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ACTION MEMORANDUM FOR AREA OF CONCERN 1

NAVAL WEAPONS STATION SEAL BEACH DETACHMENT CONCORD, CONCORD, CALIFORNIA

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December 28, 2001

DEPARTMENT OF THE NAVY
Engineering Field Activity West
Naval Facilities Engineering Command
Daly City, California

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ACRONYMS AND ABBREVIATIONS

AOC 1	Area of concern 1
ARAR	Applicable or relevant and appropriate requirement
BAAQMD	Bay Area Air Quality Management District
bgs	Below ground surface
Ca-HSC	*California Health and Safety Code*
CCR	*California Code of Regulations*
CCWD	Contra Costa Water District
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	*Code of Federal Regulations*
cy	Cubic yard
DHS	California Department of Health Services
E&E	Ecology and Environment, Inc.
EO	Executive Order
EPA	U.S. Environmental Protection Agency
LDR	Land disposal restriction
µg/L	Micrograms per liter
mg/kg	Milligram per kilogram
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
PA	Preliminary assessment
PRSC	Post-removal Site Control
PRG	Preliminary remediation goal
RASS 4	Remedial action subsite 4
RCRA	Resource Conservation and Recovery Act
RWQCB	California Regional Water Quality Control Board
SBD	Seal Beach Detachment
SLERA	Screening-level ecological risk assessment
STLC	Soluble threshold limit concentration
TCRA	Time-critical removal action
TtEMI	Tetra Tech EM Inc.
TTLC	Total threshold limit concentration
UCL_{95}	95 percent upper confidence limit
USC	*United States Code*
WET	Waste extraction test

ACTION MEMORANDUM

Department of the Navy
Engineering Field Activity West
Pacific Plaza
2001 Junipero Serra Boulevard, Suite 600
Daly City, California 94014-1976

Subject:	**Action Memorandum/Removal Action Work Plan for Removal Action at Naval Weapons Station Seal Beach Detachment Concord, Area of Concern 1, Concord, California**
Site Status:	**National Priorities List**
Removal Category:	**Time-critical Removal Action**
CERCLIS ID:	**CA7170024528**
Site ID:	**Area of Concern 1, Site 31**

I. PURPOSE

The purpose of this action memorandum is to document the U.S. Department of the Navy's decision to undertake a time-critical removal action (TCRA) for metals-contaminated waste materials at the subject site for the Administrative Record. As part of the Department of Defense, the Navy has the authority to undertake Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) response actions, including removal actions, under Title 42 *United States Code* (42 USC) Section 9604, 10 USC Section 2705, and federal Executive Order (EO) 12580. Furthermore, this removal action is, to the maximum extent possible, consistent with Chapter 6.8 of the California Health and Safety Code (Ca-HSC).

The primary objective of the proposed TCRA is to reduce ecological risk associated with metals-contaminated waste materials by excavating and removing contaminated debris and hot spots from the site. As a result, the proposed action will substantially eliminate the pathways of exposure to hazardous substances for ecological receptors at the site through the identified pathways at area of concern 1 (AOC 1), and the Navy anticipates that the removal action will reduce ecological risks to acceptable levels.

The proposed removal action for this site is deemed consistent with the factors set forth within the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) at Title 40 of the *Code of Federal Regulations* (40 CFR) Part 300, and Chapter 6.8 of the Ca-HSC, based on (1) the findings of actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants, and (2) high levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface that may migrate (see Section 300.415[b][2] of NCP, Ca-HSC Section 25356.1 *et seq.)*

No nationally significant or precedent-setting issues exist for this site.

II. SITE CONDITIONS AND BACKGROUND

A. SITE DESCRIPTION

1. Removal Site Evaluation

AOC 1 is an undeveloped 17.2-acre site on Port Chicago Highway, about 1 mile east of the eastern entrance to Naval Weapons Station Seal Beach Detachment (SBD) Concord. The site is the former location of a nitrogen-phosphorus-potassium (N-P-K) fertilizer plant operated from 1955 to 1976 by Union Oil Company of California. The Navy acquired the property in 1983 to expand the safety buffer for munitions handling at Pier 4. All buildings at the site were demolished and removed from the site in 1986, but some of the original paved roadways that connected the plant buildings remain. The site is an upland habitat, which is mostly vegetated with nonnative grasses. The property is currently vacant, except for a Contra Costa County pump station, and is secured by a locked perimeter fence.

The Navy became aware of potential contamination at AOC 1 when the Contra Costa Water District (CCWD) installed a pump station at the site in 1998. Samples collected to determine appropriate disposal of excavated soils showed that the soils were contaminated with lead, mercury, and selenium.

The Navy conducted a preliminary assessment (PA) at the site in two phases to further assess the degree of contamination associated with AOC 1 (Tetra Tech EM Inc. [TtEMI] 1999). The first phase, conducted in February 1999, consisted of reviewing agency files about the site and collecting 17 soil samples at 9 locations at the site. The first phase of the PA revealed that the soil contamination affected a larger area than was originally suspected; therefore, the Navy conducted a supplemental PA (the second phase) in July 2000 and collected 79 additional soil samples in 28 locations.

The two-phase PA identified three types of waste materials at the site: (1) cinder roadbed material, (2) ash-like material, and (3) waste gypsum. The cinder roadbed material is contaminated with lead and selenium (up to 11,400 milligrams per kilogram [mg/kg] lead and 875 mg/kg selenium). The ash-like material is contaminated with lead, selenium, and mercury at concentrations up to 895 mg/kg lead, 68.3 mg/kg selenium, and 113 mg/kg mercury. Concentrations of metals were significantly lower in the waste gypsum samples. Organic contaminants were detected inconsistently and at low concentrations in the waste materials.

Former industrial operations at the site are the suspected source of these waste materials. The cinder roadbed and ash-like materials are the probable waste products from the heat source used to dry and pelletize the fertilizer slurry. Gypsum is a byproduct of the fertilizer production process.

Key problem areas at the site include (1) the area surrounding the pump station, and (2) localized concentrations of contamination (hot spots) within the ash-like material in the north-central portion of AOC 1. Multiple parties have sampled the cinder material in the area surrounding the pump station, and all samples of the material have contained high concentrations of lead, mercury, or selenium. The ash-like material covers most of the eastern half of the site, and exhibits irregular concentrations of metals. Two hot spots that contained the highest concentrations of mercury and selenium were identified in the north-central portion of AOC 1. Analysis for the addendum to the PA has shown these hot spots to be statistical outliers, meaning that concentrations in these areas are statistically distinct from other values in the data set (defined as greater than 1.5 times the interquartile range of the data) (TtEMI 2001).

The PA and PA addendum comprise the removal site evaluation and document the types and locations of contaminants detected at the site.

2. Physical Location

Naval Weapons Station SBD Concord is located in north-central Contra Costa County, approximately 30 miles northeast of San Francisco, California. The primary use of the facility is to load and unload large quantities of weapons and equipment from cargo and prepositioning ships.

Residences and public facilities are present within a 1-mile radius of Naval Weapons Station SBD Concord, but no residences or public facilities are located directly adjacent to AOC 1. Naval Weapons Station SBD Concord includes large tidal wetlands on the south shore of Suisun Bay and several offshore islands, which provide the required safety buffer zone for explosives during ship loading operations. The wetland areas also harbor special-status plants and animals, including the salt marsh harvest mouse (*Reithrodontomys raviventris*), the California black rail (*Laterallus jamaicensis coturniculus*), and soft bird's beak (*Cordylanthus mollis mollis*). The climate is characterized as semiarid temperate, with rainy winters and dry summers. The average annual precipitation in the area from 1956 to 1974 was 16.5 inches; precipitation occurs mostly between October and March.

3. Site Characteristics

Naval Weapons Station SBD Concord is a federally owned facility and is currently operated and maintained by the Navy. The Department of the Army's Military Traffic Management Command is a tenant of the facility. The primary function of Naval Weapons Station SBD Concord is explosive ordnance transshipment. The Navy purchased the AOC 1 property in 1983 to maintain a safety buffer around loading operations. Contamination detected at AOC 1 is the result of activities at the former fertilizer plant at the site; the Navy has never used AOC 1 for any purpose other than as a safety buffer and plans to leave the parcel undeveloped. Future land use of AOC 1 for residential or commercial purposes is considered extremely remote.

