



**Chief of Naval Operations Environmental Award for FY04  
Environmental Restoration – Installation  
Naval Facilities Engineering Command, Pacific**

**AN INTRODUCTION TO NAVFAC PACIFIC’S AREA OF INSTALLATION  
RESTORATION RESPONSIBILITY**

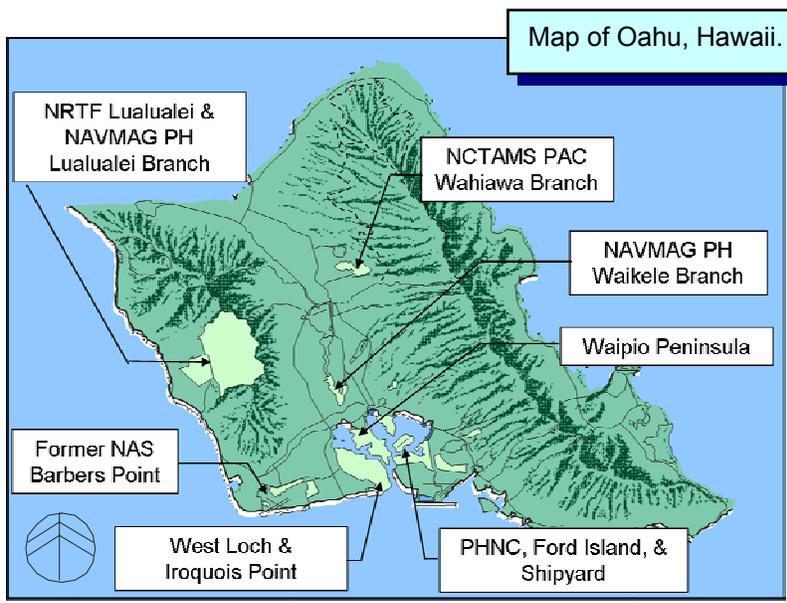
The Navy’s first presence in Hawaii was established at Pearl Harbor. To ancient Hawaiians, Pearl Harbor was known as “Wai Momi,” meaning pearl waters and named for the pearl oysters that thrived there. Despite a coral reef that blocked entry to the harbor for deep-draft vessels, several nations vied for it as a potential fuel and supply base by the late nineteenth century. In October 1887, the United States ratified a treaty with King Kalakaua granting the United States exclusive right to develop Pearl Harbor into a coaling and repair station to refuel U.S. ships. In early 1900s, the harbor was dredged, the channel was enlarged, and shore facilities that could support the Navy’s largest ships were developed. During the next decade, ships and submarines were relocated to the harbor and the Pearl Harbor Naval Complex (PHNC) grew steadily.

As world tensions increased in the 1930s and early 1940s leading to World War II, the Navy rapidly increased its presence and number of

facilities in Hawaii. During this period, the following installations were established throughout Oahu: Naval Computer and Telecommunications Area Master Station Pacific (NCTAMS PAC) and Naval Radio Transmitting Facility (NRTF)

Lualualei; Naval Magazine (NAVMAG) Pearl Harbor, Lualualei and Waikele Branches; and former Naval Air Station (NAS), Barbers Point (which now make up Commander, Navy Region, [COMNAVREG] Hawaii.

Navy presence, manpower, and operation support in Hawaii were crucial during World War II and the Korean and Vietnam Wars that followed. Today, Navy Region Hawaii is the U.S. Navy’s largest and most strategic island base in the Pacific, extending over more than 12,600 acres of land and water and serves as the headquarters of five major fleet commands, including the Commander, U.S. Pacific Fleet (PACFLT). Over 35,000 active duty personnel and civilians work for Navy Region Hawaii.



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## IR PROGRAM SUMMARY

The execution of the Installation Restoration (IR) Program is a team effort. While the Naval Facilities Engineering Command, Pacific (NAVFAC Pacific) executes the IR Program; COMNAVREG Hawaii approves final cleanup remedies. This unique seamless partnership with COMNAVREG Hawaii allows NAVFAC Pacific to more effectively prepare IR documents, participate in agreements with the regulators, incorporate IR issues in planning shore facilities, and establish and implement a comprehensive public participation program. To facilitate this partnership, restoration teams consisting of remedial project managers, contracts personnel, legal counsel, installation environmental and facilities engineers, and public affairs personnel from both NAVFAC

Pacific and COMNAVREG Hawaii were formed. The IR Program identifies, investigates, assesses, characterizes, and cleans up or controls releases of hazardous substances which reduces the risk to human health and the environment from past waste disposal operations and hazardous material spills at Navy activities in a cost-effective manner. The ultimate goal of the IR Program is to move all sites to the "No Further Action" category. Recently, NAVFAC Pacific, with COMNAVREG Hawaii, successfully and expeditiously achieved this goal at 78 of the 86 sites involved in a recent remediation project. This project cleaned up the majority of the transformer sites contaminated by polychlorinated biphenyls (PCB) throughout COMNAVREG Hawaii.

