

Island Times



Environmental Investigation and Cleanup News Naval Station Treasure Island

Spring/Summer 2004

<http://www.efdswww.navy.mil/Environmental/TreasureIsland.htm>

This newsletter has been developed to update you about the Department of the Navy's environmental program and recent field activities on former Naval Station Treasure Island (NAVSTA TI). NAVSTA TI encompasses both Treasure Island (TI) and Yerba Buena Island (YBI). The Navy established the Installation Restoration (IR) Program in 1981 to investigate and clean up sites under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). In addition to sites that fall under CERCLA guidance, the IR program includes investigation and remediation of sites with petroleum contamination from historic use. Environmental investigations and cleanup began on NAVSTA TI in the mid-1980s and continue today. The Navy has identified 33 IR sites on TI and YBI and is following the process of investigating and cleaning up each of the sites (see map on page 3).

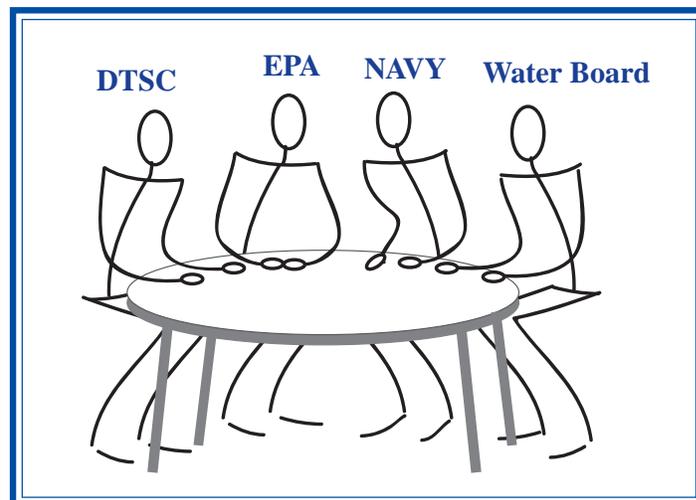
Please share this information with members of your family, friends, and representatives from any local organizations that may benefit. Individuals, businesses, and organizations can receive future newsletters by completing and returning the mailing coupon found on the back page. We also welcome your comments on the newsletter.

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PARTNERS IN ENVIRONMENTAL CLEANUP

The Base Realignment and Closure (BRAC) Cleanup Team (BCT) is comprised of the Department of the Navy (Navy), the U.S. Environmental Protection Agency (EPA), the California EPA Department of Toxic Substances Control (DTSC), and the California EPA Regional Water Quality Control Board (Water Board). The primary goals of the BCT are to protect human health and the environment, coordinate environmental investigations, and expedite the environmental cleanup at NAVSTA TI. The public is part of the environmental cleanup team as well. Fact sheets and information such as this newsletter are sent out to a mailing list of over 1,000 people and organizations. A key part of public involvement is the Restoration Advisory Board (RAB). The RAB meets regularly with members of the BCT to receive updates on the status of the cleanup program, participate in discussions, review and comment on documents, and help represent the interests of the greater community. To find out how you can attend or participate in a RAB meeting, please refer to page 8.



These entities work together as an environmental cleanup team

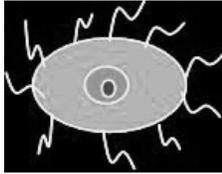
TI/YBI HISTORICAL FACT QUESTION

Where did over one-half of the Navy's Radio Technicians during World War II come from? See answer on page 6.

BIOREMEDIATION AT SITE 24, TINY BUGS TACKLE TOUGH SPILL!

A Look at How the Navy Is Using Innovative Bioremediation Technology to Clean Up Treasure Island

The Navy, in collaboration with the BCT, implemented a pilot study in April 2003 to test an innovative, biological method of groundwater cleanup using bacteria that are already in the ground to naturally degrade solvents. The pilot study is being conducted at Building 99 within Site 24 on TI (see map on page 3). Overall, this innovative treatment uses naturally occurring, living organisms in the soil to safely break down contamination, a process known as “**bioremediation**.” This process chemically replaces chlorine to detoxify the substance involved, known as “dechlorination.”



Between 1942 and 1977, Building 99 was used as the base laundry facility. The contaminants of concern are **tetrachloroethene (PCE)**, a solvent used in dry cleaning, and its degradation products. These solvents, part of a chemical class called chlorinated ethenes, have been detected at high concentrations in groundwater beneath Building 99. Because the groundwater at Treasure Island is not used for any purpose, chemicals present do not pose a risk to people living or working on Treasure Island. The drinking water for Treasure Island is supplied by the City of San Francisco, and meets all regulatory drinking water standards.

