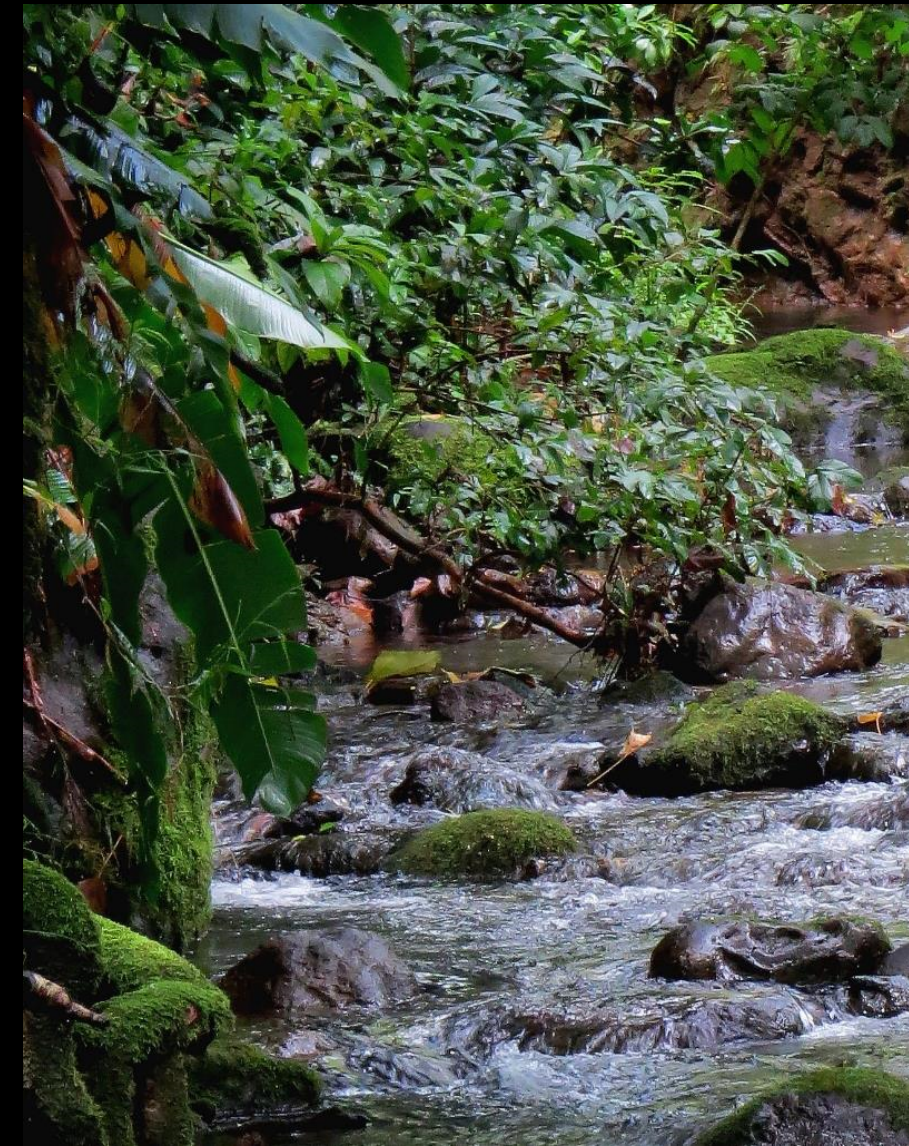




STAKEHOLDER ADVISORY GROUP

Board of Water Supply, City & County of Honolulu
October 17, 2024
Meeting 52



WELCOME & INTRODUCTIONS

DAVE EBERSOLD, FACILITATOR

STAKEHOLDER ADVISORY GROUP MEETING 52

OCTOBER 17, 2024

WWW.BOARDOFWATERSUPPLY.COM





WELCOME NEW STAKEHOLDER!
BRADY JENCKS
MANAGER OF BUILDING IMPROVEMENTS AT
ALEXANDER AND BALDWIN
REPRESENTING CD7



MEETING OBJECTIVES

- Review Water Sensible Program update
- Learn about recent detections in BWS supply wells
- Provide BWS updates
- Accept notes from meeting #52
- Review 2025 SAG meeting dates



PUBLIC COMMENT ON AGENDA ITEMS





CONSERVATION UPDATE

Daniel Chen, Honeywell
Lorna Heller, Water Resources
Steven Norstrom, Communications
October 17, 2024
boardofwatersupply.com

OVERVIEW



- Water Sensible Program
- WaterSmart
- Conservation Advertising
- Conservation Outreach
- Calendar Contest
- Xeriscape Garden



WATER SENSIBLE PROGRAM TIMELINE

2017

Water
Sensible
Program
Inception

2018

Residential
Clothes
Washers
and Rain
Barrel
Rebates

2019

Food Service
Program,
WBIC
Rebate,
Direct Install
Program

2022

Commercial
Rebate
Program,
and Cooling
Tower and
Toilet
Rebates

2023

Smart Water
Monitor and
Submeter
Rebates,
Trade Ally
Program

2024

\$100 Toilet
Rebate
Promo,
Kupuna
Program,
New
Construction
Program



RESIDENTIAL PROGRAM OVERVIEW



Clothes Washer
\$75 rebate



HURRY!
Offer ends
Dec. 31,
2024.



Toilet
~~\$45~~ \$100 rebate



Weather Based
Irrigation Controller
Up to \$100



Smart Water Monitor
Up to \$200



Rain Barrel
\$40 rebate



COMMERCIAL PROGRAM OVERVIEW



Kitchen



Landscaping



Plumbing



Cooling Tower



PROGRAM HIGHLIGHTS BY THE NUMBERS

79,775,671
Gallons Saved/Year

16,359
Rebates Issued

\$1,161,561
(\$)
Rebates Provided

11,326
Clothes Washers

3,874
Toilets

1,201
Rain Barrels

578
WBICs



MONTHLY DASHBOARD

Water Sensible Monthly Dashboard August 2024

Residential Rebate Table: Clothes Washer, Rain Barrel, WBIC, Toilet, & Smart Water Monitor

Metric	Cumulative Clothes Washers*	Cumulative Rain Barrels*	Cumulative WBIC**	Cumulative Toilets***	Cumulative Smart Water Monitor****
Applications Received	12,248	968	638	2,565	38
Rebates Provided	11,138	1,165	536	3,038	20
Incentives	\$832,200	\$46,400	\$34,180	\$205,346	\$3,893
Gallons Saved/Year	64,326,720	2,563,000	5,766,900	5,340,804	328,500
Lifetime Gallons Saved	842,714,880	37,070,000	38,296,500	106,816,080	3,285,000

*Program inception - May 2018 **WBIC inception - March 2019 ***Toilet Inception - Sept 2022 ****Water Monitor inception - July 2023

Commercial Rebate Table: Kitchen, Plumbing, Landscape, & Cooling Tower

Metric	Cumulative Commercial Kitchen*	Cumulative Commercial Plumbing*	Cumulative Commercial Landscape*	Cumulative Commercial Cooling Tower**
Applications Received	6	80	18	3
Rebates Provided	6	639	39	2
Incentives	\$600.00	\$30,685.00	\$4,000.00	\$856.00
Gallons Saved/Year	31,800	1,848,780	299,732	1,168,000
Lifetime Gallons Saved	318,000	36,548,100	2,997,320	5,840,000

* Program inception - February 2022 **Cooling Tower Inception - December 2022

Direct Installation Incentives

Metric	Services	Shower Measures	Sink Measures	Toilet Measures	Landscape Measures
	Water Audit	Fixed Showerheads, Handheld Showerheads, Pause Valves	Bath Aerators, Kitchen Aerators	Tank Bags, Fill Cycle Diverter, Flappers, Dye Tabs	Garden Hose Nozzles
Quantity Monthly	0	152	140	198	165
Cumulative	0	1,296	1,702	789	285
Gallons Saved/Year	0	3,656,280	1,223,110	617,875	3,120,750
Lifetime Gallons Saved	0	26,067,000	8,214,500	3,089,375	15,603,750

Kupuna Program Incentives

Metric	Services	Shower Measures	Sink Measures	Toilet Measures	Landscape Measures
	Water Audit	Fixed Showerheads, Handheld Showerheads, Pause Valves	Bath Aerators, Kitchen Aerators	Tank Bags, Fill Cycle Diverter, Flappers, Dye Tabs	Garden Hose Nozzles
Quantity Monthly	0	0	0	0	0
Cumulative	17	274	405	651	2
Gallons Saved/Year	NA	739,800	283,500	1,341,670	21,900
Lifetime Gallons Saved	NA	7,398,000	2,835,000	6,708,350	109,500



WATER CONSERVATION PROGRAM



CUSTOMER SERVICE

CUSTOMER SERVICE MONTHLY METRICS

TOTAL	METRIC
2	REBATE CYCLE TIME (# WEEKS)
9.6	CUSTOMER SATISFACTION SURVEY - OVERALL REBATE PROGRAM SATISFACTION
9.7	CUSTOMER SATISFACTION SURVEY - LIKELIHOOD TO RECOMMEND



TRADE ALLY PROGRAM

Training

Help Sell
Goods and
Services

Marketing
Resources

Vendor List

Protecting
Future
Generations

Additional
Revenue

Recognition
Amongst
Peers

CO-OP
Advertising



WATERSMART



Create your free, personal WaterSmart account today!


- See how you use water & where you use it most
- Find ways to save water & reduce your bill
- Compare your usage with similar households
- Sign up for high usage & leak detection alerts

H₂

Your information is always kept safe & secure. WaterSmart will never sell or provide your personal information to third-party vendors.

Board of Water Supply

Create your account at: honolulu.watersmart.com




TRACK YOUR HOME WATER USAGE

SET ALERTS FOR POSSIBLE LEAKS

IT'S EASY AND FREE!

FIND OUT HOW AT honolulu.watersmart.com



START SAVING TODAY WITH

Learn more here!

WaterSmart

Learn more here!

0:00 / 2:02

bwshonolulu

bwshonolulu WaterSmart portal

Learn how you can take advantage of the WaterSmart portal - a FREE service.

What you'll get:

- Your water usage trends over the past year.
- Alerts for possible leaks or unusual usage.
- Rebate program information and tips on saving water.

#bwshonolulu #water #conservation #rebate #saving #life #precious

5d

94 views
5 DAYS AGO

Add a comment... Post

www.honolulu.watersmart.com



WATER SENSIBLE & CONSERVATION SOCIAL MEDIA

Board of Water Supply
Sponsored · 🌐

Save precious water by collecting and using rainwater for landscape irrigation.

**CATCH THE RAIN:
SAVE MONEY AND WATER**




BOARDOFWATERSUPPLY.COM
Get a \$40 rebate on a rain barrel!
Find Water Sensible rebates... [Learn more](#)

👍 Like 💬 Comment ➦ Share

Honolulu Board of Water Supply
Sponsored · 🌐

The Water Sensible Program offers rebates for products that help you save money and protect O'ahu's precious water.



**Protect
O'ahu's
Water.
Get
Rebates!**


WaterSensible
🌊

BOARDOFWATERSUPPLY.COM
See available rebates... [Learn more](#)

👍 Like 💬 Comment ➦ Share

Honolulu Board of Water Supply
Sponsored (demo) · 🌐

Earn rebates of \$40-\$200 on water-efficient products that help lower your water bills.



Save water. Save money.

BOARDOFWATERSUPPLY.COM/RESIDENTIALREBATES
Explore available rebates
The Water Sensible Program [Learn more](#)

👍 Like 💬 Comment ➦ Share

👤 71 1 comment 5 shares



DIRECT MAIL CAMPAIGN

Condos and Apartments

SAVE WATER, SAVE MONEY

Get up to \$100 in rebates by purchasing and installing eligible water-efficient products.

WaterSensible



\$75 REBATE
Clothes washer

\$100 REBATE
Toilet

LIMITED TIME OFFER

Get \$100 back and use up to 60% less water when you purchase and install an EPA WaterSense® toilet.

- Offer valid for purchases made on or after 1/19/24, while funding lasts
- Tank and bowl must be purchased together and use 1.28 gallons per flush or less
- Limit four per household



SAY HELLO TO LOWER WATER BILLS



Scan to see all rebate details at
BoardOfWaterSupply.com/ResidentialRebates
808.237.6877

Single Family Homes

SAVE WATER INSIDE AND OUT

From washers to rain barrels, get up to \$200 in rebates by purchasing and installing eligible water-efficient products.

WaterSensible



\$40 REBATE
Rain barrel

\$100 REBATE
Toilet

UP TO \$100 REBATE
Weather-based irrigation controller

\$75 REBATE
Clothes washer

50% OFF UP TO \$200 REBATE
Smart water monitor

LIMITED TIME OFFER

Get \$100 back and use up to 60% less water when you purchase and install an EPA WaterSense® toilet.

- Offer valid for purchases made on or after 1/19/24, while funding lasts
- Tank and bowl must be purchased together and use 1.28 gallons per flush or less
- Limit four per household



SAY HELLO TO LOWER WATER BILLS



Scan to see all rebate details at
BoardOfWaterSupply.com/ResidentialRebates
808.237.6877



<First Name_Middle Initial_Last Name>
<Street Address 1>
<Street Address 2>
<City, State, Zip_Code Zip+4>



DIRECT INSTALL AND KUPUNA PROGRAMS

Direct Install Program

- Provides water and energy efficiency upgrades to customers in collaboration with Hawaii Energy's Energy Smart 4 Homes program.
- 3.6 million gallons saved annually

Kupuna Program

- Provides Kupuna customers living on their own
 - high efficiency showerheads and faucet aerators, toilet leak detection
 - Water audits of homes
 - Water Bill analysis
 - Rebate consultation
- Over 700k gallons saved annually



KUPUNA PROGRAM

- One Kalakaua Senior Living – 166 condo units
- St. Francis Healthcare Homes
 - Franciscan Vistas (150-unit affordable rental senior living community in Ewa)
- Senior Residences at Iwilei - 160 affordable rental senior housing units in Iwilei.



SUCCESS STORY



- Ramada Plaza Waikiki (198 rooms) switched to **water-saving toilets** in June 2023.
- They saved **\$17,000** in the first year.
- **Additional Savings:** \$8,500 through rebates.



WATER SENSIBLE PROGRAM TEAM OUTREACH EVENTS



City Mill's Fall Garden Expo – August 17, 2024



WATER WISDOM LARGE CONDOMINIUM PROGRAM



- BWS has sent Water conservation letters to the top 200 water users.
- Provides residents and building managers a free comprehensive toolkit to help them succeed in conserving water.



MULTI-FAMILY OUTREACH

- Partnered with Hawaii Energy and Hawaii Green Infrastructure Authority.
- Condos & townhomes classified as high water & energy users.
- Help properties reduce water use & energy consumption.
- HGIA offers lower interest & longer-term financing.