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## PCB CLEANUP PROJECT

NAVFAC Pacific, in cooperation with U.S. Environmental Protection Agency Region 9 (EPA) and the State of Hawaii Department of Health (DOH), cleaned up PCB-contaminated soil at locations on Ford Island, PHNC; Pearl Harbor Naval Shipyard and Intermediate Maintenance Facility; NCTAMS PAC Wahiawa; NRTF Lualualei; former NAS Barbers Point; NAVMAG Pearl Harbor, Waikale and Lualualei Branches; West Loch, Iroquois Point; and Waipio Peninsula. Four separate removal actions excavated and stockpiled PCB-contaminated soils from 85 PCB contaminated sites, saving \$24 million. Separating the cleanups into various removal actions met budgeting limitations, program and site requirements.

Transformers filled with dielectric fluid containing PCBs were used historically throughout Navy facilities. Past transformer maintenance practices resulted in the release of PCBs into the environment. After 1977, PCBs were phased out, and all Navy transformers containing PCBs have been replaced by non-PCB transformers.

### *Comprehensive Approach to Cleanup*

NAVFAC Pacific worked with DOH and EPA to address the PCB contamination comprehensively, rather than on a site-by-site basis. Comprehensive actions included the following:

- **Cross-Program Funding.** Coordinated projects between the IR and Base Realignment and Closure (BRAC) programs. Soils from former NAS Barbers Point, a BRAC installation, were excavated and treated along with soils from the IR sites.
- **Combined Low and High -Risk Sites.** Included excavation and treatment of PCB-contaminated soils from both low and high-risk sites.

- **Plug-in Action Memorandum.** Developed an innovative “plug-in” action memorandum (AM). This AM allowed for the inclusion of sites with similar characteristics and contaminants and avoided the need to complete a separate AM for each site or for each removal action, resulting in significant cost savings for the Navy.
- **On-Site Treatment.** Authorized operation of “on-site treatment” at the former NAS Barbers Point. NAVFAC Pacific developed a white paper requesting EPA approval to consolidate PCB-contaminated soils from multiple, noncontiguous sites to be treated at one location without triggering the Off-Site Rule under Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). EPA approved the NAVFAC Pacific request, thereby maximizing the treatment efficiency by using economies of scale and providing the Navy with flexibility when selecting a treatment technology. This approval was the first of its kind for any U.S. Department of Defense installation nationwide.
- **Consolidated Reporting.** Will prepare a consolidated remediation verification report (RVR) for all sites associated with thermal treatment of PCB-contaminated soil and concrete. The report will consolidate form at least seven individual RVRs, resulting in a cost savings to the Navy.

**Step-out Approach to Characterization**

A step-out approach to lateral and vertical delineation of PCB-contaminated soils was employed to define the extent of excavation for the design specification package. This process decreased the number of sampling mobilizations to each site and allowed for real-time analytical results, speeding up efforts of the many excavation sites. Under NAVFAC Pacific’s fixed-price remedial action contract (FRAC), the small business prime contractor utilized the design specification package to accurately estimate the cost for the removal actions and thermal treatment, and to prepare an accelerated field schedule.



Direct-push sampling at Waipio Peninsula

Based on previous analytical results, additional soil samples were collected using direct-push technology to define the lateral and vertical extent of contamination. These additional soil samples were collected using a step-out methodology from locations where PCB concentrations exceeded the cleanup goal of 1 part per million (ppm). This methodology involved stepping out vertically and horizontally in set intervals from the area of initial contamination. The first lateral and vertical samples were analyzed at the laboratory within 3 days. If concentrations exceeded the clean up goal, the next lateral and vertical samples were analyzed by the laboratory.

To reduce the number of samples collected at large excavation sites, the Navy used a hexagonal grid system developed by the U.S. Department of Energy for sampling. The use of this statistical system saved the Navy over \$165,000 in sampling and analytical costs.

## On-Island Treatment of Soils

Since Hawaii does not have a CERCLA-approved disposal facility, PCB-contaminated soils would normally be disposed of on the mainland at great cost to the Navy. Rather than using the standard approach of soil excavation and off-island disposal, the Navy used the FRAC to set up and run the low temperature thermal desorption (LTTD) treatment unit. The FRAC contractor conducted a definitive demonstration test as part of an agreement with DOH and the EPA Emergency Response Team. The



Loading of PCB-contaminated soils into the LTTD.

