



POLYCYCLIC AROMATIC  
HYDROCARBONS  
DETECTED IN BOARD OF  
WATER SUPPLY  
AIEA WELLS

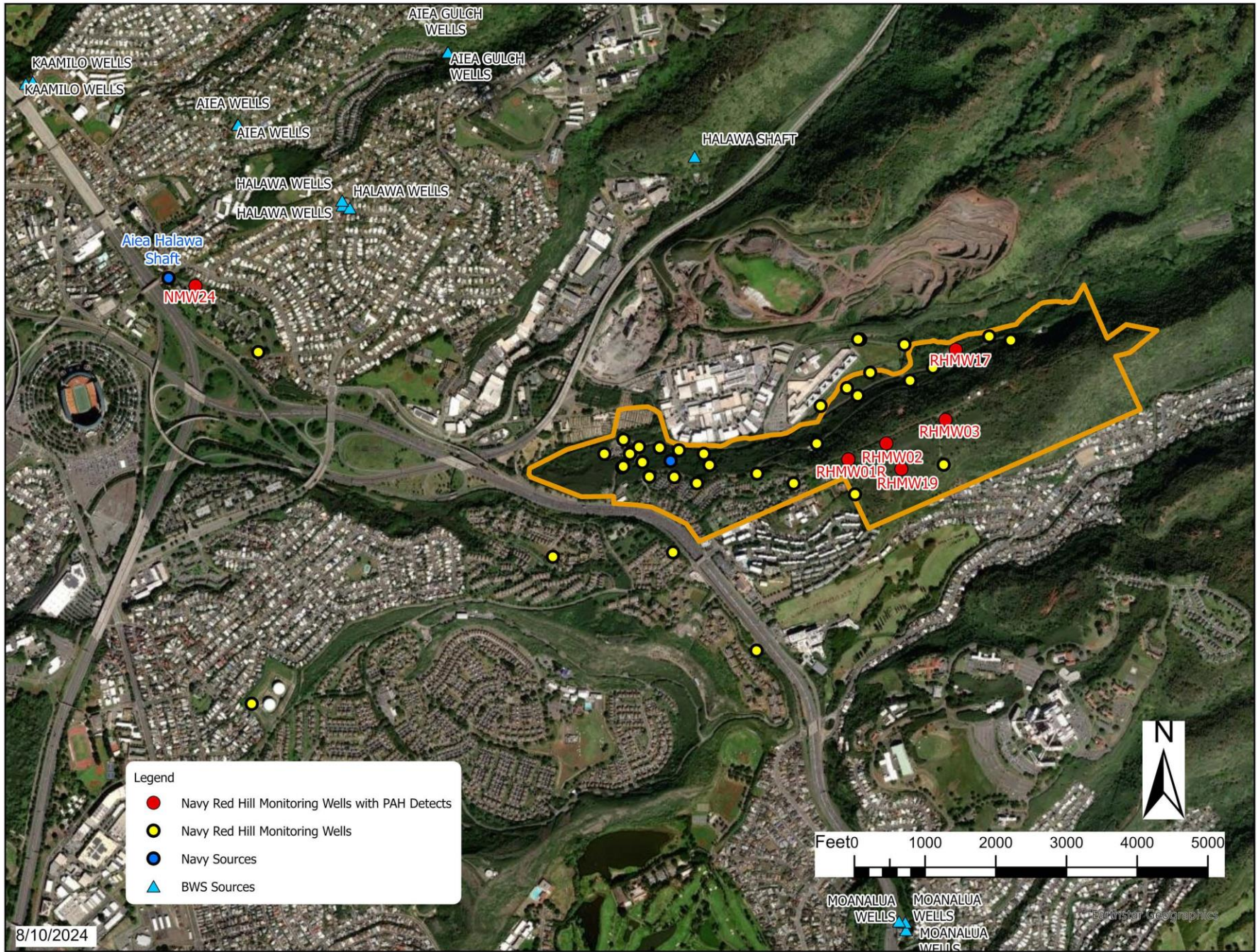
August 2024

[boardofwatersupply.com](http://boardofwatersupply.com)

# POLYCYCLIC AROMATIC HYDROCARBONS (PAH) DETECTED IN BWS AIEA WELLS

- 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 and are persistent in groundwater.
- The PAH detections at BWS Aiea Wells (inactive wells) are the first time that BWS has observed PAHs in this well.





Navy Monitoring Well (NMW24)		BWS Aiea Wells			8/14/2024	
Sample date: 6/26/2024		Sample Date: 6/4/2024				
Analyte	Results	EPA Method 525.2 Result	EPA Method 625 Result	Navy SL <sup>1</sup>	EPA MCL <sup>2</sup>	Hawaii DOH EAL <sup>3</sup>
1-Methylnaphthalene	ND	<0.098	0.0113	10	none	10
2-Methylnaphthalene	ND	NA	NA	10	none	10
Anthracene	ND	<0.020	0.00852	0.18	none	1,600
Benzo(a)anthracene	0.099	0.2	0.27	0.029	none	0.052
Benzo(a)pyrene	0.092	0.13	0.0999	0.2	0.2	0.2
Benzo(b)fluoranthene	0.1	0.19	0.213	0.22	none	0.058
Benzo(e)pyrene	ND	NA	0.0857	NA	none	None
Benzo(g,h,i) perylene	0.065	<0.049	0.0489	0.13	none	65
Benzo(k)fluoranthene	0.099	0.077	0.189	0.4	none	0.36
Chrysene	0.09	0.11	0.199	1	none	0.24
Dibenz(a,h)anthracene	0.06	<0.049	0.0269	0.22	none	0.0048
Dibenzo(a,l)pyrene	ND	NA	0.0172	NA	none	None
Fluoranthene	0.23	0.33	0.324	13	none	110
Indeno(1,3,4-c,d)pyrene	0.08	<0.049	0.0786	0.095	none	0.018
Naphthalene	ND	NA	NA	17	none	17
Perylene	ND	NA	0.0361	NA	none	None
Phenanthrene	ND	<0.039	0.0231	214.076	none	250
Pyrene	ND	0.31	0.356	67.5	none	110

