



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

Parcel A of the Former Hunters Point Naval Shipyard ("Shipyard"):

The information below addresses questions about potential current exposure to radiation at Parcel A. Here is what EPA knows about the history and cleanup of Parcel A that led to the removal of this portion of the Shipyard property from the Superfund National Priorities List and to approve the Navy's transfer of Parcel A to the City of San Francisco:

- Independent radiological monitoring of dust, groundwater, ground surfaces, and fence lines have shown no exceedances of health-based standards, and independent third party contractors routinely conduct in-person observations of current radiological cleanup work.
- Tetra Tech, ECI, did not do any radiological work at Parcel A except at Building 322, which was demolished and removed many years ago.
- Historically, the majority of Parcel A was used for residences and administrative offices, not industrial activities.
- The only radiological materials found at Parcel A were sandblast grit and firebricks. These have been removed. Former Buildings 322, 816, and 821 had potential for radiological contamination. The Navy scanned all three buildings and did not find radiological contamination above required cleanup levels. Buildings 322 and 816 were demolished and removed. Building 821 is located on Crisp Road, not in the developed portion of Parcel A. No other sources of radiological contamination were identified during the investigation or cleanup of Parcel A.
- In 2002, EPA conducted a radiological scanner van survey of Parcel A and navigable roads on other parts of the Shipyard. All of the anomalies detected during the scan were attributable to natural occurring sources at levels consistent with what would normally be found in the environment.
- Parcel A was removed from the Superfund National Priorities List in 1999 and was transferred to the City of San Francisco for development in 2004. If it would be helpful, EPA can provide copies of the Finding of Suitability to Transfer and the de-listing decision for Parcel A.

The Navy is the lead agency responsible for the investigation and cleanup of the Shipyard and holds the Administrative Record for the site. EPA and its state regulatory agency partners oversee and enforce Navy compliance with Superfund requirements to ensure the cleanup at the Shipyard protects human health and the environment. For more information on the Shipyard

investigation and cleanup, contact Derek Robinson, Navy Base Realignment and Closure (BRAC) Environmental Coordinator: 619-524-6026, derek.j.robinson1@navy.mil. If you would like to discuss EPA's oversight role, please contact Lily Lee at 415-947-4187 or lee.lily@epa.gov or contact Jackie Lane at 415-972-3236 or lane.jackie@epa.gov.

July 19, 2017



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Parcel B Artist Studios (Buildings 104, 115, 116, 117, 125) and the City/County of San Francisco Police Department (Building 606) of the Hunters Point Naval Shipyard

This information addresses concerns about potential current exposure to radiation at the above locations on the Hunters Point Naval Shipyard site. Below is what EPA knows about the history and cleanup at these locations that led to our approval for the lease of these areas:

- To date, no specific allegations have been made regarding the integrity of the cleanup work conducted specifically in areas of the artist studios or Building 606 that give us any reason to question EPA's prior decision to approve the lease of these buildings.
- The current artist studios on Parcel B had formerly been used for barracks, schools, a cafeteria, and other non-industrial uses. Therefore, EPA has never had concerns about radiological impacts in these buildings. The Navy has removed sanitary sewer and storm drain lines near these buildings.
- Before Building 606 was constructed, Building 503 had been located in its place and had the potential for radiological impact. The Navy has removed sanitary sewer and storm drain lines and soil under and near Building 606. The Navy scanned soil from beneath Building 606 and found no elevated radiation levels.
- In 2002, EPA conducted a radiological scanner van survey of navigable roads on parts of the Shipyard including near the Artist Studios and Building 606. All of the anomalies detected during the scan were attributable to natural occurring sources at levels consistent with what would normally be found in the environment.
- EPA and other regulatory agencies found Buildings 104, 115, 116, 117, 125, and 606 suitable for lease in 2008. If it would be helpful, we can provide copies of the Finding of Suitability to Lease.

The Navy is the lead agency responsible for the investigation and cleanup of the Shipyard and holds the Administrative Record for the site. EPA and its state regulatory agency partners oversee and enforce Navy compliance with Superfund requirements to ensure the cleanup at the Shipyard protects human health and the environment. For more information on the Shipyard investigation and cleanup, contact Derek Robinson, Navy Base Realignment and Closure (BRAC) Environmental Coordinator: 619-524-6026, derek.j.robinson1@navy.mil. If you would like to discuss EPA's oversight role, please contact Lily Lee, EPA project manager at 415-947-4187 or lee.lily@epa.gov or Jackie Lane, EPA Community Involvement Coordinator at 415-972-3236 or lane.jackie@epa.gov.

October 12, 2016



September 2018

Around the Shipyard: Building 606

Navy answers to tenant questions

What is the history of Building 606?

Building 606 is located on Parcel E in the southeast corner of Hunters Point Naval Shipyard (HPNS). It was constructed in 1989 on a vacant lot that had undergone cleanup to remove sanitary sewer and storm drain lines that had historically served the Shipyard. Following the removal of the drain lines, scans from soil collected in the area found no elevated radiation levels. In 1989, construction began for Building 606, and in February 1997, the San Francisco Police Department (SFPD) moved into the building.

Am I exposed to radiological contamination in the building?

Construction of Building 606 included removal of existing soil to more than five feet below ground surface and construction of a brand new building on a new foundation. A durable cover made of asphalt has been installed in areas without buildings on Parcel D-1. Employees have no exposure to soil and are not at risk for radiological exposure. In addition, the Navy and regulatory agencies have scanned the area around Building 606 and found no risk of radiological contamination, resulting in the confirmation that employees in the building can be confident that they are protected from exposure to radiation.

Can I drink the water in the building?

Drinking water on HPNS is delivered by the San Francisco Public Utilities Commission. The San Francisco Department of Public Health (SFDPH) has evaluated numerous samples of drinking water on the Shipyard, including water delivered to Building 606. A total of nine water sampling events took place between March 1997 and Sept 1999 at Building 606, and all found that the water is safe to drink.

Is dust from other areas of the Shipyard a health risk for me?

The Navy has a comprehensive dust control plan, including watering of construction areas and loose piles of dirt, rumble strips to shake loose dirt from truck tires, and a basewide 15-mile-per-hour speed limit. In addition, durable covers of asphalt or native planting have been installed over the majority of the Shipyard, where buildings do not exist. These durable covers serve as a dust control measure and a barrier to existing soil.

How does radiological retesting on the Shipyard affect me?

Repairs to the sewer system behind Building 606 were necessary in 2018. Before any work began, the Navy solicited input from SFDPH and SFPD in planning for repairs. To reduce possible exposure to contaminants, it was determined that any new excavations would begin at least five feet away from any trenches that were included in the Navy's radiological retesting activities. The distance from the trenches involved in retesting, coupled with Navy dust control protocol, limit exposure of employees at Building 606 to potential contaminants.

Who can I contact if I have a question or health concern?

SFDPH has had a dedicated Industrial Hygienist (IH) assigned to Building 606 since 1997. The role of the IH is to investigate health and safety concerns reported by SFPD employees on site, to evaluate potential risk to health and safety, and to recommend corrective actions as needed at Building 606.

SFPD employees with health and safety questions or concerns are encouraged to contact the San Francisco Department of Public Health Industrial Hygienist assigned to Building 606 at (415) 554-2760 x42760.

For more information on the Navy's cleanup at HPNS, visit the Navy's website at www.bracpmo.navy.mil/hpns.
To be added to the HPNS mailing list, send an email to info@sfhps.com.



FACT SHEET

Hunters Point Naval Shipyard

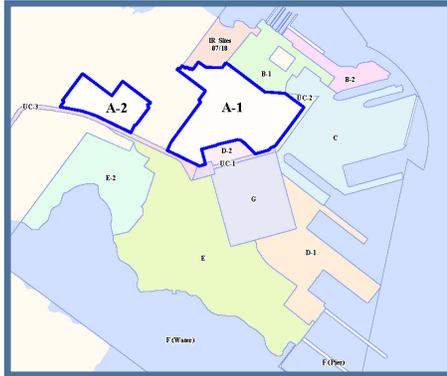
Parcel A



HPNS and Parcel A Background

The U.S. Navy has kept the safety of the public as its highest priority as Hunters Point Naval Shipyard, or HPNS, has been closed and redeveloped over the years.

The Navy, regulatory agencies and the City of San Francisco, have worked together throughout the base closure process to ensure the safe transfer of the 75 acre-section known as "Parcel A."



Location of Parcel A at HPNS

Parcel A covers approximately 75 acres in the western portion of HPNS. In 2004, Parcel A was the first section of HPNS property to be transferred to the City of San Francisco and has since been developed into townhomes and condominiums. Its safety has been verified repeatedly and consistently over decades by state and federal regulators.

History, Cleanup, and Transfer

HPNS played an important role in U.S. military history, providing ship repair and maintenance to Naval vessels in the shipyard dry docks during WWII through the mid-1970s. In addition to these activities, part of HPNS was used by the Naval Radiological Defense Laboratory (NRDL) to decontaminate ships exposed to atomic weapons testing and conduct research on the effects of radiation from 1948 to 1969. At various points in its history, the shipyard was also used by private companies for ship repair and maintenance.

Throughout its history, Parcel A was primarily used for residential purposes. Most of the other structures were used as offices and storage. In 1988, the shipyard was placed in the Base Realignment and Closure (BRAC) Program, a federal program created to oversee the cleanup and transfer of military installations to public or private entities for redevelopment.

In 1989, the United States Environmental Protection Agency (USEPA) evaluated HPNS and placed it on the Superfund National Priorities List (NPL) in response to concerns about the effects of past hazardous wastes (such as oils and solvents) created by historical shipyard activities by both the Navy and private companies.

Following its closure in 1991, HPNS entered into the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)

program, also known as Superfund, a structured cleanup process for past hazardous wastes as defined by federal law. CERCLA investigations of possible contamination on Parcel A, along with additional reviews to evaluate groundwater and soil, resulted in the conclusion that there was no risk to human health and the environment at Parcel A, and that no further action was required.

In 1995, Parcel A was reviewed and approved by federal and state regulators, who determined that no hazardous substances were present and confirmed no further action at that site. Parcel A was approved for unrestricted future use, and it was removed from the NPL in 1999 .

Additional Reviews at Parcel A Confirm Safety

To confirm radiological safety, in 2002, USEPA conducted a radiological scanner van survey of Parcel A and navigable roads on other parts of HPNS; survey results were found to be within levels attributable to naturally occurring sources. In addition, Building 322 at Parcel A was scanned for radiological activity, demolished and removed by Tetra Tech Foster Wheeler (TTFW); results confirmed that the site did not pose a risk to human health or the environment.

In 2004, the Navy conducted its Historical Radiological Assessment (HRA), a comprehensive history of radiological operations at HPNS, compiled from archival research, interviews of personnel with knowledge of radiological operations at HPNS, and visits to the site. The HRA confirmed that Parcel A did not pose a risk to human health or the environment. The parcel was approved for transfer by regulatory agencies, including the USEPA, the California Department of Toxic Substances Control (DTSC), and the City of San Francisco. Parcel A was officially transferred to the San Francisco Redevelopment Agency in December 2004 for the development of homes, parks, and other community resources.



HPNS Dry Docks, circa 1940

PROGRAM INFORMATION QUICK REFERENCE

HPNS website:
www.bracpm.navy.mil/hpns

HPNS radiological page:
www.bracpmo.navy.mil/hpnsrc

Email: info@sfhpns.com
HPNS Info Line: (415) 295-4742

No Health Concerns for Parcel A Residents

Public safety is the Navy's highest priority. In addition to the repeated investigations and confirmation of no risk at Parcel A, the Navy is managing fieldwork on the other parcels at HPNS to ensure public safety.

In areas where soil contamination was found and environmental work was required, a cover limits direct exposure to soil. This cover is either asphalt or a clean imported soil layer that has been vegetated. In areas where Navy excavations are underway, daily upwind and downwind air monitoring is conducted by the Navy, and independent samples are taken periodically by regulators. Both Navy and regulatory samples have confirmed the effectiveness of dust control measures. Investigations show that there is no risk for people who live, work, and visit HPNS and adjacent properties.

Parcel A and Survey Data Quality

After the Navy learned that a contractor, Tetra Tech, EC Inc. (TtEC), had misrepresented radiological sampling data, the Navy hired an independent team of contractors to review and evaluate the reliability of the radiological data collected by TtEC. This evaluation has not implicated Parcel A in potential fraudulent activities.

