3.13 HAZARDOUS MATERIALS AND WASTE

Military activities on NSTI have included operations and training, administration, general engineering support and mission operations, medical and dental activities, materials maintenance, and supply operations. Fuels, lubricants, paints, solvents, and other industrial chemicals have been used throughout much of the history of the station.

3.13.1 Hazardous Materials Management

Under the requirements of the BRAC process, NSTI completed a basewide environmental baseline survey (EBS) in May 1995 (DON 1995c) and a BRAC cleanup plan (BCP) in March 1997 (DON 1997b). The EBS is a broad evaluation and summary of all known and suspected areas where hazardous materials or petroleum products have been handled, stored, disposed of, or released within the boundaries of NSTI and adjacent areas. It also identifies clean properties on Treasure Island under the Community Environmental Response Facilitation Act (CERFA) (Pub. L. 102-426, 42 U.S.C. § 9620). The BCP provides an overview of the environmental restoration and associated compliance programs.

At the time of NSTI closure, hazardous materials that were not required for the environmental site restoration process or caretaker maintenance activities were collected from all designated storage areas and transferred to the Defense Reutilization and Marketing Office (DRMO) off-site. Materials that were not redistributed or sold were removed and disposed of off-site in accordance with the Resource Conservation and Recovery Act of 1976 (RCRA) (Pub. L. 94-580, 42 U.S.C. § 6901-6992k) and state requirements.

Small quantities of hazardous materials will continue to be used at NSTI during the caretaker period. These materials will consist predominantly of lubricants, degreasers, and cleaners used for general maintenance.

3.13.2 Hazardous Waste Management

NSTI has a hazardous waste management plan (DON 1992b). NSTI generated approximately 9,921 pounds (4,500 kg) of hazardous waste per month (based on 1991 records) and is classified as a fully regulated generator, subject to all laws and regulations governing the generation and handling of hazardous waste. Navy hazardous waste management plan for NSTI (DON 1992b) remains in effect for Navy generated waste until NSTI is transferred to a new owner.

Twelve facilities at NSTI generated or stored hazardous wastes or recyclable petroleum products. Waste solvents, cleaners, adhesives, and other hazardous wastes, as well as recyclable oil and antifreeze, were generated by various NSTI work centers. Hazardous wastes were stored in designated hazardous waste accumulation areas for up to 90 days before removal by the hazardous waste handler. The hazardous waste handler notified the NSTI hazardous waste manager of container types, volume, and the waste profile.

Navy has a one-time compliance closure program for closing operational light industrial and hazardous waste and material accumulation facilities. All hazardous wastes and hazardous materials other than structural materials such as asbestos and lead-based paint (LBP) will be

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removed in accordance with the NSTI hazardous waste management plan before properties are transferred or conveyed. For discussion of asbestos and LBP, see sections 3.13.4 and 3.12.7.

3.13.3 Installation Restoration (IRP)

The IRP is an ongoing DoD-administered program for identifying, evaluating, and remediating contaminated sites on federal lands under DoD control. The inventory of the full administrative record for the NSTI IRP is at:

U.S. Navy, Southwest Division
Naval Facilities Engineering Command
1230 Columbia Street, Suite 1100
BRAC Operations Office
San Diego, California 92101-8517

Public information repositories are at two locations:

San Francisco Public Library
Main Branch, Government Division
100 Larkin Street
San Francisco, CA 94102

Caretaker Site Office
410 Palm Avenue, Room 123
San Francisco, CA 94130

In January 1995, the Department of Justice (DOJ) determined that a federal agency is not required to independently implement NEPA at CERCLA clean-up sites. The DOJ decision stated that the CERCLA process incorporates many of the NEPA values of public participation including public review, and collection of environmental and human health impacts that could result from a federal action, thus making the clean-up decision process under CERCLA the functional equivalent of NEPA. Clean up of Navy property under CERCLA is independent of, and not a part of, the NEPA decision-making process.

On September 29, 1992, Navy and California Environmental Protection Agency (Cal EPA) (including the Department of Toxic Substances Control [DTSC] and the RWQCB) signed a federal facility site remediation agreement (FFSRA) (DON 1992c). The NSTI FFSRA provides a means for Navy and the State of California to cooperate in accelerating and streamlining the remediation process at NSTI consistent and in compliance with applicable federal and state laws and to use consensus problem-solving to achieve the goal of environmental restoration. It is designed to ensure that environmental impacts associated with past and present activities at NSTI are investigated and remediated to protect public health and welfare and the environment. The agreement specifies and outlines review and approval procedures and stipulates primary and secondary documents to be prepared, meetings to be conducted, and deadlines and extensions to meet. It also takes into consideration emergencies and removals, dispute resolution procedures, enforceability, public participation criteria, real property transfer, statutory compliance and corrective action, quality assurance, funding, and

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exemptions. Appendix D of the NSTI FFSRA, which provides the submittal schedule for draft primary and secondary documents, was last updated in 2002.

The following tasks are required under Section 6.2 of the agreement:

- Investigating and sampling all sites to establish the nature and extent of contamination at each site;
- Conducting feasibility studies to determine the most effective method of cleaning up each site;
- Preparing all response actions for the sites, such as removing contaminants and installing treatment systems;
- Conducting operation and maintenance response actions at the sites, including maintaining treatment systems and monitoring to assess the effectiveness of remediation; and
- Notifying and coordinating federal and state natural resource trustees.