CONSERVATION OUTREACH

Some of the condos & properties that we are working with:

- Country Club Village – Salt Lake
- Symphony Honolulu
- Ewa Villages
- Kalelekai – Hawaii Kai
- Kukui Plaza – Downtown
- College Gardens – Pearl City
- Juliana Towers Apartments – Aiea
- Palms of Kilani – Wahiawa
- Regency Park – Kaimuki



MARKETING

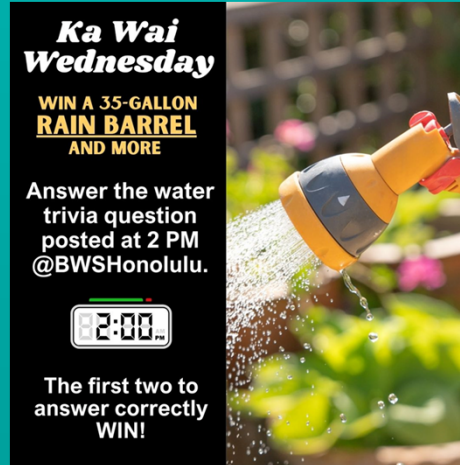


- March: World Water Day
- April: Detect-A-Leak
- May: Poster and Poetry Contest
- June: Disaster Preparedness
- July: Smart Irrigation Month
- August: Disaster Preparedness
- September: Disaster Preparedness
- October: Imagine A Day Without Water
- November & December: Holiday Theme



WATER CONSERVATION EVENTS


- Ka Wai Wednesday
- World Water Day
- Detect-A-Leak Week
- Smart Irrigation Month
- BWS Water Conservation Week
- Imagine a Day Without Water



Ka Wai Wednesday

WIN A 35-GALLON RAIN BARREL AND MORE

Answer the water trivia question posted at 2 PM @BWSHonolulu.



The first two to answer correctly WIN!

(Background image: A yellow and blue showerhead spraying water onto green foliage.)



what's the **VALUE** of smart irrigation?

water conservation

Smart Irrigation Month



www.boardofwatersupply.com/irrigation



"Water for Peace"

WORLD WATER DAY

March 22, 2024

www.boardofwatersupply.com/worldwaterday

(Background image: A blue water splash against a dark background.)



DETECT-A-LEAK WEEK

LIVE EVENT - April 26

Tamarind Park (Bishop Square)

NOON to 1 PM

(Background image: A close-up of a leaking faucet with water dripping.)

Imagine A Day Without Water

Sat, Sept. 28, 10am to 2pm
Kapolei Regional Park



DETECT A LEAK WEEK PROCLAMATION



Proclamation

WHEREAS, O'ahu's limited precious water resources are vital to sustain our high-standard of living and prosperous economy, while maintaining the health and welfare of residents; and

WHEREAS, the City and County of Honolulu's Board of Water Supply (BWS) continues its mission to protect O'ahu's water supply by providing its residents with an abundance of fresh and safe drinking water through more than 2,100 miles of pipeline; and

WHEREAS, residents are called upon to be responsible stewards of this finite resource through regular leak detection, such as the repair of leaky pipes, faucets, irrigation systems, and toilets, and to replace older inefficient toilets with WaterSense (1.28 gallons per flush) labeled models, as an effective way to save water from going to waste; and

WHEREAS, the BWS will observe the annual Detect-A-Leak Week campaign from April 16 - 22, 2023, to promote the significance of leak detection, with an emphasis on the importance of replacing older toilets with WaterSense labeled models; and

WHEREAS, Hardware Hawai'i is co-sponsoring this campaign by contributing four WaterSense labeled toilets to be given away to help consumers save water and money on their water bills; and

WHEREAS, free toilet leak detection dye tablets will be available during Detect-A-Leak Week at Hardware Hawai'i stores, satellite city halls, or in the lobby of the BWS's Public Service building.

NOW, THEREFORE, I, RICK BLANGIARDI, Mayor of the City and County of Honolulu, do hereby proclaim April 16 - 22, 2023, to be

2023 DETECT-A-LEAK WEEK

to strongly encourage O'ahu residents to participate in regular water conservation practices, especially leak detection in homes and places of business.

Done this 16th day of April, 2023,
in Honolulu, Hawai'i.




RICK BLANGIARDI

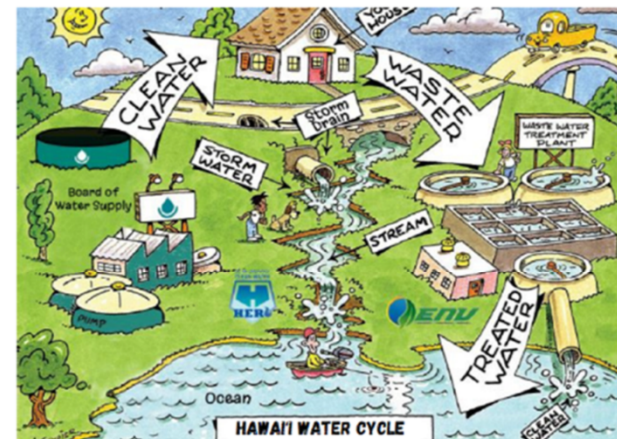


IMAGINE A DAY WITHOUT WATER

- National observance about the importance of water.
- 5th annual event
 - Held Saturday, September 28, at Kapolei Regional Park.
- More than 20 city/county & state government agencies & community organizations participated.
- Exhibits, interactive activities & workshops, including one on rain barrels.

Imagine A Day Without Water

Sat, Sept. 28, 10am to 2pm
Kapolei Regional Park



MORE THAN 15 CITY/STATE AND COMMUNITY ORGANIZATION
BOOTHS WITH INTERACTIVE ACTIVITIES
XERISCAPE PLANT CRAFT
RAINBARREL WORKSHOPS
'ONO FOOD, DESSERTS, AND SNACKS FOR SALE!
SUCCULENT MINI WORKSHOP **AND MORE!**

www.boardofwatersupply.com/onewaterhawaii



IMAGINE-A-DAY WITHOUT WATER EVENT PARTNERS

- Board of Water Supply
- Department of Facility Maintenance
- Department of Environmental Services
- Resilience Office
- Commission of Water Resource Management
- Department of Forestry and Wildlife
- State Department of Agriculture
- Hawai'i Water Environment Association
- Surfrider Foundation
- Sierra Club of Hawai'i
- American Water Works Association
- Ko'olau Mountains Watershed Partnership
- Wai'anae Mountains Watershed Partnership
- Honolulu Fire Department
- Hawaiian Electric
- Sustainable Coastlines Hawai'i



IMAGINE A DAY WITHOUT WATER PROCLAMATION



Proclamation

WHEREAS, water infuses almost every aspect of O'ahu's existence, as it shapes the lives of more than 1 million residents and visitors and helps our island communities and the economy thrive; and

WHEREAS, O'ahu's precious groundwater resource sustainability is being threatened by the impacts of climate change through increased and more severe drought, and the loss of three water sources near Red Hill resulting from the 2021 Red Hill fuel spill; and

WHEREAS, to help preserve O'ahu's groundwater supply, recognizing and using all available forms of water resources has become key for long-term resilience; and

WHEREAS, the One Water concept integrates the management of stormwater, wastewater, groundwater, seawater, freshwater, greywater, and recycled water to create resource and financial efficiencies, and it protects and uses water through management efforts of conservation, recharge, and reuse by various city and state agencies and community organizations; and

WHEREAS, the agencies and organizations will recognize the significance of the One Water concept on O'ahu through the national "Imagine-A-Day Without Water" observance on October 19, 2023; and

WHEREAS, these agencies will further collaborate to educate the public about the One Water concept and the importance of proper management and stewardship of all of Oahu's water resources on Saturday, October 21, 2023, at a special community event held inside the Wahiawa Freshwater State Recreation Area from 10 a.m. to 2 p.m.; and

WHEREAS, these two occurrences further support the City's efforts to be more ecologically friendly and resilient,

NOW, THEREFORE, I, RICK BLANGIARDI, Mayor of the City and County of Honolulu, do hereby proclaim October 19, 2023, to be

"IMAGINE A DAY WITHOUT WATER" DAY

to join with the City and State partner agencies in urging residents, businesses, organizations, and government agencies across the state to consider ways to protect and optimize the value of water to keep our precious island home healthy and thriving for generations to come.

Done this 19th day of October, 2023,
in Honolulu, Hawai'i.

Rick Blangiardi

RICK BLANGIARDI



HAWAII GREEN BUSINESS PROGRAM (GBP)

WORK WITH BUSINESSES TO:

- Conserve Energy & Water
- Preserve Culture & Natural Resources
- Increase Community involvement
- Prevent Pollution
- Reduce Waste

CATEGORIES:

- Hotel
- Restaurant
- Venue or event
- Office
- Grocery



RAIN BARREL WORKSHOPS

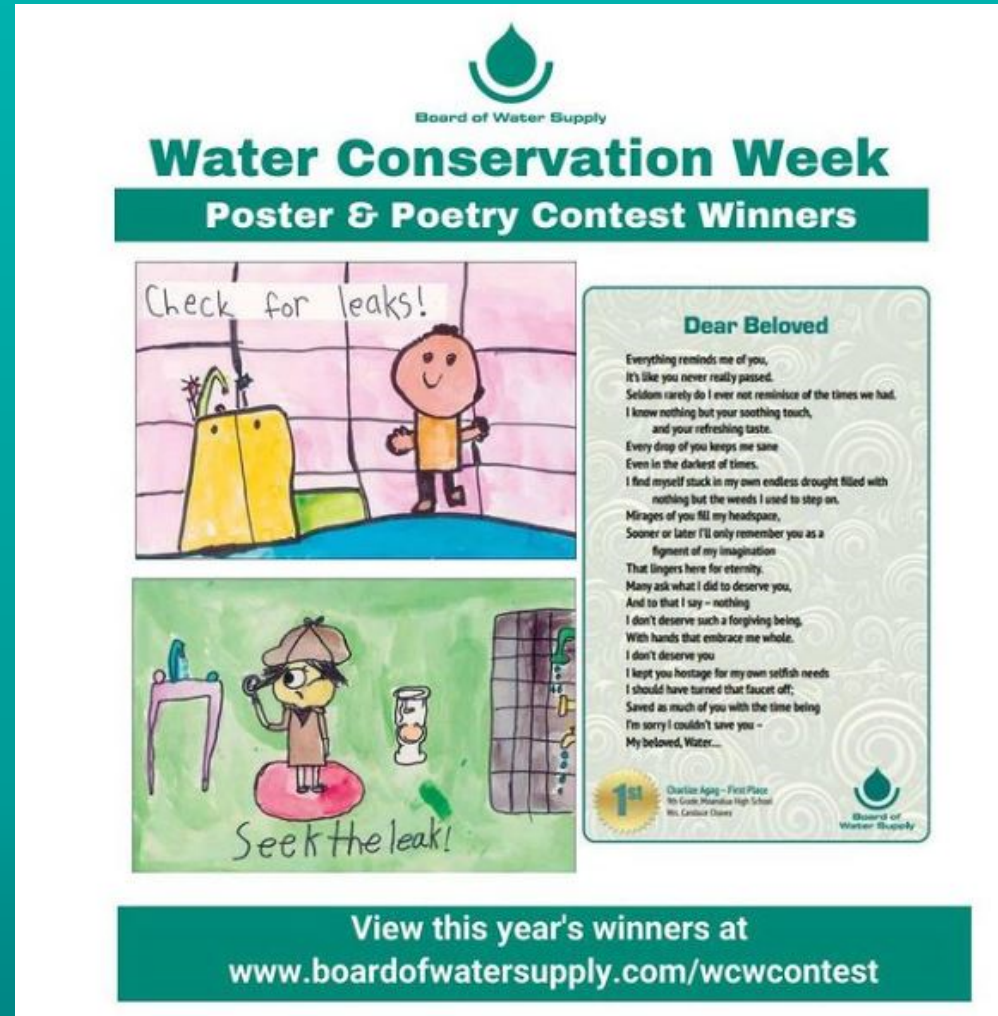


ANNUAL CALENDAR CONTEST

2024 Stats:

- Poster Schools: 49
- Poem Schools: 11
- Number submitted:
 - Posters: 847
 - Poems: 312

2025 Theme - Worth of Wai




The image is a promotional graphic for the Water Conservation Week Poster & Poetry Contest Winners. At the top center is the Board of Water Supply logo, a green water drop. Below it, the text "Board of Water Supply" is written in a small font. The main title "Water Conservation Week" is in a large, bold, green font, followed by "Poster & Poetry Contest Winners" in a white font on a green background. The graphic features two children's drawings. The top drawing, titled "Check for leaks!", shows a boy in a yellow shirt and black pants standing next to a yellow water tank with a green hose. The bottom drawing, titled "Seek the leak!", shows a girl in a brown dress and hat looking at a pink puddle on the ground, with a water meter and a water tap in the background. To the right of the drawings is a poem titled "Dear Beloved" by Charize Agui. The poem is written in a small, black font. At the bottom left of the poem is a gold "1st" place award icon. At the bottom right of the poem is the Board of Water Supply logo. At the bottom of the graphic is a green banner with the text "View this year's winners at www.boardofwatersupply.com/wcwcontest" in white.


Board of Water Supply

Water Conservation Week

Poster & Poetry Contest Winners



Check for leaks!



Seek the leak!

Dear Beloved

Everything reminds me of you,
It's like you never really passed.
Seldom rarely do I ever not reminisce of the times we had,
I know nothing but your soothing touch,
and your refreshing taste.
Every drop of you keeps me sane
Even in the darkest of times.
I find myself stuck in my own endless drought filled with
nothing but the weeds I used to step on.
Mirages of you fill my headspace,
Sooner or later I'll only remember you as a
figment of my imagination
That lingers here for eternity.
Many ask what I did to deserve you,
And to that I say - nothing
I don't deserve such a forgiving being,
With hands that embrace me whole.
I don't deserve you
I kept you hostage for my own selfish needs
I should have turned that faucet off;
Saved as much of you with the time being
I'm sorry I couldn't save you -
My beloved, Water...

1st Charize Agui - First Place
St. George's Memorial High School
Wai, Lanai, Oahu

Board of Water Supply

View this year's winners at
www.boardofwatersupply.com/wcwcontest



XERISCAPE GARDEN

- June 2024 – Reopened the Halawa Xeriscape Garden for Volunteers.
 - The garden is focusing on new volunteers, educational workshops/events, & garden/nursery care.
- August 2024 – Annual Unthirsty Plant Sale
- Ongoing – Outreach with KHON “Get Dirty” segment, senior groups, schools, parks, community events



VOLUNTEERS NEEDED
Halawa Xeriscape Garden
Wednesdays & Saturdays
9 AM - Noon

Help maintain the garden and/or propagate plants in the nursery.

Interested?
Call (808) 748-5315
or email
workshops@hbws.org
for more details.



Board of Water Supply





Mahalo!

BOARD OF
WATER SUPPLY

Providing safe, dependable, and affordable
drinking water, now and into the future.