The pilot test was designed to evaluate **in situ** (Latin for “in place”) anaerobic bioremediation (in other words, it happens in the absence of oxygen) of dissolved chlorinated ethenes in groundwater. Essentially, the groundwater is cleaned in place by providing a nutrient to the bacteria, and allowing them to biodegrade the contaminants, through **chlororespiration**, into non-toxic end products: ethene, ethane, methane, carbon dioxide, and water.



Workers prepare to distribute a food-grade nutrient to bacteria

This process is accomplished by distributing a food-grade nutrient that can ferment throughout a contaminated portion of the **aquifer** to stimulate chlororespiration by the indigenous or “native” anaerobic bacteria. (This substance is actually known in the test as a “food-grade fermentable substrate” — in this case, lactate, the same liquid found in sour milk, molasses, and wine.) At some sites, dissolved hydrogen is injected into the groundwater to aid the chlororespiration process. The process can be expedited further by **bioaugmentation** (enhancing the natural biology of) the aquifer with a culture of similar and naturally occurring, but more aggressive, dechlorinating bacteria.

Before the field demonstration began, the process was evaluated in the laboratory using native bacteria and the more aggressive, non-native bacteria. **Biodegradation** was demonstrated in the laboratory using samples that contained only the native bacteria; however, the cultured, non-native, bacteria showed a much higher ability to bioremediate the dissolved contaminants.

The field study evaluated the anaerobic process using sodium lactate, hydrogen, and augmented bacteria. Three distinct groundwater recirculation loops were established for this pilot test. In the first loop, lactate alone was injected into the groundwater. In the second loop, **biostimulation** was instigated with lactate and hydrogen gas. In the third loop, lactate injection was bioaugmented with cultured bacteria. The groundwater in each loop was recirculated and injected with lactate, and in some cases with hydrogen or bacteria, for roughly 2 months. Then, the circulation pumps were switched off and the bacteria were allowed to do their work for the next 4 months. During this time, strategically located monitoring wells were sampled and analyzed for PCE, degradation products, groundwater characteristics, and the DNA of the bacteria. After about 4 months of bioremediation, all groundwater monitoring wells showed that the bacteria were thriving and degrading the PCE. Even more significant, the several monitoring wells closest to the injection wells showed that the chlorinated ethenes had been completely degraded to non-toxic end products.

The pilot test successfully demonstrated the application of in situ anaerobic bioremediation to treat high concentrations of chlorinated ethenes. The findings from the first recirculation loop confirmed that the indigenous bacteria were capable of using lactate alone to completely biodegrade the chlorinated ethenes. However, when hydrogen was substituted for a portion of the lactate in the second loop, the biodegradation rate substantially increased, which demonstrated a significant opportunity for cost savings. Bioaugmentation using the cultured bacteria substantially increased the rate of biodegradation and more effectively degraded the

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NAVSTA TI



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chlorinated ethenes. The successful application of bioaugmentation demonstrates that this technology can be used for sites where indigenous bacteria are not capable of complete dechlorination of PCE's degradation products.

Significant progress has been made using in situ bioremediation at Site 24. This pilot study ran through March 2004. Current work planned for the site includes expanding the treatability study to include the lower-concentration plume of PCE downgradient, including additional injection and extraction wells and monitoring the progress of bioremediation through March 2006.

WHAT'S GOING ON AT THE DAYCARE CENTER AND ELEMENTARY SCHOOL PLAYGROUND ON TREASURE ISLAND?

The TI BCT has added two new sites to the Navy's IR Program for investigation and cleanup through the CERCLA process. Those new IR sites are Site 30, the Treasure Island Daycare Center, and Site 31, the Former South Storage Yard (Treasure Island Elementary School playground), both on TI (see map on page 3). The Navy has acted quickly to remove or contain soil affected by historical use that was discovered near the daycare center in 2003, before the daycare center opened, and has undertaken soil investigations at the Former South Storage Yard area.



Workers use a backhoe to excavate soil under the pavement at the daycare center

Site 30 – Daycare Center

Site 30 is located south of the Treasure Island Elementary School at the corner of Avenue D and 11th Street. The site was undeveloped until the former Navy's childcare center was built in 1985, which was

used until NAVSTA TI closed in 1997. The Treasure Island Daycare Center was leased to the City of San Francisco. The current daycare center, Kidango, opened on March 17, 2003.

