

## ACTION MEMORANDUM

To: Commander, Pacific Division, Naval Facilities Engineering Command (Code 19)

From: Commander, Pacific Division, Naval Facilities Engineering Command (Code 18)

Date: 8 September 1999

Subject: Action Memorandum for a Non-Time-Critical Removal Action at the Plating Shop Leach Field, Naval Ship Repair Facility, Apra Harbor Naval Complex, Guam

REFS:

- (a) 40 CFR 300-415, Removal Action, National Oil and Hazardous Substances Pollution Contingency Plan under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980.
- (b) SACM, OSWER Publication 9203.1-051, Volume I, Number 1-5 (December 1992), PB93-963262, PB93-963263, PB93-963264, PB93-963265, and PB93-963266.
- (c) Guidance on Implementation of the SACM under CERCLA and NCP, OSWER Publication 9203.1-03, PB93-963252. 7 July 1992.
- (d) Exercising Flexibility through the SACM, OSWER Publication 9203.1-03A, PB93-963253. 26 October 1992.
- (e) U.S. Environmental Protection Agency (EPA), *Guidance on Conducting Non-Time-Critical Removal Actions Under CERCLA*. Washington, D.C.: Office of Emergency and Remedial Response. EPA/540-R-93-057. August 1993.
- (f) EPA Action Memorandum Guidance, OSWER Directive 9360.3-01. December 1990.
- (g) *Navy/Marine Corps Installation Restoration Manual*. February 1997.
- (h) *OPNAVINST 5090.1B*. November 1994.
- (i) Region IX of the U.S. Environmental Protection Agency. Preliminary Remedial Goals (PRGs). 1998.
- (j) Earth Tech, Inc. *Engineering Evaluation/Cost Analysis (EE/CA) Non-Time-Critical Removal Action, Plating Shop Leach Field, Naval Ship Repair Facility, Guam*. Prepared for PACNAVFACENGCOCM. Honolulu. November 1998.
- (k) Ogden Environmental and Energy Services Company, Inc. *Current Conditions Report, Apra Harbor Naval Complex, Apra Harbor, Guam, Mariana Islands, Final Report*. August 1994.
- (l) Ogden Environmental and Energy Services Company, Inc. *Environmental Baseline Survey for Ship Repair Facility Inland and Waterfront Areas, Guam, Mariana Islands (draft)*. CTO 0201. June 1996.
- (m) Ogden Environmental and Energy Services Company, Inc. *Remedial Investigation for Area Behind the Fenceline Site and Plating Shop Leach Field Site, Ship Repair Facility*. Vols. 1-3. August 1995.

- (n) OHM Remediation Services Corp. *Work Plan, Non-Time-Critical Removal Action, Plating Shop Leach Field, Naval Ship Repair Facility, Guam* (draft). October 1998.

ENCL: (1) Figures  
(2) Removal Action Cost Summary

## **I. PURPOSE**

The purpose of this project-specific Action Memorandum (AM) is to document, for the Administrative Record, the decision by the Department of Navy (DON), Pacific Division Naval Facilities Engineering Command (PACNAVFACENGCOM) to undertake a non-time-critical removal action of soil at the Plating Shop Leach Field (IRP Site 25) at the Naval Ship Repair Facility (NSRF), within the Apra Harbor Naval Complex, Guam. The Department of Defense (DoD) is authorized under 42 United States Code (USC) 9604, 10 USC 2705, and Federal Executive Order (EO) 12580 to undertake Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) response actions. The AM has been prepared in accordance with references (a) through (h).

The remedial action alternative selected at the leach field was excavation of contaminated soil and disposal in a Resource Conservation and Recovery Act (RCRA) Subtitle C hazardous waste management facility landfill located within the continental United States. The removal action was implemented through a remedial action contract (RAC). The site was prepared and excavated using conventional construction equipment. Excavated soil was shipped off island as hazardous waste, treated to meet the land disposal restrictions (LDRs), and properly disposed of. Confirmation samples were collected from the limits of the excavation to document that contaminant concentrations in the remaining soil were below the Region IX of the U.S. EPA (EPA Region IX) preliminary remedial goals (PRGs) for industrial settings (reference [i]). The excavated area was backfilled with clean fill material. At the completion of the removal action, a remedial verification report (RVR) was prepared and a record of decision (ROD) will be submitted for government approval to serve as the final documentation of the removal action.

The removal action was completed in a manner consistent with the National Oil and Hazardous Substance Pollution Contingency Plan (NCP), 40 Code of Federal Regulations (CFR) 300.415(b)(2) (reference [a]), on the basis of findings of potential exposure of nearby human populations to hazardous substances, pollutants, or contaminants.

This AM is the primary decision document substantiating the need for the removal action, identifying the selected removal action alternative, and presenting the rationale for the removal action approach. There were no nationally significant or precedent-setting issues for the Plating Shop Leach Field site. This AM was prepared in support of Base Realignment and Closure (BRAC) IV environmental activities.

## **II. SITE CONDITIONS AND BACKGROUND**

Site conditions and background information are summarized below. For a detailed presentation, see the Engineering Evaluation/Cost Analysis (EE/CA) (reference [j]).

### **A. SITE DESCRIPTION**

#### **1. General Location and Characteristics**

Situated at the entrance to Inner Apra Harbor, the NSRF consists of two distinct areas encompassing approximately 183 acres: the NSRF Main Areas, Inland Site and the NSRF Main Areas, Waterfront Site. The Waterfront Site is further divided into two parcels: the Waterfront Industrial Area and the Waterfront

Drydock Island Area, one on each side of Apra Harbor. The Plating Shop Leach Field Site is located within the Waterfront Industrial Area directly east of the northeast corner of Building 2074. No longer in use, the leach field contained three underground perforated pipes, previously connected via a concrete sump to two floor drains located within Building 2074 (reference [k]). The site was partially covered with concrete and vegetation.

## 2. Site History

The NSRF was established in 1945 as the Industrial Department of the Naval Operating Base, Guam. Between 1945 and 1951, the facility conducted operational maintenance and complete rehabilitation of World War II battle-damaged ships. In 1951, the facility was redesignated as the NSRF and tasked with the overhaul, repair, alteration, dry-docking, and conversion of Navy (and other service) ships and service craft. These activities continued at the NSRF and other services were added, including voyage and emergency repair; diving and salvage services; shipyard industrial training program; health physics calibration repair services; cryptographic instrument repair and services; spectrographic analysis of fuel oil for all DoD operations on Guam; and the operation of specialized facilities, such as the decompression chamber, acoustical range, electronic reference standards laboratory, and a Reserve Craft berthing area for inactive service craft at Drydock Island.

## 3. Site Characteristics

**Topography.** Building 2074 and the surrounding area are located on relatively flat land at an elevation of approximately 8–11 feet above mean lower low water (mllw).

