



INTRODUCTION

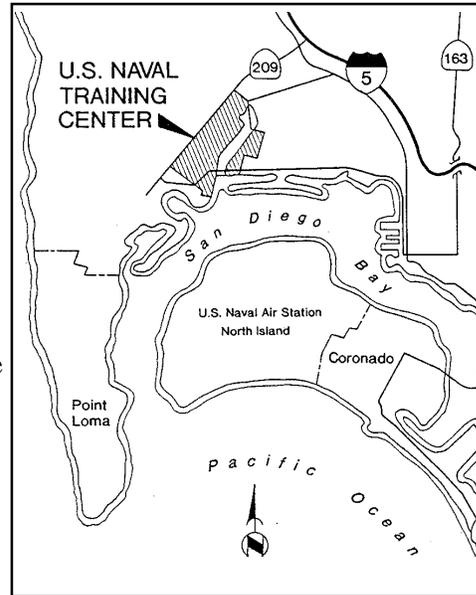
Naval Training Center (NTC) San Diego is slated to close in accordance with the Base Closure and Realignment Act of 1990. The ultimate goal after facility closure is to transfer the property to public and/or private sectors. This requires that environmental restoration programs be implemented to prepare the property for transfer and reuse.

This fact sheet is the third in a series outlining the environmental restoration program activities at NTC San Diego. Previous fact sheets provided background information on the history of NTC and sites undergoing environmental investigation and cleanup, and summarized the process of base closure, property transfer, and reuse. This fact sheet discusses the Underground Storage Tank Program underway at NTC. This Program addresses approaches, methods, and technologies available for investigating leaking underground storage tanks and cleaning up soil and/or **groundwater**

that may be contaminated with petroleum products as a result of leaking tanks.

In response to environmental problems posed by past hazardous waste disposal methods, Congress directed the U. S. Environmental Protection Agency to develop a program to manage and control old hazardous waste disposal sites. This program is outlined in the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980 and the Superfund Amendments and Reauthorization Act (SARA) of 1986. An **Installation Restoration Program** was initially established in 1980 by the Department of Defense to comply with CERCLA guidelines.

Contamination related to petroleum products, however, is specifically excluded from CERCLA regulation. Underground storage tanks containing and/or leaking petroleum are typically subject to local regulatory requirements.



Although different regulatory requirements are applied to each type of contamination, Installation Restoration and Underground Storage Tank programs often run concurrently at military facilities to comprehensively address both petroleum-based and non-petroleum-based contamination. Naval Facilities

Engineering Command, Southwest Division, provides Navy oversight of the Installation Restoration and Underground Storage Tank programs at NTC.

Underground Storage Tanks

Underground storage tanks are used to store a variety of products; the most common is gasoline. Most underground tanks contain flammable fuels. At industrial facilities, oils, refined petroleum solvents and, in some cases, specialty chemicals may be stored in underground tanks. At Navy facilities, products commonly stored in underground tanks include "diesel fuel marine", jet propulsion fuels (primarily JP-5), motor gasoline, auto diesel, recovered oil, fuel oil, and lubricants. About 95 percent of all Navy underground storage tanks

contain these types of fuel and petroleum products. Hazardous components in fuels generally include chemicals such as benzene, ethyl benzene, toluene, xylene, tetraethyl lead, ethylene dibromide, and other **petroleum hydrocarbons**.

Over time, some underground tanks (especially single-walled metal tanks) have leaked. This may pose threats to human health and the environment by contaminating surrounding soil and migrating into groundwater or by vaporizing into the atmosphere. Early identification of leaks and prompt

assessment of their impacts are necessary to minimize any adverse effects from leaking tanks. In San Diego, several agencies are involved in UST regulation and permitting:

- *California Regional Water Quality Control Board*
- *California Department of Toxic Substances Control*
- *California Air Resources Board*
- *County of San Diego Air Pollution Control District*
- *County of San Diego Department of Environmental Health*

Underground Storage Tanks, continued

The County of San Diego Department of Environmental Health has authority to oversee underground storage tanks on military bases, including NTC. This includes investigation and assessment of possible contamination due to leaking

underground tanks, and oversight of appropriate remedial (cleanup) actions. The process of assessing leaks and technologies for cleaning up sites contaminated by leaking tanks are discussed further in this fact sheet.