ACCEPT MEETING NOTES FROM MEETING 51

David Ebersold
Facilitator

October 17, 2024
www.boardofwatersupply.com





VARIOUS CHEMICALS DETECTED AT BOARD OF WATER SUPPLY WELLS

Stakeholder Advisory Group
Meeting

October 17, 2024
boardofwatersupply.com



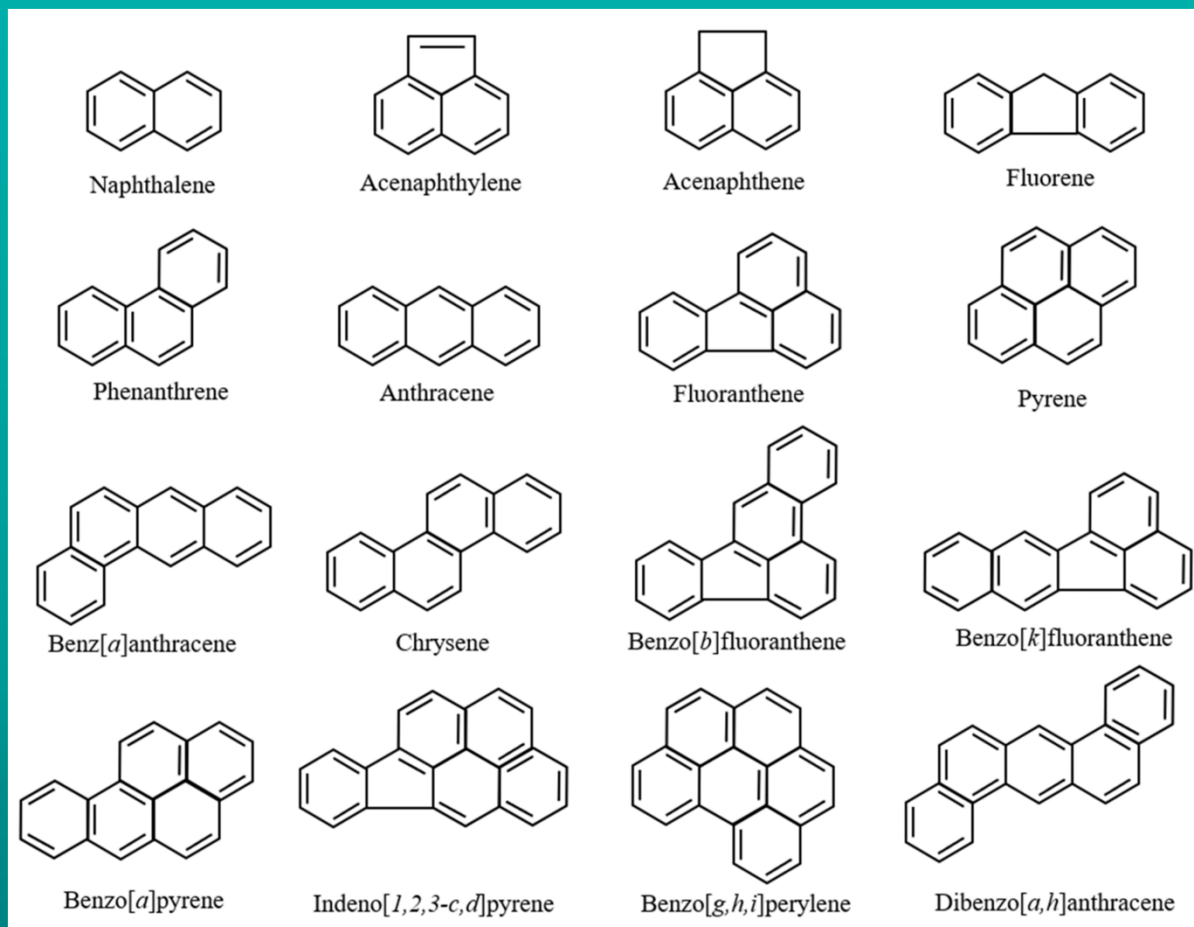
DISCUSSION

- Polycyclic aromatic hydrocarbons (PAHs) detected at BWS Aiea Wells
- Per- and polyfluoroalkyl substances (PFAS) at BWS Halawa Shaft
- Comparison detections at Navy monitoring and source wells
- What do the results mean
- Next steps



WHAT ARE POLYCYCLIC AROMATIC HYDROCARBONS (PAHS)?

- Polycyclic aromatic hydrocarbons (PAHs) are a class of chemicals that occur naturally in coal and petroleum products like crude oil, and gasoline.
- PAH occur as complex mixtures of multiple related compounds.



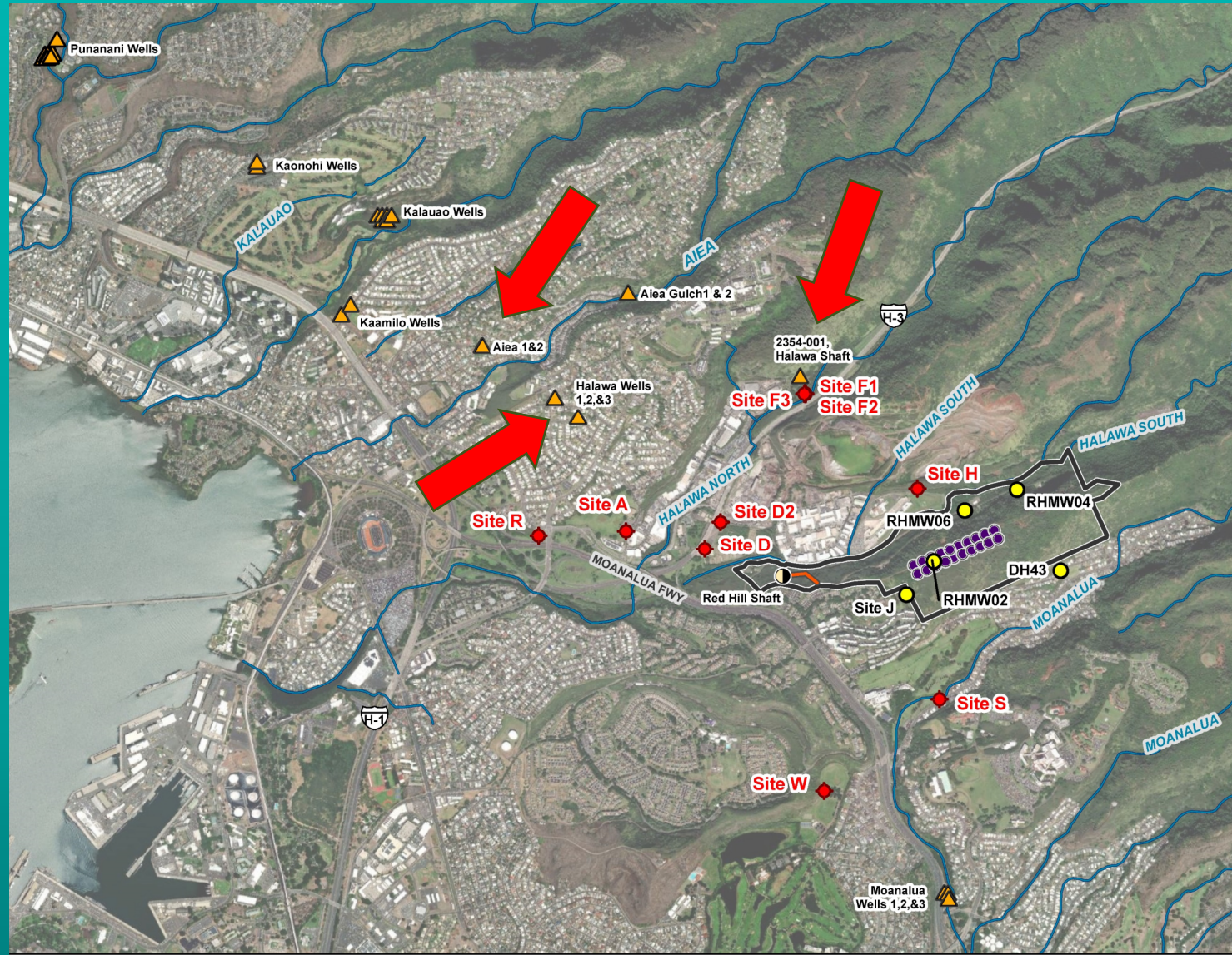
WHAT ARE PAHS? – CONT.

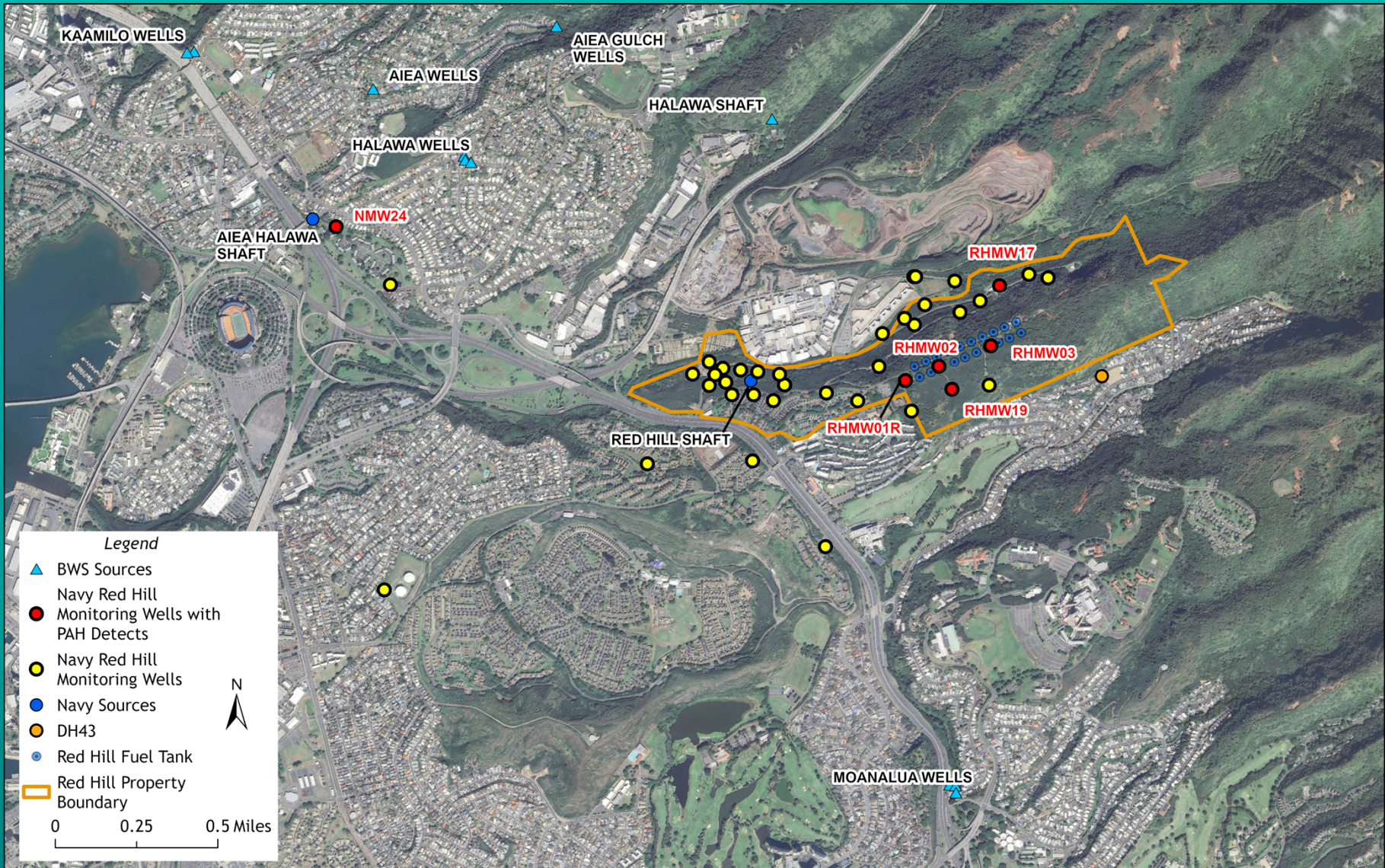
- Forms from burning coal, oil, gas, wood, garbage, and tobacco.
- High heat when cooking meat and other foods will form PAHs.
- Cigarette smoke contains many PAHs.



WHERE IS BWS AIEA WELLS ?

- Aiea Wells is 2.16 miles west of the Red Hill facility
- BWS stopped pumping Aiea Wells on December 8, 2021, soon after the Navy Red Hill Shaft contamination incident on November 20, 2021.



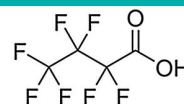


All values in ug/L

Location	Aiea Wells		Navy NMW24	BWS DH-43		RHMW02	RHMW04	RHMW06	Red Hill Shaft	EPA MCL	DOH DW Action limit
Test method	EPA 525.2	EPA 625	EPA 8270	EPA 625	EPA 625						
Sample date	6/4/2024	6/4/2024	6/24/2024	5/3/2022	3/9/2022	3/8/2022	3/14/2022	3/16/2022	2/22/2022		
Analyte											
1-methylnaphthalene	NA	NA	ND	ND	ND	15	ND	0.086	ND	None	11
2-methylnaphthalene	NA	NA	ND	ND	ND	4.6	ND	0.14	0.053	None	30
1-methylphenanthrene	<0.098	0.0113	NA	ND	ND	ND	ND	ND	ND	None	None
Acenaphthene	NA	NA	NA	ND	ND	0.27	ND	ND	0.032	None	440
Acenaphthylene	NA	NA	NA	ND	ND	0.071	ND	0.021	ND	None	300
Anthracene	<0.020	0.00852	ND	ND	ND	ND	ND	0.03	0.063	None	1600
Benz[a]anthracene	0.2	0.27	0.099	ND	0.0216	0.056	ND	0.048	ND	None	0.052
Benzo[a]pyrene	0.13	0.0999	0.092	ND	ND	0.035	0.027	0.028	ND	0.2	0.2
Benzo[e]pyrene	NA	0.0857	ND	0.0399	0.156	ND	ND	ND	ND	None	None
Benzo[b]fluoranthene	0.19	0.213	0.1	0.00947	ND	0.026	0.033	0.019	ND	None	0.058
Benzo[g,h,i]perylene	<0.049	0.0489	0.065	0.0371	0.192	0.016	0.044	0.012	ND	None	65
Benzo[k]fluoranthene	0.077	0.189	0.099	0.0054	ND	ND	0.013	ND	ND	None	0.36
Chrysene	0.11	0.199	0.09	0.0109	0.0695	0.09	0.02	0.068	ND	None	0.24
Dibenz[a,h]anthracene	<0.049	0.0269	0.06	ND	ND	ND	ND	ND	ND	None	0.0048
Dibenzo[a,l]pyrene	NA	0.0172	ND	NA	NA	NA	NA	NA	NA	None	None
Fluoranthene	0.33	0.324	0.23	0.00694	0.0153	0.044	ND	0.044	0.063	None	110
Fluorene	NA	NA	NA	ND	ND	0.14	ND	0.022	0.078	None	250
Indeno[1,2,3cd]pyrene	<0.049	0.0786	0.08	0.0129	0.104	ND	0.044	ND	ND	None	0.018
Naphthalene	NA	NA	ND	ND	ND	8.3	ND	0.041	0.048	None	17
Perylene	NA	0.0361	ND	NA	NA	NA	NA	NA	NA	None	None
Phenanthrene	<0.039	0.0231	ND	0.00696	ND	0.11	ND	0.089	0.057	None	250
Pyrene	0.31	0.356	ND	0.00999	0.0158	0.19	ND	0.19	0.044	None	110

WHAT ARE PFAS?

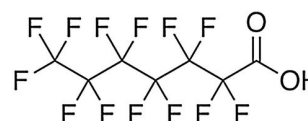
- Per- and polyfluoroalkyl substances (PFAS) are a family of chemicals used since the 1940s to make consumer and industrial products resistant to water, heat, and stains.
- PFAS can leach into groundwater and contaminate drinking water.
- Persistent in the environment and do not easily break down.
- Potential adverse health impacts including liver damage, decreased fertility, hormone suppression and cancer.