**Geology/Hydrogeology.** The shallow, unconsolidated site geology is characterized by both natural and man-made deposits of a variety of lithologic types. During the late 1940s and into the early 1950s, the site was filled with dredge deposits from Apra Harbor. Each shallow stratigraphic unit is relatively continuous across the project site; however, the units exhibit both vertical and lateral lithologic gradations. In general, the lithology consists of a coarse-grained sand and gravel unit with little or no fines overlying a clayey gravel unit.

The shallow, unconfined (water table) aquifer at the site is strongly influenced by tidal fluctuations and infiltration of precipitation. The depth to the water table is approximately 8 feet bgs; however, a daily tidal variation of 0.2–0.8 foot was observed in the monitoring well water levels.

**Surface Water Hydrology.** The closest surface water body is Inner Apra Harbor, located approximately 350 feet to the east and southeast of the site. Catch basins in the vicinity of the site collect surface water and direct it to the outfall in the harbor at Wharf Papa (reference [k]).

**Surrounding Land Use and Populations.** The Plating Shop Leach Field (IRP Site 25), located in the NSRF Waterfront Industrial Area, is now inactive. Until recently, operations in the Industrial Area focused on repair, storage, and related activities for U.S. naval ships, service craft, and ships of other government departments. The Shop Maintenance Facilities of the Industrial Area consist of 20 buildings encompassing approximately 244,000 square feet. The buildings range from large, permanent structures to small, deteriorated sheds (reference [l]). Also located within the Industrial Area, north of the Plating Shop, are the Hazardous Waste Storage Facility (Building 1014), Used Oil Waste Lot, and the Hazardous Material Storage Facility (Building 2002).

Building 2074 is surrounded on the north, east, and south by facilities used for various industrial activities. Directly to the west, across Fourth Street, is the FISC parking area. Inner Apra Harbor is south and east of Building 2074; Wharf Papa is 350 feet to the south of Building 2074 and Wharf Oscar is 350 feet to the east. The nearest residences are located approximately 2,500 feet to the southwest.

Vegetation around the Plating Shop is limited to grass and some ornamental bushes. Currently, the Industrial Area is operated by a lease to the Government of Guam, who subleased the NSRF to a private company for ship repair operations.

#### **4. Release Description**

**Possible Sources of Contamination.** The identified source of contamination consisted of the Plating Shop wastes disposed of at the leach field. The leach field was used for the disposal of diluted sludge, which consisted of plating wastes that were piped to a distribution box, then into the three leach field lines and into the ground. The Plating Shop was known to have produced and disposed of metal plating wastewater bath solutions containing chromium, cadmium, nickel, copper, silver, and cyanide between 1963 and 1971. Approximately 40 gallons of wastes were reportedly disposed of at the site during this time (reference [m]).

**Physical and Chemical Attributes of Contamination.** Samples from monitoring wells and soil borings indicated that the soil and groundwater are impacted by Plating Shop metal wastes deposited in the leach field. Contaminants of potential concern (COPCs) in the soil include hexavalent chromium, cadmium, copper, nickel, silver, and possibly lead, zinc, arsenic, and chlorinated solvents. Hexavalent chromium is a COPC in groundwater. Total chromium (trivalent and hexavalent chromium), copper, cadmium, nickel, and silver were found at concentrations above levels measured elsewhere at the NSRF.

Metals are virtually nonvolatile at atmospheric temperatures. The solubilities of metals in water, which depend strongly on pH, range from tens to thousands of milligrams per liter, generally increasing as pH decreases. Metal compounds are typically very stable and do not biodegrade. Estimated partitioning coefficients ( $K_d$ ) between water and soil vary significantly for each metal, depending on the species present in solution. In general, metals are not very mobile in soil, but can bioaccumulate in the environment.

Hexavalent chromium was of particular concern at the site because of its elevated concentrations in the leach field and groundwater. The mobility of hexavalent chromium is higher than that of trivalent chromium. The range of  $K_d$  for hexavalent chromium is 1–400 milligrams per gram. Hexavalent chromium has a strong tendency to transform into trivalent chromium under anoxic or reducing conditions.

#### **5. National Priorities List (NPL) Status**

The Plating Shop Leach Field has neither been proposed for, nor listed on, the National Priorities List.

#### **6. Maps, Pictures, and Other Geographical Representations**

The following figures are provided as Enclosure 1:

- Figure 1            Site Location Map
- Figure 2            Site Map
- Figure 3            Estimated Lateral Extent of Excavation
- Figure 4            Proposed Leach Field Excavation

#### **B. OTHER ACTIONS TO DATE**

##### **1. Previous Actions**

No known previous removal actions have been reported for the Plating Shop Leach Field.

## 2. Actions

Actions conducted at the Plating Shop Leach Field (described below) included preparation of an engineering evaluation/cost estimate (EE/CA), this AM, and a work plan (prepared by the RAC contractor) for the proposed removal action.

**Engineering Evaluation/Cost Analysis.** An EE/CA (reference [j]) was prepared for the Plating Shop Leach Field to identify and evaluate potential removal action alternatives. The EE/CA included a streamlined human health risk evaluation (SRE), summary of ecological risk, removal action objectives, potential removal action alternatives, an evaluation of these alternatives, and a recommended removal action for the site.

**Action Memorandum.** This AM has been prepared to document, for the Administrative Record, the decision of DON and PACNAVFACENGCOM to undertake a non-time-critical removal action for impacted soils at the Plating Shop Leach Field. The document includes a summary of human and ecological risks, removal action objectives, and a recommended removal action alternative for the Plating Shop Leach Field.

**Community Relations Plan.** Due to the location of the Plating Shop Leach Field in an industrial complex and the expedited schedule for the removal action, a specific Community Relations Plan (CRP) was not prepared as part of this project. However, removal action documentation was made available to the general public for review and comment.

**Removal Action Work Plan.** Due to the simple nature (excavation and disposal) of the proposed removal action and the small quantity of material involved (200 cubic yards), a removal action work plan (reference [n]) was prepared in place of a performance design package prior to the field implementation. The EE/CA contained detailed information and performance specifications that guided the RAC contractor in preparing the work plan. Following the public review of the EE/CA and Government approval of the work plan, the RAC contractor implemented the proposed removal action. Upon approval of the work plan by the Government, the RAC contractor initiated the removal action.

## C. STATE AND LOCAL AUTHORITIES' ROLES

### 1. State and Local Actions to Date

CERCLA 120 (f) and 10 USC 2705 require that DON facilities provide state (Territory) and local officials the opportunity to review and comment on DON response actions. CERCLA 120 further requires that state removal and remedial action law requirements be implemented at facilities not included on the NPL. In observance of these requirements, EPA Region IX and GEPA have provided technical advice and oversight in the planning and implementation of previous and current actions associated with the Plating Shop Leach Field.

### 2. Potential for Continued State or Local Response

EPA Region IX and GEPA provided technical advice and oversight in the planning and review of the EE/CA and have continued such support throughout the BRAC cleanup process.

