



POLYCYCLIC AROMATIC HYDROCARBONS DETECTED IN BOARD OF WATER SUPPLY AIEA WELLS

August 2024 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 | 3. | Sample Date: 6/4/2024 | 0) 14. | | | ¥. |
| Analyte | Results | EPA Method 525.2 Result | EPA Method 625 Result | Navy SL ¹ | EPA MCL ² | Hawaii DOH EAL ³ |
| 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

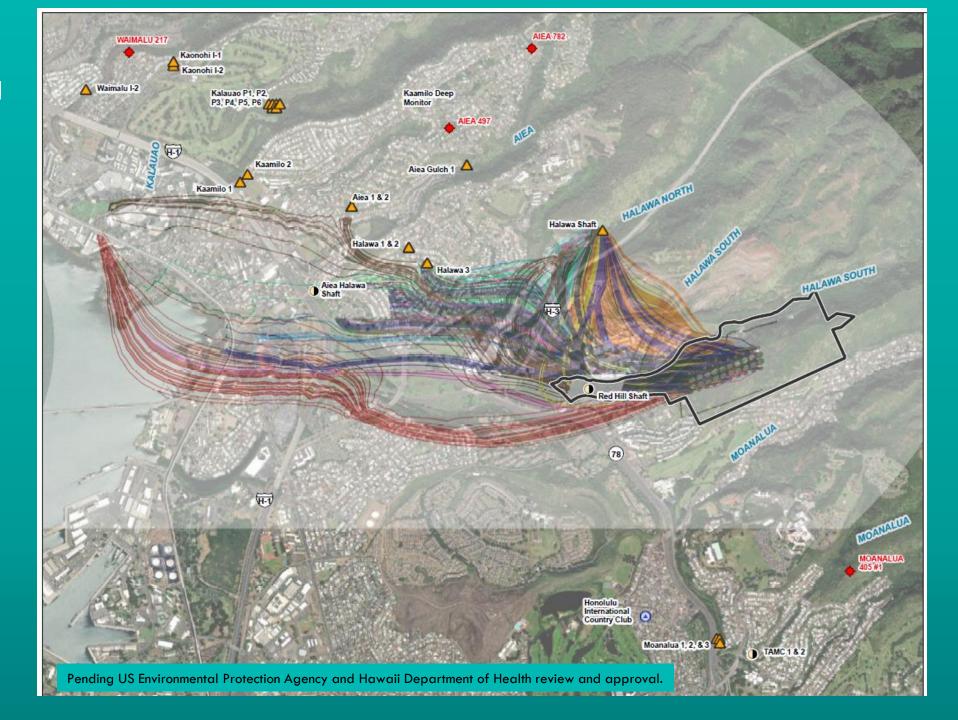
3: Department of Health Environmental Action Level



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.



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

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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.

| II values in µg/L | | EPA 525.2 EEA 380-95827-1 | | EPA 625 EEA 380-958 | |
|----------------------|-------------|------------------------------|-------|------------------------|-------|
| Analyte | Sample Date | 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 |

25.2 and EPA 625.

| CONTRACTOR | |
|---|---|
| PAH Results by PA 525.2 | Τ |
| EPA 525.2 | |
| Not detected Not detected | _ |
| Not detected | Ξ |

PA 625 also

| | MRL* |
|---|-------|
| | 0.005 |
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awa Wells.

owed no PAH detections by EPA 525.2 and EPA 625.

| H Results by A 625 | EEA Lab Report | PAH Results by EPA 525.2 |
|-----------------------|----------------|-----------------------------|
| t detected | 380-97851-1 | Not detected |
| port pending | 380-99971 | Not detected |

ed herein are enclosed for your review.

cember 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 124. 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 ls in crude oil, we believe the contamination may be elease 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 Hālawa Shaft, Hālawa mber 2021 Joint Base Pearl Harbor Hickam (JBPHH) fuel beated 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

