

5090
Ser 1832.2/L7057
16 Dec 1996

From: Commanding Officer, Engineering Field Activity, West, Naval Facilities Engineering Command

To: Distribution

Subj: ECOLOGICAL RISK ASSESSMENT, PHASE 1B, ENGINEERING FIELD ACTIVITY, WEST, NAVAL FACILITIES ENGINEERING COMMAND, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CALIFORNIA

Encl: (1) Public Summary Ecological Risk Assessment, Phase 1B, Hunters Point Shipyard, San Francisco, California; Department of the Navy, Naval Facilities Engineering Command, Engineering Field Activity, West, San Bruno, California

1. Enclosure (1) is forwarded to members of the Hunters Point Shipyard (HPS) Restoration Advisory Board (RAB) for information. The two volumes of this report are available for review at the HPS public information repositories in the San Francisco Main Library, and the Anna E. Waden Branch Library, 5075 Third Street, San Francisco, California. A presentation and additional information on this report were provided at the 11 December 1996 RAB meeting. The public review period for this report ends on 30 December 1996.

2. If you have any questions regarding this enclosure, please contact Mr. Richard Powell, Code 1832 at (415) 244-2655, or Mr. William Radzevich, Code 1832.2, at (415) 244-2555.

Original signed by:

RICHARD POWELL
By direction of
the Commanding Officer

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ACTIVITY, WEST, NAVAL FACILITIES ENGINEERING COMMAND,
HUNTERS POINT SHIPYARD, SAN FRANCISCO, CALIFORNIA

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**Hunters Point Shipyard
Ecological Risk Assessment - Phase IB**

Public Summary

We have recently completed a draft report assessing potential risks to the offshore environment at Hunters Point Shipyard (HPS). The report is called the "Phase 1B Ecological Risk Assessment" and evaluates possible risks posed to birds and marine life in the offshore area from exposure to contaminants present within HPS. The ecological risk assessment report was prepared as part of our overall environmental cleanup program underway at HPS. A separate preliminary study of potential ecological risks onshore and offshore was completed in July 1994 ("Phase 1A Ecological Risk Assessment") and is available for review at the information repositories listed on the back page.

Phase 1B follows Phase 1A of the ecological risk assessment. In addition to performing an initial assessment of the offshore ecological risks, Phase 1A involved an initial identification of contaminants and animals present in the onshore area. Phase 1B of the ecological risk assessment involved a more comprehensive study of the nature and extent of contaminants and their potential risk to animals in the offshore area.

The ecological risk assessment report includes an evaluation of all the offshore area around HPS; the offshore area is also called Parcel F*. The offshore area includes the India Basin, the berthing sites, and the South Basin. The offshore area is the main destination point for the shipyard's storm water system and may receive contaminants from the old industrial landfill in Parcel E.

To evaluate the potential ecological risk to birds and marine life in the offshore area, three types of "receptors" were identified. Receptors are the animals most likely to consume contaminants, primarily through ingesting (eating) the contaminated food or sediments. The receptors targeted for the study represent each step of the food chain. The first step of the food chain includes the "benthic" receptors; that is, worms and clams that live in the muds and sediments just offshore.

**HPS has been divided into six parcels, Parcel A through F for the purpose of managing the environmental cleanup. Cleanup of Parcel A has been completed and Parcel A is ready for transfer to the City of San Francisco. Investigation and cleanup of Parcel B through F is ongoing.*

The second step of the food chain is represented by the shorebirds who eat the mud worms and clams. The shorebird selected for the study was the willet because it is very numerous around the San Francisco Bay and is representative of other types of shorebirds.

The third step of the food chain is represented by the "birds of prey" who eat the shorebirds, as represented by the peregrine falcon. For this study, two pairs of falcons nesting in two of the Bay Bridge towers were studied. The falcons are of particular interest because in addition to representing an important part of the food chain, they are also an "endangered species" which, by federal law, must be protected. Although the falcons "forage" or feed throughout a wide region around the bay well beyond the shipyard, given their status as an endangered species, we believe it is necessary to take extra precautions to ensure their protection. Therefore, the falcons were selected for inclusion in the ecological risk assessment.

Fish that swim offshore HPS were not included in the study since the fish migrate throughout the San Francisco Bay and may be impacted by many different industries around the bay. As many of the industrial operations involve similar types of chemicals, we would be unable to directly associate impacts on the fish to contaminants at HPS. Instead, we focused on identifying the source of contamination within HPS to the bay and determining the possible impact on receptors that continually reside in the offshore area. Through addressing the sources of contamination and minimizing the impact on the offshore receptors, contamination from HPS that may impact fish swimming offshore should also be minimized. Additionally, a group of ecological assessment specialists from the regional regulatory agencies are currently evaluating how to address impacts to the fish and marine life within the bay on a region-wide basis. We are working closely with this group, called the Biological Technical Assistance Group, and are providing them information specific to HPS's offshore area.

We collected water and sediment samples at 105 locations. The primary types of contaminants found are metals, polychlorinated biphenyls (PCB), pesticides, and tributyle-tin (TBT). The metal contaminants are the result of naturally occurring metals in the bedrock, as well as past industrial operations within the shipyard (for example, ship repair activities such as painting and metal plating). The PCB contaminants are associated with old electrical transformers that may have leaked PCBs or were disposed of in the Parcel E landfill. Pesticides may have come from actual application and use, or improper disposal. TBT was used to protect ship hulls from the build-up of barnacles.

Sources of contamination in the offshore area appear to include several outfalls from the HPS storm water system, other industrial operations around San Francisco Bay, and leachate from the Parcel E landfill which is located adjacent to San Francisco Bay. Contaminants that have leached from the landfill into the groundwater have moved toward the San Francisco Bay. Currently, we are addressing the source of contamination in the outfalls by removing contaminated sediments in the storm water system as well as

it's catch basins and storm drain lines. Following that removal action, we will monitor the storm water system to identify areas where contaminated groundwater could enter the system and would need repair. The Parcel E landfill is similarly being addressed; we are installing a subsurface steel wall (a "sheet piling") between the landfill and the bay to prevent movement of the contaminants into the bay.

To assess the possible impact of the contamination to the receptors, we took tissue samples from the worms and clams that live in the sediments to determine whether the contaminants had accumulated within their tissues. We also conducted laboratory tests on other marine animals that typically live in sediments to determine the impact of exposure to contaminated sediments. Since we could not take tissue samples from the willets or falcons, we developed models based on the level of contaminants found in the worms and clams to calculate whether and how much the birds may be exposed to contaminants (for example, through the food chain), and the possible impact of that exposure.

The results of the ecological risk assessment Phase 1B indicate that there may be some potential risk to the willets through ingestion of the worms and clams. It should be noted, however, that because willets are so prevalent in the bay area, adverse impacts to the overall willet population is unlikely. Regardless, we plan to consider potential risks to the willets and are currently discussing options with the regulators.

The falcon represents a special case, given its endangered species status. It does not appear that the falcons are significantly exposed to contaminants at HPS. However, we are evaluating options to minimize potential risks to the falcons.

For more information, you may contact: Mike McClelland with the Navy at 415/244-3048, or you may visit the information repositories established for HPS. The information repositories contain documents regarding the environmental cleanup at HPS and are located at the main branch of the San Francisco Public Library and the Anna Waden Library, located at 5075 Third Street, San Francisco.