### **III. THREATS TO PUBLIC HEALTH, WELFARE, OR THE ENVIRONMENT AND STATUTORY AND REGULATORY AUTHORITIES**

#### **A. THREATS TO PUBLIC HEALTH OR WELFARE**

In accordance with the NCP (40 CFR 300.415[b][2]), the following threats have been considered in determining the appropriateness of a removal action:

- i. Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances, pollutants, or contaminants.
- ii. Actual or potential contamination of drinking water supplies or sensitive ecosystems.
- iii. Hazardous substances, pollutants, or contaminants in drums, barrels, tanks, or other bulk storage containers.
- iv. High levels of hazardous substances, pollutants, or contaminants in soils largely at or near the surface that may migrate.
- v. Weather conditions that may cause hazardous substances, pollutants, or contaminants to migrate or be released.
- vi. Threat of fire or explosion.
- vii. The availability of other appropriate federal or state response mechanisms to respond to the release.
- viii. Other situations or factors that may pose threats to public health and/or welfare of the environment.

The threat from the Plating Shop Leach Field is the actual or potential exposure of nearby human populations, animals, or the food chain to hazardous substances, pollutants, or contaminants. The SRE, conducted in accordance with EPA guidance, determined the risk associated with exposure to contaminants in soil at the Plating Shop Leach Field (reference [j]). The SRE presented a conceptual site model, identified chemicals of potential concern (COPCs), and estimated health risks. Hexavalent chromium, total chromium, arsenic, and lead were identified as preliminary COPCs in surface soil because they exceeded their respective PRGs for industrial settings. Of these, hexavalent chromium was the single, final COPC for the Plating Shop Leach Field. Arsenic, total chromium, and lead were eliminated because their concentrations fell below their respective background ranges. The SRE concluded that a remedial action should be performed to reduce hexavalent chromium concentrations in target soil below the PRG for industrial settings, thus reducing concentrations in soil to acceptable levels for planned future land use.

#### **B. THREATS TO THE ENVIRONMENT**

The site-specific soil data from the impacted environmental matrices were evaluated using risk assessment approaches consistent with federal guidelines and contaminant fate and transport modeling. No significant ecological risks were identified. However, it was determined that there was the potential for the impacted soil to continue to pose an environmental threat to the surrounding soil and groundwater.

### **IV. ENDANGERMENT DETERMINATION**

Actual or threatened releases of contaminants from this site, if not addressed by implementing the removal actions selected in this AM, may endanger public health, welfare, or the environment.

## V. ACTIONS AND ESTIMATED COSTS

### A. ACTIONS

The following summarizes the field activities required to implement the proposed removal action.

#### 1. Description of Removal Action

**Initial Soil Sampling.** To better delineate the lateral extent of impacted soil above EPA Region IX PRGs for an industrial setting, additional samples were required. The results of composite soil samples from between Building 2074 and the leach field determined the likelihood of impacted material beneath the building. The composite soil sample concentrations were below the PRGs, indicating that there was no impacted material under the plating shop building. The building remained and the portion of the building adjacent to the excavation area was shored.

**Mobilization.** All necessary personnel, equipment, and materials were mobilized to the site by the RAC contractor. DON notified GEPA two weeks prior to initiating project activities. Temporary storage facilities and an office were established on site. A digging permit was submitted to DON 10 days prior to the start of excavation work. An equipment decontamination area was constructed, and the excavation and other staging areas were delineated and prepared for use. Liaison and coordination meetings were held with the DON remedial project manager (RPM), engineer, contractor, and field representatives of the subcontractors and vendors.

**Site Preparation.** The excavation site and approach area were cleared and grubbed using conventional equipment. The asphalt overlaying the leach field was excavated, loaded into dump trucks, and transported to the Public Works Center (PWC) landfill for disposal. Following the asphalt removal, monitoring wells within the leach field were properly abandoned and the area was prepared for excavation.

**Excavation.** The top 6 inches of soil above the impacted leach field soil was excavated using a track-mounted excavator and stockpiled on site for future use as backfill material. Confirmatory composite soil sampling was conducted on this material to determine if it was appropriate backfill material.

After removal of the surface soil, the leach field pipes and adjacent impacted soil were excavated. The pipes, sediment within the pipes, and the excavated soil—potential RCRA or CERCLA hazardous waste—were loaded into lined shipping containers provided by a licensed hazardous waste transporter. The material was taken to the Guam port and loaded for transport to California and eventual disposal in an off-island landfill.

An onsite health and safety professional monitored and enforced site-specific health and safety requirements. The following provisions were included in the Health and Safety Plan:

- excavation activities conformed with the requirements of 29 CFR 1926-650;
- the health and safety coordinator inspected the site daily to ensure that no recognizable conditions exposed workers to contaminant exposure and injury;
- after every rain storm, the site was inspected before excavation activities resumed to determine whether hazardous conditions existed; and
- air emissions from the excavation were monitored periodically.

Plastic sheeting was used to minimize water contact with impacted soil in the excavation.

**Confirmation Sampling and Backfill.** Upon completion of excavation activities, confirmation soil samples were collected from the site and analyzed for metals and cyanides to document that concentrations were below the approved remediation goals. Replicate samples were also collected and analyzed for quality assurance/quality control (QA/QC).

Once the confirmation soil sampling verified the removal of impacted soil, the excavation was backfilled with clean soil and compacted. Backfill was compacted in 6-inch lifts to 90 percent relative compaction, in accordance with ASTM 1557. Prior to use as fill, the clean soil was tested to assure its appropriateness for use at this site. One sample was taken from each source of backfill material and was analyzed for VOCs, PCBs, and heavy metals.

## **2. Contribution to Remedial Performance**

The remedial action removed soil impacted with metal concentrations above the EPA Region IX PRGs for industrial settings. Remaining soil did not contain concentrations above the PRGs for industrial settings. This removal action removed the potential risk posed to future visitors and workers. The excavated potentially hazardous material was loaded for transport to California and eventual disposal in an off-island landfill. No further action was necessary because removal action attained cleanup objectives.

## **3. Description of Alternative Technologies**

The following removal action alternatives were screened for their effectiveness, implementability, and cost: (1) no action; (2) institutional controls or access restrictions; (3) excavate and dispose of metal impacted soil at an offsite, off-island landfill and backfill; (4) in situ solidification and stabilization; (5) ex situ solidification and stabilization; and (6) ex situ soil washing/soil leaching. Details of alternative evaluations are provided in the EE/CA (reference [j]).

## **4. Engineering Evaluation/Cost Analysis**

Removal action alternatives that passed screening were evaluated by eleven criteria, including the nine specified by the National Contingency Plan.