4. Release or Threatened Release into the Environment of a Hazardous Substance or Pollutant or Contaminant

Concentrations of lead, mercury, and selenium found in the three waste materials are hazardous substances, as defined by Section 101(14) of CERCLA, and are pollutants or contaminants, as defined by Section 101(33) of CERCLA.

Cinder material covers an area of roughly 27,500 square feet (0.63 acres) and is present as a thin (2- to 3-inch) layer buried by 6 to 12 inches of soil. Concentrations of metals in the cinder material are consistently high; samples of the cinder material collected by four separate entities at different locations showed high concentrations of lead, mercury, and selenium, as discussed in the PA report (TtEMI 1999).

Ash-like waste material covers most of the eastern half of the site, approximately 8 acres. However, the distribution of metals within the ash-like material is highly variable and is characterized by geographically isolated hot spots. Statistical analysis conducted as part of the addendum to the PA has shown that distributions of metals in the waste materials contain statistical outliers, or values that are statistically distinct from and much higher than other values in the same population (TtEMI 2001).

Organic contaminants were detected sporadically at relatively low concentrations. A human health risk assessment and an ecological risk assessment conducted as part of the PA found no unacceptable human or ecological risks associated with organic contaminants (TtEMI 1999).

The mechanism of release of these materials appears to be intentional disposal on the ground surface by previous owners of the site. The cinder material may have been used as temporary or informal paving materials. The ash-like material and gypsum appear to have been spilled or intentionally disposed of on the ground surface. Future windblown migration of contaminants is expected to be limited because the

waste materials are covered with a thin layer of topsoil in most locations and, where present at the surface, the materials have case-hardened into a thick, semilithified crust that is difficult to dislodge or penetrate.

As discussed in the addendum to the PA (TtEMI 2001), a significant thickness of clay- and silt-sized particles is present in borings installed west, east, and south of the site. This material is expected to inhibit vertical migration of contaminants from the waste materials present at the surface. This conclusion is supported by data for soil collected during the two-phase PA investigation, which showed that concentrations of metals in soil typically declined by at least an order of magnitude within the upper 2 feet of natural subsurface soils.

Groundwater at AOC 1 occurs in a shallow unconfined water-bearing zone within the Bay Mud. No groundwater quality data from AOC 1 are available, and groundwater data from the vicinity of AOC 1 are limited. Groundwater was encountered 23.5 feet below ground surface (bgs) in a boring near the northwestern corner of the site (Harding Lawson Associates 1977). No groundwater quality data are available from this boring. At remedial action subsite 4 (RASS 4) (immediately east of AOC 1), groundwater occurs at depths of 18 to 32 feet below grade. The three wells at RASS 4 have been sampled at least 16 times since 1989, and lead, mercury, and selenium have not been consistently detected in groundwater at RASS 4 (PRC Environmental Management, Inc. 1997). The highest detected concentrations at RASS 4 are 10.5 micrograms per liter (µg/L) lead, 0.30 µg/L mercury, and 17.8 µg/L selenium. Wells at RASS 4 were unable to support a recharge rate of 0.1 liter per minute during the most recent sampling event, indicating very low hydraulic conductivity of this material. The low hydraulic conductivity of the geologic materials and the high cation exchange capacity of the geologic materials that underlie AOC 1 suggest that potential for migration in groundwater is limited.

Regional groundwater flow near AOC 1 is north toward Suisun Bay. Groundwater flow in RASS 4 is highly variable, with no apparent seasonal cause for variations in flow direction. The RASS 4 wells are over 500 feet east of the hot spots and cinder material at AOC 1. One well at the Allied Chemical property west of AOC 1 provides process water for industrial operations. No wells are located downgradient from the site (presumed to be toward the Bay). One water supply well at the Bella Vista Trailer Court was used for domestic water supply in 1984 and may still be in use. This well is 0.7 mile east (crossgradient) from the site.

5. National Priorities List Status

Naval Weapons Station SBD Concord is on the National Priorities List and is subject to a federal facility agreement among the Navy, U.S. EPA Region 9, and the California EPA dated June 12, 2001. Various phases of remedial activities, including PAs and site inspections, remedial investigations and feasibility studies, other removal or remedial actions, and post-remediation monitoring are in progress at other sites on the base. No other response actions are occurring at AOC 1.

6. Maps, Pictures, and Other Graphic Representations

Attachment A to this action memorandum includes three figures that illustrate the major features, sampling locations, and history of the site. Figure 1 is an aerial photograph taken in 1974, which shows the fertilizer plant when it was operating at full capacity. The photograph also shows large waste gypsum piles in the northeastern portion of the site and light, discolored areas throughout the working area of the site (south of the gypsum piles and west of the site buildings). Figure 2 is an aerial photograph taken in 1986, which shows how the site appeared after the Navy purchased the property and dismantled all of the structures at the site. Figure 3 shows current site features (the fence and CCWD pump station) and locations where soil samples were collected during the two-phase PA investigation.

B. OTHER ACTIONS TO DATE

1. Previous Actions

Since 1973, AOC 1 has been the subject of a number of investigations by the California Regional Water Quality Control Board (RWQCB), the California Department of Health Services (DHS), and U.S Environmental Protection Agency (EPA). Actions undertaken by RWQCB; DHS, its successor the California Environmental Protection Agency Department of Toxic Substances Control (DTSC); and EPA, have not addressed the contaminated materials that are the focus of this TCRA. Regulatory actions at the site are discussed in Section 3 of the PA report (TtEMI 1999) and are summarized below.

RWQCB's concerns at the site appear to have been limited to the pH of surface water runoff from the site, which was addressed through a National Pollutant Discharge Elimination System permit and various administrative orders. In 1974, RWQCB addressed the issue of acidic runoff from the site by requiring the fertilizer plant's operator (Carbon Collier and Chemical Corporation) to install a storm water containment pond. Copies of RWQCB's orders for the site are included as Appendix A of the PA report (TtEMI 1999). RWQCB did not address metals contamination in soils or water.

DHS inspected the site in 1980 and collected several soil samples that contained elevated concentrations of lead, selenium, and tellurium. DHS then forwarded the matter to RWQCB. Locations where DHS collected samples are not known. The DHS analytical reports and a letter to the Navy, indicating that RWQCB would pursue the matter in the future, are included as Appendix B of the PA report (TtEMI 1999).

In 1979, EPA identified AOC 1 as a potential hazardous waste site and assigned EPA identification number CAD 980736235. In 1984, Ecology and Environment, Inc. (E&E) conducted a site inspection. E&E personnel interviewed surrounding property owners and regulatory authorities, including DHS, RWQCB, and the Contra Costa County Health Department, and researched the history of property ownership, plant operations, and the presence of local wells. E&E noted that the samples DHS collected from the site in 1980 contained elevated concentrations of metals. However, E&E did not recommend further action to address concentrations of metals because (1) the high clay content and cation exchange capacity of site soils would retard migration of metals, and (2) no drinking water supply wells are downgradient from the site. E&E recommended capping and sealing an on-site drinking water supply well, but did not note the location of the well (E&E 1984).

In 1984, EPA conducted a site prioritization investigation under CERCLA to determine whether the site required ranking using EPA's hazard ranking system (Bechtel 1994). EPA concluded that further site assessment was not required under CERCLA.

In 1985, personnel at Naval Weapons Station SBD Concord collected samples of various wastes present in small quantities at undocumented locations in buildings at AOC 1; samples were collected before the buildings were demolished. These samples showed that lead and chromium were present at elevated concentrations (up to 1,300 mg/kg lead and 1,000 mg/kg chromium) in facility wastes from a few locations, but that selenium and mercury were not present at concentrations that were comparable to levels in samples collected during the PA. The results presented in Appendix C of the PA report (TtEMI 1999) do not indicate an obvious source for the concentrations of lead, selenium, and mercury detected in the waste materials at AOC 1.

In 1996, CCWD conducted a geotechnical investigation of the location for the proposed pump station and tested four samples of cinder materials and underlying soils. The samples were contaminated with relatively high concentrations of lead (14,000 mg/kg) and selenium (2,600 mg/kg). In addition, mercury was detected at concentrations up to 180 mg/kg in three of the four samples tested.