Allegations have not been made regarding the integrity of fieldwork conducted at Parcel A. The 2002 USEPA van survey and the 2004 HRA determined that contamination is not present at Parcel A. Once Parcel A was turned over to the city in 2004, the Navy and its contractors ceased any work on the site. Soil or other materials from the rest of the base were not used or discarded on Parcel A.

Groundwater at HPNS

Groundwater from HPNS is not used for drinking water. Parcel A groundwater has been tested and has never been found to contain hazardous levels of contaminants. San Francisco Public Utilities Commission delivers water for drinking, showering, and other uses to the Bayview Hunters Point community, including Parcel A property. Residents, tenants, and the general public are not likely to come in contact with HPNS groundwater, which is located at least 7 feet below ground surface at Parcel A.

Parcel A Today

Since the transfer of Parcel A, housing has been built on the property, offering owners and residents new living space, marking a new chapter in the future of the shipyard. The Navy has also leased two buildings on Parcel A (Buildings 101 and 110) to the Shipyard Trust for the Arts (STAR) since 1996. For over twenty years, more than 300 artists have sublet studios in buildings on HPNS, making it the largest group of independent studios in the United States.

For More Information

The Navy has a dedicated page with information and resources on the radiological data evaluation at www.bracpmo.navy.mil/hpnsrc. This site provides Frequently Asked Questions, Timely Topics, program documents, and meeting materials. In addition, contact information for Navy program representatives and independent resources may be found on the web page. You can also learn more through our **Community Resources**, listed below.



Image from
Hunters Point Artists
Open Studios event
www.shipyardtrust.org



Image of
The San Francisco Shipyard
at Parcel A
www.sfshipyard.com

Community Resources

HPNS Program Management

Derek Robinson

Department of the Navy, Base Realignment and Closure
BRAC Environmental Coordinator
(619) 524-6026 derek.j.robinson1@navy.mil

HPNS Mailing List

To be added to the HPNS mailing list
or for additional program information:
(415) 295-4742 info@sfhpn.com

Community Radiological Technical Advisor

Dr. Kathryn Higley

Oregon State University
School of Nuclear Science and Engineering
(541) 737-7063 kathryn.higley@oregonstate.edu

HPNS Community Liaison

James Bryant

1333 Evans Avenue, San Francisco, CA 94124
(415) 970-9051 community@sfhpn.com

Review an HPNS Report

City of San Francisco Main Library

100 Larkin Street, 5th Floor, Gov't Center
San Francisco 94102
(415) (415) 557-4400

Shipyard Site Trailer

690 Hudson Avenue
San Francisco, CA 94124

Electronic Administrative Record

www.bracpmo.navy.mil/hpns
Link to HPNS Administrative Record
may be found on "Documents" page



HUNTERS POINT SHIPYARD RESOURCES

Amy Brownell, PE

DPH Environ. Engineer

Amy.brownell@sfdph.org

415-749-2539

SF DPH Environmental Health Branch: <https://www.sfdph.org/dph/EH/HuntersPoint/default.asp>

Karen Cohn, MS, CIH

DPH Sr. Industrial Hygienist

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Pam Sims

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Pam.sims@sfgov.org

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Kasheica McKinney

OCII Senior Project Manager

Hunters Point Shipyard & Candlestick Point

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SF OCII: <http://sfocii.org/hunters-point-shipyard-and-candlestick-point>

Certificate of Preference Program: <http://sfmohcd.org/certificate-preference>

Mayor's Hunters Point Shipyard Citizen Advisory Committee (Calendar, Agendas & Information):

<https://hpscac.net/contact-us/>

HUNTERS POINT NAVY BRAC WEBSITE:

www.bracpmo.navy.mil/hpns

RADIOLOGICAL PAGE:

www.bracpmo.navy.mil/hpnsrc

If you want to be added to the mailing list or if you have questions, email info@sfhpns.com or call the Shipyard information Line at (415) 295-4742.

US EPA:

<https://cumulis.epa.gov/supercpad/cursites/csitinfo.cfm?id=0902722>

CDPH Radiological Health Branch Parcel A Survey:

<https://www.cdph.ca.gov/Programs/CEH/DRSEM/Pages/RHB-Environment/Hunters-Point-Naval-Shipyard-Parcel-A-1-Survey.aspx>

FIVE POINT (LENNAR URBAN):

Dust Control Complaint Line 1-866-5LENNAR (re. new construction for development)

Where can I get more information about the Navy's cleanup at Hunters Point Naval Shipyard (HPNS)?

Navy Resources

Contact HPNS Program Management

Derek Robinson

BRAC Environmental Coordinator

Dept of the Navy

BRAC Program Management Office West

33000 Nixie Way, Bldg. 50, 2nd Deck

San Diego CA 92147

(619) 524-6026 derek.j.robinson1@navy.mil



Review an HPNS Report

City of San Francisco Main Library

100 Larkin Street, 5th Floor, Gov't Information Center

San Francisco, CA 94102 (415) 557-4400

Shipyard Site Trailer

690 Hudson Avenue, San Francisco, CA 94124

Join the HPNS Mailing List

To be added to the HPNS mailing list or for additional information, email info@sfpnps.com or call (415) 295-4742

Visit the HPNS Pages on the Navy Website

Navy Website: www.bracpmo.navy.mil/hpns

There is a link to the online HPNS Administrative Record on the Documents Page of the Navy's HPNS web pages

Regulatory Agency Resources



Lily Lee

Project Manager

US EPA, Region 9

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Nina Bacey

Project Manager

CA Department of Toxic Substances Control

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(510) 540-2480 Juanita.Bacey@dtsc.ca.gov



Tina Low

Project Manager

San Francisco Bay

Regional Water Quality Control Board

1515 Clay Street, Ste. 1400

Oakland, CA 94612

(510) 622-2445

TLow@waterboards.ca.gov

Community Resources

Contact the Radiological Health and Safety Community Technical Advisor with Questions

Dr. Kathryn Higley

Oregon State University

School of Nuclear Science and Engineering

(541) 737-7063

kathryn.higley@oregonstate.edu

www.ne.oregonstate.edu/kathryn-higley



Dr. Kathryn Higley

*Community Technical Advisor
for Radiological Health and Safety*

Dr. Higley is the Head of the School of Nuclear Science and Engineering at Oregon State University. As a Certified Health Physicist, she holds degrees in Radiological Health Sciences. She is available to answer community member questions by phone or email, and makes herself available to meet in person with community members whenever possible.

有

关海军在猎人角海
军造船厂的清理活动方案的更多信息，

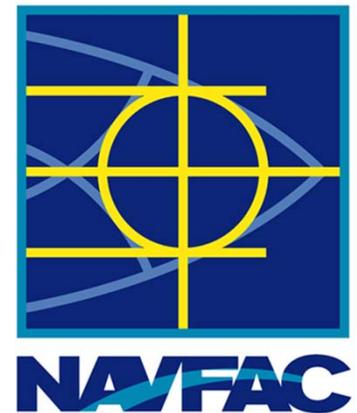
请拨打 (833) 350-6222 并留言。

Para más información sobre el programa de limpieza de la Marina en

Hunters Point Naval Shipyard Radiological Data Retesting Update

HPS CAC Environmental & Reuse Subcommittee Meeting

November 7, 2018



Derek J. Robinson, P.E.
Navy Base Realignment and Closure (BRAC)
BRAC Environmental Coordinator

Presentation Overview



Radiological Contamination at HPNS

- Why? Where? What?

Radiological Cleanup at HPNS Today

- CERCLA cleanup and radiological retesting
- Retesting of areas evaluated by Tetra Tech EC (TtEC)
- Parcel A Scans

Protecting the Public



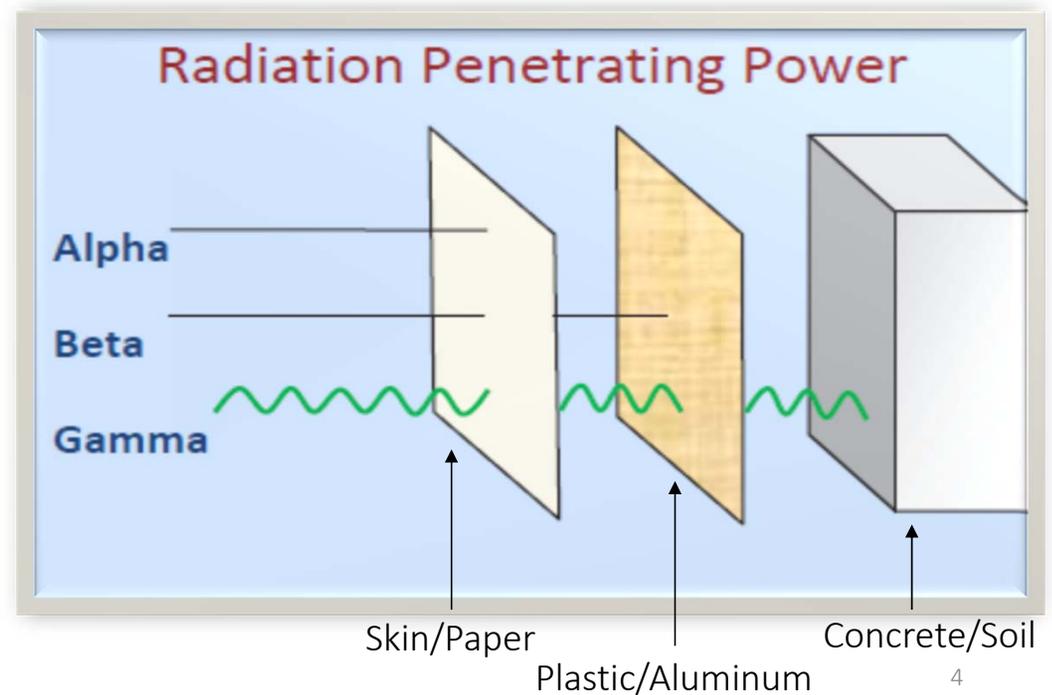
Radiological Contamination at HPNS

WHAT is radiation?



Radiation is energy that comes from a source, travels through space, and may be able to penetrate various materials

- What are the different types of radiation?
 - Light waves
 - Radio waves
 - X-rays
 - Microwaves
 - Particles and energy rays emitted from an atom



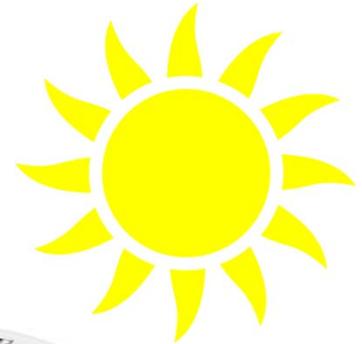
Radiological Contamination at HPNS

How are we exposed to radiation?



Radiation is all around us!!

- Natural radiation sources – some common foods, air, water, soil, and the sun
- Radiation occurs in some man-made
- sources – TV, smoke-detector, X-rays



Radiological Contamination at HPNS

WHY is there radiological contamination at HPNS?



Historical Shipyard Activities

- Ship repair and maintenance
- Operation Crossroads
- Navy Radiological Defense Laboratory (NRDL)
- Storage of radioactive materials
- Disposal of paint in drains



Radiological Contamination at HPNS

HOW do we clean up radiation?



2004 Historical Radiological Assessment identifies areas to be investigated

- Thousands of historical records researched
- Over 170 interviews with former workers
- Regulatory agency review and input
- Focus on –
 - Review of the types of radiological materials used
 - Review of locations where radioactive materials were used or stored
 - Review of sites of known spills, discharges, or other releases that may have occurred
 - Review of sites where radioactive materials may have been disposed or buried
 - Review of potential ways that contamination may have been spread

Radiological Contamination at HPNS

HOW do we determine what CLEAN is?



1. Regulations, laws, and guidance dictate safe levels of radiation.
2. Regulatory agency tools are used to calculate remedial goals for a particular site.
3. The Navy incorporates site specific goals into our remedial actions, usually memorialized in the Record of Decision document for each site.

Radiological Contamination at HPNS

HOW do we determine what CLEAN is?



Two processes are on-going:

1. Retest areas previously evaluated by TtEC to ensure radiological cleanup criteria met
 - *Retesting of parcels to begin with Parcel G.*
 - *The draft final work plan for Parcel G has been submitted and fieldwork is expected to begin in 2018!*
2. Perform 5-Year Review to evaluate protectiveness of past remedial actions.
 - *Using current risk assessment procedures and guidance, the Navy evaluated past remedial action levels and will present Navy draft calculations in the 2018 5-year Review that will demonstrate protectiveness.*

Radiological Contamination at HPNS

WHAT are the sources of radiological contamination?