- a. Effectiveness
  - Overall protection of human health and the environment
  - Compliance with applicable or relevant and appropriate requirements (ARARs)
  - Long-term effectiveness and permanence
  - Reduction in toxicity, mobility, or volume
  - Short-term effectiveness
- b. Implementability
  - Technical feasibility
  - Administrative feasibility
  - Availability of services and materials
  - BRAC Cleanup Team (BCT) acceptance
  - Projected public acceptance
- c. Cost

Both the draft and final EE/CAs were available for public review and were reviewed by the BCT. The Navy recognizes and the BCT concurs that the excavation and disposal of contaminated soil is the most cost-effective approach to site remediation.

## 5. Applicable or Relevant and Appropriate Requirements (ARARs) and To-Be-Considered (TBC) Criteria

Federal and state chemical-specific, location-specific, and action-specific ARARs and TBCs are summarized below. A detailed description of each ARAR and TBC criteria is provided in reference (j).

### *Chemical-Specific ARARs/TBCs*

The following EPA health-based limits on COPCs in the soil have been determined to be TBCs and ARARs:

- **U.S. EPA Region IX PRGs for Industrial Settings** (reference [i]). Provides non-promulgated health-based cleanup goals for industrial exposures. Exposure pathways include ingestion, inhalation, and dermal contact with surface soil. The soil PRGs are TBCs and provide guidance on soil exposure pathways. The SRE determined an exposure risk to utility workers based on screening criteria developed from Region IX PRGs for industrial settings. The PRGs for industrial settings were adopted as target cleanup levels; removal of soil with contaminants above these levels reduce the health risk at this site to acceptable levels for the intended reuse.
- **Clean Water Act (National Ambient Water Quality Standards for Marine Environments)**. Provides criteria for characterizing surface water quality and limits activities that degrade surface water quality through the introduction of contaminants into surface waters. Groundwater in the vicinity of the Plating Shop Leach Field discharges directly to the marine environment. Contaminants in groundwater above these standards could pose a risk to marine receptors. A complete exposure pathway could also exist with the associated human health risk via consumption of marine organisms.
- **Clean Water Act (Guam Water Quality Standards)**. These standards define groundwater within 20 feet of the ground surface directly connected to adjacent marine waters. Groundwater in the vicinity of the Plating Shop Leach Field discharges directly to the marine environment. Contaminants in groundwater above these standards could pose a risk to marine receptors. A complete exposure pathway could also exist with the associated human health risk via consumption of marine organisms.
- **Clean Air Act, 42 USC 7401-7642**. Establishes air quality and particulate emissions criteria during excavation activities. These standards were pertinent during excavation activities.
- **National Institute on Occupational Safety and Health or American Conference of Governmental Industrial Hygienists, 29 CFR Part 1910.120**. Provides non-promulgated published exposure limits (relative exposure limits or threshold limit values) for chemicals not regulated by the Occupational Safety and Health Administration (OSHA). These standards were pertinent during removal actions that involve earthwork.

### *Location-Specific ARARs/TBCs*

Four location-specific ARARs were selected:

- **Superfund Amendment and Reauthorization Act, Pub. Law 99-499**. This regulation is pertinent since removal actions at the Plating Shop Leach Field were performed under Section 104(b)(1) of CERCLA.
- **Protection of Flood Plains, 40 CFR 6, Appendix A; Fish and Wildlife Coordination Act, 16 USC 62 et seq.; 40 CFR 6.302**. Action to avoid adverse effects, minimize potential harm, and restore and preserve natural and beneficial values. Action that will occur in a floodplain, i.e.,

lowlands, and in relatively flat areas adjoining inland and coastal waters and other flood-prone areas.

- **Coastal Zone Management Act (CZMA), 16 USC Section 1451 et. seq.** Activities affecting the coastal zone including lands therein and thereunder and adjacent shorelands.
- **15 CFR Section 930.30 (CZMA).** Federal activities must be consistent with, to the maximum extent practicable, state coastal zone management programs. Federal agencies must supply the state with consistency determination. The coastal zone includes wetland, flood plain, estuary, beach, dune, barrier island, coral reef, and fish and wildlife and their habitat.

### *Action-Specific ARARs/TBCs*

Ten actions-specific ARARs were identified pertaining to federal regulations:

- **CERCLA, 42 USC 9601.** Established funding and enforcement authority for a comprehensive response program for past hazardous waste activities that caused or may cause significant negative impacts on human health and/or the environment. The removal action was conducted in accordance with CERCLA requirements.
- **Corrective Action Management Unit (CAMU), 40 CFR Part 552.** A CAMU is an area within a facility approved by the EPA Regional Administrator for the purpose of managing RCRA remediation wastes. Wastes managed within the CAMU would not be subject to RCRA regulatory disposal requirements, including land disposal restrictions and minimum technology requirements. Although CAMUs are authorized under RCRA and the NSRF does have a RCRA permitted unit, the leach field is subject to CERCLA. The CERCLA equivalent of a CAMU is AOC. The application of the CAMU waste management concepts were relevant and appropriate for removal actions under CERCLA.
- **Hazardous Materials Transportation Act, 49 CFR Part 171.** Establishes shipping requirements for the transportation of hazardous materials. This regulation is applicable to the off site transportation of contaminated soil, if the material is classified as RCRA hazardous waste.
- **Land Disposal Restrictions, 40 CFR Part 268.** Identifies hazardous wastes that are restricted from land disposal and establishes specific treatment standards for wastes that are disposed of on land. Will apply to the land disposal of stabilized soil if it is classified as RCRA hazardous waste. May also impact off site disposal.
- **NCP, 40 CFR Part 300.** Establishes compliance requirements for all response actions. Removal actions were conducted in accordance with NCP requirements.
- **Off-Site Policy, 40 CFR Part 300.400.** Generally provides that a facility used for the off site management of CERCLA removal action wastes must be approved by EPA. This regulation was applicable, since removal actions at the Plating Shop Leach Field were performed under CERCLA. No offsite policy approved facilities are located in Guam, and the nearest RCRA-licensed and EPA-approved facilities are located in California.
- **OSHA, 29 CFR.** Establishes and regulates worker health and safety. All removal action activities were conducted in accordance with applicable worker health and safety requirements.
- **RCRA Toxicity Characteristic Leaching Procedure (TCLP) Guidelines, 40 CFR Part 261.** Provides guidelines for establishing waste classification based on characteristics including TCLP. Site is not a RCRA site; however, once excavated, soil may classify as a characteristic hazardous waste.

- **OSHA Hazardous Waste Operations and Emergency Response, 29 CFR Part 1910.1000.** Provides promulgated standards for worker exposure to specific chemical compounds; establishes PELs. These standards were applicable during removal actions that involve earthwork.
- **Guam Soil Erosion and Sedimentation Control Regulation (pending Guam Legislative approval).** Intended to provide guidelines for erosion and sedimentation control for excavation activities in environmentally sensitive areas.

## **6. Project Schedule**

The removal action field activities began in December 1998 and were completed by May 1999. The metal-impacted soil was stockpiled during the removal action, prior to being shipped to the mainland disposal facility.