2. Current Actions

No other government or private entities are currently undertaking any actions to address contaminated waste materials at AOC 1.

C. STATE AND LOCAL AUTHORITIES' ROLES

1. State and Local Actions to Date

As previously described, EO 12580 delegates to the Department of Defense the President's authority to undertake CERCLA response actions. Congress further outlined this authority in its Defense Environmental Restoration Program Amendments, which can be found at 10 USC Sections 2701-2705. Both CERCLA Section 120(f) and 10 USC Section 2705 require Navy facilities to ensure that state and local officials are afforded timely opportunity to review and comment on Navy response actions. CERCLA Section 120 further requires the Navy to apply state removal and remedial action law requirements at its facilities.

In accordance with those requirements, DTSC and RWQCB have provided technical advice and oversight during the two-phase PA. Presentations have been conducted about planned sampling approaches, analytical results, site characterization, and risk assessments at AOC 1 during meetings of program managers for the regulatory agencies on January 5, February 9, June 7, and August 25, 1999; March 2, 2000; and February 13 and March 20, 2001. The Navy has also conducted site visits to familiarize the regulatory agencies with site features on July 8, 1999, and July 27, 2001.

2. Potential for Continued State and Local Response

DTSC, RWQCB, and the California Department of Fish and Game have provided technical advice, oversight, and assistance throughout the PA and are expected to continue to provide advice, oversight, and assistance during the proposed TCRA. It is also expected that the Navy's Defense Environmental Restoration Account will continue to be the exclusive source of funding for this program.

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

In accordance with the NCP, the following threats must be considered when evaluating the appropriateness of a removal action (40 CFR Section 300.415 [b][2]):

- Actual or potential exposure to hazardous substances or pollutants or contaminants by nearby populations, animals, or food chains.
- Actual or potential contamination of drinking water supplies or sensitive ecosystems.
- Hazardous substances or pollutants or contaminants in drums, barrels, tanks, or other bulk storage containers that may pose a threat of release.
- High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface that may migrate.
- Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released.
- Threat of fire or explosion.
- Other situations or factors that may pose threats to public health or welfare or the environment.

A. THREATS TO PUBLIC HEALTH OR WELFARE

Threats to public health or welfare for the industrial use scenario were assessed in the PA addendum using a screening level approach (TtEMI 2001). Cumulative cancer risks for industrial workers ($1.1.x\ 10^{-4}$) slightly exceeded EPA's target risk range. Concentrations of lead significantly exceed the EPA Region 9 preliminary remediation goal (PRG) for lead. Nevertheless, the contaminants at AOC 1 do not pose a threat to human receptors for two reasons. First, access to the site is restricted, and workers visit the site only for occasional maintenance. Second, waste materials at the site are typically covered by vegetation or several inches of topsoil. Actual human exposure to contaminants is expected to be significantly lower at AOC 1 than the assumed human exposure used to derive the industrial PRGs. Although lead does not pose an unacceptable risk to human health for the reasons noted above, lead, mercury, and selenium are collocated at the site, and removing the hot spots of mercury and selenium as proposed will also remove the wastes that are most contaminated with lead. Based on existing data for chemical concentrations in soil, the proposed removal action discussed in this action memorandum will address concentrations of lead at the site that exceed the EPA Region 9 industrial PRG for lead. Section 6.0 of the PA addendum (TtEMI 2001) describes potential risks to human health at the site.

B. THREATS TO THE ENVIRONMENT

The Navy has evaluated ecological risks through a screening-level ecological risk assessment (SLERA) and a more focused assessment, which were conducted as part of the PA (TtEMI 1999) and were presented in the PA addendum (TtEMI 2001). Two of the threats listed in Section 300.415(b)(2) of the NCP apply to conditions at AOC 1 at Naval Weapons Station SBD Concord. These threats are (1) actual or potential exposure to hazardous substances or pollutants or contaminants by nearby animals or the food chain (40 CFR 300.415 [b][2][i]), and (2) high levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface that may migrate (40 CFR 300.415[b][2][iv]).

Data presented in the addendum to the PA demonstrate an increased risk to environmental receptors because of concentrations of mercury and selenium at AOC 1. The nature of these risks indicates that contaminated material must be removed to mitigate potential threats to the environment and human health. The potential threats to the environment will be addressed by the recommended action described in this action memorandum. The remainder of this section summarizes site contaminants, release mechanisms, exposure pathways, and current and future threats to the environment. A detailed discussion of the ecological risks associated with site contaminants is presented in the addendum to the PA (TtEMI 2001).

Site Contaminants: The contaminants of greatest concern to ecological receptors are mercury and selenium. These metals have been shown to pose an unacceptable risk to modeled receptors using food-chain modeling in the addendum to the PA (TtEMI 2001). Other metals and organic contaminants were not present at concentrations that pose an unacceptable risk to ecological receptors. Site contaminants are discussed in detail in the PA (TtEMI 1999) and addendum to the PA (TtEMI 2001).

Release Mechanisms: The mechanism of release of contaminants at AOC 1 is not fully understood. Site records and aerial photographs indicate that the facility was used for agriculture or grazing before the fertilizer plant began operations, and no industrial activities have taken place since the facility ceased operations in 1986. Therefore, metals are almost certainly related to industrial operations at the fertilizer plant.

Although metals are not commonly associated with N-P-K fertilizer production, they have been associated with coke piles in adjacent RASS 4 and in the Litigation Area at Naval Weapons Station SBD Concord, which is about 1 mile west of AOC 1. Coke from the same sources may have been a source of fuel for the dryers used to dry the N-P-K fertilizer slurry into pellets, and waste ash from the dryers may

have been disposed of on the ground surface along with other wastes. This scenario is a hypothetical mechanism for the release of wastes at AOC 1 and cannot be confirmed by data from site investigations.

Exposure Pathways: Ingestion of chemicals in soil and prey is considered the predominant exposure pathways for birds and mammals at AOC 1.

Current Threats to the Environment: Threats to ecological receptors were evaluated through a SLERA and a more focused assessment, which are documented in the addendum to the PA (TtEMI 2001). The SLERA and more focused assessment used food-chain modeling to assess ecological risks to three vertebrate species representing separate feeding guilds. The food-chain modeling used three types of data to estimate contaminant doses: (1) site-specific chemical data, when possible; (2) chemical data from an adjacent site with comparable habitat (RASS 4), when site-specific data were not available; and (3) literature values when site-specific or nearby data were not available.

The SLERA used conservative assumptions recommended by EPA (EPA 1999) for food-chain modeling. Food-chain modeling indicated that arsenic, cadmium, lead, mercury, selenium, and zinc pose an unacceptable risk to the Western meadowlark (*Sturnella neglecta*). Because the SLERA indicated unacceptable risk, the Navy conducted a more focused assessment using site-specific and receptor-specific assumptions that were more realistic to evaluate ecological risks. Risk decreased substantially when assumptions that are more realistic were used for the site. However, mercury and selenium continued to pose unacceptable risk to the Western meadowlark when assumptions that are more realistic were used.

Future Threats to the Environment: Metals detected at AOC 1 are associated with waste materials or are in soils lying directly beneath them. The data presented in the PA and PA addendum indicate that the waste materials are contaminated with metals that have leached to some extent into underlying soils. The metals in waste materials at AOC 1 currently pose an unacceptable risk, and the risk posed by these metals is not expected to change significantly over time because (1) leaching of the metals appears to be very limited, and (2) chemical transformations are not expected to reduce concentrations of metals over time.

IV. ENDANGERMENT DETERMINATION

Calculations from the risk evaluation for the PA addendum (TtEMI 2001) and other information contained in the Administrative Record demonstrate that current conditions at AOC 1 present immediate threats to the aquatic ecosystem, public health and welfare, or the environment.

Actual or threatened releases of hazardous substances or pollutants and contaminants from this site may present an imminent and substantial endangerment to public health and welfare or the environment if the response action in this action memorandum is not implemented. Contamination at the site presents an imminent or substantial endangerment because of direct exposure to contaminants. Migration of contaminants through soil or water is considered unlikely because the contaminated wastes and soil are underlain by a 15- to 20-foot thick layer of low-permeability materials that impede vertical migration of contaminants through underlying soils and inhibit migration to underlying groundwater. Migration of contaminants through air is considered unlikely because the waste materials are typically covered with several inches of topsoil and are not volatile. Fire and explosion are not considered a threat from these materials.