Radiological contamination a result of historical shipyard activities

- Ship-board items
- Radioluminescent paint
- Sandblast grit
- Fire bricks

Examples of historical radioluminescent (glow-in-the-dark) ship-board items



Switch



Volt Meter



Deck Marker



Safety Rope

Radiological Contamination at HPNS

WHERE is the radiological contamination and HOW is the Navy addressing it?



Historical Radiological Assessment (HRA) – 2004

- Evaluated historical operations
- Interviewed former sailors and employees
- Identified over 90 sites/areas that may have radiological contamination
 - Buildings associated with NRDL activities or radium paint application
 - Sanitary sewer and storm drain lines
 - Former disposal or burial areas
 - Piers or ship berths used after Operation Crossroads

Parcel	Final Remedy per Parcel Record of Decision			
	Buildings and Soil Areas Remediation	Piers and Ship Berths Remediation	Storm and Sewer Line Removal	Contain in Place
B	X	X	X	N/A
C	X	X	X	N/A
D-1	X	X	X	N/A
D-2	X	N/A	X	N/A
E	X	N/A	X	X
E-2	X	N/A	X	X
F	N/A	X	N/A	N/A
G	X	N/A	X	N/A
UC's	N/A	N/A	X	N/A

Radiological contamination remedies at HPNS shown in green blocks

Radiological Cleanup at HPNS Today

WHERE is the Navy evaluating radiological contamination?



- Navy continues CERCLA cleanup of radiological contaminants according to each parcel's Record of Decision (ROD)
- Navy retesting areas previously evaluated by TtEC to ensure radiological cleanup criteria met
- CDPH conducting radiological surface scans of Parcel A to verify public safety



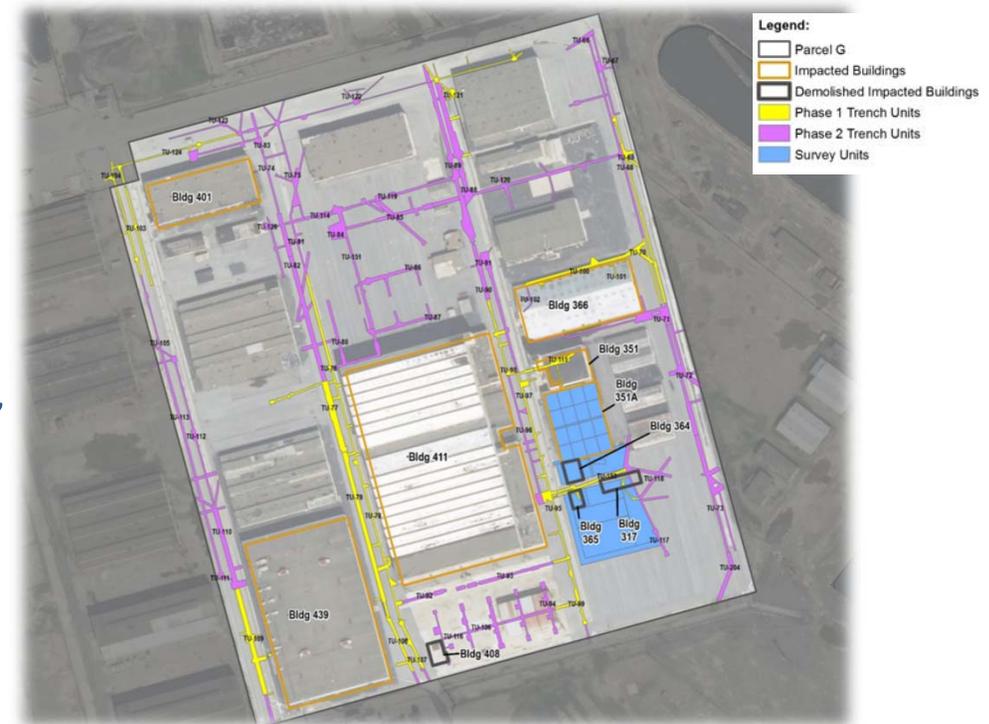
Blue represents areas being re-tested

Radiological Cleanup at HPNS Today

WHAT is the status of radiological retesting at HPNS?



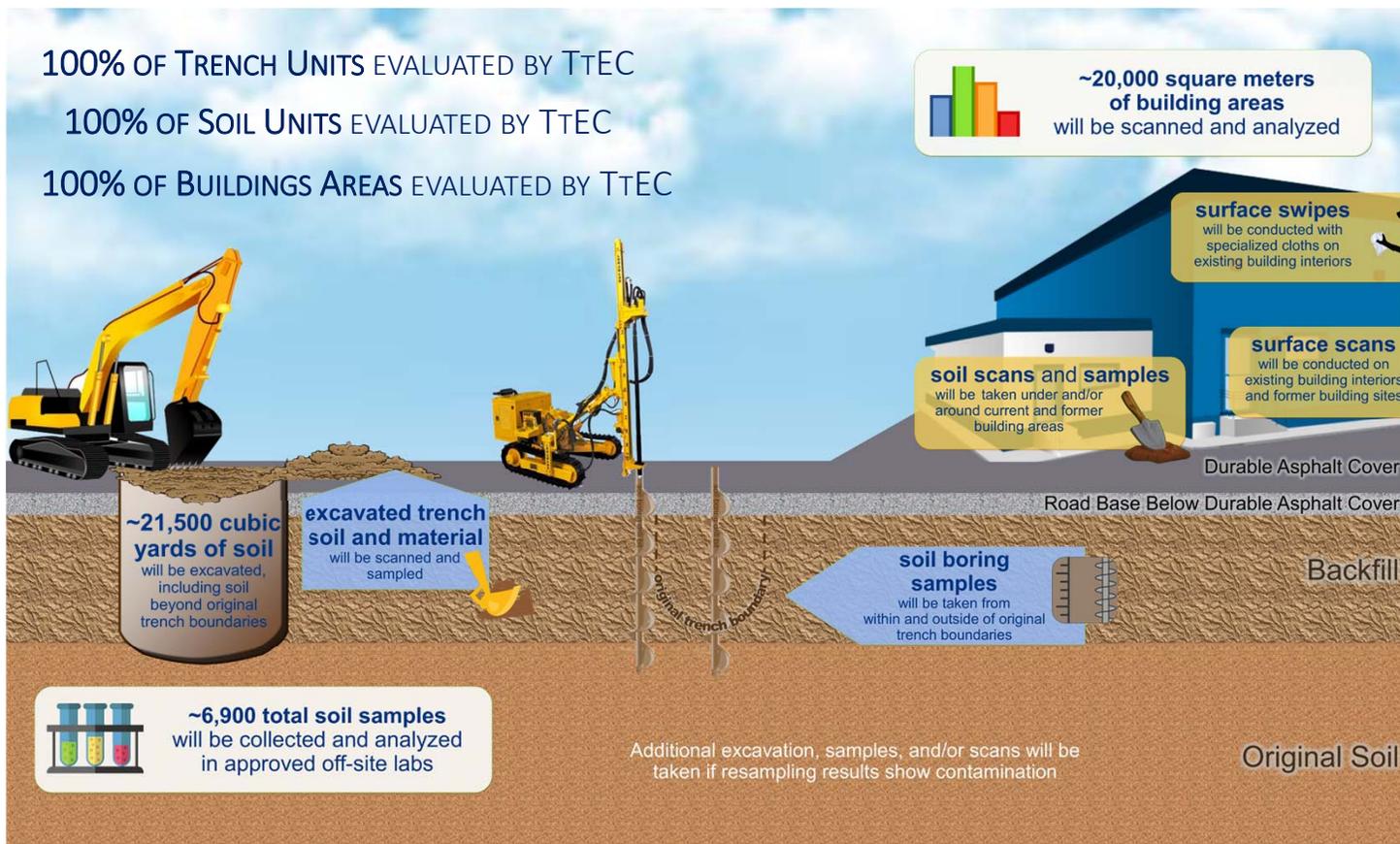
- Navy to take new samples and scans at areas previously evaluated by TtEC
 - Trenches
 - Current and former building areas
 - Existing building interiors
- Navy to conduct surface scans of Parcels G, D-2, UC-1, and UC-2
 - After radiological retesting complete
- Parcel G work to begin in late 2018/early 2019



Map of areas at Parcel G that will undergo radiological retesting

Radiological Cleanup at HPNS Today

WHAT will the Navy retest at Parcel G?



Radiological Cleanup at HPNS Today

WHAT is the status of surface scans at Parcel A?



- CDPH Parcel A-1 surface scans were completed in October 2018
 - Anomalous readings: mostly naturally occurring elements in landscaping materials
 - wood chips and fertilizer
 - 1 anomalous reading: historical low-level deck marker
 - Removed and evaluated by Navy
 - No health risk to community
- Parcel A-2 scans underway



Deck marker site discovery location (location detail in inset)
1.5" item found 10" below surface in undeveloped area behind a fence

Protecting the Public Is the community SAFE?



PARCEL A -

- ✓ No historical radiological shipyard use = EPA confirms no radiological risk to community
- ✓ Numerous radiological scans prior to property transfer = EPA confirms property is safe for redevelopment
- ✓ CDPH radiological surface scans (2018) = CDPH confirms property is safe for residential use
- ✓ Deck marker at Parcel A-1 = EPA and CDPH confirm no radiological risk to community

OTHER PARCELS-

- ✓ Radiological Retesting of areas evaluated by TtEC
- ✓ Third party oversight will ensure validity of data during CERCLA cleanup and radiological retesting
- ✓ Additional remediation wherever radiological retesting indicates the need
- ✓ Radiological surface scans of Parcels G, D-2, UC-1, and UC-2 planned after radiological retesting complete

Protecting the Public

WHO is overseeing cleanup and radiological retesting at HPNS?



HPNS BRAC Cleanup Team

- Navy BRAC – manages cleanup at HPNS
- US EPA – lead regulatory agency; ensures compliance to federal requirements
- DTSC – lead state agency; ensures cleanup meets state laws and regulations
- Water Board – ensures safety of Bay Area waters

Regulatory Agency Oversight

- During basewide cleanup
- During radiological retesting
- Throughout transfer process

Additional oversight and review during radiological retesting

- Third-party oversight to ensure integrity of data collection, document processes, verify results
- Review of procedures and results by independent experts
- Confirmation samples gathered by regulatory agencies to confirm Navy results

Protecting the Public

HOW is the Navy ensuring the safety of the public during cleanup?



