

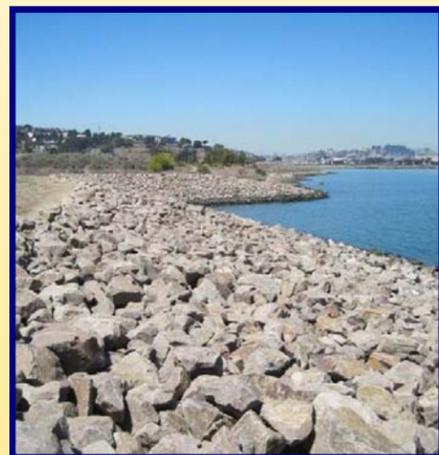
According to the City of San Francisco's Redevelopment Plan, Parcel E-2 will be developed as open space.

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Build a Shoreline Revetment

A rock wall, known as a revetment, will be built along the Parcel E-2 shoreline to prevent contaminated soil from entering San Francisco Bay, as well as to contain the landfill waste along the shoreline and prevent erosion.

- ⇒ The revetment will be 1,800 feet long, 35 feet wide, and 9 feet above mean sea level
- ⇒ A 3-foot high sea wall will be built at the top of the revetment to prevent waves from overtopping the rock wall during extreme conditions



Revetment at Parcel E-2 shoreline

Long-term Management of the Remedy

When cleanup at Parcel E-2 is complete, the Navy will implement a comprehensive monitoring program to support the City of San Francisco's redevelopment plans (depicted above, right).

The management plans includes:

- ⇒ regular inspection and maintenance of all parts of the remedy;
- ⇒ inspection and enforcement of land use and institutional controls; and
- ⇒ inspection of the conditions of the remedy in the event of an earthquake or another significant natural event.



HPNS

Hunters Point Naval Shipyard

Parcel E-2 Cleanup Update

December 2015

Parcel E-2 History

Parcel E-2 is located in the southwest portion of Hunters Point Naval Shipyard (HPNS), and includes approximately 48 acres of shoreline and lowland coastal area.

Between the 1940's and 1960's, the edges of the San Francisco Bay were filled with various materials to create Parcel E-2. These materials included crushed bedrock, dredged sediments, construction debris, soil and trash/industrial waste.

Parcel E-2 is the historical landfill for the shipyard. A variety of shipyard-related wastes were disposed of in the landfill, including:

- ⇒ 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 of concern (COCs) at Parcel E-2 include:

- ⇒ Metals, including copper, mercury, lead, manganese,

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HPNS Parcel Map

Construction of Parcel E-2 Historical Timeline



1946



1955

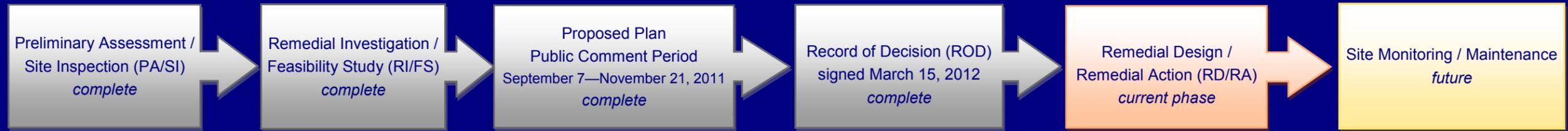


1969



1974

**The CERCLA
Cleanup Process at
Parcel E-2**



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and nickel that occur both naturally and are related to historical shipyard activities

- ⇒ Pesticides and herbicides that were used to kill rodents, insects, and unwanted plants
- ⇒ PCBs, or polychlorinated biphenyls, were commonly used to cool electrical equipment
- ⇒ Radionuclides are radioactive elements that occur naturally or are man-made
- ⇒ TPH, or total petroleum hydrocarbons, is a mixture of chemicals found in crude oil
- ⇒ Volatile organic compounds (VOCs) that easily evaporate, like paint thinner



Trench at landfill shows layers of debris

Remedial Actions at Parcel E-2

The primary components of the Navy's cleanup plan for Parcel E-2 are summarized below. Completion of all cleanup activities at Parcel E-2 is planned for 2018.



Excavation of soil and sediment

Current Focused Cleanup at Parcel E-2

The Navy previously removed several PCB contaminated areas at Parcel E-2 and is currently removing additional contamination with elevated concentrations of TPH and metals (copper and lead) in the subsurface.