Note: all values in ppb or ug/L

1: Screening Level

2: Maximum Contaminant Level

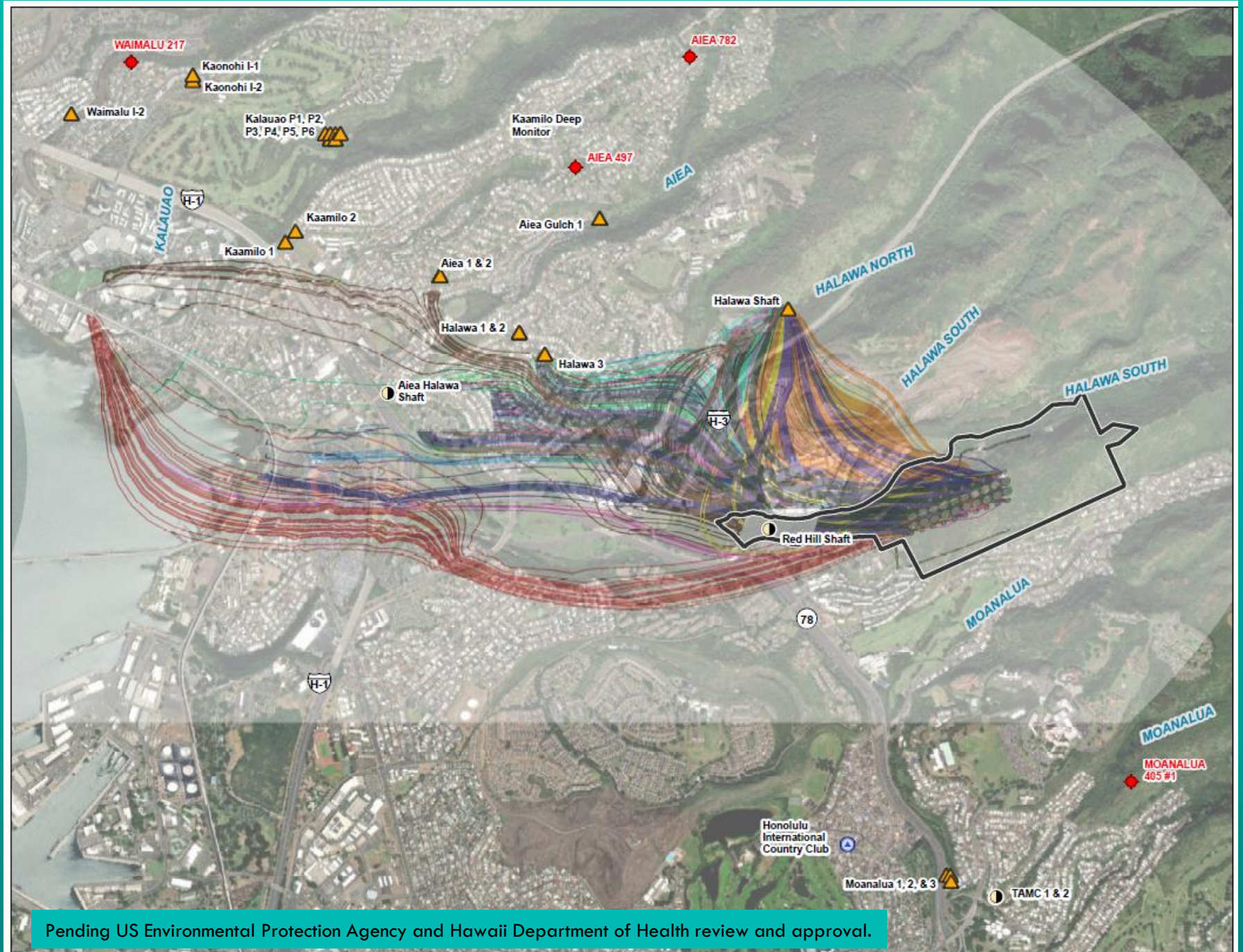
3: Department of Health Environmental Action Level



Navy groundwater model predicts possible directions of contamination from Red Hill facility.

Navy particle track show BWS Aiea Wells to be potential receptor.

BWS stopped pumping Aiea Wells on December 8, 2021, soon after the Navy Red Hill Shaft contamination incident on November 20, 2021.



**BOARD OF WATER SUPPLY  
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July 8, 2024

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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
Benzo[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

0.005
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 80-98637-2
MRL*
0.005
0.005
0.005
0.005
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awa Wells.

owed no PAH detections by EPA 525.2 and EPA 625.		
PAH Results by EPA 625	EEA Lab Report	PAH Results by EPA 525.2
Not detected	380-97851-1	Not detected
Report pending	380-99971	Not detected

ed herein are enclosed for your review.  
ember 8, 2021, soon after the Red Hill Shaft  
The PAHs detections at BWS 'Aiea Wells are the first

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

f the BWS' decision to shut down Hālawā Shaft, Hālawā  
mber 2021 Joint Base Pearl Harbor Hickam (JBPHH) fuel  
peated request to fully and expeditiously characterize and  
the groundwater aquifer underlying the Red Hill facility.  
er system to be exposed to fuel contamination appearing in  
d be highly variable and unpredictable.

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

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

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

## WHAT DOES THE PAH 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 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.





## WHAT DOES THE PAH RESULTS MEAN? – CONT.

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



# QUESTIONS / DISCUSSION

