



Hunters Point Naval Shipyard Environmental Cleanup Program Update Plutonium-239 Detection

City and County of San Francisco
Board of Supervisors Hearing

December 15, 2025

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Hunters Point Naval Shipyard (HPNS) Base Closure Manager
Navy Base Realignment and Closure (BRAC)

Multiple Layers of Health Protectiveness

Strong Planning & Controls

- Approved work plan with conservative Action Levels; multiple dust control measures.
- Pre-screen gamma survey of asphalt before grinding; no radiation detected.
- Work involved only modern (21st-century) asphalt; no soil disturbance.

Thorough Sampling & Screening

- Air filter sample collected for weekly monitoring.
- Sample screened before filter shipped to laboratory; no health concerns identified.
- Real-time PM10 stayed results below the protective health concentration.

Protective Action Level Framework

- Action Level is a conservative benchmark for evaluating dust control measures.
- Exceeding the Action Level does **not** indicate a health risk.
- The exceedance triggered a review of dust control protocols by the contractor.

Science-Based Dose Evaluation

- Estimated dose (0.4 mrem) is well below established health-protective standards.
- Low estimated dose does not represent a risk to workers or the community.
- Reanalysis of sample did not result in a Pu-239 exceedance.

Independent Verification

- Re-analysis of the same filter sample showed no Pu-239 Action Level exceedance.
- All prior and subsequent samples were within project limits.
- Independent third-party audit verified laboratory procedures.

DISCUSSION TOPICS



1

Explain the HPNS Plutonium-239 (Pu-239) Action Level.

2

Share other considerations in the evaluation of the outlier.

3

Explain the Navy's evaluation and reporting processes.

4

Summarize the information presented.

5

Discuss how we are sharing the data and ways we can improve our process.

1

The Pu-239 Action Level

Plutonium Background

What is Plutonium?

A radioactive, silvery-gray, metallic element

Primarily man-made; can be used in nuclear weapons and nuclear power plants

Tiny, natural traces of plutonium exist, however almost all of it is produced in nuclear reactors or released from weapons

Why is Plutonium found in the environment

Nuclear fallout from atmospheric nuclear weapons testing, which dispersed plutonium globally

Estimated 6 tons released globally with higher concentrations in the Northern Hemisphere

Why is Plutonium a Contaminant of Concern at HPNS?

Historical Navy ship decontamination efforts during historical US nuclear weapons testing (“Operation Crossroads”)

Navy research activities

What is the purpose of the HPNS Pu-239 Action Level?

HPNS ACTION LEVEL = a threshold for contractor evaluation of dust control measures at a site

- The Action Level is a conservative air concentration that is based on the assumption that someone **breathes the air for an entire year at that location.**
- The 10 mrem Action Level is set at **20% of the regulatory health-based limit (50 mrem per year)** used to protect the public.
- **Air filters are pre-screened** for health-protectiveness at the site before being sent off for laboratory analysis.
- A result above the Action Level simply means **contractors need to evaluate their dust control measures and enhance measures as-needed.**
- This result led to the **contractor's review of dust control measures.**
- While this result was above the project's low threshold, it is **not considered a health concern.**