V. PROPOSED ACTIONS AND ESTIMATED COSTS

A. PROPOSED ACTION

1. Proposed Action Description

Existing information provides sufficient basis to proceed with the proposed removal action, but additional information will be gathered to refine the removal action as described under Task 1 below. The action proposed to address ecological risks at AOC 1 is to excavate and properly dispose of the most contaminated materials at the site, including two hot spots, the cinder material, and other hot spots (if any), that are identified using new data. Soils within the proposed areas of excavation will be excavated to a specified depth (see Task 1) and replaced with clean fill, and the site will be restored by revegetating the area. The proposed actions consist of the following tasks:

Task 1: Investigative sampling: Additional investigative samples will be collected before initiating the removal action to better define the two hot spots and to screen other possible sources of contamination. Additional samples will be collected from the area surrounding each hot spot to better define the lateral limits of the hot spots. A square grid will be centered on each of the two hot spots, as shown in Figure 3, and composite samples will be collected from grid squares adjacent to the central grid square, and from additional grid squares if the ecological risk remains unacceptable as described below in Task 4. Additional samples will also be collected from other areas where aerial photographs show former locations of industrial processes, such as the acid tanks in the northwest part of the site and a former laboratory identified on historical drawings.

Task 2: Excavation: All waste materials in the area of the cinder roadbed, the two hot spots, and any other areas identified based on new data will be excavated and removed from the site. All cinders that are encountered in the cinder roadbed area will be excavated and removed from the site, except for near the CCWD fresh water pipeline, directly beneath the pump station, and within a lateral margin of safety around these features. The excavation will maintain a specified slope around the perimeter of the concrete pad that the CCWD pump station rests on to prevent damage to the pump station. The excavation will extend laterally 5 feet beyond the boundaries of the cinder area, and vertically to a depth of 6 inches beneath the base of the cinders to ensure that all cinders are removed.

A square grid with each grid space measuring 25 feet on each side will be centered on each of the two hot spots. The center grid square and any adjacent grid squares that require excavation will be excavated to a depth of 2 feet or to the bottom of the waste material, whichever is deeper. Excavation of additional grid squares will occur if concentrations of lead, mercury or selenium in the adjacent squares pose unacceptable ecological risk at the site (hazard quotient greater than 1, see Task 4). Adjacent grid spaces will be characterized through investigative sampling before removal action begins.

Task 3: Confirmation Sampling: Confirmation samples will be collected to verify and document that concentrations of mercury and selenium in soil that remains at the site do not pose an ongoing threat to ecological receptors. In addition, confirmation samples will be analyzed for lead to assess whether concentrations of lead in wastes that remain on site exceed the EPA Region 9 industrial PRG for lead. Confirmation sampling will consist of a representative group of samples collected around the perimeter of the excavations and throughout the footprint of the excavation. A detailed description of the proposed confirmation sampling scheme will be provided in a Field Sampling and Analysis Plan to be prepared before initiating the removal action.

Task 4: Verify that Remaining Materials Do Not Pose an Ecological Risk: After contaminated soils have been excavated, ecological risks that remains will be assessed by (1) calculating a statistical representation of concentrations in soils that remain on site within 2 feet from the surface (a 95 percent

upper confidence limit [UCL_{95}] of mercury and selenium concentrations), and (2) using the existing food-chain models from the more focused assessment presented in the addendum to the PA (TtEMI 2001) to estimate ecological risks. Materials deeper than 2 feet bgs are not considered an ecological risk because (1) it is unlikely that burrowing mammals would be exposed to contaminants more than 2 feet below the ground surface, and (2) sampling during the PA has shown that contaminant concentrations in materials more than 2 feet bgs are much lower than in shallower materials. If hazard quotients for mercury or selenium do not exceed 1, the removal will be considered complete. If hazard quotients for mercury or selenium exceed 1, additional soil will be excavated and removed in the areas where the highest concentrations remain, a UCL_{95} for soils that remain will be recalculated, and hazard quotients will be recalculated using the existing food-chain models. This process will continue iteratively until the hazard quotients for mercury and selenium do not exceed 1, at which time the removal will be considered complete.

Special-status species that may occur at AOC 1 (identified in Table 6 of the addendum to the PA [TtEMI 2001]) are not expected to be affected significantly by the proposed removal action because the proposed action is of short duration and affects only a small portion of the range of these receptors, and the habitat will be of equal or better quality after the area is restored.

Task 5: Transport and Disposal: Excavated wastes and underlying soils will be characterized and properly disposed of in an off-site landfill in accordance with federal and state regulations for transporting and disposing of hazardous and nonhazardous waste. The pertinent applicable or relevant and appropriate requirements (ARARs) are identified in Section V.5. Existing analytical data indicate that the cinders and hot spots in the ash-like material are hazardous substances, as defined by Section 101(14) of CERCLA.

Based on the information available to date, the Navy anticipates that an upper limit of approximately 4,700 cubic yards (cy) of waste material will be excavated and disposed of off site. As a reasonable estimate based on existing analytical results, approximately half of the waste material (a maximum of 2,350 cy) is anticipated to require disposal at a Resource Conservation and Recovery Act (RCRA) Subtitle C (Class I) hazardous waste landfill, such as the Chemical Waste Management Kettleman Hills Landfill in Kettleman Hills, California, because lead, selenium, and mercury concentrations in samples are expected to exceed maximum concentrations established for toxicity characteristic leaching procedures. A large proportion of the waste is also expected to require stabilization, which would occur at the disposal facility, because of bulk concentrations of lead. The remainder of the waste (a maximum of 2,350 cy) is not expected to be hazardous based on existing analytical data, and will most likely be disposed of at a Subtitle D (Class II) facility, such as the Altamont Landfill in Livermore, California. Hazardous wastes will be segregated from nonhazardous wastes to the extent possible during this TCRA. The Navy will follow CERCLA's off-site policy when disposing of the wastes.

Task 6: Site Restoration: The site will be restored by replacing the excavated soils and waste with clean soil backfill, compacting the material, grading it to match pre-excavation topography, and reseeding the restored areas. The clean soil backfill will consist of clayey silt soils similar to the natural soils that are present on site, except for the raised pump station pad. The upper 1-foot of excavated soils from the raised pump station mound will be replaced with a specified aggregate base over clayey silt soils compacted to a specified density. The upper 1-foot of the backfill soil in other areas will consist of topsoil with at least 25 percent organic content that is suitable for establishing and maintaining a dense plant community without any visible barren soil areas. Each 1,000 cy of fill soil will be tested for metals according to the methods specified in the contract laboratory program statement of work. The surface topography of the backfilled excavations will conform to pre-excavation contours, except where modification to prevent ponding of water is required. The reseeded areas will be watered until new plant life is securely established.

Concentrations of some contaminants that will remain in place will exceed Region 9 EPA residential PRGs. Based on present and future anticipated land uses at AOC 1, a need for additional post-removal site control is not anticipated because (1) the proposed removal action will remove wastes associated with ecological threats from the site, (2) the site already has restricted access, and (3) land use at the site is not expected to change in the foreseeable future. Although land use at the site is not expected to change, the Installation Master Plan or its equivalent planning document will be amended to indicate that future residential uses are prohibited at AOC 1. Institutional controls to prohibit residential reuse will also be filed with the installation office responsible for maintaining buildings and grounds. Should the Navy propose to change land use at AOC 1, the Navy will provide advance notice to the regulatory agencies. The Navy will evaluate whether the anticipated land use change will pose unacceptable risks to human health and the environment or impair the effectiveness of the remedy, and whether any additional remedial action should be undertaken. Any additional action deemed necessary will be undertaken in accordance with CERCLA.

2. Contribution to Remedial Performance

Contamination that poses an unacceptable risk to ecological receptors will have been excavated, removed, treated, and disposed of. No further action is anticipated to be required at this site.

3. Description of Alternative Technologies

Other actions, including installation of a cap over hot spots and debris, electrolytic processes, and soil washing and flushing, were also considered to address the metals-contaminated wastes and soils; however, those alternatives would not physically remove the contamination, would incur ongoing operation and maintenance costs, or would be ineffective because of the nature of the waste materials. The rationale for rejecting alternative technologies is summarized below.