CERCLA Remediation Process

CERCLA (Pub. L. 96-510, 42 U.S.C. §§ 9601 – 9675) requires that all federal facilities comply with federal and state laws with regard to the remediation process. The NSTI IRP follows this process. Phases of the process are described below.

Site Discovery (SD). A site is an area that has had or has the potential for a hazardous substance release. A single facility may contain several sites to be studied under the IRP. Occasionally, potential sites are discovered by searching through records or during construction projects.

Preliminary Assessment (PA). This assessment identifies areas of potential contamination and evaluates each area to determine if there is a threat to human health or the environment. A PA report is developed from readily available information, such as past inventory records, aerial photographs, employee interviews, existing analytical data, and an activity visit. A PA may recommend no further action, additional work under the IRP, or a removal action.

Site Inspection (SI). This inspection is conducted after the PA when additional information is needed to evaluate a site. Collecting and analyzing soil, sediment, surface, and ground water samples may help to determine the need for further study. Information needed for hazard ranking also is collected. An SI may recommend a site for no action, further study, or an immediate removal action. The PA and SI often are performed concurrently.

Removal Actions. A removal action is any action that may be necessary to monitor, evaluate, prevent, minimize, or mitigate a threat or potential threat to public health or welfare or the environment, A removal action may include cleanup or removal of a hazardous materials release or hazardous material threat. Usually, removal actions do not completely clean up a site and additional remediation steps are required.

Remedial Investigation (RI). This investigation is performed to more fully define the nature and extent of the contamination at a site and to evaluate possible methods of cleaning up the site. During the investigation, ground water, surface water, soil, sediment, and biological samples

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are collected and analyzed to determine the type and concentration of each contaminant. Samples are collected at different areas and depths to help determine the spread of the contamination. The RI process at NSTI typically is done in two phases; phase I is site characterization, and phase II is characterization of the constituents of concern, the migration pathways, and the potential hazards to human health and the environment.

Feasibility Study (FS). The FS identifies and evaluates all applicable site cleanup alternatives. As part of the study, a risk assessment is performed to quantify the level of risk posed by the site. Each alternative is evaluated for effectiveness in protecting human health and the environment, ease of implementation, and overall cost. Remedial Action Objectives (RAOs), specific goals for protecting human health and the environment, are developed. The RI and FS may be performed concurrently.

Remedial Action Plans (RAP)/Record of Decision (ROD). These two documents are essentially the same. RAP is the state term, while ROD is the federal term. The RAP/ROD documents the reasoning behind selecting a particular cleanup alternative. A RAP/ROD is required even if the most feasible alternative is no action.

Remedial Design (RD). After a RAP/ROD is signed, the remedial design phase can begin. In the RD, specific construction parameters or equipment specifications are presented for the selected cleanup alternative.

Remedial Action (RA). During the remedial action phase, the selected cleanup technology is implemented. An RA can be as simple as soil excavation or as complicated as a complete ground water treatment system, which may operate for many years. Remedial action work plans for long-term remediation include operation and maintenance (O&M) plans, which continue until the cleanup is complete.

Long-term Monitoring. After completion of the RA, federal, state, or local regulatory agencies may require subsequent monitoring of the site.

Petroleum Hydrocarbons

The CERCLA definitions of hazardous substances (42 U.S.C. § 9601[14]) and pollutants or contaminants (42 U.S.C. § 9601[33]) specifically exclude petroleum unless specifically listed. The EPA interprets the term petroleum to include hazardous substances found naturally in crude oil and crude oil fractions, such as benzene, and hazardous substances normally added to crude oil during refining. Petroleum additives or contaminants that increase in concentration in petroleum during use are not excluded from CERCLA regulations. Petroleum hydrocarbons in ground water that are not commingled with CERCLA-regulated substances are addressed under a corrective action plan (CAP) administered by the RWQCB. The RWQCB, whose mandate is to protect ground water quality, requires that potential petroleum contamination in ground water be evaluated and, if necessary, a petroleum CAP be developed.

The CAP for NSTI covers nine major sites. These sites are described in more detail below. Several of these sites were initially part of the NSTI Installation Restoration Program (IRP) but following initial site investigation under the IRP, the sites were excluded from the IRP under the CERCLA petroleum exclusion. A Draft Fuel Line CAP has been developed. Closure

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documentation is also being prepared for underground storage tank (UST) sites. Cleanup levels for these petroleum-contaminated sites have been determined by the Navy, in coordination with the RWQCB. Final cleanup methods have not been determined but could range from no action to bioventing.

Site 04 (Hydraulic Training School) and Site 19 (Refuse Transfer Area). Sites 04 and 19 (formerly IR 04 and IR 19, respectively) are along the northeastern side of Treasure Island. The Hydraulic Training School operated from the 1970s to 1997, and the Refuse Transfer Area operated until 1997. These two sites were investigated together, since they have similar contaminants and are in close proximity. Petroleum-contaminated soils were identified at these sites, which were investigated during the phase I and II RIs under the IRP and were found to qualify for CERCLA's petroleum exclusion clause. Navy transferred the sites into the petroleum program based on data indicating contamination limited to petroleum products. A site closure report is expected to be submitted to the RWQCB in May 2003.