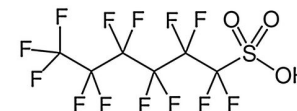
Perfluorobutanoic acid (PFBA)



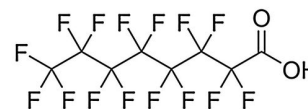
Perfluorobutane sulfonic acid (PFBS)



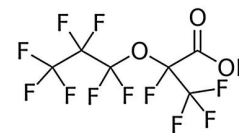
Perfluoroheptanoic acid (PFHpA)



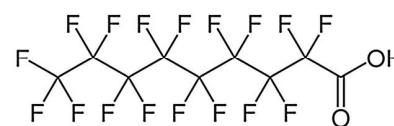
Perfluorohexane sulfonic acid (PFHxS)



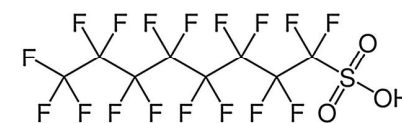
Perfluorooctanoic acid (PFOA)



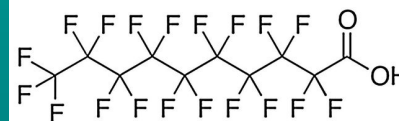
Hexafluoropropylene oxide dimer acid (HFPO-DA or GenX)



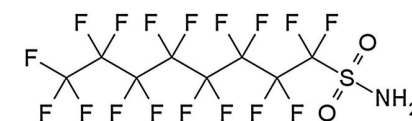
Perfluorononanoic acid (PFNA)



Perfluorooctane sulfonic acid (PFOS)



Perfluorodecanoic acid (PFDA)



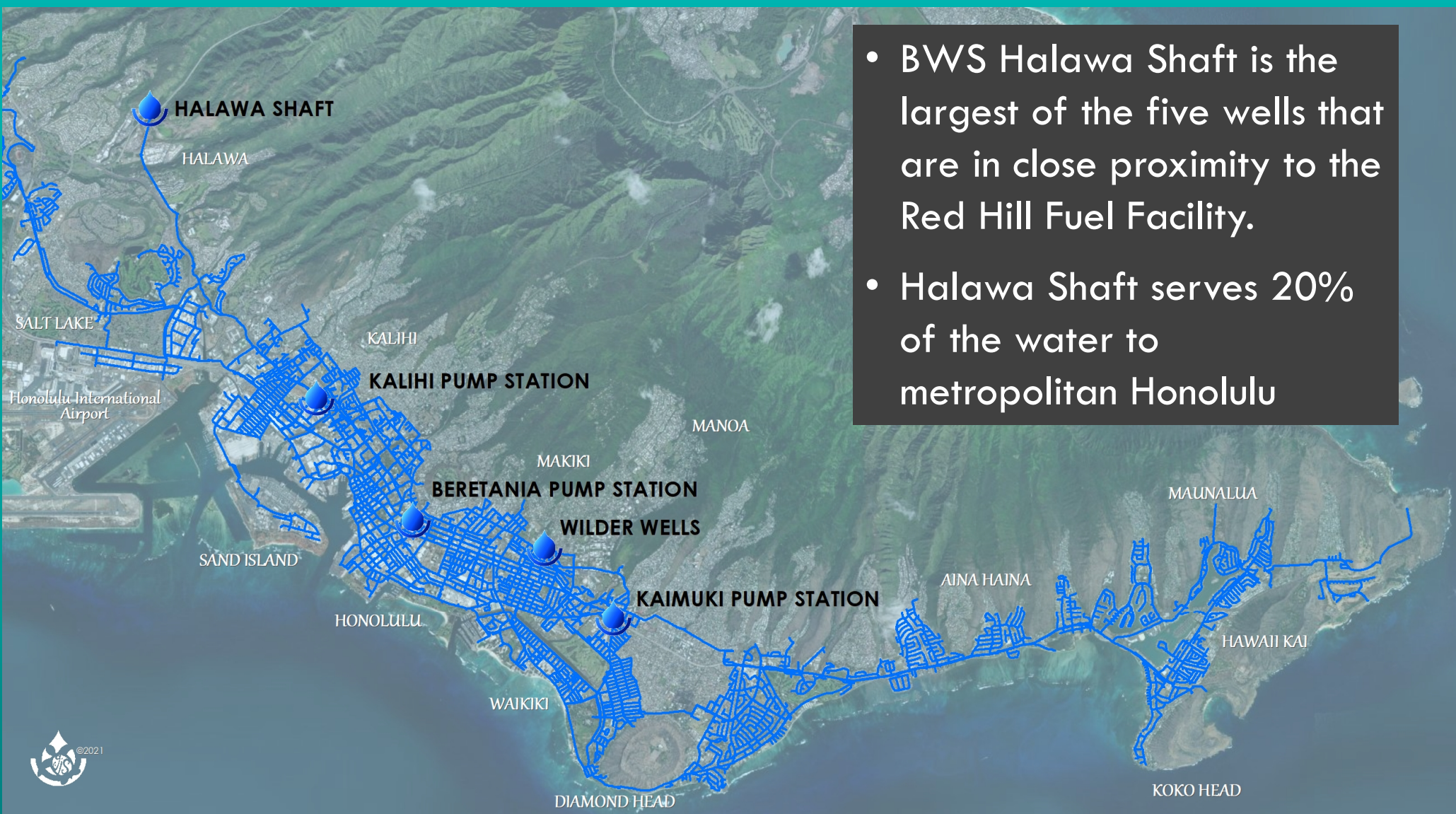
Perfluorooctanesulfonamide (PFOSA)

WHERE IS BWS HALAWA SHAFT ?

- Halawa Shaft is 0.94 miles to the northwest of the Red Hill facility
- BWS stopped pumping Halawa Shaft on December 2, 2021, soon after the Navy Red Hill Shaft contamination incident on November 20, 2021.



- BWS Halawa Shaft is the largest of the five wells that are in close proximity to the Red Hill Fuel Facility.
- Halawa Shaft serves 20% of the water to metropolitan Honolulu



Laboratory Test Results

All values in ng/L (ppt)

	BWS Halawa Shaft												Navy (1)(2)				
	8/27/2024		8/20/2024		8/6/2024		12/5/2022		4/13/2021		4/13/2020		RHP01	RHP01	RHP07	RHP08	NMW32
Sample date	8/27/2024		8/20/2024		8/6/2024		12/5/2022		4/13/2021		4/13/2020		9/12/2023	9/13/2023	9/14/2023	9/20/2023	9/18/2023
EEA Report no.	380-110890		380-109897		380-107748		380-30484		929317		865885		NA	NA	NA	NA	NA
EPA Method	533	537.1	533	537.1	533	537.1	533	537.1	533	537.1	533	537.1	1633	1633	1633	1633	1633
Analyte																	
Perfluorobutanesulfonic acid (PFBS)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	4.3	ND	ND	3.9
Perfluorobutanoic acid (PFBA)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	14.2	ND	ND	ND
Perfluoropentanoic acid (PFPeA)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	9.5	12.3	ND	ND	ND
Perfluorohexanesulfonic acid (PFHxS)	3.7	3.6	3.5	4	3.2	4	4.2	3.9	ND	ND	NA	ND	4.9	5	ND	ND	9.7
Perfluorohexanoic acid (PFHxA)	ND	ND	ND	ND	ND	ND	2.1	ND	ND	ND	NA	ND	4.4	6.3	ND	ND	4.5
Perfluoroheptanoic acid (PFHpA)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.9	5	ND	ND	ND
Perfluorooctanesulfonic acid (PFOS)	3.4	3.4	3.3	3.6	3.3	3.8	4.9	3.2	ND	ND	NA	ND	13.2	16 J	9	3.9	14.7
Perfluorooctanoic acid (PFOA)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.9	5.8	ND	ND	ND

Halawa Shaft operations shut down on 12/2/21 in response to November 2021 JBPWH water contamination

Samples collected after 12/5/21 from water table under static pumping conditions

ND = Not detected

NA = Not available

1. Reference: Per-and Polyfluoroalkyl Substances Delineation Baseline Groundwater Wells Investigation Report, Naval Facilities Engineering Command Pacific, November 27, 2023

2. See Navy map for well locations

PFHxS and PFOS present in BWS Halawa Shaft and Navy's monitoring wells

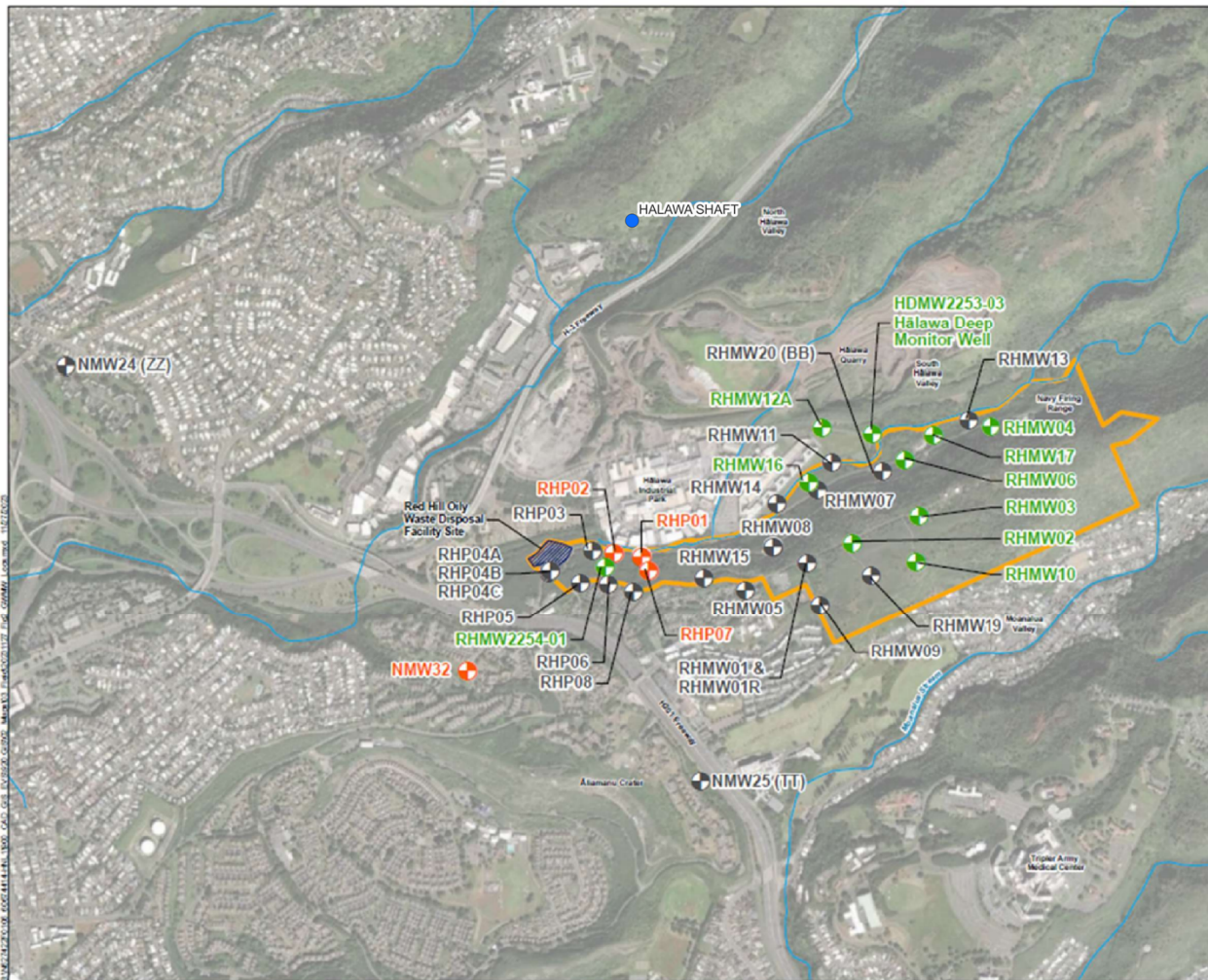


Navy (1)(2)								
	RHP02	RHP02	RHP03	RHMW08	RHP04A	RHP05	RHP06	NMW25
Sample date	9/13/2023	9/13/2023	9/14/2023	9/26/2023	9/15/2023	9/18/2023	9/20/2023	9/21/2023
EEA Report no.	NA	NA	NA	NA	NA	NA	NA	NA
EPA Method	1633	1633	1633	1633	1633	1633	1633	1633
Analyte								
Perfluorobutanesulfonic acid (PFBS)	4.3	3.6	ND	ND	ND	ND	ND	ND
Perfluorobutanoic acid (PFBA)	14.2	ND	ND	ND	ND	ND	ND	ND
Perfluoropentanoic acid (PFPeA)	12.3	11.2	ND	10.4	ND	ND	ND	ND
Perfluorohexanesulfonic acid (PFHxS)	5.0	4.5	4.0	ND	4.6	5.2	4.5	4.2
Perfluorohexanoic acid (PFHxA)	6.3	5.8	ND	ND	ND	ND	ND	ND
Perfluoroheptanoic acid (PFHpA)	5.0	5.2	ND	ND	ND	ND	ND	ND
Perfluorooctanesulfonic acid (PFOS)	ND	ND	5.1	ND	ND	ND	4.1	ND
Perfluorooctanoic acid (PFOA)	5.8	5.2	ND	ND	ND	ND	ND	ND

1. Reference: Per- and Polyfluoroalkyl Substances Delineation Baseline Groundwater Wells Investigation Report, Naval Facilities Engineering Command
2. See Navy map for well locations

PFHxS and PFOS present in BWS Halawa Shaft and Navy's monitoring wells





Location Map

Legend

- Monthly PFAS GWM Wells
- Non-Routine PFAS Groundwater Monitoring Wells (GWM) with Perfluorooctanesulfonic acid (PFOS) exceedance
- Non-Routine PFAS GWM
- Red Hill Facility Boundary
- Red Hill Oily Waste Disposal Facility
- Stream

Notes

1. Map projection: NAD 1983 Hawaii State Plane Z3 ft
2. Base Map: Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
3. Coordinates: NAD 1983 Hawaii State Plane Z3 ft



Figure 2
 Groundwater Monitoring Well Locations
 Red Hill Bulk Fuel Storage Facility
 JBPHH, O'ahu, Hawai'i



NAVY PFAS BASELINE TESTING



Naval Facilities Engineering Systems Command Pacific
JBP HH HI

Per- and Polyfluoroalkyl Substances Delineation Baseline Groundwater Wells Investigation Report

Red Hill Bulk Fuel Storage Facility
JOINT BASE PEARL HARBOR-HICKAM O'AHU HI

November 27, 2023

In September 2023, the Navy sampled 21 groundwater monitoring wells for PFAS to determine the baseline groundwater water quality.