Alternative 1: Capping. Not appropriate because of expense, ongoing maintenance requirements, potential for future migration, and ongoing presence of highly contaminated materials at the site.

Alternative 2: Electrolytic processes. May be technically effective for ash-like waste material but are unlikely to address contamination by metals associated with vitreous cinder material. This alternative is considered ineffective for some wastes at the site.

Alternative 3: Soil washing/flushing. Inappropriate because metals are not exclusively associated with the fine-sized fraction of soils. Contaminated ash-like materials are silt-sized, and contaminated cinder materials are coarse sand and gravel-sized. Differentiating materials based on grain sizes is unlikely to effectively separate contaminated materials from uncontaminated materials.

4. Engineering Evaluation/Cost Analysis

A TCRA is necessary to address ecological risks posed by contaminants at the site, in accordance with 40 CFR Part 300.415(b)(2). Because this action is a TCRA, an engineering evaluation and cost analysis is not applicable.

5. Applicable or Relevant and Appropriate Requirements

Section 300.415 of the NCP provides that removal actions must attain ARARs to the extent practicable, considering the exigencies of the situation.

Section 300.5 of the NCP defines applicable requirements as those cleanup standards, standards of control, and other substantive environmental protection requirements, criteria, or limitations promulgated under federal or state law that specifically address the situation at a CERCLA site. The requirement is

applicable if the jurisdictional prerequisites of the standard show a direct correspondence when objectively compared with the conditions at the site. An applicable federal requirement is an ARAR. An applicable state requirement is an ARAR only if it is more stringent than federal ARARs.

If the requirement is not legally applicable, then the requirement is evaluated to determine whether it is relevant and appropriate. Section 300.5 of the NCP defines relevant and appropriate requirements as those cleanup standards, standards of control, and other substantive environmental protection requirements, criteria, or limitations promulgated under federal or state law that, while not applicable, address problems or situations similar to the circumstances of the proposed response action and are well suited to the conditions of the site (EPA 1988a). A requirement must be determined to be both relevant and appropriate to be considered an ARAR and compliance is required to the same degree as if it were applicable (EPA 1988b).

Only state standards that are identified by a state in a timely manner and are more stringent than federal requirements may be applicable or relevant and appropriate.

Section 121(d) of CERCLA (42 USC Section 9621[d]), as amended, states that remedial actions at CERCLA sites must attain (or the decision document must justify the waiver of) any federal or more stringent state environmental standards, requirements, criteria, or limitations determined to be legally applicable or relevant and appropriate. Although Section 121 of CERCLA does not expressly require that CERCLA removal actions comply with ARARs, EPA has promulgated a requirement in the NCP mandating that CERCLA removal actions " . . . shall, to the extent practicable considering the exigencies of the situation, attain applicable or relevant and appropriate requirements under federal environmental or state environmental or facility siting laws" (40 CFR Section 300.415[j]) (40 CFR Section 300.415[j]). It is Navy policy to follow this requirement. Certain specified waivers may be used for removal actions, as is the case with remedial actions.

Because CERCLA on-site response actions do not require permitting, only substantive requirements are considered as possible ARARs. Administrative requirements such as approval of or consultation with administrative bodies, issuance of permits, documentation, reporting, record keeping, and enforcement are not ARARs for CERCLA actions that are confined to the site.

Three types of ARARs exist. The first type includes "chemical-specific" requirements. These ARARs set limits on concentrations of specific hazardous substances, contaminants, and pollutants in the environment. Examples of this type of ARAR are ambient water quality criteria and drinking water standards. The second type of ARAR includes location-specific requirements that set restrictions on certain types of activities based on site characteristics. These include restrictions on activities in wetlands, floodplains, and historic sites. The third type of ARAR includes action-specific requirements. These ARARs are technology-based restrictions that are triggered by the type of action considered. Examples of action-specific ARARs are RCRA regulations for waste treatment, storage, and disposal.

ARARs must be identified on a site-specific basis using information about (1) specific chemicals at the site, (2) specific features of the site location, and (3) actions that are being considered as removal actions. The following sections of this action memorandum present ARARs for the proposed TCRA. Tables 1 through 3 included in this action memorandum present each ARAR with a determination of ARAR status (applicable, relevant and appropriate, or not an ARAR) for the proposed TCRA.

5.1 Chemical-specific Applicable or Relevant and Appropriate Requirements

Chemical-specific ARARs are generally health- or risk-based numerical values or methodologies applied to site-specific conditions that result in the establishment of a cleanup level. Federal and state chemical-specific ARARs are summarized in Table 1.

The key threshold question for soil ARARs is whether the wastes located at the AOC 1 would be classified as hazardous waste. Soil may be classified as a federal hazardous waste, as defined by RCRA and the state-authorized program, or as non-RCRA, state-regulated hazardous waste. If soil is determined to be hazardous waste, hazardous waste standards in Title 22 of the *California Code of Regulations* (CCR) will apply.

A waste determined not to be an RCRA hazardous waste may still be considered a state-regulated non-RCRA hazardous waste. The state is broader in scope in its RCRA program in identifying hazardous waste. CCR 22, § 66261.24(a)(2) lists the total threshold limit concentrations (TTLC) and the soluble threshold limit concentrations (STLC) for non-RCRA hazardous waste. The state applies its own leaching procedure, the waste extraction test (WET), which uses a different acid reagent and a different dilution factor (tenfold). Other state requirements may be broader in scope than federal ARARs for identifying non-RCRA wastes regulated by the state. These requirements may be ARARs for wastes that are not covered under federal ARARs. See additional subsections of CCR 22, § 66261.24. A waste is considered hazardous if its total concentrations exceed the TTLCs or if the extract concentrations from the WET exceed STLCs. A WET is required when the total concentrations exceed the STLC but are less than the TTLCs (CCR 22, div. 4.5, ch. 11, Appendix [app.] II [b]).

CCR Title 27 also regulates other categories of waste, such as designated waste, and establishes disposal requirements for these categories of waste. The classification regulations in Title 27 are also ARARs.

A "designated waste" under Cal. Code Regs. Title 27, § 20210 is defined at Cal. Water Code § 13173. Under Cal. Water Code § 13173, designated waste is hazardous waste that has been granted a variance from hazardous waste management requirements or nonhazardous waste that consists of or contains pollutants that, under ambient environmental conditions at a waste management unit, could be released in concentrations that exceed applicable water quality objectives or that could reasonably be expected to affect beneficial uses of the waters of the state.

A nonhazardous solid waste under Cal. Code Regs. Title 27, § 20220 is all solid, semisolid, and liquid wastes, provided that such wastes do not contain wastes that must be managed as hazardous wastes or wastes that contain soluble pollutants in concentrations that exceed applicable water quality objectives or could cause degradation of waters of the state.

5.2 Action-specific Applicable or Relevant and Appropriate Requirements

Action-specific ARARs are technology- or activity-based requirements or limitations for response activities. Federal and state action-specific ARARs are summarized in Table 2. These requirements are triggered by the response activities conducted at the site and suggest how a selected response alternative should be achieved. These action-specific requirements do not determine the remedial alternative; rather, they indicate how a selected alternative must be conducted.

Because California is authorized to implement the RCRA program, the hazardous waste requirements in 22 CCR are considered potential federal ARARs. The applicability of these requirements depends on whether the waste is a RCRA hazardous waste; whether the waste was initially treated, stored, or disposed after the effective date of the RCRA requirement; and whether the activity at the site constitutes treatment, storage, or disposal as defined by RCRA. However, RCRA requirements may be relevant and appropriate even if they are not applicable.

If the excavated wastes are found to be hazardous, substantive requirements of the CCR that pertain to hazardous waste accumulation will be applicable. These requirements are either (1) requirements for a generator who accumulates hazardous waste on site for 90 days or less are set forth in CCR Title 22, Section 66264.34, (2) requirements for waste piles set forth in CCR Title 22, Section 66264.251, or (3) the staging pile requirements for remediation wastes set forth in CCR Title 22, Section 66264.554.