Upon Navy review of a 1989 as-built drawing of the water lines in the area, an area noted as "buried trash" along 11th Street was identified. Between May and June 2002, the Navy investigated the soil at Site 30. The soil investigation identified various types of wastes, including a layer of burn piles associated with historic practices of burning debris, that contained copper and lead that exceeded the site **soil screening level**. Based on these findings, the Navy completed a **time-critical removal action**.



Completed concrete cap (6 inches thick), which serves as a protective barrier

Between July 9 and 25, 2002, the Navy removed about 650 cubic yards of soil that contained burned debris from the areas north and south of 11th Street. After the soil had been removed, samples were collected to confirm that soil containing copper and lead was not left at the site at levels above the EPA's **Preliminary Remediation Goals (PRGs)**. Because additional burned debris was found, two of these confirmation samples were analyzed for **dioxins**. Results from the analysis showed that dioxins were present in the samples at concentrations that exceeded the site soil screening level in remnant debris in the southern excavation along the street-side sidewalk.

During the period from July 29 through August 1, 2002, the Navy investigated 22 additional locations at Site 30 in an effort to delineate the extent of the burned debris and dioxin contamination. This investigation identified two locations adjacent to the daycare center building where burned debris contained elevated levels of dioxins.

Some of the soil that contained burned debris was not accessible and could not be removed. On January 6 and 7, 2003, and with the ap-

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proval of the BCT, the Navy installed a 6-inch concrete cap adjacent to the daycare center to cover the 1,400-square-foot area around and between the locations that contain elevated concentrations of dioxin in the subsurface soil. The concrete cap serves as a protective barrier to ensure that no one will come into contact with the soil.

Site 31 – Former South Storage Yard

The asphalt-covered playground south of the Treasure Island Elementary School, at the corner of Avenue E and 13th Street, has been added to the IR Program as Site 31. This site is referred to as the Former South Storage Yard. According to historical aerial photographs, Site 31 was used during the 1970s as a storage yard. The nature of and operations at the storage yard are unknown. In the late 1970s, the area was paved over and developed as a playground for the elementary school.

The Navy investigated the area because of its former use as a storage yard. In 2002, an initial investigation identified the presence of construction and burned debris. The initial investigation further identified elevated concentrations of chemicals in soil below the asphalt above the site soil screening level. The chemicals found include lead, copper, **polychlorinated biphenyls (PCBs)**, and **DDT** (the common name for the pesticide **dichlorodiphenyltrichloroethane**). These chemicals may have been associated with the use of machinery, fuel leaks, electrical equipment, and paint that were stored in the former storage yard area.

Based on the results from the initial work, the Navy conducted an additional soil investigation during August and September 2003. Soil samples were collected from 49 locations throughout Site 31. In addition to lead, concentrations of **petroleum hydrocarbons** (diesel and motor oil), **polycyclic aromatic hydrocarbons (PAHs)**, and dioxins exceeded the soil screening level. The asphalt currently serves as a protective barrier to ensure that no one comes into contact with the soil beneath the playground.

NEXT STEPS

Both Sites 30 and 31 are continuing through the CERCLA process. Temporary groundwater monitoring wells were installed and sampled around Sites 30 and 31 during the Memorial Day holiday weekend May 28 through 31, 2004. Because the groundwater at Treasure Island is not used for any purpose, chemicals, if present, would not present a risk to people living or working on Treasure Island. The drinking water for Treasure Island is supplied by the City of San Francisco, and meets all regulatory drinking water standards. The data collected from the soil and groundwater investigations will be used to complete a **Remedial Investigation (RI)** Report for each site. The RI Reports will determine if further cleanup is necessary.

TEAM MEMBER PROFILE

La Rae Landers is the newest addition to the NAVSTA TI Base Realignment and Closure Team. La Rae joins the team as the Lead Remedial Project Manager for the former Naval Station Treasure Island. Before she joined the team in October 2003, La Rae was the Installation Restoration Branch Head at Marine Corps Base Camp Pendleton in Southern California.

La Rae received her B.S. degree in Geology with a concentration in Environmental Science from State University of New York at Cortland College. She also earned an M.S. degree in Geology with a concentration in Contaminant Hydrogeochemistry from Syracuse University. La Rae began her career 13 years ago as a staff geologist for a private consulting firm in San Diego, where she conducted environmental investigations.

For La Rae, the biggest challenge working on TI has been learning about the property transfer process and incorporating the process into the environmental cleanup program schedule. “There are many environmental requirements that support the Finding of Suitability to Transfer. Timing is critical because you want to ensure nothing holds up the transfer of the property to the city [of San Francisco]. It has given me the opportunity to gain experience with several environmental compliance regulations, such as lead-based paint and asbestos abatement.”