Air Monitoring

- The Navy monitors for both particulates and radiological contamination with on-site air monitors
- Independent confirmation samples are taken to confirm accuracy of Navy results



Dust Control Measures

- Dust is controlled to contain contamination within the restricted areas
- Air monitoring ensures dust from HPNS does not affect the surrounding community
- Work stoppage when wind speed is over 25 mph



Radiologically Controlled Areas

- Public access to all work areas is restricted and only specially trained personnel are permitted to access radiological controlled work areas



Portal Monitor to Screen Trucks for Radiation

- Trucks entering and leaving HPNS must pass through a portal monitor which screens for radiation

Protecting the Public Radiation in perspective



Exposure to dust: LOW

- Navy dust control measures limit exposure to the community

Exposure to radiological contaminants: LOW

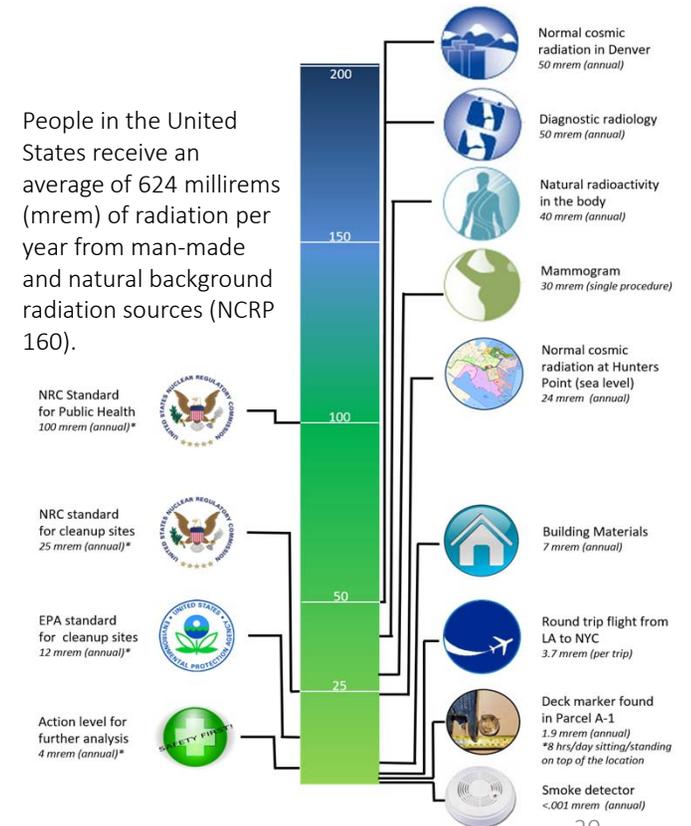
- Radiologically controlled areas limit access by the public

Exposure to radiological waste: LOW

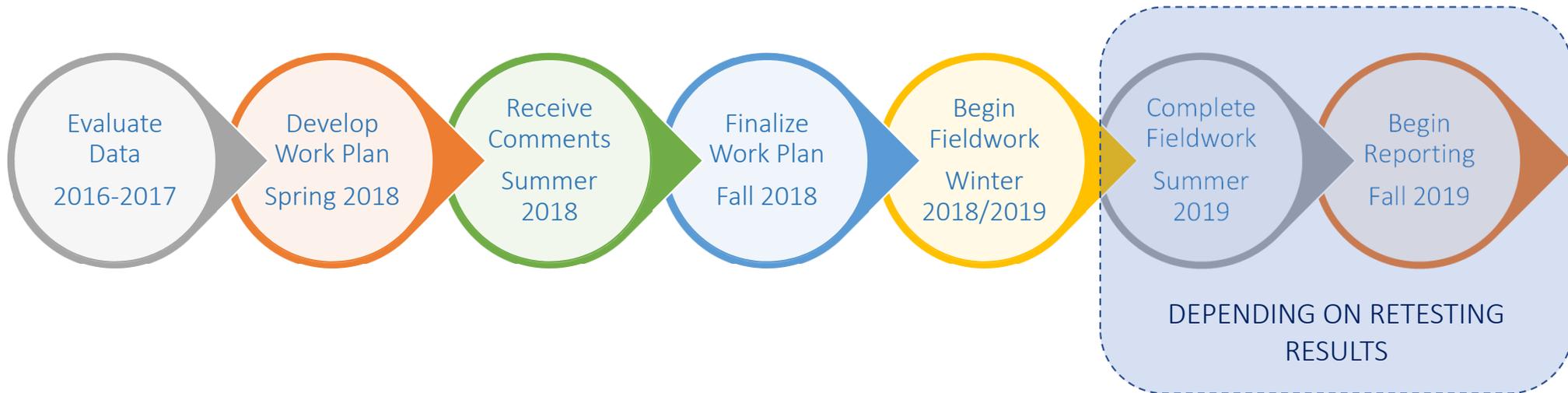
- Historical disposal in Shipyard landfill on Parcel E-2
 - protective cover and land use controls
- Radiological waste during cleanup placed in specialized bins
 - disposed of off-site at approved facilities

Exposure to radiological contamination from deck marker at Parcel A-1: LOW

- 1.9 mrem (annual) if a person were to sit or stand on the location for 8 hours per day for a year



Parcel G Retesting Schedule





Access Navy Resources For More Information

Contact HPNS program management

Derek J. Robinson
Navy BRAC PMO West
33000 Nixie Way, Bldg 50
San Diego, CA 92147
Phone: (619) 524-6026
Fax: (619) 524-5260
derek.j.robinson1@navy.mil

Attend a bus tour or Navy community meeting

Look for 2019 Bus Tour and Navy meeting announcements by email and on the Navy's website

Visit the Navy's website

Navy Website
HPNS Main Web Page
www.bracpmo.navy.mil/hpns

HPNS Radiological Program
Web Page
www.bracpmo.navy.mil/hpnsrc

Join the HPNS mailing list or leave a comment



Send an email to
info@sfhpns.com



Leave a message on the
HPNS Information Line
(415) 295-4742

Review a Navy report

City of San Francisco
Main Library
100 Larkin Street, 5th Floor
Government Information Center
San Francisco, CA 94102
(415) 557-4400

Shipyard Site Trailer
(near HPNS security entrance)
690 Hudson Avenue
San Francisco, CA 94124

Learn More



Get Radiological Health and Safety Questions Answered

Contact the Community Technical Liaison



Dr. Kathryn Higley

(541) 737-7063

kathryn.higley@oregonstate.edu

www.ne.oregonstate.edu/kathryn-higley

- Internationally-recognized expert in radiological health and safety
- Head of the School of Nuclear Science and Engineering at Oregon State University
- Highly qualified independent resource available to the public on HPNS radiological issues
- Available to answer community member questions by phone or email, during local onsite hours, or by appointment

Get Answers

For More Information on Retesting at Parcel G



Former Naval Shipyard Hunters Point

Base Realignment and Closure > BRAC Bases > California > Former Naval Shipyard Hunters Point

Former Naval Air Station Alameda

Former Naval Weapons Station Seal Beach Detachment Concord

Former Naval Auxiliary Landing Field Crows Landing

Former Marine Corps Air Station El Toro

Former Naval Shipyard Hunters Point

Meeting Material

Public Notices

Progress Reports

Documents

Contact

Links

Radiological Cleanup

Timely Topics

Hunters Point Shipyard Parcel A

HPNS Reference Library

HPNS Get Involved

Former Long Beach Naval Complex

Former Naval Shipyard Mare Island

Former Naval Air Station Moffett Field

Former DoD Housing Facility Novato/Hamilton

Former Naval Shipyard Hunters Point

REALTIME Headlines
Public Information

Timely Topics Parcel A FAQs Get Involved

Public Interest:

- Parcel G Radiological Retesting Information
- Parcel G Work Plan Fact Sheet
- Administrative Record

WHAT'S NEW

Community Meeting Open House Radiological Update
451 Galvez Avenue, San Francisco, CA 94124
Click for more information
10/03/18

Environmental Cleanup Bus Tour of HPNS on Sept. 8th at 9:00 a.m.
Click for more information
09/08/18

COMMUNITY INFORMATION
Future Past

There are no upcoming events.

Location and Contact Information

Base Summary

Base Property and Historical Use

The former Hunters Point Naval Shipyard (HPNS) is located in the southeastern portion of the city of San Francisco on a peninsula that extends into the San Francisco Bay. HPNS was operated as a commercial dry dock facility from 1869 until December 29, 1939, when the Navy purchased the property. From 1945 until 1974, the Navy predominantly used the shipyard as a repair facility. HPNS was also partially occupied by the Naval Radiological Defense Laboratory (NRDL) from 1948, when NRDL was formed, to 1969. In 1974, the Navy ceased shipyard operations at HPNS, placing it in industrial reserve and transferring control of the property to the Office of the Supervisor of Shipbuilding, Conversion, and Repair in San Francisco. From May 1976 to June 1986, Triple A Machine Shop, Inc. leased most of HPNS from the

1. Go to:

www.bracpmo.navy.mil/hpns

2. Click on “Parcel G Radiological Retesting Information”



FACT SHEET Hunters Point Naval Shipyard

Parcel G: Radiological Retesting

October 2018



This is the fifth in a series of fact sheets and other ongoing communications about radiological data review and retesting at Hunters Point Naval Shipyard (HPNS). This fact sheet discusses the Navy's updated plan to collect new radiological data at Parcel G in areas where previous results are in question. This fact sheet also provides an overview of the methods that will be used to conduct the work described in the plan, where the plan can be viewed by members of the public, and how the public can get more information.

Parcel G Retesting Background

Manipulation of radiological data was verified by a comprehensive evaluation of the data collected by Tetra Tech EC (TtEC). In late 2017, the Navy concluded that radiological data collected by TtEC was unreliable. In June 2018, the Navy published the Draft Parcel G Work Plan to resample the first of the HPNS parcels where questionable radiological data was previously collected.

Parcel G Work Plan

Public Participation

The Navy's cleanup at HPNS follows federal guidance as described in the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) of 1980, also known as Superfund. Early and meaningful public participation is a critical element of the CERCLA process.

The Navy consistently exceeds CERCLA requirements by communicating in many venues, through a variety of media, including the Navy's web page where program information is available.

One method of public involvement is the review and comment on Navy documents. The Draft Parcel G Work Plan was made available for public review and comment for a 60-day period between June 15, 2018 and August 14, 2018. All comments, questions, and feedback received during this time have been thoroughly reviewed and are an important part of improving the plan in preparation of the Draft Final Parcel G Work Plan.

New Data For Accurate Results

Reviews of historical documentation and the radiological data evaluation process determined the areas where new data will be collected. Areas evaluated in Parcel G include former sanitary sewer and storm drain trenches, buildings identified as radiologically impacted according to historical use, and soil areas identified as having possible radiological contamination.

The Navy's highest priority is public health and safety, and is committed to sampling and scanning 100% of areas where data was collected by TtEC, including:

- Former sanitary sewer and storm drain trenches
- Six buildings
- Four former building areas

The Parcel G Work Plan, including maps of sampling areas, is available on the Navy's website at www.bracpmo.navy.mil/hpnsrc.

Sampling Methods

Based on the location and material being sampled, the Navy will use different techniques to gather new radiological data at Parcel G, including trench excavations, trench soil

borings, building swipes, building scans, and building area soil collections. (see page 2)

The Navy will also collect accurate background levels at HPNS to use in the analysis of the new data. To achieve this, soil samples will be taken at both on-site and off-site locations in areas that are undisturbed and/or are not impacted by site-related contamination. Additional resources will be used to establish regional background for the greater San Francisco area (for instance, the United States Geological Survey).

What is "background"?

Naturally occurring substances present in the environment in forms that have not been influenced by human activity, as well as other natural and man-made substances as a result of human activities, are known as "background".

(source: US EPA 540-R-01-003, 2002)

Independent Oversight and Review

To objectively verify data collection and results, the Parcel G Work Plan includes several layers of oversight and review.

- Third-party oversight to ensure integrity of data collection
- Analysis of new samples at approved off-site laboratories
- Review of procedures and results by independent experts
- Confirmation samples gathered by regulatory agencies to confirm Navy results

UNDERSTANDING THE NAVY'S RETESTING PLAN AT PARCEL G

THE NAVY WILL TAKE NEW SAMPLES AND SCANS

AT AREAS EVALUATED BY TtEC

100% OF TRENCH UNITS

100% OF SOIL UNITS

100% OF BUILDINGS AREAS



~20,000 square meters of building areas will be scanned and analyzed

surface swipes

will be conducted with specialized cloths on existing building interiors

surface scans

will be conducted on existing building interiors and former building sites

soil scans and samples

will be taken under and/or around current and former building areas

soil boring samples

will be taken from within and outside of original trench boundaries

excavated trench soil and material

will be scanned and sampled

~21,500 cubic yards of soil will be excavated, including soil beyond original trench boundaries



~6,900 total soil samples will be collected and analyzed in approved off-site labs

Additional excavation, samples, and/or scans will be taken if resampling results show contamination

Original Soil

Soil Scans and Samples

100% of soil areas evaluated by TtEC will be resampled and rescanned

- ◆ Soil from all sanitary sewer and storm drain trenches
- ◆ Soil at three former building sites and in one exposed crawlspace

Trench Excavations and Borings

100% of former sanitary sewer and storm drain line trench units evaluated by TtEC will be resampled

- ◆ Soil samples taken during excavations and borings of trenches
- ◆ Scans conducted on excavated and soil boring materials

Building Scans and Samples

100% of buildings evaluated by TtEC will be rescanned and resampled

- ◆ Interior of six existing buildings
- ◆ Concrete pad of one former building

Parcel G Retesting Timeline



有关海军在猎人角海军造船厂的清理活动方案的更多信息，
请拨打 (833) 350-6222 并留言。

Para más información sobre el programa de limpieza de la Marina en Hunters Point Naval Shipyard, favor de dejar un mensaje en (833) 202-5888.

FOR MORE INFORMATION:

www.bracpmo.navy.mil/hpnsrc

info@sfhps.com

(415) 295-4742

The Navy's goal throughout the cleanup process is to ensure that all parcels are safe for planned reuse before they are transferred to the City of San Francisco for redevelopment.