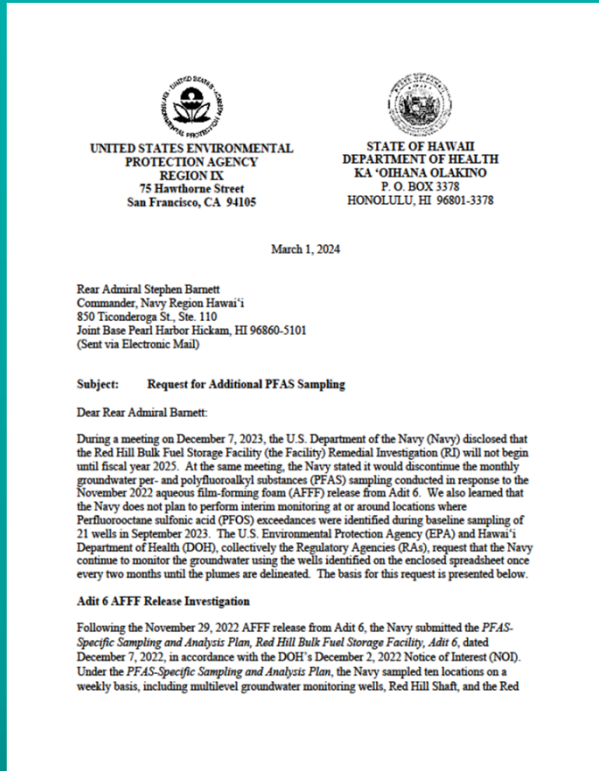
Table 1: Groundwater Monitoring Well Information

Well ID	Driller	Well Completion Date	Well Diameter (inches)	Screen Depth (Feet below ground surface)	Borehole Depth (Feet below ground surface)
RHMW01	VWD	02/2001	1	74–84	100
RHMW01R	VWD	03/2021	2	74–94	98.5
RHMW05	VWD	03/2010	2	78–93	103.5
RHMW07	VWD	10/2014	4	184–214	240
RHMW08	VWD	08/2016	4	278.9–308.9	315
RHMW09	VWD	07/2016	4	363.5–393.5	405
RHMW19	VWD	04/2020	4	415–445	455
RHMW20	YK Drilling	06/2023	4	223–253	261
NMW24	VWD	11/2022	4	80–110	116
NMW25	YK Drilling	07/2023	4	181.4–211.4	216.2
RHP01	YK Drilling	06/2022	2	125–155	160
RHP02	GeoTek Hawaii	05/2022	2	109.75–139.75	145
RHP03	VWD	07/2022	2	104–134	141.03
RHP04A	YK Drilling	08/2022	2	130.26–160.26	165
RHP04B	YK Drilling	10/2022	2	300.56–320.56	326
RHP04C	YK Drilling	02/2023	4	486.3–506.3	526
RHP05	GeoTek Hawaii	11/2022	2	203.85–233.85	238
RHP06	GeoTek Hawaii	07/2023	3	239–268.5	280.2
RHP07 ^b	VWD	02/2023	2	73.7–93.7	71
RHP08	Precision Drilling Services	08/2023	4	276–306	311
NMW32	YK Drilling	08/2023	4	161–191	210





ADDITIONAL PFAS TESTING NEEDED

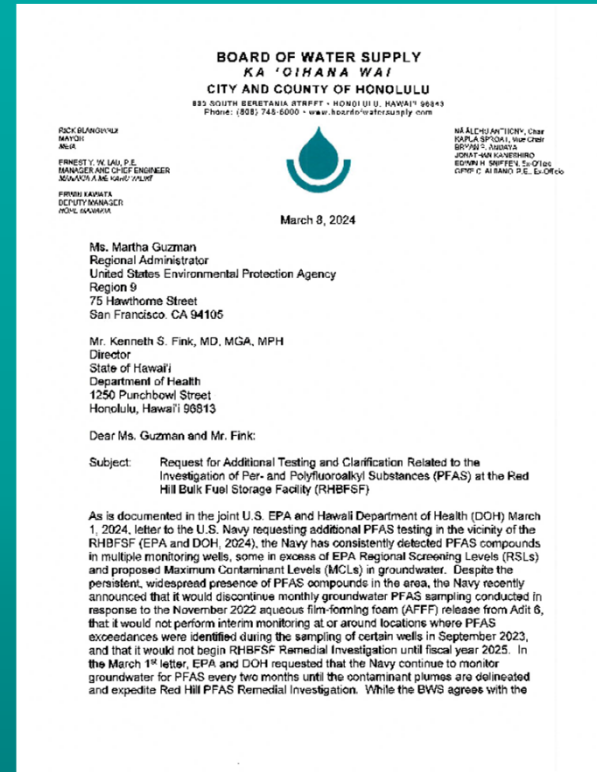


“These detections of PFOS in soil and groundwater may indicate a wider Red Hill problem with PFAS that cannot be solely attributed to the November 2022 AFFF release. Further investigation to determine the source and extent is warranted.”

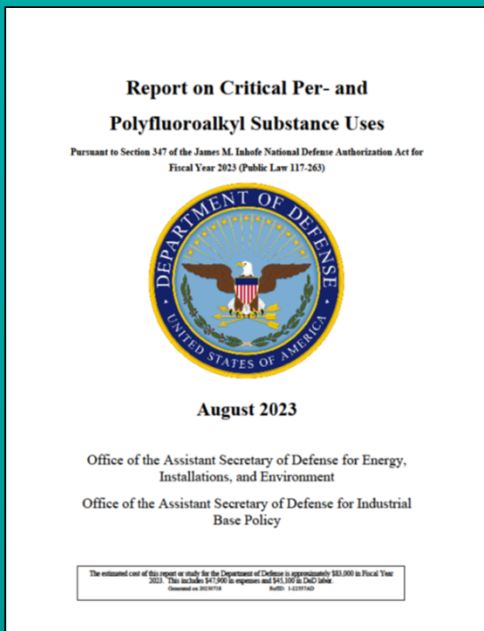
[EPA and DOH Letter to Navy Dated March 1, 2024](#)

“The Navy must be *required* to continue to perform a complete and thorough investigation of the environmental impacts associated with historic and more recent PFAS uses and releases from the RHBF, by continuing to conduct PFAS sampling at nearby monitoring wells on at least a monthly basis and to expeditious develop a concrete and workable plan for remediating the impacts of PFAS.”

[BWS Letter to EPA and DOH dated March 8, 2024](#)



REPORT ON CRITICAL PFAS USES BY DEPARTMENT OF DEFENSE



Source: [Report](#) from Office of the Assistant Secretary of Defense for Energy, Installations, and Environment

Appendix: Summary of Known Mission Critical PFAS Uses

PFAS	Application	Functionality	Availability of Alternatives	Time Frame / Cost to Develop and Qualify Alternatives*
Kinetic Capabilities				
Fluoropolymers (e.g., Teflon™)	Ingredients in binders and resins used in PBX, pyrotechnics, and components that a variety of applicat			
Fluoroelastomers (e.g., Viton™)				
PFAS	Used in energetic processing.			
Fluorinated performance fluids (e.g., 3MTM Fluorinert™ fluids)	Enable energetics research. Are crit developing and tr new energetic ma			
Energy Storage and Batteries				
Fluoropolymers (e.g., polytetrafluoroethylene (PTFE))	Multiple subcomp modern Li-ion bat electrolyte solutio			
Polyfluoroalkyl acids (PolyFAAs)	binders, separator casing materials, t			
PFAS	Battery manufact and other compon essential to produ			
Microelectronics and Semiconductors				
Fluoropolymers	Semiconductor fa etching materials			
Fluoroelastomers	photolithography cleaning gases.			
PolyFAAs				
Other PFAS				
Report on Critical Per- and Polyfluoroalkyl Su				

Appendix: Summary of Known Mission Critical PFAS Uses

PFAS	Application	Functionality	Availability of Alternatives	Time Frame / Cost to Develop and Qualify Alternatives*
Lines, Hoses, O-Rings, Seals and Gaskets, Tapes, and Cables and Connectors				
Fluoropolymers (e.g., PVDF, ECTFE, PTFE)	Critical to modern "rubberized" fuel lines. Key materials in hoses, tubing, hydraulic system lines, O-rings, seals and gaskets, tapes, and cables and connectors widely used in civil and military aircraft, space systems, vehicles, weapon systems, utility systems, and other applications.	Functionalities include UV-resistance, ozone-resistance, weather-resistance, high temperature-resistance, high pressure-resistance, and chemical resistance.	Alternatives are not as resistant to embrittlement and break-down and have a much shorter useful life, leading to more frequent part replacement, which is not feasible for space or satellite uses.	NA
Fluoroelastomers (e.g., FKM/FFKM)				
Electronic/Dielectric Fluids				
Fluorochemicals	Used in electronic and dielectric fluids used in civil and military radars, high-power electronics, and electrical system/utility system components.	Provide dielectric and heat transfer properties.	Industry and DoD have repeatedly investigated alternatives in these applications. Known alternatives have high global warming potential (e.g., sulfur hexafluoride) or may pose health/environmental risks (e.g., the polychlorinated biphenyls).	NA
Advanced Oils, Greases, Fluids, and Lubricants				
PFAS	Used in many advanced turbine engine oils, greases, fluids, and lubricants common throughout the U.S. civil transportation, industrial, and space sectors. Analogous oils, lubricants, and fluids are used in military critical ground, sea, air, and space applications.	Wear- and heat-resistant properties. Perfluorinated greases exhibit excellent shelf lives due to their intrinsic inertness.	Previous generations of oils, fluids, and lubricants approached, but did not equal, the performance of PFAS additives that have become more prevalent in high performance oils, greases, fluids, and lubricants over the past 20 years.	NA



EPA PFAS STANDARDS

Chemical	Maximum contaminant level goal (MCLG)	Maximum contaminant level (MCL)
Perfluorooctanoic Acid (PFOA)	0	4.0 ppt
Perfluorooctane sulfonic acid (PFOS)	0	4.0 ppt
Perfluorononanoic acid (PFNA)	10 ppt	10 ppt
Perfluorohexane sulfonic acid (PFHxS)	10 ppt	10 ppt
HFPO-DA (GenX chemicals)	10 ppt	10 ppt
Mixture of two or more: PFNA, PFHxS, HFPO-DA and PFBS	Hazard index of 1	Hazard index of 1

Note:

HFPO-DA = Hexafluoropropylene oxide dimer acid

PFBS = Perfluorobutane sulfonate

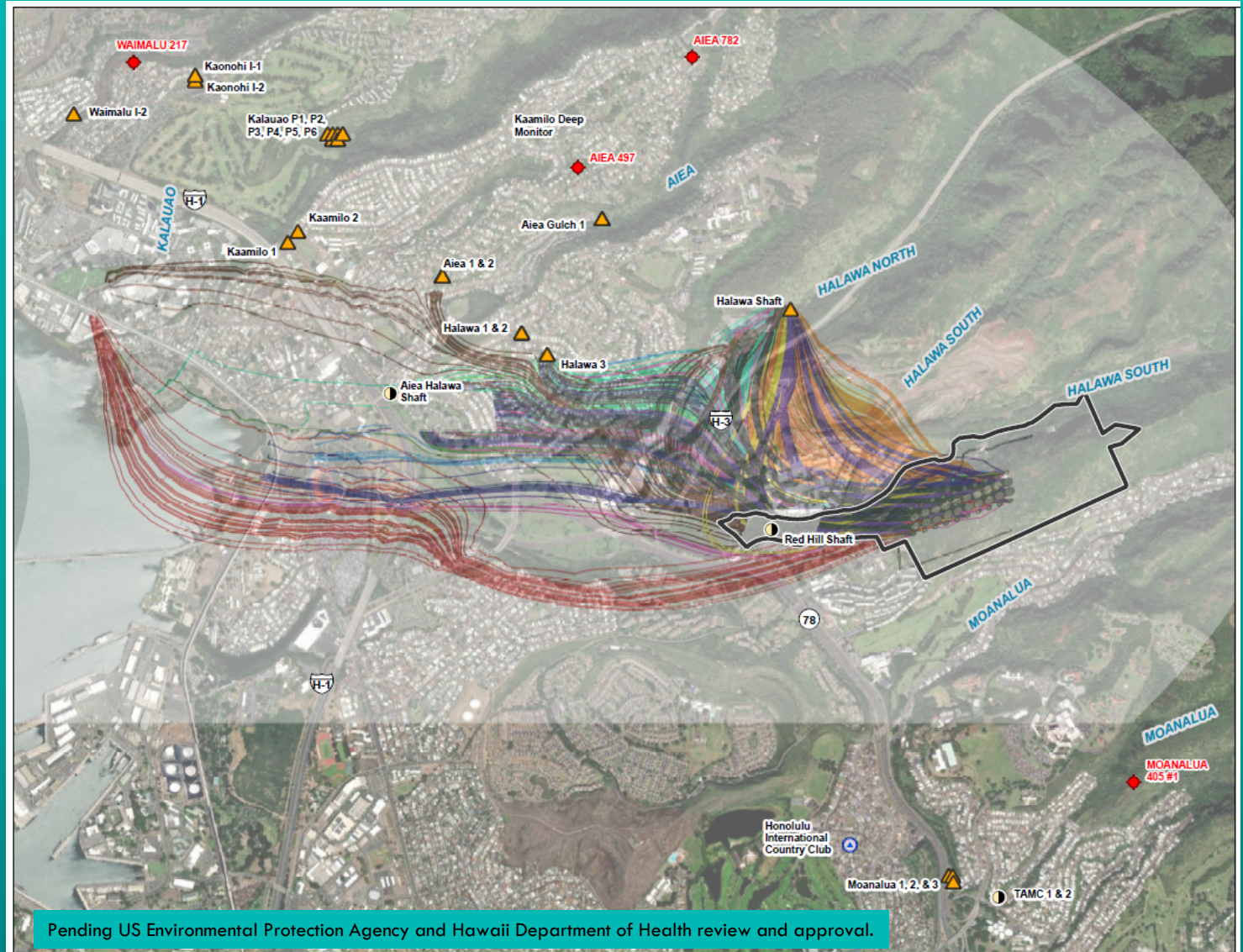


Navy's 2020 groundwater flow model report predicts possible directions of contamination from Red Hill facility.

Navy particle track show BWS Halawa Shaft and Aiea Wells.

Water level measurements decrease from east to west.

Still haven't seen Navy's 2024 GW model report. Waiting to receive a copy.