The regulation in 40 C.F.R. § 264.554 is considered a relevant and appropriate ARAR for temporary storage of remediation waste on contiguous property. The performance criteria for staging piles under this regulation are generally that the pile must (1) facilitate a reliable, effective, and protective remedy, (2) prevent or minimize releases into the environment and control cross-media transfer, and (3) not operate for more than 2 years. Placing hazardous remediation wastes in a staging pile does not trigger LDRs or minimum technology requirements.

Alternatively , the substantive requirements of CCR Title 22, Sections 66264.251, 66264.258(a) and (b), 66264.111 and 66264.114 (pertaining to the control of run-on and runoff and closure of waste piles), are relevant and appropriate requirements for temporary storage of stockpiled materials. After closure of the waste pile, certain requirements are applicable, such as decontamination of all waste residues, containment systems, subsoils, and structures and equipment. The substantive provisions of CCR Title 22, Section 66264.258(a) and (b), are applicable ARARs.

Excavated hazardous wastes will be transported off site for treatment and disposal. As such, substantive RCRA pretransportation requirements are applicable ARARs (CCR Title 22, Sections 66262.30, 66262.31, 66262.32, and 66262.33).

If the waste characterization to be completed after contaminated soil is removed indicates that the soil constitutes hazardous wastes, then certain land disposal restrictions (LDR) are applicable. In general, hazardous wastes may not be disposed of on land unless they are treated to specified levels. CCR Title 22, Sections 66268.1(f), 66268.40(e), and 66268.48, are all applicable ARARs.

5.3 Location-specific Applicable or Relevant and Appropriate Requirements

Location-specific ARARs are restrictions on activities or concentrations of hazardous substances as a result of the characteristics of the site or its immediate environment. Federal and state location-specific ARARs are summarized in Table 3. Biological resources are the only location-specific requirements that may be affected by the proposed AOC 1 removal action.

Several species of birds occur on or near the site, including the Western meadowlark (a migratory nongame bird), the Swainson's hawk (a state-listed threatened species), and the white-tailed kite (a state-listed fully protected species). The substantive provisions of the following laws and regulations are applicable ARARs:

- Migratory Bird Treaty Act of 1972 (16 USC Sections 703-712)
- California Endangered Species Act (California Fish and Game Code Section 2080)
- California Fish and Game Code Section 3511

No known habitat exists at the site for the white-tailed kite or the Swainson's hawk. The Western meadowlark is known to feed at the site, and the presence of high concentrations of mercury and selenium pose an unacceptable risk to this bird through ingestion. The removal action at AOC 1 will comply with the substantive requirements of the ARARs above because the action will not disrupt or damage critical habitat.

6. Project Schedule

The site management plan notes that the removal action will commence by May 31, 2002, and will be completed by November 29, 2002.

B. ESTIMATED COSTS

The Navy has made a present worth estimate of the removal action costs. The estimated costs include direct and indirect capital costs and post-removal site control (PRSC) costs of each alternative. The following items are considered capital costs and PRSC costs:

Task	Total Cost ($)
Excavation	
Excavate soils	$6,000
Decontamination	$9,000
Dust control	$6,000
Confirmation sampling	$13,000
Transportation and disposal	
Waste characterization sampling	$17,000
Transportation, pretreatment, and disposal	$676,000
Site Restoration	
Backfill material	$ 94,000
Backfill emplacement	$ 3,000
Compaction	$ 1,000
Grading	$ 21,000
Reseeding	$ 500
Post-removal watering	$ 3,000
Surveying	$ 8,000
Oversight	$ 10,000
Subtotal	**$ 867,000**
Contingency (15%)	$ 130,050
Removal Action Total	**$ 997,050**

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

If action should be delayed or not taken, ecological receptors will continue to be exposed to mercury and selenium in metals-contaminated wastes and soil. Additionally, ecological and human receptors will be exposed to lead if action should be delayed or not taken, although lead-contaminated waste materials do not appear to pose an unacceptable threat to human or ecological receptors under current or likely future land use. Contamination may spread from the site to nearby areas by wind erosion and surface water runoff. Spread of contamination would result in an increased health risk to the exposed population.

Delayed action will also increase risks to the health of the adjacent population through prolonged exposure to contaminants.

VII. PUBLIC INVOLVEMENT

The Navy will prepare and distribute a fact sheet describing contaminants present at the site, risks to ecological receptors, and the proposed removal action. The Navy anticipates a public meeting will not be required to support this removal action. The action memorandum and other documents from the Administrative Record will be available for public review in the information repository at the Contra Costa Public Library in Pleasant Hill. A public notice will be inserted in a local newspaper such as the *Contra Costa Times* to inform the public about the availability of the Administrative Record.

VIII. OUTSTANDING POLICY ISSUES

No outstanding policy issues exist for this removal action.

IX. RECOMMENDATION

To date, the Navy has not acquired evidence that identifies other potentially responsible parties at this site. However, information acquired in the future, including but not limited to information acquired during implementation of this removal action or future response actions at the site, could result in the identification of other potentially responsible parties.

The action memorandum was prepared in accordance with current EPA and Navy guidance documents for TCRAs under CERCLA. The purpose of this action memorandum was to identify and analyze removal actions to address metals-contaminated wastes and soils at AOC 1 at Naval Weapons Station SBD Concord.

Based on the analysis of the removal action alternatives completed in Section 5.A.3, the recommended removal action is excavation of debris and hot spots and disposal of excavated materials at a properly licensed off-site landfill. This alternative is recommended because it provides a high degree of protection for human health and the environment, does not involve significant administrative or technical constraints, and is not cost prohibitive.

This decision document represents the selected removal action for AOC 1 (Site 31) at Naval Weapons Station SBD Concord, California, developed in accordance with CERCLA, as amended by the Superfund Amendments and Reauthorization Act, and consistent with the NCP. This decision is based on the Administrative Record for the site.

_____ _____

Captain Robert Mirick, U.S. Navy
Commanding Officer
Naval Weapons Station Seal Beach, Detachment Concord

Date

REFERENCES

Bechtel Environmental, Inc. 1994. "Site Inspection Prioritization, Site: Union Collier." January 31.

Ecology and Environment, Inc. 1984. "Site Inspection Report, Union Collier Plant, Pittsburg, California" TDD Number R-09-8411-05, Report Number c(85) C142. December.

Harding-Lawson and Associates. 1977. "Soil Investigation Purge Pond Bay Point Works, Pittsburg, California." June 9.

PRC Environmental Management, Inc. 1997. "Technical Memorandum: Tidal Influence Study and Post-Remediation Groundwater Monitoring, Naval Weapons Station Concord." July 22.

Tetra Tech EM Inc. (TtEMI). 1999. "Naval Weapons Station Seal Beach Detachment, Concord, Area of Concern 1, Pump Station Area, Preliminary Assessment Report." May 20.

TtEMI. 2001. "Preliminary Assessment Addendum, Area of Concern 1, Naval Weapons Station, Seal Beach Detachment Concord." September 28.

U.S. Environmental Protection Agency (EPA). 1999. "Screening Level Ecological Risk Assessment Protocol." U.S. EPA Region 6, Office of Solid Waste, Center for Combustion Science and Engineering. August.

Table 1
Chemical-Specific ARARs

Requirement	Prerequisite	Citation[a]	ARAR Determination	Comments
Resource Conservation and Recovery Act (42 U.S.C., ch. 82, §§ 6901–6991[i])[b]				
Definition of RCRA hazardous waste.	Waste.	Cal. Code Regs. title 22, § 66261.21, 66261.22(a)(1), 66261.23, 66261.24(a)(1), and 66261.100	Applicable.	Applicable for determining whether waste is hazardous. The determination of whether the wastes are hazardous will be made at the time the wastes are generated.
A solid waste is characterized as toxic, based on the TCLP, if the waste exceeds the TCLP maximum concentrations.	Waste.	Cal. Code Regs. title 22, § 66261.24(a)(1)(B)	Applicable.	Applicable for determining whether waste is hazardous. The determination of whether the wastes are hazardous will be made at the time the wastes are generated.
LDRs prohibit disposal of hazardous waste unless treatment standards are met.	Hazardous waste land disposal.	Cal. Code Regs. title 22, § 66268.1(f)	Applicable.	If the waste characterization performed upon removal of the wastes identifies such wastes as hazardous, then LDRs are applicable.
Treatment standards including technology requirements before hazardous waste can be disposed to land.	Hazardous waste land disposal.	Cal. Code Regs. title 22, § 66268.40	Applicable.	If the waste characterization performed upon removal of the wastes identifies such wastes as hazardous, then LDRs are applicable.
Universal Treatment Standards used to comply with treatment standards.	Hazardous waste land disposal.	Cal. Code Regs. title 22, § 66268.48	Applicable.	If the waste characterization performed upon removal of the wastes identifies such wastes as hazardous, then LDRs are applicable.
Definitions of designated waste, nonhazardous waste, and inert waste.	Waste	Cal. Code Regs. title 27, §§ 20210, 20220, and 20230	Relevant and Appropriate	Potential ARARs for classifying waste and determining ARAR status of other requirements.
Definition of "non-RCRA hazardous waste."	Waste.	Cal. Code Regs. title 22, § 66261.22(a)(3) and (4), § 66261.24(a)(2)–(a)(8), § 66261.101, § 66261.3(a)(2)(C) or § 66261.3(a)(2)(F)	Applicable	Wastes not covered under Federal ARARs may still be considered state-regulated non-RCRA hazardous wastes. Total threshold limit concentrations (TTLCs) and soluble threshold limit concentrations (STLCs) are the criteria used to define non-RCRA hazardous waste.