Reaching Out to the HPNS Community

The Navy has an extensive outreach program to communicate program updates and information to community members, provide opportunities for participation in public review of Navy documents, and encourage public participation in Navy meetings and events.



• Attend a Community Meeting or Bus Tour

The Navy presents updates at scheduled community meetings to inform people about cleanup at HPNS several times throughout the year, and bus tours are offered each summer. Check the Navy's website for the annual calendar of events held in the community.

• Call the Local Information Line

The HPNS Info Line at (415) 295-4742 provides up-to-date information about outreach activities planned for the shipyard, including Navy meeting information and bus tour announcements and registration. The Info Line supports questions or comments on the HPNS Cleanup Program in English, Spanish, or Cantonese.

• Join Our Email and Mailing Lists

If you would like to send a question or comment to the Navy about the cleanup at HPNS, or join an HPNS distribution list, send your contact information to the Navy at info@sfhpn.com.

• Visit the HPNS Website

Information on the Navy's environmental cleanup at HPNS is available on the Navy's website at www.bracpmo.navy.mil/hpns. Information on the HPNS Radiological Cleanup Program may be found on dedicated pages at www.bracpmo.navy.mil/hpnsrc.

• Review a Navy HPNS Report

HPNS documents available for public review may be found at the following locations:

San Francisco Public Library
Government Information Center
5th Floor, 100 Larkin Street
San Francisco, CA 94102
(415) 557-4400

The Shipyard Site Trailer
(near HPNS security entrance)
690 Hudson Avenue
San Francisco, CA 94124

Navy's HPNS Website
www.bracpmo.navy.mil/hpns

HPNS Radiological Cleanup Program Web Pages
www.bracpmo.navy.mil/hpnsrc

contacts

The Navy and regulatory agencies working to clean up HPNS are available to answer questions.



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Regional Water Quality Control Board
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Oakland, CA 94612
(510) 622-2445
TLow@waterboards.ca.gov



有关海军在猎头角海军造船厂的清理活动方案的更多信息，请拨打 (833) 350-6222 并留言。

Para más información sobre el programa de limpieza de la Marina en Hunters Point Naval Shipyard, favor de dejar un mensaje en (833) 202-5888.

continued from Page 3

Parcel F

The portion of San Francisco Bay (off-shore area) surrounding HPNS. Historic shipyard activities, coupled with soil erosion, resulted in contamination of Bay sediment.

Sediment: Remedy pending

Next steps: The Navy will choose the cleanup remedy with regulatory agencies' concurrence and input from the public in 2018

Anticipated Transfer Date: 2024

Parcel G

Parcel G was used for ship repair and maintenance, as well as radiological research.

Groundwater: Bioremediation complete; groundwater monitoring ongoing

Soil: Excavation and containment complete

Next Steps: Complete radiological evaluation; all other environmental cleanup complete

Anticipated Transfer Date: 2019

Parcel UC-3

Parcel UC-3, more commonly known as Crisp Avenue, is a former utility corridor that served HPNS.

Soil: Focused excavation complete; durable cover complete

Next steps: Complete radiological evaluation; all other environmental cleanup complete

Anticipated Transfer Date: 2019



Guided HPNS Bus Tours provide an opportunity to observe the Navy's cleanup activities and historical buildings at the former shipyard

2018

ANNUAL
UPDATE OF
CLEANUP
ACHIEVEMENTS

HPNS info

Hunters Point Naval Shipyard

Preparing for Tomorrow

what's inside

- HPNS History [Page 1](#)
- Program Successes to Date [Page 1](#)
- Parcel Background & Cleanup Status [Page 2](#)
- Cleanup Laws & Agencies Involved [Page 2](#)
- Cleanup Programs on HPNS [Page 3](#)
- Radiological Data Evaluation [Page 3](#)
- Reaching Out to the HPNS Community [Page 4](#)
- Contacts [Page 4](#)

Cleanup and Redevelopment

The Navy is committed to completing cleanup of HPNS and looks forward to transferring the parcels for redevelopment.

Program Successes to Date

- ◆ Transferred four parcels to the City of San Francisco: Parcel A (2004); Parcels D-2, UC-1 and UC-2 (2015)
- ◆ 10 Records of Decision (RODs) signed
- ◆ Removed 28 miles of sanitary sewer/storm drain lines
- ◆ Removed more than 21,000 truckloads of soil in support of sanitary sewer and storm drain line removal
- ◆ Removed more than 10,000 truckloads (to date) of soil and sediment from Parcel E-2
- ◆ Treated 8.6 million gallons of groundwater
- ◆ Closed 52 Petroleum Sites
- ◆ Created a comprehensive database of 70,000 radiological samples and 900,000 analytical results to confirm the accuracy of previously collected data

Community Resources

HPNS Email: info@sfhpn.com

HPNS Information Line: (415) 295-4742

Navy HPNS Web Pages

Main Page:
www.bracpmo.navy.mil/hpns

Radiological Cleanup Program:

www.bracpmo.navy.mil/hpnsrc



Hunters Point Naval Shipyard (HPNS): A History of Maritime Service

The Hunters Point Naval Shipyard, or HPNS, is located on 934 acres of waterfront in the southeast corner of San Francisco, California. It was founded as a commercial dry dock in 1869 and owned privately by Union Iron Works and later Bethlehem Shipbuilding Company. The shipyard was purchased by the United States Navy in 1939, beginning its important role in service to our country. During World War II, the shipyard provided needed deep-water facilities between San Diego and Bremerton, Washington, where the Navy could conduct ship repair and maintenance of Naval vessels.

In addition to these activities, a portion of HPNS was used by the Naval Radiological Defense Laboratory (NRDL) from 1948 to 1969. NRDL decontaminated ships exposed to atomic weapons testing and also conducted research on the effects of radiation. The shipyard was an active Navy base until 1974.

In 1976, much of the property was leased to a commercial ship repair company, Triple A Machine Shop, which repaired commercial and Naval vessels on the site until 1986 when the Navy reclaimed the shipyard.

Evaluating the Environment

In 1988, the former Shipyard entered the Base Realignment and Closure (BRAC) Program, a federal program created to oversee the cleanup and transfer of military installations to public or private entities for redevelopment. In 1989, the United States Environmental Protection Agency (USEPA) evaluated HPNS and placed it on the National Priorities List in response to concerns about the effects of past hazardous wastes created by historical shipyard activities by both the Navy and private companies. The Navy is completing its extensive investigation of contaminated areas of the base and cleaning up the land and groundwater where contamination is found. The Navy's cleanup program is tailored to meet the City of San Francisco's current Redevelopment Plan, which can be found on the Internet at <http://sfocii.org>.

Navy HPNS Community Meeting Open Houses offer an opportunity for community members to ask questions directly of Navy and regulatory agency members



The Laws and Agencies Involved in HPNS Cleanup

CERCLA and NPL

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), also known as Superfund, was created by Congress in 1980 to create a program to identify, investigate, and clean up hazardous wastes. The National Priorities List (NPL) was developed under CERCLA to guide the United States Environmental Protection Agency (USEPA) in determining which sites need additional investigation. The Navy's environmental cleanup at HPNS follows the requirements in CERCLA.

USEPA

The USEPA is the lead regulatory agency and provides federal oversight for the environmental cleanup at HPNS.

DTSC

The California Department of Toxic Substances Control (DTSC) is the lead state agency that oversees the cleanup of hazardous wastes and ensures that California laws and regulations are followed.

Water Board

The San Francisco Bay Regional Water Quality Control Board (Water Board) is responsible for making sure that the waters of the Bay Area are clean and that laws and regulations are followed. The Water Board oversees cleanup activities that affect water and the Navy's Petroleum Program.

Coordination at HPNS

The Navy's BRAC Program manages the cleanup program at HPNS. The Navy works closely with USEPA, DTSC, Water Board, other agencies, and the City of San Francisco. Together, they ensure that HPNS will be safe for planned redevelopment activities.



HPNS Parcel Background and Cleanup Status

There are currently nine active cleanup parcels at HPNS. When cleanup is complete, the property will be ready for transfer to the City of San Francisco for redevelopment.

When HPNS was assigned to the BRAC Program, it was decided that the best way to manage the cleanup of the 934 acres would be to break it up into smaller areas, or parcels. HPNS is currently made up of nine parcels: Parcels B-1, B-2, C, D-1, E, E-2, F, G, and UC-3. Parcel A was cleaned up by the Navy and transferred to the San Francisco Redevelopment Agency (SFRA) in December 2004. Parcels D-2, UC-1, and UC-2 were transferred to the Office of Community Investment and Infrastructure (OCII), Successor Agency to the San Francisco Redevelopment Agency, in 2015.

Common Remediation Technologies Used at HPNS

The Navy uses state of the art technologies to clean up contaminated soil, groundwater, and sediment at HPNS. A determination for the best cleanup solution is made based on several factors, including the type of contaminant(s), the contaminated medium (for example, soil or groundwater), the location, and the phase of cleanup. Technologies may be used alone or in conjunction with other methods to achieve the best possible cleanup solution. A summary of several of the most common remediation technologies used at HPNS is provided below.

Soil Vapor Extraction (SVE) involves applying a vacuum to the soil to create a steady, controlled flow of air to remove volatile and some semi-volatile organic contaminants

Bioremediation enhances microorganisms in the ground to degrade and/or breakdown contaminants in soil and groundwater

Durable cover is used at sites to contain the contaminants to reduce or minimize releases

In situ chemical reduction involves the placement of a chemical under the ground surface to degrade toxic organic compounds, resulting in less toxic or nontoxic compounds

Natural attenuation relies on natural processes to clean up or reduce pollution in soil and groundwater; scientists monitor or test these conditions to make sure natural attenuation is working

Stabilization involves the addition of chemicals to a solid material to contain contaminants and reduce access by external sources (for example: air and water)

Thermal remediation uses heat to separate, destroy, or immobilize contaminants

Development by OCII on Parcels D-2, UC-1, and UC-2 is currently on hold, pending additional radiological evaluation to verify the parcels are safe for planned redevelopment. *Read more about the ongoing radiological data evaluation at HPNS on Page 3 of this Annual Update, or visit the Navy's website at www.bracpmo.navy.mil/hpnsrc.*

Parcels B-1 and B-2

Parcels B-1, B-2, and Installation Restoration (IR) Site 07/18 (a subsite within Parcel B) were used to provide support and services for the repair and maintenance of submarines and ships. Parcels B-1 and B-2 have been further sub-divided to assist with property transfer activities: subsites include IR-10 (Parcel B-1) and IR-26 (Parcel B-2). Parcels B-1 and B-2 (excluding IR-10 and IR-26) will transfer to the City of San Francisco first, followed by the IR sites upon completion of cleanup.

Groundwater: Bioremediation complete (Parcel B-1, IR-10); remediation ongoing (Parcel B-2); groundwater monitoring ongoing (Parcels B-1 and B-2)

Soil gas: Soil Vapor Extraction (SVE) ongoing (Parcel B-1)

Soil/sediment: Excavation and durable cover complete (Parcels B-1 and B-2)

Next steps: Additional cleanup and monitoring to continue at IR-10 and IR-26

Anticipated Transfer Date: Parcel B-1 (excluding IR-10) - early 2019; IR-07/18 —early 2019; Parcel B-2 (excluding IR-26) - early 2019; IR-26—late 2019; IR-10 —2021

Parcel C

Portions of Parcel C were used for ship repair and radiological research, as well as a power plant and machine, metalworking, and paint shops.

Groundwater: Bioremediation and groundwater monitoring ongoing

Soil gas: SVE ongoing

Soil/sediment: Excavation complete; durable cover remedy complete

Radiological: Building 253/211 is undergoing additional characterization and cleanup beginning in 2018; a small section of remaining sanitary sewer/storm drain line will be removed in 2018

Next steps: Complete radiological work and sampling

Anticipated Transfer Date: 2020

Parcel D-1

Parcel D-1 was used for ship repair and maintenance, as well as radiological research.