## **B. ESTIMATED COSTS**

The estimated cost of implementing the proposed removal action was approximately \$400,000, as compared to the originally estimated \$992,000.

## **VI. EXPECTED CHANGE IN SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN**

If action had been delayed or not taken at the Plating Shop Leach Field, human populations may have been exposed to elevated metal concentrations. This could increase the risk to the public and adjacent populations through prolonged ingestion and dermal adsorption.

## **VII. OUTSTANDING POLICY ISSUES**

No outstanding policy issues were associated with the removal action at the Plating Shop Leach Field.

## **VIII. ENFORCEMENT**

The Plating Shop Leach Field is the property of the Navy. Thus, the Navy is proceeding as the lead agency in cleaning up the site, with regulatory concurrence from the BCT. The Navy performed the proposed removal action properly and promptly according to the provisions listed above.

## **IX. RECOMMENDATION**

It is recommended that the removal action be approved as an appropriate response for the non-time-critical removal action at the Plating Shop Leach Field at the Naval Ship Repair Facility, Guam. This decision document was developed in accordance with CERCLA, as amended, and is consistent with the National Oil and Hazardous Substances Contingency Plan (reference [a]).

**Concurrence:**

*M. Z. Waki*  
\_\_\_\_\_  
for Melvin Z. Waki, P.E.  
Head, Environmental Services Department  
Pacific Division  
Naval Facilities Engineering Command

*9/16/99*  
\_\_\_\_\_  
Date

*Randy Hoffman*  
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Randy Hoffman  
Acting Head, Base Realignment and  
Closure Division  
Pacific Division  
Naval Facilities Engineering Command

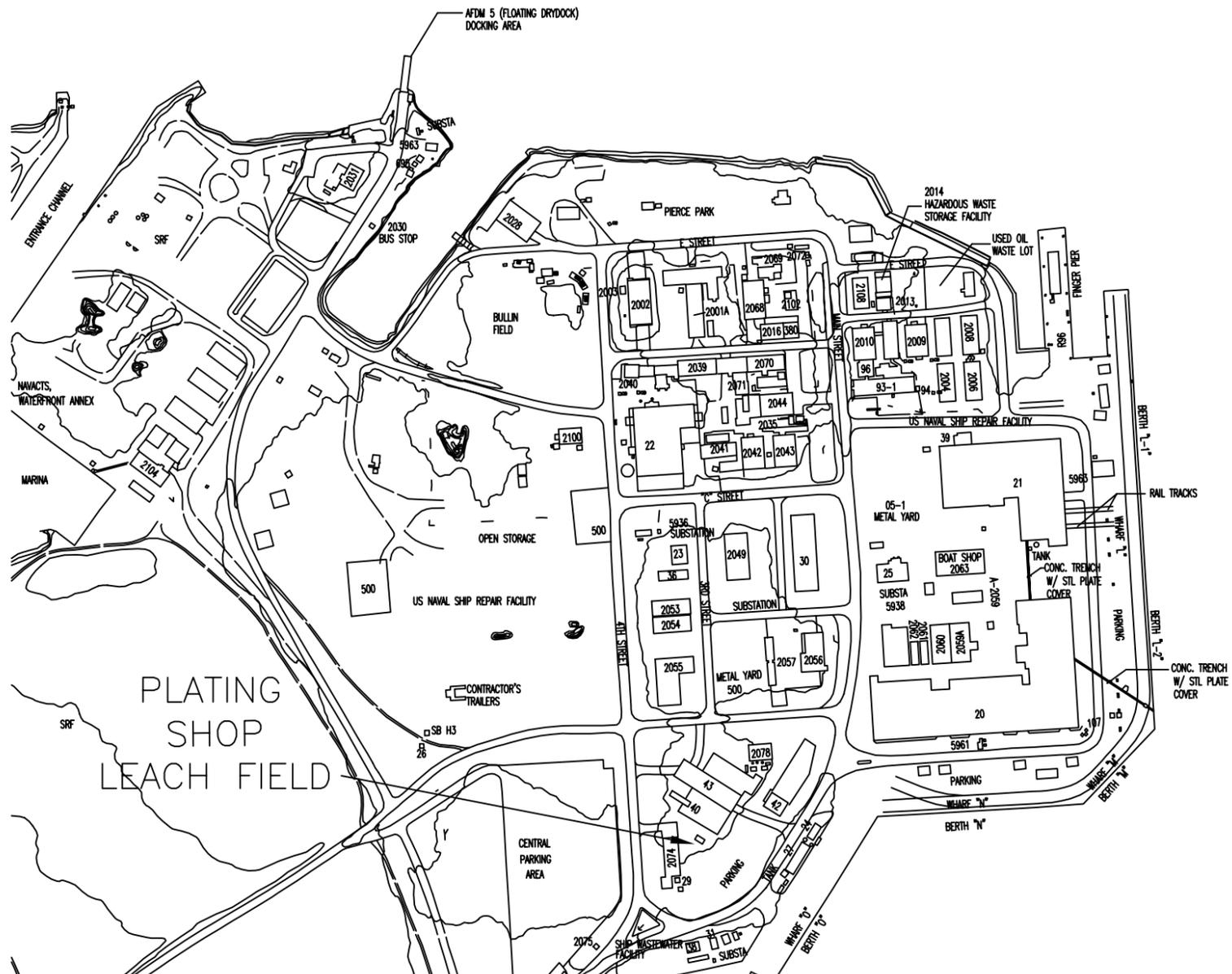
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**ENCLOSURE 1**