STATUS OF UNDERGROUND STORAGE TANK SITES AT NTC

As of December 1994, six underground storage tank sites at NTC are under investigation or are being cleaned up, as follows (see map on this page for locations):

SITE 2 *Building No. 227.* During a subsurface soil investigation for a construction project, soil borings indicated petroleum contamination in the vicinity of Building 227. Six underground tanks were removed from the area in 1991, with oversight by the County Department of Environmental Health. A site assessment was also completed in 1991. Soil sample analytical results identified the presence of petroleum hydrocarbons.

A Navy contract is currently underway to remove the petroleum-contaminated soil. Field work occurred during November 1994 through January 1995, and a final site assessment report is expected to be completed by May 1995. This contract is also underway at sites 7, 8 and 9 (see below).

SITE 3 *Navy Exchange (NEX) Gas Station.* Since the 1950s, the NEX Gas Station has been in operation on the corner of Nimitz Blvd. and Rosecrans Street. In 1973, during the construction of a hotel complex across Nimitz Blvd., gasoline was discovered in one of the excavation trenches. In 1974, gasoline floating on top of groundwater was removed. The NEX Gas Station and a nearby

commercial gas station were suspected as potential sources of the gasoline.

A site inspection conducted in December 1991 indicated that gasoline, solvent, and waste oil contamination are present at the NEX Gas Station. In 1992, gasoline was removed from one of the groundwater monitoring wells. Work is currently underway to fully characterize and determine the extent of soil and groundwater contamination at the NEX Gas Station. This work will also identify and test potential cleanup options.

SITE 7 *Building No. 49/50A.* A 3,200-gallon underground tank adjacent to former Building 50A (now part of Building 49) was removed in January 1988, in conjunction with building demolition and reconstruction. The removal was conducted with oversight by the County Department of Environmental Health. Examination of the tank revealed several leaks. Visual inspection and analysis of the soil samples indicated that an unknown quantity of fuel oil had escaped from the tank. The excavation was back-filled with clean, compacted material.

A site assessment was conducted in 1992 which investigated the extent of soil contamination. The report indicated that approximately 80 cubic yards of soil were contaminated with fuel oil. This site is being addressed under a Navy cleanup contract (see Site 2, left).

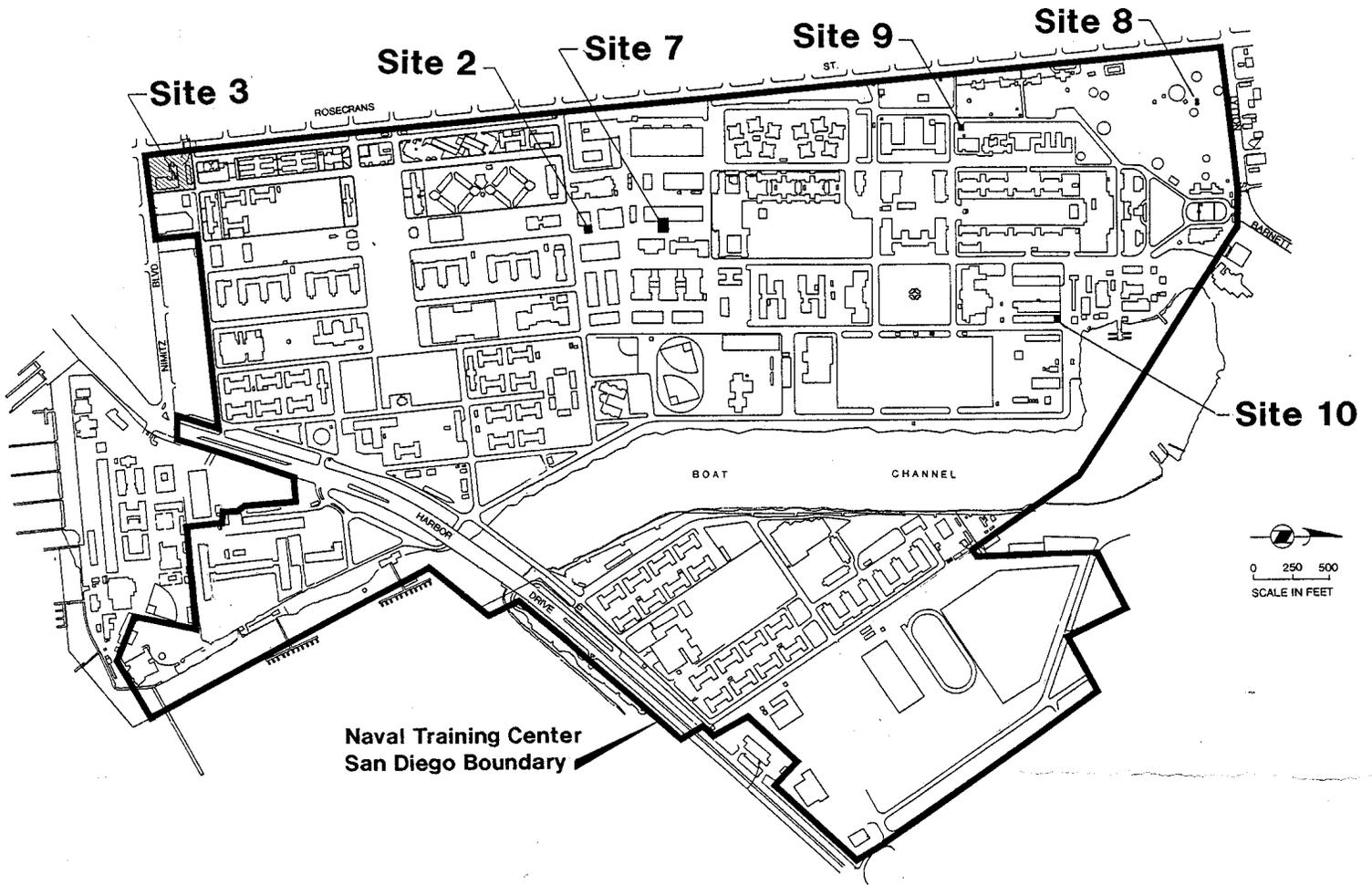
SITE 8 *Building No. 368.* A 550-gallon tank was removed in January 1994, with oversight by the County Department of Environmental Health. Visual inspection and soil sample analysis indicated that gasoline had leaked from the tank. This site is being addressed under a Navy cleanup contract (see Site 2, left).