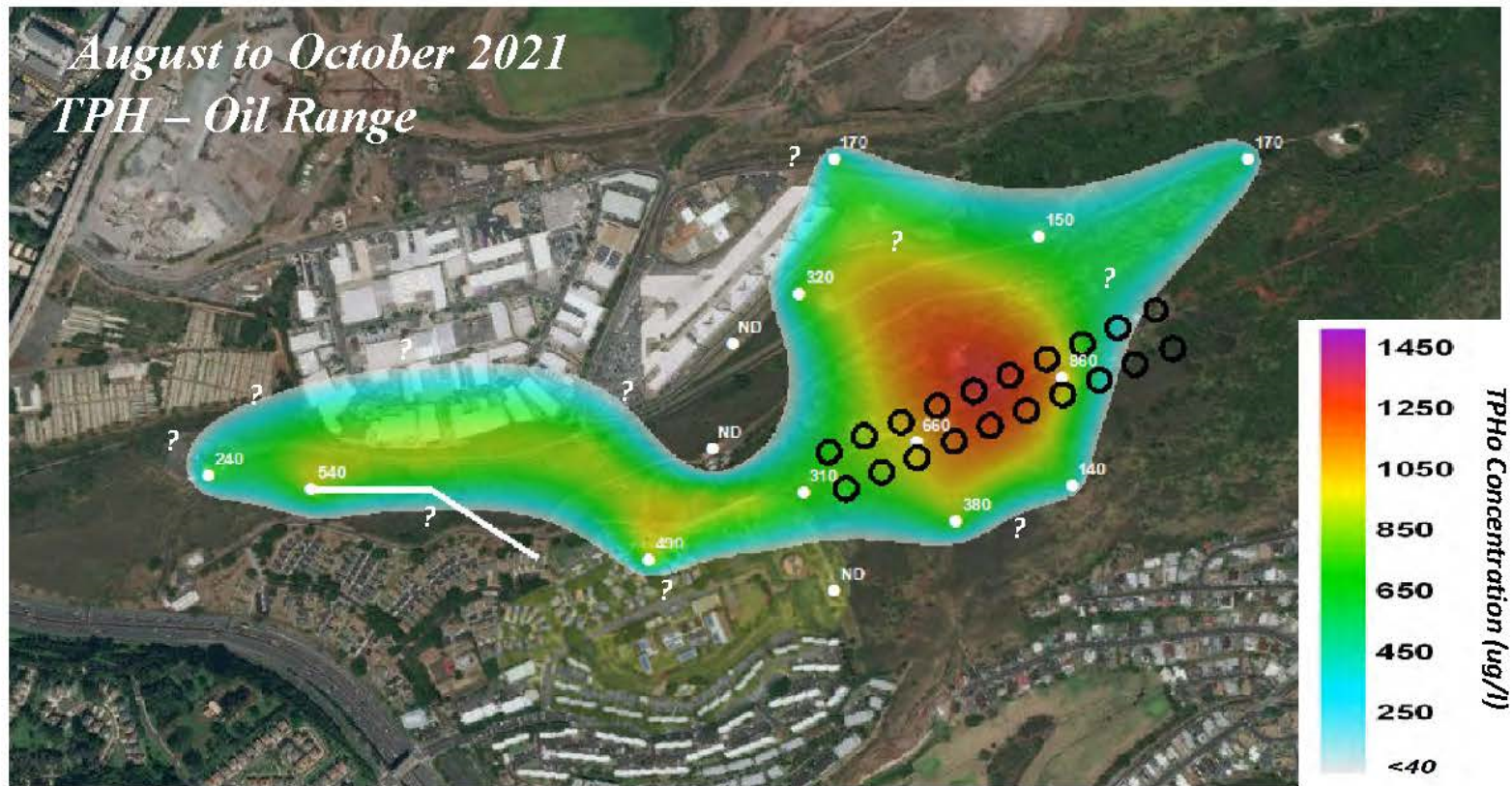
TPH-Oil Plume Distribution over Time

Prior & following May 2021 Release(s) EAL 500 $\mu\text{g/l}$



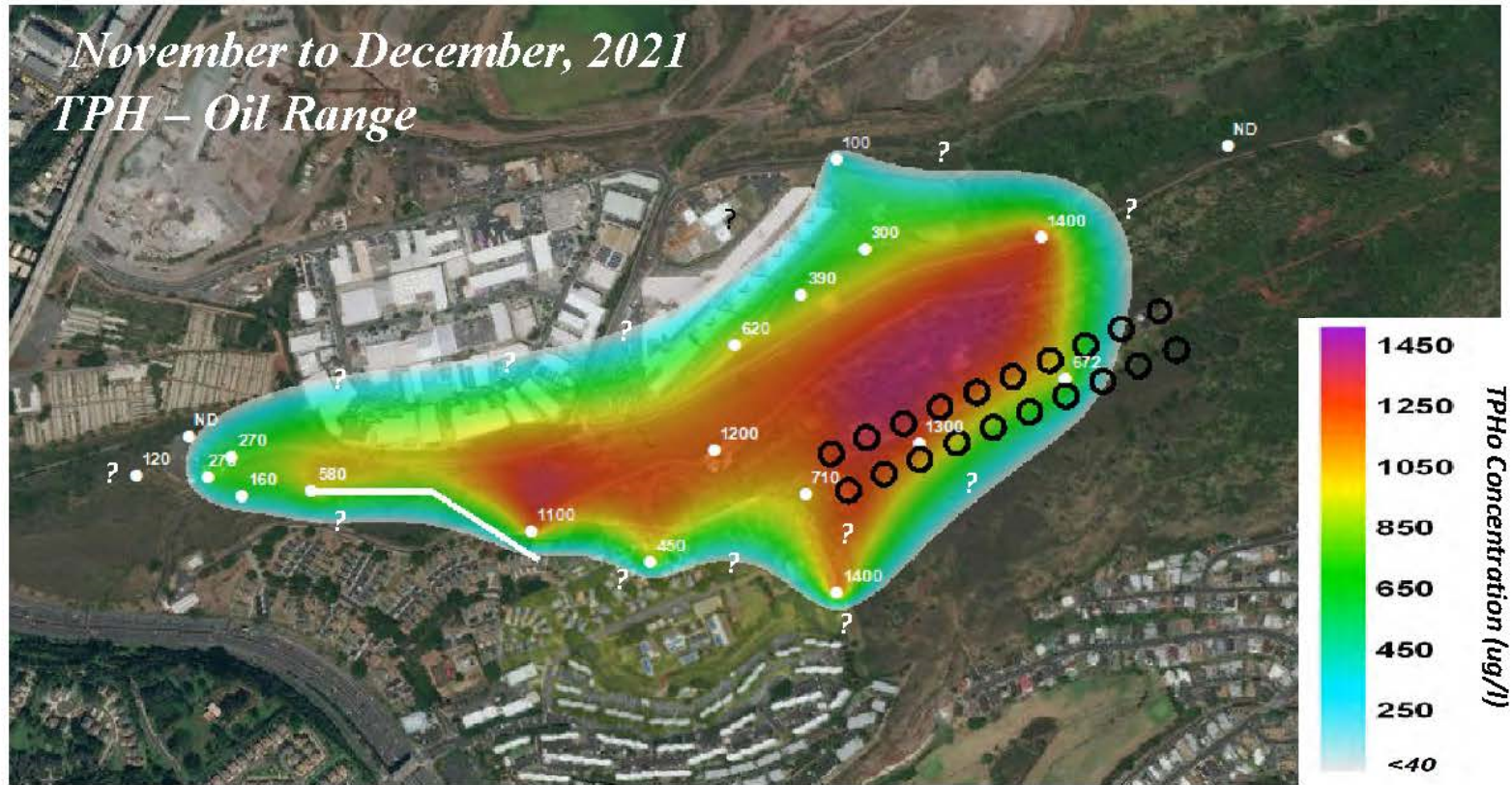
TPH-Oil Plume Distribution over Time

August to October 2021



TPH-Oil Plume Distribution over Time

November to December, 2021



TPH-Oil Plume Distribution over Time

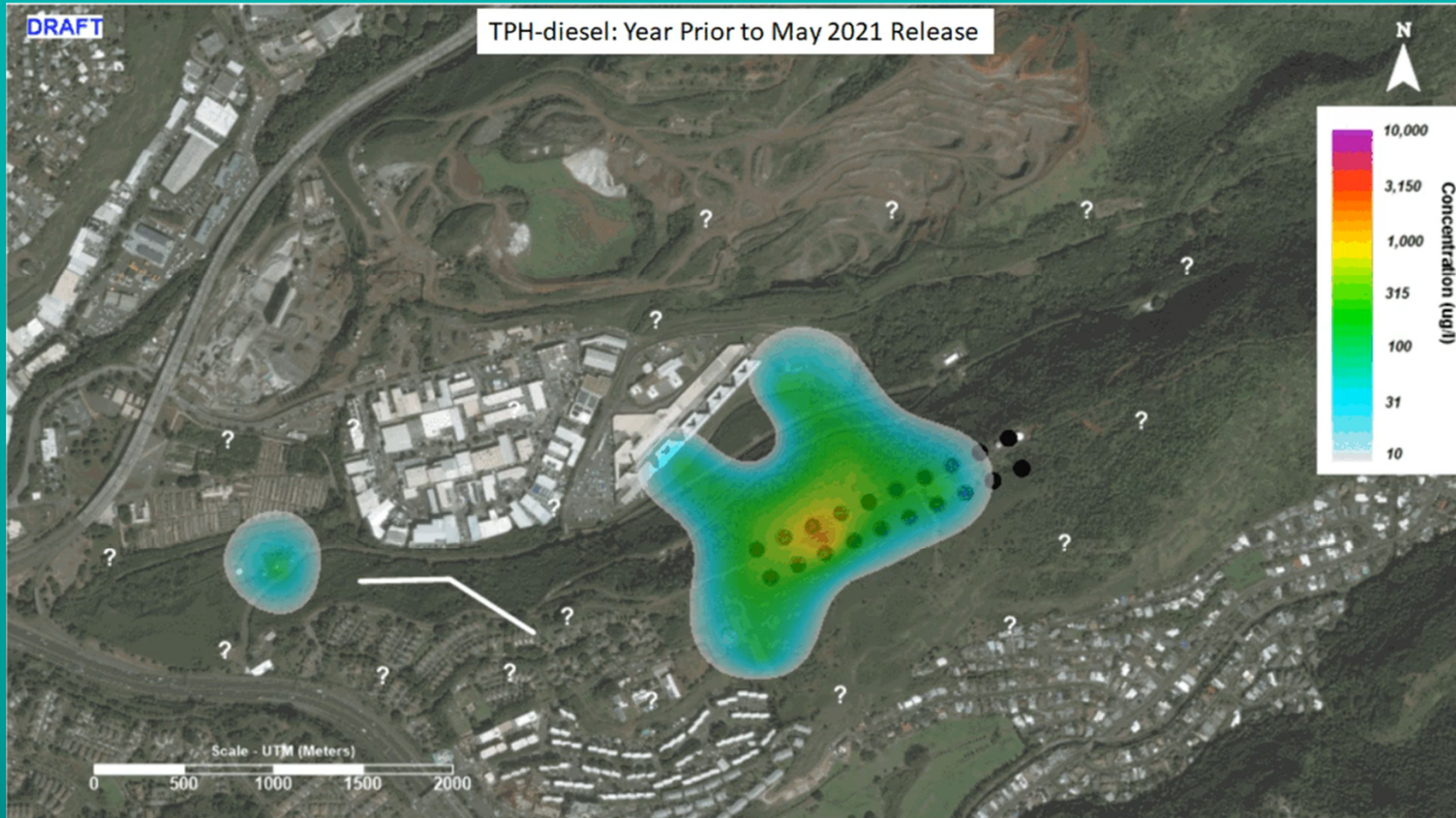
February to March 2022



TPH-Oil Plume Distribution over Time

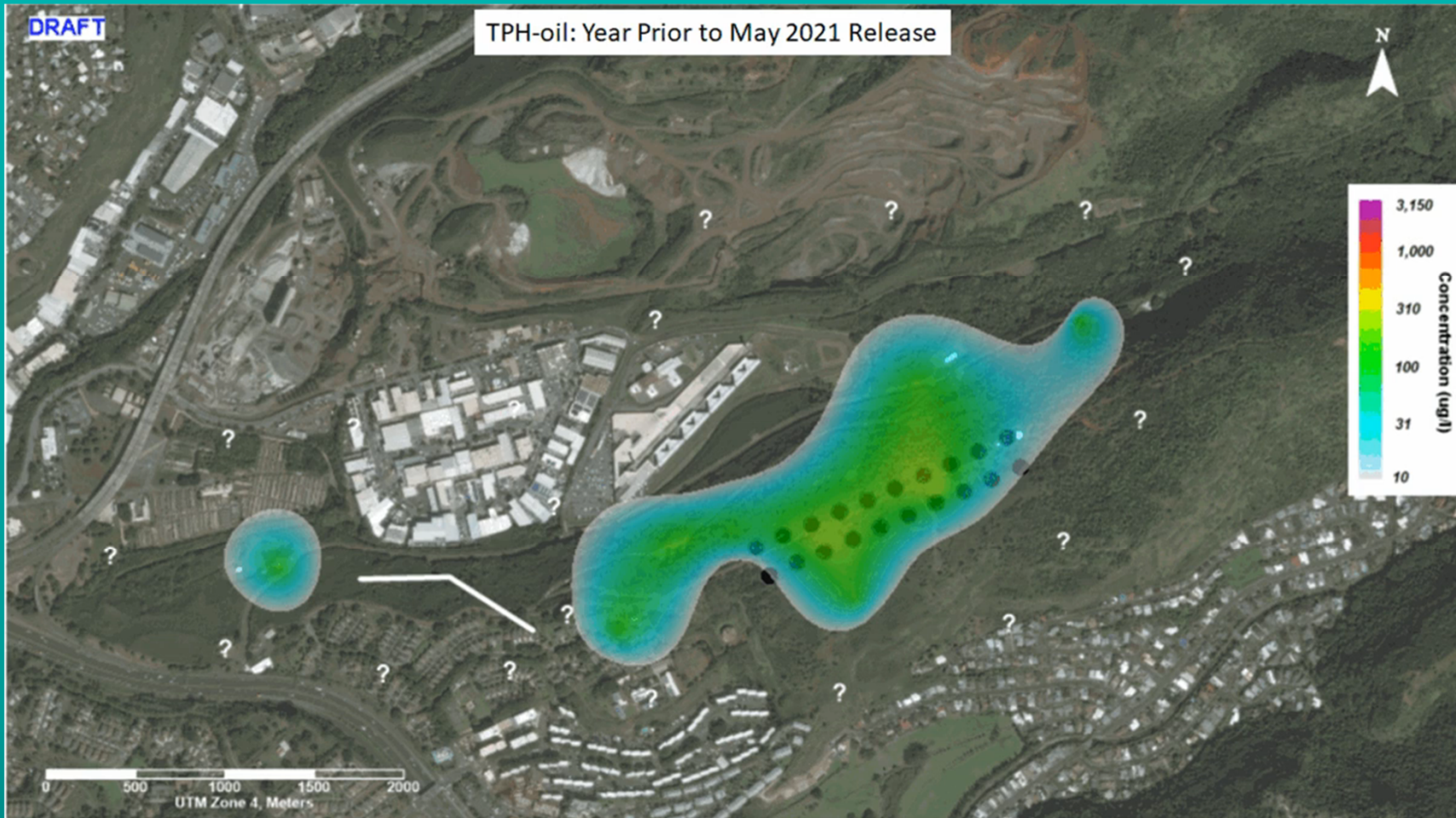
April 2022





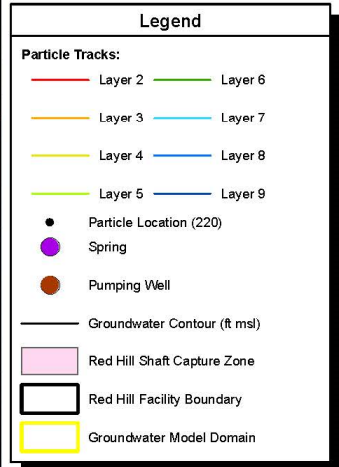
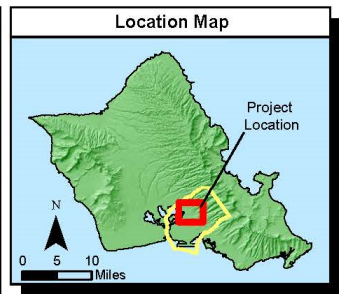
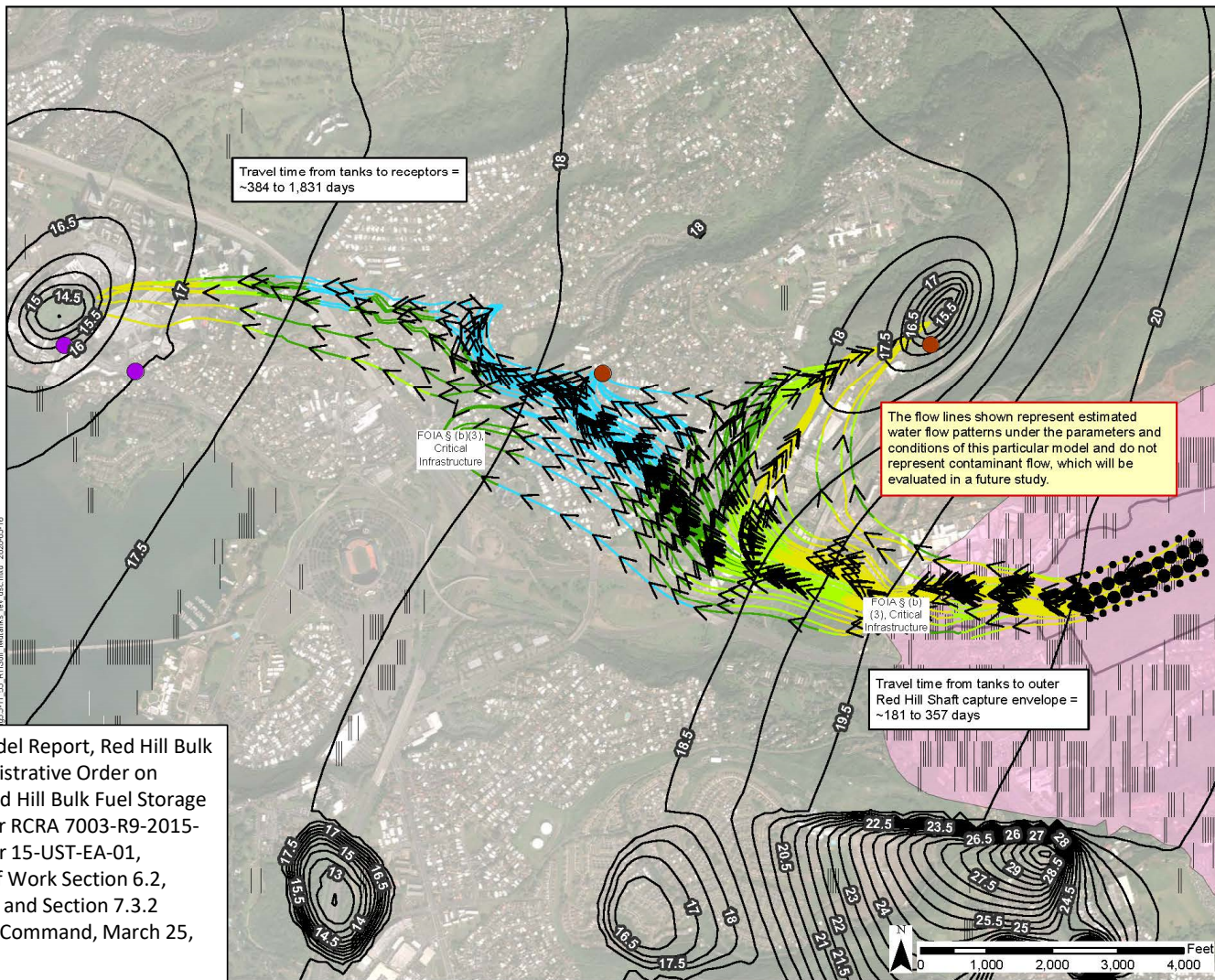
Reference: Hawaii Department of Health, https://health.hawaii.gov/ust/files/2024/02/TPHd_v8-D-FINAL.mp4