**FIGURES**



OUTER APRA HARBOR



INNER APRA HARBOR

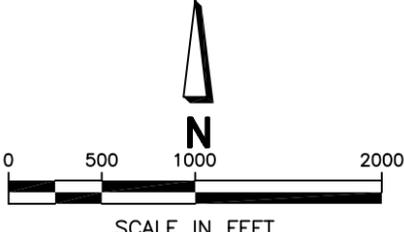
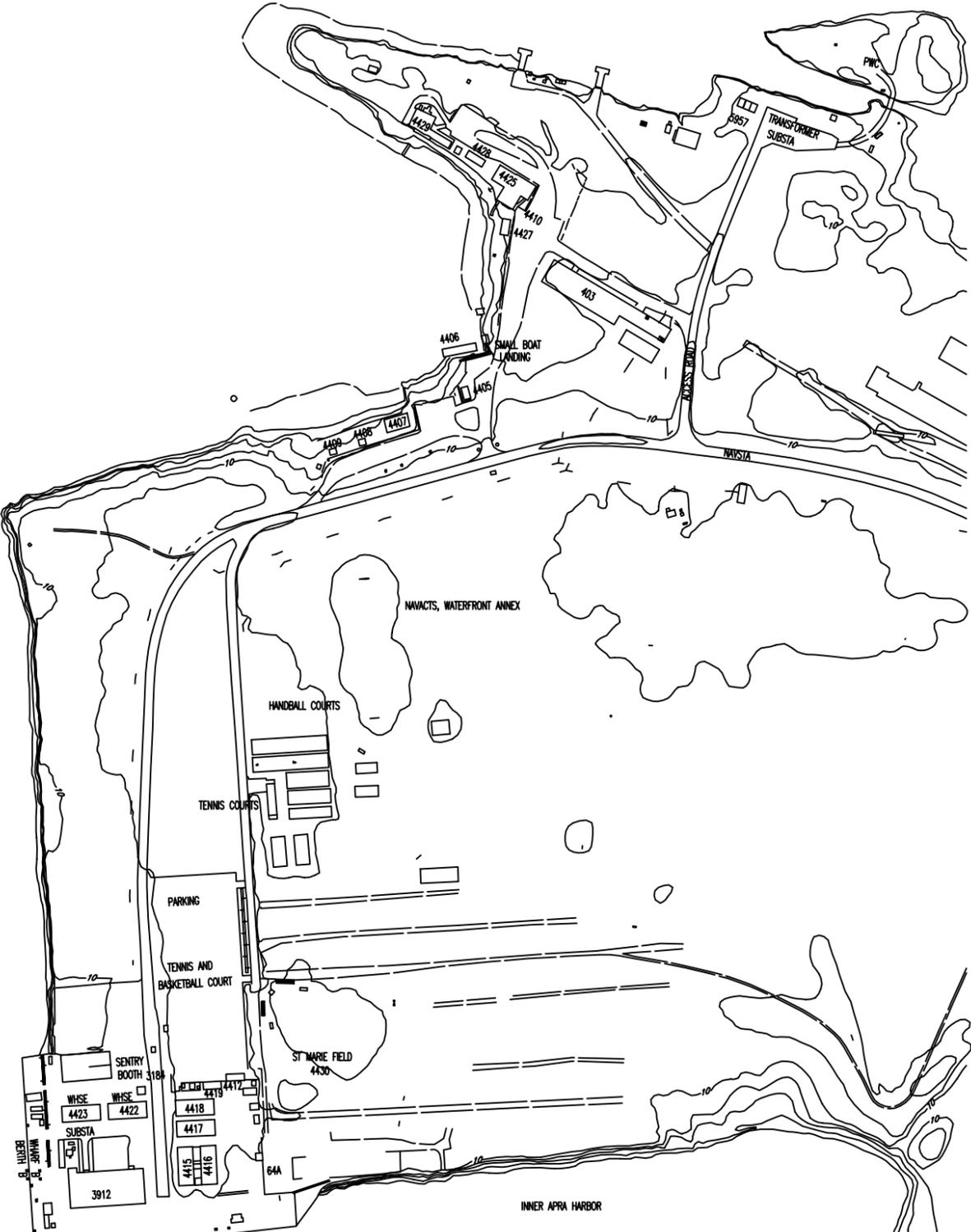