Groundwater: Bioremediation complete; groundwater monitoring ongoing

Soil/sediment: Excavation complete; approximately half of the durable cover remedy is complete; the remaining portions will be completed in 2018

Radiological: All radiological work is complete

Next steps: Complete remaining cleanup actions

Anticipated Transfer Date: 2019

Radiological Data Evaluation

In 2012, as a part of its regular review of contractor data, the Navy learned of a discrepancy in radiological sampling by one contractor, Tetra Tech EC (TtEC). Sampling data in question was reviewed and initial corrective actions were taken by TtEC. In 2016, a former TtEC contractor made additional claims about the work done in 2012. In response to these allegations, the Navy hired an independent team of contractors to review and evaluate the reliability of the radiological data collected by TtEC. During 2017, the technical team gathered data, compiled a database of radiological soil samples and radiological scans, analyzed data, and evaluated findings.

Extent of Evaluation

Eight parcels on HPNS are included in the radiological data evaluation: Parcel B (inclusive of Parcels B-1 and B-2, as well as the IR Sites associated with those parcels), Parcel C, Parcel D-2,

Parcel E

Parcel E was used for industrial operations and radiological research.

Groundwater: Underground barriers, bioremediation, and thermal remediation upcoming

Soil gas: SVE upcoming

Soil: Excavation and durable cover upcoming

Radiological: Removal of final remaining sections of storm water and sanitary sewer lines planned for 2018

Next steps: The Navy is completing the remedial design for cleanup of the parcel; fieldwork for the first stage of cleanup will begin in 2018

Anticipated Transfer Date: 2023

Parcel E-2

Parcel E-2 is the site of the HPNS landfill.

Groundwater: Construction of underground barriers complete

Soil gas: Evaluation and mitigation upcoming

Soil and sediment: Excavation completed in 2016; shoreline revetment completed in 2017; durable cover upcoming

Radiological: Conduct surface scan of HPNS landfill area to ensure it is safe for future reuse as a public park and green space

Next steps: Continue with construction of the site remedy

Anticipated Transfer Date: 2021

continued on Page 4

Parcel E, Parcel G, and the three utility corridors - Parcels UC-1, UC-2, and UC-3.

Evaluation Results

After reviewing more than 900,000 analytical results, evidence of data falsification was found in additional locations not previously identified. Past laboratory data quality and sample procedures complicate information already in question. Potential falsification of data and other issues have created uncertainty for all radiological data collected by TtEC.

Next Steps

Due to the lack of confidence in these results, next steps are currently under development and include additional evaluation and sampling, beginning in 2018. The Navy's goal for this process is to verify that the parcels are safe for planned reuse before the property is transferred to the City of San Francisco.

Cleanup Programs on HPNS

The Navy is investigating hazardous wastes at HPNS under three cleanup programs.

Base Cleanup Program

The Installation Restoration (IR) Program was created by the Department of Defense in 1986 to identify, evaluate, and cleanup contamination at US Navy and Marine Corps bases. The IR Program meets the requirements of CERCLA. The chemicals regulated under CERCLA include things like chemicals used to manufacture solvents, pesticides, and metals.

Petroleum Program

The Petroleum Program, also referred to as the TPH Program, focuses on the cleanup of fuels left over from historical activities and uses. Former fueling stations, distribution lines, and maintenance areas may have leaked fuels, including diesel, gasoline, and motor oil into the soil and groundwater at HPNS. The Water Board oversees this portion of the cleanup.

Radiological Program

The Radiological Program focuses on identifying and cleaning up specific items that are radioactive, like glow-in-the-dark buttons and dials, as well as sewers, storm drain lines, and buildings that were used by the Naval Radiological Defense Laboratory (NRDL) for radiological research that could have caused contamination from their activities.



FREQUENTLY ASKED QUESTIONS (FAQs)

Hunters Point Naval Shipyard (HPNS)

Radiological Data Evaluation



HEALTH AND SAFETY

Am I at risk from radiation exposure? What about my child or my grandparents?

Radiation is present naturally in the Earth's environment and we all experience some exposure on a daily basis regardless of location or lifestyle. The radiation exposures that the Navy is investigating are less than, or similar to, the amount of radiation received by the average person on an average day. Calculated limits at HPNS are protective of individuals of all ages and genders.

Is this project safe?

Yes, the Navy is committed to ensuring public safety. The Navy wants to make sure areas with potentially fraudulent radiological testing meet health protective standards; therefore, additional radiological sampling and testing are being conducted. The Navy will confirm that the entire property is safe before transferring it to the City of San Francisco.

How often is the air monitored and where can I see results from air monitoring stations?

For all active construction projects, air monitoring stations are placed both downwind and upwind of cleanup activities. Air monitoring stations collect data on dust and chemicals in the air. Soils are screened in the field for airborne contaminants. In addition to the samples collected by the Navy, regulatory agencies also collect on-site air samples as an additional verification step. Results from air monitoring stations may be found on the Navy's website and on California Department of Toxic Substances Control website.

Will soil excavation expose the community to radiological contamination?

Prior to soil excavations at HPNS, samples are collected at different depths to determine the levels of contaminated materials in soil and to determine soil handling procedures.

Where are you disposing of radiological waste found during cleanup?

California does not allow radiological waste to be disposed of within the state. Radiological waste from HPNS is typically shipped to Utah for disposal at a landfill specifically designed to safely hold radiological waste.

What type of safety measures are taken during radiological cleanup to ensure public safety?

The Navy implements several on-site controls and procedures at HPNS to ensure public safety. Examples include: (a) the establishment of radiologically controlled areas; (b) daily monitoring of air quality; and (c) implementation of the Basewide Dust Control Plan to contain contamination within radiologically controlled areas. In addition, regulatory agencies and the California Department of Public Health collect their own confirmation samples from radiological cleanup sites for independent verification and site workers follow health and safety plans specific to their tasks.

Who sets the radiation protection standards?

Radiation protection standards are established by many federal and state agencies, including the Nuclear Regulatory Commission, U.S. Environmental Protection Agency, and the California Department of Public Health. The Navy works with all of these agencies and others to ensure compliance with all radiation protection requirements. Dr. Kathryn Higley, the Navy's Community Technical Liaison can help answer your questions about radiation protection standards.

Are there resources for health testing of former workers? What about family members or neighbors?

Dr. Kathryn Higley is the Head of the School of Nuclear Science and Engineering at Oregon State University. As a Certified Health Physicist, she holds degrees in Radiological Health Sciences. The Navy has contracted with Dr. Higley to serve as a Community Technical Liaison to answer your radiological health and safety questions at (541) 737-7063 or kathryn.higley@oregonstate.edu. If you have immediate health concerns, please talk to your physician.

Reference fact sheets may be found on the Navy's website at www.bracpmo.navy.mil/hpnsrc

[Understanding Radiation \(February 2017\)](#)

[Radiological Data Review Fact Sheet \(February 2017\)](#)

[Radiological Data Review Fact Sheet Update #2 \(September 2017\)](#)

[Radiological Data Fact Sheet Update #3 \(January 2018\)](#)

[Dust Control During Cleanup at HPNS \(April 2016\)](#)

[Air Monitoring at Parcel E-2 \(July 2017\)](#)



Relative Doses from Radiation Sources

Millirem Doses

Rem is the dosage for the biological effects of ionizing radiation for humans. Rem is a standard measure of radiation. The millirem (mrem), which is one-thousandth of a rem, is a measure often used to approximate dosages commonly encountered, such as those depicted below.

People in the United States receive an average of 624 millirems (mrem) of radiation per year from man-made and natural background radiation sources (NCRP 160).

Known Carcinogens

While not shown here, radiation from smoking and overexposure to the sun have been proven to have health risks.

[Indicates dose level above background]

NRC Standard for Public Health
100 mrem (annual)*



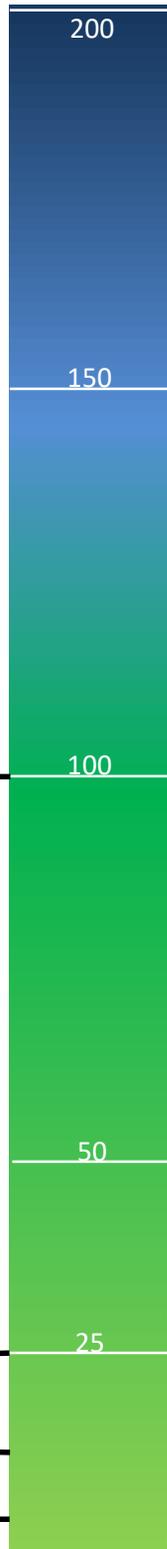
NRC standard for cleanup sites
25 mrem (annual)*



EPA standard for cleanup sites
12 mrem (annual)*



Action level for further analysis
4 mrem (annual)*



Normal cosmic radiation in Denver
50 mrem (annual)



Diagnostic radiology
50 mrem (annual)



Natural radioactivity in the body
40 mrem (annual)



Mammogram
30 mrem (single procedure)



Normal cosmic radiation at Hunters Point (sea level)
24 mrem (annual)



Building Materials
7 mrem (annual)



Round trip flight from LA to NYC
3.7 mrem (per trip)



Deck marker found in Parcel A-1
1.9 mrem (annual)
*8 hrs/day sitting/standing on top of the location



Smoke detector
<.001 mrem (annual)

Sources: http://www.ncrponline.org/Publications/Press_Releases/160press.html,
http://www.epa.gov/radiation/docs/cleanup/rad_arar.pdf, <http://isis-online.org/risk/tab7>,
<http://www.epa.gov/radtown> and <http://lowdose.energy.gov/>



FREQUENTLY ASKED QUESTIONS (FAQs)

Hunters Point Naval Shipyard (HPNS)

Radiological Data Evaluation



REGULATORY OVERSIGHT AND INDEPENDENT REVIEW

What is the role of the Navy and regulatory agencies during the HPNS radiological data evaluation?

The Navy is the lead agency responsible for the investigation and cleanup of the Shipyard. The U.S. Environmental Protection Agency and its state regulatory agency partners (including the California Department of Toxic Substances Control [DTSC] and the California Department of Public Health [CDPH]) oversee Navy compliance with Superfund requirements to ensure cleanup at the Shipyard protects human health and the environment.

Have the regulatory agencies and the City of San Francisco agreed to the radiological data evaluation plan?

Yes. The Navy, regulatory agencies, and the City of San Francisco have been working together on the development of this plan and the subsequent implementation measures.

Who are the stakeholders that the Navy and regulatory agencies are working with?

The Navy is committed to keeping the public informed during the cleanup process at HPNS. Members of the public include, but are not limited to the following individuals and groups:

- homeowners, residents, and businesses on and immediately outside of the HPNS property line
- homeowners' and neighborhood associations in close proximity to HPNS
- residents and businesses in the neighboring communities
- other people who live and work in San Francisco
- local, city, and government officials
- community groups, activist and environmental groups

Where can I find information on dust monitoring and radiological scanning by DTSC Industrial Hygienists?

As a part of the regulatory oversight process, regulatory agencies periodically inspect cleanup activities and may take samples to confirm the effectiveness of Navy cleanup activities. To date, independent DTSC sampling results have confirmed the effectiveness of the Navy's dust control measures. The Navy and DTSC air monitoring reports are available on DTSC's Envirostor website under the Activities tab at http://www.envirostor.dtsc.ca.gov/public/profile_report.asp?global_id=38440005

How will the Navy check Tetra Tech EC's work? When and where can I see the results?

An independent team of technical experts are conducting an extensive evaluation of radiological data results through a set of statistical analyses and logic tests. Preliminary findings are complete and additional results are anticipated during the spring of 2018, including recommendations to address any questionable data that is identified. Findings and conclusion reports will be available on the Navy's website at www.bracpmo.navy.mil/hpnsrc.

Do we know if more anomalous soil samples have been identified after 2016?

The ongoing investigations by our team of technical experts include review of anomalous samples identified during the data evaluation process.

What is the role of contractors and independent experts during the HPNS radiological data evaluation?

A team of contractors with extensive expertise in radiological cleanup have been hired to conduct a thorough evaluation of soil sampling data collected by Tetra Tech EC to determine if the results are dependable, and a third-party contractor has been hired to monitor proper collection and documentation of soil samples. These firms currently include Battelle, Cabrera, CH2M, Oregon State University, Perma-Fix, and SC&A. In addition, the Oakridge National Laboratory is conducting third-party independent analysis of the data evaluation methods and findings for the HPNS radiological data review.

Has the Navy used a separate contractor to conduct impartial quality control for radiological work at HPNS?

Yes, a third-party contractor (Battelle) has been hired to monitor proper collection and documentation of radiological soil samples.