La Rae resides in her hometown of San Diego. In her spare time, she enjoys getting together with her family, especially her four nieces, and traveling with friends. When asked what she likes most about her work at Treasure Island, La Rae responded: “Location, location, location!”



La Rae Landers, Lead Remedial Project Manager for NAVSTA TI

PROPOSED PLAN AND UPCOMING RECORD OF DECISION

A **Proposed Plan (PP)** for Site 13, Offshore Sediments, was prepared and released to the public on April 1, 2004. The PP is a fact sheet-style document that presents the remedial action the Navy proposes to take at a specific IR site. The offshore investigation area was defined as IR Site 13, and consists of approximately 538 acres of offshore sediments. Environmental data collected at Site 13 between 1992 and 2002 were used to define the extent of contamination in the offshore sediments and evaluate potential risks to the environment. During these investigations, samples of offshore sediment, storm drain sediment, storm water, and **poREWATER** were collected for chemical analysis. Results of the investigation were used to conduct an ecological risk assessment, which concluded that the offshore sediments at Site 13 did not pose an unacceptable risk to the environment. The Navy therefore has proposed no action be taken at Site 13.

The public was invited to comment on the PP during the 30-day comment period, held April 1 through April 30, 2004. The PP can be found at the Information Repositories (see page 8 for locations). Now that the comment period has ended, the Navy will consider the comments received on this PP before a final decision is made for Site 13. The Navy's decision will be recorded in the **Record of Decision (ROD)**, which will include all of the comments received on the PP, as well as the Navy's responses.



A typical stormwater outfall at Treasure Island

LEAD-BASED PAINT RE-EVALUATION

The Navy conducted a re-evaluation of lead-based paint (LBP) at the residential housing units on YBI during April and May of 2004. Starting in 1995, the Navy has worked extensively to identify and abate LBP and put controls in place to prevent exposures to lead at the residential housing units on YBI. The goal of this re-evaluation is to ensure the LBP abatement controls already in place remain protective and to identify any new LBP that needs abating. The Navy is continuing efforts to complete a Finding of Suitability to Transfer for the YBI Developed Parcel. This LBP re-evaluation will support the Department of Defense requirement to conduct a LBP assessment of residential housing units within one year before transferring the property.

TI/YBI HISTORICAL FACT ANSWER

Right here at Treasure Island. Turning out skilled Radio Technicians was the wartime mission of the Radio Materiel School. Over 10,000 students were trained at Treasure Island from February 1942 until the end of the war. Navy Radio Technicians maintained and repaired radio, radar and other electronic equipment both on ship and ashore. (RADAR stands for Radio Detection And Ranging.) Headed by a Navy Captain, training buildings were located on both TI and YBI. The school was just one part of the NAVSTA TI "University" that included the Fleet Operational Training School and the Advanced Naval Training School to provide trained crews for ships bound for the Pacific. NAVSTA TI mission as a schoolhouse for the Navy fleet continued until the base closed in 1997.

BRAC CLEANUP TEAM CONTACT LIST

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GLOSSARY

Aquifer: A permeable formation that stores and transmits groundwater in sufficient quantity to supply wells.

Bioaugmenting: Adding microbial populations or strains to indigenous populations to speed destruction of contaminants during bioremediation or biotreatment.

Biodegradation: Being decomposed by biological organisms, such as bacteria.

Bioremediation: A biological process to remediate environmental contaminants — in this case, using living organisms to break down contaminants into non-toxic by-products.

Biostimulation: Controlled addition of nutrients to stimulate growth and activity of microbial populations; used in bioremediation or biotreatment.

Chlororespiration: The use of reductive dechlorination reactions for energy.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA): A federal law that establishes a program to identify hazardous waste sites and sets procedures for cleaning them up to be protective of human health and the environment.

Dichlorodiphenyltrichloroethane (DDT): DDT is a pesticide that was used commonly before it was banned in 1973. DDT may accumulate in living tissue (bioaccumulate) and is considered toxic to ecological receptors, especially fish and other aquatic organisms. The molecular structure of DDT is stable and resists common degradation processes causing it to be persistent in the environment.

Dioxins: Any of a family of compounds known chemically as dibenzo-p-dioxins. Dioxins are a by-product of incineration, forest fires, and certain industrial processes. Concern about them arises from their potential toxicity and because they are sometimes found as contaminants in commercial products.

In Situ: Latin, meaning “in place.” In the instance of environmental cleanup, it means that soil or water is remediated in place, rather than being removed.