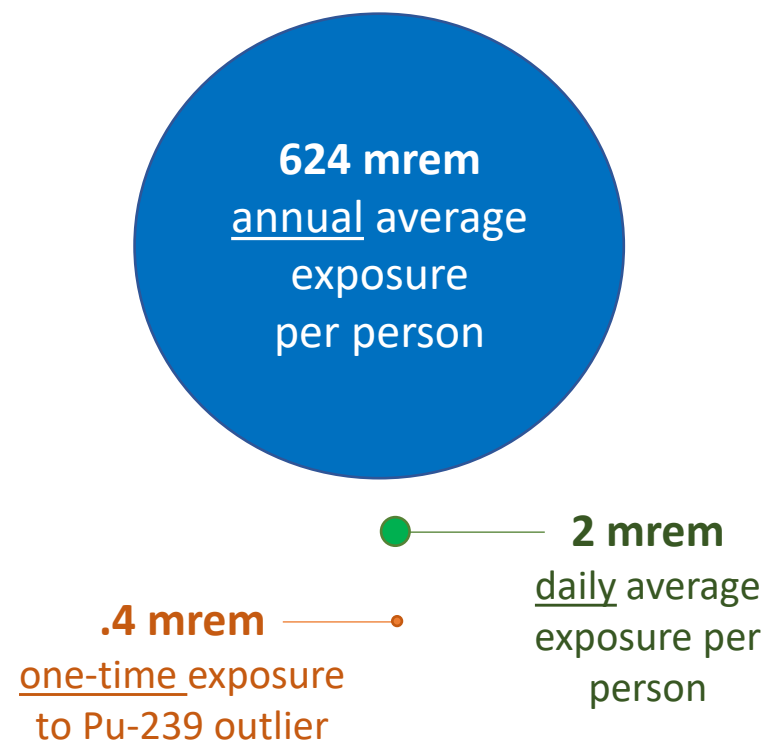
Why is this an outlier?

- The air filter was **pre-screened and passed for health protectiveness** before being sent off to the laboratory.
- The estimated dose represents a **one-time event**.
- It has a maximum projected dose = 0.4 mrem, which is **0.03% of the annual average dose**
- This result was **completely different than any other laboratory analysis result** analyzed or reported.



The total possible mass of Pu-239 was 0.00000000004 grams, about the weight of a single human red blood cell.

One dose of 0.4 mrem is extremely small, compared to the average daily exposure of about 2 mrem per person.



NOTE: figure not to scale

2