Site 06 (Fire Training Area). Site 06 (formerly IR 06) is along the northern side of Treasure Island. This site was an active fire training area from 1946 to 1992. During the phase I and II RIs under the IRP, this site was found to qualify for CERCLA's petroleum exclusion. Navy transferred the site into the petroleum program based on data indicating contamination limited to petroleum products. However, in June 1997, the RWQCB requested that Navy continue ground water monitoring for potential CERCLA substances at the site, including, but not limited to, metals and chlorinated solvents (RWQCB 1997b). The CAP was finalized on June 28, 2002. Remediation measures recommended in the Final CAP includes in-situ treatment of groundwater and deep soil (soil vapor extraction) and bioremediation. Dioxins have also been detected and will be further investigated in the CERCLA program. Field activity was completed in January 2003. The Post Construction Summary Report (PCSR) will be submitted in May 2003. The report will include a request for no further action for petroleum in shallow soil. Ground water monitoring will continue for one year. The PCSR includes analysis of dioxins at Site 06. Navy and the regulatory agencies will review the dioxin data to determine if there is a need for additional dioxin investigation. The estimated site closeout date is late 2004.

Site 14 (New Fuel Farm) and Site 22 (Navy Exchange Services Station). Site 14 and Site 22 (formerly IR 14 and IR 22, respectively) are north of 11th Street, between Avenue N and the Bay on the northeast corner of Treasure Island. The sites were investigated together because of their close proximity and similar contaminants. IR 14 operated as a fuel farm between 1943 and 1997. IR 22 operated as Navy Exchange Service Station between 1946 and 1997. Contaminants of concern include VOCs, petroleum, and polynuclear aromatic hydrocarbons (PAHs) in soil. IR 14/IR 22 were investigated during the phase I and phase II RIs and later found to qualify for CERCLA's petroleum exclusion. Based on data indicating contamination limited to petroleum products, Navy evaluated this site as part of the petroleum program. The CAP was finalized on June 28, 2002. Final CAP recommendations included excavation and treatment for surface soil and bioventing for subsurface soil. Soil vapor extraction began operation in June 2002. Navy is currently performing ongoing groundwater monitoring. The estimated site closeout date is late 2004.

Site 15 (Old Fuel Farm). Site 15 (formerly IR 15) is on the southeastern portion of Treasure Island, at the intersection of California Avenue and Avenue M. The site operated as a fuel farm during the 1940s. Petroleum and SVOC contamination in soil were identified as the

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contaminants of concern during phase I and phase II RIs. Based on data indicating contamination is limited to petroleum products, the Navy evaluated this site as part of the petroleum program. A Final CAP, dated June 28, 2002, recommended excavation and treatment for surface soil and six months of continued groundwater monitoring. Additional monitoring is required through May 2004 and site closure is anticipated in August 2004.

Site 16 (Clipper Cove Tank Farm). Site 16 (formerly IR 16) is located on the northwestern corner of Yerba Buena Island, at the intersection of Macalla Road and Treasure Island Road. The site operated as a tank farm between the 1940s and the 1960s. Phase I and phase II RIs identified petroleum-contaminated soil. Based on data indicating contamination limited to petroleum products, Navy evaluated this site as part of the petroleum program. Draft CAP recommendations included excavation and treatment for surface soil. The Navy was preparing a construction summary report and a closure summary report when it was discovered that the aboveground tank farm appears to lie south and east of the initial RI investigation area. An additional site investigation was initiated in March 2003. The site closure date depends on the results of the investigation.

Site 20 (Auto Hobby Shop and Transportation Center). Site 20 (formerly IR 20) is in the western portion of Treasure Island. The site is bordered by 12th Street to the north and Avenue B to the west. From 1943 to 1997, the site operated as an auto hobby shop and a transportation center. RI activities identified petroleum-contaminated soil, and excavation and treatment of surface soils was completed. The construction summary report and closure summary report have been completed, and the groundwater monitoring is ongoing. The estimated site closeout date is late 2003.

Site 25 (Seaplane Maintenance). Site 25 (formerly IR 25) is located on the southern portion of Treasure Island, between Avenue D and F. The site operated as a seaplane maintenance facility between 1938 and 1946. Petroleum-contaminated soil was identified during RI activities. Based on data indicating contamination limited to petroleum products, Navy evaluated this site as part of the petroleum program. Regulatory agency concerns at this site are limited to releases at the shoreline and their potential environmental risks. The Final CAP, dated 28, 2002, recommended soil vapor extraction in deep soil and groundwater, which began operation in June 2002. Navy is also currently performing a groundwater monitoring program. The estimated site closeout date is late 2004.

NSTI Installation Restoration Program

Twenty-nine IR sites were originally identified for investigation. Based on the recommendations of a PA/SI conducted in 1988 (DON 1997b), 25 sites remained in the IRP for further study; four sites (02, 18, 23, 26) were removed from the IRP. The three sites requiring no further action under CERCLA are sites 02, 18, and 23. Site 26 was composed of underground storage tanks (USTs); therefore, it was deactivated as an IR site and the individual tank sites are being investigated under a separate petroleum program. As discussed above, nine sites that were initially part of the IRP were removed from the program following the determination under the Draft RI that the petroleum products were the only concern and therefore qualified for the petroleum exclusion under CERCLA. An additional site (IR 30) was added on September 6, 2002. The 17 remaining IRP sites are described below.

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Localized ground water contamination from hazardous materials has been noted on both Treasure Island and Yerba Buena Island. Contamination is from various petroleum hydrocarbons and chlorinated solvents that have spilled or leaked into the soil and entered the high ground water table. This contamination has resulted in limited exceedances of the US EPA's ambient water quality criteria for various organic compounds and metals commonly associated with fuel leaks and spills and, at one site, solvents associated with dry cleaning activities (DON 1996n). Most of the known contaminated areas are on the perimeter of Treasure Island within approximately 50 to 600 feet (15 to 183 m) from the shore. Given the proximity of many of these contaminated sites to San Francisco Bay and tidal influences, some contaminated materials may have entered the Bay in concentrations exceeding the US EPA criteria. Specific sites are discussed below.