Radiological soil screening

- Confirmation samples are being collected from the excavation sidewalls and bottom to ensure that remaining soil meets the site cleanup goals.
- ⇒ Drilling and sampling of 19 identified focused contamination areas began in February 2015
 - ⇒ As of November 2015, approximately 2,850 truckloads of soil and debris have been excavated from the 19 identified excavation areas
 - ⇒ Cleanup at the focused contamination areas will continue during the winter of 2015 and will be completed in 2016

Installation of Slurry Walls

The first of two slurry walls, which will help to minimize potential contaminants from migrating into San Francisco Bay from the landfill, is currently under construction on the edge of Parcel E-2. Constructing a slurry wall involves filling a long, deep trench with a clay and water mixture (slurry), followed by the addition of clean soil and cement to create the wall. This slurry wall will be completed during the winter of 2015.

In 2016, the Navy will begin construction of the second slurry wall along the western property boundary, northwest of the landfill. This slurry wall will serve as an underground barrier to reduce the amount of groundwater flowing into the landfill and the wetlands. The gravel drain (French Drain) associated with this slurry wall will reduce the amount of water that flows off of the property onto future wetlands.

Creation of Wetlands

Wetlands are land with wet soil and vegetation that are frequently flooded and provide habitat for various birds and other wildlife. As a part of the Remedial Design, the Navy will build two wetlands to replace existing wetlands that contain contaminated sediment and will be damaged or removed during the cleanup process.

A freshwater wetland, approximately 1.59 acres in size, will consist of a pond that receives water from the French Drain and surface runoff. The edge of the pond will be planted with native species.



Creation of new wetlands will provide habitats for native plant and animal species

A tidal wetland will be constructed in an area next to the San Francisco Bay that will be flooded with Bay ocean water during high tides. This 3.18 acre wetland will also be planted with native species.

Collect and Treat Landfill Gas

Landfill gas is created when buried debris, such as wood and paper, decomposes. The Navy will use a landfill gas control system to collect and treat landfill gas.

- ⇒ An existing landfill gas control system will be integrated into the new system
- ⇒ A network of 39 new gas extraction wells will be connected to the new system
- ⇒ Landfill gas will be treated on-site for both methane and other organic compounds

Installation of a Protective Liner and Soil Cover

During the Proposed Plan stage of the CERCLA process, the Navy reviewed several options for cleaning up contamination in the landfill. The selected remedy was approved by regulatory agencies and involves containment of the landfill in place using a protective cover of clean soil cover over the area.

The soil cover will include a protective liner followed by two feet of clean soil in the landfill area. In the wetland area, the Navy will install a liner followed by three-feet of clean soil. Both soil covers will be planted with native vegetation.



Installation of clean soil cover



HPNS

Protecting the Public

Hunters Point Naval Shipyard

Department of the Navy

Base Realignment and Closure (BRAC)

December 2015

The Navy implements several on-site controls and procedures at HPNS to ensure the public stays safe. In addition to the strategies listed below, individual oversight agencies monitor the cleanup and the California Department of Public Health collects its own confirmation samples from radiological cleanup sites for independent verification.

Radiologically Controlled Areas



Public access to all work areas is restricted. Only specially trained personnel with radiation monitoring equipment are permitted to access Radiologically Controlled Areas (RCAs). All

radiologically impacted areas are secured with locks and warning signs are posted. All RCA boundaries are routinely monitored to ensure radiation is at background levels, and all personnel, equipment, and materials are screened for radiation before they leave the RCA.

Air Monitoring



The Navy conducts daily monitoring for air quality, both upwind and downwind. On-site monitoring equipment tests for both particulates (such as dust) and radiological contamination.

Dust Control Measures

In compliance with HPNS' Base-wide Dust Control Plan, dust in RCAs is controlled to contain contamination within these areas.



Misting systems are used to wet down work areas and roads, and stockpiles of soil are coated with a biodegradable polymer to minimize windblown dust. A 15-mile-per-hour (mph) speed limit is enforced base-wide, and it is reduced to 5 mph in active work areas. All truck beds containing soil (even clean soil) are required to be covered. Raised strips to vibrate truck tires and loosen soil caught in the treads to loosen soil, known as rumble strips, are placed at the exits of the RCAs. A tire wash station also helps remove excess dirt and dust from truck

tires as they leave the site. In addition, a Navy contractor provides daily street sweeping, and operations are shut down when conditions become too windy.



Portal Monitor for Truck Screening

Trucks entering and leaving HPNS must pass through a portal monitor which screens for radiation. If elevated radiation is detected, the monitor will sound an alarm, and a more thorough screening using



hand-held devices to determine the cause is conducted. To date, it has been reported that the majority of alarms have been caused by naturally occurring radiation, rather than from HPNS soil contamination.

HPNS Truck Route Map

The Navy uses several different methods to bring in and dispose of materials and supplies during the cleanup process at HPNS, including water delivery by barge and land transportation by truck. In order to limit the impact to the Bayview Hunters Point community, a route has been developed for trucks to exit the former shipyard. In addition to this truck route, hours have been established for transportation through the community in an effort to reduce noise by the trucks.



HPNS Truck Route Map