SITE 9 *Building No. 196.* A 60-gallon tank was removed in April 1994, with oversight by the County Department of Environmental Health. Visual inspection and soil sample analysis indicated that petroleum products had leaked from the tank. This site is being addressed under a Navy cleanup contract (see Site 2, left).

SITE 10 *Building No. 189.* A 100-gallon tank was removed in August 1994, with oversight by the County Department of Environmental Health. Visual inspection and soil sample analysis indicated that petroleum products had leaked from the tank. This site is scheduled to be assessed this year (1995) and a remedial action (cleanup method) is anticipated during 1996.

In addition to these sites under investigation, twelve other tanks have been removed from nine locations on NTC. These locations did not reveal any indication of tank leakage or soil contamination and "no further action" status has been granted by the County Department of Environmental Health.

One additional tank was removed from the Public Works Center Gas Station, with oversight by the County Department of Environmental Health. Contaminated soil was excavated and an upgraded double-walled tank, including a leak-detection system, was installed. ■



Petroleum Contamination Assessment and Treatment Technologies

Assessment

Assessment is an evaluation of the extent of contamination. In the past, underground storage tanks did not have leak detection devices. Therefore, leaks or spills of petroleum products are often discovered after tanks are removed. Examples of leak/spill assessment technologies include soil sampling, monitor wells and, in some cases, excavation. It is important to note that improved technology is making it possible to assess subsurface leaks or spills without extensive excavation.

- *Soil sampling* (cores and borings) - Samples of soil taken through **borings** or **cores** are a primary means of assessing the extent of petroleum hydrocarbon contamination.
- *Monitoring wells* - Monitoring wells can be used to measure fluid elevations and determine local groundwater flow directions. Samples are collected from monitoring wells to evaluate levels of contaminants.
- *Temporary well groundwater sampling* - A pointed, pipe-like punch is driven into the ground to groundwater, and measurements and samples of groundwater are collected. This causes less disturbance than installing a monitoring well.
- *Excavation* - Excavation can be done at some sites to allow visual inspection of and access to the shallow subsurface soil. Excavation is normally limited to depths less than 15 feet and is appropriate at sites with certain soils. It can provide additional information on the distribution of subsurface soil materials that may be missed by boring.
- *Site Characterization and Analysis Penetrometer System (SCAPS)* - SCAPS is a new experimental technology developed by the Navy, Army, and Air Force. SCAPS uses a fiber-optic chemical sensor system for detecting petroleum hydrocarbons, integrated with a probe, to screen for subsurface petroleum products in soils. Because the fiber-optic sensors produce immediate results, one advantage of SCAPS is that the vertical and horizontal extent of contamination

can be represented at the time the probe is pushed into the ground. This reduces the need for subsequent laboratory analysis. Traditional soil sampling methods, on the other hand, require sending soil samples to a laboratory for analysis, resulting in a time delay.