A draft baseline human health risk assessment and a draft ecological risk assessment report were prepared in conjunction with the draft phase I RI report for the IR sites in 1993. A phase II RI was conducted during 1994, 1995, and 1996 to further characterize the extent of contamination and to collect data necessary for evaluating remedial alternatives.

As IR sites are identified as candidates for removal actions, and after removal actions are completed, some of the IR sites are expected to require no further action.

IR 01 (Medical Clinic). IR 01 is in the central portion of Treasure Island at the intersection of 9th Street and Avenue F. From the 1940s to the late 1970s, the site operated as a medical clinic for NSTI personnel. The clinic occupied Building 257, and the X-ray department was operated at the south end of the middle wing in Building 257 until the early 1970s. During this period of operation, developer and corrosive fixer solutions leaked from the X-ray equipment through the wooden floor of the building into the soil (DON 1997i). Residual silver from the X-ray film was identified as the contaminant of concern at the site. The removal of silver-contaminated soil was completed at the site. At the time of the soil removal, it was determined that the building was constructed over a concrete sub-floor. All contaminated soil was located on top of this concrete sub-floor. No further action under CERCLA is recommended since contamination was limited to the concrete sub-floor and there was no release to the environment. Navy received the site closure approval from DTSC on March 20, 2002.

IR 03 (Polychlorinated Biphenyls [PCB] Equipment Storage Area). IR 03 is along the southeastern side of Treasure Island, approximately 150 feet (46 m) from the shore. The site was used to store and repair transformers used to supply electricity to the various facilities at NSTI from before 1953 to the present. Some of the transformers were known to have contained PCBs. PCB-containing transformer fluid may have been spilled at the site as recently as the mid-1980s (DON 1997i). Based on sampling results from the PA/SI, IR 03 was recommended for further study in an RI. Based on the results of the draft RI, baseline human health risk assessment, and ecological risk assessment, the site has been recommended for no further action under CERCLA. Navy received the site closure approval from DTSC on March 20, 2002.

IR 05 (Old Boiler Plant). IR 05 is on the southeastern portion of Treasure Island. The old boiler plant operated from the 1940s to 1968. Asbestos was used as an insulating material for the boilers and pipes in the building, and mercuric nitrate may have been used during boiler plant operations to inhibit scaling. In 1968, the building was demolished and the debris reportedly buried in place. Underground fuel pipelines that may have been damaged in the 1989 Loma

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Prieta earthquake run beneath the site in an east-west direction along 5th Street. A 1988 PA/SI identified that building debris possibly containing asbestos had been buried at the site; therefore, an RI was recommended. Asbestos was not detected in the soil samples taken from the site; however, petroleum and volatile organic compound (VOC) contamination were discovered during Navy's RI. Petroleum contamination will be addressed under the petroleum program. The site will be subject to deed restrictions due to VOC-contaminated ground water. Any additional investigation of ground water at the site will be investigated as part of the dry cleaning facility at Site 24. The Navy will prepare a letter documenting no action at the site. Navy received closure approval from DTSC on January 17, 2001.

IR 07 (Pesticide Storage). IR 07 is located north of 13th Street, between Avenue M and the Bay, in the northeast corner of Treasure Island. Between 1943 and the 1960s, the site was used for storage and handling of a variety of liquid substances, including pesticides, chlorinated herbicides, and paint. Pesticide- and herbicide-contaminated soil and ground water were identified at the site during the phase I and phase II RIs. Additional sampling for contaminants of concern was completed in April 2002 and a Final Supplemental Site Inspection report was completed in October 2002. The Navy has recommended No Further Action at this site. The DTSC is postponing closure of this site until additional investigations at adjacent areas are complete.

IR 08 (Army Point Sludge Disposal Area, Yerba Buena Island). IR 08 is on Army Point at the extreme eastern end of Yerba Buena Island. The site was used as a disposal area for sludge from the wastewater treatment facility on Treasure Island between 1968 and 1976. Waste sludge was transported from the wastewater treatment facility and spread on the ground between the foundations of former buildings at IR 08 to dewater the sludge. Pesticides and metals, including elevated lead concentrations, were identified as the contaminants of concern at the site. DTSC requested that additional effort be made to explain elevated lead concentrations in four borings collected from the site. The Navy is currently reviewing responses to DTSC and CDFG's comments on the Draft Final Onshore RI and will follow up with their findings. This site was transferred to FHWA/Caltrans on October 26, 2000. A validation study for ecological risk has been completed and further evaluation of Caltrans environmental data performed. The final RI will be prepared with Sites 28 and 29. The estimated site closeout date is late 2005.

IR 09 (Foundry). IR 09 is in the central portion of the southern end of Treasure Island. The site has been used for multiple operations since the early 1940s, including a forge and foundry between 1943 and 1947 and a paint shop between 1952 and 1981. Metals are the most likely contaminants from the foundry and the paints used at this facility were known to have contained lead and zinc-chromium based pigments. Two concrete trenches, the remnants of a hydraulic lifting system, indicate that vehicle maintenance also may have been performed at this site. From 1981 to 1987, the foundry building was used as a welding training school by Navy Technical Training Center, and in 1994, it was the site of a small boat maintenance shop. A 1988 PA/SI recommended further investigation because of potential soil and ground water contamination from previous site activities (DON 1997i).