Reference: Hawaii Department of Health, https://health.hawaii.gov/ust/files/2024/02/TPHo_V5-D-Final.mp4

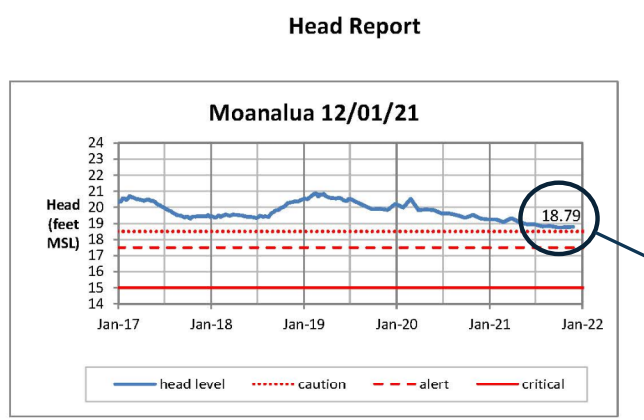
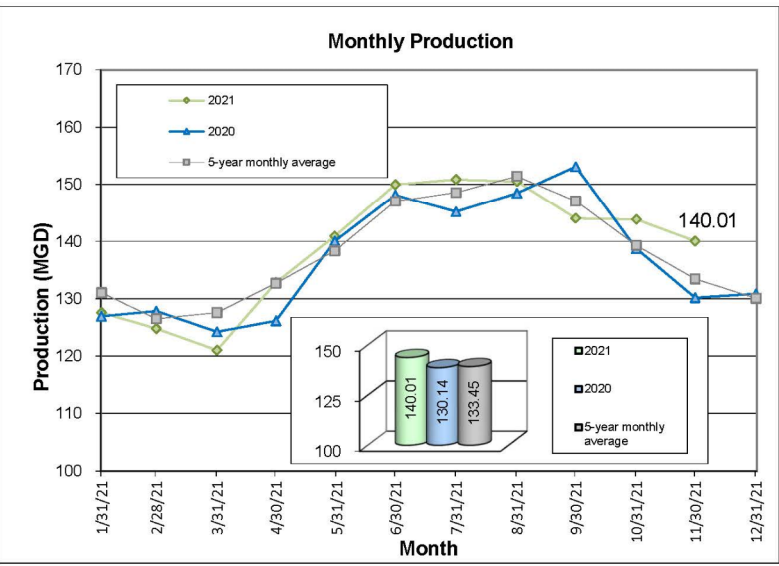
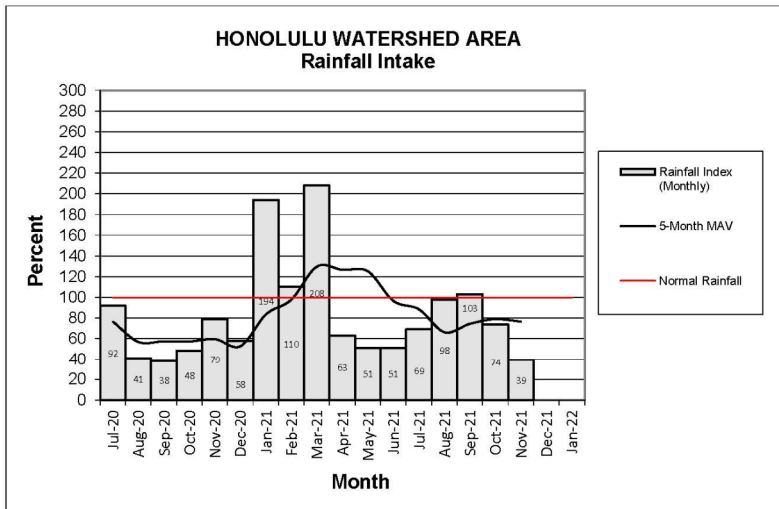




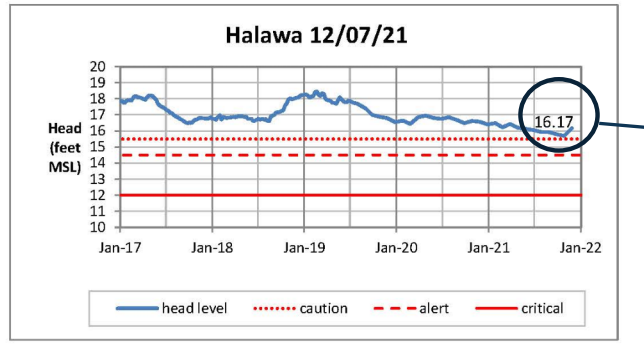
- Notes**
1. Map projection: NAD 1983 UTM Z4N feet.
 2. Base Map: DigitalGlobe, Inc. (DG) and NRCS. Publication Date: 2015
 3. Facility forward pathline arrows = 90 days.

Ref: Groundwater Flow Model Report, Red Hill Bulk Fuel Storage Facility, Administrative Order on Consent in the Matter of Red Hill Bulk Fuel Storage Facility, EPA Docket Number RCRA 7003-R9-2015-01 and DOH Docket Number 15-UST-EA-01, Attachment A, Statement of Work Section 6.2, Section 7.1.2, Section 7.2.2, and Section 7.3.2 Naval Facilities Engineering Command, March 25, 2020, Revision 00

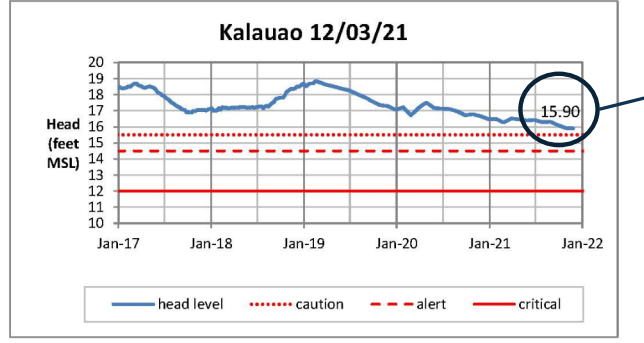
Figure 5.3-11
 Model #53: Heterogeneous Basalt – Migration from Tanks and Red Hill Shaft Capture Zone for Red Hill Shaft Not Pumping and Hālawā Shaft Pumping at 12 MGD Groundwater Flow Model Report Red Hill Bulk Fuel Storage Facility JBP HH, O’ahu, HI



18.79



16.17

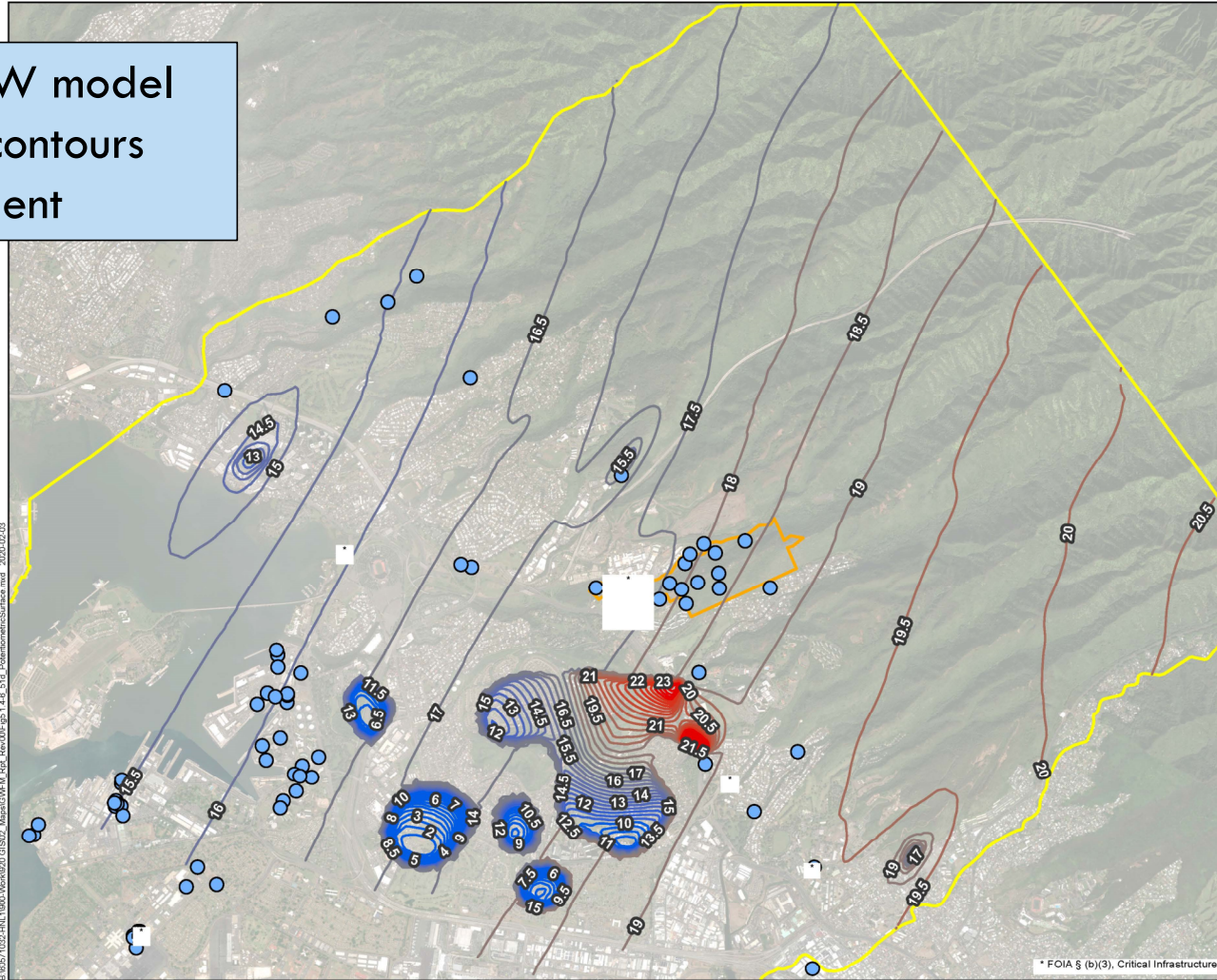


15.90



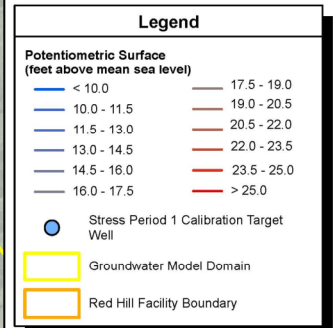
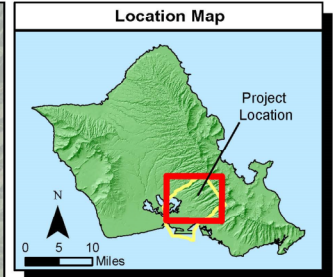
2020 Navy GW model report – GW contours and flow gradient

For Red Hill AOC Party-Use Only



B:\50571032-Hill\1000-McW\200 GIS\20 GIS\20 Maps\GWPM_EPA_Rev00\Figs\1_4_6_51d_PotentiometricSurface.mxd 2020-02-03

• FOIA § (b)(3), Critical Infrastructure



- ### Notes
1. Map projection: NAD 1983 UTM Z4N feet.
 2. Base Map: DigitalGlobe, Inc. (DG) and NRCS. Publication Date: 2015
 3. Contours are plotted for Model Layer 4.

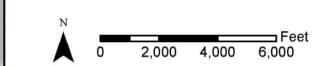


Figure 5.1.4-6
Model #51d: Homogeneous Basalt with 17.5:1 Anisotropy and Basalt Zonation – Potentiometric Surface for SP1 Groundwater Flow Model Report Red Hill Bulk Fuel Storage Facility JBPHH, O'ahu, HI

BWS notifies EPA and Hawaii DOH of PAH detections by letter dated July 8, 2024

BOARD OF WATER SUPPLY KA 'OIHANA WAI CITY AND COUNTY OF HONOLULU

630 SOUTH BERETANIA STREET • HONOLULU, HAWAII 96843
Phone: (808) 748-5000 • www.boardofwatersupply.com

RICK BLANGIARDI
MAYOR
MEIA

ERNEST Y. W. LAU, P.E.
MANAGER AND CHIEF ENGINEER
MANAKA A ME KAHU WILIKI

ERWIN KAWATA
DEPUTY MANAGER
HOPE MANAKA



July 8, 2024

Ms. Martha Guzman
Regional Administrator
US Environmental Protection Agency
Region IX
75 Hawthorne Street
San Francisco, CA 94105

And

Dr. Kenneth S. Fink, M.D.
Director
State of Hawai'i
Department of Health
P.O. Box 3378
Honolulu, Hawai'i 96801-3378

Dear Ms. Guzman and Dr. Fink:

Subject: Polynuclear Aromatic Hydrocarbons (PAHs)
Detected at Board of Water Supply 'Aiea Wells

The Board of Water Supply (BWS) would like to inform the United States Environmental Protection Agency (EPA) and Hawai'i Department of Health (DOH) (collectively referred to as the "Regulatory Agencies") that we have detected polycyclic aromatic hydrocarbons (PAHs) at the BWS 'Aiea Wells in water samples collected on 5/13/24 and 6/4/24 using EPA Methods 525.2 and 625. The findings are summarized in the tables below, which include sample results collected before and after these dates for comparison purposes.