The treatment phase of the project was completed in August 2004, with 44,500 cubic yards (cy) of PCB-contaminated soils removed and treated at a cost of \$400/cy resulting in a cost savings of \$24 million compared to off-island disposal.

cooperative effort of these on-site personnel resulted in real time concurrence from the regulators on the treatment processes and operational parameters. Based on analytical results and consensus from EPA, treated soils were available for reuse as backfill for the excavations. This allowed for unrestricted use of the former PCB-contaminated sites, increasing the amount of land for installation purposes and subsequently, military readiness.



The comprehensive approach to cleanup, the step-out approach to characterization, and the on-island treatment of soils implemented by the partnership between the Navy, various regulators, the Comprehensive Long-Term Environmental Action Navy contractor, and the FRAC contractor, sets precedence for future military and non-military environmental restoration in an expeditious and cost-saving manner.



Excavating contaminated soils from a former transformer site.

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## SMALL BUSINESS

The Environmental Chemical Company, (ECC) a small business, was awarded the competitively bid FRAC by NAVFAC Pacific. In addition to utilizing a small business prime contractor, ECC subcontracted waste transportation and disposal, fuel sources, backfill and topsoil transportation, utility location, equipment transportation, and landscaping services to small businesses. Significant use of local businesses as well as use of local labor for the entire excavation and treatment support crews also benefited the local economy.

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## CHALLENGES

- Coordination of the project funding from various sources, along with meeting or readjusting award dates due to technical and contractual issues.
  - Continuous discussions and meetings with regulators to ensure compliance with regulatory requirements and regulatory approval prior to mobilization of the LTTD treatment unit.
  - Carefully monitoring dust emissions. The careful placement of fixed monitoring stations achieved compliance during some high wind events.
  - Addressing unforeseen conditions at multiple excavation sites.
  - Resolving transportation manifesting issues prior to transport of the soils from the various sites to the “on-site” treatment unit located at Barbers Point.
  - Resolving LTTD operation issues due to and different site and weather conditions.
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## COMMUNITY INVOLVEMENT

Early and continuous communication with DOH and EPA was necessary to obtain approval on consolidation of soils for treatment and to ensure the on-site treatment unit met all regulatory requirements. The Navy maintained essential lines of communication with the community because the excavation and treatment projects affected four different Restoration Advisory Board (RAB) communities. All stages of the project from identification of the proposed alternative of consolidation/treatment to the fieldwork were presented to the RABs.

**Navy to tackle contaminated soil**  
By Will Hoover, Advertiser Leeward O'ahu Writer  
For the first time in Hawai'i, the Navy today will fire up an advanced heating unit that is expected to treat some 26,000 PCB-contaminated soil excavated from various locations and stockpiled at the former Naval Air Station Barbers Point at

**Navy project gives soil fresh start**  
The Kalaheo facility is a cost-effective solution, officials say  
By Gregg K. Kakesako, gkakesako@starbulletin.com  
Over the next four months the Navy will "bake" of PCB-contaminated soil into an almost equal material.

**Site tour of system prior to treating contaminated soil**  
**Media Day**

Site visits to the treatment unit by RAB members, EPA and HDOH representatives and other interest groups such as the Resident Officer in Charge of Construction, Navy technical and project management personnel, and Region environmental, compliance, and safety personnel, were helpful in communicating the Navy's commitment to cleanup.

"We are glad that PCBs from the Navy properties on the island of Oahu have been safely removed as a result of the Thermal Desorption Project.

The process proved to be less expensive than shipping the soils to the mainland for disposal and this successful effort is a direct result of the partnership forged by the Navy, State of Hawaii and EPA."

-Keith Takata, EPA Region 9 Superfund Division Director

## PROJECT SUCCESSES

✓ 78 transformer locations are completely free of contamination and can be reused.

✓ Treatment on-island versus off-island disposal saved \$24 million.

✓ Value engineering resulted in a cost savings of \$165,000 in sampling and analytical costs.

✓ Regulators approved the consolidation of soils from sites at various Naval bases to a single "on-site" temporary treatment facility.

✓ Partnering with EPA, DOH and the Navy resulted in the approval of the on-site treatment unit and successful proof-of-performance run.

✓ Coordinated the budget from multiple sites to fund a consolidated project.

✓ Kept the public informed of the project progress via RABs and multiple visits to the treatment site by RAB members and media.



Treated soil in a shelter off of the treatment system.



End of a day at the temporary thermal desorption facility.