Petroleum and metal contamination was discovered in both soil and ground water during RI activities. The site was recommended for further evaluation and inclusion in the RI because of ecological risks associated with the potential impacts to the Bay. A request was made in March

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2000 by DTSC and RWQCB to analyze soil samples collected near a 30-gallon (114-liter) hydraulic hoist tank for VOCs and PCBs. RWQCB also requested adding VOCs to the ground water monitoring program for well 09-MW01. Analytic results indicated no major VOC contamination in ground water. PCB concentrations were below detection limits. Trench oil soil samples were collected and were non detect for PCBs (< 10 mg/kg). Navy completed additional investigation in January 2003 and is currently preparing an RI report in anticipation of a No Action ROD. Site closure is anticipated in late 2004.

IR 10 (Bus Painting Shop). IR 10 is north of 13th Street, between Avenue M and the Bay, in the northeast corner of Treasure Island. It was constructed during the mid-1940s and operated as a bus painting shop through the 1950s. For an unspecified period of time, the building also may have been used for paint mixing. Pesticides, petroleum, and semi-volatile organic compounds (SVOCs) have been identified as the contaminants of concern in both ground water and soil. Additional research was conducted regarding the catch basins located within the building. Elevated TPH extractable concentrations were detected in sediment samples collected from the catch basins. Navy completed additional investigation in January 2003 and is currently preparing an RI report in anticipation of a No Action ROD. Site closure is anticipated in late 2004.

IR 11 (Yerba Buena Island Landfill). IR 11 is a 200- by 600-foot (66- by 197-m) former marsh area on the southern side of the eastern tip of Yerba Buena Island. The site operated as a landfill for an unspecified period of time beginning in 1935. The exact nature of materials disposed at this site is unknown but is thought to include solid wastes from Yerba Buena Island and Treasure Island operations. Former USTs and a fuel pipeline also may have been sources of contamination at the landfill site. The 1988 PA/SI concluded that the site warranted further investigation in an RI due to potential soil and ground water contamination from past site operations (DON 1997i). Metals, petroleum, pesticides, VOCs, and SVOCs in soil and ground water were identified as the contaminants of concern during RI activities. A validation study for ecological risk was finalized and an additional investigation for landfill delineation and lead concentrations in surface soils was completed. Additional sampling of intertidal sediments offshore of Site 11 has been completed. No PCBs or petroleum hydrocarbons were detected above screening criteria, which were presented in the Sampling and Analysis Plan (SAP). Therefore, this sampling data will be incorporated into the No Action ROD being prepared for the Basewide Offshore Sediments (Site 13).

Although this site is on land that was transferred to either the US Coast Guard or FHWA/Caltrans, Navy is continuing with the remedial activities pursuant to CERCLA.

IR 12 (Old Bunker Area). IR 12 comprises about 90 acres (36 ha) at the northwestern end of Treasure Island. Ammunition, electronics, tear gas, and film were stored in bunkers throughout the site from the early 1940s until about 1969 when the site was converted to military housing. Soil trenching and boring activities performed prior to housing foundation excavations in 1965 indicated that debris, including rubbish, bottles, wire rope, paper, and steel drums, had been disposed of in the areas between and around the bunkers. Incinerator ash was also suspected to have been disposed in this area. A UST, a former landing strip, and a former storage yard (FSY) in the area also may have contributed to potential contamination at this site (DON 1997i).

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A PA/SI was conducted in 1988 to review past activities. A preliminary risk assessment, including a geophysical survey to locate utilities and buried items, and soil sampling for metals, TPHs, VOCs, and SVOCs, was conducted in 1990. Following the preliminary risk assessment, an RI was performed to assess the nature and extent of the identified TPH and metals contamination, to determine whether the bunker areas and buried oil tank continued to be sources of contamination, to assess the extent of soil and ground water contamination, and to characterize ground water hydraulic parameters for modeling purposes. Petroleum, metals, and SVOCs were identified as contaminants of concern during RI activities. Additional soil and ground water sampling to characterize the portions of the site beyond the boundaries of known or suspected contamination began in October 1997. Further evaluation of the site in an FS was recommended due to potential human health and ecological risks. A removal action at the site is scheduled to be completed in 2004 and will be followed by a Final RI.

Analysis of soil and groundwater samples from the FSY area indicated that PAHs and PCBs were the chemicals of concern. In 2000, all soil in the FSY area containing PCBs at levels in excess of the screening level (1 mg/kg) was excavated to 4 feet (1 m) bgs, except where buildings or other structures such as transformer pads impeded access. Indoor air monitoring to evaluate the potential risk posed by vapor intrusion from volatilization of PCBs into buildings is ongoing. Initial conservative estimates from this investigation indicate that PCB volatilization may pose a risk to human health in Building 1100 Unit C.

This site is currently residential and is expected to remain residential under reuse. Numerous housing units on this site are currently occupied under interim leases with San Francisco and TIHDI for market rate rentals and homeless housing. All CERCLA response actions will be conducted to ensure continued protection of human health and the environment. The Remedial Action Objective under CERCLA will be for residential or unrestricted use, consistent with the current configuration of housing on NSTI. Any subsequent redevelopment of the area that would involve demolition of existing structures and the grading and reconfiguring of the soil would be subject to land use controls on the property, including a City-administered soil management plan that would ensure proper characterization and management of soil and groundwater disturbance. In addition, deeds conveying the affected property will contain a notice that portions of the property not accessible to remediation efforts (such as areas beneath existing foundations) may require additional characterization and possible response actions subject to appropriate regulatory oversight. Navy is currently in remedial investigation and performing ongoing groundwater monitoring with supplemental investigations. The estimated site closeout date is mid-2006.