Reference fact sheets may be found on the Navy's website at www.bracpmo.navy.mil/hpnsrc

[Radiological Data Review Fact Sheet \(February 2017\)](#)

[Radiological Data Review Fact Sheet Update #2 \(September 2017\)](#)

[Radiological Data Fact Sheet Update #3 \(January 2018\)](#)

[Air Monitoring at Parcel E-2 \(July 2017\)](#)



FREQUENTLY ASKED QUESTIONS (FAQs)

Hunters Point Naval Shipyard (HPNS)



GENERAL SITE CLEANUP

Is the cleanup at Hunters Point Naval Shipyard complete?

Cleanup at HPNS is ongoing, based on a phased schedule by parcel. In December 2004, the Navy transferred the first 75 acres of HPNS (known as Parcel A) for redevelopment to the City of San Francisco, followed by Parcels D-2, UC-1, and UC-2 in 2015. The remaining parcels will be transferred to the City of San Francisco once environmental cleanup is complete and transfer of the property is approved. The current plan is to have all cleanup complete by 2024; however, additional environmental samples are being taken that may affect the Navy's current schedule.

How is the cleanup being overseen, by whom, and what are the safeguards in place?

The Navy is leading the cleanup of HPNS. The U.S. Environmental Protection Agency, the California Department of Toxic Substances Control, and the San Francisco Regional Water Quality Control Board ensure the Navy's compliance with federal site cleanup requirements. Federal law ensures that the cleanup protects human health and the environment.

What is the process for cleaning up radiological contamination?

The Navy follows an established procedure for cleaning up radiological contamination under CERCLA. The primary steps include investigation, remediation, and confirmation.

Is the Navy taking the future possibility of sea level rise into consideration?

Yes, all Navy remedies at HPNS, including those proposed for the landfill, are designed to withstand potential sea level rise. The landfill remedy includes revetments (below and above-ground walls that prevent water and soil movement) and elevations to account for sea level rise.

How is the public protected from dust caused by earth moving operations at the Shipyard?

Dust suppression measures are defined in the Navy's work plans, which are reviewed and approved by regulatory agencies. These measures include regular watering of surface soil to reduce dust, tire washing, covering of trucks transporting soil to landfills, and regular air quality monitoring both upwind and downwind from the location of earth moving operations.

Is the Navy taking the effects of an earthquake into consideration?

Yes, regulations require an evaluation of short- and long-term protectiveness for any solution proposed, including protectiveness during and after an earthquake. Geotechnical testing is performed at HPNS where contamination is being left in place and site conditions dictate. Final cleanup solutions are designed and constructed to withstand earthquakes.

How does the cleanup affect the health and safety of current and future Bayview residents?

The health and safety of community members is the Navy's priority during and after the environmental cleanup at HPNS. Compliance with federal, state, and local guidelines and regulatory requirements is required. The Navy meets conservative cleanup levels for sites, providing a high level of health protectiveness.

How will the durable covers be maintained and monitored?

Once the final durable covers have been installed, the Navy will monitor and maintain them indefinitely, including: regular inspections of pavement conditions, cracks in building foundations, settlement, accumulation of surface water, the condition of survey benchmarks, and signs of vandalism. To ensure that the solution remains protective, Five Year Reviews will be conducted indefinitely.

Should I be concerned about exposure to contaminated groundwater?

Radiological contamination has not been found in groundwater at HPNS; however, other contaminants have been identified and are being treated, as needed. Residents, tenants, workers, and the general public are not likely to come in contact with HPNS groundwater, as groundwater from HPNS is not used. The San Francisco Public Utilities Commission pumps drinkable water to the site and surrounding area for drinking, showering, and other uses.

Reference fact sheets may be found on the Navy's website at www.bracpmo.navy.mil/hpns

Annual Update of Cleanup Achievements (2017)

Dust Control During Cleanup (April 2016)

Parcel E-2 Landfill Fact Sheet (August 2017)

Radiological Cleanup Process (April 2015)

Installation of Durable Covers (March 2015)



FREQUENTLY ASKED QUESTIONS (FAQs)

Hunters Point Naval Shipyard (HPNS)

Radiological Data Evaluation



COMMUNITY OUTREACH

How do I get on/off the email or mailing list?

You can be added or deleted from the email or mailing list by sending an email to info@sfhpn.com or by leaving a message on the HPNS Info Line at (415) 295-4742. You can also add your contact information to a sign-in sheet at a Navy meeting, a community event with a Navy informational table, or during an HPNS Bus Tour.

Why are there no uniformed Navy personnel at these meetings?

Hunters Point is no longer an operational Naval facility; therefore, no uniformed personnel are on the base. The base remains US Navy property until cleanup is complete and it is transferred to the City of San Francisco for redevelopment.

How will the Navy address public comments?

Questions received by members of the public and Navy responses may be included in future fact sheets or Frequently Asked Questions (FAQs). Public comments during formal public comment periods will be published on the Navy's website and included in final versions of the document commented upon.

Will the Navy regularly attend my group's public town hall meetings?

The Navy offers multiple outreach opportunities throughout the year to share information with the public via site tours, public meetings and the Navy website. You are always welcome to participate. The Navy also attends community meetings and provides information specific to stakeholders' concerns in a mutually respectful setting.

Why won't the Navy host a town-hall meeting so others can hear what I have to say?

The Navy has found that the most productive forum for sharing information with the public is through an Open House style meeting wherein experts are available to respond at each poster board station to individual questions. This format allows us to answer more questions in a shorter period of time and accommodates stakeholders' schedules.

How is the Navy involving community members who live near the Shipyard in the cleanup?

The Navy leads the community involvement process at HPNS that includes a robust outreach program, including electronic communications, postings in local news media and blogs, and outreach to community leaders and community based organizations.

Navy community meetings offer information on cleanup progress and specific cleanup technologies, providing an opportunity for community members to learn about the cleanup and ask questions.

Technical documents are available for review by members of the public at local information repositories and on the Navy's website.

The Navy hosts several guided bus tours of the cleanup sites at HPNS each year, gives presentations to community groups, and hosts informational tables at local community events.

The Navy has hired a local community liaison and a community technical advisor to provide additional resources for community members during the radiological data evaluation.

Regulatory Agencies participate in Navy community engagement events, take part in meetings hosted by local organizations, and refers inquiries from the public to the Navy for response.

Will the Navy restore the Restoration Advisory Board?

The HPNS Restoration Advisory Board (RAB) was formed in 1994 and dissolved in 2009 when it was no longer fulfilling its purpose or mission. Besides distributing information via emails, mailers, bus tours, and newspaper ads, the Navy conducts at least three (3) public meetings each year to provide information to the public in lieu of a RAB. If you are interested in knowing more, please sign up to be included on an HPNS distribution list by sending an email to info@sfhpn.com, leave a message on the HPNS Info Line at (415) 295-4742, or provide your information on a sign-up form at an event where the Navy hosts an informational booth. You may also view program information on the Navy's website at www.bracpmo.navy.mil/hpn.com.

Where can I get more information on the Navy's cleanup at HPNS?

See page 2

Reference fact sheets may be found on the Navy's website at www.bracpmo.navy.mil/hpnsrc



FREQUENTLY ASKED QUESTIONS (FAQs)

Hunters Point Naval Shipyard Radiological Data Evaluation



COMMUNITY OUTREACH (continued)

Where can I get more information on the Navy's cleanup at HPNS?

There are many ways to get more information on the Navy's cleanup at HPNS.

- Attend a Community Meeting or Bus Tour: The Navy presents updates at scheduled community meetings to inform people about cleanup at HPNS several times throughout the year, and bus tours are offered each spring and summer. For a list of upcoming meetings or bus tours, visit the Navy's website at www.bracpmo.navy.mil/hpns. You may also send an email to info@sfhpns.com or leave a message on the HPNS Info Line at (415) 295-4742 to receive more information.
- Join the HPNS distribution lists to receive electronic newsletters with meeting announcements, bus tour registration, program updates, document links, and other current information by sending a request to info@sfhpns.com.
- Visit the HPNS pages of the Navy's website at www.bracpmo.navy.mil/hpnsrc for program information, access to HPNS radiological program documents, and other related resources.
- Call Our Local Information Line at (415) 295-4742 for up-to-date information about outreach activities planned for the shipyard, including Navy meeting information and bus tour announcements and registration. A message may also be left with any questions or comments on the HPNS Cleanup Program. The HPNS Info Line supports three languages: English, Spanish and Cantonese.
- Call or visit the Navy's community resources to ask a question or request more information:
 - ◇ Dr. Kathryn Higley, Community Technical Advisor (541) 737-0675 or kathryn.higley@oregonstate.edu
 - ◇ Mr. James Bryant, HPNS Community Liaison (415) 970-9051 or community@sfhpns.com



Navy BRAC program representative leads a guided bus tour of the cleanup sites at HPNS



Navy BRAC Environmental Coordinator gives a presentation at a local community group meeting



Radiological Community Technical Advisor answers questions at a local event

Para más información sobre el programa de limpieza de la Marina en Hunters Point Naval Shipyard, favor de dejar un mensaje en (833) 202-5888.

有关海军在猎头角海军造船厂的清理活动方案的更多信息, 请拨打 (833) 350-6222 并留言.



FACT SHEET

Hunters Point Naval Shipyard

Air Monitoring at Parcel E-2

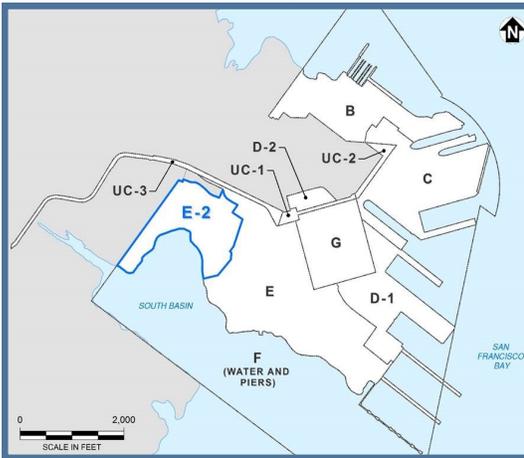
July 2017

This fact sheet provides information on air monitoring at Parcel E-2 at Hunters Point Naval Shipyard (HPNS). It provides background information on the cleanup solution at Parcel E-2, Navy and California Department of Toxic Substances Control (DTSC) air monitoring activities during environmental cleanup at the site, and links for more information on the Navy's cleanup at Parcel E-2.

Parcel Background

History and Location of Parcel E-2

Parcel E-2 consists of 47 acres in the southwest portion of HPNS. The Parcel was created between the 1940's and the 1960's by filling the area along the edges of the San Francisco Bay with artificial fill materials. Parcel E-2 also includes a 22-acre landfill where the Navy disposed of construction debris, municipal-type trash, and a variety of industrial wastes.



Location of Parcel E-2 at HPNS

Cleanup at Parcel E-2

In November 2012, the Navy finalized a Record of Decision (ROD) for Parcel E-2. A summary of the proposed cleanup activities were presented to the community during public meetings on December 18, 2013, February 23, 2014, and April 26, 2014. The ROD outlines the major activities planned for Parcel E-2 which include (1) hot spot excavation activities, (2) installation of two underground barriers (also known as "slurry walls"), (3) site grading and additional soil covers, (4) extension of the landfill gas control system, (5) installation of a revetment, or rock wall, along the shoreline, (6) creation of two wetlands, and (7) long-term monitoring and management of the site. More information on the Parcel E-2 ROD may be found in the [Navy's Parcel E-2 ROD Summary Fact Sheet on the Navy's website](#).

The cleanup at Parcel E-2 is ongoing. The hot spot excavations and construction of one slurry wall is complete. Current field work at the site consists of site grading, construction of a 1,800-foot rock wall (revetment) along the shoreline to prevent erosion and to stabilize the shoreline, and installation of a 550-foot upland slurry wall.

Air Monitoring at Parcel E-2

Navy Air Monitoring at Parcel E-2

The Navy has implemented several measures to control dust on HPNS during cleanup activities as outlined in the [Navy's Dust Control Plan Summary Fact Sheet on the Navy's website](#). To ensure the measures are working adequately, the Navy screens soils at excavation sites and installs at least two air monitoring stations (one upwind and one downwind) in the area where field work is being done. The air monitoring stations collect data on both dust and chemicals in the air. To date, the air sampling results from the air monitoring station have not exceeded the acceptable levels.