All values in µg/L	Sample Date	EPA 525.2 EEA 380-95827-1		EPA 625 EEA 380-95821-1	
		Result	MRL*	Result	MRL*
1-Methylphenanthrene	5/13/24	<0.097	0.097	<0.005	0.005
Anthracene	5/13/24	<0.019	0.019	<0.005	0.005
Benz[a]anthracene	5/13/24	<0.048	0.048	0.0077	0.005
Benzo[a]pyrene	5/13/24	<0.019	0.019	<0.005	0.005
Benzo[b]fluoranthene	5/13/24	<0.019	0.019	0.0104	0.005
Benzo[e]pyrene	5/13/24	NA	NA	<0.005	0.005
Benzo[g,h,i]perylene	5/13/24	<0.048	0.048	<0.005	0.005

NĀ'ĀLEHU ANTHONY, Chair
JONATHAN KANESHIRO, Vice Chair
BRYAN P. ANDAYA
KAPUA SPROAT
EDWIN H. SNIFFEN, Ex-Officio
GENE C. ALBANO, P.E., Ex-Officio

0.005
0.005
0.005
0.005
0.005
0.005
0.005
0.005
0.005

25.2 and EPA 625.

PAH Results by
EPA 525.2
Not detected
Not detected

PA 625 also

PA 625

MRL*
0.005
0.005
0.005
0.005
0.005
0.005
0.005
0.005
0.005
0.005
0.005
0.005
0.005
0.005

'Aiea Wells

showed no PAH detections by EPA 525.2 and EPA 625.

PAH Results by A 625	EEA Lab Report	PAH Results by EPA 525.2
Not detected	380-97851-1	Not detected
Not detected	380-99971	Not detected

Results herein are enclosed for your review.

On September 8, 2021, soon after the Red Hill Shaft
The PAHs detections at BWS 'Aiea Wells are the first

plume moving through the aquifer in the area of the
2024. The 5/13/24 samples may have recorded the leading
the well in the 6/4/24 sample as indicated by the higher
is compared to the results of the 5/13/24 sample. The
for these dates may represent the plume moving past the
the crude oil, we believe the contamination may be
release into Red Hill Shaft and/or past fuel releases from
the pumping conditions and can appear without warning in
the results also indicate that contaminants can move in the
The sizing and design of any contaminant removal
potentially cost prohibitive.

If the BWS' decision to shut down Hālaewa Shaft. Hālaewa
November 2021 Joint Base Pearl Harbor Hickam (JBPHH) fuel
storage request to fully and expeditiously characterize and
the groundwater aquifer underlying the Red Hill facility.
The system to be exposed to fuel contamination appearing in
could be highly variable and unpredictable.

The Navy expedite characterizing the nature and extent of the
numerical groundwater flow model and the fate and
in the aquifer.

Erwin Kawata, Deputy Manager, at 808-748-5066.

Very truly yours,

ERNEST Y.W. LAU, P.E.
Manager and Chief Engineer

BWS receives reply letter from EPA and Hawaii DOH dated August 9, 2024



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



STATE OF HAWAII
DEPARTMENT OF HEALTH
KA 'ŌHANA OLAKINO
P. O. BOX 3378
HONOLULU, HI 96801-3378

August 9, 2024

Ernest Y.W. Lau, P.E.
Manager and Chief Engineer
Honolulu Board of Water Supply
630 South Beretania Street
Honolulu, Hawai'i 96843
[via email only: elau@hbws.org]

Dear Manager and Chief Engineer Lau,

**SUBJECT: Request for Information Regarding Polycyclic Aromatic Hydrocarbons
Detected at Board of Water Supply 'Aiea Wells**

Thank you for your July 8, 2024 letter¹ notifying us of polycyclic aromatic hydrocarbons (PAHs) detected in samples taken from Honolulu Board of Water Supply (BWS) 'Aiea Wells on May 13 and June 4, 2024. We appreciate BWS' efforts to uphold our shared commitment to protecting public health and the environment and want to work together to accurately identify the root cause of these detections. We understand BWS believes these detections may be related to the November 2021 fuel spill from the Red Hill Facility. To better understand and further investigate these detections, we are interested in receiving additional background and data from the BWS about these detections. Both DOH and EPA would like to receive the following information as soon as possible:

1. Specific locations in BWS 'Aiea Wells where the samples were taken.
2. Sample collection methodology used.
3. Sample type (pre-/post-treatment).

¹ https://www.boardofwatersupply.com/bws/media/redhill/bws%20letters/BWS-Letter-to-EPA-DOH-re-PAH-at-Aiea-Wells-Draft2-Rev2_Final_FL-with-enclosures.pdf

attenuation of fuel
time persistent

during and after

formation that

July 8, 2024 letter,
since the November
been relatively static
(detected)
e wells. Therefore, it
WS 'Aiea Wells.

y sources, although
ng?
mile northeast of the
ms, and reservoirs
sugar mills in the
wells area in 1930.

S detected PAHs in

a April and May
ed rainfall can lead
were detected in
results could
sustained rains.

ya Wells are
t plume from the
quivalent or greater
eater spike in PAH

? We reviewed a
pring well
ndwater

tection Plan,
theast. For
to flow in the

Wells are
The low
e compounds
m a different
d help to
were from the

veral concerns

mple, some
lysis listed – yet
methods (or no
Therefore, the

lected that could

detections, the
We do not know
ng trip blank.

ward, we

limit) for Method

PAH detections.

y characterize
y's site
essment, Red
ne BWS for

regulators. As
he models
s, who have little
forward to
odeling and field
the Navy on the

EPA Red Hill
Ann Lee, DOH
226.

mental Health
nt of Health



BWS responds by letter dated September 23, 2024 to EPA and Hawaii DOH letter of August 9, 2024 regarding PAH detections at Aiea Wells

**BOARD OF WATER SUPPLY
KA 'OIHANA WAI
CITY AND COUNTY OF HONOLULU**

630 SOUTH BERETANIA STREET • HONOLULU, HAWAII 96843
Phone: (808) 748-5000 • boardofwatersupply.com

RICK BLANGIARDI
MAYOR
MEIA

ERNEST Y. W. LAU, P.E.
MANAGER AND CHIEF ENGINEER
MANAKIA A ME KAHU WILIKI

ERWIN KAWATA
DEPUTY MANAGER
HOPE MANAKIA



September 23, 2024

NĀ'ĀLEHU ANTHONY, Chair
JONATHAN KANESHIRO, Vice Chair
BRYAN P. ANDAYA
KAPUA SIFROAT
LANCE WILHELM
EDWIN H. SNIFFEN, Ex-Officio
GENE C. ALBANO, P.E., Ex-Officio

Martha Guzman
Regional Administrator
U.S. Environmental Protection Agency, Region 9
75 Hawthorne Street
San Francisco, California 94105

and

Kenneth S. Fink, MD, MGA, MPH
Director of Health
Hawai'i State Department of Health
1250 Punchbowl Street
Honolulu, Hawai'i 96813

Dear Ms. Guzman and Dr. Fink:

Subject: Honolulu Board of Water Supply (BWS) Response to U.S. Environmental Protection Agency (EPA) and Hawai'i State Department of Health (DOH) Request for Information (RFI) dated August 9, 2024, Regarding Polycyclic Aromatic Hydrocarbons (PAHs) at BWS 'Aiea Wells

BWS submits the enclosed materials and responses to the subject letter. For clarity, the RFI is reprinted in bold font, followed by our reply.

DOH RFI No. 1 – Specific locations in BWS 'Aiea Wells where samples were taken?

BWS Response No. 1 – The 'Aiea Wells samples were collected from 'Aiea Wells Pump No. 2. Please see Attachment 1 entitled "'Aiea Wells Pump #2."

DOH RFI No. 2 – Sample Collection Methodologies Used?

BWS Response No. 2 – BWS followed sample collection methodologies outlined in the EPA Methods used (EPA Methods 525.2 and 625.1). Please see Attachment 2 entitled "Collection Methodologies for EPA Methods 525.2 and 625.1."

BWS notifies EPA and Hawaii DOH of PFAS detections at Halawa Shaft by letter dated September 30, 2024

BOARD OF WATER SUPPLY
KA 'OIHANA WAI
CITY AND COUNTY OF HONOLULU

630 SOUTH BERETANIA STREET • HONOLULU, HAWAII 96843
Phone: (808) 748-5000 • boardofwatersupply.com



September 30, 2024

RICK BLANGIARDI
MAYOR
MEJA

ERNEST Y. W. LAU, P.E.
MANAGER AND CHIEF ENGINEER
MANAKIA A ME KAHU WILIKI

ERWIN KAWATA
DEPUTY MANAGER
HOPE MANAKIA

NĀ ĀLEHU ANTHONY, Chair
JONATHAN KANESHIRO, Vice Chair
BRYAN F. ANDAYA
KAPUA SPROAT
LANCE WILHELM
EDWIN H. SNIFFEN, Ex-Officio
GENE C. ALBANO, P.E., Ex-Officio

Martha Guzman
Regional Administrator
U.S. Environmental Protection Agency, Region 9
75 Hawthorne Street
San Francisco, California 94105

and

Kenneth S. Fink, MD, MGA, MPH
Director of Health
Hawaii State Department of Health
1250 Punchbowl Street
Honolulu, Hawaii 96813

Dear Ms. Guzman and Dr. Fink:

Subject: Per- and Polyfluoroalkyl Substances (PFAS) Detected at Board of Water Supply Hälawa Shaft

Board of Water Supply (BWS) would like to inform the U.S. Environmental Protection Agency (EPA) and Hawaii State Department of Health (DOH) (collectively referred to as the "Regulatory Agencies") that we have detected per- and polyfluoroalkyl substances (PFAS) at the BWS Hälawa Shaft using EPA Methods 533 and 537.1. The findings are summarized in the enclosed table.

BWS stopped pumping Hälawa Shaft on December 2, 2021, soon after the Red Hill Shaft contamination incident on November 20, 2021. In November 2022, the existing cable car used to transport staff and equipment up and down Hälawa Shaft's 300-foot incline suddenly became inoperable. Several attempts to restore cable car operations were unsuccessful. In the meantime, staff manually traversed the 300-foot incline to gather the samples collected on December 5, 2022. This effort however, proved unsafe to repeat for future sample collections. For this reason, no repeat samples could be collected to confirm the December 2022 detections. This condition remained until August 2024, when a temporary winch system was installed and a flat landing place was constructed to enable staff to safely resume sample collection. The test results for the samples collected in August 2024 and the subsequent samples collected thereafter appear comparable to the

S. Fink

, 2022. No PFAS detections were observed in 2020 and 2021.

a Shaft test results of samples collected from 2024. During this period, the results show comparable PFAS (PFHxS) and perfluorooctanesulfonic acid

as reported by the Navy in their Per- and Baseline Groundwater Wells Investigation Report (BGLW). The Navy results show PFHxA and PFOS also at the Red Hill facility property (RHP01) and one location remaining monitoring wells show a variety of sparse

the necessity of BWS' decision to shut down Hälawa Shaft at Joint Base Pearl Harbor-Hickam fuel storage tanks at Hälawa Shaft may be related to historic releases from the Navy's Red Hill Shaft, and/or the confirmed PFAS (AFFF) release at the Red Hill Fuel Facility on Oahu. We believe these results speak to our repeated requests for the Navy to act on the groundwater aquifer contamination expeditiously.

We require the Navy to collect and test weekly samples from the existing drinking water sources for PFAS to expand the monitoring. We also require the Navy to expedite the investigation of all contamination in the aquifer, install additional monitoring wells to the west and northwest of the Red Hill Bulk Fuel Storage tanks, update the water flow model (note that BWS has not been updated on the model since 2020) and fate and transport modeling for both the aquifer and the vadose (unsaturated zone) and above the aquifer's water table (about 80 to 100 feet below the surface).

Contact Erwin Kawata, Deputy Manager, at (808) 748-

Very truly yours,

Ernest Y.W. Lau, P.E.
Manager and Chief Engineer

WHAT DOES THE PAH AND PFAS RESULTS MEAN?

- Reaffirms BWS concerns with past fuel releases from Red Hill and impact to aquifer and environment.
- Reaffirms decision to shut down three BWS wells (Halawa Shaft, Aiea Wells and Halawa Wells) soon after JBPHH water crisis.
- The three BWS wells to remain shut down indefinitely – Restart is uncertain.



WHAT DOES THE PAH AND PFAS RESULT MEAN? – CONT.

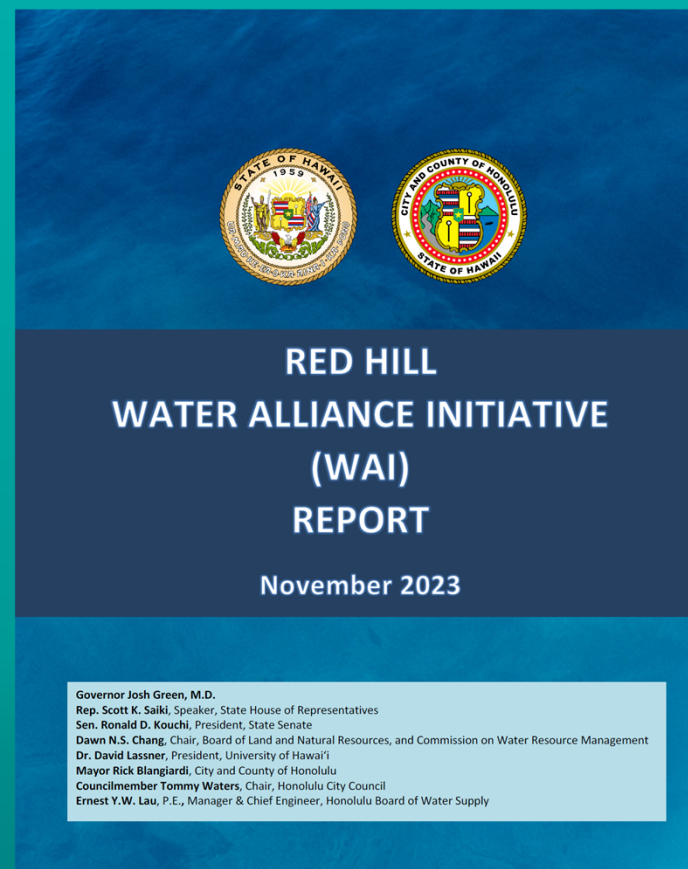
- Need better understanding of groundwater flow direction in the aquifer and how past fuel releases can be cleaned up.
- Further study is warranted to assess the potential long-term impact to the aquifer.
- Every Navy monitoring well and water source needs to be tested weekly for all PAHs (using EPA method 525.2 and 625) and PFAS (using EPA method 533 and 537.1).





WHAT DOES THE PAH AND PFAS RESULTS MEAN? – CONT.

- Reaffirms the Red Hill WAI Alliance call for remediation and monitoring in the region.



RED HILL WAI REPORT

- “To provide sufficient data points to assess aquifer quality, inform identified need for remediation, and guide the location of future production wells, the Red Hill WAI believes there is a need to establish a “sentinel” monitoring grid in addition to the existing monitoring wells identified by the Navy between the Red Hill facility and the Halawa Shaft, Halawa wells, and ‘Aiea wells. A comprehensive grid may consist of up to **122 monitoring wells at 61 sites**, but terrain, access, and contamination issues will likely change the array or numbers of wells within the array.”



QUESTIONS / DISCUSSION





BWS UPDATES

Ernest Lau
Manager and Chief Engineer
October 17, 2024
boardofwatersupply.com

UPCOMING STAKEHOLDER ADVISORY GROUP MEETINGS

2025

- Thursday, January 16, 2025
- Thursday, April 17, 2025
- Thursday, July 17, 2025
- Thursday, October 16, 2025





Mahalo!

Providing safe, dependable, and affordable drinking water, now and into the future.