IR 13 (Stormwater Outfalls, Treasure Island and Yerba Buena Island, Offshore Sediments). IR 13 comprises six stormwater outfall areas (A through G) surrounding Treasure Island and the northeastern end of Yerba Buena Island. Historically at IR 13, petroleum leaks were suspected to have entered Treasure Island storm drains and flowed to the Bay. Navy has a stormwater pollution prevention plan (SWPPP) that monitors the outfalls for petroleum and other potential contaminants on an annual basis.

During the 1993 Phase I ecological risk assessment for NSTI, chemicals of potential ecological concern (CPOECs) were identified using data collected during the stormwater investigation, in which drainage areas served by each stormwater outfall were investigated. The onshore RI focused on human health issues, and the offshore RI primarily addressed ecological risks based

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on the CPOECs identified in the 1993 data. The final offshore RI report was completed in December 2001 (DON 2001a). Based on chemical concentration screening of offshore sediment and pore water, the following were identified as chemicals of concern at the IR 13 outfall areas: arsenic, barium, cobalt, copper, lead manganese, mercury, nickel, selenium, vanadium, zinc, and organics, including dichlorodiphenyltrichloroethane (DDT), PCBs, and polychlorinated aromatic hydrocarbons (PAHs). The draft offshore RI addresses the risk these chemicals present to benthic receptors and birds. The Final RI has been completed, a No Action ROD is currently being prepared, and the estimated site closeout date is late-2003. The Navy has recommended No Further Action at this site.

IR 17 (Tanks 103/104). IR 17 is near the center of Treasure Island, approximately 1,400 feet (460 m) west of the eastern edge of the island. The site is bordered by Avenue H, Avenue I, 5th Street, and an unnamed street to the south. The site contains two 200,000-gallon (757,000-liter) diesel fuel aboveground storage tanks (ASTs). The ASTs were installed before 1943 and decommissioned in 1993. An estimated 20,000 gallons (75,700 liters) of diesel fuel was reportedly released from the ASTs in 1983. The 1983 fuel spill, other unrecorded minor spills, and tank or pipeline leaks are thought to be the primary sources of contamination at the site (DON 2001a). Petroleum, metals, and SVOCs were detected in soil and ground water during RI activities. No VOCs have been detected in preliminary well and soil samples collected at the site. The Navy will prepare a letter documenting no action at the site. IR 17 could be the subject of deed restrictions due to solvent-contaminated ground water, depending on the success of remediation actions. Petroleum will be addressed under the petroleum program (Uribe and Associates 2000). Any additional investigations of soil and ground water at the site will be investigated as part of the dry cleaning facility at Site 24. Navy received closure approval from DTSC on January 17, 2001.

IR 21 (Vessel Waste Oil Recovery). IR 21 is along the southeastern edge of Treasure Island, directly adjacent to the Bay and Clipper Cove. Asphalt and buildings cover this site. IR 21 operated as a waste oil transfer and separation facility from 1946 to 1995. Waste oil unloaded from ships was transferred to an onshore oil/water separation facility at IR 21, consisting of five 2,000-gallon (7,570-liter) capacity ASTs. The ASTs were removed in 1995. Several of the buildings at this site were reportedly used for chemical storage. For example, Building 3 stored sulfuric acid for batteries, paint, paint thinner, lubricating oil, and hydraulic fluid. A fuel line also was on the site and was abandoned in place after the 1989 Loma Prieta earthquake damaged it (DON 1997i).

In 1988, a PA/SI was conducted for IR 21, and in 1994 the soil and ground water in the vicinity of the abandoned pipeline were sampled for VOCs, including chlorinated solvents. Chlorinated solvents were detected in ground water samples but not in soil samples (DON 1997i). An RI was conducted to determine the nature and extent of TPH contamination near the oil recovery system and chlorinated solvent contamination near the abandoned pipeline. Petroleum and VOCs (chlorinated solvents from an unknown source) were identified in ground water and soil during RI activities. No further action is planned for soils. For this site, human health risks are within the US EPA target risk range considered protective of human health. Further investigations will lead to decisions regarding remedial action through the IRP. Additional investigation of VOC contamination has been performed and groundwater monitoring/investigation is ongoing. A final RI is being prepared. The estimated site closeout date is mid-2006.

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IR 24 (Fifth Street Fuel Releases and Dry Cleaning Facility). IR 24 is on the southeastern part of Treasure Island and extends from the central portion of the island east towards the Bay. The site is rectangular and is bounded by Avenue H on the west, Avenue N on the east, 6th Street on the north, and 4th Street on the south. Building 99, on the site, operated as a laundry and dry cleaning facility from the 1940s through the 1950s. Trench drains in the building's floor may have been used to dispose of dry-cleaning waste solvents. The site also contains an underground pipeline that was formerly used to transport oil and fuel on Treasure Island between 1943 and 1977. In 1986, leaks were discovered at several locations along 5th Street. A PA/SI was conducted in 1988 to determine the extent of soil contamination from the abandoned fuel lines along 5th Street. The highest concentrations of TPHs were detected in soil samples from a stockpile excavated in 1986 and 1987 near the intersection of Avenue M and 5th Street. An RI was conducted to determine the extent of chlorinated solvent contamination in soil and ground water. To further characterize contamination at IR 24, additional ground water sampling was conducted in July 1997. The RI recommended continued ground water monitoring for VOCs.