Other Considerations in Outlier Evaluation

Overview of Additional Information Considered in Evaluation

Health Protection Built Into The Process



- Work plans define dust control measures, on-site sampling, and laboratory analysis.
- Regulatory agencies review work plans and fieldwork.
- Real-time (PM10) dust monitoring used to protect workers and the community.

Isolated Result; No Identified Health Risk



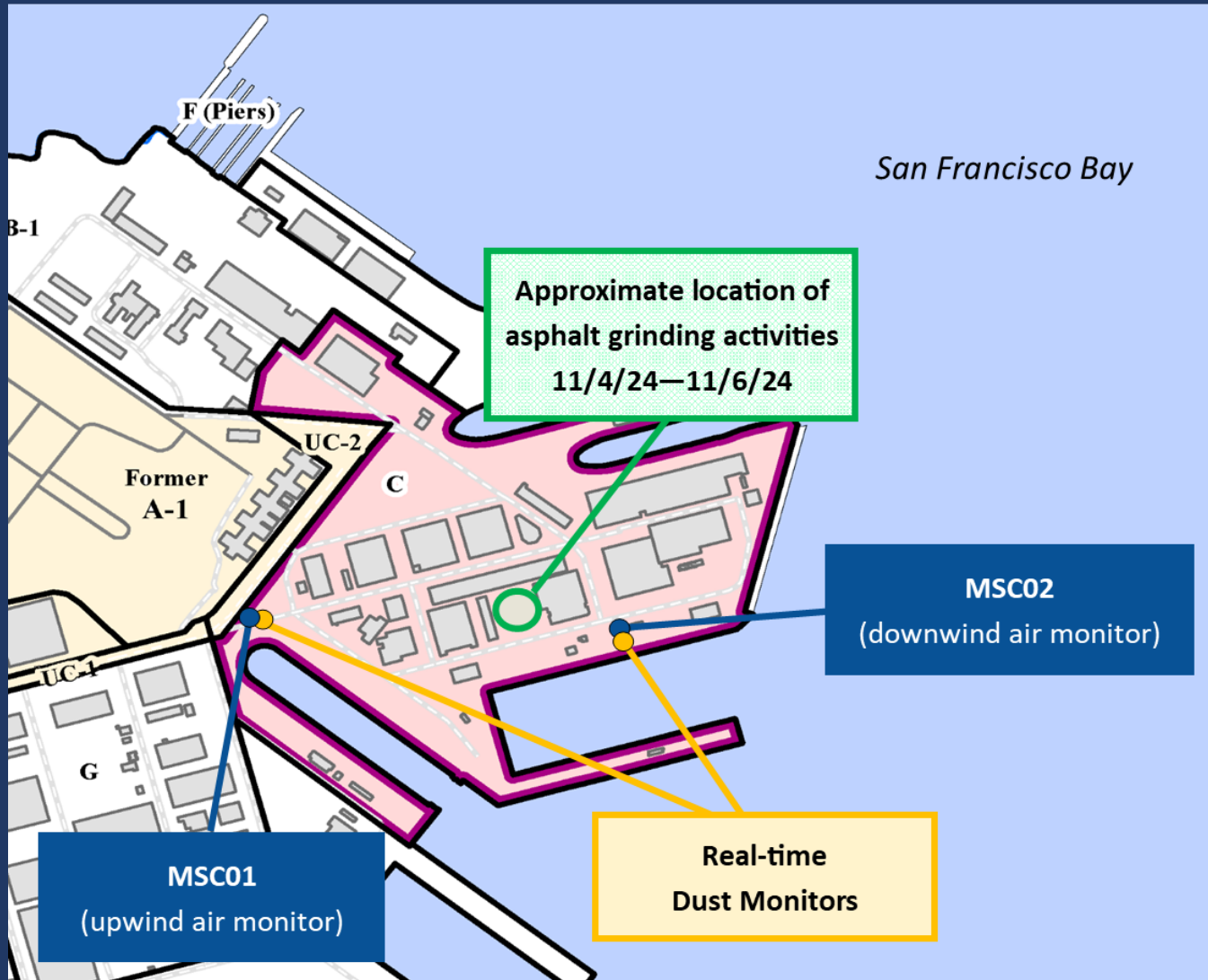
- On-site air filter screening was below health-protective standards.
- One laboratory analysis result reported above project Action Levels; no exceedance was found during resampling.
- This was the only exceedance in 167 analytical samples from July 2023 – October 2024

