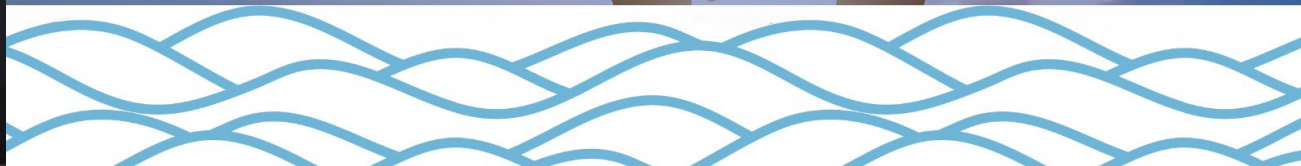
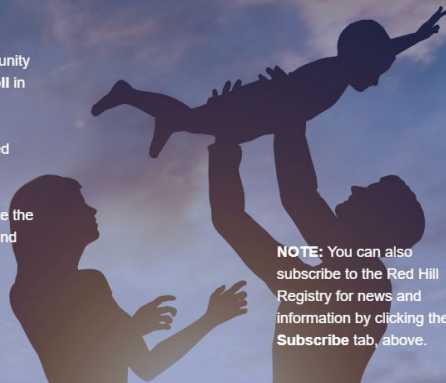
PRE-ENROLLMENT IS HERE!

The Red Hill Registry, set to launch formal enrollment in mid-2025, seeks community members impacted by the jet fuel spill at Red Hill on O'ahu, Hawai'i, to **pre-enroll** in the Red Hill Registry.

The quick, 5- to 10-minute questionnaire provides an opportunity for the impacted community to connect with the Red Hill Registry and be part of a community-centered approach to guide the development of the Registry to better serve the needs of impacted individuals. Participants must be 18 years or older to complete the survey and will have the opportunity to provide information for family members and children under the age of 18 years.

[Fill out our pre-enrollment questionnaire here](#)

NOTE: You can also subscribe to the Red Hill Registry for news and information by clicking the [Subscribe](#) tab, above.



redhillregistry.org



Communications and Media

- Social Media
 - Instagram, Facebook, X, Threads = @RedHillRegistry
- Press Releases
- Logo Planning
- Podcasts, videos and more



Scientific Planning

- Literature review of impacts of jet fuel on health
 - Determining links between exposure and outcomes, identifying gaps in knowledge
- Provided scientific expertise for the pre-enrollment screening questionnaire (launched December 2024)
- Developing a full baseline questionnaire with community input
- Convening a Scientific Advisory Workgroup in February
 - Gathering experts on exposure science, toxicology, and epidemiology



Referral Program

- Considering and selecting referral platforms to connect future enrollees to services/resources
- Meeting with other National Registries to learn about their referral programs and best practices (Ex: Flint Registry; World Trade Center Health Registry; Katrina Registry)
- Clinical input and leadership
- Listening and honoring the community's needs based on focus group and survey responses



Image by [Freepik](#)



Education Program

- Updating UH Red Hill Information Hub <https://redhill.hawaii.edu/>
- Conducting preliminary analysis of patterns of contaminant movement
 - Developing a qualitative analyses and maps showing patterns of potential exposure
- Creating an interactive StoryMap to visually present the history, context, exposure timeline, and response efforts