In March 2000, the RWQCB recommended that additional investigation be conducted to identify the source of VOCs at the site. The site is recommended for further evaluation and inclusion in an FS because of ecological risks associated with the potential impacts to the Bay. For this site, human health risks are within the US EPA target risk range considered protective of human health. Petroleum contamination in the soil and any associated remedial actions will be conducted under the petroleum program (DON 1997i). As with Site 17, a remedial action is planned. The site could be subject to deed restrictions, depending on the success of remedial actions. Navy is currently performing an additional investigation for delineation of VOCs and TPH in addition to ongoing groundwater monitoring/investigation. Workplans are currently being drafted for a source area pilot study, which will include in-situ bioremediation of chlorinated solvents utilizing lactic acid. If the pilot study proves effective on remediating the source area and downgradient plume, the estimated site closeout date could be in 2006.

IR 27 (Clipper Cove Skeet Range). IR 27 is a separate operable unit off the southern shore of Treasure Island. The site operated as a skeet range between 1979 and 1989. IR 27 was investigated in 1996 during the Phase II ecological risk assessment. Sampling to define the vertical and horizontal extent of lead and PAHs in offshore sediments and overlying surface water was conducted during this investigation. This site is included in the December 2001 final offshore RI report (DON 2001a), which was conducted to characterize the sources, extent, and potential toxicity of chemicals in offshore sediments at NSTI. Based on the screening of chemical concentrations in offshore sediment and pore water, lead and PAHs were identified as chemicals of concern. The Clipper Cove Skeet Range was under a Regional Board Cleanup and Abatement Order, and Navy worked with the RWQCB under a Compliance Plan. A feasibility study is being prepared for this site and the estimated site closeout date is mid-2005.

IR 28 (West Side On- and Off-Ramps). IR 28 consists of the northwestern slopes of Yerba Buena Island and the SFOBB's west side on- and off-ramps, along Treasure Island Road. The west side on- and off-ramps on Yerba Buena Island have been in operation since the SFOBB was opened to traffic in 1936. A 1993 investigation indicated lead and zinc concentrations in soil near the west side on- and off-ramps. An RI was conducted to determine the extent of metals contamination, which was found to be present in soils throughout the site. No action for soil has been proposed based on the site's industrial use only categorization. A validation study for

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ecological risk was finalized and no additional investigation is required. A final RI will be prepared with Sites 8 and 29. The estimated site closeout date is mid-2004.

IR 29 (East Side On- and Off-Ramps). IR 29 consists of the eastern slopes of Yerba Buena Island directly underneath the SFOBB, and its east side on- and off-ramps along Treasure Island Road, near the guard shack, which is no longer active. The east side on- and off-ramps have been in operation since the SFOBB was opened to traffic in 1936. Similar to IR 28, IR 29 was suspected to be subject to lead and other metals contamination as a result of vehicle emissions and ramp painting and maintenance. Lead contamination in soil was identified during RI activities. Further investigations were requested by RWQCB in March 2000 to evaluate lead concentration levels at the site. Because of the uncertainty associated with the pending SFOBB work, any remedial action would most likely be delayed until all bridge-work is complete. This site was transferred to FHWA/Caltrans on October 26, 2000. A validation study for ecological risk was finalized and further evaluation of Caltrans environmental data performed. An additional investigation of lead concentrations in the surface soils was performed. A final RI will be prepared with Sites 8 and 28. The estimated site closeout date is late 2005.

IR 30 (Building 502). This site was added to the IRP on September 6, 2002. IR 30 currently consists of a Day Care Center (Building 502) and outside play area constructed in 1987. Prior to construction of the building, burn ash was deposited on the site and subsequently spread through grading. Lead, copper, and dioxin have been identified as soil contaminants at this site. Based on the results from the first phase of the site investigation, a time-critical removal action was instituted in the northwestern portion of the site to remove soils contaminated with elevated levels of lead and copper. Additional subsurface characterization at IR 30 detected elevated dioxin levels from various sample locations. An investigation was subsequently conducted to determine the extent of contamination and assist in assessing site options. The site was capped with an agency-approved concrete/asphalt covering over areas where elevated dioxin levels were reported below 2 feet below ground surface. The site closure agreement included deed restriction requirements prohibiting/limiting any future subsurface excavations in the area. The Day Care opened on March 17, 2003. An RI/FS will be completed for this site.

3.13.4 Asbestos

Several surveys to determine the presence of asbestos-containing material (ACM) have been conducted at NSTI. Between 1995 and 1997, the Mare Island Naval Shipyard conducted an ACM survey of some of the nonresidential buildings at NSTI, and Radian conducted surveys of the remaining major nonresidential structures. Abatement of asbestos in all residential and nonresidential buildings has been completed, and the results have been compiled into a report of ACM type, location, and status (Uribe and Associates 2000).

Navy began and partially completed an asbestos survey of the Job Corps buildings. However, this Navy survey was not completed because the Department of Labor began their own asbestos survey and took over remediation responsibility for any hazards. This property has been transferred by DoD to the Department of Labor, and there are no further Navy actions for asbestos.

DoD policy is that any ACM at NSTI found to be a threat to human health will be abated prior to property transfer. ACM considered a threat to human health is defined as any damaged

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ACM that is accessible. Any undamaged friable ACM and any damaged friable ACM that is inaccessible may remain (U.S. DoD 1994).