No Source; Evaluation Needed



- During this time, work activities were limited to asphalt grinding.
- The asphalt is unlikely to be associated with the Pu-239 result.
- The exceedance required further evaluation to validate the result since it was unusual compared to the other samples.

About the November 2024 Pu-239 Outlier



Summary

During the sample period in **November 2024**, no exceedances were measured in real-time PM10 dust monitoring at MSC01 and MSC02.

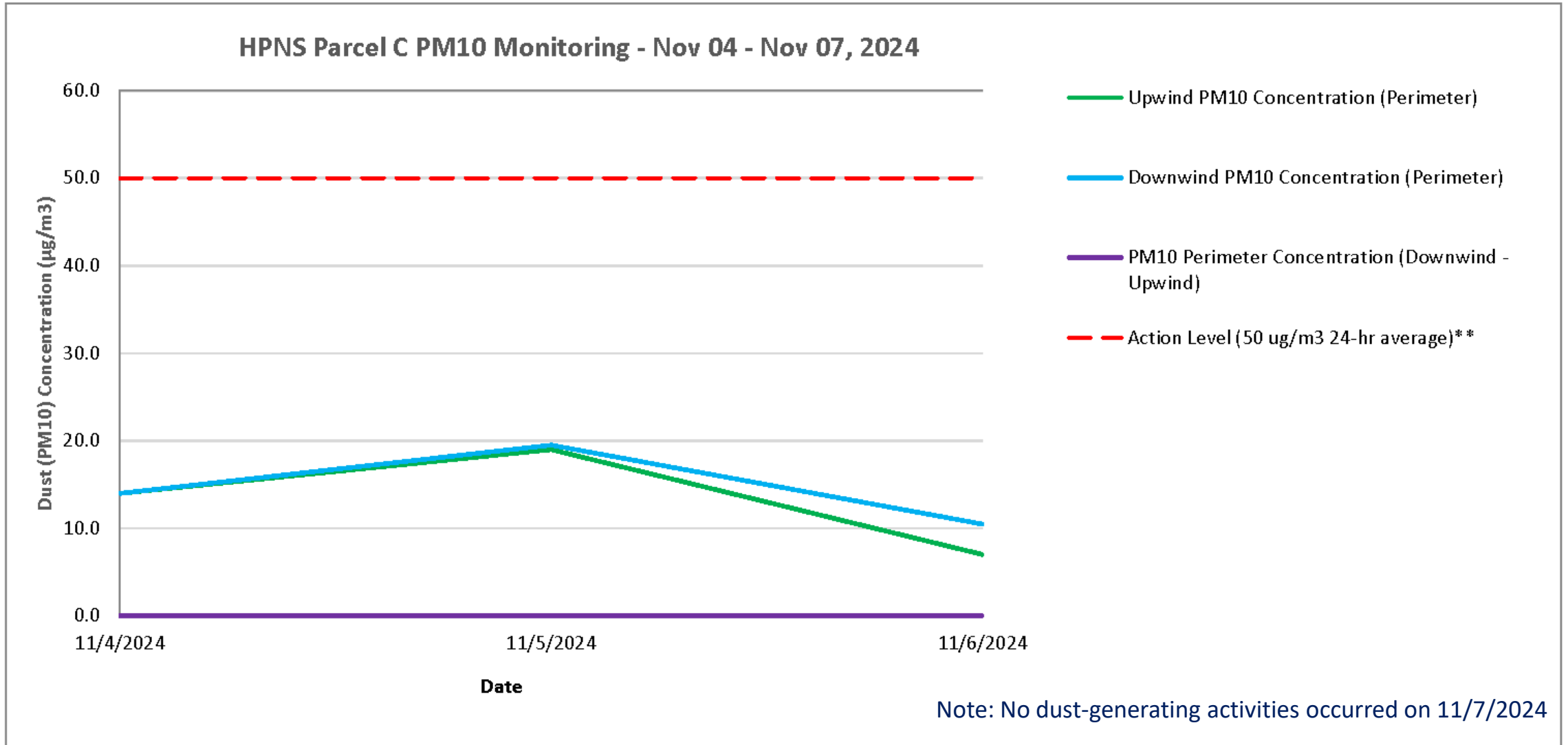
At the end of the week, air filters were collected, screened, and **did not indicate any elevated radionuclides**.

The collected air filters were **sent to a laboratory for analysis** for radionuclides, including Pu-239.

In March 2025, the Navy received the results for the air sample analysis, reporting Pu-239 at 8.16×10^{-15} microcuries per milliliter ($\mu\text{Ci/mL}$).

The Project Action Level is $4.00 \times 10^{-15} \mu\text{Ci/mL}$. **This initiated a review** by the laboratory and the Navy.

Real-time PM10 Air Monitoring Results at the Time of the Outlier Result



Exceedance Compared to Relative Doses From Radiation Sources Over Time



**NRC Standard
for radionuclides in air
50 mrem (annual)**



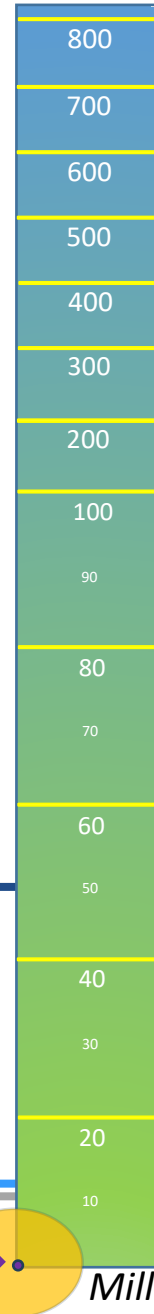
**EPA Cleanup Level
for radionuclides
12 mrem (annual)**



**Navy Action Level
for radionuclides in air
10 mrem (annual)**



**HPNS Parcel C
Pu-239 Outlier
air sampling result
0.4 mrem (one week sample)**



Millirem Doses

**Average dose
per person in
United States
624 mrem (annual)**



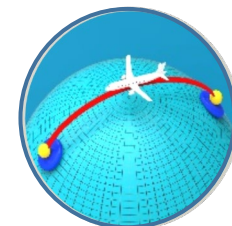
**Medical X-ray
40 mrem
(single procedure)**