Table 1 (Continued)
Chemical-Specific ARARs

Notes:

[a] Only the substantive provisions of the requirements cited in this table are potential ARARs

[b] Statutes and policies, and their citations, are provided as headings to identify general categories of potential ARARs for the convenience of the reader; listing the statutes and policies does not indicate that DON accepts the entire statutes or policies as potential ARARs; specific potential ARARs are addressed in the table below each general heading; only pertinent substantive requirements of the specific citations are considered potential ARARs

Acronyms/Abbreviations:

ARAR	applicable or relevant and appropriate requirement
DON	Department of the Navy
LDR	land disposal restriction
RCRA	Resource Conservation and Recovery Act
TCLP	toxicity characteristic leaching procedure

Table 2
Action-Specific ARARs

Action	Requirement	Prerequisite	Citation[a]	ARAR Determination	Comments
Resource Conservation and Recovery Act (42 U.S.C., ch. 82, §§ 6901–6991[i])[b]					
On-site waste generation	Person who generates waste shall determine if that waste is a hazardous waste.	Generator of waste.	Cal. Code Regs. title 22, § 66262.10(a), 66262.11	Applicable.	Applicable for any operation where hazardous waste is generated. The determination of whether wastes generated during removal activities are hazardous will be made at the time the wastes are generated.
On-site waste generation	Requirements for analyzing waste for determining whether waste is hazardous.	Generator of waste.	Cal. Code Regs. title 22, § 66264.13 (a) and (b)	Applicable.	Applicable for determining whether the removal wastes are hazardous.
Hazardous waste accumulation	On-site hazardous waste accumulation is allowed for up to 90 days as long as the waste is stored in containers or tanks, on drip pads, inside buildings, is labeled and dated, etc.	Accumulate hazardous waste.	Cal. Code Regs. title 22, § 66262.34	Applicable.	Applicable for any operation where hazardous waste is generated. The determination of whether wastes generated during removal activities are hazardous will be made at the time the wastes are generated.
Pretransport requirements	Hazardous waste must be packaged in accordance with DOT regulations prior to transporting.	Any operation where hazardous waste is generated.	Cal. Code Regs. title 22, § 66262.30	Applicable.	Applicable for any operation where hazardous waste is generated and transported. The determination of whether wastes generated during removal activities are hazardous will be made at the time the wastes are generated.
Pretransport requirements	Hazardous waste must be labeled in accordance with DOT regulations prior to transporting.	Any operation where hazardous waste is generated.	Cal. Code Regs. title 22, § 66262.31	Applicable.	Applicable for any operation where hazardous waste is generated and transported. The determination of whether wastes generated during removal activities are hazardous will be made at the time the wastes are generated.

Table 2 (Continued)
Action-Specific ARARs

Action	Requirement	Prerequisite	Citation[a]	ARAR Determination	Comments
Pretransport requirements	Provides requirements for marking hazardous waste prior to transporting.	Any operation where hazardous waste is generated.	Cal. Code Regs. title 22, § 66262.32	Applicable.	Applicable for any operation where hazardous waste is generated and transported. The determination of whether wastes generated during removal activities are hazardous will be made at the time the wastes are generated.
Pretransport requirements	A generator must ensure that the transport vehicle is correctly placarded prior to transport of hazardous waste.	Any operation where hazardous waste is generated.	Cal. Code Regs. title 22, § 66262.33	Applicable.	Applicable for any operation where hazardous waste is generated and transported. The determination of whether wastes generated during removal activities are hazardous will be made at the time the wastes are generated.
Placement of waste in land disposal units	Movement of excavated materials to new location and placement in or on land will trigger LDRs for the excavated waste or closure requirements for the unit in which the waste is being placed.	Materials containing RCRA hazardous wastes subject to LDRs are placed in another unit.	Cal. Code Regs. title 22, § 66268.40	Applicable.	This may be an ARAR for disposal or placement of waste on land. However, a response action can be designed around LDRs.
Waste pile	Allows generator to accumulate solid remediation waste in a U.S, EPA-designated pile for storage only, up to 2 years during remedial operations without triggering LDRs.	Hazardous remediation waste temporarily stored in piles.	40 CFR § 264.554	Relevant and appropriate.	May be ARAR for waste stored on site before off-site disposal.

Table 2 (Continued)
Action-Specific ARARs

Action	Requirement	Prerequisite	Citation[a]	ARAR Determination	Comments
Clean Air Act (42 U.S.C., ch. 85, §§ 7401–7671)[b]					
Air Quality Management District/Air Pollution Control District					
Air emissions	No person shall discharge into the atmosphere from any source whatsoever any air contaminant, other than uncombined water vapor, for a period or periods aggregating more than 3 minutes in any 1 hour that is as dark or darker in shade as that designated as No. 2 on the Ringelmann Chart, as published by the United States Bureau of Mines, or of such opacity as to obscure an observer's view to a degree equal to or greater than does smoke.	Air emissions.	Cal. Health & Safety Code § 41701	Relevant and appropriate.	Normally implemented through local air district regulations, such as BAAQMD Rule 6-303.
Waste disposal	Wastes that contain total lead in excess of 350 ppm, copper in excess of 2,500 ppm, or nickel in excess of 200 ppm must be disposed in a Class I landfill.	Waste containing total lead, copper, or nickel in excess of specified levels.	Cal. Health & Safety Code § 25157.8	Applicable.	If the waste characterization performed following removal of the contaminated soil identifies such wastes as containing levels of lead in excess of the criteria, then this rule is applicable for disposal of wastes.

Notes:

[a] Only the substantive provisions of the requirements cited in this table are potential ARARs

[b] Statutes and policies, and their citations, are provided as headings to identify general categories of potential ARARs for the convenience of the reader; listing the statutes and policies does not indicate that DON accepts the entire statutes or policies as potential ARARs; specific potential ARARs are addressed in the table below each general heading; only pertinent substantive requirements of the specific citations are considered potential ARARs

Acronyms/Abbreviations:

ARAR applicable or relevant and appropriate requirement
C.F.R. *Code of Federal Regulations*
DON Department of the Navy
LDR land disposal restriction
ppm parts per million
RCRA Resource Conservation and Recovery Act

Table 3
Location-Specific ARARs

Action	Requirement	Prerequisite	Citation[a]	ARAR Determination	Comments
California Endangered Species Act (Cal. Fish & Game Code §§ 2050–2116)[b]					
Endangered species habitat	Department policy and legislative findings and definitions for significant natural areas.	Activity taking place in an endangered species habitat and significant natural area.	Cal. Fish & Game Code §§ 2050–2068	Not an ARAR.	Procedural; not a "cleanup standard, standard of control," or "other substantive requirement, criteria, or limitation."
Endangered species habitat	Procedures for listing endangered species.	Threatened or endangered species determination.	Cal. Fish & Game Code § 2070	Not an ARAR.	Procedural; not a "cleanup standard, standard of control," or "other substantive requirement, criteria, or limitation."
Endangered species habitat	No person shall import, export, take, possess, or sell any endangered or threatened species or part or product thereof.	Threatened or endangered species determination on or before 01 January 1985 or a candidate species with proper notification.	Cal. Fish & Game Code § 2080	Applicable.	The Swainson's Hawk is listed as a threatened species and is potentially occurring in the area. All necessary steps will be taken to protect and preserve the habitat of this species.
Endangered species habitat	Ensures that action taken will not jeopardize the survival and reproduction of any threatened or endangered species.	Threatened or endangered species determination or a candidate species with proper notification.	Cal. Fish & Game Code §§ 2090–2096	Not an ARAR.	ot effective after 01 January 994.
Fully protected species habitat.	No person shall take or possess any fully protected species.	Presence of fully protected species.	Cal. Fish & Game Code § 3511	Applicable.	The White-tailed Kite is listed as a fully protected species and has been observed in the area. All necessary steps will be taken to protect and preserve the habitat of this species.