ACM is regulated both as a hazardous material under the Toxic Substances Control Act (TSCA) (15 U.S.C. §§ 2601-2692) and a hazardous air pollutant under the Clean Air Act (42 U.S.C. §§ 7401–7671q). It is a potential worker safety hazard under the authority of California's Occupational Safety and Health Administration (Cal OSHA). These regulations limit emissions of asbestos from asbestos-related manufacturing, demolition, or construction activities and require notice to federal and local government agencies prior to beginning renovation or demolition that could disturb asbestos. BAAQMD requires asbestos removal pursuant to state regulations.

All available information on ACM will be provided to the transferee. The information must include the following:

- Available information on the type, location, and condition of asbestos in any building or improvement on the property;
- Results of testing for asbestos;
- A description of asbestos control measures taken for the property;
- Available information on costs or time necessary to remove all or any portion of the remaining ACM; and
- Results of a site-specific update of the asbestos inventory performed to revalidate the condition of the ACM.

3.13.5 Polychlorinated Biphenyls (PCBs)

PCBs are considered a hazardous substance under the TSCA (15 U.S.C. §§ 2601-2692). A basewide remedial program began in the mid-1980s to update electrical equipment, including primary transformers and capacitors. Investigation of potential releases of PCBs from this equipment was not conducted at the time of replacement. In 1995, Navy completed a survey to determine whether any primary electrical equipment containing PCBs remained at NSTI. Naval Operations Instruction (OPNAVINST) 5090.1B specifies eliminating all transformers containing 500 ppm or more PCBs by October 1998 and eliminating all transformers containing 50 ppm or more PCBs by October 2003. Approximately five pieces of equipment were removed, since PCBs were detected in them at over 500 ppm.

Navy has investigated IR sites 03, 12, and 17 for potential PCB contamination. No further action relative to PCBs has been recommended at either site 03 or 17. A removal action for soils containing PCBs at levels in excess of the screening level (1 mg/kg) was conducted in 2000 at IR 12. The EBS also identified parcels that may have contained PCB equipment. Additional research and investigation into soils for PCBs at IR site 09 has been recommended by DTSC and RWQCB. Two transformers are being investigated as part of EBS data gaps sampling. Results will be presented in a technical memorandum.

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3.13.6 Storage Tanks and Oil/Water Separators

Underground Storage Tanks (USTs)

Eighty-six sites with suspected USTs were investigated at NSTI. Of these, 41 were removed, 15 were closed in place, and investigation of 16 USTs indicated that the tanks did not exist (DON 1997b). Recently, two USTs were found near the entrance to the US Coast Guard Station.

Fuel lines also are subject to UST regulations requiring upgrade or removal. Navy has completed removing or closing approximately 11,000 linear feet (3,353 m) of abandoned fuel lines at NSTI. These areas were investigated in 1998 and 1999.

The SWRCB has a draft policy regarding the cleanup of low-risk petroleum sites. The intent of the policy for low-risk sites is to remove floating product and the contaminant source, followed by ground water monitoring to assess whether bioremediation has occurred. Navy has identified approximately 10 sites that appear to qualify as low risk under this guidance. Approval of these sites is pending further negotiations with the RWQCB (DON 1998b).

Aboveground Storage Tanks (ASTs)

Fifty-three ASTs are or were located at NSTI. Of these, 27 have been removed (DON 1997b). Twenty-six ASTs are at NSTI, and seven are included in IR sites (section 3.13.3). Any contamination associated with these ASTs will be addressed under the IRP. Only eight of the remaining ASTs are active. They are being used by the gasoline station (one), fire training school (five), sewer treatment boiler plant (one), and brig (one). Remaining ASTs will be or have been drained and cleaned and will remain in place unless demolition is needed for remedial action (TtEMI 2000b).

Oil/Water Separators (OWS)

There were two underground oil/water separators at the former fire training school location, IR Site 06; however, these tanks were removed in 2002. The status of this site is addressed under section 3.13.3.

3.13.7 Lead

Lead-Based Paint (LBP)

Lead was a major ingredient in the house paint used throughout the country for many years. In 1978, the maximum lead content was reduced to 0.06 percent of newly applied dry paint. LBP use was discontinued in 1980.

Navy, in accordance with HUD guidelines, will abate any hazardous LBP found in residential use structures constructed before 1960. The inspection and abatement will not be performed for buildings scheduled for demolition or nonresidential use.

DTSC has considered a release to soil of LBP from DoD buildings or structures to be a CERCLA hazardous substance release. DoD and EPA have developed a Field Guide for Lead-Based Paint guidelines for disposal of DoD residential real property. Navy's policy for LBP

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remediation in nonresidential areas has been to comply with CERCLA in the same manner and to the same extent, both procedurally and substantively, as any non-governmental entity.

Lead in Drinking Water

NSTI tested for lead and copper in drinking water in 1993, 1994, and 1995, but no copper or lead was detected above the federal maximum contaminant levels (MCLs). The City and County of San Francisco, under Navy Cooperative Agreement, will continue to monitor lead and copper in drinking water, as required by the Safe Drinking Water Act of 1974 (Pub. L. 93-523, as amended, 42 U.S.C. §§ 300f–300j-26).

3.13.8 Radon

Radon screening for six locations was conducted by Navy at NSTI (March 1991) as part of Navy Radon Assessment and Mitigation Program. Concentrations ranged from none detected above the detection limit of 0.5 picocuries per liter (pCi/L) (4 locations) to 0.6 pCi/L. No buildings were identified as having radon gas levels above 4 pCi/L, which is the US EPA recommended action level (US EPA 1988).

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