Petroleum Hydrocarbons: Petroleum-based substances that constitute a complex blend of hydrocarbons derived from crude oil through the process of separation, conversion, upgrading, and finishing, such as motor fuel, jet oil, lubricants, petroleum solvents, and used oil.

Preliminary Remediation Goals: Risk-based concentrations that are intended to assist risk assessors and others in initial screening-level evaluations of environmental measurements.

Polychlorinated biphenyls (PCBs): PCBs were compounds previously used as coolants and lubricants in electrical and hydraulic equipment because they are good insulators and do not burn easily. PCBs do not break down, so they may persist in the environments for long periods. They were banned in the 1970s.

Polycyclic Aromatic Hydrocarbons (PAHs): Compounds typically associated with incomplete combustion of fossil fuels. These compounds are stable and resist common degradation processes in the environment.

Porewater: The water occupying the space between sediment particles.

Proposed Plan (PP): A CERCLA required, fact sheet style document containing the remedial action that the Navy proposes for a given IR Program site.

Record of Decision (ROD): A CERCLA required document that contains the final decision and agreement among the Navy, the state, and EPA on selection of the remedial action at an IR site. The Record of Decision is based on information from the RI and on public comments and concerns.

Remedial Investigation: A specific phase of the CERCLA process where site investigation data is used to determine the type and extent of contaminant and the potential risk to human health and the environment.

Soil Screening Level: A concentration in soil that, if exceeded, indicates further investigation may be needed to delineate the vertical and horizontal extent of the contamination.

Tetrachloroethene: Also known as perchlorethene or PCE, this solvent is commonly used in dry-cleaning facilities.

Time-Critical Removal Action: A CERCLA action undertaken in response to contamination that requires action within weeks or months to be protective of human health or the environment.

Total Petroleum Hydrocarbons: TPH is the measurable amount of petroleum-based hydrocarbons in an environmental medium such as soil or water.

JOIN THE RESTORATION ADVISORY BOARD

The Restoration Advisory Board (RAB) is composed of members of the community who work with the Navy and regulatory agencies to provide input on the environmental restoration of former NAVSTA TI. The RAB is a committee of interested community members who review and comment on Navy documents prepared for the environmental cleanup at NAVSTA TI. Regular meetings are held to discuss the progress of the IR Program. It is a great opportunity to **find out what is going on and to have your voice heard**. **RAB meetings are held at 7:00 p.m. on the third Tuesday of every other month and are open to everyone. RAB meetings are currently scheduled for June, August, October and December 2004. Stop by!**

For more information, see the website at:

<http://www.efdswnavfac.navy.mil/Environmental/RAB.htm>

or call James Sullivan at (415) 743-4704.

WEBSITE

The Navy has initiated a web page for the NAVSTA TI RAB.

You can find a listing of RAB meeting minutes, copies of fact sheets and newsletters, and other general information.

Please go to:

www.efdswnavfac.navy.mil/environmental/treasureisland.htm

Information regarding other Navy RABs in California
can be found at:

www.efdswnavfac.navy.mil/environmental/rab.htm

INFORMATION REPOSITORY

The following information repositories are provided for the community to review current documents related to environmental cleanup activities at NAVSTA TI:

Navy Southwest Detachment

410 Palm Avenue, Building 1, Room 161
Treasure Island, San Francisco, California
(415) 743-4704
Monday - Friday
8:30 a.m. to 4:30 p.m.

San Francisco Public Library

Government Publications Section
100 Larkin Street, San Francisco, California
(415) 557-4400
Monday - 10:00 a.m. to 6 p.m.
T/W/Th. - 9:00 a.m. to 8:00 p.m.
Friday - noon to 6:00 p.m.
Saturday - 10:00 a.m. to 6:00 p.m.
Sunday - noon to 5:00 p.m.

UPCOMING RESTORATION ADVISORY BOARD (RAB) MEETINGS

Date and Times:

Tuesday, June 15, 2004
7:00 p.m. - 9:00 p.m.

Tuesday, August 17, 2004
7:00 p.m. - 9:00 p.m.

Tuesday, October 19, 2004
7:00 p.m. - 9:00 p.m.

Tuesday, December 21, 2004
7:00 p.m. - 9:00 p.m.

Place:

Casa de la Vista, Building 271, Treasure Island

NAVSTA TI Mailing Coupon

If you would like to be added to the TI/YBI mailing list and receive copies of future newsletters and fact sheets, please fill out the coupon below and mail it to:

James Sullivan
Navy Southwest Detachment
410 Palm Avenue
Building 1, Room 161
Treasure Island, San Francisco, CA 94130-1806

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E-mail Address _____

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