An example of equipment that the Navy uses to collect data on both dust and chemicals in the air

DTSC Dust Monitoring at Parcel E-2

As a part of the regulatory oversight process, regulatory agencies periodically inspect cleanup activities and may take samples to confirm the effectiveness of Navy cleanup activities. DTSC is currently monitoring dust (particulate matter) one to two times per week near the boundary of Parcel E-2 to ensure that the dust controls measures that were approved in the Navy's work plan are being used and are working. DTSC plans to continue periodic sampling during the remainder of the cleanup work at Parcel E-2.



DTSC monitors dust near the perimeter of Parcel E-2 to ensure Navy dust control measures are working

PROGRAM INFORMATION LINKS

For more information on the Navy's cleanup at Parcel E-2, including reports referenced in this fact sheet, visit the HPNS pages of the Navy's website at www.bracpmo.navy.mil or DTSC's Envirostor website at www.envirostor.dtsc.ca.gov/public/profile_report.asp?global_id=38440005

To date, independent DTSC sampling results have confirmed the effectiveness of the Navy's dust control measures. [The Navy and DTSC air monitoring reports are available on DTSC's Envirostor website under the Activities tab.](#)

A park is planned for the future reuse of Parcel E-2.



Artist's rendering of the future of Parcel E-2

The Future of Parcel E-2

When cleanup is complete at Parcel E-2, the Navy will begin a long-term management program to ensure the cleanup solutions continue to protect human health and the environment.

- ⇒ Inspect and maintain all parts of the cleanup solutions at Parcel E-2 on a regular schedule
- ⇒ Ensure no changes are made to any part of the cleanup solutions that would change its planned reuse from that of a park
- ⇒ Evaluate the conditions of the cleanup solutions if a significant natural event occurs, like an earthquake or sea level rise
- ⇒ Make repairs or modifications if the any part of the final cleanup is damaged, altered, or jeopardized



The cleanup solution at Parcel E-2 will allow native species, like the Avocet, to thrive at the shipyard

How to Get More Information on the Navy's Cleanup at HPNS

Contact HPNS Program Management

Derek Robinson, BRAC Environmental Coordinator
 Dept of the Navy, BRAC Program Management Office West
 33000 Nixie Way, Bldg. 50, 2nd Deck, San Diego CA 92147
 (619) 524-6026 derek.j.robinson1@navy.mil

To be added to the HPNS mailing list or for additional information, email info@sfhpns.com or call (415) 295-4742.

Review HPNS Reports

City of San Francisco Main Library
 100 Larkin Street, 5th Floor, Gov't Information Center
 San Francisco, CA 94102 (415) 557-4400

Hunters Point Naval Shipyard Site Trailer
 690 Hudson Avenue, San Francisco, CA 94124

Navy Website: www.bracpmo.navy.mil

Get Answers on Radiological Health and Safety from a Technical Expert

Dr. Kathryn Higley
 (541) 737-7063

kathryn.higley@oregonstate.edu
www.ne.oregonstate.edu/kathryn-higley

Dr. Kathryn Higley is highly qualified to serve as a resource to the public on HPNS radiological issues. She is the Head of the School of Nuclear Science and Engineering at Oregon State University. She is a Certified Health Physicist with a Ph.D. and M.S. in Radiological Health Sciences.

Dr. Higley is available to answer community member questions by phone or email. In addition, community members are notified in advance of the location, date, and time of her availability when she is in the San Francisco area.

有关海军在猎人角海军造船厂的清理活动方案的更多信息，
 请拨打 (833) 350-6222 并留言。

Para más información sobre el programa de limpieza de la Marina en
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HPNS

Hunters Point Naval Shipyard

Parcel E-2 Cleanup Progress

About Parcel E-2

Location

Parcel E-2 is located on approximately 47 acres in the southwest portion of the shipyard. It was created between the 1940's and 1960's with fill materials, including crushed bedrock and soil, dredged sediments, construction debris, trash and industrial waste

Historical Use

Parcel E-2 is the site of the shipyard landfill, used for disposal of various wastes

- ◇ construction debris (wood, steel, concrete, and soil)
- ◇ municipal trash (paper, plastic, glass, and metal)
- ◇ industrial waste (sandblast waste, low-level radioactive material, paint sludge, solvents, and waste oils)

Contaminants

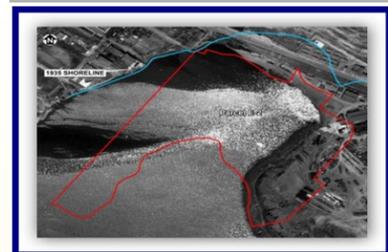
Contamination at Parcel E-2 resulted from its historical use as the shipyard landfill.

Contaminant	Source
Metals	naturally occurring and as related to historical shipyard activities
Pesticides and herbicides	used to kill rodents, insects, and unwanted plants
PCBs (polychlorinated biphenyls)	used to cool electrical equipment
Low-level radioactive contaminants	used for radiological research and as a lighting source (deck markers) aboard ships
TPH (total petroleum hydrocarbons)	mixture of chemicals found in crude oil
VOCs (volatile organic compounds)	fluids that evaporate easily, like paint thinner

Landfill Fire of 2000

On August 6, 2000, 14 acres burned in a brush fire on Parcel E-2 at HPNS. Soil and air samples confirmed no health hazards and no long-term risk to the community and shipyard tenants. The Navy monitors air quality samples to keep the public safe.

Parcel E-2 Changes Over Time



1946



1955



1965

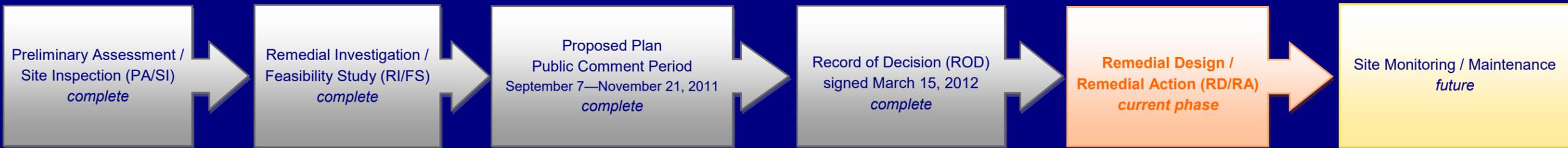


1969

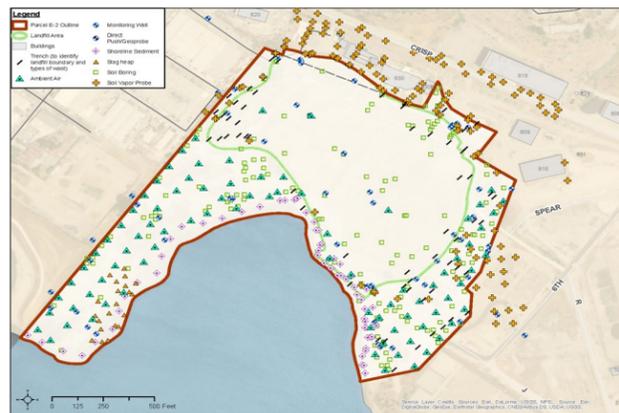


1974

The CERCLA Cleanup Process at Parcel E-2



Parcel E-2 Sampling Map



The Navy has collected and analyzed thousands of samples since 1998

Navy's Cleanup Plan at Parcel E-2

There are five primary components to the Navy's cleanup solution for Parcel E-2.

Remove Contaminated Soil

Purpose: To remove contamination and prepare areas for additional work

Solution: The Navy has removed more than 130,000 cubic yards (almost 10,000 truckloads) of soil contaminated with PCBs, metals, and oils from the area next to the landfill

Manage Groundwater

Purpose: To manage the flow of groundwater around the landfill to prevent the spread of contamination

Solution: The Navy is constructing two underground barriers ("slurry walls") to manage the flow of groundwater under Parcel E-2

- ◆ The shoreline slurry wall will help protect the San Francisco Bay waters from contaminated groundwater at Parcel E-2
- ◆ The upland slurry wall will prevent groundwater from flowing into the landfill and will provide a natural water source for the new freshwater wetlands

Cover Landfill and Manage Landfill Gases

Purpose: To prevent access to contamination left in the landfill

Solution: The Navy will place a protective cover over the landfill and use a landfill gas control system to collect and treat methane gas

Rebuild the Shoreline

Purpose: To prevent contaminated soil from entering San Francisco Bay and to prepare for future sea level rise

Solution: The Navy will make a protective barrier of rocks ("revetment") on the shoreline to stop erosion from the site and a 3-foot high cement sea wall to prevent Bay waters from washing up over the rock barrier

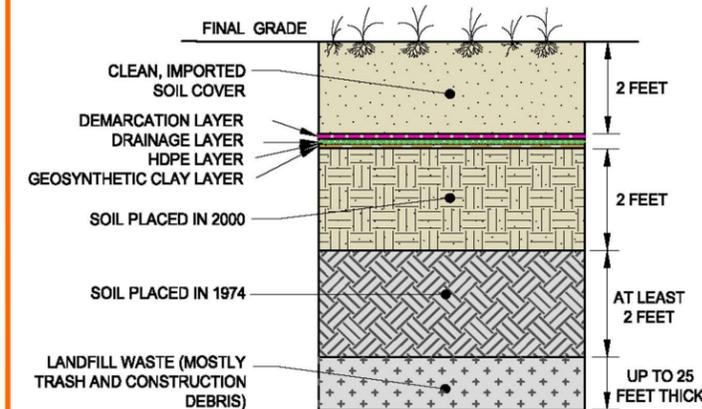
Create New Wetlands

Purpose: To provide a natural habitat for native bird species and other wildlife

Solution: The Navy will build two wetlands to replace existing contaminated or damaged wetlands

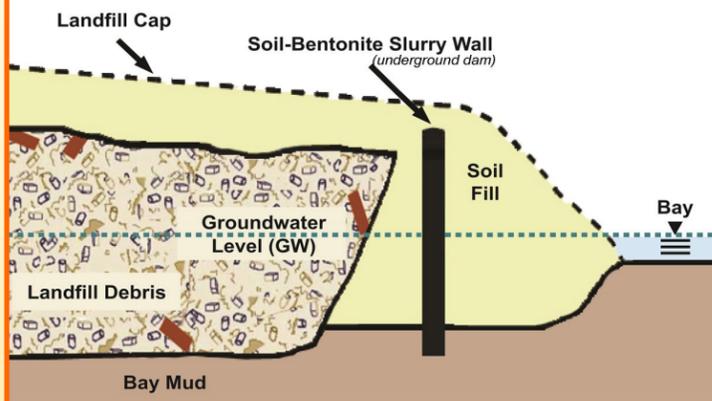
- ◆ The freshwater wetland includes a pond that will be fed by the nearby underground barrier ("slurry wall")
- ◆ The tidal wetland will lie on the shoreline and will be flooded by San Francisco Bay high tides

Landfill Soil Cover and Protective Liner



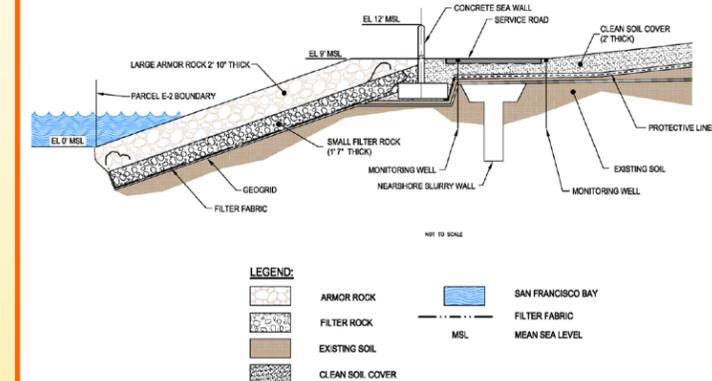
The landfill cover will protect the public from any old landfill materials

Slurry Wall Cross Section



The underground shoreline wall will protect Bay waters

Shoreline Revetment Cross Section



Shoreline rocks will protect the Bay waters from erosion from the site



Excavations remove contaminants and prepare for future work areas



Underground barriers will limit the flow of groundwater from the site



A protective liner and clean soil will be placed over the landfill



Landfill gas will be collected and treated to ensure the air is safe



Soil, sediment, and other debris are removed from wetlands areas



New wetlands will provide habitats for native plant and animal species



"Rip-rap" rock will protect the San Francisco Bay waters from erosion



The soil cover will be maintained to ensure it stays in place