**Normal cosmic
radiation in
San Francisco
(low elevation)
24 mrem (annual)**



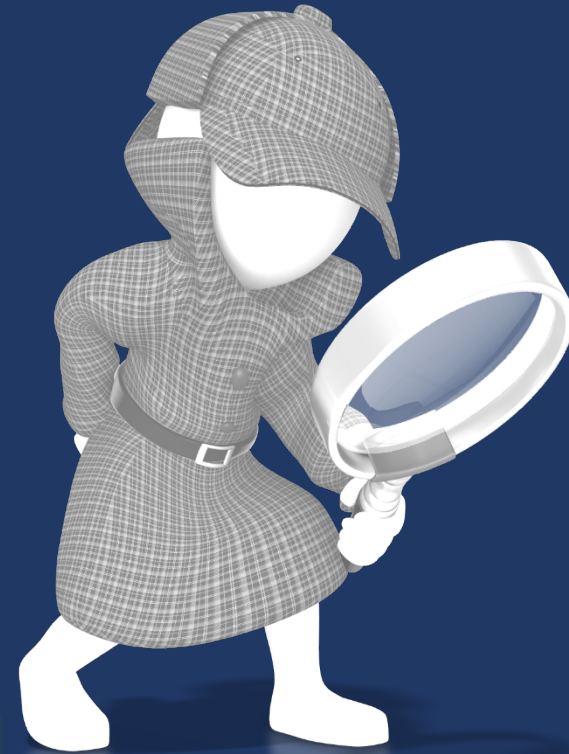
**Round trip flight
from SF to NYC
~4 mrem (per trip)**