Community Engagement: Outreach

Neighborhood Board Meetings



Shut Down Red Hill Mutual Aid Kapilina water jug exchange



Navy Closure Task Force Open House

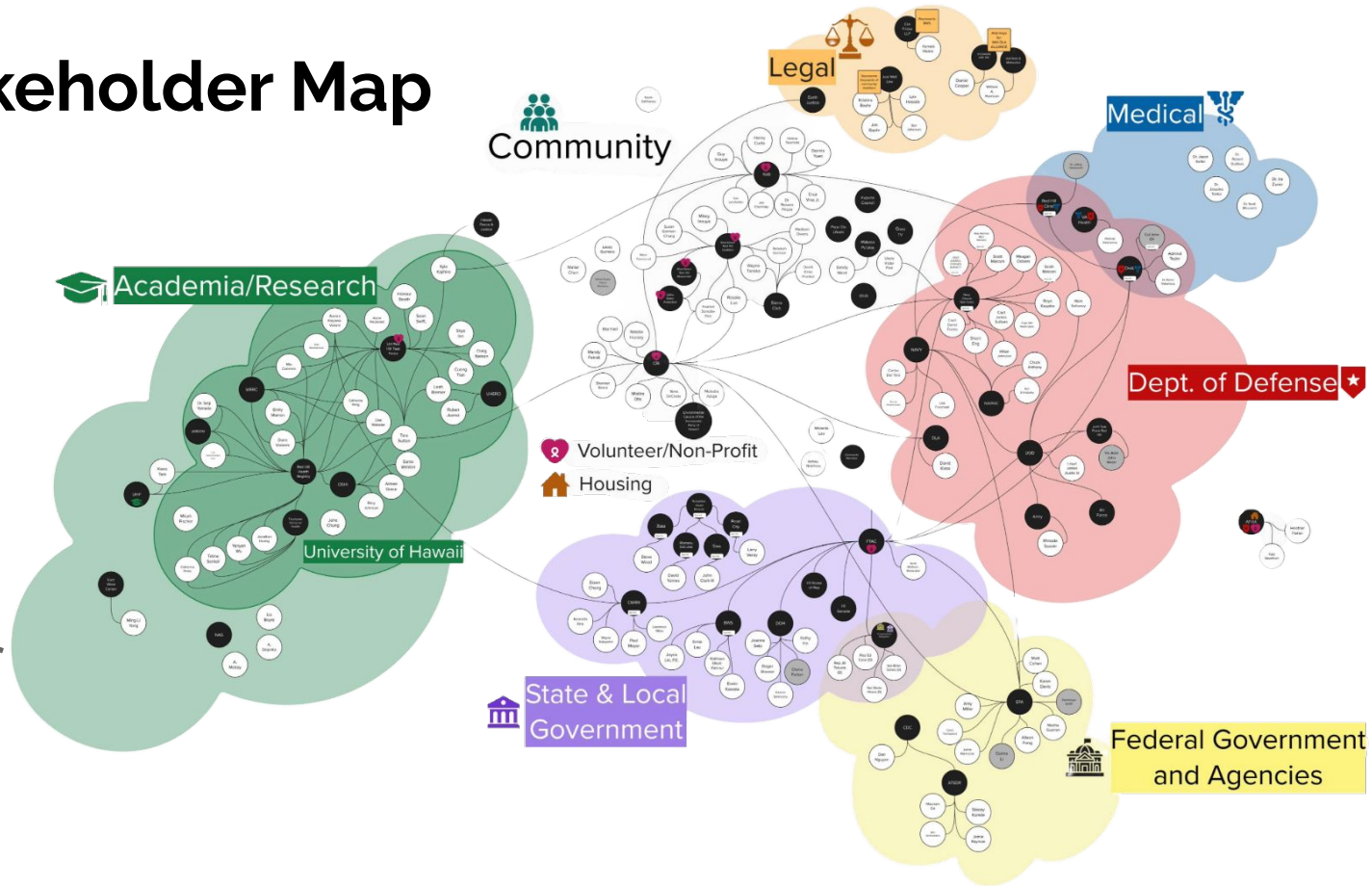


Community Representation Initiative (CRI)



Red Hill Stakeholder Map

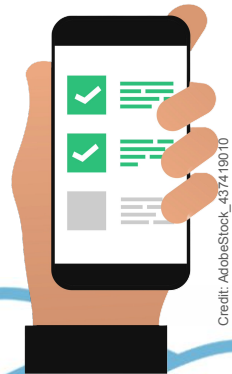
Building relationships within the Red Hill community that will solidify a foundation for the Registry



Co-Create with the Community



- Focus groups to gain insight from:
 - Impacted water users (those with military affiliation and civilian)
 - Professionals and advocates
 - Concerned residents (not directly exposed)
- Online surveys
- Pre-enrollment opportunity
- Community Advisory Workgroup



What is the Community Saying

- Just glad this is happening
- TRANSPARENCY
- Honesty
- Leave no one out
- Do what you say you're going to do without overpromising
- Independence from military
- Trauma informed; mental health referrals and support
- Hiring impacted community
- Continued education on needed topics from health to environmental, for the community and healthcare providers



Referral Needs Reported from Community (1/2)

- Healthcare Topics (Head to toe symptoms/issues referenced by community)
 - Ex: toxicology, dermatology, neurology, endocrinology, gastrointestinal, mental health, genitourinary, ENT
- Social Issues
 - Health advocacy, legal aid, counseling, community trauma specialist, health insurance, cultural trauma, trust/transparency, talk story/community building



Referral Needs Reported from Community (2/2)

- Employment Topics
 - Employee rights; career change: due to lifestyle change, relocation, or illness/disability; re-entering the workforce
- Housing Topics
 - Water utility maps, water filtration systems, landlord/tenant rights, maintaining a safe home environment
- Education-related Needs
 - Learning/behavioral difficulties, financial assistance (adult & children's education), reentering education (adults)



Education Needs

- Community
 - Podcasts, videos, radio, social media, media engagement, support groups
- Health care providers
 - Fact sheet for participants to take to appointments and/or QR code linked to information sharing the 5 W's of the Red Hill water crisis
 - Training programs for continuing education for HCP's
- Topics
 - Cultural education, history of Hawai'i and militarization of Red Hill, environmental health awareness, legal protections/support, crisis management, pet health, sharing ongoing research



Challenges

- Military and civilian impacted individuals
 - Various health care systems and insurance plan coverages
 - Potential global dispersion of the affected community today
- Trust / Institutional Betrayal
 - Fear of retaliation
- Eligibility questions around geography and time frame of exposure
- Time: With each passing day, we risk losing reach to some impacted community members as they travel far from Hawai'i
- Healthcare Providers in various locations of the world where community now lives may be unaware of RH water crisis
- Limited research on long-term health effects of jet fuel ingestion





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Thank you!

**On behalf of the Red Hill Registry,
we want to acknowledge the Red Hill
community and people of Hawai'i who
recognized a problem and fought for answers!!**

Questions?



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