SCAPS has been employed at NTC Sites 3 and 10. As SCAPS is considered an experimental technology, the data collected will be cross-checked with that derived from conventional soil sampling methods also conducted at these sites.

Treatment

Once petroleum-contaminated soil is assessed at a site, it must be treated to remove the contaminants. A number of technologies exist for cleaning up petroleum-related contamination; for example:

- *Soil vapor extraction* - a physical/chemical process where a vacuum is applied through specially designed groundwater extraction wells. The draw of the vacuum causes the gas-phase **volatile organic compounds** to move through the soil to the extraction wells.
 - *Bioremediation* - a biological process which uses naturally occurring microscopic organisms in soil to break down contamination caused by organic contaminants (e.g., gasoline or oil).
 - *Low-temperature thermal desorption* - A form of heat treatment where soils or sludges are heated at low temperatures (500 to 800 degrees F) which removes the water, volatile organic compounds, and some **semivolatile organic compounds**. The result is a dry solid containing trace amounts of organic residue. The volatile organic compounds driven off may be recovered, trapped in a carbon filter, or destroyed through another process.
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• G L O S S A R Y •

Borings - Holes dug in the ground to obtain information on subsurface soil and water.

Contamination - A volume of a spent or wasted chemical that is considered hazardous.

Cores - Samples of subsurface soil taken while drilling.

Groundwater - Water found beneath the earth's surface that fills pores between materials such as sand, soil, or gravel.

Installation Restoration Program - Developed by the Department of Defense, the Installation Restoration

Program is a comprehensive environmental program conducted by the Navy to identify, investigate, and clean up hazardous waste sites at all its facilities.

Petroleum hydrocarbons - A class of chemicals usually associated with gasoline, oil, or fuel.

Semivolatile organic compounds - Organic (carbon-containing) compounds that evaporate (volatilize) at temperatures slightly above room temperature

Volatile organic compounds - Organic (carbon-containing) compounds that evaporate (volatilize) readily at room temperature.

Restoration Advisory Board Update

The NTC Restoration Advisory Board (RAB) has been meeting for approximately one year and recently held its 22nd meeting. The RAB consists of 22 community representatives who meet to review and comment on reports and documents prepared as part of the environmental restoration programs underway at NTC. Meetings are held in the evening of the fourth Tuesday of each month, or as needed. All meetings are advertised in local newspapers and agendas are mailed to all those on the NTC mailing list.

Most recently, the RAB reviewed and commented on work plans for cleanup at the NEX Gas Station and at four Underground Storage Tank sites, on the Base Realignment and Closure (BRAC) Cleanup Plan Update, and the Extended Site Inspection Work Plan for Site 1, the Inactive Landfill.

Information Repositories

Information Repositories for NTC's San Diego environmental cleanup program have been established at two locations in the area so that the local community will have an opportunity to review project documents and reports.

San Diego Library

Point Loma Branch
2130 Poinsettia Drive
San Diego, CA
(619) 531-1539

Located at Front Desk

** this is an abbreviated information repository.*

Hours: Mon & Wed: 12 Noon - 8:00 p.m.

Tues, Thurs, Fri, Sat: 9:30 a.m. - 5:30 p.m.

Sun: 1:00 p.m. - 5:00 p.m.

San Diego City Library

Central Library
820 "E" Street
San Diego, CA
(619) 236-5800

Science and Industry Desk

Hours: Mon - Thurs: 10:00 a.m. - 9:00 p.m.

Fri, Sat: 9:30 a.m. - 5:30 p.m.

Sun: 1:00 p.m. - 5:00 p.m.

For More Information

Phill Dyck

BRAC Environmental Coordinator
Naval Training Center
33502 Decatur Road, Suite 120
San Diego, CA 92133-1449
(619) 524-1022

Celeste Albanez

Public Participation Specialist
Department of Toxic Substances Control
245 West Broadway, Suite 425
Long Beach, CA 90802-4444
(310) 590-5561

MAILING LIST

Phill Dyck

BRAC Environmental Coordinator
Naval Training Center
33502 Decatur Road, Suite 120
San Diego, CA 92133-1449

- Please DELETE my name from the NTC mailing list
- Please ADD my name to the NTC mailing list

Name: _____

Address: _____

City: _____ State: _____ Zip: _____

Affiliation: _____

If you would like to either remove your name from or add your name to the NTC mailing list, please fill out the coupon above and return it by mail to the address shown above

Thank you!