3 Our Evaluation and Reporting Processes

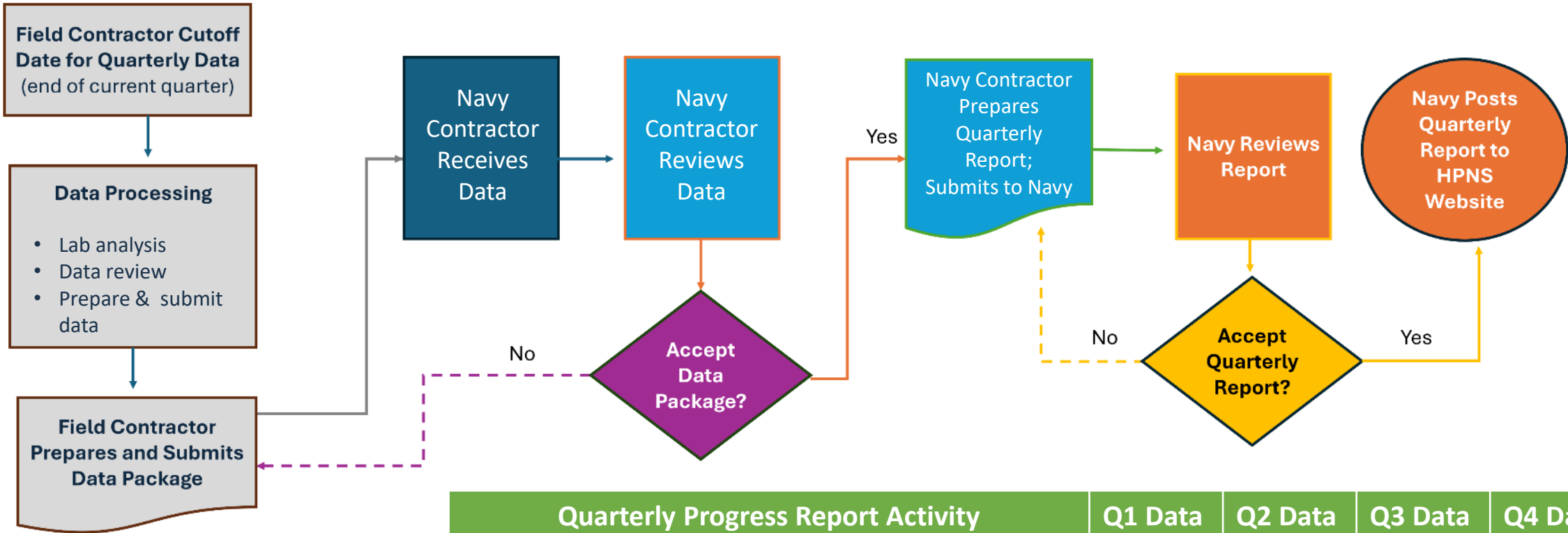
Outlier Result Evaluation Timeline

- After receiving the outlier result in **March 2025**, the laboratory completed a reanalysis of the sample in April 2025: This second analysis **was below the HPNS Action Level for Pu-239**.
- **Between May and September 2025**, the Navy and the laboratory:
 - Further investigated the test results, and
 - Conducted a review of laboratory procedures and practices to ensure compliance.
- An independent third party* organization conducted an evaluation of the laboratory's performance and **confirmed laboratory compliance with standard operating procedures**.



*Department of Defense Environmental Laboratory Accreditation Program [DOD ELAP] -
<https://www.denix.osd.mil/edqw/accreditation/home/>

Quarterly Reporting Process



This Parcel C Quarterly Report was originally posted with the result from the re-analysis; it was removed from the website and has been reposted with both results.

Quarterly Progress Report Activity	Q1 Data	Q2 Data	Q3 Data	Q4 Data
Cutoff Date for Data Evaluated in Quarterly Report	3/31	6/30	9/30	12/31
Navy Contractor Receives Data; Prepares Report	6/30	9/30	12/31	3/31
Navy Receives Draft Report	7/31	10/31	1/31	4/30
Navy Completes Review of Report	8/31	11/30	2/28	5/30
Navy Receives Final Report, Posts to Website	9/15	12/15	3/15	6/15

4 Summary

Summary

The Navy is committed to protecting the health and safety of everyone who lives and works near the former Shipyard. We take this responsibility seriously.

- The Navy wanted to understand the result, make sure it was valid, and report correct information.
- What we knew:
 - Two conflicting results for one laboratory sample, both of which were **significantly below health-based concentrations**.
 - More than 200 samples collected to date, with **only one Action Level exceedance**.
 - Real time PM10 dust monitoring results and on-site air filter screenings were **below health-protective levels**.
 - **No Pu-239 source**, given the time of placement of the imported asphalt when installed.



Looking Forward

Our Commitment

- **Improve our communication process**
 - Re-evaluate our reporting process to improve community notification
- **Ensure clear, coordinated steps for reviewing results**
 - Working with the regulatory agencies to refine the review process
- **Share the current information on the Navy's website: <https://www.bracpmo.navy.mil/hpns>**
 - The **Parcel C 2024 Fourth Quarter Air Monitoring Report** - *including an explanation of both sample results* - has been reposted (*Documents > Air Monitoring*)
 - The San Francisco Department of Public Health letter to the Navy and the Navy's response (*Documents>Parcels*)
 - "Fact Sheet - Air Monitoring at Parcel C" (*Timely Topics*)
 - This presentation will be available:
 - On the Navy's website (*Meeting Material*)
 - On the HPSCAC website (hpscac.net)



Resources for More Information



HPNS Program Management



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Navy BRAC PMO West
33000 Nixie Way, Bldg 50, Suite 207
San Diego, CA 92147
www.bracpmo.navy.mil/hpns

Regulatory Agencies

US Environmental Protection Agency

Mike Collins: collins.mike@epa.gov
Nadia Burke: burke.nadiahollan@epa.gov

CA Dept. of Toxic Substances Control

Michael Howley: michael.howley@dtsc.ca.gov

San Francisco Bay Regional Water Quality Control Board

Mary Snow: mary.snow@waterboards.ca.gov

Other Resources



Community Technical Advisor

Dr. Kathryn Higley
(541) 737-0675
kathryn.higley@oregonstate.edu
www.ne.oregonstate.edu

HPNS Online Documents

- <https://www.bracpmo.navy.mil/hpns>
- <https://administrative-records.navfac.navy.mil/?PN24V63WGTUM4VG4WO>



HPNS Community Outreach

Send an email or leave a message

- For program information
- To join the HPNS Mailing List
- To request language assistance



info@sfhpn.com



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