Figure 1  
Site Location Map  
Plating Shop Leach Field  
NSRF, Guam



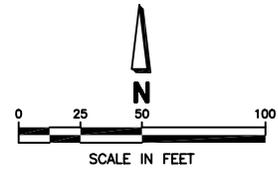
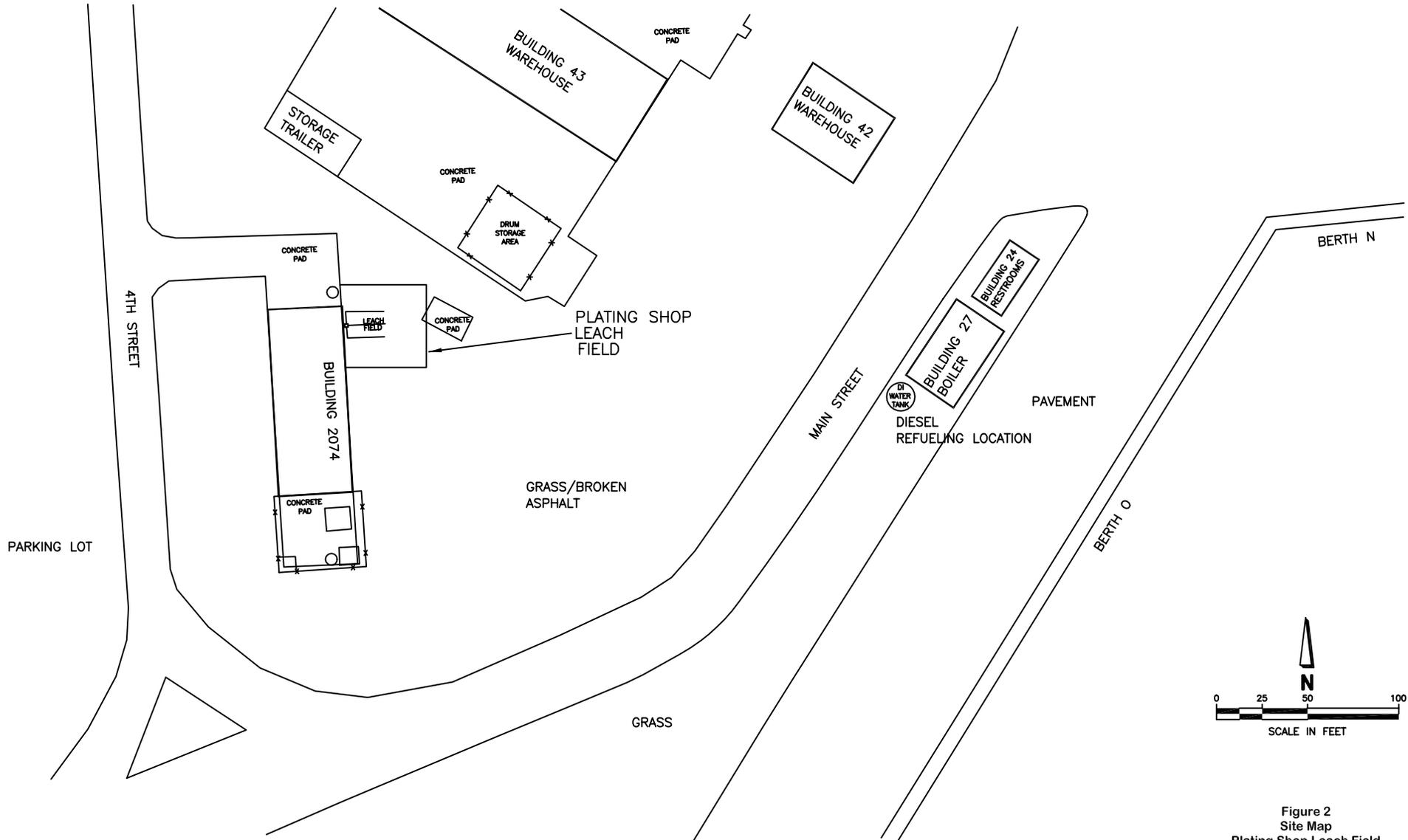
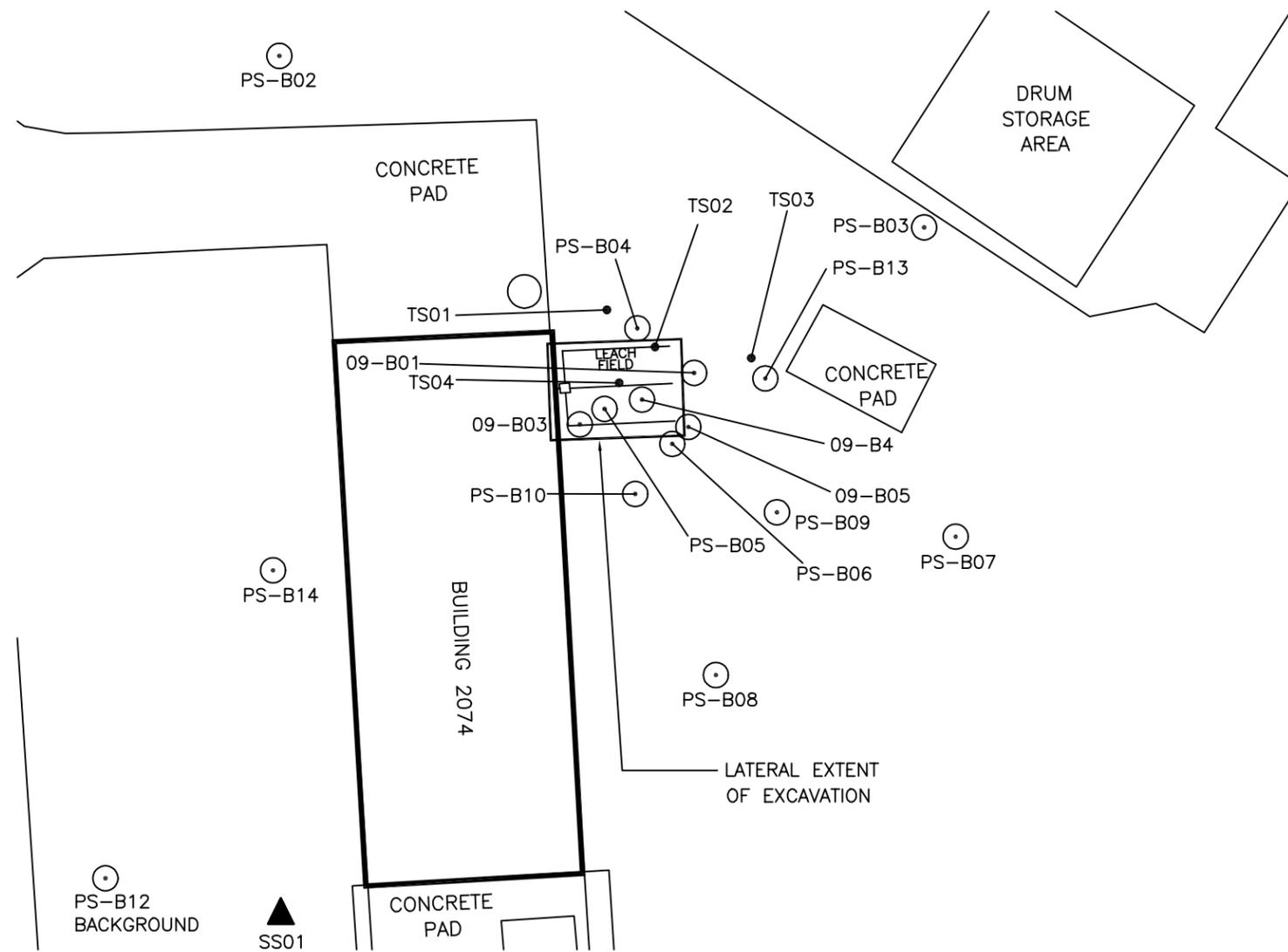


Figure 2  
 Site Map  
 Plating Shop Leach Field  
 Naval Ship Repair Facility, Guam