Table 3 (Continued)
Location-Specific ARARs

Action	Requirement	Prerequisite	Citation[a]	ARAR Determination	Comments
Migratory Bird Treaty Act of 1972 (16 U.S.C. §§ 703–712)[b]					
Migratory bird area	Protects almost all species of native migratory birds in the U.S. from unregulated "take," which can include poisoning at hazardous waste sites.	Presence of migratory birds.	16 U.S.C. § 703	Applicable.	The Western Meadowlark, a migratory bird, is known to inhabit the area near AOC1 and may feed on the site. Substantive provisions of 16 U.S.C. §§ 703–712 are applicable ARARs and precautions will be taken to ensure that there are no adverse effects on this species.

Notes:

[a] Only the substantive provisions of the requirements cited in this table are potential ARARs

[b] Statutes and policies, and their citations, are provided as headings to identify general categories of potential ARARs for the convenience of the reader; listing the statutes and policies does not indicate that DON accepts the entire statutes or policies as potential ARARs; specific potential ARARs are addressed in the table below each general heading; only pertinent substantive requirements of the specific citations are considered potential ARARs.

Acronyms/Abbreviations:

AOC	area of concern
ARAR	applicable or relevant and appropriate requirement
DON	Department of the Navy
U.S.C.	*United States Code*

N

100' 0 100' 200' Feet

Tetra Tech EM Inc.

NAVAL WEAPONS STATION
SEAL BEACH DETACHMENT
CONCORD, CALIFORNIA

FIGURE 1

1974 AERIAL PHOTOGRAPH
AND SITE FEATURES

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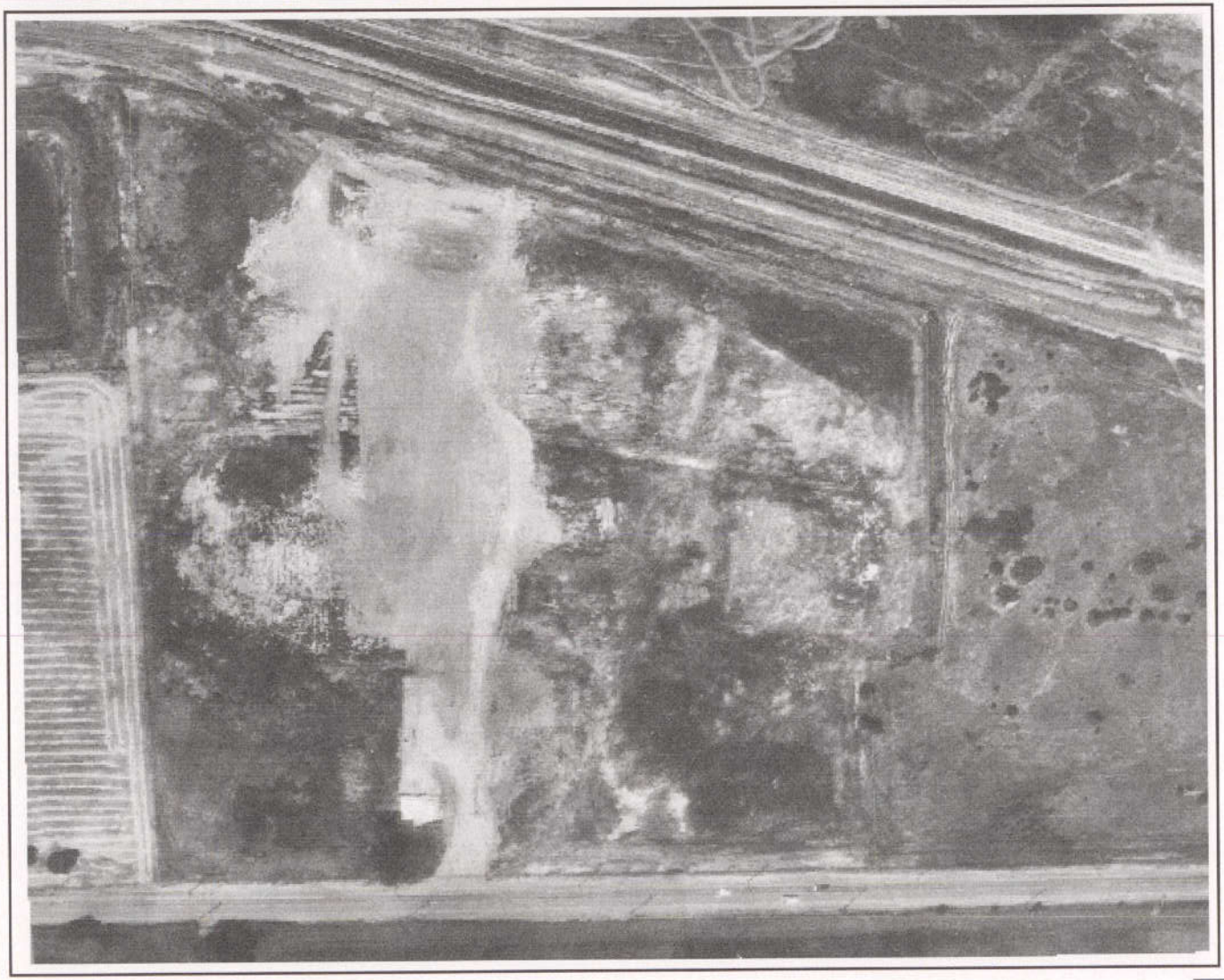

100' 0 100' 200' Feet

Tetra Tech EM Inc.

NAVAL WEAPONS STATION
SEAL BEACH DETACHMENT
CONCORD, CALIFORNIA

Figure 2
1986 Aerial Photograph
and Site Features

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HOT SPOT EXCAVATION
(OUTLINE SHOWS KNOWN LIMITS OF EXCAVATIONS. ADDITIONAL GRID SQUARES MAY ALSO BE EXCAVATED BASED ON FUTURE INVESTIGATIVE SAMPLING)

CINDERS EXCAVATION AREA
(OUTLINE DELINEATES APPOXIMATE MAXIMUM LIMIT OF CINDERS)

CONTRA COSTA WATER DISTRICT PUMP STATION

ELEVATED PUMP STATION MOUND

SB09 SB07 SB04 SB06 SB05 SB02 SB03 SB08 SB01

GB01 GB02 GB03 GB04 GB05 GB06 GB08 GB09 GB10 GB11 GB12 GB13 GB14 GB15 GB16 GB17 GB18 GB19 GB20 GB21 GB22 GB23 GB24 GB25 GB26 GB27 GB28 GB29 GB30 GB32 GB33 GB34 GB35 GB36 GB37 GB38 GB39 GB40 GB41 GB42 GB43 GB44 GB45 GB46 GB47 GB48 GB49 GB50 GB51 GB52 GB53 GB54 GB55

25'
25'

LEGEND:

- SAMPLE LOCATION (JULY 2000)
- SAMPLE LOCATION (FEBRUARY 1999)
- SAMPLE LOCATION WHERE NO WASTE WAS ENCOUNTERED
- TELEPHONE POLES
- REFUSAL OF GEOPROBE BORING
- PROPOSED REMOVAL AREA
- FORMER BUILDING SHOWN ON 1974 AERIAL PHOTOGRAPH

N

50 0 50 100 Feet

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NAVAL WEAPONS STATION
SEAL BEACH DETACHMENT
CONCORD, CALIFORNIA

FIGURE 3

PROPOSED SOIL REMOVAL AREAS

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