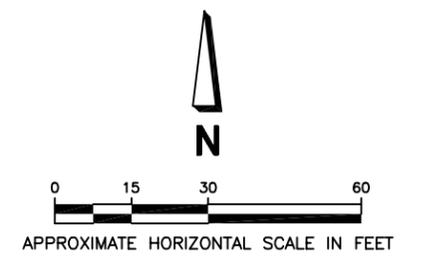


**LEGEND**

-  ESTIMATED LATERAL EXTENT OF EXCAVATION
-  - BORING LOCATION (1990, 1993)
-  - SURFACE SAMPLE
-  - TRENCH SAMPLE

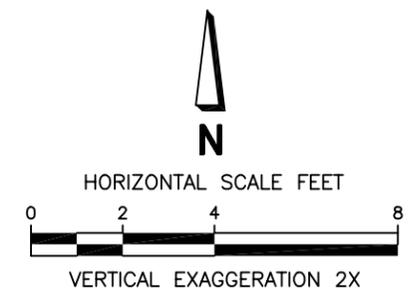
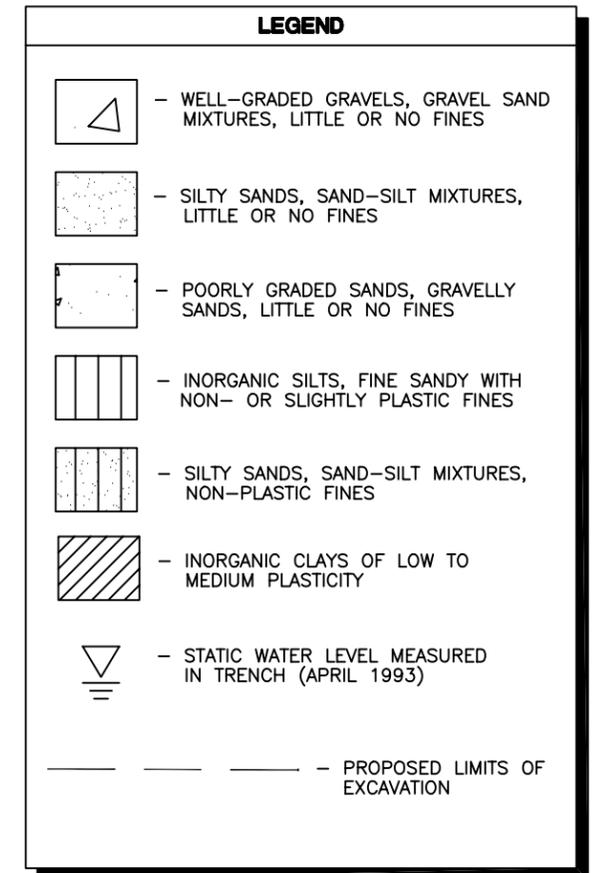
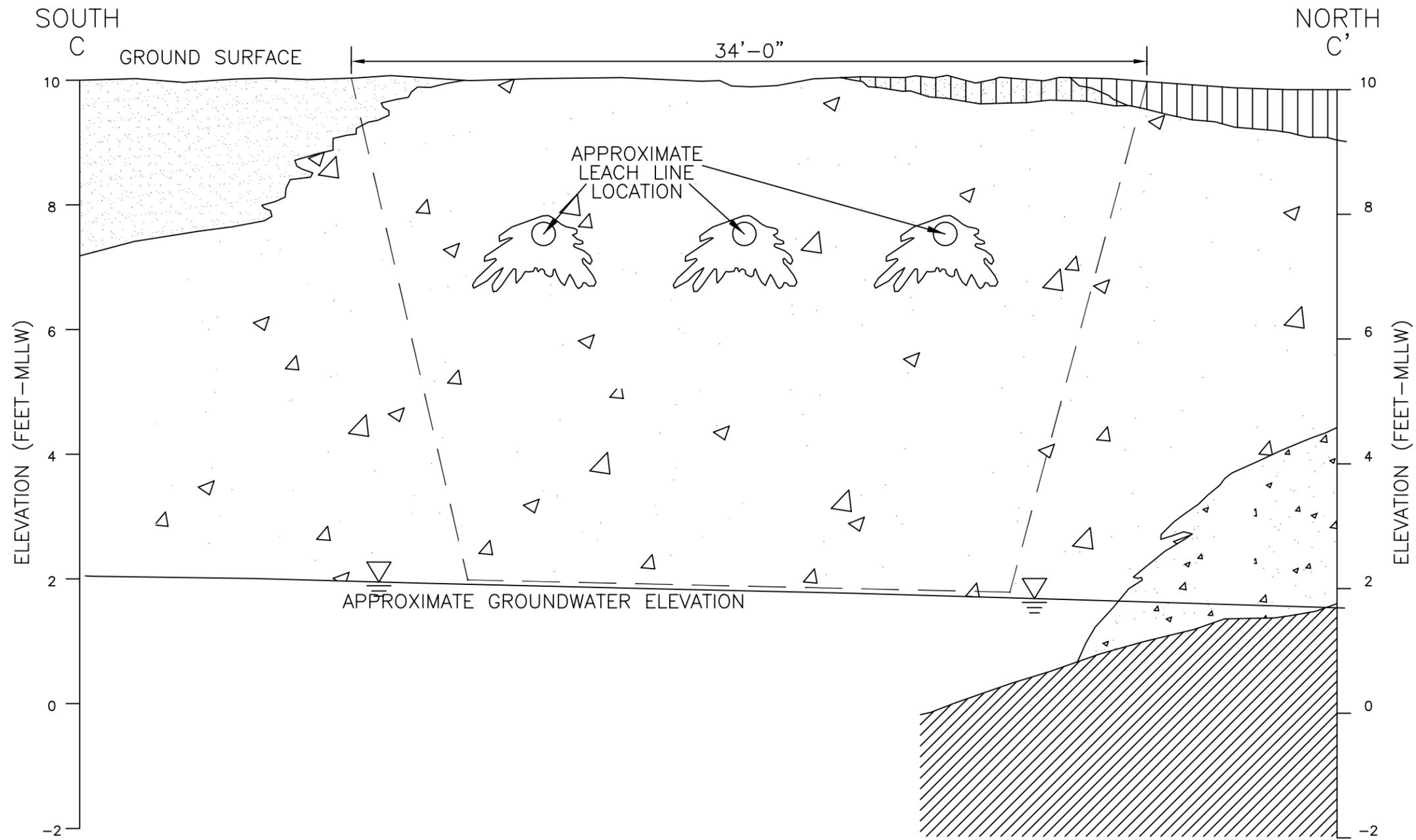
**NOTE**

SAMPLE LOCATION IDs SHOWN IN BOLD HAVE CONTAMINANT CONCENTRATIONS ABOVE BACKGROUND



**Figure 3**  
**Estimated Lateral Extent of Excavation**  
**Plating Shop Leach Field**  
**NSRF, Guam**





**Figure 4**  
**Proposed Leach Field Excavation**  
**Plating Shop Leach Field**  
**NSRF, Guam**



**ENCLOSURE 2**  
**REMOVAL ACTION COST SUMMARY**



### Summary of Estimated Costs to Remediate Heavy Metal-Impacted Soil, Plating Shop Leach Field

	Alternative 1: No Action	Alternative 2: Institutional Controls	Alternative 3A: Excavation of Impacted Soil for Disposal and Backfill (0–8 ft) without Building Demolition	Alternative 3B: Excavation of Impacted Soil for Disposal and Backfill (0–8 ft) with Building Demolition	Alternative 4: In Situ Solidification and Stabilization	Alternative 5: Ex Situ Solidification and Stabilization	Alternative 6: Ex Situ Soil Washing/ Soil Leaching
<b>Direct Capital Cost</b>							
Excavation and Backfill							
Treatment, Transportation, and Disposal/Reuse	0	0	\$339,445	\$441,265	\$122,285	\$207,560	\$262,905
Analytical	0	0	\$9,000	\$9,000	\$9,000	\$9,000	\$9,000
Direct Cost Subtotal	0	0	\$412,419	\$508,955	\$177,202	\$286,944	\$342,289
<b>Indirect Capital Cost</b>							
Engineering Design and Oversight	0	\$20,600	\$53,335	\$53,335	\$217,675	\$224,200	\$254,600
Construction Management	0	\$0	\$7,200	\$7,200	\$9,600	\$19,200	\$19,200
Project Implementation Documents	0	\$14,400	\$24,000	\$24,000	\$112,000	\$114,400	\$86,800
Indirect Cost Subtotal	0	\$35,000	\$84,535	\$84,535	\$339,275	\$362,800	\$360,600
Subtotal	0	\$35,000	\$496,954	\$593,490	\$516,477	\$649,744	\$702,889
Project Administration @ 20%	0	\$7,000	\$99,391	\$118,698	\$103,295	\$129,949	\$140,578
Contractor Overhead @ 15%	0	\$5,250	\$74,543	\$89,023	\$77,472	\$97,462	\$105,433
Contractor Profit @ 10%	0	\$4,725	\$67,089	\$80,121	\$69,724	\$87,716	\$94,890
<b>Grand Subtotal</b>	0	\$51,975	\$737,976	\$881,332	\$766,968	\$964,871	\$1,043,790
Contingency @ 25%	0	\$12,994	\$184,494	\$220,333	\$191,742	\$241,218	\$260,948
<b>Capital Cost</b>	<b>0</b>	<b>\$65,000</b>	<b>\$922,000</b>	<b>\$1,102,000</b>	<b>\$959,000</b>	<b>\$1,206,000</b>	<b>\$1,305,000</b>